



# Adding Continuous Truck Counts to the Regional Data Archive (PORTAL)

TransPORT  
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# Objective

- Develop system for permanent truck counts for the region's ITS monitoring system
  - Integrate with PORTAL
  - 20-second intervals, 24 hours per day, 365 days per year
  - Explore freeway and possible arterial applications

# Likely uses of data

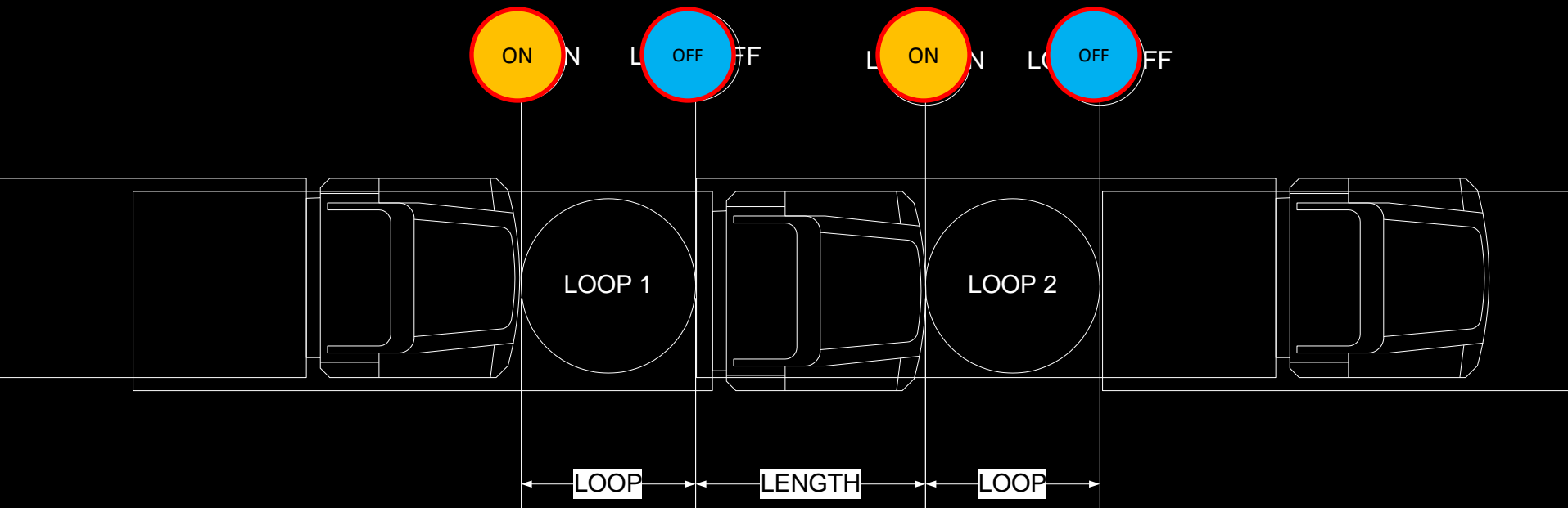
- Measuring performance specific to freight
- Adding value to [private-sector truck GPS data](#)
- Transportation modeling in support of freight
- Possible operational enhancements
  - Ramp metering
  - VSLs
  - Other

# Methods for Defining Trucks



- Manual (e.g. visual)
- Axle Sensors
- Vehicle Length
- Machine Vision
- Other Technologies

