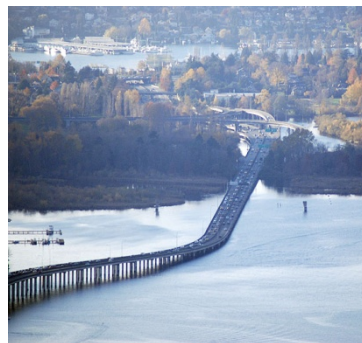


“Transpo Talks”: Traffic Analytics and Visualization

WHERE PASSION MEETS PERFORMANCE

Corridor Capacity Report – WSDOT’s multimodal system performance analysis

Sreenath Gangula, P.E., PTOE
Washington State Department of Transportation

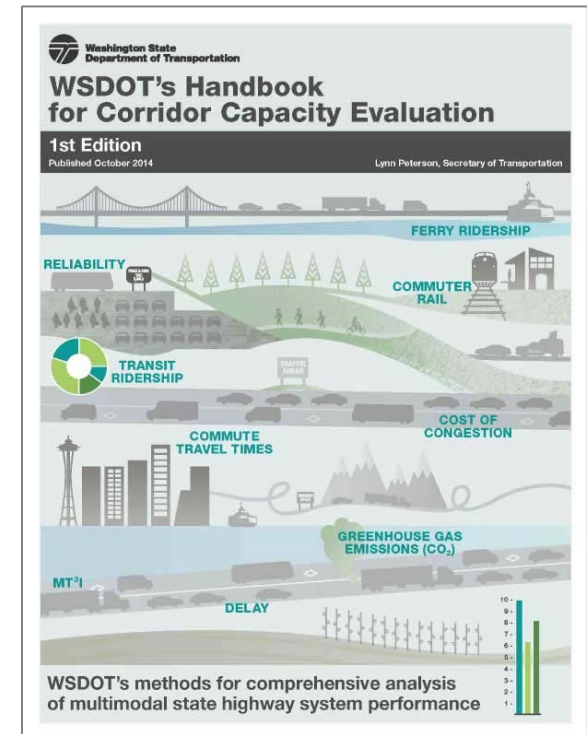
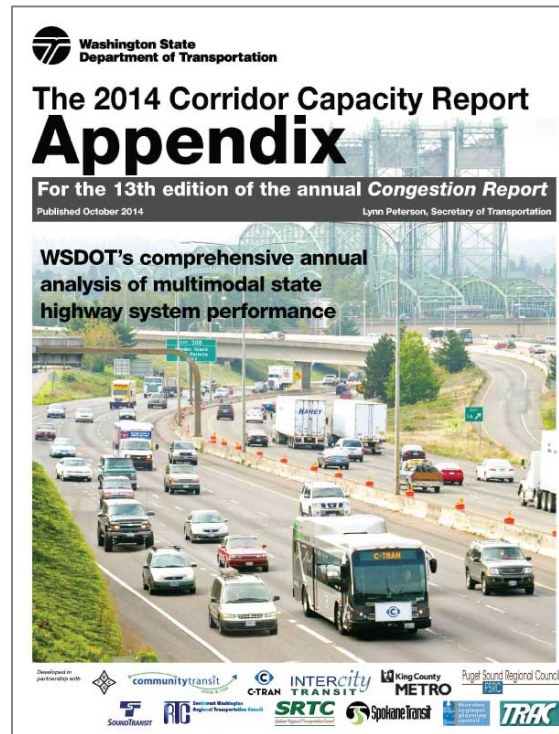
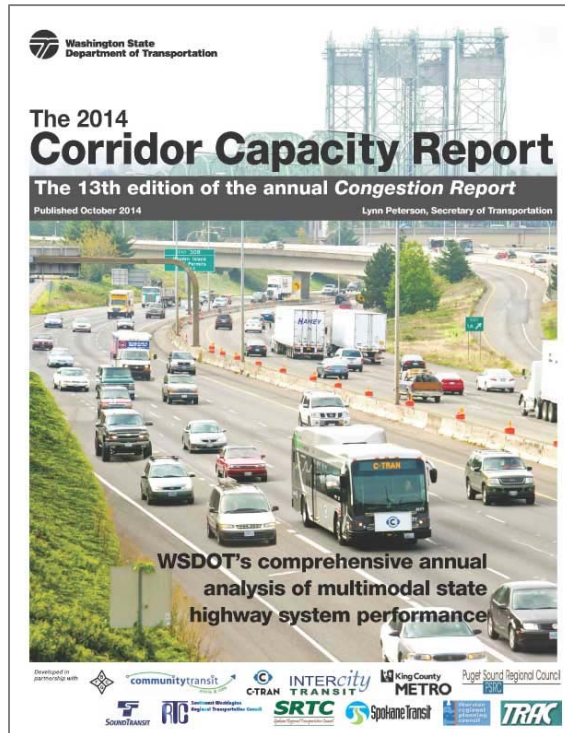


