

FINAL Technical Memorandum #2

Date: September 7, 2017 Project #:17720

To: Redmond TSP PMT

From: Julia Kuhn, PE, Matt Kittelson, PE and Jacqueline Gulczynski

Project: Redmond Transportation System Plan Update

Subject: Analysis Methodology and Assumptions Methodology

This memorandum documents the methodology and key assumptions that we propose to use as part of the existing and future conditions analyses for the Redmond Transportation System Plan (TSP) Update. The methodologies included in this memorandum are based on guidance provided in the Oregon Department of Transportation (ODOT) *Transportation System Plan Guidelines (2008)* and the *Analysis Procedures Manual (APM)*, Versions 1 and 2 as they relate to the City of Redmond. This memorandum serves as the Consultant Task 2.3 Deliverable per the approved ODOT scope (PA #27456; WOC#66) for the TSP Update.

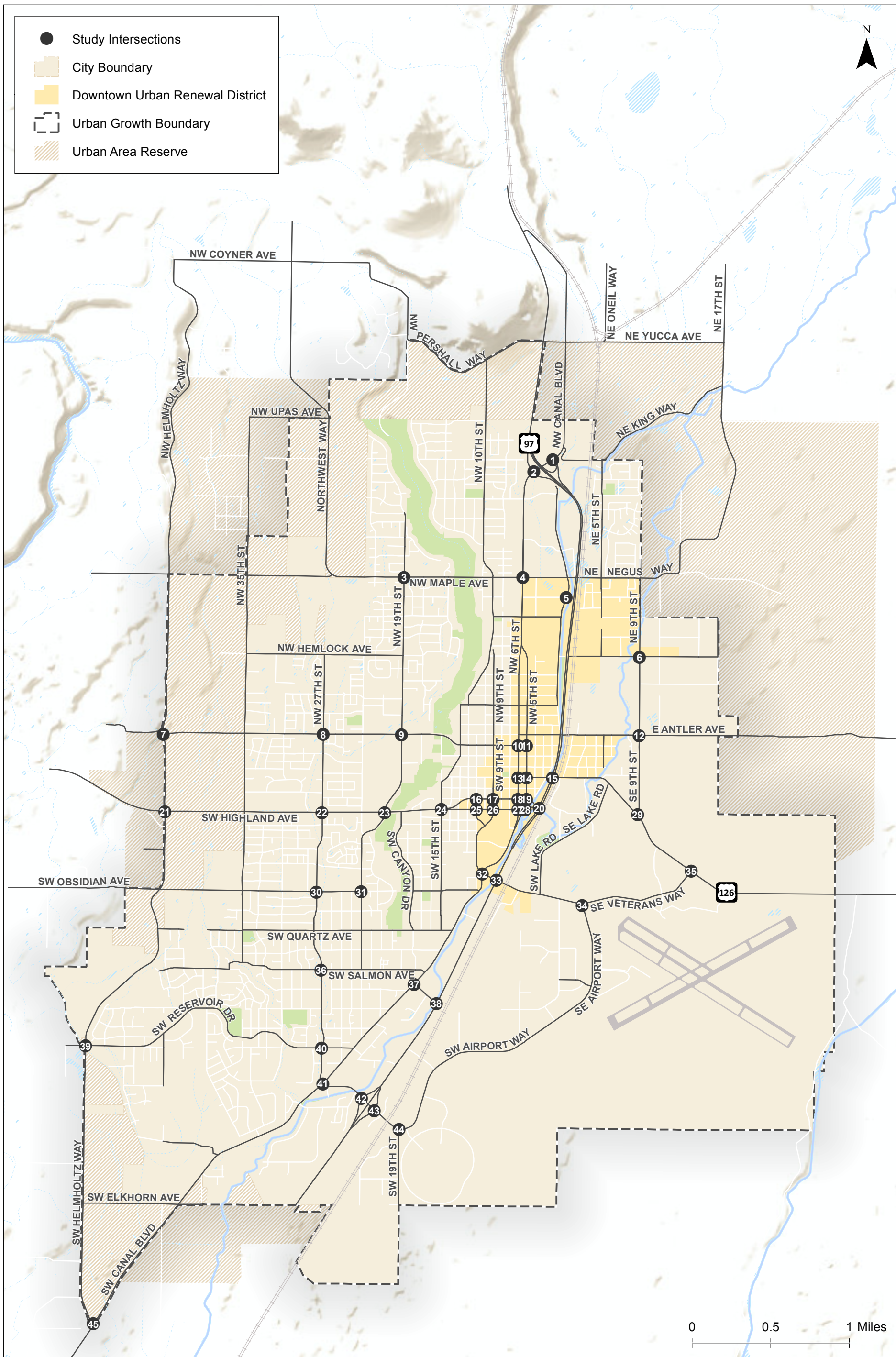
STUDY INTERSECTIONS

Figure 1 identifies the locations where four-hour traffic counts (2:00-6:00 PM) were collected in April 2017 to help guide the TSP update. The counts were collected Tuesday, April 18th and Wednesday, April 19th and include vehicle turning movements, pedestrian volumes, bicycle volumes, truck volumes and passenger car volumes.

In addition to the turning movement counts, 48-hour tube counts were collected at the following locations in June 2017 while school was still in-session:

- US 97 south of Yew Avenue
- US 97 south of Highland Avenue
- US 97 north of Canal Boulevard
- OR 126 east of 35th Street
- OR 126 west of Veterans Way
- Canal Boulevard north of Badger Avenue

The data collected includes vehicle speed, classification, and total volume. Figure 1 illustrates the location of the identified study intersections. Both the turning movement counts and the tube counts were collected consistent with Task 3.1.B.1 of the ODOT scope. A list of the study intersections is provided in Appendix A.



Study Intersections
Redmond, Oregon

Figure
1

INTERSECTION OPERATIONAL STANDARDS

Per Task 3.1.B.2, we will present the following information for each study intersection, regardless of jurisdictional control:

- Volume-to-capacity (v/c) ratio;
- Level-of-service (LOS);
- Delay;
- 95th Percentile queuing (not-simulation based); and
- Turning movement counts.

This information will be provided in tables, figures, and/or technical appendices, but where possible will be provided in figures to give the general public a more clear and relatable understanding of the analysis results.

ODOT Mobility Targets