# Dual-loop configuration



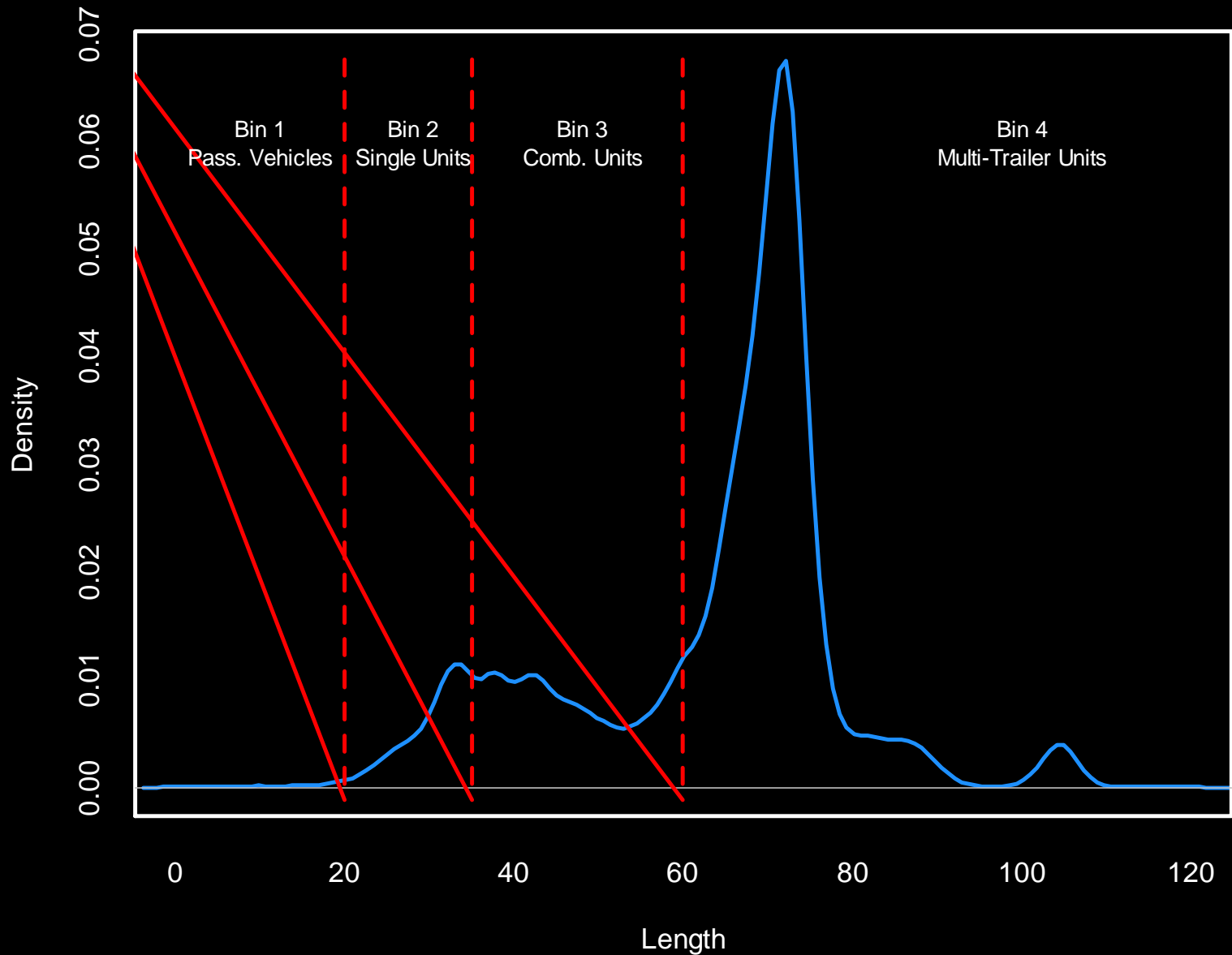
$$v_{off} = \frac{L_{loop} + L_{int}}{t_{off2} - t_{off1}}$$

$$L_{veh} = v_{off} (t_{off2} - t_{off1}) - L_{loop}$$

Vehicles Classification	Range of Length (in ft)		
	FHWA	ODOT	WSDOT
Passenger vehicles (PV)	Less than 13	Less than 20	Less than 26
Single unit trucks (SU)	13 to 35	20 to 35	26 to 39
Combination trucks (CU)	36 to 61	36 to 60	40 to 65
Multi-trailer trucks (MU)	62 to 120	61 to 150	> 65

# All Trucks

Mean= 63.28 n= 77935



# Options Considered

- Upgrade to 2070 ramp controllers
- Rewrite Wapiti ramp controller firmware
- Develop and program independent device at select number of stations



