

Appendix A: Roadway Standards

**Yamhill County Roadway Standards
For Construction/Reconstruction of Private Roads Used by Public**

| Design ADT | >400 | | | 250 to 400 | | | 100 to 250 | | | <100 | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------|--------|------------|--------|--------|------------|--------|--------|--------------------|--------|--------|
| Design Speed (mph) | 35 | 30 | 25 | 35 | 30 | 25 | 35 | 30 | 25 | 35 | 30 | 25 |
| Maximum Grade (%) ¹ | 10 | | | 10 | | | 10 | | | 10 | | |
| Minimum Stopping Sight Distance (ft) ² | 250 | 200 | 155 | 250 | 200 | 155 | 250 | 200 | 155 | 250 | 200 | 155 |
| Lane Width (ft) ³ | 10 | | | 10 | | | 9 | | | 9 | | |
| Shoulder Width (ft) | 2 | | | 2 | | | 2 | | | 2 | | |
| Surface Type ⁴ | P | | | P/G | | | P/G | | | P/G | | |
| Shoulder Type ⁵ | C | | | C | | | C | | | C | | |
| Roadway Width (ft) | 24 | | | 24 | | | 22 | | | 22/13 ⁶ | | |
| Maximum Super Elevation Rate | | | | | | | | | | | | |
| Paved | 6% | | | 6% | | | 6% | | | 6% | | |
| Gravel | 0% | | | 0% | | | 0% | | | 0% | | |
| Minimum Radius | | | | | | | | | | | | |
| Paved | 340 | 275 | 144 | 340 | 275 | 144 | 340 | 275 | 144 | 340 | 275 | 144 |
| Gravel | 820 | 600 | 420 | 820 | 600 | 420 | 820 | 600 | 420 | 820 | 600 | 420 |
| Maximum Degree of Curvature | | | | | | | | | | | | |
| Paved | 16°50' | 20°50' | 39°45' | 16°50' | 20°50' | 39°45' | 16°50' | 20°50' | 39°45' | 16°50' | 20°50' | 39°45' |
| Gravel | 6°55' | 9°30' | 13°35' | 6°55' | 9°30' | 13°35' | 6°55' | 9°30' | 13°35' | 6°55' | 9°30' | 13°35' |
| Vertical Clearance (ft) | 14 | | | 14 | | | 14 | | | 14 | | |
| Minimum Easement Width (ft) | 40 | | | 40 | | | 40 | | | 40 | | |
| Cross Slope | | | | | | | | | | | | |
| Low Type (Pavement) | 2% | | | 2% | | | 2% | | | 2% | | |
| High Type (Treated Earth/Gravel) | 3 to 4% | | | 3 to 4% | | | 3 to 4% | | | 3 to 4% | | |
| Minimum Turnout Spacing (ft) ⁷ | N/A | | | N/A | | | N/A | | | 1000 | | |
| Notes: | | | | | | | | | | | | |
| ¹ Maximum sustained grade is 10%. Maximum intermittent grade is 15% for 200 feet. | | | | | | | | | | | | |
| ² Minimum stopping sight distance is a function of speed and grade. The distances shown are for level terrain (less than or equal to 3% grade) and the design speeds shown above. Distances must be calculated for grades exceeding 3 percent. | | | | | | | | | | | | |
| ³ Lane width of 11' for roads with high truck volumes (all design ADT categories). | | | | | | | | | | | | |
| ⁴ P - Pavement, P/G - Pavement or Gravel (to be determined by County Roadway Engineer). Standards for lane width, shoulder width, and shoulder type do not apply to gravel surfaces. | | | | | | | | | | | | |
| ⁵ C - Composite | | | | | | | | | | | | |
| ⁶ Single lane may be appropriate for roads with <100 ADT. | | | | | | | | | | | | |
| ⁷ Applicable for single-lane roads only. | | | | | | | | | | | | |

Appendix B: Existing Transportation Conditions



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MEMORANDUM

TO: Bill Gille, Yamhill County
John Phelan, Yamhill County
Terry Cole, ODOT Region 2

FROM: Bob Schulte, PTP
Julie Sosnovske, P.E.

DATE: November 30, 2012

SUBJECT: **YAMHILL COUNTY TRANSPORTATION SYSTEM PLAN** **P# 11086-04**
Technical Memorandum #3 – Existing Transportation Conditions

This memo documents the analysis of existing transportation conditions for the Yamhill County Transportation System Plan. The findings of the analysis will be used in the development of proposed improvements to address transportation needs within the county.

The objective of the study is the development of a comprehensive transportation plan document that will serve to guide transportation system management and project programming for both state and county facilities over the next 20 to 25 years.

The study area, shown in Figure 1, comprises the rural portion of Yamhill County and does not include incorporated areas or county roads within these areas. Within the study area, agriculture is the predominant land use, with some commercial and residential development. The wine industry is a significant component of the agricultural sector. Over 80 wineries and 200 vineyards represent the largest concentration of wine growers and producers in Oregon.

Yamhill County is adjacent to Tillamook, Washington, Clackamas, Marion, and Polk Counties. Thus, there is a significant amount of commute traffic between the incorporated areas of the county, such as Newberg and McMinnville, and the Portland metropolitan and Salem areas. The primary commute routes are OR 99W, OR 47, and OR 221. OR 99W and OR 18 also serve as one of the main routes for recreational travel from the Portland area to the Oregon coast.

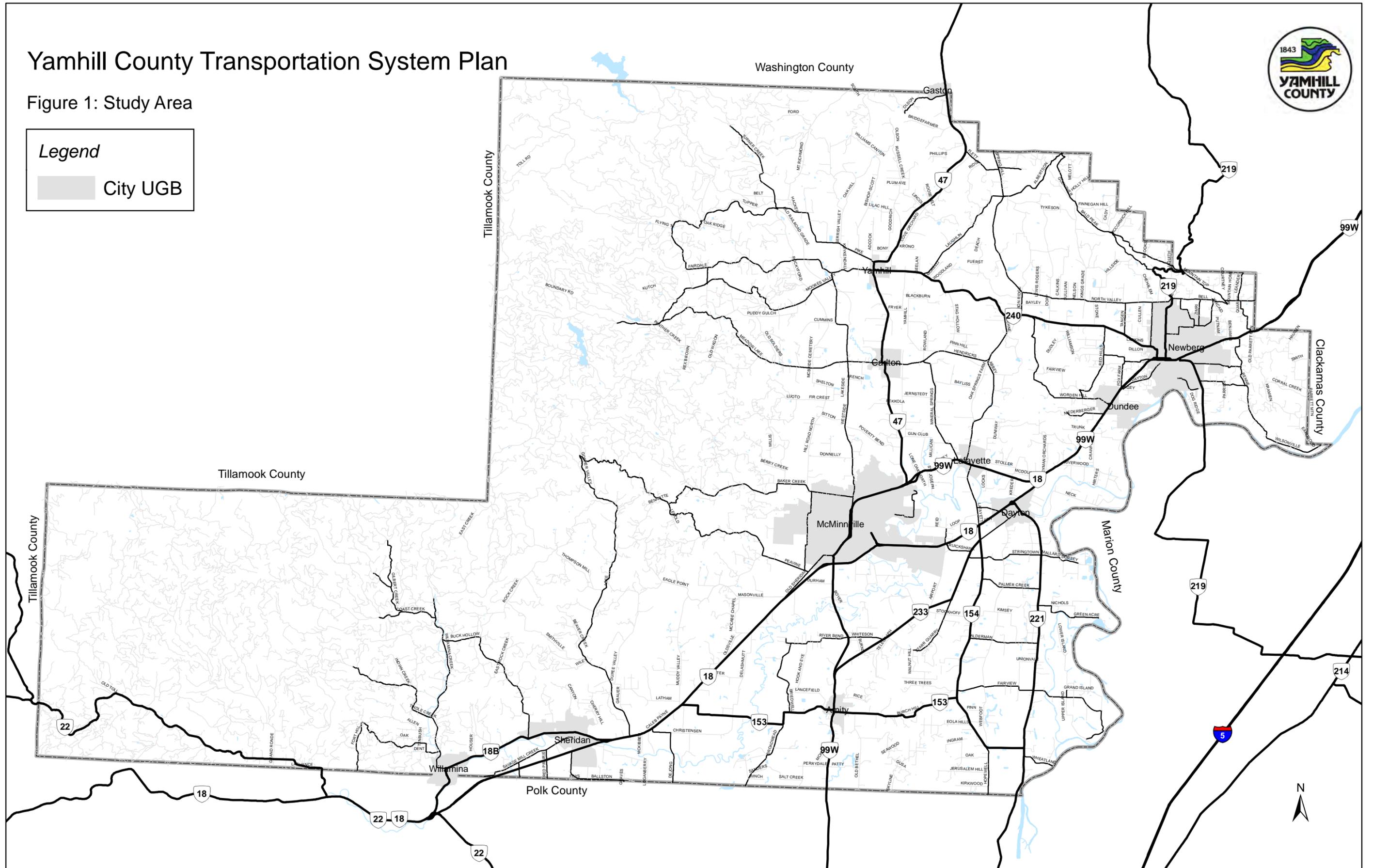
Yamhill County Transportation System Plan

Figure 1: Study Area



Legend

City UGB





Two approaches were used in the analysis of existing transportation conditions. With the first approach, transportation data such as traffic volumes and roadway characteristics were collected and analyzed. The results of the analysis were compared to standards, and for locations that did not meet the standards, a need was identified. The second approach was to gather information on existing transportation needs from stakeholders, agency staff, and members of community. This information was obtained through stakeholder interviews, meetings with ODOT and Yamhill County roadway maintenance staff, and input from the county’s Road Improvement Advisory Committee (RIAC). The reported needs from these sources were cataloged, and field reconnaissance was conducted at the reported need locations to investigate the nature of the problems.

ROADWAYS

FACILITIES

Network Overview

The existing study area roadway network comprises roughly 117 miles of state highways and 210 miles of county roadways classified as minor collector or above. There are eleven state highways within the study area. The areas they serve are listed below in Table 1.

Table 1 – State Highways Within Study Area

| State Highway | ODOT Highway Number | Primary Areas Served |
|---------------|---------------------|--------------------------------------------------------------------------------------------------|
| OR 18 | 039 | Dayton and McMinnville, with connections to Sheridan, Willamina, and the Oregon Coast |
| OR 18B | 157 | Sheridan, Willamina |
| OR 22 | 032 | Connection between OR 18 and Oregon Coast |
| OR 47 | 029 | Yamhill, Carlton, and McMinnville, with connection to Washington County |
| OR 99W | 091 | Newberg, Dundee, Lafayette, McMinnville, and Amity, with connections to Portland and Polk County |
| OR 153 | 153 | Amity, south Yamhill County |
| OR 154 | 154 | Dayton, south Yamhill County |
| OR 219 | 140 | Newberg, east Yamhill County, with connections to Washington County and Woodburn |
| OR 221 | 150 | Dayton, south Yamhill County, with connection to Salem |



| State Highway | ODOT Highway Number | Primary Areas Served |
|---------------|---------------------|----------------------|
| OR 233 | 155 | Amity, Dayton |
| OR 240 | 151 | Newberg, Yamhill |

Functional Classification

The county’s existing functional classification system was reviewed and updated in coordination with Yamhill County staff and the RIAC. The functional classification system describes the hierarchy of roadway types and their relative roles in the system, and provides criteria for classifying specific roadways.

The roadway network performs two essential functions: to facilitate mobility and provide access to property. Higher classified roadways (e.g., freeways and arterials) primarily provide mobility, while lower classified roadways, such as local roads, primarily provide land access. Intermediate classifications (e.g., collectors) serve both mobility and access needs.

The classifications provide guidance for the design standards to be applied when a roadway is improved and, for county roads, prioritization of improvement and maintenance projects. The county’s design standards are applied for county roads and ODOT’s design standards are applied for state highways.

The updated functional classification system is summarized in Table 2. The classification assigned to each roadway is shown in Figure 2.

Table 2 – Functional Classification System

| Classification | Description/Characteristics |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Principal Arterial | <ul style="list-style-type: none"> • Carries substantial volume of statewide or interstate travel. • Penetrates urban boundaries or comes within 10 miles of the center of an urban area. |
| Minor Arterial | <ul style="list-style-type: none"> • Links cities, larger towns, and other major traffic generators, providing interregional and intercounty service. • Serves travel flows of greater length and density than those served by lower classified roads. • Connects state highways. |



| Classification | Description/Characteristics |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | <ul style="list-style-type: none"> Typically carries average daily traffic (ADT) volume of 2,000 or higher. |
| Major Collector | <ul style="list-style-type: none"> Provides service to larger towns not served by higher classified roads. Also serves schools, county parks, and important agricultural areas. Connects these places with nearby larger towns or cities or with arterials. Serves intracounty travel. |
| Minor Collector | <ul style="list-style-type: none"> Collects traffic from local roads. Provides service to remaining smaller communities. Serves locally important traffic generators. |
| Resource Road | <ul style="list-style-type: none"> Provides a connection between resource areas and the remaining roadway network. Facilitates movement of goods and services. |
| Local Roads | <ul style="list-style-type: none"> Provides access to adjacent land and higher classified roads. Accommodates travel over shorter distances compared to collectors or arterials. |

As shown in Figure 2, most state highways are classified as principal arterials or major arterials under the county's updated functional classification system. There are a few county roads classified as minor arterials, primarily in the more developed northern portion of the study area (Westside Rd., Abbey Rd./Kuehne Rd., Hendricks Rd., Spring Hill Rd./Flett Rd., Wilsonville Rd., Stringtown Rd., and Hopewell Hwy.). Most of the county roads, however, are classified as collectors, resource, or local roads.

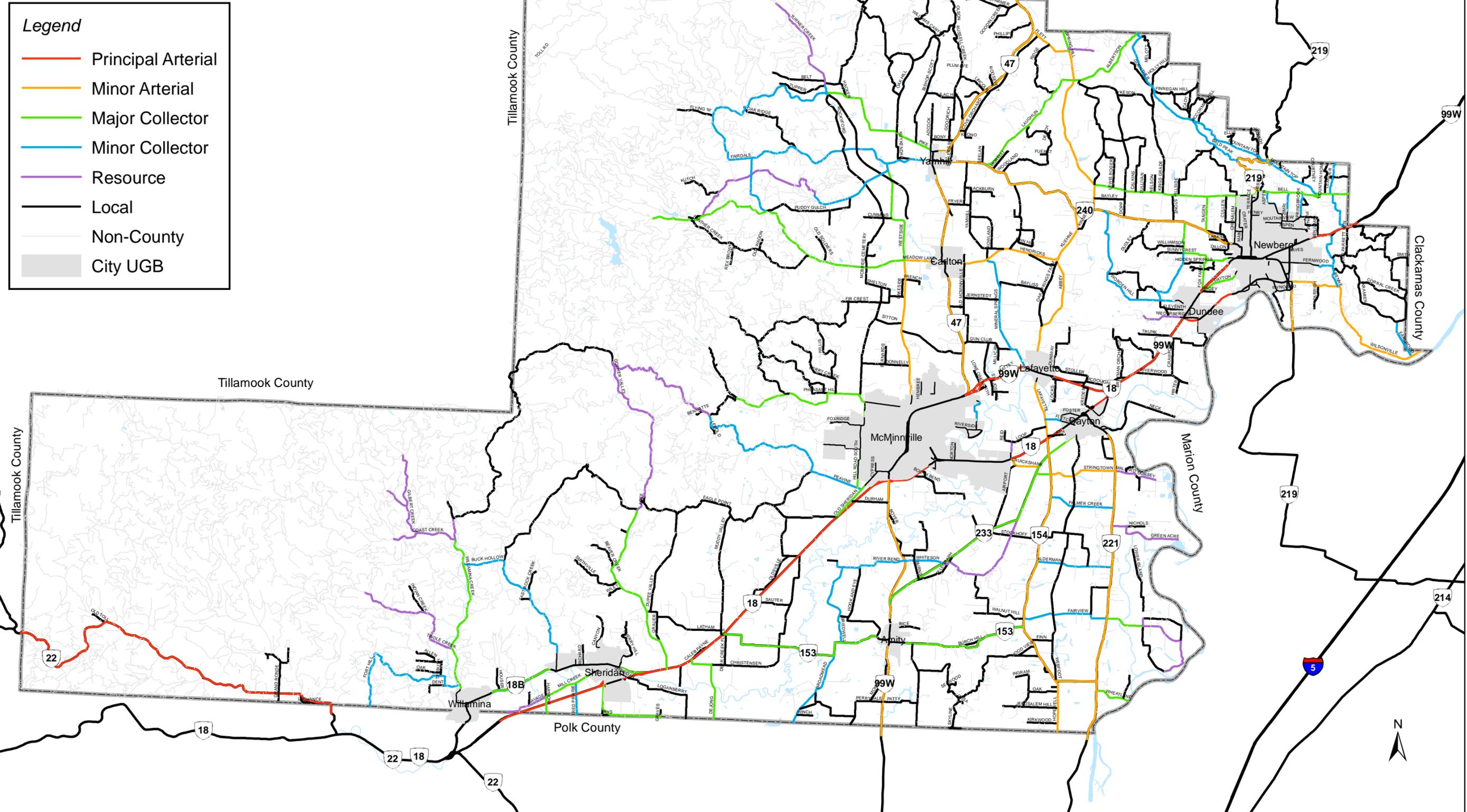
Physical and Operational Features

The number of through travel lanes for state highways within the study area is shown in Figure 3. The majority of state highways are two-lane facilities, with additional through lanes at some locations along OR 99W and OR 18. Turning lanes are provided at most major intersections along OR 99W and OR 18, but generally are not provided on other state highways. Existing turn lanes are shown in Figure 4.

The basic speed rule is in effect for almost all state highways, with isolated slower speed zones in rural developed areas. There are no signalized intersections along state highways outside of the incorporated areas in the county.

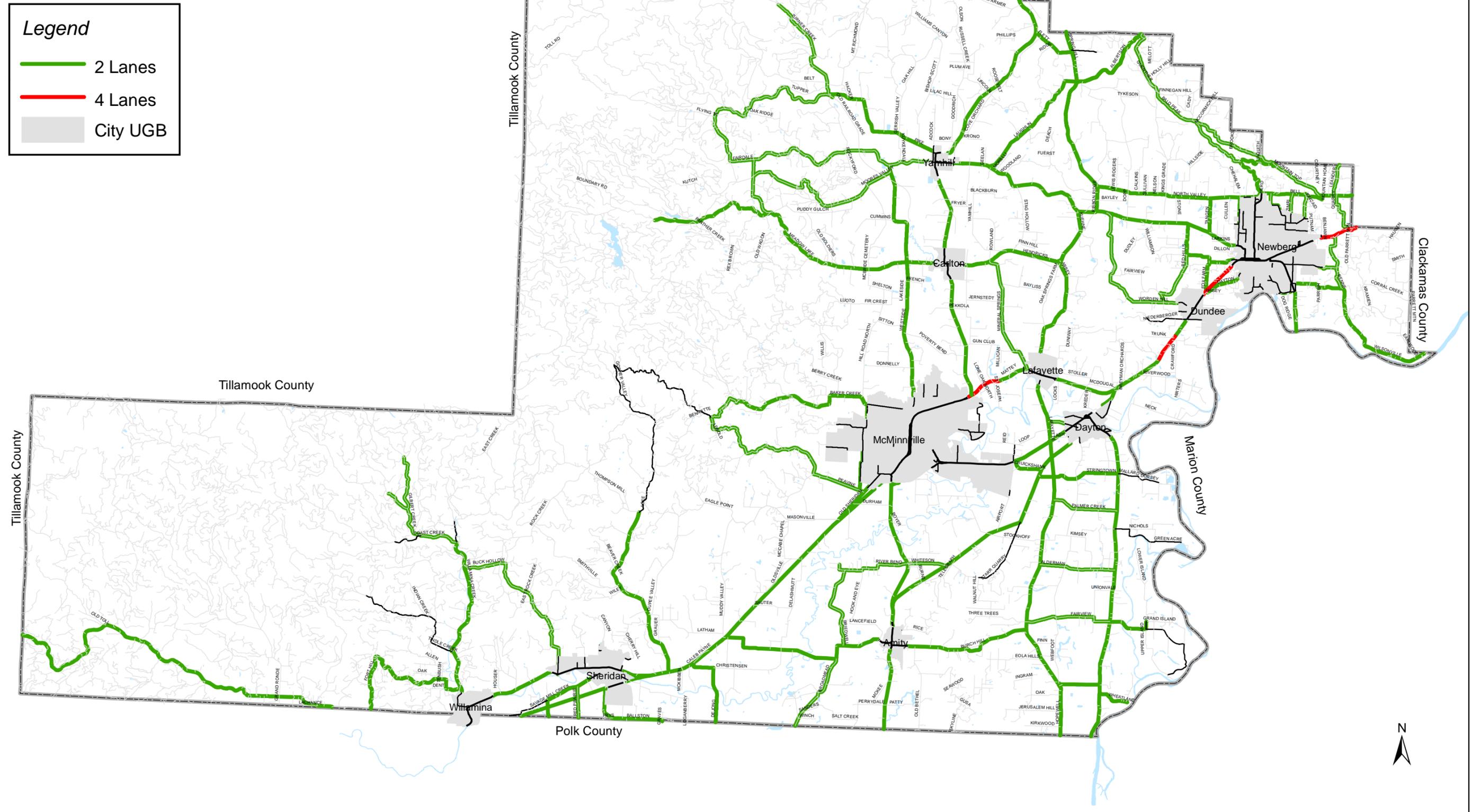
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Figure 2: Functional Classification System (December, 2014)



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Figure 3: Existing Number of Travel Lanes



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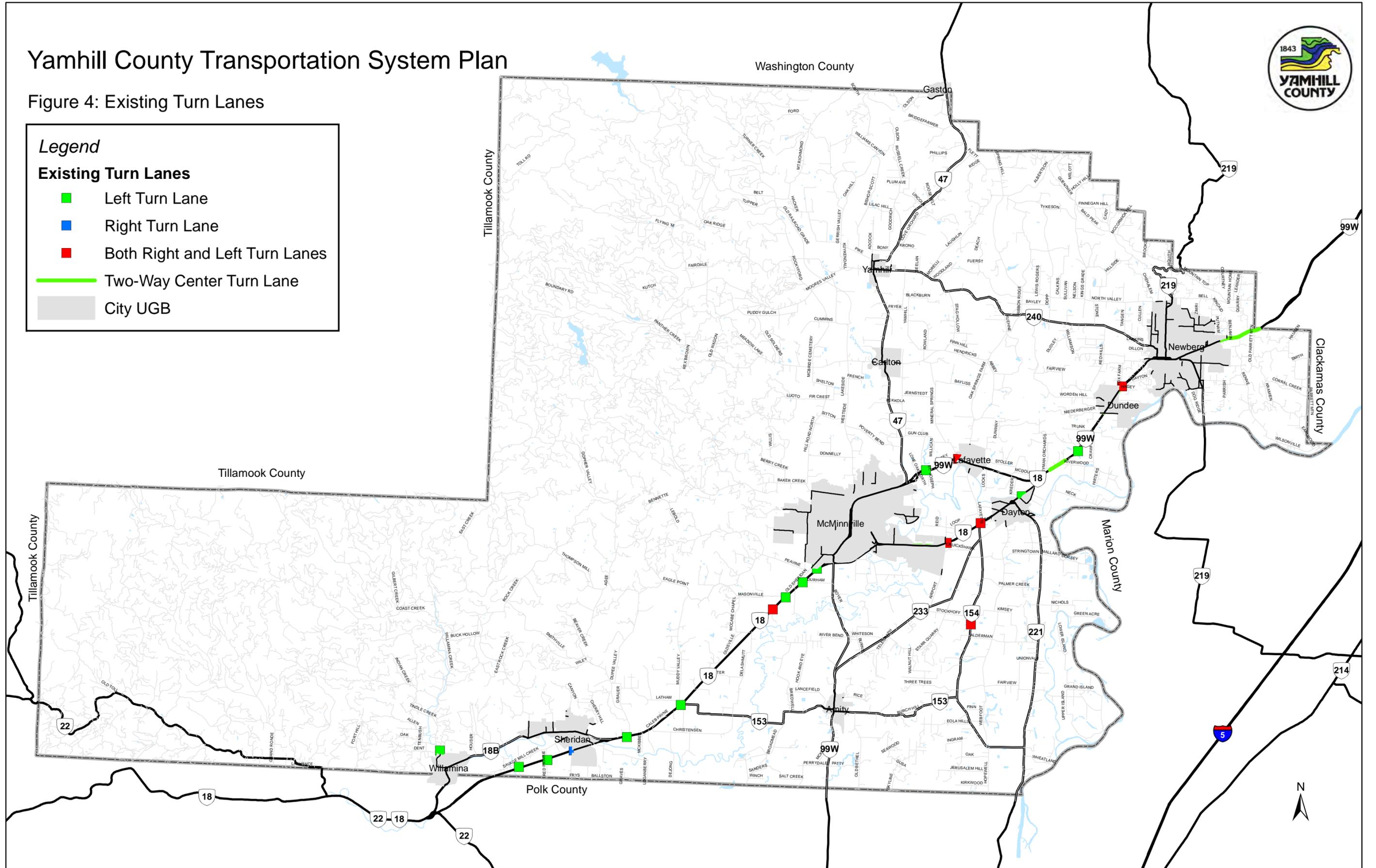
Figure 4: Existing Turn Lanes



Legend

Existing Turn Lanes

- Left Turn Lane
- Right Turn Lane
- Both Right and Left Turn Lanes
- Two-Way Center Turn Lane
- City UGB





The county road system is comprised entirely of two-lane road segments with no medians. Most of the county roadways classified as resource road or above are paved; those segments that are gravel are shown in Figure 5. The local roads are mostly gravel. Turn lanes are provided on only a few intersection approaches, as shown in Figure 4. The basic speed rule covers most of the system, with slower speed zones in rural developed areas and for specific segments with geometric deficiencies. Currently within the rural area, there are no signalized county intersections. There is, however, four-way stop control at isolated locations, such as the Westside Rd./Meadow Lake Rd. intersection.

TRAFFIC VOLUMES

Traffic volume data was obtained from several sources, including ODOT, Yamhill County and traffic counts collected specifically for this study.

ODOT data included Automatic Traffic Recorder (ATR) data at three locations in Yamhill County, as well as turning movement counts and vehicle classification counts. In addition, 2009 annual average daily traffic (AADT) volumes were obtained for each link on the state highway system.¹

County data included hourly volume classification counts collected over roughly the past 10 years as a part of the county's annual traffic counting program.

The counts conducted specifically for this study included 20 P.M. peak hour intersection turning movement counts, five 16-hour vehicle classification turning movement counts, and twelve 24-hour two-way tube counts.

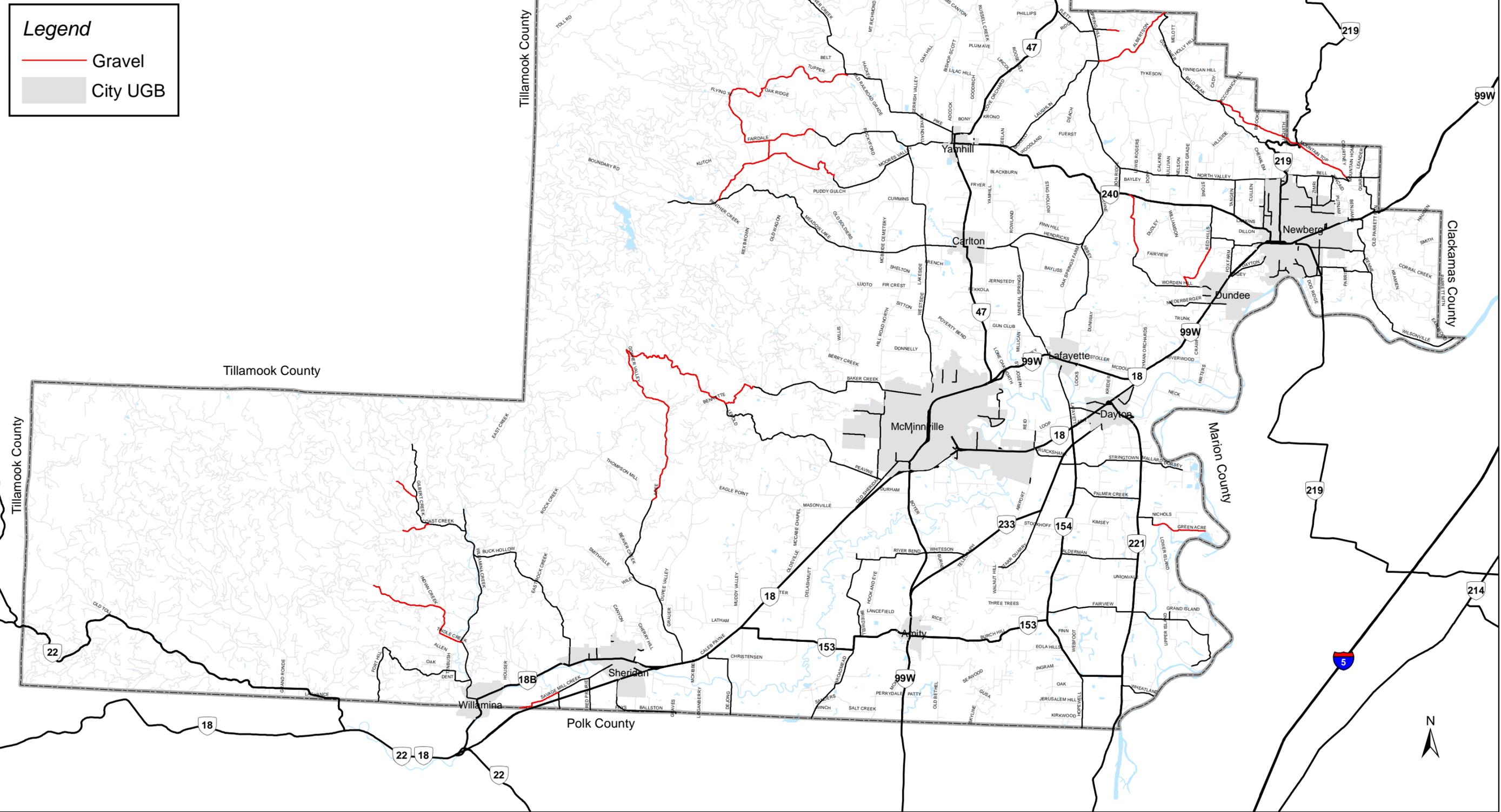
Daily Volumes

A summary of the AADTs for state highways throughout the study area is shown in Figure 6. The state highways within the study area carry volumes generally ranging between 3,000 and 15,000 vehicles per day. However, volumes are as low as less than 1,000 vehicles per day on some district-level routes and as high as over 30,000 vehicles per day on OR 99W east of Newberg. The highest-volume routes are OR 99W between the Washington County line and Newberg and OR 18.

¹ ODOTs FACS (Features, Attributes & Conditions Survey) Data To Go, data obtained in February/March 2012.

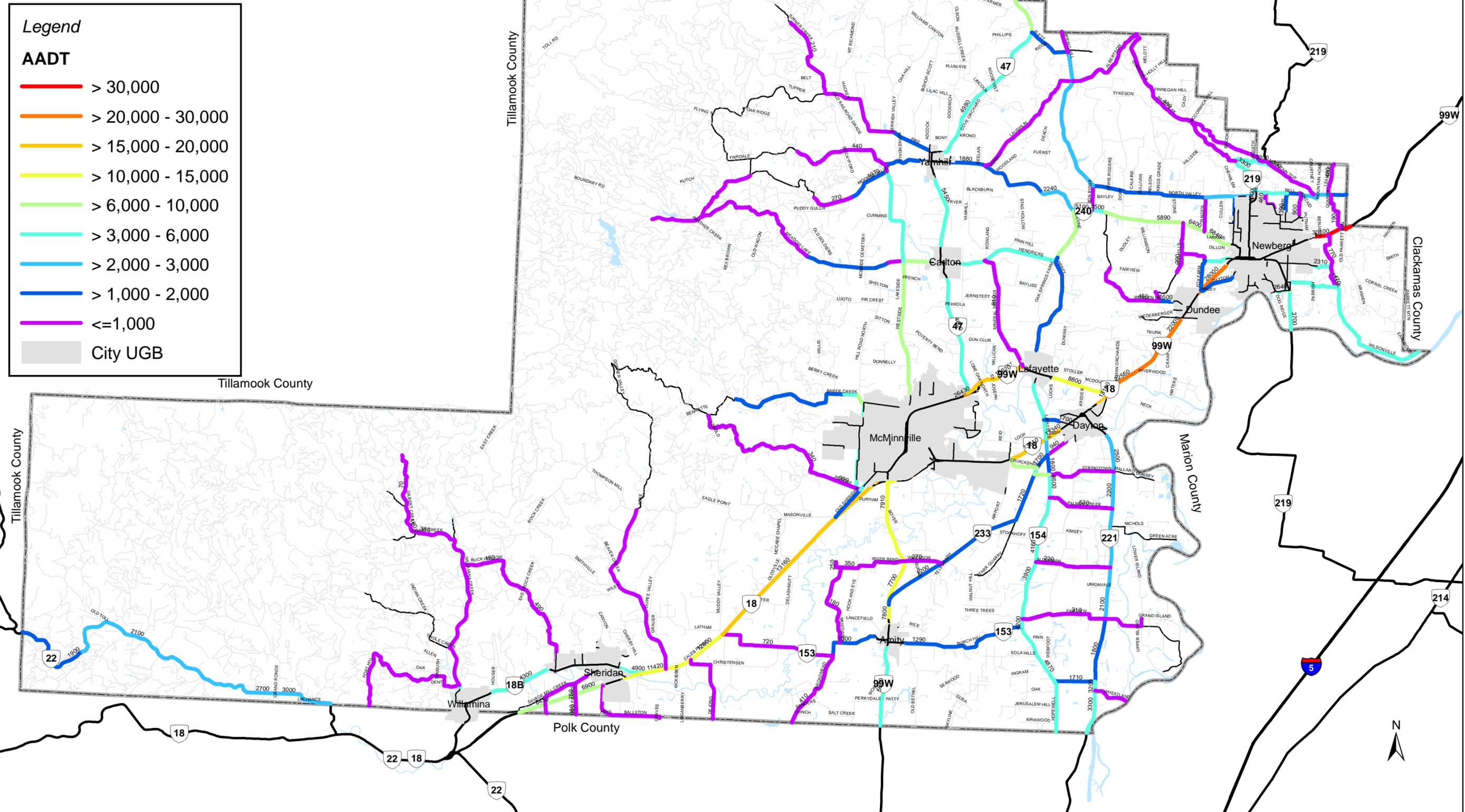
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Figure 5: Existing Gravel Road Segments
(Resource Classification and Above)



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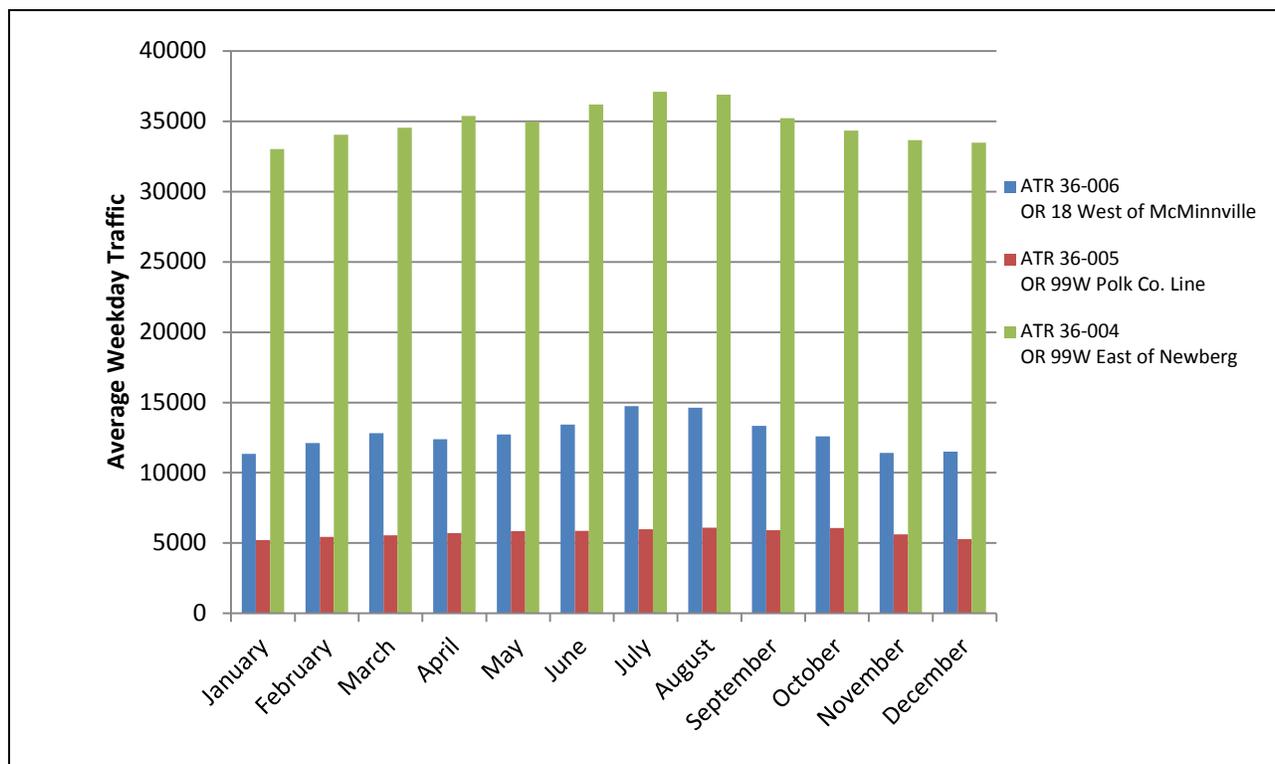
Figure 6: Existing AADT





A majority of county roadways carry less than 1,500 vehicles per day, with the highest volume about 5,000 vehicles per day. Figure 7 shows monthly volume profiles developed based on data from ODOT’s three ATRs in Yamhill County.

Figure 7 – Monthly Volume Profiles



These indicate that:

- Along OR 99W near the Polk County line, volumes do not vary significantly over the course of the year.
- There is some seasonal variation in volumes on OR 99W east of Newberg, but this is dampened due to the effect of commuter traffic, which is fairly consistent throughout the year.
- Seasonal variation is the strongest along OR 18 to the west of McMinnville, where recreational travel makes up a larger percentage of the total traffic than at locations further to the east.



Hourly Volumes

Hourly volume profiles for a sample of state highways and county roadways are shown in Figure 8. The routes were separated into three groups:

- High - volume/high - peaking routes (state highways used as primary commute routes)
- Medium - volume/medium peaking routes (routes used for both commuting and local traffic)
- Low - volume/low - peaking routes (routes used primarily for local traffic)

These profiles indicate that traffic volumes typically peak between 6 - 8 A.M. and 3 - 6 P.M., with the peaks more pronounced for the higher volume routes. The morning peaks generally have lower volumes than the afternoon peaks.

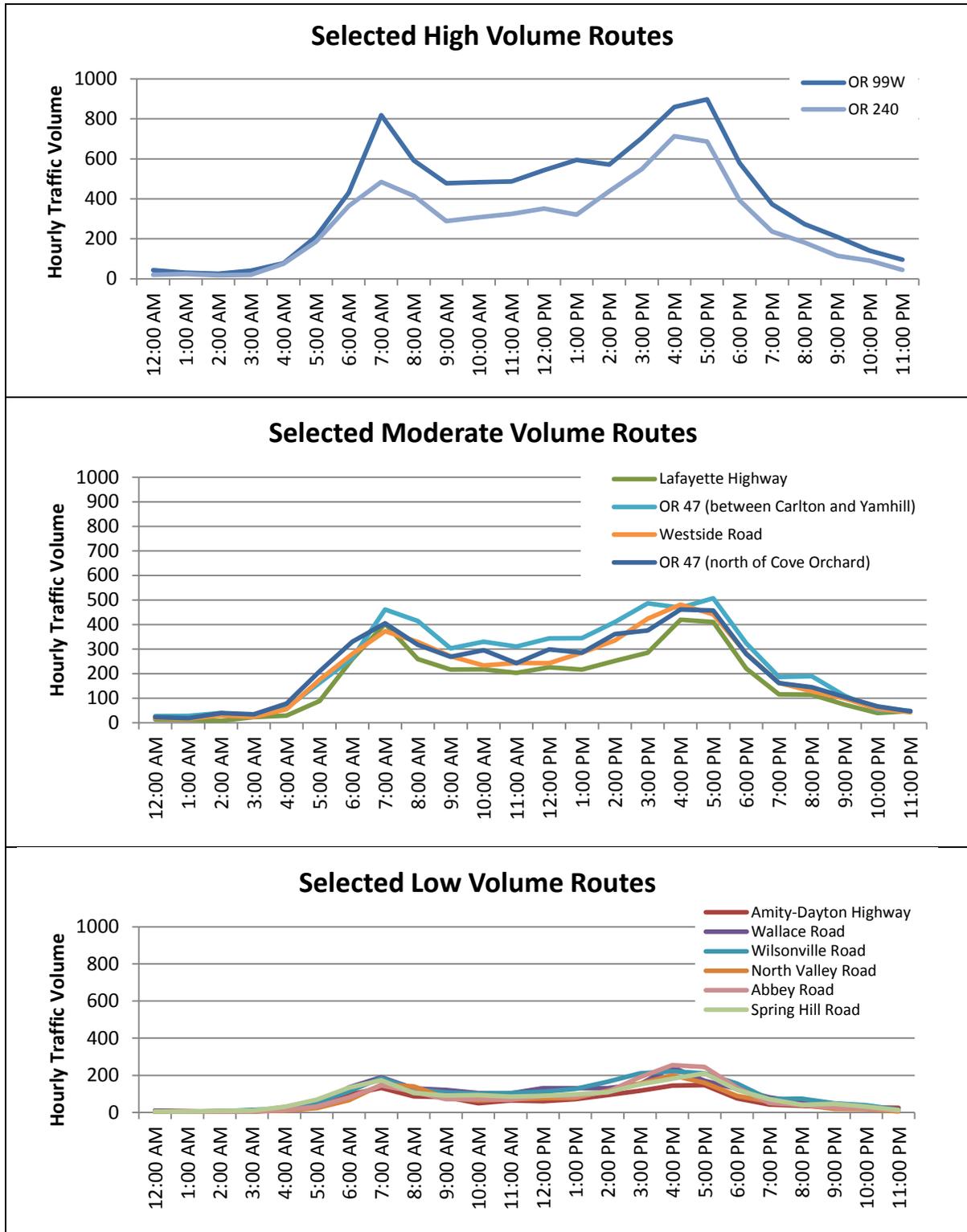
NEEDS

Existing roadway needs within the unincorporated portion of Yamhill County are significantly different than the needs typically found in urban areas. This is due both to the low density of development in rural areas as well the character of the roadway network that has been built to serve this development. Because of the higher development densities in urban areas, the most serious needs are usually related to mobility and traffic operations. Geometric deficiencies are of lower importance because urban streets are built to relatively high design standards. In rural areas, on the other hand, mobility is less frequently an issue and operational problems are primarily related to deficient geometrics or the lack of passing opportunities. Safety and geometric deficiencies are, however, of greater importance than in urban areas. In the unincorporated area of Yamhill County this is not surprising, since many of the roads were never designed, but simply evolved as transportation needs arose.

Existing needs were analyzed in the areas of mobility, traffic operations, safety, geometrics, and access. With the exception of mobility, this was done for roadways with a functional classification of minor collector or higher.



Figure 8 – Hourly Volume Profiles





As mentioned previously, two approaches were used in the analysis of existing transportation conditions. With the first approach, transportation system data such as traffic volumes and roadway characteristics were collected and analyzed. The results of the analysis were compared to standards, and for locations that did not meet the standards, a need was identified. The second approach was to gather information on existing transportation needs from stakeholders, county and ODOT road maintenance and traffic engineering staff and the RIAC. The reported needs from these sources were cataloged, and field reconnaissance was conducted at these locations to confirm the need and investigate the nature of the problem.

Mobility Needs

Analysis Volumes

Design hour volumes (DHVs) for state highways are shown in Figure 9. These volumes correspond to the 30th highest hour, the time period for which existing conditions on state highways were analyzed. The volumes were developed based on ODOT's reported AADT volumes for state highway segments using the procedures contained in ODOT's Analysis Procedures Manual (APM).² K_{30} factors³ were applied to the AADT volumes to obtain a DHV for each analysis segment.

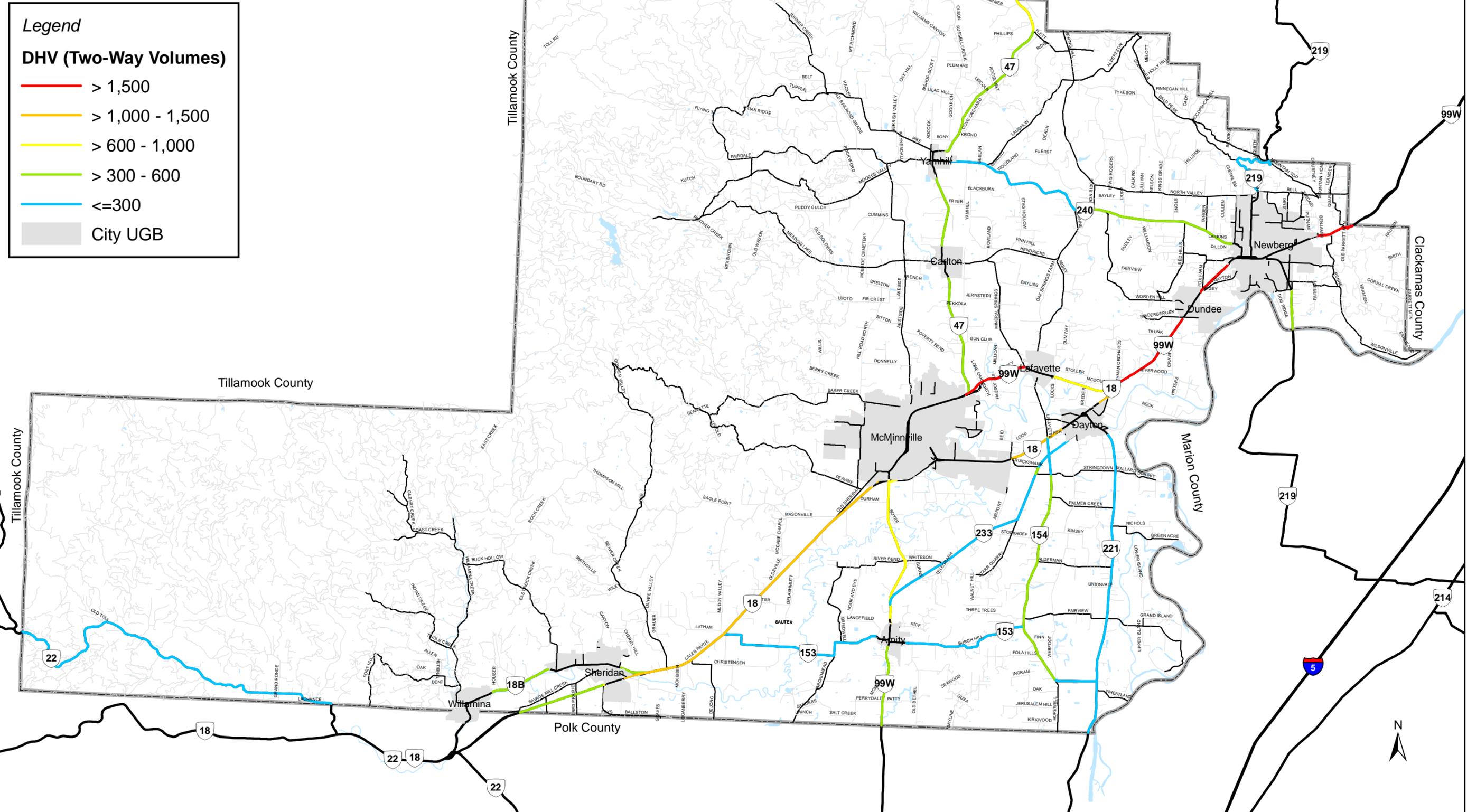
For county roadways, average weekday peak hour volumes were used for the segment analysis (see Figure 10). The average weekday peak hour was selected rather than the 30th highest hour because for county roadways, there is less difference between peak hour volumes and 30th highest hour volumes compared to state highways, which typically have a stronger seasonal traffic component. These volumes were developed by multiplying the county's most recent daily traffic counts by an average peak hour factor ($K_{\text{Peak Hour}}$). An overall countywide peak hour time period of 4-5 P.M. was established using bi-directional county traffic counts for a range of roadways and functional classifications. Two $K_{\text{Peak Hour}}$ factors were developed, one for arterial roadways and the other for collectors, based on the relationship between the peak hour (4-5 P.M.) volumes and daily volumes for a sample of roadways for each functional classification.

² Oregon Department of Transportation, Analysis Procedures Manual, (2011).

³ K_{30} factors were obtained from ODOT's OTMS Traffic Volume and Vehicle Classification (2010) database.

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Figure 9: Existing State Highway Design Hour Volumes (DHV)



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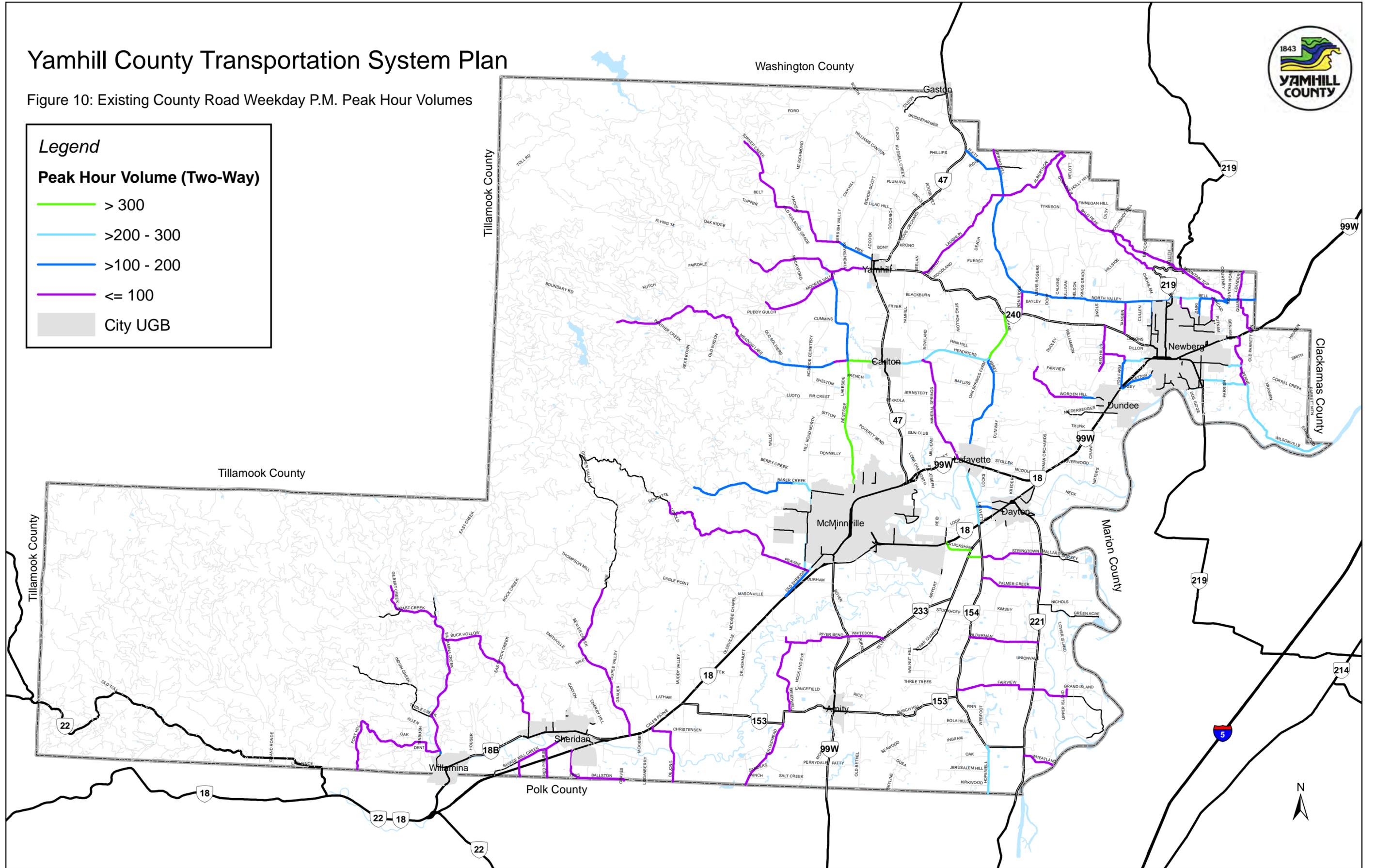
Figure 10: Existing County Road Weekday P.M. Peak Hour Volumes



Legend

Peak Hour Volume (Two-Way)

- > 300
- >200 - 300
- >100 - 200
- ≤ 100
- City UGB





Intersection turning movement counts were conducted at 25 locations within the study area along both state highways and county roadways. An examination of the count data showed that the system peak for state highway intersections occurs between 4:30 and 5:30 P.M. and the system peak for county intersections occurs between 4:00 and 5:00 P.M. Therefore, the counts for these periods were used in the development of intersection analysis volumes.

Seasonal adjustment factors were applied to all of the state highway intersection counts to reflect the 30th highest hour. The “ATR Trend Summary Method” described in the APM was used to determine the factors. The counts for the county intersections were not seasonally adjusted, but represent an average weekday peak hour condition.

Mobility Standards

Existing mobility needs were identified by comparing volume-to-capacity (v/c) ratio estimates for roadway segments and intersections to the appropriate v/c ratio standards. The applicable standards for state highways are shown in Table 3. The standards reflect the revisions to the Oregon Highway Plan (OHP) Policy 1F⁴ that went into effect in January, 2012.

Table 3 – State Highway Mobility Standards (Volume-to-Capacity Ratio)

| Area/Highway Category | Segments/Signalized Intersections | Unsignalized Intersections* |
|----------------------------------------------------------------------------|-----------------------------------|-----------------------------|
| Outside Urban Growth Boundary/Rural Lands | | |
| Statewide Expressways (OR 99W, OR 18) | 0.70 | 0.75 |
| Regional (OR 22, OR 47, OR 99W, OR 154) | 0.70 | 0.75 |
| District (OR 18B, OR 153 ⁵ , OR 219, OR 221, OR 233, OR 240) | 0.75 | 0.75 |

Source: Table 6 of the OHP Policy 1F Revisions – Adopted by the Oregon Transportation Commission: December 21, 2011.

* For unsignalized intersections, the v/c ratio shown is for the controlled approaches.

For county roadways, a v/c ratio standard of 0.75 was applied for both roadway segments and intersections.⁶

⁴ Oregon Department of Transportation, OHP Policy 1F Revisions, (2011).

⁵ The portion of OR 153 south of OR 154 is a regional route, for which the associated mobility standards were used.



Segment Mobility

For capacity analysis purposes, roadway segment endpoints for both state highways and county roads were defined by intersections with minor collector roads or higher. A segment capacity analysis was conducted for all state highways and for county roads classified as major collector or higher.⁷

Segment v/c ratio estimates were developed using the DHV estimates for state highways and the average weekday peak hour volume estimates for county roads. The analysis was performed according to the methodologies for two-lane rural highways outlined in the 2000 Highway Capacity Manual (HCM2000)⁸ and the APM.

Figure 11 shows the estimated v/c ratios for state highways and county roads within the study area. The existing mobility for state highway segments is summarized in Table 4.

Figure 12 shows the segments not meeting the mobility standards. The only segments with v/c ratios exceeding the standards are along OR 99W between Newberg and Dundee and between Dundee and OR 18. All county roadways currently operate well within the mobility standard.

Intersection Mobility

A list of intersection locations with suspected level of service problems was developed based on discussions with county staff, as well as a review of daily intersection volumes. All intersections of state highways were also included.

Intersection v/c ratio estimates were developed using the HCM2000 methodology for unsignalized intersections. This methodology reports the v/c ratio for the worst movement at an intersection, which is usually the minor road left-turn for two-way stop intersections. This v/c ratio is evaluated against the applicable mobility standard to determine if a mobility need exists. Typically, the v/c ratio for turning traffic on the mainline is low.

⁶ Based on discussions with county staff, it was decided that the state highway mobility standards should be used for county roadways. In this regard, it was assumed that county roadways are most similar to ODOT's district level highways.

⁷ The analysis was not performed for roadways below this classification because it was assumed that the low volumes for these roadways would not result in mobility needs.

⁸ Transportation Research Board, Highway Capacity Manual, Special Report 209, (2000).

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Figure 11: Existing V/C Ratios

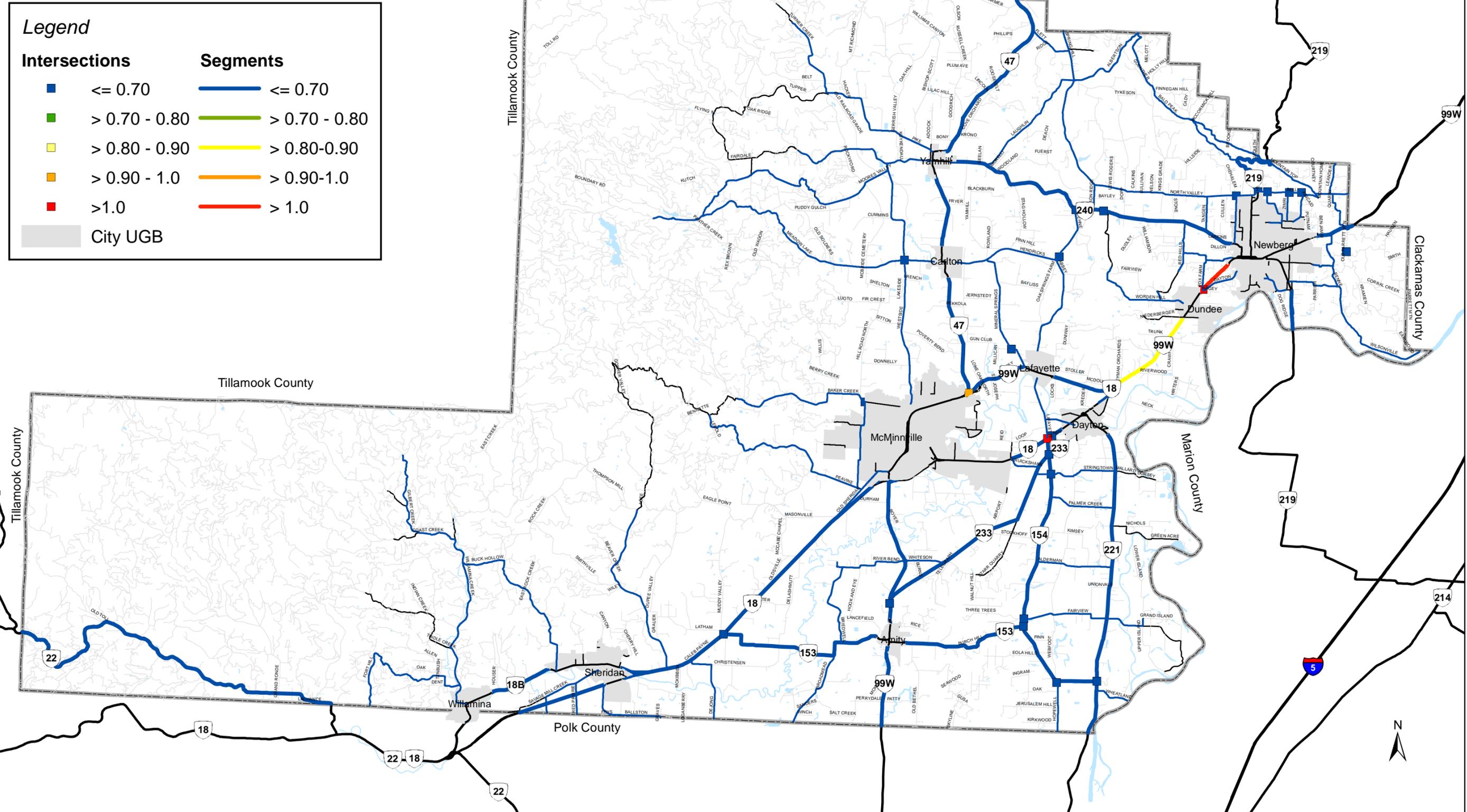




Table 4 – Existing Mobility Summary - State Highway Segments

| State Highway | V/C Standard | Total Miles | % Deficient |
|--------------------------|--------------|--------------|-------------|
| OR 18 | 0.70 | 16.2 | 0% |
| OR 18B | 0.75 | 3.0 | 0% |
| OR 22 | 0.70 | 12.9 | 0% |
| OR 47 | 0.70 | 14.3 | 0% |
| OR 99W | 0.70 | 17.7 | 27% |
| OR 153 (west of OR 154) | 0.75 | 9.9 | 0% |
| OR 153 (south of OR 154) | 0.70 | 3.4 | 0% |
| OR 154 | 0.70 | 6.3 | 0% |
| OR 219 | 0.75 | 4.5 | 0% |
| OR 221 (north of OR 153) | 0.75 | 8.2 | 0% |
| OR 221 (south of OR 153) | 0.70 | 1.7 | 0% |
| OR 233 | 0.75 | 8.2 | 0% |
| OR 240 | 0.75 | 10.4 | 0% |
| Total | | 116.7 | 4% |

The results of the intersection capacity analysis are shown in Table 5 and Figure 11. All of the intersections currently operate within the mobility standards, with the exception of OR 18/Lafayette Hwy., OR 47/OR 99W and OR 99W/Fox Farm Rd. The v/c ratios for the mainline turning movements for these intersections meet their respective mobility standard, however.

Reported Mobility Needs

There were multiple comments from stakeholders, agency staff and the RIAC members about the general need for additional capacity along the OR 99W/OR 18 corridor, the need for alternate routes to OR 99W, and the need for more routes connecting communities (see Figure 13 and Table A-1 in Appendix A). Overall mobility within the county was not a significant concern, however.

Yamhill County Transportation System Plan

Figure 12: Existing Mobility Needs



Legend

- Intersection mobility need
- Segment mobility need
- City UGB

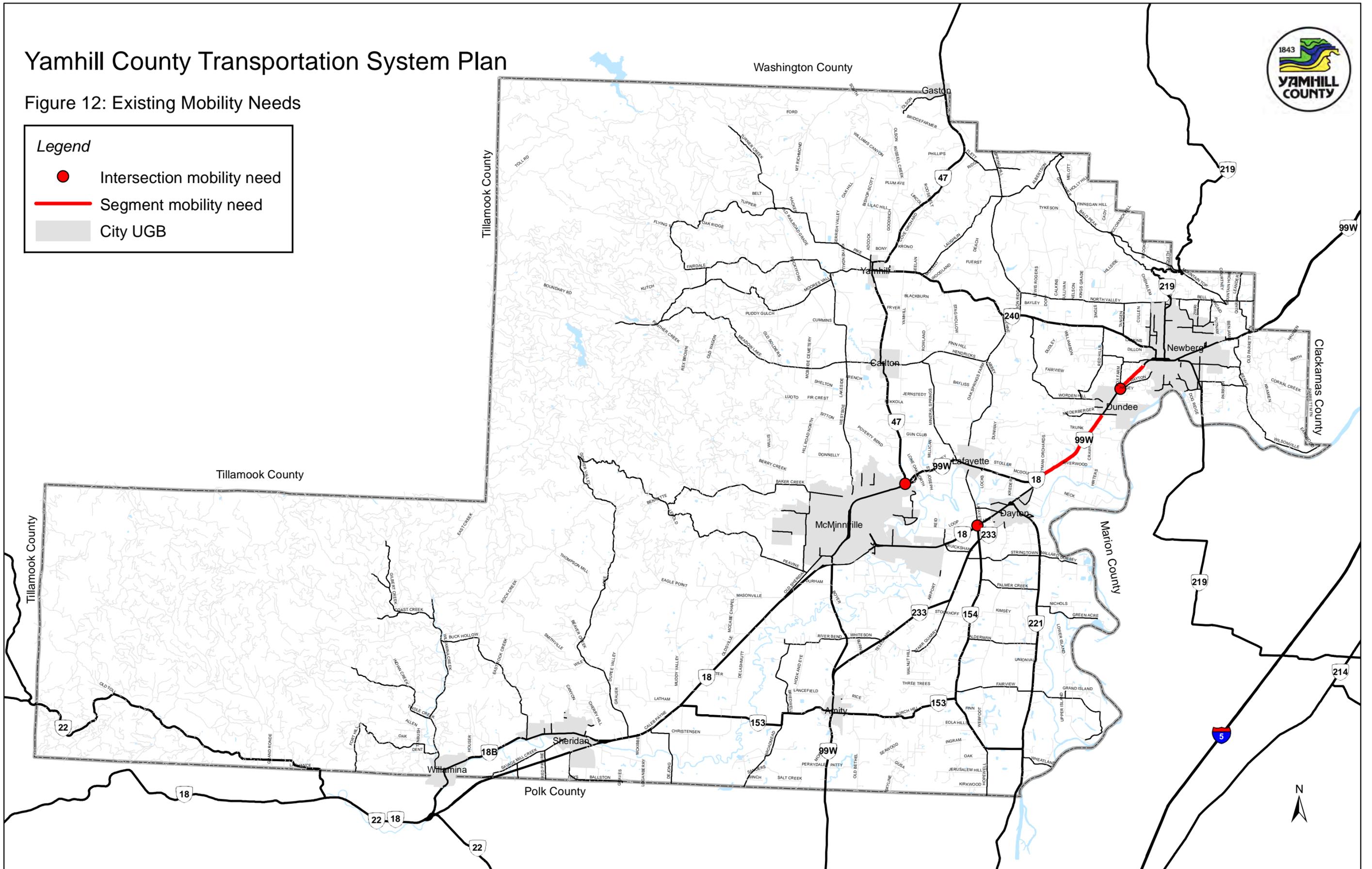




Table 5 – Existing Mobility Summary - Intersections

| Intersection | Mobility Standard (Major/Minor V/C Ratio) | V/C Ratio* (Major) | V/C Ratio* (Minor) |
|------------------------------------|-------------------------------------------------|-----------------------|-----------------------|
| NW Hill Rd./SW 2 nd St. | 0.75/0.75 | 0.28 | 0.04 |
| NW Hill Rd./NW Baker Creek Rd. | 0.75/0.75 | 0.26 | 0.11 |
| NW Westside Rd./NW Meadow Lake Rd. | 0.75/0.75 | 0.32 | 0.26 |
| NE Abbey Rd./NE Hendricks Rd. | 0.75/0.75 | 0.23 | 0.11 |
| OR 240/NE Kuehne Rd. | 0.75/0.75 | 0.28 | 0.14 |
| OR 219/NE Bell Rd. | 0.75/0.75 | 0.34 | 0.02 |
| N. Aspen Way/NE Bell Rd. | 0.75/0.75 | 0.05 | 0.02 |
| OR 18/OR 99W/McDougall Rd. | 0.70/0.75 | 0.66 | 0.47 |
| OR 18/SE Ash Rd. | 0.70/0.75 | 0.00 | 0.31 |
| OR 18/SE Lafayette Hwy. | 0.70/0.70 | 0.43 | >1.0 |
| OR 154/OR 233 | 0.70/0.75 | 0.21 | 0.14 |
| OR 154/Stringtown Rd. | 0.70/0.75 | 0.14 | 0.25 |
| OR 153/Hopewell Rd | 0.70/0.75 | 0.00 | 0.23 |
| OR 154/SE Fairview Rd. | 0.70/0.75 | 0.01 | 0.01 |
| OR 240/Worden Hill Rd. | 0.75/0.75 | 0.00 | 0.01 |
| Zimri Rd./Bell Rd. | 0.75/0.75 | 0.05 | 0.08 |
| Springbrook Rd./Bell Rd. | 0.75/0.75 | 0.03 | 0.03 |
| Parrett Mountain Rd./Schaad Rd. | 0.75/0.75 | 0.01 | 0.00 |
| Gun Club Rd./Mineral Springs Rd. | 0.75/0.75 | 0.04 | 0.01 |
| Chehalem Dr./North Valley Rd. | 0.75/0.75 | 0.09 | 0.01 |
| OR 18/OR 153 | 0.70/0.75 | 0.37 | 0.04 |
| OR 99W/OR 233 | 0.70/0.75 | 0.28 | 0.25 |
| OR 47/OR 99W | 0.70/0.70 | 0.33 | 0.94 |
| OR 154/OR 153 | 0.70/0.70 | 0.17 | 0.09 |
| OR 221/OR 153 | 0.75/0.75 | 0.06 | 0.11 |
| OR 99W/Fox Farm Rd. | 0.70/0.75 | 0.68 | >1.0 |

* V/C ratio for worst movement is reported. Bold/shaded cells indicate intersections not meeting mobility standard.

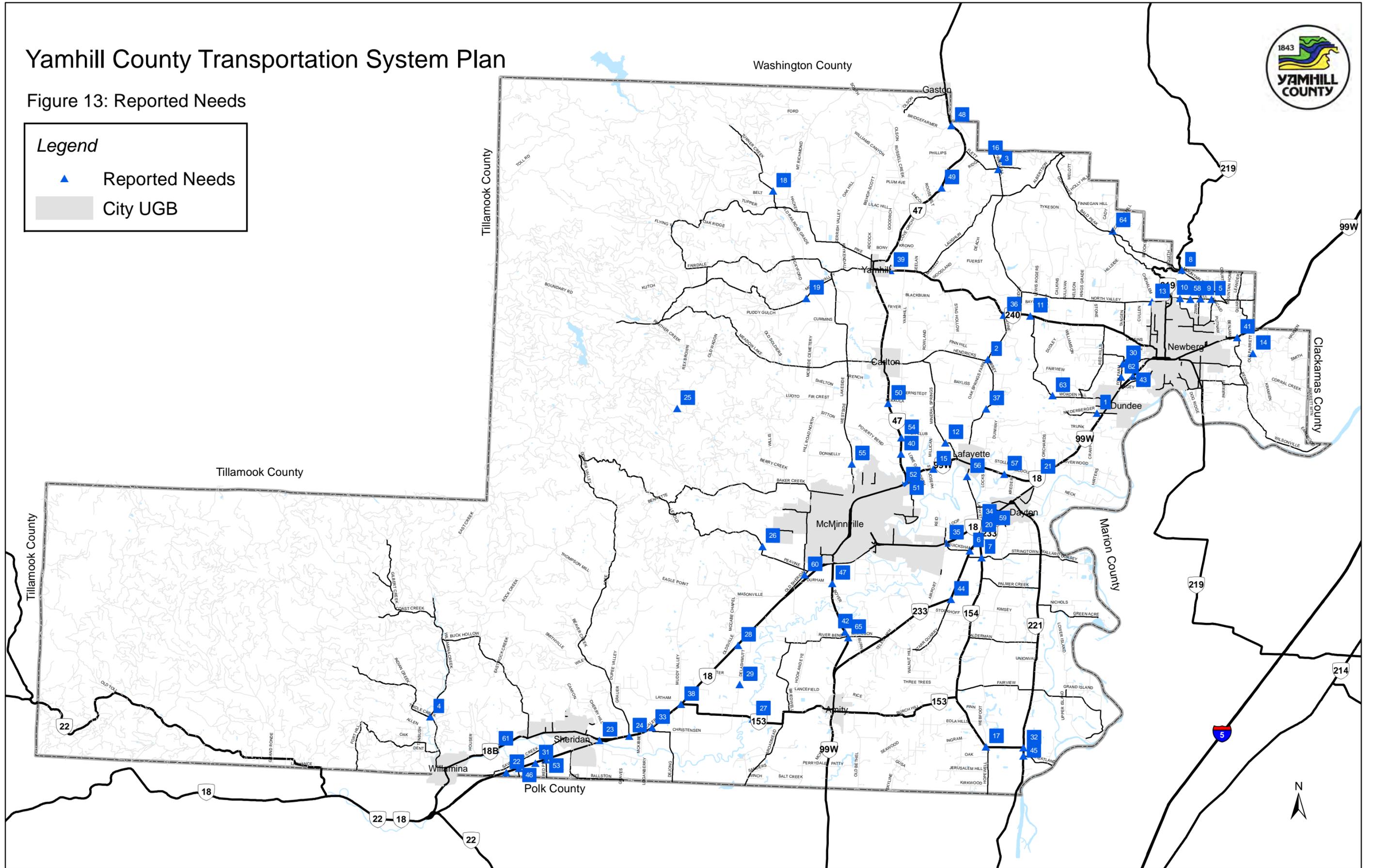
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Figure 13: Reported Needs



Legend

- ▲ Reported Needs
- City UGB





Traffic Operations Needs

Intersections

Traffic operations needs were identified for unsignalized intersections where left-turn or right-turn lanes may be needed. Left-turn lanes reduce the possibility of rear-end collisions and improve traffic flow by preventing left-turning vehicles from blocking the flow of through traffic. Right-turn lanes reduce the delay of through vehicles behind right-turning traffic and ease right-turns for drivers by providing a refuge from the higher-speed through traffic stream.

Turn lane needs were determined using the turn lane criteria contained in the APM.⁹ The volume criterion for left-turn lanes is based on the hourly opposing volume per lane and advancing volume per lane, hourly turning volume, and posted speed limit at an intersection. As the opposing plus advancing volume and/or turning volume increases, or as the speed limit increases, the volume threshold at which a turn lane should be considered decreases. The volume criterion for right-turn lanes is based on the hourly approaching volume in the outside lane (through plus right-turn volume), hourly turning volume, and speed limit. As any of these factors increases, the volume threshold for a right-turn lane decreases.

Table 6 shows the intersections where left-turn lane needs were found. The existing left-turn volume is listed along with the threshold for which a left-turn lane would be warranted based on the existing advancing/opposing traffic volumes. Table 7 shows similar data for intersections where right-turn lane needs were found.

Table 8 summarizes intersections where either a left-turn lane or a right-turn lane is warranted based on existing volumes and posted speeds. The results of the analysis are shown in Figure 14. A majority of the turn lane needs are on state highways.

⁹ Oregon Department of Transportation, Analysis Procedures Manual, (2011).

**Table 6 – Existing Left-Turn Lane Needs**

| Roadway | Intersection | Direction | Left-Turn Volume | Left-Turn Volume Threshold |
|------------------------|---------------------|-----------|------------------|----------------------------|
| State Highways | | | | |
| OR 240 | Kuehne Rd. | WB | 396 | 12 |
| OR 154 | Stringtown Rd. | NB | 162 | 23 |
| OR 99W | OR 47 | EB | 238 | 10 |
| OR 154 | OR 153 | NB | 32 | 16 |
| OR 221 | OR 153 | NB | 82 | 26 |
| OR 99W | Fox Farm Rd. | NB | 135 | 38 |
| County Roadways | | | | |
| Hill Rd. | 2 nd St. | SB | 55 | 26 |
| Baker Creek Rd. | Hill Rd. | WB | 151 | 22 |
| Abbey Rd. | Hendricks Rd. | SB | 211 | 18 |

Table 7 – Existing Right-Turn Lane Needs

| Roadway | Intersection | Direction | Right-Turn Volume | Right-Turn Volume Threshold |
|-----------------------|--------------|-----------|-------------------|-----------------------------|
| State Highways | | | | |
| OR 18 | Ash Rd. | EB | 52 | 0 |
| OR 153 | Hopewell Rd. | EB | 162 | 82 |
| OR 99W | OR 47 | WB | 36 | 30 |
| OR 99W | Fox Farm Rd. | SB | 230 | 80 |
| OR 99W | Fox Farm Rd. | EB | 55 | 0 |

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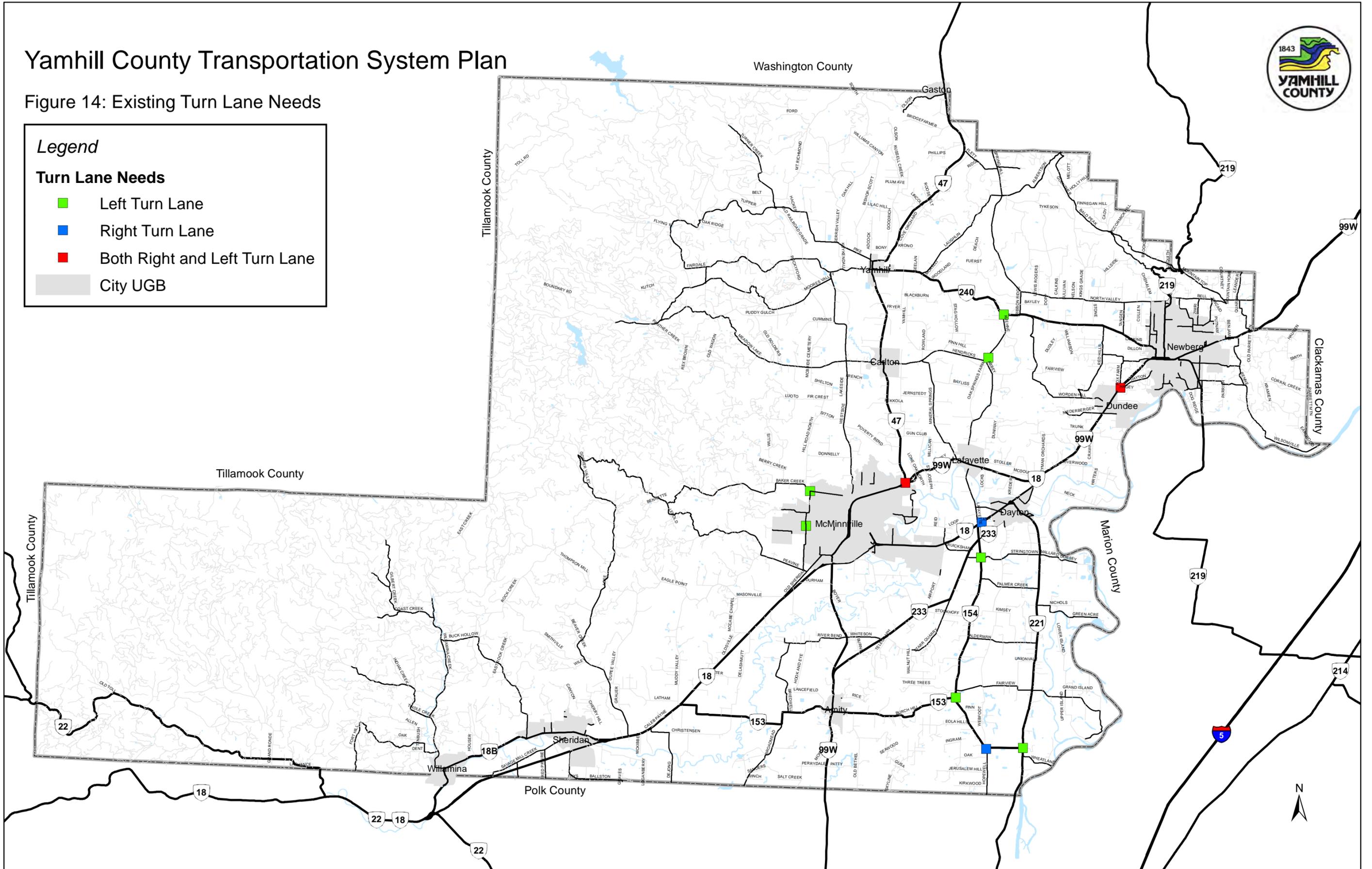
Figure 14: Existing Turn Lane Needs



Legend

Turn Lane Needs

- Left Turn Lane
- Right Turn Lane
- Both Right and Left Turn Lane
- City UGB





Reported Traffic Operations Needs

Numerous traffic operations needs were reported by stakeholders, agency staff, and the RIAC members (see Figure 13 and Table A-1 in Appendix A). Many of the comments were related to problems with turning vehicles and the need for two-way center lanes and turn lanes at intersections, particularly along OR 18. Other specific concerns noted were:

- Difficulty in turning onto and crossing OR 18 from side roads.
- Lack of pull-outs for buses countywide.
- Lack of designated stop areas for buses countywide.
- Lack of alternate routes for OR 99W.
- Driver confusion at the OR 99W/OR 18/McDougall Rd. intersection due to the atypical intersection geometry.
- Need for a traffic signal along OR 18 in the Sheridan/Willamina area.
- Need for a traffic signal in Dundee to facilitate crossing/turning traffic.
- Need for a turn lane at OR 18/Christensen Rd.¹⁰
- Driver confusion at a number of intersections caused by lane geometry that allows free-flow turning movements (e.g., the north-to-west and east-to-south movements at OR 154/Stringtown Rd.).
- Driver confusion at OR 18/Cruickshank Rd. due to the atypical intersection geometry.
- Difficulty in accessing OR 99W from Old Parrett Mountain Rd., Corral Creek Rd., and Quarry Rd. due to high speeds and high traffic volumes on OR 99W.
- High crossing volumes at OR 18/Harmony Rd.
- Need for a turn lane at OR 47/Goodin Creek Rd.
- Driver confusion at OR 47/OR 99W.
- Difficulty of drivers turning back to see on-coming traffic at several intersections with separated right-turn lanes.

Safety Needs

The safety needs analysis included the calculation of crash rates for intersections and road segments along all roads with a functional classification of minor collector or higher. ODOT's Safety Priority Index System (SPIS) locations were also included in the analysis. The crash rates,

¹⁰ A project to add a westbound left-turn lane is underway.



SPIS locations, and input from the RIAC, stakeholders, and county staff were then considered to identify seven locations for further investigation.

Crash Rates

Crash data for the most recent five year period (2006 – 2010) were obtained from ODOT¹¹ for the calculation of crash rates for county roads and state highways. Roadway segment and intersection crash rates were calculated separately using the same data set. The crash rates are not additive, since the crashes included in the intersection crash rates are also reflected in the segment crash rates. Thus, all of the crashes were included in the segment rates, while only a subset of the crashes were included in the intersection rates.

Segment crash rates were calculated as the number of crashes per million vehicle miles traveled (MVMT), based on the number of crashes and the AADT volume. Statewide average crash rates were used as the standard of comparison for both the county road and state highway segments.¹² The statewide average crash rates for the 2006 to 2010 period were averaged and are shown in Table 9 below.

Table 9 – Statewide Average Crash Rates - 2006 to 2010

| Functional Classification | Statewide Average Crash Rate |
|----------------------------------|-----------------------------------------|
| Other Principal Arterials | 0.672 |
| Minor Arterials | 0.960 |
| Rural Major Collectors | 1.166 |
| Rural Minor Collectors | 0.748 |

Figure 15 shows the crash rates for county road and state highway segments as a percentage of the applicable statewide average. The analysis shows that there are multiple county roadway and state highway segments with crash rates of 200% or more of the statewide average for similar facilities.

¹¹ Oregon Department of Transportation, Crash Data System website, <https://keiko36.odot.state.or.us/whalecome5690917adb26326abdb252e22d8/whalecom0/SecureKeiko36PortalHomePage/>, accessed April 3, 2012.

¹² Oregon Department of Transportation, 2010 State Highway Crash Rate Tables, (2010).

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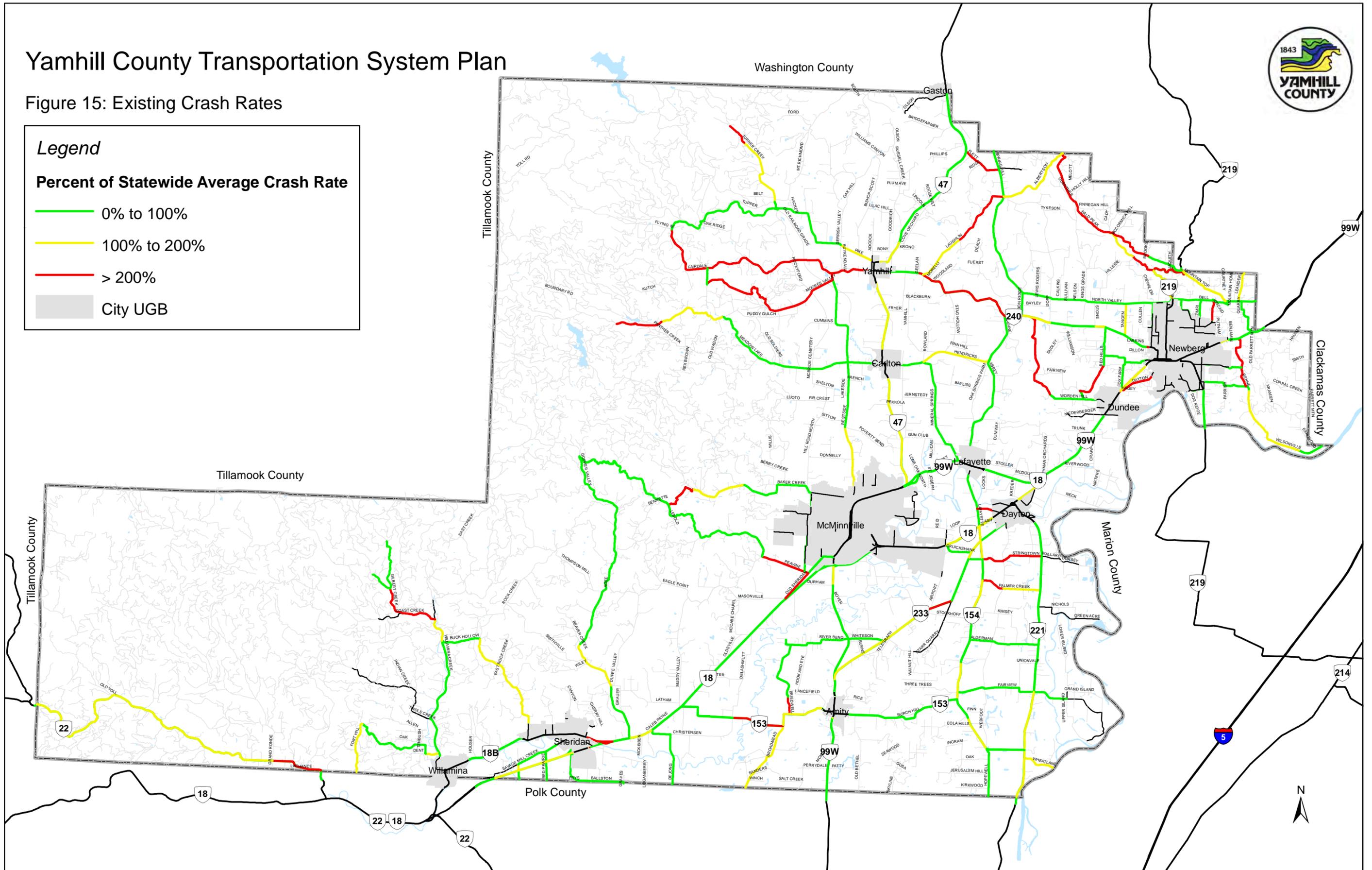
Figure 15: Existing Crash Rates



Legend

Percent of Statewide Average Crash Rate

- 0% to 100%
- 100% to 200%
- > 200%
- City UGB





Intersection crash rates were calculated as the number of crashes per million entering vehicles (MEV), based on the number of crashes and the annual average total entering volume. ODOT does not have an intersection crash rate standard. Instead, the APM includes a rule-of-thumb for identifying potential problem locations of greater than 1.0 crashes per MEV.¹³ This guideline was applied to the 16 intersections for which crash rates were calculated.¹⁴ Only the intersection of OR 18/Cruickshank Rd., with a crash rate of 1.31 crashes per MEV, exceeded this rate and was flagged for further investigation. Both of the county road intersections included in the analysis had crash rates of less than 1.0 crashes per MEV.

ODOT Safety Priority Index System

ODOT maintains the SPIS for the identification and analysis of locations on the state highway system with potential safety needs. Each year, the system is used to produce a list of sites within each ODOT Region that are ranked within the top 5th or top 10th percentiles of all SPIS locations statewide. The SPIS score is based on three years of crash data and reflects crash frequency, crash rate, and crash severity. A roadway location is defined as a SPIS site if there have been three or more crashes or at least one fatal crash over the three-year period. SPIS sites are defined as 0.10 mile sections on the state highway system.

The SPIS sites within the study area in the top 5th and top 10th percentiles for the 2008-2010 time period are listed in Table 10 and shown in Figure 16.

As would be expected, a majority of the SPIS sites are at intersections. OR 18 and OR 99W have the largest number of sites. There are two areas along these highways with closely-spaced SPIS sites. The first is along OR 99W between the westbound lane drop and the Dundee city limits (Locations 11 and 12) and the second is on OR 18 between Lafayette Hwy. and Ash Rd. (Locations 2 and 3). Three of these SPIS sites are discussed in more detail in the following section.

¹³ Oregon Department of Transportation, Analysis Procedures Manual, (2011).

¹⁴ Crash rates were calculated for 16 intersections only because these were the only locations with traffic count data available.



Table 10 – Top 5th and Top 10th Percentile SPIS Sites - 2008 to 2010

| Location No. | Highway | Beginning M.P. | Ending M.P. | Location | SPIS Percentile Ranking |
|--------------|---------|----------------|-------------|-----------------------|-------------------------|
| 1 | OR 18 | 31.57 | 31.75 | Red Prairie Rd. | 5 |
| 2 | OR 18 | 49.82 | 50.00 | OR 154/Lafayette Hwy. | 5 |
| 3 | OR 18 | 50.01 | 50.19 | Ash Rd. | 5 |
| 4 | OR 22 | 16.91 | 17.09 | E/O USFS Road | 10 |
| 5 | OR 22 | 21.92 | 22.10 | Grande Ronde Rd. | 10 |
| 6 | OR 221 | 9.17 | 9.29 | OR 153 | 10 |
| 7 | OR 233 | 5.00 | 5.16 | Starr Quarry Rd. | 10 |
| 8 | OR 240 | 2.31 | 2.45 | Woodland Loop | 10 |
| 9 | OR 47 | 42.34 | 42.46 | OR 99W | 5 |
| 10 | OR 99W | 19.91 | 20.09 | Parrett Mtn. Rd. | 10 |
| 11 | OR 99W | 24.91 | 25.09 | WB Lane Drop | 10 |
| 12 | OR 99W | 25.44 | 25.62 | Dundee W.C.L. | 5 |
| 13 | OR 99W | 39.91 | 40.02 | Durham Ln. | 5 |

Safety Investigation

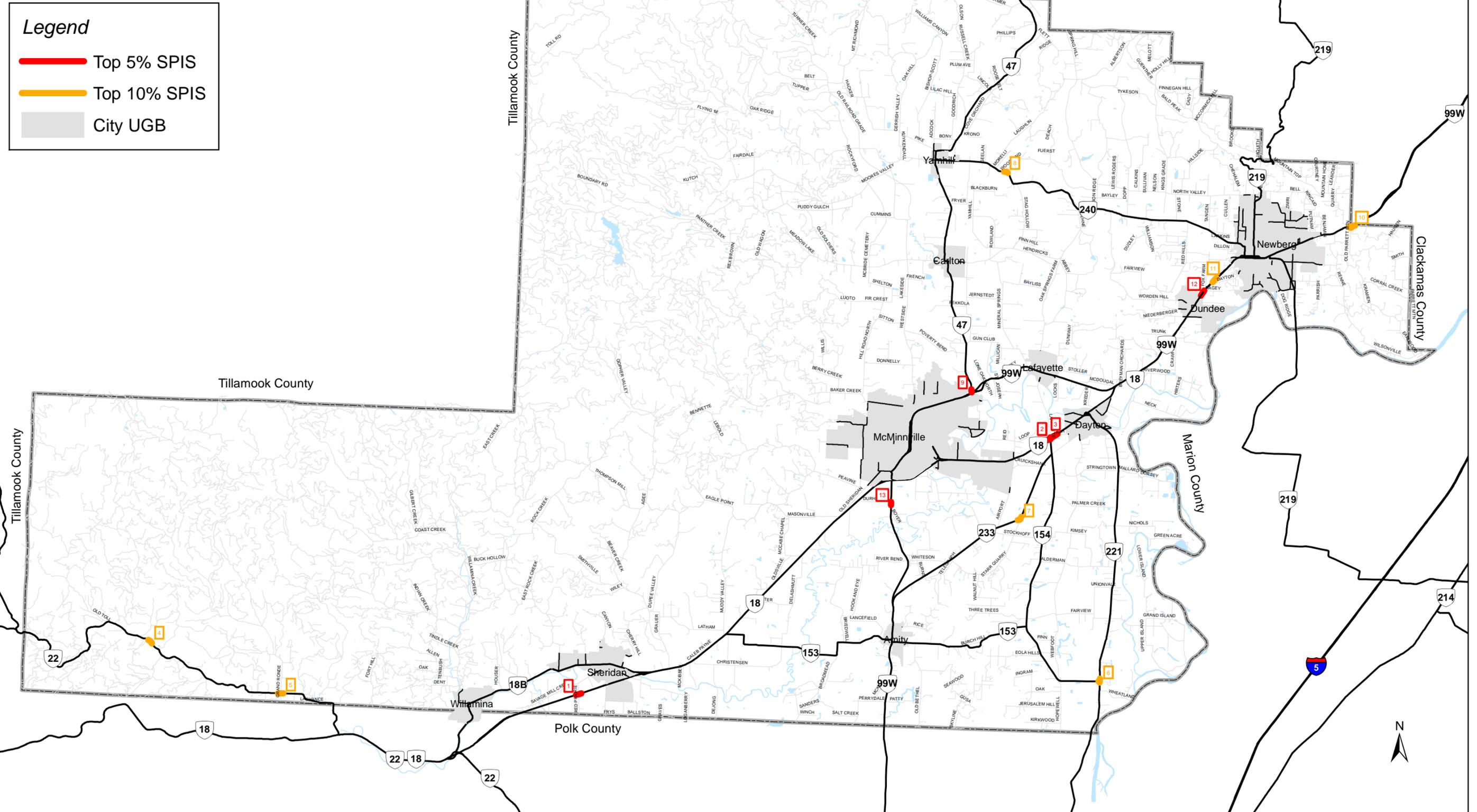
Based on the crash rates, SPIS data, and input received from the stakeholders, RIAC, and county staff, the following seven locations were selected for further investigation:

- Abbey Rd./Hendricks Rd. intersection
- Stringtown Rd. between OR 154 and OR 221
- Worden Hill Rd. from OR 240 to the end of pavement
- OR 99W/OR 18/McDougall Rd. intersection
- OR 18 between OR 154/Lafayette Hwy. and Ash Rd.
- OR 18/SW Red Prairie Rd. intersection
- OR 99W/OR 47 intersection

These locations are shown in Figure 17.

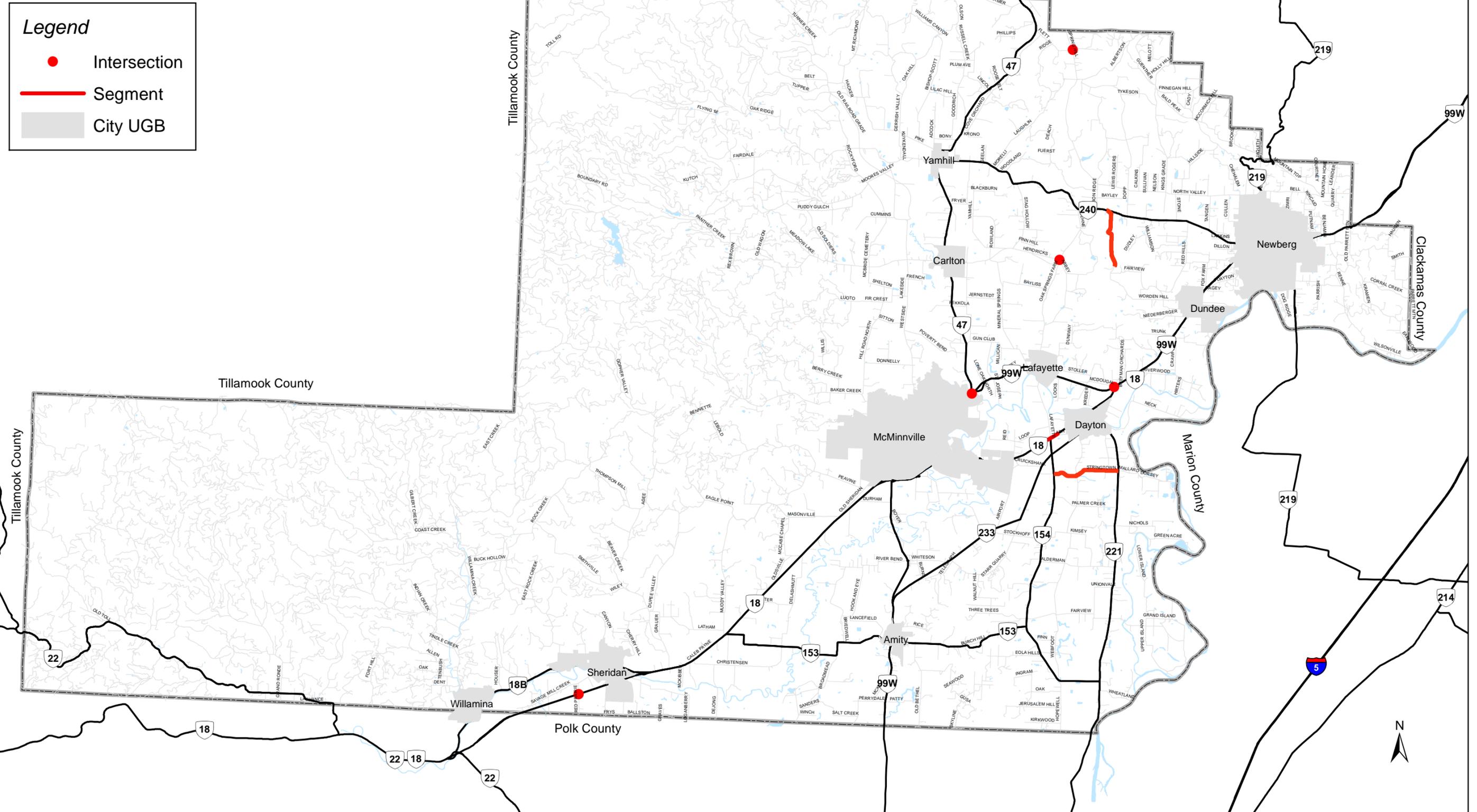
Yamhill County Transportation System Plan

Figure 16: SPIS Locations



Yamhill County Transportation System Plan

Figure 17: Safety Investigation Locations





Abbey Rd./Hendricks Rd. Intersection

The Abbey Rd./Hendricks Rd. intersection was identified by the RIAC, stakeholders, and county road maintenance staff as a safety problem location. A total of five crashes occurred at this intersection between 2006 and 2010, resulting in crash rate of 0.58 crashes per MEV.

One of the crashes involved a through vehicle on eastbound Hendricks Rd. and a vehicle turning left from the Abbey Rd.-to-Hendricks Rd. connector onto westbound Hendricks Rd. The cause of this crash was cited as the failure to yield by the turning vehicle.

Two other crashes were fixed object crashes involving eastbound/northbound vehicles on Hendricks Rd. near the Abbey Rd./Kuehne Rd. intersection. In both cases, the vehicle left the roadway and ended up in the ditch. This location is on a curve following a long straight section to the west along Hendricks Rd. The cause cited for both crashes was excessive speed, which may indicate that the drivers did not adjust their speed for the curve from the straight section. In one of these crashes, foggy weather and an icy road surface may also have been contributing factors.

The remaining crashes were rear-end crashes involving southbound/westbound vehicles on Kuehne Rd. approaching the Hendricks Rd./Abbey Rd./Kuehne Rd. intersection. The crash cause in both cases was “following too close”. In these crashes, the impacted vehicles may have been stopped on southbound Kuehne Rd., waiting for a gap in the eastbound/northbound traffic on Hendricks Rd. to access Abbey Rd.

All of the crashes at this intersection appear to be related to driver error.

Stringtown Rd. Between OR 154 and OR 221

Five crashes occurred along this section of Stringtown Rd. over the five-year period. The crash rate of 8.55 crashes per MVMT is nearly 8.5 times the average rate for similar roadways in Oregon. Part of the reason for the higher crash rate is that Stringtown Rd. is a relatively low-volume road, which amplifies the effect of crash frequency on the crash rate. This section was identified by the RIAC, county maintenance staff, and stakeholders as a safety problem location.

A review of the crash history did not indicate a strong pattern of the crashes. One of the crashes was a rear-end collision at the intersection of OR 154/Stringtown Rd., in which the



driver was following too close. The other four crashes were fixed-object collisions. Three of these occurred on curves and the other on a straight section. In one of the crashes, the fixed-object was a piece of equipment on or near the roadway, and another involved a collision with a deer or elk. Excessive speed was cited as a contributing cause in all of the fixed-object crashes.

Worden Hill Rd. from OR 240 to End of Pavement

Four crashes were recorded on this section of Worden Hill Rd. between 2006 and 2010. It was identified as a safety problem location by the RIAC and county maintenance staff. The crash rate of 11.94 crashes per MVMT is nearly 11 times the statewide average. The relatively low volume on this road contributes to the high crash rate.

This two-mile section of roadway is gravel. It is characterized by narrow width, horizontal and vertical curves, no shoulders, little or no clear zone, and obstructions such as trees, utility poles, and embankments along the roadside. All of the crashes occurred at locations where there is a combination of horizontal and vertical curves. One of the crashes was a head-on collision, while the others involved vehicles either overturning or leaving the roadway and striking fixed objects. These crash types suggest that the roadway characteristics may limit the driver's ability to anticipate upcoming roadway features and traffic, as well as the likelihood of recovery. The gravel roadway surface does not appear to be a factor, since the surface condition was dry in the all of the crashes.

OR 99W/OR 18/McDougall Rd. Intersection

The OR 99W/OR 18/McDougall Rd. intersection was identified by stakeholders and county maintenance staff as a safety problem location. There were seven crashes at this location over the 2006 – 2010 period, resulting in a crash rate of 0.20 crashes per MEV.

Four of the crashes were turning or angle crashes at the intersection. Three of these crashes involved southbound vehicles on McDougall Rd. attempting to cross or turn left onto OR 99W, in which the driver passed the stop sign and flashing beacon or failed to yield. This indicates that the drivers did not properly recognize the upcoming intersection or cross traffic on OR 99W. The fourth crash occurred between an eastbound through vehicle and a westbound vehicle turning left onto OR 18 that failed to yield. The fifth crash at the intersection was a rear-end collision in the westbound left-turn lane that happened during snowy conditions.



The other two crashes occurred just to the east of the intersection. The first crash was a fixed-object crash that appeared to be unrelated to the intersection. The second crash was at the merge point between eastbound OR 99W and the connector from OR 18 in which the vehicle on OR 18 failed to yield.

OR 18 between OR 154/Lafayette Hwy. and Ash Rd.

This section of OR 18 is identified as a top 5th percentile SPIS site. Over the 2006 – 2010 period, 30 crashes occurred within this segment. All of these were at or near the OR 18/OR 154/Lafayette Hwy. and OR 18/Ash Rd. intersections.

At the OR 18/OR 154/Lafayette Hwy. intersection, 12 of the 20 crashes were angle crashes involving vehicles on OR 154/Lafayette Hwy. attempting to cross OR 18. In all cases, the cause was failure to yield or passing the stop sign and flashing beacon. One of the crashes resulted in a fatality. Three other crashes were turning crashes in which the driver failed to yield to the cross traffic on OR 18. These crash types indicate that the drivers may have been unaware of the intersection or cross traffic. Another cause could be that the gap in the traffic stream was too small, which may be related to the high traffic volumes and higher speeds along OR 18. The other five crashes were all rear-end crashes involving stopped vehicles on OR 18. The causes of these crashes were either driver inattention or following too closely.

There was a similar pattern of crashes at the OR 18/Ash Rd. intersection, where there was a total of 10 crashes. Six of the crashes were turning or angle crashes in which the drivers failed to yield or passed the stop signs on the Ash Rd. intersection approaches. One of the crashes resulted in a fatality. There were also two rear-end crashes due to inattention/driver error and two fixed object crashes, one caused by tire failure and the other by excessive speed with icy road conditions.

OR 18/SW Red Prairie Rd. Intersection

This intersection is listed in the top 5th percentile of ODOT's SPIS sites. All ten of the crashes occurring from 2006 to 2010 were angle crashes between vehicles attempting to cross OR 18 from Red Prairie Rd. and through traffic on OR 18. The primary cause was failure to yield, indicating that the drivers may have tried to use gaps that were too short for the crossing maneuver. In one case, the crash cause was passing the stop sign and flashing beacon on the Red Prairie Rd. intersection approach.



OR 99W/OR 47 Intersection

The OR 99W/OR 47 intersection is a top 5th percentile SPIS site, with 29 crashes between 2006 and 2010. Most of the crashes at this location were angle or rear-end collisions. There were 10 angle collisions involving vehicles crossing OR 99W from/to OR 47. In almost all of the crashes, the reported cause was failure to yield. In two cases, the drivers passed the stop signs and flashing beacons on the approaches to the intersection. There was also a large proportion of rear-end crashes (13). Nine of these occurred on southbound Hwy. 47, which approaches OR 99W at an angle. Two others were located on the west connection between the westbound and eastbound roadways of OR 99W. The remaining two rear-end crashes were on the westbound approach of OR 99W to OR 47, which may have involved vehicles slowing to turn onto Hwy. 47.

Four other crashes occurred between vehicles turning onto westbound OR 99W from either southbound Hwy. 47 or the east connection between the westbound and eastbound roadways of OR 99W. The reported cause in two of these crashes was improper overtaking. Passing a stop sign and excessive speed were cited as the causes in the other two crashes.

Two crashes near the intersection appeared to be unrelated to the intersection, one involving a vehicle backing up in the travel lane and the other a fixed-object crash caused by excessive speed.

Reported Safety Needs

The safety needs reported by the stakeholders, agency staff, and RIAC members are shown in Figure 13 and Table A-1 in Appendix A. A number of the locations are also the SPIS sites described above.

Nearly all of the reported problems were related to intersections of state highways and county roads. At several of these intersections, difficulty in accessing the highway because of high volumes and high speeds was cited as a possible cause. This includes the OR 18/OR 154/Lafayette Hwy. intersection, which was the most frequently reported safety need location. At other intersections, driver confusion related to the atypical intersection configuration and the lack of recognition of the approaching intersection were mentioned as possible causes.



Segment safety needs were identified along OR 99W between Newberg and Dundee where the highway narrows from two lanes to one lane in the westbound direction and on the OR 18 South Yamhill River Bridge near McMinnville, which was described as needing replacement.

Geometric Needs

Segment Geometrics

Geometric needs related lane width and shoulder width were identified for roadway segments. The lane and shoulder widths for state highway segments were compared to two sets of standards contained in the ODOT Highway Design Manual (HDM).¹⁵ For OR 18 and the portion of OR 99W to the east of OR 18, the 4-R new rural arterial design standards were used in the comparison. For all other state highways, the 3-R rural non-freeway design standards were used. This approach was based on the assumption that the future improvements for most state highways would likely be resurfacing, restoration, or rehabilitation projects for which the 3R standards would apply. The use of the 3-R standards for the identification of needs, however, does not preclude the possibility that the higher 4-R standards may be followed at the time an improvement project is developed. Both sets of standards reflect the design values contained in the current version of the HDM, which are subject to change.

Because the AADT volumes for OR 18 and OR 99W to the east of OR 18 are well over 2,000, the 4R standards indicate that the lane widths should be at least 12 feet and shoulder widths should be at least 8 feet. The 3-R standards vary based on traffic volume, speed, and the percentage of trucks, and are summarized in Table 11 below.

The existing lane and shoulder widths for state highways are shown in Figures 18 and 19. For all state highways, the applicable shoulder width standard is not met along more than 50% of the highway (see Table 12). The highest-volume highways, OR 99W and OR 18, have significantly lower percentages of deficient shoulder widths, however, than the lower-volume highways. Lane width deficiencies are more unevenly distributed, with some highways having no deficient mileage (OR 18, OR 22, OR 47, OR 99W, OR 219, and OR 240), while the other highways have deficient lane widths over more than 50% of their mileage (OR 18B, OR 153, OR 154, OR 221, and OR 233). OR 154 has deficient lane widths over its entire length.

