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DRAFT MEMORANDUM #5

DATE: January 16, 2018

TO: Benton County TSP Project Management Team and Stakeholders

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SUBJECT: Task 2.4 Future Transportation Operation Conditions
Benton County Transportation System Plan Update

The objective of the transportation planning process is to generate information necessary for making decisions that will result in safe and efficient travel options through 2040, the planning horizon year for the Benton County Transportation System Plan (TSP) update. This memorandum describes how population and employment growth in Benton County are expected to change future transportation conditions and discusses the major areas of need. The information presented here, along with information from the existing conditions evaluation (Memorandum #4) and stakeholder input, will inform the solutions development process presented in subsequent memoranda.

The condition of Benton County's future transportation system depends on growth in population and employment, future travel patterns (e.g., choice of modes, routes, and frequency of trips), and regional and community investment decisions. Growth in population and number of jobs is forecast based on historical trends and expert knowledge of the county and region. Future travel patterns are more difficult to predict as the community's investment decisions and the economy can have a significant effect on choice of modes and routes.

METHODOLOGY FOR ESTIMATING FUTURE TRAVEL CONDITIONS

The 2040 transportation conditions in Benton County were forecasted based on trips that anticipated new growth will generate, with the following assumptions:

- No new investments in infrastructure beyond what is already funded for construction;
- Distribution of travel modes (i.e., private motor vehicle, transit, walking, biking) chosen does not significantly change despite the growth in the population of elderly residents; and
- Continuation of current travel behaviors, based on decisions and preferences of existing residents, employees, tourists, and institutions around the region.

The Analysis Methodology Memorandum (see appendix) provides more detail on the motor vehicle travel forecasting process. The forecasting process for Benton County includes a combination of high-level regional travel demand modeling, statewide forecasts of future highway volumes, and analysis of local growth trends.

SNAPSHOT OF BENTON COUNTY IN 2040

Benton County has seen an 18% increase in population since the year 2000, translating to approximately 1.06% annual growth.¹ This growth trend is expected to continue, with a forecast of over 110,000 total residents by 2040. This data is shown in Table 1. Population growth has been in the urbanized areas, with Corvallis seeing the highest total population increases and Adair Village and North Albany seeing the highest growth rates. As shown in Table 2 this trend of urban growth is expected to continue in future years. The annual rate of growth is forecasted to be 7.15% in Adair Village from 2017-2020, and 2.21% in North Albany.

Table 1: Benton County Population Growth History and Forecast

Year	2000	2010	2017	2020	2030	2040
Benton County Total	78,153	85,579	92,287	95,818	106,498	113,169
Adair Village	536	840	928	1,127	1,934	2,075
North Albany	5,104	6,463	7,586	8,088	9,615	10,850
Corvallis	49,322	54,462	61,449	63,857	70,572	75,227
Monroe	607	617	637	643	660	675
Philomath	3,838	4,584	5,169	5,388	6,848	7,493
Unincorporated	18,746	18,613	16,517	16,715	16,868	16,849

Data from PSU Population Research Center. 2000-2010 Census Counts (incorporated areas) and population forecasts (Urban Growth Boundaries). This data may not completely reflect planned residential development in Adair Village or Monroe.

¹ Population estimate of 92,287 for July 1, 2017 by the Portland State University Population Research Center. The American Community Survey 2015 5-year estimate (2011-2015) is 86,495.

Table 2: Benton County Historic and Forecasted Population Growth Rates

Year	2000-2010	2010-2017	2017-2020	2020-2030	2030-2040
Benton County Total	0.95%	1.12%	1.28%	1.11%	0.63%
Adair Village	5.67%	1.50%	7.15%	7.16%	0.73%
North Albany	2.66%	2.48%	2.21%	1.89%	1.28%
Corvallis	1.04%	1.83%	1.31%	1.05%	0.66%
Monroe	0.16%	0.46%	0.31%	0.26%	0.23%
Philomath	1.94%	1.82%	1.41%	2.71%	0.94%
Unincorporated	-0.07%	-1.61%	0.40%	0.09%	-0.01%

Data from PSU Population Research Center. 2000-2010 Census Counts (incorporated areas) and population forecasts (Urban Growth Boundaries)

Demographic Overview

Aging Population

Figure 1 below shows the forecasted composition of Benton County’s population by age group. The proportion of Benton County residents over the age of 65 is predicted to grow from 12% in 2010 to 17% in 2040, peaking at 19% in 2030.