Purpose of the report

The 2014 *Corridor Capacity Report* (CCR) is intended to:

- ▶ Apprise the Legislature, partners, stakeholders, educational and research institutions, the media, and the public about highway system conditions and how we can work together to reduce congestion
- ▶ Help inform city, county and state agency policy makers, planners and engineers as they examine the multimodal capacity opportunities for state highways
- ▶ Support WSDOT's Practical Solutions and performance-based planning initiatives
- ▶ System performance data reported since 2001

This year's capacity report includes:



...in partnership with Metropolitan Planning Organizations (MPOs), Transit agencies

Ben-Franklin Council of Governments; C-Tran; Community Transit; Intercity Transit; King County Metro; Puget Sound Regional Council; Southwest Regional Transportation Council; Sound Transit; Spokane Regional Planning Council; Spokane Transit; Thurston Regional Planning Council; University of Washington

Reaction & Responses: strong media interest



“Washington drivers spending more time in traffic”

The Seattle Times

“Your commute takes much longer, but the reason isn’t clear”

PUGET SOUND
BUSINESS JOURNAL

“WSDOT study says I-5, I-90 traffic worsening”

MYNorthwest.com

“SDOT to blame for awful commute into Seattle”



“What can we do? Seattle traffic is getting much worse, new report says”

the Stranger

“Washington’s traffic nightmares will get worse until 2019”



“More on why a statewide transportation funding plan is a 2015 legislative must-do”

HeraldNet

“Numbers don’t lie—traffic is terrible and getting worse”



Washington State
Department of Transportation



The Big Picture: Dashboard

2014 Corridor Capacity Report Dashboard of Indicators

	2009	2010	2011	2012	2013	Difference '11 vs. '13
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Per person, total vehicle miles traveled on all public roads, state highways only

All public roads vehicle miles traveled (VMT) (in billions)	56.461	57.191	56.965	56.607	57.211	0.4%
All public roads per person VMT (miles)	8,462	8,505	8,417	8,303	8,313	-1.2%
State highways VMT (in billions)	31.456	31.764	31.455	31.214	31.648	0.6%
State highways per person VMT (miles)	4,714	4,724	4,648	4,578	4,598	-1.1%

Congestion on state highway system

Total state highway lane miles	18,571	18,630	18,642	18,659	18,662	0.1%
Lane miles of state highway system congested	966	1,025	1,007	1,026	1,026	1.9%
Percent of state highway system congested ⁶	5.2%	5.5%	5.4%	5.5%	5.5%	0.1%

Per person, total, and cost of delay on state highways

Annual hours of per person delay on state highways ⁷	4.21	4.71	4.72	4.52	4.71	-0.4%
Total vehicle hours of delay, in millions of hours ⁷	28.1	31.6	31.9	30.9	32.4	1.5%
Cost of delay on state highways (in millions) ⁷	\$742	\$837	\$845	\$817	\$858	1.5%

Corridor-specific congestion indicators (84 commutes statewide)

Annual Maximum Throughput Travel Time Index (MT ^{3I}) ⁸	1.30	1.39	1.38	1.39	1.43	4%
Number of commute routes with MT ^{3I} > 1 ⁹	43 ⁹	47	60	58	56	-7%

The Big Picture: Dashboard (contd.)