¹⁵ Oregon Department of Transportation, Highway Design Manual, (2003).



**Table 11 – ODOT 3-R Rural Non-Freeway Design Standards
Minimum Lane and Shoulder Widths**

| Design Year Volume (ADT) | Average Running Speed | Less than 10% Trucks | | More than 10% Trucks | |
|-----------------------------|--------------------------|----------------------|-------------------|----------------------|-------------------|
| | | Lane Width | Shoulder Width | Lane Width | Shoulder Width |
| < 750 vehicles | < 50 mph | 9' | 2' | 10' | 2' |
| | >= 50 mph | 10' | 2' | 10' | 2' |
| 750 – 2,000 vehicles | < 50 mph | 10' | 2' | 11' | 2' |
| | >= 50 mph | 11' | 3' | 12' | 3' |
| 2,001 – 4,000 vehicles | All Speeds | 11' | 4' | 12' | 4' |
| > 4,000 vehicles | All Speeds | 11' | 6' | 12' | 6' |

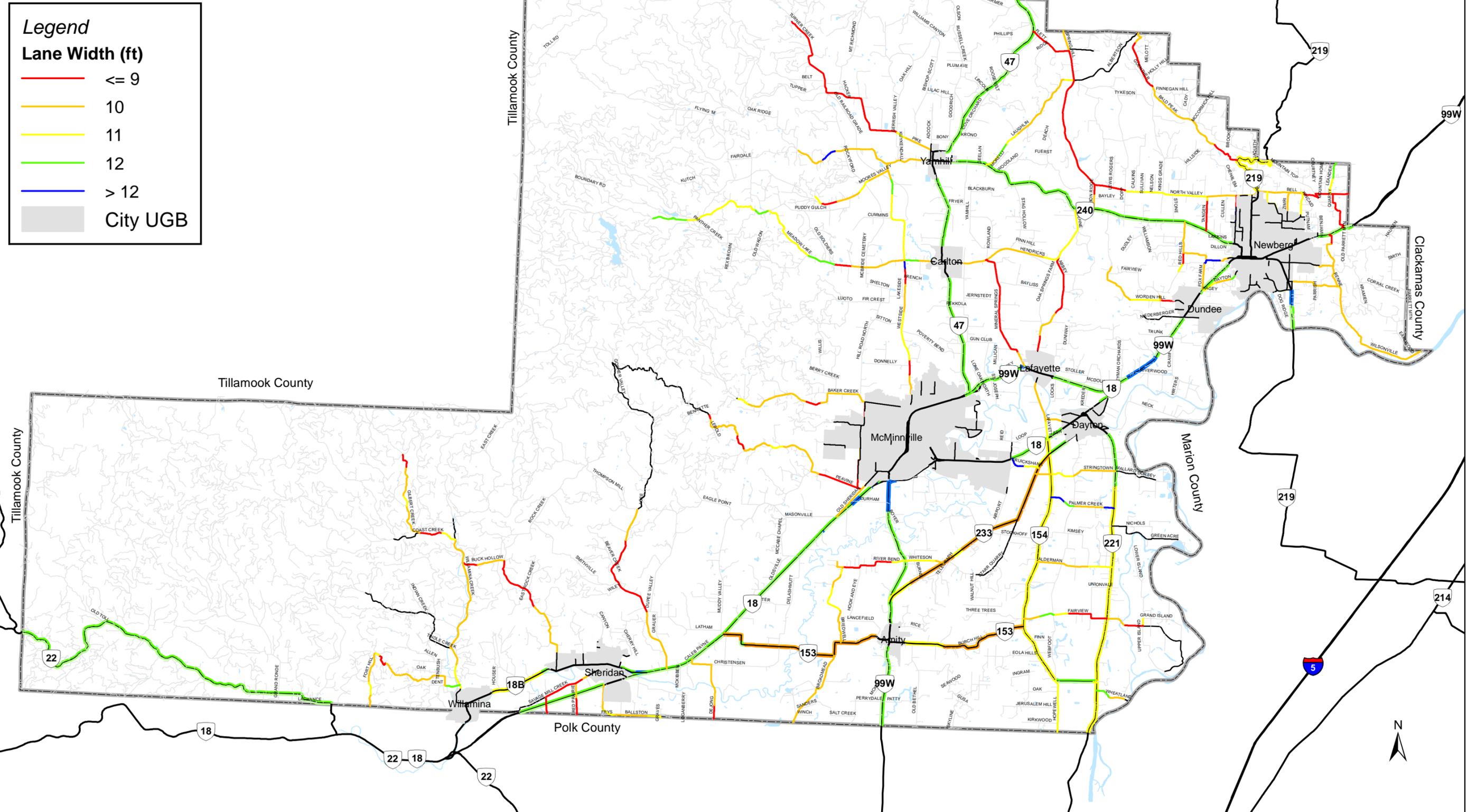
Table 12 – Existing Lane and Shoulder Width Summary – State Highways

| State Highway | Total Miles | Shoulder Width Standard | % Deficient | Lane Width Standard | % Deficient |
|------------------|----------------|----------------------------|----------------|------------------------|----------------|
| OR 18 | 16.17 | 8' | 53% | 12' | 0% |
| OR 18B | 3.02 | 6' | 89% | 12' | 59% |
| OR 22 | 12.88 | 3-4' | 99% | 12' | 0% |
| OR 47 | 14.29 | 6' | 94% | 12' | 0% |
| OR 99W | 17.70 | 6-8' | 60% | 11-12' | 0% |
| OR 153 | 13.34 | 2-6' | 94% | 10-12' | 60% |
| OR 154 | 6.26 | 3-6' | 100% | 12' | 100% |
| OR 219 | 4.46 | 4-6' | 78% | 11' | 0% |
| OR 221 | 9.88 | 3-4' | 97% | 11-12' | 83% |
| OR 233 | 8.19 | 2-6' | 98% | 11-12' | 90% |
| OR 240 | 10.44 | 2-6' | 98% | 11-12' | 0% |

For Yamhill County, updated design standards were developed. Three separate sets of standards were developed, the first for new construction and reconstruction projects, the second for maintenance projects, and the third for private roads for public travel. The maintenance project standards for lane and shoulder widths, summarized in Table 13 below, were used for the assessment of geometric needs for county roads.

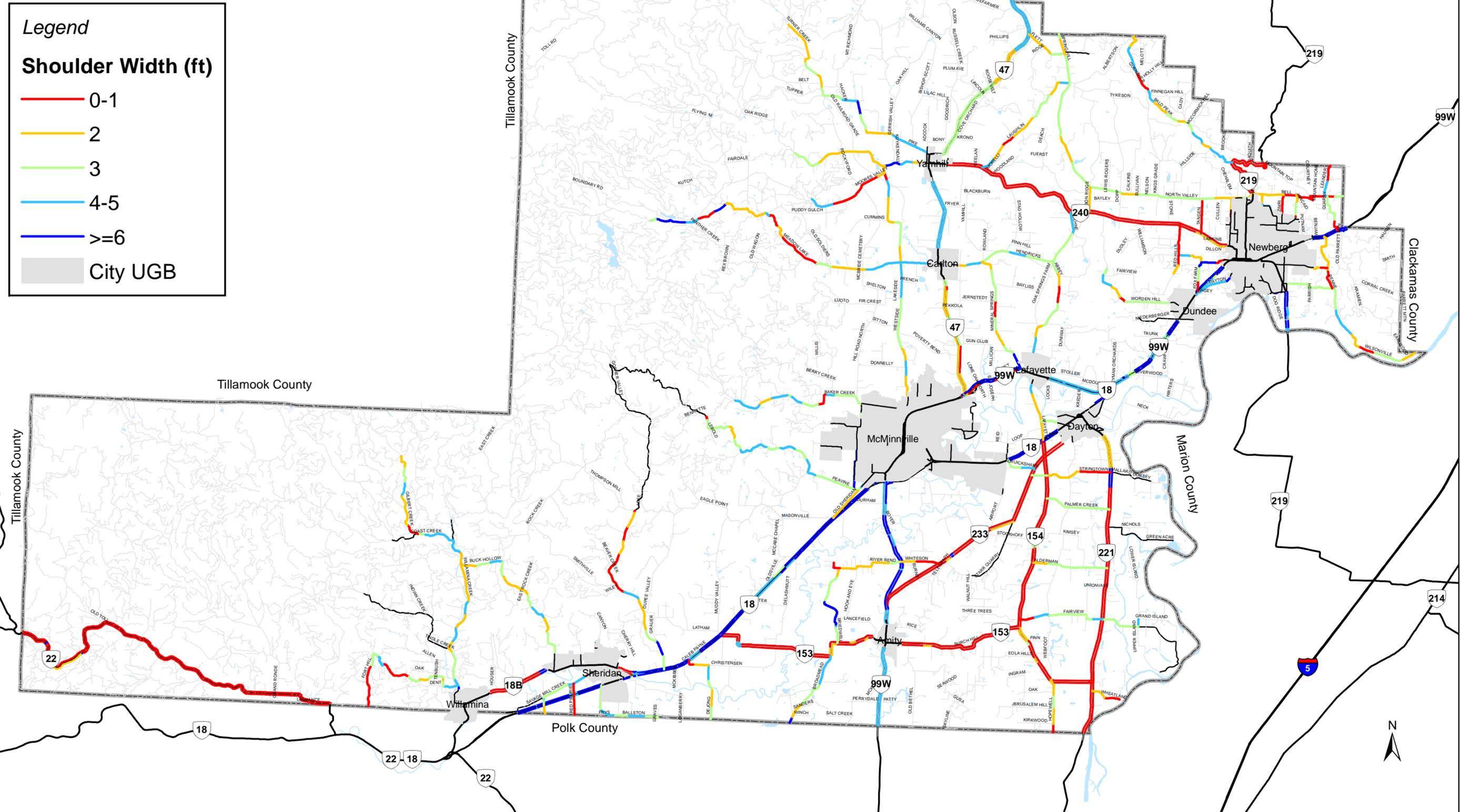
Yamhill County Transportation System Plan

Figure 18: Existing Lane Widths



Yamhill County Transportation System Plan

Figure 19: Existing Shoulder Widths



Legend

Shoulder Width (ft)

- 0-1
- 2
- 3
- 4-5
- ≥ 6
- City UGB



**Table 13 – County Maintenance Project Standards
 Minimum Lane and Shoulder Widths**

| Measure | Principal Arterials | Minor Arterials | Major Collectors | Minor Collectors | Resource Roads | Local Roads |
|----------------|---------------------|-----------------|------------------|------------------|----------------|-------------|
| Lane Width | 12' | 11' | 11' | 11' | 10' | 10' |
| Shoulder Width | 4' | 3' | 2' | 2' | 2' | 2' |

The existing county roadway lane and shoulder widths are shown in Figures 18 and 19. Comparison to the standards indicated that roughly 75% of the paved roadways classified as minor collector or above do not meet the lane width standards and about 21% do not meet the shoulder width standards.

The existing lane width and shoulder width deficiencies for state highways and county roads are shown in Figure 20.

Intersection Geometrics

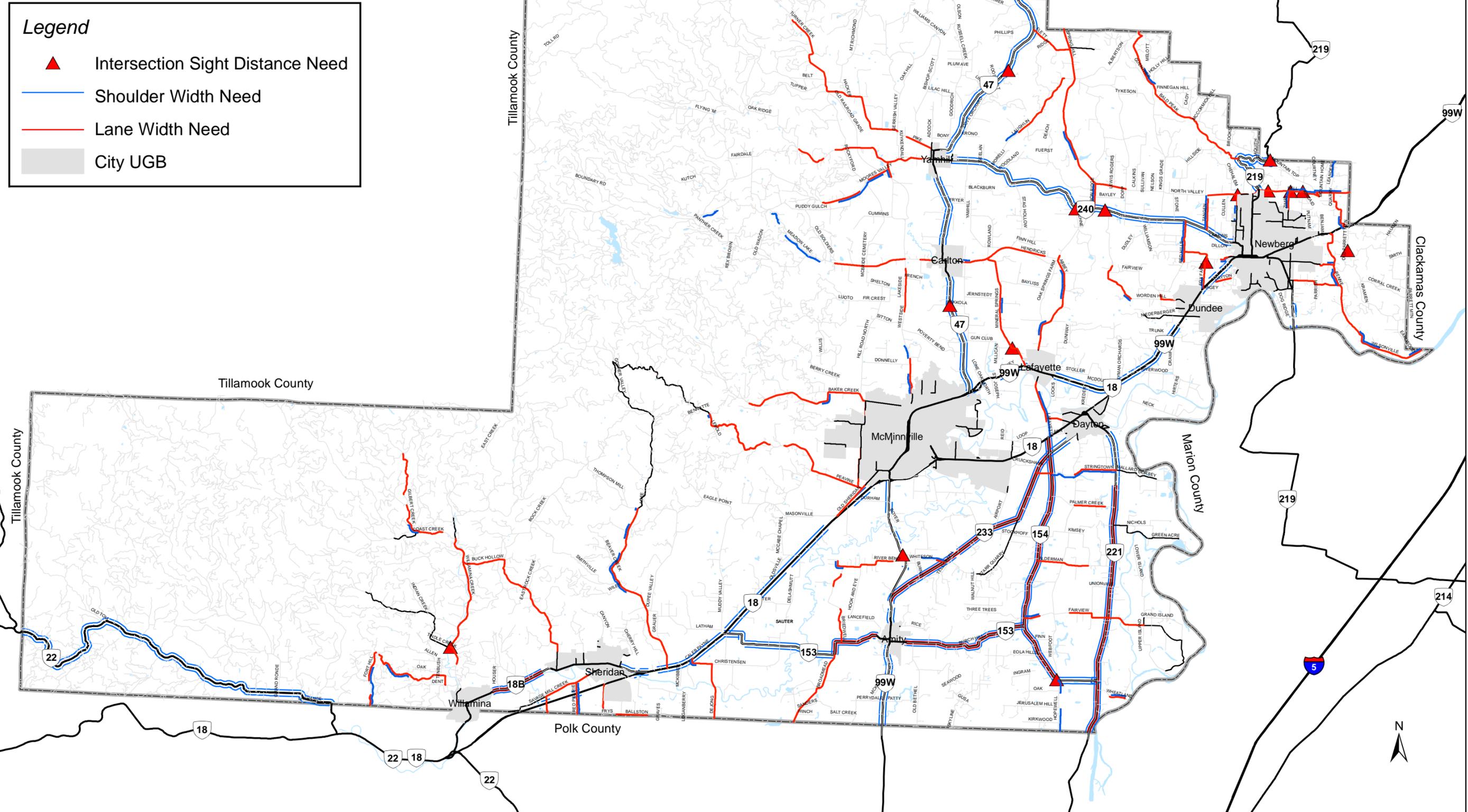
For intersections, geometric needs were analyzed for the minor road approaches. This was done for intersections where there was a potential problem identified by the stakeholders, county or ODOT staff, and the RIAC, or through field reconnaissance. Approach width, approach grade, intersection angle, and intersection sight distance were investigated and compared to the American Association of State Highway and Transportation Officials (AASHTO) standards.¹⁶

Intersection approach widths should be a minimum of 20-24 feet, based on the lane width standard of 10-12 feet for state highways and 11 feet for county roadways (minor collector and above). Adequate approach width is needed to provide spacing between vehicles traveling in opposite directions on the approach and to allow larger vehicles to turn onto/off of the roadway without cutting corners. The following intersections did not meet the standards:

¹⁶ AASHTO, A Policy on the Geometric Design of Highways and Streets, (2004)

Yamhill County Transportation System Plan

Figure 20: Existing Geometric Needs





- Schaad Rd. (20 feet) at Parrett Mountain Rd.
- Worden Hill Rd. (18 feet) at OR 240
- Hidden Springs Rd. (17 feet) at Fox Farm Rd.
- North Trade St. (18 feet) at Cherry Rd.

Approach grades should be three percent or lower for all roadways. If the approach is steeper than this, vehicles may have difficulty stopping (on a negative grade) or accelerating from a stop (on a positive grade). The approach grades at the following intersections failed to meet this standard:

- Aspen Way approaching Bell Rd.
- Zimri Dr. approaching Bell Rd.
- Schaad Rd. approaching Parrett Mountain Rd.
- Worden Hill Rd. approaching OR 240
- Mountain Top Rd. approaching OR 219
- Tindle Creek Rd. approaching Willamina Creek Rd.
- Fox Farm Rd. approaching OR 99W

The intersection angle should be no less than 60 degrees.¹⁷ Sharp intersection angles can result in limited sight distance for stopped vehicles on the approach. Tight turns can also occur if the angle is too severe, requiring larger vehicles to use the opposing travel lane. The following intersections have less than a 60 degree angle:

- OR 154/Stringtown Rd. (connector road)
- OR 219/Mountain Top Rd.
- OR 240/Worden Hill Rd.
- OR 153/OR 221 (connector road)
- Kuehne Rd./Hendricks Rd.
- Willamina Creek Rd./Tindle Creek Rd.
- Mineral Springs Rd./Gun Club Rd.
- Schaad Rd./Parrett Mountain Rd.
- OR 18/OR 153/Muddy Valley Rd.
- OR 99W/Fox Farm Rd.

¹⁷ AASHTO, A Policy on the Geometric Design of Highways and Streets, (2004)



Adequate intersection sight distance is required for drivers turning from the minor road to clearly see oncoming traffic, turn into the traffic stream, and safely accelerate. The largest sight distance requirements are for drivers turning left from the minor road. Longer sight distances are required for trucks than cars to account for the slower acceleration rate of trucks.

Intersection sight distances were measured and compared with the standards contained in the HDM.¹⁸ The ODOT standards are based on the recommendations contained in the AASHTO Green Book.¹⁹ They vary depending on vehicle speed and the approach grade of the minor road. The intersections not meeting the standards are listed in Table 14 and shown in Figure 20.

Table 14 – Intersection Sight Distance Deficiencies

| Roadway | Intersection Approach | Speed Limit (mph) | Intersection Sight Distance | | |
|---------------------|----------------------------|-------------------|-----------------------------|----------|-------------------------|
| | | | Movement | Standard | Measured Sight Distance |
| Bell Rd. | Springbrook Rd. | 45 | NB LT | 500' | 150' |
| | | | NB RT | 430' | 300' |
| Bell Rd. | Zimri Rd. | 45 | NB LT | 500' | 300' |
| Bell Rd. | Aspen Way | 45 | NB LT | 500' | 200-225' |
| Fox Farm Rd. | Hidden Springs Rd. | 55 | EB LT | 610' | 350' |
| Mineral Springs Rd. | Gun Club Rd. | 55 | NB LT | 610' | 390' |
| | | | EB TH | 610' | 390' |
| North Valley Rd. | Chehalem Dr. | 45 | NB LT | 500' | 325' |
| | | | SB LT | 500' | 350' |
| OR 153 | Hopewell Hwy./ Webfoot Rd. | 55 | SB LT | 610' | 385' |
| | | | NB LT | 610' | 575' |
| OR 219 | Mountain Top Rd. | 30 | WB LT | 335' | 325' |
| OR 240 | Worden Hill Rd. | 55 | NB LT | 610' | 325' |
| OR 240 | Kuehne Rd. | 55 | NB RT | 530' | 240' |

¹⁸ Oregon Department of Transportation, Highway Design Manual, (2003).

¹⁹ AASHTO, A Policy on the Geometric Design of Highways and Streets, (2004).



| Roadway | Intersection Approach | Speed Limit (mph) | Intersection Sight Distance | | |
|----------------------|--------------------------|-------------------|-----------------------------|----------|-------------------------|
| | | | Movement | Standard | Measured Sight Distance |
| OR 47 | Cove Orchard Rd. (north) | 55 | WB LT | 610' | 425' |
| OR 47 | Pekkola Rd. | 55 | WB LT | 610' | 275' |
| OR 99W | Cherry Rd. | 55 | WB LT | 610' | 200' |
| Parrett Mountain Rd. | Schaad Rd. | 55 | EB LT | 610' | 100' |
| Willamina Creek Rd. | Tindle Creek Rd. | 55 | NB LT | 610' | 275' |
| | | | EB RT | 610' | 275' |
| OR 99W | Fox Farm Rd. | 35 | SB LT | 390' | --* |
| | | 35 | SB RT | 335' | --* |

* To be determined at time of project development.

Reported Geometric Needs

Geometrics was, by a large margin, the most frequently reported type of need. These are shown in Figure 13 and Table A-1 in Appendix A. For intersections, the main problem identified was poor intersection sight distance caused by horizontal or vertical curves and vegetation. Other problems mentioned were skewed intersection alignment and atypical intersection configuration that results in driver confusion.

One of the most frequently mentioned intersections was Hendricks Rd./Abbey Rd./Kuehne Rd., where skewed alignment, driver confusion about the right-of-way, and high-speed turning movements were identified as problems. Another intersection receiving multiple comments was OR 154/Stringtown Rd., where the separated right turn lanes require drivers to turn their heads sharply to see on-coming traffic and cause confusion for drivers who are unfamiliar with the intersection.

Commonly mentioned roadway segment needs were poor horizontal and vertical alignment, such as along Abbey Rd. between Oak Spring Farms Rd. and Millican Creek, and narrow roadways. Two overall needs identified were shoulder widening and roadway widening.



Access Needs

Similar to many state highways which, in addition to serving through traffic, provide access to adjacent property, there are areas along OR 47 and OR 240 with high concentrations of access points. The problems associated with high access density are well understood, including reduced capacity, traffic operations and safety conflicts between slower-moving turning vehicles and higher-speed through-traffic, and degradation of the bicycle and pedestrian environment.

In order to better understand access conditions along these corridors, an inventory of existing approaches was conducted, including public streets and private driveways. The data was assembled using ODOT video log and road inventory data.

The OHP establishes access spacing standards to improve safety and mobility by limiting turning conflicts. These standards, which apply to both driveways and public streets, vary depending on highway classification, traffic volume, posted speed, and the character of surrounding land uses.

The existing access spacing for OR 47 and OR 240 was compared to ODOT's spacing standards to identify areas that do not meet the standards.²⁰ For the analysis, segments were defined by where roadways classified as minor collector or above intersected the highway or where the access spacing standard changed based on roadway classification, volume, and/or speed.

Table 15 presents the results of the evaluation, showing the number of approaches by segment along each side of the highway and comparing the average approach spacing (total number of approaches divided by segment length) to the applicable standard. Directional segments not meeting the spacing standard are indicated in shaded/bold type and are shown in Figure 21.

While this level of analysis does not identify specific properties where the spacing standards are not met, it does reflect the degree to which the overall spacing is consistent with the standards. The rightmost column of the table indicates the maximum number of approaches that would be allowed according to the standards. This number is exceeded by all but a few of the segments.

²⁰ Standards reflect the approach spacing requirements contained in SB 264 that went into effect on January 1, 2012.



Table 15 – OR 47 and OR 240 Access Spacing

| Analysis Segment | From/To | Milepost | No. of Approaches | | Average Approach Spacing | | | No. of Approaches Allowed |
|------------------|------------------------------------------------|---------------|-------------------|-----------|--------------------------|------------|------------|---------------------------|
| | | | Eastside* | Westside | Std. (ft.) | Eastside | Westside | |
| OR 47 | | | | | | | | |
| 1 | County Line – Olson Rd. | 25.72 -26.52 | 0 | 1 | 600 | 0 | 4,198 | 6 |
| 2 | Olson Rd. – n/o Country Ln. | 26.52 – 26.67 | 0 | 1 | 750 | 0 | 792 | 1 |
| 3 | N/O Country Ln. – Flett Rd. | 26.67 – 28.78 | 4 | 20 | 990 | 2,693 | 539 | 10 |
| 4 | Flett Rd. – Wapato School Rd. | 28.78 – 30.00 | 2 | 9 | 990 | 3,247 | 722 | 6 |
| 5 | Wapato School Rd. – Graham Ave. | 30.00 – 31.36 | 5 | 11 | 650 | 1,489 | 677 | 11 |
| 6 | Graham Ave – Yamhill City Limit | 31.36 – 33.77 | 12 | 19 | 990 | 1,056 | 667 | 12 |
| 7 | Yamhill City Limit – n/o Yamhill St. (Carlton) | 35.06 – 37.29 | 9 | 26 | 990 | 1,200 | 415 | 10 |
| 8 | N/O Yamhill St. – Carlton City Limit | 37.29 – 37.37 | 3 | 0 | 750 | 378 | N/A | 1 |
| 9 | Carlton City Limit – OR 99W | 38.53 – 42.46 | 31 | 25 | 650 | 669 | 829 | 31 |
| OR 240 | | | | | | | | |
| 1 | Yamhill City Limit – w/o Yamhill Rd. | 0.57 – 1.01 | 6 | 3 | 360 | 260 | 519 | 4 |
| 2 | W/O Yamhill Rd. – Kuehne Rd. | 1.01 – 5.49 | 24 | 24 | 650 | 1,010 | 1,010 | 37 |
| 3 | Kuehne Rd. – Ribbon Ridge Rd. | 5.49 – 6.09 | 0 | 6 | 700 | N/A | 506 | 4 |
| 4 | Ribbon Ridge Rd. – Worden Hill Rd. | 6.09 – 6.41 | 4 | 2 | 700 | 462 | 924 | 2 |
| 5 | Worden Hill Rd. – Red Hills Rd. | 6.41 – 9.12 | 28 | 29 | 700 | 513 | 495 | 20 |
| 6 | Red Hills Rd. – Tangen Rd. | 9.12 – 9.87 | 5 | 8 | 700 | 739 | 462 | 5 |
| 7 | Tangen Rd. – Old Yamhill Rd. | 9.87 – 10.67 | 5 | 6 | 700 | 618 | 515 | 4 |
| 8 | Old Yamhill Rd. – w/o Chehalem Dr. | 10.67 – 10.85 | 5 | 8 | 500 | 459 | 287 | 4 |
| 9 | W/O Chehalem Dr. – Newberg City Limit | 10.85 – 11.01 | 5 | 2 | 250 | 201 | 502 | 4 |

* Bold/shaded cells indicate intersections not meeting access spacing standard.

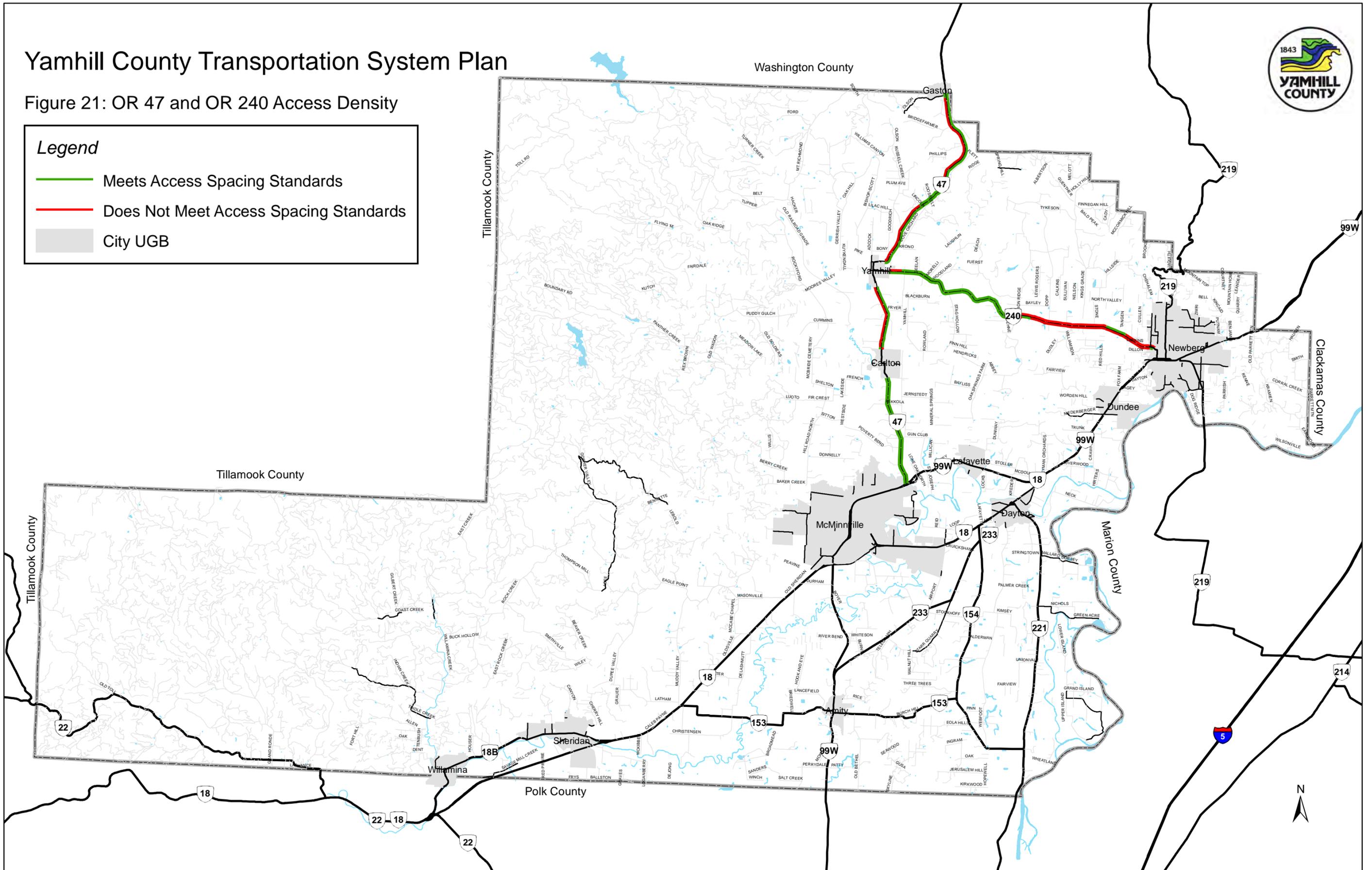
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Figure 21: OR 47 and OR 240 Access Density



Legend

- Meets Access Spacing Standards
- Does Not Meet Access Spacing Standards
- City UGB



BICYCLE AND PEDESTRIAN

FACILITIES

Bikeways include shoulder bikeways, shared roadways, bike lanes, and shared-use paths. A shoulder bikeway is a paved shoulder that provides a suitable area for bicycling, reducing conflicts with faster moving motor vehicle traffic.²¹ On a shared roadway, bicyclists and motorists share the same travel lanes. There are no standard dimensions for shared roadways. They are common on rural roads and low-volume highways. Shoulder bikeways and shared roadways comprise nearly all of the bicycle facilities within the rural Yamhill County area.

Bike lanes are a portion of the roadway designated for preferential use by bicyclists. They are marked with pavement stencils and an eight-inch wide stripe. Bike lanes are typically provided on busy urban and suburban streets, but may also be provided on rural highways near urban areas, where there is high bicycle use. There are only a few bike lanes in the study area, located on Dayton Ave. outside of Newberg, and on Hill Rd., Old Sheridan Rd., and Baker Creek Rd. near McMinnville. There are no shared-use paths within the rural county area.

Walkways include sidewalks, paths, and shoulders. There are no sidewalks or paths within the study area. Thus, all of the pedestrian facilities consist of shoulders, which may be used to serve pedestrians as well as bicyclists in rural areas.²²

BICYCLE AND PEDESTRIAN VOLUMES

Bicycle and pedestrian volumes were collected as a part of the peak period (3-6 P.M.) intersection turning movement counts conducted for the study. These volumes are shown in Table 16.

Bicycle and pedestrian volumes are very low, with the highest volumes occurring near cities (e.g., NW Hill Rd./NW Baker Creek Rd. near McMinnville).

²¹ Oregon Department of Transportation, Bicycle and Pedestrian Design Guide, (2011).

²² Oregon Department of Transportation, Highway Design Manual, (2003).

Table 16 – Peak Period Bicycle and Pedestrian Volumes

| Intersection | Bicycle Volume | Pedestrian Volume |
|--------------------------------------------------|-----------------------|--------------------------|
| NW Hill Rd./NW 2 nd St. (McMinnville) | 0 | 11 |
| NW Hill Rd./NW Baker Creek Rd. (McMinnville) | 2 | 2 |
| NW Westside Rd./NW Meadow Lake Rd. | 0 | 0 |
| NE Abbey Rd./NE Hendricks Rd. | 0 | 0 |
| OR 240/NE Kuehne Rd. | 0 | 0 |
| OR 219/North Valley Rd. | 3 | 0 |
| N. Aspen Way/NE Bell Rd. | 0 | 0 |
| OR 99W/OR 18/McDougall Rd. | 2 | 0 |
| OR 18/SE Ash Rd. | 0 | 0 |
| OR 18/OR 154/Lafayette Hwy. | 0 | 0 |
| OR 154/OR 233 | 0 | 0 |
| OR 154/SE Stringtown Rd. | 0 | 0 |
| OR 153/Hopewell Rd./SE Webfoot Rd. | 0 | 0 |
| OR 154/SE Walnut Hill Rd./SE Fairview Rd. | 0 | 0 |
| OR 240/Worden Hill Rd. | 0 | 2 |
| NE Zimri Rd./NE Bell Rd. | 0 | 0 |
| NW Springbrook Rd./NE Bell Rd. | 1 | 0 |
| Parrett Mountain Rd./Schaad Rd. | 1 | 2 |
| Mineral Springs Rd./Gun Club Rd. | 1 | 0 |
| Chehalem Dr./North Valley Rd. | 0 | 0 |

NEEDS

The ODOT Bicycle and Pedestrian Guide²³ indicates that shared roadways are suitable for bicycle use on low-volume rural roads and highways. Thus, shared roadways are appropriate for most county roads and some state highways within the study area, with no bicycle needs along these facilities.

On rural roads with high bicycle use or demand, however, the Guide states that roads should include paved shoulders where vehicle speeds and volumes are high. Further, the Guide

²³ Oregon Department of Transportation, Bicycle and Pedestrian Design Guide, (2011).

recommends that the shoulder width standards for rural highways contained in the HDM should be used in determining adequate shoulder widths for bicycle use. Similarly, the county uses their maintenance project shoulder width standards in determining shoulder widths for bicycle use along county roadways.

Based on these guidelines, bicycle needs were identified where there are higher bicycle and vehicle volumes and:

- The shoulder width standard is not met; or
- The shoulder is not paved.

These locations are shown in Figure 22 and include all or portions of:

- OR 47
- OR 99W
- OR 154/Lafayette Hwy.
- Westside Rd.
- Old Sheridan Rd.

The locations with higher bicycle volumes were identified based on information received from the stakeholders and the bicycle counts.

It is unlikely that additional bike lanes are currently needed within the study area. This is because all of the locations with higher bicycle volumes are on high-speed rural roadways, where bike lanes are generally not recommended.²⁴ The reason for this is that at channelized intersections along these facilities, the speeds are too high to place a through bike lane to the left of right-turning vehicles.

For pedestrians, shoulders are typically the most appropriate type of facility in rural areas, because pedestrian volumes are too low to warrant sidewalks or paths. The ODOT Bicycle and Pedestrian Guide²⁵ indicates that the shoulder widths recommended in the HDM are generally adequate to accommodate pedestrians. The county considers shoulders meeting their maintenance project shoulder width standards to be adequate for serving pedestrians.

²⁴ Oregon Department of Transportation, Bicycle and Pedestrian Design Guide, (2011).

²⁵ Oregon Department of Transportation, Bicycle and Pedestrian Design Guide, (2011).

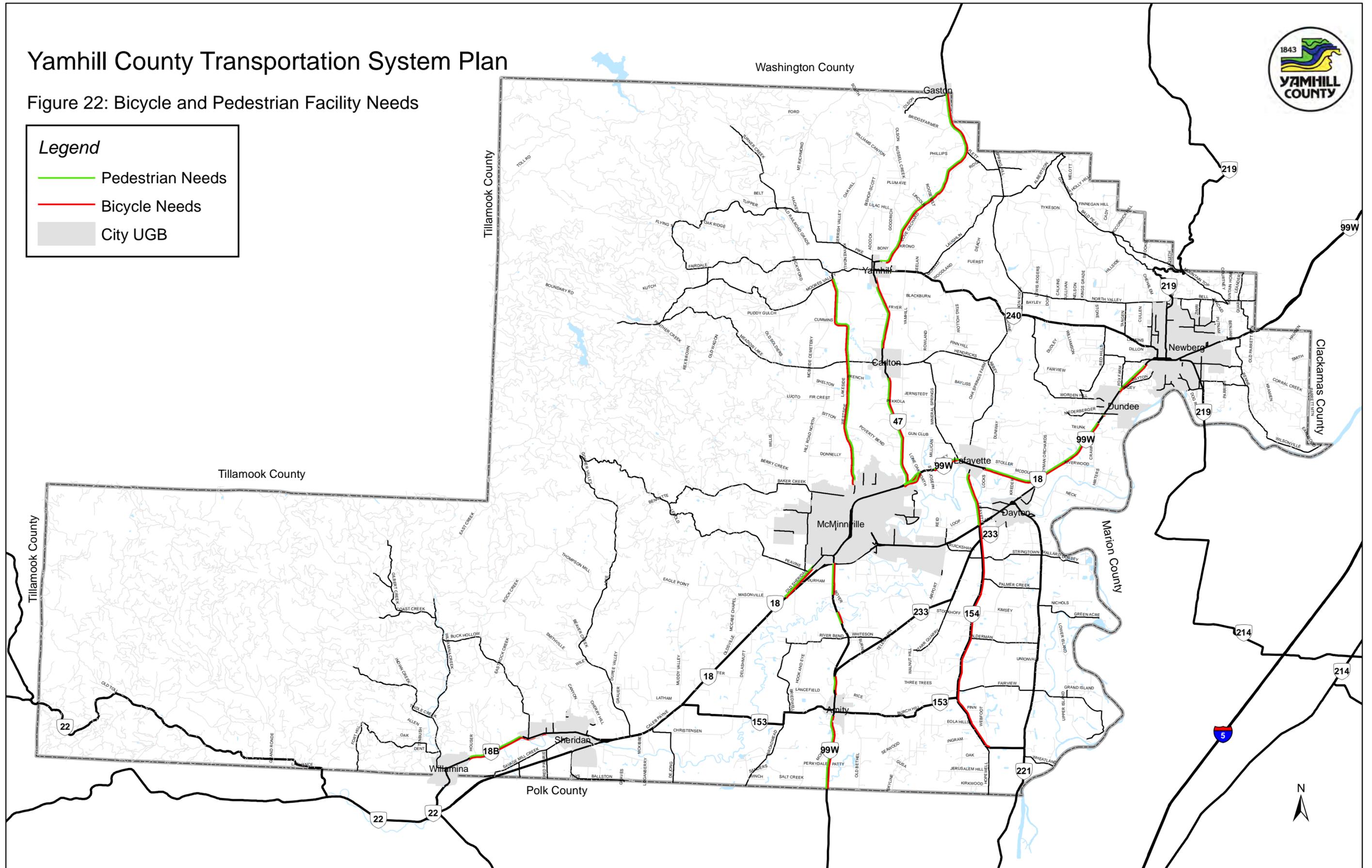
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Figure 22: Bicycle and Pedestrian Facility Needs



Legend

- Pedestrian Needs
- Bicycle Needs
- City UGB



The roadway segments identified by the stakeholders as having higher pedestrian volumes that do not meet the ODOT and county shoulder width standards are shown in Figure 22. These are largely the same as the locations with bicycle needs, with the exception of OR 18B between Sheridan and Willamina. Here, there are several areas with shoulder widths of only a foot or so.

Reported Needs

The roadways with bicycle and pedestrian needs reported by the stakeholders include the locations listed on the previous page, as well as the following:

- OR 233
- North Valley Rd.
- Worden Hill Rd.
- Fox Farm Rd.

These are shown in Figure 13 and Table A-1 in Appendix A. The need to accommodate bicyclists and pedestrians with improved facilities along these roadways was identified by the stakeholders.

CORRIDOR HEALTH

CORRIDOR HEALTH CONCEPT

The U.S. Department of Transportation recommends the use of a multiple criteria to analyze needs and prioritize transportation projects and investments in rural areas.²⁶ Following this guidance, a Corridor Health Tool was applied for all state highways and county roads within the study area with a functional classification of minor collector or higher. The corridor health concept is based on the idea of measuring the “health” of a corridor for several different categories of performance, and then combining the measurements to provide a picture of overall corridor health.

²⁶ U.S. Department of Transportation, Planning for Transportation in Rural Areas, (2001).

DEVELOPMENT OF FACTORS, WEIGHTS, AND FORMULAS

The Corridor Health Tool comprises a set of factors, weights, and formulas that are used to calculate a composite health score for each corridor segment. The factors correspond to the same areas of need described in the previous sections, i.e., mobility, traffic operations, safety, geometrics, and bicycle and pedestrian facilities.

A set of weights was developed for the factors, with the sum of the weights equal to 100. Formulas were also developed to calculate scores for each of the factors. The formulas were set up to produce scores ranging from zero to one, with a score of one representing “perfect” health and a score of zero indicating very poor conditions or performance. The weights and formulas for each factor are shown in Table 17.

Table 17 – Corridor Health Score Weights and Formulas

| Factor | Weight | Scoring Formula |
|-------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety | 35 | =0.5/X if $X \geq 0.5$; else 1 Where: $X = 0.7 * (\text{Fatal + Injury Crash Rate for Segment} / \text{Average for Facility Category}) + 0.3 * (\text{Total Crash Rate for Segment} / \text{Average for Facility Category})$ |
| Geometrics | 20 | =0.2*min(Lane Width/Lane Width Standard,1)+0.8*min(Shoulder Width/Shoulder Width Standard,1) |
| Traffic Operations | 15 | =1-min(Turn Lane Need, Max. Turn Lane Need)/Max. Turn Lane Need* |
| Bicycle/Pedestrian Facilities | 15 | =(% of Segment with Adequate Bicycle/Pedestrian Facilities)/100** |
| Mobility | 15 | =min((1-VC)/(1-VC Standard),1) |

* Turn lane need is the number of turn lanes (left-turn and right-turn) needed per segment. Since segment endpoints were defined by intersections with minor collector roadways or above, a value of four was assumed for the maximum turn lane need (i.e., the need for a left-turn lane and right-turn lane at each end of the segment).

** Bicycle/pedestrian facilities were considered to be adequate if the shoulder width standard was met.

The factor scores were multiplied by the weights to produce an overall corridor health score for each segment ranging between zero and 100, with 100 representing the best score and zero the worst score.

RESULTS

The corridor health scores are shown in Figure 23. For ease of understanding, the the segments were assigned to good, fair, and poor categories of corridor health based on the scores. The scores corresponding to each category are:

- Good – 75 – 100
- Fair – 50 – 74
- Poor - < 50

The percentages of state highway mileage by corridor health category are presented in Table 18.

Table 18 – Corridor Health – State Highways

| State Highway | Corridor Health | | | | | | | |
|---------------|-----------------|-----|-------|-----|-------|-----|-------|------|
| | Good | | Fair | | Poor | | Total | |
| | Miles | % | Miles | % | Miles | % | Miles | % |
| OR 18 | 10.9 | 67% | 5.3 | 33% | 0.0 | 0% | 16.2 | 100% |
| OR 18B | 2.0 | 67% | 0.0 | 0% | 1.0 | 33% | 3.0 | 100% |
| OR 22 | 0.0 | 0% | 2.9 | 22% | 10.0 | 78% | 12.9 | 100% |
| OR 47 | 3.1 | 22% | 7.3 | 51% | 3.9 | 27% | 14.3 | 100% |
| OR 99W | 11.1 | 63% | 5.4 | 30% | 1.2 | 7% | 17.7 | 100% |
| OR 153 | 1.3 | 10% | 6.0 | 45% | 6.0 | 45% | 13.3 | 100% |
| OR 154 | 0.0 | 0% | 2.4 | 38% | 3.9 | 62% | 6.3 | 100% |
| OR 219 | 1.5 | 33% | 3.0 | 67% | 0.0 | 0% | 4.5 | 100% |
| OR 221 | 0.0 | 0% | 6.1 | 62% | 3.8 | 38% | 9.9 | 100% |
| OR 233 | 2.3 | 28% | 4.4 | 54% | 1.5 | 18% | 8.2 | 100% |
| OR 240 | 1.2 | 12% | 4.0 | 38% | 5.2 | 50% | 10.4 | 100% |
| Total | 33.4 | 29% | 46.8 | 40% | 36.5 | 31% | 116.7 | 100% |

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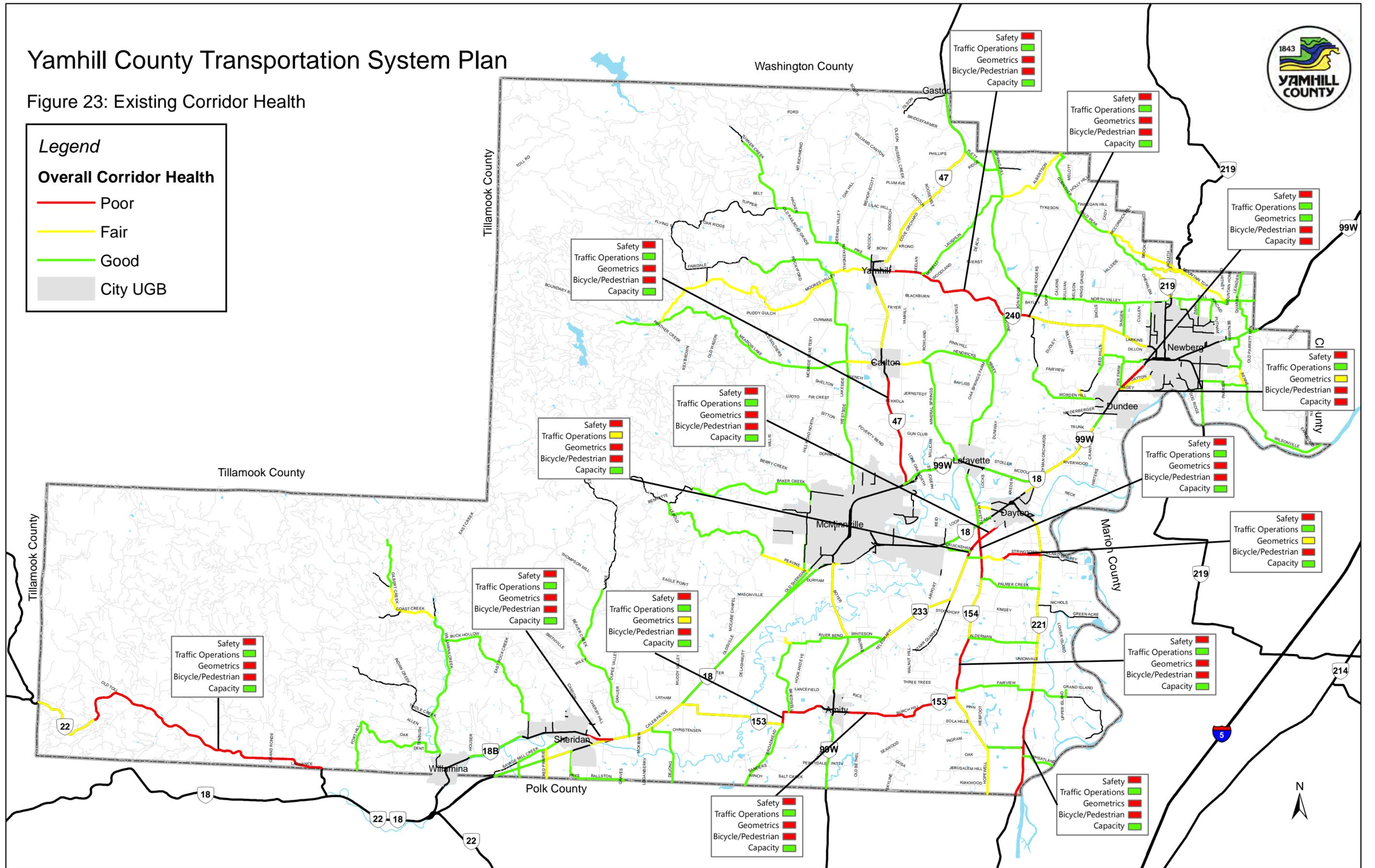
Figure 23: Existing Corridor Health



Legend

Overall Corridor Health

- Poor
- Fair
- Good
- City UGB



The percentages of overall state highway mileage falling within each corridor health category are:

- Good – 29%
- Fair – 40%
- Poor - 31%

Nearly all of OR 99W/OR 18, the primary route within the study area, is within the good or fair categories, with only a small percentage (7%) between Newberg and Dundee within the poor category. State highways with relatively high percentages of “poor” mileage include OR 22 (78%), OR 154 (62%), and OR 240 (50%). The main factors contributing to the poor scores for almost all of the “red” state highway segments shown in Figure 23 are safety, geometrics, and bicycle/pedestrian facilities.

Nearly all of the county roadway mileage falls within the good or fair categories, as reflected in the following percentages:

- Good – 86%
- Fair – 13%
- Poor - 1%

The only county road with a portion of its mileage within the poor category is Stringtown Rd., between OR 221 and Webfoot Rd. The factors contributing to the poor score for this segment are safety and bicycle/pedestrian facilities.

TRANSIT

SERVICES AND FACILITIES

Yamhill County Transit Area (YCTA) provides the majority of the transit service within the county. This includes intra-city service within McMinnville and Newberg, inter-city link routes, Dial-a-Ride service, and Volunteer Medical Transportation.

The intra-city service comprises two routes in McMinnville and two routes in Newberg. It is provided at one-hour headways, Monday through Friday, with connections to the link routes. Four link routes connect McMinnville, Newberg, and other communities to destinations outside of Yamhill County. These operate along fixed routes with fixed schedules, and serve major

stops within each community. The link routes are shown in Figure 24 and summarized in Table 19.

Table 19 – Link Route Transit Service

| Route | Service Days | Number of Trips* | | Places Served |
|--------------------------------------|--------------|------------------|------|-------------------------------------------------------------------|
| | | A.M. | P.M. | |
| 11 – McMinnville – Salem | Weekday | 2 | 3 | McMinnville, Whiteson, Amity, West Salem |
| 22 – McMinnville – West Valley | Weekday | 4 | 4 | McMinnville, Sheridan, Willamina, Grand Ronde |
| 24S – McMinnville – West Valley | Saturday | 2 | 2 | McMinnville, Sheridan, Willamina, Grand Ronde |
| 33 – McMinnville - Hillsboro | Weekday | 2 | 3 | McMinnville, Carlton, Yamhill, Gaston, Forest Grove, Hillsboro |
| 44 – McMinnville-99W Link | Weekday | 4 | 6 | McMinnville, Lafayette, Dayton, Dundee, Newberg, Sherwood, Tigard |
| 45X - McMinnville-99W Link (Express) | Weekday | 1 | 1 | McMinnville, Newberg, Sherwood, Tigard |
| 46S - McMinnville-99W Link | Saturday | 2 | 3 | McMinnville, Lafayette, Dayton, Dundee, Newberg, Sherwood, Tigard |

* Trips by direction (inbound/outbound).

Dial-a-Ride is a curb-to-curb transportation service operating throughout Yamhill County. It is available to anyone unable to access YCTA fixed routes because of mobility limitations, or those whose origins and/or destinations are not near YCTA fixed routes.

Volunteer Medical Transportation is a volunteer-operated van service providing Yamhill County residents access to medical appointments in the Portland area, serving over 100 medical locations including hospitals, clinics, laboratories, and doctor offices. The van is provided by YCTA and the service is funded by a yearly grant from ODOT Special Transportation Funds.

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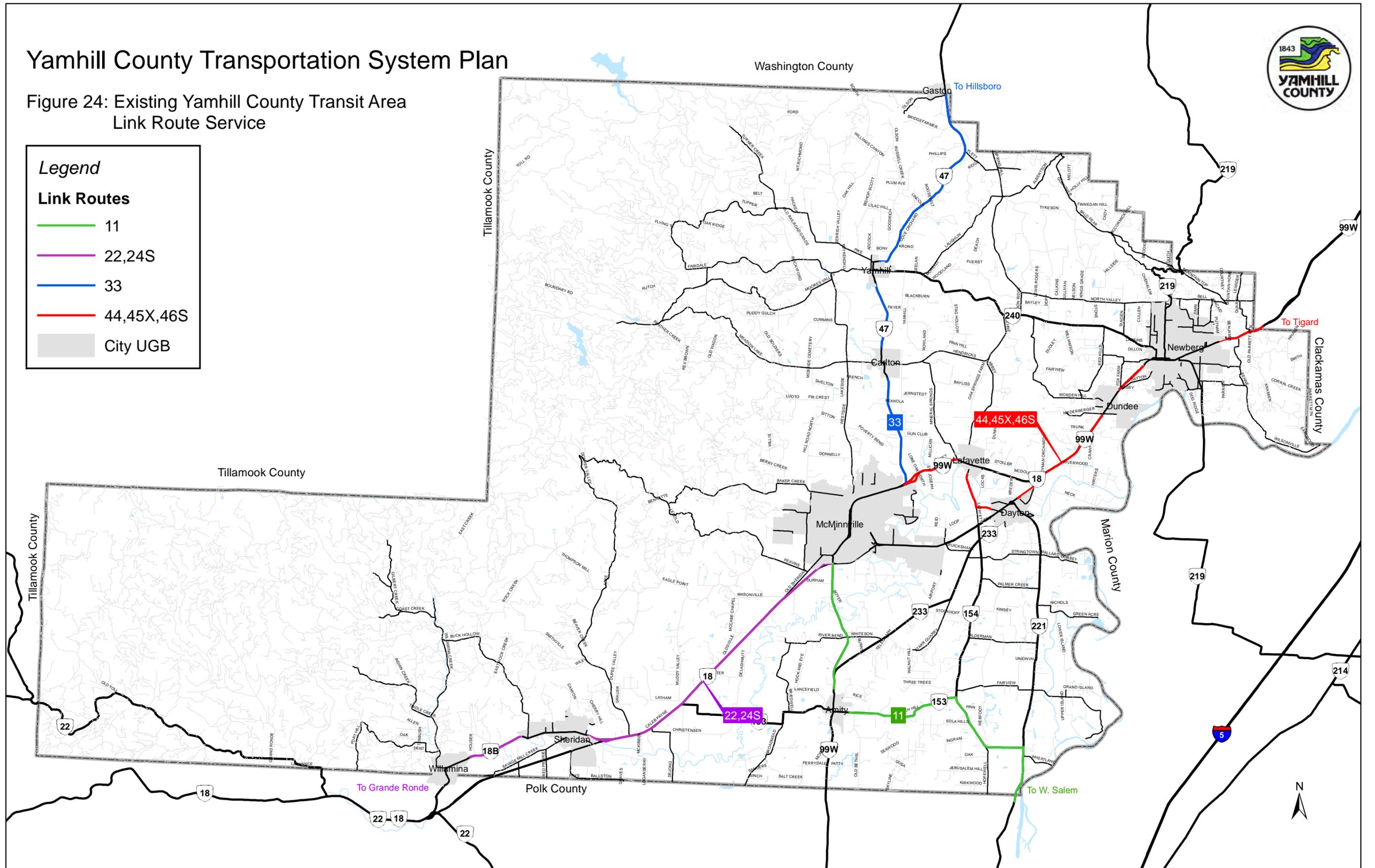
Figure 24: Existing Yamhill County Transit Area Link Route Service



Legend

Link Routes

- 11
- 22,24S
- 33
- 44,45X,46S
- City UGB



In addition to the services provided by YCTA, there are a number of human services agencies whose missions include providing some form of transportation assistance to their clients. These agencies generally provide services to a specific client population and are not available to the general public.

There are no transit facilities such as bus shelters, bus pull-outs, or park-and-ride lots within the study area.

NEEDS

The Yamhill County Coordinated Human Services Public Transportation Plan: The Next Steps²⁷ was prepared by the Mid-Willamette Valley Council of Governments in 2007 to identify strategies to improve transportation services for people with disabilities, seniors, and individuals with lower incomes. Unmet transportation needs were identified and grouped into the following categories:

- Lack of available transportation services
 - Lack of transportation services during evenings and weekends
 - Need for more frequent bus stops
 - Need for expanded service to large employers such as the Spirit Mountain Casino and the Riverside Drive industrial area
- Gaps in transportation service to specific areas
 - Gaps in outlying areas
 - Need for inter-city transportation between Yamhill and Carlton
 - Need for inter-city transportation between Sheridan, Willamina and Grand Ronde (West Valley)
- Inadequate transit facilities
 - Need for designated bus stops with signs and posted schedules
 - Need for transit shelters for fixed routes

²⁷ Mid-Willamette Valley Council of Governments, Coordinated Human Services Public Transportation Plan, (2007).

- Many areas lack sidewalks, curb cuts, loading spaces, and crosswalks
- Need for better ADA accessibility

YCTA staff indicated that these still represent YCTA’s needs; however, the following additional needs were also identified:²⁸

- Pull-outs for buses
- Improved travel time reliability on OR 99W
- More regional connections (e.g., the Oregon coast)

Reported Needs

The only transit needs reported by the stakeholders were the lack of pull-outs for buses and the lack of designated stop areas.

BRIDGES

Existing bridge conditions and needs were analyzed based on data obtained from ODOT’s PONTIS bridge management system. The database contains information on bridge sufficiency ratings, structural conditions, and height and load restrictions for both ODOT and county bridges.

SUFFICIENCY RATING

The sufficiency rating for each bridge is determined by periodic inspections performed by ODOT. The rating is a numeric value indicative of the sufficiency of a bridge to remain in service. A score of 100% would represent an entirely sufficient bridge, while a score 0% would indicate a completely deficient bridge. The rating is calculated using a formula comprising the following factors:

- Structural adequacy and safety (maximum of 55%)
- Serviceability and functional obsolescence (maximum of 30%)
- Essentiality for public use (maximum of 15%)
- Special reductions (maximum of -13%)

²⁸ Conversation with Tanya Saunders, YCTA, on March 5th, 2012.

The Federal Highway Administration (FHWA) uses this index in evaluating the nation’s bridges for funding distribution and eligibility. Those bridges with a sufficiency rating of 80 or less are eligible for rehabilitation. Bridges with a rating of 50 or less are eligible for replacement. Bridges lose their eligibility status for a period of ten years after a federal Highway Bridge Program project is completed. Figure 25 shows the sufficiency rating for all ODOT and county bridges within the study area.

Table 20 summarizes the study area bridges by eligibility status based on their sufficiency ratings.

Table 20 – FHWA Bridge Funding Eligibility Status

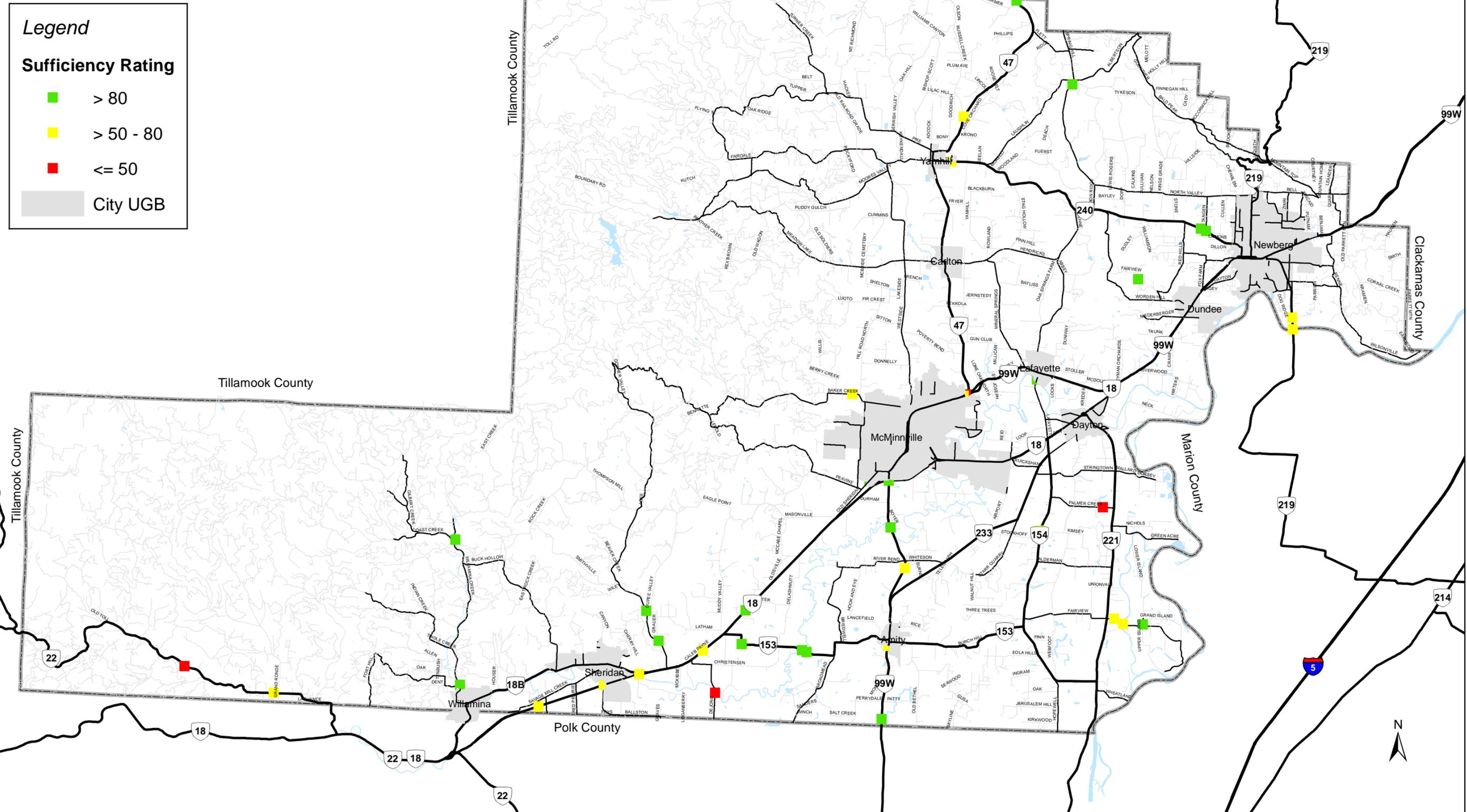
| FHWA Funding Status | ODOT Bridges | | County Bridges | | All Bridges | |
|--------------------------------------------|--------------|------|----------------|------|-------------|------|
| | No. | % | No. | % | No. | % |
| Not Eligible (Suff. Rating > 80) | 11 | 42% | 11 | 65% | 22 | 51% |
| Rehabilitation (Suff. Rating > 50 - 80) | 13 | 50% | 4 | 24% | 17 | 40% |
| Replacement (Suff. Rating <= 50) | 2 | 8% | 2 | 12% | 4 | 9% |
| Total | 26 | 100% | 17 | 100% | 43 | 100% |

As shown, 58% of the ODOT bridges and 36% of the county bridges are eligible for either rehabilitation or replacement (sufficiency rating of less than 80). Overall, 49% of the study area bridges are eligible for funding. The four bridges eligible for replacement (sufficiency rating of less than 50) are:

- OR 99W at North Yamhill River
- OR 22 at South Yamhill River
- Palmer Creek Rd. at Palmer Creek
- Dejong Rd. at South Yamhill River

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Figure 25: Bridge Sufficiency Ratings



STRUCTURAL CONDITIONS

As part of ODOT’s bridge inspection program, various bridge components are evaluated on a scale of zero-to-nine according to the National Bridge Inventory (NBI) system, including the bridge deck, superstructure, and substructure. The general condition of these components for the ODOT and county bridges within the study area are summarized in Table 21.

Table 21 – Bridge Condition Ratings

| Component | Bridge Condition Ratings | | | | | | | |
|-----------------------|--------------------------|-----|------------|-----|------------|-----|-------|------|
| | Good (7-9) | | Fair (5-6) | | Poor (0-4) | | Total | |
| | No. | % | No. | % | No. | % | No. | % |
| ODOT Bridges | | | | | | | | |
| Bridge Deck | 9 | 35% | 17 | 65% | 0 | 0% | 26 | 100% |
| Superstructure | 9 | 35% | 17 | 65% | 0 | 0% | | |
| Substructure | 10 | 38% | 16 | 62% | 0 | 0% | | |
| County Bridges | | | | | | | | |
| Bridge Deck | 12 | 71% | 5 | 29% | 0 | 0% | 17 | 100% |
| Superstructure | 15 | 88% | 2 | 12% | 0 | 0% | | |
| Substructure | 5 | 29% | 10 | 59% | 2 | 12% | | |
| All Bridges | | | | | | | | |
| Bridge Deck | 21 | 49% | 22 | 51% | 0 | 0% | 43 | 100% |
| Superstructure | 24 | 56% | 19 | 44% | 0 | 0% | | |
| Substructure | 15 | 35% | 26 | 60% | 2 | 5% | | |

Two county bridges have a poor substructure rating. These are:

- Dejong Rd. at South Yamhill River
- Palmer Creek Rd. at Palmer Creek

All of the other bridges have a good or fair rating for all of the components.

HEIGHT AND LOAD RESTRICTIONS

The PONTIS data indicated there are no ODOT or county bridges within the study area having height restrictions. There are, however, two railroad trestles with vertical underclearances that are less than the ODOT standard of 16 feet.²⁹ These are the WPRR trestle over OR 99W between Lafayette and OR 47 (15.1 feet) and the WPRR trestle over OR 99W north of Whiteson (14.8 feet). There are several bridges in Yamhill County with load restrictions, but all of these are within the incorporated areas.

²⁹ Oregon Department of Transportation, Bridge Design and Drafting Manual, (2012).

APPENDIX A

REPORTED NEEDS

**Table A-1
Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|--------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type* | Frequency** | Source | |
| Countywide | | Need better alternatives to OR 99W. | M | 1 | Stakeholder Interviews | |
| Countywide | | Not enough routes connecting communities. | M | 1 | Stakeholder Interviews | |
| Countywide | | Roadway shoulders need widening. | G | 3 | Stakeholder Interviews | |
| Countywide | | Roadways need widening. | G | 3 | Stakeholder Interviews | |
| Countywide | | Roadways need better maintenance. | Mnt | 2 | Stakeholder Interviews | |
| Countywide | | Lack of designated stop areas for buses. | O, T | 1 | Stakeholder Interviews | |
| Countywide | | Lack of pull-outs for buses. | O, T | 1 | Stakeholder Interviews | |
| Niederberger Rd. | 1 | Narrow roadway and two sharp horizontal curves. | G | 1 | RIAC | <ol style="list-style-type: none"> 1. Narrow roadway with horizontal and vertical curves. 2. Roadway width appears to be adequate to serve relatively low traffic volume. 3. Portion of roadway is eroding down hillside and is in need of repair. |
| Hendricks Rd./Abbey Rd./Kuehne Rd. | 2 | <ol style="list-style-type: none"> 1. Skewed intersection/poor sight distance from Abbey Rd. to Hendricks Rd. 2. Horizontal curve on Hendricks Rd. 3. Confusion about which movements have right-of-way. 4. High speed merge with yield only from NB Abbey Rd to NB Kuehne Rd. Also, angle of SB Kuehne Rd. to SB Abbey Rd. movement encourages high speeds and conflicts with high-speed NB Kuehne Rd. traffic. 5. Problem with connector between Hendricks Rd. and Abbey Rd. may be handled in same way as ODOT improvement at OR 18/Cruickshank Rd. | G, O | 3 | RIAC, Stakeholder Interviews, Road Maintenance Staff | <ol style="list-style-type: none"> 1. Sight distance does not appear to be an issue, although intersection angle at Abbey Rd./Kuehne Rd. is acute. 2. Remainder of reported needs confirmed through field survey. |
| Spring Hill Rd./Flett Rd. | 3 | <ol style="list-style-type: none"> 1. Horizontal curve. 2. Confusion for drivers on NB Spring Hill Rd. about whether to continue straight on Spring Hill Rd. or left on Flett Rd. | G, O | 2 | RIAC, Road Maintenance Staff | Through route is well-marked with signage. Striping could be improved to make this clearer, however. |
| Willamina Creek Rd./Tindle Creek Rd. | 4 | Horizontal curve | G | 1 | RIAC | <ol style="list-style-type: none"> 1. Trees, bushes, and hill in northwest quadrant of intersection limit sight distance on curve and at intersection. 2. At north intersection, sight distance to southeast is limited from 14.5' from edge of traveled way. 3. At south intersection, sight distance to northwest is limited to 275' from 14.5' from edge of traveled way. |

**Table A-1
Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|--------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type* | Frequency** | Source | |
| Bell Rd./Springbrook Rd. | 5 | 1. Horizontal curves on Bell Rd and Springbrook Rd. 2. Vertical curve on Bell Rd. 3. Limited sight distance from Springbrook Rd (both eastbound and westbound). 4. Utility pole near edge of pavement not visible to westbound vehicles on Bell Road. | G | 1 | RIAC | 1. Horizontal and vertical curves on Bell Rd., combined with skewed intersection angle and relatively high speeds, limit sight distance and create safety concern. 2. Speed reduction is not signed in advance of intersection on Bell Rd.; advance signage does, however, indicate atypical intersection geometry and need to slow down. |
| OR 233/Cruickshank Rd. | 6 | Improved safety. | S | 1 | RIAC | 1. No apparent sight distance or geometric issues. 2. May be confusing to drivers due to three conflict locations, although each location is stop controlled. |
| OR 154/Stringtown Rd. | 7 | 1. Atypical intersection configuration - separated right turn lanes (connectors) require drivers to turn their heads sharply to see on-coming traffic. 2. Problems with free northbound left-turn and free eastbound right-turn movements. | G, O | 3 | RIAC, Stakeholder Interviews, Road Maintenance Staff | 1. Free NB to WB movement may be confusing to drivers unfamiliar with right-of-way rules. 2. EB to SB movement requires drivers to turn their heads sharply to see SB traffic. 3. No apparent sight distance deficiencies. |
| OR 219/Mountain Top Rd. | 8 | Sight distance/skewed intersection – “can’t see over hump”. | G | 2 | RIAC, Road Maintenance Staff | 1. Mountain Top Rd. approaches OR 219 at well over 3% grade and at an awkward skew. 2. Sight distance from Mountain Top Rd. to north was measured as 325’. This is below standard of 335’. |
| Bell Rd./Zimri Rd. | 9 | 1. Sight distance problem for northbound traffic turning eastbound. 2. High speeds on Bell Rd. | G | 1 | RIAC | 1. Vertical curve west of Zimri Rd. restricts sight distance, which was measured as 300’ from northbound approach to west. Posted speed of 45 mph would require 500’ of sight distance. 2. Additional sight distance (up to 550’) would be available with removal of obstructions along south side of Bell Rd. (utility box, mail boxes, trees, etc.). |
| Bell Rd./Aspen Way | 10 | 1. Sight distance problem for northbound drivers looking westbound. 2. Vertical curve on Bell Rd. | G | 1 | RIAC | 1. Vertical curve on Bell Rd. west of Aspen Way limits sight distance from northbound approach of Aspen Way to west to 200-225’ compared to 500’ standard. 2. Aspen Way approaches Bell Rd. at grade of steeper than 3%. |
| OR 240/Worden Hill Rd. | 11 | Sight distance problem/skewed intersection. | G | 2 | RIAC, Road Maintenance Staff | 1. Worden Hill Rd. is a gravel road that provides access to several wineries. It approaches OR 240 at a grade of well over 3% and on a skew. Sight distance was measured as 325’ from northbound approach to east, which does not meet the standard of 610’. 2. House would have to be acquired to straighten intersection. |

**Table A-1
Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------|-------|-------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type* | Frequency** | Source | |
| Mineral Springs Rd./Gun Club Rd. | 12 | Sight distance problem on Gun Club Rd. due to horizontal curve on Mineral Springs Rd. | G | 1 | RIAC | <ol style="list-style-type: none"> 1. Sight distance from eastbound approach of Gun Club Rd. at Mineral Springs Rd. is 390' to north. 2. Sight distance from northbound approach of connector road is 390' to southeast and 690' to the north. 3. Advisory speed for curve on Mineral Springs Rd. is 35 mph. Based on this speed, sight distances from both eastbound approach of Gun Club Rd. and northbound approach of Gun Club Rd. connector road are adequate. 4. No control at intersection of connector road and Gun Club Rd. Need for stop or yield sign on southbound approach of connector road or westbound approach of Gun Club Rd. should be investigated. |
| North Valley Rd./Chehalem Dr. | 13 | Sight distance problem. | G | 2 | RIAC, Stakeholder Interviews | <ol style="list-style-type: none"> 1. Vertical curve on North Valley Rd. west of Chehalem Dr. restricts sight distance, which was measured as 325' from northbound approach of Chehalem Dr. to west and 350' from southbound approach to west. North Valley Rd. posted speed is 45 mph, requiring 500' of sight distance. 2. Adequate sight distance is available to east. |
| Schaad Rd./Parrett Mountain Rd. | 14 | Large vehicles have difficulty getting started on gravel approach of Schaad Rd. even in best conditions. Worse with snow and ice. | G | 1 | RIAC | <ol style="list-style-type: none"> 1. Schaad Rd. approaches Parrett Mountain Rd. at severe grade (over 10%) and there are horizontal and vertical curves on Parrett Mountain Rd. immediately south of intersection. While first 75' of Schaad Rd. is paved, it is gravel road beyond that. Sight distance on Schaad Rd. was measured as 100' to south, which is inadequate. 2. Speeds on both roadways are relatively low due to geometric constraints. |
| OR 99W between Lafayette and McMinnville | 15 | Roadway is in poor condition. | Mnt | 1 | Stakeholder Interviews | |
| Cunningham Ln. | 16 | Needs maintenance (poor condition). | Mnt | 1 | Stakeholder Interviews | |

**Table A-1
Yamhill County Transportation System Plan
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| Location | Reported Need | | | | | Comments |
|--------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type* | Frequency** | Source | |
| OR 154/Hopewell Rd. | 17 | Very dangerous – high speeds. | G | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> Intersection is located on horizontal curve which limits sight distance to east. Sight distance was measured as: <ul style="list-style-type: none"> Southbound approach - 385' to east and 550' to west. Northbound approach - 575' to east and > 610' to west. Trimming/removal of vegetation would help for all sight distance restrictions. Removal of trees would likely be required to improve sight distance to east in order to meet standards. |
| Turner's Creek Rd. | 18 | Roadway is in poor condition. | Mnt | 1 | Stakeholder Interviews | Roadway is severely rutted with potholes. |
| Moore's Valley Rd. | 19 | Roadway is in poor condition. | Mnt | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> In general, condition of road seems adequate for level of traffic observed. Near Yamhill, road has been newly paved and there are no major roadside obstructions. Further to west, quality of pavement is degraded and section of road is marked as being part of slow slide area. Beyond paved section, road turns to gravel. Gravel seems to be in good condition, with no rutting or washboarding. |
| OR 18/Lafayette Hwy. | 20 | Dangerous intersection. | S | 3 | Stakeholder Interviews | <ol style="list-style-type: none"> High speeds and high volume on OR 18 make turning onto or crossing highway difficult. No geometric or sight distance issues identified. |
| OR 99W/OR 18/McDougall Rd. | 21 | Dangerous intersection - safety and traffic operations problems. | S,O | 3 | Stakeholder Interviews, Road Maintenance Staff | <ol style="list-style-type: none"> Intersection configuration is not standard and may be confusing to drivers. High speeds and high traffic volumes on both OR 99W and OR 18 create safety concern. No geometric or sight distance problems identified. |
| OR 18 | 22 | Need four lanes all the way to coast. | M | 3 | Stakeholder Interviews | |
| OR 18 – S. Yamhill River Bridge (Sheridan) | 23 | Needs replacement/improvement – critical in case of disaster. | S | 1 | Stakeholder Interviews | Bridge is narrow. |
| OR 18/Gopher Valley Rd. | 24 | <ol style="list-style-type: none"> Poor sight distance from Gopher Valley Rd. High volume of traffic on OR 18 combined with merging traffic from adjacent business access. Poor geometrics. | G | 2 | Stakeholder Interviews, Road Maintenance Staff | Adequate intersection sight distance available in both directions from Gopher Valley Rd. (660' to east and west). |
| High Heaven Rd. | 25 | Roadway is in poor condition. | Mnt | 1 | Stakeholder Interviews | |

**Table A-1
Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type* | Frequency** | Source | |
| Peavine Rd. | 26 | Roadway is in poor condition. | Mnt | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> 1. Pavement is in good to excellent condition for first few miles of road (Old Sheridan Rd. to Bennett Rd.). Pavement markings are in good condition. 2. After this section, pavement quality drops and there is some patching; pavement is still smooth and in relatively good shape, however. Guardrail is in good condition. Pavement markings are a little worn, but still visible. 3. Pavement is more patched in section where slow slide has been gradually deforming face of slope and adjacent road. |
| OR 153 w/o S. Yamhill River Bridge | 27 | Sharp corner, steep shoulder, narrow road - feels unsafe. | G | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> 1. Area is mostly flat. There are four curves, two of which are 90-degree curves between OR 18 and SW Broadmead Rd. All curves are marked and have speed warning signs. 2. Bridge is as wide as road and has shoulders. |
| OR 18 | 28 | Needs turn lanes. | O | 1 | Stakeholder Interviews | |
| Delashmutt Ln. | 29 | Very dangerous due to lack of turn lanes. | O | 1 | Stakeholder Interviews | |
| Hidden Springs Rd./Fox Farm Rd. | 30 | Poor sight distance from Hidden Springs Rd. | G | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> 1. Horizontal and vertical curves along Fox Farm Rd. create poor sight distance from Hidden Springs Rd. Measured sight distance to east is 350', compared to sight distance requirement of 610'. Sight distance from stop bar to south is zero. 2. Trimming of vegetation would help, but probably would not eliminate sight distance need. |
| Sheridan/Willamina | 31 | Traffic signal is needed along OR 18 for safe access/crossing. | S | 1 | Stakeholder Interviews | Interchange already exists at OR 18/Ballston Rd. |
| OR 153/OR 221 | 32 | <ol style="list-style-type: none"> 1. Atypical intersection configuration – separated right turn lanes (connectors) require drivers to turn their heads sharply to see on-coming traffic. 2. Free movement from northbound OR 221 to westbound OR 153 is confusing to some drivers. | G, O | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> 1. Free NB to WB turn movement may be confusing. 2. No sight distance issues identified, although drivers must turn their heads sharply to see on-coming traffic because of sharp angle of connector road approaches at OR 153 and OR 221. |
| OR 18/Christensen Rd. | 33 | <ol style="list-style-type: none"> 1. Safety and traffic operations issues. 2. Conflicting movements from accesses at or near intersection. | O | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. This is visually busy intersection. 2. Sight distance does not appear to be problem. 3. Project to add westbound left turn lane on OR 18 is underway. Caleb Payne Rd. also to be cul-de-sac'd. |

**Table A-1
Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|-----------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type * | Frequency** | Source | |
| OR 18/Ash Rd. | 34 | Safety, geometric and traffic operations issues. | S | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Ash Rd. intersects OR 18 at skew; sight distance is not restricted, however. 2. High speeds and traffic volumes on OR 18 make turns onto and crossing of OR 18 difficult. |
| OR 18/Cruickshank Rd. | 35 | Safety and geometric problems remain even after reconstruction of intersection. Drivers don't realize that eastbound right-turn lane is not a through lane. | O | 1 | Road Maintenance Staff | Intersection has atypical channelization for WB OR 18 left-turns onto Cruickshank Rd. and NB Cruickshank Rd. left-turns onto WB OR 18. In addition, Loop Rd. intersects OR 18 about 300' west of Cruickshank Rd., further complicating intersection operations. |
| OR 240/Kuehne Rd. | 36 | Merge from Kuehne Rd. to OR 240 is confusing - drivers on Kuehne Rd. are required to stop, but only have to yield further south at Abbey Rd./Kuehne Rd. intersection. | O | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Intersection has three conflict points which are all stop-controlled. 2. Sight distance was measured and found to be adequate, except on connector road to SB Kuehne Rd., where sight distance to north/east is 240'. This is due to vegetation which could be trimmed. |
| Abbey Rd. between Oak Spring Farms Rd. and Millican Creek | 37 | Poor horizontal alignment. | G | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Several sharp horizontal curves - all are signed in advance and well-marked. 2. County will be adding shoulders in this area. |
| OR 18/OR 153/Muddy Valley Rd. | 38 | Sight distance problem to north. | G | 1 | Road Maintenance Staff | Measured sight distance is adequate in both directions from both OR 153 and Muddy Valley Rd. approaches. |
| OR 240/Stiller's Mill Rd. | 39 | Sharp turns for trucks using Stiller's Mill Rd. to bypass Yamhill. | G | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Stiller's Mill Rd. is roughly 27' wide, which could make turning difficult for trucks that use it to bypass downtown Yamhill. 2. Vertical curve on OR 240, combined with fixed objects (power pole, mailbox), limit sight distance from southbound approach of Stiller's Mill Rd. to west to roughly 200'. Without fixed objects, sight distance would be about 600', which would be adequate. |
| OR 47 | 40 | This is a main commuter route for bicyclists and walkers – needs improvement to accommodate them. | B, P | 1 | Stakeholder Interviews | |
| OR 99W/Old Parrett Mountain Rd., OR 99W/Corral Creek Rd., OR 99W/Quarry Rd. | 41 | <ol style="list-style-type: none"> 1. High speeds and multiple lanes of traffic on OR 99W make it very difficult to turn onto highway. 2. One or more of these intersections is or has been SPIS site. | O,S | 1 | Road Maintenance Staff | Reported needs were confirmed through field survey. |

**Table A-1
Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|---------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type* | Frequency** | Source | |
| OR 99W/Cherry Rd. | 42 | 1. Poor sight distance at Cherry Rd. 2. Cherry Rd. needs widening | G | 1 | Road Maintenance Staff | 1. From 14.5' behind stop bar, sight distance is restricted by medium-sized pine tree in southeast quadrant of intersection. This limits sight distance to south to approximately 200'. 2. Sight distance improves to over 1,000' from 10' from traveled way. 3. Removal of tree would improve sight distance. |
| OR 99W between Dundee and Newberg | 43 | 1. This is SPIS site. 2. Highway changes from two lanes to one lane in WB direction. | S | 1 | Road Maintenance Staff | There are multiple warning signs starting at 1,000' before merge. |
| OR 233/Starr Quarry Rd. | 44 | 1. This is SPIS site. 2. Sharp corner – drivers on SB OR 233 are confused about which way to go. Signs are now posted. | S | 1 | Road Maintenance Staff | 1. Confusing to drivers. 2. Signs indicate through movement is on OR 233. |
| OR 221/Wheatland Rd. | 45 | Multiple accidents – may be caused by driver inattention or rolling stops. | S | 1 | Road Maintenance Staff | Cause of safety problem not clear. No apparent sight distance or geometric needs. |
| OR 18/Harmony Rd. | 46 | 1. This is SPIS site. 2. Drivers don't realize OR 18 is approaching – disorienting/confusing. 3. There is flasher at OR 18. 4. There is high demand for traffic crossing OR 18 at this location. | S, O | 1 | Road Maintenance Staff | 1. Intersection is clearly visible from OR 18 and Harmony Rd. 2. There are "Intersection Ahead" and "Stop Ahead" warning signs on Harmony Rd. 3. Sight distance is adequate for all approaches at this intersection. |
| OR 99W/Durham Ln. | 47 | 1. This is SPIS site. 2. Durham Ln. is used as cutoff between OR 18 and OR 99W. There is turn lane on OR 18, but not on OR 99W. | S, O | 1 | Road Maintenance Staff | 1. Durham Ln. is newly paved and in good condition. 2. Intersection is easy to miss from SB OR 99W. |
| OR 47/Goodin Creek Rd. | 48 | Northbound turn lane may be needed on OR 47. | O | 1 | Road Maintenance Staff | 1. Traffic counts required to confirm this need. 2. Goodin Creek Rd. is gravel at OR 47. |
| OR 47/Cove Orchard Rd. (north intersection) | 49 | Poor sight distance, skewed intersection. | G | 1 | Road Maintenance Staff | 1. Cove Orchard Rd. intersects OR 47 at a skew. 2. Sight distance is adequate to north. 3. Sight distance to south is limited to 425' by horizontal and vertical curves on OR 47. Sight distance requirement for 55-mph roadway is 610'. 4. Speeds on OR 47 may be higher at this location. |

**Table A-1
Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|---------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type * | Frequency** | Source | |
| OR 47/Pekkola Rd. | 50 | Intersection on curve, possible poor sight distance. | G | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Intersection sight distance was measured from 14.5' from edge of traveled way. 2. Sight distance from westbound approach to south is restricted to 300' by vegetation and embankment. Sight distance to north is limited to 275' by vegetation and roadside obstructions (utility pole and fence). 3. Intersection sight distance from eastbound approach is not limited. |
| OR 47/OR 99W | 51 | Poor intersection configuration. | G | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Intersection configuration is somewhat confusing. 2. Possible improvement would be to separate movements and eliminate highway crossing movements: <ul style="list-style-type: none"> • Restrict access/egress to right-in/right-out only. • Provide SB left-turn movement as WB U-turn 300' to west. • Provide EB left-turn movement as EB U-turn 450' to east. |
| OR 99W Bridges w/o OR 47 | 52 | Bridges need to be replaced – very narrow. | G | 1 | Road Maintenance Staff | Reported need was confirmed through field survey. |
| OR 18/Red Prairie Rd. | 53 | Red Prairie Rd. has sharp curves to south of intersection and then is straight as drivers approach intersection. No flasher to indicate approach to OR 18 – confusing. | O | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Flashing beacons provided at intersection for all approaches. 2. Red Prairie Rd. approaches to highway are adequately signed with advance “stop ahead” signs. 3. There is adequate intersection and stopping sight distance. 4. There is a series of 90-degree curves south of intersection. These are marked with warning signs. |
| OR 47/Gun Club Rd. | 54 | Intersection on curve, poor visibility. | G | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Intersection is on curve. 2. Sight distance is adequate. 3. Intersection is easy to miss when traveling along OR 47. 4. An “intersection ahead” sign would increase driver awareness of upcoming intersection. |
| Westside Rd. (McMinnville to Yamhill and Carlton) | 55 | This is a main commuter route for bicyclists and pedestrians – needs improvement to accommodate them. | B, P | 1 | Stakeholder Interviews | |
| OR 99W, Madison St. (Lafayette)/Lafayette Hwy. | 56 | These roads need to be included in County’s bicycle plan. | B | 1 | Stakeholder Interviews | |
| OR 99W | 57 | Should accommodate all modes of transportation. | B, P | 1 | Stakeholder Interviews | |
| North Valley Rd. | 58 | Heavy use by pedestrians and bicyclists. | B, P | 1 | Stakeholder Interviews | |

**Table A-1
Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
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| | No. | Description | Type * | Frequency** | Source | |
| OR 233 | 59 | Bike improvements needed - could use better shoulders. | B | 1 | Stakeholder Interviews | |
| Old Sheridan Rd. | 60 | Has large volume of pedestrian traffic with no sidewalks. | P | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> Multiple pedestrians were observed walking along edge of road. There are locations where there is little or no shoulder. Some sections of road do not have marked fog line. There is also a narrow bridge that would limit potential for shoulder widening to accommodate pedestrians. Separated path and bridge would benefit pedestrians and bicyclists. This improvement has already been started at north end of Old Sheridan Rd. |
| OR 18B between Sheridan and Willamina | 61 | Sidewalk and shoulder should be extended between two towns. | B, P | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> Multiple pedestrians were observed walking along edge of road within or near both towns. There are several locations where shoulder is gravel and only a foot or so wide. Wider paved shoulders or multi-use path would benefit pedestrians and bicyclists. |
| Fox Farm Rd. | 62 | Poor conditions for bicyclists and pedestrians. | B, P | 1 | Stakeholder Interviews | |
| Worden Hill Rd. | 63 | Poor conditions for bicyclists and pedestrians. | B, P | 1 | Stakeholder Interviews | |
| Bald Peak Rd./Mountain Top Rd. | 64 | Safety concern due to sight distance problem, skewed intersection. | S | 1 | RIAC | |
| OR 99W/Riverbend Rd. | 65 | Potential safety problem for NB left turning vehicles – storage for only one vehicle if train is present. | S | 1 | County staff | Proposed county park to west will generate more traffic, worsening this problem. |

* A = Access, M = Mobility, G = Geometric, O = Traffic Operations, Mnt = Maintenance, S = Safety, B = Bike, P = Pedestrian, T = Transit

** Number of comments received.

Appendix C: Summary of Reported Needs

**Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|--------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type * | Frequency** | Source | |
| Countywide | | Need better alternatives to OR 99W. | M | 1 | Stakeholder Interviews | |
| Countywide | | Not enough routes connecting communities. | M | 1 | Stakeholder Interviews | |
| Countywide | | Roadway shoulders need widening. | G | 3 | Stakeholder Interviews | |
| Countywide | | Roadways need widening. | G | 3 | Stakeholder Interviews | |
| Countywide | | Roadways need better maintenance. | Mnt | 2 | Stakeholder Interviews | |
| Countywide | | Lack of designated stop areas for buses. | O, T | 1 | Stakeholder Interviews | |
| Countywide | | Lack of pull-outs for buses. | O, T | 1 | Stakeholder Interviews | |
| Niederberger Rd. | 1 | Narrow roadway and two sharp horizontal curves. | G | 1 | RIAC | <ol style="list-style-type: none"> 1. Narrow roadway with horizontal and vertical curves. 2. Roadway width appears to be adequate to serve relatively low traffic volume. 3. Portion of roadway is eroding down hillside and is in need of repair. |
| Hendricks Rd./Abbey Rd./Kuehne Rd. | 2 | <ol style="list-style-type: none"> 1. Skewed intersection/poor sight distance from Abbey Rd. to Hendricks Rd. 2. Horizontal curve on Hendricks Rd. 3. Confusion about which movements have right-of-way. 4. High speed merge with yield only from NB Abbey Rd to NB Kuehne Rd. Also, angle of SB Kuehne Rd. to SB Abbey Rd. movement encourages high speeds and conflicts with high-speed NB Kuehne Rd. traffic. 5. Problem with connector between Hendricks Rd. and Abbey Rd. may be handled in same way as ODOT improvement at OR 18/Cruickshank Rd. | G, O | 3 | RIAC, Stakeholder Interviews, Road Maintenance Staff | <ol style="list-style-type: none"> 1. Sight distance does not appear to be an issue, although intersection angle at Abbey Rd./Kuehne Rd. is acute. 2. Remainder of reported needs confirmed through field survey. |
| Spring Hill Rd./Flett Rd. | 3 | <ol style="list-style-type: none"> 1. Horizontal curve. 2. Confusion for drivers on NB Spring Hill Rd. about whether to continue straight on Spring Hill Rd. or left on Flett Rd. | G, O | 2 | RIAC, Road Maintenance Staff | Through route is well-marked with signage. Striping could be improved to make this clearer, however. |
| Willamina Creek Rd./Tindle Creek Rd. | 4 | Horizontal curve | G | 1 | RIAC | <ol style="list-style-type: none"> 1. Trees, bushes, and hill in northwest quadrant of intersection limit sight distance on curve and at intersection. 2. At north intersection, sight distance to southeast is limited from 14.5' from edge of traveled way. 3. At south intersection, sight distance to northwest is limited to 275' from 14.5' from edge of traveled way. |

**Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|--------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type * | Frequency** | Source | |
| Bell Rd./Springbrook Rd. | 5 | 1. Horizontal curves on Bell Rd and Springbrook Rd. 2. Vertical curve on Bell Rd. 3. Limited sight distance from Springbrook Rd (both eastbound and westbound). 4. Utility pole near edge of pavement not visible to westbound vehicles on Bell Road. | G | 1 | RIAC | 1. Horizontal and vertical curves on Bell Rd., combined with skewed intersection angle and relatively high speeds, limit sight distance and create safety concern. 2. Speed reduction is not signed in advance of intersection on Bell Rd.; advance signage does, however, indicate atypical intersection geometry and need to slow down. |
| OR 233/Cruickshank Rd. | 6 | Improved safety. | S | 1 | RIAC | 1. No apparent sight distance or geometric issues. 2. May be confusing to drivers due to three conflict locations, although each location is stop controlled. |
| OR 154/Stringtown Rd. | 7 | 1. Atypical intersection configuration - separated right turn lanes (connectors) require drivers to turn their heads sharply to see on-coming traffic. 2. Problems with free northbound left-turn and free eastbound right-turn movements. | G, O | 3 | RIAC, Stakeholder Interviews, Road Maintenance Staff | 1. Free NB to WB movement may be confusing to drivers unfamiliar with right-of-way rules. 2. EB to SB movement requires drivers to turn their heads sharply to see SB traffic. 3. No apparent sight distance deficiencies. |
| OR 219/Mountain Top Rd. | 8 | Sight distance/skewed intersection – “can’t see over hump”. | G | 2 | RIAC, Road Maintenance Staff | 1. Mountain Top Rd. approaches OR 219 at well over 3% grade and at an awkward skew. 2. Sight distance from Mountain Top Rd. to north was measured as 325’. This is below standard of 335’. |
| Bell Rd./Zimri Rd. | 9 | 1. Sight distance problem for northbound traffic turning eastbound. 2. High speeds on Bell Rd. | G | 1 | RIAC | 1. Vertical curve west of Zimri Rd. restricts sight distance, which was measured as 300’ from northbound approach to west. Posted speed of 45 mph would require 500’ of sight distance. 2. Additional sight distance (up to 550’) would be available with removal of obstructions along south side of Bell Rd. (utility box, mail boxes, trees, etc.). |
| Bell Rd./Aspen Way | 10 | 1. Sight distance problem for northbound drivers looking westbound. 2. Vertical curve on Bell Rd. | G | 1 | RIAC | 1. Vertical curve on Bell Rd. west of Aspen Way limits sight distance from northbound approach of Aspen Way to west to 200-225’ compared to 500’ standard. 2. Aspen Way approaches Bell Rd. at grade of steeper than 3%. |
| OR 240/Worden Hill Rd. | 11 | Sight distance problem/skewed intersection. | G | 2 | RIAC, Road Maintenance Staff | 1. Worden Hill Rd. is a gravel road that provides access to several wineries. It approaches OR 240 at a grade of well over 3% and on a skew. Sight distance was measured as 325’ from northbound approach to east, which does not meet the standard of 610’. 2. House would have to be acquired to straighten intersection. |

**Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------|--------|-------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type * | Frequency** | Source | |
| Mineral Springs Rd./Gun Club Rd. | 12 | Sight distance problem on Gun Club Rd. due to horizontal curve on Mineral Springs Rd. | G | 1 | RIAC | <ol style="list-style-type: none"> 1. Sight distance from eastbound approach of Gun Club Rd. at Mineral Springs Rd. is 390' to north. 2. Sight distance from northbound approach of connector road is 390' to southeast and 690' to the north. 3. Advisory speed for curve on Mineral Springs Rd. is 35 mph. Based on this speed, sight distances from both eastbound approach of Gun Club Rd. and northbound approach of Gun Club Rd. connector road are adequate. 4. No control at intersection of connector road and Gun Club Rd. Need for stop or yield sign on southbound approach of connector road or westbound approach of Gun Club Rd. should be investigated. |
| North Valley Rd./Chehalem Dr. | 13 | Sight distance problem. | G | 2 | RIAC, Stakeholder Interviews | <ol style="list-style-type: none"> 1. Vertical curve on North Valley Rd. west of Chehalem Dr. restricts sight distance, which was measured as 325' from northbound approach of Chehalem Dr. to west and 350' from southbound approach to west. North Valley Rd. posted speed is 45 mph, requiring 500' of sight distance. 2. Adequate sight distance is available to east. |
| Schaad Rd./Parrett Mountain Rd. | 14 | Large vehicles have difficulty getting started on gravel approach of Schaad Rd. even in best conditions. Worse with snow and ice. | G | 1 | RIAC | <ol style="list-style-type: none"> 1. Schaad Rd. approaches Parrett Mountain Rd. at severe grade (over 10%) and there are horizontal and vertical curves on Parrett Mountain Rd. immediately south of intersection. While first 75' of Schaad Rd. is paved, it is gravel road beyond that. Sight distance on Schaad Rd. was measured as 100' to south, which is inadequate. 2. Speeds on both roadways are relatively low due to geometric constraints. |
| OR 99W between Lafayette and McMinnville | 15 | Roadway is in poor condition. | Mnt | 1 | Stakeholder Interviews | |
| Cunningham Ln. | 16 | Needs maintenance (poor condition). | Mnt | 1 | Stakeholder Interviews | |

**Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|--------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type * | Frequency** | Source | |
| OR 154/Hopewell Rd. | 17 | Very dangerous – high speeds. | G | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> Intersection is located on horizontal curve which limits sight distance to east. Sight distance was measured as: <ul style="list-style-type: none"> Southbound approach - 385' to east and 550' to west. Northbound approach - 575' to east and > 610' to west. Trimming/removal of vegetation would help for all sight distance restrictions. Removal of trees would likely be required to improve sight distance to east in order to meet standards. |
| Turner's Creek Rd. | 18 | Roadway is in poor condition. | Mnt | 1 | Stakeholder Interviews | Roadway is severely rutted with potholes. |
| Moore's Valley Rd. | 19 | Roadway is in poor condition. | Mnt | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> In general, condition of road seems adequate for level of traffic observed. Near Yamhill, road has been newly paved and there are no major roadside obstructions. Further to west, quality of pavement is degraded and section of road is marked as being part of slow slide area. Beyond paved section, road turns to gravel. Gravel seems to be in good condition, with no rutting or washboarding. |
| OR 18/Lafayette Hwy. | 20 | Dangerous intersection. | S | 3 | Stakeholder Interviews | <ol style="list-style-type: none"> High speeds and high volume on OR 18 make turning onto or crossing highway difficult. No geometric or sight distance issues identified. |
| OR 99W/OR 18/McDougall Rd. | 21 | Dangerous intersection - safety and traffic operations problems. | S,O | 3 | Stakeholder Interviews, Road Maintenance Staff | <ol style="list-style-type: none"> Intersection configuration is not standard and may be confusing to drivers. High speeds and high traffic volumes on both OR 99W and OR 18 create safety concern. No geometric or sight distance problems identified. |
| OR 18 | 22 | Need four lanes all the way to coast. | M | 3 | Stakeholder Interviews | |
| OR 18 – S. Yamhill River Bridge (Sheridan) | 23 | Needs replacement/improvement – critical in case of disaster. | S | 1 | Stakeholder Interviews | Bridge is narrow. |
| OR 18/Gopher Valley Rd. | 24 | <ol style="list-style-type: none"> Poor sight distance from Gopher Valley Rd. High volume of traffic on OR 18 combined with merging traffic from adjacent business access. Poor geometrics. | G | 2 | Stakeholder Interviews, Road Maintenance Staff | Adequate intersection sight distance available in both directions from Gopher Valley Rd. (660' to east and west). |
| High Heaven Rd. | 25 | Roadway is in poor condition. | Mnt | 1 | Stakeholder Interviews | |

**Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type * | Frequency** | Source | |
| Peavine Rd. | 26 | Roadway is in poor condition. | Mnt | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> 1. Pavement is in good to excellent condition for first few miles of road (Old Sheridan Rd. to Bennett Rd.). Pavement markings are in good condition. 2. After this section, pavement quality drops and there is some patching; pavement is still smooth and in relatively good shape, however. Guardrail is in good condition. Pavement markings are a little worn, but still visible. 3. Pavement is more patched in section where slow slide has been gradually deforming face of slope and adjacent road. |
| OR 153 w/o S. Yamhill River Bridge | 27 | Sharp corner, steep shoulder, narrow road - feels unsafe. | G | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> 1. Area is mostly flat. There are four curves, two of which are 90-degree curves between OR 18 and SW Broadmead Rd. All curves are marked and have speed warning signs. 2. Bridge is as wide as road and has shoulders. |
| OR 18 | 28 | Needs turn lanes. | O | 1 | Stakeholder Interviews | |
| Delashmutt Ln. | 29 | Very dangerous due to lack of turn lanes. | O | 1 | Stakeholder Interviews | |
| Hidden Springs Rd./Fox Farm Rd. | 30 | Poor sight distance from Hidden Springs Rd. | G | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> 1. Horizontal and vertical curves along Fox Farm Rd. create poor sight distance from Hidden Springs Rd. Measured sight distance to east is 350', compared to sight distance requirement of 610'. Sight distance from stop bar to south is zero. 2. Trimming of vegetation would help, but probably would not eliminate sight distance need. |
| Sheridan/Willamina | 31 | Traffic signal is needed along OR 18 for safe access/crossing. | S | 1 | Stakeholder Interviews | Interchange already exists at OR 18/Ballston Rd. |
| OR 153/OR 221 | 32 | <ol style="list-style-type: none"> 1. Atypical intersection configuration – separated right turn lanes (connectors) require drivers to turn their heads sharply to see on-coming traffic. 2. Free movement from northbound OR 221 to westbound OR 153 is confusing to some drivers. | G, O | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> 1. Free NB to WB turn movement may be confusing. 2. No sight distance issues identified, although drivers must turn their heads sharply to see on-coming traffic because of sharp angle of connector road approaches at OR 153 and OR 221. |
| OR 18/Christensen Rd. | 33 | <ol style="list-style-type: none"> 1. Safety and traffic operations issues. 2. Conflicting movements from accesses at or near intersection. | O | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. This is visually busy intersection. 2. Sight distance does not appear to be problem. 3. Project to add westbound left turn lane on OR 18 is underway. Caleb Payne Rd. also to be cul-de-sac'd. |
| OR 18/Ash Rd. | 34 | Safety, geometric and traffic operations issues. | S | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Ash Rd. intersects OR 18 at skew; sight distance is not restricted, however. 2. High speeds and traffic volumes on OR 18 make turns onto and crossing of OR 18 difficult. |

**Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|-----------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type * | Frequency** | Source | |
| OR 18/Cruickshank Rd. | 35 | Safety and geometric problems remain even after reconstruction of intersection. Drivers don't realize that eastbound right-turn lane is not a through lane. | O | 1 | Road Maintenance Staff | Intersection has atypical channelization for WB OR 18 left-turns onto Cruickshank Rd. and NB Cruickshank Rd. left-turns onto WB OR 18. In addition, Loop Rd. intersects OR 18 about 300' west of Cruickshank Rd., further complicating intersection operations. |
| OR 240/Kuehne Rd. | 36 | Merge from Kuehne Rd. to OR 240 is confusing - drivers on Kuehne Rd. are required to stop, but only have to yield further south at Abbey Rd./Kuehne Rd. intersection. | O | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Intersection has three conflict points which are all stop-controlled. 2. Sight distance was measured and found to be adequate, except on connector road to SB Kuehne Rd., where sight distance to north/east is 240'. This is due to vegetation which could be trimmed. |
| Abbey Rd. between Oak Spring Farms Rd. and Millican Creek | 37 | Poor horizontal alignment. | G | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Several sharp horizontal curves - all are signed in advance and well-marked. 2. County will be adding shoulders in this area. |
| OR 18/OR 153/Muddy Valley Rd. | 38 | Sight distance problem to north. | G | 1 | Road Maintenance Staff | Measured sight distance is adequate in both directions from both OR 153 and Muddy Valley Rd. approaches. |
| OR 240/Stiller's Mill Rd. | 39 | Sharp turns for trucks using Stiller's Mill Rd. to bypass Yamhill. | G | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Stiller's Mill Rd. is roughly 27' wide, which could make turning difficult for trucks that use it to bypass downtown Yamhill. 2. Vertical curve on OR 240, combined with fixed objects (power pole, mailbox), limit sight distance from southbound approach of Stiller's Mill Rd. to west to roughly 200'. Without fixed objects, sight distance would be about 600', which would be adequate. |
| OR 47 | 40 | This is a main commuter route for bicyclists and walkers – needs improvement to accommodate them. | B, P | 1 | Stakeholder Interviews | |
| OR 99W/Old Parrett Mountain Rd., OR 99W/Corral Creek Rd., OR 99W/Quarry Rd. | 41 | <ol style="list-style-type: none"> 1. High speeds and multiple lanes of traffic on OR 99W make it very difficult to turn onto highway. 2. One or more of these intersections is or has been SPIS site. | O,S | 1 | Road Maintenance Staff | Reported needs were confirmed through field survey. |
| OR 99W/Cherry Rd. | 42 | <ol style="list-style-type: none"> 1. Poor sight distance at Cherry Rd. 2. Cherry Rd. needs widening | G | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. From 14.5' behind stop bar, sight distance is restricted by medium-sized pine tree in southeast quadrant of intersection. This limits sight distance to south to approximately 200'. 2. Sight distance improves to over 1,000' from 10' from traveled way. 3. Removal of tree would improve sight distance. |

**Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|---------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type * | Frequency** | Source | |
| OR 99W between Dundee and Newberg | 43 | 1. This is SPIS site. 2. Highway changes from two lanes to one lane in WB direction. | S | 1 | Road Maintenance Staff | There are multiple warning signs starting at 1,000' before merge. |
| OR 233/Starr Quarry Rd. | 44 | 1. This is SPIS site. 2. Sharp corner – drivers on SB OR 233 are confused about which way to go. Signs are now posted. | S | 1 | Road Maintenance Staff | 1. Confusing to drivers. 2. Signs indicate through movement is on OR 233. |
| OR 221/Wheatland Rd. | 45 | Multiple accidents – may be caused by driver inattention or rolling stops. | S | 1 | Road Maintenance Staff | Cause of safety problem not clear. No apparent sight distance or geometric needs. |
| OR 18/Harmony Rd. | 46 | 1. This is SPIS site. 2. Drivers don't realize OR 18 is approaching – disorienting/confusing. 3. There is flasher at OR 18. 4. There is high demand for traffic crossing OR 18 at this location. | S, O | 1 | Road Maintenance Staff | 1. Intersection is clearly visible from OR 18 and Harmony Rd. 2. There are "Intersection Ahead" and "Stop Ahead" warning signs on Harmony Rd. 3. Sight distance is adequate for all approaches at this intersection. |
| OR 99W/Durham Ln. | 47 | 1. This is SPIS site. 2. Durham Ln. is used as cutoff between OR 18 and OR 99W. There is turn lane on OR 18, but not on OR 99W. | S, O | 1 | Road Maintenance Staff | 1. Durham Ln. is newly paved and in good condition. 2. Intersection is easy to miss from SB OR 99W. |
| OR 47/Goodin Creek Rd. | 48 | Northbound turn lane may be needed on OR 47. | O | 1 | Road Maintenance Staff | 1. Traffic counts required to confirm this need. 2. Goodin Creek Rd. is gravel at OR 47. |
| OR 47/Cove Orchard Rd. (north intersection) | 49 | Poor sight distance, skewed intersection. | G | 1 | Road Maintenance Staff | 1. Cove Orchard Rd. intersects OR 47 at a skew. 2. Sight distance is adequate to north. 3. Sight distance to south is limited to 425' by horizontal and vertical curves on OR 47. Sight distance requirement for 55-mph roadway is 610'. 4. Speeds on OR 47 may be higher at this location. |
| OR 47/Pekkola Rd. | 50 | Intersection on curve, possible poor sight distance. | G | 1 | Road Maintenance Staff | 1. Intersection sight distance was measured from 14.5' from edge of traveled way. 2. Sight distance from westbound approach to south is restricted to 300' by vegetation and embankment. Sight distance to north is limited to 275' by vegetation and roadside obstructions (utility pole and fence). 3. Intersection sight distance from eastbound approach is not limited. |

**Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|---------------------------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type * | Frequency** | Source | |
| OR 47/OR 99W | 51 | Poor intersection configuration. | G | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Intersection configuration is somewhat confusing. 2. Possible improvement would be to separate movements and eliminate highway crossing movements: <ul style="list-style-type: none"> • Restrict access/egress to right-in/right-out only. • Provide SB left-turn movement as WB U-turn 300' to west. • Provide EB left-turn movement as EB U-turn 450' to east. |
| OR 99W Bridges w/o OR 47 | 52 | Bridges need to be replaced – very narrow. | G | 1 | Road Maintenance Staff | Reported need was confirmed through field survey. |
| OR 18/Red Prairie Rd. | 53 | Red Prairie Rd. has sharp curves to south of intersection and then is straight as drivers approach intersection. No flasher to indicate approach to OR 18 – confusing. | O | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Flashing beacons provided at intersection for all approaches. 2. Red Prairie Rd. approaches to highway are adequately signed with advance “stop ahead” signs. 3. There is adequate intersection and stopping sight distance. 4. There is a series of 90-degree curves south of intersection. These are marked with warning signs. |
| OR 47/Gun Club Rd. | 54 | Intersection on curve, poor visibility. | G | 1 | Road Maintenance Staff | <ol style="list-style-type: none"> 1. Intersection is on curve. 2. Sight distance is adequate. 3. Intersection is easy to miss when traveling along OR 47. 4. An “intersection ahead” sign would increase driver awareness of upcoming intersection. |
| Westside Rd. (McMinnville to Yamhill and Carlton) | 55 | This is a main commuter route for bicyclists and pedestrians – needs improvement to accommodate them. | B, P | 1 | Stakeholder Interviews | |
| OR 99W, Madison St. (Lafayette)/Lafayette Hwy. | 56 | These roads need to be included in County’s bicycle plan. | B | 1 | Stakeholder Interviews | |
| OR 99W | 57 | Should accommodate all modes of transportation. | B, P | 1 | Stakeholder Interviews | |
| North Valley Rd. | 58 | Heavy use by pedestrians and bicyclists. | B, P | 1 | Stakeholder Interviews | |
| OR 233 | 59 | Bike improvements needed - could use better shoulders. | B | 1 | Stakeholder Interviews | |

**Yamhill County Transportation System Plan
Reported Needs**

| Location | Reported Need | | | | | Comments |
|---------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------|--------|-------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | No. | Description | Type * | Frequency** | Source | |
| Old Sheridan Rd. | 60 | Has large volume of pedestrian traffic with no sidewalks. | P | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> Multiple pedestrians were observed walking along edge of road. There are locations where there is little or no shoulder. Some sections of road do not have marked fog line. There is also a narrow bridge that would limit potential for shoulder widening to accommodate pedestrians. Separated path and bridge would benefit pedestrians and bicyclists. This improvement has already been started at north end of Old Sheridan Rd. |
| OR 18B between Sheridan and Willamina | 61 | Sidewalk and shoulder should be extended between two towns. | B, P | 1 | Stakeholder Interviews | <ol style="list-style-type: none"> Multiple pedestrians were observed walking along edge of road within or near both towns. There are several locations where shoulder is gravel and only a foot or so wide. Wider paved shoulders or multi-use path would benefit pedestrians and bicyclists. |
| Fox Farm Rd. | 62 | Poor conditions for bicyclists and pedestrians. | B, P | 1 | Stakeholder Interviews | |
| Worden Hill Rd. | 63 | Poor conditions for bicyclists and pedestrians. | B, P | 1 | Stakeholder Interviews | |
| Bald Peak Rd./Mountain Top Rd. | 64 | Safety concern due to sight distance problem, skewed intersection. | S | 1 | RIAC | |
| OR 99W/Riverbend Rd. | 65 | Potential safety problem for NB left turning vehicles – storage for only one vehicle if train is present. | S | 1 | County staff | Proposed county park to west will generate more traffic, worsening this problem. |

* A = Access, M = Mobility, G = Geometric, O = Traffic Operations, Mnt = Maintenance, S = Safety, B = Bike, P = Pedestrian, T = Transit

** Number of comments received.

Appendix D: Future Transportation Conditions



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MEMORANDUM

TO: Bill Gille, Yamhill County
John Phelan, Yamhill County
Terry Cole, ODOT Region 2

FROM: Bob Schulte, PTP
Julie Sosnovske, P.E.