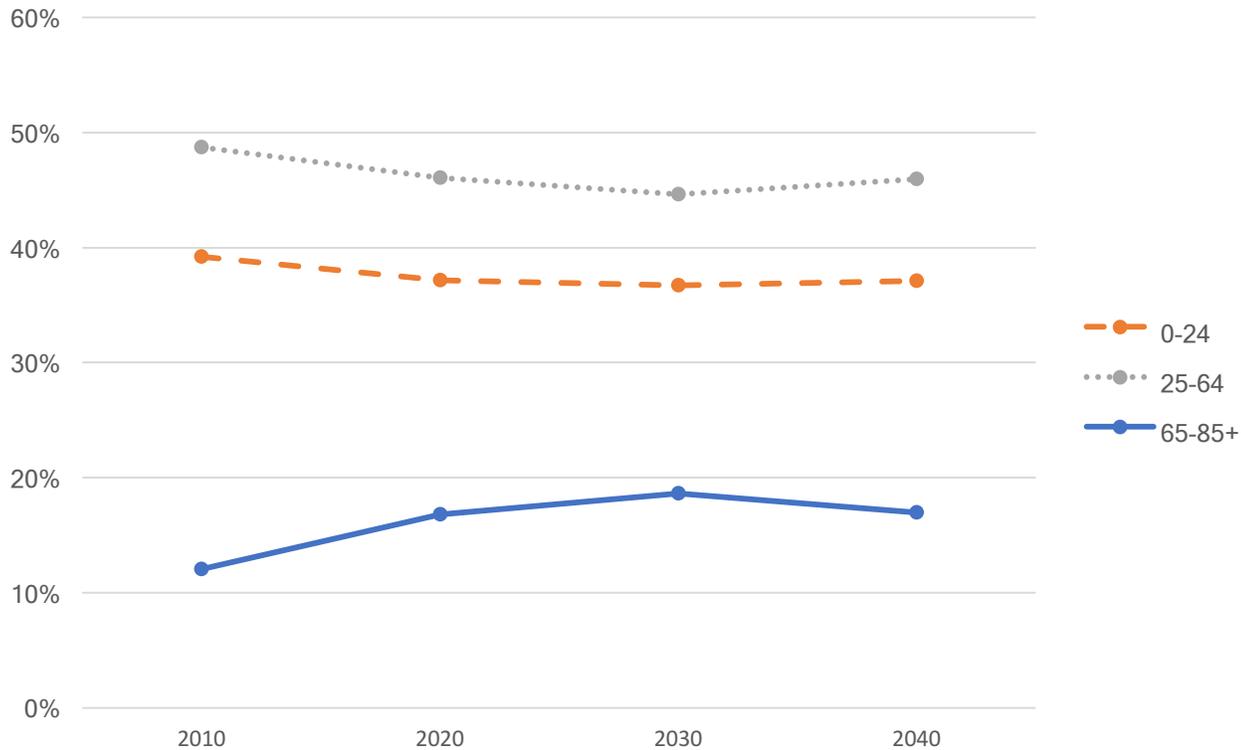
The increase in the elderly population has a measurable impact on the transportation system. As elderly residents become unable to drive, they will become increasingly dependent on other modes of transportation. This vulnerable population will require accessible facilities to lead full and healthy lives.

Persons with Disabilities

According to the Oregon Office on Disability and Health’s “2013 Annual Report on the Health of Oregonians with Disabilities,” 22.4% of Benton County residents have some form of disability. The number of persons with disabilities in Benton County is greater than both statewide and national averages. The collective belief of the health, social service, and transportation professional community in Benton County is that the population of persons with disabilities increased between 2000 and 2016 and will continue to increase in the future, most likely on a level commensurate with the increase in the County’s overall older adult population.

Primary transportation services for persons with disabilities in Benton County include the Benton County STF Demand Response Service and the Corvallis Transit System ADA Paratransit Service.

Figure 1: Percent of Total Population by Age Group in Benton County



Data from the State of Oregon, Office of Economic Analysis, Released March 28, 2013

Low-Income Persons

Approximately 30% of County residents are identified as low-income. In 2007-2009, the County had a higher percentage of individuals below the poverty level than in the state and nationally. The highest percentage below the poverty level were female, single parent families. Monroe had the highest percentage increase in low-income residents. Low-income residents living in Benton County may need more affordable transportation services.

FUTURE TRANSPORTATION SYSTEM CONDITIONS

The impact of the anticipated population growth on the motor vehicle system is analyzed using the Corvallis-Albany-Lebanon Model (CALM) for areas that are included within its boundary (primarily the area surrounding Corvallis, Albany, Adair Village, and Philomath). For the area outside of the CALM model, the ODOT Future Highway Volume Table is used. More information about volume forecasting can be found in the Analysis Methodology Memorandum in the appendix. These volume projections, along with the committed infrastructure improvements below, are combined to provide a model of traffic volumes in Benton County in 2040.

Adair Village is expected to experience significant growth by 2040, with proposed and expected residential development resulting in approximately 600 new homes. Traffic impacts from a similar development plan were analyzed for an Urban Growth Boundary (UGB) expansion study completed in 2006. The current Calloway Creek Subdivision site plan deviates slightly from the 2006 configuration, but the traffic impact on state and county facilities in Adair Village is expected to be similar. This study was used to develop future volumes for study intersections in Adair Village.

The City of Monroe is expecting a new 55-unit subdivision, Red Hills Estates, in the lot south of Orchard Street and between 9th Street and 10th Street. This development can be expected to generate 61 p.m. peak hour trips based on the formula from the Institute of Transportation Engineer's Trip Generation Manual. It is assumed that all trips will access the development via OR 99W and that approximately 66% will travel to and from points south, with approximately 33% traveling to and from points north.

Committed Infrastructure Improvements

The baseline condition reflects the transportation network in 2040, assuming that only transportation projects that already have secured funding will be built between now and then. Projects included in the 2018-2021 Statewide Transportation Improvement Plan (STIP) and the Benton County 2017-2019 Adopted Biennium Budget are assumed to be completed by 2040. These projects include:

Active Transportation

- **Marys River – Crystal Lake Multiuse Path:** This path will provide a bypass of OR 99W for active transportation modes.
- **Corvallis to Albany Trail: Scenic Drive – Springhill Drive:** This path will provide an off-street option for active transportation users in North Albany and recreational or commuting cyclists who use US 20.
- **Chapel Drive Bikeway Improvement:** This project will add 6-foot bike lanes on either side of the road, a raised tabletop intersection at 19th Street & Chapel Drive, and a designated pedestrian and school crossing.
- **Independence Highway Widening:** This project widens travel lanes and adds paved shoulder bikeways between Metge Avenue and Ryals Avenue. This project will tie into potential widening projects on Metge Avenue and Ryals Avenue.
- **Ryals Avenue:** This project would widen travel lanes and adds paved shoulders to Ryals Avenue from Arnold Avenue to Independence Highway.
- **Metge Avenue:** This project would widen travel lanes and add paved shoulders to Metge Avenue from Independence Highway to Oak Grove Drive.
- **Oak Grove Drive:** This project would add bike lanes to Oak Grove Drive from the existing bike lanes to Metge Avenue.
- **Crocker Lane Urbanization:** This project adds pedestrian and bicyclist amenities and urbanizes the northern part of Crocker Lane from Meadow Wood Drive to Valley View Drive.