2014 Corridor Capacity Report Dashboard of Indicators

	2009	2010	2011	2012	2013	Difference '11 vs. '13
Demographic and economic indicators						
State population (thousands)	6,672	6,725	6,768	6,818	6,882	1.7%
Gasoline price per gallon (annual average) ¹	\$2.80	\$3.22	\$3.85	\$3.90	\$3.64	-5.5%
Washington total employment (thousands of workers) ²	2,863	2,837	2,873	2,922	2,990	4.1%
Taxable retail sales (billions of dollars) ¹	\$109.5	\$107.7	\$107.4	\$110.7	\$117.2	9.1%
Multimodal performance measures						
Drive alone commuting rate ³	72.1%	73.0%	73.3%	72.2%	72.7%	-0.6%
Carpooling commuting rate ³	11.3%	10.5%	10.2%	10.7%	10.1%	-0.1%
Bicycling and walking commuting rate ³	4.3%	4.4%	4.2%	4.5%	4.3%	0.1%
Public transit commuting rate ³	5.9%	5.5%	5.6%	5.8%	6.3%	0.7%
Transit ridership ⁴ (in millions)	129.9	189.8	195.1	218.1	--	--
WSDOT Ferries ridership ⁴ (in millions)	22.5	22.6	22.3	22.2	22.5	0.9%
Statewide congestion indicators						
Greenhouse gas emissions						
Million metric tons of carbon dioxide equivalents (CO ₂ e) ⁵	95.0	96.1	--	--	--	--
Transportation as percent of emissions from all sources statewide ⁵	44.8%	43.9%	--	--	--	--

Statewide and regional indicators: Delay

Hours of delay per person remains steady statewide
2009 through 2013; Annual delay in hours:minutes

Urban areas	2009	2010	2011	2012	2013	%Δ 2011 vs. 2013
Puget Sound ¹	7:26	8:19	8:23	8:03	8:23	0.0%
Spokane County	0:05	0:12	0:08	0:09	0:08	0.0%
Tri-Cities ²	0:21	0:36	0:35	0:32	0:12	-65.7%
Vancouver (Clark Co.)	0:38	0:22	0:23	0:22	0:17	-26.1%
Statewide	4:12	4:42	4:43	4:31	4:42	-0.4%

Data source: WSDOT Urban Planning Office, Washington State Office of Financial Management.
 Notes: 1 King, Snohomish, Pierce counties. 2 Benton, Franklin counties.

Estimated annual travel delay and cost of delay on state highways by urban area
2009 through 2013; Delay in hours; Cost of delay in millions in 2013 dollars

Urban area	2009	2010	2011 ¹	2012	2013	%Δ 2011 vs. 2013
Puget Sound (King, Snohomish and Pierce counties)	27,236,023	30,750,000	31,165,000	30,170,000	31,737,500	1.8%
Spokane (Spokane County)	39,000	97,500	65,000	77,500	70,000	7.7%
Tri-Cities (Benton and Franklin counties)	86,750	155,000	155,000	141,000	55,000	-64.5%
Vancouver (Clark County)	272,500	157,500	167,500	160,000	130,000	-22.4%
Other areas	450,727	485,000	417,500	351,500	457,500	9.6%
Statewide annual	28,085,000	31,645,000	31,970,000	30,900,000	32,450,000	1.5%
Annual cost of delay	\$742	\$837	\$845	\$817	\$858	1.5%

Data source: WSDOT Urban Planning Office.

Note: 1 2011 delay numbers do not match previous years' reports as segmentation changes were made in order to compare with 2013 analysis.

Corridor Drill Down: Example I-5, Federal Way to Everett



Washington State
Department of Transportation

Interstate 5 Corridor Capacity Analysis



Annual person miles traveled

2011 vs. 2013
2,472 vs. 2,472
in millions of miles



Annual vehicle delay¹

2011 vs. 2013
1,919 vs. 3,010
in thousands of hours



Annual emissions

2011 vs. 2013
2,068 vs. 2,018
in millions of pounds of CO₂ equivalents

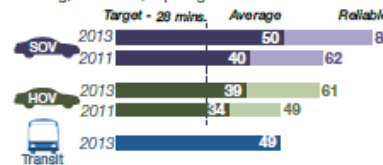


Commute travel times

2011 and 2013; Weekday travel times in minutes at the peak 5-minute interval including average and reliable² travel times for single occupant vehicle (SOV) and high occupancy vehicle (HOV) trips as well as maximum throughput (target) and planned transit travel times.