DATE: March 28, 2013

SUBJECT: YAMHILL COUNTY TRANSPORTATION SYSTEM PLAN **P# 11086-04**
Technical Memorandum #4 – Future Transportation Conditions

This memo documents the analysis of future transportation conditions for the Yamhill County Transportation System Plan. The findings of the analysis will be used in the development of proposed improvements to address transportation needs within the county. The analysis was conducted for the future No Build scenario.

A 2035 forecast year was selected, consistent with the Transportation Planning Rule requirement that a 20-year planning horizon from the time of plan adoption must be used. The 2035 time frame is also consistent with the forecast year used in the Newberg-Dundee Bypass planning.

ROADWAYS

TRAFFIC FORECASTS

State Highways

ODOT's Analysis Procedures Manual (APM)¹ describes three main traffic forecasting methods. The historical trends method uses previous traffic volumes to estimate future volumes, based

¹ Oregon Department of Transportation, Analysis Procedures Manual, (2011).



on the assumption that the future growth trend will be similar to the historical trend. It is applied primarily in rural or small urban areas where significant growth is not anticipated. Trendline volumes are obtained from ODOT's Future Volume Table.²

The cumulative analysis method is generally used to forecast volumes for small urban areas that are growing at a fairly uniform rate and for areas where only minor changes are expected to take place. This method layers future background traffic and traffic from expected future development on existing traffic volumes to obtain an overall future traffic volume estimate. Application of this method is generally limited to small urban areas or subareas of larger regions because of the complexity of tracking traffic changes across larger areas.

Urban travel demand models use projected land use and transportation network data to estimate future travel demand. The data is obtained from many different sources, including census data, state employment data, origin-destination surveys, household travel surveys, traffic counts and field surveys. Models are the most sophisticated tool for forecasting future traffic volumes, but the data needs and development costs are high, so they are typically available only in urban areas where travel patterns are more complex.

For the state highway traffic forecasts, the trendline method was selected, because there is no travel forecasting model available for the study area and traffic volumes were anticipated to increase at a low rate over the planning period. The cumulative analysis method was not considered because the future development level in the unincorporated portion of Yamhill County is expected to be low.

Future State Highway Traffic Volumes

ODOT's 2030 Future Volume Table contains, for each highway segment, the most recent traffic count for the 2008 – 2010 period, as well as an estimated 2030 volume. The 2030 volumes are obtained from a travel demand model if a local model is available or derived using regression analysis of historical count data at the location. Because a travel forecasting model is not available for the unincorporated part of Yamhill County, the 2030 volumes in the Future Volume Table for state highway segments within the study area are based on regression analysis.

² Oregon Department of Transportation, Technical and Analysis Tools website, <http://www.oregon.gov/ODOT/TD/TP/pages/tools.aspx>, accessed September 7, 2012.



The traffic counts and 2030 volumes were used to calculate the average annual traffic growth rates shown in Table 1.

Table 1 – Summary of Growth Rates for State Highway Segments

| State Highway | Range of Annual Growth Rates | Average |
|----------------|------------------------------|-------------|
| OR 47 | 1.43 – 2.16 | 1.68 |
| OR 22 | 0.95 – 1.81 | 1.26 |
| OR 18 | 1.75 – 2.77 | 2.51 |
| OR 99W | 0.37 – 2.54 | 1.52 |
| OR 219 | 2.65 – 3.70 | 3.36 |
| OR 221 | 1.86 – 2.84 | 2.31 |
| OR 240 | 1.22 – 2.89 | 2.13 |
| OR 153 | 0.81 – 2.39 | 1.72 |
| OR 154 | 2.02 – 2.58 | 2.46 |
| OR 233 | 1.78 – 1.94 | 1.87 |
| OR 18B | 1.63 – 1.74 | 1.70 |
| Average | | 1.94 |

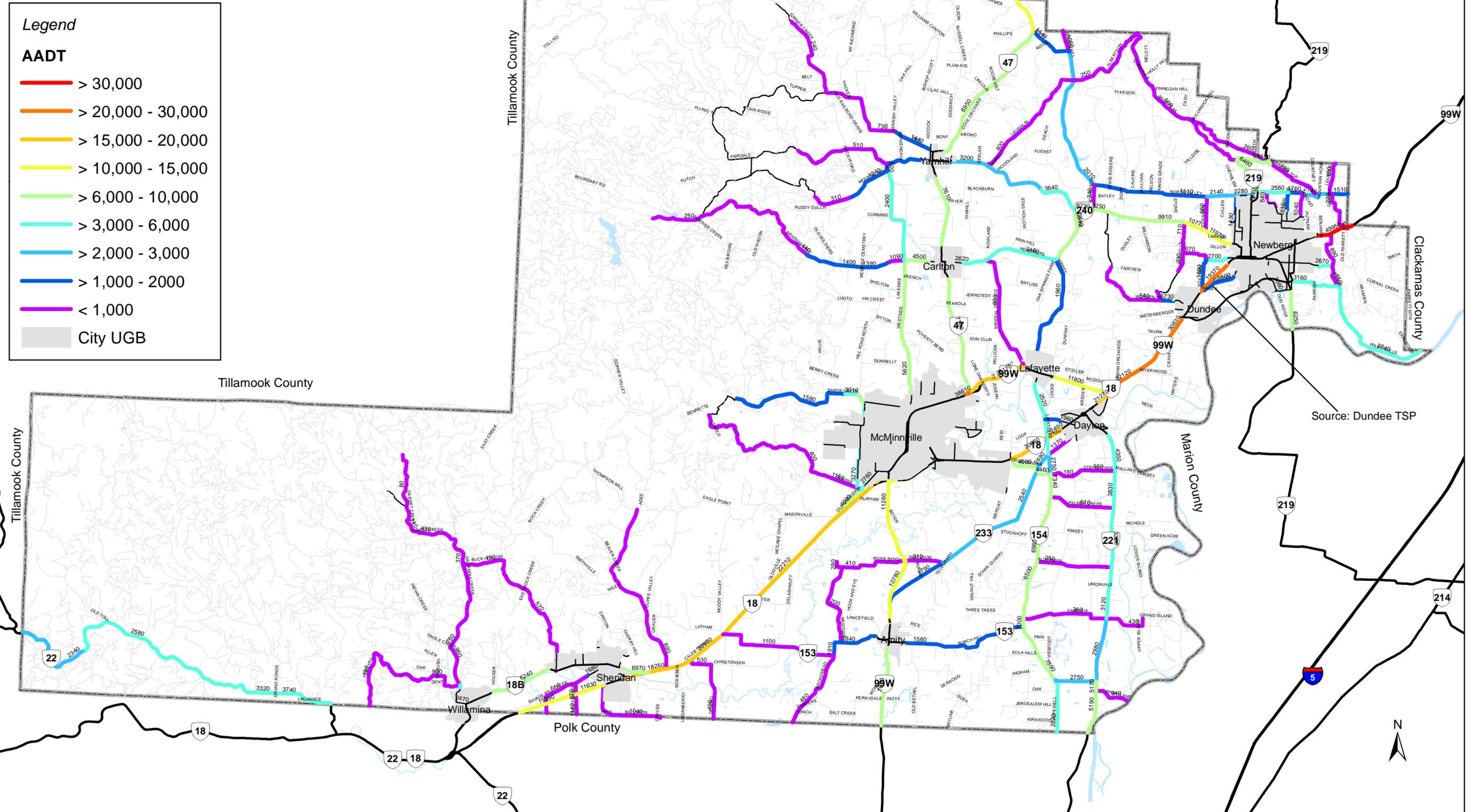
The segment growth rates were applied to the existing volumes to produce the forecasts of 2035 AADT and design hour volumes (DHVs) shown in Figures 1 and 2. For each highway, the segment volumes were compared for consistency to the volumes for the adjacent segments, and adjustments were made where necessary.

The only exception to this approach was for the OR 99W segments between Newberg and Dundee. To maintain consistency with the TSPs currently being developed for Newberg and Dundee, the future volumes for these segments were obtained from the TSP's.

As for the highway segments, the intersection volume forecasts were developed by applying the growth factors to the existing intersection approach volumes.

Yamhill County Transportation System Plan

Figure 1: Future Base Case (2035) AADT



Yamhill County Transportation System Plan

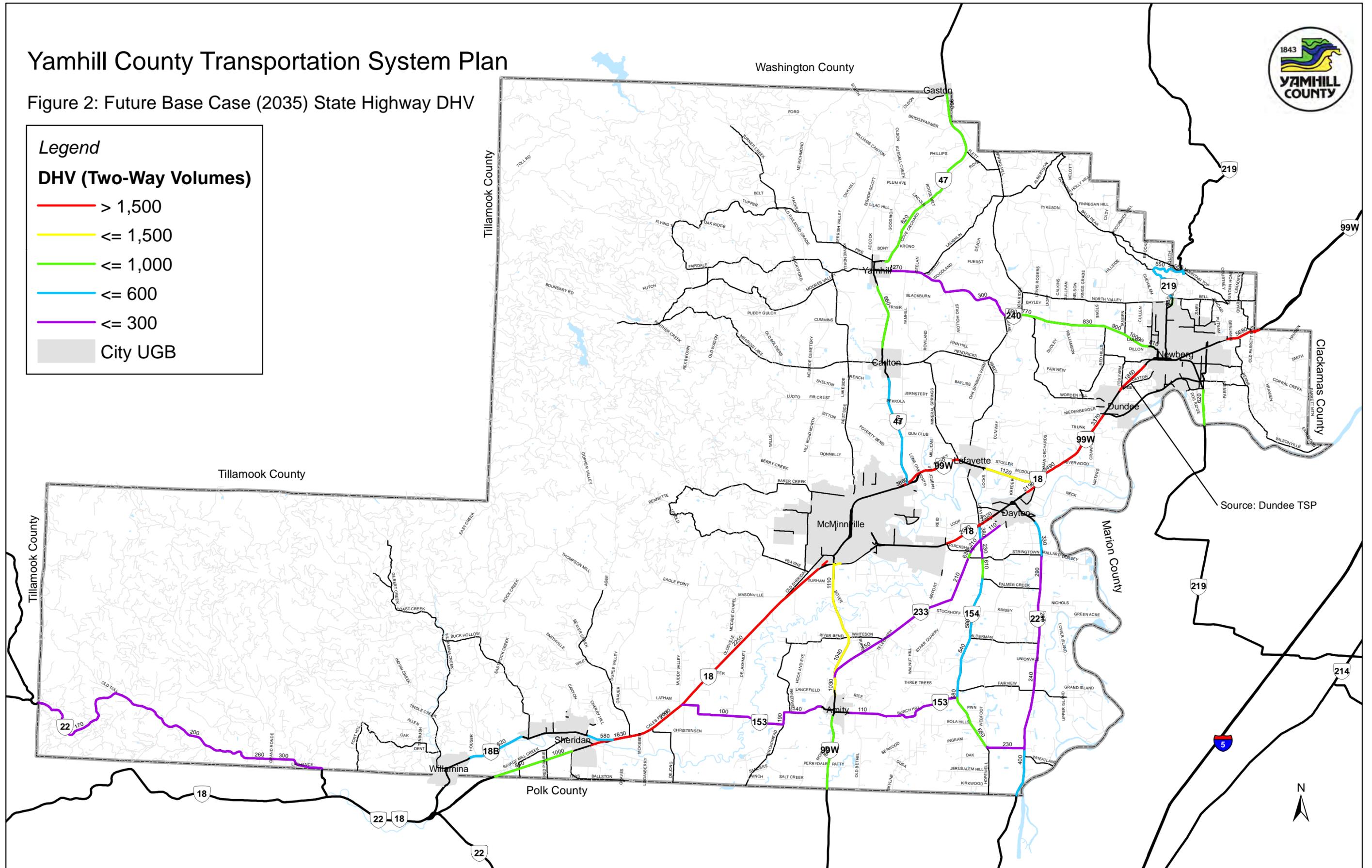
Figure 2: Future Base Case (2035) State Highway DHV



Legend

DHV (Two-Way Volumes)

- > 1,500
- <= 1,500
- <= 1,000
- <= 600
- <= 300
- City UGB



Source: Dundee TSP



County Roads

Similar to state highways, historical counts were used as the basis for forecasting county road traffic volumes. Limitations of the count data, however, required that a different approach be taken. The county's count database covers the period from 1999 to 2011. Twenty-four hour and 48-hour counts are collected for selected roads each year. Within the database, there are generally three to four counts available for each road. For a particular road, however, the interval between count years can vary, as can the count location. Because of this variation, trendline or average growth rates could not be calculated for county roads or individual county road segments.

Therefore, for county roads having counts for multiple years at the same location, average linear growth rates were calculated. The average growth rates were grouped across roads in different ways, such as by functional classification and volume range. For each group or category, such as major collectors, the average growth rates were averaged, with the resulting "average of the averages" used as an average growth factor in calculating future traffic volumes for all county road segments within that category.

This method did not produce average growth factors that were satisfactory, however. In some cases, there were too few count locations within a category or the locations were limited to a small number of roads, so that the average growth factor was not representative of all roads within the category. In other cases, there was significant variation between the average growth rates for the individual locations, which could also result in an average growth factor that was representative of the category.

Therefore, another method was applied, in which the average growth rates for all county roads were grouped by the beginning and ending count years. Groups were defined for all unique combinations of beginning and ending count years. For example, if the counts for a particular road location were for the years 2003 and 2009, an average linear growth rate was calculated for that period and added to the group of locations for the same period. Once this had been done for all count locations, an average growth rate was calculated for each group based on the rates for the individual locations.

The average growth rates for the groups were summarized in a table showing, for each group, the beginning and ending year, average growth rate, number of count locations in the group, and number of years covered by the time period. Various methods were considered for



developing an overall growth factor based on the average growth rates for each group. It was decided that this factor should be calculated as a weighted average of the group rates, with the number of count locations and number of years for the groups serving as the weights.

Only those groups with a minimum of five count locations and covering a period of at least five years were included in the calculation. Also, examination of the count data indicated that many of the counts conducted in 2008 were significantly lower than the counts for the other years, which was likely related to the economic downturn during that year. Therefore, groups with a beginning or ending count year of 2008 were not included in the calculation.

Using this approach, an overall annual growth factor of 0.61% was obtained. This factor was applied to the volumes from the existing conditions analysis to produce 2035 volume estimates for county roadways. The estimated 2035 AADT and P.M. peak hour volumes are shown in Figures 1 and 3.

Reasonableness Checks of County Traffic Forecasts

Because traffic volumes on county roads are influenced much more by local land uses than state highways, which carry a higher percentage of external traffic, the estimated county traffic growth factor was compared to information on future land use characteristics. This information was available from the following sources:

- Population forecasts from Portland State University
- Employment forecasts from the Oregon Department of Economic Analysis (OEA)
- Yamhill County Agri-Business Economic and Community Development Plan
- Yamhill County Planning Department

Portland State University's Population Research Center recently produced long-term population forecasts for the county, its ten incorporated cities, and the unincorporated portion of the county.³ The forecast horizon extended 24 years from 2011 to 2035, with forecasts produced in five-year intervals between 2010 and 2035. A summary of the forecasts is shown in Table 2.

³ Portland State University Population Research Center, Population Forecasts for Yamhill County, Its Cities and Unincorporated Area 2011-2035, (2012).

Yamhill County Transportation System Plan

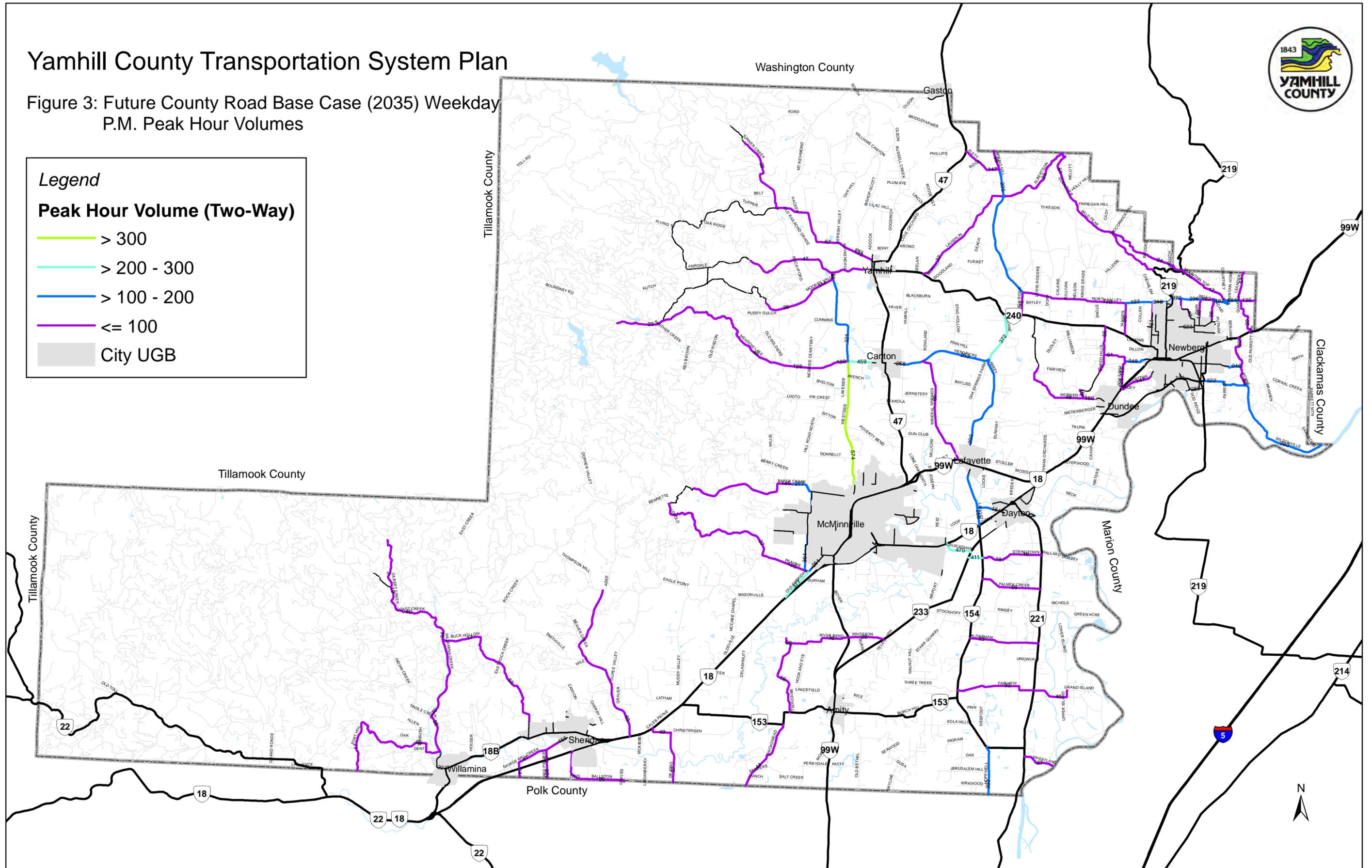
Figure 3: Future County Road Base Case (2035) Weekday P.M. Peak Hour Volumes



Legend

Peak Hour Volume (Two-Way)

- > 300
- > 200 - 300
- > 100 - 200
- <= 100
- City UGB





**Table 2 – Yamhill County Population Forecasts
Portland State University Population Research Center**

| Location | 2011 | 2035 | Growth | Relative Growth | Annual Growth | Annual Rate |
|------------------------------------|---------------|----------------|---------------|------------------------|----------------------|--------------------|
| McMinnville | 32,808 | 49,983 | 17,175 | 52.4% | 716 | 2.1% |
| Newberg | 22,730 | 38,490 | 15,760 | 69.3% | 657 | 2.8% |
| Amity | 1,635 | 2,097 | 462 | 28.3% | 19 | 1.1% |
| Carlton | 2,036 | 2,890 | 854 | 41.9% | 36 | 1.7% |
| Dayton | 2,731 | 3,765 | 1,034 | 37.9% | 43 | 1.5% |
| Dundee | 3,210 | 4,985 | 1,775 | 55.3% | 74 | 2.2% |
| Lafayette | 3,745 | 5,797 | 2,052 | 54.8% | 86 | 2.2% |
| Sheridan | 6,228 | 8,657 | 2,429 | 39.0% | 101 | 1.6% |
| Willamina (Yamhill County portion) | 1,180 | 1,241 | 61 | 5.2% | 3 | 0.2% |
| Yamhill | 1,037 | 1,403 | 366 | 35.3% | 15 | 1.4% |
| Unincorp. Yamhill County | 22,510 | 23,338 | 828 | 3.7% | 35 | 0.1% |
| Total County | 99,850 | 142,646 | 42,796 | 42.9% | 1,783 | 1.7% |

While the population of the county overall is expected to grow at about 1.7% annually, growth in the unincorporated area will be much slower, at closer to 0.1% annually. This is related to Oregon land use law, which restricts most development to areas within urban growth boundaries (UGBs). Population growth in the urban areas will, however, contribute to traffic growth on county roads in the rural areas.

The OEA is responsible for developing economic and employment forecasts for the State of Oregon. For this study, a request was made to the OEA for an employment forecast for Yamhill County. The OEA applied statewide growth projections to the current industry structure and historic growth to develop unofficial countywide employment forecasts by industry sector. The forecasts indicated that average annual employment growth will range between 1.16% to 2.01% for the various sectors between 2012 and 2035.



The Yamhill County Agri-Business Economic and Community Development Plan⁴ examined the current status and future of the county's agriculture and tourism industries. The study found that infrastructure is a limitation to growth in these industries, including the water, sewer, and transportation systems, with water being the biggest issue. OR 99W was mentioned as a concern for the transportation system. Changes in the current zoning will also be needed to allow development to occur, particularly in the rural areas. Specific growth forecasts were not included in the study.

Yamhill County Planning Department staff indicated that they do not expect significant growth in the rural/unincorporated portion of the county.⁵ Residential and employment development are generally restricted to urban areas. While there has been the development of wineries in the rural areas of the county and there is the capacity for this to continue, there is no way to predict how much of this activity will occur or where. Therefore, there are no specific future growth forecasts for the winery industry or similar land uses.

Based on the information from these sources, it appears that the future rate of development in the rural areas of the county will be slow. Population in the unincorporated area is expected to increase by only 0.1% annually. While the predicted total county employment growth rate is higher, most of this growth will occur within the cities. Infrastructure will also be a limitation to development in the rural areas. Therefore, the relatively low estimated traffic growth factor of 0.61% per year for rural county roads is consistent with this outlook.

NEEDS

Future roadway needs were examined in the areas of mobility, traffic operations, safety, and geometrics for the same facilities included in the existing conditions analysis.

Mobility Needs

Future mobility needs were identified by comparing volume-to-capacity (v/c) ratio estimates for roadway segments and intersections to the applicable targets. The targets for state highways

⁴ Yamhill County, Yamhill County Agri-Business Economic and Community Development Plan, (2009).

⁵ Conversation with Ken Friday, Yamhill County Planning Department on September 6, 2012.



within the study area are shown in Table 3. They reflect the revisions to the Oregon Highway Plan (OHP) Policy 1F⁶ that went into effect in January, 2012.

Table 3 – State Highway Mobility Targets (Volume-to-Capacity Ratio)

| Area/Highway Category | Segments and Signalized Intersections | Unsignalized Intersections* |
|-------------------------------------------------------------------------|---------------------------------------|-----------------------------|
| Outside Urban Growth Boundary/Rural Lands | | |
| Statewide Expressways (OR 99W, OR 18) | 0.70 | 0.75 |
| Regional Highways (OR 22, OR 47, OR 99W, OR 154) | 0.70 | 0.75 |
| District Highways (OR 18B, OR 153**, OR 219, OR 221, OR 233, OR 240) | 0.75 | 0.75 |

Source: Table 6 of the OHP Policy 1F Revisions, adopted by the Oregon Transportation Commission on December 21, 2011.

* For unsignalized intersections, the v/c ratio target applies to the controlled approaches.

** The portion of OR 153 south of OR 154 is a Regional Highway, for which the applicable mobility targets were used.

For county roadways, a v/c ratio target of 0.75 was applied for both roadway segments and intersections.⁷

Segment Mobility

Segment capacity analysis was conducted for all state highways and county roads classified as a major collector or higher.⁸ V/C ratios were calculated using the estimated 2035 DHVs for state highways and the 2035 average weekday peak hour volume estimates for county roads. The

⁶ Oregon Department of Transportation, OHP Policy 1F Revisions, (2011).

⁷ Based on discussions with county staff, it was decided that the state highway mobility targets should be used for county roadways. In this regard, it was assumed that county roadways are most similar to ODOT’s District level highways.

⁸ The analysis was not performed for roadways below this classification because it was assumed that the low volumes for these roadways would not result in mobility needs.



analysis was performed according to the methodology for two-lane rural highways outlined in the 2000 Highway Capacity Manual (HCM2000)⁹ and the APM.

Figure 4 shows the estimated v/c ratios for state highways and county roads within the study area. Figure 5 shows the segments not meeting the mobility standards. As can be seen, a majority of the segments operate within the mobility standard. State highway segments having v/c ratios exceeding the mobility target are:

- OR 99W east of Newberg
- OR 99W between Dundee and OR 18
- OR 99W between OR 47 and McMinnville
- OR 18 between Dayton and OR 154
- OR 18 between McMinnville and OR 153

Future mobility for state highway segments is summarized in Table 4. The percentage of

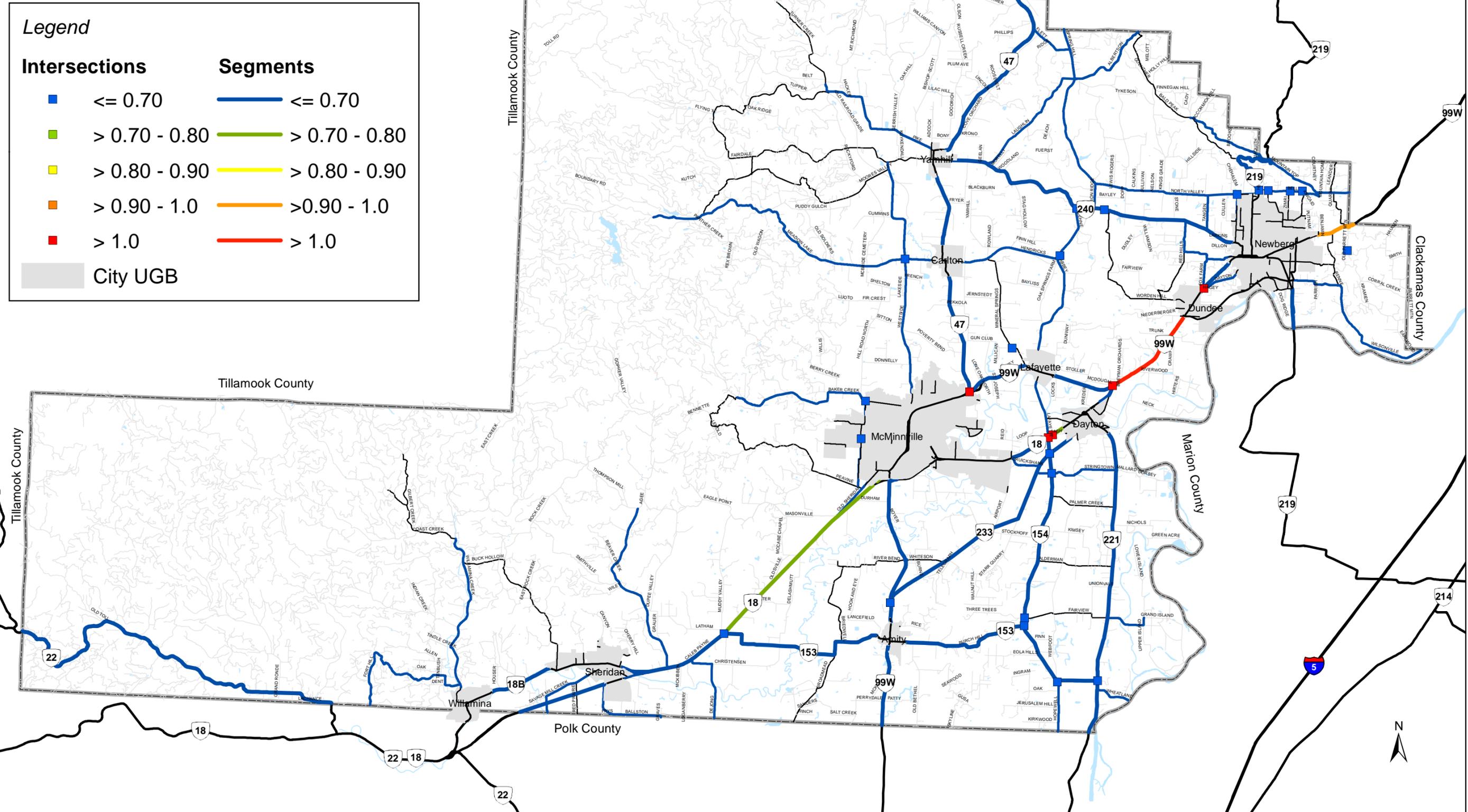
Table 4 – Future Mobility Summary - State Highway Segments

| State Highway | V/C Target | Total Miles | % Deficient |
|--------------------------|------------|--------------|-------------|
| OR 18 | 0.70 | 16.2 | 47% |
| OR 18B | 0.75 | 3.0 | 0% |
| OR 22 | 0.70 | 12.9 | 0% |
| OR 47 | 0.70 | 14.3 | 0% |
| OR 99W | 0.70 | 17.7 | 25% |
| OR 153 (west of OR 154) | 0.75 | 9.9 | 0% |
| OR 153 (south of OR 154) | 0.70 | 3.4 | 0% |
| OR 154 | 0.70 | 6.3 | 0% |
| OR 219 | 0.75 | 4.5 | 0% |
| OR 221 (north of OR 153) | 0.75 | 8.2 | 0% |
| OR 221 (south of OR 153) | 0.70 | 1.7 | 0% |
| OR 233 | 0.75 | 8.2 | 0% |
| OR 240 | 0.75 | 10.4 | 0% |
| Total | | 116.7 | 10% |

⁹ Transportation Research Board, Highway Capacity Manual, Special Report 209, (2000).

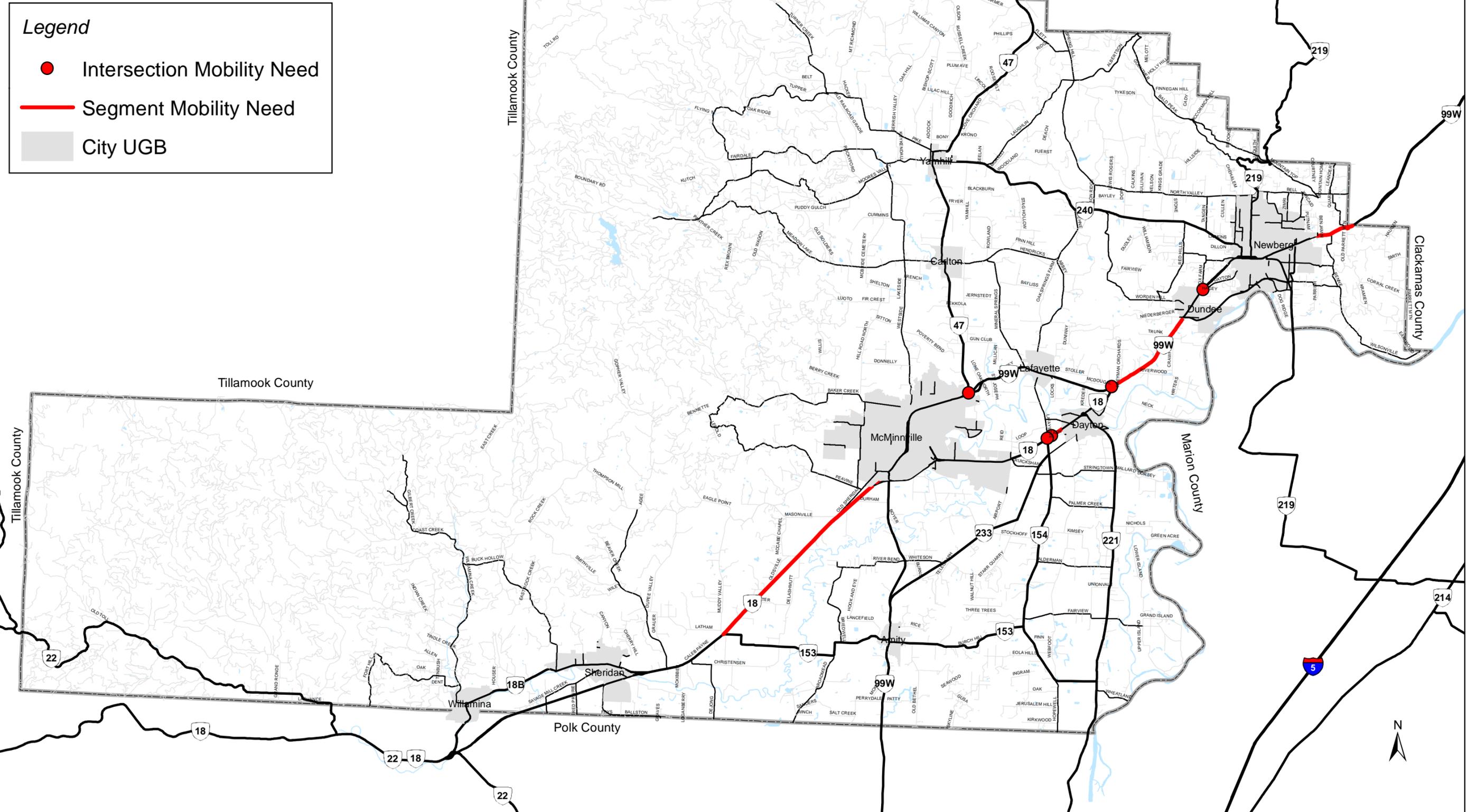
Yamhill County Transportation System Plan

Figure 4: Future Base Case (2035) V/C Ratios



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Figure 5: Future Base Case (2035) Mobility Needs





deficient miles along OR 18 increases from 0% for existing conditions to 47% for 2035, but decreases from 27% to 25% along OR 99W. The reason for the decrease along OR 99W is that the mobility target is met for the segments between Newberg and Dundee with the addition of the bypass. None of the remaining state highway segments have mobility deficiencies. Compared to existing conditions, this results in an increase in the overall percentage of deficient miles from 4% to 10%.

Consistent with the relatively low traffic growth for county roads, all county roadway segments will operate well within the mobility standard.

Intersection Mobility

Capacity analysis was conducted for all intersections of state highways, as well as the intersections with suspected level of service problems identified for the existing conditions analysis. The intersection v/c ratio estimates (see Figure 4) were developed using the HCM2000 methodology for unsignalized intersections.

As shown in Table 5 and Figure 5, all of the intersections meet the mobility targets, with the following exceptions:

- OR 18/ OR 99W/McDougall Rd.
- OR 18/Ash Rd.
- OR 18/Lafayette Hwy.
- OR 47/OR 99W
- OR 99W/Fox Farm Rd.

The reported intersection v/c ratio is for the worst movement, which is typically the left-turn movement from the minor road. Thus, while the v/c ratios for the worst movements at the four intersections listed above do not meet the target, the v/c ratios for the mainline (state highway) turning movements are within the target. The only exception to this is the intersection of OR 99W/McDougall Rd./OR 18, where the v/c ratio for the westbound left-turn movement on OR 99W is 0.82.



Table 5 – Future Mobility Summary – Intersections

| Intersection | Mobility Target (Major/Minor V/C Ratio) | V/C Ratio* (Major) | V/C Ratio* (Minor) |
|------------------------------------|-----------------------------------------------|--------------------------|--------------------------|
| NW Hill Rd./SW 2 nd St. | 0.75/0.75 | 0.35 | 0.05 |
| NW Hill Rd./NW Baker Creek Rd. | 0.75/0.75 | 0.31 | 0.13 |
| NW Westside Rd./NW Meadow Lake Rd. | 0.75/0.75 | 0.38 | 0.31 |
| NE Abbey Rd./NE Hendricks Rd. | 0.75/0.75 | 0.27 | 0.13 |
| OR 240/NE Kuehne Rd. | 0.75/0.75 | 0.45 | 0.31 |
| N. Aspen Way/NE Bell Rd. | 0.75/0.75 | 0.06 | 0.02 |
| OR 18/OR 99W/McDougall Rd. | 0.70/0.75 | 0.82 | >1.0 |
| OR 18/SE Ash Rd. | 0.70/0.75 | 0.01 | >1.0 |
| OR 18/SE Lafayette Hwy. | 0.70/0.70 | 0.54 | >1.0 |
| OR 154/OR 233 | 0.70/0.75 | 0.35 | 0.21 |
| OR 154/Stringtown Rd. | 0.70/0.75 | 0.21 | 0.30 |
| OR 153/Hopewell Rd. | 0.70/0.75 | 0.33 | 0.00 |
| OR 154/SE Fairview Rd. | 0.70/0.75 | 0.02 | 0.01 |
| OR 240/Worden Hill Rd. | 0.75/0.75 | 0.01 | 0.00 |
| Zimri Rd./Bell Rd. | 0.75/0.75 | 0.06 | 0.10 |
| Springbrook Rd./Bell Rd. | 0.75/0.75 | 0.04 | 0.03 |
| Parrett Mountain Rd./Schaad Rd. | 0.75/0.75 | 0.01 | 0.00 |
| Gun Club Rd./Mineral Springs Rd. | 0.75/0.75 | 0.04 | 0.01 |
| Chehalem Dr./North Valley Rd. | 0.75/0.75 | 0.10 | 0.01 |
| OR 18/OR 153 | 0.70/0.75 | 0.58 | 0.26 |
| OR 99W/OR 233 | 0.70/0.75 | 0.38 | 0.54 |
| OR 47/OR 99W | 0.70/0.70 | 0.44 | >1.0 |
| OR 154/OR 153 | 0.70/0.70 | 0.26 | 0.15 |
| OR 221/OR 153 | 0.75/0.75 | 0.18 | 0.10 |
| OR 99W/Fox Farm Rd. | 0.70/0.75 | 0.66 | >1.0 |

* V/C ratio for the worst movement is reported. Bold/shaded cells indicate intersections not meeting the mobility target.

Traffic Operations Needs

As for existing conditions, turn lane needs were determined for unsignalized intersections using the turn lane criteria contained in the APM.¹⁰ The volume criterion for left-turn lanes is based on the hourly opposing plus advancing volume per lane, hourly turning volume, and posted speed limit at an intersection. Thus, as the opposing plus advancing volume and/or turning volume increases, or as the speed limit increases, the volume threshold at which a turn lane should be considered decreases. The volume criterion for right-turn lanes is based on the hourly approaching volume in the outside lane (through plus right-turn volume), hourly turning volume, and speed limit. As any of these factors increases, the volume threshold for a right-turn lane decreases. Table 6 shows the intersections where future left-turn lane needs were found. The left-turn volume is listed along with the threshold for which a turn lane would be warranted based on the advancing/opposing traffic volumes. Table 7 shows similar data for intersections where future right-turn lane needs were found.

Table 6 – Future Left-Turn Lane Needs

| Roadway | Intersection | Direction | Left-Turn Volume | Left-Turn Volume Threshold |
|------------------------|---------------------|------------------|-------------------------|-----------------------------------|
| State Highways | | | | |
| OR 240 | Kuehne Rd. | WB | 614 | 11 |
| OR 219 | Bell Rd. | NB | 40 | 13 |
| OR 219 | Bell Rd. | SB | 50 | 12 |
| OR 154 | Stringtown Rd. | NB | 248 | 13 |
| OR 154 | Fairview Rd. | NB | 19 | 10 |
| OR 154 | Fairview Rd. | SB | 10 | 10 |
| OR 99W | OR 47 | EB | 334 | 10 |
| OR 154 | OR 153 | NB | 49 | 10 |
| OR 221 | OR 153 | NB | 123 | 17 |
| OR 99W | Fox Farm Rd. | NB | 105 | 46 |
| County Roadways | | | | |
| Hill Rd. | 2 nd St. | SB | 63 | 23 |
| Hill Rd. | Baker Creek Rd. | WB | 172 | 19 |
| Kuehne Rd. | Hendricks Rd. | SB | 241 | 15 |

¹⁰ Oregon Department of Transportation, Analysis Procedures Manual, (2011).



Table 7 – Future Right-Turn Lane Needs

| Roadway | Intersection | Direction | Right Turn Volume | Right-Turn Volume Threshold |
|-----------------------|--------------|-----------|-------------------|-----------------------------|
| State Highways | | | | |
| OR 18 | Ash Rd. | EB | 83 | 0 |
| OR 18 | OR 154 | NB | 95 | 87 |
| OR 18 | OR 154 | WB | 22 | 0 |
| OR 18 | OR 154 | EB | 18 | 0 |
| OR 153 | Hopewell Rd. | EB | 252 | 28 |
| OR 18 | OR 153 | NB | 20 | 20 |
| OR 18 | OR 153 | SB | 31 | 20 |
| OR 99W | OR 47 | WB | 49 | 20 |
| OR 99W | Fox Farm Rd. | SB | 195 | 85 |
| OR 99W | Fox Farm Rd. | EB | 60 | 0 |

Table 8 summarizes intersections where either a left-turn or a right-turn lane would be warranted based on future volumes and posted speeds. The results of the analysis are shown in Figure 6. A majority of the future turn lane needs are on state highways.

Table 8 – Future Turn Lane Need Summary

| Intersection | Northbound | | Southbound | | Eastbound | | Westbound | |
|-----------------------|------------|----|------------|----|-----------|----|-----------|----|
| | LT | RT | LT | RT | LT | RT | LT | RT |
| State Highways | | | | | | | | |
| OR 240/Kuehne Rd. | | | | | | | √ | |
| OR 219/Bell Rd. | √ | | √ | | | | | |
| OR 18/Ash Rd. | | | | | | √ | | |
| OR 154/Stringtown Rd. | √ | | | | | √ | | |
| OR 153/Hopewell Rd. | | | | | | √ | | |
| OR 99W/OR 47 | | | | | √ | | | √ |
| OR 154/OR 153 | √ | | | | | | | |
| OR 221/OR 153 | √ | | | | | √ | | |
| OR 154/Fairview Rd. | √ | | √ | | | | | |
| OR 18/OR 154 | | √ | | | | √ | | √ |



| Intersection | Northbound | | Southbound | | Eastbound | | Westbound | |
|------------------------------|------------|----|------------|----|-----------|----|-----------|----|
| | LT | RT | LT | RT | LT | RT | LT | RT |
| OR 18/OR 153 | | √ | | √ | | | | |
| OR 99W/Fox Farm Rd. | √ | | | √ | | √ | | |
| County Roadways | | | | | | | | |
| Kuehne Rd./Hendricks Rd. | | | √ | | | | | |
| Hill Rd./2 nd St. | | | √ | | | | | |
| Hill Rd./Baker Creek Rd. | | | | | | | √ | |

Safety Needs

The Highway Safety Manual (HSM)¹¹ contains Crash Modification Factors (CMFs) which can be used to estimate future crash rates. The CMFs are used to adjust estimates of average crash frequency for the effects of specific geometric design and traffic control features for local sites. Some of the CMFs are based on traffic volume. Therefore, to estimate the effect of higher future traffic volumes on crash rates, the CMFs can be applied using the following procedure:

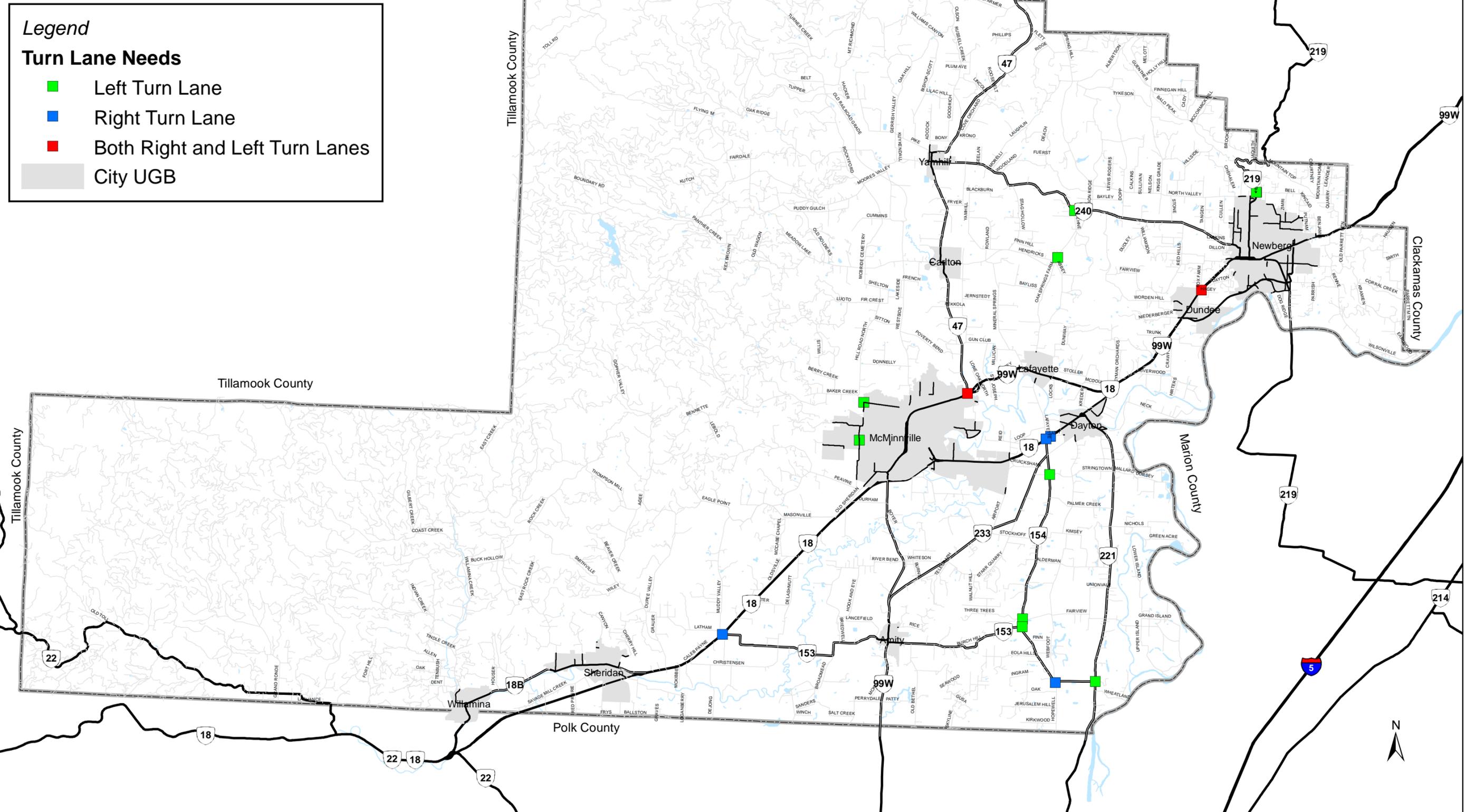
- Calculate CMF values for the base year and future year, using existing and future traffic volumes for the CMFs that are volume-based.
- Calculate composite CMF values for the base and future years by multiplying the individual CMF values.
- Estimate future crash rate by multiplying the ratio of the future year composite CMF to the base year composite CMF by the base year crash rate. Any resulting difference between the base year and future year crash rates is due to the volume differences.

CMFs are available for both roadway segments and intersections.

¹¹ American Association of State Highway and Transportation Officials, Highway Safety Manual, (2010).

Yamhill County Transportation System Plan

Figure 6: Future Base Case (2035) Turn Lane Needs





Use of this procedure to estimate future crash rates for the seven locations examined in the existing conditions analysis was investigated. These locations are:

- Abbey Rd./Hendricks Rd. intersection
- Stringtown Rd. between OR 154 and OR 221
- Worden Hill Rd. from OR 240 to the beginning of pavement
- OR 99W/OR 18/McDougall Rd. intersection
- OR 18 between OR 154/Lafayette Hwy. and Ash Rd.
- OR 18/SW Red Prairie Rd. intersection
- OR 99W/OR 47 intersection

For the roadway segments, the volume-based CMFs for which data were available were the lane width CMF and shoulder width CMF. The CMF values for both of these geometric features do not vary below 400 vehicles per day (vpd) or above 2,000 vpd. The existing and future volumes for the Stringtown Rd. segment between OR 154 and OR 221 are below 400 vpd. Therefore, there would be no difference between the base year and future year composite CMFs for this segment. The ratio of the composite CMFs would be 1.0, with no change in the estimated future crash rate compared to the base year rate based on these factors. Similarly for the OR 18 segment between OR 154/Lafayette Hwy. and Ash Rd., the existing and future year volumes are above 2,000 vpd, so that the ratio of the composite CMFs would be 1.0, with no change in the estimated future crash rate.

The segment on Worden Hill Rd. between OR 240 and the beginning of pavement is gravel, so there are no defined lane or shoulder widths. Therefore, the lane and shoulder width CMFs could not be applied for this segment.

There are no volume-based CMFs for intersections, so the future crash rate estimation procedure could not be applied for the intersections.

Geometric Needs

Future geometric needs for state highways may differ from existing needs depending on the level of future traffic volumes. Such a difference may occur where an existing geometric feature is adequate for lower volumes, but falls below the standard for higher future volumes.



Potential volume-based differences for geometrics were investigated for lane and shoulder widths. Based on the standards in the Highway Design Manual,¹² future lane width needs were identified at the following locations where there are no existing needs:

- OR 219 – Yamhill County line to North Valley Rd. (M.P. 15.61 – M.P. 17.92)
- OR 153 – east of OR 18 to west of Deer Creek Flats Rd. (M.P. 0.0 – M.P. 0.76)
- OR 153 – east of Deer Creek Flats Rd. to Yamhill River (M.P. 0.97 – M.P. 2.84)
- OR 153 – Yamhill River to Broadmead Rd. (M.P. 3.35 – M.P. 3.98)

The lane width need would apply to both sides of the highway at each of these locations.

There would no differences in shoulder width needs along state highways due to the higher future volumes.

The lane width and shoulder width standards for county roads are based strictly on functional classification and do not consider traffic volume. Therefore, future lane and shoulder width needs for county roads would be the same as existing needs.

Figure 7 shows the future geometric needs on both state highways and county roads.

BICYCLE AND PEDESTRIAN

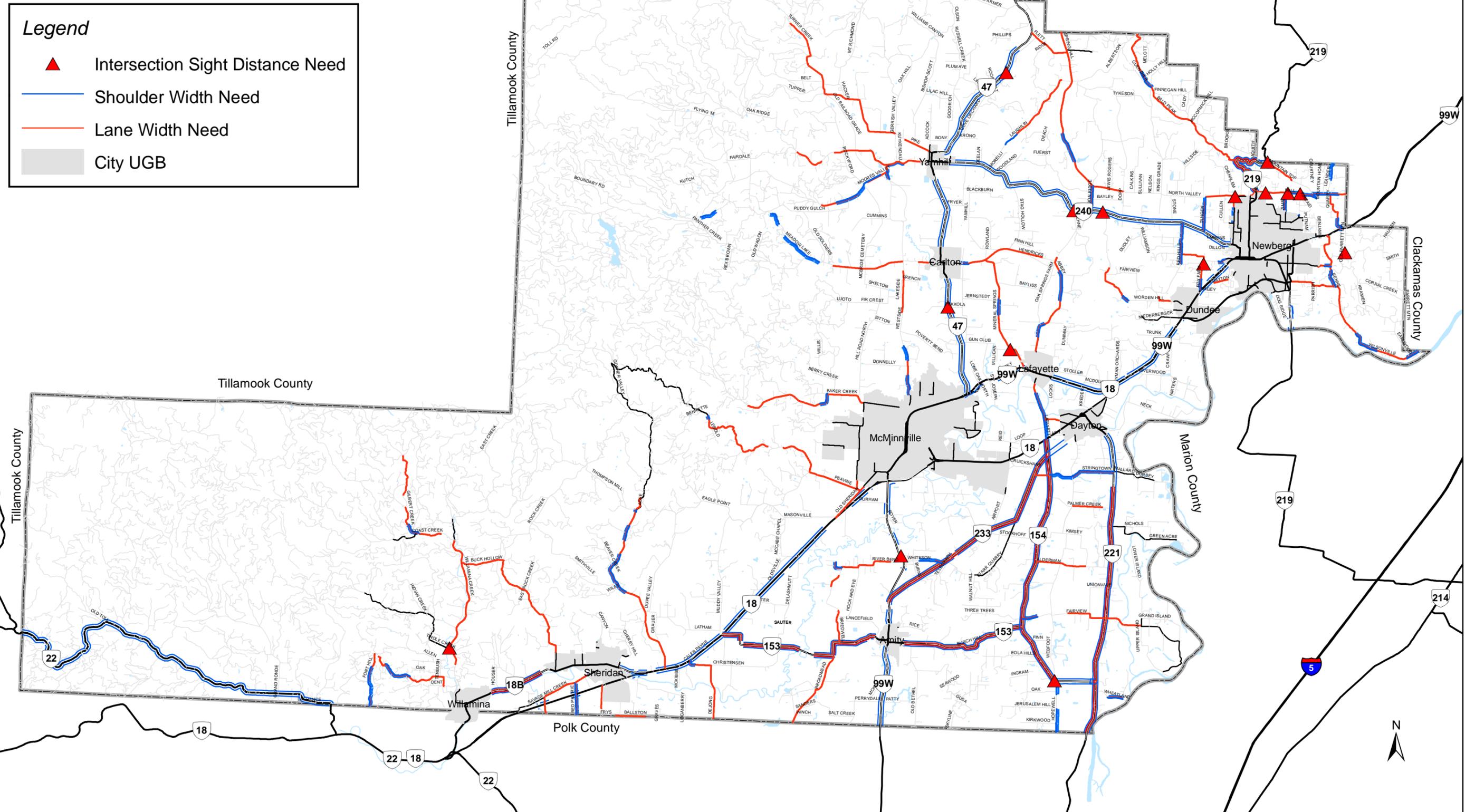
Because traffic volumes will remain low on most county roads and some state highways, shared roadways will continue to be adequate for bicycle use along these facilities. For roadways with existing bicycle needs, the level of need will become higher as traffic volumes increase. These are roadways with higher bicycle and vehicle volumes and:

- The shoulder width standard is not met; or
- The shoulder is not paved.

¹² Oregon Department of Transportation, [Highway Design Manual](#), (2003).

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Figure 7: Future Base Case (2035) Geometric Needs





The locations identified in the existing conditions analysis meeting these criteria were:

- OR 47
- OR 99W
- OR 154/Lafayette Hwy.
- Westside Rd.
- Old Sheridan Rd.

Due to higher traffic volumes, the level of need will also be higher at those locations with pedestrian needs identified in the existing conditions analysis. These are largely the same as the locations with bicycle needs, in addition to OR 18B between Sheridan and Willamina.

YAMHELAS WESTSIDER TRAIL

Yamhill County Parks Department has been working with the Friends of Yamhelas Westsider Trail, citizens, and local businesses on a proposal to acquire the abandoned Union Pacific Railroad right-of-way for the Yamhelas Westsider Trail. The trail will eventually run from OR 99W through the cities of Carlton, Yamhill, and Gaston, linking with the state highway bicycle trail to Forest Grove and Hagg Lake (see Figure 8). Access will be available from intersecting county roads and nearby OR 47.

The trail will connect urban neighborhoods to regional open spaces, serving pedestrians, joggers, equestrians and bicyclists. The Friends of Yamhelas Westsider Trail has been awarded \$1.4 million in grant money by the Oregon Transportation Commission – enough to pay for almost 13.5 miles of the 17 miles of Union Pacific right-of-way needed.¹³

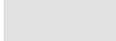
¹³ www.yamhelaswestsidetrail.org website, accessed July 24, 2013.

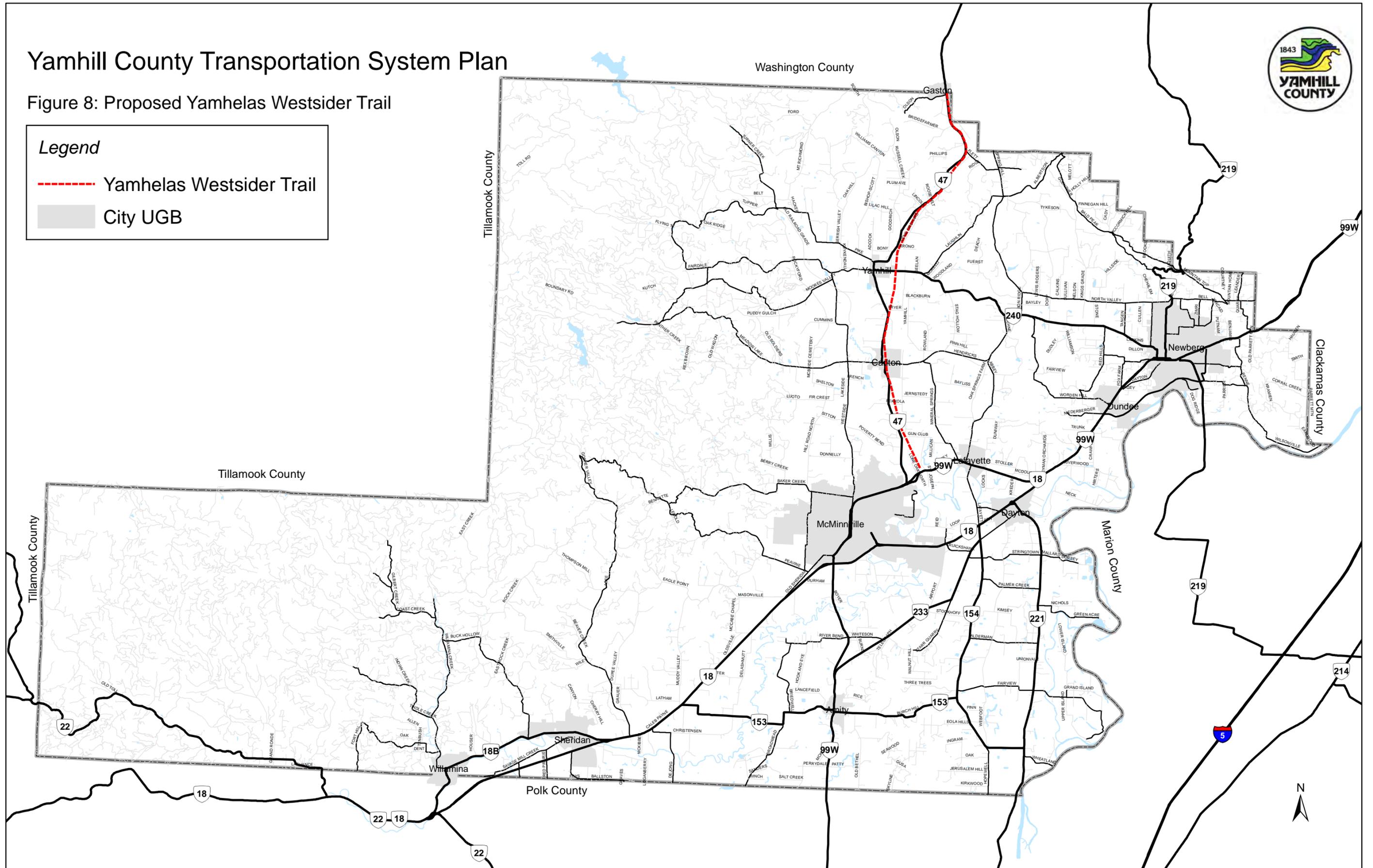
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Figure 8: Proposed Yamhelas Westsider Trail



Legend

-  Yamhelas Westsider Trail
-  City UGB





CORRIDOR HEALTH

The Corridor Health Tool was used to calculate a future corridor health score for each corridor segment by applying the same set of factors, weights, and formulas used for the existing conditions analysis. The factors correspond to the same areas of need described in the previous sections, i.e., mobility, traffic operations, safety, geometrics, and bicycle and pedestrian facilities.

The sum of the weights for the factors is equal to 100. The formulas were set up to produce scores for each factor ranging from zero to one, with a score of one representing “perfect” health and a score of zero indicating very poor conditions or performance. The weights and formulas for each factor are shown in Table 9.

Table 9 – Corridor Health Score Weights and Formulas

| Factor | Weight | Scoring Formula |
|-------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Safety | 35 | =0.5/X if $X \geq 0.5$; else 1 Where: $X = 0.7 * (\text{Fatal + Injury Crash Rate for Segment} / \text{Average for Facility Category}) + 0.3 * (\text{Total Crash Rate for Segment} / \text{Average for Facility Category})$ |
| Traffic Operations | 15 | = $1 - \min(\text{Turn Lane Need}, \text{Max. Turn Lane Need}) / \text{Max. Turn Lane Need}^*$ |
| Geometrics | 20 | = $0.2 * \min(\text{Lane Width} / \text{Lane Width Standard}, 1) + 0.8 * \min(\text{Shoulder Width} / \text{Shoulder Width Standard}, 1)$ |
| Bicycle/Pedestrian Facilities | 15 | =(% of Segment with Adequate Bicycle/Pedestrian Facilities)/100** |
| Mobility | 15 | = $\min((1 - VC) / (1 - VC \text{ Standard}), 1)$ |

* Turn lane need is the number of turn lanes (left-turn and right-turn) needed per segment. Since segment endpoints were defined by intersections with minor collector roadways or above, a value of four was assumed for the maximum turn lane need (i.e., the need for a left-turn lane and right-turn lane at each end of the segment).

** Bicycle/pedestrian facilities were considered to be adequate if the shoulder width standard was met.



The factor scores were multiplied by the weights to produce an overall corridor health score for each segment ranging between 0 and 100, with 100 representing the best score attainable and 0 being the worst score.

Results

The segments were assigned to good, fair, and poor categories of corridor health based on the scores. The scores corresponding to each category are:

- Good – 75 – 100
- Fair – 50 – 74
- Poor - < 50

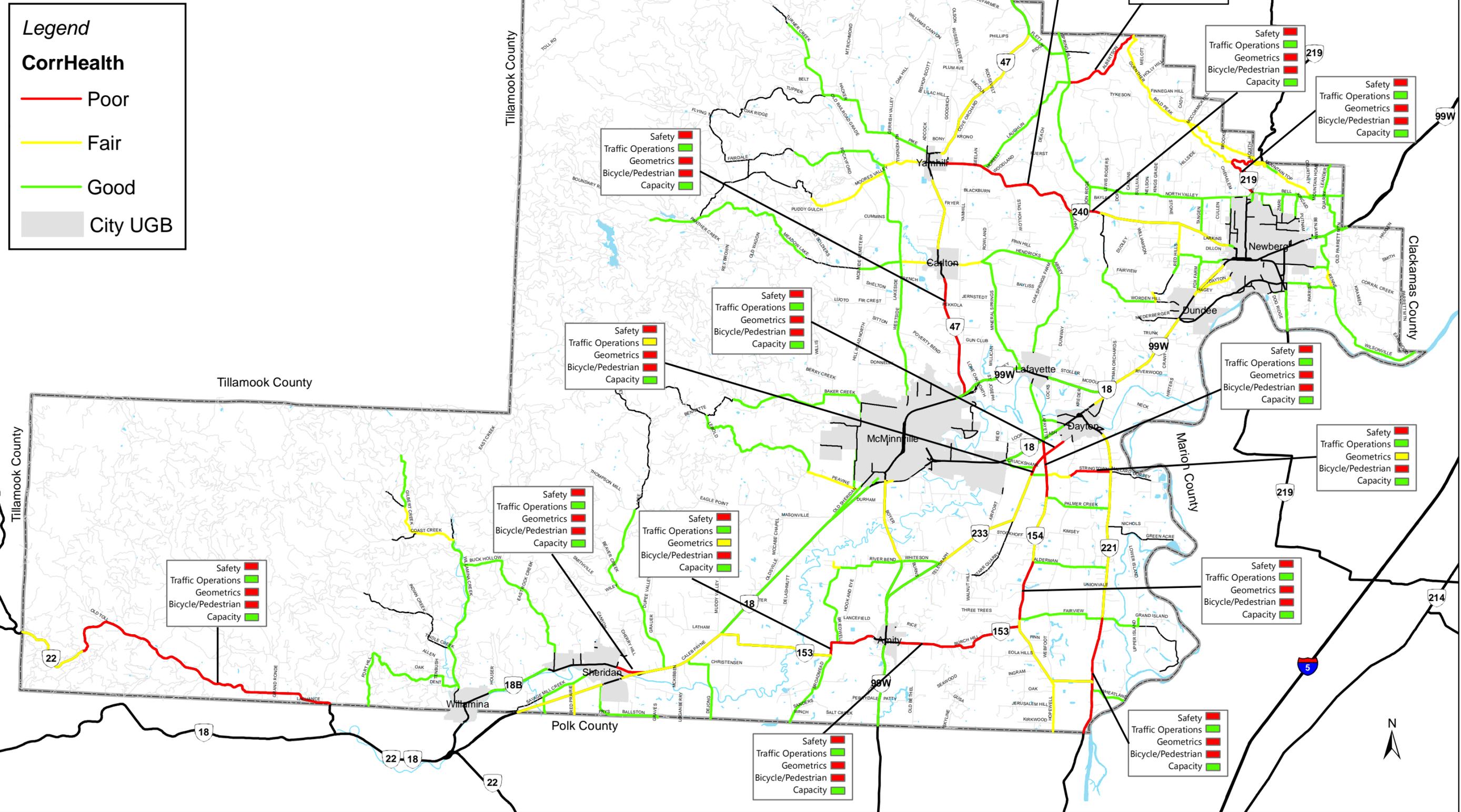
The future corridor health category for each state highway and county roadway segment is shown Figure 9. The percentages of state highway mileage by corridor health category are presented in Table 10.

Table 10 – Future Corridor Health – State Highways

| State Highway | Corridor Health | | | | | | | |
|---------------|-----------------|------------|-------------|------------|-------------|------------|--------------|-------------|
| | Good | | Fair | | Poor | | Total | |
| | Miles | % | Miles | % | Miles | % | Miles | % |
| OR 18 | 10.3 | 64% | 5.9 | 36% | 0 | 0% | 16.2 | 100% |
| OR 18B | 2.0 | 67% | 0 | 0% | 1.0 | 33% | 3.0 | 100% |
| OR 22 | 0 | 0% | 2.9 | 22% | 10.0 | 78% | 12.9 | 100% |
| OR 47 | 3.1 | 22% | 7.3 | 51% | 3.9 | 27% | 14.3 | 100% |
| OR 99W | 10.5 | 59% | 7.2 | 41% | 0 | 0% | 17.7 | 100% |
| OR 153 | 0 | 0% | 7.4 | 56% | 5.9 | 44% | 13.3 | 100% |
| OR 154 | 0 | 0% | 2.4 | 38% | 3.9 | 62% | 6.3 | 100% |
| OR 219 | 1.5 | 33% | 0.7 | 16% | 2.3 | 51% | 4.5 | 100% |
| OR 221 | 0 | 0% | 6.1 | 62% | 3.8 | 38% | 9.9 | 100% |
| OR 233 | 2.3 | 28% | 4.4 | 54% | 1.5 | 18% | 8.2 | 100% |
| OR 240 | 1.2 | 12% | 4.0 | 38% | 5.2 | 50% | 10.4 | 100% |
| Total | 30.9 | 27% | 48.3 | 41% | 37.5 | 32% | 116.7 | 100% |

Yamhill County Transportation System Plan

Figure 9: Future Base Case (2035) Corridor Health





The percentages of overall state highway mileage falling within each corridor health category are:

- Good – 27%
- Fair – 41%
- Poor - 32%

Corridor health remains the same in the future for most state highway segments. Along OR 99W, the segments between Newberg and Dundee improve from poor to fair because of the improved mobility with the construction of the Newberg-Dundee Bypass. The segment of OR 153 from Hopewell Rd. to OR 221 changes from good to fair because of the shoulder width needs associated with the higher future volumes along this segment. The segment of OR 18 from Red Prairie Rd. to the Yamhill County line and the segment of OR 219 north of North Valley Rd. both change from fair to poor because of the additional turn lane needs resulting from higher future volumes.

As for existing conditions, nearly all of the county roadway mileage falls within the good or fair categories, as reflected in the following percentages:

- Good – 88%
- Fair – 7%
- Poor - 5%

The Corridor Health category would not change for any of the county road segments.

TRANSIT

Based on the anticipated slow rates of population and employment growth within the rural portion of the county, the type and level of future needs for Yamhill County Transit Area (YCTA) transit services will likely be similar to the existing needs. These include the need for:

- Improved transportation services
 - Transportation services during evenings and weekends
 - More frequent bus stops
 - Service to large employers such as the Spirit Mountain Casino and the Riverside Drive industrial area
 - Improved travel time reliability on OR 99W



- Expanded transportation service to specific areas
 - Outlying areas of Yamhill County
 - Inter-city transportation between Yamhill and Carlton
 - Inter-city transportation between Sheridan, Willamina and Grand Ronde (West Valley)
 - More regional connections (e.g., the Oregon coast)
- Improved transit facilities
 - Designated bus stops with signs and posted schedules
 - Transit shelters for fixed routes
 - Sidewalks, curb cuts, loading spaces, and crosswalks
 - Better ADA accessibility
 - Transit center in McMinnville
 - Bus pull-outs

In addition to the future YCTA needs, future commuter rail needs were identified in the Yamhill County Commuter Rail Study.¹⁴ The study evaluated the potential for commuter rail operation from McMinnville to Milwaukie utilizing existing freight railroad lines which generally parallel OR 99W (see Figure 10). Key findings from the study include the following:

- Assuming an upgrade of the line and a maximum 60-mph operation, travel time would be 68 minutes from McMinnville to Milwaukie and 46 minutes from Newberg to Milwaukie.
- A schedule of five inbound trips in the morning peak period and five outbound trips in the evening peak based on 30-minute frequencies appears realistic. Two trains in each peak would run to and from McMinnville, with the remainder operating to and from Newberg.

¹⁴ Oregon Department of Transportation, Yamhill County Commuter Rail Study, (1998).

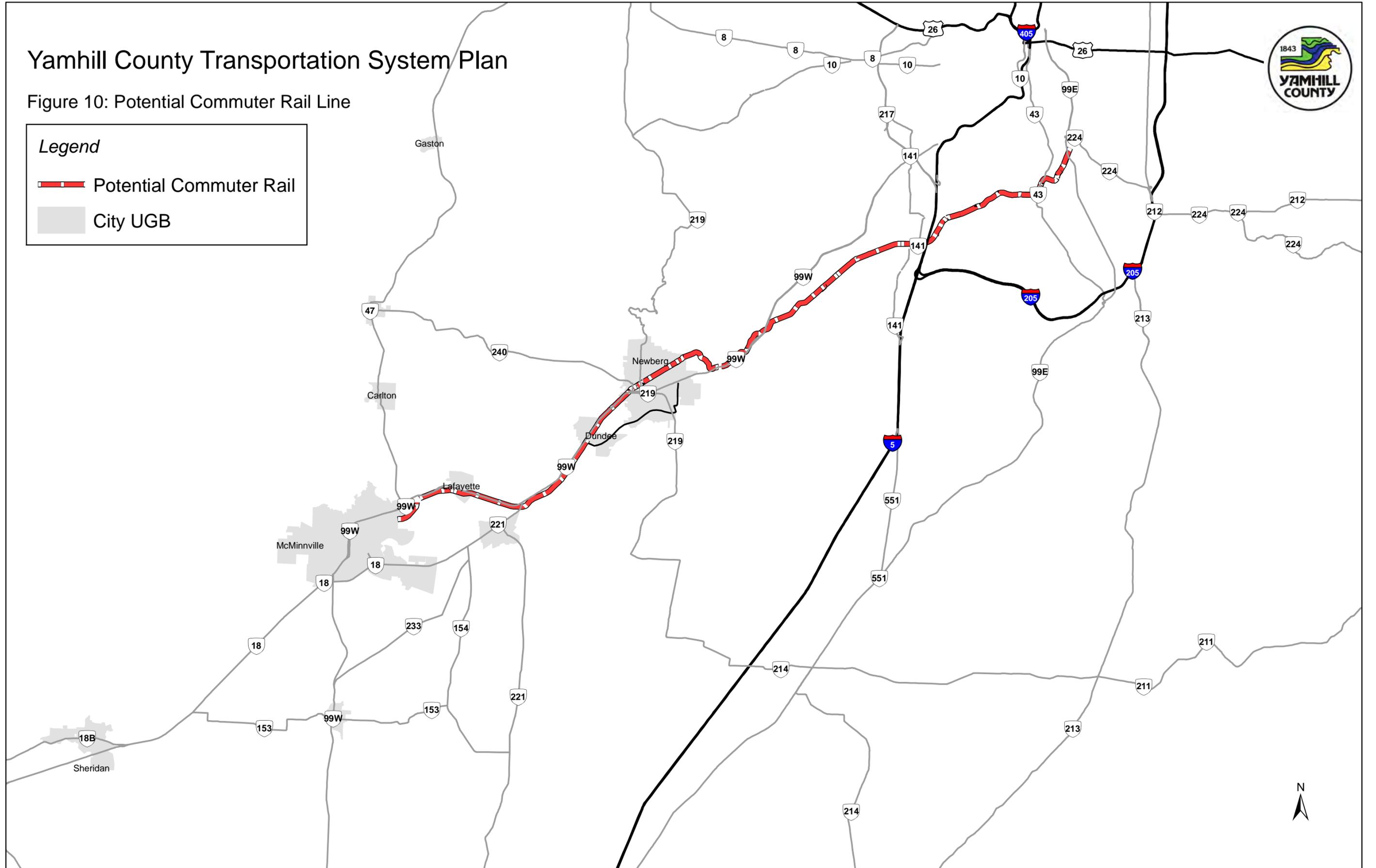
Yamhill County Transportation System Plan

Figure 10: Potential Commuter Rail Line



Legend

-  Potential Commuter Rail
-  City UGB





- Although adequate for low-speed freight service, the line would require considerable upgrading to accommodate commuter rail operations safely and cost-effectively. In particular, most of the bridges and trestles would require replacement or substantial upgrading, a significant number of ties would require replacement, much of the rail would have to be replaced, and many grade crossings would require upgraded protection to accommodate the increased speeds.
- The estimated capital cost to place a McMinnville-to-Milwaukie commuter rail line into operation would be \$112.2 million (1997 dollars). The estimated costs include the upgrading of track, replacement of trestles, upgrading of crossing protection, vehicles, maintenance facilities, centralized train control, stations, and park-and-ride lots.
- The estimated operating cost would be \$3.0 million annually.
- Daily boardings for 2015 are estimated to be 1,580. With the travel patterns heavily oriented towards the metropolitan area in the morning and away in the evening, there appears to be limited rationale for providing reverse commute service.
- Given the number of riders with trip destinations in the OR 217 corridor and Wilsonville, a timed connection with a Beaverton to Wilsonville line would be important.
- Aside from regular commute functions, the line would provide opportunities to develop excursion travel to other attractions in the corridor.

Appendix E: Funding Table

Future Funding from Existing Revenue Sources

| Revenue Source | Description | Use | Total Amount ¹ | Average Annual Amount | Estimated Annual Funding |
|--------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------|--------------------------|
| Funding for County Facilities | | | | | |
| Roadway revenues | Primary source of revenues is State Highway Fund ² | State Highway Fund revenues to be spent for construction, improvement, maintenance, operation and use of public highways, roads, streets and roadside rest areas. | \$559,000 ³ | \$62,000 | \$62,000 |
| Bridge revenues | Funded by Oregon Transportation Investment Act | Specific projects identified. | \$14,840,000 | \$1,649,000 | \$0 ⁴ |
| Subtotal | | | \$15,399,000 | \$1,711,000 | \$62,000 |
| Funding for State Facilities | | | | | |
| State Sources⁵ | | | | | |
| BIKE-PED | Bicycle and Pedestrian Program | Build or improve sidewalks, bike lanes, and trails. ⁶ | \$325,000 | \$27,000 | \$27,000 |
| STATE | State Highway Fund | Construction, improvement, maintenance, operation and use of public highways, roads, streets and roadside rest areas. | \$26,000 | \$2,000 | \$2,000 |
| OTHER | Other state funding | | \$39,000 | \$3,000 | \$3,000 |
| OTIA | Oregon Transportation Investment Act | Specific projects identified. | \$373,000 | \$31,000 | \$0 |
| Subtotal | | | \$763,000 | \$63,000 | \$32,000 |
| Federal Sources | | | | | |
| NHCBP | National Historic Covered Bridge Preservation Program | Supports the rehabilitation, repair, and/or preservation of historic covered bridges. ⁷ | \$284,000 | \$24,000 | \$24,000 |
| NHS | National Highway System | Improvements to rural and urban roads that are part of the NHS. | \$1,208,000 | \$101,000 | \$101,000 |
| PRIORYR | Prior year federal funding | | \$410,000 | \$34,000 | \$34,000 |
| ADVCON | Advance construction | Construction of Federal-aid projects in advance of the apportionment of authorized funds. | \$2,328,000 | \$194,000 | \$194,000 |
| EARMK | Earmarks | Specific projects identified. | \$789,000 | \$66,000 | \$66,000 |
| STP | Surface Transportation Program | Projects on any Federal-aid highway other than local or rural minor collector roads, unless they were on the Federal-aid highway system on January 1, 1991. ⁸ | \$9,596,000 | \$800,000 | \$800,000 |
| STP-RR | Surface Transportation Program funds for rail crossing safety projects. | Correction of hazardous rail crossings. | \$770,000 | \$64,000 | \$64,000 |
| STP-LR | Surface Transportation Program funds for areas with population of less than 5,000. | Projects on any Federal-aid highway, including up to 15 percent of the amounts for each of fiscal years 2013 through 2014 on minor collector roads. | \$3,052,000 | \$254,000 | \$254,000 |
| HEP | Hazard Elimination Program (replaced by HSIP) | See HSIP | \$641,000 | \$53,000 | \$0 |
| HSIP | Highway Safety Improvement Program | Infrastructure-related highway safety improvements to achieve a significant reduction in traffic fatalities and serious injuries on all public roads. | \$3,668,000 | \$306,000 | \$359,000 ⁹ |
| HBRRL | Highway Bridge Rehabilitation and Replacement Program (local bridges) | Replacement or rehabilitation of deficient highway bridges and seismic retrofitting of bridges located on any local public road. | \$542,000 | \$45,000 | \$45,000 |
| HBRRS | Highway Bridge Rehabilitation and Replacement Program (state bridges) | Replacement or rehabilitation of deficient highway bridges and seismic retrofitting of bridges located on state highways. | \$999,000 | \$83,000 | \$83,000 |
| Subtotal | | | \$24,287,000 | \$2,024,000 | \$2,024,000 |
| Total | | | | \$3,798,000 | \$2,118,000 |

¹ Total amounts shown for county facilities are for the nine-year period from 2002-2009. Total amounts shown for state facilities are for the 12-year period from 2002-2013.

² State Highway Fund revenue sources include motor vehicle fuel taxes, motor vehicle registration and title fees, driver's license fees, and weight-mile tax. (State of Oregon, Financial Services website, http://www.oregon.gov/ODOT/CS/FS/Pages/hwy_rev.aspx#Highway_Revenues_Apportionment, accessed February, 2013).

³ Amounts shown are the proportion of total roadway revenues spent on county capital road improvement contracts.

⁴ Non-recurring revenue source.

⁵ Fund code descriptions from ODOT's 2002 – 2005 Final Statewide Transportation Improvement Program.

⁶ Oregon Department of Transportation, *STIP User's Guide*.

⁷ Federal Highway Administration, 2012 Discretionary Grant Program Fact Sheets website, <http://www.fhwa.dot.gov/discretionary/2012factsheets.cfm>, accessed February, 2013.

⁸ Federal Highway Administration, Surface Transportation Program (STP) Implementation Guidance website, <http://www.fhwa.dot.gov/map21/guidance/guidestp.cfm>, accessed February, 2013.

⁹ Includes average annual amount from HEP.

Future County Funding from New Revenue Sources

| Revenue Source | Description | Comments | Estimated Annual Funding ¹⁰ |
|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| County Sources | | | |
| Property tax/local option ad valorem tax for roads <i>Authority:</i> ORS 280.040 to 280.145 and ORS 368.705 to 368.710 | ORS 280.040 to 280.145 establishes the power of subdivisions (e.g., counties) to levy local option ad valorem property taxes. | <ol style="list-style-type: none"> Requires voter approval. ORS 368.710 requires tax levies to be shared with cities. The tax may be permanent or of limited duration. | \$680,000 |
| System development charges <i>Authority:</i> ORS 223.297 to 223.314 | Charges are imposed on developers for present and/or future capital improvements to meet additional capacity requirements as a result of a new development. | Revenue generated from this source would likely be limited due to the low development levels in the unincorporated portion of Yamhill county. | \$89,000 ¹¹ |
| Traffic impact fees <i>Authority:</i> County Charter and County Ordinance Authority - ORS 203.035 | Fees are similar to system development charges, but are imposed countywide within the cities as well as the unincorporated areas. | <ol style="list-style-type: none"> Requires voter approval. The fee is collected at the time building permits are issued and is used for capacity improvements. | \$0 |
| Transportation utility fee <i>Authority:</i> County Charter and County Ordinance Authority - (ORS 203.035) | Fee is a recurring monthly charge that is paid by all residences and businesses within the county based on the number of trips generated. It is collected through a regular utility bill (e.g., water or sewer). | <ol style="list-style-type: none"> The county must have a billing mechanism in place to charge the fees. Some cities collect fees as a part of their water and sewer utility bill. The county's property tax system could potentially be used as the collection system. No Oregon counties use this funding source. | \$46,000 |
| Local improvement districts (special assessment district) <i>Authority:</i> ORS 371.605 to 371.660 | A local improvement district is a geographic area in which real property is taxed to defray all or part of the costs of a public improvement. | Costs are apportioned according to the estimated benefit that will accrue to each property. | \$133,000 |
| County gas tax <i>Authority:</i> Article IX, Section 3a - ORS 203.035 and 203.055 | | <ol style="list-style-type: none"> Collection of the tax is administered by ODOT. Requires voter approval. There is a moratorium on enacting new gas taxes until January 2014. Multnomah County (three cents per gallon) and Washington County (one cent per gallon) are the only counties that currently impose a gas tax. | N/A ¹² |
| County vehicle registration fee <i>Authority:</i> Article IX, Section 3a - ORS 203.035, 203.055, 801.040 to 801.041, 801.043, 803.420 and 803.445 | | <ol style="list-style-type: none"> Must be approved by voters and implemented by county ordinance. For counties with a population of less than 350,000, this fee is not available until July 2013. The fee cannot exceed the state's annual registration fee of \$43. Multnomah County is the only county with a vehicle registration fee. | N/A |
| Traffic fines | | Used by Douglas, Marion, and Tillamook Counties. | \$35,000 |
| Lodging tax | Imposed in addition to the state lodging tax. | <ol style="list-style-type: none"> Levied by 15 Oregon counties. Wallowa County uses their lodging tax for road purposes. | \$18,000 |
| Franchise fees | Fees charged on utilities' and telecommunications providers' operations. | <ol style="list-style-type: none"> Used by Clackamas, Morrow, and Wallowa Counties. Assessment limits are not controlled by the state – each county establishes its own ordinances and codes. | N/A |
| County road districts <i>Authority:</i> ORS 371.055 to 371.110 | A district is formed by a contiguous territory within the county for the purpose of improving county roads. | <ol style="list-style-type: none"> Districts may have a permanent tax rate or levy local option taxes. Taxes are levied in the same manner as other county taxes. The money collected by the road district must be expended on roads within the district and not elsewhere. The money can be spent on local access roads as well as county roads. | N/A |

¹⁰ Estimated annual funding amounts were developed based on historical funding data for similar Oregon counties obtained from the Association of Oregon Counties' website.

¹¹ Includes amount from traffic impact fees.

¹² No comparable counties use this revenue source.

Future County Funding from New Revenue Sources (cont.)

| Revenue Source | Description | Comments | Estimated Annual Funding ¹³ |
|------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Special road districts <i>Authority: ORS 371.305 to 371.385</i> | A district is formed by a contiguous territory within the county and outside of incorporated cities for the purpose of improving county roads. | 1. Districts are governed by a three-member district board of commissioners appointed by the county court or elected by the voters of the district. 2. Districts have the power to: <ul style="list-style-type: none"> • Make contracts • Acquire, hold, receive and dispose of real and personal property • Sue and be sued • Exercise the power of eminent domain • Assess, levy, and collect taxes on all taxable property within the district • Do any other act necessary to carry out the statutory authority of the district 3. Districts may have a permanent tax rate or levy local option taxes. 4. Districts may be divided into zones for the purpose of imposing different tax rates and providing different services. | N/A |
| Improvement of streets and roads in unincorporated areas <i>Authority: ORS 371.605 to 371.660</i> | Provides a means for funding an improvement that benefits a specific group of property owners. | 1. Proceedings are initiated by the county governing body by resolution or by a petition signed by at least 60% of the owners of the land representing at least 60% of the land abutting on the proposed improvement. 2. Improvements may include grading, graveling, paving or other surfacing of any road, or opening, laying out, widening, extending, altering, changing the grade of, or constructing any road. 3. Assessments from land owners are due in full 30 days after the assessment is certified. | N/A |
| County service district <i>Authority: ORS 451.010 to 451.610</i> | Provides services for unincorporated areas of the county. | 1. A county may establish areas within which it may provide special services to be financed by user charges, connection charges, ad valorem taxes, the sale of bonds, local option taxes, or any combination of these mechanisms. 2. A district may have a permanent tax rate or levy local option taxes. 3. In 2011, the legislature removed the requirement that at least 50% of registered voters cast ballots in the formation election. | N/A |
| Intergovernmental entity for transportation facilities <i>Authority: ORS 190.083</i> | Intergovernmental entities have broad funding authority for financing the operation, maintenance, repair, and modernization of all types of transportation facilities, including bonding authority. | 1. The formation of an intergovernmental entity requires the approval of a majority of the cities within the county. 2. An intergovernmental entity can issue general obligation bonds and assess, levy, and collect taxes. 3. The approval of bonds requires an affirmative vote of a majority of the voters within the entity's boundaries. 4. Outstanding bonds cannot exceed two percent of the real market value of all taxable property within the entity's boundaries. 5. An intergovernmental entity is not a district, as defined in ORS 198.010. | N/A |
| County road bonds ¹⁴ | Any county may issue bonds for the purpose of raising money to be used | 1. The issuance of bonds must be approved by a majority of voters. | N/A |

¹³ Estimated annual funding amounts were developed based on historical funding data for similar Oregon counties obtained from the Association of Oregon Counties' website.

Future County Funding from New Revenue Sources (cont.)

| Revenue Source | Description | Comments | Estimated Annual Funding ¹³ |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| <i>Authority:</i> ORS 367.605 to 367.665 | for the construction and maintenance of permanent roads in the county. | 2. The amount necessary to provide the redemption fund and to pay the annual interest on outstanding bonds is added to the general levy of taxes on all the taxable property in the county. 3. The statutory debt limit for counties is two percent of the real market value of property within the county. 4. There is no statutory requirement that the county share bond proceeds with cities and special districts. 5. The restrictions imposed by Measure 5 appear to have caused more counties to resort to debt financing since debt service levies for eligible bond issues are outside the \$10 per \$1,000 property value levy limitation. | |
| Subtotal | | | \$1,001,000 |
| State Sources | | | |
| Highway user tax bonds <i>Authority:</i> ORS 367.605 to 367.665 | Proceeds from the sale of bonds by the state are used for the purpose of building and maintaining permanent public roads, including county roads and city streets. | 1. The bonds are backed by moneys in the State Highway Fund from highway user taxes and fees. 2. The bonds are revenue bonds, not general obligation bonds, and therefore do not constitute a debt or obligation of the state. 3. Bond proceeds may also be used for loans to cities and counties for use on local roadways. 4. Highway user tax bonds were used to finance the OTIA programs. | N/A |
| Bonded indebtedness for city and county roads and recreation facilities <i>Authority:</i> ORS 367.700 to 367.750 | Authorizes the state to sell bonds for the purpose of making loans to cities and counties for the construction, reconstruction, improvement, repair, maintenance, operation and use of public highways, roads, streets and roadside rest areas. | 1. Bonds in the “aggregate principal sum” may not exceed \$50 million. 2. Loans are repaid by withholding payments due to the city or county from the State Highway Fund. 3. If the funds available are not sufficient to cover all projects, priority is given to projects in cities and counties with the highest unemployment rates. | N/A |
| Special County Program <i>Authority:</i> ORS 366.772 | Allocates a total of \$750,000 annually to counties having the largest road base funding deficit. | The deficit is defined as the amount of a county’s minimum road base funding minus the amount of the county’s dedicated road funding. “Minimum road base funding” means \$4,500 per mile of county arterial and collector roads as of July 1, 2008, and adjusted annually thereafter for inflation. “Dedicated road funding” means the previous year’s State Highway Fund allocation, USFS distribution and STP allocation. | N/A |
| Special Public Works Fund | Provides funds for publicly owned facilities that support economic and community development in Oregon. Funds are available to public entities for: <ul style="list-style-type: none"> • Planning • Design • Purchasing • Improving and constructing publicly owned facilities • Replacing publicly owned essential community facilities | 1. Funding is provided by the Infrastructure Finance Authority, an Oregon state agency. 2. Low-interest loans are available from \$100,000 to \$10 million. 3. Initial loan terms are up to 25 years or the useful life of the project. 4. Grants of up to \$500,000 are available for construction projects that create or retain traded-sector jobs. 5. This program has been utilized by several Oregon counties. | |
| ODOT Pedestrian and Bicycle Program grants | Projects are selected using a statewide competitive process. | 1. Grants are awarded every other year to coincide with the STIP update cycle. | N/A |

¹⁴ Financing public facilities through borrowing (issuance of bonds) is a method of paying for the facilities, but the bonds must be retired using revenue raised by one or more of the above (or other) methods, so bonding in and of itself is not a funding source.

Future County Funding from New Revenue Sources (cont.)

| Revenue Source | Description | Comments | Estimated Annual Funding ¹³ |
|-----------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| | | 2. A local match is seen as a local commitment to a project and can be a consideration in project selection. 3. Typical grants range from \$50,000 - \$500,000. 4. Grants are distributed mainly to cities and counties. | |
| Subtotal | | | \$0 |
| Total | | | \$1,001,000 |

Appendix F: Goals, Objectives and Evaluation Criteria



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MEMORANDUM

DATE: October 29, 2014

TO: Bill Gille, Yamhill County
John Phelan, Yamhill County
Terry Cole, ODOT Region 2

FROM: Bob Schulte, PTP
Julie Sosnovske, P.E.

SUBJECT: Yamhill County TSP - Goals, Objectives, and Evaluation Criteria

This memorandum documents a set of draft goals, objectives, and evaluation criteria for the Yamhill County Transportation System Plan (TSP).

The goals and objectives should reflect Yamhill County's values and guide the development and implementation of the TSP. Goals are somewhat general in nature and should be challenging, but not unreasonable, to achieve. Each goal must be supported by more finite objectives. In contrast to goals, objectives should be specific and measurable.

The solutions identified in the TSP must be consistent with the goals and objectives. To accomplish this, evaluation criteria based on the goals and objectives have also been developed to assess and screen transportation system alternatives and prioritize TSP actions.

GOALS, OBJECTIVES, AND EVALUATION CRITERIA

A draft set of goals, objectives, and evaluation criteria have been prepared for consideration. The goals and objectives are based on local interests and statewide transportation planning requirements. In addition to defining the County's vision for transportation, the goals provide the basis for evaluation criteria used to measure potential transportation projects and strategies developed in the TSP.

Goal 1: Provide for Efficient and Convenient Motor Vehicle Travel

Objective 1a: Establish mobility standards to maintain the minimum level of motor vehicle travel efficiency. State and County standards for mobility will be supported by the respective jurisdiction.

Objective 1b: Maintain mobility and traffic operations according to standards.

Evaluation Criterion 1b.1: Reduction in congestion and delay.





Evaluation Criterion 1b.2: Reduction in traffic conflicts.

Objective 1c: Maintain the existing system of roads and bridges to a level suitable for the function of the road, allowing for smooth and comfortable travel, and reducing vehicle maintenance costs through the preservation of pavements and prevention of damage by overweight vehicles.

Objective 1d: Identify opportunities to reduce the use of state highways for local trips.

Objective 1e: Establish and maintain a functional classification system that provides a plan for system purpose and design.

Objective 1f: Limit access points on highways and arterials. Support consolidated and shared access points.

Evaluation Criterion 1f.1: Improvement in access conditions.¹

Goal 2: Provide for the Safety of All Transportation Modes

Objective 2a: Identify improvements to address high-collision locations to enhance safety for all modes.

Evaluation Criterion 2a.1: Reduction in crash rate/severity.

Objective 2b: Improve roadway geometrics.

Evaluation Criterion 2b.1: Type/level of geometric improvement.²

Goal 3: Provide an Equitable, Balanced and Connected Multi-modal Transportation System

Objective 3a: Improve facilities for all transportation modes.

Objective 3b: Distribute the benefits and impacts of transportation decisions fairly and address the transportation needs and safety of all users, including the young, elderly, people with disabilities, and people of all races, ethnicities, and income levels.

Objective 3c: Provide connections to all modes that meet applicable County and Americans with Disabilities Act (ADA) standards.

Objective 3d: Support connectivity between the various communities in the County.

Goal 4: Increase the Quality and Availability of Pedestrian and Bicycle Facilities

Objective 4a: Improve bicycle and pedestrian facilities.

Evaluation Criterion 4a.1: Type/level of bicycle/pedestrian facility improvement.³

Objective 4b: Consider bicycle/pedestrian improvements that complement the basic provision of facilities to encourage higher levels of usage (e.g., way-finding signage).

Objective 4c: Support the development of the Yamhelas Westsider trail.

¹ Includes the reduction in the number of access points and the improvement in access design.

² Type of improvement refers to the suitability of an improvement for addressing a specific type of need. Level of improvement represents the extent or degree of an improvement relative to the standard.

³ Ibid.



Goal 5: Work with Transit Service Providers to Provide Transit Service and Amenities that Encourage and Increase Ridership

- Objective 5a: Identify areas that support additional transit services, and coordinate with transit providers and transit plans to improve the coverage, reliability and frequency of services.
- Objective 5b: Promote transit accessibility for transportation-disadvantaged groups.
- Objective 5c: Enhance intercity transit connectivity.
- Objective 5d: Implement bus stops, park-and-ride lots, and transit centers identified in the *Yamhill County Coordinated Human Services Public Transportation Plan: The Next Steps*.⁴
- Objective 5e: Identify needs for services to regional employment and activity centers.
- Objective 5f: Consider transit user needs that complement the basic provision of service to encourage higher levels of usage (e.g., shelters and benches).

Goal 6: Manage the Transportation System to Support a Prosperous and Competitive Economy

- Objective 6a: Enhance access to major employment and industrial locations.
- Objective 6b: Enhance the efficiency, access, capacity and reliability of the freight system.

Goal 7: Provide Transportation Facilities and Services that are Fiscally Responsible and Economically Feasible

- Objective 7a: Plan for an economically viable and cost-effective transportation system that makes the best use of limited transportation funds.

Evaluation Criterion 7a.1: Minimization of construction cost.

- Objective 7b: Identify and develop diverse and stable funding sources to implement recommended projects in a timely fashion and ensure sustained funding for road maintenance and transportation improvement projects.
- Objective 7c: Actively seek state and federal transportation funds to finance programs and improvements.
- Objective 7d: Maintain the existing transportation system assets to preserve their intended function and maintain their useful life.
- Objective 7e: Identify opportunities to improve travel reliability and safety with system management solutions.
- Objective 7f: Consider costs and benefits when identifying project solutions and prioritizing public investments.
- Objective 7g: Ensure transparency when determining transportation system investments.

⁴ Mid-Willamette Valley Council of Governments, Coordinated Human Services Public Transportation Plan, (2007).



Goal 8: Provide a Transportation System that Conserves Energy and Protects and Improves the Environment

Objective 8a: Minimize impacts to preserve the natural, scenic, and cultural resources in the county.

Evaluation Criterion 8a.1: Minimization of impacts to environmentally sensitive areas.

Objective 8b: Minimize land use impacts.

Evaluation Criterion 8b.1: Minimization of impacts to EFU-zoned and developed parcels.

Evaluation Criterion 8b.2: Minimization of required right-of-way.

Goal 9: Coordinate with Local and State Agencies and Transportation Plans

Objective 9a: Coordinate with the *Oregon Transportation Plan* and associated modal plans.

Evaluation Criterion 9a.1: Consistency with ODOT standards

Objective 9b: Coordinate with local agency transportation system plans for communities within Yamhill County.

Objective 9c: Meet the requirements of the *Oregon Transportation Planning Rule*.

Objective 9d: Coordinate with local agencies and entities within Yamhill County including major employers, incorporated and unincorporated communities, and other stakeholders or groups, as appropriate, on transportation issues involving these entities.

Objective 9e: Coordinate regional project development and implementation with local jurisdictions (e.g. evacuation routes, countywide transit, and jurisdictional transfer of roadways).

Objective 9f: Coordinate with cities and ODOT to review and assess potential impacts and appropriate mitigation of proposed development applications.

SCREENING PROCEDURE FOR IMPROVEMENT OPTIONS

For locations where more than one improvement option has been identified, it is necessary to have a method to compare the options. Therefore, the following screening procedure is proposed, incorporating the evaluation criteria presented above.

The improvement alternatives are evaluated by developing scores for the evaluation criteria. For each alternative, point scores of between zero and ten are assigned to each of the criteria. The point scores reflect the assessment, based on professional judgment, of the degree to which the improvement alternative satisfies the criteria. The construction cost criterion is scored based on planning level cost estimates for the alternatives.

Not all of the criteria will apply to each alternative. For example, the criterion for improved roadway geometrics would not apply to an alternative that does not affect the existing geometrics.

The score for each criterion is multiplied by an associated weight. The weights shown below are based on an assessment of the relative importance of improvement needs, consistent with the goals and objectives presented above. The weighted scores are summed to produce a total weighted score for each alternative.



Table 1
Weights for Evaluation Criteria

| Criterion | Weight |
|-------------------------------------------------------------------|------------|
| 2.a.1: Reduction in crash rate/severity | 20 |
| 2.b.1: Type/level of geometric improvement ⁵ | 20 |
| 1.b.2: Reduction in traffic conflicts | 10 |
| 7.a.1: Minimization of construction cost | 10 |
| 8.b.2: Minimization of required right-of-way | 10 |
| 8.b.1: Reduction in congestion and delay ⁶ | 5 |
| 9.a.1: Consistency with ODOT and County standards | 5 |
| 8.b.1: Minimization of impacts to EFU-zoned and developed parcels | 5 |
| 1.f.1: Improvement in access conditions ⁷ | 5 |
| 4.a.1: Type/level of bicycle/pedestrian facility improvement | 5 |
| 8.a.1: Minimization of impacts to environmentally sensitive areas | 5 |
| Total | 100 |

⁵ Type of improvement refers to the suitability of an improvement for addressing a specific type of need. Level of improvement represents the extent or degree of an improvement relative to the standard.

⁶ Measured by v/c ratio.

⁷ Includes the reduction in the number of access points and the improvement in access design.

Appendix G: Management Systems and Tools



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MEMORANDUM

DATE: January 23, 2014

TO: John Phelan, Yamhill County
Bill Gille, Yamhill County
Terry Cole, ODOT Region 2

FROM: Bob Schulte, PTP, and Julie Sosnovske, P.E.

SUBJECT: Yamhill County Transportation System Plan
Task 9 – Develop Management Systems and Tools

P#11086-004

This memorandum addresses the need identified by the County for new or enhanced management systems and tools for managing the County's transportation system. In addition, it references management systems already in place. These management systems and tools cover a variety of areas, including:

- Traffic diversion from state highways to county roads
- Potential scenic routes
- Truck/hazardous materials routes
- Project prioritization process
- Safety problem location ranking system
- Gravel road condition rating system
- Prioritization criteria for paving of gravel roads

The County's existing management systems and tools within these areas were reviewed. For areas with no existing system, a new system was proposed. Following this, a meeting was held with the County and ODOT to identify any desired modifications to the existing and proposed systems. The results of this process are described below.

Traffic Diversion from State Highways to County Roads

Information was obtained from County staff on the specific county roads, time periods, and problems associated with the diversion of traffic from state highways to county roads. Potential countermeasures to mitigate the traffic impacts to county roads were then determined for each location.

Three existing diversion routes were identified, all related to drivers trying to avoid congestion on OR 99W (see Figure 1). These are:

- OR 240 through the Kuehne Road/Abbey Road/Hendricks Road intersection and continuing south on Abbey Road into Lafayette or west on Hendricks Road into Carlton or McMinnville.

Yamhill County Transportation System Plan

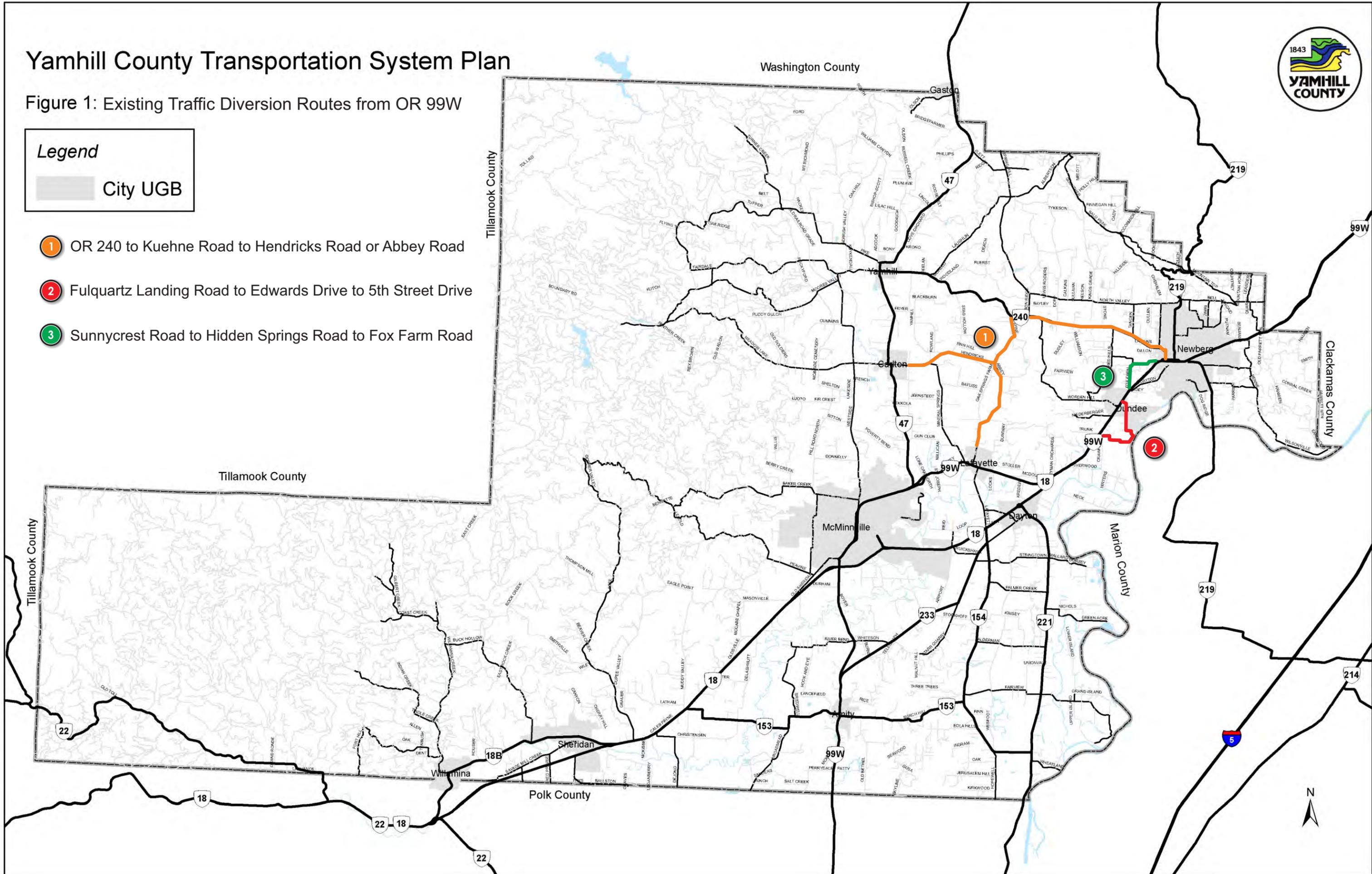
Figure 1: Existing Traffic Diversion Routes from OR 99W



Legend

City UGB

- OR 240 to Kuehne Road to Hendricks Road or Abbey Road
- Fulquartz Landing Road to Edwards Drive to 5th Street Drive
- Sunnycrest Road to Hidden Springs Road to Fox Farm Road





- OR 99W to Fulquartz Landing Road (south of Dundee), to Edwards Drive, to signal at OR 99W/5th Street in Dundee.
- OR 99W to Sunnycrest Road/Hidden Springs Road/Fox Farm Road between Newberg and Dundee.

