

**Estimates of the Hourly Value of Unexpected Delay for Vehicles
in Oregon 2017**



**Oregon Department of Transportation
Program Implementation and Analysis Unit
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For questions contact:

Oregon Department of Transportation
Program Implementation & Analysis Unit
555 13th St. NE, Suite 2
Salem, OR 97301-4178
(503) 986-5364

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Estimating the Cost of Delay Due to Unexpected Highway Closures

In the event of a traffic incident causing a highway closure, ODOT is typically asked how much the closure cost the travelling public. This can be estimated if we know the average value of travelers' time and the number of vehicles impacted by the closure. "The Value of Time Travel" report in Appendix A explains the methodology used to develop the average value of travelers' time, by vehicle type (Passenger vehicle, Delivery/Medium Truck, Heavy Truck). The number of vehicles impacted by the closure is dependent on the location of the traffic incident and traffic flow conditions (average, high, or low). Oregon has 180 Automatic Traffic Recorders (ATR) throughout the state which supply monthly minimum, maximum, and peak hour traffic counts along with the percentage of vehicle types. The value of travelers' time is combined with ATR data to estimate the cost of Unexpected Delay for each ATR in Oregon by traffic flow conditions. Maps of Oregon's ATRs can be found in Appendix B.

Please note that accident or weather related *unexpected delay* is NOT the same as *expected delay*, such as construction work zones or scheduled lane closures.

Estimation of Cost of unexpected Delay Process:

Step 1. Identify which 2 ATR's (by Mile Post) the road closure is between on the Hourly Cost of Unexpected Delay Table. Oregon Highway numbering system is different than Route number, as the roads are commonly known by. For example, *Highway #1* is *Route* Interstate I-5. A Highway/ Routes cross-reference table can be found in Appendix B.

Also, for help finding Mile Posts numbers if given a general location (for example, 2 miles north of Salem), you can zoom in on the dots on the map located at:

https://data.oregon.gov/dataset/Mile-Posts-ArcGIS_rest_services_Framework_Trans_Ge/8pq4-kjbx

Step 2. Find the delay estimates for the ATRs closes to the road closure location to decide which would best reflect the traffic flow at the closure location.

Step 3. Identify the hours of closure so you can choose the appropriate value of time estimate. For example, on average, a closure in I-5, MP 11 (ATR 15-002) would cost the traveling public \$20,300 per hour. If the closure were to occur during busy times of the day, it would be appropriate to choose the estimate from the "High" column or "Peak Hour". If the closure is for multiple hours, use your best judgement.

Example

A truck overturns on I-5 in Salem, spilling cargo onto the highway between mile Posts 257 and 258 at 2 pm on a weekday. The highway was reopened after 2 hours. How much did this closure cost the traveling public?

The closest ATR locations on the map are 24-021 and 03-011. The average value of travel time at those two locations ranges from \$94,700- \$109,900. Traffic in the Salem section of I-5 is closer to volumes seen near the 24-021 ATR so the figure from this ATR will be used for the delay estimate. Given the time of day and knowing some of the traffic through Salem is local, it is reasonable to use the Average value figure. Thus, for two hours, the total estimated cost of delay due to this closure is $2 \times \$109,900 = \$219,800$, which should be rounded to \$220K (otherwise you give people the impression we have estimates more accurate than they actually are).

Hourly Cost of Unexpected Delay								
Location				Value of One Hour of Travel Time for all Vehicles				Peak Hour as % of Average
ATR	Highway	Route	Mile Point	Average	Low	High	Peak Hour	
15-002	001	I-5	11.03	\$ 20,300	\$ 15,500	\$ 24,800	\$ 57,600	284%
15-021	001	I-5	18.11	\$ 32,800	\$ 26,600	\$ 36,200	\$ 75,000	229%
15-019	001	I-5	28.33	\$ 60,200	\$ 51,800	\$ 62,800	\$ 133,400	222%
15-001	001	I-5	42.84	\$ 45,900	\$ 37,200	\$ 50,600	\$ 103,900	226%
17-001	001	I-5	64.2	\$ 27,700	\$ 21,300	\$ 32,900	\$ 69,900	252%
10-008	001	I-5	98.82	\$ 26,200	\$ 20,000	\$ 31,300	\$ 68,900	263%
10-005	001	I-5	130.15	\$ 39,900	\$ 33,200	\$ 43,500	\$ 91,000	228%
10-007	001	I-5	145.39	\$ 29,500	\$ 23,400	\$ 34,200	\$ 73,500	249%
10-010	001	I-5	151.57		New ATR	2017 data not complete		
20-020	001	I-5	170.25	\$ 30,900	\$ 24,000	\$ 36,100	\$ 78,000	252%
20-025	001	I-5	190.92	\$ 70,000	\$ 56,800	\$ 75,500	\$ 158,300	226%
22-016	001	I-5	214.56	\$ 48,800	\$ 39,100	\$ 54,300	\$ 114,700	235%
22-005	001	I-5	234.8	\$ 77,900	\$ 64,900	\$ 82,600	\$ 159,600	205%
24-021	001	I-5	252.2	\$ 94,700	\$ 79,400	\$ 98,700	\$ 199,100	210%
03-011	001	I-5	281.2	\$109,900	\$ 91,000	\$ 114,200	\$ 205,500	187%
34-008	001	I-5	290.14	\$185,000	\$ 161,500	\$ 186,200	\$ 332,600	180%
26-016	001	I-5	298.24	\$157,900	\$ 133,400	\$ 161,400	\$ 283,800	180%
26-026	001	I-5	300.37	\$156,500	\$ 132,500	\$ 158,400	\$ 288,600	184%
26-026	001	I-5 NB	300.37	\$156,500	\$ 132,500	\$ 158,400	\$ 288,600	184%
26-026	001	I-5 SB	300.37	\$156,500	\$ 132,500	\$ 158,400	\$ 288,600	184%
26-019	001	I-5	304.66	\$148,800	\$ 130,300	\$ 151,200	\$ 255,700	172%
26-004	001	I-5	307.97	\$149,100	\$ 128,800	\$ 149,700	\$ 253,700	170%
26-015	002	I-84	0.49	\$159,700	\$ 135,900	\$ 162,200	\$ 262,800	165%
26-014	002	I-84	3.35	\$183,100	\$ 154,600	\$ 185,000	\$ 296,700	162%
26-028	002	I-84	11.45	\$120,600	\$ 94,300	\$ 129,600	\$ 228,100	189%
26-001	002	I-84	17.71	\$ 38,100	\$ 21,900	\$ 53,400	\$ 132,200	347%
14-004	002	I-84	45.53	\$ 26,600	\$ 15,100	\$ 36,000	\$ 89,800	338%
33-001	002	I-84	75.93	\$ 27,400	\$ 15,900	\$ 33,500	\$ 76,400	279%
28-002	002	I-84	109.51	\$ 15,100	\$ 7,700	\$ 20,000	\$ 49,900	330%
11-009	002	I-84	147.78	\$ 14,800	\$ 8,200	\$ 19,100	\$ 50,700	343%
33-005	004	US 197	10.3	\$ 3,300	\$ 2,000	\$ 4,100	\$ 10,800	327%
16-002	004	US 97	97.11	\$ 17,100	\$ 11,600	\$ 20,300	\$ 44,800	262%
09-023	004	US 97	119.09	\$ 25,700	\$ 18,900	\$ 28,500	\$ 61,400	239%
09-022	004	US 97	120.92	\$ 27,100	\$ 20,500	\$ 29,600	\$ 61,500	227%
09-020	004	US 97	124.39	\$ 39,200	\$ 31,300	\$ 41,900	\$ 91,000	232%
09-007	004	US 97	135.95	\$ 60,600	\$ 48,500	\$ 64,500	\$ 141,000	233%
09-009	004	US 97	137.36	\$ 58,800	\$ 46,600	\$ 63,700	\$ 141,600	241%
09-025	004	US 97	140.45	\$ 23,700	\$ 16,900	\$ 28,900	\$ 60,900	257%
09-003	004	US 97	142.41	\$ 29,100	\$ 20,700	\$ 35,600	\$ 76,300	262%
18-006	004	US 97	204.65	\$ 6,800	\$ 2,700	\$ 11,200	\$ 27,400	403%
18-023	004	US 97	243.22	\$ 5,500	\$ 2,800	\$ 8,200	\$ 20,100	365%
18-022	004	US 97	254.3	\$ 7,800	\$ 4,800	\$ 11,100	\$ 25,700	329%
18-019	004	US 97	289.44	\$ 5,300	\$ 3,100	\$ 7,900	\$ 20,300	383%
11-007	005	OR 19	6.81	\$ 900	\$ 700	\$ 1,100	\$ 3,000	333%
12-003	005	US 26	131.4	\$ 1,200	\$ 600	\$ 1,700	\$ 5,100	425%
12-009	005	US 26	175.79	\$ 1,100	\$ 600	\$ 1,700	\$ 4,600	418%