# Proposed Work Plan

- Identify test locations
- Develop independent hardware and software
  - Working with OSU Industrial Engineering faculty D. Kim and D. Porter
- Validate methodology
- Configure for network, integrate with ATMS
- Identify remaining locations for deployment



# Resources

- City of Portland experience with truck priority logic
- University of Washington dual-loop algorithm and sensitivity testing

TABLE 3 One-Hour Video-Based, Event Data-Based, and TDAD-Based Vehicle Classification Data

Bin No.	Lane 1					Lane 2				
	$V_V$	$V_E$	$V_T$	$\frac{V_E}{V_V}$	$\frac{V_T}{V_V}$	$V_V$	$V_E$	$V_T$	$\frac{V_E}{V_V}$	$\frac{V_T}{V_V}$
Bin 1	973	973	914	100%	94%	1463	1463	1326	100%	91%
Bin 2	39	39	30	100%	77%	12	12	7	100%	58%
Bin 3	44	44	35	100%	80%	20	20	14	100%	70%
Bin 4	88	87	73	99%	83%	24	24	16	100%	67%
Subtotal	1144	1143	1052	99.9%	92.0%	1519	1519	1363	100.0%	89.7%

$V_V$  = number of vehicles that were classified into bins when processing the videotape  
 $V_E$  = number of vehicles that were classified into the same bins by the new dual-loop algorithm and by processing the videotape  
 $V_T$  = number of vehicles that were classified into the same bins by the current WSDOT dual-loop algorithm and by processing the videotape

# Resources

- FHWA pooled-fund study on length-based classification
- ODOT Traffic Monitoring
- OSU experience getting devices on ODOT network

# Other items to consider

- Integrate reading of RFID tags on trucks?
- RTMS devices in Washington configured for length?
- Other?

# STATE OF OREGON STATE HIGHWAY SYSTEM 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  
DECEMBER 2008

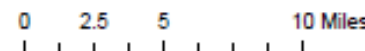
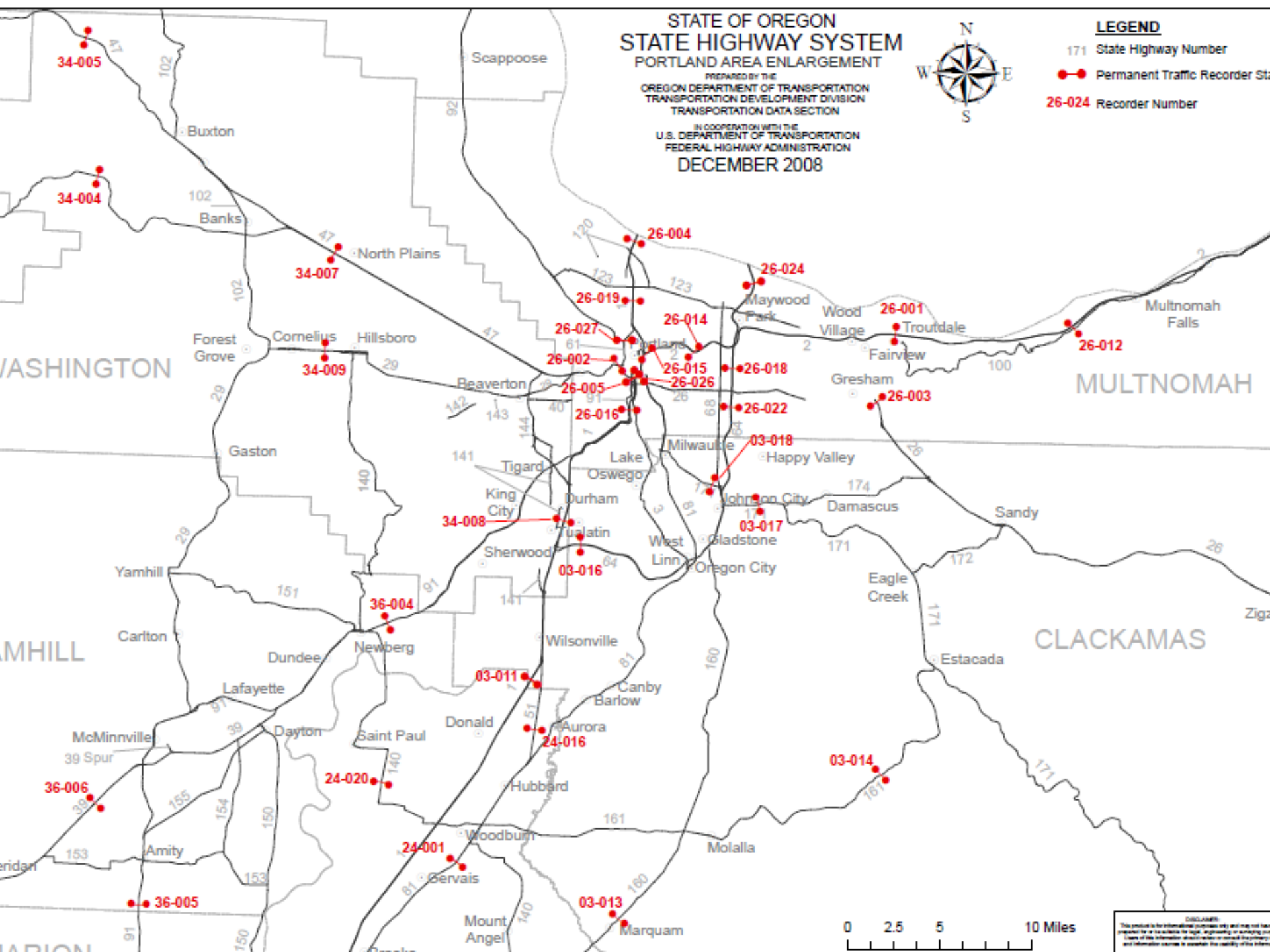