OR 240 to Kuehne Road/Abbey Road/Hendricks Road

These roads experience relatively high traffic volumes (3,000 - 6,000 ADT) for a rural/agricultural area. The highest volumes occur primarily during evening peak commute hour. Due to the significant out-of-direction travel required to use this route, most of the diversion is likely local traffic destined for Lafayette, McMinnville, or Carlton.

The diversion to this route is likely the result of congestion on OR 99W between Newberg and Dundee. However, it is also an important route for local traffic within the County's transportation system. It provides an east-west connection between Newberg and the communities to the west, including Yamhill, Carlton and McMinnville. While construction of Phase I of the Newberg-Dundee Bypass will help to some degree, it may only shift the bottleneck to the south end of Dundee. This would still affect anyone traveling to the west of Dundee, i.e., drivers using this route to reach Lafayette, McMinnville, and Carlton.

An effective way to decrease the amount of diverted traffic along this route would be to improve the OR 99W corridor. In addition to Phase I of the Bypass, there are several improvements for the corridor that will be included as a part of the new Yamhill County TSP:

- OR 99W between Newberg and Dundee (widen shoulders and reduce conflicts at the lane drop)
- OR 99W between Dundee and OR 18 Junction (widen to four lanes where needed and widen shoulders)
- Intersection improvements at OR 99W/OR 18/McDougall Rd.
- Intersection improvements at OR 99W/OR 47

These improvements would enhance traffic operations, geometrics, and safety along OR 99W. In addition, Phase 2 of the Newberg-Dundee Bypass, if constructed, would likely eliminate all diverted traffic from this corridor.

If the primary issue regarding diverted traffic is that the higher volumes result in poor traffic operations and safety conditions, it may also be desirable to improve the roads along this route. The planned improvement at Kuehne Road/Abbey Road/Hendricks Road intersection will facilitate travel by improving operations, geometrics, and safety. The improvements to be recommended in the TSP for the OR 47/OR 99W intersection will have a similar effect. In addition, the County and ODOT may wish to consider improvements along OR 240 and at the OR 240/Kuehne Road intersection. Potential improvements include:



- Shoulder widening along OR 240
- A roundabout or other intersection improvements at OR 240/Kuehne Road
- Safety improvements along OR 240

This route should be monitored after the opening of Phase I of the Bypass to determine the level of diversion. If this does not significantly decrease, the following improvement opportunities should be explored:

- Improvements along OR 240 (e.g., shoulder widening, improved signage, curve warnings, etc.)
- Intersection improvements at OR 240/Kuehne Rd.
- Advancement of improvements along the OR 99W corridor, including the intersections of OR 47/OR 99W and OR 99W/OR 18/McDougall Rd.

OR 99W to Fulquartz Landing Road to Edwards Drive to Signal at 5th Street/OR 99W in Dundee

Vehicles divert to this route to avoid congestion on OR 99W. This typically occurs during the morning peak commute periods and on weekends when there are higher through traffic volumes to/from the Oregon Coast. The volume of diverted traffic is likely low, but since Fulquartz Landing Road is a gravel road, a significant amount of dust is created. This route is roughly twice as long as the OR 99W route (about three miles compared to 1.5 miles), so the travel time savings are small.

This will likely be resolved with the construction of Phase I of the Bypass, since the problem appears to be directly related to congestion on OR 99W in Dundee. In addition, Fulquartz Landing Road and Edwards Drive will be realigned as part of the Bypass construction in such a way that this route will become even more circuitous. The volume of diverted traffic should be monitored once Phase I opens to determine whether this will continue to be a problem.

OR 99W to Sunnycrest Road/Hidden Springs Road/Fox Farm Road Between Newberg and Dundee

Drivers use this route to avoid congestion on OR 99W and the traffic queue near the OR 99W/Fox Farm Road intersection. The additional traffic is undesirable, particularly with the poor intersection configuration at the Hidden Springs Road/Fox Farm Road intersection. In addition, non-local drivers are generally less aware of pedestrians and the concerns of residents along the route (high speeds, for example).

Since this diversion is a direct result of congestion on OR 99W, it will be reduced with construction of Phase I of the Bypass. In addition, improvements will be recommended in the TSP that will enhance safety, traffic operations, and geometrics at the intersections of Hidden Springs Road/Fox Farm Road and OR 99W/Fox Farm Road.

This route should be monitored once Phase I of the Bypass has been constructed. If diversion continues to be a problem, the improvements recommended for the Hidden Spring Road/Fox Farm Road



intersection should be pursued and the County should work with ODOT to advance the improvements at OR 99W/Fox Farm Road.

One factor that will affect the future diversion levels for all of these routes is the jughandle intersection that will form the southern terminus of the Phase I Bypass south of Dundee. This intersection is expected to reach capacity by the end of the 2035 planning horizon. A potential solution to this problem would be to provide a free movement for northbound traffic from OR 99W to the Bypass.

Potential Scenic Routes

The County has an interest in the capability of identifying potential scenic routes. Both objective (measurable) criteria and subjective criteria should be applied in determining suitable routes. Once a potential route has been defined, County staff should work with county and state tourism organizations to refine and implement the route.

Scenic Route Criteria

A set of criteria was defined to help evaluate desirability of roadways for scenic routes. The objective criteria to be met are:

- Roadway is paved
- Adequate travel lane width (>11 feet) or adequate combined travel lane and shoulder width (>12 feet)¹
- Crash rate less than or equal to two times the statewide average for the same facility type (minor collector and above)
- Roadway does not have a SPIS location

While these criteria are primarily for county roadways, it is important to recognize that most travelers are likely to use state highways to access the county roadways. Figure 2 shows the results of applying these criteria to both county roads and state highways.

A second set of criteria should be subjectively applied to determine whether a roadway would be suitable for sightseeing traffic, which behaves differently than typical traffic (e.g., slower moving, less likely to recognize potential safety problems). A potential set of criteria are:

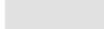
- Horizontal alignment
- Vertical alignment
- Presence of sight distance deficiencies

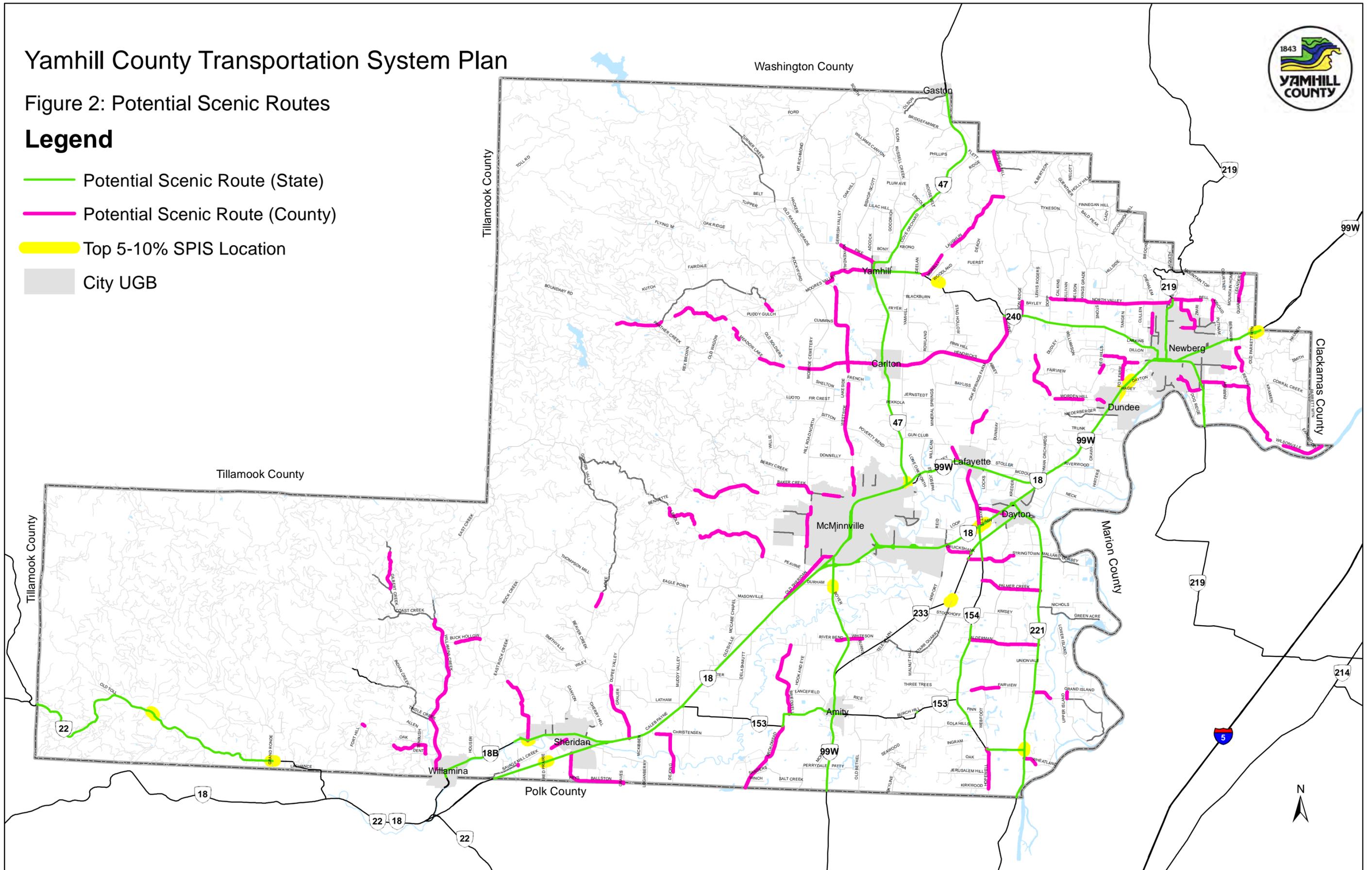
¹ Eleven feet is the County's minimum lane width standard for minor collector roads for both maintenance and new/reconstruction projects. Twelve feet is the minimum combined lane and shoulder width for any road for both maintenance and new/reconstruction projects.

Yamhill County Transportation System Plan

Figure 2: Potential Scenic Routes

Legend

-  Potential Scenic Route (State)
-  Potential Scenic Route (County)
-  Top 5-10% SPIS Location
-  City UGB





- Surface quality
- Access density
- Availability of turnouts
- Scenic value of surrounding terrain
- Types of vehicles on roadway (e.g., farm vehicles)
- Presence of roadway lighting

Other subjective criteria are the level of support from local groups and municipalities and plans for the protection, enhancement, and promotion of the roadway as a scenic route.

Although there will typically be gaps or deficiencies along a potential scenic route based on these criteria, it can still be considered viable. The gaps or deficiencies could either be deemed acceptable, or an improvement could be planned to mitigate the deficiency.

Once the criteria have been applied and a potential route has been identified, the County should work with county and/or state tourism organizations to determine whether to pursue adoption of the route. If it is adopted, the County would work these organizations, as well as key local stakeholders, to develop signing/way finding and to promote the route. Further information on this process can be found in the *Oregon Scenic Byways Program*² included in Appendix A.

Truck/Hazardous Materials Routes

Truck and freight routes can be defined as either recommended or prohibited routes. Within Yamhill County, existing truck/freight routes are defined for both state highways and county roadways. Hazardous materials routes are typically regulated by the federal government.

ODOT truck/freight routes are identified in ODOT's functional classification system. In Yamhill County, the primary truck routes are on OR 99W and OR 18. Trucks are allowed on other routes, but through truck traffic is encouraged to use these designated routes when possible. A summary of the ODOT truck/freight routes in Yamhill County, as defined in the *Oregon Highway Plan*,³ is included in the Appendix B.

Yamhill County's recommended truck route map (Appendix B) shows both length and weight-restricted routes. Trucks are allowed on all county roadways unless prohibited. The specific restrictions are shown in the *Yamhill County Weight Restricted Bridges and Approved Route List*⁴ in Appendix B. This document, developed by the ODOT Bridge Section and County weighmasters, provides several tables summarizing the types of vehicles that are length and/or weight-restricted for various county roadways.

² Oregon Department of Transportation, *Oregon Scenic Byways Program*, 1995.

³ Oregon Department of Transportation, *Oregon Highway Plan*, 1999.

⁴ Yamhill County, *Yamhill County Weight Restricted Bridges and Approved Route List: Attachment C36*, 2008.



Motor carriers transporting hazardous materials that are required to be placarded or marked in accordance with 49 CFR 177.823 must follow federal regulations. These regulations state that the motor carrier “shall operate the vehicle over routes which do not go through or near heavily populated areas, places where crowds are assembled, tunnels, narrow streets, or alleys, except where there is no practicable alternative”.⁵

A brochure produced by ODOT and the Portland Office of Emergency Management regarding truck routes for hazardous materials in the Portland area⁶ is included in Appendix C. All commercial vehicle operators are expected to be aware of the current state highway and county road hazardous materials restrictions within Yamhill County.

Project Prioritization Process

The County’s Road Maintenance/Reconstruction Prioritization Policy is used to identify annual road maintenance and reconstruction improvements to protect public safety and property, make effective use of available funds, and preserve the County’s investment in its transportation system. It was adopted by the Yamhill County Board of Commissioners on May 14, 2008 by Board Order.

The policy includes eight implementation strategies:

1. Confine road maintenance and reconstruction to roads formally accepted as county roads. County funds will not be expended for the maintenance or improvement of public or private roads.
2. Prioritize road maintenance and reconstruction expenditures annually in a resolution and order adopted by the Board of Commissioners, using a road maintenance priority matrix as a guide. The matrix assigns point values to various activities (mandated, emergencies, hazards, general maintenance, minor improvements, and reconstruction) and roadway classifications (arterial, major collector, minor collector, and local/resource road).
3. The Yamhill County Road Improvement Advisory Board (RIAC) will recommend revisions as needed (emergency and non-emergency requests) to the Yamhill County Board of Commissioners to ensure the most effective use of available funds.
4. Implement a base condition concept for the maintenance of paved roads based on a set of criteria that consist of an average pavement condition index (PCI) value and a minimum percentage of road miles greater than or equal to a specific PCI value for each functional classification.

⁵ 49 CFR 397.67 - Motor Carrier Responsibility for Routing, 2011.

⁶ ODOT and the Portland Office of Emergency Management, Truck Routes for Hazardous Materials in the Portland Area, 2009.



5. Develop a base condition concept for gravel roads that will provide a systematic measurement and reporting of their condition (see “Gravel Road Condition Rating System” below).
6. Limit expenditures for major reconstruction projects to county roads that are not identified as needing capacity improvements in the near-term. Capital improvement projects should be identified and prioritized separately through the Transportation Capital Improvement Program.
7. Finance reconstruction and minor improvement activities for local streets through localized funding mechanisms, such as the creation of service districts or local improvement districts (LIDs), established exclusively for maintenance of these roads.
8. Encourage annexation to a city for local roads within urban and urban reserve areas.

The complete policy is contained in Appendix D.

Gravel Road Condition Rating System

The County currently uses an informal Gravel Road Condition Rating System. The following conditions are evaluated in the field for a section of roadway with representative average conditions.

Table 1
Yamhill County Gravel Road Surface Rating Criteria

| Criterion | Measurement | Classification | Category |
|---------------------------------|-------------|----------------|-----------|
| Crown | +3% | 5 | Very Good |
| | 2% | 3 | Good |
| | <2% | 1 | Poor |
| Drainage - culverts and ditches | Subjective | 5 | Very Good |
| | | 4 | Good |
| | | 3 | Fair |
| | | 1 | Poor |
| Safety | | 5 | Good |
| | | 1 | Poor |
| Width | 24' | 5 | Excellent |
| | 22' | 4 | Good |
| | 20' | 3 | Fair |
| | <20' | 2 | Poor |
| | <18' | 1 | Very Poor |
| Vegetation – sight distance | | 5 | Good |
| | | 1 | Bad |



**Table 1 (cont.)
 Yamhill County Gravel Road Surface Rating Criteria**

| Criterion | Measurement | Classification | Category |
|----------------------|-------------|----------------|-----------|
| Rock | 4" | 5 | Adequate |
| | 2" | 2 | Poor |
| | 0-1" | 1 | Very Poor |
| Maximum Total | | 30 | |

The scores for each of the criteria are summed, with a possible maximum total score of 30, and then multiplied by 3.33 to convert the total score to a 100-point scale. This number represents the gravel condition index (GCI). Roadways are determined to be in generally good, fair, or poor condition based on the GCI score, with higher scores representing roads in good condition and lower scores representing roads in poor condition.

County staff does not anticipate implementing a more detailed rating system due to the dynamic nature of gravel roadway conditions, which can vary along the length of the roadway and on a daily basis depending on weather conditions and other factors.

Each gravel roadway is compared against the County’s prioritization criteria for the paving of gravel roads (see below) to determine whether there are near-term plans to pave the roadway. If so, the roadway is not given a maintenance priority. Otherwise, roadways with lower GCI scores are given a higher maintenance priority. The County’s gravel road surface rating form and an example application of the scoring system are provided in Appendix E.

Prioritization Criteria for Paving of Gravel Roads

The County has an administrative application of its Gravel Collector Roads Upgrade Prioritization System. An example of the application is included Appendix F. Prioritization points are calculated for candidate gravel collector roads using the system shown below.



Table 2
Yamhill County Gravel Collector Roads Upgrade Prioritization System

| Criterion | Points |
|-----------------------|--------------------------------------------|
| Traffic Volume | Volume (ADT)/10 |
| Safety Conditions | Reported Crashes/2 |
| | Reported Crashes with Fatalities x 3 |
| | Reported Crashes with Injuries x 2 |
| | Reported Crashes with Property Damage Only |
| Gravel Road Condition | Gravel Road Condition Index/3 |
| Residential Density | Residences per Mile/2 |

Points are calculated for collector roadways considered as potential candidates for paving. The paving prioritization is determined by ranking the project locations by total points.

Safety Problem Location Ranking System

The county currently uses a ranking system for safety problem locations that was developed and implemented by the RIAC. The criteria considered are traffic volume, the number of reported crashes, total fatalities, total injuries, and the number of property damage only (PDO) crashes. Total fatalities and injuries are weighted more heavily than PDO crashes. Prioritization points are calculated based on the measures shown below.

Table 3
Yamhill County Safety Problem Location Ranking System

| Criterion | Points |
|-------------------|--------------------------|
| Traffic Volume | Total Volume (ADT)/1000* |
| Safety Conditions | Reported Crashes/2 |
| | Total Fatalities x 3 |
| | Total Injuries x 2 |
| | Number of PDO Crashes |

* For intersections, total volume of all entering roadways.

The prioritization is determined by ranking the problem locations by total points. An example application of the system is shown in Appendix G. The County will continue to use this ranking system, with possible modifications over time.



Pavement Maintenance System

In the past, the County has used a Pavement Management System (MTC-PMS) to identify pavement maintenance needs. This system utilizes a Pavement Condition Index which rates the overall condition of the pavement based on various measures of pavement distress. The PMS is not currently in use; however, the County may be purchasing an updated system in the future that includes digital pavement data collection.

Policy for Road Ownership Transfers

The previous Yamhill County TSP includes the following policy for the transfer of county road jurisdiction to cities when annexation occurs:

“County policy will encourage the expeditious transfer of jurisdiction of roadways to incorporated cities in conjunction with annexation. It is the policy of Yamhill County that developers of property who propose annexation and who have frontage on a road that does not meet city road standards shall have the primary responsibility for upgrading the road to city standards. Roads shall be upgraded at the time of annexation, or the developer shall sign an agreement with the city to upgrade the road, at the time of development. Transfer of jurisdiction shall require the approval of both the County and the City, in accordance with the provisions in Oregon Revised Statutes 373.270.”⁷

The policy further states that:

“It is the policy of Yamhill County to require the transfer, or an agreement to transfer with specific time lines and milestones as part of the agreement, of jurisdiction of County roadways within urban growth boundaries to their respective cities at the time of annexation.”

Although the terms of the agreement may vary from case-to-case, the County adheres to this policy and will continue to do so in the future. A copy of the portion of ORS 373.270 pertaining to road jurisdiction transfers is included in Appendix H.

Summary

The following management systems and tools have been adopted or approved by RIAC:

- Truck/hazardous materials routes
- Project prioritization process
- Safety problem location ranking system
- Gravel road condition rating system

⁷ Yamhill County, Yamhill County Transportation System Plan, 1995.



- Prioritization criteria for paving of gravel roads

The project prioritization process has also been adopted by the Yamhill County Board of Commissioners.

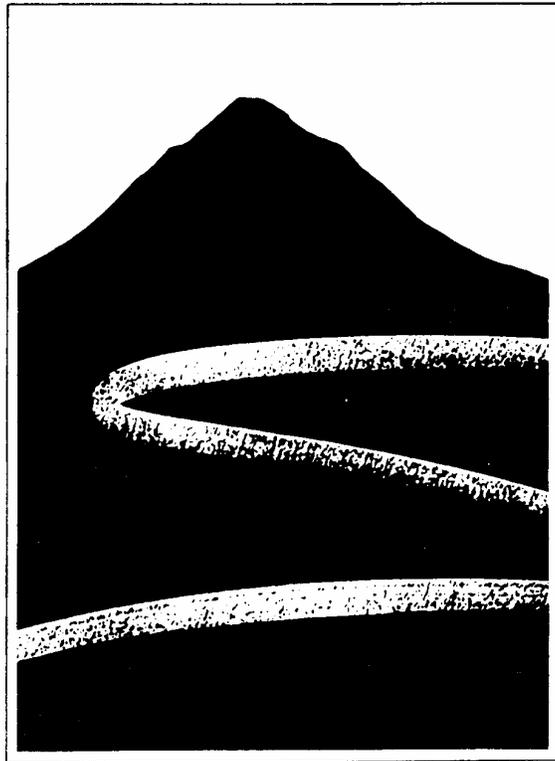
It is recommended that County staff and RIAC consider use of the proposed traffic diversion program and the proposed process for the identification of scenic routes.



Appendix A

OREGON SCENIC BYWAYS PROGRAM

OREGON
SCENIC
BYWAYS
PROGRAM



FORWARD

This guide was prepared by Julie Porter and Deb Wheelbarger of Innovative Action under contract for the Oregon Department of Transportation, through a program managed by the Travel Information Council.

NOTICE

This document is available through the Oregon Department of Transportation, TDB, Planning Section, 555 13th Street N.E., Salem, Oregon 97310. Attention: Pat Moran (503) 986-4261.

ACKNOWLEDGEMENTS

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March 1995

OREGON SCENIC BYWAY USERS GUIDE

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SCENIC BYWAYS PROGRAM

HISTORICAL OVERVIEW

Americans have a love affair with driving. In 1994, it was estimated that U.S. travelers spent \$380 billion on domestic travel activities. More than one billion of that astounding total was spent during travel on designated scenic byways. This money translated directly into thousands of jobs and millions of dollars in state and local taxes. It was a tremendous boon to the communities involved, many of which are rural.

The United States has been a leader in the scenic byways program from the very beginning, when Ladybird Johnson took the initiative to rid our national scenic roadways of billboards and junkyards. Oregon followed suit and established one of the toughest billboard laws in the country. The new National Scenic Byways Program created out of the Intermodal Surface Transportation Efficiency Act (ISTEA) has further motivated Oregon to develop a scenic byways program. The newly established Oregon criteria dovetail perfectly with the national program, thus enhancing a local byway's chance for elevation to national stature once application is made.

Oregon has the added benefit of the work done by the Bureau of Land Management and the U.S. Forest Service. Each agency has implemented national programs, the Back Country Byways and the National Forest Scenic Byways, respectively. These routes vary from single track bike trails to narrow, low speed, paved roads. Each has a special aesthetic, cultural or historic value. These corridors may also contain outstanding vistas, unusual geology or other elements, all providing enjoyment to the traveler. These routes will be incorporated into the new statewide program to network with state, county and city scenic corridors.

INTRODUCTION

The purpose of this guide is to assist in the creation of a scenic byway or tour route in the Oregon Scenic Byway Program. The steps for preparing an application for designation are outlined.

Suggestions for grassroots organizing to build local support and guidelines for assessing your route for existing qualities, conditions and possible needs are included. The information you assemble will be used to develop a corridor management plan which, in conjunction with letters of support, funding sources and a marketing plan, will be submitted to the Oregon Scenic Byway Advisory Committee.

The reviewing agencies, Oregon Scenic Byway Advisory Committee, Oregon Transportation Commission and Oregon Tourism Council have set review time lines to ensure prompt response to applications. The preapplication will be reviewed within 60 days and a determination will be made on the final application within 90 days of its receipt. (If your byway must be reviewed during a specific time of the year, the designation may be delayed until the appropriate review time.)

Every attempt has been made to provide complete information and projected time lines at the time this volume was published. There may be additions and/or modifications of which you will be notified when you contact the Oregon Department of Transportation (ODOT).

WHAT IS AN OREGON SCENIC BYWAY?

GOALS OF SCENIC BYWAYS

The Oregon Scenic Byway Program is intended to achieve three primary goals:

1. To create a unified, statewide network of scenic highways that would recognize and manage Oregon's most outstanding scenic routes;
2. to preserve or enhance the natural, scenic, historical, cultural, recreational, and/or archaeological qualities of Oregon's byways; and
3. to provide a pleasurable attraction for in-state and out-of-state travelers.

In order to achieve these goals, objectives for the program were identified which are important in making this program a success:

- Having Oregon Scenic Byway designees meet consistent, statewide criteria.
- Roads to be designated as Scenic Byways must have management plans developed by the local applicant. The plan should balance the maintenance of the scenic or other qualities with travel, tourism and/or development needs.
- A state map and other promotional materials listing the designated byways will be developed and distributed for use by travelers and tourists.

There are two categories in the Scenic Byway system. **Scenic Byways** include the most scenic roads that would accommodate most travelers. **Tour Routes** include all the other routes with limited drivability routes with unique fea-

tures. These routes can be made up of a combination of local, state and/or federal agency roadways.

Scenic Byways, as a classification, would contain examples of truly spectacular routes with national or statewide significance and the best scenic drives in Oregon. They would be paved and passable by passenger car or RV and meet certain road and safety standards. If certain routes are closed seasonally, they will be identified. Also, scenic routes must be a minimum of 30 miles in length. Promotion will be done at the state level.

Tour Routes encompass regionally or locally known scenic, cultural, or historic values which also have features or points of interest that draw people out of their vehicles. These could include wine tours, covered bridge tours or resource management tours. Tour Routes may also be primitive routes requiring high-clearance vehicles, with scenery or attractions ranging from national to local significance. The Tour Routes should be safe for the prescribed season and required type of vehicle. Tour Routes must be a minimum of 20 miles in length. Promotion will be the responsibility of the proponent.

For specific criteria comparison refer to Appendix 1. It is important to note that *both* of these classifications are of *equal* importance to the development of a comprehensive scenic byways program.

The term "scenic byway" refers to the overall program and applies to the creation of a scenic byway or a tour route. Since the process for designation is the same, this manual uses "scenic byway" to represent both aspects.

A. PROPONENT

The proponent is an individual, group or agency which prepares the application for scenic byway designation. In order to be awarded a scenic byway designation, the proponent must demonstrate local support. The success of the byway depends upon the level of commitment for maintaining and promoting the byway long after it is designated. Thus, building supportive relationships is of key importance.

As soon as a proponent is identified, make contact with Pat Moran at the Oregon Department of Transportation, TDB, Planning Section, 555 13th Street NE, Salem, Oregon 97310, (503) 986-4261, to express your interest in developing a scenic byway. He can assist you with any questions you may have about scenic byways and the application process.

B. BUILDING LOCAL SUPPORT

Building local support is critically important to the success of your byway project. The development and maintenance of an effective scenic byway is a grassroots effort and depends on the ideas, energy and expertise of many people. It is useful to begin soliciting local participation early. You will quickly identify where support and opposition may lie. Organizing support of your project is an ongoing process. Throughout this guide, you will be reminded to continue your efforts to keep people informed and encourage participation.

Begin by making contact with other local individuals, associations and agencies to form a group that is interested in exploring the possibility of developing a scenic byway. Ideally, coalition members are those local people with contacts and influence. People to consider contacting initially would include:

- Agencies in charge of managing the road (city, county, U.S. Forest Service, BLM, ODOT, etc.). **Without the support of the agency which manages the road, no scenic byway designation may be considered.**

Much of Oregon is federally managed land. Calling the agency with jurisdiction in your area will be very helpful in identifying the road managers. It will be crucial to have their involvement in the whole process, so it is a good idea to contact these agencies first and enlist their help and support. Remember, the Forest Service and Bureau of Land Management have been leaders in the national scenic byway movement, so they have a lot of experience to offer.

- Corridor property owners. County tax records will indicate private property owners.
- Representatives of other major interests in the corridor. These might include tribal councils, State Parks Department, Department of Fish and Wildlife, business owners, city officials, etc.
- Convention & Visitor Bureaus, Chambers of Commerce or local tourism promotion groups.

Remember, everyone in the coalition does not have to agree on every point. There will be people who broadly support the byway idea and those that are concerned about the impact it will have on their interests, but are willing to consider common solutions. Coalition members can be invaluable in promoting the idea of a byway, especially to those with reservations or objections. It is important to identify potential concerns early to allow time for resolution.

In addition to the coalition you build, it will be important to engage general support. This can include individuals as well as clubs and organizations that can lend their assistance. Hold public meetings to keep the community informed and to solicit input. Community members have much more ownership in a project in which they have had some involvement. Some tips for conducting successful and productive public meetings are:

- Advertise the meeting well in advance through press releases, public meeting listings in the local paper and mailed meeting notices.

- Meet in a familiar and accessible location (restaurant, school, library, etc.).
- Choose a strong and effective leader.
- Have a clear agenda that you stick to.
- Start and end on time.

Take advantage of the media in your area to keep people informed. Go to your local paper, television, or radio station, and explain the project; really sell the idea. Supply press releases and photo opportunities whenever you can.

C. PREAPPLICATION

Before you go any further, complete the preapplication form and submit it to the Oregon Department of Transportation. A blank form for your use is at the end of this chapter (page 4); a completed sample preapplication form is included in Appendix. The Oregon Scenic Byway Committee will review the preapplication and determine within 60 days whether it should continue in the designation process. The Committee's determination will be based on:

- How well the route meets the Oregon Scenic Byway criteria (see Appendix 1); and
- how the proposed route fits in the pattern of currently designated and pending routes to avoid confusion or over saturation in specific areas.

Be sure to include all the necessary information such as a map of the corridor boundaries with attributes noted and numbered, photographs to highlight special areas, and letters of support, especially from road management agencies.

If the committee rejects the proposed byway as outlined in the preapplication, they will explain what they saw as weaknesses and provide suggestions for improvements. If they approve the preapplication, it will be time to begin preparing a corridor management plan, marketing plan and gathering support documents for a final application to the committee. A final application form and sample corridor management plan will be sent to you upon approval of your preapplication.

If you have questions about the preapplication, contact Pat Moran at the Oregon Department of Transportation, TDB, Planning Section, 555 13th Street NE, Salem, Oregon 97310, (503) 986-4261, FAX (503) 986-4174.

STATEMENT OF PURPOSE

Once you have a core group of proponents in place, a commitment of support from the road manager, and your preapplication has been approved, it is useful to define a **statement of purpose** which is the reason why you want to propose a route for scenic byway designation. If you would like ideas for preparing a statement of purpose, refer to Appendix 5.

EXAMPLE

Your statement of purpose may look like this:

Our purpose is to develop a scenic byway that preserves the roadway's natural and agricultural qualities which include the wildlife preserve, rolling agricultural lands, large nursery and oak groves while developing tourism opportunities including enhanced marketability of the historical towns.

D. EVALUATING YOUR ROUTE

This is the time to assess objectively your byway's strengths and weaknesses -- to look realistically at what you have to work with. Remember, be realistic. While the beauty and history of an area may be significant to you, you must consider objectively whether it has statewide significance. The local road management agency may be helpful with your assessment. The evaluation exercise in Appendix 7 may also be useful.

Tools

Before beginning your evaluation, there are tools you can assemble to assist you.

- Maps—Locate them through the local planning department, Forest Service, BLM, county and ODOT offices. Tax assessor maps identify property owners. Zoning maps delineate land uses.
- Camera—"A quality picture is worth a thousand words" when trying to convince someone of the qualities of your route.
- Local experts—Identify who these people are. They can include historians, local long-time residents, landscape architects, botanists, etc., who can help identify special qualities and history of the corridor.

- **Library research**—The library is a great source of information on geology, history and culture of the area. If you don't know where to begin, ask the reference librarian for help.

Values Inventory

What are the features that make this roadway special and unique? It is helpful to get in your car and drive the route as if for the first time. Take a piece of paper and pencil with you (and preferably a couple of other people) and make a rough sketch of the road, noting its general characteristics and resources. Look for qualities of the road that are:

- Scenic
- Historical
- Cultural
- Natural
- Recreational
- Archeological

Keep in mind that overlapping of one element into two or more categories is good.

Ask other people for input. You can supplement your visual inventory with research on the area. Contact the U.S. Forest Service, BLM, and/or local historical and preservation societies for assistance and information.

Existing Conditions

In addition to the qualities that you inventoried above, it is helpful to have a clear understanding of the existing conditions, both attributes and distractions, of the road and area. These can be useful when identifying what is needed to reach your vision and goals for the byway. Use your local and regional agencies to assist you in obtaining information. Some things to consider are:

- **Physical Conditions:** number of lanes, surface quality, turnouts, etc.
- **Land Use:** zoning and usage along the corridor.
- **Traffic:** traffic flow, congestion, types of vehicles, speed zones, etc.
- **Safety factors:** dangerous curves, adequate lighting, etc.
- **Utilities:** wires overhead, underground or crossing the road.
- **Signs:** directional signs, billboards, etc.

Tourism and Economic Development

In addition to protecting the scenic qualities of a byway, most communities are interested in de-

veloping tourism and economic opportunities. If that is true for your community, then the final task in assessing the byway is determining the resources that are available for tourism and economic development.

Begin by considering what type of tourism you want to attract. Do you want to double the tourism in your area or do you want a small increase? Are you more interested in increasing the number of tourists, the amount of money they spend, or both? Would the draw be a specific season or year round? Would you be appealing to RV travelers, tour buses, hikers/bikers/campers, etc.?

What tourism resources does your area have to offer? *Remember, for there to be a significant economic impact you have to get the tourists out of their cars and give them something to buy.* What would be the draw? Would it be the scenery of your byway, historic sites, local museums and festivals, fishing, river running, or waterfalls? Or would it be to shop for antiques, visit wineries, or partake in cultural events?

Now look around your community and byway area and list the facilities that are available for tourists. Do you have enough hotels and restaurants? What about parking, public restrooms, information kiosks and directional signs? If not, think about what you would like to see developed and where.

VISION STATEMENT

With the information you have on hand about the byway, you could write a vision statement that articulates what you would like the byway to be in the future. Vision statements can help you stay focused when conflicts or the need for compromises arise. From a vision statement, you can also establish goals, objectives and specific management strategies. For more information on these, refer to Appendix 5.

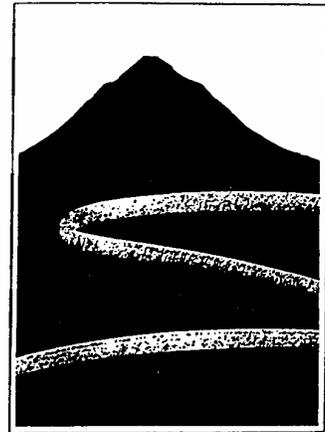
EXAMPLE

Your vision statement may look like this:

A well-surfaced, rolling roadway through scenic agricultural lands and oak groves. Tourists are drawn to the wildlife preserve, winery and nursery. Quaint historical towns provide shopping, dining and overnight accommodations.

**PREAPPLICATION FOR THE
OREGON SCENIC BYWAY PROGRAM**

The following general information must be provided with letters of support from all jurisdictional agencies. A map delineating the corridor and noting key attributes, by number, must accompany this preliminary application. Photographs, interpretive brochures and other supporting materials may also prove helpful.



Submission Date: _____

PROPONENT INFORMATION

Proponent(s) _____

Contact Person _____ Phone _____

Business/Organization _____

Address _____ City _____ Zip _____

ROUTE INFORMATION

Roadway Name _____ Roadway Number _____

Beginning Point _____ (Mileposts) _____

Ending Point _____ (Mileposts) _____

Total Mileage _____

Road Surface (Asphalt or Other, Specify) _____

Timing: During which month of the year would you prefer the route be rated? _____

General Route Description (include any existing designations and recognitions) _____

Describe Route Primary Theme (recreational, scenic, historic, cultural, etc.) _____

Road Jurisdictional Agencies

Contact Person

Phone Number

| | | | |
|----|-------|-------|-------|
| 1. | _____ | _____ | _____ |
| 2. | _____ | _____ | _____ |
| 3. | _____ | _____ | _____ |
| 4. | _____ | _____ | _____ |

General Route Attributes (include positive attributes and distractions/modifications)

Map Number

| | | |
|-----|-------|-------|
| 1. | _____ | _____ |
| 2. | _____ | _____ |
| 3. | _____ | _____ |
| 4. | _____ | _____ |
| 5. | _____ | _____ |
| 6. | _____ | _____ |
| 7. | _____ | _____ |
| 8. | _____ | _____ |
| 9. | _____ | _____ |
| 10. | _____ | _____ |

Completed preliminary applications must be returned to:

**Oregon Scenic Byway Committee, c/o Pat Moran, Oregon Department of Transportation,
TDB, Planning Section, 555 13th Street NE
Salem, Oregon 97310**

CHAPTER 2: DEVELOPING A CORRIDOR MANAGEMENT PLAN

The next step is preparing a corridor management plan to be submitted as part of your final application. The corridor management plan compiles your goals and objectives and specific techniques and strategies for implementation. Each management plan will be different due to differing roadway qualities and local goals. As stated earlier, the plan should balance the maintenance of the scenic or other qualities with travel, tourism and/or development needs.

Having evaluated your corridor, you understand its qualities and have considered the type of development you are seeking. Identify the values in your route that correspond to the Oregon Scenic Byway criteria (see Appendix 1). A corridor management plan should include the following information.

- How the values of your route will be protected.

- How the values will be interpreted for the public.
- How the road and parking will be maintained to enhance those values and for public safety.
- How the values of the route will be enhanced.

The Oregon Department of Transportation, the Bureau of Land Management and the U.S. Forest Service already have management strategies for scenic routes. If your route is managed by one of these agencies, their management techniques will be a guide for your corridor management plan. **It is important to work in conjunction with the road managing agency in developing a management plan.** If your corridor is not managed by one of these agencies, the steps outlined in Appendix 5 may be of assistance.

For a sample corridor management plan contact Pat Moran, ODOT, (503) 986-4261.

CHAPTER 3: APPLICATION

A. DOCUMENTATION

Compile your corridor management plan, letters of support, funding sources, and marketing plan for submission to the Department of Transportation for final review. A marketing plan outline can be found in Appendix 6.

B. REVIEW PROCESS

1. The Oregon Scenic Byways Committee field team will do a site evaluation which will be submitted along with your application to the Oregon Scenic Byways Advisory Committee for review. The Committee will review the application based on how it measures against the scenic byway criteria. If the pro-

ponent is seeking a scenic byway, but the road does not meet the drivability or scenic standards, the route may be considered as a tour route.

2. Upon recommendation of the Oregon Scenic Byways Advisory Committee, the application will be forwarded to the Oregon Transportation Commission and Oregon Tourism Council for review. Both the Commission and the Council must adopt the recommendation for the route by a two-thirds majority for it to receive designation.
3. If it is not recommended, the proponent will receive comments stating the reasons for rejection and possible improvements.

CHAPTER 4: IMPLEMENTATION AND MAINTENANCE

A. IMPLEMENT CORRIDOR MANAGEMENT PLAN

Implementation will include installing signage and executing the marketing plan.

B. COMMITTEE COMPLIANCE REVIEWS

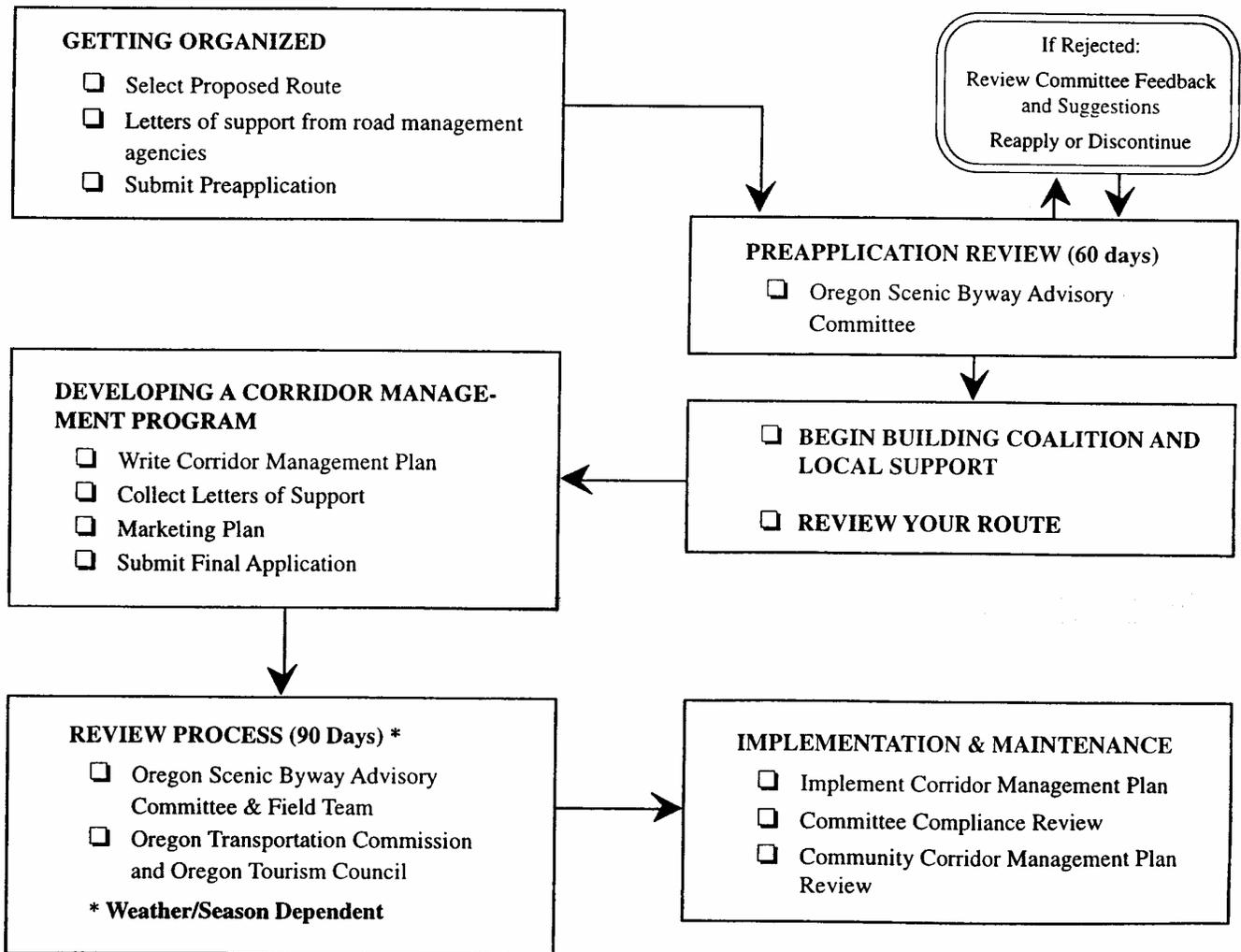
The Oregon Scenic Byways Advisory Committee will review the roadway's compliance to scenic byway criteria at least every five years. The evaluation will be conducted by the Committee's field team.

C. COMMUNITY CORRIDOR MANAGEMENT REVIEW

The proponent committee should meet periodically to evaluate viability and progress of the corridor management plan. Since this is a working document, continual community input is necessary to ensure the vision is held and the goals are met.

Congratulations on completing the Oregon Scenic Byway designation process! If you are interested in placing your route in competition as a National Scenic Byway, contact the National Scenic Byways Clearinghouse, 1440 New York Avenue NW, Suite 202, Washington, DC, 20005, 1-800-4BYWAYS.

FLOW CHART & CHECKLIST



APPENDIX 1

SCENIC BYWAY AND TOUR ROUTE CRITERIA

SCENIC BYWAY CRITERIA

| BEST | MODERATE | MINIMAL |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><u>LANDFORM</u></p> <p>Topographic relief is visible, <u>dominant</u>, and exceptional.</p> <p>- <u>High vertical relief</u></p> | <p>Topographic relief is visible, interesting, though <u>not dominant</u> or exceptional.</p> <p>- <u>Moderate vertical relief</u></p> | <p>Topographic relief is <u>absent</u> or <u>not noticeable</u>.</p> <p>Low rolling hills, flat valley bottoms.</p> <p>- <u>No vertical relief</u></p> |
| <p><u>VEGETATION</u></p> <p>High degree of vegetative patterns provide <u>unusual</u> or <u>outstanding diversity</u>.</p> | <p>Vegetative patterns providing <u>limited variety</u> or <u>visual diversity</u> but only one or two major types.</p> | <p>Vegetative patterns have little or <u>no variety</u> or <u>visual diversity</u>.</p> |
| <p><u>WATER</u></p> <p>Water bodies or streams that are a <u>dominant feature in the landscape</u>.</p> <p>- <u>High visual interest</u></p> | <p>Water bodies or streams are present but <u>not dominant feature in the landscape</u>.</p> <p>- <u>Limited visual interest</u></p> | <p>Water bodies or streams are <u>absent</u>, or present but <u>not noticeable</u>.</p> <p>- <u>No visual interest</u></p> |
| <p><u>COLOR</u></p> <p><u>Rich color combinations, variety or vivid color</u>; or pleasing contrasts in the soil, rock, vegetation, water or snow fields.</p> <p>- <u>A dominant scenic element</u></p> | <p><u>Some intensity or variety in colors</u> and contrast of the soil, rock, vegetation, <u>but not a dominant scenic element</u>.</p> | <p>Subtle color variations, contrast, or interest, generally mute tones.</p> |
| <p><u>MODIFICATIONS</u></p> <p><u>Modifications do not add or subtract to visual harmony</u>.</p> | <p><u>Modifications are present, discordant and promote disharmony</u>.</p> | <p><u>Modifications</u> are very discordant and promote strong disharmony.</p> |
| <p><u>UNIQUENESS/SCARCITY</u></p> <p><u>One of a kind; or very rare within region</u>. Regions are defined in "Statewide Comprehensive Outdoor Recreation Plan" (SCORP) for Oregon 1988-93.</p> <p>- Any unique combination of scenic elements such as landform, vegetation, water, wildflowers or consistent wildlife.</p> | <p><u>Only a few examples within the region</u></p> | <p>- <u>Fairly common within region</u></p> <p>- Many examples within regions</p> <p>- Nothing unique</p> |

The following criteria will be used in addition to the Scenic Byway Criteria for designation in the Tour Route category. The number of specific points of interest and the relative value of them will be weighed against the total length of the route. This is to ensure that a route has a sufficient number of points of interest or significant values.

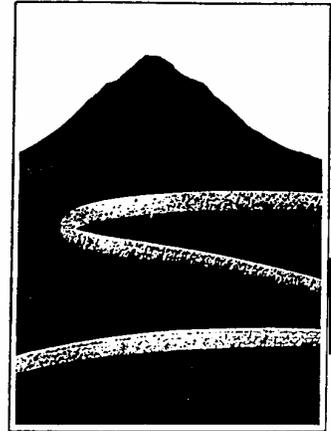
TOUR ROUTE CRITERIA

| BEST | MODERATE | MINIMAL |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><u>HISTORIC</u></p> <p>National Register Site, or nationally known event or site.</p> <p>Site is well defined and clearly shows history.</p> <p>Comprehensive interpretation provided.</p> | <p>National Register Site, or nationally known event or site.</p> <p>Site may require some visualization to show history.</p> <p>Moderate interpretation provided.</p> | <p>Non-National Register Site.</p> <p>Local Significance.</p> <p>Site may be difficult to understand.</p> <p>Minimal interpretation provided.</p> |
| <p><u>NATURAL</u></p> <p>Part of nationally designated area.</p> <p>Uniquely diverse ecological system.</p> <p>Spectacular feature: waterfall, large lake or geological formation.</p> <p>Probable opportunity to view unusual animals, birds, or major fish runs.</p> <p>Numerous examples of significant features and their interpretation.</p> <p>Comprehensive interpretation provided.</p> | <p>State or Regional designation.</p> <p>Highly interesting ecological system.</p> <p>Highly interesting feature: mountain lakes or cascades.</p> <p>Possible opportunity to view big game, fish runs, or other interesting unusual wildlife.</p> <p>Route is enhanced by numerous natural vistas, interpretive pull-outs or natural interpretive trails.</p> <p>Moderate interpretation provided.</p> | <p>Local designation.</p> <p>Interesting ecological system.</p> <p>Interesting features: meadows, creeks, rocks.</p> <p>Chance to view wildlife.</p> <p>Minimal interpretation provided.</p> |
| <p><u>AGRICULTURE/FORESTRY</u></p> <p>Nationally recognized as an "Oregon" product.</p> <p>Growth or processing are unusually interesting.</p> <p>Comprehensive interpretation provided.</p> | <p>Product representative of region.</p> <p>The route is enhanced by a high concentration of interpretive pull-outs or roadside farm marketing developments.</p> <p>Moderate interpretation provided.</p> | <p>Product representative of local area.</p> <p>Corridor is enhanced by wineries, popular tourist stops, or popular examples of agriculture or forestry.</p> <p>Minimal interpretation provided.</p> |

APPENDIX 2

**PREAPPLICATION FOR THE
OREGON SCENIC BYWAY PROGRAM**

The following general information must be provided with letters of support from all jurisdictional agencies. A map delineating the corridor and noting key attributes, by number, must accompany this preliminary application. Photographs, interpretive brochures and other supporting materials may also prove helpful.



Submission Date: 3/6/95

PROPONENT INFORMATION

Proponent(s) Wallowa-Whitman National Forest

Contact Person Rich Tobin Phone 523-1246

Business/Organization _____

Address PO Box 907 City Baker City, OR Zip 97814

ROUTE INFORMATION

Roadway Name Hells Canyon N.F.S. Scenic Byway Roadway Number _____

Beginning Point LaGrande (Mileposts) Exit 261 I-84

Ending Point Baker City (Mileposts) Exit 304 I-84

Total Mileage 314 Miles

Road Surface (Asphalt or Other, Specify) Paved except two spur roads and all weather gravel.

Timing: During which month of the year would you prefer the route be rated? Mid-June

General Route Description (include any existing designations and recognitions) Travel through the majestic mountain country of the Wallowa-Whitman National Forest to impressive Hells Canyon. The route has been designated as a National Forest Scenic Byway.

Describe Route Primary Theme (recreational, scenic, historic, cultural, etc.) Different segments of the route have different themes which shall include recreational, scenic, historical, geological, wildlife, cultural and forest management.

| Road Jurisdictional Agencies | Contact Person | Phone Number |
|----------------------------------|----------------------|-----------------------|
| 1. <u>Wallowa-Whitman N.F.S.</u> | <u>Rich Tobin</u> | <u>523-1246</u> |
| 2. <u>Wallowa County</u> | <u>Judge Esley</u> | <u>426-4543</u> |
| 3. <u>Idaho Power</u> | <u>Dwayne Wood</u> | <u>(208) 383-2901</u> |
| 4. <u>ODOT State of Oregon</u> | <u>Bob Reitmajer</u> | <u>963-5314</u> |

| General Route Attributes (include positive attributes and distractions/modifications) | Map Number |
|---------------------------------------------------------------------------------------|------------|
| 1. <u>Ladd Marsh Wildlife Preserve</u> | <u>8</u> |
| 2. <u>Wallowa Mountains Visitor Center</u> | <u>7</u> |
| 3. <u>Wallowa Lake</u> | <u>6</u> |
| 4. <u>Wallowa Mountains and Eagle Cap Wilderness</u> | <u>5</u> |
| 5. <u>Hells Canyon Visitor Information Station</u> | <u>3</u> |
| 6. <u>Hells Canyon Overlook</u> | <u>4</u> |
| 7. <u>Hells Canyon National Recreation Area</u> | <u>2</u> |
| 8. <u>National Historic: Oregon Trail Interpretive Center</u> | <u>1</u> |
| 9. _____ | _____ |
| 10. _____ | _____ |

Completed preliminary applications must be returned to:

**Oregon Scenic Byway Committee, c/o Pat Moran, Oregon Department of Transportation,
TDB, Planning Section, 555 13th Street NE
Salem, Oregon 97310**

GLOSSARY

Agriculture/Forestry: Crops, wineries, vineyards, ranches, fisheries, old growth and reforested lands.

Archeological: Archeological explorations and findings, ranging from dinosaurs to historical excavations of old military forts.

BLM: Bureau of Land Management

Color: Overall colors of the basic components of the landscape (e.g., soil, rock, vegetation, etc.) as they appear during seasons or periods of high use. Key factors are variety, contrast and harmony.

Corridor: The linear area through which a scenic byway route passes. A corridor has a determined length and width.

Cultural: Cultural qualities are often historic qualities as well. They include museums, universities, or even ethnic communities. Also look for industries and resources which were responsible for growth and community identity such as logging and fishing.

Distractions: Structures or conditions that detract from the scenic quality of the corridor (e.g., overhead utility lines, topped trees, road signs that block a view, etc.).

Drivability: Driving safety, ease and pleasure as related to road standards (e.g., lane and shoulder width, traffic character, etc.).

FHWA: Federal Highway Administration

Historical: May be represented in structures or objects, wagon wheel trails, burial sites, or even by less tangible evidence. Development patterns such as farming practices would also qualify as a human modification to the natural environment.

ISTEA: Pronounced "ice tea" the Intermodal Surface Transportation Efficiency Act of 1991. ISTEA outlines national policy and goals for the nation's transportation system.

Land Form: Topography becomes more interesting as it gets steeper or more massive, or more severely sculptured. Outstanding landforms may be monumental or exceedingly artistic and subtle.

Land Use: The existing or proposed manner in which a piece of property can be most easily identified. (e.g., residential, commercial, agricultural, etc.)

Modifications: Modifications in the landform, water, vegetation or addition of structures that detract from or complement the scenic quality.

Natural: This includes natural features such as geologic formations, wildlife sites, waterfalls, lake basins, old-growth stands, mountain meadows, etc. The probable opportunity to view animals, birds or fish runs would also apply.

ODOT: Oregon Department of Transportation

Paved: Hard surface such as concrete or bituminous.

Proponent: Individual, or group, which proposes a scenic byway designation.

Recreational: Traditionally associated with nature-based outdoor recreation such as skiing, white water rafting, camping, exploring tide pools, bike paths or good bicycle access, picnicking, horseback riding, etc.

Scenic: Multiple elements such as water, buildings, fields, mountains, trees, farm lands, orchards, etc. The composition of the features is important. Look for views which inspire awe by the way the various elements are combined. The same features, if found in a different order, may not be as spectacular.

Scenic Byways: Encompass scenic, historic, recreational and cultural values of not only the roadway right-of-way, but also the adjacent visual resources.

Uniqueness/Scarcity: The relative scarcity or abundance of a particular unique scenic resource or combination of features within the geographic region.

Vegetation: Forest, prairies, orchards, active farm crop land and tree farms. Consider variety of patterns, forms and textures created by plant life. Consider smaller scale vegetational features which add striking and intriguing detail elements to the landscape.

View: The area seen from a fixed point in space.

Viewshed: Entire view area (all directions) from a fixed point in space; the entire linear view area seen from the spine (roadway) of the corridor.

Vista: A broad and sweeping view usually, though not exclusively, framed by an element or elements in the foreground.

Water: Ocean, rivers, lakes, waterfalls, rapids, marshes, canals and harbors. That ingredient which adds movement or serenity to a scene. The degree to which water dominates the scene.

APPENDIX 4

RESOURCE LIST

AAA of Oregon

Attn: Wendy Parr
600 SW Market Street
Portland, Oregon 97201
(503) 222-6729

Oregon Historical Society

1200 SW Park Avenue
Portland, Oregon 97205
(503) 222-1741

Bureau of Land Management

Attn: Ken White
PO Box 2965
Portland, Oregon 97208
(503) 952-6002

Oregon Parks & Recreation Department

Attn: Kathy Shutt
525 Trade Street SE
Salem, Oregon 97310
(503) 378-6305

National Scenic Byways Clearinghouse

1440 New York Avenue NW, Suite 202
Washington, DC 20005
1-800-4BYWAYS FAX (202)783-4798

Scenic America

21 Dupont Circle NW
Washington, DC 20036
(202) 833-4300 FAX (202) 833-4304

Oregon Department of Transportation

Attn: Pat Moran
TDB, Planning Section
555 13th Street NE
Salem, Oregon 97310
(503) 986-4261 FAX (503)986-4174

Travel Information Council

Attn: Wendy Cloyd
229 Madrona Street SE
Salem, Oregon 97310
(503) 378-4508 FAX (503) 378-6282

**Oregon Economic Development
Department, Tourism Division**

Attn: Robin Roberts
775 Summer Street NE
Salem, Oregon 97310
(503) 986-0004 FAX (503) 986-0001
TDD (503) 986-0123

U.S. Forest Service

Attn: Chuck Tietz
PO Box 3623
Portland, Oregon 97208
(503) 326-2310

Oregon Forestry Department

2600 State Street SE
Salem, Oregon 97310
(503) 945-7200 TDD (503) 945-7213

| ODOT | BLM | FOREST SERVICE | |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Statewide Scenic Byway Coordinator 525 13th Street NE Salem, OR 97310 986-4261 | Oregon State Office 1515 SW 5th Ave PO Box 2965 Portland, OR 97208 952-6001 | USDA Forest Service Region 6 Engineering PO Box 3623 Portland, OR 97208-3623 | Umpqua NF 2900 NW Stewart Pkwy PO Box 1008 Roseburg, OR 97470 672-6601 |
| Region 1 123 NW Flanders Portland, OR 97209-4037 731-8200 | Burns District Office HC 74-12533 Hwy. 20 West Hines, OR 97738 573-5241 | Deschutes NF 1645 Hwy. 20 E Bend, OR 97701-4864 388-2715 | Wallowa-Whitman NF 1550 Dewey Ave PO Box 907 Baker, OR 97814 523-6391 |
| Region 2 123 NW Flanders Portland, OR 97209-4037 986-2631 | Coos Bay District Office 1300 Airport Lane North Bend, OR 97459-2000 756-0100 | Fremont NF 524 North G St. Lakeview, OR 97630-0058 947-2151 | Willamette NF 211 E 7th Ave. PO Box 10607 Eugene, OR 97440-2607 465-6521 |
| Region 3 3500 NW Stewart Parkway Roseburg, OR 97470 440-3399 | Eugene District Office 2890 Chad Dr. PO Box 10226 Eugene, OR 97440 683-6600 | Malheur NF 139 NE Dayton St John Day, OR 97845 575-1731 | Winema NF 2819 Dahlia Klamath Falls, OR 97601-7119 883-6714 |
| Region 4 63055 N Hwy. 97 PO Box 5309 Bend, OR 97708 388-6180 | Lakeview District Office 1000 Ninth St. S PO Box 151 Lakeview, OR 97630 947-2177 | Mt. Hood NF 2955 NW Division St. Gresham, OR 97030 666-0700 | Columbia River Gorge NSA 902 Wasco Ave., Suite 200 Hood River, OR 97031 386-2333 |
| Region 5 3012 Island Ave. La Grande, OR 97850 963-3177 | Medford District Office 3040 Biddle Rd. Medford, OR 97504 770-2200 | Ochoco NF 3000 E 3rd St. Prineville, OR 97754-0490 447-6247 | |
| | Prineville District Office 185 E Fourth St. PO Box 550 Prineville, OR 97754 447-4115 | Rogue River NF 333 W 8th St. PO Box 520 Medford, OR 97501 776-3600 | |
| | Roseburg District Office 777 NW Garden Valley Blvd. Roseburg, OR 97470 440-4930 | Siskiyou NF 200 NE Greenfield Rd PO Box 440 Grants Pass, OR 97526 471-6500 | |
| | Salem District Office 1717 Fabry Rd SE Salem, OR 97306 375-5646 | Siuslaw NF PO Box 1148 Corvallis, OR 97339 750-7000 | |
| | Vale District Office 100 Oregon St Vale, OR 97918 473-3144 | Umatilla NF 2517 SW Hailey Ave Pendleton, OR 97801-3942 278-3721 | |

1. IDEAS FOR DEVELOPING A STATEMENT OF PURPOSE

Begin by answering the following questions in a very general way (specifics come later).

- ***What makes your route special?***
Make some quick notes on a flip chart about the things which are unique and special. Look beyond the obvious and ask if there were events of historical importance that local people take for granted which might be of interest to visitors.
- ***How do you imagine your proposed byway in fifteen years?***
Will it be the same as it is now or do you anticipate changes? Keep in mind that we have an aging population and that the “baby boomers” will be out in force driving RVs, riding bicycles, hiking, etc. What sort of accommodations would they need?
- ***What would you like to achieve by developing a scenic byway?***
Scenic preservation? Tourist revenue and jobs helping to stabilize the economy of your community?

The answers to these questions form your broad statement of purpose. It will be refined later as you continue through the process. This statement will be useful to refer back to in the future if you begin to lose a clear focus on why you are working to develop a scenic byway.

EXAMPLE

If the answers to your questions look like this:

- Special qualities include: wildlife preserve; winery; small historical towns; large nursery; rolling agricultural lands; oak groves.
- Looking at our byway in fifteen years we see: preserved natural and agricultural qualities with developed tourism opportunities including enhanced marketability of the historical towns.
- By developing a scenic byway, we want to preserve the natural and agricultural qualities of the road while developing new income from tourism.

Your statement of purpose may look like this:

Our purpose is to develop a scenic byway that preserves the roadway's natural and agricultural qualities which include a wildlife preserve, rolling agricultural lands, a large nursery and oak groves, while developing tourism opportunities including enhanced marketability of the historical towns.

2. WRITING A VISION STATEMENT

With the information you have on hand about the byway, you are prepared to articulate your vision for the byway. A vision statement is simply a statement of purpose coupled with your dreams and grounded by the information you have compiled. Look at your original statement of purpose and the information you compiled on resources, existing conditions, tourism and economic development and incorporate it in a broad context. You don't need to define how you are going to achieve your vision, but having a clear vision will guide you in the future when you begin to address the “how-to's.” Inevitably, you will run into conflicts and the need for compromises. When these times arise, you can weigh future plans against the vision.

The easiest way to write a vision statement is to write, *in the present tense*, what the byway will look like in the future. Imagine yourself in fifteen years looking at the byway. What do you see?

EXAMPLE

Refer to your original statement of purpose (above).

Your vision statement may look like this:

A well-surfaced, rolling roadway through scenic agricultural lands and oak groves. Tourists are drawn to the wildlife preserve, winery and nursery. Quaint historical towns provide shopping, dining and overnight accommodations.

3. ESTABLISHING GOALS AND OBJECTIVES

At this point you begin to realize your vision. Your goals and objectives are the blueprint for making your dreams and vision a reality. Look at your vision statement and pull out the key components. These are the clues to identifying

your goals and objectives. In general, you have the things you want in the future, but how to keep them in their present form or change them to fit your community vision requires work.

For instance, in the example below, in 15 years the wildlife preserve hopefully is going to be pretty much as it is today, but that information would need to be verified with the managing agency. The agricultural land is probably privately owned and, therefore, is open to changing patterns of development. Land use regulations may need to be verified and/or modified. Increasing tourism requires a number of factors to work in tandem in order to make a viable marketing plan. Using just three key components, you can examine how goals and objectives are developed.

EXAMPLE

Vision Statement:

A well surfaced, rolling roadway through scenic agricultural lands and oak groves. Tourists are drawn to the wildlife preserve, winery and nursery. Quaint historical towns provide shopping, dining and overnight accommodations.

The key components in this vision statement are:

- A well surfaced, rolling roadway
- Scenic agricultural lands and oak groves
- Wildlife preserve, winery and nursery as tourist draws
- Quaint historic towns provide tourist facilities and attractions

GOAL 1

Guarantee continued preservation of the wildlife refuge.

Objectives:

1. Contact managing agency and confirm future intent.
2. If needed begin necessary negotiations for continued use in present form.

GOAL 2

Protect agricultural lands.

Objectives:

1. Review land use and zoning designations.
2. Work with local property owners to agree upon a common future vision.

GOAL 3

Increasing tourism.

Objectives:

1. Develop a marketing plan.
 2. Develop historic qualities and tourist facilities which may include food service, overnight accommodations in the form of hotels, bed and breakfasts, RV parks and historic tours or markers.
 3. Develop roadside information kiosks at wildlife refuge, nursery and winery.
-

4. TECHNIQUES TO MEET GOALS AND OBJECTIVES

At this point you determine specific ways in which you implement your objectives. These may include, but are not limited to, land use and zoning regulations, informal agreements, community action, funding sources, partnerships with other communities and agencies. The list is endless, limited only by your creativity. This is the time to take advantage of all the coalition building and community support you have been developing throughout this process.

EXAMPLE

GOAL

Increase Tourism.

Objective

1. Develop historic qualities and tourist facilities which may include food service, overnight accommodations in the form of hotels, bed and breakfasts and RV parks, and historic tours or markers.

Technique to meet objective:

1. Coordinate road managers and business concerns for appropriate promotional signage.
 2. Partnership with local historical society.
 3. Apply for national registry of applicable property.
 4. Work with local business owners to develop a unified "look".
 5. Work with city planners to develop additional parking, which will include accommodation for RV's.
-

HOW TO WRITE A MARKETING PLAN

Before you start, have you:

- Appraised your tourism potential
- Developed your product
- Planned for Tourism

STEP ONE: THE MISSION STATEMENT

Decide what your product is, what makes your product appealing, what benefits it offers, and where it stands within the marketplace.

STEP TWO: ASSESSING THE SITUATION

- Begin with a basic statement of what your product is -- be objective.
- Look at all areas related to your product: Direct and indirect.
- Discover your strengths and weaknesses.

STEP THREE: WHO IS THE COMPETITION?

- Evaluate their product in the same way you define your own.
- Remain as objective as possible.

STEP FOUR: MARKETING OBJECTIVES

- Decide what you want your marketing effort to accomplish.
- Define where you want your product to go.
- Decide if the market is broad or a niche market.
- Be practical in determining overall objectives.

STEP FIVE: MARKETING GOALS

- Examine current sales and overall growth realistically.
- Isolate travel and tourism sales from overall sales, when appropriate.
- Consider uncontrollable factors of growth - environment, economy, etc.
- Determine your motivation and set measurable goals.

STEP SIX: COMMUNICATION STRATEGY

- Identify the primary market you need to reach - trade and/or consumer.
- Communicate your products' strengths clearly.
- Conduct specific market research (consumer and travel trade).
- Implement on a realistic timeline.

STEP SEVEN: PROGRAM AREAS

- Advertising: Creative, used to develop awareness, but its true purpose is to influence public opinion.
- Public Relations: Generates positive awareness and credibility.
- Promotions: Involves product demonstrations and communicates to a smaller group.
- Sales efforts: Finalizes the decision-making process and moves the products off the shelf and into the hands of the consumer.

STEP EIGHT: THE BUDGET: HOW ARE WE GOING TO PAY FOR IT?

- Long range funding sources.
- Rework, revise, and update plan as reality sets in.
- Potential return on investment will help to determine a reasonable cost.
- Long term vs. short term investments.
- Coordination is key for a successful plan. One person should coordinate, but several will implement.
- An excellent marketing plan will be defeated if the customer is unhappy.

STEP NINE: EVALUATION

- Analyze each year's results.
- Track your return on investment, evaluate measurable goals.
- Implement an ongoing break-out of cost effectiveness, then modify your plan.
- Recognize patterns related to seasonality, advertising, public relations, promotion or sales efforts and changes in personnel; modify when appropriate.

STEP TEN: LONG TERM OBJECTIVES

- Make accurate guesses about the durability of your product.
- Develop your marketing plan for 3-5 years ahead.
- Plan long term - allow for insight and flexibility.
- Revisit your plan at regular scheduled intervals.

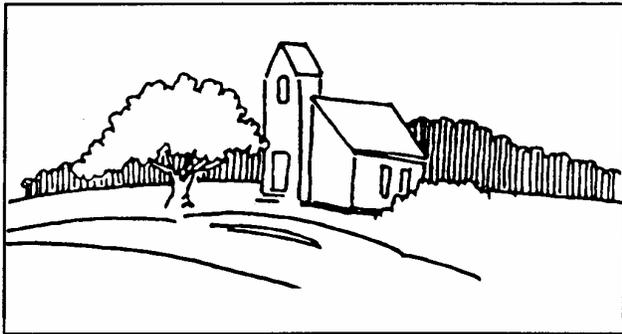
RESOURCE EVALUATION EXERCISE

As your group begins to assess the resources along your route, it will be important to consider which ones you value the most. What gives the road its special appeal or character? Is it an individual resource or how several interact that make the byway so attractive and appealing?

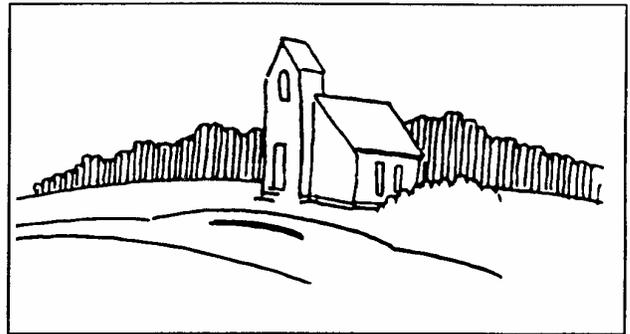
The following exercise is a sample of one you can do when identifying what resources need to be protected or enhanced along your byway.

THE OLD SCHOOLHOUSE

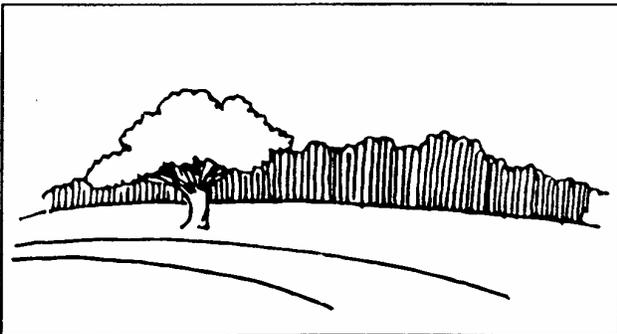
In the first picture, the old schoolhouse and ancient oak are identified as valuable byway resources. Now imagine a resource gone, one by one.



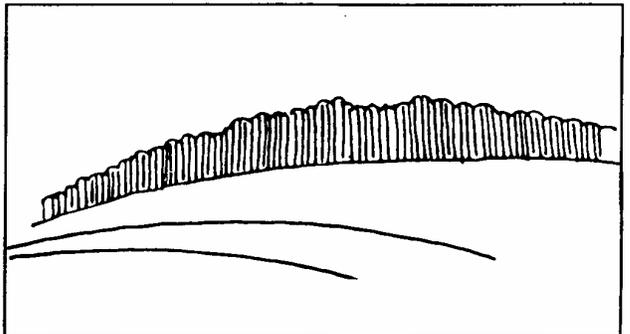
What about the ancient oak? Is it not also important to the schoolhouse? Would the schoolhouse be the same if the ancient oak were to be cut down in a road widening project?



How would you feel if the old schoolhouse by the ancient oak were gone as in this picture? Upset? If so, this may be a good indication that the schoolhouse is an important asset.

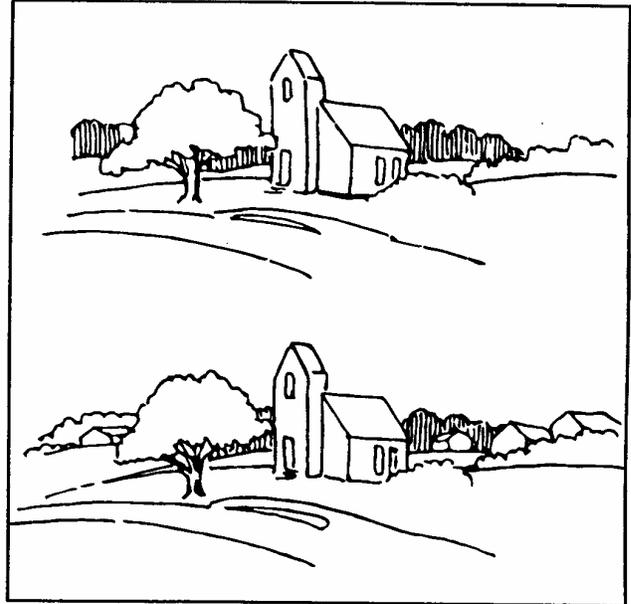
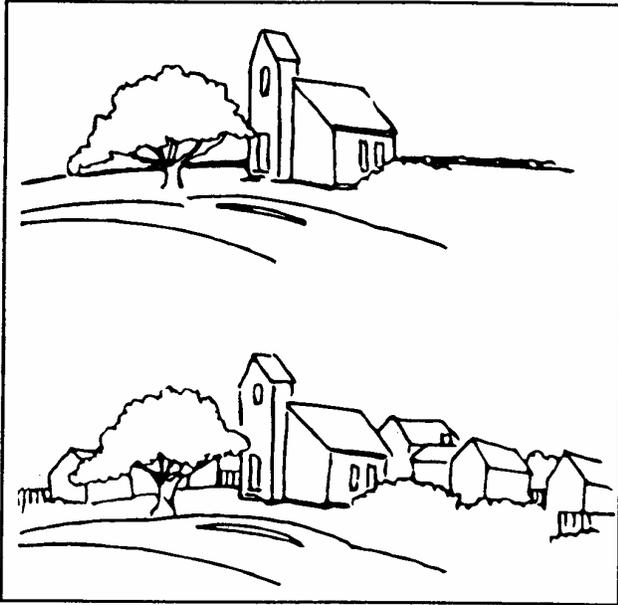


What about no old schoolhouse or ancient oak? If their disappearance does not seem significant then they are probably not a significant element in the appeal of your byway.



What is the impact of future small scale development?

What about larger scale development? How does it affect the skyline? Is overall open space a valuable resource?



* Modified from a draft copy "Scenic Byways Community Guide To Corridor Management & Planning" U.S. Department of Transportation Federal Highway Administration. June, 1994. (Complete test available through National Scenic Byways Clearinghouse).



Appendix B

ODOT AND YAMHILL COUNTY TRUCK ROUTES

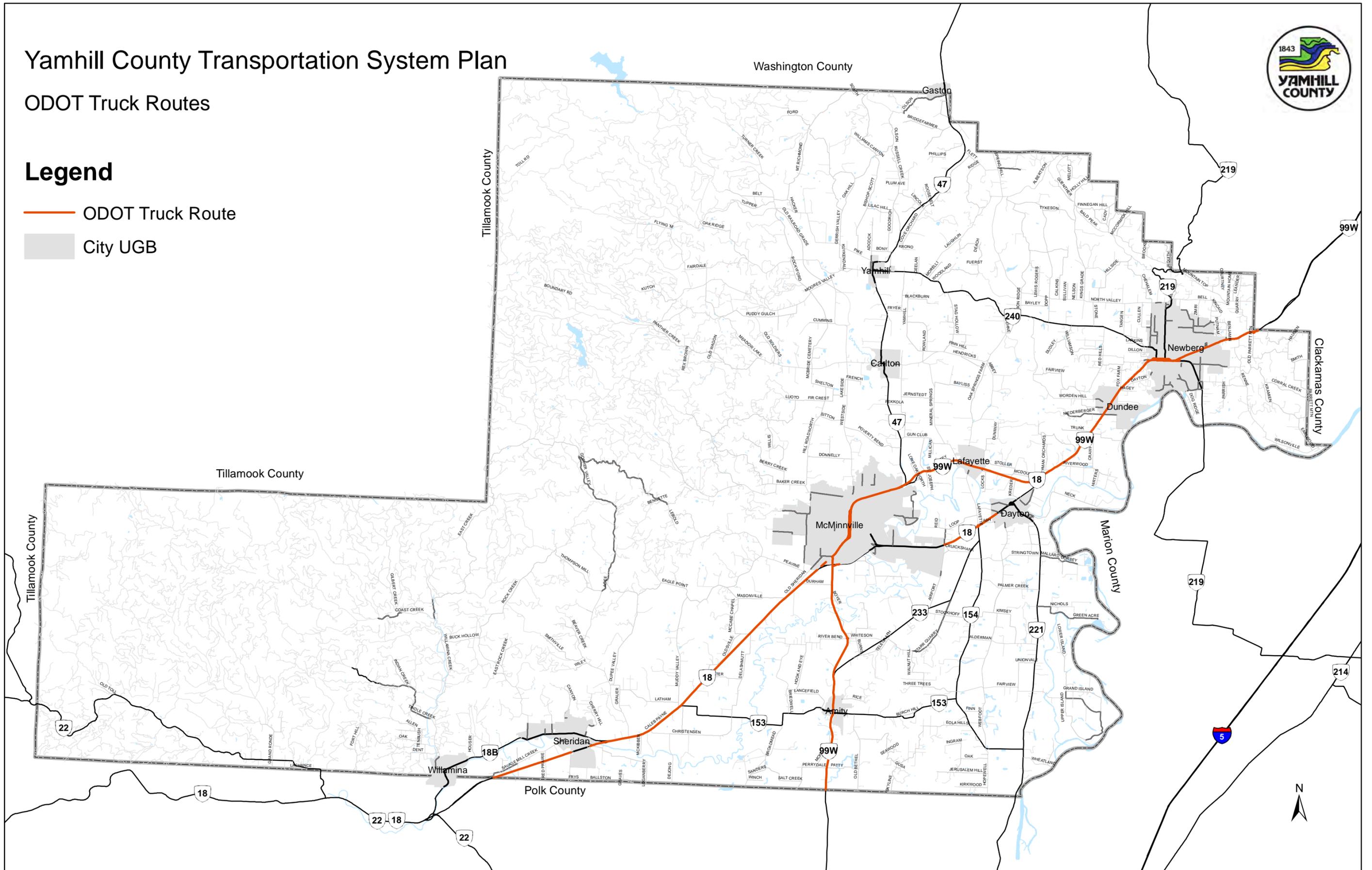
| Hwy | RDNO | BEGMP | ENDMP | Name | ODOT OHP Classification | NHS | Freight Route | Truck Route | Scenic Byway | Express | Bypass | Highway Segment Designation | Highway Design Manual Classification | Notes |
|----------|------|-------|-------|----------------------|-------------------------|-----|---------------|-------------|--------------|---------|--------|-----------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| 18 | 039 | 29.76 | 32.62 | Salmon River Highway | Statewide | NHS | FR | TR | | EXPR | BP | | Rural Principal Arterial - Other | |
| 18 | 039 | 33.33 | 43.76 | Salmon River Highway | Statewide | NHS | FR | TR | | EXPR | BP | | Rural Principal Arterial - Other to 43.51 | Urban Principal Arterial - Other after 43.51 |
| 18 | 039 | 48.54 | 50.69 | Salmon River Highway | Statewide | NHS | FR | TR | | EXPR | BP | | Rural Principal Arterial - Other | |
| 18 | 039 | 51.98 | 52.71 | Salmon River Highway | Statewide | NHS | | | | | BP | | Rural Principal Arterial - Other | |
| 47 | 029 | 25.72 | 26.54 | Tualatin Valley | Regional | | | | | | | STA | Rural Minor Arterial | |
| 47 | 029 | 37.89 | 38 | Tualatin Valley | Regional | | | | | | | STA | Rural Minor Arterial | |
| 99W | 153 | 6.23 | 6.3 | Bellevue-Hopewell | Regional | | | TR | | | | | Rural Minor Arterial | |
| 219, 99W | 140 | 20.19 | 20.55 | Hillsboro-Silverton | Statewide | NHS | | TR | | | | | Urban Principal Arterial - Other | |
| 219, 99W | 140 | 20.55 | 20.73 | Hillsboro-Silverton | Statewide | | | TR | | | | | Urban Principal Arterial - Other | |
| 99W | 091 | 19.86 | 22.89 | Pacific Highway West | Statewide | NHS | FR | TR | | | | | Urban Principal Arterial - Other to 19.88 | Rural Principal Arterial - Other from 19.88 to 21.36 Urban Principal Arterial - Other from 21.36 to 22.89 |
| 219, 99W | 091 | 22.89 | 23.18 | Pacific Highway West | Statewide | NHS | FR | TR | | | | | Urban Principal Arterial - Other | |
| 99W | 091 | 23.18 | 23.45 | Pacific Highway West | Statewide | NHS | FR | TR | | | | | Urban Principal Arterial - Other | |
| 99W | 091 | 23.45 | 23.95 | Pacific Highway West | Statewide | NHS | FR | TR | | | | | Urban Principal Arterial - Other | |
| 99W | 091 | 23.95 | 27.09 | Pacific Highway West | Statewide | NHS | FR | TR | | | | | Rural Principal Arterial - Other | |
| 99W | 091 | 27.09 | 28.05 | Pacific Highway West | Statewide | NHS | FR | TR | | | | | Rural Principal Arterial - Other | |
| 99W | 091 | 28.05 | 29.79 | Pacific Highway West | Statewide | NHS | FR | TR | | | | | Rural Principal Arterial - Other | |
| 99W | 091 | 29.79 | 32.18 | Pacific Highway West | Statewide | NHS | FR | TR | | | | | Rural Minor Arterial | |
| 99W | 091 | 32.18 | 32.57 | Pacific Highway West | Regional | | | TR | | | | | Rural Minor Arterial | |
| 99W | 091 | 32.57 | 32.97 | Pacific Highway West | Regional | | | TR | | | | | Rural Minor Arterial | |
| 99W | 091 | 32.97 | 33.74 | Pacific Highway West | Regional | | | TR | | | | | Rural Minor Arterial | |
| 99W | 091 | 33.74 | 34.22 | Pacific Highway West | Regional | | | TR | | | | | Rural Minor Arterial | |
| 99W | 091 | 34.22 | 35.14 | Pacific Highway West | Regional | | | TR | | | | | Rural Minor Arterial to 35.01 | Urban Principal Arterial - Other from 35.01 |
| 99W | 091 | 35.14 | 37.01 | Pacific Highway West | Regional | | | TR | | | | | Urban Principal Arterial - Other | |
| 99W | 091 | 37.01 | 38.23 | Pacific Highway West | Regional | | | TR | | | | | Urban Principal Arterial - Other | |
| 99W | 091 | 38.23 | 39.24 | Pacific Highway West | Regional | | | TR | | | | | Urban Principal Arterial - Other | |
| 99W | 091 | 39.24 | 44.68 | Pacific Highway West | Regional | | FR | TR | | | | | Urban Principal Arterial - Other to 39.34 | Rural Minor Arterial from 39.34 |
| 99W, 153 | 091 | 44.68 | 44.75 | Pacific Highway West | Regional | | FR | TR | | | | | Rural Minor Arterial | |
| 99W | 091 | 44.75 | 47.52 | Pacific Highway West | Regional | | FR | TR | | | | | Rural Minor Arterial | |

Yamhill County Transportation System Plan

ODOT Truck Routes

Legend

-  ODOT Truck Route
-  City UGB





YAMHILL COUNTY WEIGHT RESTRICTED BRIDGES AND APPROVED ROUTE LIST ATTACHMENT C36

Yamhill County Weight Restricted Bridges & Roads

| Highway | Crossing | Approximate Location | Mile Point | Tandem Axle | 3 axle group within 20 feet not uniform in weight | 3 axle group within 20 feet uniform in weight | 4 axle group within 20 feet not uniform in weight | 4 axle group within 20 feet uniform in weight |
|------------------------|----------------|-----------------------------------------|------------|-----------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------|---------------------------------------------------|-----------------------------------------------|
| County Park | Dear Creek | 1/4 mile West of Gopher Valley Road | | Restricted to 10 ton load limit | | | | |
| County Park | Baker Creek | 1/8 mile South of Baker Creek Road | | Restricted to 22 ton load limit | | | | |
| Power House Road /284 | Baker Creek | 1/16 mile Southwest of Baker Creek Road | 1.445 | Restricted to 12 ton load limit | | | | |
| Oak Ridge Road / 244 | Yamhill River | 3/4 mile West of Moores Valley Road | 0.779 | Restricted to 38 ton load limit | | | | |
| Patty Lane /454 | Ash Swale | 1/2 mile East of OR99W | 0.420 | Restricted to legal axle weights, 28 ton 3 axle, 24 ton type 3, 40 ton 6 axle, 36 ton 5 axle. | | | | |
| Bayley Road/100 | Chehalem Creek | 1/4 mile East of Ribbon Ridge Road | 0.245 | Restricted to 14 ton type 3, 21 ton type 3S2 and 23 ton type 3-3. | | | | |
| Adcock Road / 262 | None / Roadway | Just off Pike Road North end only | | Restricted to 12 Tons | | | | |
| Power House Road / 284 | None / Roadway | Just off of Baker Creek Road | | Restricted to 12 Tons | | | | |

PILOT VEHICLE REQUIREMENTS

| WIDTH | FRONT PILOTS REQUIRED | REAR PILOTS REQUIRED |
|------------------|-----------------------|----------------------|
| 08'07" TO 09'00" | NONE | NONE |
| 09'01" TO 10'00" | ONE | NONE |
| 10'01" TO 11'00" | ONE | ONE |
| 11'01" TO 12'00" | ONE | ONE |
| 12'01" TO 14'00" | ONE | ONE |

**Yamhill County Approved Route List
(SEE YAMHILL COUNTY TRUCK ROUTE MAP)**

Truck Tractor/Semitrailer Combinations may operate at a maximum of 75 feet in overall length on all county highways except roads listed below.
Double Trailer Combinations may operate at a maximum of 95 feet in overall length on all county highways except roads listed below.
Truck & Trailer Combinations may operate at a maximum of 75 feet in overall length on all county highways except roads listed below.
Log Truck & Pole Combinations 95 feet in overall length on all county highways except roads listed below.

ROUTE 1

**Truck Tractor/Semi Trailer Combinations 60 Feet
 Double Trailer Combinations 75 Feet
 Truck & Trailer Combinations 75 Feet
 Log Truck & Pole Combinations 75 Feet**

| Highway | From | To |
|-------------------|-------------------|----------------------|
| North Valley Road | Ribbon Ridge Road | Spring Hill Road |
| Bald Peak Road | Hwy. 219 | Bald Peak State Park |

ROUTE 2

Truck Tractor/Semitrailer Combinations may operate at a maximum of 50 feet in overall length on the county highways listed below.
Double Trailer Combinations may operate at a maximum of 65 feet in overall length on the county highways listed below.
Truck & Trailer Combinations may operate at a maximum of 65 feet in overall length on the county highways listed below.
Log Truck & Pole Trailer Combinations may operate at a maximum of 65 feet in overall length on the county highways listed below.

| Highway | From | To |
|----------------|----------------------|------------------------|
| Bald Peak Road | Bald Peak State Park | Washington County Line |
| Quarry Road | Hwy. 99W | Bell Road |
| Bell Road | Springbrook | Mountain Top |
| Kreder Road | Hwy. 18 | Hwy. 99W |

Yamhill County Approved Route List

All Vehicle Combinations are limited to 50 feet in overall length except the highways listed below

- The maximum length of a semitrailer in a truck-tractor semitrailer combination is 53 feet.
- The maximum length of a semitrailer in a truck tractor semitrailer trailer combination (doubles) is 40 feet. The distance measured from the front trailer to the rear trailer cannot exceed 68 feet.
- The maximum length of a truck or trailer in a truck trailer combination is 40 feet.

Truck Tractor/Semitrailer Combinations may operate at a maximum of 75 feet in overall length on the county highways listed below.
Double Trailer Combinations may operate at a maximum of 95 feet in overall length on the county highways listed below.
Truck & Trailer Combinations may operate at a maximum of 75 feet in overall length on the county highways listed below.

| Highway | From | To |
|------------------|----------------------|----------------------|
| Springbrook Road | Newberg City Limits | OR219 |
| Loganberry Lane | Sheridan City Limits | OR18 |
| Whiteson Road | OR99W | Amity-Dayton Highway |

Truck Tractor/Semitrailer Combinations may operate at a maximum of 65 feet in overall length on the county highways listed below.
Double Trailer Combinations may operate at a maximum of 95 feet in overall length on the county highways listed below.
Truck & Trailer Combinations may operate at a maximum of 75 feet in overall length on the county highways listed below.

| Highway | From | To |
|------------------|----------------------|-------------|
| Christensen Road | OR18 | Dejong Road |
| Cruickshank Road | Amity-Dayton Highway | OR18 |

Truck Tractor/Semitrailer Combinations may operate at a maximum of 60 feet in overall length on the county highways listed below.
Double Trailer Combinations may operate at a maximum of 95 feet in overall length on the county highways listed below.
Truck & Trailer Combinations may operate at a maximum of 75 feet in overall length on the county highways listed below.

| Highway | From | To |
|----------------------|----------------------------|--------------------|
| Willamina Creek Road | Fort Hill Road | OR18 Business |
| Fort Hill Road | Willamina Creek Road | Dent Road |
| Westside Road | McMinnville City Limits | Moores Valley Road |
| Moores Valley Road | Westside | OR47 |
| Hendricks Road | Carlton City Limits | Kuehne Road |
| Mineral Springs Road | OR99W | Hendricks Road |
| Kuehne Road | Hendricks/Abby Interchange | OR240 |

| Highway | From | To |
|------------------|------------|-------------------|
| Spring Hill Road | Flett Road | Cunningham Lane |
| Flett Road | OR47 | Spring Hill Road |
| Tangen Road | OR240 | North Valley Road |

Truck Tractor/Semitrailer Combinations may operate at a maximum of 60 feet in overall length on the county highways listed below.
Double Trailer Combinations may operate at a maximum of 75 feet in overall length on the county highways listed below.
Truck & Trailer Combinations may operate at a maximum of 75 feet in overall length on the county highways listed below.

| Highway | From | To |
|-------------------|-------------------|----------------------|
| Christensen Road | Dejong Road | Bellevue Highway |
| Delashmutt Lane | OR18 | Bellevue Highway |
| Riverbend Road | OR99W | Briedwell Road |
| Briedwell Road | Riverbend Road | Bellevue Highway |
| Starr Quarry Road | Telegraph Road | Amity-Dayton Highway |
| Eola Hills Road | Lafayette Highway | Old Bethel Road |
| Pike Road | OR47 | Tupper Road |
| Turner Creek Road | Tupper Road | MP 6.83 |
| Hawn Creek Road | OR99W | Gun Club Road |

SPECIAL NOTE ROUTES

NE WORDEN HILL ROAD No access to or from Hwy. 240 for vehicles in excess of 30 feet
WILSONVILLE HWY. No through truck traffic from Hwy. 219 to (Clackamas County Line)
DURHAM LANE No through truck traffic from 99W. to Hwy. 18
RIVERSIDE DRIVE No through truck traffic from R/R Track North to City Limits South
STOCKOFF ROAD Starr Quarry road to Lafayette Hwy. NO. 154, **UNCONTROLLED ONE WAY TRUCK TRAFFIC** through "S" curves for Route 2 Type, and larger combinations. All traffic must clear this restricted area before proceeding.

ADDITIONAL NOTE:

All Commercial Vehicle operators need to be aware of State Highway restrictions within Yamhill County. Some Yamhill County Roads allow longer combinations lengths than the State Highways.

ODOT Phone Number (503) 373-0000

Appendix C

TRUCK ROUTES FOR HAZARDOUS MATERIALS

Subpart C—Routing of non-radioactive hazardous materials

§397.67 Motor carrier responsibility for routing.

(a) A motor carrier transporting NRHM shall comply with NRHM routing designations of a State or Indian tribe pursuant to this subpart.

(b) A motor carrier carrying hazardous materials required to be placarded or marked in accordance with 49 CFR 177.823 and not subject to a NRHM routing designations pursuant to this subpart, shall operate the vehicle over routes which do not go through or near heavily populated areas, places where crowds are assembled, tunnels, narrow streets, or alleys, except where the motor carrier determines that:

(b)(1) There is no practicable alternative;

(b)(2) A reasonable deviation is necessary to reach terminals, points of loading and unloading, facilities for food, fuel, repairs, rest, or a safe haven; or

(b)(3) A reasonable deviation is required by emergency conditions, such as a detour that has been established by a highway authority, or a situation exists where a law enforcement official requires the driver to take an alternative route.

(c) Operating convenience is not a basis for determining whether it is practicable to operate a motor vehicle in accordance with paragraph (b) of this section.

(d) Before a motor carrier requires or permits a motor vehicle containing explosives in Class 1, Divisions 1.1, 1.2, 1.3, as defined in 49 CFR 173.50 and 173.53 respectively, to be operated, the carrier or its agent shall prepare a written route plan that complies with this section and shall furnish a copy to the driver. However, the driver may prepare the written plan as agent for the motor carrier when the trip begins at a location other than the carrier's terminal.

You — as a licensed carrier or driver — are ultimately responsible for the safe transportation of your hazardous cargo.

Not all hazardous materials shipments present a risk requiring routing. Shipments affected by these prohibitions are:

- Bulk Cargo Tanks requiring placarding
- Any amount of hazardous material that is required to be marked or placarded in accordance with 177.823; also see FMCSR 397.1 and 397.67
- ANY QUANTITY OF:
 - o Explosives Class: 1.1, 1.2, & 1.3
 - o Poison Gases: 2.3 – Zone A or B
 - o Dangerous When Wet: 4.3

For Further Information

- DOT Motor Carrier Enforcement: (503) 378-3667
- Portland Office of Emergency Management: (503) 823-4375
- Informational Recording: (503) 823-1300



Truck Routes for Hazardous Materials in the Portland Area



May 2009



Truck transportation of hazardous materials creates potential health and safety problems for the general public, as well as for those who drive the trucks. Trucks hauling hazardous materials should use the safest available highway routes. Safe routes are those where accidents are less likely to occur, and where the consequences will be less severe if accidents occur.

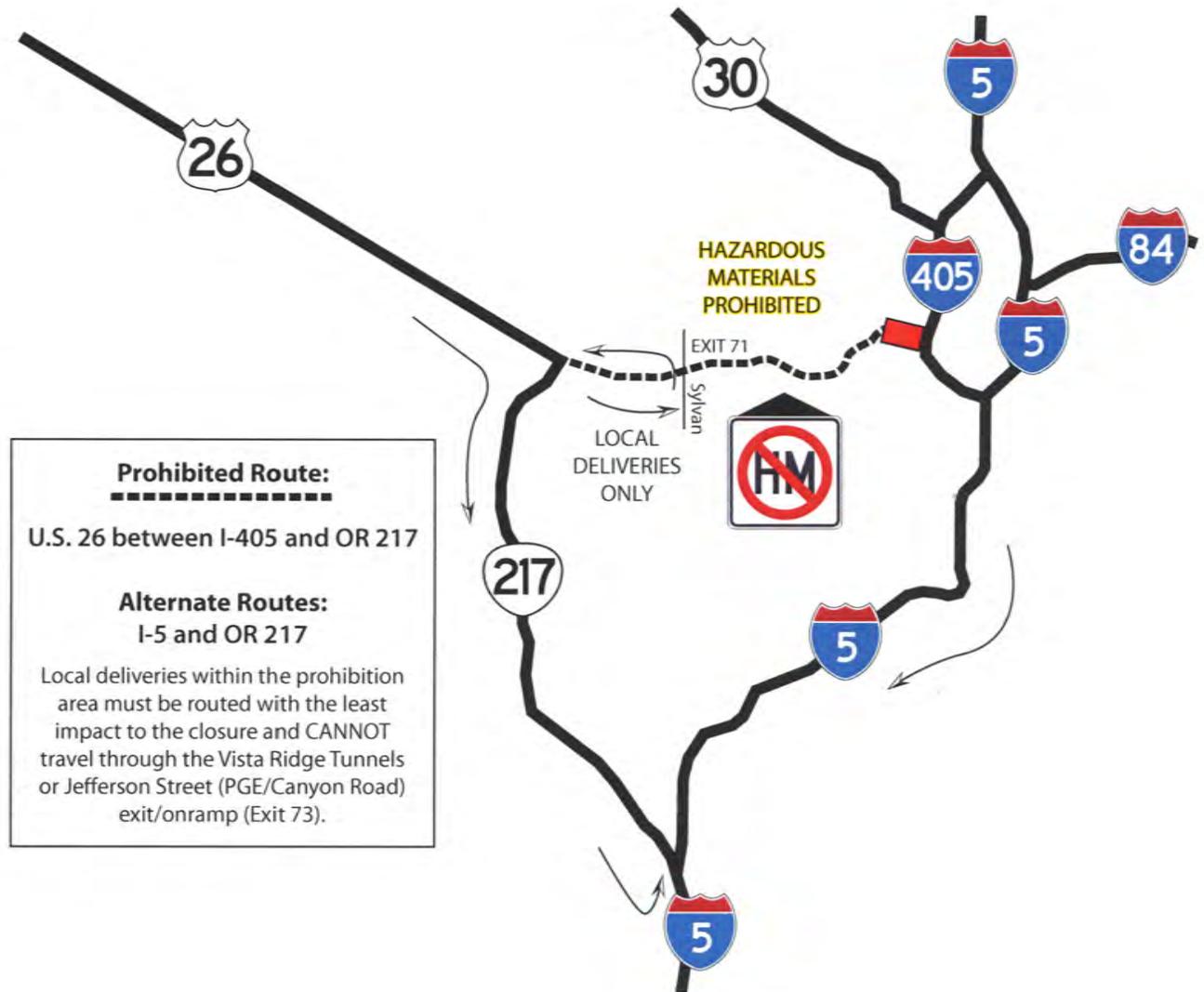
These prohibitions have been in place since 1994.

The route identified on the map in this brochure was selected after thorough study by motor-carrier and public safety officials familiar with the Portland area.

Federal Motor Carrier Safety Regulations:

“Unless there is no practical alternative, a motor vehicle that contains hazardous materials must be operated over routes which do not go through or near heavily populated areas, places where crowds are assembled, tunnels, narrow streets, or alleys.

...Operating convenience is not a basis for determining whether it is practicable to operate a motor vehicle in accordance with this paragraph...”



Prohibited Route:

 U.S. 26 between I-405 and OR 217

Alternate Routes:
 I-5 and OR 217

Local deliveries within the prohibition area must be routed with the least impact to the closure and CANNOT travel through the Vista Ridge Tunnels or Jefferson Street (PGE/Canyon Road) exit/onramp (Exit 73).

Know before you go!





Appendix D

YAMHILL COUNTY ROAD MAINTENANCE/RECONSTRUCTION PRIORITIZATION POLICY

**YAMHILL COUNTY PUBLIC WORKS DEPARTMENT
ROAD MAINTENANCE/RECONSTRUCTION
PRIORITIZATION POLICY**

BACKGROUND

Adequate maintenance of Yamhill County roadways is critical for public safety and economic development. In the long term, it is much less expensive to maintain the surface and integrity of a roadway than to do inadequate maintenance and have to replace it prematurely.

Yamhill County maintains 667 miles of roads and 132 bridges. Historically, funding for maintenance of the system has fallen short of the need, although Department practices have kept the County paved roads in relatively good condition. Property taxes pay for schools, fire districts and other County services but not roads. Road maintenance is funded by gas tax, trucker's weight/mile tax, vehicle licensing fees, and some federal timber receipts. It is important to note that from 2000-2007, the County received approximately \$450,000 per year in federal timber receipts from a law called PL 106-393. This equated to about 10% of the Road budget. These timber funds have been primarily used to resurface paved roads with chip seals and asphalt overlays and to make major repairs/replacements of county bridges. PL 106-393 has expired. As of April 2008, Congress has not reauthorized this law. Without reauthorization of this funding, the pavement resurfacing program will be substantially reduced. This loss of funding impacts the ability of the department to adequately maintain the condition of the paved road system (called the "pavement condition index") and to repair/replace some county bridges.

Maintaining the roadway system, including unimproved portions of the right-of-way, includes a wide range of activities. These include relatively minor activities, such as replacing signs, to major and more costly activities, such as replacing a deteriorating roadway surface.

This policy and implementing strategies address maintaining roadway conditions at certain base-level standards, and establishing priorities for determining how available resources will be allocated to achieve and maintain these condition levels. This policy calls for continuing the practice of developing an annual Road Maintenance Program that specifically identifies maintenance projects and activities for the year and how anticipated resources will be allocated. It also calls for a county-wide prioritization policy to replace the current "quadrant" approach to road maintenance/reconstruction activities.

DEFINITIONS

Road classifications and maintenance activities are defined below and are prioritized in Table 1.

"Arterial Road" is a road that carries substantial statewide or interstate travel, or that links cities, larger towns, and other major traffic generators to provide interregional and intercounty service.

"County Road" means a public road under the jurisdiction of a county that has been designated as a county road under ORS 368.016. [ORS 368.001 (1)].

"Emergencies" are occurrences that cause a road to become impassable, or which require prompt action in order to protect human life. Examples of activities that may be required in response to emergency situations include, but are not limited to, sanding, snow removal, flooding, slides and washouts.

"General Maintenance" includes preventative activities required to keep a road in good condition. Typical maintenance activities include pothole patching, grading graveled roads, cleaning drainage facilities (pipes and ditches), mowing roadside grass and clearing brush, maintaining traffic control devices and replacing damaged signs. More intensive forms of general maintenance include heavy patching and sealing, asphalt overlays, and repair of damage caused by ice, snow, flooding or landslides.

"Hazards" are existing or pending conditions which may cause the operator of a vehicle to lose control, enter another travel lane, or could otherwise lead to an emergency situation in which a person or property is at risk of injury or damage. Examples of maintenance to eliminate hazards include, but are not limited to, pothole patching on high speed roads, gravel road reshaping, eliminating sight obstructions, cleaning up chemical spills, and replacing damaged or missing safety equipment such as guardrails.

"Local/Resource Road" is a road that accommodates travel over short distances as compared to collectors or arterials and primarily provides access to adjacent land and important natural resource land.

"Major Collector Road" is a road that serves important intra-county travel corridors, including larger towns not served by higher classified roads, and other traffic generators of equivalent county importance, such as schools, county parks, and important economic areas.

"Mandated Services" are activities required by Federal, State or local laws. Specific authorization varies for each type of activity. Examples of such activities include, but are not limited to, installation and maintenance of traffic control devices, signs, road striping and stenciling, and traffic analysis related specifically to road safety problems.

"Minor Collector Road" is a road that collects traffic from local roads, provides service to smaller communities, and links locally important traffic generators with rural destinations.

"Minor Improvements" include what might be considered limited and relatively low cost projects that go beyond general maintenance but are often done in conjunction with general maintenance to address a specific problem that would not be addressed by general maintenance activities. Examples include widening shoulders, improvement of sight distance at intersections, intersection improvements, large culvert replacements, and drainage improvements.

"Public road" means a road over which the public has a right of use that is a matter of public record [ORS 368.001 (5)].

“Reconstruction” projects rebuild substandard or deteriorated roads to County design standards. These projects are sometimes considered a comprehensive form of maintenance with a purpose to improve the roadway base rather than to address a safety or capacity problem, although building to County design standards generally has beneficial effects on safety and capacity. This includes rebuilding a gravel road as a paved road.

ROAD MAINTENANCE/RECONSTRUCTION PRIORITIZATION POLICY

It is the policy of Yamhill County to establish annual road maintenance and reconstruction programs that protect public safety and property, make effective use of available funds, and preserve the County’s investment in its transportation system.

Implementation Strategies

1. Confine county road maintenance and reconstruction program activities to roads that have been formally accepted as “County Roads”. County funds will not be expended for the maintenance or improvement of “public” or private roads. Emphasis will be placed upon maintaining those County roads that were constructed to County structural standards.
2. Prioritize road maintenance and reconstruction expenditures annually in a resolution and order adopted by the Board of Commissioners, using Table 1 as a guide.

Table 1. Road Maintenance Priority Matrix

| Activity | Road Classification/Priority ^a | | | |
|----------------------------------|-------------------------------------------|-----------------|-----------------|---------------------|
| | Arterial | Major Collector | Minor Collector | Local/Resource Road |
| Mandated | 1 | 1 | 1 | 1 |
| Emergencies | 1 | 1 | 1 | 1 |
| Hazards | 1 | 1 | 1 | 1 |
| General Maintenance ^b | 2 | 3 | 4 | 7 |
| Minor Improvements | 5 | 6 | 10 | 12 |
| Reconstruction | 8 | 9 | 11 | 13 |

a. 1 is the highest priority; 13 is the lowest priority

b. Surface maintenance of paved roads will be in conformance with the base condition concept described in strategy 4.

3. The Yamhill County Road Improvement Advisory Committee (RIAC) will review procedures and response times for dealing with emergency and non-emergency requests for road maintenance service annually. RIAC will recommend revisions as needed to the Yamhill County Board of Commissioners to ensure the most effective use of available maintenance funds.

4. Implement a "Base Condition" concept for the maintenance of paved roads under which the average Pavement Condition Index (PCI) of all paved roads within a functional class are at or above the levels shown in Table 2.

Table 2. Pavement Condition Index (PCI) Base Condition

| Functional Class | Average PCI | Road Miles |
|---------------------|-------------|-----------------------------------------------|
| Arterial | 80 | 90% of road miles greater than or equal to 70 |
| Major Collector | 75 | 90% of road miles greater than or equal to 65 |
| Minor Collector | 70 | 90% of road miles greater than or equal to 55 |
| Local/Resource Road | 65 | 90% of road miles greater than or equal to 50 |

5. Develop a "Base Condition" concept for gravel roads that will provide a systematic measurement and reporting of their condition.
6. Limit expenditures for major reconstruction projects to those County roads that are not identified as needing capacity improvements prior to 2015, identifying and prioritizing these projects in the Transportation Capital Improvement Program.
7. Except as noted in Strategy #4, finance reconstruction and minor improvement activities for Local Streets through localized funding mechanisms, such as the creation of service districts or Local Improvement Districts (LIDs) established exclusively for maintenance of these roads, as allowed by Oregon Revised Statutes and County ordinance.
8. Encourage annexation to a city for Local Roads within urban and urban reserve areas.

PRIVATE FINANCING FOR ROAD IMPROVEMENTS

A policy for Cooperative Road Improvement Projects (CRIP) was adopted by the Yamhill County Board of Commissioners on August 24, 2000. This policy allows private parties to fund major road improvements if they pay 100 percent of the design and construction costs, with the County share limited to administrative costs for inspection and contract administration. Where private contribution is less than 100 percent of all project costs, the proposal will be considered on a case-by-case basis and the applicant must address total project cost, funding, public importance of the project, effect on jobs and enhancement of economic vitality in the area, effect on road maintenance costs, impact on the overall County road system, projected traffic volumes, and the effect of redirecting county resources to the proposed project. More information is available from the Yamhill County Public Works Department.