Hourly Cost of Unexpected Delay

Location				Value of One Hour of Travel Time for all Vehicles				Peak Hour as % of Average
ATR	Highway	Route	Mile Point	Average	Low	High	Peak Hour	
15-007	021	OR 66	6.61	\$ 1,300	\$ 800	\$ 1,700	\$ 4,800	369%
15-017	022	OR 62	1.11	\$ 52,600	\$ 50,500	\$ 53,300	\$ 105,300	200%
15-013	022	OR 62	15.46	\$ 9,600	\$ 7,400	\$ 11,600	\$ 25,000	260%
18-021	022	OR 62	91.1	\$ 700	\$ 200	\$ 1,500	\$ 5,200	743%
17-005	025	US 199	4.68	\$ 14,500	\$ 11,000	\$ 16,500	\$ 34,700	239%
17-003	025	US 199	41.32	\$ 3,900	\$ 2,400	\$ 5,800	\$ 15,900	408%
26-003	026	US 26	14.36	\$ 36,500	\$ 32,800	\$ 37,200	\$ 76,700	210%
03-006	026	US 26	46.38	\$ 11,700	\$ 8,800	\$ 15,100	\$ 48,100	411%
03-007	026	OR 35	57.79	\$ 2,900	\$ 1,400	\$ 4,300	\$ 21,500	741%
14-003	026	OR 35	82.91	\$ 1,900	\$ 1,000	\$ 3,600	\$ 9,500	500%
02-003	027	OR 34	53.89	\$ 2,400	\$ 2,000	\$ 2,700	\$ 6,700	279%
30-008	028	US 395	1.77	\$ 29,200	\$ 25,000	\$ 30,000	\$ 66,000	226%
30-007	028	US 395	16.7	\$ 1,000	\$ 500	\$ 1,500	\$ 5,000	500%
12-006	028	US 395	89.8	\$ 500	\$ 200	\$ 1,000	\$ 3,900	780%
34-009	029	OR 8	14.84	\$ 39,200	\$ 35,400	\$ 39,700	\$ 85,100	217%
27-006	030	OR 22	19.47	\$ 32,700	\$ 27,800	\$ 34,100	\$ 74,700	228%
24-014	030	OR 22	25.9	\$105,400	\$ 97,100	\$ 108,000	\$ 231,900	220%
21-006	033	US 20	34.24	\$ 7,000	\$ 5,500	\$ 8,100	\$ 17,100	244%
10-006	035	OR 42	70.2	\$ 6,700	\$ 5,400	\$ 7,400	\$ 16,100	240%
34-004	037	OR 6	38.55	\$ 6,400	\$ 3,400	\$ 9,000	\$ 32,100	502%
27-001	039	OR 18	23.23	\$ 20,000	\$ 15,400	\$ 23,700	\$ 61,200	306%
36-006	039	OR 18	41	\$ 15,400	\$ 12,700	\$ 17,000	\$ 37,700	245%
07-002	041	OR 126	3.23	\$ 10,800	\$ 8,600	\$ 11,400	\$ 26,300	244%
07-001	041	US 26	22.85	\$ 3,400	\$ 1,800	\$ 5,800	\$ 19,200	565%
28-001	042	US 97	17.36	\$ 3,800	\$ 2,400	\$ 5,100	\$ 11,500	303%
10-003	045	OR 38	23.65	\$ 4,100	\$ 2,900	\$ 5,500	\$ 16,200	395%
34-005	047	US 26	37.6	\$ 9,200	\$ 4,600	\$ 13,400	\$ 44,300	482%
34-007	047	US 26	56.23	\$ 26,100	\$ 17,500	\$ 34,000	\$ 74,000	284%
34-010	047	US 26	65.02	\$127,300	\$ 106,400	\$ 129,400	\$ 242,900	191%
26-002	047	US 26	73.75	\$156,500	\$ 134,600	\$ 158,300	\$ 283,900	181%
13-001	048	US 395	66.3	\$ 600	\$ 300	\$ 1,300	\$ 4,600	767%
18-018	050	OR 39	-4.08	\$ 25,200	\$ 23,000	\$ 26,000	\$ 62,100	246%
18-020	050	OR 39	16.15	\$ 5,200	\$ 3,900	\$ 6,000	\$ 13,100	252%
24-016	051	OR 551	3.7	\$ 10,400	\$ 8,900	\$ 10,800	\$ 22,400	215%
25-007	052	OR 74	37.83	\$ 1,600	\$ 1,300	\$ 1,800	\$ 4,700	294%
03-009	053	US 26	57.77	\$ 7,500	\$ 3,900	\$ 11,300	\$ 36,500	487%
16-006	053	US 26	113.17	\$ 9,500	\$ 6,200	\$ 11,900	\$ 31,200	328%
30-019	054	US 395	8.7	\$ 8,900	\$ 7,500	\$ 9,400	\$ 20,600	231%
22-022	058	US 20	2.14	\$ 43,600	\$ 41,100	\$ 44,500	\$ 97,900	225%
22-012	058	OR 99E	21.64	\$ 4,600	\$ 3,800	\$ 5,200	\$ 12,200	265%
26-005	061	I-405	0.6	\$104,900	\$ 86,800	\$ 107,600	\$ 194,200	185%
26-027	061	I-405	3.05	\$145,800	\$ 121,600	\$ 147,300	\$ 269,900	185%
20-005	062	OR 126	43.86	\$ 7,600	\$ 5,800	\$ 9,300	\$ 23,600	311%
15-014	063	OR 99	15.93	\$ 10,400	\$ 9,700	\$ 10,800	\$ 25,100	241%
03-016	064	I-205	0.76	\$ 99,900	\$ 92,600	\$ 101,900	\$ 179,600	180%

Hourly Cost of Unexpected Delay								
Location				Value of One Hour of Travel Time for all Vehicles				Peak Hour as % of Average
ATR	Highway	Route	Mile Point	Average	Low	High	Peak Hour	
26-022	064	I-205	18.25	\$172,200	\$ 146,100	\$ 174,200	\$ 294,200	171%
26-018	064	I-205	20.35	\$167,200	\$ 141,500	\$ 168,900	\$ 277,500	166%
26-024	064	I-205	25.5	\$175,300	\$ 150,000	\$ 178,700	\$ 321,200	183%
01-001	066	US 30	37.7	\$ 1,000	\$ 700	\$ 1,200	\$ 3,100	310%
20-028	069	OR 569	5.2	\$ 30,900	\$ 27,700	\$ 31,000	\$ 69,800	226%
30-025	070	I-82	0.58	\$ 25,300	\$ 16,700	\$ 29,800	\$ 61,600	243%
01-012	071	OR 7	48.4	\$ 1,800	\$ 1,100	\$ 2,300	\$ 8,700	483%
24-022	072	OR 99EB	0.67	\$ 28,200	\$ 24,400	\$ 28,500	\$ 61,600	218%
03-021	075	OR 224	5.46	\$ 20,200	\$ 17,200	\$ 20,700	\$ 45,000	223%
24-001	081	OR 99E	34.03	\$ 13,900	\$ 12,000	\$ 14,900	\$ 37,200	268%
36-004	091	OR 99W	21.81	\$ 41,500	\$ 37,900	\$ 41,600	\$ 82,100	198%
36-005	091	OR 99W	47.45	\$ 8,100	\$ 6,600	\$ 8,600	\$ 21,700	268%
27-005	091	OR 99W	70.9	\$ 9,200	\$ 8,000	\$ 9,600	\$ 25,000	272%
02-007	091	OR 99W	94.9	\$ 6,200	\$ 5,200	\$ 6,700	\$ 15,200	245%
20-024	091	OR 99	115.28	\$ 18,700	\$ 16,900	\$ 19,700	\$ 46,400	248%
05-006	092	US 30	53.33	\$ 12,800	\$ 9,900	\$ 15,400	\$ 35,100	274%
26-012	100	I-84	13.94	\$ 900	\$ 100	\$ 1,900	\$ 7,300	811%
10-004	138	OR 138	28.41	\$ 1,100	\$ 500	\$ 2,200	\$ 6,300	573%
24-020	140	OR 219	31.88	\$ 3,500	\$ 2,600	\$ 4,100	\$ 11,400	326%
27-002	150	OR 221	18.6	\$ 15,900	\$ 14,300	\$ 16,100	\$ 38,600	243%
03-020	160	OR 213	8.9	\$ 17,300	\$ 14,400	\$ 18,100	\$ 37,800	218%
03-013	160	OR 213	22.15	\$ 5,900	\$ 4,600	\$ 6,600	\$ 17,300	293%
03-014	161	OR 211	24.23	\$ 3,500	\$ 2,500	\$ 4,100	\$ 10,100	289%
24-004	162	OR 22	2.82	\$ 31,000	\$ 26,500	\$ 34,200	\$ 73,000	235%
24-005	162	OR 22	10.02	\$ 24,600	\$ 20,800	\$ 27,400	\$ 61,200	249%
24-013	162	OR 22	33.69	\$ 6,200	\$ 3,400	\$ 9,900	\$ 34,100	550%
24-015	162	OR 22	51.3	\$ 5,400	\$ 3,000	\$ 8,500	\$ 29,100	539%
03-018	171	OR 224	3.6	\$ 42,000	\$ 37,800	\$ 42,600	\$ 91,800	219%
03-017	171	OR 212	6.8	\$ 43,200	\$ 38,600	\$ 44,000	\$ 84,000	194%
03-008	173	OR173	5.45	\$ 2,200	\$ 1,600	\$ 3,000	\$ 11,600	527%
02-005	191	OR 223	26.43	\$ 1,400	\$ 1,000	\$ 1,600	\$ 4,600	329%
20-023	200	OR 200	13.54	\$ 2,100	\$ 1,600	\$ 2,600	\$ 5,000	238%
22-020	210	OR 34	3.92	\$ 36,400	\$ 33,000	\$ 37,200	\$ 92,400	254%
22-010	211	OR 226	0.43	\$ 6,400	\$ 5,400	\$ 7,100	\$ 15,700	245%
20-008	227	I-105	2.82	\$ 72,500	\$ 65,700	\$ 73,000	\$ 176,400	243%
20-027	227	OR 126	8.66	\$ 36,900	\$ 32,700	\$ 37,800	\$ 89,000	241%
20-004	229	OR 36	41.04	\$ 2,300	\$ 1,700	\$ 2,800	\$ 7,000	304%
15-020	270	OR 140	16.03	\$ 3,700	\$ 2,400	\$ 4,700	\$ 11,600	314%
15-011	272	OR 238	24.94	\$ 4,000	\$ 2,900	\$ 4,500	\$ 10,500	263%
11-004	300	OR 206	41.74	\$ 200	\$ 200	\$ 300	\$ 900	450%
30-012	330	OR 204	0.12	\$ 1,300	\$ 800	\$ 2,100	\$ 4,700	362%
01-007	340	OR 203	36.86	\$ 300	\$ 200	\$ 300	\$ 900	300%
13-005	440	OR 205	0.01	\$ 500	\$ 300	\$ 700	\$ 1,700	340%
13-007	442	OR 78	1.7	\$ 1,900	\$ 1,400	\$ 2,200	\$ 5,200	274%
23-012	456	US 95	91.48	\$ 1,900	\$ 1,000	\$ 2,800	\$ 8,100	426%