## LEGEND

171 State Highway Number

●—● Permanent Traffic Recorder Station

26-024 Recorder Number



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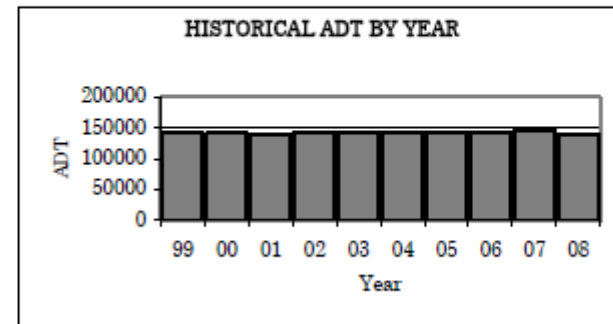
# ODOT Permanent Count

Location: I-5; MP 298.24; PACIFIC HIGHWAY NO. 1; 1.07 miles north of S.W. Terwilliger Blvd,  
in Portland

Site Name: Iowa Street (26-016)  
Installed: December, 1961

## HISTORICAL TRAFFIC DATA

Year	Average Daily Traffic	Max Day	Percent of AADT			
			Max Hour	10TH Hour	20TH Hour	30TH Hour
1999	144033	121	8.8	8.6	8.5	8.4
2000	141525	118	8.8	8.5	8.4	8.3
2001	140698	119	8.8	8.6	8.5	8.5
2002	142881	119	8.7	8.5	8.4	8.4
2003	144060	120	8.7	8.5	8.5	8.4
2004	142117	119	8.8	8.6	8.4	8.3
2005	143566	118	8.8	8.5	8.4	8.4
2006	144118	120	8.6	8.5	8.4	8.3
2007	145047	119	9.2	8.3	8.3	8.2
2008	139791	121	10.0	8.5	8.5	8.4