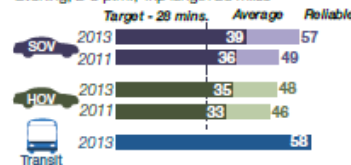
Everett to Seattle

Morning; 5-10 a.m.; Trip length 24 miles



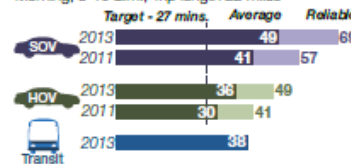
Seattle to Everett

Evening; 2-8 p.m.; Trip length 23 miles



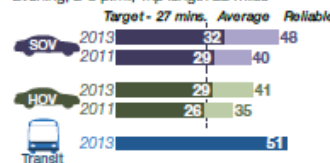
Federal Way to Seattle

Morning; 5-10 a.m.; Trip length 22 miles



Seattle to Federal Way

Evening; 2-8 p.m.; Trip length 22 miles



See [Appendix pp. 5-15](#) for more commute routes



Transit system use

2013; For typical weekday morning (6-9 a.m.) and evening (3-6 p.m.) peak periods; Ridership and percent of available seats occupied on select commutes

Corridor-wide⁴ ridership

13.8 million transit riders annually
252.8 million passenger miles traveled annually
79% transit seats occupied on average

By commute peak period

Commute	Daily period riders	Percent of seats occupied
Morning (6-9 a.m.)		
Federal Way to Seattle	10,472	89%
Everett to Seattle	8,565	64%
SeaTac to Seattle	5,748	95%
Evening (3-6 p.m.)		
Seattle to Federal Way	10,411	93%
Seattle to Everett	8,036	60%
Seattle to SeaTac	6,968	110%

Park and ride capacity

2013; Parking spaces and average percent occupied for select park and rides (P&R) (see map for locations)

Everett-Seattle commute

Park and ride	Spaces	Percent occupied
Lynnwood Transit Center	1,370	100%
Ash Way P&R	1,022	100%
Mountlake Terrace P&R	877	100%
Kenmore area	693	100%
S. Everett Freeway Station	397	100%
Northgate area	1,024	99%
Mariner P&R	644	75%
Everett Station	921	35%

Federal Way-Seattle commute

Park and ride	Spaces	Percent occupied
Auburn area	633	100%
Sumner train station	302	100%
Tukwila area	855	99%
Kent area	996	97%
Tacoma Dome	2,283	96%
Puyallup area	583	94%
Lakewood area	1,093	84%
Federal Way area	2,067	73%

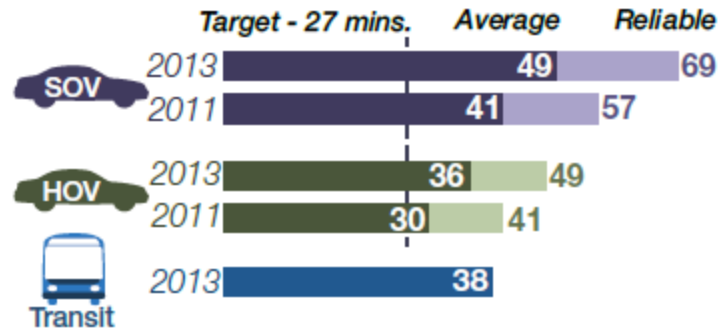
Data source: Washington State Transportation Center (TRAC) at the University of Washington, WSDOT Urban Planning Office, Sound Transit, King County Metro, Community Transit and WSDOT Office of Strategic Assessment and Performance Analysis.
Notes: Measures at the top of the page are for the I-5 corridor between Everett and Federal Way for SOV trips only. 1 WSDOT defines delay when average speeds are slower than 85% of the posted speed limit. 2 Reliable travel time is the travel time that will get a commuter to their destination on time or early 19 out of 20 weekdays, or 95% of the time. 3 Transit travel times by bus, Link light rail and Sounder rail include off-highway travel to stops and may not be comparable to SOV/HOV times which are highway only. 4 Peak period corridor-wide ridership includes trips on all I-5 central Puget Sound area corridors. 5 For more park and ride information, see <http://www.wsdot.wa.gov/choices/parkride.htm>. 6 Person throughput values include morning (6-9 a.m.) and evening (3-6 p.m.) peak period values.