Accepted by Yamhill County
Board of Commissioners on
5/14/08 by Board Order
08-299



Appendix E

YAMHILL COUNTY GRAVEL ROAD SURFACE RATING SYSTEM

GRAVEL ROAD SURFACE RATING FORM

CROWN

| | | |
|-----|---|-----------|
| +3% | 5 | Very Good |
| 2% | 3 | Good |
| <2% | 1 | Poor |

DRAINAGE (CULVERTS & DITCHES)

| | |
|---|-----------|
| 5 | Very Good |
| 4 | Good |
| 3 | Fair |
| 1 | Poor |

SAFETY

| | |
|---|------|
| 5 | Good |
| 1 | Poor |

WIDTH

| | | |
|------|---|-----------|
| 24' | 5 | Excellent |
| 22' | 4 | Good |
| 20' | 3 | Fair |
| <20' | 2 | Poor |
| <18' | 1 | Very Poor |

VEGETATION – SITE DISTANCE

| | |
|---|------|
| 5 | Good |
| 1 | Bad |

ROCK

| | | |
|------|---|-----------|
| 4" | 5 | Adequate |
| 2" | 2 | Poor |
| 0-1" | 1 | Very Poor |

ROAD NAME:

ROAD NUMBER:

SECTION NUMBER:

DATE:

COMMENTS:

GRAVEL SURFACE RATING

| | CROWN | DRAINAGE | SAFETY | WIDTH | VEGETATION | ROCK | GCI | MILES |
|-------------------|-------|----------|--------|-------|------------|------|------|-------|
| FAIRDALE | 1 | 1 | 1 | 1 | 1 | 2 | 23.3 | 5.77 |
| PANTHER CREEK | 1 | 1 | 1 | 1 | 1 | 2 | 23.3 | 1.56 |
| RED HILLS | 1 | 3 | 1 | 2 | 1 | 1 | 30.0 | 1.49 |
| MOORES VALLEY | 1 | 1 | 1 | 2 | 1 | 5 | 36.6 | 5.25 |
| FULQUARTZ LANDING | 1 | 3 | 1 | 1 | 5 | 2 | 43.3 | 2.44 |
| PEAVINE | 3 | 3 | 1 | 3 | 1 | 5 | 53.3 | 2.85 |
| OLD MOORES VALLEY | 1 | 1 | 5 | 4 | 1 | 5 | 56.6 | 2.05 |
| GOPHER VALLEY | 3 | 3 | 5 | 4 | 1 | 5 | 69.9 | 1.56 |
| EARLWOOD* | 5 | 3 | 5 | 3 | 5 | 2 | 76.6 | 1.277 |
| SCHAAD* | 5 | 3 | 3 | 1 | 1 | 5 | 59.9 | 0.58 |
| KUYKENDALL* | 3 | 4 | 5 | 3 | 5 | 2 | 73.3 | 0.956 |

* Local Connector Roads

| |
|-------------|
| 2007 RATING |
| 2014 RATING |



Appendix F

YAMHILL COUNTY GRAVEL COLLECTOR ROADS UPGRADE PRIORITIZATION SYSTEM

GRAVEL COLLECTOR ROADS UPGRADE PRIORITIZATION

| PRIORITY POINTS CALCULATED BY: | | | | | | | | | | | | | | |
|------------------------------------------------------------|-------|---------|-------------|-----------|------------|----------|-----|--------------|---------------------------|---------|----------------------|------------------|--|--------------------|
| Roadway traffic count/10 | | | | | | | | | | | | | | |
| Accidents reported at the project site/2 | | | | | | | | | | | | | | |
| Accidents reported with fatalities at the project site x 3 | | | | | | | | | | | | | | |
| Accidents reported with injuries x 2 | | | | | | | | | | | | | | |
| Accidents reported with property damage only | | | | | | | | | | | | | | |
| Gravel Rd Condition Index/3 | | | | | | | | | | | | | | |
| Residences/Miles | | | | | | | | | | | | | | |
| | Miles | Traffic | Traffic Pts | Accidents | Fatalities | Injuries | PDO | Accident Pts | Gravel Rd Condition Index | GCI Pts | Number of Residences | Residence Points | | Total Priority Pts |
| Gopher Valley Road | 5.9 | 275.5 | 27.6 | 1 | 0 | 2 | 0 | 8.5 | 70 | 23.33 | 20 | 6.78 | | 66.2 |
| Moores Valley Road | 5.3 | 42 | 4.2 | 4 | 0 | 14 | 0 | 34 | 36.7 | 12.23 | 16 | 6.04 | | 56.5 |
| Mountain Top Road (West) | 3.1 | 149.5 | 15.0 | 6 | 1 | 8 | 1 | 27 | 33.3 | 11.10 | 33 | 21.29 | | 74.3 |
| Mountain Top Road (East) | 1.9 | 248 | 24.8 | 2 | 0 | 4 | 0 | 13 | 33.3 | 11.10 | 16 | 16.84 | | 65.7 |
| Red Hills Road | 1.1 | 213 | 21.3 | 1 | 0 | 1 | 0 | 6.5 | 30 | 10.00 | 18 | 32.73 | | 70.5 |
| Fulquartz Landing Road | 2.3 | 57 | 5.7 | 0 | 0 | 0 | 0 | 4 | 43.3 | 14.43 | 15 | 13.04 | | 37.2 |
| Worden Hill Road | 2.01 | 148 | 14.8 | 4 | 0 | 4 | 0 | 14 | 43.3 | 14.43 | 19 | 18.91 | | 62.1 |
| Panther Creek Road | 1.5 | 40 | 4.0 | 2 | 0 | 2 | 0 | 9 | 23.3 | 7.77 | 13 | 17.33 | | 38.1 |
| Old Moores Valley Road | 2.1 | 120 | 12.0 | 2 | 0 | 3 | 0 | 11 | 56.7 | 18.90 | 4 | 3.81 | | 45.7 |
| Fairdale Road (East) | 1.6 | 92.5 | 9.3 | 1 | 0 | 3 | 0 | 10.5 | 23.3 | 7.77 | 9 | 11.25 | | 38.8 |
| Fairdale Road (West) | 2.4 | 106.5 | 10.7 | 2 | 0 | 2 | 0 | 9 | 23.3 | 7.77 | 10 | 8.33 | | 35.8 |
| Peavine Road | 4.6 | 97 | 9.7 | 0 | 0 | 0 | 0 | 4 | 53.3 | 17.77 | 17 | 7.39 | | 38.9 |
| | | | 158.9 | | | | | 150.5 | | 156.60 | | 163.74 | | 629.7 |



Appendix G

YAMHILL COUNTY SAFETY PROBLEM LOCATION RANKING SYSTEM

2009 SAFETY PROJECTS

| MAP | PROJECT | ADT 1 | ADT 2 | ADT 3 | | FATAL | INJ | PDO | PTS | PRIORITY |
|-----|--------------------------------|-------|-------|-------|----|-------|-----|-----|--------|----------|
| 12 | NIEDERBERGER | 420 | | | | 1 | 13 | 15 | 44.42 | 1 |
| 3 | HENDRICKS/ABBEY/KUEHNE | 1,616 | 1,769 | 3150 | 24 | 1 | 7 | 2 | 37.535 | 2 |
| 13 | SPRINGHILL @ FLETT | 1,545 | 1,609 | | 3 | | 10 | 10 | 34.654 | 3 |
| 11 | WILLAMINA CR @ TINDLE CR | 867 | 434 | | 1 | | 6 | 1 | 14.801 | 4 |
| 8 | BELL @ SPRINGBROOK | 2,580 | 1,849 | | 3 | | 1 | 3 | 10.929 | 5 |
| 4 | CRUICKSHANK @ DAYTON/AMITY HWY | 2,300 | 5,100 | | 1 | | 1 | 1 | 10.9 | 6 |
| 5 | STRINGTOWN @ LAFAYETTE HWY | 3,008 | 4,600 | | 2 | | 1 | | 10.608 | 7 |
| 10 | BALD PEAK @ MOUNTAIN TOP | 668 | 402 | | 3 | 1 | 1 | 2 | 9.57 | 8 |
| 7 | BELL @ ZIMRI | 1,520 | 2,580 | | 1 | | | 3 | 7.6 | 9 |
| 6 | BELL @ ASPEN | 2,210 | 2,580 | | 1 | | | 1 | 6.29 | 10 |
| 2 | OR HWY 240 @ WORDEN | 5,200 | 148 | | | | | | 5.348 | 11 |
| 14 | MINERAL SPRINGS @ GUN CLUB | 816 | 1,025 | | 3 | | 1 | | 5.341 | 12 |
| 1 | N VALLEY @ CHEHALEM | 2,001 | 1,970 | | | | | 1 | 4.971 | 13 |
| 9 | SCHAAD @ PARRETT | 147 | 89 | | | | | | 0.236 | 14 |

PRIORITY POINTS

- **TRAFFIC COUNT / 1000 = POINTS**
- **ACCIDENT REPORT / 2 = POINTS**
- **FATALITIES * 3 = POINTS**
- **INJURIES * 2 = POINTS**
- **PROP DAMAGE ONLY (PDO) = POINTS**



Appendix H

ORS 373.270 – TRANSFERRING COUNTY ROADS TO A CITY

CHAPTER 8: JURISDICTIONAL CLASSIFICATION OF ROADS
(This chapter was revised and updated in 2008, 2010, 2012 and 2014)

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| 8.525 | Transferring County Roads to a City |
| 8.530 | Transferring City Streets to a County |
| 8.540 | Road Functional Classification |

8.525 TRANSFERRING COUNTY ROADS TO A CITY. A county road inside a city may be transferred to the city by mutual agreement. [ORS 373.270](#) provides that either the city or the county may initiate the transfer of jurisdiction. Once the transfer has been initiated, the county must provide public notice and an opportunity for a public hearing before the final order by the county governing body surrendering jurisdiction. The transfer is not complete until it is formally accepted by the city when it is initiated by the county or by the county when it is initiated by the city. On completion of the transfer, county jurisdiction ceases, and the city assumes the same responsibility over the former county road as it has for other city streets.

8.530 TRANSFERRING CITY STREETS TO A COUNTY. A city street may be transferred to a county by mutual agreement of the two jurisdictions. Either the city or county may initiate the transfer under provisions of ORS 368.062. Once the transfer has been initiated, the city must provide public notice and an opportunity for a public hearing before the final action by the city governing body surrendering jurisdiction. The transfer must be accepted by the county when it is initiated by the city or by the city when it is initiated by the county. On completion of the transfer, city jurisdiction ceases, and the county assumes the same responsibility over the former city road as it has for other county roads.

8.540 ROAD FUNCTIONAL CLASSIFICATION. After each decennial census, the Federal Highway Administration (FHWA) requires state DOTs to use census data to review and update all Federal Aid Urban Boundaries (FAUB) and the corresponding Federal Functional Classification (FC) of public roads ([Title 23, Section 103, USC](#)). Information on Oregon’s [2010 Statewide Functional Class Review](#) is available on ODOT’s website.

The FAUB is the dividing line between urban and rural Federal Functional Classification. This booklet presents the concepts and criteria for the FAUBs and FC of roads. Counties should use the ODOT publication, [Guidelines for Updating Federal Aid Urban Boundaries and Functional Classification](#), in conjunction with their local Transportation System Plan (TSP) to identify needed updates of their Federal Aid Urban Area boundary and Federal Functional Classification.

While there is a major emphasis on updating FC immediately after the census, adjustments to FC should be made any time there are major changes in the road system or the local TSP.

The functional classification of urban routes will change when roads cross the urban area boundary into a rural area. This change is due to the decreasing population density and an increasing importance of land accessibility.

| Urban (Pop. Over 5,000) | Rural |
|--------------------------------|--------------------------------------------------|
| Urban Principal Arterial | Rural Principal Arterial or Rural Minor Arterial |
| Urban Minor Arterial | Rural Major Collector |
| Urban Collector | Rural Minor Collector |
| Urban Local | Rural Local |

Appendix H: Summary of Public Involvement Activities



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MEMORANDUM

TO: Bill Gille, Yamhill County
John Phelan, Yamhill County
Terry Cole, ODOT Region 2

FROM: Bob Schulte, PTP and Julie Sosnovske, P.E.

DATE: April 3, 2015

SUBJECT: **Yamhill County Transportation System Plan**
Technical Memorandum #2 – Public Involvement Activities

P#11086-004

This memo summarizes and documents the public involvement program undertaken for the Yamhill County Transportation System Plan (TSP). The program comprises the following elements:

- Stakeholder interviews
- Public survey
- Public open house #1
- Public open house #2

COMPLIANCE WITH TITLE VI OUTREACH REQUIREMENTS

Public Involvement for the TSP is subject to the requirements and guidance found in ODOT's *Guidelines for Addressing Title VI and Environmental Justice in Transportation Planning*.¹ Specifically, Title VI identifies measures to reach and solicit comments from disadvantaged populations within a community. Although Yamhill County has relatively limited concentrations of minorities and low-income residents, these populations must be accommodated. Yamhill County Planning Department staff was not aware of any groups that should be specifically approached. They indicated that the groups typically expressing interest in the County's planning projects would not qualify for Title VI or Environmental Justice noticing, since these groups' issues are typically focused on environmental concerns unrelated to the disadvantaged populations identified in ODOT's guidelines.

¹ Oregon Department of Transportation, [Guidelines for Addressing Title VI and Environmental Justice in Transportation Planning](#), 2015.



Based on 2010 Census data, about 85% of the County's population is white and about 15% of the population is classified as Hispanic/Latino. This is a comparable percentage of white, and slightly higher percentage of Hispanic/Latino, compared to Oregon as a whole. The percentage of people of races other than white in Yamhill County is also similar to Oregon as a whole. To help reach Hispanic/Latino populations, newspaper advertisements were printed in both English and Spanish and a Spanish interpreter was made available at the two open house meetings.

An estimated 15% of individuals in the County were below the poverty line in 2013, which is comparable to the state as a whole.

STAKEHOLDER INTERVIEWS

Sixteen telephone interviews were conducted with key stakeholders in Yamhill County in February and March, 2012. The stakeholders were identified by county staff and included representatives from local jurisdictions within the county, school districts, emergency services, key employers, and representatives from industries with freight and farm vehicles using county roadways. A summary of the questions and responses is included in Appendix A.

The stakeholders vary in their use of the county roadway system. Most primarily use the state highways for longer-distance trips and county roadways for access on either end of the trips. Some of the stakeholders use the county roadway system extensively on a daily basis. Emergency responders, such as the Sheriff's Office and Fire Department, travel the county roadways regularly to respond to emergency requests.

Most of the stakeholders rated the county roadway system as adequate overall, although some describe it as poor. Common concerns are poor surface conditions (potholes, delamination, washboarding, etc.) and lack of room for bicycles. Capacity on county roadways is generally considered to be adequate. Most of the stakeholders believe the state highways are in worse physical condition than the higher-level county roads; however, lower-level county roads are in need of repair. The Newberg-Dundee bottleneck on OR 99W was mentioned by several stakeholders.

Key safety and operational concerns focused on OR 18 and roadways that are too narrow for bicycles. A number of specific locations were mentioned, with the OR 18/Lafayette Hwy., OR 18/OR 99W/McDougall Rd. and OR 153/Hopewell Rd. intersections receiving the most comments.



Suggestions for addressing the safety and operational issues include widening OR 18 to four lanes, widening shoulders on county roads, constructing overpasses along OR 18, constructing the Newberg-Dundee Bypass, implementing the safety improvements identified by the County's Road Improvement Advisory Committee (RIAC), improving pavement markings, and educating drivers.

Most of the stakeholders indicated that funding is the key constraint for implementing safety and operational improvements and that most of the future issues will be on the state highways. A few mentioned the desirability of a more direct connection to I-5.

PUBLIC SURVEY

An on-line public survey was conducted, with access provided via Yamhill County's website. The survey was advertised on the Yamhill County website and in local newspapers. The survey included several questions related to the county roadway system and questions about the respondents' "top three" problem locations. A summary of the responses is included in Appendix B.

The respondents were asked how well they think the county transportation system functions. A large majority responded "good" (33.3%) or "fair" (57.6%). A significant number of responses identified the following issues: congestion on OR 99W/need for the Newberg-Dundee Bypass, roadway maintenance, lack of shoulders/facilities for bicycles, and improved transit service.

The respondents were also asked to rank general transportation needs. The results are listed below in order of importance:

- Safety
- Bicycle/pedestrian facilities
- Congestion/delay
- Access conflicts
- Transit service/facilities
- Traffic operations

Comments on specific issues and problem locations were also provided.



Information was also obtained on the respondents' top three problem locations, and the most significant needs at each location. Most of the responses were for state highway segments and intersections, particularly along OR 99W, OR 18, and OR 240. The most frequently mentioned county roads were Westside Rd, Fox Farm Rd., and Willamina Creek Rd. The need categories with the largest percentages of responses, overall, were safety, bicycle/pedestrian conflicts, and access conflicts.

With regard to future transportation needs, the respondents identified the following general issues, ranked in order of importance:

- Improved safety
- Roadway maintenance
- Additional capacity
- Bicycle lanes/wider shoulders
- Improved transit service/facilities

Additional comments provided by the respondents regarding existing and future transportation issues were focused on safety and bicycle/pedestrian needs.

OPEN HOUSE #1

The first open house was held on August 8, 2013. The meeting was advertised in the McMinnville and Newberg newspapers in both English and Spanish, and on a local radio station in the two days immediately prior to the meeting. A Spanish interpreter was present at the meeting.

The purpose of the open house #1 was to provide the public an opportunity to review information on existing and future projected conditions in the County. Another objective was to obtain comments on key transportation issues within the County, potential solutions to address the issues, and the highest-priority locations to investigate. In addition to the public, the meeting was attended by several members of the RIAC. Comments forms were provided and verbal comments were documented as well.

Some of the key concerns/issues identified by the public include the following:



- Kings Grade Rd. – two citizens who live on this road indicated the desire to have it reclassified from a local road to a minor collector road. It was reported that this is used as a short-cut between Chehalem Ridge and McMinnville.
- Support was expressed for improved bicycle/pedestrian access on Highway 18B between Sheridan and Willamina.
- Several comments were provided regarding the roadway networks in Lafayette, Amity, and Dundee.
- Support was expressed for the reclassification of Albertson Rd. from a local road to a major collector road.

A summary of open house #1 is included in Appendix C.

OPEN HOUSE #2

The second open house was held on December 11, 2014. The meeting was advertised in the McMinnville and Newberg newspapers in both English and Spanish, and on a local radio station in the two days immediately prior to the meeting. A Spanish interpreter was present at the meeting.

The purpose of the open house #2 was to provide an opportunity for the public to comment on project options for a list of 21 priority roadway and bicycle/pedestrian improvement locations. Fourteen people, including several members of the RIAC, attended the meeting. Comments forms were provided and verbal comments were documented as well.

Preferences for specific project options were expressed for six of the priority improvement locations. There were no responses indicating “do nothing” for any of the locations. Comments unrelated to specific project options include the following:

- Roundabouts help the flow of traffic.
- Add shoulders when performing maintenance work on county roads.
- Widen Lafayette Hwy. between OR 18 and OR 99W to better accommodate bicyclists.
- Consider adding paved shoulders on Baker Creek Rd. for bicycle access to the county parks outside of McMinnville.
- OR 99W needs shoulders between Trunk Rd. and Riverwood Rd.

A summary of open house #2 is included in Appendix C.

Appendix A

STAKEHOLDER INTERVIEW SUMMARY

YAMHILL COUNTY TRANSPORTATION SYSTEM PLAN

Stakeholder Response Summary

Question 1: What are your primary uses of the county transportation system? How frequently?

Summary: In general, most people travel at least some portion of the county roadway system on a regular basis, with varying amounts of time spent within cities or outside of cities. Most primarily use the state highways for longer distances and county roadways for access on either end of their trips. Some of these people use it on a daily basis. Emergency responders, such as the sheriff and fire departments travel the county roadways regularly to respond to emergency requests. The sheriff's office also patrols the county roadways on a regular basis.

Question 2: What involvement have you had in previous planning processes for the county transportation system?

Summary: Most have not participated in previous planning processes for the county transportation system overall. Some have participated in studies for specific transportation elements (i.e. trails, transit). Some are familiar with and/or have had exposure to RIAC. Several have followed developments in the Newberg-Dundee Bypass study.

Question 3: How would you describe the current overall condition of the county transportation system in terms of meeting transportation needs?

Summary: Most respondents considered the county road system adequate overall, although some considered it poor. Common concerns were potholes (also called chuckholes, delamination, washboard, etc.) and lack of room for bicycles. Most respondents primarily use the county routes to gain access to state routes. Capacity on county roadways was generally thought to be sufficient, with the exception of adequate room for bicycles. Generally, most considered the state routes to be in worse physical condition than the higher level county routes, but the lower classified county routes were thought to be in need of repair. Several thought that the county is doing the best they can with the resources they have. The Newberg-Dundee bottleneck was mentioned by several respondents.

Question 4a: What would you identify as the key safety and operational issues? Please explain and identify specific locations.

Summary: The most commonly mentioned safety concerns include the following:

- *OR 18/Lafayette Highway*
- *OR 18/OR 99W/McDougall's Junction*
- *Any intersection with OR 18*
- *Lack of adequate capacity on OR 18 (only 2 lanes)*
- *Hopewell Highway/Lafayette Highway*
- *Width of roads (too narrow)*
- *Unstable shoulders*
- *Inadequate room for bicycles*
- *Additional specific locations were mentioned*

Question 4b: How do you feel these safety and operational issues can best be addressed?

Summary: Suggestions for addressing the safety and operational issues included widening OR 18 to four lanes, widen shoulders on county roads, construct overpasses over OR 18, construct safety improvements previously identified by RIAC, better pavement marking (spray fog lines regularly) and educate drivers (particularly with respect to farm equipment).

Question 4c: What are the primary constraints to addressing these issues?

Summary: Most respondents suggested money was the key constraint. Topography/grade was also a key factor at many locations. Lack of access to I-5 was also mentioned.

Question 4d: What are the top three safety or operational improvements needed? Please identify specific locations.

Summary: The top safety or operational improvements mentioned included the OR 18/Lafayette Highway intersection, the OR 18/OR 99W intersection, OR 18 in general (widening, turn lanes), wider shoulders and pot hole maintenance.

Question 5: Are there other improvements needed for purposes of bicycle and pedestrian safety not identified above? Please identify specific locations.

Summary: Several suggested that the county should have a bicycle plan and be working toward improving bicycle facilities in the county. Many of the routes are known and should be improved. One respondent bluntly stated that “bicycles should not be allowed,” citing the dangerous conflict between bicycles and motorized vehicle (particularly truck) traffic. Lack of shoulders or inadequate shoulders were mentioned by many respondents.

Question 6: Are there specific improvement needs for the county transit system?

Summary: Most stakeholders had limited exposure to the transit system, but most felt like the transit system was doing the best that it can with the limited funding available. A few mentioned the desire for better communication with the local jurisdictions.

Question 7: What is your long-term (20-year) vision for the county’s transportation system?

Summary: Most respondents considered the need for the proposed Newberg-Dundee as the biggest issue facing the county in the next 20 years. They consider it essential for economic development and mobility. Bicycle accommodation (lanes, wider shoulders) was mentioned by several stakeholders. Many believe the county will experience a significant amount of growth in the next 20 years. Several mentioned that most of the issues they foresee will be on state highways. A few mentioned they would like to see a more direct connection to I-5.

Question 8: Looking into the future, do you see any future traffic, bicycle/pedestrian, or transit issues in the county that we should be planning for now?

Summary: Many stakeholders would like to see better facilities for bicycles on county roads. Many also think the Bypass is necessary, but will also attract more traffic to Yamhill County, increasing the need for improvements on the county roadway network. Maintenance and wider shoulders were mentioned as ways to improve safety and overcrossings over OR 18 were suggested as a way to improve rural access.

Question 9a: Who are the key stakeholders to involve in this project?

Summary: A variety of stakeholders were mentioned, including various local businesses as well as local jurisdictions, schools, fire and sheriff's departments.

Question 9b: What techniques would work best to inform/involve the public throughout the planning process?

Summary: Most stakeholders suggested a website and newspapers as the best way to involve the public. Town meetings were also suggested by several stakeholders.

Question 10: How would you like to be informed and involved as this project proceeds?

Summary: Most respondents seemed prefer email or websites as a way to be informed about the project.

Question 11: Is there anything else you would like to add about the Transportation System Plan Update project?

Summary: Additional concerns included communication between jurisdictions, river and rail as modes of transportation, the need for additional bridges across the Willamette River, and the need to better maintain drainage systems.



Appendix B

PUBLIC SURVEY SUMMARY

YAMHILL COUNTY TRANSPORTATION SYSTEM PLAN

Public Survey Responses

Question 1: Overall, how well do you think the county transportation system functions?

| Response | Percent |
|-----------|---------|
| Very Good | 3.0% |
| Good | 33.3% |
| Fair | 57.6% |
| Poor | 6.1% |

Question 1: Summary of Issues:

The following categories best sum up comments about how well the county transportation system functions.

- **Congestion/Bypass:** Concern regarding congestion and the need for the planned Newberg-Dundee Bypass. Safety on this route becoming more of an issue.
- **Maintenance:** Comments about the need for repairs beyond basic patching.
- **Shoulders/Bicycles:** Comments about the lack of shoulders on county roads and their need for both auto safety and bicycle use.
- **Transit:** Concerns include lack of in-town runs, time delays between runs, service cuts, lack of driver training, additional commuter service to Portland and Salem.

Specific Comments:

- County roads were built with way less traffic that they now have. Many features like lack of shoulders and blind turns with drivers now seeming less attentive to their driving.
- Many roads are in need of repair beyond that of basic patching. Much of the patching done lasts only until the first frost/heavy rain.
- Too few roads with bike lanes.
- The main issue with our buses are lack of in town runs and time delays between runs
- The major difficulties are with the principal routes. The local roads are generally quite good. Biking is very good.
- They keep cutting back service in McMinnville on side streets. Also I don't like that they didn't tell the new drivers where the stops were when First Transit first started in July. At other transit districts they take their drivers around and show them the routes BEFORE they start driving them with passengers.
- I would like to know with what frequency (if any) city and county officials use public transit to get to where they need to go.
- Poor quality of roads and no shoulders
- Decent bus system, decent road system, some bows to bike and foot travel. Not great, but some effort evident.
- The Dundee chokepoint on Hwy 99W is ridiculous...
- Yamhill County urgently needs the by-pass ~ especially to reduce the Newberg & Dundee bottleneck traffic jam!
- I would like to see more commuter options to Portland and Salem, both for cars and Autos?? Many/most roads in Yamhill are not safe for cyclists, so I do not ride in Yamhill.
- Hwy 18 can be a nightmare. Slow traffic at times going no more than 40 mph. AND, crashes are starting to occur more often.
- *County roads are used to bypass congested cities, adding safety and maintenance issues for county roads.*

Question 2: Rate the following current transportation issues (1 being Very Important; 5 being Not Important At All)

| Transportation Need | 1 | 2 | 3 | 4 | 5 | Average Rating |
|-------------------------------|-----|-----|-----|-----|-----|----------------|
| Safety | 70% | 9% | 18% | 0% | 3% | 1.6 |
| Traffic Operations | 16% | 34% | 34% | 6% | 10% | 2.6 |
| Congestion/Delay | 16% | 49% | 19% | 13% | 3% | 2.4 |
| Access Conflicts | 19% | 26% | 42% | 10% | 3% | 2.5 |
| Transit Service/Facilities | 31% | 16% | 34% | 6% | 13% | 2.5 |
| Bicycle/Pedestrian Facilities | 40% | 18% | 27% | 6% | 9% | 2.3 |
| Other (described below) | 75% | 0% | 13% | 0% | 12% | 1.8 |

Question 2: Summary of Issues:

The following categories best sum up comments regarding current transportation issues:

- **Road Conditions:** Concern regarding the overall condition of county roads and the relationship between roadway condition and roadway safety.
- **Transit:** Comments about the need for better information related to the transit system (i.e. better access to schedules, routes, etc., including signage at bus stops). The need for bus shelters was identified as well as commuter options to park and ride areas in/toward Portland.

Specific Comments:

- Road conditions. Many are on a long maintenance cycle and get quite poor before repaving.
- Conditions of road. Pot holes appear to be fixed only during the summer.
- An easy way to find out when, where to and from, and what time the bus runs. I've never seen a schedule printed and available in Newberg shops or businesses. Always have to search out the info online.
- Again, the actual condition of the roads themselves. I suppose this issue may be included in the "safety" category, but regardless, it is very important.
- Need bus shelters and more bike racks on current buses
- Taking the drivers around and actually have them drive the routes and show them where to go and where the stops are BEFORE they start driving the busses with passengers.
- As someone dependent on either public transportation or my own two feet, my issues likely will differ from someone with an automobile.
- Serious need for speed regulatory sign on Renne Road, Newberg. Northbound traffic accidents at northbound "S" curve are common/avg. 8-10 wks interval. Renne has become a shortcut for traffic from Wilsonville road to 99 via Corral Creek. Road design is unsuitable for drivers unfamiliar with the area. Speed/warning signs would be a huge help!
- Yamhill county NEEDS to post signs for each public bus stop as soon as possible. I have taken the "Link bus" many times and there are NO posted bus stop signs. This will not cost much money to complete. It is important to post bus stop signs so people will know where the bus will stop!! I have called various times regarding this and no bus stop signs have been posted. Please complete this simple and important task!! Thank you.
- Commuter options to park and ride areas north and east. For example, bus route to a facility with parking in Portland would be something I'd utilize for commuting if efficient.

Top Three Problem Locations:

Top Problem Location 1:

| Location | Safety | Traffic Operations | Congestion/Delay | Access Conflicts | Bicycle/Pedestrian Conflicts | Comments |
|----------------------------------------------------------|--------|--------------------|------------------|------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| County Roads/State Highway intersections | √ | | | √ | | |
| Dopp Road and OR 240 | √ | | | | | Traffic heading east on OR 240 gets a passing lane just before Dopp, but traffic at Dopp has poor visibility to the west because of the curve and slope of the hill, leading to potential accidents as they pull out to the west, only to have an unseen eastbound passer come zooming over the hill. |
| Intersection of Red Hills Rd and OR 240 | √ | | | | | Sight distance is minimal for turning from Red Hills Rd to westbound OR 240. Split of Red Hills road has gravel median gravel gets on road causing tires to loose traction when trying to get a quick start. The split also is blind so those turning left don't see those that had traveled westbound on OR 240 turned onto Red Hills road. |
| West Side Road | √ | | | | √ | No shoulder for bicycles or pedestrians to avoid traffic. |
| Hwy 99W and Hwy 18 interchange | | | √ | | | It's hard to turn at times due to congestion. Also lots of impatient drivers who cause near accidents. |
| Fox Farm Road between Sunnycrest Rd & Hidden Springs Rd. | √ | | | | | The road is rather narrow with no shoulder. When drivers come around the corner they often cross the center line into the oncoming lane. |
| West side road from McMinnville to | √ | | | | √ | |

| Location | Safety | Traffic Operations | Congestion/Delay | Access Conflicts | Bicycle/Pedestrian Conflicts | Comments |
|------------------------------------------------------------------------------------------------------------------|--------|--------------------|------------------|------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| meadow lake road | | | | | | |
| | √ | | | | | |
| West side road | √ | | | | √ | No shoulder on a road where speeding is endemic |
| Highway 99 at Hawn Creek Road | √ | | | | √ | Unsafe condition for bicycles to cross from OR 99W northbound to Hawn Creek Road. |
| West Side Road | √ | | | | √ | No shoulder for cars to pull off in case of emergency. High speed. No shoulder for bikes or pedestrians. |
| | | | | | √ | Yamhill County is becoming, or will become, a destination area for bicycle tourism directly relating to low population and the wine industry. It is obvious that paved shoulders cost money and not every road can have a paved shoulder. However, key roads should be identified and effort made over time to place paved shoulders on these key roads. |
| 99W and Evans | √ | √ | √ | √ | | Access to parking lot into Little Caesars should be closed, traffic trying to enter and exit across lanes blocks traffic and causes problems |
| Stiller's Mill Road | √ | | | √ | √ | |
| Hwy 99 W moving people across the county while allowing residents free access to their own community facilities. | | | √ | | | The worst of the 99W problems are in Dundee and Lafayette, but Newberg is not very much behind. |
| Turing into WinCo from Hwy. 99W | | | | √ | | |
| Hwy 18 and Lafayette Highway | √ | √ | | √ | | Deadly intersection. I'm always |

| Location | Safety | Traffic Operations | Congestion/Delay | Access Conflicts | Bicycle/Pedestrian Conflicts | Comments |
|-------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------|------------------|------------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | | | worried about cross traffic when on OR 18. |
| Hwy 219 and Everest Rd - Dundee bottleneck!!! - OR 99W and Deborah/McDonald's parking lot | √ | √ | √ | | | |
| Intersection of Main St and Willamina Creek Rd | √ | √ | √ | √ | √ | May I suggest a round-about as a solution to congestion and uncertain right-of-way problems at the Willamina Creek intersection? I realize the railroad is a complication. Chip trucks and log trucks and cars turning left and pedestrians frequently jam up the intersection, with no one able to move. |
| Hwy 99W from Amity to Newberg | | √ | | | √ | |
| HWY 99 W through Dundee | | | √ | | | |
| Renne road, Newberg. Numerous accidents and frequent "close calls" from northbound drivers taken unawares by blind corner and "S" curves. | √ | | | | √ | Renne road (Newberg). Blind corners present a serious hazard: speeders & inattentive drivers are caught unaware by slow-moving farm equipment, bicycles, pedestrians, etc. This road currently has no posted speed limit. Suggest limiting speeds to 25mpg a blind "S" curve," installing rumble strips to alert northbound traffic. |
| Highway 99W entering Dundee | √ | | √ | | √ | Very congested traffic entering Dundee from Newberg. There also are not many sidewalks or bike paths for people to use, which would reduce traffic. |
| Corner of E. 2nd Street and St. Paul Hwy | √ | | | √ | | |

| Location | Safety | Traffic Operations | Congestion/Delay | Access Conflicts | Bicycle/Pedestrian Conflicts | Comments |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------|------------------|------------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lafayette Hwy and Hwy 18 | √ | | | √ | | |
| Highway 18 between McMinnville and Lincoln City, | √ | | √ | | | |
| Highway 18 from the Grand Ronde area to points north where it meets the 99W. This should all be two lane and possibly higher speed to support commuters. A bus option to Portland and Salem should be available from McMinnville. | √ | √ | √ | | √ | Cyclists do not have enough safety at the edge of roads, often riding right next to deep ditches. One lane traffic and agricultural traffic makes it hard for commuters to make the drive efficiently. Perhaps a northerly route from McMinnville to I-5 would be ideal, but otherwise, OR 18 and OR 99W bypasses would help. If safe, I'd like to see a higher speed limit if lanes provided. Lack of public transportation options from McMinnville to Portland, at least I have not found them yet. |

Top Problem Location #1 Summary

| Problem Type | Response Count (28 Total Responses) | Percentage of Responses Problem Type Identified |
|------------------------------|----------------------------------------|----------------------------------------------------|
| Safety | 19 | 68% |
| Traffic Operations | 6 | 21% |
| Congestion/Delay | 9 | 32% |
| Access Conflicts | 9 | 32% |
| Bicycle/Pedestrian Conflicts | 12 | 43% |
| Other | 3 | 11% |

Top Problem Location #2:

| Location | Safety | Traffic Operations | Congestion/Delay | Access Conflicts | Bicycle/Pedestrian Conflicts | Comments |
|------------------------------------------------------|--------|--------------------|------------------|------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Intersection of Fox Farm Road and Hidden Springs Rd. | √ | | | | | During rush hour many use SunnyCrest/FoxFarm as a short cut around the back up into Dundee. The sight distance when traveling northbound on Fox Farm Road and turning left onto Hidden Springs Rd requires that one must nearly complete the right hand turn prior to turning left. This, coupled with the road is narrow in the S turn and the majority of folks seem to take their half out of the middle on these blind turns at the intersection. You can see from the rut in the dirt on the south bound side of Fox Farm in the S turn that they have to drive off the road to avoid these middle of the road drivers. |
| 99W bridge between the steel mill and highway 47 | | | | | √ | No safe shoulder for pedestrians or bicyclists. |
| Hwy 99W between Newberg and McMinnville. | √ | | | | | Extremely rough road in places due to potholes, poor patching, etc. |
| Baker Creek Road from Hill road to Orchard View | √ | | | | √ | |
| OR 47 | √ | | | | √ | Major north-south state hwy. with no consideration for bicycles |
| The HiGH Percentage of gravel roads. | √ | | | | √ | Gravel roads are slow and do not allow for most bike travel. |
| Public Transit hub at courthouse | √ | √ | √ | √ | | Causes congestion in and around Courthouse, should have own area with restrooms |
| The stop behind Safeway | √ | √ | √ | √ | √ | Look at it... Really???? How are handicapped and elderly people supposed to get across the |

| Location | Safety | Traffic Operations | Congestion/Delay | Access Conflicts | Bicycle/Pedestrian Conflicts | Comments |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------|------------------|------------------|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | | | road? There is no crosswalk and let's face it. DRIVERS ARE RUDE!! They will not stop to let you cross the street |
| Hwy 18 SW of McMinnville | √ | | | | | Needs a center barrier wall |
| Baker St and 12th St intersection | √ | √ | | | | There needs to either be a marked right turn lane or enforcement of drivers that create their own turn lane there. I have seen many drivers in the marked lane with right turn signals on have another driver zoom up on their right to turn from the non-existent right-turn lane, and am amazed that so far I have never seen a collision. |
| Hwy 47 | √ | | | √ | √ | |
| 99W entering Dundee, Rex Hill area ~ near the winery entrance | √ | | √ | | √ | The area at the top of Rex Hill on 99W should have a STOP light!!! This is a very dangerous area for drivers and people trying to go to the Rex Hill Winery. |
| There are not adequate bike/pedestrian spaces that are adequately separated from the roads to provide safety to those not in motorized vehicles. | √ | | | √ | √ | |
| Abbey Rd and the road to Carlton | √ | √ | | √ | | |
| 25 MPH speed limit on 18B in residential areas. | √ | | | | | |
| McMinnville and points north on OR 99W. | | | √ | | | OR 18 from Grand Ronde to points north is a very slow ride. |

Top Problem Location #2 Summary

| Problem Type | Response Count (17 Total Responses) | Percentage of Responses Identifying Problem Type |
|------------------------------|------------------------------------------------|---------------------------------------------------------|
| Safety | 14 | 82% |
| Traffic Operations | 4 | 24% |
| Congestion/Delay | 5 | 29% |
| Access Conflicts | 5 | 29% |
| Bicycle/Pedestrian Conflicts | 8 | 47% |
| Other | 2 | 12% |

Top Problem Location #3:

| Location | Safety | Traffic Operations | Congestion/Delay | Access Conflicts | Bicycle/Pedestrian Conflicts | Comments |
|----------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------|------------------|------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Intersection of OR 240 and NE Kuehne Rd | √ | | | | | Sight distance for seeing cars when one is traveling north on Kuehne Rd with intent to turn left onto 240 and traveling west bound on OR 240 with intent to turn left on Kuehne Rd. Split has trees and shrubs blocking vision. |
| Hwy 240 out of Newberg at the intersection where you turn left toward Carlton (right would take you toward Gaston). I believe that's Hwy 47. | √ | | | | | As you turn left toward Carlton, the turn is blinded by roadside trees and brush such that you cannot safely see the oncoming traffic. Many times I've seen drivers make that turn quickly and almost hit the oncoming car. |
| hwy 221 | √ | | | | | Main county access to and from Salem without any consideration for cyclists in either direction. |
| County roads without paved or adequate shoulders! | √ | | | | | The more heavily traveled roads should have paved shoulder or a shoulder adequate for a car to partially pull off partially out of the roadway. Also a paved shoulder would provide for SAFER bike and pedestrian use. |
| 99W through Dundee | | | √ | √ | | |
| Route 22 | | √ | | | √ | This bus line just does not run often enough and the buses cannot accomodate the number of bike riders on this route |
| Intesection of Hwy 47 and Hwy 240 | √ | | | | √ | Poor visibility. Consider a stop light |
| merge lane westbound onto Hwy 18 from McMinnville | √ | | | √ | | The merge lane is short and there is no visibility of traffic on Hwy 18, leading to |

| Location | Safety | Traffic Operations | Congestion/Delay | Access Conflicts | Bicycle/Pedestrian Conflicts | Comments |
|--------------------------------------------------------------------------------|--------|--------------------|------------------|------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | | | | | | occasional conflicts for space |
| The need to post proper bus stop signs in all locations for the public to see. | | | √ | | √ | Please post signs for all locations where the Newberg Link stops. Currently there are NO signs posted. This is essential for people to view so they know where the bus stop is located!! |
| Hwy 240 at intersection that goes to Carlton | √ | | | √ | | The curve in 240 limits visibility in a high speed area. Turning there to go to Carlton is not safe. |
| willamina creek road | √ | | | √ | √ | No shoulder to provide safety to cyclists who seem to frequent this road. Due to narrow road and poor view it is hard to safely pass cyclists. |

Top Problem Location #3 Summary

| Problem Type | Problem Type Frequency (12 Total Responses) | Percentage of Responses Identifying Problem Type |
|------------------------------|---------------------------------------------|--------------------------------------------------|
| Safety | 8 | 67% |
| Traffic Operations | 1 | 8% |
| Congestion/Delay | 3 | 25% |
| Access Conflicts | 4 | 33% |
| Bicycle/Pedestrian Conflicts | 5 | 42% |
| Other | 2 | 17% |

Location #1-3 Overall Summary:

The most mentioned categories discussed related to Location #1 included the following:

- **Shoulders/Bicycle Facilities:** General concern for lack of shoulders/bicycle facilities throughout the county.
- **Crossing/Turning Difficulties:** Concern about difficulties crossing state highways, especially OR 18 and OR 99W, including difficulties turning onto or off of these facilities. Concerns regarding safety.
- **Congestion:** Concern about congestion, especially in Newberg and Dundee.
- **Maintenance:** Concern about poor quality roads.
- **Sight Distance Issues:** Some specific sight distance issues were identified. General concern countywide, especially with narrow (no shoulder), windy, county roadways.
- **Transit:** Lack of options between McMinnville and Portland. Lack of information about route and lack of signage identifying specific stops.

Question #6: Rate the following future (20-year) transportation needs (1 being Very Important; 5 being Not Important at All)

| Transportation Need | 1 | 2 | 3 | 4 | 5 | Average Rating |
|-----------------------------------------|-----|-----|-----|----|-----|----------------|
| Improved Safety | 69% | 27% | 4% | 0% | 0% | 1.4 |
| Additional Capacity | 35% | 35% | 19% | 7% | 4% | 2.1 |
| Roadway Maintenance | 43% | 39% | 10% | 4% | 4% | 1.9 |
| More Transit Service/Facilities | 36% | 21% | 25% | 4% | 14% | 2.4 |
| Bicycle Lanes/Wider Shoulders for Bikes | 50% | 18% | 18% | 4% | 10% | 2.1 |
| Other | 50% | 0% | 0% | 0% | 50% | 3.0 |

Specific Comments:

- With all the winding roads, many drivers cross the yellow lines, this is quite visible as the striping wears away in many turns. Something needs to be done to encourage them (like rod dots) to stay in their lane.
- WE need the old Route 1 back!!
- A real bypass would be nice

Question #7: Please provide any additional comments that you may have regarding the existing or future transportation system

- **Safety:** Concern about narrow roads not being maintained creating safety issues. Suggestion for using raised dots to keep drivers in their own travel lane.
- **Bicycle/Pedestrian:** Several comments about the need for improved opportunities for bicycles and pedestrians. The possibility of a bicycle/pedestrian advisory committee was suggested.

Specific Comments:

- Major concern with old roads being used by more and more traffic, and road safety not kept up to handle the load. Either speeds need to be dropped or improvements made.
- If raised dots were used more frequently on the striping in turns, perhaps it would deter drivers from crossing into the oncoming lanes (i.e. Fox Farm Rd issue). Thank you for this opportunity for residents to offer opinions/suggestions.
- Perhaps Yamhill County could develop an advisory group to work on identifying key areas that would enhance bicycling in the county. County engineers do not need additional "bosses" trying to tell them how to maintain roads, but input from the bicycle community might be helpful.
- We need Route 1 back and Route 22 needs additional runs??
- Keeping riders informed about policy changes more than two weeks before they happen.
- I rate the overall Yamhill County Transportation as good. I have no major complaints. However, I do not bike and do not use public transportation, so I only see one aspect. I also think that improved safety on Hwy 18 should be a priority.
- I am concerned about bypass roads that become business corridors and eventually invite loss of farm land and require traffic control
- Thanks for the opportunity to comment.
- I would love to see improvements in safety for methods of moving people around the county in non-motorized ways.
- Overall, Yamhill has great roads! Keep up the good work. Still very sad that you recently paved our dirt road without asking for public opinion, as we specifically chose our home due to dirt road.



Appendix C

OPEN HOUSE SUMMARY

YAMHILL COUNTY TRANSPORTATION SYSTEM PLAN

OPEN HOUSE MEETING #1

Thursday, August 8, 2013, 5:00 PM – 7:00 PM

MEETING SUMMARY

BACKGROUND

The first open house meeting for the Yamhill County Transportation System Plan was held at the Yamhill County Public Works Building in McMinnville, Oregon. The meeting was advertised in two local newspapers (McMinnville News Register and Newberg Graphic) in both English and Spanish, and on a local radio station (KYLC) 33-45 times in the two days immediately prior to the meeting.

The purpose of the meeting was to explain the results of the existing and future conditions analysis and obtain input from the public on existing and future transportation needs and potential improvement options. Six people, in addition to several members of the county's Road Improvement Advisory Committee (RIAC), signed in at the meeting. Comments forms were provided for the public to fill out and verbal comments were documented as well.

COMMENTS

- Two citizens who live on Kings Grade Road expressed the desire to have their roadway reclassified from a local street to a minor collector. It is a reported short-cut between Chehalem Ridge and McMinnville. Concerns include the following:
 - Substantial through traffic, including logging and gravel trucks
 - A new vineyard south of Tykeson will potentially increase traffic on Kings Grade Road
 - The gravel section north of Tykeson is dangerous due to a steep grade and loose gravel all year
 - Dust is an issue
 - Safety concern – multiple roll-overs occurred recently
 - Would like road signage and paved surface to address existing and future traffic volume conditions.

- The Mayor of Sheridan likes the bicycle/ped “plan” for Highway 18B between Sheridan and Willamina (Note: Map shown showed “needs” rather than a “plan”). He indicated that Sheridan is building an 8 foot pathway on the north side of the S. Yamhill River along W. Main (OR 18B). The goal is to connect to Willamina. There is a group in Willamina pushing bike paths in that City and building toward Sheridan. He would like the County’s support of this multi-use path.
- The City Engineer for the City of Lafayette is interested in ensuring bike/ped connectivity to the new McMinnville – Hagg Lake Trail (Note: Current name is Yamhelas Westsider Trail). No specific connections were indicated.
- The City Engineer for the City of Lafayette wanted to make sure the County was aware of Lafayette’s pending UGB expansion to the north along Bridge Street.
- The City Engineer for the City of Amity would like to see a roadway extension of Old Bethel Road (approximately a half mile) shown as a proposed roadway on the County’s transportation plan, to connect OR 153 to Rice Lane to provide for north-south connectivity to the City’s new UGB expansion area north of Rice Lane.
- The City Engineer for the City of Dundee had the following comments:
 - He would like to see a new roadway connection from the end of Dundee Landing Road (planned new road associated with bridge across bypass) to Edwards Road at the intersection of 5th.
 - He would also like the County to consider an extension of Edwards Road from its northern terminus to Dayton Avenue, enabling access between Dundee and Newberg without crossing the railroad tracks.
 - He had a question regarding how improvements on Fulquartz Road will be handled when development occurs in accordance with the Dundee Riverside Master Plan since half of the roadway is in the City and the other half is in the County. He noted that cities legally have the ability to fund projects outside their limits.
- A representative from the Chehalem Park & Recreation District has concerns about the Pedestrian & Bicycle Plan (note: no pedestrian or bicycle plan was proposed, graphics showed needs, not plans). He requested that the TSP include their master plans in this process.
- A representative from the logging/trucking community likes the revised functional classification of Albertson Road to major collector. He said that there is a sight distance issue for log trucks at the north end of Laughlin at Spring Hill Road and that taking out a brush row would improve sight distance. He also took several comment forms to provide to trucking employees who are aware of many of the county’s roadways.

YAMHILL COUNTY TRANSPORTATION SYSTEM PLAN

OPEN HOUSE MEETING #2

Thursday, December 22, 2014, 5:00 – 7:00 PM

MEETING SUMMARY

COMMUNITY PREFERRED OPTIONS

At Open House #2, the public was asked to provide input on which options they preferred. A total of 3 comment forms were received, with only two stating which options they preferred.

For the Worden Hill Road project, one attendee supported Option 3, which includes intersection improvements at Worden Hill Road/OR 240, warning signs at several horizontal curves, pavement treatments including wide edge line markings and rumble stripes and flattening crests at two locations, and one attendee supported Option 4, which would be the same as Option 3, plus realignment of curves at several locations.

For the OR 18 – Ash Rd. to Lafayette Hwy. project, only one attendee indicated a preference, and that was for Option 2, which would close Ash Rd. both north and south of OR 18 and realign Lafayette Highway and OR 154 as offset “T” intersections.

Both attendees preferred Option 2 at OR 153/Hopewell Rd./Webfoot Rd. intersection. Option 2 would improve sight distance by removing vegetation, install a warning beacon at the intersection and widen travel lanes and shoulders on OR 153 and Hopewell Rd. in the vicinity of the intersection. In addition, an eastbound right-turn lane would be considered.

At the OR 233/Cruickshank Rd. intersection, there was equal support for Option 2 and Option 3. Both options would remove the existing home located in the center of the intersection. Option 2 would remove the connector roads and realign Cruickshank Rd. to meet OR 233 in a “T” intersection. A northbound left-turn lane and southbound right-turn lane on OR 233 would be considered and travel lanes and shoulders would be widened on OR 233 in the vicinity of the intersection. Option 3 would reconstruct the intersection as a roundabout.

At Fox Farm Rd./Hidden Springs Rd., one attendee indicated support for Option 2, which would realign Fox Farm Rd. to improve radii on “S” curves and realign Hidden Spring Rd. as a “T” intersection at Fox Farm Rd.

At OR 47/OR 99W, there was support for Option 3, the roundabout, from one attendee. No other comments were made regarding this location.

There were no responses for “doing nothing” at any of the priority improvement locations.

Comments unrelated to specific improvement options included the following:

- Traffic circles (roundabouts) really help the flow of traffic
- Add shoulders when working on county roads
- Widen Lafayette Hwy. between OR 18 and OR 99W
- Consider paved shoulder widening on Baker Creek Rd. for bicycle access to county parks along Baker Creek Rd. from McMinnville
- OR 99W needs shoulders between Trunk Rd. and Riverwood Rd.

A tally of the comments supporting each option at the improvement locations with more than one option is shown in Table 1.

Table 1: Public Input on Improvement Options

| Location | Description | Option 1 | Option 2 | Option 3 | Option 4 | None |
|----------|--------------------------------------------------|----------|----------|----------|----------|------|
| 3 | Worden Hill | 0 | 0 | 1 | 1 | 0 |
| 5 | OR 18 – Ash Rd. to Lafayette Hwy. | 0 | 1 | | | 0 |
| 7 | OR 47/OR 99W intersection | 0 | 0 | 1 | | 0 |
| 9 | OR 153/Hopewell Rd./ Webfoot Rd. intersection | 0 | 2 | | | 0 |
| 18 | OR 233/Cruickshank Rd. intersection | 0 | 1 | 1 | | 0 |
| 21 | Fox Farm Rd./Hidden Springs Rd. intersection | 0 | 1 | | | 0 |

Appendix I: Analysis of Preliminary Alternatives



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MEMORANDUM

TO: Bill Gille, Yamhill County
John Phelan, Yamhill County
Terry Cole, ODOT Region 2

FROM: Bob Schulte, PTP and Julie Sosnovske, P.E.

DATE: November 12, 2014

SUBJECT: **Yamhill County Transportation System Plan**
Task 6 – Development and Analysis of Improvement Options

P#11086-004

This memo documents the development and analysis of roadway and bicycle/pedestrian improvement options for the Yamhill County Transportation System Plan. The findings of the analysis will serve as the basis for the selection of preferred options for the plan.

DEVELOPMENT AND ANALYSIS OF ROADWAY IMPROVEMENT OPTIONS

The analysis process for the roadway improvement options comprised the following steps:

- Development of improvement options
- Development of data to support the evaluation of the options
- Evaluation of options

Development of the options began with a list of priority safety improvement locations. The seven locations had been identified for further investigation in the existing conditions analysis based on crash rates, SPIS data,¹ and input received from stakeholders, the County's Road Improvement Advisory Committee (RIAC), and county and ODOT staff. The priority safety improvement locations listed below are shown by location number in Figure 1.

1. Kuehne Rd./Abbey Rd./Hendricks Rd. intersection
2. Stringtown Rd. between OR 221 and OR 154
3. Worden Hill Rd. from OR 240 to north of Fairview Drive

¹ Data for the 2008-2010 time period.

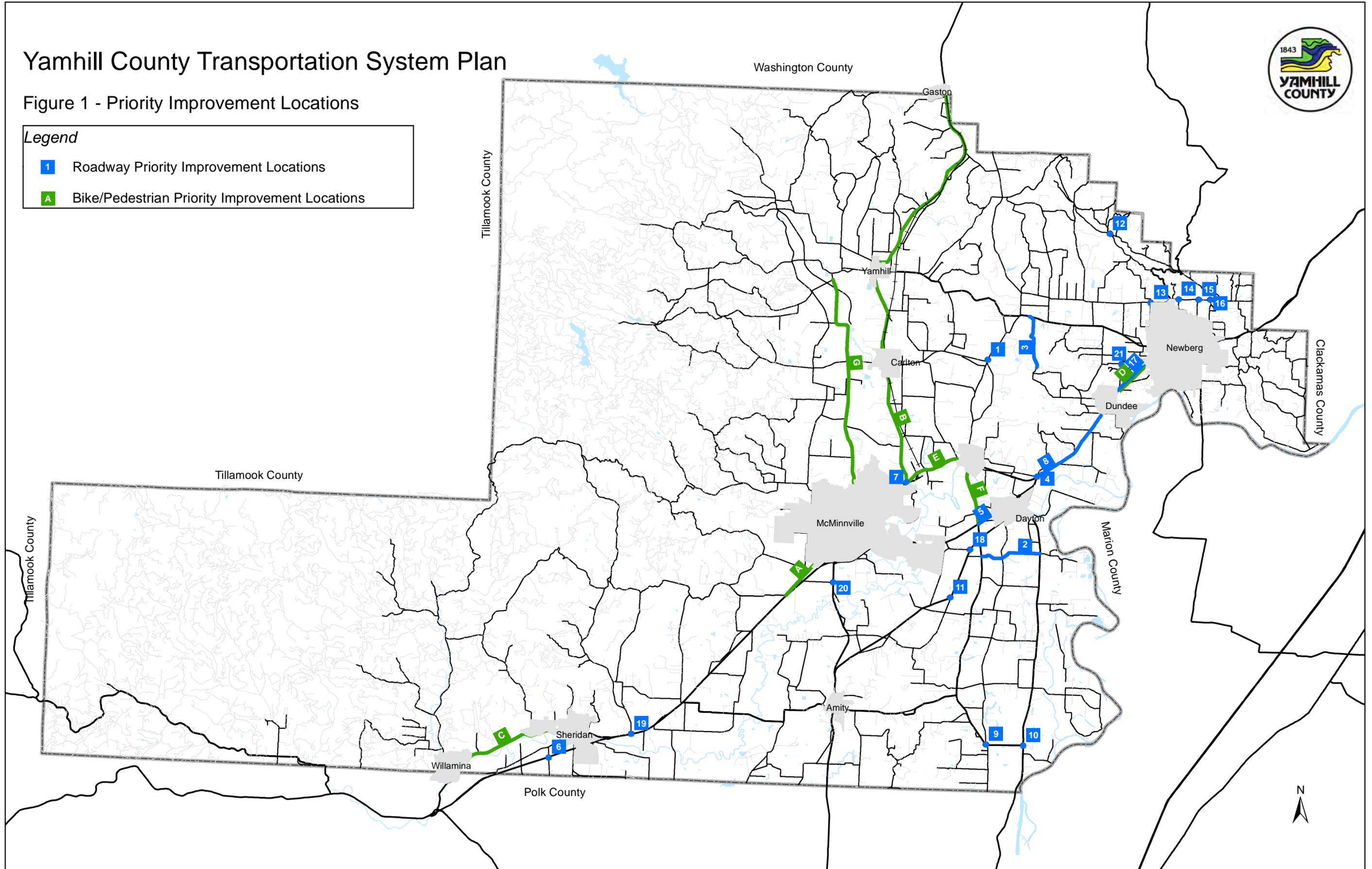
Yamhill County Transportation System Plan

Figure 1 - Priority Improvement Locations



Legend

- 1** Roadway Priority Improvement Locations
- A** Bike/Pedestrian Priority Improvement Locations





4. OR 99W/OR 18/McDougall Rd. intersection
5. OR 18 between Ash Rd. and OR 154/Lafayette Hwy.
6. OR 18/SW Red Prairie Rd. intersection
7. OR 99W/OR 47 intersection

In addition to these locations, the findings of the existing and future conditions analysis were reviewed together with a list of need locations previously identified by stakeholders, the RIAC, County and ODOT staff, the public. An additional 14 priority improvement locations were selected based on this review, with an emphasis on locations having multiple needs that could be addressed at the same time (e.g., safety, mobility, traffic operations, geometric, or pedestrian/bicycle needs). The additional priority improvement locations are:

8. OR 99W – Dundee city limits to OR 18 junction
9. OR 153/Hopewell Rd./Webfoot Rd.
10. OR 221/OR 153
11. OR 233/Starr Quarry Rd.
12. Bald Peak Rd./Mountain Top Rd.
13. North Valley Rd./Chehalem Dr.
14. Bell Rd./Aspen Way
15. Bell Rd./Zimri Rd.
16. Bell Rd./Springbrook Rd.
17. OR 99W – Newberg city limits to Dundee city limits
18. OR 233/Cruickshank Rd.
19. OR 18/Gopher Valley Rd.
20. OR 99W/Durham Ln.
21. Fox Farm Rd./Hidden Springs Rd.

This list of 21 priority improvement locations was reviewed and agreed upon by County and ODOT staff. The ordering of the list does not reflect the importance of one location compared to the others.²

In addition, a number of priority locations for bicycle/pedestrian improvements were identified. In the rural portion of the county, bicycle and pedestrian needs typically consist of shoulder

² Since this list was developed, more recent SPIS data became available. The more recent (2013) SPIS data is referred to in the memo, unless otherwise noted.



widening and paving. The volume of bicycle and pedestrian traffic on rural roadways generally does not justify designated bicycle or pedestrian treatments such as bike lanes or sidewalks.

Focusing the development of improvement options on the priority locations recognizes that future ODOT and the County funding levels will address only a small subset of the total needs identified in the existing and future conditions analysis.

Based on the general types of existing and future needs, the main objective of the process was to identify improvements that would increase safety and maintain traffic operations, while minimizing environmental and land use impacts. Another objective was to recognize future ODOT and County funding constraints. Therefore, most of the proposed options are relatively low-cost improvements that enhance, rather than replace, existing transportation facilities. Where possible, improvement packages were developed for each location that would address the primary need as well as secondary needs within the vicinity. This approach increases the cost-effectiveness of improvement projects by maximizing the total benefit while reducing the total cost.

In some cases, due to the type of need or specific characteristics of a location, only one improvement option was developed. An example of this would be an intersection where there are conflicts between turning vehicles and through traffic. Here, the only option would be to provide a turn lane.

The preliminary improvement options were analyzed to develop information to support the evaluation of the options. For locations with more than one option, this information was used within a screening process to assess the relative effectiveness of the options.

For convenience, the evaluation data was organized within cut sheets for each location (see Appendix A). This information included:

- Improvement location
- Description of needs
- Description of improvement option(s)
- Improvement maps
- Preliminary cost estimate
- Benefits
- Key considerations/notes



The improvement descriptions and layout drawings define the basic features of the improvement options and illustrate how they would be configured.

The cost estimates are planning level estimates that indicate the order-of-magnitude costs of the improvements. They include all major cost categories except right-of-way acquisition. In general, right-of-way cost was not included because of the difficulty of obtaining accurate cost information and because it would not be a large cost component of most of the options. For a few of the options in which right-of-way would be a major cost component and information was available, this was included.

The benefits listed in the cut sheets include all of the significant benefits of the improvement options, described in either quantitative or qualitative terms. In the key considerations/notes section, special considerations for the improvements are identified, such as operational characteristics and potential impacts to specific parcels.

The results of the screening process are included in the last section of the cut sheets. The improvement options were evaluated by assigning point scores of between zero and ten for each criterion. The point scores reflect the assessment, based on professional judgment, of the degree to which an option satisfied the criteria. Not all of the criteria were applicable to each option. For example, the criterion for improved roadway geometrics would not apply to an option that does not change the existing geometrics.

The score for each criterion was multiplied by an associated weight. The weights were developed based on an assessment of the relative importance of the criteria. The weighted scores were then summed to produce a total weighted score for each option.

The evaluation scoring is intended to be used as a decision-making tool only; the final decisions on the preferred options will be made County and ODOT staff.

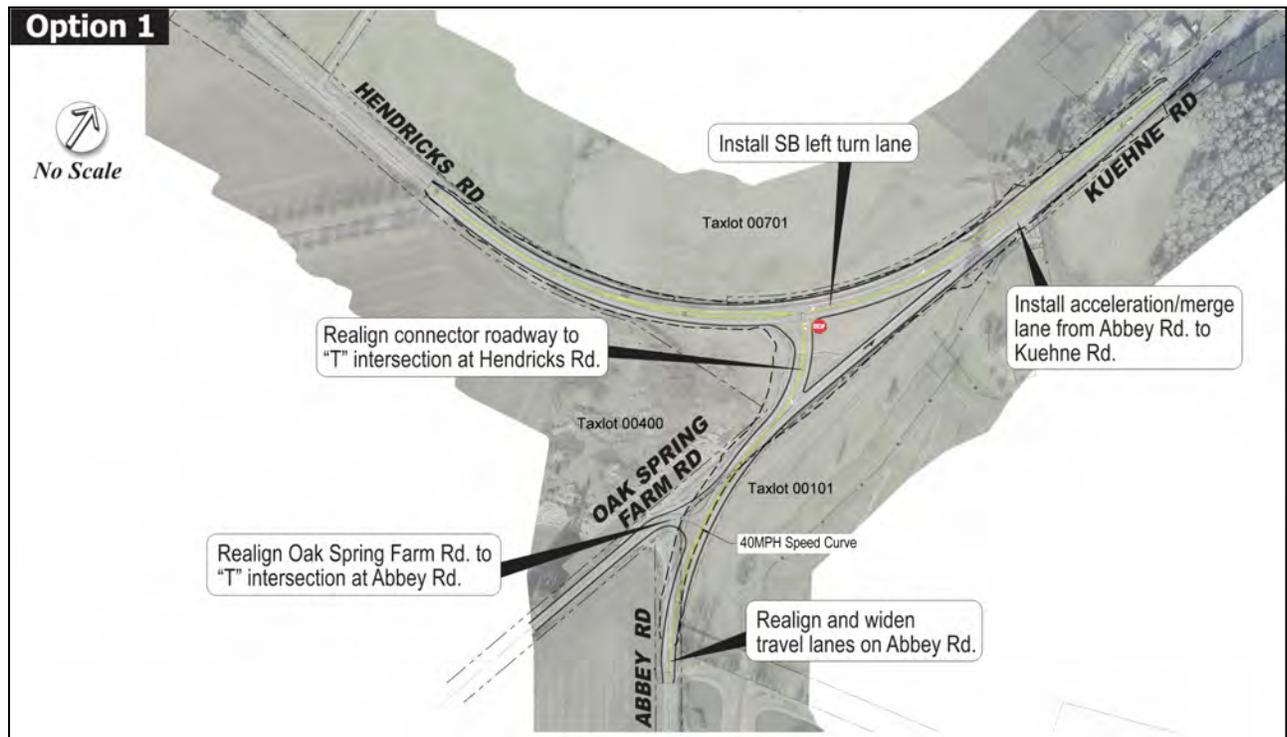
Analysis Results

The improvement options for the 21 priority locations are described below; additional information can be found in the cut sheets in Appendix A. The improvement options are also summarized in Table B-1 in Appendix B.

Location #1: Abbey Rd./Hendricks Rd./Kuehne Rd.

This cluster of intersections was included in a list of priority safety improvement locations developed by the RIAC. It was described by stakeholders as confusing to drivers due to its poor configuration. There are skewed intersection approaches and a horizontal curve on Hendricks Rd. that has been the site of several crashes. A southbound left-turn lane is needed at the Kuehne Rd./Abbey Rd. intersection, as well as wider travel lanes on Abbey Rd.

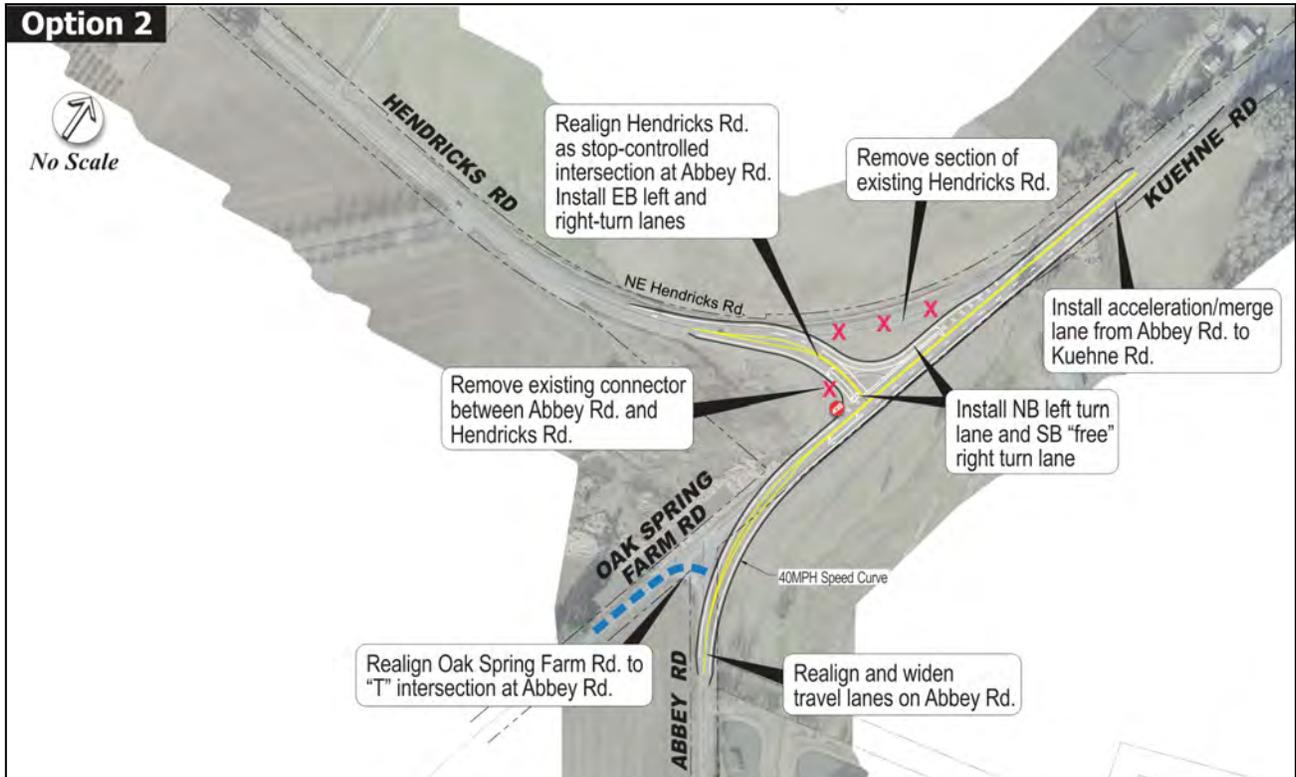
In a separate study,³ three options were identified to address these needs. Option 1 realigns Abbey Rd. as a “T” intersection at Hendricks Rd. However, the northbound through movement on Abbey Rd. would continue on its existing alignment, merging with Kuehne Rd. to the north. A left-turn lane would be constructed on southbound Kuehne Rd. for vehicles turning onto Abbey Rd. The horizontal curve on Abbey Rd. south of the intersection would also be realigned as a 40-mph curve.



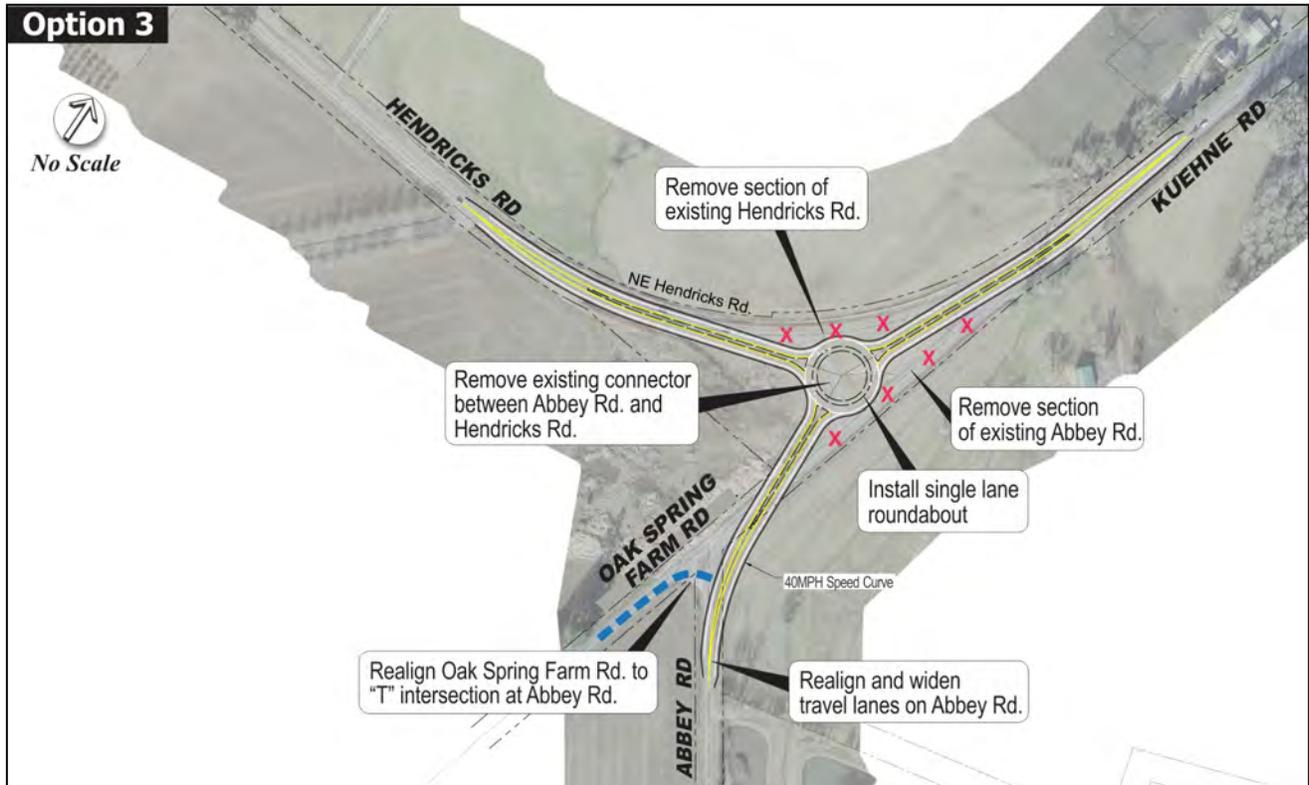
Option 2 realigns Hendricks Rd. as a “T” intersection at Abbey Rd., with left-turn lanes provided on both northbound Abbey Rd. and southbound Hendricks Rd. With the realignment, the existing connections between Hendricks Rd. and Abbey Rd. would be removed. However, a

³ Analysis conducted by Cardno Limited in 2014.

“free” right-turn lane would be provided between southbound Abbey Rd. and Hendricks Rd. Two through lanes would be maintained on Abbey Rd. between the intersection and the merge point with Kuehne Rd., allowing the Hendricks Rd. left-turning traffic to merge with the Abbey Rd. through traffic. All travel lanes and shoulders in the intersection area would be widened to meet county standards. In addition, the horizontal curve on Abbey Rd. south of the intersection would be realigned as a 40-mph curve.



Option 3 would realign the three intersections as a single-lane roundabout and widen the travel lanes on Abbey Rd. As with Option 2, the existing connections between Hendricks Rd. and Kuehne Rd. and Hendricks Rd. and Abbey Rd. would be removed. The horizontal curve on Abbey Rd. south of the intersection would be realigned as a 40-mph curve. In addition to addressing all of the identified needs, Option 3 would have the benefit of slowing traffic on the roadways approaching the roundabout.



Based on the findings of the analysis, Option 1 was adopted by the Yamhill County Board of Commissioners on July 31, 2014.

Location #2: Stringtown Rd. – OR 221 to OR 154

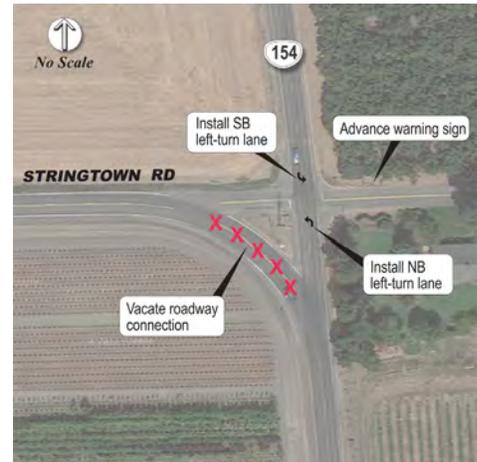
Safety needs were identified along both the segment of Stringtown Rd. between OR 221 and OR 154 and at its intersection with OR 154. On Stringtown Rd., most of the crashes over the five-year review period were fixed object collisions on curves, with excessive speed cited as a contributing cause. In addition to this safety need, wider travel lanes and shoulders are needed.

The OR 154/Stringtown Rd. intersection is a previous SPIS location, where there is a need for a northbound left-turn lane. The non-standard intersection configuration is also confusing to drivers, and the skewed intersection angles require drivers to turn their heads sharply to see.

An ODOT intersection improvement project is planned for construction at this location in 2015. The proposed project includes vacating the existing south-to-west roadway connection to create a standard intersection, and installing both northbound and southbound left-turn lanes on OR 154. Additional advance warning for the intersection would also be provided on the

westbound approach of Stringtown Road. This project is expected to improve the crash rate/severity at the intersection.

An additional improvement option was developed to address the remaining needs. This option focuses on improvements to Stringtown Rd., consisting of travel lane widening, shoulder widening, (including increased distance to roadside features/obstacles), and signing and striping to increase driver awareness of horizontal curves. These improvements are expected to have positive safety impacts along the segment.



Location #3: Worden Hill Rd.- OR 240 to North of Fairview Drive

Safety needs were identified along Worden Hill Road between OR 240 and north of Fairview Dr., including the OR 240/Worden Hill Rd. intersection. The OR 240/Worden Hill Rd. intersection is skewed, with sight distance and approach width needs on Worden Hill Rd. There is also a shoulder width need on OR 240 in the vicinity of the intersection.

South of OR 240, Worden Hill Rd. is characterized by narrow width, horizontal and vertical curves, the lack of shoulders, little or no clear zone, and obstructions such as trees, utility poles, and embankments along the roadside. All of the crashes over the previous five years have occurred at locations where there is a combination of horizontal and vertical curves. One of the crashes was a head-on collision, while the others involved vehicles either overturning or leaving the roadway and striking fixed objects. These crash types suggest that the roadway characteristics may limit the driver’s ability to anticipate upcoming roadway features and traffic, as well as the likelihood of recovery.

Four options were developed to improve the OR 240/Worden Hill Road intersection and Worden Hill Rd.⁴ Option 1 addresses the intersection only. It includes the realignment of Worden Hill Rd. to eliminate the skew angle and improve sight distance and shoulder widening on OR 240 in the vicinity of the intersection.

The other three options all include the Option 1 intersection improvements, plus improvements along Worden Hill Rd. They differ in the level of improvement, with each option building on the previous options.

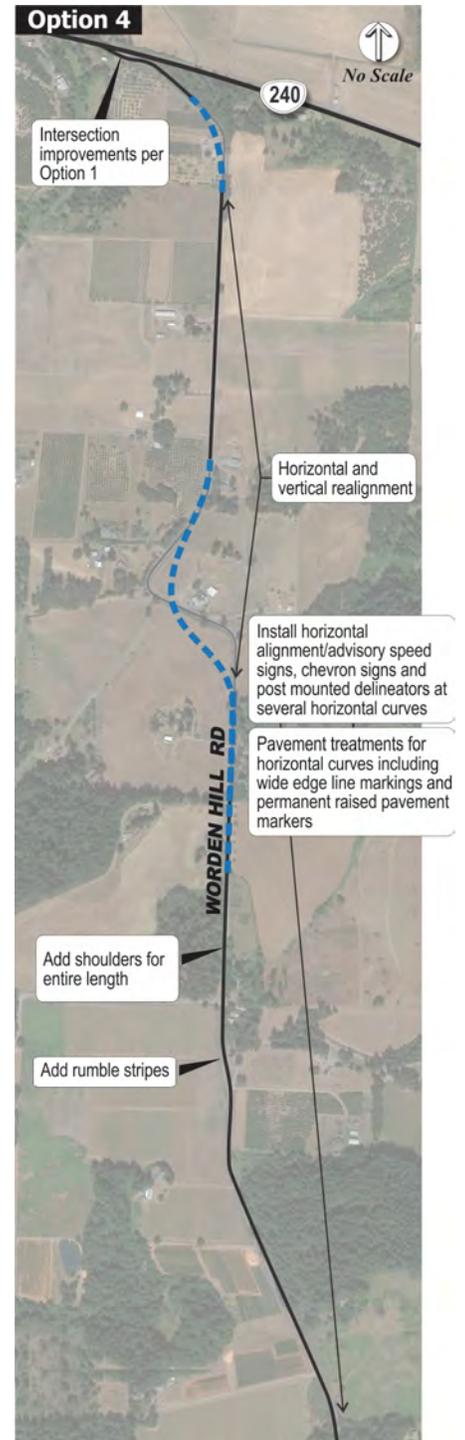
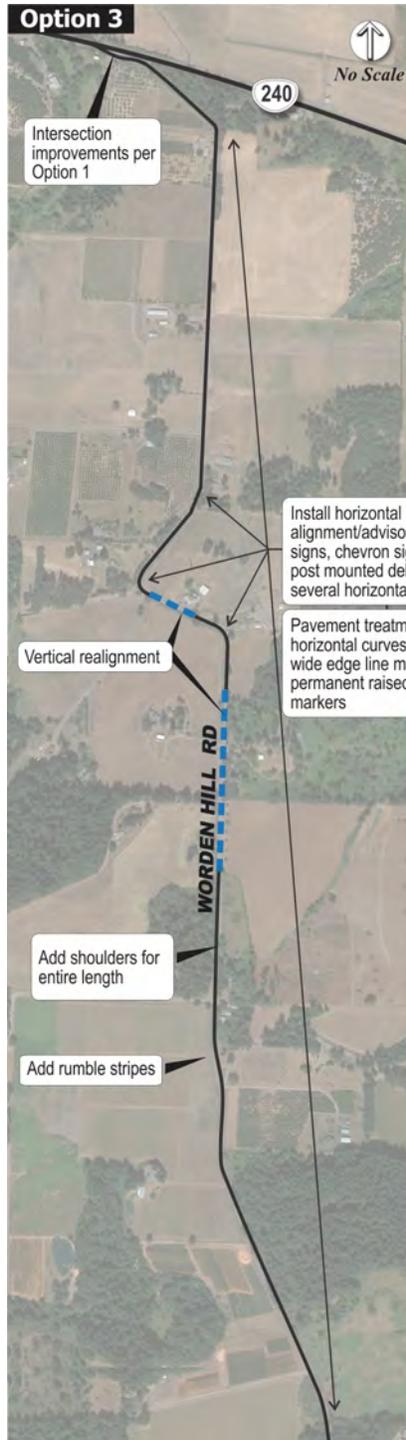
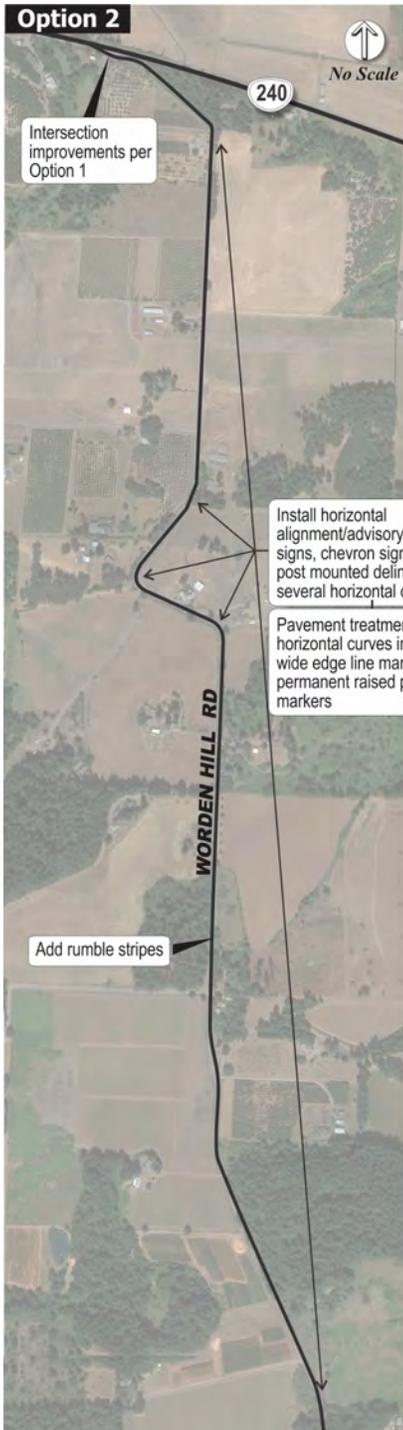


Option 2 features the installation of advance horizontal alignment/advisory speed signs, chevron signs, post mounted delineators, raised pavement markers and wide edge line markings at several horizontal curves to increase driver awareness of the curves. In addition, it includes edge line rumble stripes for the length of the segment (north of Fairview Ave.).

Option 3 includes the signage and delineation improvements in Option 2, plus shoulder widening along the entire segment and vertical realignment at two locations. Option 4 includes all of the Option 3 improvements, plus realignment of several horizontal curves.

Options 3 and 4 scored significantly higher than the first two options because of the greater improvements in safety, geometrics, and the bicycle/pedestrian environment. While Option 4 includes the realignment of several horizontal curves, it scored only slightly better than than Option 3 due to the significant right-of-way and cost impacts associated with these improvements.

⁴ The County recently completed a project comprising paving and shoulder widening in some locations of this section of Worden Hill Rd. and minor realignment of the OR 240/Worden Hill Rd. intersection. The improvement options described here build on these improvements already made by the County.

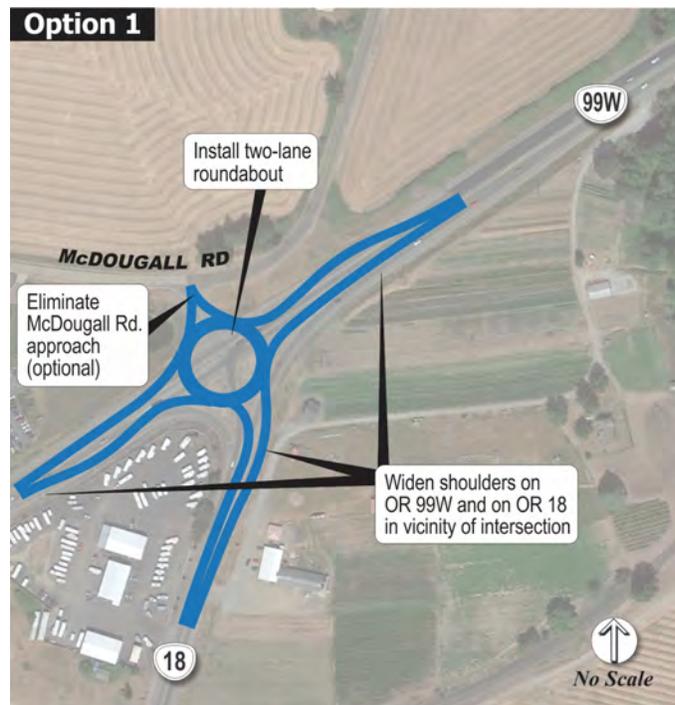


Location #4: OR 99W/OR 18/McDougall Rd.

The OR 99W/OR 18/McDougall Rd. intersection has a non-standard configuration and was identified by stakeholders and road maintenance staff as a dangerous intersection with safety and traffic operations needs. It was recently added as a top 5% SPIS location. There are shoulder width needs on both OR 99W and OR 18 near the intersection. It was also determined that there will be a future mobility need.⁵

Construction of the Dundee to Dayton Phase of the Newberg-Dundee Bypass would reconfigure this intersection and eliminate the need for an interim option. If at some point in the planning horizon it becomes clear that this phase of the bypass is unlikely, other improvement options may be considered.

One option that could be considered in lieu of the bypass is the installation of a two-lane roundabout. Shoulder widening on OR 99W and OR 18 in the vicinity of the intersection would also be included with this option. It should be noted that ODOT will approach any multi-lane roundabout proposal with caution since their experience with them is limited. Further analysis would be required before ODOT would commit to constructing a roundabout at this location.



A two-lane roundabout would improve future mobility (v/c ratio of 0.69), as well as safety and traffic operations by providing a protected left-turn for westbound vehicles (via the roundabout). It would have the additional safety benefit of slowing speeds on all of the roadways approaching the roundabout and reducing other turn movement conflicts. Although the benefits would not be significant, closure of the McDougall Rd. approach should be considered with this option.

⁵ The v/c ratio for the westbound left turn movement would be 0.82. Also, the v/c ratio for the McDougall Rd. approach would exceed 1.0, but only a very small volume of traffic would experience this level of congestion.

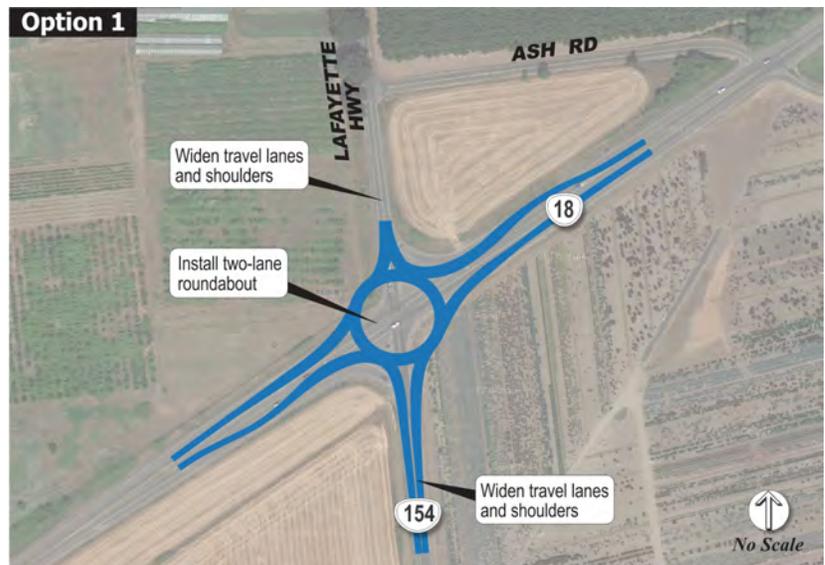
Location #5: OR 18 – Ash Rd. to OR 154/Lafayette Hwy.

There are a variety of needs along this section of OR 18, including safety, geometric, traffic operations, mobility, and bicycle/pedestrian needs. A future mobility need will extend from the Dayton UGB to OR 154 (v/c ratio of 0.73). The intersection at OR 18/Ash Rd. is a top 10% SPIS location (previously a top 5% location), with geometric needs and a future mobility need (v/c ratio > 1.0). The needs at OR 18/OR 154/Lafayette Hwy. include improved safety, lane and shoulder width needs near the intersection, mobility (v/c ratio > 1.0), and bicycle/pedestrian needs on OR 154/Lafayette Hwy. north and south of OR 18.

From a traffic operations and safety standpoint, the ideal improvement at the OR 18/OR 154/Lafayette Highway intersection is a full interchange. This option was identified in the Three-Mile Lane Refinement Plan⁶ which was approved by Yamhill County Commission resolution. This document will be incorporated into the final TSP by reference. However, according to ODOT, because even a simple interchange would likely cost at least \$20-25 million, this option is not considered reasonably likely to be funded within the 20-year planning horizon.

Two additional options could be considered to address these needs. Both options would include the closure/vacation of Ash Road north and south of OR 18. If not vacated, Ash Rd. could be retained as a bicycle and pedestrian route, because it is a desired route for bicycle traffic.

Option 1 would install a multi-lane roundabout at Lafayette Highway/OR 154/OR 18 intersection. In conjunction with this improvement, the lanes and shoulders on OR 154 and Lafayette Hwy. would also be widened north and south of the intersection. This option would address the existing and future mobility needs at OR 18/OR 154/Lafayette Hwy., with the future v/c ratio improving to



⁶ City of McMinnville, Yamhill County, Oregon Department of Transportation, and the Mid-Willamette Valley Council of Governments, Oregon Highway 18 Corridor Refinement Plan, 1996.



0.57. As with the OR 99W/OR 18/McDougall Rd. intersection, ODOT will approach any multi-lane roundabout proposal with caution since their experience with them is limited. Further analysis would be required before ODOT would commit to constructing a roundabout at this location.

Option 2 would realign Lafayette Hwy. and OR 154 into two separate offset “T” intersections. This type of configuration has been shown to reduce collisions by reducing the number of conflicting turn movements at each location.⁷ Depending on the specific configuration, vehicles traveling between OR 154 and Lafayette Hwy. would make either a right-turn onto OR 18 and a left-turn off of OR 18 onto the offset intersection approach (i.e., right-left) or a left-turn onto OR 18 and a right-turn onto the offset intersection approach (i.e., left-right). The advantage of an offset intersection configuration is that it reduces left turn and through movement conflicts. For the “right-left” case, the left-turn movement would be against only one lane of traffic, with opposing traffic clearly visible since turning vehicles would be oriented toward oncoming cars. For the “left-right” case, the number of conflicts at each turn location would be reduced. As with Option 1, Ash Rd. would be closed both north and south of OR 18.

Assuming a “right-left” configuration for Option 2, the future 2035 v/c ratio at the OR 18/OR 154 intersection would be 0.72 for northbound right turns, compared to the mobility target of 0.70. At the offset intersection, the future v/c ratio would be 0.76, compared to the mobility target of 0.75.

A capacity improvement from Dayton to OR 154/Lafayette Hwy. was considered in which OR 18 would be widened to four lanes with a median. This option was not advanced since the future v/c ratio of 0.73 for the existing highway would exceed the target of 0.70 by only a small amount. In addition, this section of OR 18 would have two-lane sections on either side - through Dayton to the east and west of OR 154/Lafayette Hwy. to the west - limiting the benefits of a widened section.

ODOT would explore Option 1 (two-lane roundabout) first, since it would address most of the needs at this location and the cost would be similar to Option 2, with less impact to farmland. However, as previously noted, ODOT will approach any multi-lane roundabout with caution since their experience with them is limited. Further analysis would be required before ODOT would commit to constructing a roundabout at this location. Both options would result in improved mobility, reduction in traffic conflicts, and reduction in crash rate/severity provided by the separation of vehicular conflicts.

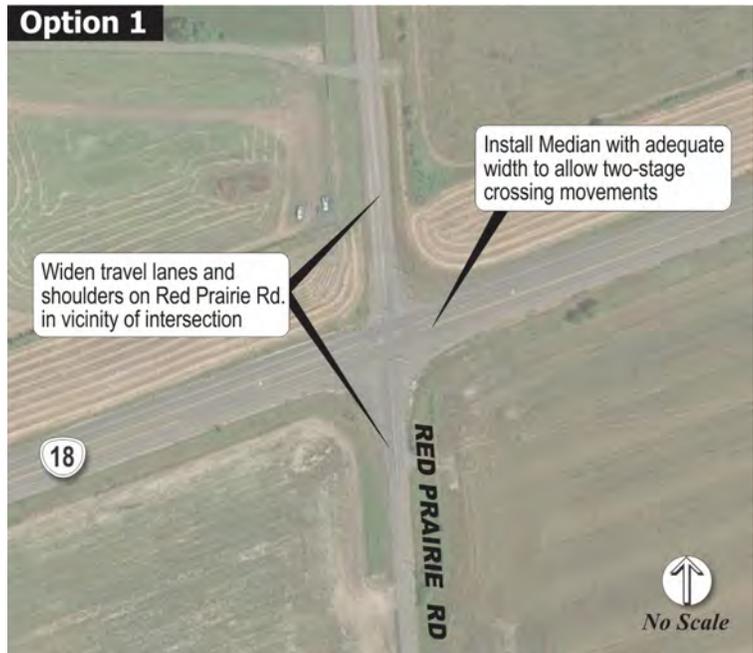
⁷ Oregon Department of Transportation, Safety Comparison of Four-Way Cross and Offset T Intersections, 2001.

Location #6: OR 18/Red Prairie Rd.

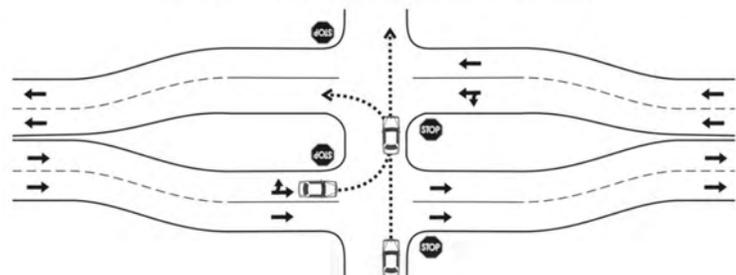
This intersection is a top 10% SPIS location (previously a top 5% location). All of the crashes in the five-year review period were angle crashes between vehicles attempting to cross OR 18 from Red Prairie Rd. and through traffic on OR 18. The primary cause was failure to yield, indicating that the drivers may have tried to use gaps that were too short for the crossing maneuver.

A flasher is currently installed at the intersection and there are signing and pavement markers in advance of the intersection. These represent the range of low-cost improvements typically installed at intersections such as OR 18/Red Prairie Rd.

To further reduce the likelihood of crossing crashes, a median would be installed on OR 18 with adequate width to allow two-stage crossing movements. In addition to this safety improvement, lane and shoulder widening on Red Prairie Rd. in the vicinity of the intersection would be included.



Two-Stage Crossing With Median



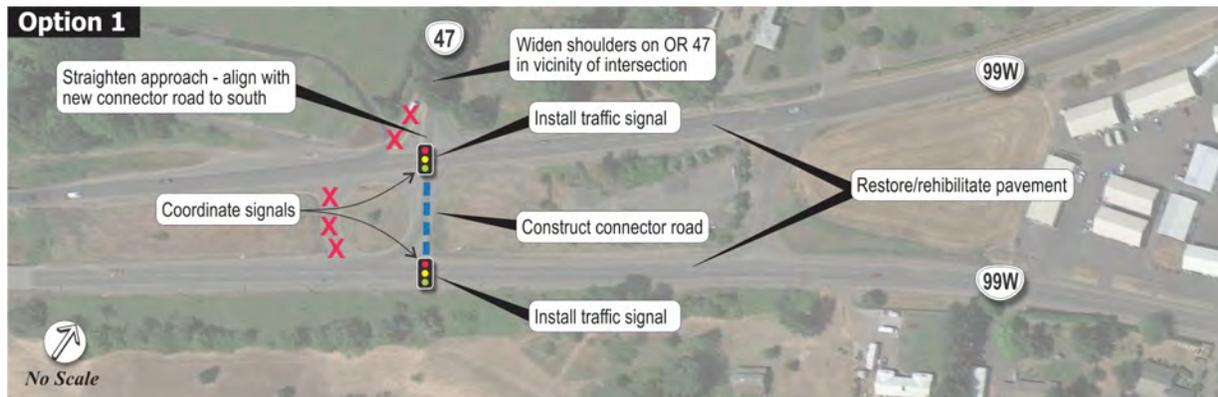
Location #7: OR 47/OR 99W

The OR 47/OR 99W intersection was previously identified as a top 5% SPIS location. Most of the crashes at this location were angle collisions involving vehicles crossing OR 99W from/to OR 47 or rear-end collisions. In addition to this safety need, there are mobility, turn lane, shoulder width, and pavement needs.

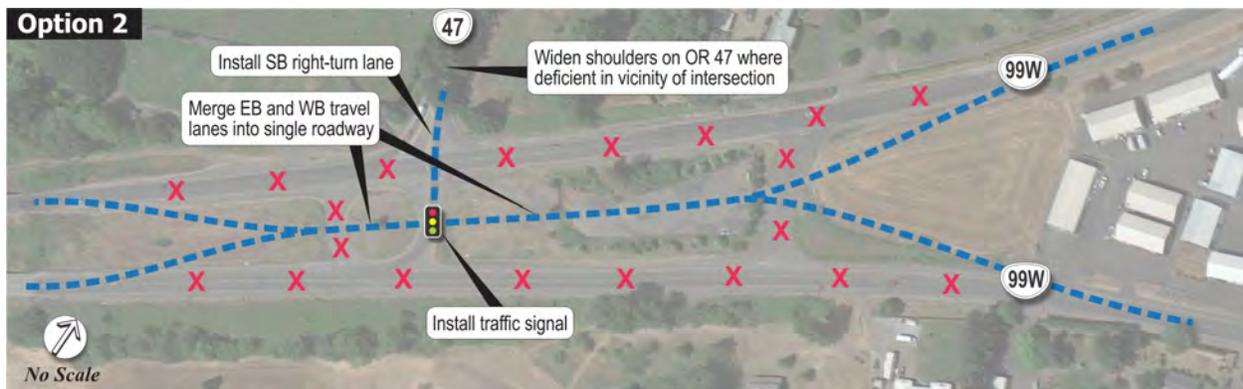
For the future No-Build scenario, the OR 99W westbound intersection will have a mobility need due to the v/c ratio of greater than one for the northbound through movement to OR 47. Peak

hour and eight-hour volume signal warrants are met at this location for both existing and future conditions.

Three options were considered to provide safety and mobility improvements. Option 1 includes the installation of traffic signals on both eastbound and westbound OR 99W, with the construction of a connector road between the two intersections and realignment of OR 47 with the new connector road. Pavement restoration on OR 99W and shoulder widening of OR 47 and OR 99W near the intersection would also occur.

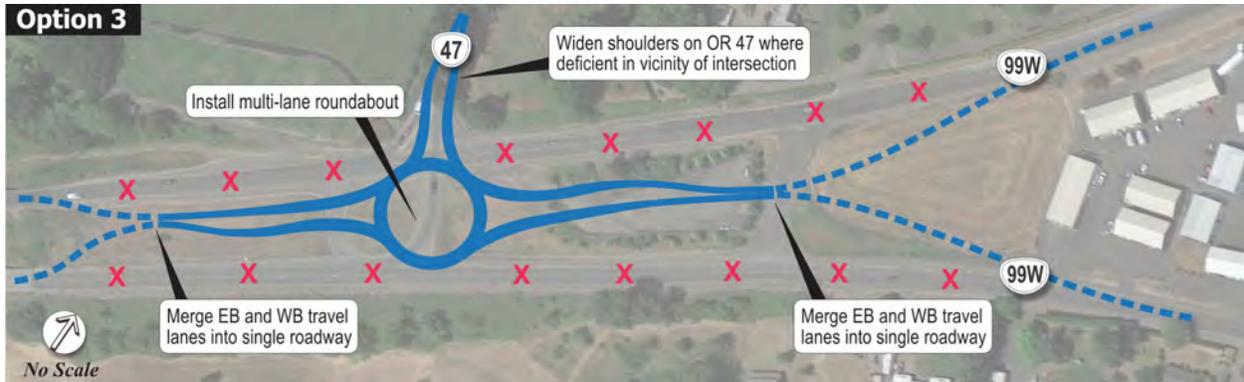


With Option 2, the eastbound and westbound roadways on OR 99W would be merged into a single roadway, converging at a new signalized intersection. Bringing the roadways together serves as an indicator to drivers that conditions are changing, preparing them for the traffic control change ahead.



While traffic signals are a possibility due to the relatively close proximity to McMinnville, these options will be considered carefully because this location is within a high-speed section of OR 99W. In general, ODOT's practice is to not install traffic signals on high-speed rural roads.

Option 3 would be similar to Option 2, but instead of a traffic signal, the roadways would meet in a multi-lane roundabout. Again, as previously noted, ODOT will approach any multi-lane roundabout with caution since their experience with them is limited. Further analysis would be required before ODOT would commit to constructing a roundabout at this location. Both Options 2 and 3 would also include shoulder widening on OR 47 in the vicinity of the intersection.

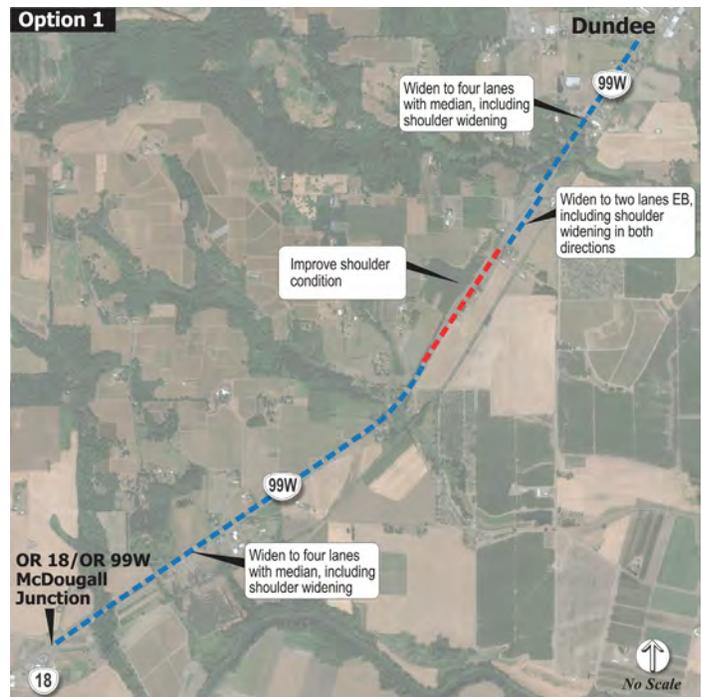


All three options would operate at a similar volume-to-capacity ratio. Option 3 received a higher score due primarily to the greater safety benefits associated with a roundabout. It is noted that while Option 1 scored slightly lower than Option 3, its estimated cost is roughly 60 percent lower than that of Option 3.

Location #8: OR 99W – Dundee to OR 18 Junction

Along OR 99W between Dundee and the OR 18 junction, there are existing and future mobility needs, as reflected by the existing v/c ratio of 0.89 and future v/c ratio > 1.0. There is also shoulder width need. To meet these needs, OR 99W would need to be widened to four lanes with a median, together with shoulder widening.

This capacity improvement would not be needed with the construction of the Dundee-to-Dayton phase of the Newberg-Dundee Bypass, because the bypass would then draw a significant amount of traffic from OR 99W. This improvement would only serve as an



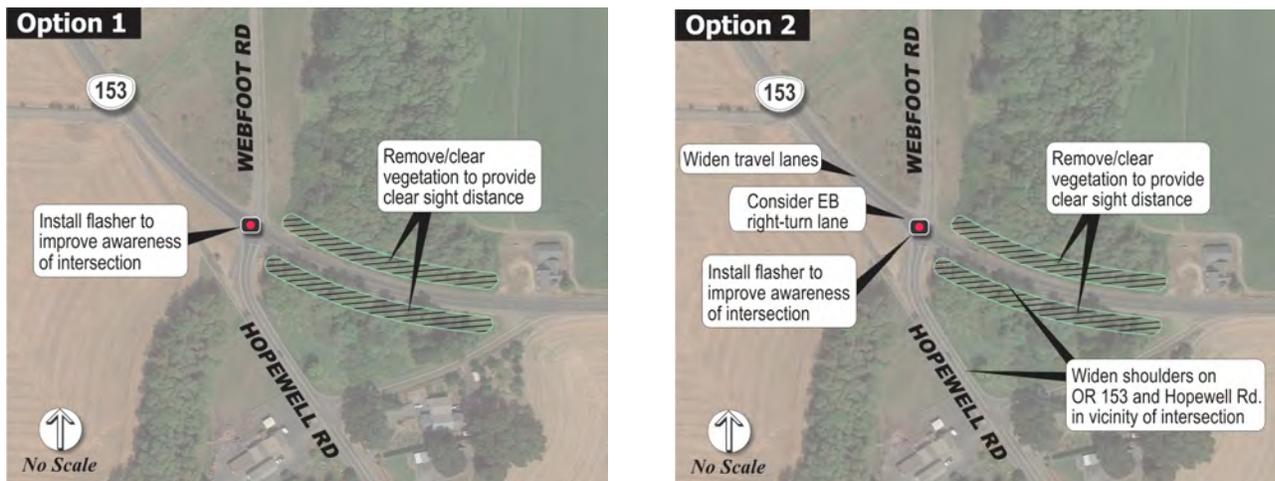
interim fix because ultimately, the bypass would be needed either with or without the widening.

But because neither this improvement (with an estimated cost of over \$50 million) nor the additional phases of the bypass are reasonably likely to be funded within the planning horizon, an alternate mobility target will be required to address the operational condition that will exist in this corridor segment in the absence of the Dundee-to-Dayton phase of the bypass or the direct widening of the segment.

Location #9: OR 153/Hopewell Rd./Webfoot Rd.

Stakeholders identified this as a dangerous intersection with high speeds. Field reconnaissance determined that there are sight distance needs from both Hopewell Rd. and Webfoot Rd. There is also a potential right-turn lane need on eastbound OR 153 and geometric needs on OR 153 and Hopewell Rd. near the intersection.

Option 1 is a low-cost option which removes vegetation on the north and south sides of OR 153 to improve sight distance to the east and installs a warning beacon to improve intersection visibility. Option 2 builds on Option 1, and includes consideration of an eastbound right-turn lane on OR 153 and lane and shoulder widening on OR 153 and Hopewell Rd.



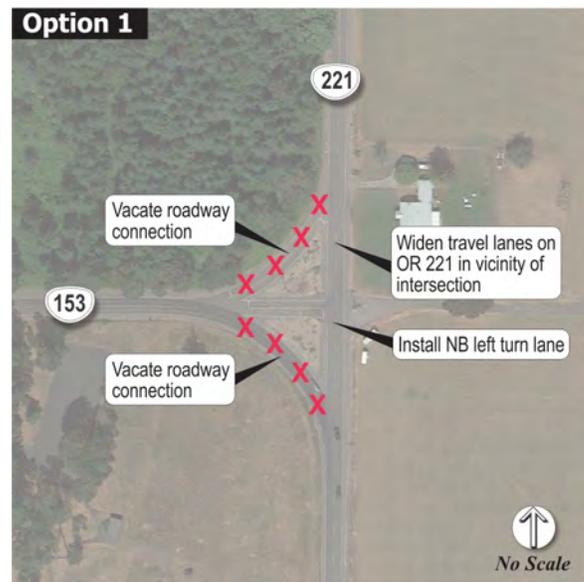
Option 2 received a higher score based on having several additional benefits compared to Option 1. The travel lane and shoulder widening as well as the potential eastbound right-turn lane are significant geometric improvements, which are expected to improve safety while reducing traffic conflicts. In addition, the shoulder widening would result in an improved

pedestrian and bicycle environment. The additional cost of these improvements was considered to be relatively minor compared to the added benefits.

Location #10: OR 221/OR 153

The OR 221/OR 153 intersection was previously identified as a top 10% SPIS location. Stakeholders indicated that the “free” northbound left-turn and southbound right-turn movements permitted by the connector roads between OR 221 and OR 153 may be confusing to drivers unfamiliar with the intersection. The connector roads also create sharp intersection angles where drivers must turn their heads sharply to see. A left-turn lane need and lane and shoulder width needs on OR 221 and OR 153 were also identified.