ODOT assess intersections operations based on established mobility targets (as defined by the volume-to-capacity (v/c) ratio). Table 6 of the *Oregon Highway Plan* (OHP) provides the mobility targets for facilities outside the Portland Metro area. The OHP targets will be used to evaluate existing and future no-build conditions. (Note that Highway Design Manual standards will be used to evaluate potential solutions in TM #7, Identification of Alternatives, unless alternative standards are established.) There are two state facilities within the City of Redmond: US 97 (The Dalles-California Highway) and OR 126 (Ochoco Highway). Both facilities are designated by the OHP as Statewide Freight Routes. US 97 is further classified as an expressway north of Veteran’s Way and south of Yew Avenue. US 26 is designated as an expressway west of Helmholtz and east of the city limits.

Table 1 includes the mobility targets for expressways and statewide freight routes based on the posted speed. Both US 97 and OR 126 bisect the city center, where the posted speed is below 45 miles per hour (mph). Action 1F.1 of the OHP states that:

*For unsignalized intersections, achieving the volume to capacity ratios in Tables 6 and 7 for the state highway approaches indicates that state mobility targets are being met. In order to maintain safe operation of the intersection, **non-state highway approaches** are expected to meet or not to exceed the volume to capacity ratios for District/Local Interest Roads in Table 6.(Emphasis added)*

These ratios are identified under the “Unsignalized” column in Table 1. The OHP acknowledges the unique characteristics of an interchange opposed to an intersection directly on the state facility. The OHP states that the maximum v/c ratio for the interchange ramp termini should be designated as 0.85 unless the intersection v/c ratio target is less than 0.85. In which case, the intersection v/c ratio should be applied to the interchange.

Table 1. Volume to Capacity Ratio for State Freight Routes (US 97 and OR 126)

	Speed (Miles Per Hour)	Signalized	Unsignalized
Freight Route on a Statewide Highway	<=35mph	0.85	0.95
	40mph	0.80	0.90
	>=45mph	0.80	0.90
Statewide Expressway	>=45mph	0.85	0.80

The City of Redmond has adopted a performance standard based on Level of Service. The City requires an intersection to operate at a Level of Service E or better during the peak 15 minute period of the peak hour. For unsignalized intersections with a low minor street volume, the City may presume the intersection to operate acceptably with a v/c ratio less than 0.90 and a 95th percentile queue of less than 4 vehicles during the peak hour.