Safety

- **Region 2 (Central) Local Road Roadway Departure [along Springhill Drive]:** Improvements to reduce roadway departure crashes (e.g., rumble strips, delineator posts, warning signage) are planned along Springhill Drive from Albany City Limits to Independence Highway.
- **City of Corvallis Signal Enhancements:** This safety improvement is targeted at the signals on US 20 & Circle Boulevard and OR 99W & Circle Boulevard.
- **US 20: Children's Farm Home to Merloy Avenue:** This improvement will construct a two-way left turn lane to improve accessibility and safety along US 20.
- **South Fork Road Comprehensive Corridor Plan:** This funded plan will develop a Federal Lands Access Program (FLAP) proposal to address critical safety deficiencies on South Fork Road.
- **53rd Street & Country Club Intersection:** Includes analysis and potential construction of a roundabout as an intersection improvement.
- **US 20 Safety Upgrades from Albany to Corvallis:** House Bill 2017 recently dedicated \$20 million in funding for safety improvements in this corridor.

Resilience

- **Hubbard Road: Long Tom River Bridge:** The existing bridge, and Hubbard Road, is closed along this route. This project will replace the structure with a pre-stressed concrete girder bridge along the same alignment.
- **US 20: Willamette River (Ellsworth Street) Bridge:** This project will increase the truss span vertical clearance over the Willamette River.
- **NW Crescent Valley Drive Bridge:** Bridge rehabilitation project that includes strengthening and widening to accommodate pedestrians/cyclists.
- **OSU Campus Way Covered Bridge:** Preservation project that includes re-roofing, re-painting, and installation of a fire suppression system.
- **Alpine Road Bridge:** Timber bridge replaced with prestressed concrete slab bridge.
- **Marys River Road Bridge:** Timber bridge strengthening project to allow for continued access to timber resource land by logging equipment.
- **Starr Creek Road Extension:** This project connects Starr Creek Road to Hells Canyon Road with a proposed gated emergency access road to provide for two-way traffic in the case of emergency. This connects two roadway systems that currently have only one access/egress point with an emergency secondary access.

Other Projects

- **OR 99W: Monmouth – NE Elliot Circle Road Resurfacing²**
- **Fern Road: Chapel Drive to Grange Hall Road Resurfacing²**
- **Crescent Valley Drive Highland/Jackson Overlay²**
- **13th Street Grind & Overlay²**
- **53rd Street: Reservoir Road – Harrison Boulevard Resurfacing²**

Auto Mobility

Motor Vehicle System

An increase in motor vehicle travel with no further improvements to increase the capacity of the roadway network leads to an increase in congestion. The duration of congestion experienced on the most congested corridors, as shown in the Corridor Health figures in Memorandum #4, will likely expand. Travel activity, as reflected by evening peak hour motor vehicle trips beginning or ending in Benton County, is expected to increase significantly through 2040. The already heavily-traveled US 20 corridor between North Albany and Corvallis is projected to see the greatest increase in traffic of approximately 33%.

2040 Baseline weekday p.m. peak hour³ intersection traffic volumes and operations, displayed in Figure 2 and Table 3, show that with the increased motor vehicle travel, three signalized intersections and five unsignalized intersections along state highways will fail to meet Oregon Highway Plan (OHP) mobility targets (see appendix for detailed analysis worksheets). Benton County does not have adopted mobility targets, but one unsignalized intersection and one signalized intersection on County facilities would fail to meet ODOT's mobility targets. Compared with the 2017 existing year operations, three more intersections on state facilities fail in the future year and two more County intersections would be significantly congested (i.e., would fail to meet ODOT's mobility targets).

Intersections found to experience excessive congestion (failing to meet ODOT's mobility targets) are listed in Table 3 below, with their performance under existing conditions also shown for comparison. The projected performance of all studied intersections in Benton County for the year 2040 is shown in Table 4.

² This project is not designated as an Active Transportation improvement but improvements to pavement condition will improve the experience of any cyclists and pedestrians that use this facility.

³ The future 30th highest annual hour of traffic volumes (also referred to as Design Hour volumes) were used to represent a typical weekday p.m. peak hour in the peak traffic month of the year.