Morning Commute: Multimodal Performance I-5

Travel times

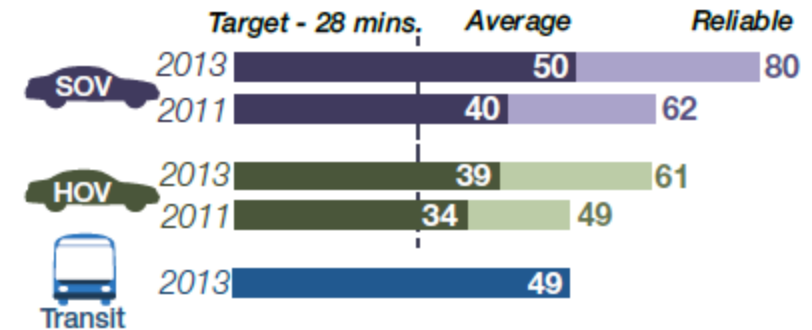
Federal Way to Seattle

Morning; 5-10 a.m.; Trip length 22 miles



Everett to Seattle

Morning; 5-10 a.m.; Trip length 24 miles



Transit ridership & percent utilized

Morning (6-9 a.m.)

Federal Way to Seattle	10,472	89%
<small>*Includes Tacoma to Seattle bus routes</small>		
SeaTac to Seattle	5,748	95%

Morning (6-9 a.m.)

Everett to Seattle	8,565	64%
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Park and ride facilities

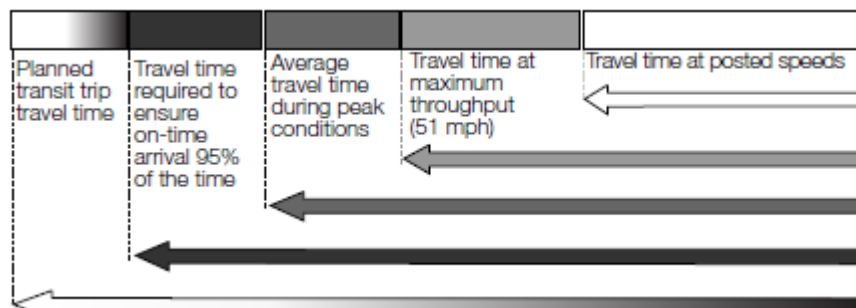
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Federal Way area	2,067	73%

Everett-Seattle commute

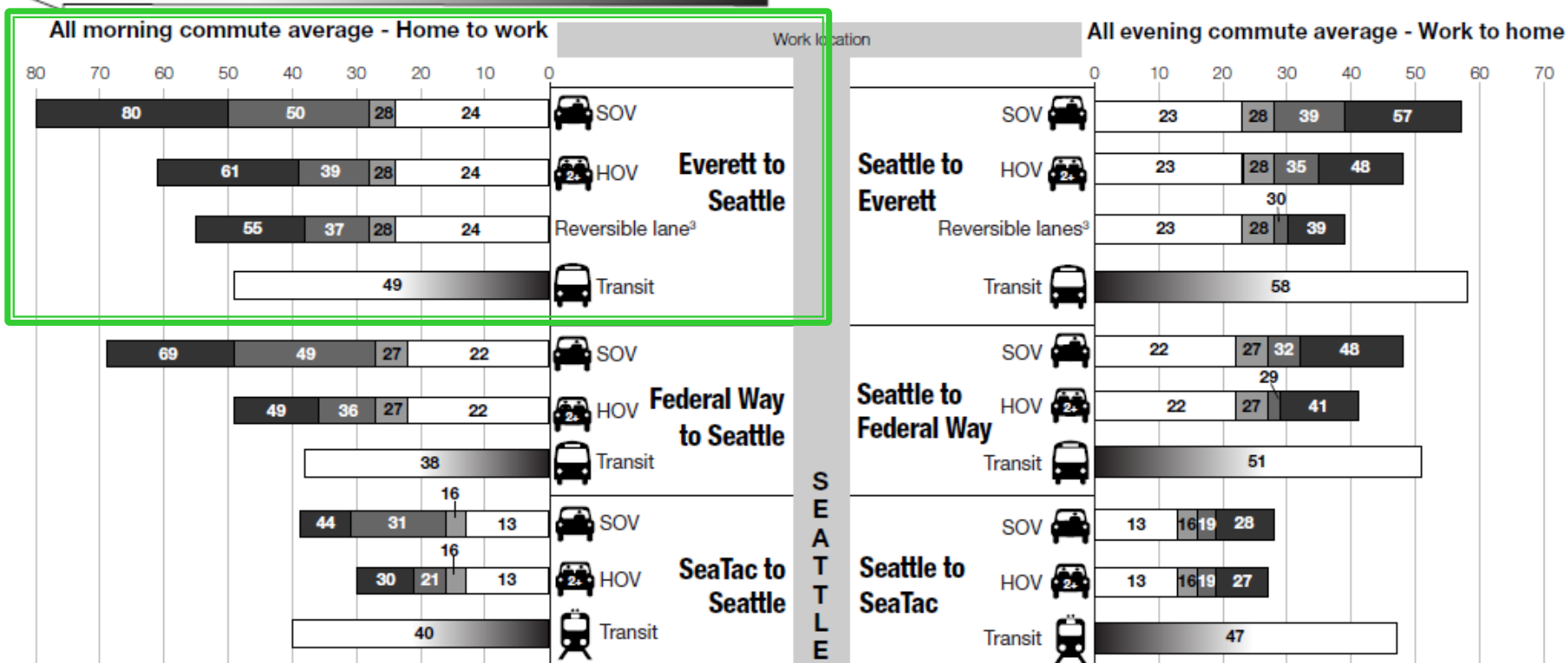
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Northgate area	1,024	99%
Mariner P&R	644	75%
Everett Station	921	35%