Table 2 shows the intersection control and mobility targets for the study intersections.

Table 2. Study Intersection Control and Mobility Target

Study Int. #	Intersection	Classification/ Jurisdiction	Intersection Control	Mobility Target
1	NW Canal Blvd/ US 97 NB Ramps	ODOT	Signalized	v/c<0.85
2	NW Canal Blvd/ US 97 SB Ramps	ODOT	Signalized	v/c<0.85
3	NW Maple Ave/ NW 19th St	City	Unsignalized	LOS E, v/c<0.90
4	NW Maple Ave/ NW 6th St	City	Signalized	LOS E
5	NW Larch Ave/ NW Canal Blvd	City	Unsignalized	LOS E, v/c<0.90
6	NE Hemlock Ave/ NE 9th St	City	Unsignalized	LOS E, v/c<0.90
7	W Antler Ave/ SW Helmholtz Way	City	Unsignalized	LOS E, v/c<0.90
8	W Antler Ave/ SW 27th St	City	Signalized	LOS E
9	W Antler Ave/ SW Rimrock Way	City	Signalized	LOS E
10	SW Black Butte Blvd/ SW 6th St	City	Unsignalized	LOS E, v/c<0.90
11	SW Black Butte Blvd/ SW 5th St	City	Unsignalized	LOS E, v/c<0.90
12	E Antler Ave/ NE 9th St	City	Unsignalized	LOS E, v/c<0.90
13	SW Evergreen Ave/ SW 6th St	City	Signalized	LOS E
14	SW Evergreen Ave/ SW 5th St	City	Signalized	LOS E
15	SW Evergreen Ave/ US 97	ODOT	Signalized	Alternative Mobility Standard
16	OR 126 (SW Glacier Ave)/ SW 11th St	ODOT	Signalized	v/c<0.85
17	OR 126 (SW Glacier Ave)/ SW 9th St	ODOT	Signalized	v/c<0.85
18	OR 126 (SW Glacier Ave)/ SW 6th St	ODOT	Signalized	v/c<0.85
19	OR 126 (SW Glacier Ave)/ SW 5th St	ODOT	Signalized	v/c<0.85
20	OR 126 (SW Glacier/Highland Ave)/ US 97	ODOT	Signalized	v/c<0.85
21	OR 126 (SW Highland Ave) / SW Helmholtz Way	ODOT	Unsignalized	v/c<0.80/0.90
22	OR 126 (SW Highland Ave)/ SW 27th St	ODOT	Signalized	v/c<0.80

Study Int. #	Intersection	Classification/ Jurisdiction	Intersection Control	Mobility Target
23	OR 126 (SW Highland Ave)/ SW Rimrock Way	ODOT	Signalized	v/c<0.80
24	OR 126 (SW Highland Ave)/ SW 15th St	ODOT	Signalized	v/c<0.85
25	OR 126 (SW Highland Ave)/ SW 11th St	ODOT	Signalized	v/c<0.85
26	OR 126 (SW Highland Ave)/ SW 9th St	ODOT	Signalized	v/c<0.85
27	OR 126 (SW Highland Ave)/ SW 6th St	ODOT	Signalized	v/c<0.85
28	OR 126 (SW Highland Ave)/ SW 5th St	ODOT	Signalized	v/c<0.85
29	OR 126/ SE 9th St (McCaffrey Rd)	ODOT	Unsignalized	v/c<0.80
30	SW Obsidian Ave/ SW 27th St	City	Unsignalized	LOS E, v/c<0.90
31	SW Obsidian Ave/ SW 23rd St	City	Unsignalized	LOS E, v/c<0.90
32	SW Veterans Way/ SW Canal Blvd	City	Signalized	LOS E
33	SW Veterans Way/ US 97	ODOT	Signalized	v/c<0.80
34	SW Veterans Way/ SE Airport Way	City	Unsignalized	LOS E, v/c<0.90
35	SW Veterans Way/ OR 126	ODOT	Unsignalized	Alternative Mobility Standard
36	SW Salmon Ave/ SW 27th St	City	Unsignalized	LOS E, v/c<0.90
37	SW Odem Medo Way/ SW Canal Blvd	City	Signalized	LOS E
38	SW Odem Medo Way/ US 97	ODOT	Signalized	v/c<0.80
39	SW Wickiup Ave/ SW 51st St (SW Helmholtz Way)	City	Unsignalized	LOS E, v/c<0.90
40	SW Wickiup Ave(Forked Horn Rd)/ SW 27th St	City	Unsignalized	LOS E, v/c<0.90
41	SW Canal Blvd/ SW 27th St	City	Unsignalized	LOS E, v/c<0.90
42	SW Yew Ave/ US 97 SB Ramps	ODOT	Signalized	v/c<0.80
43	SE Airport Way/ US 97 NB Ramps	ODOT	Signalized	v/c<0.80
44	SE Airport Way/ SW 19th St	City	Unsignalized	LOS E, v/c<0.90
45	S Canal Blvd / SW Helmholtz Way	City	Unsignalized	LOS E, v/c<0.90