Appendix A

**The Value of Travel-Time: Estimates of the Hourly Value of Time for
Vehicles in Oregon 2017**



**Oregon Department of Transportation
Program Implementation and Analysis Unit
April 2019**

For questions contact:

Oregon Department of Transportation
Program Implementation & Analysis Unit
555 13th St. NE, Suite 2
Salem, OR 97301-4178
(503) 986-5364

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Executive Summary

Time is a valuable and limited resource for individuals and businesses. Transportation investments and policy can affect how we use time. Estimates of the value of travel-time are needed to make informed investment and policy decisions affecting highway users.

National estimates of the value of travel-time vary from under \$10 per hour to over \$100 per hour. Such differences exist because estimates of the value of travel-time depend on a number of components:

- Mode of travel
- Type of vehicle
- Vehicle occupancy
- Trip purpose
- Costs included and excluded when building the estimates
- Availability of detailed data
- Underlying assumptions

Details on underlying assumptions, sources, and calculations used for the estimates of 2017 hourly value of travel-time for vehicles in Oregon are provided in the text and footnotes of this document.

This update, like previous reports, focuses on highway users and provides an estimate of the value of travel-time in Oregon for three vehicle categories: automobiles/light trucks, delivery/medium trucks, and heavy trucks. It illustrates how the final value is sensitive to (and changes with) underlying assumptions regarding the share of miles traveled for work vs. personal purposes, total number of people in the vehicle, and changes in wages. By providing regular updates and keeping values current, planning and project impact analysis is improved.

The estimates are presented in Table 1. When using these estimates to make regulatory or investment decisions, a range of estimates of the value of travel-time should be used for sensitivity analyses. USDOT guidelines for plausible ranges are presented at the end of this paper.

Table 1. Estimated Value of One Hour of Travel-Time by Vehicle Class, Oregon 2017

Vehicle Class	Average Value
Auto/Light Truck	\$26.44
Delivery/Med. Trucks	\$31.89
Heavy Trucks	\$33.24

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The Value of Travel-Time: Estimates of the Hourly Value of Time for Vehicles in Oregon 2017

Introduction

Time is a valuable and limited resource for individuals and businesses. Transportation investments and policy can affect how we use time. Estimates of the value of travel-time are needed to make informed investment and policy decisions affecting highway users.

Travel-time is one of three primary types of user costs associated with travel. The other two are vehicle operating costs and safety costs.¹ Some travel-time estimates include vehicle operating costs as a component of the time value estimate. This paper considers costs associated with time as separate from vehicle operating costs.

Costs associated with travel-time fall within one of two categories, on-the-clock/business time or personal time. Costs associated with business travel-time include employers' costs such as wages and fringe benefits and in some instances the time value of the average payload. For driving outside of work hours (i.e., personal time), travel-time costs reflect the fact that how we spend our time is important and affects our happiness. In economic terms it is the opportunity cost of people's time spent driving – time that could be spent doing something else.

This update, like previous reports, focuses on highway users and provides an estimate of the value of travel-time in Oregon for three vehicle categories: automobiles/light trucks, delivery/medium trucks, and heavy trucks. It illustrates how the final value is sensitive to (and changes with) underlying assumptions regarding the share of miles traveled for work vs. personal purposes, total number of people in the vehicle, and changes in wages. By providing regular updates and keeping values current, planning and project impact analysis are improved.

Some analyses using value of travel-time estimates may be sensitive to the magnitude of the values. The United States Department of Transportation (USDOT) guidelines suggest using a range of plausible values to test the sensitivity of economic evaluations and conclusions. Plausible ranges identified by the USDOT for values of travel-time per person hour are included in this paper.

Variation in Estimates

National estimates of the value of travel-time vary from under \$10 per hour to over \$100 per hour. Such differences exist because estimates of the value of travel-time depend on a number of elements:

- Mode of travel
- Type of vehicle

¹ In addition to user costs, there are also agency costs, capital improvement costs, and external costs associated with use of the transportation system. External costs borne by users and non-users alike include air, water, and noise pollution, land use, property value, and aesthetic impacts.

- Vehicle occupancy
- Trip purpose
- Costs included and excluded when building the estimates
- Availability of detailed data
- Underlying assumptions

Details on underlying assumptions, sources, and calculations used for the estimates of the 2017 hourly value of travel-time for vehicles in Oregon are provided in the remainder of this document.

Oregon Value of Travel-Time Estimates

Oregon data is used in conjunction with national trend data to build value of travel-time estimates for three vehicle categories. The methodology used in this paper is based on work done by the USDOT in the Highway Economic Requirements System (HERS) and Revised Departmental Guidance on Valuation of Travel Time.²

Household Income & Total Compensation

The value of travel-time is conventionally based on either household income or total compensation. The value of on-the-clock business time is a reflection of the total cost of the employee's time to the employer and so is a function of total compensation.³ Value of personal time reflects the opportunity cost of time spent traveling versus time that could be spent doing something else and is typically expressed as a fraction of household income.⁴ Household income and compensation information used in these estimates comes from the U.S. Department of Labor⁵ and the U.S. Census Bureau⁶.

² Highway Economic Requirements System - State Version, unpublished technical data dated August 2, 2016; *The Value of Travel Time Savings: Departmental Guidance for Conducting Economic Evaluations Revision 2 (2015 Update)*, U.S. Department of Transportation.

³ Total compensation includes wages, fringe benefits (insurance, vacation, holidays, sick leave, other paid leave, etc.) and legally required benefits (unemployment insurance, Social Security, workers' compensation, etc.).

⁴ *The Value of Travel Time Savings: Departmental Guidance for Conducting Economic Evaluations Revision 2 (2015 Update)*, uses annual median household income divided by 2080 (hours) to represent person-hour personal trip values for all travelers regardless of their age, employment status, or relationship to other travelers. The fraction of the hourly median household income used to value personal time is currently 50% for local trips and 70% for intercity trips, applied equally to drivers and passengers.

⁵ Median hourly wages used for autos was taken from *Occupational Employment and Wage Estimates*, Bureau of Labor Statistics, U.S. Department of Labor, May 2017, and utilizes the median hourly wage for category 00-0000 All Occupations in Oregon. Truck driver median hourly wages come from the same source, but different occupational categories (53-3033 Light Truck or Delivery Services Drivers in Oregon. and 53-3032 Heavy and Tractor-Trailer Truck Drivers in Oregon). Fringe benefit estimates are derived from the wage to fringe benefit relationships for appropriate occupational categories taken from the *Employer Costs for Employee Compensation Historical Listing March 2004 – June 2016* published by the Bureau of Labor Statistics.