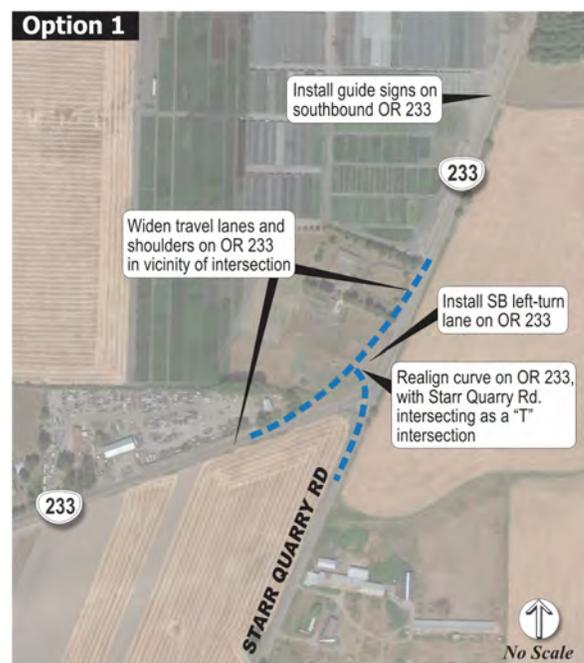
An improvement option was developed which would vacate the south-to-west and north-to-west connector roads to create a standard intersection. This would eliminate the safety concern and skew effect of the non-standard configuration. A northbound left-turn lane would also be installed together with lane widening on OR 221 near the intersection.



Location #11: OR 233/Starr Quarry Rd.

This intersection was previously identified as a top 10% SPIS site and is located on a substandard curve. Road maintenance staff indicated that because of the intersection alignment, southbound drivers may be confused about which direction to turn to continue traveling on OR 233. There are also lane and shoulder width needs on OR 233.

To address these needs, OR 233 would be realigned so that the horizontal curve meets ODOT standards. In conjunction with the curve realignment, Starr Quarry Rd. would be realigned to “T” into OR 233. A southbound left-turn lane would be installed on

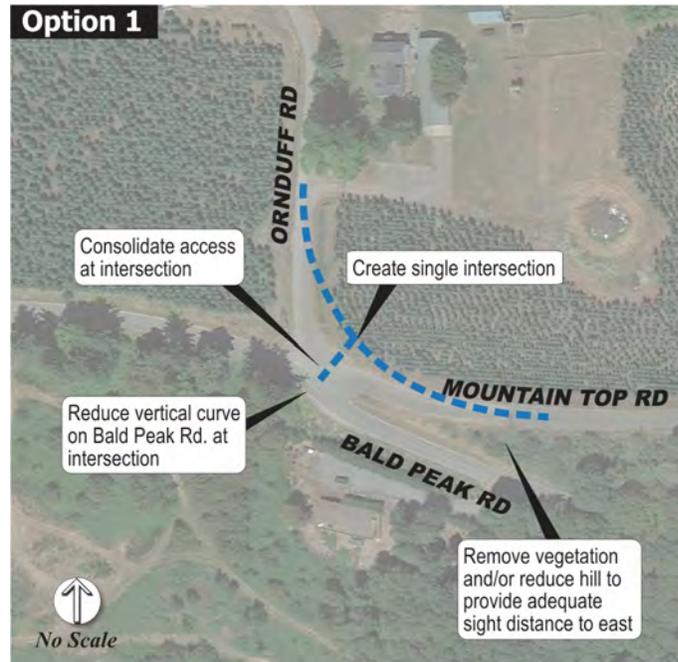


OR 233 at the realigned intersection, along with guide signs on southbound OR 233. The lanes and shoulders on OR 233 would also be widened in the vicinity of the intersection.

Location #12: Bald Peak Rd./Mountain Top Rd.

The Bald Peak Rd./Mountain Top Rd. intersection was identified as a safety concern by the RIAC because of the skewed intersection angle and potential sight distance problems. The crash rate within this section of Bald Peak Rd. is higher than the average crash rate. This intersection is also located on a combined horizontal/vertical curve. Lane and shoulder width needs exist on Bald Peak Rd.

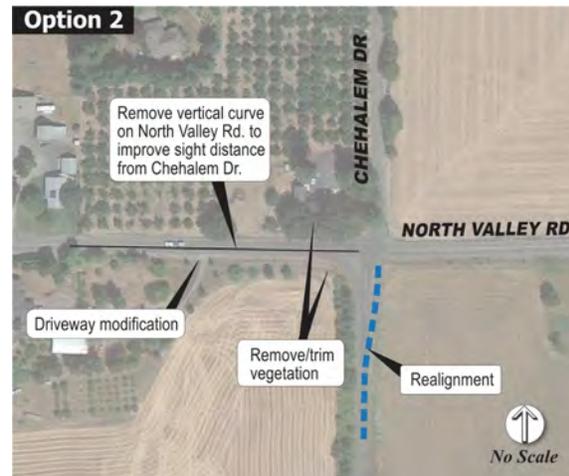
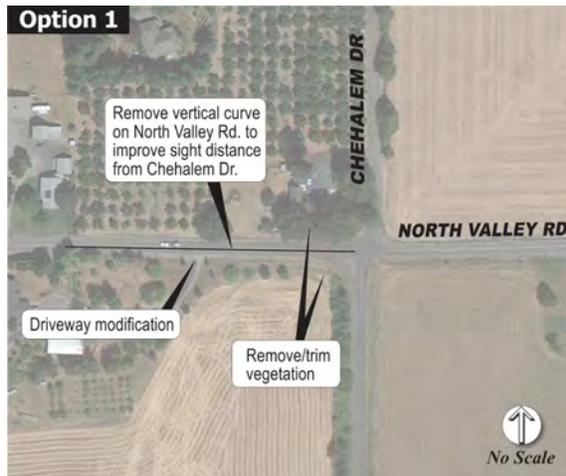
The range of improvement options at this location is significantly limited by the topography. One option was developed, however, in which Ornduff Rd. would be realigned with Mountain Top Rd. to form a single intersection just north of Bald Peak Rd. This intersection would be connected to Bald Peak Rd. at a consolidated access point. In addition, the vertical curve on Bald Peak Rd. would be reduced. Lane and shoulder width widening on Bald Peak Rd. would be cost-prohibitive because of the steep grade below Bald Peak Rd.



Location #13: North Valley Rd./Chehalem Dr.

There are sight distance needs at this intersection due to a vertical curve on North Valley Rd. to the west and vegetation on the north and south sides of North Valley Rd. The Chehalem Dr. intersection approaches are also offset.

With the first improvement option, North Valley Rd. would be reconstructed west of Chehalem Dr. to remove the vertical curve and the vegetation would be trimmed to improve sight distance for both the north and south intersection approaches. Option 2 includes these improvements, plus the realignment of the south leg of Chehalem Dr. to eliminate the offset.

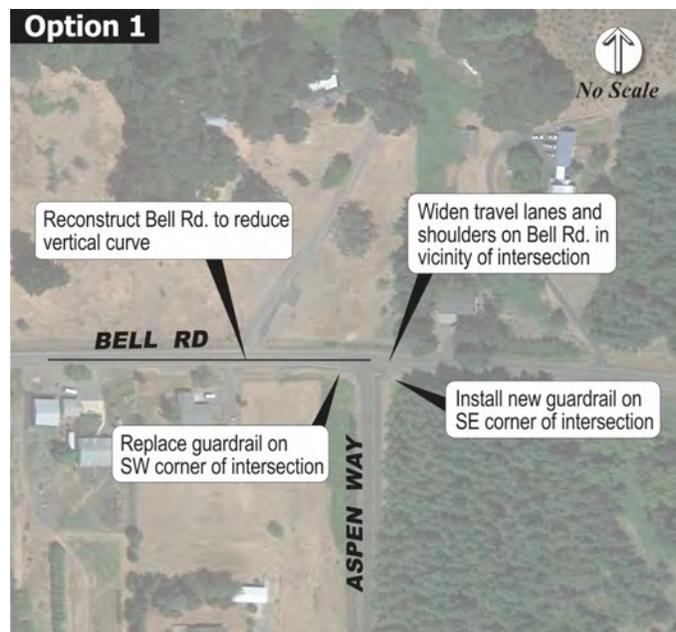


In the evaluation, both options received identical scores. While Option 2 is superior in terms of improved safety and geometrics because of the increased sight distance and lane and shoulder widening on Chehalem Dr., these benefits are offset by the higher cost and potential right-of-way and EFU (Exclusive Farm Use) land use impacts of this option.

Location #14: Bell Rd./Aspen Way

At the Bell Rd./Aspen Way intersection, there is a sight distance need to the west from northbound Aspen Way because of a vertical curve on Bell Rd. This is worsened by the steep approach grade on Aspen Way.

The improvement option for this intersection includes increasing the sight distance by reconstructing Bell Rd. west of the intersection to remove the vertical curve. Lane and shoulder widening on Bell Rd. in the vicinity of the intersection would also be included with this option.



An improvement to reduce the grade on Aspen Way at Bell Rd. was also considered, but this would be cost-prohibitive.

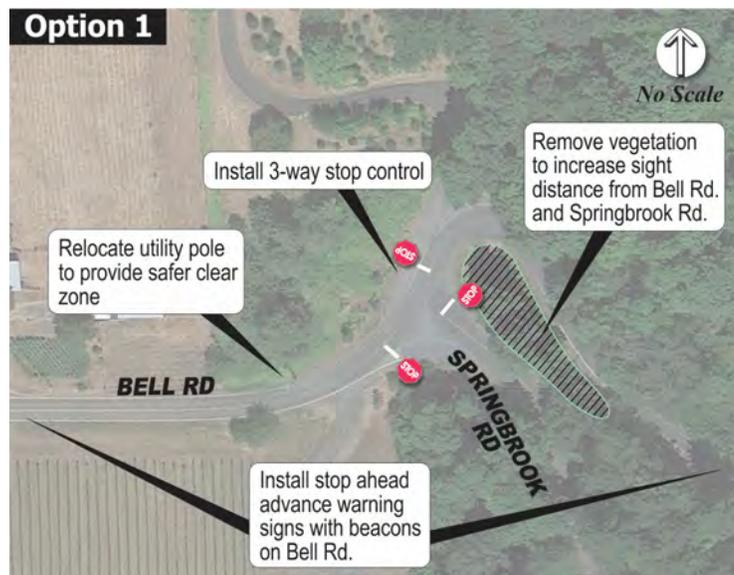
Location #15: Bell Rd./Zimri Rd.

Similar to the Bell Rd./Aspen Way intersection, there is a sight distance need to the west of the Bell Rd./Zimri Rd. intersection from northbound Zimri Rd. This is caused by sight obstructions on the southwest corner of the intersection and the steep approach grade on Zimri Rd. The sight distance would be improved by removing and/or relocating the obstructions on the south side of Bell Rd. Reducing the grade on the northbound approach of Zimri Rd. was considered to be cost-prohibitive.



Location #16: Bell Rd./Springbrook Rd.

This intersection has sight distance needs in both directions from northbound Springbrook Rd. due to the horizontal and vertical curves on Bell Rd. as well as vegetation. Because of the topography constraints that limit the improvement options at this location, the intersection would be converted to all-way stop control. Along with this improvement, vegetation on the southeast corner of the intersection would be removed and a utility pole on the north side of Bell Rd. would be relocated to improve clear zone safety. To increase driver awareness of the intersection, advance warning signs with beacons would be installed on Bell Rd., along with a flashing beacon at the intersection.



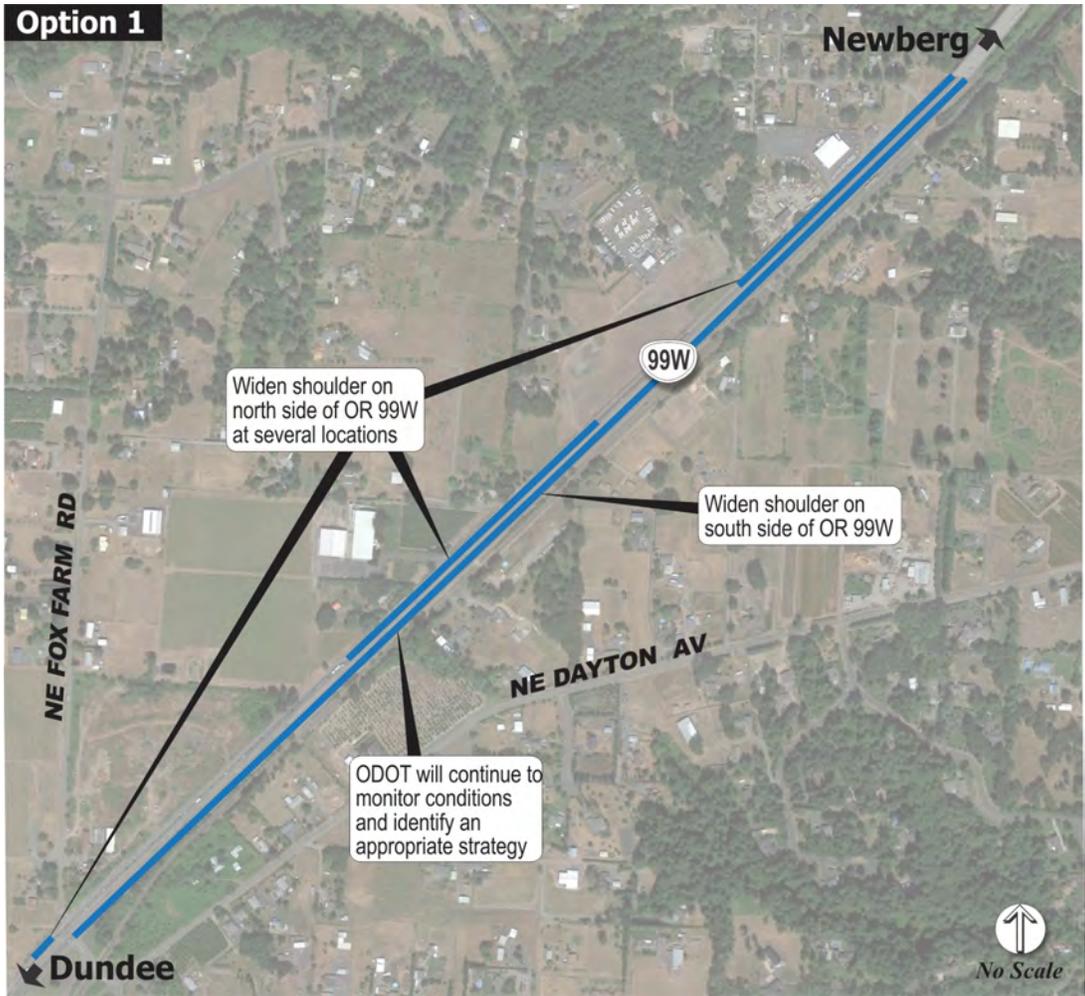


Location #17: OR 99W - Newberg to Dundee

Within this segment of OR 99W, there are two locations that have appeared within recent top 5% and top 10% SPIS lists. The safety problems may be related to the lane reduction east of Fox Farm Rd. in the westbound direction and the OR 99W/First St. intersection in Dundee. Although there is also an existing mobility need ($v/c > 1.0$), this is expected to improve in the future due to the construction of the Newberg-Dundee Bypass. The shoulder widths do not meet the ODOT standard along a significant portion of the segment.

The improvement strategy for this highway segment is for ODOT to widen the shoulder in the areas that do not currently meet standards, as funding allows, and to continue to seek ways to improve safety by monitoring and refining the advance warning and lane reduction treatment on the westbound approach to Dundee where OR 99W narrows from four-lanes to two-lanes in each direction. Additionally, ODOT is currently working with the City of Dundee to develop an improvement to the intersection of OR 99W and First Street in Dundee. The scope of this improvement will either include or have an effect on the intersection of OR 99W and Fox Farm Road.

At this time there is no estimate of how this improvement will impact the operation of the OR 99W/Fox Farm Rd. intersection, but some improvement is expected, particularly in combination with the reduction in traffic expected with the opening of Phase One of the Newberg Dundee Bypass. The operational conditions at this intersection should continue to be monitored by ODOT, post Phase One, and addressed to the extent practicable from a property impact and funding standpoint, in consideration of the magnitude of any operational or safety problems that may develop by the end of the 20-year planning horizon. The potential for the Dundee to Dayton segment of the bypass to be constructed should also be a factor in these considerations as its construction would include a complete reconstruction/replacement of the existing OR 99W and Fox Farm Road Intersection.



Location #18: OR 233/Cruickshank Rd.

This intersection was reported as a safety concern by the RIAC. The intersection configuration may be confusing to drivers due to multiple conflict locations. There are also lane and shoulder width needs on OR 233 near the intersection.

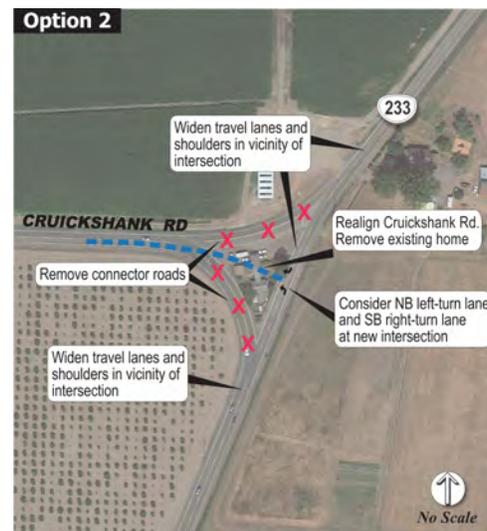
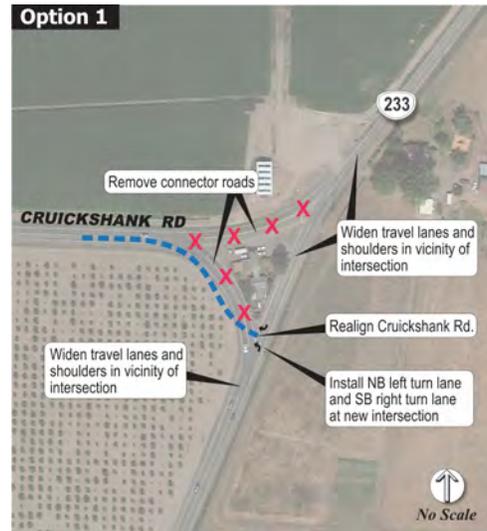
Three options were developed to improve this location. All of these involve consolidating the existing conflict points into a single intersection.

Option 1 would remove the connector roadways and realign Cruickshank Rd. to meet OR 233 at a “T” intersection south of a house that sits between the connector roadways and OR 233. A northbound left-turn lane and southbound right-turn lane would be considered at the new intersection. The travel lanes and shoulders on OR 233 would also be widened in the vicinity of the intersection.

Option 2 would be the same as Option 1, except the existing house would be removed to allow a straighter alignment of Cruickshank Rd. with OR 233.

Option 3 would reconstruct the intersection as a roundabout, removing the house and widening the travel lanes and shoulders on OR 233 in the vicinity of the intersection.

Option 1 scored the highest. It would require less additional right-of-way and have a lower construction cost than Options 2 or 3. Although Option 3 would have greater potential safety benefits and more extensive geometric improvements, these benefits would be offset by the higher right-of-way requirement and construction cost compared to Option 1.



Location #19: OR 18/Gopher Valley Rd.

Stakeholders and road maintenance staff reported poor traffic operations at this location caused by multiple business accesses near the intersection.

The County and ODOT should work with the property owners to consolidate accesses over time. Any changes would be dependent on right-of-way negotiations and, since there are multiple property owners, potential easements between the properties. Any improvement would be a relatively low cost project, likely consisting of one or more driveway closures and one or more driveway improvements with potential connecting access roadways between the properties.

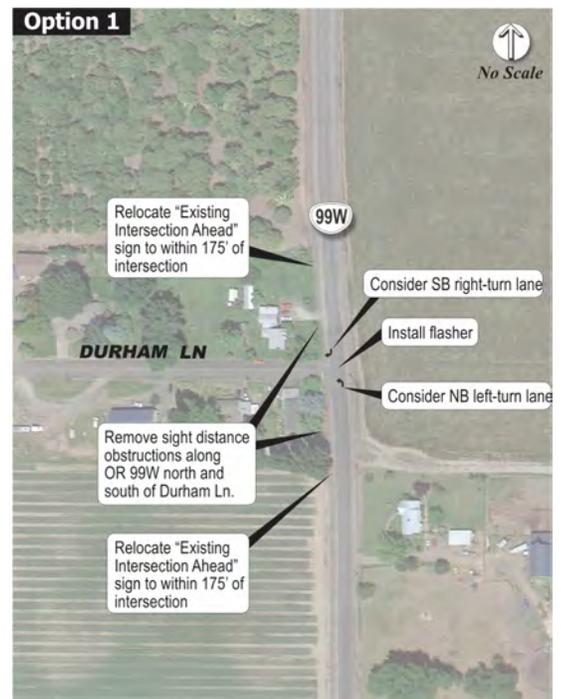
Consolidation of the accesses would result in improvements in safety and access conditions, better consistency with ODOT standards, and a reduction in traffic conflicts.

Location #20: OR 99W/Durham Ln.

Durham Ln. provides a connection between OR 99W and OR 18. The intersection at OR 99W/Durham Ln. was a previous top 5% SPIS location. The improvements at this location are oriented toward increasing driver awareness of the intersection and providing turn lanes to reduce traffic conflicts. This includes the removal of sight distance obstructions, relocating advance intersection warning signage, installing a northbound left-turn lane and, potentially, a southbound right-turn lane on OR 99W, and relocating the stop sign on Durham Ln.

Location #21: Fox Farm Rd./Hidden Springs Rd.

This intersection was identified as a safety concern by County staff, with a fatality occurring here within the past year. There are significant horizontal and vertical curve needs near the intersection that limit sight distance from Fox Farm Rd. Sight distance from the eastbound approach of Hidden Springs Rd. is also poor. The large pavement area at the intersection encourages high speeds on Fox Farm Rd.

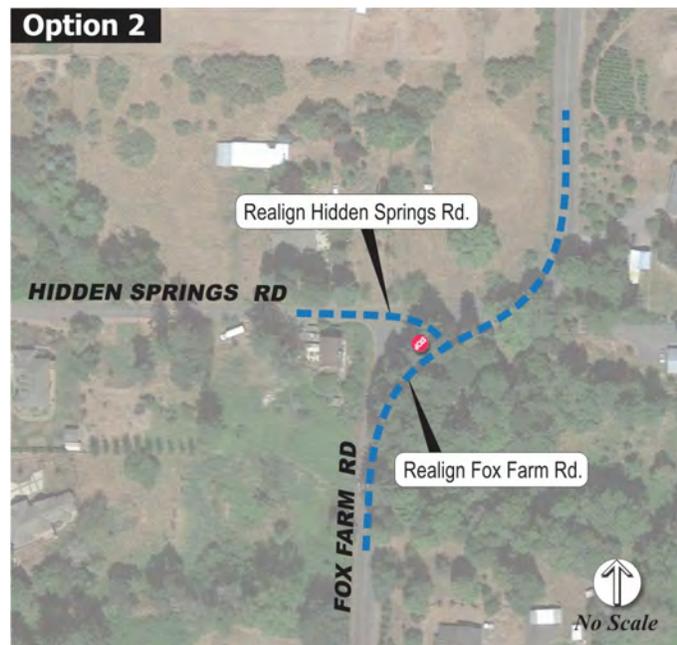


Option 1 partially addresses these needs by realigning the intersection into a “T” configuration, with stop control on Hidden Springs Rd. The realignment would improve sight distance from Hidden Springs Rd. by placing the stop bar much closer to Fox Farm Rd. than the existing location.

Option 2 would realign Fox Farm Rd. both south and north of Hidden Springs Rd. The realignment would reduce the severity of the existing horizontal and vertical curves near the intersection. This would improve safety on both Fox Farm Rd. and Hidden Springs Rd. by improving sight distance and roadway geometrics. An engineering study of this option would be required to determine its feasibility.

A third option featuring all-way stop control at the intersection was also investigated. This was considered infeasible, however, due to the steep approach grade that would result for stopped vehicles on northbound Fox Farm Rd.

Option 2 received a higher score than Option 1 because of the greater potential safety benefits and higher level of geometric improvements. Option 2 provides significantly better sight distance at the intersection and reduces both the horizontal and vertical curves on Fox Farm Rd. The estimated cost of Option 2 is significantly higher, however, and additional engineering will be required to determine the overall feasibility of the project. There would also likely be impacts to environmentally sensitive areas, primarily trees on the southeast side of the intersection.





BICYCLE/PEDESTRIAN IMPROVEMENTS

Bicycle/pedestrian improvements were identified at a number of locations throughout the county. The priority locations listed in Table 1 and shown in Figure 1 were identified through lane and shoulder width data, stakeholder interviews, and an assessment of key routes between population centers where bicyclists and pedestrians travel.

Since these improvements are specifically oriented to bicyclists and pedestrians, it was determined that the shoulders should be widened to the preferred six-foot width⁸ for these modes, even if the state or county roadway standard is lower at a specific location. In addition, widening of the adjacent travel lane was included since providing sufficient width for vehicles is a contributing factor for bicycle and pedestrian safety. The total roadway widening requirement by direction at each location, including travel lane and shoulder widening, is shown in the last column of Table 1.

⁸ Oregon Department of Transportation, Oregon Bicycle and Pedestrian Design Guide, (2011).



Table 1: Bicycle and Pedestrian Priority Improvements

| Priority Improvement Location | | From | To | Need | Improvement | Total Roadway Widening (each direction) | Estimated Cost |
|-------------------------------|------------------|-------------------------|-------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------|
| A | Old Sheridan Rd. | McMinnville City Limits | OR 18 | Significant pedestrian volume | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 5 feet | \$2.0M plus bridge/culvert |
| B | OR 47 | OR 99W | Washington County Line | Important commuter route for bicyclists and pedestrians | <ul style="list-style-type: none"> Yamhelas Westsider Trail* | N/A | N/A |
| C | OR 18B | Sheridan City Limits | Willamina City Limits | Relatively short distance between population centers | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 7 feet | \$3.0M |
| D | OR 99W | Newberg City Limits | Dundee City Limits | Relatively short distance between population centers | <ul style="list-style-type: none"> Widen and pave shoulders to six feet** | Varies | See Location #17 cut sheet |
| E | OR 99W | Lafayette City Limits | McMinnville City Limits | Relatively short distance between population centers | <ul style="list-style-type: none"> Widen and pave shoulders to six feet | 6 feet*** | Reconstruction of two bridges |
| F | Lafayette Hwy. | Lafayette City Limits | OR 18 | Significant pedestrian volume | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 4 feet | \$1.7M plus utility pole relocation |
| G | Westside Rd. | McMinnville City Limits | Meadowlake Road | Important commuter route for bicyclists and pedestrians | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 5 feet | \$5.1M |
| H | Westside Rd. | Meadowlake Road | Moore's Valley Road | Important commuter route for bicyclists and pedestrians | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 7 feet | \$4.8M |

* The trail will run along the abandoned Union Pacific right-of-way between OR 99W and the Washington County line and through the cities of Gaston, Yamhill and Carlton. Access will be available from OR 47 and intersecting county roads.

** Alternatively, widening of the shoulders on Dayton Avenue could be considered per Dundee TSP and Chehalem Heritage Trail Strategic Plan.

*** South Yamhill River bridges only.

Appendix A

CUT SHEETS



Location #1:
Kuehne Rd./Abbey Rd./Hendricks Rd.

Sheet 1 of 3

Needs:

- Improved safety – on RIAC list of safety improvement locations
- Poor intersection configuration – driver confusion about right-of-way
- Skewed intersections
- Southbound left-turn lane needed on Kuehne Rd.
- Horizontal curve on Hendricks Rd. possibly contributed to two crashes
- Lane width need on Abbey Rd.
- Horizontal curve on Abbey Rd. south of Intersection



Improvement Option 1

Description:

- Realign Abbey Rd. to "T" intersection at Hendricks Rd.
- Install southbound left turn lane on Hendricks Rd. at Abbey Rd.
- Install northbound acceleration lane/merge lane on Kuehne Rd. at Hendricks Rd.
- Widen travel lanes and shoulders on Abbey Rd.
- Widen travel lanes and shoulders on Hendricks Rd. and Kuehne Rd.
- Improve horizontal alignment on Abbey Rd. south of intersection to 40 mph curve.
- Realign Oak Spring Farm Rd. to "T" intersection at Abbey Rd.

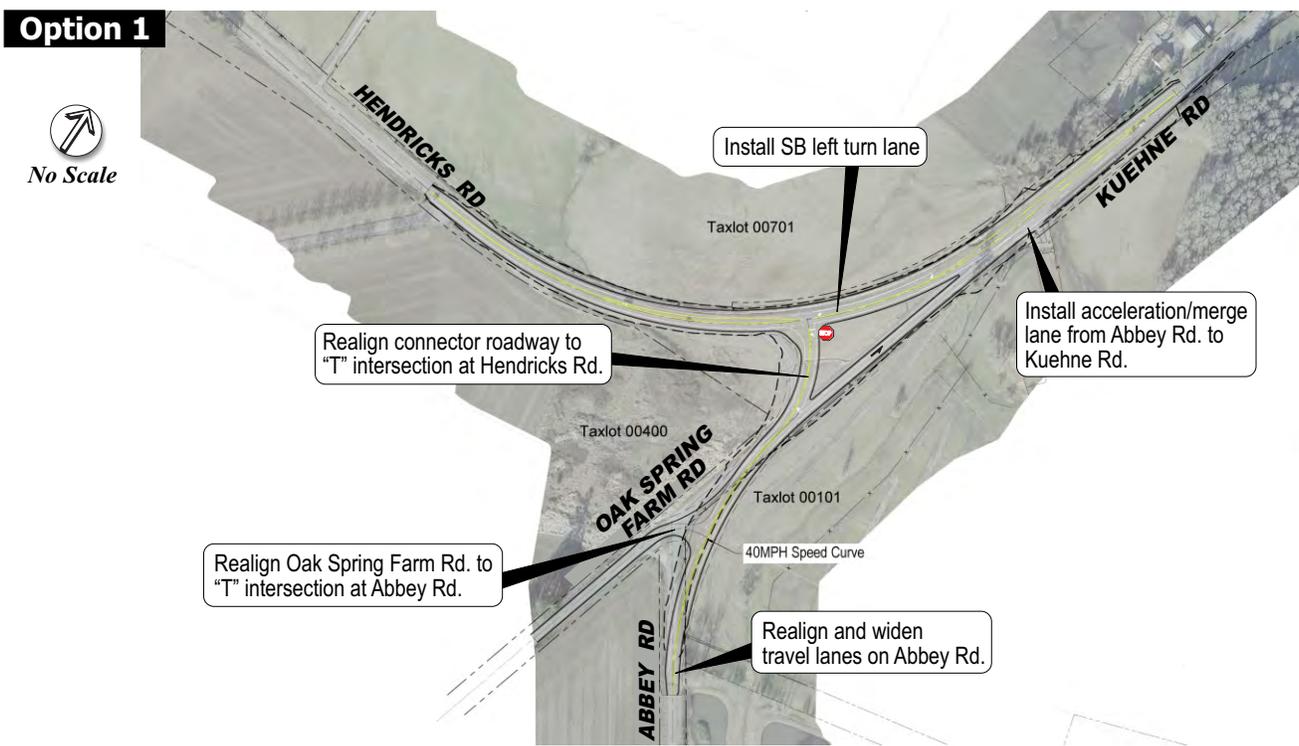
Preliminary Cost Estimate: \$625,000+ROW

Benefits:

- Left turn lane provides refuge for drivers waiting to turn from southbound Kuehne Rd. to southbound Abbey Rd.
- Improved safety conditions on Kuehne Rd./Hendricks Rd.
- Improved geometric conditions on Abbey Rd.

Key Considerations/Notes:

- No additional right-of-way would be needed for the intersection improvement, but will be needed for Abbey Rd. curve realignment.





Location #1:
Kuehne Rd./Abbey Rd./Hendricks Rd.

Sheet 2 of 3

Improvement Option 2

Description:

- Realign three intersections as stop-controlled "T" intersection
- Install northbound left-turn lane on Abbey Rd.
- Install "free" southbound right-turn lane on Abbey Rd. at new intersection
- Install acceleration/merge lane from Abbey Rd. to Kuehne Rd.
- Widen travel lanes and shoulders on Abbey Rd. Kuehne Rd. and Hendricks Rd.
- Improve horizontal alignment on Abbey Rd. south of intersection
- Realign Oak Spring Farm Rd. to "T" intersection with Abbey Rd.

Preliminary Cost Estimate: Unavailable

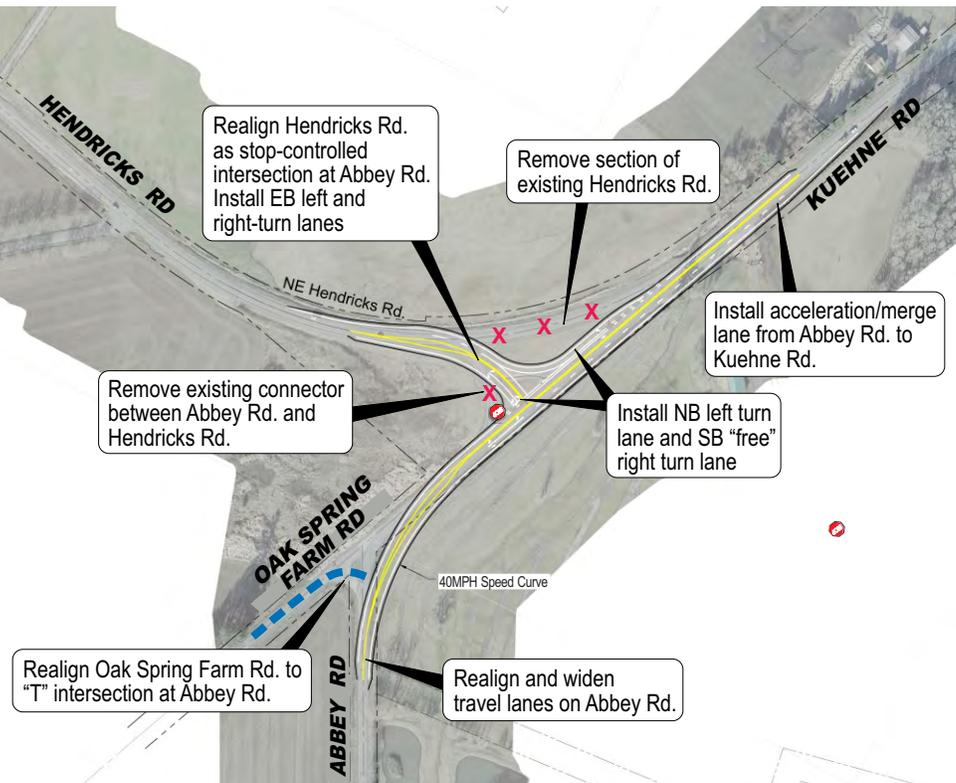
Benefits:

- Single intersection less confusing to drivers than multiple intersections
- Eliminates unexpected movements (e.g. southbound left turns at existing Abbey Rd./Kuehne Rd. intersection)
- Eliminates skewed intersection approaches
- Improved geometric conditions on Abbey Rd.

Key Considerations/Notes:

- No additional right-of-way would be needed for the intersection improvement, but may be needed for Abbey Rd. curve realignment

Option 2





Location #1:

Kuehne Rd./Abbey Rd./Hendricks Rd.

Sheet 3 of 3

Improvement Option 3

■ Description:

- Realign three intersections as single-lane roundabout
- Widen approach lanes and shoulders on Abbey Rd., Kuehne Rd. and Hendricks Rd.
- Improve horizontal alignment on Abbey Rd. south of intersection
- Realign Oak Spring Farm Rd. to "T" intersection with Abbey Rd.

■ Preliminary Cost Estimate: Unavailable

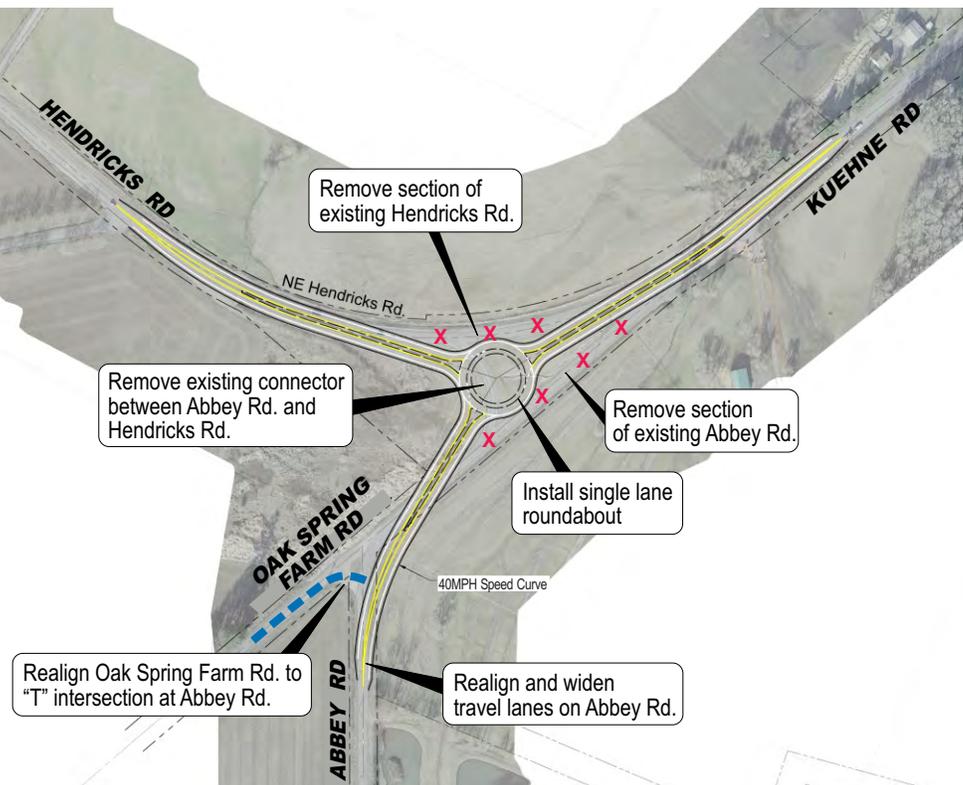
■ Benefits:

- Single intersection less confusing to drivers than multiple intersections
- Eliminates unexpected movements (e.g. southbound left turns at existing Abbey Rd./Kuehne Rd. intersection)
- Reduced number of traffic conflict points
- Eliminates skewed intersection approaches
- Slower speeds through intersection on all roadways
- Improved geometric conditions on Abbey Rd.

■ Key Considerations/Notes:

- No additional right-of-way would be needed for the intersection improvement, but may be needed for Abbey Rd. curve realignment.

Option 3





Location #2:
Stringtown Rd. - OR 221 to OR 154

Sheet 1 of 1

■ Needs:

- Improved safety – segment crash rate is greater than 200% of statewide average crash rate
- Lane width and shoulder width needs on Stringtown Rd.



Improvement Option 1

■ Description:

- Widen road
- Widen/improve shoulders, including increasing distance to roadside features/obstacles
- Install shoulder rumble stripes
- Provide signing/stripping to indicate horizontal curves at following locations:

M.P. 1.10

- Add advisory speed sign to existing horizontal alignment sign (westbound)
- Install horizontal alignment/advisory speed sign (eastbound)
- Place wide edgeline markings
- Install additional chevron signs (westbound and eastbound)

M.P. 1.75

- Add advisory speed sign to existing horizontal alignment sign (westbound)
- Install combination horizontal alignment/advisory speed sign (eastbound)
- Place wide edgeline markings
- Install chevron signs (westbound and eastbound)

M.P. 1.89 – M.P. 2.05 (westbound and eastbound)

- Install combination horizontal alignment/advisory speed signs
- Place wide edgeline markings
- Install chevron signs

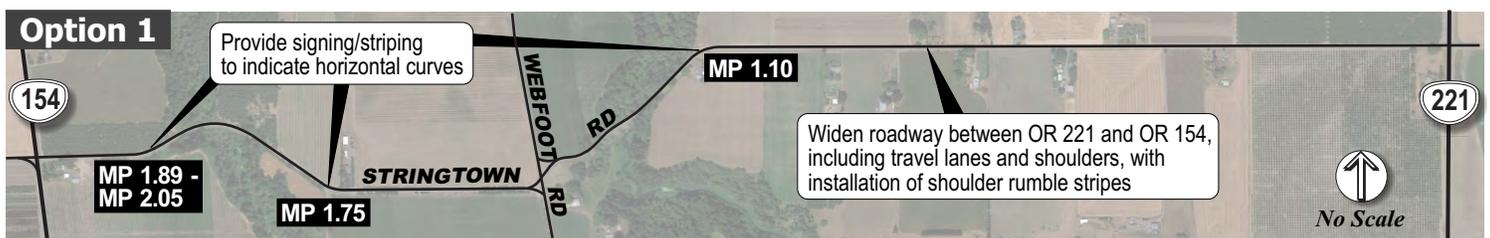
■ Preliminary Cost Estimate: \$4.25 million

■ Benefits:

- Widening road increases driver margin of error
- Widening shoulders provides greater recovery area
- Shoulder rumble strips improve driver awareness of edge of roadway
- Improved signing and striping improves driver awareness of curves
- Improved bicycle and pedestrian environment with wider shoulders

■ Key Considerations/Notes:

- Additional right-of-way may be needed for this improvement
- Realignment of curves was considered cost prohibitive



Location #3:

Worden Hill Rd. - OR 240 to North of Fairview Dr.

Sheet 1 of 5

Needs:

- Improved safety - segment crash rate is greater than 200% of statewide average
- At OR 240/Worden Hill Rd.:
 - Skewed intersection
 - Sight distance need on Worden Hill Rd.
 - Approach width need on Worden Hill Rd.
 - Shoulder width need on OR 240



Improvement Option 1

Description:

OR 240/Worden Hill Rd. Intersection Only Improvements:

- Realign intersection to eliminate skew
- Widen shoulders on OR 240 in vicinity of intersection

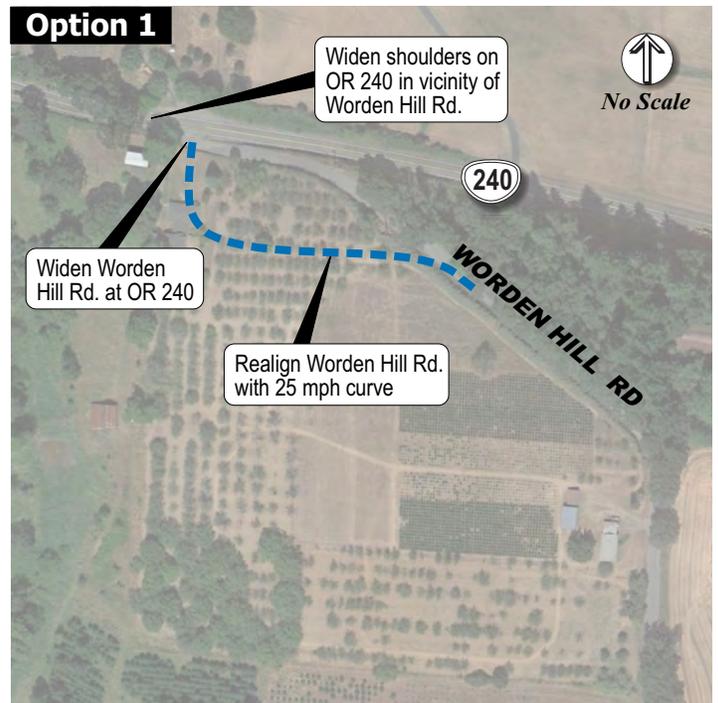
■ **Preliminary Cost Estimate:** \$2.4 million

Benefits:

- Improved sight distance at intersection with removal of skew angle
- Improved traffic operations with widening of Worden Hill Rd. approach

Key Considerations/Notes:

- Additional right-of-way would be needed for this improvement, including purchase of house





Location #3:

Worden Hill Rd. - OR 240 to North of Fairview Dr.

Sheet 2 of 5

Improvement Option 2

■ Description:

Same as Option 1, plus:

- Install chevron signs and post-mounted delineators on horizontal curves on Worden Hill Rd. at M.P. 2.53, M.P. 3.57, M.P. 3.70, M.P. 3.85, and M.P. 4.33
- Install horizontal alignment/advisory speed signs in advance of these curves
- Install wide edge line markings and permanent raised markers at curves
- Install ledge line rumble stripes for length of roadway

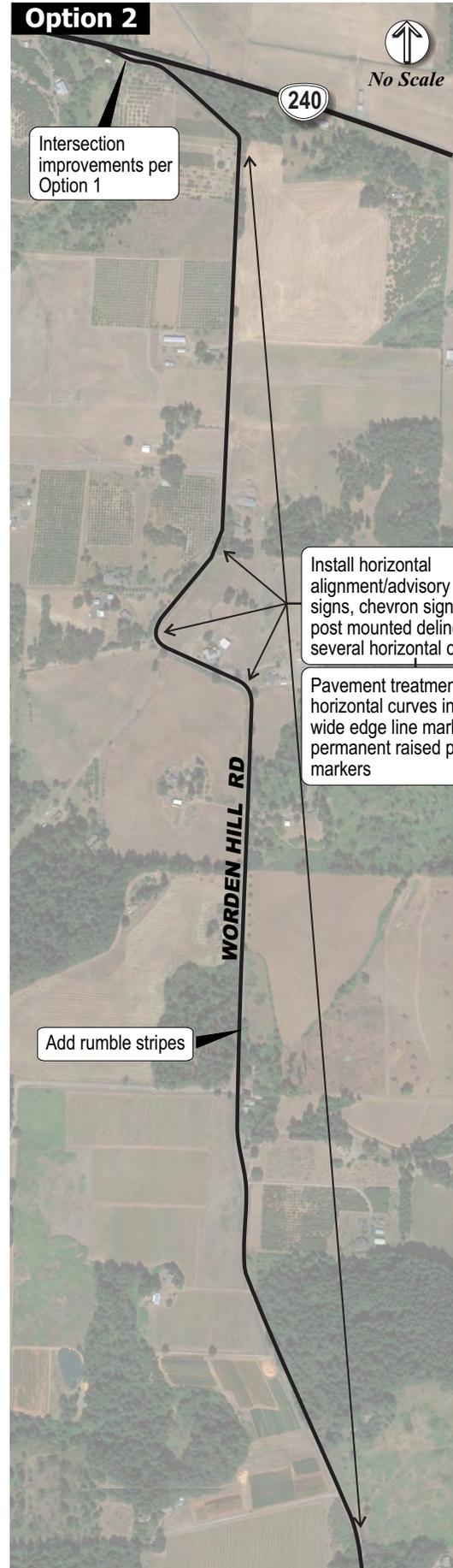
■ Preliminary Cost Estimate: \$2.5 million

■ Benefits:

- Benefits of Option 1
- Improved driver awareness of curves and edge of pavement

■ Key Considerations/Notes:

- Same additional right-of-way requirement as Option 1 for OR 240/Worden Hill Rd. intersection improvement





Location #3:

Worden Hill Rd. - OR 240 to North of Fairview Dr.

Sheet 3 of 5

Improvement Option 3

Description:

Same as Option 3, plus:

- Vertical realignment at:
 - M.P. 3.63 - 3.69
 - M.P. 3.27 - 3.5
- Add shoulders for entire length (2 ft.)

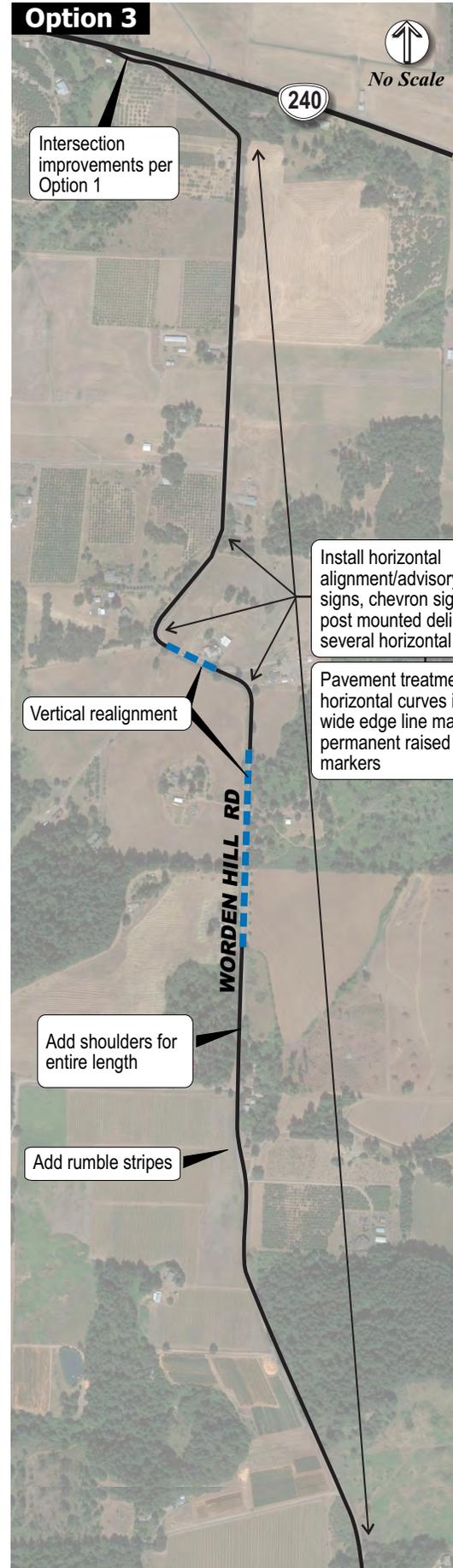
Preliminary Cost Estimate: \$4.8 million

Benefits:

- Benefits of Option 2
- Improves roadway sight distance and safety by removing vertical curves at key locations
- Improves roadway safety by providing shoulders

Key Considerations/Notes:

- Same additional right-of-way requirement as Option 1 for OR 240/Worden Hill Rd. intersection improvement





Location #3:

Worden Hill Rd. - OR 240 to North of Fairview Dr.

Sheet 4 of 5

Improvement Option 4

Description:

Same as Option 4, plus:

- Realignment of horizontal curves at:
 - M.P. 3.57
 - M.P. 3.70
 - M.P. 3.85
 - M.P. 4.33

Preliminary Cost Estimate: \$5.4 million

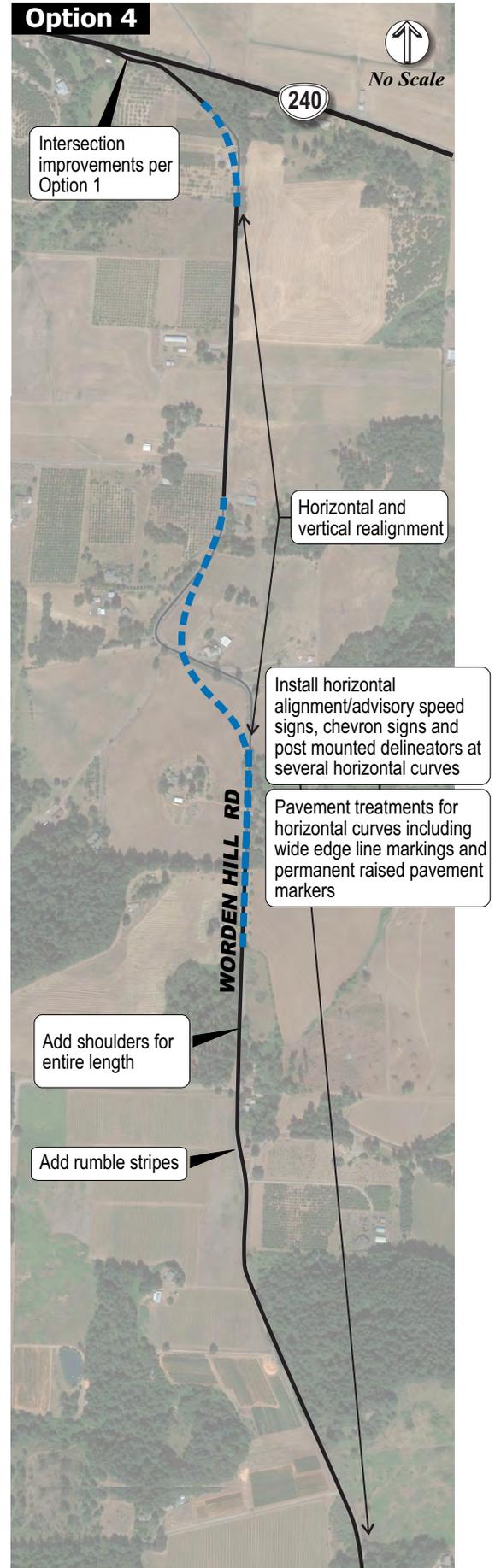
Benefits:

- Benefits of Option 3
- Improves roadway sight distance and safety by removing horizontal curves at key locations

Key Considerations/Notes:

- Right-of-way would be needed for horizontal curve realignment, in addition to that required for Option 1
- Signing/pavement markings not necessary because these needs would be addressed through realignment

Option 4





Location #3:

Worden Hill Rd. - OR 240 to North of Fairview Dr.

Sheet 5 of 5

Scoring

| Evaluation Criterion | Weight | Raw Score | | | |
|----------------------------------------------------------------|--------------|------------|------------|------------|------------|
| | | Option 1 | Option 2 | Option 3 | Option 4 |
| 1. Potential reduction in crash rate/severity | 20 | 1 | 4 | 6 | 8 |
| 2. Type/level of geometric improvement ¹ | 20 | 1 | 1 | 6 | 8 |
| 3. Potential reduction in traffic conflicts | 10 | 0 | 0 | 0 | 0 |
| 4. Minimization of construction cost | 10 | 6 | 6 | 3 | 2 |
| 5. Minimization of required right-of-way | 10 | 7 | 7 | 7 | 2 |
| 6. Potential reduction in congestion and delay ² | 5 | 0 | 0 | 0 | 0 |
| 7. Consistency with County/ODOT standards | 5 | 2 | 2 | 6 | 8 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 7 | 7 | 7 | 3 |
| 9. Improvement in access conditions ³ | 5 | 0 | 0 | 0 | 1 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 0 | 0 | 5 | 5 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 10 | 10 | 9 |
| | Total | 265 | 325 | 480 | 490 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

Location #4:
OR 99W/OR 18/McDougall Rd.

Sheet 1 of 1

■ **Needs:**

- Improved safety (top 5% SPIS location)
- Improved traffic operations
- Non-standard intersection geometry
- Shoulder width needs on both OR 99W and OR 18
- Intersection mobility (future need - $v/c=0.82$ for westbound left-turn)



Improvement Option 1

■ **Description:**

- Install two-lane roundabout
- Widen shoulders on OR 99W and OR 18 in vicinity of intersection

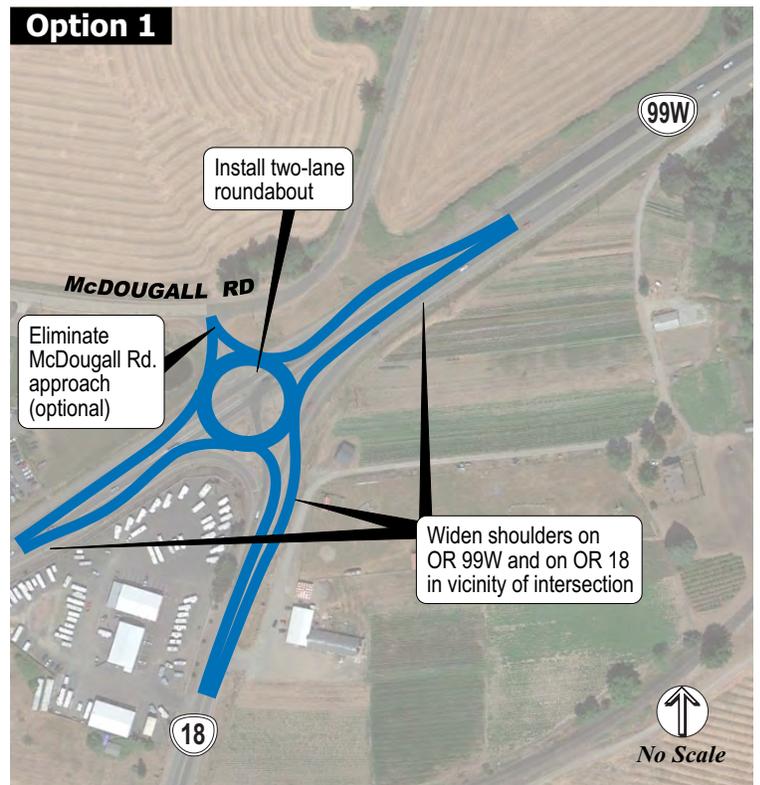
■ **Preliminary Cost Estimate:** \$9 million

■ **Benefits:**

- Improved capacity, traffic operations and safety at intersection
- Reduced speeds on OR 18 and OR 99W in vicinity of roundabout

■ **Key Considerations/Notes:**

- No additional right-of-way would be needed for this improvement
- Assumes eastbound and northbound right turns are included in roundabout
- Future intersection v/c ratio of 0.69 with or without McDougall Rd. leg would meet the OHP mobility standard (0.70) for year 2035



Location #5:

OR 18 - Ash Rd. to OR 154/Lafayette Hwy.

Sheet 1 of 3

■ Needs:

- Mobility need between Dayton UGB and OR 154 (future)
- Top 5% SPIS location between Ash Rd. and west of OR 154

At OR 18/Ash Rd.:

- Improved safety
- Top 5% SPIS location
- Ash Rd. intersects OR 18 at skewed angle
- Eastbound right-turn lane needed on OR 18
- Intersection mobility need (future)

At OR 18/OR 154/Lafayette Hwy.:

- Improved safety
- Shoulder width needs on OR 154 and Lafayette Hwy.
- Lane width need on OR 154 south of OR 18
- Existing and future intersection mobility needs
- Eastbound and westbound right-turn lanes needed (future needs)
- Peak hour signal warrants met for existing and future (2035) conditions
- Pedestrian needs on Lafayette Hwy. north of OR 18
- Bicycle needs on OR 154/Lafayette Hwy. north and south of OR 18





Location #5:

OR 18 - Ash Rd. to OR 154/Lafayette Hwy.

Sheet 2 of 3

Improvement Option 1

Description:

OR 18/Ash Rd.:

- Close/vacate Ash Rd. north and south of OR 18

OR 18/OR 154/Lafayette Hwy.:

- Install two-lane roundabout
- Widen shoulders on Lafayette Hwy. and OR 154 north and south of intersection
- Widen lanes on Lafayette Hwy. and OR 154 north and south of intersection

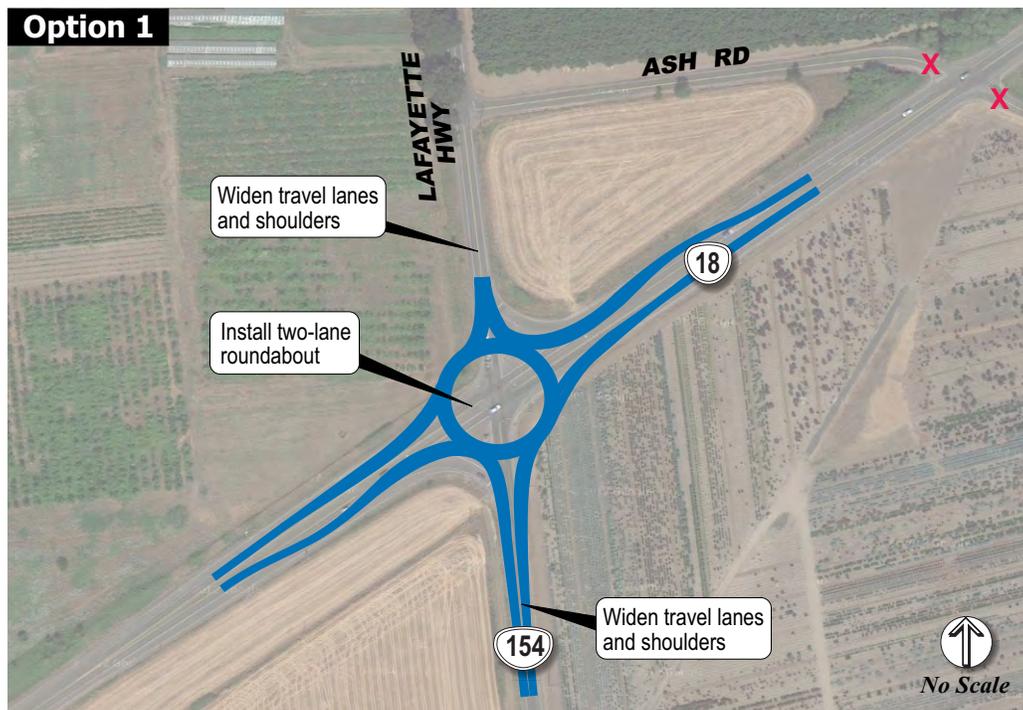
Preliminary Cost Estimate: \$8.00 million

Benefits:

- Improved safety at Ash Rd. due to elimination of crossing movements
- Improved traffic flow on OR 18 due to Ash Rd. closure
- Improved traffic operations and safety at OR 18/OR154/Lafayette Hwy. due to roundabout
- Improved pedestrian/bicycle environment due to widened travel lanes and shoulders on OR 154/Lafayette Hwy.

Key Considerations/Notes:

- No additional right-of-way would be needed for this improvement
- Assumes eastbound and westbound right turns are included in roundabout
- Future (2035) intersection v/c ratio of 0.57 at OR 18/OR 154/Lafayette Hwy. would meet the OHP mobility target





Location #5:

OR 18 - Ash Rd. to OR 154/Lafayette Hwy.

Sheet 3 of 3

Improvement Option 2

■ **Description:**

OR 18/Ash Rd:

- Close or vacate Ash Rd. north and south of OR 18

OR 18/OR 154/Lafayette Hwy.:

- Realign Lafayette Hwy. and OR 154 as offset “T” configuration

■ **Preliminary Cost Estimate:**

Option 2: \$5-8 million

■ **Benefits:**

- Improved safety at Ash Rd. due to elimination of crossing movements
- Improved traffic flow on OR 18 due to Ash Rd. closure
- Improved intersection operations at OR 18/Lafayette Hwy./OR 154 due to reduced conflicts at each intersection

■ **Key Considerations/Notes:**

- Additional right-of-way would likely be needed for this improvement
- Future (2035) intersection v/c ratio at OR 18/OR154/Lafayette Hwy. offset T intersections may not meet the OHP mobility target, but would be much closer than without improvement

Scoring

| Evaluation Criterion | Weight | Raw Score | |
|----------------------------------------------------------------|--------|------------|------------|
| | | Option 1 | Option 2 |
| 1. Potential reduction in crash rate/severity | 20 | 7 | 6 |
| 2. Type/level of geometric improvement ¹ | 20 | 5 | 3 |
| 3. Potential reduction in traffic conflicts | 10 | 7 | 5 |
| 4. Minimization of construction cost | 10 | 2 | 3 |
| 5. Minimization of required right-of-way | 10 | 10 | 5 |
| 6. Potential reduction in congestion and delay ² | 5 | 7 | 5 |
| 7. Consistency with County/ODOT standards | 5 | 5 | 8 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 10 | 5 |
| 9. Improvement in access conditions ³ | 5 | 7 | 7 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 3 | 1 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 10 |
| Total Weighted Score⁴ | | 640 | 490 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

⁴ Sum of raw score * weight for all criteria.

Location #6:
OR 18/Red Prairie Rd.

Sheet 1 of 1

Needs:

- Top 10% SPIS location (previously top 5%)
- Lane width need on Red Prairie Rd.
- Shoulder width needs on OR 18 and Red Prairie Rd.
- Difficult to access or cross OR 18

Improvement Option 1

Description:

- Install median on OR 18 with adequate width to allow two-stage crossing movements (see below)
- Widen lanes and shoulders on Red Prairie Rd. in vicinity of intersection

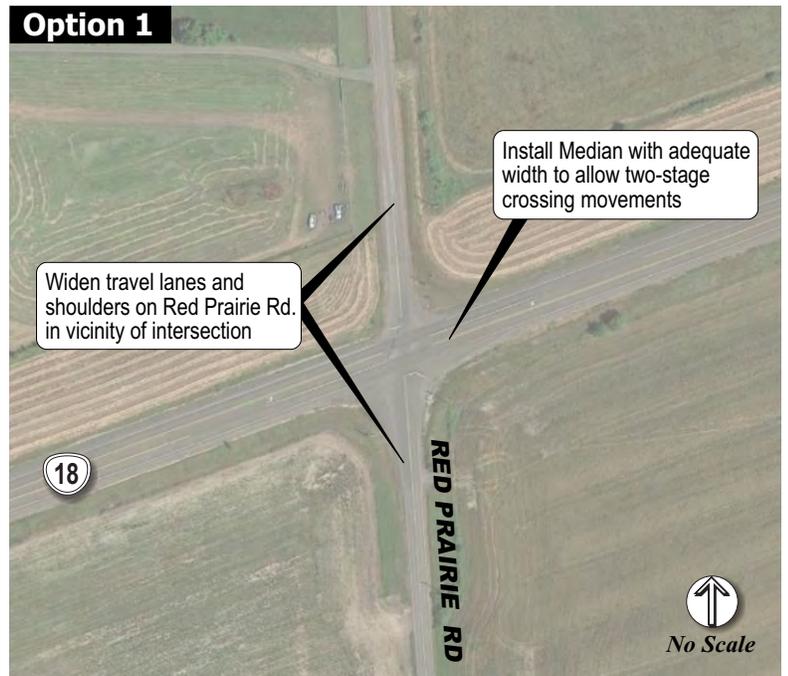
Preliminary Cost Estimate: \$7 million

Benefits:

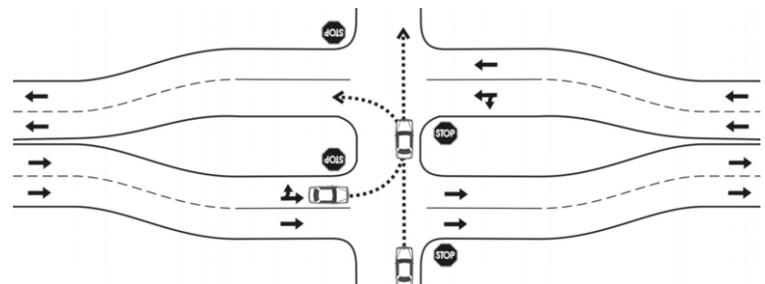
- Improved traffic operations and safety at intersection by providing refuge for vehicles crossing or turning onto/off of OR 18
- Improved pedestrian/bicycle environment with travel lane and shoulder widening on Red Prairie Rd.

Key Considerations/Notes:

- Additional right-of-way may be needed for this improvement and is included in the cost
- At least one-half mile of widened roadway on OR 18, including upgraded intersections and drainage and water quality facilities
- Flasher at intersection and signing and raised pavement markers in advance of intersection are already in place



Two-Stage Crossing With Median





**Location #7:
OR 47/OR 99W**

Sheet 1 of 3

Needs:

- Previous top 5% SPIS location
- Eastbound left turn lane needed on OR 99W
- Westbound right turn lane needed on OR 99W
- Existing (v/c of 0.94) and future (v/c >1.0) mobility needs
- Shoulder width needs on OR 47 and OR 99W
- Poor pavement condition on OR 99W
- Existing and future peak hour signal warrants met (70%)
- Existing and future eight-hour signal warrants met (70%)



Improvement Option 1

Description:

- Install traffic signals on eastbound and westbound OR 99W
- Construct single connector road between eastbound and westbound OR 99W
- Align OR 47 with connector road
- Restore/rehabilitate pavement on OR 99W in vicinity of intersection
- Widen shoulders on OR 47 in vicinity of intersection

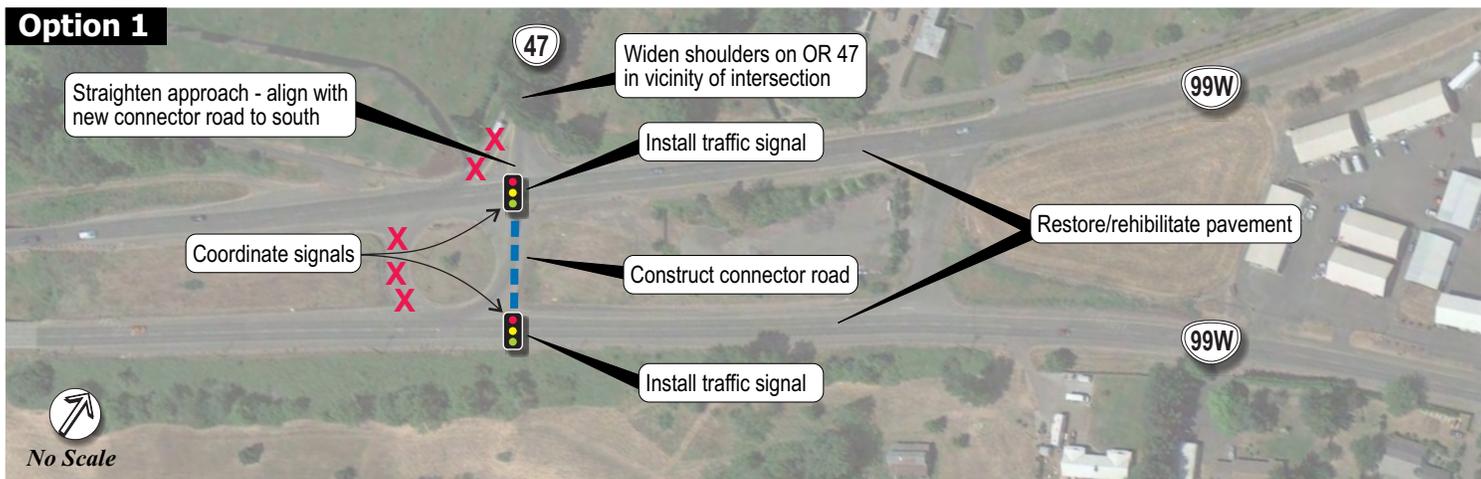
Benefits:

- Improved mobility
- Improved traffic operations and safety
- Improved intersection visibility
- Improved pedestrian/bicycle environment

Key Considerations/Notes:

- Future intersection v/c = 0.67 at OR 47/OR 99W westbound; future v/c = 0.44 at OR 47/OR 99 eastbound, which both meet OHP mobility target of 0.70

Preliminary Cost Estimate: \$5 million





**Location #7:
OR 47/OR 99W**

Sheet 2 of 3

Improvement Option 2

Description:

- Merge eastbound and westbound roadways on OR 99W into single roadway
- Install traffic signal
- Install southbound right-turn lane
- Widen shoulders on OR 47 in vicinity of intersection

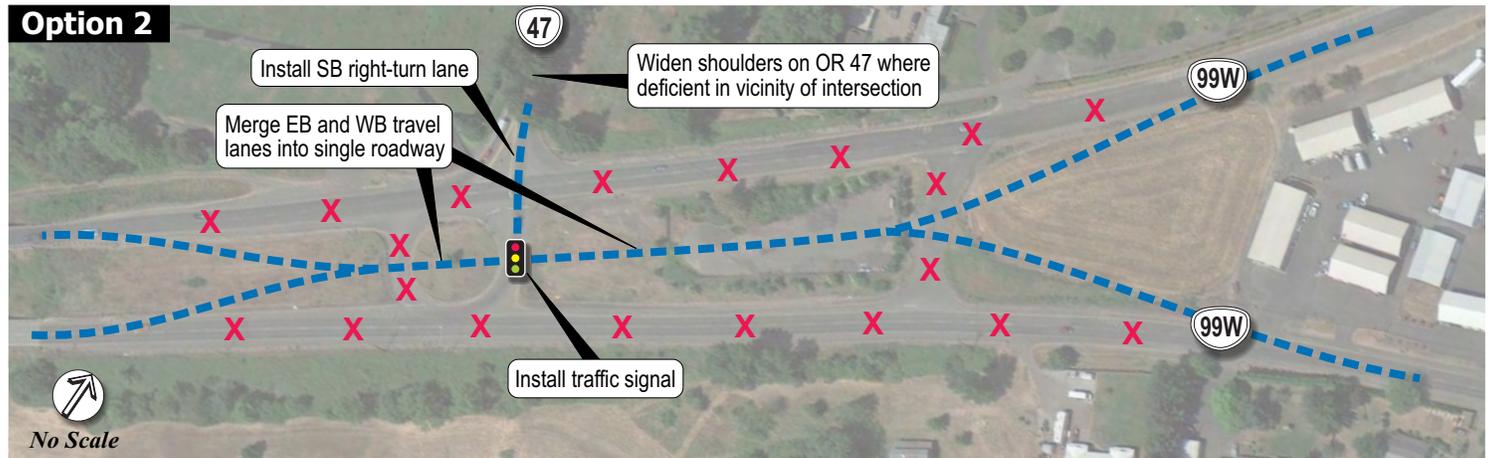
Preliminary Cost Estimate: \$5 million

Benefits:

- Improved mobility
- Improved traffic operations and safety
- Improved pedestrian/bicycle environment

Key Considerations/Notes:

- Additional right-of-way would likely be needed for this improvement
- Future intersection v/c = 0.70, which meets 0.70 OHP mobility target



Improvement Option 3

Description:

- Install multi-lane roundabout
- Merge eastbound and westbound roadways on OR 99W into single roadway
- Widen shoulders on OR 47 in vicinity of intersection

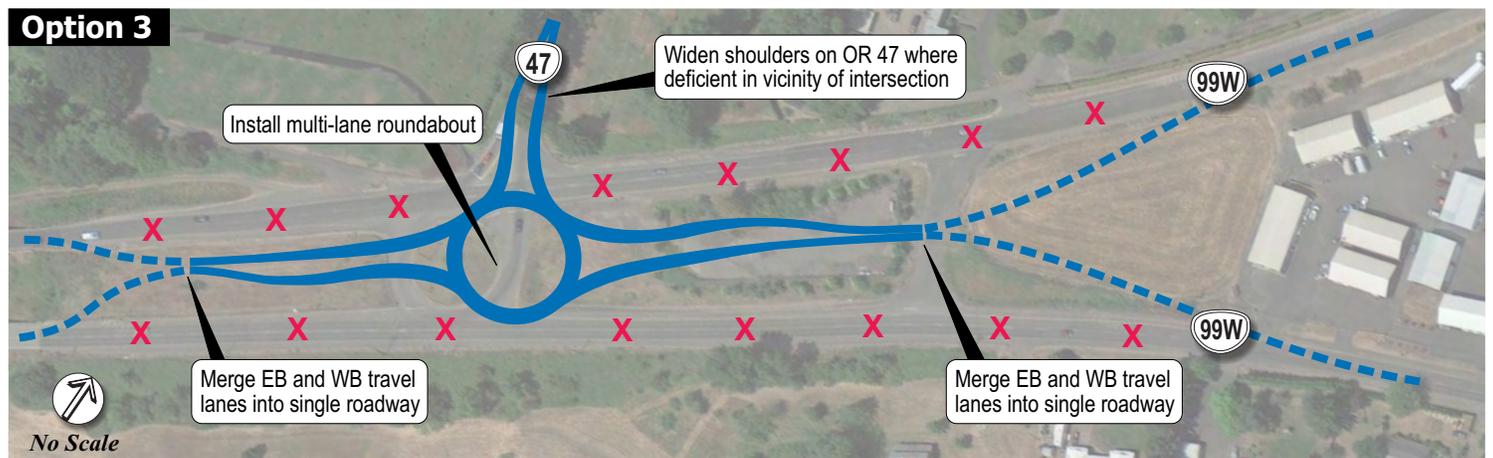
Preliminary Cost Estimate: \$6 million

Benefits:

- Improved mobility
- Improved traffic operations and safety
- Increased intersection visibility

Key Considerations/Notes:

- Additional right-of-way would likely be needed for this improvement
- Future intersection v/c = 0.68 which meets 0.70 OHP mobility target





**Location #7:
OR 47/OR 99W**

Sheet 3 of 3

Scoring

| Evaluation Criterion | Weight | Raw Score | | |
|----------------------------------------------------------------|--------|------------|------------|------------|
| | | Option 1 | Option 2 | Option 3 |
| 1. Potential reduction in crash rate/severity | 20 | 6 | 8 | 10 |
| 2. Type/level of geometric improvement ¹ | 20 | 8 | 8 | 9 |
| 3. Potential reduction in traffic conflicts | 10 | 6 | 9 | 9 |
| 4. Minimization of construction cost | 10 | 5 | 2 | 2 |
| 5. Minimization of required right-of-way | 10 | 10 | 5 | 5 |
| 6. Potential reduction in congestion and delay ² | 5 | 9 | 8 | 8 |
| 7. Consistency with County/ODOT standards | 5 | 3 | 5 | 5 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 10 | 8 | 8 |
| 9. Improvement in access conditions ³ | 5 | 0 | 0 | 0 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 4 | 4 | 3 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 10 | 10 |
| Total Weighted Score⁴ | | 670 | 655 | 710 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

⁴ Sum of raw score * weight for all criteria.



Location #8:
OR 99W - Dundee to OR 18 Junction

Sheet 1 of 1

■ Needs:

- Existing (v/c = 0.89) and future (v/c > 1.0) mobility needs

Improvement Option 1

■ Description:

- Widen OR 99W to four lanes with median between Newberg-Dundee Bypass junction and OR 18
- Widen shoulders

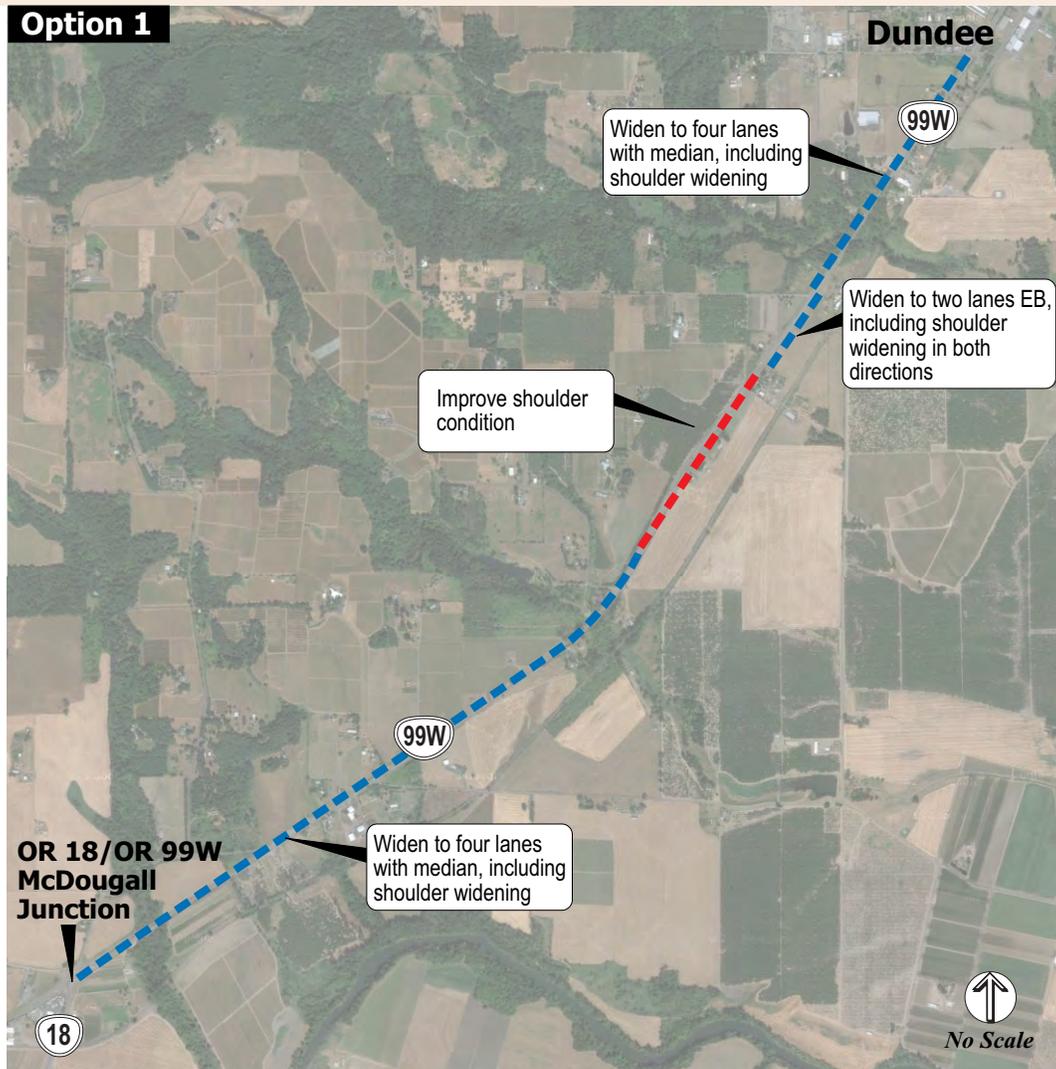
■ Preliminary Cost Estimate: \$40-50 million

■ Benefits:

- Improved mobility (v/c < 0.70)
- Improved traffic operations and safety
- Improved pedestrian/bicycle environment

■ Key Considerations/Notes:

- Additional right-of-way would not be needed for this improvement
- Median openings should be at least 25 feet wide for turning and crossing vehicles



Location #9:
OR 153/Hopewell Rd./Webfoot Rd.

Sheet 1 of 2

■ **Needs:**

- High speeds on OR 153
- Sight distance needs to east from northbound and southbound approaches of Hopewell Rd./Webfoot Rd.
- Eastbound right-turn lane needed on OR 153
- Shoulder widening needed on OR 153 and Hopewell Rd.
- Lane widening needed to west on OR 153

Improvement Option 1

■ **Description:**

- Remove vegetation on east side of intersection on north and south sides of OR 153
- Install warning beacon at Hopewell Rd./Webfoot Rd.

■ **Preliminary Cost Estimate:** \$110,000

■ **Benefits:**

- Improved intersection visibility
- Improved sight distance to east from Hopewell Rd. and Webfoot Rd.

■ **Key Considerations/Notes:**

- Additional right-of-way would not be needed for this improvement



Improvement Option 2

■ **Description:**

- Same as Option 1, plus:
 - Widen travel lanes on OR 153 west of intersection
 - Widen shoulders on OR 153 east of intersection and Hopewell Rd. in vicinity of intersection
 - Consider eastbound right turn lane on OR 153

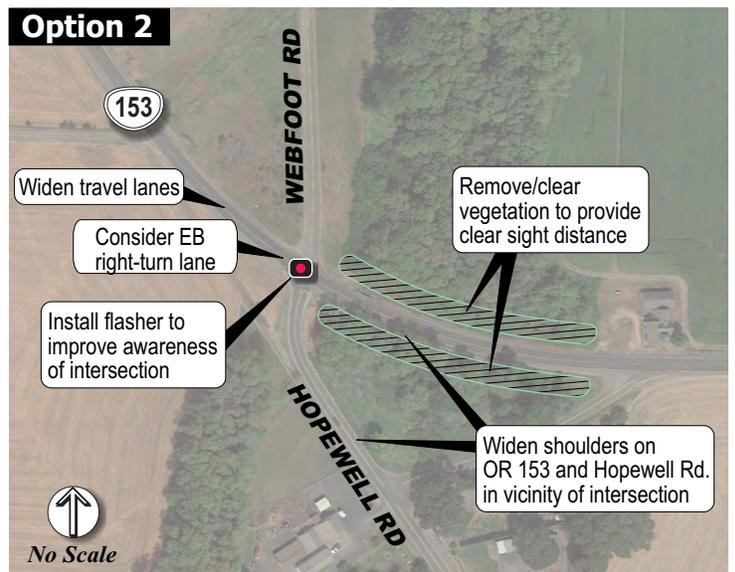
■ **Preliminary Cost Estimate:** \$1 million

■ **Benefits:**

- Benefits of Option 1
- Improved traffic operations and safety
- Improved pedestrian/bicycle environment

■ **Key Considerations/Notes:**

- Additional right-of-way would not be needed for this improvement





Location #9:
OR 153/Hopewell Rd./Webfoot Rd.

Sheet 2 of 2

Scoring

| Evaluation Criterion | Weight | Raw Score | |
|----------------------------------------------------------------|--------|------------|------------|
| | | Option 1 | Option 2 |
| 1. Potential reduction in crash rate/severity | 20 | 5 | 8 |
| 2. Type/level of geometric improvement ¹ | 20 | 0 | 7 |
| 3. Potential reduction in traffic conflicts | 10 | 0 | 5 |
| 4. Minimization of construction cost | 10 | 10 | 5 |
| 5. Minimization of required right-of-way | 10 | 10 | 10 |
| 6. Potential reduction in congestion and delay ² | 5 | 0 | 0 |
| 7. Consistency with County/ODOT standards | 5 | 10 | 10 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 10 | 10 |
| 9. Improvement in access conditions ³ | 5 | 0 | 0 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 0 | 2 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 10 |
| Total Weighted Score⁴ | | 450 | 660 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

⁴ Sum of raw score * weight for all criteria.

Location #10:
OR 221/OR 153

Sheet 1 of 1

■ **Needs:**

- Previous top 10% SPIS location
- Free northbound left-turn and free eastbound right-turn movements are confusing to drivers unfamiliar with the intersection
- Sharp angles of connector roads from OR 153 to OR 221 require drivers to turn heads sharply to see
- Northbound left turn lane needed on OR 221
- Shoulder width needs on OR 221 and OR 153
- Lane width needs on OR 221

Improvement Option 1

■ **Description:**

- Vacate south-to-west and north-to-west connections to create standard intersection – eliminates safety concern and skew effect for vehicles merging between OR 153 and OR 221
- Install northbound left turn lane on OR 221
- Widen travel lanes on OR 221 in vicinity of intersection

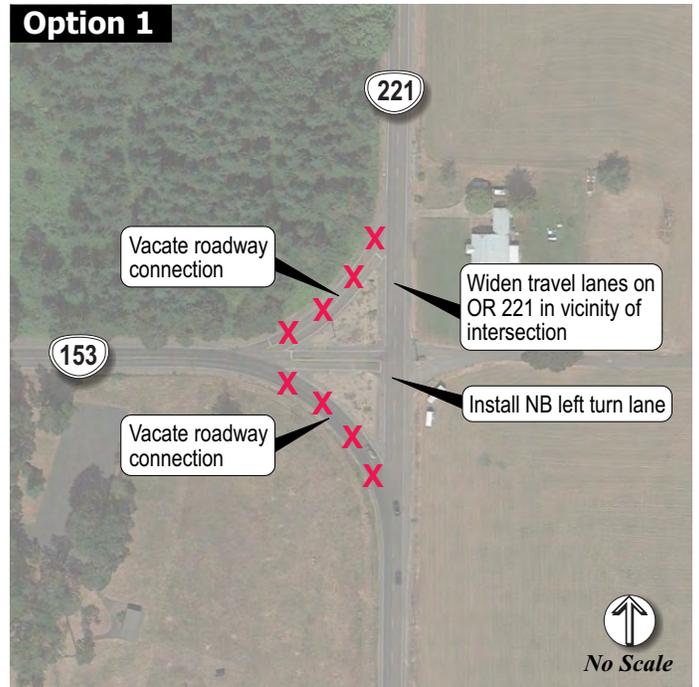
■ **Preliminary Cost Estimate:** \$1.5 million

■ **Benefits:**

- Improved safety - conversion to standard intersection with northbound left turn lane addresses rear-end and turning crash patterns at intersection
- Eliminates potential driver confusion about non-standard intersection geometry

■ **Key Considerations/Notes:**

- Additional right-of-way would not be needed for this improvement



Location #11:
OR 233/Starr Quarry Rd.

Sheet 1 of 1

■ **Needs:**

- Previous top 10% SPIS location
- Shoulder width need on OR 233
- Lane width need on OR 233
- Poor intersection configuration – driver confusion in southbound direction
- Substandard curve on OR 233



Improvement Option 1

■ **Description:**

- Realign OR 233 so that curve meets standard
- Realign Starr Quarry Rd. to "T" into OR 233
- Install southbound left turn lane on OR 233
- Install guide signs on southbound OR 233
- Widen travel lanes and shoulders on OR 233 in vicinity of intersection

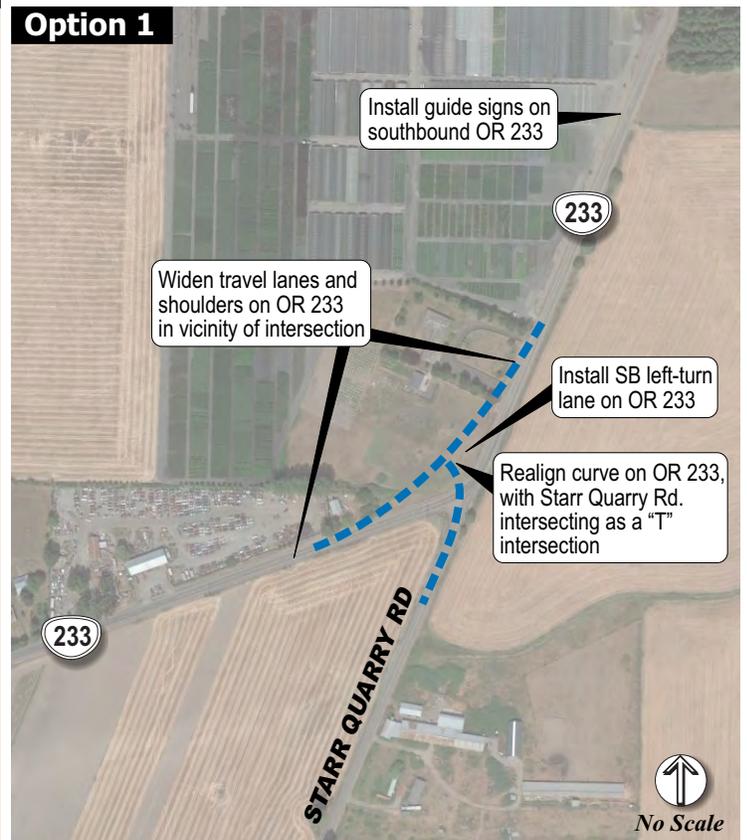
■ **Preliminary Cost Estimate:** \$1.5 million

■ **Benefits:**

- Improved traffic operations and safety with realignment and left turn lane
- Improved intersection visibility/awareness
- Addresses rear-end, fixed object and overturn crash patterns at intersection

■ **Key Considerations/Notes:**

- Additional right-of-way would likely be needed for this improvement



Location #12:
Bald Peak Rd./Mountain Top Rd.

Sheet 1 of 1

Needs:

- Located within segment of Bald Peak Rd. having crash rate greater than 200% of statewide average crash rate
- Possible sight distance need along eastbound Bald Peak Rd.
- Skewed intersection
- Lane and shoulder width needs on Bald Peak Rd.



Improvement Option 1

Description:

- Realign Ornduff Rd. and Mountain Top Rd. to form single intersection north of Bald Peak Rd.
- Connect new intersection with Bald Peak Rd.
- Reduce vertical curve on Bald Peak Rd. at existing intersection

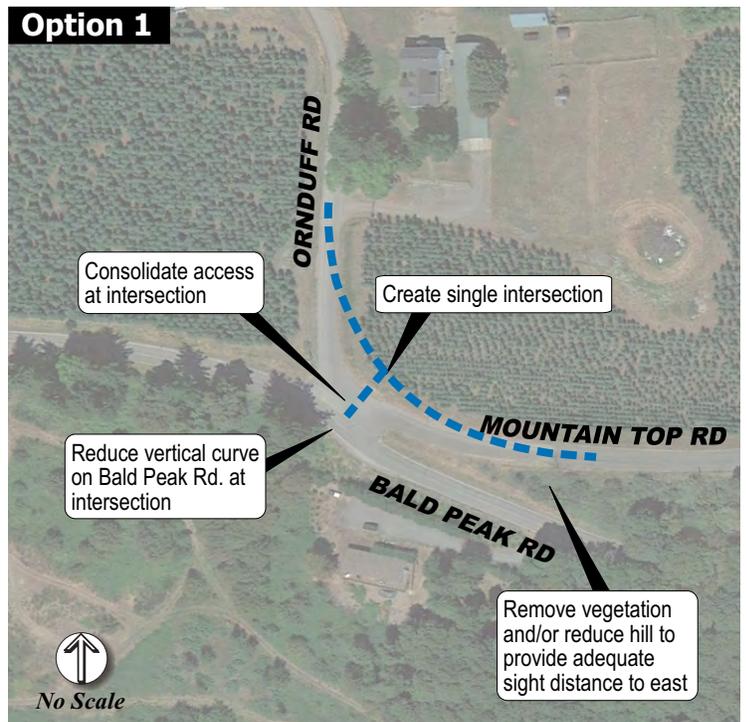
Preliminary Cost Estimate: \$620,000

Benefits:

- Improved intersection alignment
- Improved intersection sight distance

Key Considerations/Notes:

- Additional right-of-way may be needed for this improvement
- Roughly 30 feet of storage would be provided between Bald Peak Rd. and the new Ornduff Rd./Mountain Top Rd. intersection
- May need to remove vegetation or reduce hill below Mountain Top Rd. to increase intersection sight distance
- Lane and shoulder widening on Bald Peak Rd. would be cost-prohibitive due to grade below Bald Peak Rd.



Location #13:
North Valley Rd./Chehalem Dr.
 Sheet 1 of 2

Needs:

- Sight distance need to west from northbound and southbound approaches of Chehalem Dr.
- Vertical curves on North Valley Rd. west of Chehalem Dr.
- Lane width needs on North Valley Rd. and Chehalem Dr. south of North Valley Rd.
- North and south approaches of Chehalem Dr. are offset

Improvement Option 1

Description:

- Reconstruct North Valley Rd. for approximately 500 feet west of Chehalem Dr. to remove vertical curve
- Trim/remove vegetation to west on both north and south sides of North Valley Rd. to improve sight distance from Chehalem Dr. approaches

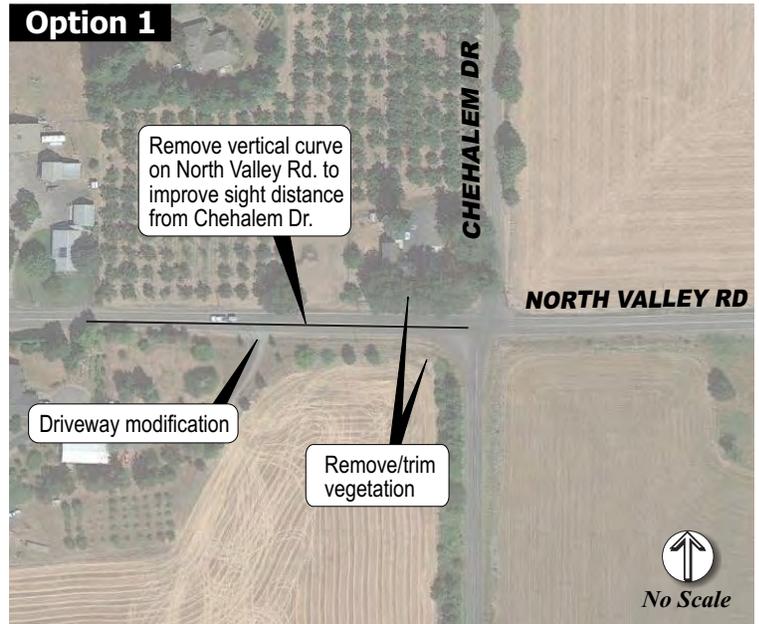
Preliminary Cost Estimate: \$365,000

Benefits:

- Improved intersection sight distance

Key Considerations/Notes:

- Additional right-of-way would not be needed for this improvement
- One driveway modification would be required with vertical realignment of North Valley Rd.



Improvement Option 2

Description:

- Same as Option 1, plus:
 - Realign south leg of Chehalem Dr. to eliminate offset

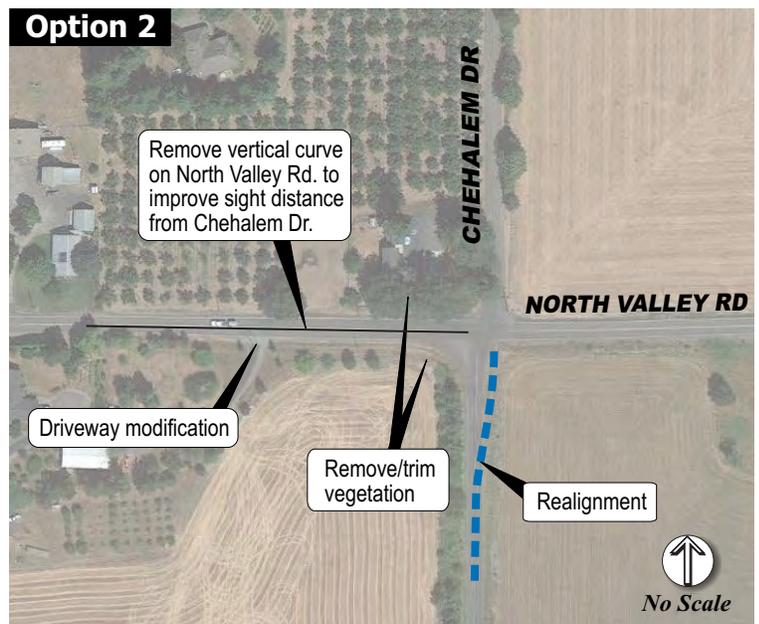
Preliminary Cost Estimate: \$525,000

Benefits:

- Improved intersection sight distance
- Improved intersection alignment

Key Considerations/Notes:

- Additional right-of-way may be needed for this improvement
- One driveway modification would be required with vertical realignment of North Valley Rd.





Location #13:
North Valley Rd./Chehalem Dr.

Sheet 2 of 2

Scoring

| Evaluation Criterion | Weight | Raw Score | |
|----------------------------------------------------------------|--------|------------|------------|
| | | Option 1 | Option 2 |
| 1. Potential reduction in crash rate/severity | 20 | 5 | 7 |
| 2. Type/level of geometric improvement ¹ | 20 | 6 | 8 |
| 3. Potential reduction in traffic conflicts | 10 | 0 | 0 |
| 4. Minimization of construction cost | 10 | 7 | 5 |
| 5. Minimization of required right-of-way | 10 | 10 | 6 |
| 6. Potential reduction in congestion and delay ² | 5 | 0 | 0 |
| 7. Consistency with County/ODOT standards | 5 | 10 | 10 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 10 | 6 |
| 9. Improvement in access conditions ³ | 5 | 1 | 1 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 0 | 0 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 10 |
| Total Weighted Score⁴ | | 545 | 545 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

⁴ Sum of raw score * weight for all criteria.

Location #14:
Bell Rd./Aspen Way
Sheet 1 of 1

■ **Needs:**

- Sight distance need to west from northbound Aspen Way
- Approach grade on Aspen Way greater than 3%
- Lane and shoulder width needs on Bell Rd.

Improvement Option 1

■ **Description:**

- Reduce vertical curve to west of intersection to increase sight distance
- Widen travel lanes and shoulders on Bell Rd. in vicinity of intersection
- Replace guardrail on SW corner of intersection
- Install new guardrail on SE corner of intersection

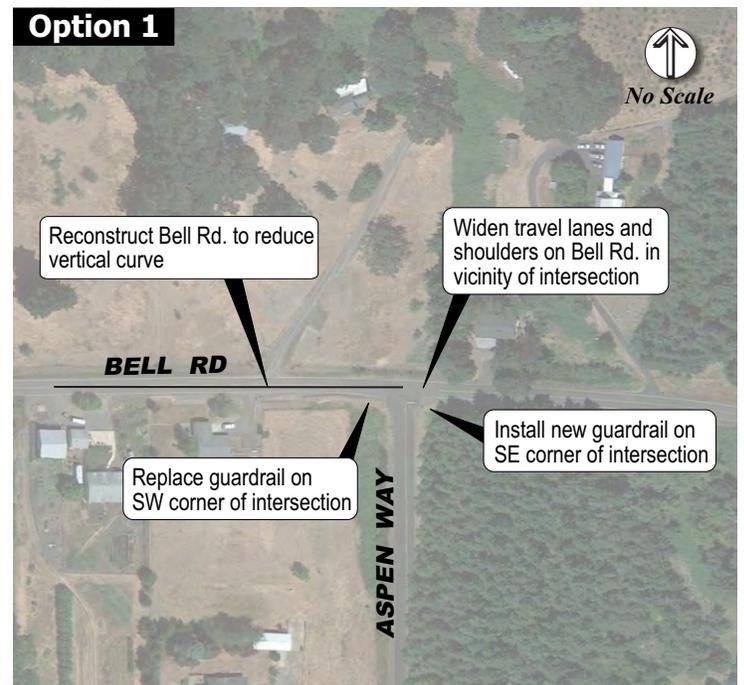
■ **Preliminary Cost Estimate:** \$710,000

■ **Benefits:**

- Improved safety due to increased sight distance, roadway widening and guardrail
- Improved pedestrian/bicycle environment

■ **Key Considerations/Notes:**

- Considered raising grade on Aspen Way to meet approach grade standard and increase sight distance - determined to be cost-prohibitive
- Three driveway modifications would be required with vertical realignment of Bell Rd.



Location #15:
Bell Rd./Zimri Dr.

Sheet 1 of 1

■ **Needs:**

- Sight distance need to west from northbound Zimri Dr.
- Approach grade on Zimri Dr. greater than 3%
- Shoulder width needs on Zimri Dr. and Bell Rd. east of Zimri Dr.
- Lane width needs on Bell Rd. and Zimri Dr.

Improvement Option 1

■ **Description:**

- Remove/relocate sight obstructions on southwest corner of intersection (e.g. utility box, mail boxes, fence, trees, etc.) to improve sight distance to west

■ **Preliminary Cost Estimate:** \$20,000

■ **Benefits:**

- Improved intersection visibility
- Improved sight distance to west from Zimri Dr.

■ **Key Considerations/Notes:**

- Considered raising grade on Zimri Dr. to meet approach grade standard and increase sight distance - determined to be cost prohibitive

Option 1



Location #16:
Bell Rd./Springbrook Rd.

Sheet 1 of 1

Needs:

- Located within segment of Springbrook Rd. having crash rate greater than 200% of statewide average
- Sight distance needs to east and west from northbound Springbrook Rd.
- Horizontal curves on Bell Rd. limit sight distance from Bell Rd. and Springbrook Rd.
- Shoulder width and lane width needs on Bell Rd.



Improvement Option 1

Description:

- Convert intersection to three-way stop
- Remove vegetation on southeast corner of intersection to increase sight distance from Bell Rd. and Springbrook Rd.
- Relocate utility pole on north side of Bell Rd. to improve clear zone safety
- Install "Stop Ahead" advance warning signs with beacons on Bell Rd.
- Install warning beacon at intersection

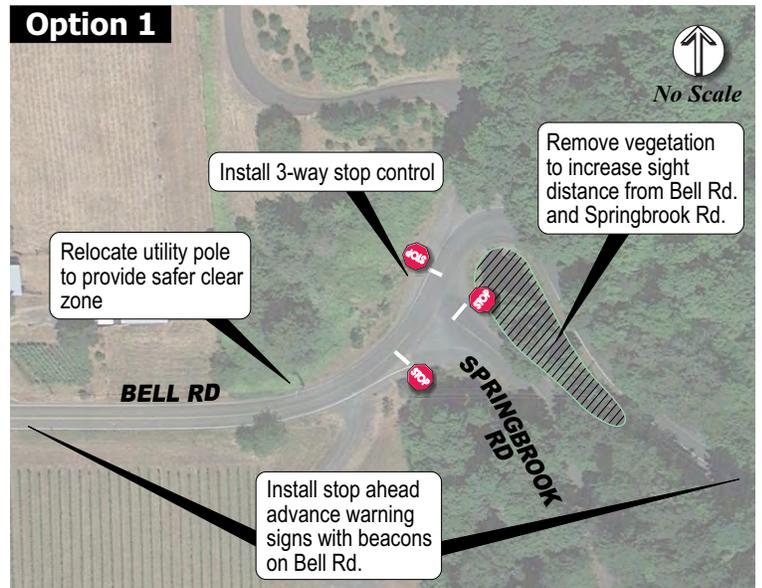
Preliminary Cost Estimate: \$130,000

Benefits:

- Improved intersection visibility
- Improved sight distance to east from intersection
- Safer clear zone on Bell Rd.