## 2008 TRAFFIC DATA

Month	Average Weekday Traffic	Percent of AADT	Average Daily Traffic	Percent of AADT	Classification Breakdown	
					Classification	Percent of AADT
January	143597	103	133978	96	Motorcycles	0.4
February	154605	111	143374	103	Passenger cars	47.4
March	154796	111	144262	103	Light Trucks	43.0
April	157134	112	145236	104	Buses	0.3
May	152541	109	141813	101	Single unit trucks (2 axles)	2.4
June	156565	112	145325	104	Single unit trucks (3 axles)	0.5
July	160370	115	146161	105	Single unit trucks (4 or more axles)	0.0
August	158853	114	148472	106	Single trailer trucks (4 or less axles)	0.5
September	150715	108	142216	102	Single trailer trucks (5 axles)	3.5
October	154056	110	143388	103	Single trailer trucks (6 or more axles)	1.3
November	146890	105	136376	98	Multi trailer trucks (5 or less axles)	0.1
December	116039	83	106890	76	Multi trailer trucks (6 axles)	0.1
					Multi trailer trucks (7 or more axles)	0.5

### Controls

#### Speeds

Show Speeds Help

Date:

Start Time:  :  AM

End Time:  :  AM

Date & Time Live

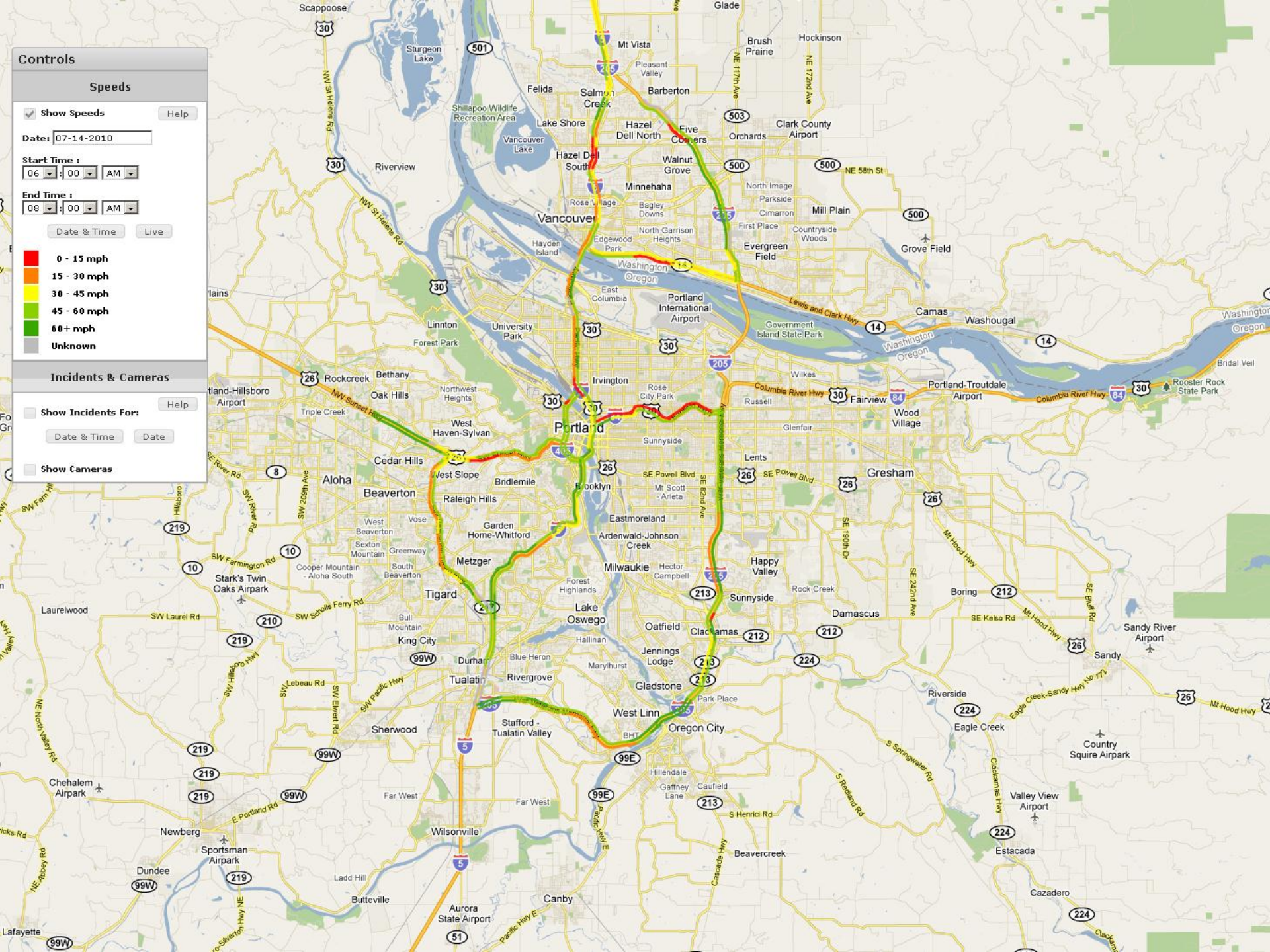
- 0 - 15 mph
- 15 - 30 mph
- 30 - 45 mph
- 45 - 60 mph
- 60+ mph
- Unknown