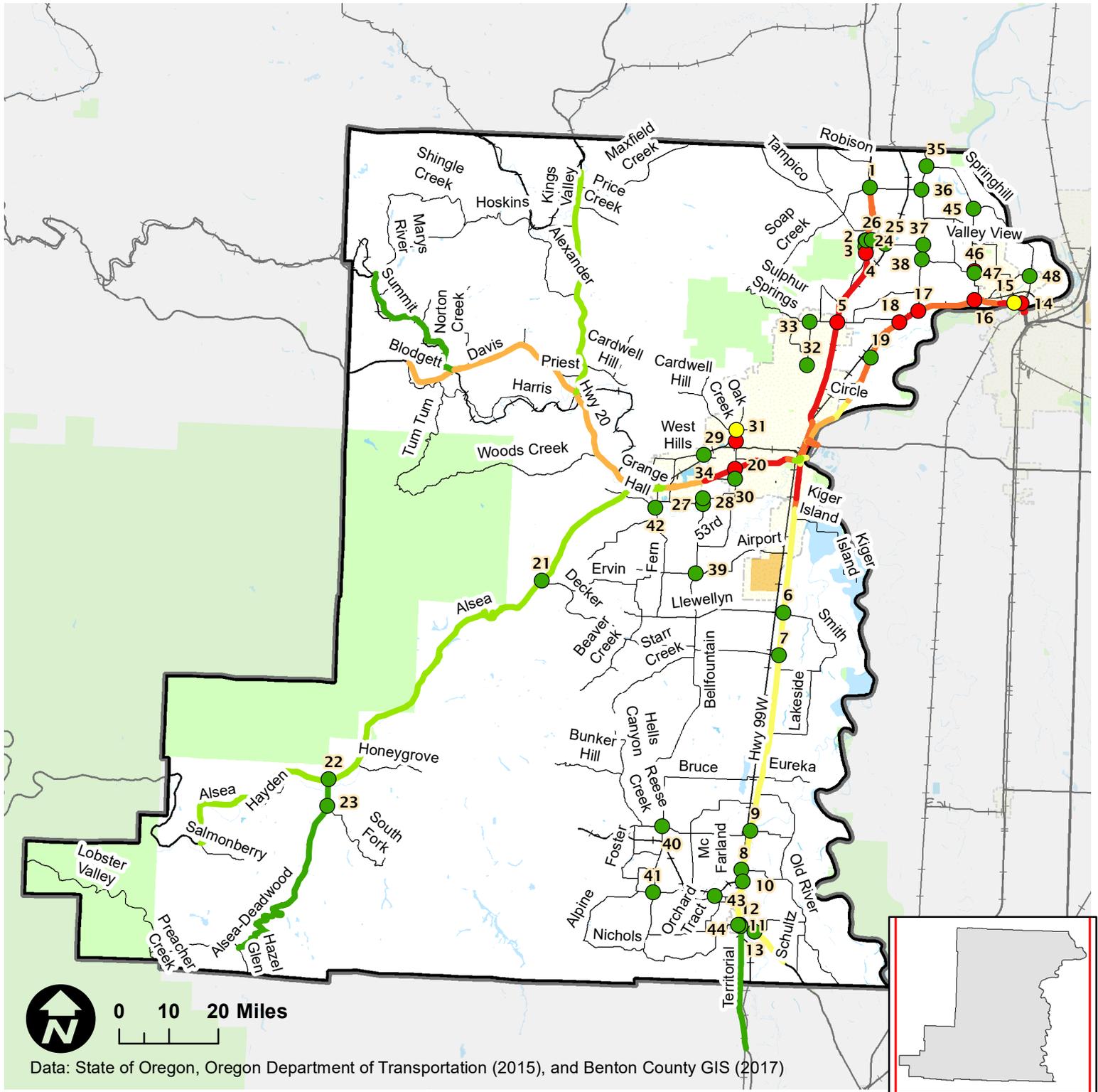
Table 3: Congested Intersections in 2017 and 2040 (Weekday P.M. Peak Hours)

Intersection	Mobility Target (v/c)	2017 Existing Year v/c	2040 Future Year v/c
OR 99W & Lewisburg Ave/Granger Ave (signalized) ⁴	0.90	0.93	1.16
US 20 & Springhill Dr (signalized)	0.95	0.85	1.21
US 20-OR 34 & 53 rd St (signalized)	0.85	0.86	1.02
53 rd St & Reservoir Ave (signalized)	NA	0.79	1.00
OR 99W & Arnold Ave (unsignalized)	0.70 [0.75]	0.43	1.03
OR 99W & Ryals Ave (unsignalized)	0.70 [0.75]	0.31	>2.0
US 20 & Scenic Dr (unsignalized) ⁴	0.95 [0.95]	0.99	>2.0
US 20 & Independence Hwy (unsignalized) ⁴	0.70 [0.75]	0.97	>2.0
US 20 & Granger Ave (unsignalized) ⁴	0.70 [0.75]	1.94	>2.0
Scenic Dr & Oak Grove Dr (unsignalized)	NA	0.25	1.00

BOLD text indicates mobility target is not met (Benton County does not currently have adopted mobility standards. Information for Country facilities at locations where significant congestion occurs is shown for informational purposes only)

Mobility Targets pertain to the intersection for signalized control and to Major [Minor] street approaches for two-way stop control v/c is shown at the intersection level for signalized control and the worst movement for two-way stop control

⁴ Intersection fails in base and future year analysis.