Key Considerations/Notes:

- Additional right-of-way would not be needed for this improvement
- Realignment of horizontal curves on Bell Rd. would be cost-prohibitive
- Topography limits range of improvement options at this location





**Location #17:
OR 99W -Newberg to Dundee**

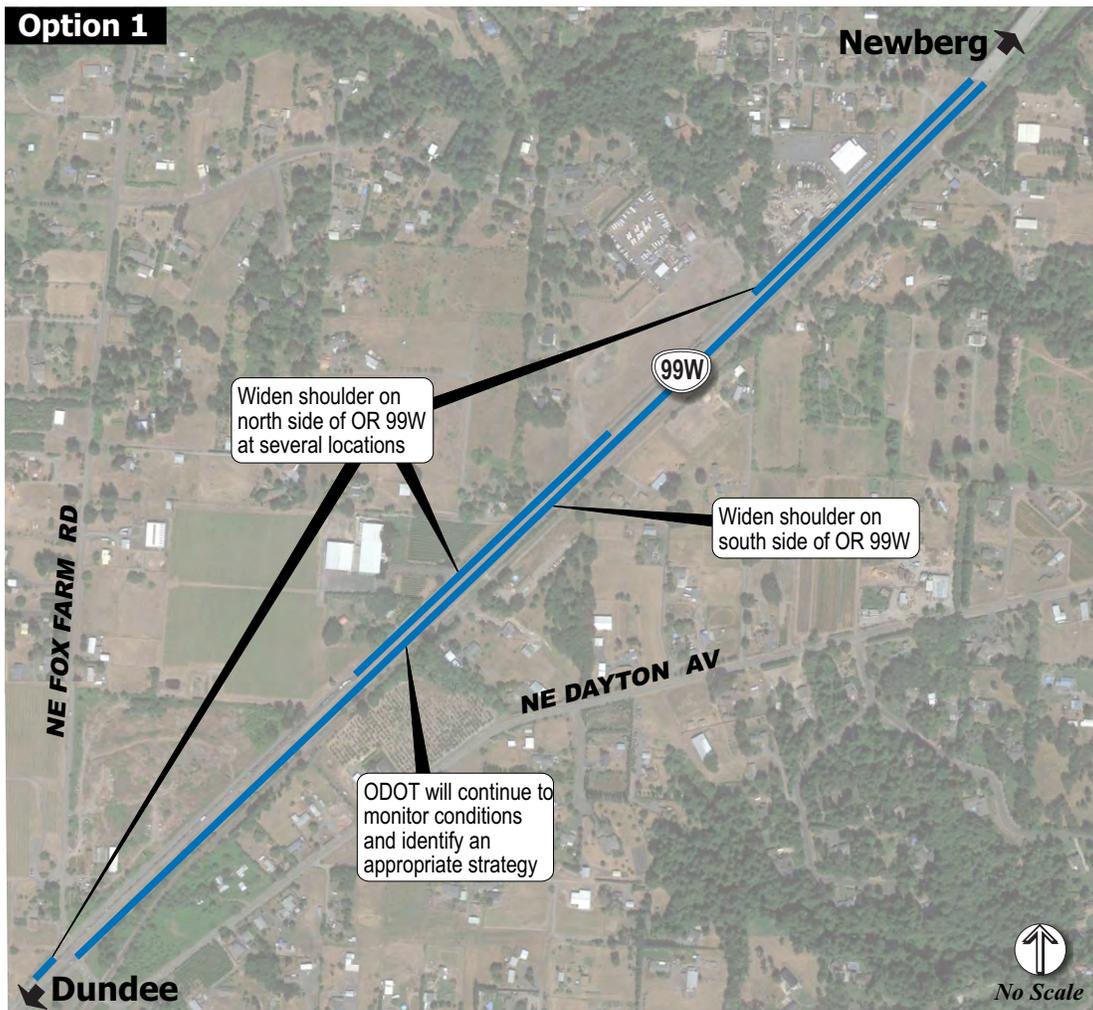
Sheet 1 of 1

Needs:

- One Top 5% and one previous top 5% SPIS location within segment
- Existing mobility need (v/c >1.0)
- Shoulder width need
- Merge problem in westbound direction 0.4 miles east of Fox Farm Rd. where lanes drop from two to one

Improvement Option 1

| | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Description:</p> <ul style="list-style-type: none"> • Widen shoulders on OR 99W where deficient • ODOT will monitor lane reduction area and identify appropriate improvement measure as necessary <p>Preliminary Cost Estimate: \$3 million</p> <p>Benefits:</p> <ul style="list-style-type: none"> • Improved traffic operations and safety • Improved pedestrian/bicycle environment | <p>Key Considerations/Notes:</p> <ul style="list-style-type: none"> • Includes associated drainage, water quality/ driveway work, some right-of-way • Assumes shoulder widening would be to ODOT Highway Design Manual (HDM) standards (8 feet), a design exception could be requested to build to a minimum design of 5-6 feet for a lower cost • Existing mobility need will be addressed with construction of Newberg-Dundee Bypass (Future No Build v/c of 0.63) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



Location #18:
OR 233/Cruickshank Rd.
 Sheet 1 of 3

■ **Needs:**

- Improved safety
- Confusing intersection due to three conflict locations
- Lane and shoulder width needs on OR 233



Improvement Option 1

■ **Description:**

- Remove connector roads
- Realign Cruickshank Rd. to meet OR 233 in a "T" intersection to south of existing home
- Consider northbound left-turn lane and southbound right-turn lane at new intersection
- Widen travel lanes and shoulders on OR 233 in vicinity of intersection

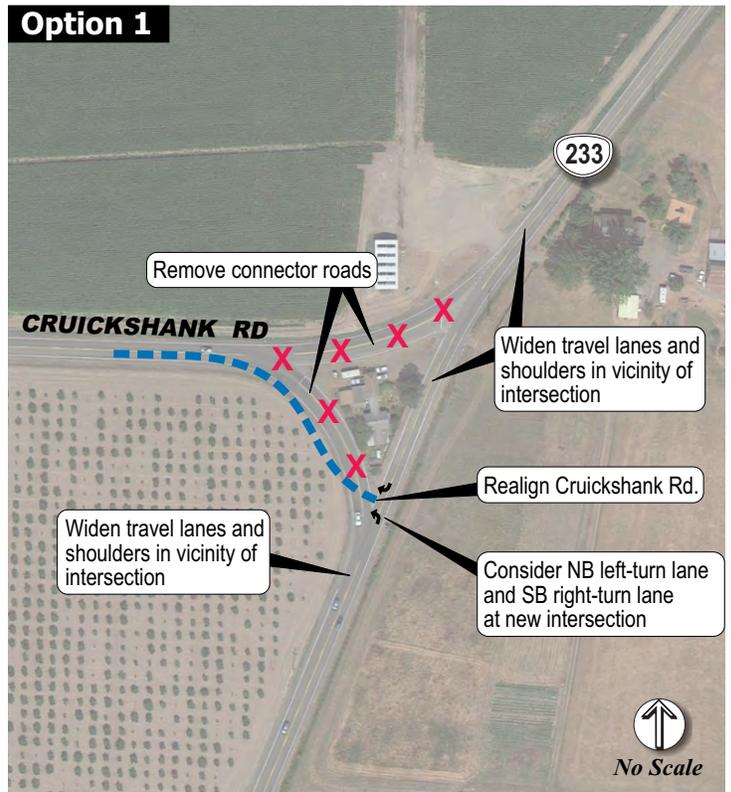
■ **Preliminary Cost Estimate:** \$1 million

■ **Benefits:**

- Improved intersection sight distance
- Removes "skew" angles at connector road intersections
- Improved traffic operations and safety

■ **Key Considerations/Notes:**

- Additional right-of-way may be needed for this improvement



Location #18:
OR 233/Cruickshank Rd.
 Sheet 2 of 3

Improvement Option 2

Description:

- Remove connector roads
- Realign Cruickshank Rd. to meet OR 233 in a "T" intersection, removing existing home
- Consider northbound left-turn lane and southbound right-turn lane at new intersection
- Widen travel lanes and shoulders on OR 233 in vicinity of intersection

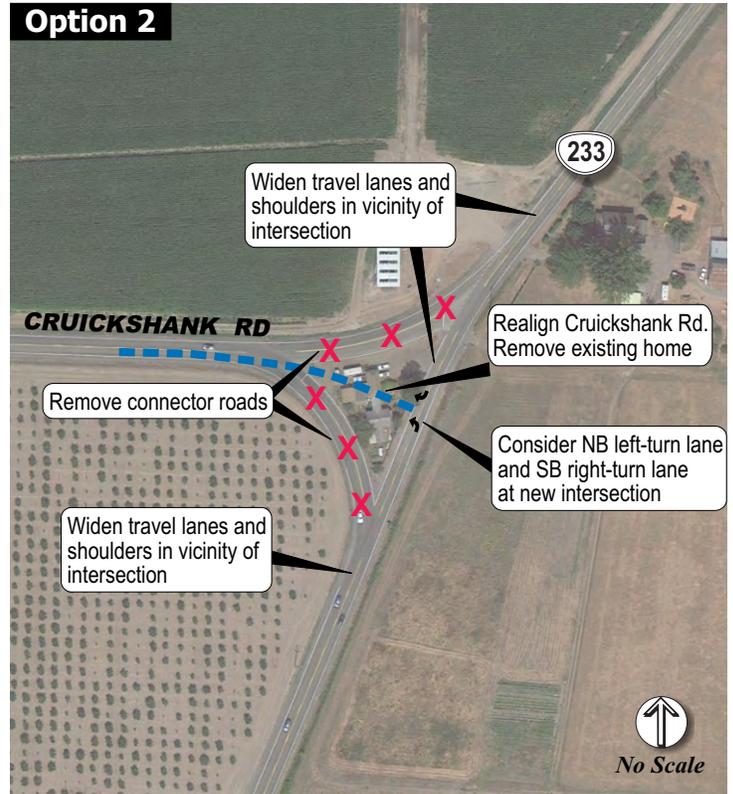
Preliminary Cost Estimate: \$2 million

Benefits:

- Improved intersection sight distance
- Removes "skew" angles at connector road intersections
- Improved traffic operations and safety

Key Considerations/Notes:

- Additional right-of-way would be needed for this improvement



Improvement Option 3

Description:

- Reconstruct intersection as roundabout, removing existing home

Preliminary Cost Estimate: \$3.5 million

Benefits:

- Eliminates intersection sight distance needs
- Removes "skew" angles at intersection
- Improved traffic operations and safety

Key Considerations/Notes:

- Additional right-of-way would be needed for this improvement





Location #18:
OR 233/Cruickshank Rd.
 Sheet 3 of 3

Scoring

| Evaluation Criterion | Weight | Raw Score | | |
|----------------------------------------------------------------|--------------|------------|------------|------------|
| | | Option 1 | Option 2 | Option 3 |
| 1. Potential reduction in crash rate/severity | 20 | 7 | 7 | 9 |
| 2. Type/level of geometric improvement ¹ | 20 | 7 | 7 | 9 |
| 3. Potential reduction in traffic conflicts | 10 | 8 | 8 | 9 |
| 4. Minimization of construction cost | 10 | 7 | 6 | 3 |
| 5. Minimization of required right-of-way | 10 | 8 | 5 | 5 |
| 6. Potential reduction in congestion and delay ² | 5 | 0 | 0 | 0 |
| 7. Consistency with County/ODOT standards | 5 | 10 | 10 | 6 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 7 | 3 | 3 |
| 9. Improvement in access conditions ³ | 5 | 2 | 4 | 4 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 2 | 2 | 2 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 10 | 10 |
| | Total | 665 | 615 | 655 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

Location #19:
OR 18/Gopher Valley Rd.

Sheet 1 of 1

■ **Needs:**

- Confusing geometrics - driveways on south side of OR 18 do not align with Gopher Valley Rd.
- Lane width need on Gopher Valley Rd.
- Shoulder width need on OR 18

Improvement Option 1

■ **Description:**

- County and ODOT to work with property owners to consolidate access over time
- One or more driveway closures likely
- One or more driveway improvements likely
- Potential connecting access roadways between properties

■ **Preliminary Cost Estimate:** Unavailable

■ **Benefits:**

- Improved traffic operations and safety

■ **Key Considerations/Notes:**

- Easements may be needed between properties



Location #20:
OR 99W/Durham Ln.

Sheet 1 of 1

Needs:

- Previous top 5% SPIS location
- Shoulder width need on OR 99W



Improvement Option 1

Description:

- Install overhead flashing beacon at intersection
- Remove/relocate sight distance obstructions on OR 99W both north and south of Durham Ln. intersection
- Relocate stop sign on Durham Ln. as close to intersection as possible
- Consider northbound left-turn lane on OR 99W
- Consider southbound right-turn lane on OR 99W
- Move existing intersection warning signs to within 225 feet of intersection, per MUTCD

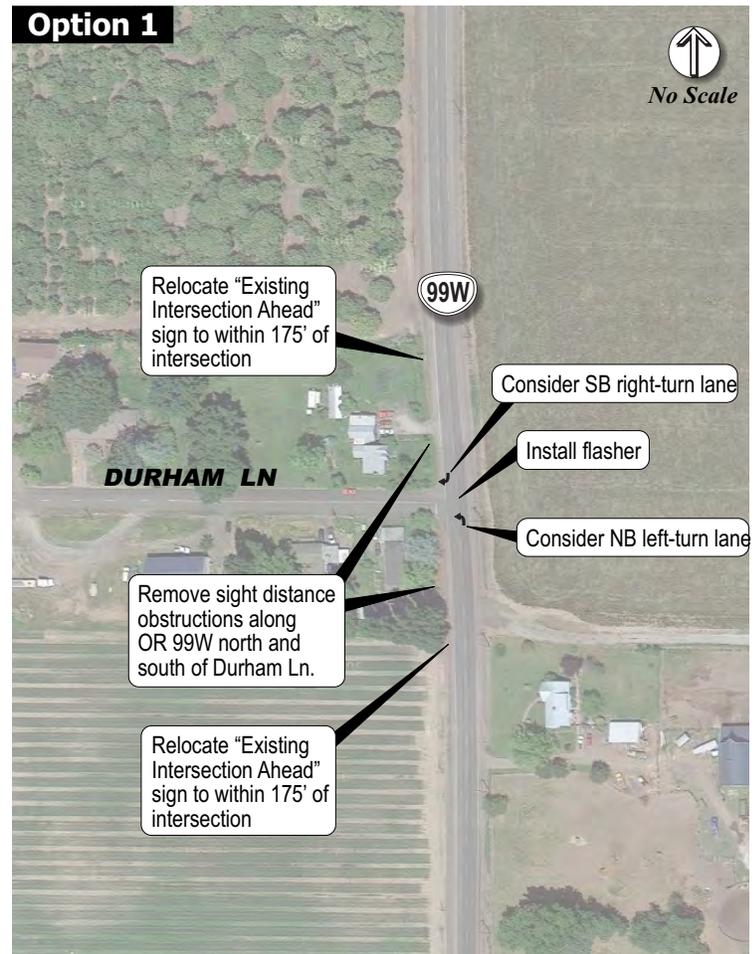
Preliminary Cost Estimate: \$1 million

Benefits:

- Improved traffic operations and safety
- Improved intersection visibility
- Improved pedestrian/bicycle environment

Key Considerations/Notes:

- Current locations of intersection warning signs are roughly 600 feet from intersection
- Current stop sign location on Durham Ln. is roughly 40 feet from intersection
- Additional right-of-way would not be needed for this improvement



Location #21:
Fox Farm Rd./Hidden Springs Rd.
Sheet 1 of 2

■ **Needs:**

- Safety (fatal crash)
- Horizontal and vertical curves limit sight distance from Fox Farm Rd.
- Large pavement area at intersection encourages high speeds
- Poor sight distance from eastbound approach of Hidden Springs Rd.
- Substandard curves on Fox Farm Rd.

Improvement Option 1

■ **Description:**

- Create "T" intersection
- Relocate stop control at new intersection location

■ **Preliminary Cost Estimate:** \$10,000

■ **Benefits:**

- Improved traffic operations and safety
- Encourages slower speeds on Fox Farm Rd. due to reduced pavement area and better delineated intersection
- Improved sight distance from eastbound approach of Hidden Springs Rd.

■ **Key Considerations/Notes:**

- Additional right-of-way would not be needed for this improvement

Option 1



Improvement Option 2

■ **Description:**

- Realign Fox Farm Rd. to improve radii on "S" curves
- Realign Hidden Springs Rd. as "T" intersection at Fox Farm Rd.

■ **Preliminary Cost Estimate:** \$415,000

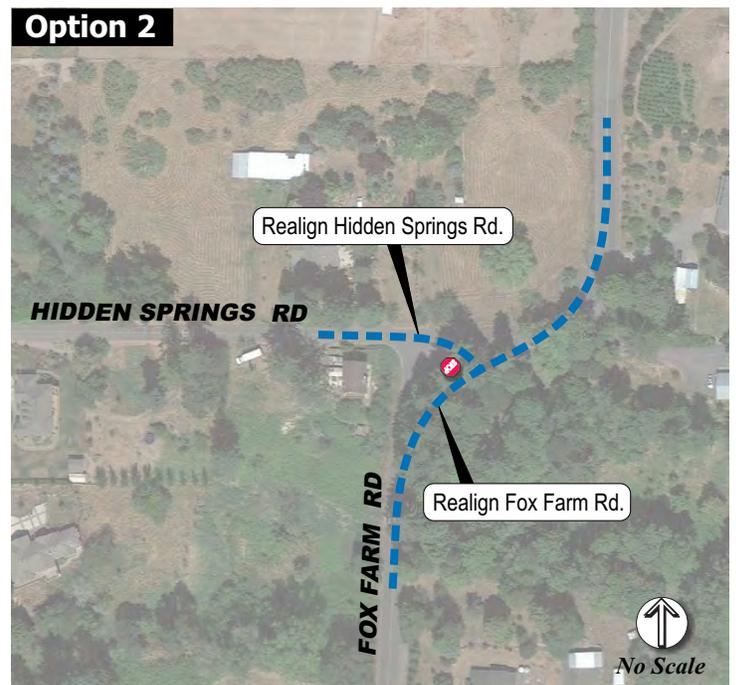
■ **Benefits:**

- Improved geometrics and safety
- Improved sight distance from eastbound approach of Hidden Springs Rd.
- Improved sight distance on Fox Farm Rd.

■ **Key Considerations/Notes:**

- Additional right-of-way would be needed for this improvement

Option 2





Location #21:
Fox Farm Rd./Hidden Springs Rd.
 Sheet 2 of 2

Scoring

| Evaluation Criterion | Weight | Raw Score | |
|----------------------------------------------------------------|--------|------------|------------|
| | | Option 1 | Option 2 |
| 1. Potential reduction in crash rate/severity | 20 | 3 | 8 |
| 2. Type/level of geometric improvement ¹ | 20 | 3 | 8 |
| 3. Potential reduction in traffic conflicts | 10 | 4 | 6 |
| 4. Minimization of construction cost | 10 | 10 | 6 |
| 5. Minimization of required right-of-way | 10 | 10 | 2 |
| 6. Potential reduction in congestion and delay ² | 5 | 0 | 0 |
| 7. Consistency with County/ODOT standards | 5 | 10 | 10 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 10 | 9 |
| 9. Improvement in access conditions ³ | 5 | 0 | 0 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 0 | 0 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 7 |
| Total Weighted Score⁴ | | 510 | 590 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

⁴ Sum of raw score * weight for all criteria.

Table 1: Bicycle and Pedestrian Priority Improvements

| Priority Improvement Location | | From | To | Need | Improvement | Total Roadway Widening (each direction) | Estimated Cost |
|-------------------------------|------------------|-------------------------|-------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------|
| A | Old Sheridan Rd. | McMinnville City Limits | OR 18 | Significant pedestrian volume | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 5 feet | \$2.0M plus bridge/culvert |
| B | OR 47 | OR 99W | Washington County Line | Important commuter route for bicyclists and pedestrians | <ul style="list-style-type: none"> Yamhelas Westsider Trail* | N/A | N/A |
| C | OR 18B | Sheridan City Limits | Willamina City Limits | Relatively short distance between population centers | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 7 feet | \$3.0M |
| D | OR 99W | Newberg City Limits | Dundee City Limits | Relatively short distance between population centers | <ul style="list-style-type: none"> Widen and pave shoulders to six feet** | Varies | See Location #17 cut sheet |
| E | OR 99W | Lafayette City Limits | McMinnville City Limits | Relatively short distance between population centers | <ul style="list-style-type: none"> Widen and pave shoulders to six feet | 6 feet*** | Reconstruction of two bridges |
| F | Lafayette Hwy. | Lafayette City Limits | OR 18 | Significant pedestrian volume | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 4 feet | \$1.7M plus utility pole relocation |
| G | Westside Rd. | McMinnville City Limits | Meadowlake Road | Important commuter route for bicyclists and pedestrians | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 5 feet | \$5.1M |
| H | Westside Rd. | Meadowlake Road | Moore's Valley Road | Important commuter route for bicyclists and pedestrians | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 7 feet | \$4.8M |

* The trail will run along the abandoned Union Pacific right-of-way between OR 99W and the Washington County line and through the cities of Gaston, Yamhill and Carlton. Access will be available from OR 47 and intersecting county roads.

** Alternatively, widening of the shoulders on Dayton Avenue could be considered per Dundee TSP and Chehalem Heritage Trail Strategic Plan.

*** South Yamhill River bridges only.

Appendix B

SUMMARY OF IMPROVEMENT OPTIONS

Table B-1: Summary of Improvement Options

| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
|-------------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------|
| 1 | Abbey Rd./ Hendricks Rd./ Kuehne Rd. | <ul style="list-style-type: none"> Improved safety Poor intersection configuration – driver confusion about right-of-way Skewed intersections Southbound left turn lane need on Kuehne Rd. Lane width need on Abbey Rd. Horizontal curves on Hendricks Rd. and Abbey Rd. | 1 | <ul style="list-style-type: none"> Realign Abbey Rd. to “T” intersection at Hendricks Rd. Install southbound left turn lane on Hendricks Rd. at Abbey Rd. Install acceleration/merge lane from Abbey Rd. to Kuehne Rd. Realign and widen travel lanes on Abbey Rd. Realign Oak Spring Farm Rd. to “T” intersection at Abbey Rd. Widen travel lanes and shoulders on Hendricks Rd. and Kuehne Rd. | N/A | \$625 K + ROW cost |
| | | | 2 | <ul style="list-style-type: none"> Realign three intersections as stop-controlled “T” intersection Install northbound left-turn lane on Abbey Rd. Install southbound right-turn lane on Abbey Rd. at new intersection | N/A | Unavailable |
| | | | 3 | <ul style="list-style-type: none"> Realign as single lane roundabout Widen and realign travel lanes on Abbey Rd. | N/A | Unavailable |
| 2 | Stringtown Rd. – OR 221 to OR 154 | <ul style="list-style-type: none"> Improved safety – crash rate greater than 200% of statewide average Lane width and shoulder width needs | 1 | <ul style="list-style-type: none"> Widen road Widen/improve shoulders, including increasing distance to roadside features/obstacles Install shoulder rumble stripes Provide signing/stripping at several horizontal curves | N/A | \$4.25 M |

| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
|-------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|
| 3 | Worden Hill Rd. | <ul style="list-style-type: none"> Improved safety – crash rate >200% statewide average At OR 240/Worden Hill Rd. <ul style="list-style-type: none"> Skewed intersection Limited sight distance Worden Hill Rd. approach width OR 240 shoulder width need | 1 | <ul style="list-style-type: none"> Realign OR 240/Worden Hill Rd. intersection to eliminate skew Widen shoulders on OR 240 in vicinity of intersection | 265 | \$2.4 M |
| | | | 2 | Option 1, plus: <ul style="list-style-type: none"> Install signs and delineators at several horizontal curves Install wide edge line markings and permanent raised markers at curves Install edge line rumble stripes along length of roadway | 325 | \$2.5 M |
| | | | 3 | Option 2, plus: <ul style="list-style-type: none"> Construct 2-foot shoulders Vertical realignment at two locations | 480 | \$4.8 M |
| | | | 4 | Option 3, plus: <ul style="list-style-type: none"> Horizontal realignment at several locations | 490 | \$5.4 M |
| 4 | OR 99W/OR 18/McDougall Rd. | <ul style="list-style-type: none"> Improve safety (top 5% SPIS location) Improved traffic operations Non-standard intersection geometry Shoulder width needs on OR 99W and OR 18 Intersection mobility (future need) | 1 | <ul style="list-style-type: none"> Install multi-lane roundabout Widen shoulders on OR 99W and OR 18 in vicinity of intersection | N/A | \$9 M |

| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
|-------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|
| 5 | OR 18 – Ash Rd. to OR 154/ Lafayette Hwy. | <ul style="list-style-type: none"> • Mobility need between Dayton UGB and OR 154 (future) • Top 10% SPIS location (previously top 5%) between Ash Rd. and west of OR 154 • At OR 18/Ash Rd. <ul style="list-style-type: none"> - Improved safety - Skewed intersection - Eastbound right-turn lane need on OR 18 - Future mobility need • At OR 18/OR 154/Lafayette Hwy. <ul style="list-style-type: none"> - Improved safety - Shoulder width needs on OR 154 - Existing and future mobility needs - Eastbound and westbound right-turn lane needs - Pedestrian and bicycle needs | 1 | <ul style="list-style-type: none"> • Close/vacate Ash Rd. north and south of OR 18 • Install multi-lane roundabout • Widen travel lanes and shoulders on Lafayette Hwy. and OR 154 north and south of intersection | 640 | \$8 M |
| | | | 2 | <ul style="list-style-type: none"> • Close/ vacate Ash Rd. north and south of OR 18 • Realign Lafayette Hwy. and OR 154 as offset T configuration | 490 | \$5–8 M |

| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
|-------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|
| 6 | OR 18/Red Prairie Rd. | <ul style="list-style-type: none"> • Top 10% SPIS location (previously top 5%) • Lane width need on Red Prairie Rd. • Shoulder width need on OR 18 and Red Prairie Rd. • Difficult to access or cross OR 18 | 1 | <ul style="list-style-type: none"> • Install median on OR 18 with adequate width to allow two-stage crossing movements • Widen lanes and shoulders on Red Prairie Rd. in vicinity of intersection | N/A | \$7 M |
| 7 | OR 47/OR 99W | <ul style="list-style-type: none"> • Previous top 5% SPIS location • Eastbound left-turn lane needed on OR 99W • Westbound right-turn lane needed on OR 99W • Existing and future mobility needs • Shoulder width needs on OR 47 and OR 99W • Poor pavement condition on OR 99W | 1 | <ul style="list-style-type: none"> • Install traffic signals on eastbound and westbound OR 99W • Construct single connector road between eastbound and westbound OR 99W • Align OR 47 with connector road • Restore/rehabilitate pavement on OR 99W • Widen shoulders on OR 47 in vicinity of intersection | 670 | \$5 M |
| | | | 2 | <ul style="list-style-type: none"> • Merge eastbound and westbound roadways on OR 99W into single roadway • Install traffic signal • Install southbound right-turn lane • Widen shoulders on OR 47 in vicinity of intersection | 655 | \$4 M |

| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
|-------------------------------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|
| | | | 3 | <ul style="list-style-type: none"> • Install multi-lane roundabout • Merge eastbound and westbound roadways on OR 99W into single roadway • Widen shoulders on OR 47 in vicinity of intersection | 710 | \$6 M |
| 8 | OR 99W – Dundee to OR 18 Junction | <ul style="list-style-type: none"> • Existing and future mobility needs | 1 | <ul style="list-style-type: none"> • Widen OR 99W to four lanes with median between Newberg-Dundee Bypass junction and OR 18 • Widen shoulders | N/A | \$40-50 M |
| 9 | OR 153/ Hopewell Rd./ Webfoot Rd. | <ul style="list-style-type: none"> • High speeds on OR 153 • Sight distance needs to east from northbound and southbound approaches • Eastbound right-turn lane need on OR 153 • Shoulder widening needs on OR 153 and Hopewell Rd. • Lane widening need on OR 153 to west | 1 | <ul style="list-style-type: none"> • Remove vegetation on east side of intersection north and south of OR 153 • Install warning beacon at Hopewell Rd./Webfoot Rd. | 450 | \$110,000 |
| | | | 2 | Option 1, plus: <ul style="list-style-type: none"> • Widen travel lanes on OR 153 west of intersection • Widen shoulders on OR 153 east of intersection and Hopewell Rd. in vicinity of intersection • Consider eastbound right-turn lane on OR 153 | 690 | \$1 M |

| Priority Improvement Location | | Need | Improvement Option | Evaluation Score | Estimated Cost |
|-------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|
| 10 | OR 221/OR 153 | <ul style="list-style-type: none"> • Previous top 10% SPIS location • Free northbound left-turn and free eastbound right-turn movements are confusing to drivers • Sharp angles on connector roads require drivers to turn heads sharply to see • Northbound left-turn lane need on OR 221 • Shoulder width needs on OR 221 and OR 153 • Lane width needs on OR 221 | 1 <ul style="list-style-type: none"> • Vacate south-to-west and north-to-west connections to create standard intersection • Install northbound left-turn lane on OR 221 • Widen travel lanes on OR 221 in vicinity of intersection | N/A | \$1.5 M |
| 11 | OR 233/Starr Quarry Rd. | <ul style="list-style-type: none"> • Previous top 10% SPIS location • Shoulder width and lane width needs on OR 233 • Poor intersection configuration • Substandard curve on OR 233 | 1 <ul style="list-style-type: none"> • Realign OR 233 so that curve meets standard • Realign Starr Quarry Rd. to “T” into OR 233 • Install southbound left-turn lane on OR 233 • Install guide signs on southbound OR 233 • Widen travel lanes and shoulders on OR 233 in vicinity of intersection | N/A | \$1.5 M |

| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
|-------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|
| 12 | Bald Peak Rd./ Mountain Top Rd. | <ul style="list-style-type: none"> • Safety need – crash rate > 200% of statewide average • Possible sight distance need along eastbound Bald Peak Rd. • Skewed intersection • Lane and shoulder width needs on Bald Peak Rd. | 1 | <ul style="list-style-type: none"> • Realign Ornduff Rd. and Mountain Top Rd. to form single intersection north of Bald Peak Rd. • Connect new intersection with Bald Peak Rd. • Reduce vertical curve on Bald Peak Rd. at existing intersection | N/A | \$620,000 |
| 13 | North Valley Rd./ Chehalem Dr. | <ul style="list-style-type: none"> • Sight distance need to west from northbound and southbound approaches of Chehalem Dr. • Vertical curves on North Valley Rd. west of Chehalem Dr. • Lane width needs on North Valley Rd. and Chehalem Dr. south of North Valley Rd. • North and south approaches of Chehalem Dr. are offset | 1 | <ul style="list-style-type: none"> • Reconstruct North Valley Rd. for approximately 500 ft. west of intersection to remove vertical curve • Trim/remove vegetation to west on both north and south sides of North Valley Rd. to improve sight distance from Chehalem Dr. approaches | 545 | \$365,000 |
| | | | 2 | Option 1, plus: <ul style="list-style-type: none"> • Realign south leg of Chehalem Dr. to eliminate offset | 545 | \$525,000 |
| 14 | Bell Rd./Aspen Way | <ul style="list-style-type: none"> • Sight distance need to west from northbound Aspen Way • Approach grade on Aspen Way greater than 3% • Lane and shoulder width needs on Bell Rd. | 1 | <ul style="list-style-type: none"> • Reduce vertical curve to west of intersection to increase sight distance • Widen travel lanes and shoulders on Bell Rd. in vicinity of intersection • Replace guardrail on SW corner of intersection • Install new guardrail on SE corner of intersection | N/A | \$710,000 |

| Priority Improvement Location | | Need | Improvement Option | Evaluation Score | Estimated Cost |
|-------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|
| 15 | Bell Rd./Zimri Dr. | <ul style="list-style-type: none"> • Sight distance need to west from northbound Zimri Dr. • Approach grade on Zimri Dr. greater than 3% • Shoulder width needs on Zimri Dr. and Bell Rd. east of Zimri Dr. • Lane width needs on Bell Rd. and Zimri Dr. | <p>1</p> <ul style="list-style-type: none"> • Remove/relocate sight obstructions on southwest corner of intersection to improve sight distance to west | N/A | \$20,000 |
| 16 | Bell Rd./Springbrook Rd. | <ul style="list-style-type: none"> • Springbrook Rd. has crash rate >200% of statewide average • Sight distance needs to east and west from northbound Springbrook Rd. • Horizontal curves on Bell Rd. limit sight distance from bell Rd. and Springbrook Rd. • Shoulder width and lane width needs on Bell Rd. | <p>1</p> <ul style="list-style-type: none"> • Convert intersection to three-way stop control • Remove vegetation on southeast corner of intersection to increase sight distance from Bell Rd. and Springbrook Rd. • Relocate utility pole on north side of Bell Rd. to improve clear zone safety • Install “stop ahead” advance warning signs with beacons on Bell Rd. • Install warning beacon at intersection | N/A | \$130,000 |

| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
|-------------------------------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|
| 17 | OR 99W – Newberg to Dundee | <ul style="list-style-type: none"> • One top 5% and one previous top 5% SPIS location within segment • Existing mobility need • Shoulder width need • Merge problem in westbound direction just east of Fox Farm Rd. where lanes drop from two to one | 1 | <ul style="list-style-type: none"> • Widen shoulders on OR 99W where deficient • ODOT will monitor lane reduction area and identify appropriate improvement measure as necessary | N/A | \$3 M |
| 18 | OR 233/Cruickshank Rd. | <ul style="list-style-type: none"> • Improved safety • Confusing intersection due to three conflict locations • Lane and shoulder width needs on OR 233 | 1 | <ul style="list-style-type: none"> • Remove connector roads • Realign Cruickshank Rd. to meet OR 233 in a “T” intersection south of existing home • Consider northbound left-turn lane and southbound right-turn lane at new intersection • Widen travel lanes and shoulders on OR 233 in vicinity of intersection | 665 | \$1 M |
| | | | 2 | <ul style="list-style-type: none"> • Remove connector roads • Realign Cruickshank Rd. to meet OR 233 in a “T” intersection, removing existing home • Consider northbound left-turn lane and southbound right-turn lane at new intersection • Widen travel lanes and shoulders on OR 233 in vicinity of intersection | 615 | \$2 M |
| | | | 3 | <ul style="list-style-type: none"> • Reconstruct intersection as roundabout, removing existing home | 655 | \$3.5 M |

| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
|-------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|
| 19 | OR 18/Gopher Valley Rd. | <ul style="list-style-type: none"> • Confusing geometrics – driveways on south side of OR 18 do not align with Gopher Valley Rd. • Lane width need on Gopher Valley Rd. • Shoulder width need on OR 18 | 1 | <ul style="list-style-type: none"> • County and ODOT to work with property owners to consolidate accesses over time • One or more driveway closures • One or more driveway improvements • Potential connecting access roadways between properties | N/A | N/A |
| 20 | OR 99W/Durham Ln. | <ul style="list-style-type: none"> • Previous top 5% SPIS location • Shoulder width need on OR 99W | 1 | <ul style="list-style-type: none"> • Install overhead flashing beacon at intersection • Remove/relocate sight distance obstructions on OR 99W both north and south of Durham Ln. intersection • Relocate stop sign on Durham Ln. as close to intersection as possible • Consider northbound left-turn lane and southbound right-turn lane on OR 99W • Move existing intersection warning signs to within 225 feet of intersection | N/A | \$ 1 M |

| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
|-------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|
| 21 | Fox Farm Rd./ Hidden Springs Rd. | <ul style="list-style-type: none"> • Safety (fatal crash) • Horizontal and vertical curves limit sight distance from Fox Farm Rd. • Large pavement area at intersection encourages high speeds • Poor sight distance from eastbound approach of Hidden Springs Rd. • Substandard curves on Fox Farm Rd. | 1 | <ul style="list-style-type: none"> • Create “T” intersection • Relocate stop control at new intersection location | 510 | \$10,000 |
| | | | 2 | <ul style="list-style-type: none"> • Realign Fox Farm Rd. to improve radii on “S” curves • Realign Hidden Springs Rd. as “T” intersection at Fox Farm Rd. | 590 | \$415,000 |

Appendix J: Selection of Recommended Alternatives



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MEMORANDUM

TO: Bill Gille, Yamhill County
John Phelan, Yamhill County
Terry Cole, ODOT Region 2

FROM: Bob Schulte, PTP and Julie Sosnovske, P.E.

DATE: February 26, 2015

SUBJECT: **Yamhill County Transportation System Plan**
Technical Memorandum #7 –Recommended Improvements

P#11086-004

This memo documents the selection of recommended roadway, bicycle, and pedestrian improvements for the Yamhill County Transportation System Plan (TSP). The recommended roadway improvements were selected from a set of improvement options for 21 priority improvement locations, shown in Figure 1. None of the improvements involve any significant right-of-way or property impacts. They are not expected to have any disproportionately negative impacts on Title VI populations. Rather, these improvements will benefit the entire population.

Tech Memo #6 documents the development and evaluation of the roadway improvement options and the identification of the bicycle and pedestrian improvements. It was reviewed by County and ODOT staff, and modifications were made to the roadway improvement options based on the comments received. The revised options and bicycle/pedestrian improvements were then presented at an open house meeting on December 11, 2014 in which the public and members of the County's Road Improvement Advisory Committee (RIAC) provided input. The input was considered in selecting the recommended improvements.

RECOMMENDED ROADWAY IMPROVEMENTS

The recommended improvements at each location are described below, together with the rationale for the recommendation. For reference, Appendix A contains the cut sheets included in Tech Memo #6 that summarize the improvement options and evaluation of the options for the priority improvement location. In some cases, due to the type of need or specific

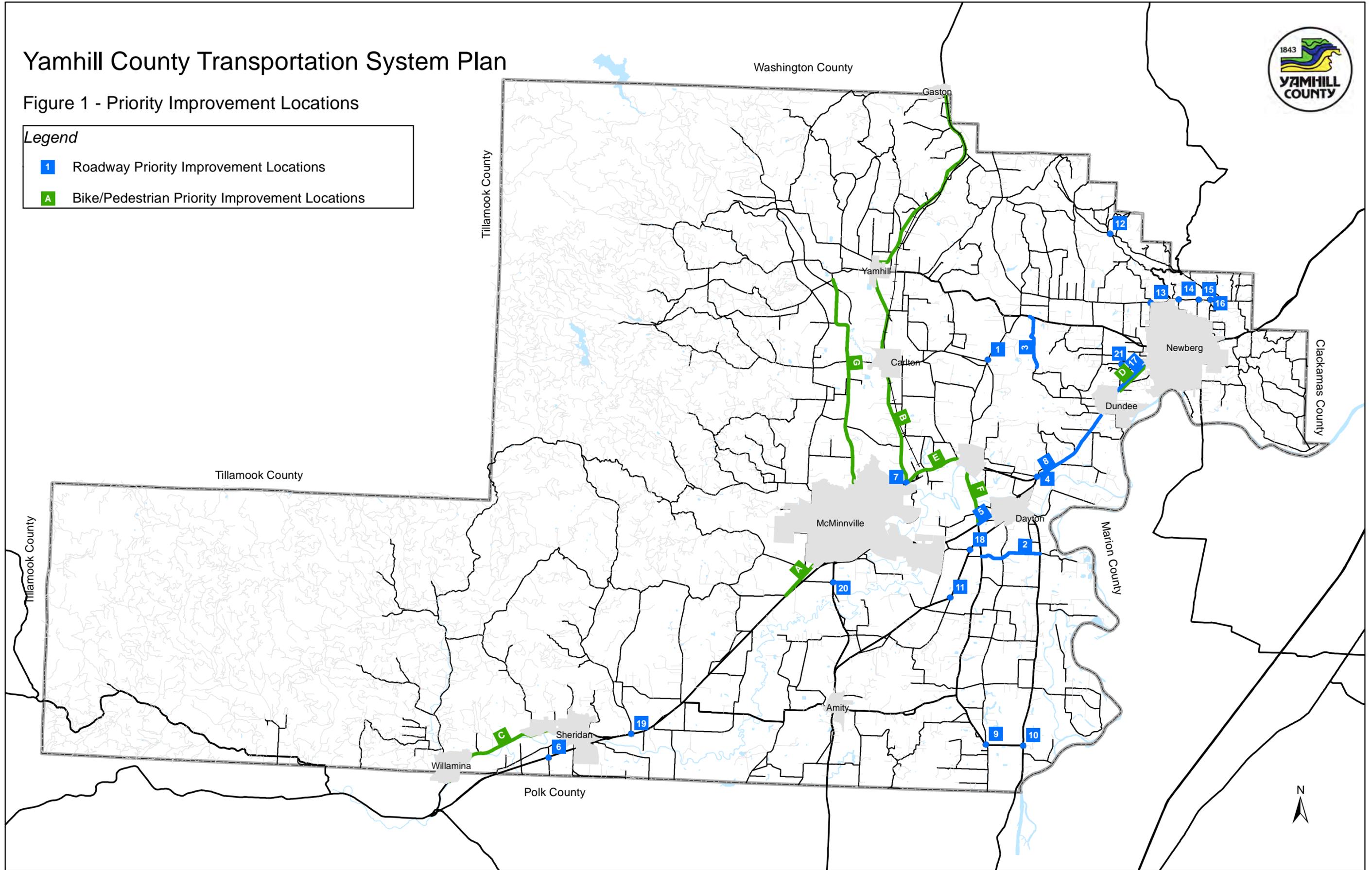
Yamhill County Transportation System Plan

Figure 1 - Priority Improvement Locations



Legend

- 1** Roadway Priority Improvement Locations
- A** Bike/Pedestrian Priority Improvement Locations





characteristics of a location, only one improvement option was available. Appendix B contains a summary of the options.

The recommended improvements are in the form of projects, which consist of a bundle of one or more individual improvements that address both the primary and secondary needs at a location. This approach enhances the cost-effectiveness of improvement projects by increasing the total benefit and reducing the total cost, compared to separate projects for each improvement. The recommendations describe the type of improvements to be implemented, not their specific design characteristics or features. These would be determined at the time of project development.

For each project, a funding source is identified. In the past, County roadway improvements have typically been funded using revenues from the State Highway Fund that are allocated to the County or Oregon Transportation Investment Act (OTIA) funds, which are specifically used for bridge projects.¹ Alternative funding sources currently not used by the County are also included, such as local improvement districts, county vehicle registration fees, county road bonds, property taxes for roads, and ODOT Pedestrian and Bicycle Program grants. For state highways, ODOT expects to have approximately \$10-15M available for capital improvements within the rural portion of the County over the 20-year planning horizon.

A recommended time frame is also provided for each project. The time frame estimates are generally based on when the project will be needed to address the identified short-term and long-term needs. Other factors were considered in some cases, including:

- Phasing – if the project can be implemented in an inexpensive, short-term phase and a longer-term phase, which may require additional time to secure funding.
- Other recent improvements – if an improvement has recently been made at a location, there may be less priority for another project at the same location.
- Related improvements –if another improvement is scheduled which, if implemented, would eliminate the need for the recommended project.

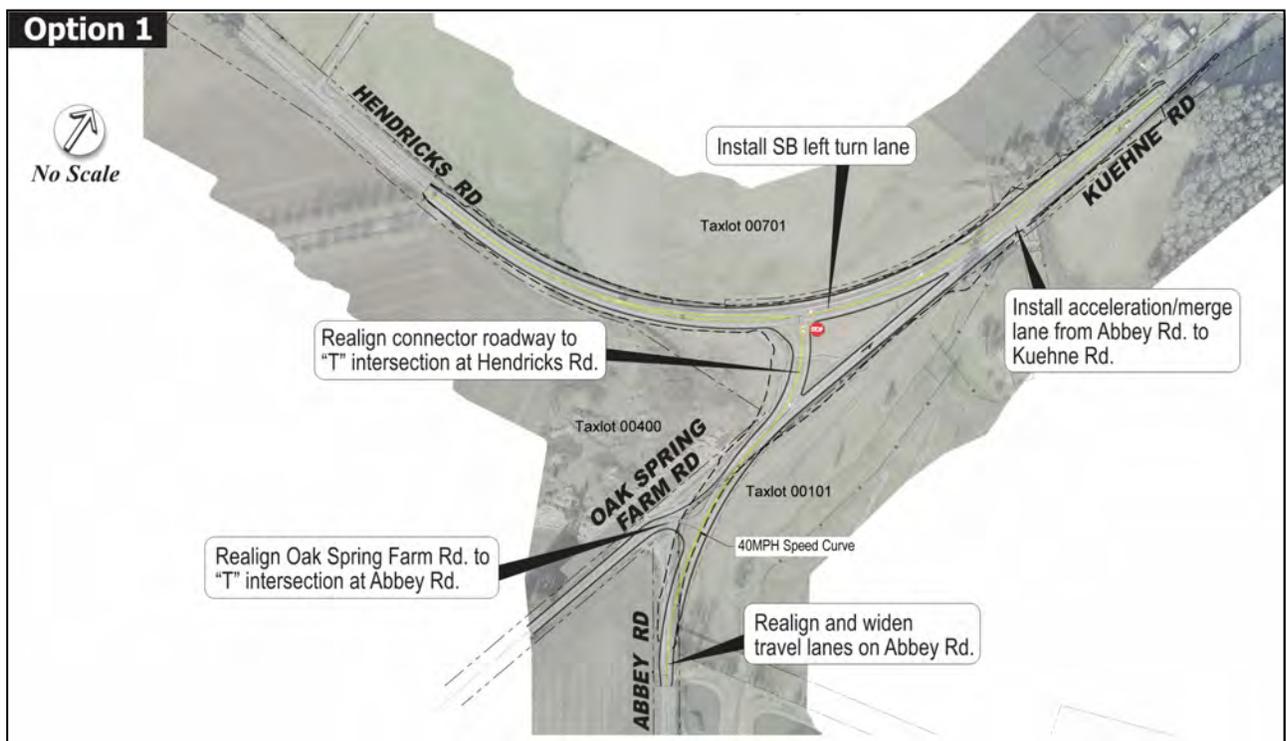
The time frame is not intended to reflect priority. The recommended county roadway projects can be considered as a pool of potential improvements that the county can select from according to future circumstances, such as the availability of funding for a specific improvement type or the ability to combine the project with another project.

¹ In the future, OTIA funds will not be available.

Location #1: Abbey Rd./Hendricks Rd./Kuehne Rd.

In a separate study,² three options were identified to address the needs at this location. Option 1 realigns Abbey Rd. as a “T” intersection at Hendricks Rd. Option 2 realigns Hendricks Rd. as a “T” intersection at Abbey Rd., with left-turn lanes provided on both northbound Abbey Rd. and southbound Hendricks Rd. Option 3 would realign the three intersections as a single-lane roundabout and widen the travel lanes on Abbey Rd.

Option 1 was adopted by the Yamhill County Board of Commissioners on July 31, 2014. This decision was made in conjunction with County staff and the public and preceded the TSP open house meeting held on December 11, 2014. Therefore, this is the recommended option.



Additional features of Option 1 are:

- The northbound through movement on Abbey Rd. would continue on its existing alignment, merging with Kuehne Rd. to the north.
- A left-turn lane would be constructed on southbound Kuehne Rd. for vehicles turning onto Abbey Rd.

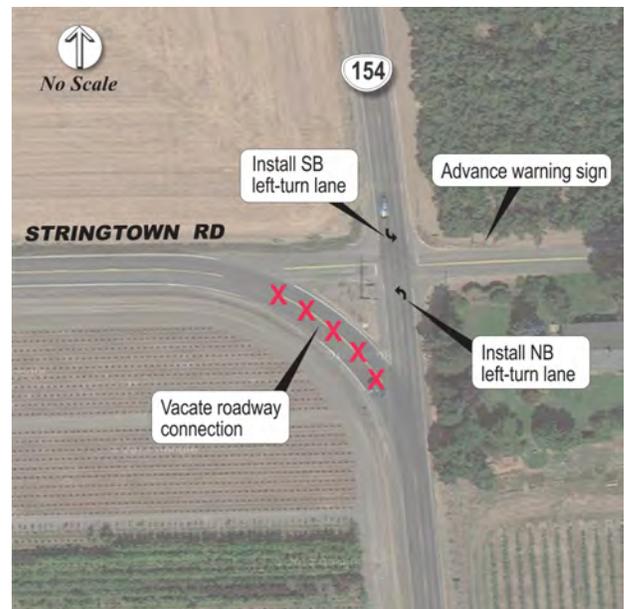
² Study conducted by Cardno Limited in 2014.

- The horizontal curve on Abbey Rd. south of the intersection would also be realigned as a 40-mph curve.

| | |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Recommended Option: | Option 1 – Realignment of Abbey Rd. as a “T” intersection at Hendricks Rd. |
| Estimated Cost: | \$625,000 (does not include right-of-way) |
| Funding Sources: | <ul style="list-style-type: none"> • County (State Highway Fund) • Alternate County funding sources |
| Time Frame: | Short-term (2015 – 2020) |

Location #2: Stringtown Rd. – OR 221 to OR 154

An ODOT intersection improvement project is currently scheduled for construction at OR 154/Stringtown Rd. in 2015. It consists of vacating the existing south-to-west connector roadway to create a standard intersection and installing northbound and southbound left-turn lanes on OR 154. Additional advance warning for the intersection will be provided on the westbound approach of Stringtown Rd.



Additional improvements are recommended to address the remaining needs along this segment of Stringtown Rd., consisting of lane and shoulder widening (including increased distance to roadside features/obstacles), and signing and striping to increase driver awareness of horizontal curves. These improvements are expected to have positive safety impacts along the segment and were generally supported by the RIAC and County. No public comments were received for this option at the open house.



It is unlikely that all of the required funding for this project will be available in the short-term. Therefore, the recommended short-term improvement is to provide signing/striping to



delineate the horizontal curves at M.P. 1.10, M.P. 1.75, and M.P. 1.89 – M.P. 2.05. The remaining improvements should be staged over the medium/long-term as funding allows.

| | |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Option: | Option 1 – Stringtown Rd. improvements |
| Estimated Cost: | \$4.25 M |
| Funding Sources: | <ul style="list-style-type: none"> • County (State Highway Fund) • Alternate County funding sources |
| Time Frame: | <ul style="list-style-type: none"> • Short-term (2015 – 2020) – signing/stripping on horizontal curves at M.P. 1.10, M.P. 1.75, and M.P. 1.89 – M.P. 2.05. • Medium/long-term (2020 – 2030+) – remaining Option 1 improvements |

Location #3: Worden Hill Rd.- OR 240 to North of Fairview Drive

The County recently completed improvements to Worden Hill Rd., so additional improvements are not considered a short-term priority by the County. The recent improvements do not, however, address all of the needs along this segment. Therefore, several improvement options were developed to address the remaining needs.

Option 1 includes additional intersection improvements at OR 240/Worden Hill Rd. to eliminate the skew angle and widen the shoulders on OR 240. Option 2 features rumble stripes along Worden Hill Rd. and signing and striping to delineate the horizontal curves, in addition to the OR 240/Worden Hill Rd. intersection improvements. Option 3 builds on Option 2 by adding shoulders and vertical realignment at two locations. Option 4 includes the Option 3 improvements, plus horizontal realignment at several curve locations.

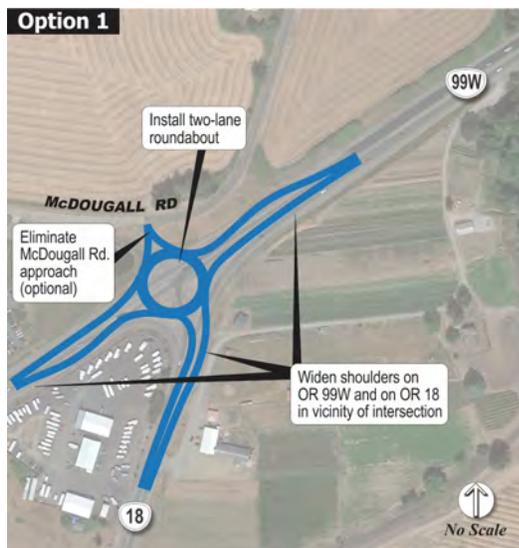
Options 3 and 4 scored significantly higher in the evaluation than the first two options because of the greater improvements in safety, geometrics, and the bicycle/pedestrian environment. While Option 4 includes the realignment of several horizontal curves, it scored only slightly higher than Option 3 due to the significant right-of-way and cost impacts associated with these improvements.

Option 4 is recommended because it scored the highest in the evaluation and is favored by the RIAC and County. Options 3 and 4 were equally preferred by the open house attendees. Implementation of Option 4 is not a near-term priority for the County because of the recent improvements to this segment.

| | |
|---------------------|-------------------------------------------------------------------------------------------------------------------------|
| Recommended Option: | Option 4 – All improvements described above |
| Estimated Cost: | \$5.4 M |
| Funding Sources: | <ul style="list-style-type: none"> County (State Highway Fund) Alternate County funding sources |
| Time Frame: | Long-term (2025 – 2030+) |

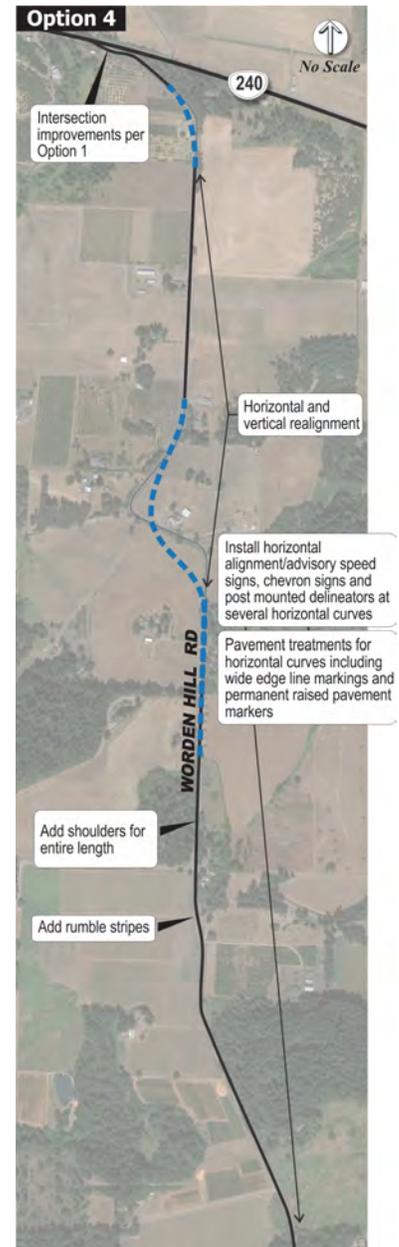
Location #4: OR 99W/OR 18/McDougall Rd.

Construction of the Dundee-to-Dayton Phase of the Newberg-Dundee Bypass would reconfigure this intersection and eliminate the need for additional improvements. However, if it becomes clear that construction of this phase of the bypass is unlikely, reconstruction of this intersection as a multi-lane roundabout to address the future mobility need is recommended. Without this improvement, the future v/c ratio would be greater than 1.0 on the



McDougall Rd. approach and 0.82 for westbound left-turn movements on OR 99W. With the improvement, the overall intersection v/c ratio would decrease to 0.69, which would meet the mobility target. This option is preferred by the County.

The McDougall Rd. approach could also be closed with or without the construction of the roundabout. The volumes on this approach are very low and an



initial review indicated that reasonable alternate routes are available. The closure would reduce driver confusion and provide a potential safety benefit to the intersection. This action is supported by both the County and ODOT.

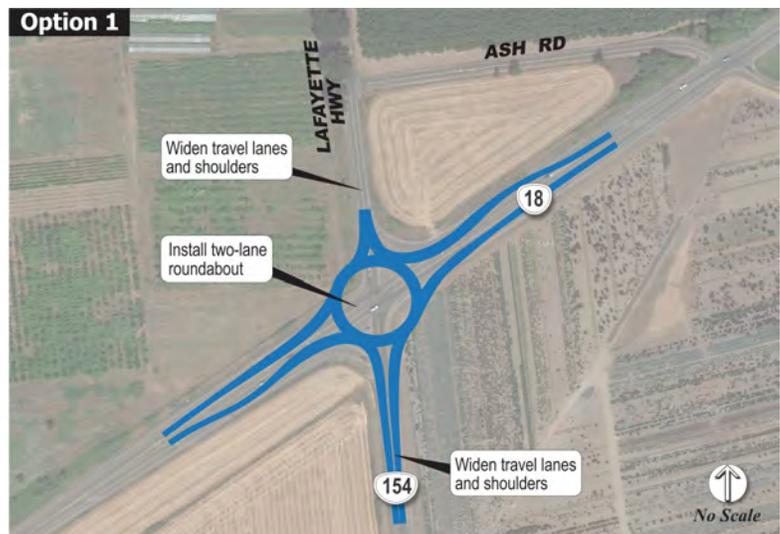
ODOT will consider any multi-lane roundabout proposal with caution since their experience with them is limited. Further analysis, including exploring other options, would be required before ODOT would commit to constructing a roundabout at this location. The public expressed mixed support for roundabouts and some RIAC members have concerns about this concept.

| | |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recommended Option: | Option 1 – Install multi-lane roundabout, close McDougall Rd. at OR 99W/OR 18 |
| Estimated Cost: | \$9.0 M |
| Funding Source: | ODOT |
| Time Frame: | <ul style="list-style-type: none"> • Short-term (2015 – 2020) – Close McDougall Rd. at OR 99W/OR 18 • Long-term (2025 – 2030+) – Remaining Option 1 improvements (if no construction of Dundee-to-Dayton phase of bypass) |

Location #5: OR 18 – Ash Rd. to OR 154/Lafayette Hwy.

Two options were developed to address safety and future mobility needs at this location. With Option 1, a multi-lane roundabout would be installed. This would result in lower crash rate/severity and traffic conflicts by separating the traffic flows, as well as improved mobility. Option 2 would construct offset “T” intersections to separate the turning movements on OR 18.

Option 1 is recommended because it scored the highest in the evaluation and was preferred by the County and the public at the open house. Also, Option 1 would meet the future mobility need, while Option 2 would fall short of the mobility target. With Option 1, the future v/c ratio would drop to 0.57, compared to a v/c ratio



of greater than one without this improvement.

As previously noted, ODOT will consider any multi-lane roundabout proposal with caution since their experience with them is limited. Further analysis, including exploring other improvement options, would be required before ODOT would provide final approval of this option.

Another element of Option 1 is the closure of Ash Rd. at OR 18, which has been a top 5% Safety Priority Index System (SPIS) location in the past. This could be done with or without the construction of the roundabout. The volumes on the Ash Rd. approaches are relatively low and an initial review indicated that reasonable alternate routes are available. The County and ODOT support this action.

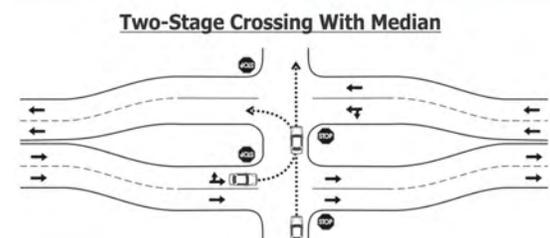
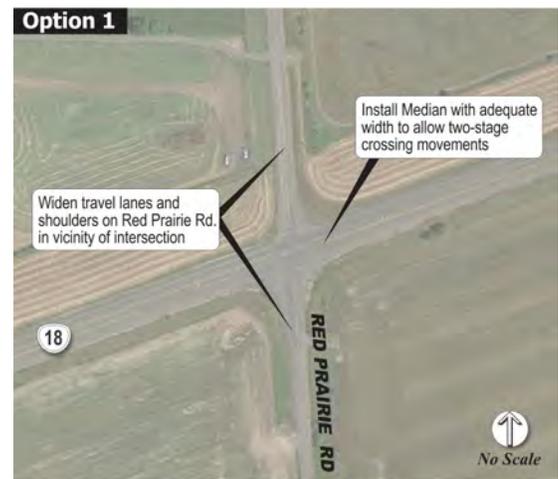
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| Recommended Option: | Option 1 –Install multi-lane roundabout, close Ash Rd. at OR 18 |
| Estimated Cost: | \$8.0 M |
| Funding Source: | ODOT |
| Time Frame: | <ul style="list-style-type: none"> • Short-term (2015 – 2020) – Close Ash Rd. at OR 18 • Medium-term (2020 – 2030) – Construct roundabout |

Location #6: OR 18/Red Prairie Rd.

This intersection is a SPIS location where there have been a number of angle crashes, primarily due to the failure to yield. An intersection flasher is currently installed and there are warning signs and pavement markers in advance of the intersection.

To further reduce the likelihood of crossing crashes, installation of a median on OR 18 with adequate width to allow two-stage crossing movements is recommended. In addition to this improvement, Option 1 includes lane and shoulder widening on Red Prairie Rd. in the vicinity of the intersection.

The County believes this option will address the needs at this location. ODOT is willing to consider these improvements in the future. No input was provided for this option by the RIAC or the public at the open



house.

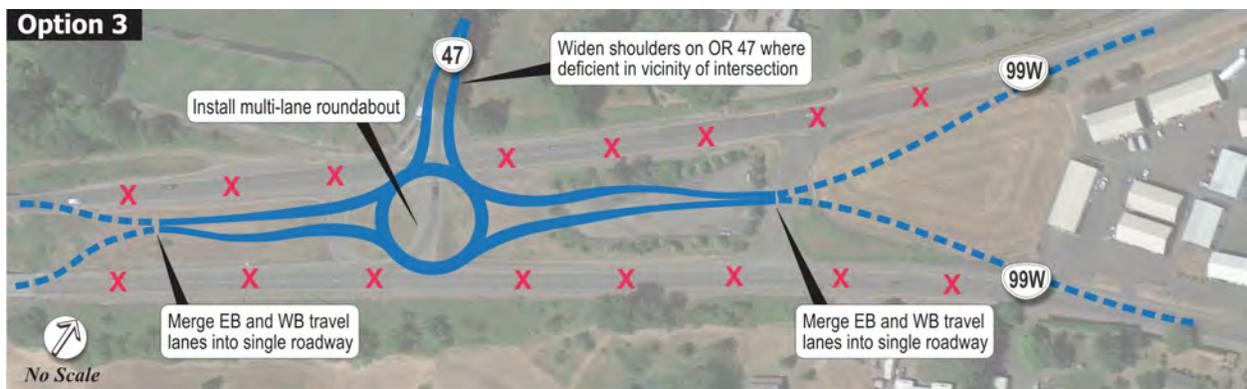
Although the needs at this location are immediate, the improvements will be constructed as funding allows. In the meantime, the existing countermeasures should be maintained.

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| Recommended Option: | Option 1 – Install median, widen lanes and shoulders on Red Prairie Rd. |
| Estimated Cost: | \$7.0 M |
| Funding Source: | ODOT |
| Time Frame: | Medium/long-term (2020 – 2030+) |

Location #7: OR 47/OR 99W

Three improvement options were developed to address the safety and mobility needs at this location. Option 1 includes the installation of traffic signals on both eastbound and westbound OR 99W, with a connector road between the two intersections.³ With Option 2, the eastbound and westbound roadways on OR 99W would be merged into a single roadway, converging at a new signalized intersection. Option 3 would be similar to Option 2, but instead of a traffic signal, the roadways would meet in a multi-lane roundabout.

Option 3 is recommended because it scored the highest in the evaluation and was preferred by County staff, primarily because of its potential safety benefits. Public input received at the open house also supported this option. With Option 3, the future v/c ratio would drop to 0.68, which would meet the mobility target, compared to a v/c ratio of greater than one without this improvement.



³ In general, ODOT’s practice is to not install traffic signals on high-speed rural roads. However, ODOT is willing to consider a traffic signal(s) as a possibility at this location due to the relatively close proximity to McMinnville, an urban area where drivers expect traffic signals.

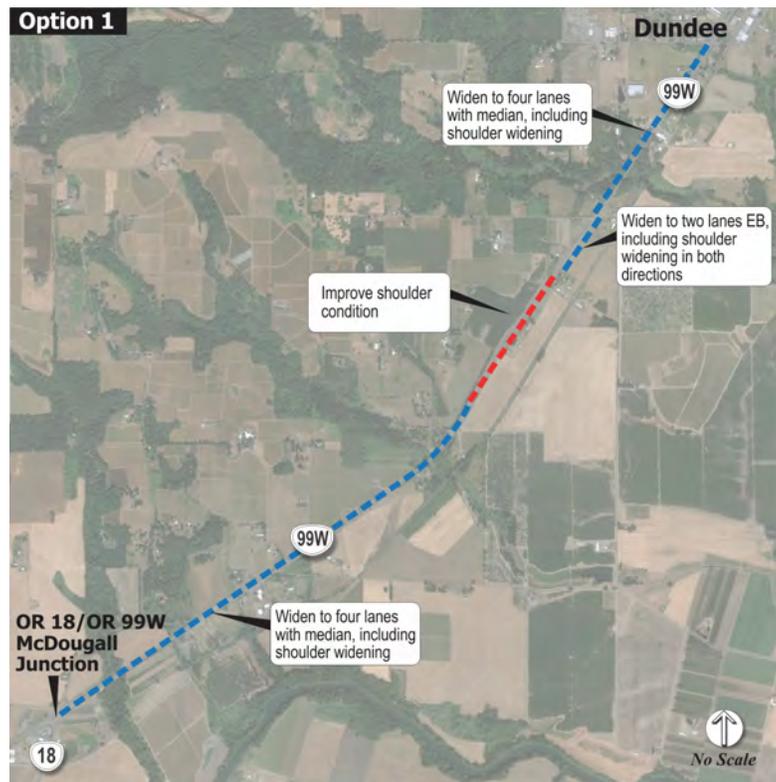
As previously noted, ODOT will consider any multi-lane roundabout proposal with caution since their experience with them is limited. Further analysis, including exploring other improvement options, would be required before ODOT would provide final approval of this option.

| | |
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| Recommended Option: | Option 3 – Merge eastbound and westbound OR 99W into single roadway, install multi-lane roundabout |
| Estimate Cost: | \$6.0 M |
| Funding Source: | ODOT |
| Time Frame: | Short-term (2015 – 2020) |

Location #8: OR 99W – Dundee to OR 18 Junction

One improvement option was developed to address the mobility need along this segment, in which OR 99W would be widened to four lanes with a median, together with shoulder widening and rehabilitation. This improvement would result in a future v/c ratio of less than 0.70, which would meet the mobility target. Without this improvement, the v/c ratio would be greater than one.

The widening will not be needed if the Dundee-to-Dayton phase of the bypass is constructed, because the bypass is expected to draw a significant amount of traffic from OR 99W.



However, if neither this improvement option, with an estimated cost of over \$50 M, nor the Dundee-to-Dayton phase of the bypass are funded within the planning horizon, an alternate mobility target will be required to address the existing and future mobility needs for this segment.

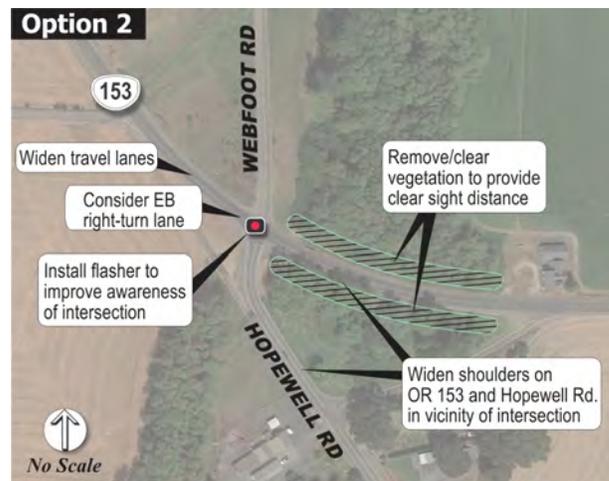
The shoulder widening and rehabilitation are recommended in the short-term, because the high cost of the four-lane widening makes this unlikely to occur and because these improvements are needed regardless of whether the future phase of the bypass is built or not.

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| Recommended Option: | Option 1 –Four-lane widening with median, shoulder widening and rehabilitation |
| Estimated Cost: | \$40.0 – 50.0 M |
| Funding Source: | ODOT |
| Time Frame: | <ul style="list-style-type: none"> • Medium-term (2020 – 2030+) – Shoulder widening and rehabilitation • Long-term (2025 – 2030+) – Four-lane widening with median, pending outcome of future bypass phase and availability of funding |

Location #9: OR 153/Hopewell Rd./Webfoot Rd.

Option 1 at this intersection is a low-cost approach which removes vegetation on the north and south sides of OR 153 to improve sight distance to the east and installs a warning beacon to improve intersection visibility. Option 2 builds on Option 1, with consideration of an eastbound right-turn lane on OR 153 and lane and shoulder widening on OR 153 and Hopewell Rd.

Option 2 received a higher score in the evaluation because of several additional benefits compared to Option 1. The lane and shoulder widening, as well as the potential eastbound right-turn lane, are significant geometric improvements which are expected to improve safety while reducing traffic conflicts. In addition, the shoulder widening would result in an improved pedestrian and bicycle environment. The additional cost of these improvements is considered to be relatively minor compared to the added benefits. The County and the public input received at the open house both support Option 2.

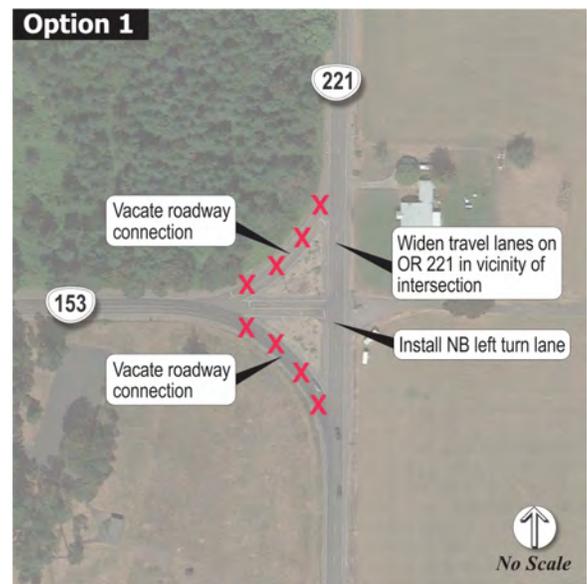


Therefore, Option 2 is recommended. However, Option 1 should be pursued as an interim measure until funding for Option 2 can be secured.

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| Recommended Option: | Option 2 – Remove/clear vegetation, install intersection beacon, consider adding eastbound right-turn lane, widen travel lanes and shoulders |
| Estimated Cost: | \$1.0 M |
| Funding Sources: | <ul style="list-style-type: none"> • ODOT • County (State Highway Fund) • Alternate County funding sources |
| Time Frame: | <ul style="list-style-type: none"> • Short-term (2015 – 2020) – Remove/clear vegetation, install beacon • Medium/long-term (2020 – 2035+) – Remainder of Option 2, as funding allows |

Location #10: OR 221/OR 153

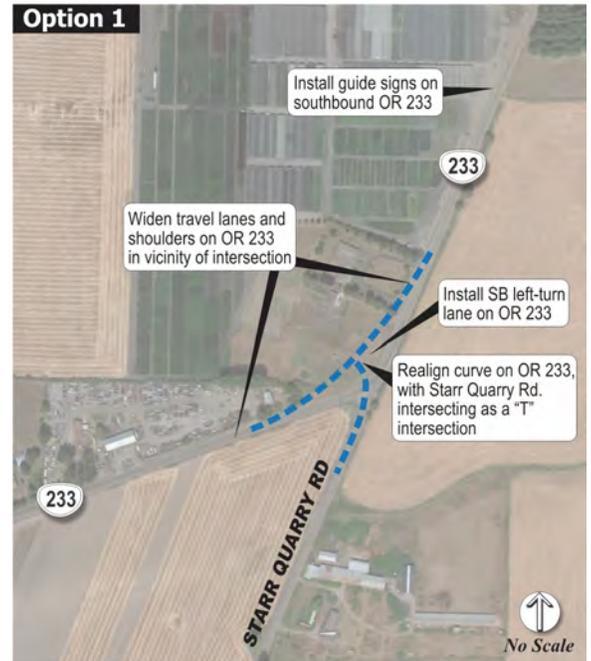
One improvement option was developed which would eliminate the safety concerns and skewed approaches on the connector roads at this intersection. With this option, the south-to-west and north-to-west connector roads would be vacated to create a standard intersection. A northbound left-turn lane would also be installed, together with lane widening on OR 221 near the intersection. This option is supported by the County, with the provision that the turning radii at the reconfigured intersection must allow turns between OR 153 and OR 221 for hay trucks and farm equipment. No public comments were received at the open house for this location.



| | |
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| Recommended Option: | Option 1 –Vacate south-to-west and north-to-west connector roads, install northbound left-turn lane, widen lanes on OR 221 |
| Estimated Cost: | \$1.5 M |
| Funding Source: | ODOT |
| Time Frame: | Short-term (2015 – 2020) |

Location #11: OR 233/Starr Quarry Rd.

One option was developed to address the safety and geometric needs at this intersection. OR 233 would be realigned so that the horizontal curve meets ODOT standards. In conjunction with the curve realignment, Starr Quarry Rd. would be realigned to “T” into OR 233. A southbound left-turn lane would be installed at the realigned intersection, along with guide signs on southbound OR 233 directing drivers to Starr Quarry Rd. The lanes and shoulders on OR 233 would also be widened in the vicinity of the intersection. This option is supported by the County. No public comments were received for this location at the open house.

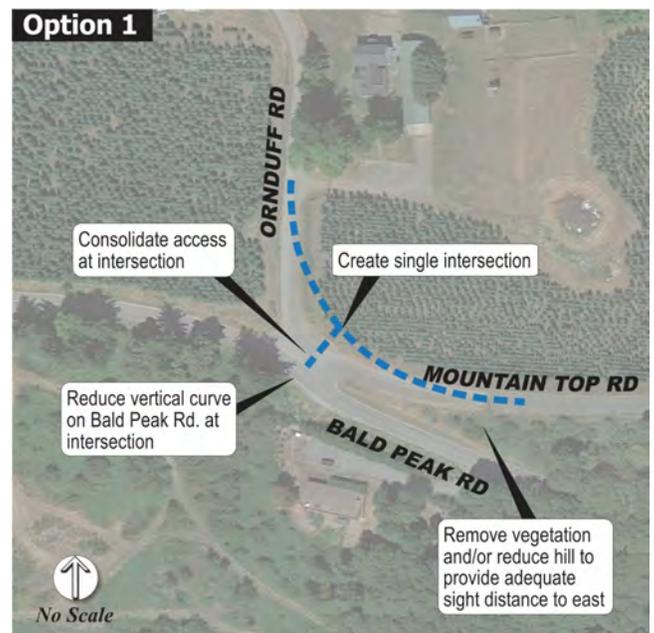


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| Recommended Option: | Option 1 – Realign OR 233 and Starr Quarry Rd., install southbound left-turn lane, install guide signs, widen lanes and shoulders on OR 233 |
| Estimated Cost: | \$1.5 M |
| Funding Source: | <ul style="list-style-type: none"> • ODOT • County (State Highway Fund) • Alternate County funding sources |
| Time Frame: | Short-term (2015 – 2020) |

Location #12: Bald Peak Rd./Mountain Top Rd.

This intersection was identified as a safety concern by the RIAC because of the skewed intersection angle and potential sight distance problems. It is also located on a combined horizontal/vertical curve and there are lane and shoulder width needs on Bald Peak Rd.

Because of the topographic constraints, only one option was developed in which Ornduff Rd. would be realigned with Mountain Top Rd. to form a single intersection just north of Bald Peak Rd. This



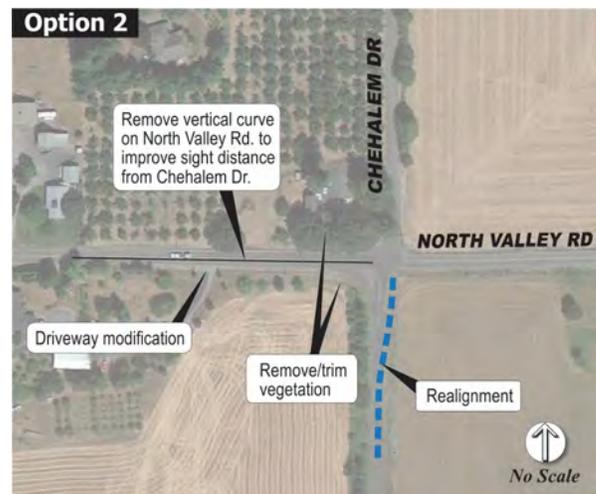
intersection would be connected to Bald Peak Rd. at a consolidated access point. In addition, the vertical curve on Bald Peak Rd. would be reduced. The County supports this option since it improves the existing intersection with Bald Peak Rd. No public input was provided for this location at the open house.

Mountain Top Rd. was a gravel road that was recently paved. County staff recommends delaying implementation of Option 1 for a few years until traffic volumes stabilize as a result of the paving. At that time, a decision can be made about whether the improvement is warranted based on the volume of traffic using the intersection.

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| Recommended Option: | Option 1 – Realign Ornduff Rd. and Mountain Top Rd. to form single intersection; connect new intersection with Bald Peak Rd. at consolidated access point |
| Estimated Cost: | \$620,000 |
| Funding Sources: | <ul style="list-style-type: none"> County (State Highway Fund) Alternate County funding sources |
| Time Frame: | Medium-term (2020 – 2030) |

Location #13: North Valley Rd./Chehalem Dr.

Two options were developed at this location to address intersection sight distance and geometric needs. With Option 1, the sight distance from Chehalem Dr. would be improved by reconstructing North Valley Rd. west of the intersection to remove a vertical curve and by removing/trimming vegetation on the north and south sides of North Valley Rd. Option 2 includes these improvements, plus realignment of the south leg of Chehalem Dr. to eliminate the existing offset.



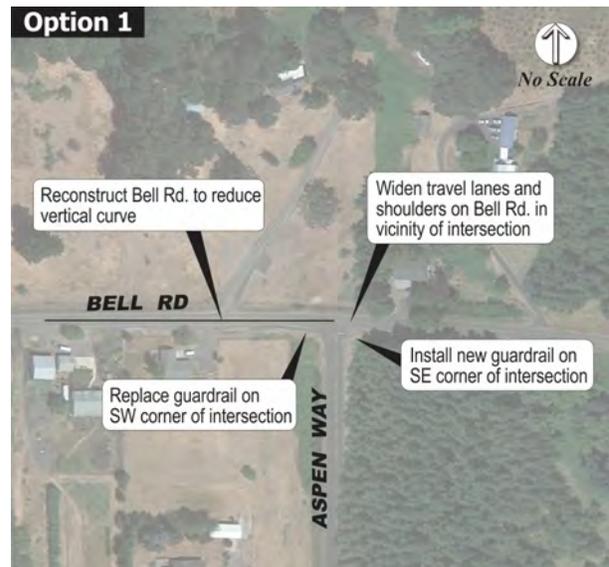
Although both options scored the same in the evaluation, Option 2 is recommended because it is preferred by County staff. No public input was provided for this location at the open house.

The southeast quadrant of the intersection is located within Newberg’s UGB, so it is possible that the Chehalem Dr. realignment could be constructed in conjunction with future development in the area.

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| Recommended Option: | Option 2 – Remove vertical curve on North Valley Rd. west of intersection, remove/trim vegetation, realign Chehalem Dr. south of intersection |
| Estimate Cost: | \$525,000 |
| Funding Sources: | <ul style="list-style-type: none"> • County (State Highway Fund) • Alternate County funding sources • City of Newberg (future development fees) |
| Time Frame: | Short-term (2015 – 2020), contingent on future development in SE quadrant of intersection |

Location #14: Bell Rd./Aspen Way

One improvement option was developed for this intersection to increase the sight distance from Aspen Way by removing a vertical curve west of the intersection. Lane and shoulder widening on Bell Rd. in the vicinity of the intersection is also included. The County supports this option. No public input was provided for this location at the open house.



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| Recommended Option: | Option 1 – Reconstruct Bell Rd. to reduce vertical curve to west, lane and shoulder widening on Bell Rd., install/replace guardrail |
| Estimated Cost: | \$710,000 |
| Funding Sources: | <ul style="list-style-type: none"> • County (State Highway Fund) • Alternate County funding sources |
| Time Frame: | Short-term (2015 – 2020) |

Location #15: Bell Rd./Zimri Dr.

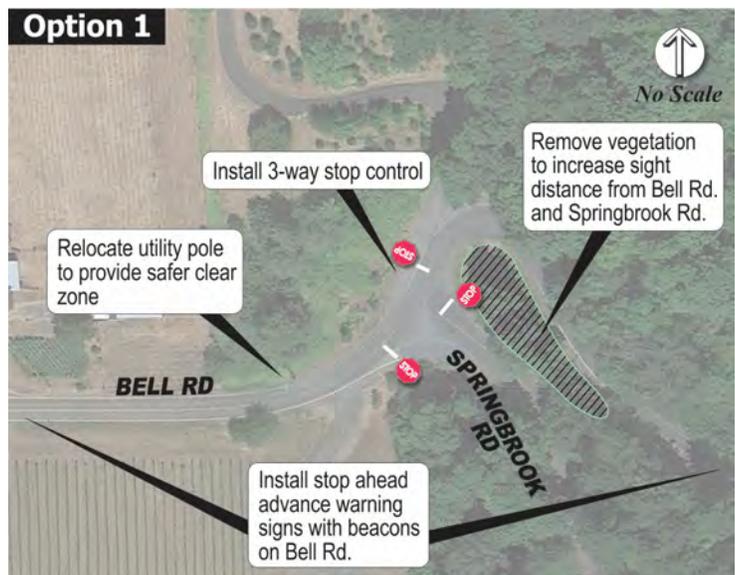
At the Bell Rd./Zimri Rd. intersection, removal and/or relocation of sight obstructions on the south side of Bell Rd. is recommended to improve sight distance from the Zimri Dr. approach. This improvement is supported by County staff. No public input was received for this location at the open house.



| | |
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| Recommended Option: | Option 1 – Remove/relocate sight obstructions on south side of Bell Rd. |
| Estimated Cost: | \$20,000 |
| Funding Sources: | <ul style="list-style-type: none"> • County (State Highway Fund) • Alternate County funding sources |
| Time Frame: | Short-term (2015 – 2020) |

Location #16: Bell Rd./Springbrook Rd.

At this intersection, sight distance from northbound Springbrook Rd. is limited in both directions due to vegetation and horizontal and vertical curves on Bell Rd. Because of topographic constraints, the only feasible improvement is to convert the intersection to all-way stop control. Along with this improvement, vegetation on the southeast corner of the intersection should be removed and a utility pole on the north side of Bell Rd. should be relocated to improve clear zone safety. To increase driver awareness of the intersection, advance warning signs on Bell Rd.





with beacons should be installed on Bell Rd., along with a flashing beacon at the intersection. The County supports this recommendation. No public input was received for this location at the open house.

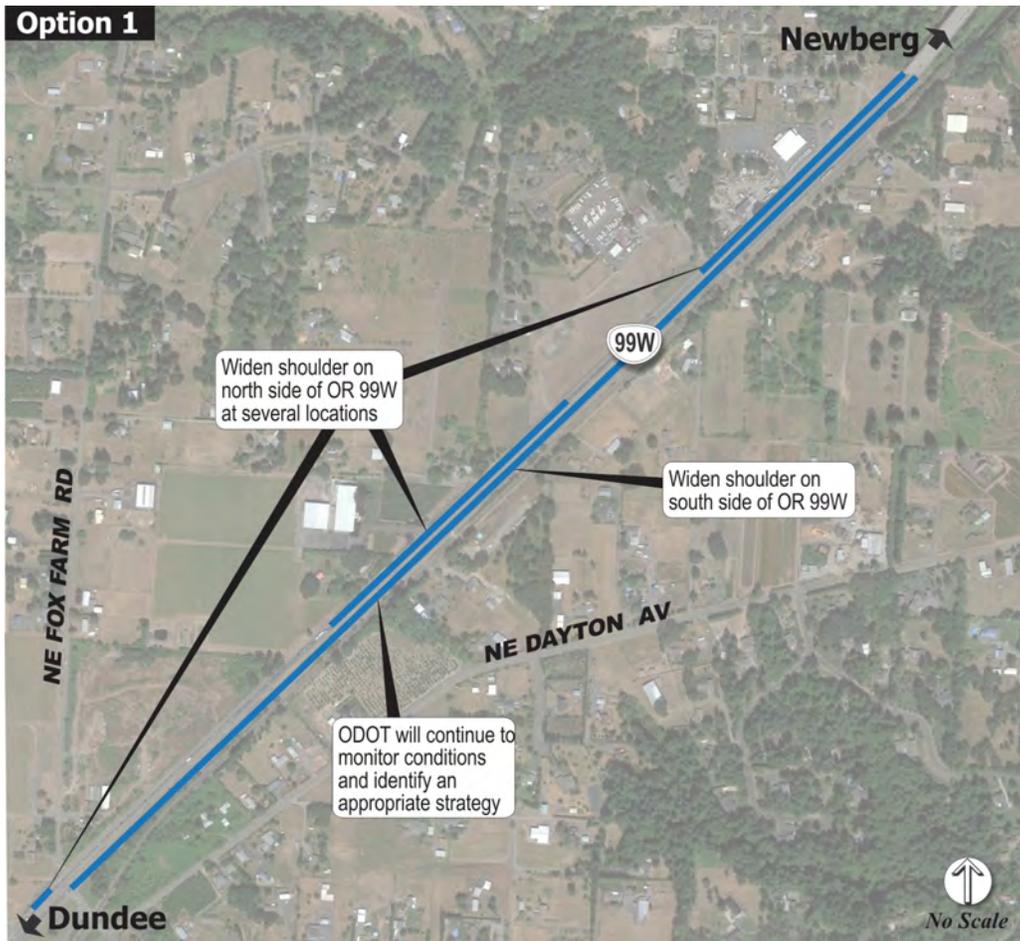
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| Recommended Option: | Option 1 – Convert intersection to all-way-stop control, remove vegetation, install intersection beacon and advance warning signs on Bell Rd., relocate utility pole |
| Estimated Cost: | \$130,000 |
| Funding Sources: | <ul style="list-style-type: none"> • County (State Highway Fund) • Alternate County funding sources |
| Time Frame: | Short-term (2015 – 2020) |

Location #17: OR 99W - Newberg to Dundee

Within this segment of OR 99W, there are safety problems at two SPIS locations that may be related to the lane reduction in the westbound direction east of Fox Farm Rd. and the OR 99W/First St. intersection in Dundee. Also, the shoulder widths do not meet the ODOT standard along a significant portion of the segment.

The recommended improvement strategy is for ODOT to widen the shoulders in the areas that do not currently meet the standard, as funding allows, and to continue to seek ways to improve safety by monitoring and refining the advance warning and lane reduction treatments on the westbound approach to Dundee, where OR 99W narrows from four-lanes to two-lanes in each direction. Additionally, ODOT is currently working with the City of Dundee to develop an improvement at the intersection of OR 99W/First St. in Dundee. The scope of this improvement will either include or have an effect on the intersection of OR 99W/Fox Farm Rd.

At this time, there is no estimate of how this improvement will impact the operation of the OR 99W/Fox Farm Rd. intersection, but some improvement is expected, particularly in combination with the reduction in traffic expected with the opening of Phase One of the Newberg-Dundee Bypass. The operational conditions at this intersection should continue to be monitored by ODOT, post-Phase One, and addressed to the extent practicable from a property impact and funding standpoint, in consideration of the magnitude of any operational or safety problems that may develop by the end of the 20-year planning horizon. The potential for the Dundee-to-Dayton segment of the bypass to be constructed should also be a factor in these considerations, as its construction would include a complete reconstruction/replacement of the existing OR 99W/Fox Farm Rd. intersection.



ODOT and the County support this strategy. There was no public input received for this location at the open house.

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| Recommended Option: | Option 1 – widen shoulders on OR 99W where deficient |
| Estimated Cost: | \$3.0 M |
| Funding Source: | ODOT |
| Time Frame: | Medium-term (2020 – 2030) |

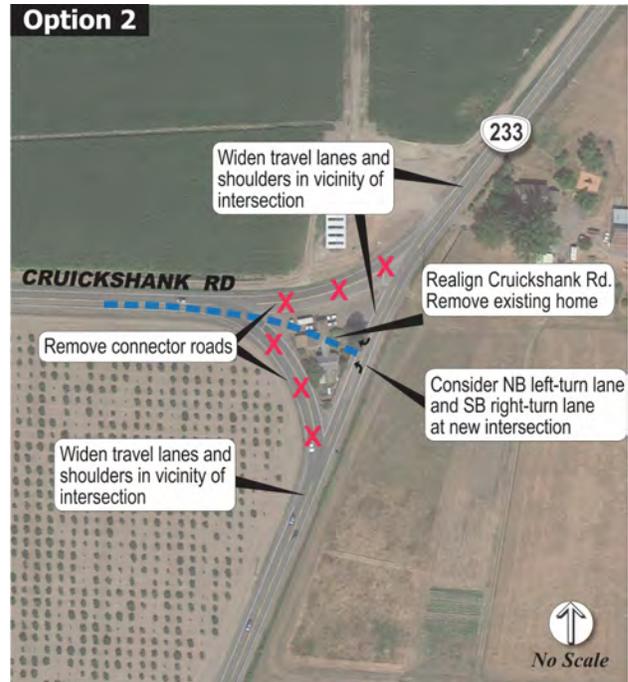
Location #18: OR 233/Cruickshank Rd.

Three options were developed to consolidate the three conflict points formed by the connector roads at this intersection into a single intersection. Option 1 would realign Cruickshank Rd. to meet OR 233 at a “T” intersection south of a house that sits between the connector roads and OR 233. Option 2 would be the same as Option 1, except the existing house would be removed

to allow a straighter alignment of Cruickshank Rd. with OR 233. Option 3 would reconstruct the intersection as a roundabout, with removal of the house.

All of the options received similar scores in the evaluation, with Option 1 scoring the highest because it would minimize land use impacts and construction costs compared to Options 2 and 3. Option 2 was preferred by the County, however, because the sight distance obstructions created by the house would be eliminated with the removal of the house. Therefore, Option 2 is recommended.

In addition to the realignment of Cruickshank Rd., a northbound left-turn lane and southbound right-turn lane would be considered at the new intersection. The travel lanes and shoulders on OR 233 would also be widened in the vicinity of the intersection.⁴



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| Recommended Option: | Option 2 – Realign Cruickshank Rd. as “T” intersection with OR 233 (removing the existing house), consider installing NB left-turn lane and SB right-turn lane, widen lanes and shoulders on OR 233 |
| Estimated Cost: | \$2.0 M |
| Funding Source: | ODOT |
| Time Frame: | Medium-term (2020 – 2030) |

⁴ A consideration for project development is that this site may have previously been a gas station, so it is possible that there are underground storage tanks that would need to be removed.

Location #19: OR 18/Gopher Valley Rd.

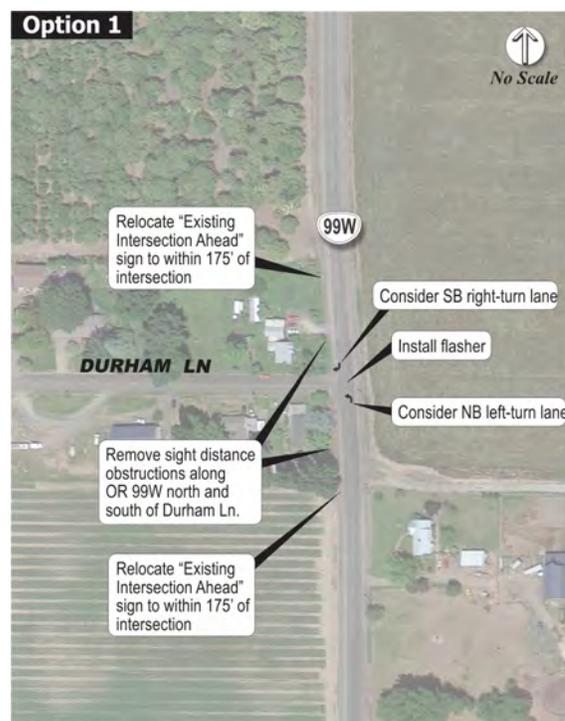
Multiple accesses on OR 18 result in poor traffic operations in the vicinity of the intersection. It is recommended that the County and ODOT should work with the property owners to consolidate the accesses over time. Any changes would be dependent on right-of-way negotiations and, since there are multiple property owners, potential easements between the properties. Development review would provide a good opportunity to explore changes if any land use actions are pursued by the property owners. Any improvements would be relatively low-cost, likely consisting of one or more driveway closures and one or more driveway improvements, with potential connecting access roadways between the properties. County staff supports this approach. No public input was received at the open house for this location.



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| Recommended Option: | Option 1 – County and ODOT to work with property owners to consolidate accesses over time |
| Estimated Cost: | N/A |
| Funding Source: | ODOT |
| Time Frame: | Medium/long-term (2020 – 2035+) |

Location #20: OR 99W/Durham Ln.

The intersection at OR 99W/Durham Ln. is a previous top 5% SPIS location. Improvements to increase driver awareness of the intersection are recommended, including the removal of sight distance obstructions, relocating advance intersection warning signs, relocating the stop sign on Durham Ln., and installing an intersection beacon. In addition, a northbound left-turn lane and, potentially, a southbound right-turn lane should be considered.



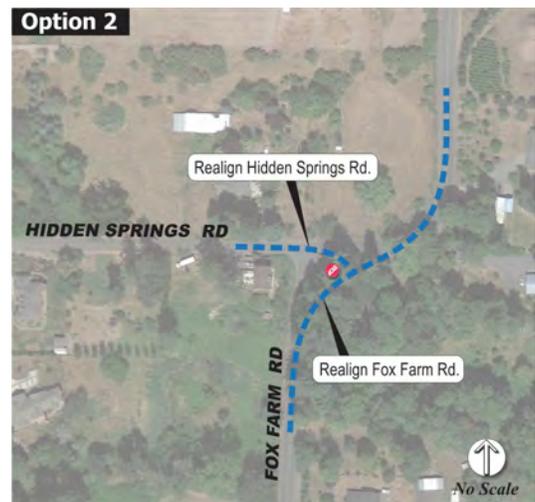
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| Recommended Option: | Option 1 – Remove sight distance obstructions, relocate advance intersection warning signs, relocate stop sign on Durham Ln., install intersection beacon, consider turn lanes |
| Estimated Cost: | \$1.0 M |
| Funding Source: | ODOT |
| Time Frame: | Medium-term (2020 – 2030) |

Location #21: Fox Farm Rd./Hidden Springs Rd.

Two options were developed to address safety and geometric needs at this location. Option 1 partially addresses these needs by realigning the intersection into a “T” configuration to improve sight distance, with stop control on Hidden Springs Rd. Option 2 would realign Fox Farm Rd. south and north of Hidden Springs Rd. to reduce the severity of the curves and improve sight distance.

Option 2 received a higher score in the evaluation because of the greater potential safety benefits and higher level of geometric improvements. The estimated cost of Option 2 is significantly higher, however, and there would likely be impacts to environmentally sensitive areas.

Because it offers a relatively low-cost solution that could be implemented quickly, County staff supports Option 1 as a short-term improvement, with Option 2 to be considered as a longer-term improvement. Public input received at the open house supported Option 2.





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| Recommended Options: | Option 1 – Realign Fox Farm Rd. and Hidden Springs Rd. as a “T” intersection Option 2 – Realign curves on Fox Farm Rd., realign Fox Farm Rd. and Hidden Springs Rd. as a “T” intersection |
| Estimated Cost: | Option 1 - \$10,000 Option 2 - \$415,000 |
| Funding Sources: | <ul style="list-style-type: none"> • County (State Highway Fund) • Alternate County funding sources |
| Time Frame: | Short-term (2015 – 2020) - Option 1 Long-term (2020 – 2035+) - Option 2 |

BICYCLE/PEDESTRIAN IMPROVEMENTS

Bicycle/pedestrian improvements were identified at a number of priority locations throughout the County (see Figure 1). Table 1 indicates which of these improvements are recommended based on input received from County and the public at the open house.

The only improvements not supported by the County are the lane and shoulder widening for Westside Rd. between McMinnville and Meadowlake Rd. (Location “G”) and between Meadowlake Rd. and Moore’s Valley Rd. (Location “H”). Although Westside Rd. is a relatively heavily traveled bicycle and pedestrian route, the County believes that efforts should be focused on the Yamhela’s Westsider Trail project, which runs parallel to Westside Rd.

In addition, although the County supports the widening and paving of shoulders along OR 99W between Newberg and Dundee (Location “D”), this improvement would be initiated by ODOT. If this does not happen within the desired time frame, the recommended alternative would be to provide paved, 6-foot wide shoulders along both sides of Dayton Ave. between Newberg and Dundee.

TRANSIT IMPROVEMENTS

The recommended improvements for transit service in Yamhill County were determined based on the needs identified in the *Yamhill County Coordinated Human Services Public Transportation Plan: The Next Steps*⁵ and by YCTA staff, stakeholders, and the public. The recommended improvements are:

⁵ Mid-Willamette Valley Council of Governments, Coordinated Human Services Public Transportation Plan, 2007.



Table 1: Recommended Bicycle/Pedestrian Improvements

| Priority Improvement Location | | Need | Improvement | Total Roadway Widening (each dir.) | Estimated Cost | Rec.? | Time Frame |
|-------------------------------|-----------------------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------------------------|-------|-----------------------------------------------------------|
| A | Old Sheridan Rd. - McMinnville City Limits to OR 18 | Significant pedestrian volume | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 5 feet | \$2.0 M + culvert replacement | Yes | Short-term (2015 – 2020) |
| B | OR 47 - OR 99W to Washington County Line | Important commuter route for bicyclists and pedestrians | <ul style="list-style-type: none"> Yamhelas Westsider Trail* | N/A | N/A | Yes | Short-term (2015 – 2020) |
| C | OR 18B - Sheridan City Limits to Willamina City Limits | Relatively short distance between population centers | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 7 feet | \$3.0 M | Yes | Medium-term (2020 – 2030) |
| D | OR 99W - Newberg City Limits to Dundee City Limits | Relatively short distance between population centers | <ul style="list-style-type: none"> Widen and pave shoulders to six feet** | Varies | See Location #17 cut sheet (Appendix A) | Yes | Medium-term (2020-2030) or with Location #17 improvements |
| E | OR 99W - Lafayette City Limits to McMinnville City Limits | Relatively short distance between population centers | <ul style="list-style-type: none"> Widen and pave shoulders to six feet | 6 feet*** | Reconstruction of two bridges | Yes | Medium-term (2020 – 2030) |
| F | Lafayette Hwy. - Lafayette City Limits to OR 18 | Significant bicycle volume | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 4 feet | \$1.7 M + utility pole relocation | Yes | Short-term (2015 – 2020) |

* The trail will run along the abandoned Union Pacific Railroad right-of-way between OR 99W and the Washington County line and through the cities of Gaston, Yamhill and Carlton. Access will be available from OR 47 and intersecting county roads.

** Alternatively, widening of the shoulders on Dayton Ave. could be considered per Dundee TSP and Chehalem Heritage Trail Strategic Plan.

*** South Yamhill River bridges only

- Additional service during the evenings and on weekends
- More frequent bus stops
- Expanded service to large employers (e.g. Spirit Mountain Casino and the Riverside Drive industrial area)
- Improved service to outlying areas
- New service between Yamhill and Carlton
- New service between Sheridan, Willamina and Grand Ronde (West Valley)
- Designated bus stops with signs and posted schedules
- Transit shelters for fixed routes
- Sidewalks, curb cuts, loading spaces, and crosswalks in areas adjacent to transit lines
- Improved ADA accessibility
- Pull-outs for buses
- More regional connections (e.g. to the Oregon coast)

Additional improvements may be identified in a Transit Development Plan that may be developed by the YCTA in the near future.

AIR, RAIL, PIPELINE, AND WATERWAY IMPROVEMENTS

There are no recommended air, pipeline, or waterway improvements.

The potential passenger rail connection between Yamhill County and the Portland metropolitan area identified in the *Oregon State Rail Plan*⁶ was examined in the *Yamhill County Commuter Rail Study*.⁷ The study evaluated the potential for commuter rail operation from McMinnville to Milwaukie utilizing existing freight rail lines which generally parallel OR 99W. Key findings from the study include the following:

- Service would include five inbound trips in the morning peak period and five outbound trips in the evening peak based on 30-minute frequencies. Two trains in each peak would run to and from McMinnville, with the remainder operating to and from Newberg.
- Although adequate for low-speed freight service, the rail line would require considerable upgrading to accommodate commuter rail operations safely and cost-effectively.

⁶ Oregon Department of Transportation, [Oregon State Rail Plan](#), 2014.

⁷ Oregon Department of Transportation, [Yamhill County Commuter Rail Study](#), 1998.

- The estimated capital cost to place a McMinnville-to-Milwaukie commuter rail line into operation would be \$112M (1997 dollars).
- The estimated operating cost would be \$3.0M annually.
- Daily boardings for 2015 are estimated to be 1,580.
- Given the number of riders with trip destinations in the OR 217 corridor and Wilsonville, a timed connection with Tri-Met's Westside Express Service between Wilsonville and Beaverton would be important.

Development of new service will require a detailed feasibility study that examines potential ridership, technical feasibility, implementation, costs, and other factors.

Appendix A

CUT SHEETS

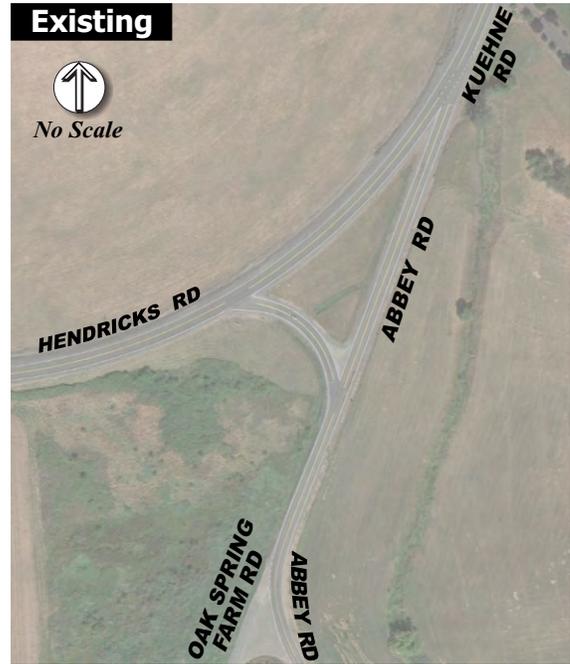


Location #1:
Kuehne Rd./Abbey Rd./Hendricks Rd.

Sheet 1 of 3

Needs:

- Improved safety – on RIAC list of safety improvement locations
- Poor intersection configuration – driver confusion about right-of-way
- Skewed intersections
- Southbound left-turn lane needed on Kuehne Rd.
- Horizontal curve on Hendricks Rd. possibly contributed to two crashes
- Lane width need on Abbey Rd.
- Horizontal curve on Abbey Rd. south of Intersection



Improvement Option 1

Description:

- Realign Abbey Rd. to "T" intersection at Hendricks Rd.
- Install southbound left turn lane on Hendricks Rd. at Abbey Rd.
- Install northbound acceleration lane/merge lane on Kuehne Rd. at Hendricks Rd.
- Widen travel lanes and shoulders on Abbey Rd.
- Widen travel lanes and shoulders on Hendricks Rd. and Kuehne Rd.
- Improve horizontal alignment on Abbey Rd. south of intersection to 40 mph curve.
- Realign Oak Spring Farm Rd. to "T" intersection at Abbey Rd.

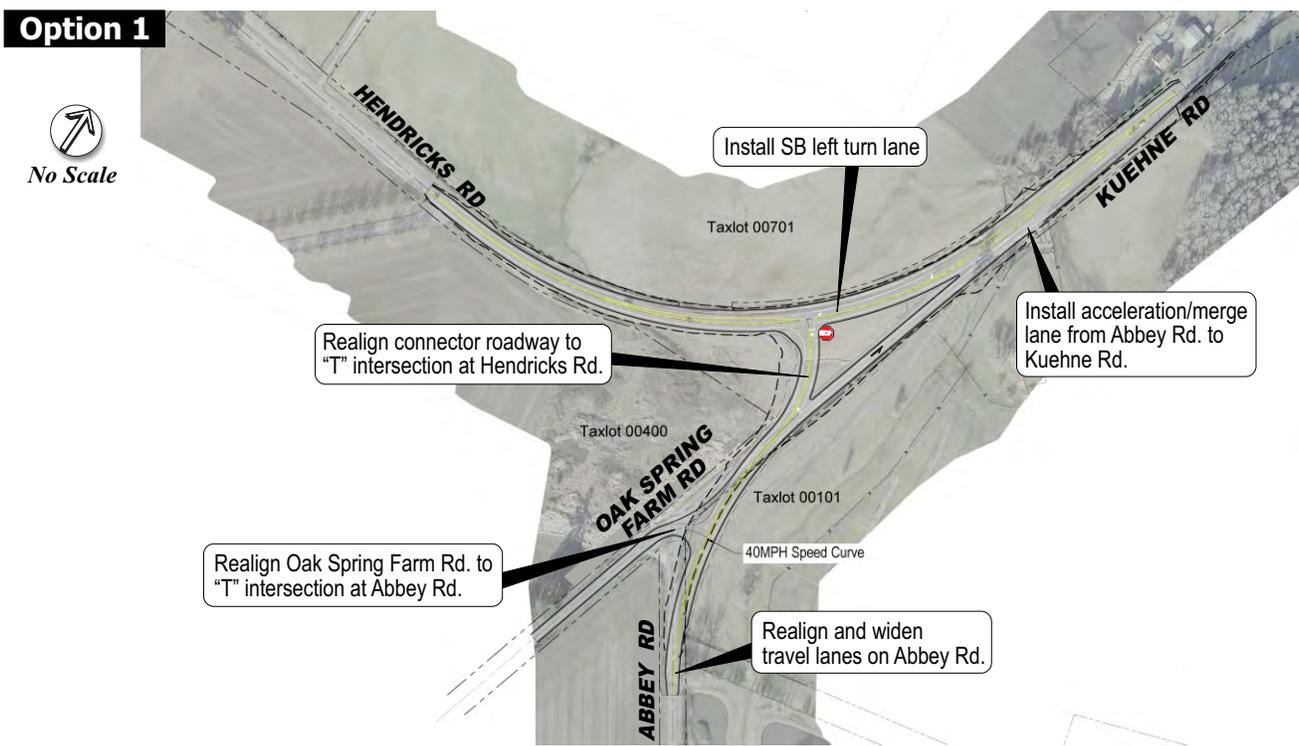
Preliminary Cost Estimate: \$625,000+ROW

Benefits:

- Left turn lane provides refuge for drivers waiting to turn from southbound Kuehne Rd. to southbound Abbey Rd.
- Improved safety conditions on Kuehne Rd./Hendricks Rd.
- Improved geometric conditions on Abbey Rd.

Key Considerations/Notes:

- No additional right-of-way would be needed for the intersection improvement, but will be needed for Abbey Rd. curve realignment.





Location #1:
Kuehne Rd./Abbey Rd./Hendricks Rd.

Sheet 2 of 3

Improvement Option 2

Description:

- Realign three intersections as stop-controlled "T" intersection
- Install northbound left-turn lane on Abbey Rd.
- Install "free" southbound right-turn lane on Abbey Rd. at new intersection
- Install acceleration/merge lane from Abbey Rd. to Kuehne Rd.
- Widen travel lanes and shoulders on Abbey Rd. Kuehne Rd. and Hendricks Rd.
- Improve horizontal alignment on Abbey Rd. south of intersection
- Realign Oak Spring Farm Rd. to "T" intersection with Abbey Rd.

Preliminary Cost Estimate: Unavailable

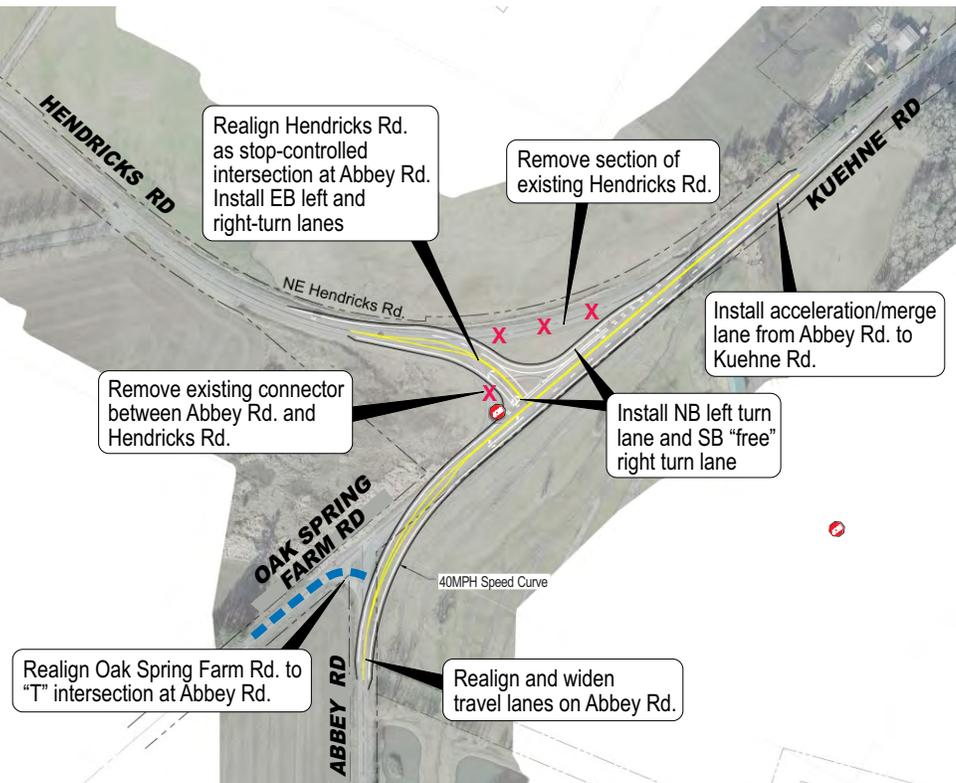
Benefits:

- Single intersection less confusing to drivers than multiple intersections
- Eliminates unexpected movements (e.g. southbound left turns at existing Abbey Rd./Kuehne Rd. intersection)
- Eliminates skewed intersection approaches
- Improved geometric conditions on Abbey Rd.

Key Considerations/Notes:

- No additional right-of-way would be needed for the intersection improvement, but may be needed for Abbey Rd. curve realignment

Option 2





Location #1:

Kuehne Rd./Abbey Rd./Hendricks Rd.

Sheet 3 of 3

Improvement Option 3

Description:

- Realign three intersections as single-lane roundabout
- Widen approach lanes and shoulders on Abbey Rd., Kuehne Rd. and Hendricks Rd.
- Improve horizontal alignment on Abbey Rd. south of intersection
- Realign Oak Spring Farm Rd. to "T" intersection with Abbey Rd.