#### Incidents & Cameras

Show Incidents For: Help

Date & Time Date

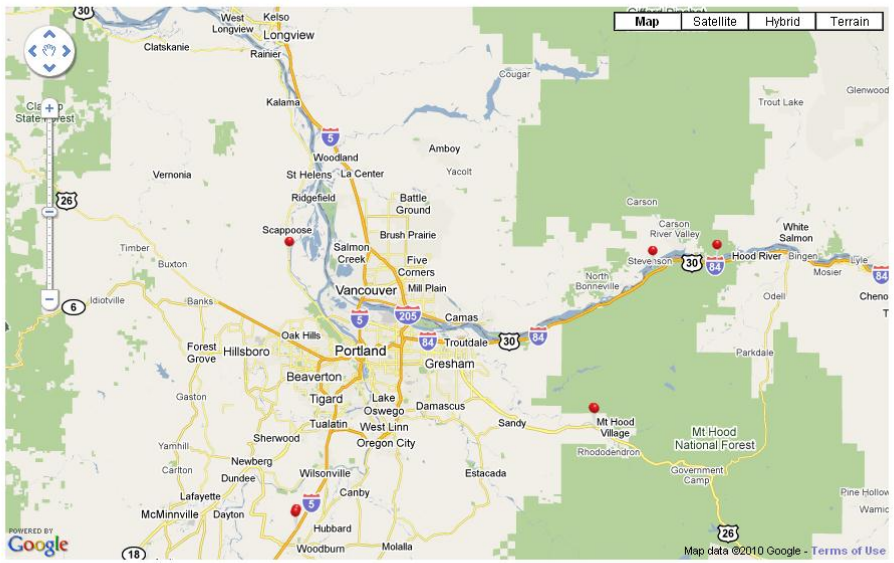
Show Cameras



# WIM Archive

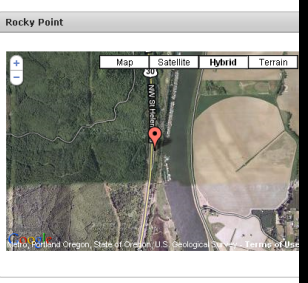
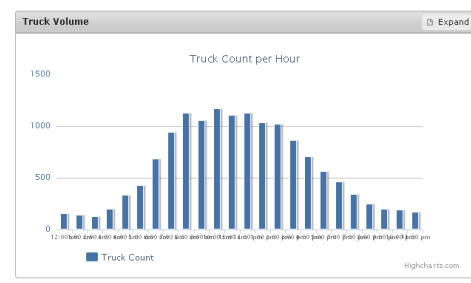
## Oregon Wim Page

Please, click on a pin to explore a station or select a station from the list in the upper left hand corner and click go.



## Oregon Weight in Motion Stations Page -> Rocky Point

Rocky Point Highway: US-30 WB GIs Data: 45.695081, -122.870991 Mile Marker: 16.4



[ Portland State University | Maseeh CECS | ITS Lab | Oregon DOT | Federal Highway Administration | National Science Foundation ]

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# Questions?