SEASONAL ADJUSTMENT FACTOR

Per Task 3.1.B.1, we will adjust all traffic counts along the state routes to reflect 30th highest hour conditions. Version 2 of the APM identifies three methods for identifying seasonal adjustment factors for highway traffic volumes, of which the on-site Automatic Traffic Recorders (ATR) have been identified by ODOT as the most accurate method of use There are five on-site ATR stations located within or near the Redmond city limits, as shown in Figure 2.

- ATR 09-020: Located on US 97, The Dalles-California Highway, Mile Post (MP) 124.40
- ATR 09-021: Located on OR 126, McKenzie Highway, MP 108.27
- ATR 09-022: Located on US 97, The Dalles-California Highway, MP 120.94
- ATR 09-023: Located on US 97, The Dalles-California Highway, MP 119.09
- ATR 07-002: Located on OR 126, McKenzie Highway, MP 3.23

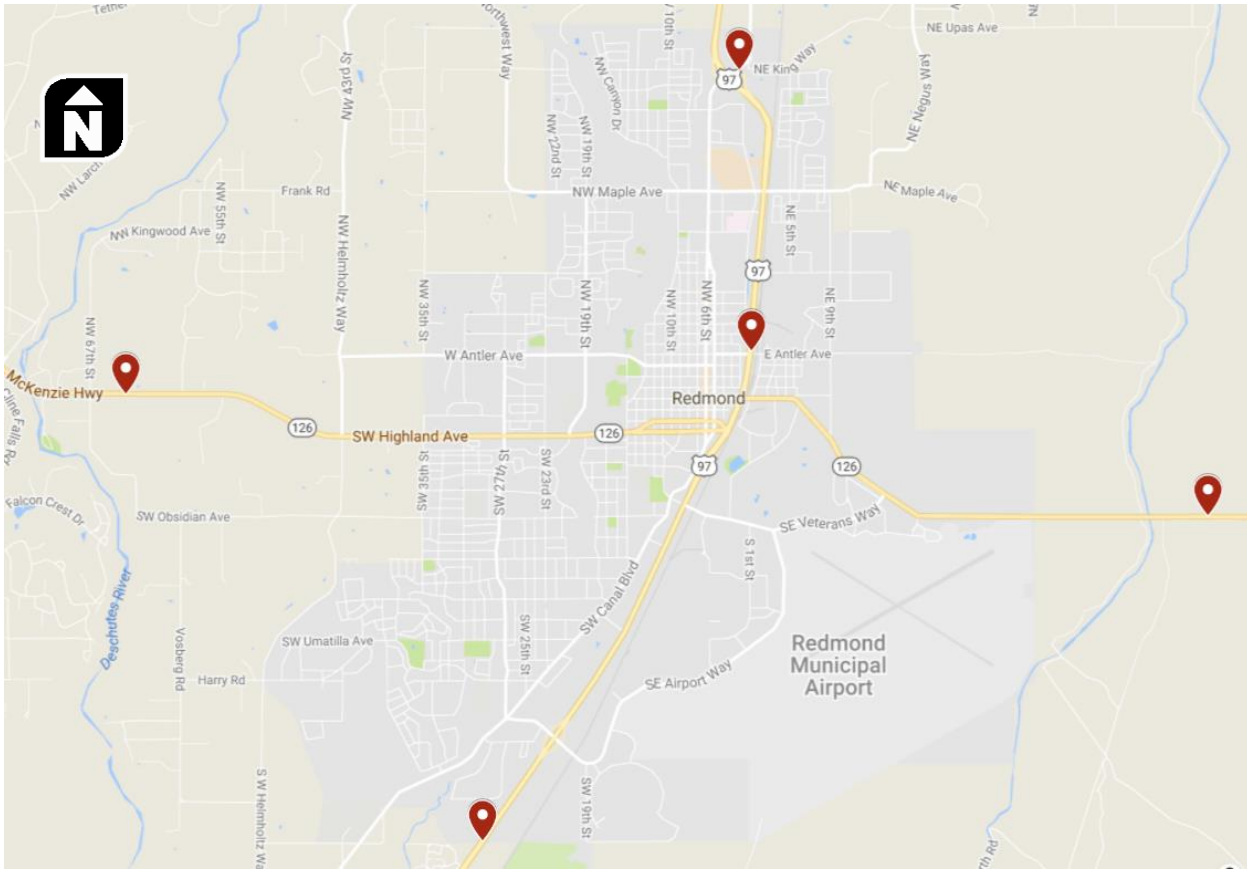


Figure 2. ATR Locations in and near City of Redmond

On-Site ATR Method

As stated within section 5.4.1 of the APM,

“The On-Site ATR Method is used when an ATR is within or near the project area. If located outside of the project area, there should be no major intersections between the ATR and the project area, and it should be within a minimal distance so that the traffic characteristics are comparable”.

Per the on-site ATR method, we calculated the applicable seasonal adjustment factors. These calculations are provided in Appendix B and summarized in Table 3.

Table 3: On-Site ATR Method Seasonal Adjustment Method

ATR Station	ATR Location	Seasonal Adjustment Factor	Applied Area
ATR 07-002	OR 126 0.35 miles west of Deschutes/Crook County line	1.10	OR 126 east of US 97
ATR 09-020	US 97 0.79 miles south of Yew Avenue	1.10	US 97 south of Highland Avenue
ATR 09-021	OR 126 1.38 miles west of SW Helmholtz Way	1.29	OR 126 west of US 97
ATR 09-022	US 97 0.04 miles north of Antler Avenue	1.13	Between Antler Avenue and Highland Avenue
ATR 09-023	US 97 0.57 miles south of O'Neil Highway	1.16	US 97 north of Antler Avenue