Preliminary Cost Estimate: Unavailable

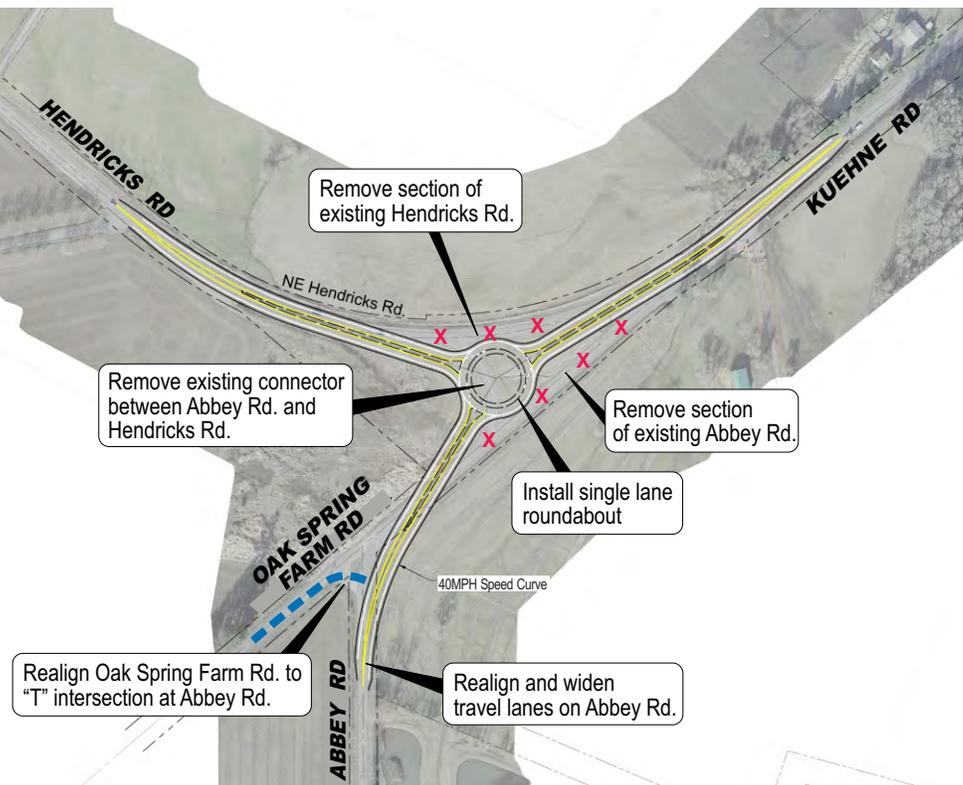
Benefits:

- Single intersection less confusing to drivers than multiple intersections
- Eliminates unexpected movements (e.g. southbound left turns at existing Abbey Rd./Kuehne Rd. intersection)
- Reduced number of traffic conflict points
- Eliminates skewed intersection approaches
- Slower speeds through intersection on all roadways
- Improved geometric conditions on Abbey Rd.

Key Considerations/Notes:

- No additional right-of-way would be needed for the intersection improvement, but may be needed for Abbey Rd. curve realignment.

Option 3





Location #2:
Stringtown Rd. - OR 221 to OR 154

Sheet 1 of 1

■ **Needs:**

- Improved safety – segment crash rate is greater than 200% of statewide average crash rate
- Lane width and shoulder width needs on Stringtown Rd.



Improvement Option 1

■ **Description:**

- Widen road
- Widen/improve shoulders, including increasing distance to roadside features/obstacles
- Install shoulder rumble stripes
- Provide signing/stripping to indicate horizontal curves at following locations:

M.P. 1.10

- Add advisory speed sign to existing horizontal alignment sign (westbound)
- Install horizontal alignment/advisory speed sign (eastbound)
- Place wide edgeline markings
- Install additional chevron signs (westbound and eastbound)

M.P. 1.75

- Add advisory speed sign to existing horizontal alignment sign (westbound)
- Install combination horizontal alignment/advisory speed sign (eastbound)
- Place wide edgeline markings
- Install chevron signs (westbound and eastbound)

M.P. 1.89 – M.P. 2.05 (westbound and eastbound)

- Install combination horizontal alignment/advisory speed signs
- Place wide edgeline markings
- Install chevron signs

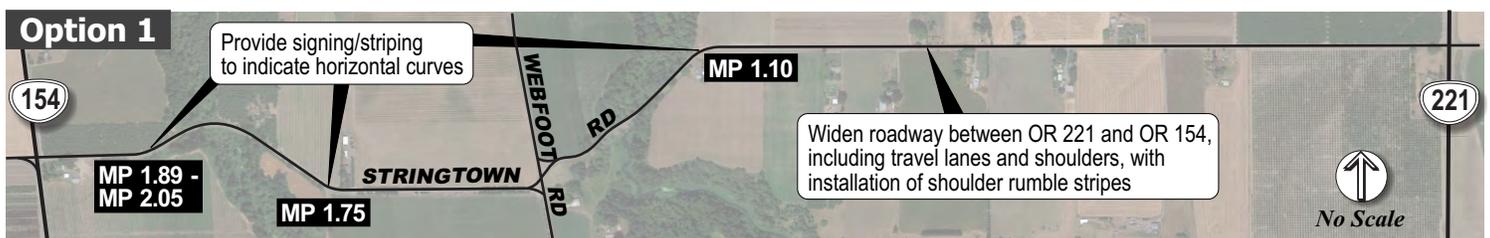
■ **Preliminary Cost Estimate:** \$4.25 million

■ **Benefits:**

- Widening road increases driver margin of error
- Widening shoulders provides greater recovery area
- Shoulder rumble strips improve driver awareness of edge of roadway
- Improved signing and striping improves driver awareness of curves
- Improved bicycle and pedestrian environment with wider shoulders

■ **Key Considerations/Notes:**

- Additional right-of-way may be needed for this improvement
- Realignment of curves was considered cost prohibitive



Location #3:

Worden Hill Rd. - OR 240 to North of Fairview Dr.

Sheet 1 of 5

Needs:

- Improved safety - segment crash rate is greater than 200% of statewide average
- At OR 240/Worden Hill Rd.:
 - Skewed intersection
 - Sight distance need on Worden Hill Rd.
 - Approach width need on Worden Hill Rd.
 - Shoulder width need on OR 240



Improvement Option 1

Description:

OR 240/Worden Hill Rd. Intersection Only Improvements:

- Realign intersection to eliminate skew
- Widen shoulders on OR 240 in vicinity of intersection

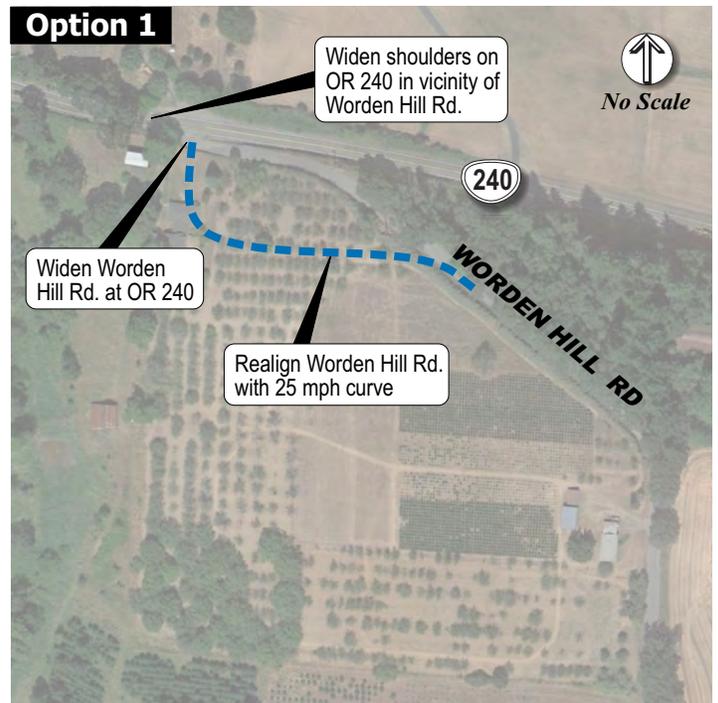
■ **Preliminary Cost Estimate:** \$2.4 million

Benefits:

- Improved sight distance at intersection with removal of skew angle
- Improved traffic operations with widening of Worden Hill Rd. approach

Key Considerations/Notes:

- Additional right-of-way would be needed for this improvement, including purchase of house





Location #3:

Worden Hill Rd. - OR 240 to North of Fairview Dr.

Sheet 2 of 5

Improvement Option 2

■ Description:

Same as Option 1, plus:

- Install chevron signs and post-mounted delineators on horizontal curves on Worden Hill Rd. at M.P. 2.53, M.P. 3.57, M.P. 3.70, M.P. 3.85, and M.P. 4.33
- Install horizontal alignment/advisory speed signs in advance of these curves
- Install wide edge line markings and permanent raised markers at curves
- Install ledge line rumble stripes for length of roadway

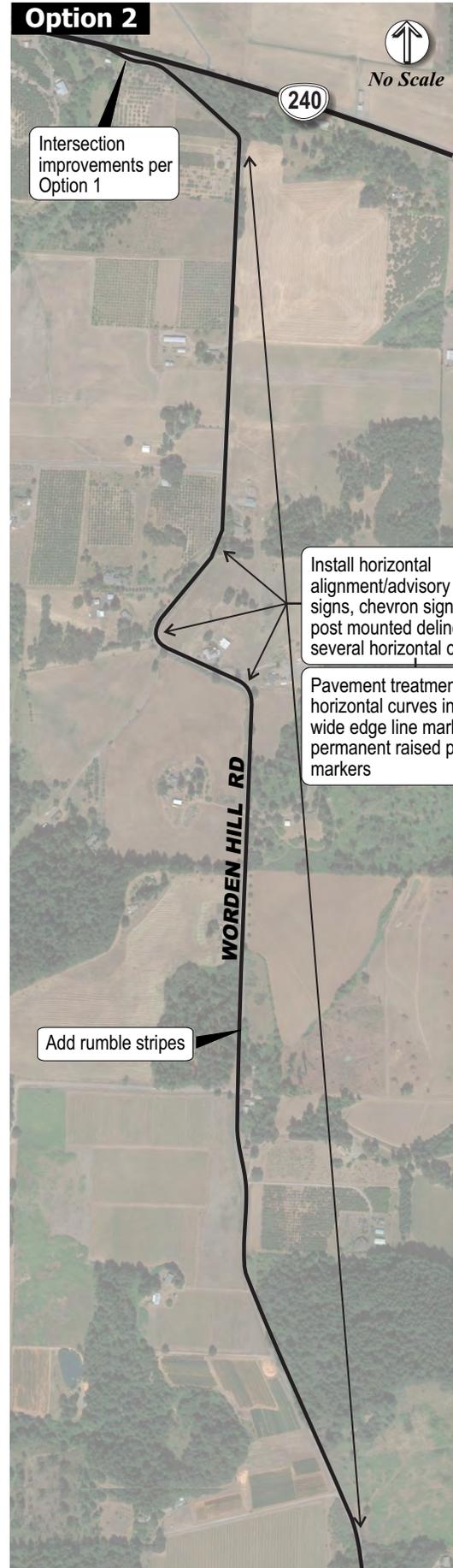
■ Preliminary Cost Estimate: \$2.5 million

■ Benefits:

- Benefits of Option 1
- Improved driver awareness of curves and edge of pavement

■ Key Considerations/Notes:

- Same additional right-of-way requirement as Option 1 for OR 240/Worden Hill Rd. intersection improvement





Location #3:

Worden Hill Rd. - OR 240 to North of Fairview Dr.

Sheet 3 of 5

Improvement Option 3

Description:

Same as Option 3, plus:

- Vertical realignment at:
 - M.P. 3.63 - 3.69
 - M.P. 3.27 - 3.5
- Add shoulders for entire length (2 ft.)

Preliminary Cost Estimate: \$4.8 million

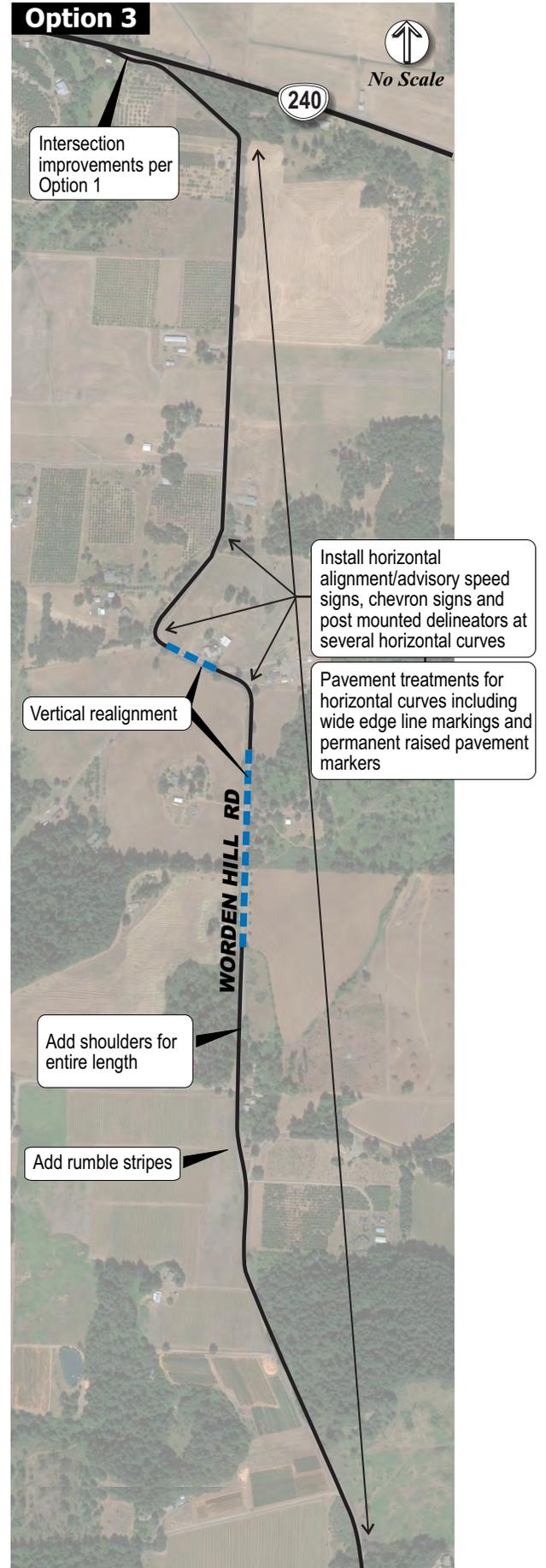
Benefits:

- Benefits of Option 2
- Improves roadway sight distance and safety by removing vertical curves at key locations
- Improves roadway safety by providing shoulders

Key Considerations/Notes:

- Same additional right-of-way requirement as Option 1 for OR 240/Worden Hill Rd. intersection improvement

Option 3





Location #3:

Worden Hill Rd. - OR 240 to North of Fairview Dr.

Sheet 4 of 5

Improvement Option 4

Description:

Same as Option 4, plus:

- Realignment of horizontal curves at:
 - M.P. 3.57
 - M.P. 3.70
 - M.P. 3.85
 - M.P. 4.33

Preliminary Cost Estimate: \$5.4 million

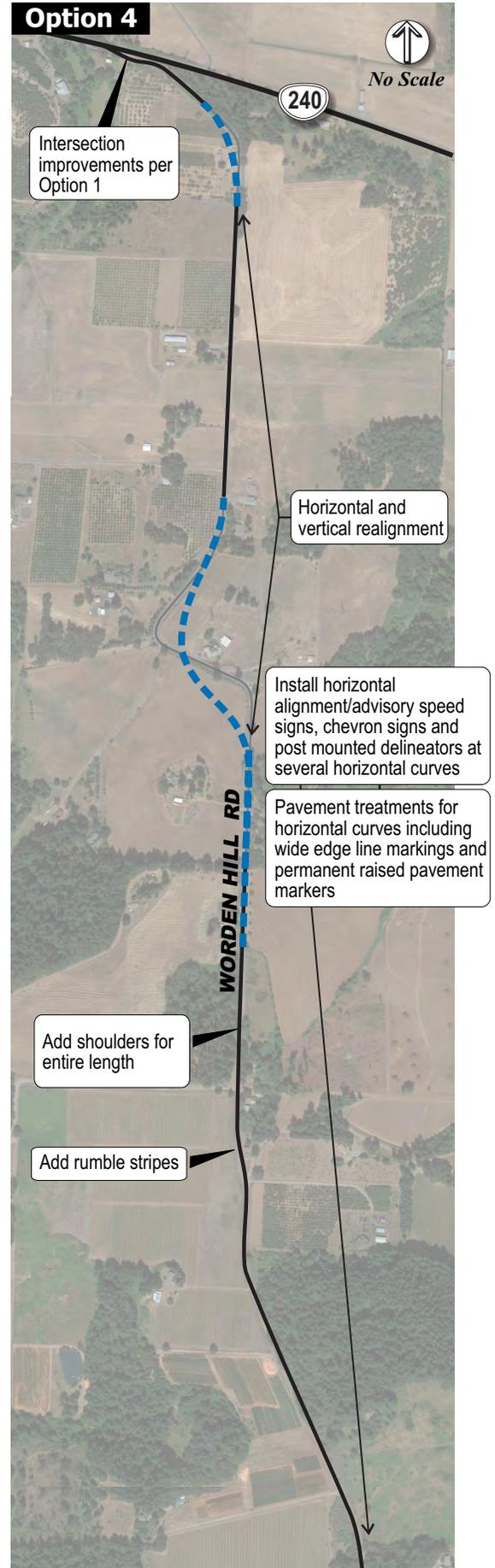
Benefits:

- Benefits of Option 3
- Improves roadway sight distance and safety by removing horizontal curves at key locations

Key Considerations/Notes:

- Right-of-way would be needed for horizontal curve realignment, in addition to that required for Option 1
- Signing/pavement markings not necessary because these needs would be addressed through realignment

Option 4





Location #3:

Worden Hill Rd. - OR 240 to North of Fairview Dr.

Sheet 5 of 5

Scoring

| Evaluation Criterion | Weight | Raw Score | | | |
|----------------------------------------------------------------|--------------|------------|------------|------------|------------|
| | | Option 1 | Option 2 | Option 3 | Option 4 |
| 1. Potential reduction in crash rate/severity | 20 | 1 | 4 | 6 | 8 |
| 2. Type/level of geometric improvement ¹ | 20 | 1 | 1 | 6 | 8 |
| 3. Potential reduction in traffic conflicts | 10 | 0 | 0 | 0 | 0 |
| 4. Minimization of construction cost | 10 | 6 | 6 | 3 | 2 |
| 5. Minimization of required right-of-way | 10 | 7 | 7 | 7 | 2 |
| 6. Potential reduction in congestion and delay ² | 5 | 0 | 0 | 0 | 0 |
| 7. Consistency with County/ODOT standards | 5 | 2 | 2 | 6 | 8 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 7 | 7 | 7 | 3 |
| 9. Improvement in access conditions ³ | 5 | 0 | 0 | 0 | 1 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 0 | 0 | 5 | 5 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 10 | 10 | 9 |
| | Total | 265 | 325 | 480 | 490 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

Location #4:
OR 99W/OR 18/McDougall Rd.

Sheet 1 of 1

■ **Needs:**

- Improved safety (top 5% SPIS location)
- Improved traffic operations
- Non-standard intersection geometry
- Shoulder width needs on both OR 99W and OR 18
- Intersection mobility (future need - $v/c=0.82$ for westbound left-turn)



Improvement Option 1

■ **Description:**

- Install two-lane roundabout
- Widen shoulders on OR 99W and OR 18 in vicinity of intersection

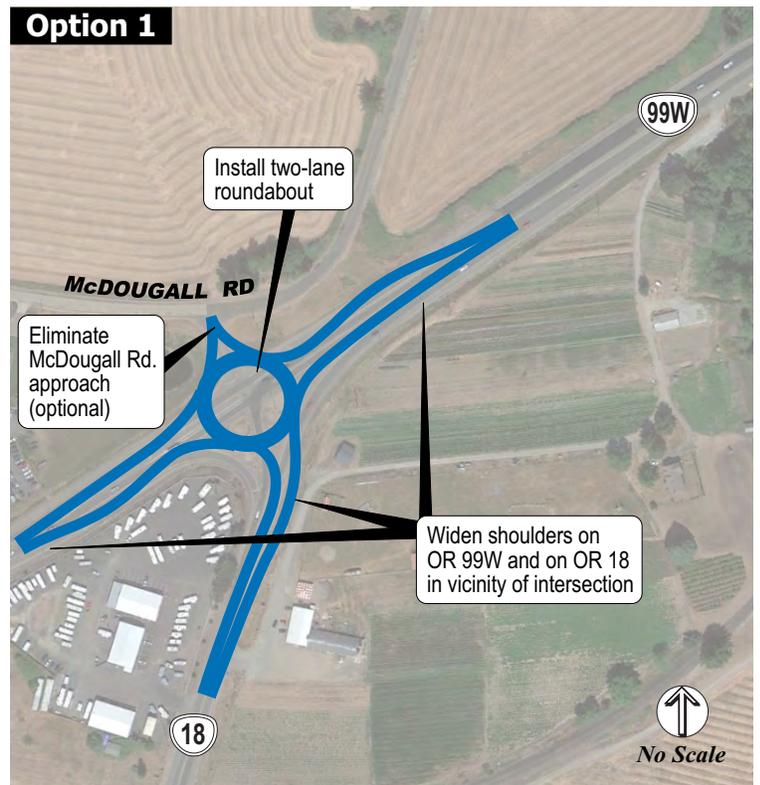
■ **Preliminary Cost Estimate:** \$9 million

■ **Benefits:**

- Improved capacity, traffic operations and safety at intersection
- Reduced speeds on OR 18 and OR 99W in vicinity of roundabout

■ **Key Considerations/Notes:**

- No additional right-of-way would be needed for this improvement
- Assumes eastbound and northbound right turns are included in roundabout
- Future intersection v/c ratio of 0.69 with or without McDougall Rd. leg would meet the OHP mobility standard (0.70) for year 2035



Location #5:

OR 18 - Ash Rd. to OR 154/Lafayette Hwy.

Sheet 1 of 3

■ Needs:

- Mobility need between Dayton UGB and OR 154 (future)
- Top 5% SPIS location between Ash Rd. and west of OR 154

At OR 18/Ash Rd.:

- Improved safety
- Top 5% SPIS location
- Ash Rd. intersects OR 18 at skewed angle
- Eastbound right-turn lane needed on OR 18
- Intersection mobility need (future)

At OR 18/OR 154/Lafayette Hwy.:

- Improved safety
- Shoulder width needs on OR 154 and Lafayette Hwy.
- Lane width need on OR 154 south of OR 18
- Existing and future intersection mobility needs
- Eastbound and westbound right-turn lanes needed (future needs)
- Preliminary signal warrants met for future (2035) conditions
- Pedestrian needs on Lafayette Hwy. north of OR 18
- Bicycle needs on OR 154/Lafayette Hwy. north and south of OR 18





Location #5:

OR 18 - Ash Rd. to OR 154/Lafayette Hwy.

Sheet 2 of 3

Improvement Option 1

Description:

OR 18/Ash Rd.:

- Close/vacate Ash Rd. north and south of OR 18

OR 18/OR 154/Lafayette Hwy.:

- Install two-lane roundabout
- Widen shoulders on Lafayette Hwy. and OR 154 north and south of intersection
- Widen lanes on Lafayette Hwy. and OR 154 north and south of intersection

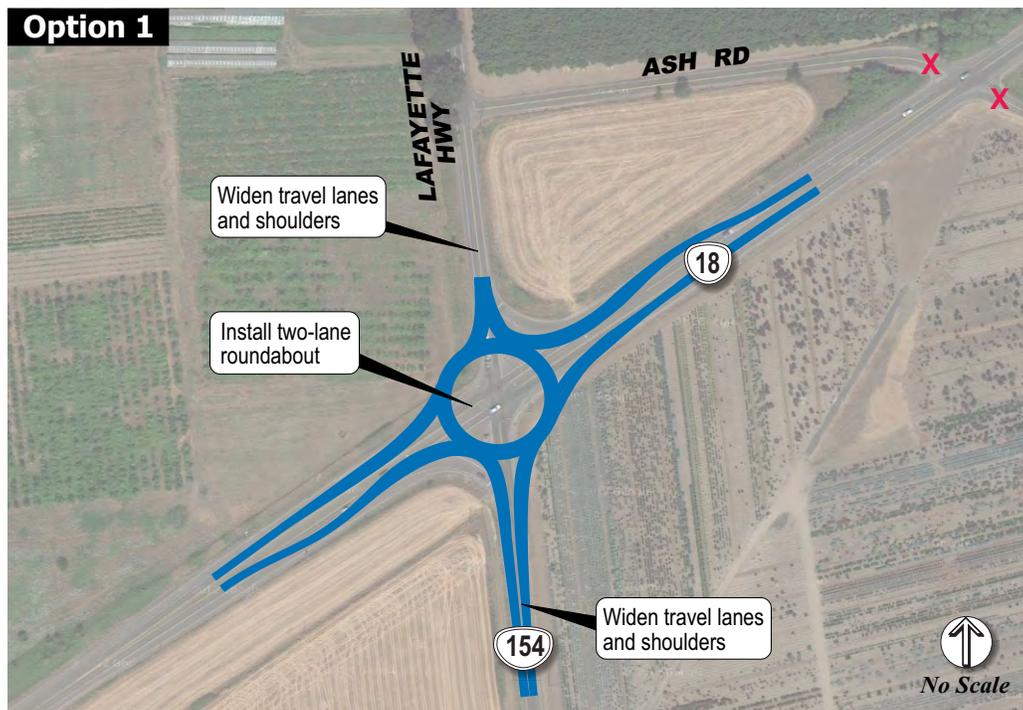
Preliminary Cost Estimate: \$8.00 million

Benefits:

- Improved safety at Ash Rd. due to elimination of crossing movements
- Improved traffic flow on OR 18 due to Ash Rd. closure
- Improved traffic operations and safety at OR 18/OR154/Lafayette Hwy. due to roundabout
- Improved pedestrian/bicycle environment due to widened travel lanes and shoulders on OR 154/Lafayette Hwy.

Key Considerations/Notes:

- No additional right-of-way would be needed for this improvement
- Assumes eastbound and westbound right turns are included in roundabout
- Future (2035) intersection v/c ratio of 0.57 at OR 18/OR 154/Lafayette Hwy. would meet the OHP mobility target





Location #5:

OR 18 - Ash Rd. to OR 154/Lafayette Hwy.

Sheet 3 of 3

Improvement Option 2

■ **Description:**

OR 18/Ash Rd:

- Close or vacate Ash Rd. north and south of OR 18

OR 18/OR 154/Lafayette Hwy.:

- Realign Lafayette Hwy. and OR 154 as offset “T” configuration

■ **Preliminary Cost Estimate:**

Option 2: \$5-8 million

■ **Benefits:**

- Improved safety at Ash Rd. due to elimination of crossing movements
- Improved traffic flow on OR 18 due to Ash Rd. closure
- Improved intersection operations at OR 18/Lafayette Hwy./OR 154 due to reduced conflicts at each intersection

■ **Key Considerations/Notes:**

- Additional right-of-way would likely be needed for this improvement
- Future (2035) intersection v/c ratio at OR 18/OR154/Lafayette Hwy. offset T intersections may not meet the OHP mobility target, but would be much closer than without improvement

Scoring

| Evaluation Criterion | Weight | Raw Score | |
|----------------------------------------------------------------|--------|------------|------------|
| | | Option 1 | Option 2 |
| 1. Potential reduction in crash rate/severity | 20 | 7 | 6 |
| 2. Type/level of geometric improvement ¹ | 20 | 5 | 3 |
| 3. Potential reduction in traffic conflicts | 10 | 7 | 5 |
| 4. Minimization of construction cost | 10 | 2 | 3 |
| 5. Minimization of required right-of-way | 10 | 10 | 5 |
| 6. Potential reduction in congestion and delay ² | 5 | 7 | 5 |
| 7. Consistency with County/ODOT standards | 5 | 5 | 8 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 10 | 5 |
| 9. Improvement in access conditions ³ | 5 | 7 | 7 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 3 | 1 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 10 |
| Total Weighted Score⁴ | | 640 | 490 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

⁴ Sum of raw score * weight for all criteria.

Location #6:
OR 18/Red Prairie Rd.

Sheet 1 of 1

Needs:

- Top 10% SPIS location (previously top 5%)
- Lane width need on Red Prairie Rd.
- Shoulder width needs on OR 18 and Red Prairie Rd.
- Difficult to access or cross OR 18

Improvement Option 1

Description:

- Install median on OR 18 with adequate width to allow two-stage crossing movements (see below)
- Widen lanes and shoulders on Red Prairie Rd. in vicinity of intersection

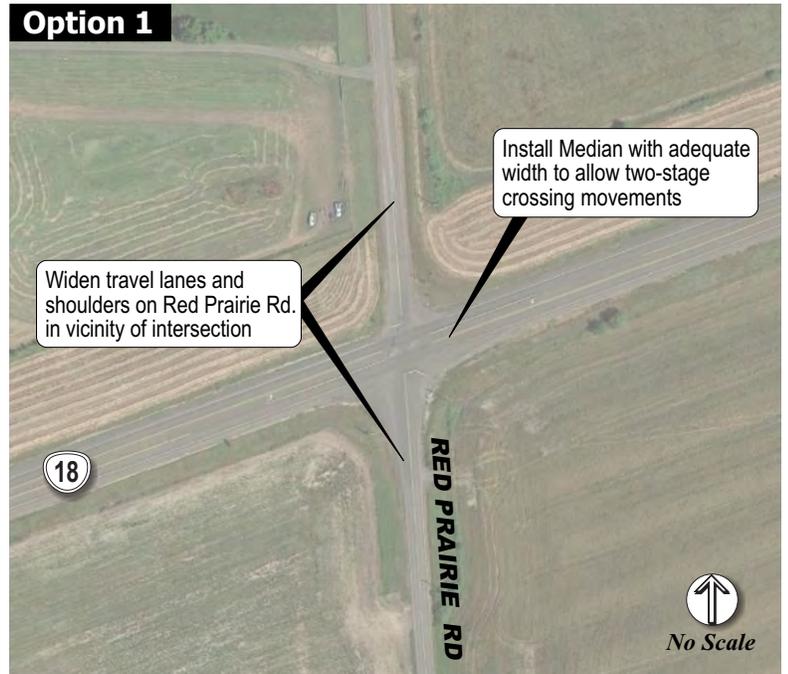
Preliminary Cost Estimate: \$7 million

Benefits:

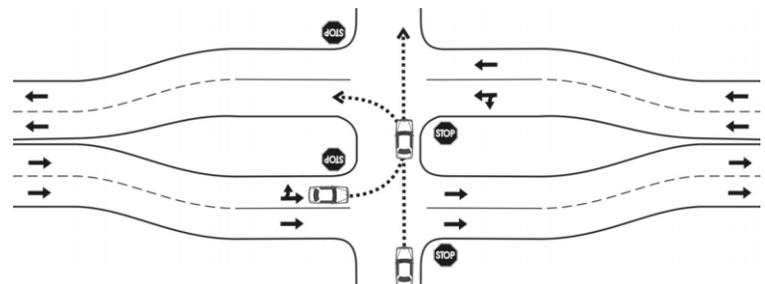
- Improved traffic operations and safety at intersection by providing refuge for vehicles crossing or turning onto/off of OR 18
- Improved pedestrian/bicycle environment with travel lane and shoulder widening on Red Prairie Rd.

Key Considerations/Notes:

- Additional right-of-way may be needed for this improvement and is included in the cost
- At least one-half mile of widened roadway on OR 18, including upgraded intersections and drainage and water quality facilities
- Flasher at intersection and signing and raised pavement markers in advance of intersection are already in place



Two-Stage Crossing With Median





**Location #7:
OR 47/OR 99W**

Sheet 1 of 3

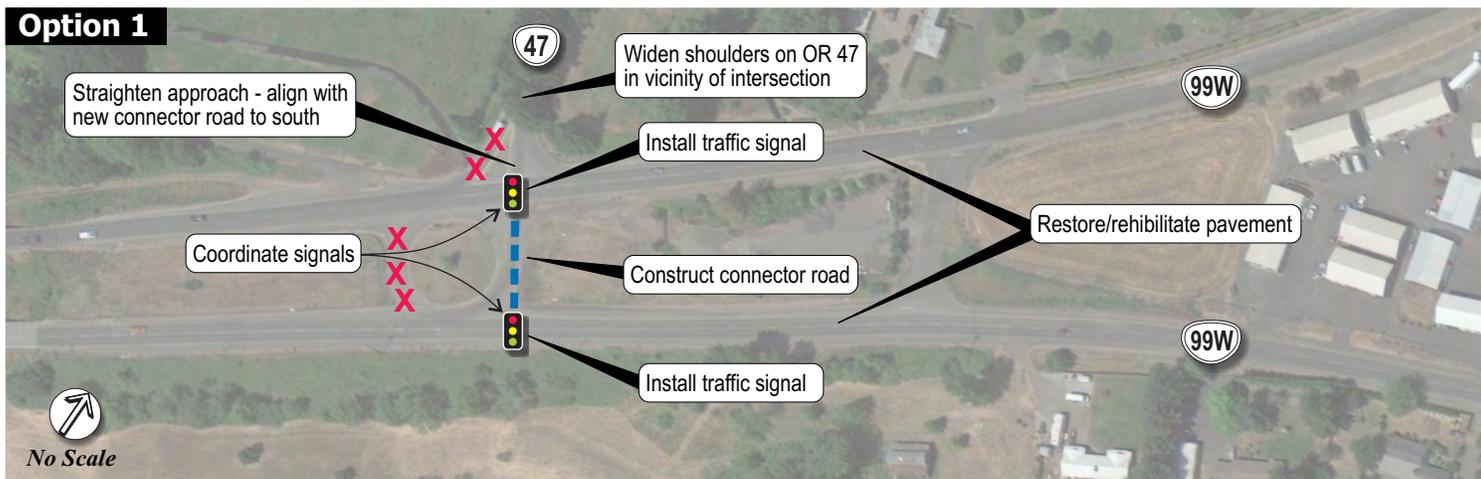
Needs:

- Previous top 5% SPIS location
- Eastbound left turn lane needed on OR 99W
- Westbound right turn lane needed on OR 99W
- Existing (v/c of 0.94) and future (v/c >1.0) mobility needs
- Shoulder width needs on OR 47 and OR 99W
- Poor pavement condition on OR 99W
- Existing and future eight-hour signal warrants met (70%)



Improvement Option 1

- Description:**
 - Install traffic signals on eastbound and westbound OR 99W
 - Construct single connector road between eastbound and westbound OR 99W
 - Align OR 47 with connector road
 - Restore/rehabilitate pavement on OR 99W in vicinity of intersection
 - Widen shoulders on OR 47 in vicinity of intersection
- Benefits:**
 - Improved mobility
 - Improved traffic operations and safety
 - Improved intersection visibility
 - Improved pedestrian/bicycle environment
- Key Considerations/Notes:**
 - Future intersection v/c = 0.67 at OR 47/OR 99W westbound; future v/c = 0.44 at OR 47/OR 99 eastbound, which both meet OHP mobility target of 0.70
- Preliminary Cost Estimate:** \$5 million





**Location #7:
OR 47/OR 99W**

Sheet 2 of 3

Improvement Option 2

Description:

- Merge eastbound and westbound roadways on OR 99W into single roadway
- Install traffic signal
- Install southbound right-turn lane
- Widen shoulders on OR 47 in vicinity of intersection

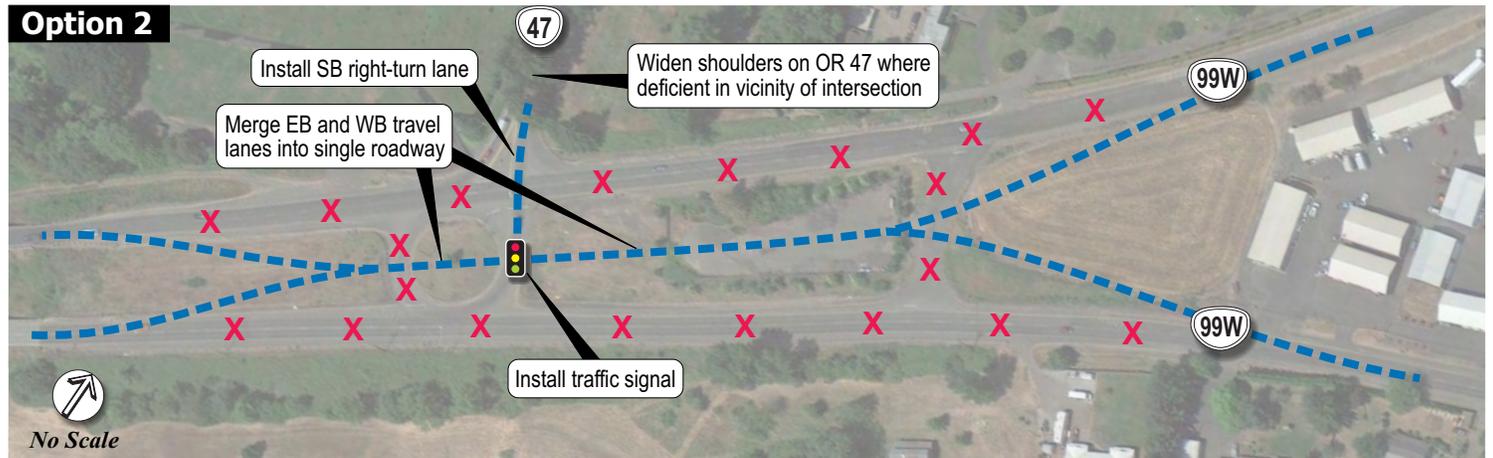
Preliminary Cost Estimate: \$5 million

Benefits:

- Improved mobility
- Improved traffic operations and safety
- Improved pedestrian/bicycle environment

Key Considerations/Notes:

- Additional right-of-way would likely be needed for this improvement
- Future intersection v/c = 0.70, which meets 0.70 OHP mobility target



Improvement Option 3

Description:

- Install multi-lane roundabout
- Merge eastbound and westbound roadways on OR 99W into single roadway
- Widen shoulders on OR 47 in vicinity of intersection

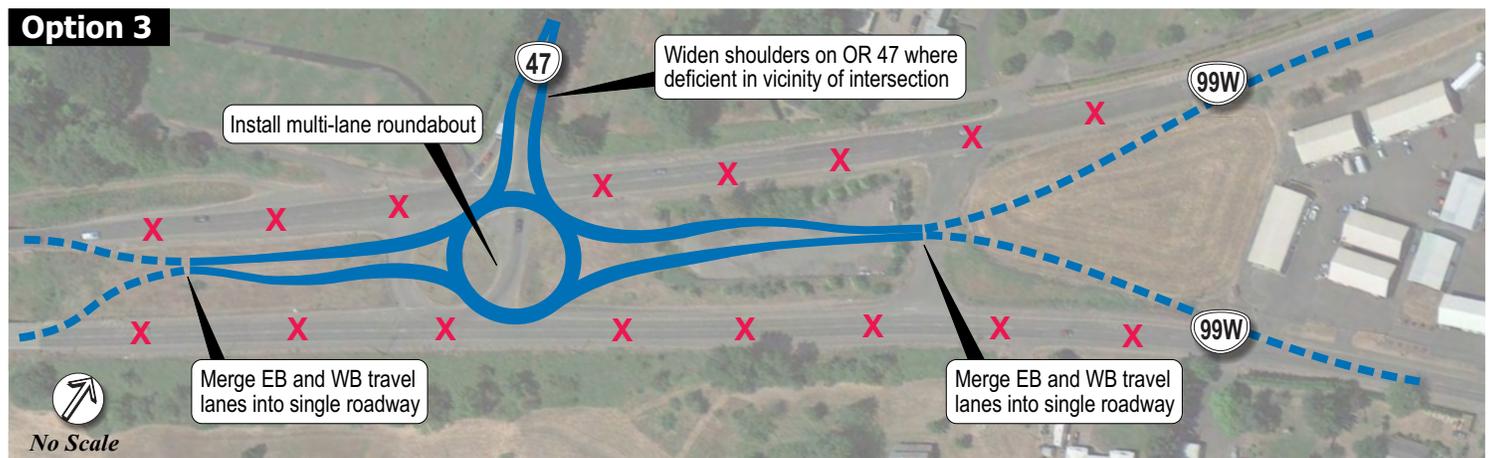
Preliminary Cost Estimate: \$6 million

Benefits:

- Improved mobility
- Improved traffic operations and safety
- Increased intersection visibility

Key Considerations/Notes:

- Additional right-of-way would likely be needed for this improvement
- Future intersection v/c = 0.68 which meets 0.70 OHP mobility target





**Location #7:
OR 47/OR 99W**

Sheet 3 of 3

Scoring

| Evaluation Criterion | Weight | Raw Score | | |
|----------------------------------------------------------------|--------|------------|------------|------------|
| | | Option 1 | Option 2 | Option 3 |
| 1. Potential reduction in crash rate/severity | 20 | 6 | 8 | 10 |
| 2. Type/level of geometric improvement ¹ | 20 | 8 | 8 | 9 |
| 3. Potential reduction in traffic conflicts | 10 | 6 | 9 | 9 |
| 4. Minimization of construction cost | 10 | 5 | 2 | 2 |
| 5. Minimization of required right-of-way | 10 | 10 | 5 | 5 |
| 6. Potential reduction in congestion and delay ² | 5 | 9 | 8 | 8 |
| 7. Consistency with County/ODOT standards | 5 | 3 | 5 | 5 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 10 | 8 | 8 |
| 9. Improvement in access conditions ³ | 5 | 0 | 0 | 0 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 4 | 4 | 3 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 10 | 10 |
| Total Weighted Score⁴ | | 670 | 655 | 710 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

⁴ Sum of raw score * weight for all criteria.



Location #8:
OR 99W - Dundee to OR 18 Junction
Sheet 1 of 1

■ **Needs:**

- Existing (v/c = 0.89) and future (v/c > 1.0) mobility needs

Improvement Option 1

■ **Description:**

- Widen OR 99W to four lanes with median between Newberg-Dundee Bypass junction and OR 18
- Widen shoulders

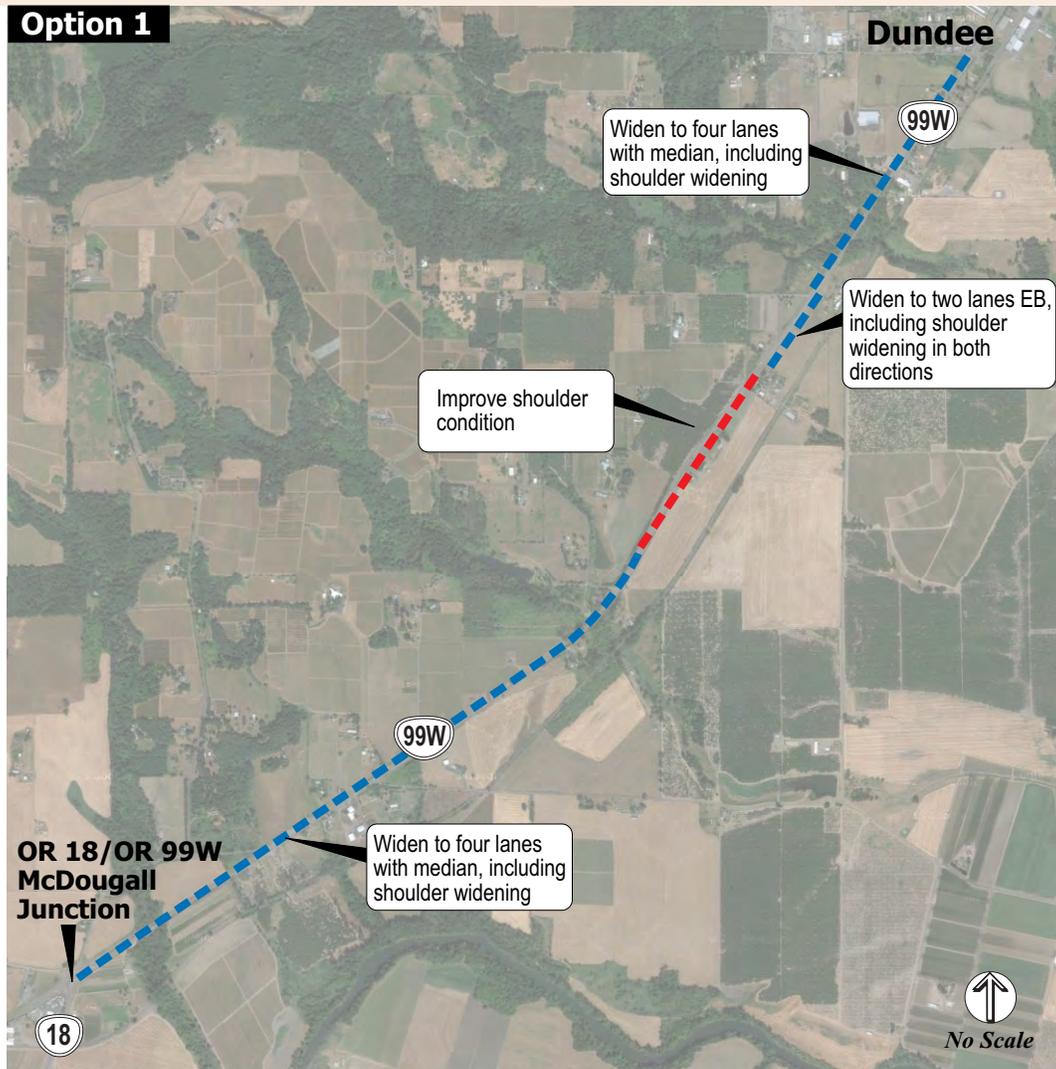
■ **Preliminary Cost Estimate:** \$40-50 million

■ **Benefits:**

- Improved mobility (v/c < 0.70)
- Improved traffic operations and safety
- Improved pedestrian/bicycle environment

■ **Key Considerations/Notes:**

- Additional right-of-way would not be needed for this improvement
- Median openings should be at least 25 feet wide for turning and crossing vehicles



Location #9:
OR 153/Hopewell Rd./Webfoot Rd.

Sheet 1 of 2

Needs:

- High speeds on OR 153
- Sight distance needs to east from northbound and southbound approaches of Hopewell Rd./Webfoot Rd.
- Eastbound right-turn lane needed on OR 153
- Shoulder widening needed on OR 153 and Hopewell Rd.
- Lane widening needed to west on OR 153

Improvement Option 1

Description:

- Remove vegetation on east side of intersection on north and south sides of OR 153
- Install warning beacon at Hopewell Rd./Webfoot Rd.

Preliminary Cost Estimate: \$110,000

Benefits:

- Improved intersection visibility
- Improved sight distance to east from Hopewell Rd. and Webfoot Rd.

Key Considerations/Notes:

- Additional right-of-way would not be needed for this improvement



Improvement Option 2

Description:

- Same as Option 1, plus:
 - Widen travel lanes on OR 153 west of intersection
 - Widen shoulders on OR 153 east of intersection and Hopewell Rd. in vicinity of intersection
 - Consider eastbound right turn lane on OR 153

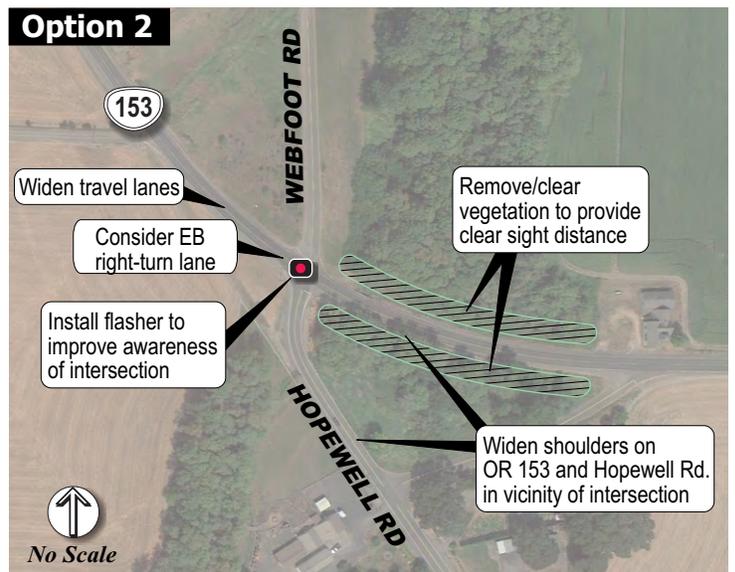
Preliminary Cost Estimate: \$1 million

Benefits:

- Benefits of Option 1
- Improved traffic operations and safety
- Improved pedestrian/bicycle environment

Key Considerations/Notes:

- Additional right-of-way would not be needed for this improvement





Location #9:
OR 153/Hopewell Rd./Webfoot Rd.

Sheet 2 of 2

Scoring

| Evaluation Criterion | Weight | Raw Score | |
|----------------------------------------------------------------|--------|------------|------------|
| | | Option 1 | Option 2 |
| 1. Potential reduction in crash rate/severity | 20 | 5 | 8 |
| 2. Type/level of geometric improvement ¹ | 20 | 0 | 7 |
| 3. Potential reduction in traffic conflicts | 10 | 0 | 5 |
| 4. Minimization of construction cost | 10 | 10 | 5 |
| 5. Minimization of required right-of-way | 10 | 10 | 10 |
| 6. Potential reduction in congestion and delay ² | 5 | 0 | 0 |
| 7. Consistency with County/ODOT standards | 5 | 10 | 10 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 10 | 10 |
| 9. Improvement in access conditions ³ | 5 | 0 | 0 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 0 | 2 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 10 |
| Total Weighted Score⁴ | | 450 | 660 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

⁴ Sum of raw score * weight for all criteria.

Location #10:
OR 221/OR 153

Sheet 1 of 1

■ **Needs:**

- Previous top 10% SPIS location
- Free northbound left-turn and free eastbound right-turn movements are confusing to drivers unfamiliar with the intersection
- Sharp angles of connector roads from OR 153 to OR 221 require drivers to turn heads sharply to see
- Northbound left turn lane needed on OR 221
- Shoulder width needs on OR 221 and OR 153
- Lane width needs on OR 221

Improvement Option 1

■ **Description:**

- Vacate south-to-west and north-to-west connections to create standard intersection – eliminates safety concern and skew effect for vehicles merging between OR 153 and OR 221
- Install northbound left turn lane on OR 221
- Widen travel lanes on OR 221 in vicinity of intersection

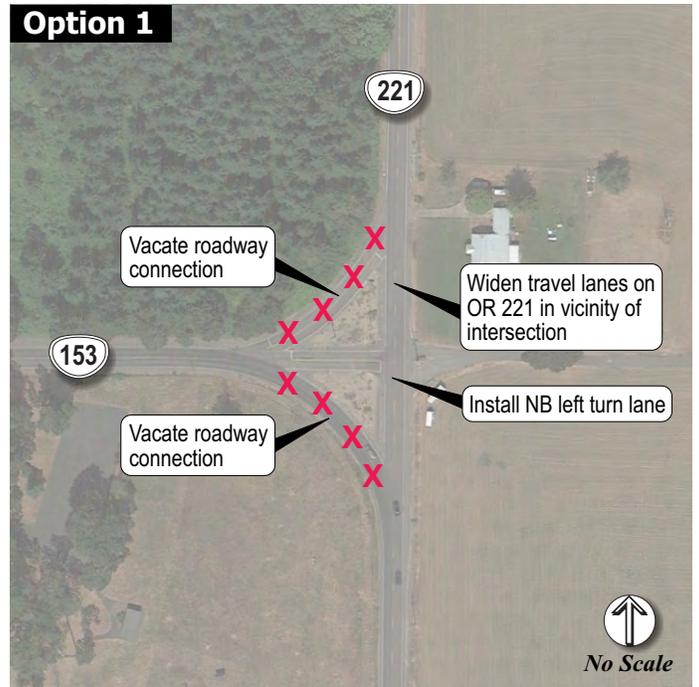
■ **Preliminary Cost Estimate:** \$1.5 million

■ **Benefits:**

- Improved safety - conversion to standard intersection with northbound left turn lane addresses rear-end and turning crash patterns at intersection
- Eliminates potential driver confusion about non-standard intersection geometry

■ **Key Considerations/Notes:**

- Additional right-of-way would not be needed for this improvement



Location #11:
OR 233/Starr Quarry Rd.

Sheet 1 of 1

Needs:

- Previous top 10% SPIS location
- Shoulder width need on OR 233
- Lane width need on OR 233
- Poor intersection configuration – driver confusion in southbound direction
- Substandard curve on OR 233



Improvement Option 1

Description:

- Realign OR 233 so that curve meets standard
- Realign Starr Quarry Rd. to "T" into OR 233
- Install southbound left turn lane on OR 233
- Install guide signs on southbound OR 233
- Widen travel lanes and shoulders on OR 233 in vicinity of intersection

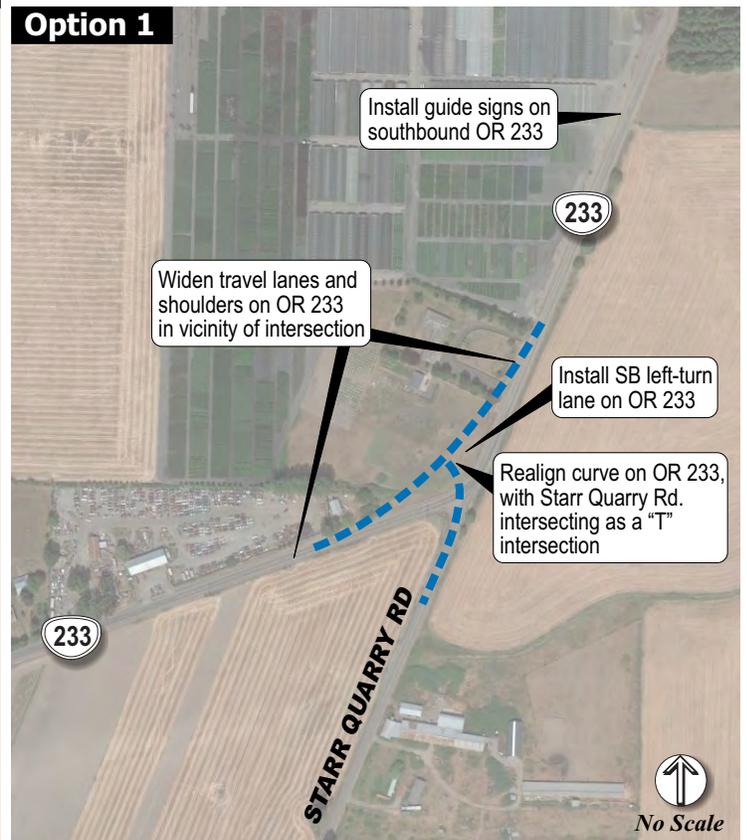
Preliminary Cost Estimate: \$1.5 million

Benefits:

- Improved traffic operations and safety with realignment and left turn lane
- Improved intersection visibility/awareness
- Addresses rear-end, fixed object and overturn crash patterns at intersection

Key Considerations/Notes:

- Additional right-of-way would likely be needed for this improvement



Location #12:
Bald Peak Rd./Mountain Top Rd.

Sheet 1 of 1

■ **Needs:**

- Located within segment of Bald Peak Rd. having crash rate greater than 200% of statewide average crash rate
- Possible sight distance need along eastbound Bald Peak Rd.
- Skewed intersection
- Lane and shoulder width needs on Bald Peak Rd.



Improvement Option 1

■ **Description:**

- Realign Ornduff Rd. and Mountain Top Rd. to form single intersection north of Bald Peak Rd.
- Connect new intersection with Bald Peak Rd.
- Reduce vertical curve on Bald Peak Rd. at existing intersection

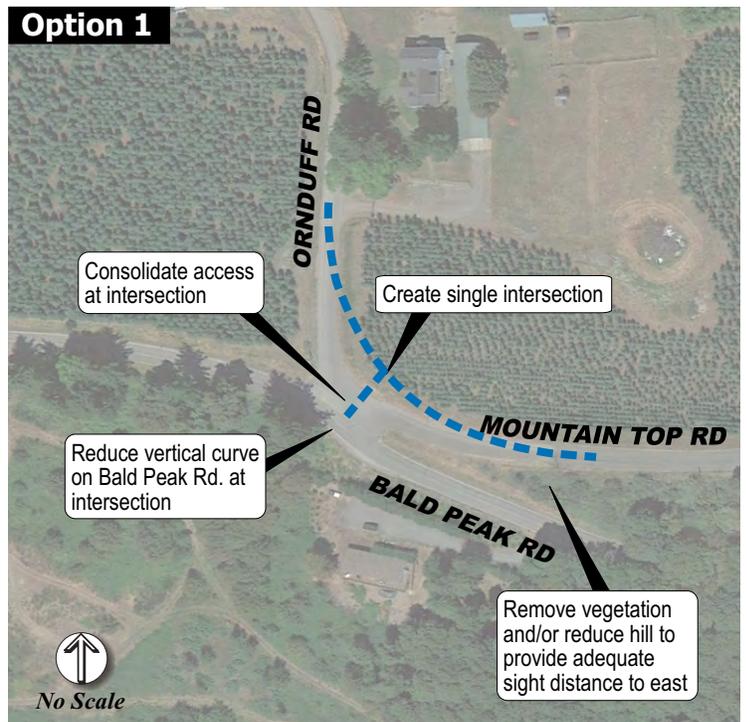
■ **Preliminary Cost Estimate:** \$620,000

■ **Benefits:**

- Improved intersection alignment
- Improved intersection sight distance

■ **Key Considerations/Notes:**

- Additional right-of-way may be needed for this improvement
- Roughly 30 feet of storage would be provided between Bald Peak Rd. and the new Ornduff Rd./Mountain Top Rd. intersection
- May need to remove vegetation or reduce hill below Mountain Top Rd. to increase intersection sight distance
- Lane and shoulder widening on Bald Peak Rd. would be cost-prohibitive due to grade below Bald Peak Rd.





Location #13:
North Valley Rd./Chehalem Dr.

Sheet 1 of 2

Needs:

- Sight distance need to west from northbound and southbound approaches of Chehalem Dr.
- Vertical curves on North Valley Rd. west of Chehalem Dr.
- Lane width needs on North Valley Rd. and Chehalem Dr. south of North Valley Rd.
- North and south approaches of Chehalem Dr. are offset

Improvement Option 1

Description:

- Reconstruct North Valley Rd. for approximately 500 feet west of Chehalem Dr. to remove vertical curve
- Trim/remove vegetation to west on both north and south sides of North Valley Rd. to improve sight distance from Chehalem Dr. approaches

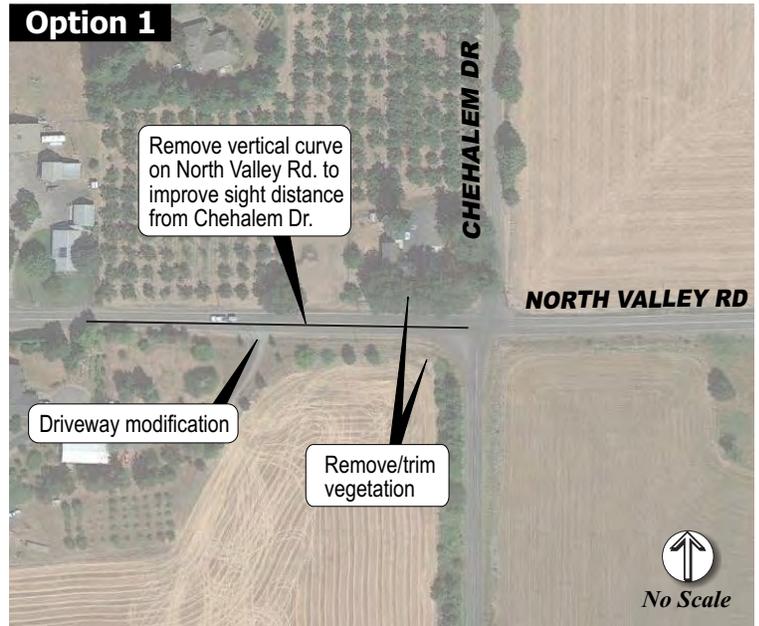
Preliminary Cost Estimate: \$365,000

Benefits:

- Improved intersection sight distance

Key Considerations/Notes:

- Additional right-of-way would not be needed for this improvement
- One driveway modification would be required with vertical realignment of North Valley Rd.



Improvement Option 2

Description:

- Same as Option 1, plus:
 - Realign south leg of Chehalem Dr. to eliminate offset

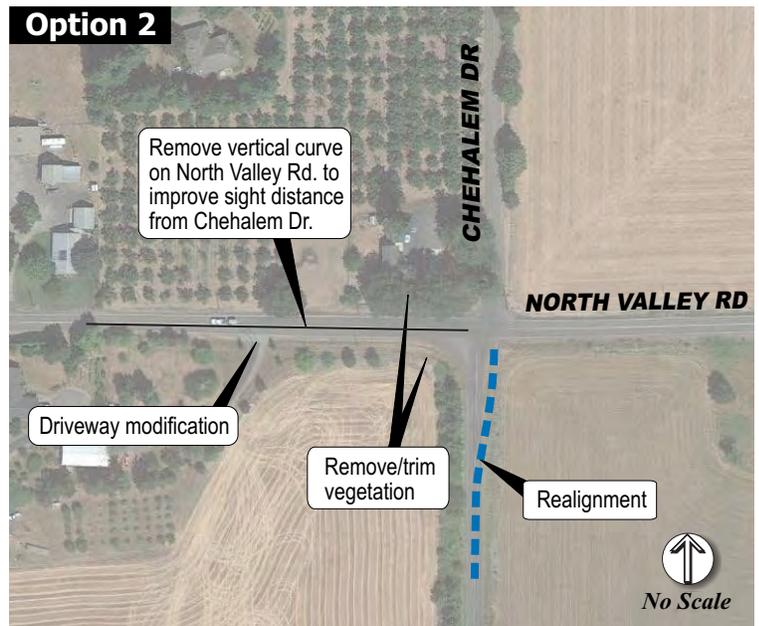
Preliminary Cost Estimate: \$525,000

Benefits:

- Improved intersection sight distance
- Improved intersection alignment

Key Considerations/Notes:

- Additional right-of-way may be needed for this improvement
- One driveway modification would be required with vertical realignment of North Valley Rd.





Location #13:
North Valley Rd./Chehalem Dr.

Sheet 2 of 2

Scoring

| Evaluation Criterion | Weight | Raw Score | |
|----------------------------------------------------------------|--------|------------|------------|
| | | Option 1 | Option 2 |
| 1. Potential reduction in crash rate/severity | 20 | 5 | 7 |
| 2. Type/level of geometric improvement ¹ | 20 | 6 | 8 |
| 3. Potential reduction in traffic conflicts | 10 | 0 | 0 |
| 4. Minimization of construction cost | 10 | 7 | 5 |
| 5. Minimization of required right-of-way | 10 | 10 | 6 |
| 6. Potential reduction in congestion and delay ² | 5 | 0 | 0 |
| 7. Consistency with County/ODOT standards | 5 | 10 | 10 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 10 | 6 |
| 9. Improvement in access conditions ³ | 5 | 1 | 1 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 0 | 0 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 10 |
| Total Weighted Score⁴ | | 545 | 545 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

⁴ Sum of raw score * weight for all criteria.

Location #14:
Bell Rd./Aspen Way
 Sheet 1 of 1

■ **Needs:**

- Sight distance need to west from northbound Aspen Way
- Approach grade on Aspen Way greater than 3%
- Lane and shoulder width needs on Bell Rd.

Improvement Option 1

■ **Description:**

- Reduce vertical curve to west of intersection to increase sight distance
- Widen travel lanes and shoulders on Bell Rd. in vicinity of intersection
- Replace guardrail on SW corner of intersection
- Install new guardrail on SE corner of intersection

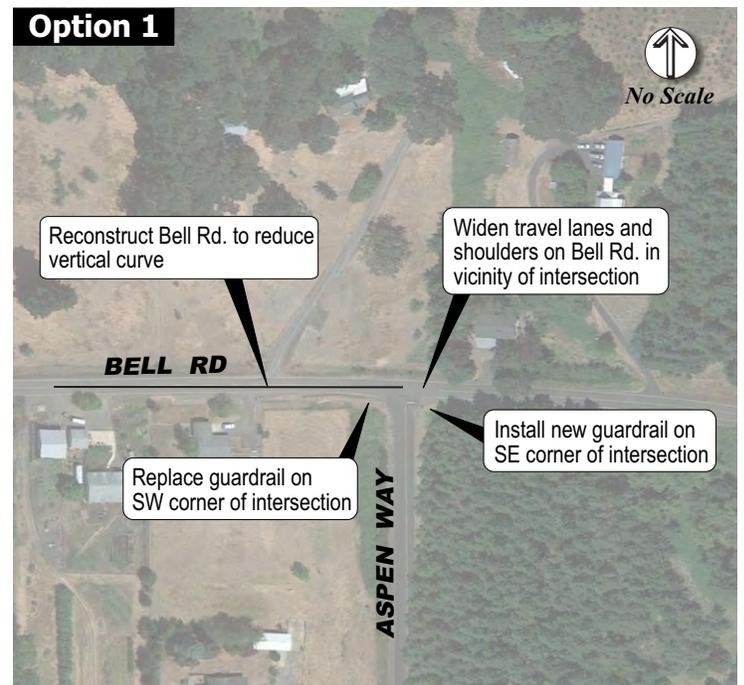
■ **Preliminary Cost Estimate:** \$710,000

■ **Benefits:**

- Improved safety due to increased sight distance, roadway widening and guardrail
- Improved pedestrian/bicycle environment

■ **Key Considerations/Notes:**

- Considered raising grade on Aspen Way to meet approach grade standard and increase sight distance - determined to be cost-prohibitive
- Three driveway modifications would be required with vertical realignment of Bell Rd.



Location #15:
Bell Rd./Zimri Dr.

Sheet 1 of 1

■ **Needs:**

- Sight distance need to west from northbound Zimri Dr.
- Approach grade on Zimri Dr. greater than 3%
- Shoulder width needs on Zimri Dr. and Bell Rd. east of Zimri Dr.
- Lane width needs on Bell Rd. and Zimri Dr.

Improvement Option 1

■ **Description:**

- Remove/relocate sight obstructions on southwest corner of intersection (e.g. utility box, mail boxes, fence, trees, etc.) to improve sight distance to west

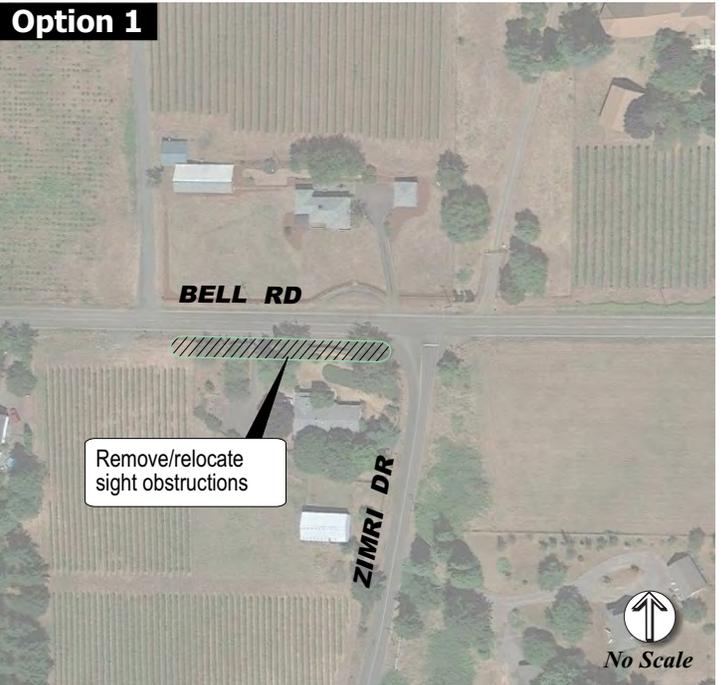
■ **Preliminary Cost Estimate:** \$20,000

■ **Benefits:**

- Improved intersection visibility
- Improved sight distance to west from Zimri Dr.

■ **Key Considerations/Notes:**

- Considered raising grade on Zimri Dr. to meet approach grade standard and increase sight distance - determined to be cost prohibitive



Location #16:
Bell Rd./Springbrook Rd.

Sheet 1 of 1

Needs:

- Located within segment of Springbrook Rd. having crash rate greater than 200% of statewide average
- Sight distance needs to east and west from northbound Springbrook Rd.
- Horizontal curves on Bell Rd. limit sight distance from Bell Rd. and Springbrook Rd.
- Shoulder width and lane width needs on Bell Rd.



Improvement Option 1

Description:

- Convert intersection to three-way stop
- Remove vegetation on southeast corner of intersection to increase sight distance from Bell Rd. and Springbrook Rd.
- Relocate utility pole on north side of Bell Rd. to improve clear zone safety
- Install "Stop Ahead" advance warning signs with beacons on Bell Rd.
- Install warning beacon at intersection

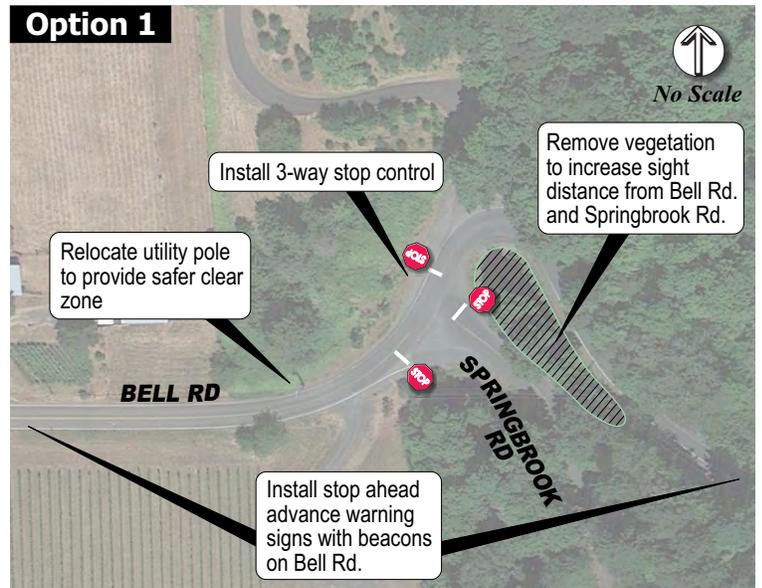
Preliminary Cost Estimate: \$130,000

Benefits:

- Improved intersection visibility
- Improved sight distance to east from intersection
- Safer clear zone on Bell Rd.

Key Considerations/Notes:

- Additional right-of-way would not be needed for this improvement
- Realignment of horizontal curves on Bell Rd. would be cost-prohibitive
- Topography limits range of improvement options at this location





**Location #17:
OR 99W -Newberg to Dundee**

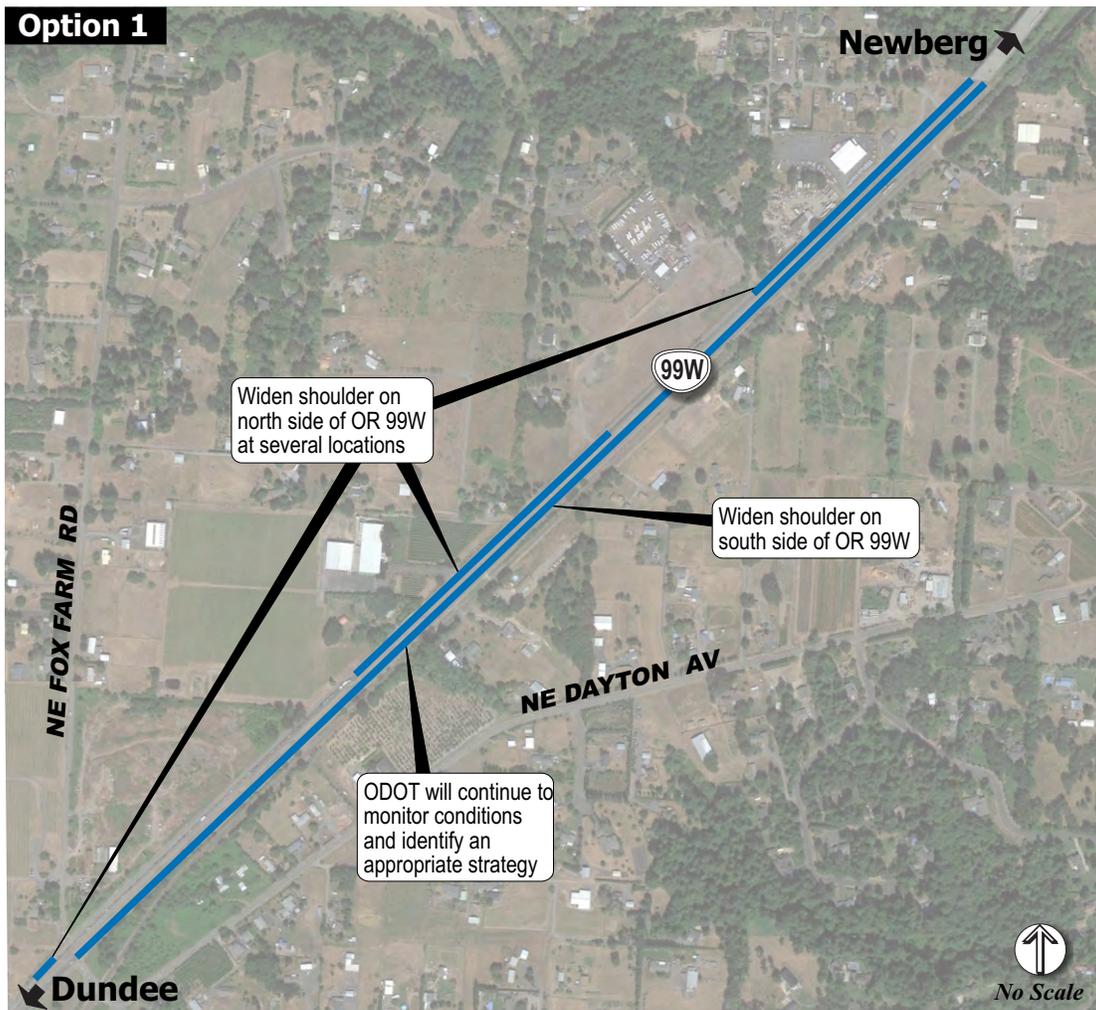
Sheet 1 of 1

Needs:

- One Top 5% and one previous top 5% SPIS location within segment
- Existing mobility need (v/c >1.0)
- Shoulder width need
- Merge problem in westbound direction 0.4 miles east of Fox Farm Rd. where lanes drop from two to one

Improvement Option 1

| | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Description:</p> <ul style="list-style-type: none"> • Widen shoulders on OR 99W where deficient • ODOT will monitor lane reduction area and identify appropriate improvement measure as necessary <p>Preliminary Cost Estimate: \$3 million</p> <p>Benefits:</p> <ul style="list-style-type: none"> • Improved traffic operations and safety • Improved pedestrian/bicycle environment | <p>Key Considerations/Notes:</p> <ul style="list-style-type: none"> • Includes associated drainage, water quality/ driveway work, some right-of-way • Assumes shoulder widening would be to ODOT Highway Design Manual (HDM) standards (8 feet), a design exception could be requested to build to a minimum design of 5-6 feet for a lower cost • Existing mobility need will be addressed with construction of Newberg-Dundee Bypass (Future No Build v/c of 0.63) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



Location #18:
OR 233/Cruickshank Rd.
 Sheet 1 of 3

■ **Needs:**

- Improved safety
- Confusing intersection due to three conflict locations
- Lane and shoulder width needs on OR 233



Improvement Option 1

■ **Description:**

- Remove connector roads
- Realign Cruickshank Rd. to meet OR 233 in a "T" intersection to south of existing home
- Consider northbound left-turn lane and southbound right-turn lane at new intersection
- Widen travel lanes and shoulders on OR 233 in vicinity of intersection

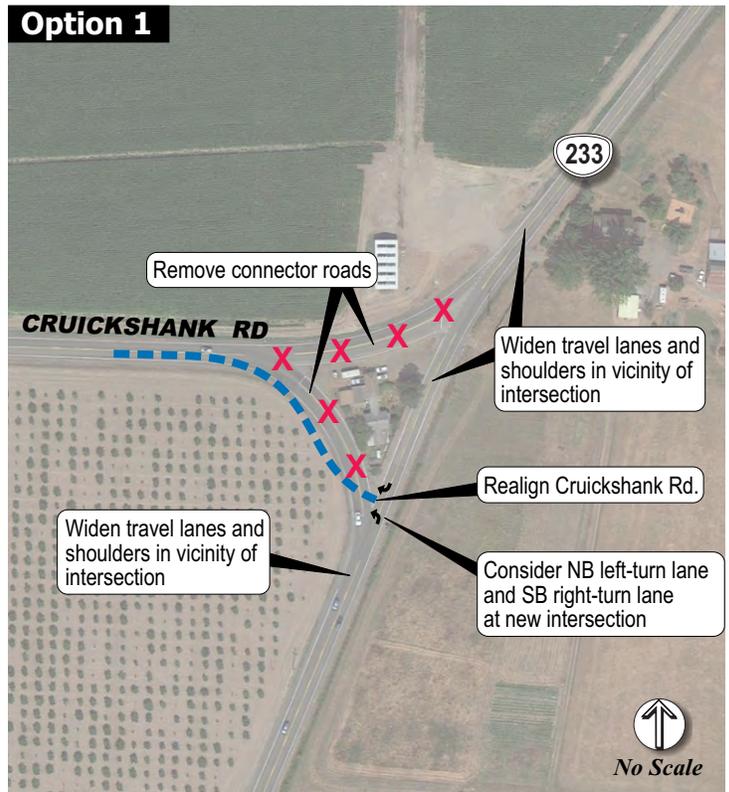
■ **Preliminary Cost Estimate:** \$1 million

■ **Benefits:**

- Improved intersection sight distance
- Removes "skew" angles at connector road intersections
- Improved traffic operations and safety

■ **Key Considerations/Notes:**

- Additional right-of-way may be needed for this improvement



Location #18:
OR 233/Cruickshank Rd.
 Sheet 2 of 3

Improvement Option 2

Description:

- Remove connector roads
- Realign Cruickshank Rd. to meet OR 233 in a "T" intersection, removing existing home
- Consider northbound left-turn lane and southbound right-turn lane at new intersection
- Widen travel lanes and shoulders on OR 233 in vicinity of intersection

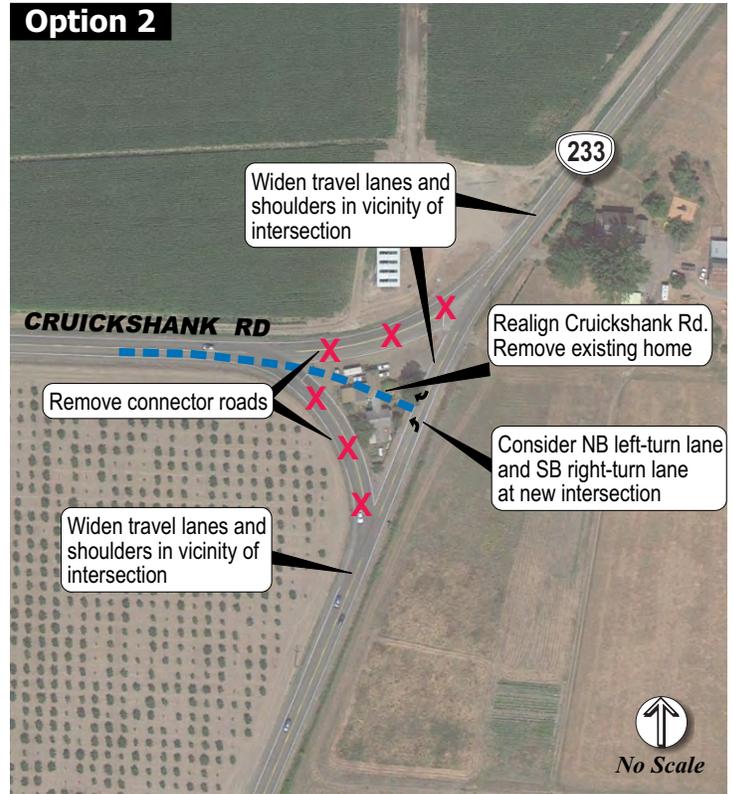
Preliminary Cost Estimate: \$2 million

Benefits:

- Improved intersection sight distance
- Removes "skew" angles at connector road intersections
- Improved traffic operations and safety

Key Considerations/Notes:

- Additional right-of-way would be needed for this improvement



Improvement Option 3

Description:

- Reconstruct intersection as roundabout, removing existing home

Preliminary Cost Estimate: \$3.5 million

Benefits:

- Eliminates intersection sight distance needs
- Removes "skew" angles at intersection
- Improved traffic operations and safety

Key Considerations/Notes:

- Additional right-of-way would be needed for this improvement





Location #18:
OR 233/Cruickshank Rd.
Sheet 3 of 3

Scoring

| Evaluation Criterion | Weight | Raw Score | | |
|----------------------------------------------------------------|--------|------------|------------|------------|
| | | Option 1 | Option 2 | Option 3 |
| 1. Potential reduction in crash rate/severity | 20 | 7 | 7 | 9 |
| 2. Type/level of geometric improvement ¹ | 20 | 7 | 7 | 9 |
| 3. Potential reduction in traffic conflicts | 10 | 8 | 8 | 9 |
| 4. Minimization of construction cost | 10 | 7 | 6 | 3 |
| 5. Minimization of required right-of-way | 10 | 8 | 5 | 5 |
| 6. Potential reduction in congestion and delay ² | 5 | 0 | 0 | 0 |
| 7. Consistency with County/ODOT standards | 5 | 10 | 10 | 6 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 7 | 3 | 3 |
| 9. Improvement in access conditions ³ | 5 | 2 | 4 | 4 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 2 | 2 | 2 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 10 | 10 |
| Total | | 665 | 615 | 655 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

Location #19:
OR 18/Gopher Valley Rd.

Sheet 1 of 1

■ **Needs:**

- Confusing geometrics - driveways on south side of OR 18 do not align with Gopher Valley Rd.
- Lane width need on Gopher Valley Rd.
- Shoulder width need on OR 18

Improvement Option 1

■ **Description:**

- County and ODOT to work with property owners to consolidate access over time
- One or more driveway closures likely
- One or more driveway improvements likely
- Potential connecting access roadways between properties

■ **Preliminary Cost Estimate:** Unavailable

■ **Benefits:**

- Improved traffic operations and safety

■ **Key Considerations/Notes:**

- Easements may be needed between properties



Location #20:
OR 99W/Durham Ln.

Sheet 1 of 1

Needs:

- Previous top 5% SPIS location
- Shoulder width need on OR 99W



Improvement Option 1

Description:

- Install overhead flashing beacon at intersection
- Remove/relocate sight distance obstructions on OR 99W both north and south of Durham Ln. intersection
- Relocate stop sign on Durham Ln. as close to intersection as possible
- Consider northbound left-turn lane on OR 99W
- Consider southbound right-turn lane on OR 99W
- Move existing intersection warning signs to within 225 feet of intersection, per MUTCD

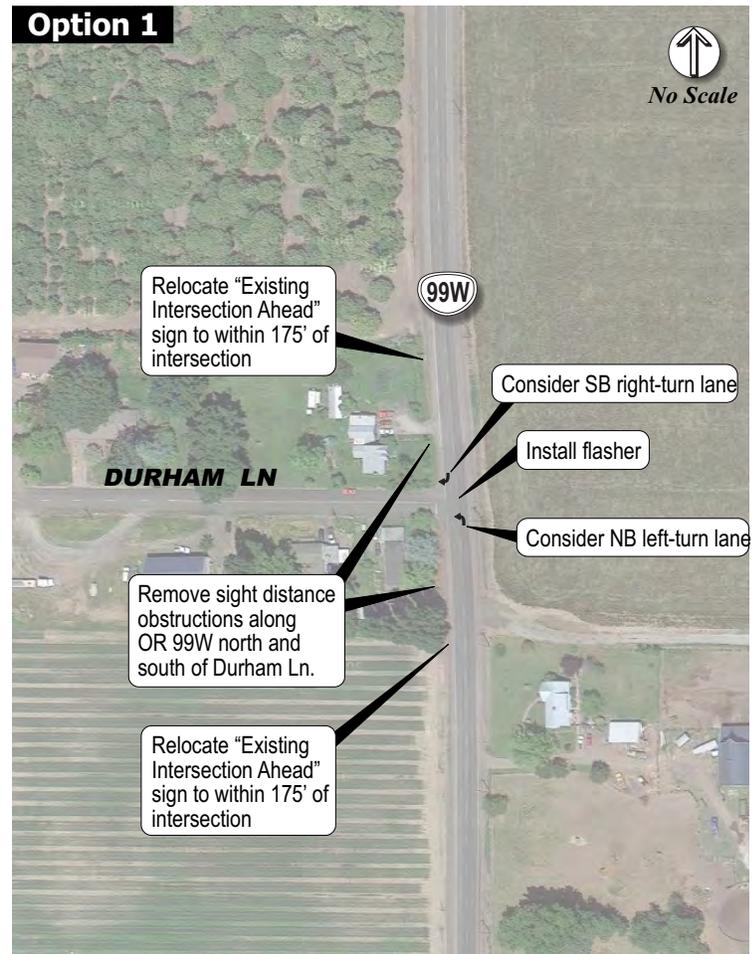
Preliminary Cost Estimate: \$1 million

Benefits:

- Improved traffic operations and safety
- Improved intersection visibility
- Improved pedestrian/bicycle environment

Key Considerations/Notes:

- Current locations of intersection warning signs are roughly 600 feet from intersection
- Current stop sign location on Durham Ln. is roughly 40 feet from intersection
- Additional right-of-way would not be needed for this improvement





Location #21:
Fox Farm Rd./Hidden Springs Rd.
Sheet 1 of 2

■ **Needs:**

- Safety (fatal crash)
- Horizontal and vertical curves limit sight distance from Fox Farm Rd.
- Large pavement area at intersection encourages high speeds
- Poor sight distance from eastbound approach of Hidden Springs Rd.
- Substandard curves on Fox Farm Rd.

Improvement Option 1

■ **Description:**

- Create "T" intersection
- Relocate stop control at new intersection location

■ **Preliminary Cost Estimate:** \$10,000

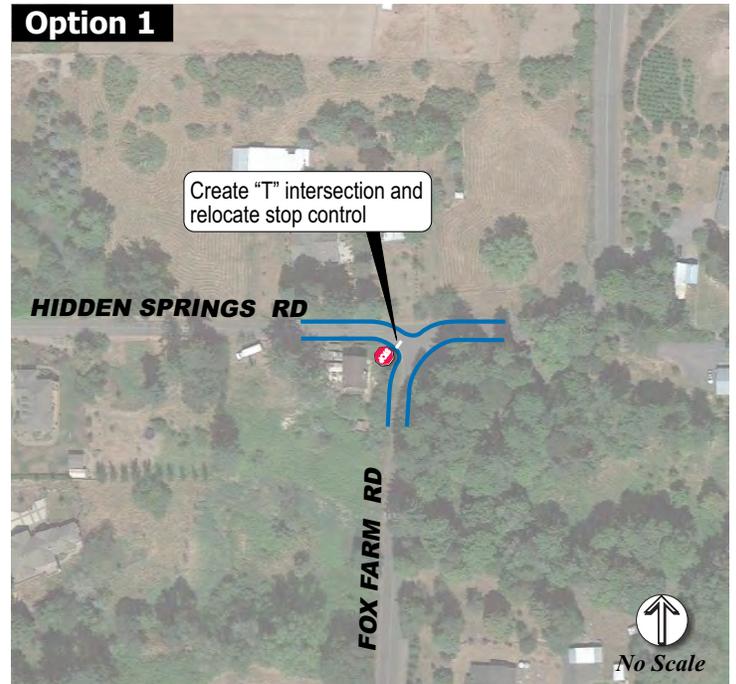
■ **Benefits:**

- Improved traffic operations and safety
- Encourages slower speeds on Fox Farm Rd. due to reduced pavement area and better delineated intersection
- Improved sight distance from eastbound approach of Hidden Springs Rd.

■ **Key Considerations/Notes:**

- Additional right-of-way would not be needed for this improvement

Option 1



Improvement Option 2

■ **Description:**

- Realign Fox Farm Rd. to improve radii on "S" curves
- Realign Hidden Springs Rd. as "T" intersection at Fox Farm Rd.

■ **Preliminary Cost Estimate:** \$415,000

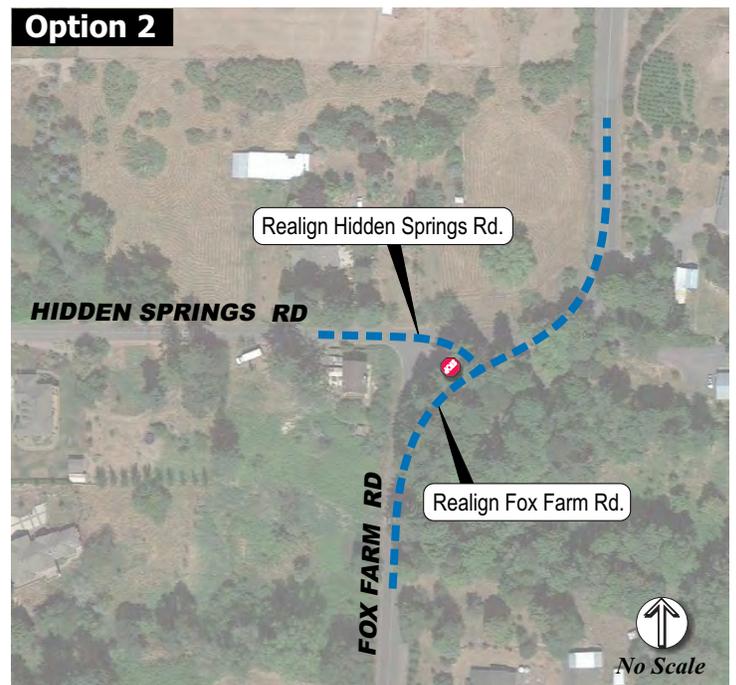
■ **Benefits:**

- Improved geometrics and safety
- Improved sight distance from eastbound approach of Hidden Springs Rd.
- Improved sight distance on Fox Farm Rd.

■ **Key Considerations/Notes:**

- Additional right-of-way would be needed for this improvement

Option 2





Location #21:
Fox Farm Rd./Hidden Springs Rd.
 Sheet 2 of 2

Scoring

| Evaluation Criterion | Weight | Raw Score | |
|----------------------------------------------------------------|--------|------------|------------|
| | | Option 1 | Option 2 |
| 1. Potential reduction in crash rate/severity | 20 | 3 | 8 |
| 2. Type/level of geometric improvement ¹ | 20 | 3 | 8 |
| 3. Potential reduction in traffic conflicts | 10 | 4 | 6 |
| 4. Minimization of construction cost | 10 | 10 | 6 |
| 5. Minimization of required right-of-way | 10 | 10 | 2 |
| 6. Potential reduction in congestion and delay ² | 5 | 0 | 0 |
| 7. Consistency with County/ODOT standards | 5 | 10 | 10 |
| 8. Minimization of impacts to EFU-zoned or developed parcels | 5 | 10 | 9 |
| 9. Improvement in access conditions ³ | 5 | 0 | 0 |
| 10. Type/level of bicycle/pedestrian facility improvement | 5 | 0 | 0 |
| 11. Minimization of impacts to environmentally sensitive areas | 5 | 10 | 7 |
| Total Weighted Score⁴ | | 510 | 590 |

¹ Type of improvement is the potential effectiveness of one improvement type compared to another. Level of improvement represents the extent of the improvement compared to standards.

² Measured by v/c ratio, where applicable.

³ Reduction in number of access points and/or improvement in access design.

⁴ Sum of raw score * weight for all criteria.

Table 1: Bicycle and Pedestrian Priority Improvements

| Priority Improvement Location | | From | To | Need | Improvement | Total Roadway Widening (each direction) | Estimated Cost |
|-------------------------------|------------------|-------------------------|-------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------------------------------------|
| A | Old Sheridan Rd. | McMinnville City Limits | OR 18 | Significant pedestrian volume | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 5 feet | \$2.0M plus bridge/culvert |
| B | OR 47 | OR 99W | Washington County Line | Important commuter route for bicyclists and pedestrians | <ul style="list-style-type: none"> Yamhelas Westsider Trail* | N/A | N/A |
| C | OR 18B | Sheridan City Limits | Willamina City Limits | Relatively short distance between population centers | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 7 feet | \$3.0M |
| D | OR 99W | Newberg City Limits | Dundee City Limits | Relatively short distance between population centers | <ul style="list-style-type: none"> Widen and pave shoulders to six feet** | Varies | See Location #17 cut sheet |
| E | OR 99W | Lafayette City Limits | McMinnville City Limits | Relatively short distance between population centers | <ul style="list-style-type: none"> Widen and pave shoulders to six feet | 6 feet*** | Reconstruction of two bridges |
| F | Lafayette Hwy. | Lafayette City Limits | OR 18 | Significant pedestrian volume | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 4 feet | \$1.7M plus utility pole relocation |
| G | Westside Rd. | McMinnville City Limits | Meadowlake Road | Important commuter route for bicyclists and pedestrians | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 5 feet | \$5.1M |
| H | Westside Rd. | Meadowlake Road | Moore's Valley Road | Important commuter route for bicyclists and pedestrians | <ul style="list-style-type: none"> Widen travel lanes Widen and pave shoulders to six feet | 7 feet | \$4.8M |

* The trail will run along the abandoned Union Pacific right-of-way between OR 99W and the Washington County line and through the cities of Gaston, Yamhill and Carlton. Access will be available from OR 47 and intersecting county roads.

** Alternatively, widening of the shoulders on Dayton Avenue could be considered per Dundee TSP and Chehalem Heritage Trail Strategic Plan.

*** South Yamhill River bridges only.

Appendix B

SUMMARY OF IMPROVEMENT OPTIONS

Table B-1: Summary of Roadway Improvement Options

| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
|-------------------------------|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------------|
| 1 | Abbey Rd./ Hendricks Rd./ Kuehne Rd. | <ul style="list-style-type: none"> Improved safety Poor intersection configuration – driver confusion about right-of-way Skewed intersections Southbound left turn lane need on Kuehne Rd. Lane width need on Abbey Rd. Horizontal curves on Hendricks Rd. and Abbey Rd. | 1 | <ul style="list-style-type: none"> Realign Abbey Rd. to “T” intersection at Hendricks Rd. Install southbound left turn lane on Hendricks Rd. at Abbey Rd. Install acceleration/merge lane from Abbey Rd. to Kuehne Rd. Realign and widen travel lanes on Abbey Rd. Realign Oak Spring Farm Rd. to “T” intersection at Abbey Rd. Widen travel lanes and shoulders on Hendricks Rd. and Kuehne Rd. | N/A | \$625,000 + ROW cost |
| | | | 2 | <ul style="list-style-type: none"> Realign three intersections as stop-controlled “T” intersection Install northbound left-turn lane on Abbey Rd. Install southbound right-turn lane on Abbey Rd. at new intersection | N/A | Unavailable |
| | | | 3 | <ul style="list-style-type: none"> Realign as single lane roundabout Widen and realign travel lanes on Abbey Rd. | N/A | Unavailable |
| 2 | Stringtown Rd. – OR 221 to OR 154 | <ul style="list-style-type: none"> Improved safety – crash rate greater than 200% of statewide average Lane width and shoulder width needs | 1 | <ul style="list-style-type: none"> Widen road Widen/improve shoulders, including increasing distance to roadside features/obstacles Install shoulder rumble stripes Provide signing/stripping at several horizontal curves | N/A | \$4.25 M |
| 3 | Worden Hill Rd. | <ul style="list-style-type: none"> Improved safety – crash rate >200% statewide average At OR 240/Worden Hill Rd. | 1 | <ul style="list-style-type: none"> Realign OR 240/Worden Hill Rd. intersection to eliminate skew Widen shoulders on OR 240 in vicinity of | 265 | \$2.4 M |



| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
|-------------------------------|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------|
| | | <ul style="list-style-type: none"> - Skewed intersection - Limited sight distance - Worden Hill Rd. approach width - OR 240 shoulder width need | | intersection | | |
| | | | 2 | Option 1, plus: <ul style="list-style-type: none"> • Install signs and delineators at several horizontal curves • Install wide edge line markings and permanent raised markers at curves • Install edge line rumble stripes along length of roadway | 325 | \$2.5 M |
| | | | 3 | Option 2, plus: <ul style="list-style-type: none"> • Construct 2-foot shoulders • Vertical realignment at two locations | 480 | \$4.8 M |
| | | | 4 | Option 3, plus: <ul style="list-style-type: none"> • Horizontal realignment at several locations | 490 | \$5.4 M |
| 4 | OR 99W/OR 18/ McDougall Rd. | <ul style="list-style-type: none"> • Improve safety (top 5% SPIS location) • Improved traffic operations • Non-standard intersection geometry • Shoulder width needs on OR 99W and OR 18 • Intersection mobility (future need) | 1 | <ul style="list-style-type: none"> • Install multi-lane roundabout • Widen shoulders on OR 99W and OR 18 in vicinity of intersection | N/A | \$9.0 M |
| 5 | OR 18 – Ash Rd. to OR 154/ Lafayette Hwy. | <ul style="list-style-type: none"> • Mobility need between Dayton UGB and OR 154 (future) • Top 10% SPIS location (previously top 5%) between Ash Rd. and west of OR 154 • At OR 18/Ash Rd. | 1 | <ul style="list-style-type: none"> • Close/vacate Ash Rd. north and south of OR 18 • Install multi-lane roundabout • Widen travel lanes and shoulders on Lafayette Hwy. and OR 154 north and south of intersection | 640 | \$8.0 M |
| | | | 2 | <ul style="list-style-type: none"> • Close/ vacate Ash Rd. north and south of OR 18 • Realign Lafayette Hwy. and OR 154 as offset T | 490 | \$5.0–8.0 M |



| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
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| | | <ul style="list-style-type: none"> - Improved safety - Skewed intersection - Eastbound right-turn lane need on OR 18 - Future mobility need • At OR 18/OR 154/Lafayette Hwy. <ul style="list-style-type: none"> - Improved safety - Shoulder width needs on OR 154 - Existing and future mobility needs - Eastbound and westbound right-turn lane needs - Pedestrian and bicycle needs | | configuration | | |
| 6 | OR 18/Red Prairie Rd. | <ul style="list-style-type: none"> • Top 10% SPIS location (previously top 5%) • Lane width need on Red Prairie Rd. • Shoulder width need on OR 18 and Red Prairie Rd. • Difficult to access or cross OR 18 | 1 | <ul style="list-style-type: none"> • Install median on OR 18 with adequate width to allow two-stage crossing movements • Widen lanes and shoulders on Red Prairie Rd. in vicinity of intersection | N/A | \$7.0 M |



| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
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| 7 | OR 47/OR 99W | <ul style="list-style-type: none"> • Previous top 5% SPIS location • Eastbound left-turn lane needed on OR 99W • Westbound right-turn lane needed on OR 99W • Existing and future mobility needs • Shoulder width needs on OR 47 and OR 99W • Poor pavement condition on OR 99W | 1 | <ul style="list-style-type: none"> • Install traffic signals on eastbound and westbound OR 99W • Construct single connector road between eastbound and westbound OR 99W • Align OR 47 with connector road • Restore/rehabilitate pavement on OR 99W • Widen shoulders on OR 47 in vicinity of intersection | 670 | \$5.0 M |
| | | | 2 | <ul style="list-style-type: none"> • Merge eastbound and westbound roadways on OR 99W into single roadway • Install traffic signal • Install southbound right-turn lane • Widen shoulders on OR 47 in vicinity of intersection | 655 | \$4.0 M |
| | | | 3 | <ul style="list-style-type: none"> • Install multi-lane roundabout • Merge eastbound and westbound roadways on OR 99W into single roadway • Widen shoulders on OR 47 in vicinity of intersection | 710 | \$6.0 M |
| 8 | OR 99W – Dundee to OR 18 Junction | <ul style="list-style-type: none"> • Existing and future mobility needs | 1 | <ul style="list-style-type: none"> • Widen OR 99W to four lanes with median between Newberg-Dundee Bypass junction and OR 18 • Widen shoulders | N/A | \$40.0-50.0 M |
| 9 | OR 153/ Hopewell Rd./ Webfoot Rd. | <ul style="list-style-type: none"> • High speeds on OR 153 • Sight distance needs to east from northbound and southbound approaches | 1 | <ul style="list-style-type: none"> • Remove vegetation on east side of intersection north and south of OR 153 • Install warning beacon at Hopewell Rd./Webfoot Rd. | 450 | \$110,000 |



| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
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| | | <ul style="list-style-type: none"> • Eastbound right-turn lane need on OR 153 • Shoulder widening needs on OR 153 and Hopewell Rd. • Lane widening need on OR 153 to west | 2 | Option 1, plus: <ul style="list-style-type: none"> • Widen travel lanes on OR 153 west of intersection • Widen shoulders on OR 153 east of intersection and Hopewell Rd. in vicinity of intersection • Consider eastbound right-turn lane on OR 153 | 690 | \$1.0 M |
| 10 | OR 221/OR 153 | <ul style="list-style-type: none"> • Previous top 10% SPIS location • Free northbound left-turn and free eastbound right-turn movements are confusing to drivers • Sharp angles on connector roads require drivers to turn heads sharply to see • Northbound left-turn lane need on OR 221 • Shoulder width needs on OR 221 and OR 153 • Lane width needs on OR 221 | 1 | <ul style="list-style-type: none"> • Vacate south-to-west and north-to-west connections to create standard intersection • Install northbound left-turn lane on OR 221 • Widen travel lanes on OR 221 in vicinity of intersection | N/A | \$1.5 M |
| 11 | OR 233/Starr Quarry Rd. | <ul style="list-style-type: none"> • Previous top 10% SPIS location • Shoulder width and lane width needs on OR 233 • Poor intersection configuration • Substandard curve on OR 233 | 1 | <ul style="list-style-type: none"> • Realign OR 233 so that curve meets standard • Realign Starr Quarry Rd. to "T" into OR 233 • Install southbound left-turn lane on OR 233 • Install guide signs on southbound OR 233 • Widen travel lanes and shoulders on OR 233 in vicinity of intersection | N/A | \$1.5 M |



| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
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| 12 | Bald Peak Rd./ Mountain Top Rd. | <ul style="list-style-type: none"> • Safety need – crash rate > 200% of statewide average • Possible sight distance need along eastbound Bald Peak Rd. • Skewed intersection • Lane and shoulder width needs on Bald Peak Rd. | 1 | <ul style="list-style-type: none"> • Realign Ornduff Rd. and Mountain Top Rd. to form single intersection north of Bald Peak Rd. • Connect new intersection with Bald Peak Rd. • Reduce vertical curve on Bald Peak Rd. at existing intersection | N/A | \$620,000 |
| 13 | North Valley Rd./ Chehalem Dr. | <ul style="list-style-type: none"> • Sight distance need to west from northbound and southbound approaches of Chehalem Dr. • Vertical curves on North Valley Rd. west of Chehalem Dr. • Lane width needs on North Valley Rd. and Chehalem Dr. south of North Valley Rd. • North and south approaches of Chehalem Dr. are offset | 1 | <ul style="list-style-type: none"> • Reconstruct North Valley Rd. for approximately 500 ft. west of intersection to remove vertical curve • Trim/remove vegetation to west on both north and south sides of North Valley Rd. to improve sight distance from Chehalem Dr. approaches | 545 | \$365,000 |
| | | | 2 | <ul style="list-style-type: none"> • Option 1, plus: • Realign south leg of Chehalem Dr. to eliminate offset | 545 | \$525,000 |
| 14 | Bell Rd./Aspen Way | <ul style="list-style-type: none"> • Sight distance need to west from northbound Aspen Way • Approach grade on Aspen Way greater than 3% • Lane and shoulder width needs on Bell Rd. | 1 | <ul style="list-style-type: none"> • Reduce vertical curve to west of intersection to increase sight distance • Widen travel lanes and shoulders on Bell Rd. in vicinity of intersection • Replace guardrail on SW corner of intersection • Install new guardrail on SE corner of intersection | N/A | \$710,000 |



| Priority Improvement Location | | Need | Improvement Option | Evaluation Score | Estimated Cost |
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| 15 | Bell Rd./Zimri Dr. | <ul style="list-style-type: none"> Sight distance need to west from northbound Zimri Dr. Approach grade on Zimri Dr. greater than 3% Shoulder width needs on Zimri Dr. and Bell Rd. east of Zimri Dr. Lane width needs on Bell Rd. and Zimri Dr. | 1 <ul style="list-style-type: none"> Remove/relocate sight obstructions on southwest corner of intersection to improve sight distance to west | N/A | \$20,000 |
| 16 | Bell Rd./Springbrook Rd. | <ul style="list-style-type: none"> Springbrook Rd. has crash rate >200% of statewide average Sight distance needs to east and west from northbound Springbrook Rd. Horizontal curves on Bell Rd. limit sight distance from bell Rd. and Springbrook Rd. Shoulder width and lane width needs on Bell Rd. | 1 <ul style="list-style-type: none"> Convert intersection to three-way stop control Remove vegetation on southeast corner of intersection to increase sight distance from Bell Rd. and Springbrook Rd. Relocate utility pole on north side of Bell Rd. to improve clear zone safety Install "stop ahead" advance warning signs with beacons on Bell Rd. Install warning beacon at intersection | N/A | \$130,000 |
| 17 | OR 99W – Newberg to Dundee | <ul style="list-style-type: none"> One top 5% and one previous top 5% SPIS location within segment Existing mobility need Shoulder width need Merge problem in westbound direction just east of Fox Farm Rd. where lanes drop from two to one | 1 <ul style="list-style-type: none"> Widen shoulders on OR 99W where deficient ODOT will monitor lane reduction area and identify appropriate improvement measure as necessary | N/A | \$3.0 M |



| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
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| 18 | OR 233/Cruickshank Rd. | <ul style="list-style-type: none"> Improved safety Confusing intersection due to three conflict locations Lane and shoulder width needs on OR 233 | 1 | <ul style="list-style-type: none"> Remove connector roads Realign Cruickshank Rd. to meet OR 233 in a “T” intersection south of existing home Consider northbound left-turn lane and southbound right-turn lane at new intersection Widen travel lanes and shoulders on OR 233 in vicinity of intersection | 665 | \$1.0 M |
| | | | 2 | <ul style="list-style-type: none"> Remove connector roads Realign Cruickshank Rd. to meet OR 233 in a “T” intersection, removing existing home Consider northbound left-turn lane and southbound right-turn lane at new intersection Widen travel lanes and shoulders on OR 233 in vicinity of intersection | 615 | \$2.0 M |
| | | | 3 | <ul style="list-style-type: none"> Reconstruct intersection as roundabout, removing existing home | 655 | \$3.5 M |
| 19 | OR 18/Gopher Valley Rd. | <ul style="list-style-type: none"> Confusing geometrics – driveways on south side of OR 18 do not align with Gopher Valley Rd. Lane width need on Gopher Valley Rd. Shoulder width need on OR 18 | 1 | <ul style="list-style-type: none"> County and ODOT to work with property owners to consolidate accesses over time One or more driveway closures One or more driveway improvements Potential connecting access roadways between properties | N/A | N/A |



| Priority Improvement Location | | Need | Improvement Option | | Evaluation Score | Estimated Cost |
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| 20 | OR 99W/ Durham Ln. | <ul style="list-style-type: none"> • Previous top 5% SPIS location • Shoulder width need on OR 99W | 1 | <ul style="list-style-type: none"> • Install overhead flashing beacon at intersection • Remove/relocate sight distance obstructions on OR 99W both north and south of Durham Ln. intersection • Relocate stop sign on Durham Ln. as close to intersection as possible • Consider northbound left-turn lane and southbound right-turn lane on OR 99W • Move existing intersection warning signs to within 225 feet of intersection | N/A | \$1.0 M |
| 21 | Fox Farm Rd./ Hidden Springs Rd. | <ul style="list-style-type: none"> • Safety (fatal crash) • Horizontal and vertical curves limit sight distance from Fox Farm Rd. • Large pavement area at intersection encourages high speeds • Poor sight distance from eastbound approach of Hidden Springs Rd. • Substandard curves on Fox Farm Rd. | 1 | <ul style="list-style-type: none"> • Create "T" intersection • Relocate stop control at new intersection location | 510 | \$10,000 |
| | | | 2 | <ul style="list-style-type: none"> • Realign Fox Farm Rd. to improve radii on "S" curves • Realign Hidden Springs Rd. as "T" intersection at Fox Farm Rd. | 590 | \$415,000 |