⁶ Median household income for Oregon in 2017 came from the U.S. Census Bureau, American Community Survey, *Household Income: 2017*, a brief issued September 2018.

On-the-Clock Business Trips

On-the-clock/business trips represent travel for work and do not include commute trips. In order to estimate the weighted value of travel-time for on-the-clock trips by vehicle category, a number of other variables must be determined. These include the average number of occupants in the vehicles, freight inventory value for trucks, and the proportion of travel miles spent on-the-clock. The sections that follow discuss each of these variables in turn.

Vehicle Occupancy

In order to include all relevant employee time associated with on-the-clock travel, it is necessary to know how many people occupy the vehicle during these trips. Oregon-specific vehicle occupancy data is not available, but there is no reason to expect Oregon to be very different from the nation as a whole. Average vehicle occupancy for on-the-clock auto trips is estimated to be 1.42 persons.⁷

Average vehicle occupancy for the delivery and medium weight truck category is estimated using a combination of local and national data. HERS documentation identifies an average occupancy of 1.38 persons for six-tire vehicles, which include pick-up-and-delivery vehicles that sometimes carry a helper; while larger single-unit trucks are assumed to have an average of 1.14 occupants, and small combination trucks are assumed to have an average of 1.02 occupants. Using the proportion of average daily traffic on the state highway system in 2017 for each of the delivery and medium weight truck categories, the weighted average vehicle occupancy for trucks in this category in Oregon is estimated at 1.30 persons.

HERS assumes average vehicle occupancy of 1.02 persons for four and five axle combination trucks.⁸ This same average vehicle occupancy has been assigned to Oregon's heavy truck category.

Line 7 of Table 2 lists on-the-clock business vehicle occupancy rates. Employee compensation for 2017 was multiplied by average vehicle occupancy to compute total per-vehicle cost to employers for one hour of work travel-time. Line 8 of Table 2 presents the 2017 cost of employees per vehicle.

⁷ "The 2017 National Household Travel Survey (NHTS)", U.S. Department of Transportation, Federal Highway Administration, <http://nhts.ornl.gov/>. Average vehicle occupancy for on-the-clock business trips is a VMT weighted estimate based on the "work from home", "work related meeting/trip", and "volunteer activities" categories of travel.

⁸ Source: Unpublished HERS-ST technical data dated August 2, 2016.

**Table 2. Details of Estimated Value of One Hour of Travel-Time
by Vehicle Class, Oregon 2017**

Vehicle Class				
#	Category	Auto/Light Truck	Delivery/Med. Trucks	Heavy Trucks
1	2017 Oregon Median Hourly Wage	\$18.67	\$16.10	\$21.35
2	2017 Value of Fringe Benefits	\$8.67	\$8.34	\$11.06
3	Total Hourly "On-the-Clock" Compensation	\$27.34	\$24.44	\$32.41
4	2017 Oregon Hourly Median Household Income	\$29.01	N/A	N/A
5	Hourly Value Personal Local Travel	\$14.50	N/A	N/A
6	Hourly Value Personal Intercity Travel	\$20.31	N/A	N/A
"On-the-Clock" Business Trips				
7	Average Vehicle Occupancy	1.420	1.297	1.020
8	2017 Cost of Employees per Vehicle	\$38.82	\$31.71	\$33.06
9	2017 Freight Inventory Value	\$0.00	\$0.18	\$0.18
10	Total "On-the-Clock" Value per Vehicle	\$38.82	\$31.89	\$33.24
11	% Miles "On-the-Clock"	7.0%	100.0%	100.0%
12	Weighted Value	\$2.72	\$31.89	\$33.24
Personal Trips				
12	Average Vehicle Occupancy	1.68	N/A	N/A
13	Total Personal Value Local Trips	\$24.32	\$0.00	\$0.00
14	% Miles Personal Local Trips	81.7%	0.0%	0.0%
15	Total Personal Value Intercity Trips	\$34.05	\$0.00	\$0.00
16	% Miles Personal Intercity Trips	11.3%	0.0%	0.0%
17	Weighted Value	\$23.72	\$0.00	\$0.00
18	Total Weighted Average	\$26.44	\$31.89	\$33.24

Note: A number of key variables have been adjusted to reflect updated guidance (for example, using median rather than average wages). As a result, these estimates should not be used with previous years' estimates. In addition, the table values are rounded to two decimal places, but calculated values are not. So calculations made by the reader may differ slightly from some values in the table.

Freight Inventory Value

The freight inventory value represents the time value of the average payload (i.e. the interest costs of cargo). Freight inventory values are based on HERS-ST data and *exclude* costs for spoilage and/or depreciation. The freight inventory value per hour of travel-time is estimated to be \$0.18.⁹ HERS assumes the same values for both medium and heavy trucks.

Total On-the-Clock Value per Vehicle

Total on-the-job value is the sum of cost of the employees and freight inventory value for each vehicle category and is shown on Line 10 of Table 2.

Miles On-the-Clock

It is estimated that on-the-clock trips represent approximately 7.02 percent of miles driven in autos. There are two components in determining this number. The first is the proportion of registered autos that are in fleets (except rental

⁹ HERS-ST technical data indicates a \$0.17 hourly value of the average payload (ignoring costs for spoilage or depreciation over time). This appears to be a 2012 estimate and has been inflated to 2017 dollars using the national GDP deflator.

vehicles) – in other words those used 100 percent for work-related travel. The second component is the work-related proportion of total miles of travel for non-fleet autos.¹⁰ Miles on-the-job are assumed to be 100 percent for both the delivery/medium and heavy truck categories.

Personal Trips

Personal trips include commuting, recreation, shopping, and other personal travel. Because delivery/medium and heavy trucks are allocated on-the-clock travel 100 percent of the time, autos/light trucks are the only vehicle type for which personal travel valuation assumptions have been made.

Vehicle Occupancy

The 2017 National Household Travel Survey identifies average personal vehicle occupancies for a number of trip purposes. The estimated auto vehicle occupancy for personal trips, approximately 1.70 persons, is the weighted average vehicle occupancy for all trips not work-related.¹¹

Total Personal Trip Values (Local and Intercity Trips)

The time spent on these non-work trips is not without value simply because people are not getting paid for their time. Personal travel-time costs reflect the fact that how we spend our time is important and affects our happiness. The USDOT estimates the value of person-hour personal travel-time as a fraction of hourly household income.¹² This is done to represent all travelers regardless of their age, employment status, or relationship to other travelers.

The fraction of the household income used to value personal time per person-hour varies depending on whether travel is local or intercity. This is based on the assumption that the value of travel-time rises with distance (because the constraint on time and so choices is greater with longer distance journeys). For local personal trips, the value of travel-time is estimated at 50 percent of hourly median household income, for intercity personal trips 70 percent. The proportion is applied equally to drivers and passengers.

Applying the average occupancy figure of approximately 1.7 persons to the estimated hourly value for personal local travel per person hour gives a total personal local travel-time value for autos/light trucks as shown on line 13 of Table 2. Applying the occupancy rate to the hourly value for personal intercity travel gives a total value per vehicle for personal intercity trips as shown on line 15 of Table 2.

¹⁰ Sources include: FHWA State Motor-Vehicle Registrations 2016; <http://www.fhwa.dot.gov/policyinformation/statistics/2016/mv1.cfm> ; Fleet data 1/1/18 from Automotive Fleet Fact Book (annual issues), Bobit Publishing Co <http://www.automotive-fleet.com/statistics/> ; 2017 National Household Travel Survey, U.S. Department of Transportation, Bureau of Transportation Statistics.

¹¹ “The 2017 National Household Travel Survey (NHTS)”, U.S. Department of Transportation, Federal Highway Administration, <http://nhts.ornl.gov/>. Average vehicle occupancy for personal trips is a vehicle miles traveled weighted estimate based on all travel categories *except*: "return to work", "attend business meeting/trip", and "other work related".

¹² U.S. Department of Transportation, *The Value of Travel Time Savings: Departmental Guidance for Conducting Economic Evaluations Revision 2 (2015 Update)*, identifies the use of median household income to derive the value of personal travel for surface vehicles (regardless of employment or age). The data source for 2017 Oregon Median Household Income was the U.S. Census Bureau, American Community Survey, *Household Income: 2017*, a brief issued September 2018.

Miles Personal Trips (Local and Intercity)

As mentioned previously, 7 percent of miles traveled in autos/light trucks are work-related. The remaining percent of miles traveled represent personal trips. U.S.DOT ratios¹³ were used to estimate the proportion of personal travel that is local vs. intercity, these values are provided on lines 14 and 16 of Table 2.

Weighted Values and Total Weighted Average

The values of travel-time for on-the-clock and personal travel are weighted by each trip type's share of miles traveled (on lines 11, 14, and 16 of Table 2) to determine the weighted values by trip purpose for vehicles. These are summed to create the total weighted average value of travel-time by vehicle category, presented on line 18 of Table 2. These estimates represent the total statewide average values of travel-time for Oregon vehicles in the three vehicle classes.