- | | | |
|---|---|---|
| <ul style="list-style-type: none"> — Street —+— Railroad — Bodies of Water — Natural Area - - - City Limit/UGB — Airports | <p>Annual Average Daily Traffic (AADT)</p> <ul style="list-style-type: none"> ■ 0 - 1,000 Vehicles Per Day ■ 1,001 - 2,500 ■ 2,501 - 5,000 ■ 5,001 - 10,000 ■ 10,001 - 15,000 ■ 15,001 - 20,000 ■ 20,001 - 30,000 | <p>Study Intersection Operations</p> <ul style="list-style-type: none"> ● Does Not Meet Mobility Target ● Approaching Mobility Target ● Meets Mobility Target |
|---|---|---|

Figure 2A
Future Traffic Operations
 AADT is estimated based on CALM model volumes or ODOT growth tables





- Street
- +— Railroad
- Bodies of Water
- Natural Area
- - - City Limit/UGB
- Airports

Annual Average Daily Traffic (AADT)

- 0 - 1,000 Vehicles Per Day
- 1,001 - 2,500
- 2,501 - 5,000
- 5,001 - 10,000
- 10,001 - 15,000
- 15,001 - 20,000
- 20,001 - 30,000

Study Intersection Operations

- Does Not Meet Mobility Target
- Approaching Mobility Target
- Meets Mobility Target

Figure 2B - Corvallis Area Future Traffic Operations

AADT is estimated based on CALM model volumes or ODOT growth tables





Data: State of Oregon, Oregon Department of Transportation (2015), and Benton County GIS (2017)

- Street
- +— Railroad
- Bodies of Water
- Natural Area
- - - City Limit/UGB
- Airports

- Annual Average Daily Traffic (AADT)**
- 0 - 1,000 Vehicles Per Day
 - 1,001 - 2,500
 - 2,501 - 5,000
 - 5,001 - 10,000
 - 10,001 - 15,000
 - 15,001 - 20,000
 - 20,001 - 30,000

- Study Intersection Operations**
- Does Not Meet Mobility Target
 - Approaching Mobility Target
 - Meets Mobility Target

Figure 2C - Albany Area Future Traffic Operations

AADT is estimated based on CALM model volumes or ODOT growth tables



Table 4: 2040 Baseline Weekday P.M. Peak Hour Intersection Operations

Int. ID	Intersection Name	Mobility Target (v/c)	Intersection Performance ⁵			
			Delay (sec)	Level of Service (LOS)	Volume/Capacity Ratio (v/c)	Worst Movement
1	OR 99W & Coffin Butte Rd/Camp Adair Rd	0.70 [0.75]	1.1 [31.9]	A [D]	0.18	Westbound Left/Thru
2	OR 99W & Arnold Ave	0.70 [0.75]	1.2 [116.5]	A [F]	1.03	Westbound Left/Thru
3	OR 99W & FR 540/Vandenberg Ave	0.70 [0.75]	0 [59.7]	A [F]	0.24	Westbound Left/Thru
4	OR 99W & Ryals Ave	0.70 [0.75]	1.1 >300]	A [F]	>2.0	Westbound Left/Thru
5	OR 99W & Lewisburg Ave/Granger Ave	0.90	92.9	F	1.16	-
6	OR 99W & Llewellyn Rd	0.70 [0.75]	0.6 [13.4]	A [B]	0.19	Eastbound Left/Right
7	OR 99W & Greenberry Rd	0.70 [0.75]	1.6 [12.7]	A [B]	0.16	Eastbound Left/Right
8	OR 99W & Old River Rd	0.70 [0.75]	0.2 [12.8]	A [B]	0.04	Westbound Left/Right
9	OR 99W & Dawson Rd/Hubbard Rd	0.70 [0.75]	0.5 [14.2]	A [B]	0.05	Eastbound Left/Thru
10	OR 99W & Alpine Rd	0.70 [0.75]	0.2 [12.5]	A [B]	0.03	Eastbound Left/Right
11	OR 99W & Orchard St	0.90 [0.95]	1.5 [15.2]	A [C]	0.24	Eastbound Left/Right
12	OR 99W & Territorial HWY	0.90 [0.95]	0.2 [18.1]	A [C]	0.30	Eastbound Left
13	OR 99W & Ingram Island Rd	0.70 [0.75]	0.3 [11.7]	A [B]	0.03	Westbound Left/Right

⁵ BOLD text indicates mobility target is not met (Benton County does not currently have adopted mobility standards. Information for Country facilities at locations where significant congestion occurs is shown for informational purposes only)

Mobility Targets pertain to the intersection for signalized control and to Major [Minor] street approaches for TWSC

Delay is shown in seconds at an intersection level for signalized control and as Major [Minor] for TWSC

LOS is shown at the intersection level for signalized control and as Major [Minor] for TWSC

V/C is shown at the intersection level for signalized control and the worst movement for TWSC

Int. ID	Intersection Name	Mobility Target (v/c)	Intersection Performance ⁵			
			Delay (sec)	Level of Service (LOS)	Volume/Capacity Ratio (v/c)	Worst Movement
14	US 20 & Springhill Dr	0.95	115	F	1.21	-
15	Takena Landing Park Rd/North Albany Rd & US 20	0.95	31.2	C	0.84	-
16	US 20 & Scenic Dr	0.95 [0.95]	1.9 [>300]	A [F]	>2.0	Southbound Left
17	US 20 & Independence HWY	0.70 [0.75]	0.7 [>300]	A [F]	>2.0	Southbound Left
18	US 20 & Granger Ave/Autumn Seed Drwy	0.70 [0.75]	0.1 [>300]	A [F]	>2.0	Eastbound Left/Thru
19	US 20 & Merloy Ave	0.70 [0.75]	0.1 [117]	A [F]	0.42	Eastbound Left/Right
20	US 20-OR 34 & 53rd St	0.85	117.6	F	1.02	-
21	Alea HWY & Decker Rd	0.75 [0.75]	0.9 [9.6]	A [A]	0.02	Westbound Left/Right
22	Alea-Deadwood HWY/N 1st St & Alea HWY OR34	0.80 [0.80]	2.7 [10.7]	A [B]	0.08	Northbound Left/Thru/Right
23	Alea-Deadwood HWY & S Fork Rd	0.75 [0.75]	1.9 [8.8]	A [A]	0.02	Westbound Left/Right
24	William R Carr Ave & Arnold Ave	NA	2 [12.1]	A [B]	0.10	Southbound Left/Thru/Right
25	Ryals Ave & Arnold Ave	NA	4.1 [15.2]	A [C]	0.41	Northbound Left/Right
26	Arnold Ave & Laurel Dr	NA	0.5 [10.6]	A [B]	0.02	Southbound Left/Right
27	Bellfountain Rd & Chapel Dr	NA	2.3 [13.0]	A [B]	0.25	Eastbound Left/Right
28	Bellfountain Rd & Southwood Dr/Plymouth Dr	NA	9.8	A	0.38	-
29	53rd St & Reservoir Ave ⁶	NA	50.6	D	1.00	-