A significant number of study intersections in Redmond are located on state facilities. With five On-site ATR locations, seasonal adjustment factors were assigned based on proximity and roadway characteristics.

Table 4 summarizes ODOT intersections to be analyzed as part of the TSP and corresponding seasonal adjustment factors. As shown in Table 4, US 97 was used as the bisector on OR 126 to separate the seasonal adjustment factors on OR 126. Intersections on OR 126 west of US 97 apply the adjustment factor associated with ATR 09-021, and intersections east US 97 apply the seasonal adjustment factor associated with ATR 07-002. The seasonal adjustment factors at intersection along the US 97 corridor were applied based on location, average ADT, and roadway characteristics. No seasonal adjustment factors are proposed for intersections on the City of Redmond transportation system.

Table 4. Summary of Intersection Standards and Adjustment Factors

Study Int. #	Intersection	Classification/ Jurisdiction	Seasonal Adjustment Factor
1	NW Canal Blvd/ US 97 NB Ramps	ODOT	1.16
2	NW Canal Blvd/ US 97 SB Ramps	ODOT	1.16
15	SW Evergreen Ave/ US 97	ODOT	1.13
16	OR 126 (SW Glacier Ave)/ SW 11th St	ODOT	1.29
17	OR 126 (SW Glacier Ave)/ SW 9th St	ODOT	1.29
18	OR 126 (SW Glacier Ave)/ SW 6th St	ODOT	1.29
19	OR 126 (SW Glacier Ave)/ SW 5th St	ODOT	1.29
20	OR 126 (SW Glacier/Highland Ave)/ US 97	ODOT	1.29
21	OR 126 (SW Highland Ave) / SW Helmholtz Way	ODOT	1.29
22	OR 126 (SW Highland Ave)/ SW 27th St	ODOT	1.29
23	OR 126 (SW Highland Ave)/ SW Rimrock Way	ODOT	1.29
24	OR 126 (SW Highland Ave)/ SW 15th St	ODOT	1.29
25	OR 126 (SW Highland Ave)/ SW 11th St	ODOT	1.29
26	OR 126 (SW Highland Ave)/ SW 9th St	ODOT	1.29
27	OR 126 (SW Highland Ave)/ SW 6th St	ODOT	1.29
28	OR 126 (SW Highland Ave)/ SW 5th St	ODOT	1.29
29	OR 126/ SE 9th St (McCaffrey Rd)	ODOT	1.10
33	SW Veterans Way/ US 97	ODOT	1.10
35	SW Veterans Way/ OR 126	ODOT	1.10
38	SW Odem Medo Way/ US 97	ODOT	1.10
42	SW Yew Ave/ US 97 SB Ramps	ODOT	1.10
43	SE Airport Way/ US 97 NB Ramps	ODOT	1.10