Sensitivity to Underlying Assumptions

Changing the underlying assumptions used to build value of travel-time estimates will affect the resulting values. Table 3 presents effects of changing some of these underlying assumptions.

Table 3. Effect of Changing Underlying Assumptions of Value of Travel-Time Estimates

Category	Auto/Light Truck	Delivery/Med. Trucks	Heavy Trucks
2017 Estimates	\$26.44	\$31.89	\$33.24
Business Occupancy Rate of 1.0	\$25.64	\$24.62	\$32.59
% Miles On-the-Clock Doubled	\$29.16	N/A	N/A
% Miles On-the-Clock Cut in Half	\$25.08	N/A	N/A
Value of Benefits Excluded	\$25.58	\$21.06	\$21.96
Drop Median Hourly Wage 20%	\$26.07	\$27.70	\$28.88
Increase Median Hourly Wage 20%	\$26.81	\$36.06	\$37.59

Doubling the assumed miles on-the-clock for auto/light trucks increases the value of travel-time estimate from \$26.44 to \$29.16. Removing benefits from the total compensation calculation reduces the heavy truck estimate from \$33.24 to \$21.96. Increasing the assumed wage for delivery/medium truck drivers by 20 percent increases the value of travel-time estimate from \$31.89 to \$36.06. These examples illustrate how estimates may vary because of the unique data or assumptions being applied.

Plausible Ranges

Even when quality data is available, uncertainty exists. So, like other travel behavior parameters, the estimated values of travel-time provided in this report are subject to uncertainty. Because of this, the U.S. Department of Transportation (USDOT) released departmental guidelines¹⁴ describing the use of plausible ranges for its travel-time estimates. The USDOT ranges are presented in Table 4. For example, if the average wage for a region were \$20 per hour, USDOT would

¹³ U.S. Department of Transportation, *The Value of Travel Time Savings: Departmental Guidance for Conducting Economic Evaluations Revision 2 (2015 Update)*, distributes local travel by surface mode 95.4% to personal travel and 4.6% to business; intercity travel by surface mode as 78.6% to personal and 21.4% to business. Using these ratios and the assumption that 7% of auto travel is business use, one can solve for local vs. intercity distributions. The results are shown in Table 2.

¹⁴ U.S. Department of Transportation, *The Value of Travel Time Savings: Departmental Guidance for Conducting Economic Evaluations Revision 2 (2015 Update)*.

calculate the plausible range of values for local travel to be \$7.00 - \$12.00 per person hour for personal trips and \$16.00 - \$24.00 for business trips.

Table 4. Plausible Ranges for Values of Travel-Time Savings per Person Hour as Percentage of Total Earnings

Category	Percentage of Total Hourly Earnings
Local Travel	
Personal	35-60%
Business	80-120%
Intercity Travel	
Personal	60-90%
Business	80-120%

The guidelines suggest that analysts test the sensitivity of their analyses and conclusions to potential errors in estimation. This is best addressed by using a range of values to test how sensitive predicted outcomes are to the estimates used; as has been done in Table 3.

Conclusion

The estimated values of travel-time for vehicles in Oregon in this report are intended to assist analysts and policy makers by providing region-specific guidance for valuing delays and time savings.¹⁵ Region-specific guidance based on traffic volumes is calculated in other documents that are part of this 2017 series.

Efforts have been made to create well-reasoned estimates derived from public and regularly updated data sources. In order to create standardized values, a number of factors representing the complexity and broad variance in the way individuals value time have had to be simplified. Many of these factors do not have readily available sources for estimates nor agreed upon methodologies, and using them as a basis for local estimates adds significant uncertainty.

The estimated values of travel-time in this report should be used for Oregon-specific transportation policy, planning, and investment decisions. The USDOT may request reliance on national figures for analyses provided for national competitions; such as BUILD grants.

¹⁵ These estimates are not intended to represent the long-term changes in business operations or capital costs due to recurring congestion and related delay.

Appendix B



2018 CROSS REFERENCE TABLE OF HIGHWAY ROUTE NUMBER TO STATE HIGHWAY NUMBER

INTERSTATE	HIGHWAY NAME	HWY.#							
I-5	PACIFIC	001	US 97B	KLAMATH FALLS-LAKEVIEW	020	OR 37	PENDLETON	067	
I-82	MCNARY	070	US 97B	KLAMATH FALLS-MALIN	050	OR 37	PENDLETON-COLD SPRINGS	036	
I-84	COLUMBIA RIVER	002	US 97B	MCKENZIE-BEND	017	OR 37	PENDLETON-JOHN DAY	028	
I-84	OLD OREGON TRAIL	006	US 101	OREGON COAST	009	OR 38	UMPQUA	045	
I-105	EUGENE-SPRINGFIELD	227	US 101B	NEHALEM	102	OR 39	HATFIELD	426	
I-205	EAST PORTLAND FREEWAY	064	US 101B	WARRENTON-ASTORIA	105	OR 39	KLAMATH FALLS-LAKEVIEW	020	
I-405	STADIUM FREEWAY	061	US 197	THE DALLES-CALIFORNIA	004	OR 39	KLAMATH FALLS-MALIN	050	
			US 199	REDWOOD	025	OR 42	COOS BAY-ROSEBURG	035	
US ROUTE	HIGHWAY NAME	HWY.#	US 199	REDWOOD SPUR	482	OR 42S	COQUILLE-BANDON	244	
US 20	ALBANY-CORVALLIS	031	US 395	CENTRAL OREGON	007	OR 43	OSWEGO	003	
US 20	ALBANY-JUNCTION CITY	058	US 395	COLUMBIA RIVER	002	OR 46	OREGON CAVES	038	
US 20	CENTRAL OREGON	007	US 395	FREMONT	019	OR 47	MIST-CLATSKANIE	110	
US 20	CORVALLIS-LEBANON	210	US 395	JOHN DAY	005	OR 47	NEHALEM	102	
US 20	CORVALLIS-NEWPORT	033	US 395	JOHN DAY-BURNS	048	OR 47	SUNSET	047	
US 20	MCKENZIE	015	US 395	LAKEVIEW-BURNS	049	OR 47	TUALATIN VALLEY	029	
US 20	MCKENZIE-BEND	017	US 395	MCNARY	070	OR 51	INDEPENDENCE	193	
US 20	PACIFIC HIGHWAY WEST	1W (91)	US 395	OLD OREGON TRAIL	006	OR 51	MONMOUTH-INDEPENDENCE	043	
US 20	SANTIAM	016	US 395	PENDLETON-JOHN DAY	028	OR 52	PAYETTE SPUR	492	
US 26	CENTRAL OREGON	007	US 395	UMATILLA-STANFIELD	054	OR 53	NECANICUM	046	
US 26	JOHN DAY	005	US 730	COLUMBIA RIVER	002	OR 58	WILLAMETTE	018	
US 26	MADRAS-PRINEVILLE	360	OR ROUTE	HIGHWAY NAME	HWY.#	OR 62	CRATER LAKE	022	
US 26	MT. HOOD	026	OR 3	ENTERPRISE-LEWISTON	011	OR 66	GREEN SPRINGS	021	
US 26	OCHOCO	041	OR 6	WILSON RIVER	037	OR 70	DAIRY-BONANZA	023	
US 26	STADIUM FREEWAY	061	OR 7	BAKER-COPPERFIELD	012	OR 74	HEPPNER	052	
US 26	SUNSET	047	OR 7	LA GRANDE-BAKER	066	OR 78	STEENS	442	
US 26	THE DALLES-CALIFORNIA	004	OR 7	WHITNEY	071	OR 82	WALLOWA LAKE	010	
US 26	WARM SPRINGS	053	OR 8	TUALATIN VALLEY	029	OR 86	BAKER-COPPERFIELD	012	
US 30	COLUMBIA RIVER	002	OR 10	BEAVERTON-HILLSDALE	040	OR 86S	BAKER-COPPERFIELD SPUR	481	
US 30	HISTORIC COLUMBIA RIVER	100	OR 10	FARMINGTON	142	OR 99	COOS BAY-ROSEBURG	035	
US 30	HUNTINGTON	449	OR 10	PACIFIC HIGHWAY WEST	1W (91)	OR 99	GOLD HILL SPUR	486	
US 30	LA GRANDE-BAKER	066	OR 11	OREGON-WASHINGTON	008	OR 99	GOSHEN-DIVIDE	226	
US 30	LOWER COLUMBIA RIVER	2W (92)	OR 18	SALMON RIVER	039	OR 99	NORTH UMPQUA HIGHWAY EAST	138	
US 30	MOSIER-THE DALLES	292	OR 18B	WILLAMINA-SHERIDAN	157	OR 99	PACIFIC	001	
US 30	OLD OREGON TRAIL	006	OR 19	JOHN DAY	005	OR 99	PACIFIC HIGHWAY WEST	1W (91)	
US 30	ONTARIO SPUR	493	OR 22	NORTH SANTIAM	162	OR 99	REDWOOD	025	
US 30	OREGON-WASHINGTON	008	OR 22	SALEM	072	OR 99	ROGUE RIVER	060	
US 30	PACIFIC	001	OR 22	SALMON RIVER	039	OR 99	ROGUE VALLEY	063	
US 30	PENDLETON	067	OR 22	THREE RIVERS	032	OR 99	SAMS VALLEY	271	
US 30	STADIUM FREEWAY	061	OR 22	WILLAMINA-SALEM	030	OR 99	UMPQUA	045	
US 30	THE DALLES-CALIFORNIA	004	OR 27	CROOKED RIVER	014	OR 99	WILLAMETTE	018	
US 30B	OLDS FERRY-ONTARIO	455	OR 31	FREMONT	019	OR 99E	ALBANY-JUNCTION CITY	058	
US 30B	ONTARIO SPUR	493	OR 34	ALSEA	027	OR 99E	PACIFIC	001	
US 30BY	NORTHEAST PORTLAND	123	OR 34	CORVALLIS-LEBANON	210	OR 99E	PACIFIC HIGHWAY EAST	1E (81)	
US 95	I.O.N.	456	OR 34	CORVALLIS-NEWPORT	033	OR 99EB	SALEM	072	
US 95S	WEISER SPUR	491	OR 34	PACIFIC HIGHWAY WEST	1W (91)	OR 99W	PACIFIC HIGHWAY WEST	1W (91)	
US 97	SHERMAN	042	OR 35	HISTORIC COLUMBIA RIVER	100	OR 103	FISHHAWK FALLS	103	
US 97	THE DALLES-CALIFORNIA	004	OR 35	MT. HOOD	026	OR 104	FORT STEVENS	104	
US 97B	ESPLANADE SPUR	484	OR 36	MAPLETON-JUNCTION CITY	229	OR 104S	FORT STEVENS SPUR	485	