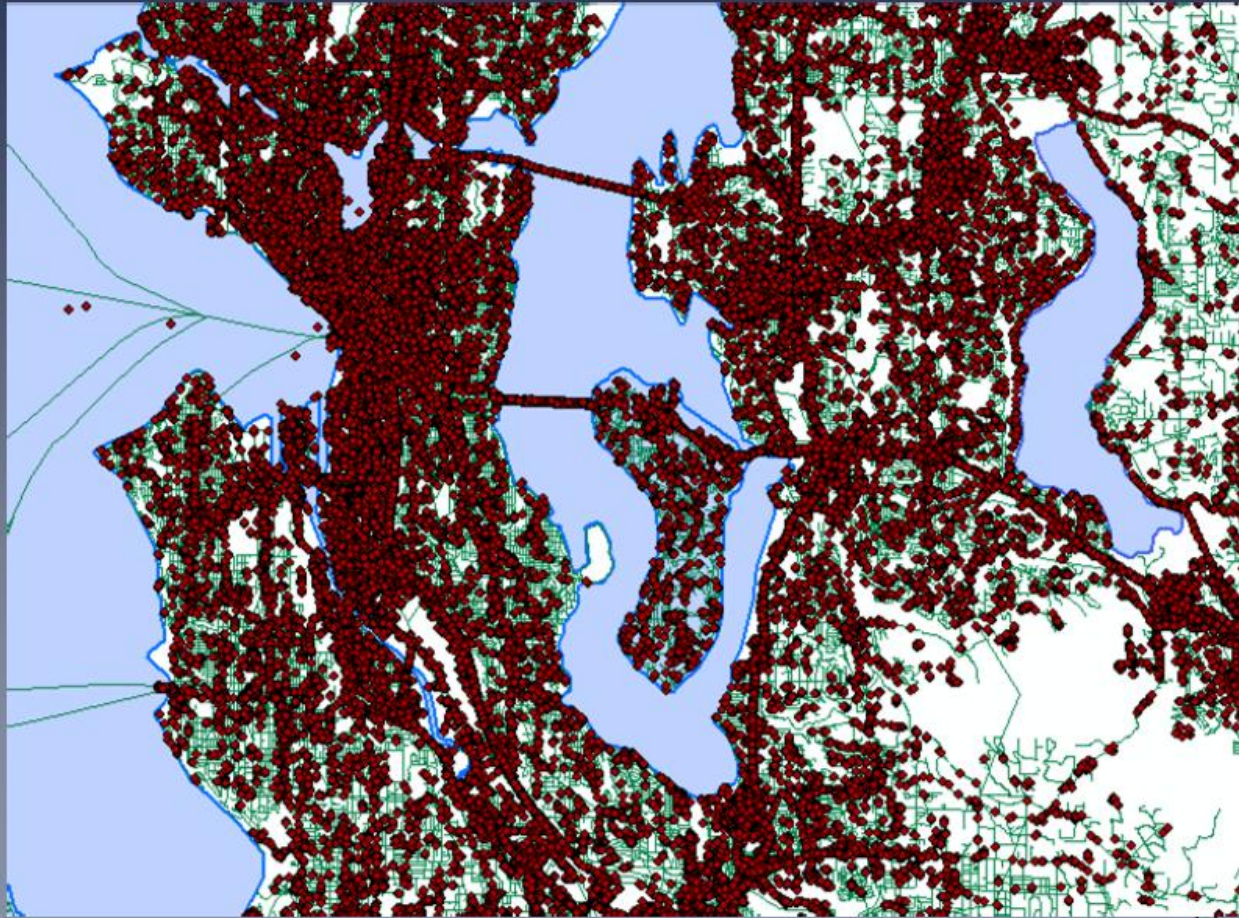
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**NATMEC 2010 -- The Use of Private Sector Truck GPS Data by Public Organizations, Edward McCormack, University of Washington**

## Data Acquisition - One Week of Data



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