ANALYSIS MODEL PARAMETERS

The bullets below identify the proposed sources of data and methodologies to be used to analyze traffic conditions in Redmond. Analyses of all state facilities will be conducted according to the most-recent version of the APM, unless otherwise agreed upon by both ODOT’s Transportation Planning and Analysis Unit (TPAU) and the consultant team.

1. *Intersection/Roadway Geometry* (lane numbers and arrangements, cross-section elements, signal phasing, etc.) will be reviewed through aerial photography and confirmed through a field review. Available as-built data may also be used to verify existing roadway geometry. The analysis models will be built on scaled roadway line work from GIS or aerial photography in Synchro analysis software.
2. *Operational Data* (such as posted speeds, intersection control, parking, right-turn on red, etc.) will be field verified. Data will be reviewed during a field visit and supplemented by available GIS data, aerials, photos, and the ODOT Video Log.
3. *Peak Hour Factors* (PHF) will be calculated for each intersection and applied to the existing conditions analyses. Where applicable, corridor or regional PHFs may be developed. PHFs of 0.95 will be used for the future analysis for high-order facilities (arterials), with 0.90 applied to

medium-order facilities (collectors) and 0.85 applied to local roads. If the existing PHF is greater than these default future values, the existing PHF will be applied.

4. Traffic Operations

- a. Highway Capacity Manual (HCM) methodology shall be used for intersection analyses of the design hour conditions. Signalized intersection analysis will be based on HCM methods. The existing and future no-build analysis will utilize Synchro software for all study intersections. Level-of-service, delay, and volume-to-capacity ratios will be reported at each of the study intersections regardless of roadway jurisdiction.
- b. Queuing analysis methodology will be based on Synchro 95th percentile queue lengths as appropriate; ODOT's two-way stop-controlled intersection calculator tool will be used to estimate queue lengths for two-way stop-controlled intersections. Microsimulation is not proposed as part of the long-range planning effort.

SYNCHRO INPUT ASSUMPTIONS

Synchro software will be used for the intersection analyses. This analysis will be consistent with the HCM procedures. Table 5 lists the proposed input parameters.

Table 5. Synchro Operations Parameters/Assumptions

Arterial Intersection Parameters	Existing Conditions
Peak Hour Factor	From traffic counts
Conflicting Bikes and Pedestrian per Hour	From traffic counts, as available
Ideal Saturation Flow Rate (for all movements)	1,750 passenger cars per hour green per lane
Lane Width	12 feet unless field observations suggest otherwise
Percent Heavy Vehicles	From traffic counts by movement, as available
95th percentile vehicle queues	Synchro HCM summary output

CRASH ANALYSES

Per Task 3.1.B.4, we will review most recent five years of crash data, as provided by ODOT, at the study intersections and study segments (where tube count data was collected). Any intersections or roadway segments that are identified as a Top 5% and 10% Safety Priority Index System (SPIS) site will be included in the crash data.

Intersection crash rates at each location will be compared to the 90th percentile rates and critical crash rates, per the APM. Crash rates will also be compared to the ODOT Crash Tables II and IV severe injury and fatal crash rates. Any locations where the rates are exceeded, we will identify potential countermeasures using the ODOT All Roads Transportation Safety (ARTS) crash reduction factors.