2018 CROSS REFERENCE TABLE OF HIGHWAY ROUTE NUMBER TO STATE HIGHWAY NUMBER

OR 120	SWIFT	120	OR 207	LEXINGTON-ECHO	320	OR 251	PORT ORFORD	251
OR 126	BELTLINE	069	OR 207	SERVICE CREEK-MITCHELL	390	OR 255	CARPENTERVILLE	255
OR 126	CLEAR LAKE-BELKNAP SPRING	215	OR 207	WASCO-HEPPNER	300	OR 255	OREGON COAST	009
OR 126	EUGENE-SPRINGFIELD	227	OR 210	SCHOLLS	143	OR 260	ROGUE RIVER LOOP	260
OR 126	FLORENCE-EUGENE	062	OR 211	CLACKAMAS	171	OR 273	SISKIYOU	273
OR 126	MCKENZIE	015	OR 211	EAGLE CREEK-SANDY	172	OR 281	HOOD RIVER	281
OR 126	OCHOCO	041	OR 211	WOODBURN-ESTACADA	161	OR 282	ODELL	282
OR 126	PACIFIC HIGHWAY WEST	1W (91)	OR 212	CLACKAMAS	171	OR 293	ANTELOPE	293
OR 126	SANTIAM	016	OR 212	CLACKAMAS-BORING	174	OR 331	UMATILLA MISSION	331
OR 126B	MCKENZIE	015	OR 213	CASCADE HWY NORTH	068	OR 332	SUNNYSIDE-UMAPINE	332
OR 126B	PACIFIC HIGHWAY WEST	1W (91)	OR 213	CASCADE HWY SOUTH	160	OR 334	ATHENA-HOLDMAN	334
OR 130	LITTLE NESTUCCA	130	OR 213	CLACKAMAS	171	OR 335	HAVANA-HELIX	335
OR 131	NETARTS	131	OR 213	EAST PORTLAND FREEWAY	064	OR 339	FREEWATER	339
OR 138	ELKTON-SUTHERLIN	231	OR 214	HILLSBORO-SILVERTON	140	OR 350	LITTLE SHEEP CREEK	350
OR 138	NORTH UMPQUA HIGHWAY EAST	138	OR 214	PACIFIC HIGHWAY EAST	1E (81)	OR 351	JOSEPH-WALLOWA LAKE	351
OR 138	PACIFIC	001	OR 214	SILVER CREEK FALLS	163	OR 361	CULVER	361
OR 140	FREMONT	019	OR 216	SHERARS BRIDGE	290	OR 370	O NEIL	370
OR 140	GREEN SPRINGS	021	OR 216	THE DALLES-CALIFORNIA	004	OR 380	PAULINA	380
OR 140	KLAMATH FALLS-LAKEVIEW	020	OR 216	WAPINITIA	044	OR 402	KIMBERLY-LONG CREEK	402
OR 140	KLAMATH FALLS-MALIN	050	OR 217	BEAVERTON-TIGARD	144	OR 410	SUMPTER	410
OR 140	LAKE OF THE WOODS	270	OR 218	SHANIKO-FOSSIL	291	OR 413	HALFWAY-CORNUCOPIA	413
OR 140	SOUTH KLAMATH FALLS	424	OR 219	HILLSBORO-SILVERTON	140	OR 414	PINE CREEK	414
OR 140	WARNER	431	OR 219	PACIFIC HIGHWAY WEST	1W (91)	OR 422	CHILOQUIN	422
OR 141	BEAVERTON-TUALATIN	141	OR 221	SALEM-DAYTON	150	OR 422S	CHILOQUIN SPUR	488
OR 153	BELLEVUE-HOPEWELL	153	OR 222	SPRINGFIELD-CRESWELL	222	OR 429	CRESCENT LAKE	429
OR 154	LAFAYETTE	154	OR 223	DALLAS-RICKREALL	189	OR 451	VALE-WEST	451
OR 164	JEFFERSON	164	OR 223	KINGS VALLEY	191	OR 452	PARMA SPUR	489
OR 173	TIMBERLINE	173	OR 224	CLACKAMAS	171	OR 453	ADRIAN-ARENA VALLEY	453
OR 180	EDDYVILLE-BLODGETT	180	OR 224	SUNRISE EXPRESSWAY	075	OR 454	ADRIAN-CALDWELL	454
OR 194	MONMOUTH	194	OR 225	MCVAY	225	OR 501	ALSEA-DEADWOOD	201
OR 200	TERRITORIAL	200	OR 226	ALBANY-LYONS	211	OR 528	SPRINGFIELD	228
OR 201	CENTRAL OREGON	007	OR 228	HALSEY-SWEET HOME	212	OR 540	CAPE ARAGO	240
OR 201	HOMEDALE SPUR	490	OR 229	SILETZ	181	OR 542	POWERS	242
OR 201	OLDS FERRY-ONTARIO	455	OR 230	WEST DIAMOND LAKE	233	OR 551	WILSONVILLE-HUBBARD	051
OR 201	SUCCOR CREEK	450	OR 233	AMITY-DAYTON	155	OR 569	BELTLINE	069
OR 202	NEHALEM	102	OR 233	LAFAYETTE	154			
OR 203	LA GRANDE-BAKER	066	OR 233	SALMON RIVER	039			
OR 203	MEDICAL SPRINGS	340	OR 234	GOLD HILL SPUR	486			
OR 203	OLD OREGON TRAIL	006	OR 234	SAMS VALLEY	271			
OR 204	WESTON-ELGIN	330	OR 237	COVE	342			
OR 205	FRENCHGLEN	440	OR 237	LA GRANDE-BAKER	066			
OR 206	CELILO-WASCO	301	OR 238	JACKSONVILLE	272			
OR 206	JOHN DAY	005	OR 240	YAMHILL-NEWBERG	151			
OR 206	WASCO-HEPPNER	300	OR 241	COOS RIVER	241			
OR 207	HEPPNER	052	OR 242	MCKENZIE	015			
OR 207	HEPPNER-SPRAY	321	OR 244	UKIAH-HILGARD	341			
OR 207	HERMISTON	333	OR 245	DOOLEY MOUNTAIN	415			
OR 207	JOHN DAY	005	OR 250	CAPE BLANCO	250			