Infographic illustrates travel times: I-5



Travel times at posted speeds, maximum throughput speeds, peak travel times and 95th percentile reliable travel times

Morning and evening commutes by work location
 2013; Single occupant vehicle (SOV), high occupancy vehicle (HOV) and public transit commutes in the central Puget Sound area; Travel times in minutes



Other analysis in the capacity report include:

- ▶ Marine highways (Ferries)
 - Ridership
 - Trip reliability
 - Fuel usage
 - Capacity/utilization
 - On-time performance
- ▶ Before and After project analysis
 - I-5 Active Traffic Management
 - SR 167 HOT lane evaluation
 - Capacity expansion project analysis
- ▶ Incident Response analysis
- ▶ Future federal and state reporting requirements
 - Moving Ahead for Progress in the 21st Century (MAP-21)
 - Results Washington

Corridor Capacity Report Evolution



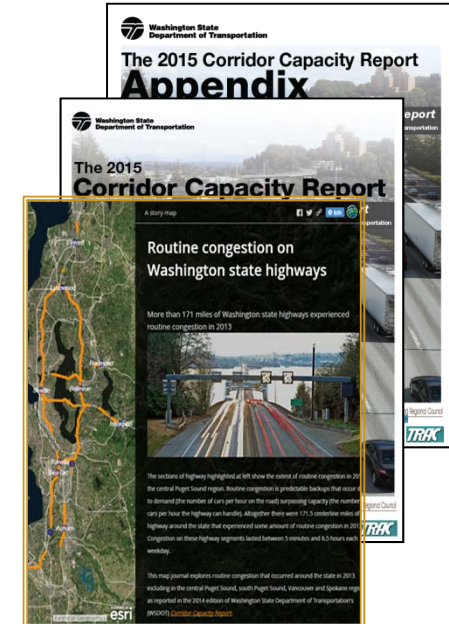
Highway-focused



Phase 1 - Introduce Corridor as well as Multimodal analysis



Phase 2 - Establish Corridor, Multimodal and Methodology explained



Phase 3 - Interactive/Online

Applications

- Project analysis on commute corridors
- Before and After Analysis

- Multimodal corridor analysis for scoping (5 corridors)
- Communications

- Expanded multimodal corridor analysis statewide
- Partnership building

- Performance based planning
- Practical Design
- Strategic Investments
- Moving Washington Forward

For additional information on the 2014 Corridor Capacity
Report, please contact:

Sreenath Gangula, WSDOT
360-705-6888 GangulS@wsdot.wa.gov