FORECAST YEAR VOLUME DEVELOPMENT

To assist in the development of traffic volumes for the Future Scenario Conditions (per Task 4 of the scope), we will obtain 2040 Bend Redmond travel demand data from ODOT's Transportation Planning Analysis Unit (TPAU). The model output data will be post-processed using NCHRP Report 255 methodologies.

ACTIVE TRANSPORTATION ANALYSIS

Per Task 3.1.B.3, the scope of work, we will identify existing gaps in the sidewalks, bicycle network, and transit network along the city's collector and arterial roadways. The Bicycle Level of Traffic Stress (LTS) and pedestrian methodology will reference the Redmond Neighborhood Revitalization Plan as it has recently been completed as part of that project.

Quantitative and qualitative analysis of active transportation facilities be performed consistent with APM version 2 and include:

1. Qualitative (multimodal) assessment for transit modes;
2. A qualitative assessment of transit service and identification of underserved areas.
3. Gaps in intermodal connectivity.

NEXT STEPS

We look forward to your review of the assumptions and parameters to be used as part of the Redmond TSP Existing and Future conditions analyses.

Appendix A- Study Intersections

Study Intersection Locations

Study Intersection	East-West Road Name	North-South Road Name
1	NW Canal Blvd	US 97 NB Ramps
2	NW Canal Blvd	US 97 SB Ramps
3	NW Maple Ave	NW 19th St
4	NW Maple Ave	NW 6th St
5	NW Larch Ave	NW Canal Blvd
6	NE Hemlock Ave	NE 9th St
7	W Antler Ave	SW Helmholtz Way
8	W Antler Ave	SW 27th St
9	W Antler Ave	SW Rimrock Way
10	SW Black Butte Blvd	SW 6th St
11	SW Black Butte Blvd	SW 5th St
12	E Antler Ave	NE 9th St
13	SW Evergreen Ave	SW 6th St
14	SW Evergreen Ave	SW 5th St
15	SW Evergreen Ave	US 97
16	OR 126 (SW Glacier Ave)	SW 11th St
17	OR 126 (SW Glacier Ave)	SW 9th St
18	OR 126 (SW Glacier Ave)	SW 6th St
19	OR 126 (SW Glacier Ave)	SW 5th St
20	OR 126 (SW Glacier/Highland Ave)	US 97
21	OR 126 (SW Highland Ave)	SW Helmholtz Way
22	OR 126 (SW Highland Ave)	SW 27th St
23	OR 126 (SW Highland Ave)	SW Rimrock Way
24	OR 126 (SW Highland Ave)	SW 15th St
25	OR 126 (SW Highland Ave)	SW 11th St
26	OR 126 (SW Highland Ave)	SW 9th St
27	OR 126 (SW Highland Ave)	SW 6th St
28	OR 126 (SW Highland Ave)	SW 5th St
29	OR 126	SE 9th St (McCaffrey Rd)
30	SW Obsidian Ave	SW 27th St
31	SW Obsidian Ave	SW 23rd St
32	SW Veterans Way	SW Canal Blvd
33	SW Veterans Way	US 97
34	SW Veterans Way	SE Airport Way
35	SW Veterans Way	OR 126
36	SW Salmon Ave	SW 27th St
37	SW Odem Medo Way	SW Canal Blvd
38	SW Odem Medo Way	US 97
39	Harry Rd/SW Wickiup Ave	SW 51st St (SW Helmholtz Way)
40	SW Wickiup Ave/Forked Horn Rd	SW 27th St
41	SW Canal Blvd	SW 27th St
42	SW Yew Ave	US 97 SB Ramps
43	SE Airport Way	US 97 NB Ramps
44	SE Airport Way	SW 19th St
45	S Canal Blvd	SW Helmholtz Way

Appendix B – Seasonal Adjustment Factor Data

**ODOT ATR 09-020, US97; MP 124.39; THE DALLES-CALIFORNIA HIGHWAY NO. 4; 0.79 mile south of
Yew Avenue**

Year	15-Jan	15-Feb	15-Mar	15-Apr	15-May	15-Jun	15-Jul	15-Aug	15-Sep	15-Oct	15-Nov	15-Dec
2015	92	98	102	108	108	115	122	116	113	113	101	102
2014	97	96	104	105	107	117	120	119	112	112	101	97
2013	92	100	102	107	108	114	115	117	111	111	104	100
2012	92	99	99	107	110	116	112	119	112	110	104	97
2011	99	99	103	107	109	113	115	117	109	108	102	101
Average	93.7	98.7	102.3	107.0	108.3	115.0	116.7	117.7	111.7	111.0	102.3	99.3
Count Adj	1.26	1.19	1.15	1.10	1.09	1.02	1.01	1.00	1.05	1.06	1.15	1.18