⁶ This intersection would fail if ODOT mobility targets were applied.

Int. ID	Intersection Name	Mobility Target (v/c)	Intersection Performance ⁵			
			Delay (sec)	Level of Service (LOS)	Volume/Capacity Ratio (v/c)	Worst Movement
30	53rd St & Country Club Dr	NA	1 [26.5]	A [D]	0.51	Eastbound Left/Thru/Right
31	53rd St/Walnut Blvd. & Oak Creek Dr/Harrison Blvd.	NA	19.9	B	0.79	-
32	Highland Dr & Lester Ave	NA	0.4 [99.3]	A [F]	0.73	Eastbound Left/Right
33	Highland Dr/Highland Pl & Lewisburg Ave	NA	6.1 [22.5]	A [C]	0.70	Northbound Left/Thru/Right
34	West Hills Rd & Reservoir Ave	NA	0.2 [42.8]	A [E]	0.68	Northbound Left/Thru
35	Independence HWY & Springhill Dr	NA	5.8 [9.6]	A [A]	0.15	Westbound Right
36	Independence HWY & Camp Adair Rd	NA	3.4 [9.6]	A [A]	0.07	Eastbound Right
37	Independence HWY & Ryals Ave	NA	5 [12.1]	A [B]	0.26	Eastbound Right
38	Independence HWY & Metge Ave	NA	4.3 [15.2]	A [C]	0.26	Westbound Left/Right
39	Bellfountain Rd & Airport Ave	NA	1.7 [11.9]	A [B]	0.13	Westbound Left/Thru
40	Bellfountain Rd & Dawson Rd	NA	3.4 [10.7]	A [B]	0.05	Northbound Left/Thru/Right
41	Bellfountain Rd & Alpine Rd	NA	1.7 [9.9]	A [A]	0.08	Southbound Left/Thru/Right
42	Fern Rd & Grange Hall Rd	NA	2.3 [10.6]	A [B]	0.14	Eastbound Left/Thru/Right
43	Alpine Rd & Alpine Cutoff Rd	NA	0.9 [9.2]	A [A]	0.09	Westbound Left/Right
44	S 6th St & Orchard St	NA	0.7 [9.5]	A [A]	0.02	Northbound Left/Thru/Right
45	Scenic Dr & Springhill Dr	NA	1 [14.8]	A [B]	0.16	Northbound Left/Right
46	Scenic Dr & Oak Grove Dr/Oak Grove Way ⁶	NA	3.8 [47.5]	A [E]	1.00	Eastbound Left/Thru
47	Scenic Dr & Gibson Hill Rd	NA	6.1 [60.0]	A [F]	0.81	Northbound Thru/Right
48	Springhill Dr & Quarry Rd/South Nebergall Loop	NA	1.9 [49.1]	A [E]	0.37	Westbound Left/Thru/Right

Preliminary Signal Warrant Analysis

For unsignalized intersections that experience excessive congestion, the construction of traffic signals can be an effective improvement. However, before a traffic signal is constructed, a complete engineering investigation should be completed to ensure that the signal would operate safely and that there are sufficient side street traffic volumes to justify the delay that will be incurred by the traffic on the major street.

ODOT has developed preliminary signal warrants based on average daily traffic for use in long-range planning. This tool helps determine if forecasted side street traffic volumes may be sufficient to justify the construction of a traffic signal. Meeting these warrants does not guarantee a signal will be installed, but it does assist in planning. While these warrants only consider signalization, consideration of roundabouts as alternatives to traffic signals for future intersection improvements is recommended.

The unsignalized intersections shown in Tables 3 and 4 as experiencing excessive congestion were tested against the preliminary signal warrants to determine which locations might be good candidates for future traffic signals. Detailed worksheets are in the appendix. Two intersections were found to meet the preliminary signal warrants:

- US 20 & Granger Avenue
- OR 99W & Ryals Avenue

In the upcoming phase of this TSP update process, both locations will be considered for intersection improvements that can include signalization. However, isolated signals on high-speed corridors in rural and semi-rural areas can be hazardous and are discouraged by ODOT. Therefore, careful consideration of the trade-offs between reduced side-street delay and overall motorist safety will be required and alternatives to signalization will be preferred.

Freight Mobility

Efficient truck movement plays a vital role in the economical transport of raw materials and finished products. The designation of through truck routes provides for this efficient movement while maintaining neighborhood livability and public safety, and minimizing maintenance costs of the roadway system (due to their heavy loads freight vehicles cause more wear on the road structure). Conflicts between freight traffic and other modes can cause mobility issues and increased freight volume will create additional areas where this conflict occurs.