2018 CROSS REFERENCE TABLE OF STATE HIGHWAY NUMBER TO ROUTE NUMBER

HWY #	HIGHWAY NAME	ROUTE NUMBER(S)	HWY #	HIGHWAY NAME	ROUTE NUMBER(S)
001	PACIFIC	I-5, US30, OR99, OR99E, OR138	049	LAKEVIEW-BURNS	US395
1E 811	PACIFIC HIGHWAY EAST	OR99E, OR214	050	KLAMATH FALLS-MALIN	US97B, OR39, OR140
1W 911	PACIFIC HIGHWAY WEST	US20, OR10, OR34, OR99, OR99W, OR126, OR126B, OR219	051	WILSONVILLE-HUBBARD	OR551
002	COLUMBIA RIVER	I-84, US30, US395, US730	052	HEPPNER	OR74, OR207
2W 921	LOWER COLUMBIA RIVER	US30	053	WARM SPRINGS	US26
003	OSWEGO	OR43	054	UMATILLA-STANFIELD	US395
004	THE DALLEES-CALIFORNIA	US26, US30, US97, US197, OR216	058	ALBANY-JUNCTION CITY	US20, OR99E
005	JOHN DAY	US26, US395, OR19, OR206, OR207	060	ROGUE RIVER	OR99
006	OLD OREGON TRAIL	I-84, US30, US395, OR203	061	STADIUM FREEWAY	I-405, US26, US30
007	CENTRAL OREGON	US20, US26, US395, OR201	062	FLORENCE-EUGENE	OR126
008	OREGON-WASHINGTON	US30, OR11	063	ROGUE VALLEY	OR99
009	OREGON COAST	US101, OR255	064	EAST PORTLAND FREEWAY	I-205, OR213
010	WALLOWA LAKE	OR82	066	LA GRANDE-BAKER	US30, OR7, OR203, OR237
011	ENTERPRISE-LEWISTON	OR3	067	PENDLETON	US30, OR37
012	BAKER-COPPERFIELD	OR7, OR86	068	CASCADE HWY NORTH	OR213
014	CROOKED RIVER	OR27	069	BELTLINE	OR126, OR569
015	MCKENZIE	US20, OR126, OR126B, OR242	070	MCNARY	I-82, US395
016	SANTIAM	US20, OR126	071	WHITNEY	OR7
017	MCKENZIE-BEND	US20, US97B	072	SALEM	OR22, OR99EB
018	WILLAMETTE	OR58, OR99	075	SUNRISE EXPRESSWAY	OR224
019	FREMONT	US395, OR31, OR140	100	HISTORIC COLUMBIA RIVER	US30, OR35
020	KLAMATH FALLS-LAKEVIEW	US97B, OR39, OR140	102	NEHALEM	US101B, OR47, OR202
021	GREEN SPRINGS	OR66, OR140	103	FISHHAWK FALLS	OR103
022	CRATER LAKE	OR62	104	FORT STEVENS	OR104
023	DAIRY-BONANZA	OR70	105	WARRENTON-ASTORIA	US101B
025	REDWOOD	US199, OR99	110	MIST-CLATSKANIE	OR47
026	MT. HOOD	US26, OR35	120	SWIFT	OR120
027	ALSEA	OR34	123	NORTHEAST PORTLAND	US30BY
028	PENDLETON-JOHN DAY	US395, OR37	130	LITTLE NESTUCCA	OR130
029	TUALATIN VALLEY	OR8, OR47	131	NETARTS	OR131
030	WILLAMINA-SALEM	OR22	138	NORTH UMPQUA HIGHWAY EAST	OR99, OR138
031	ALBANY-CORVALLIS	US20	140	HILLSBORO-SILVERTON	OR214, OR219
032	THREE RIVERS	OR22	141	BEAVERTON-TUALATIN	OR141
033	CORVALLIS-NEWPORT	US20, OR34	142	FARMINGTON	OR10
035	COOS BAY-ROSEBURG	OR42, OR99	143	SCHOLLS	OR210
036	PENDLETON-COLD SPRINGS	OR37	144	BEAVERTON-TIGARD	OR217
037	WILSON RIVER	OR6	150	SALEM-DAYTON	OR221
038	OREGON CAVES	OR46	151	YAMHILL-NEWBERG	OR240
039	SALMON RIVER	OR18, OR22, OR233	153	BELLEVUE-HOPEWELL	OR153
040	BEAVERTON-HILLSDALE	OR10	154	LAFAYETTE	OR154, OR233
041	OCHOCO	US26, OR126	155	AMITY-DAYTON	OR233
042	SHERMAN	US97	157	WILLAMINA-SHERIDAN	OR18B
043	MONMOUTH-INDEPENDENCE	OR51	160	CASCADE HWY SOUTH	OR213
044	WAPINITIA	OR216	161	WOODBURN-ESTACADA	OR211
045	UMPQUA	OR38, OR99	162	NORTH SANTIAM	OR22
046	NECANICUM	OR53	163	SILVER CREEK FALLS	OR214
047	SUNSET	US26, OR47	164	JEFFERSON	OR164
048	JOHN DAY-BURNS	US395	171	CLACKAMAS	OR211, OR212, OR213, OR224
			172	EAGLE CREEK-SANDY	OR211

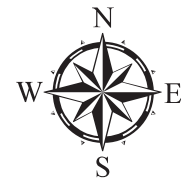
2018 CROSS REFERENCE TABLE OF STATE HIGHWAY NUMBER TO ROUTE NUMBER

HWY #	HIGHWAY NAME	ROUTE NUMBER(S)	HWY #	HIGHWAY NAME	ROUTE NUMBER(S)
173	TIMBERLINE	OR173	335	HAVANA-HELIX	OR335
174	CLACKAMAS-BORING	OR212	339	FREEWATER	OR339
180	EDDYVILLE-BLODGETT	OR180	340	MEDICAL SPRINGS	OR203
181	SILETZ	OR229	341	UKIAH-HILGARD	OR244
189	DALLAS-RICKREALL	OR223	342	COVE	OR237
191	KINGS VALLEY	OR223	350	LITTLE SHEEP CREEK	OR350
193	INDEPENDENCE	OR51	351	JOSEPH-WALLOWA LAKE	OR351
194	MONMOUTH	OR194	360	MADRAS-PRINEVILLE	US26
200	TERRITORIAL	OR200	361	CULVER	OR361
201	ALSEA-DEADWOOD	OR501	370	O NEIL	OR370
210	CORVALLIS-LEBANON	US20, OR34	372	CENTURY DRIVE	
211	ALBANY-LYONS	OR226	380	PAULINA	OR380
212	HALSEY-SWEET HOME	OR228	390	SERVICE CREEK-MITCHELL	OR207
215	CLEAR LAKE-BELKNAP SPRINGS	OR126	402	KIMBERLY-LONG CREEK	OR402
222	SPRINGFIELD-CRESWELL	OR222	410	SUMPTER	OR410
225	MCVAY	OR225	413	HALFWAY-CORNUCOPIA	OR413
226	GOSHEN-DIVIDE	OR99	414	PINE CREEK	OR414
227	EUGENE-SPRINGFIELD	I-105, OR126	415	DOOLEY MOUNTAIN	OR245
228	SPRINGFIELD	OR528	420	MIDLAND	
229	MAPLETON-JUNCTION CITY	OR36	422	CHILOQUIN	OR422
231	ELKTON-SUTHERLIN	OR138	424	SOUTH KLAMATH FALLS	OR140
233	WEST DIAMOND LAKE	OR230	426	HATFIELD	OR39
240	CAPE ARAGO	OR540	429	CRESCENT LAKE	OR429
241	COOS RIVER	OR241	431	WARNER	OR140
242	POWERS	OR542	440	FRENCHGLEN	OR205
244	COQUILLE-BANDON	OR42S	442	STEENS	OR78
250	CAPE BLANCO	OR250	449	HUNTINGTON	US30
251	PORT ORFORD	OR251	450	SUCCOR CREEK	OR201
255	CARPENTERVILLE	OR255	451	VALE-WEST	OR451
260	ROGUE RIVER LOOP	OR260	453	ADRIAN-ARENA VALLEY	OR453
270	LAKE OF THE WOODS	OR140	454	ADRIAN-CALDWELL	OR454
271	SAMS VALLEY	OR99, OR234	455	OLDS FERRY-ONTARIO	US30B, OR201
272	JACKSONVILLE	OR238	456	I.O.N.	US95
273	SISKIYOU	OR273	457	SNAKE RIVER CORR INST	
281	HOOD RIVER	OR281	481	BAKER-COPPERFIELD SPUR	OR86S
282	ODELL	OR282	482	REDWOOD SPUR	US199
290	SHERARS BRIDGE	OR216	483	MCMINNVILLE SPUR	
291	SHANIKO-FOSSIL	OR218	484	ESPLANADE SPUR	US97B
292	MOSIER-THE DALLES	US30	485	FORT STEVENS SPUR	OR104S
293	ANTELOPE	OR293	486	GOLD HILL SPUR	OR99, OR234
300	WASCO-HEPPNER	OR206, OR207	487	CELILO-WASCO SPUR	
301	CELILO-WASCO	OR206	488	CHILOQUIN SPUR	OR422S
320	LEXINGTON-ECHO	OR207	489	PARMA SPUR	OR452
321	HEPPNER-SPRAY	OR207	490	HOMEDALE SPUR	OR201
330	WESTON-ELGIN	OR204	491	WEISER SPUR	US95S
331	UMATILLA MISSION	OR331	492	PAYETTE SPUR	OR52
332	SUNNYSIDE-UMAPINE	OR332	493	ONTARIO SPUR	US30, US30B
333	HERMISTON	OR207			
334	ATHENA-HOLDMAN	OR334			