**ODOT ATR 09-021, OR126; MP 108.27; MCKENZIE HIGHWAY NO. 15; 1.38 miles west of S.W.
Helmholtz Way (S.W. 43rd Street)**

Year	15-Jan	15-Feb	15-Mar	15-Apr	15-May	15-Jun	15-Jul	15-Aug	15-Sep	15-Oct	15-Nov	15-Dec
2015	79	83	92	97	105	118	122	116	109	103	86	86
2014	79	75	91	100	109	117	125	121	109	103	87	83
2013	81	78	84	95	104	114	123	119	113	100	92	88
2012	81	81	86	95	106	113	122	123	110	101	90	85
2011	82	81	87	95	104	114	124	122	110	103	88	86
Average	80.3	80.0	88.0	95.7	105.0	115.0	123.0	120.7	109.7	102.3	88.3	85.7
Count Adj	1.53	1.54	1.40	1.29	1.17	1.07	1.00	1.02	1.12	1.20	1.39	1.44

**ODOT ATR 09-022, US97; MP 120.92; THE DALLES-CALIFORNIA HIGHWAY NO. 4; 0.04 mile north of
S.W. Antler Avenue**

Year	15-Jan	15-Feb	15-Mar	15-Apr	15-May	15-Jun	15-Jul	15-Aug	15-Sep	15-Oct	15-Nov	15-Dec
2015	88	95	99	104	107	113	118	113	109	108	94	93
2014	90	88	100	106	110	114	118	116	110	108	94	90
2013	84	92	97	105	110	113	116	115	109	107	99	93
2012	87	92	94	102	107	112	115	116	108	106	100	93
2011	92	91	97	102	107	113	116	116	108	104	97	97
Average	88.3	91.7	97.7	103.7	108.0	113.0	116.7	115.7	108.7	107.0	96.7	93.0
Count Adj	1.32	1.27	1.19	1.13	1.08	1.03	1.00	1.01	1.07	1.09	1.21	1.25

**ODOT ATR 09-023, US97; MP 119.09; THE DALLES-CALIFORNIA HIGHWAY NO. 4; 0.57 mile south of
O'Neil Highway No. 370**

Year	15-Jan	15-Feb	15-Mar	15-Apr	15-May	15-Jun	15-Jul	15-Aug	15-Sep	15-Oct	15-Nov	15-Dec
2015	84	91	97	101	105	111	117	112	108	105	92	90
2014	85	84	97	103	108	113	117	115	109	105	91	87
2013	83	91	95	100	105	110	114	114	108	103	96	91
2012	84	90	92	99	105	111	115	116	109	103	96	89
2011	89	90	95	99	105	112	116	115	107	102	92	95
Average	84.3	90.3	95.7	100.0	105.0	111.3	116.0	114.7	108.3	103.7	93.3	90.0
Count Adj	1.38	1.28	1.21	1.16	1.10	1.04	1.00	1.01	1.07	1.12	1.24	1.29

**ODOT ATR 07-002, OR126; MP 3.23; OCHOCO HIGHWAY NO. 41; 0.35 mile west of Deschutes-Crook
County Line**

Year	15-Jan	15-Feb	15-Mar	15-Apr	15-May	15-Jun	15-Jul	15-Aug	15-Sep	15-Oct	15-Nov	15-Dec
2015	91	96	103	105	108	114	119	113	112	113	101	101
2014	90	91	98	107	109	114	118	117	113	112	103	97
2013	92	100	102	108	110	114	115	114	110	108	99	96
2012	90	90	93	105	109	116	118	119	112	114	106	95
2011	93	97	100	106	110	114	115	115	110	107	99	98
Average	91.0	94.7	100.0	106.0	109.3	114.0	117.0	115.3	111.3	111.0	101.0	97.0
Count Adj	1.29	1.24	1.17	1.10	1.07	1.03	1.00	1.01	1.05	1.05	1.16	1.21

 Peak month
 Min/Max removed from average