Highways designated as freight/truck routes by ODOT and the federal government include US 20, OR 99W, and the US 20-OR 34 corridor from Linn County through Philomath, as discussed in Memorandum #4. Since most of the congestion forecast to occur in Benton County is on these corridors, projects targeted at improving the efficiency of travel on freight/truck routes may be a priority.

Other areas that are not identified as freight routes but also experience high truck volumes include Bellfountain Road, Decker Road, Llewellyn Road, Springhill Drive, and Kings Valley Highway. Where these roads pass through rural communities, the high volume of truck traffic can impact the quality of life. Such impacts should be considered when developing solutions on these corridors.

Transit

Transit provides mobility to Benton County residents without access to a car or who do not drive. For other residents, transit provides an option to avoid some of nuisances of driving such as congestion and parking. It can play a role in reducing the volume of traffic on the road and improving environmental quality. Fixed-route transit service is provided to residents of Adair Village, Corvallis, Philomath and North Albany. The rural communities of Wren and Alpine are somewhat connected via the Coast to Valley Express route but this service is not priced for daily commuting from those communities and is of limited frequency (4 trips daily in each direction). Residents of the City of Monroe and the unincorporated communities of Belfountain, Greenberry, Kings Valley, Hoskins and Alsea have no fixed-route transit options or demand responsive options that are open to all demographic groups.

Existing transit services provide mobility and economic opportunity for some of the county's most vulnerable residents but they do not provide a comprehensive and open network for all residents or visitors. To improve mobility for all, transit in Benton County needs to expand service to accommodate the county's growth. The Benton County Coordinated Human Services – Public Transportation Plan, summarized in Memorandum #2, describes strategies for efficiently prioritizing resources and identifies unmet needs and service gaps. Other transit plans, such as the Corvallis Transit System Transit Development Plan (in progress) and the Albany Area MPO/City of Albany Transit Development Plan (in progress), will help guide the improvement of transit service in the urbanized areas of Benton County.

Other specific transit needs to be addressed include:

- **Service along OR 99W south and north of Corvallis:** The area of southeast Benton County surrounding the City of Monroe does not have any fixed-route transit available since a pilot program of a southern 99 Express connecting Monroe with Corvallis was discontinued due to lack of demand. A new route extending to Lane County with stops in Junction City and Eugene may result in increased demand for riders from the metropolitan areas interested in the through trip. Coordination with Lane County Transit would be required to develop this route. Additionally, there is also no service along OR 99W north of Adair Village to Monmouth and other communities in Polk County. Further study is needed for this potential route.
- **Expansion of Regional Linn-Benton Loop Service:** The Linn-Benton Loop is the existing regional transit system, connecting the two regional colleges (OSU and LBCC) and the two inter-connected metropolitan areas of Corvallis and Albany. The existing Loop route and schedule have remained unchanged for the past two decades, even while significant growth has changed the face of both counties. Planning is now underway to study the routes and schedules for potential expansion of the Loop network with future transit funding under HB 2017, to better serve commuters as well as the evolving needs of the two colleges.
- **Demand responsive transit capacity improvements:** Benton County Dial-a-Bus service is operating at capacity while the population continues to age and the participation percentage of eligible users is small. There is significant potential for increased demand for this service in the future. Investments to expand the capacity on the Dial-a-Bus system should be considered. Demand responsive service can also be considered as an alternative to fixed route service in

rural areas where demand is often low in under-served areas of the County including Wren, Kings Valley, the Alsea River Valley corridor, and South Benton County.

- **Increased frequency of service and expanded evening/weekend service:** There is currently no Sunday fixed-route service on CTS, no weekend service on the Philomath Connection and limited demand response services on weekends. Requests for expanded weekend services are common themes from surveys and outreach events. Convenient access to public transportation for those commuting outside normal working hours, especially for service sector employees, is limited and more frequent off-peak service should be considered.
- **Expanded service to the North Albany area:** While this portion of Benton County is experiencing significant growth, current service is limited. Improved commuter service at peak hours and improved route and schedule timing coordinated to employment locations is needed for this corridor.
- **Improved coordination with health and human service providers:** A 2012 Statewide Human Services-Public Transportation Coordination Study and numerous interviews cite a significant disconnect between the provision of human and health services and the provision of public transportation services, in large part due to differing missions (transportation providers are in the business of moving the greatest number of people at the lowest cost; human and health service providers are in the business of providing an array of services, of which transportation is not a priority). Human and health service providers are said to be often unaware of the most cost-effective public transportation services, resulting in referring clients to costly, often inefficient services. Coordination of medical and human services transportation is an on-going challenge that requires substantial and continued partnership efforts. One of the priorities is the need for all partners, particularly state agencies, to better understand and to acknowledge the important role that transportation plays in accessing medical and human services.
- **Expanded efforts to inform the public of available services:** Despite the best of efforts, lack of awareness about available public transportation services has been identified as the single greatest impediment to its use. While public transportation users may be aware of the specific services that they utilize, they have little to no knowledge of connecting services or other transportation opportunities within the region. An example is the relatively small percentage of eligible riders that are signed up to receive Ride Line NEMT (non-emergency medical transportation) services. There is an ongoing need to communicate broadly about available services and to conduct outreach to those populations without convenient access to public transportation, that are hesitant to use public transportation, or that are unaware of available services. Rider training and continuing distribution of information about available services are needed to increase ridership, especially among seniors and low-income persons.

Safety

Several locations were identified in Memorandum #4 as high collision locations based on crash rates and the ODOT SPIS system. For more details on these locations, refer to the Safety Evaluation section of Memorandum #4, including the map shown there in Figure 20. With growing traffic volumes, these problematic areas/trends will likely persist, and may even become progressively worse. The following projects are funded and expected to improve safety conditions in 2040.