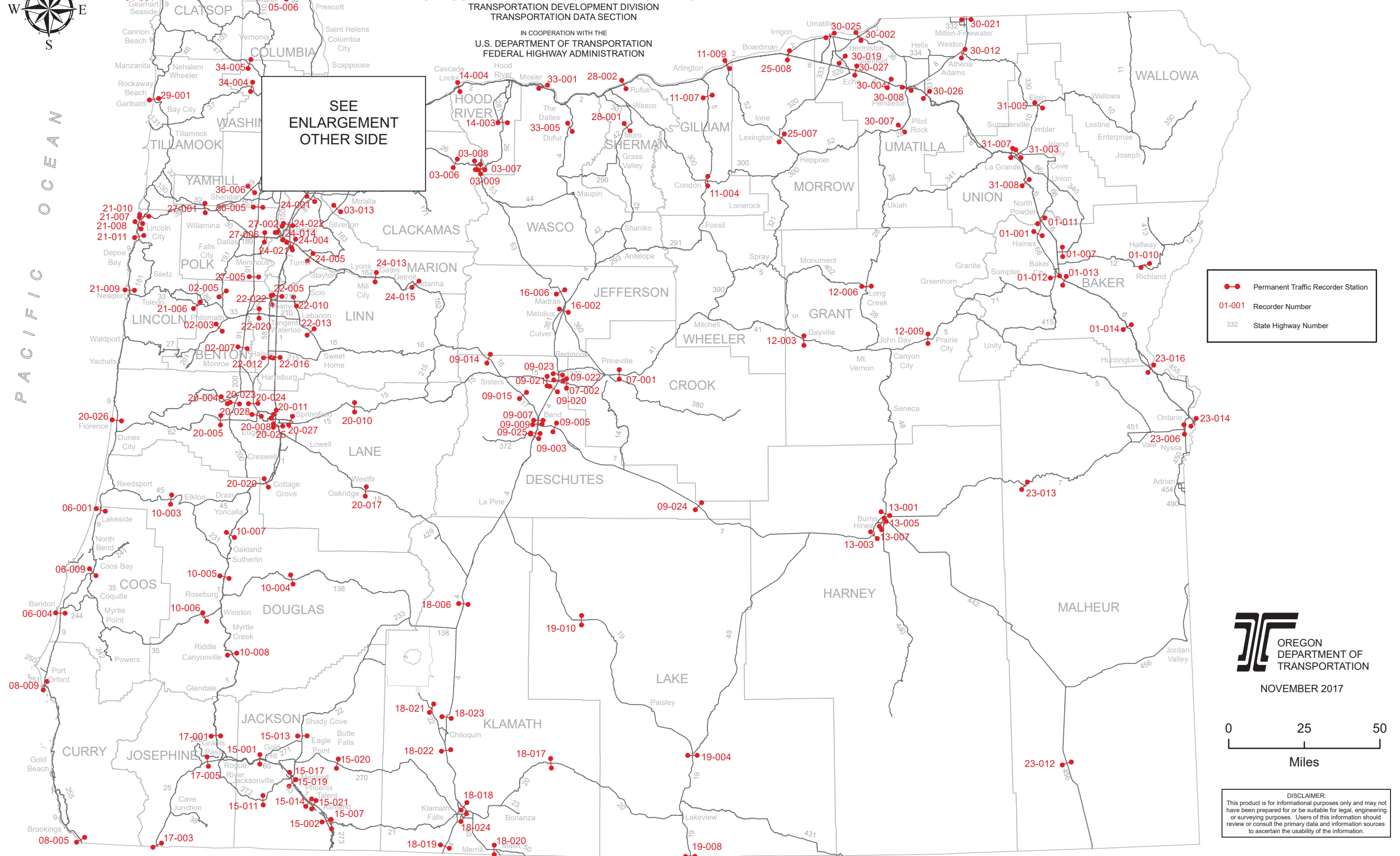
STATE OF OREGON PERMANENT RECORDER STATION LOCATIONS

PREPARED BY THE
OREGON DEPARTMENT OF TRANSPORTATION
TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION

IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION



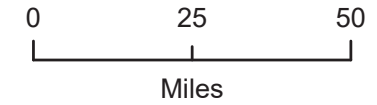
SEE
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OTHER SIDE



- Permanent Traffic Recorder Station
- 01-001 Recorder Number
- 332 State Highway Number




NOVEMBER 2017

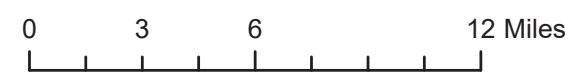
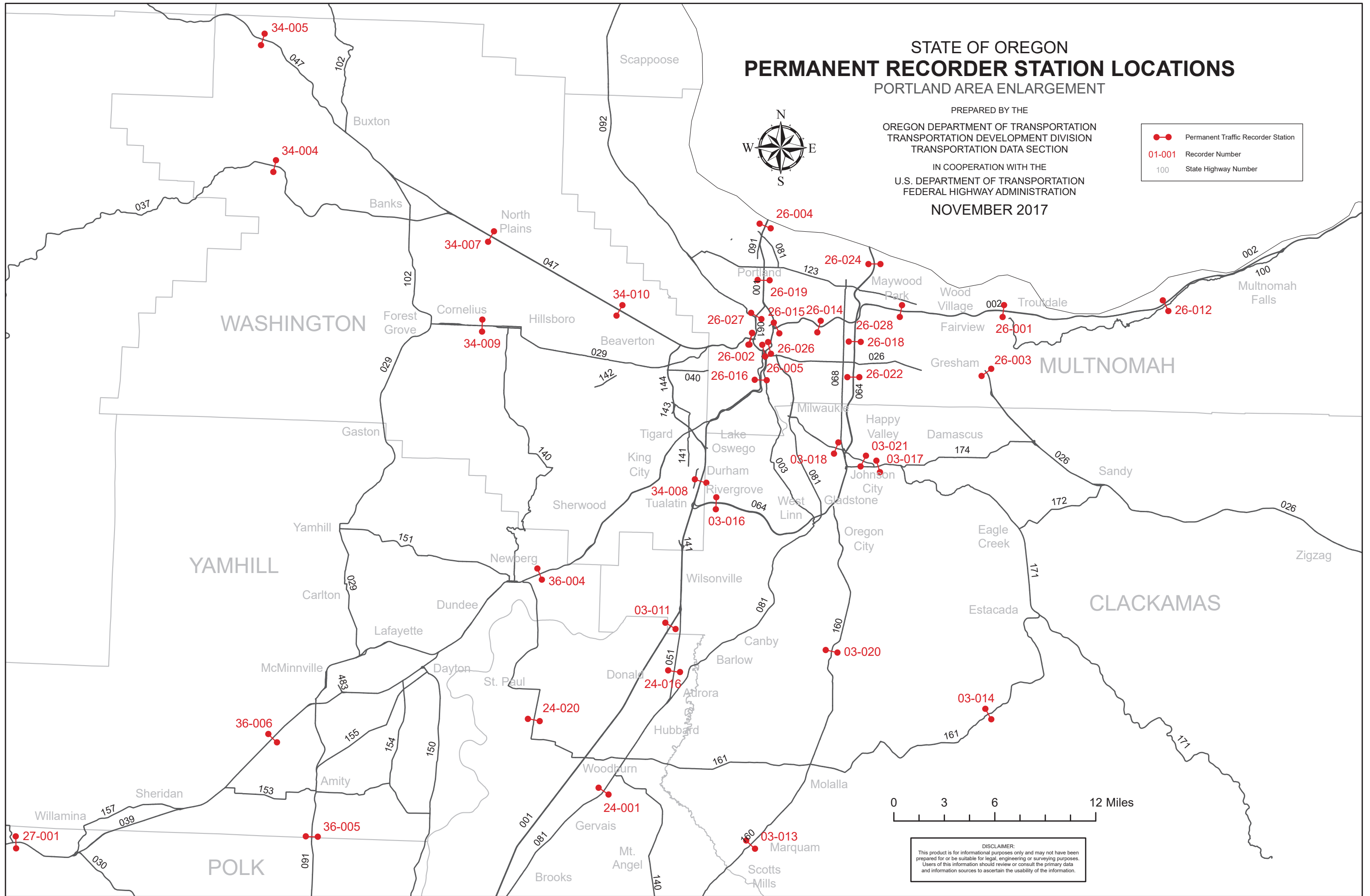
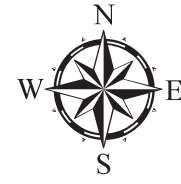


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STATE OF OREGON PERMANENT RECORDER STATION LOCATIONS PORTLAND AREA ENLARGEMENT

PREPARED BY THE
OREGON DEPARTMENT OF TRANSPORTATION
TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
NOVEMBER 2017

	Permanent Traffic Recorder Station
01-001	Recorder Number
100	State Highway Number



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