- **Region 2 (Central) Local Road Roadway Departure [along Springhill Drive]:** Improvements to reduce roadway departure crashes (e.g., rumble strips, delineator posts, warning signage) are planned along Springhill Drive from Albany City Limits to Independence Highway
- **53rd Street & Country Club Intersection:** Includes analysis and potential construction of a roundabout
- **US 20 Safety Upgrades from Albany to Corvallis:** (House Bill 2017 recently dedicated \$20 million in funding for safety improvements in this corridor)

Other locations that were not flagged by the analysis in Memorandum #4, but have funded safety improvements, are:

- **Circle Boulevard and OR 99W:** The location of two pedestrian fatalities between 2011-2015. The project will include safety enhancements for the signals on Circle Boulevard at US 20 and OR 99W.
- **US 20 and Merloy Avenue:** Identified at TAC/SAC Meeting #2 as having safety concerns, the segment south of this intersection is funded for a two-way left turn improvement in the 2018-2021 STIP.

The funded safety projects listed above are expected to have a positive impact on the Safety category of the Corridor Health analysis. These projects should improve conditions along Springhill Drive, US 20, and OR 99W within Corvallis. Sections of OR 34 and OR 99W that were rated “poor” in the existing year analysis may continue to experience poor safety conditions in the future and should be targeted for improvements.

Resiliency

Funded bridge improvements like those on Hubbard Road and US 20 will improve Corridor Health Resilience scores on connected segments, but aging infrastructure throughout the county means that more bridges will have weight restrictions in future years. Preserving dedicated funding for bridge maintenance will be important to maintain reliable connectivity in Benton County.

Emergency response preparation will assist Benton County’s recovery efforts in the event of a natural disaster. In the case of an emergency, transportation will be in high demand, particularly for older adults and persons with disabilities. The County’s Emergency Services Division plans and directs emergency procedures, including emergency response training and exercises and maintaining an Emergency Communications Center where response agencies coordinate actions and allocate resources in an emergency. Under the Emergency Operations plan, Benton County Public Works is the lead agency responsible for transportation. Support agencies include transportation providers within the region, such as Corvallis Transit System, Benton County Dial-A-Bus, and Albany Transit (Call-A-Ride, Linn-Benton Loop).⁷

⁷ Benton County Emergency Operations Plan, June 2012.

The County has collaborated with Linn County in establishing and staffing a Vulnerable Populations Emergency Planning Work Group to plan for and coordinate services to those vulnerable populations least able to respond to emergencies without assistance. The group completed an emergency response plan in 2012 and is currently providing training and emergency preparedness planning to emergency service providers, transportation providers, community shelters, City and County personnel, and other agencies.

Active Transportation

Active transportation modes provide healthy alternatives to motor vehicle transportation. Encouraging walking and cycling can improve public health and reduce the amount of vehicle traffic on roadways. With increasing motor vehicle volumes along major county biking routes through 2040, designating separate spaces for bicyclists & pedestrians is critical to ensuring their safety and supporting walking and biking.

Identified deficiencies include:

- Rural Connectivity:** The city of Monroe is within 5 miles of the unincorporated communities of Alpine and Bellfountain, but there are no adequate facilities for active transportation users in that area. The communities of Wren, Greenberry, and Alsea also lack adequate and safe shoulder facilities to access destinations by walking or biking. The lack of facilities also creates limited to no safe routes to school for the children in these communities. Planning efforts undertaken for rural areas in Benton County include the South Benton County Recreation Plan (in progress) and the South Fork Road Comprehensive Corridor Plan (funded).
- Alternative Routes:** The primary north-south corridors in southeastern Benton County are Bellfountain Road and OR 99W. OR 99W provides wider shoulders than Bellfountain Road but also carries more vehicles. Both roads have speeds over 45 miles per hour and carry freight traffic. This results in unattractive conditions for people desiring to walk or bike. Other areas of Benton County, such as Wren-Blodgett-Summit, Kings Valley, and Alsea, also have limited choices for active transportation corridors. Preferred routes should be identified and improvements focused on those corridors.
- US 20 Corridor:** US 20 connects the core cities of the metropolitan areas, Corvallis and Albany. Segments of US 20 do not meet recommended minimum shoulder width for cyclists. The planned multiuse path from Scenic Drive to Springhill Drive in North Albany begins to fix the gap between these cities, but further improvements to reach Corvallis will be needed.
- Maintenance of Existing and Future Facilities:** Paramount to a successful active transportation project is planning for its continued maintenance. Many of Benton County's multi-use paths are falling apart due to the lack of a funding source/maintenance plan. Although paths and paved shoulders exist throughout the county, if they are not properly maintained they create a "barrier effect," an obstacle to promoting bicycle riding, and/or a safety hazard. Some chip sealed roads in the county are no longer used by cyclists because the roads are too rough for road bikes.

Active transportation improvement projects, such as multiuse paths adjacent to US 20 and OR 99W, would provide high-quality connectivity for cyclists and pedestrians. Rural areas of the county remain reliant on

shoulders for active transportation facilities, many of which do not meet minimum or recommended widths (see Memorandum #4), and put non-motorized users close to high-speed traffic. Overlays and resurfacing projects may provide opportunities to improve conditions for cyclists and pedestrians, but without facilities that at least meet minimum requirements the active transportation Corridor Health will remain poor. As improvements for active transportation are developed for this TSP update, facilities that provide separation from motor vehicles and connections to key destinations should be a priority, particularly on roads where an alternate route is not available.