



King County

**Road Services Division
2016 Transportation Concurrency
Update Report**

July 2016



King County

Department of Transportation

Road Services Division
King Street Center, KSC-TR-0313
201 South Jackson Street
Seattle, WA 98104
206-296-6590
www.kingcounty.gov/roads

Alternative Formats Available
206-296-6590 TTY Relay: 711

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1. Introduction

King County's Transportation Concurrency Management (TCM) program began in 1995 and is administered by the Road Services Division (Roads). The program satisfies the requirements of the 1990 Growth Management Act (GMA), Revised Code of Washington 36.70A.070 (6) (vii) (b), and the concurrency policies contained in the King County Comprehensive Plan. King County Code 14.70.270 (6) requires performing concurrency testing in even numbered years, and submittal of a report to the County Council explaining the technical assumptions and parameters used to update the concurrency map. This report addresses those requirements.

The County has utilized a number of concurrency testing methodologies and travel shed configurations throughout the last 20 years. Due to city incorporations and annexations, the amount of urban area remaining in unincorporated King County is dramatically smaller than at the start of the concurrency program. The 2016 update provides a travel shed configuration that reflects the current urban and rural nature of the unincorporated area and can be easily updated in the future as the few remaining unincorporated urban areas become parts of cities consistent with the GMA and County policy.

Roads updated the data acquisition and processing methodology to a significantly more efficient and cost effective program. Efficient administration of the concurrency program is especially critical given the significant roads funding crisis facing the County.

The concurrency update report contains both a 2016 Transportation Concurrency Test Results Map (Figure 1) and a 2016 Transportation Concurrency Travel Shed Boundary Map (Figure 2).

2. Summary of changes and findings

This report responds to the need for change in the County's concurrency process, as called for in the 2016 Executive Proposed Comprehensive Plan. Roads hired transportation planning consultants, Fehr and Peers, to examine the existing concurrency program and its testing methodology. The proposed changes make King County's concurrency process more accurate, sensitive to local conditions, cost-effective and efficient to administer, while increasing alignment with County planning objectives and the GMA.

There are three primary changes in this 2016 update:

1. The method of collecting and processing travel time data was streamlined and includes substantially more accurate data using more modern methods of collection;
2. The travel sheds were restructured to reflect continuing annexations and to separate urban and rural areas so that they can be tested to their adopted level of service standards; and
3. Regionally-significant state routes were removed from the testing process. The Puget Sound Regional Council Executive Board adopts the level of service standards for these routes and these

standards are different from the County's standards. The state routes are all meeting the PSRC established level of service standards.

Data gathering

The last concurrency data collection involved County staff driving each route several times during afternoon commute hours using a GPS measuring device and a clipboard. Each route was tested over two to three days to build a representative sample and then the data was post-processed over several months to create the concurrency test results. In 2016, the County purchased comprehensive travel time data from INRIX, Inc., an international leader in traffic data systems. Rather than use representative samples, data was obtained for each route for the entire month of March 2016. The purchased data contained thousands of hourly speed data points on unincorporated King County routes enabling a much more robust analysis of the travel time. At the suggestion of the TCERP, county staff spot checked the travel time data on a sample of routes selected from routes that had failed the concurrency test in the previous update. Manual travel time measurements were taken on 11 sample routes during the PM peak period and compared with the INRIX data. The manual measurements were found to be generally consistent with the INRIX travel time data and did not indicate any concerns.

INRIX, Inc. is a Kirkland, Washington based company that creates traffic speed data products. Using the location data of smartphones and vehicles with cellular connections, INRIX collects data about the speed of movement on various road segments around the world. The profusion of smartphones in passenger vehicles enables INRIX to measure the speeds of a single road segment with thousands of data points, significantly increasing the sample size and reliability of the data. This innovative system will be repeatable and cost effective for future updates.

Travel sheds

For this update, the concurrency travel sheds were restructured to reflect continuing annexations, separate urban and rural areas, and to be able to test those areas to their respective adopted level of service standard. King County's Comprehensive Plan sets different level of service standards for the urban and rural areas. These travel sheds as designated in the new map, better reflect unincorporated King County, and rural travel sheds will not need to be continually redrawn as the urban portions continue to annex. The change resulted in 25 travel sheds being consolidated into 13 sheds.

The revised travel shed boundary map (Figure 2) was discussed with and unanimously approved by the Transportation Concurrency Expert Review Panel.

Comparison of past and 2016 program

	Past Program	2016 Program
Data source	Up to 25 staff driving with GPS units, three days per week over a two and a half month period. Data post-processed using software program, involving three staff, over two to three months.	Data purchased from INRIX, industry leader in traffic data collection and analysis. Data is collected 24 hours per day from cell phone pings.
Concurrency standard	Travel time by road mileage within each shed - 85% of principal & minor arterial mileage within each shed must meet Concurrency standard for shed to pass	Same
Level of service standard	Urban E, Rural B*	Same
State facilities tested?	Portions of state facilities were tested for county's level of service – not tested for adopted state level of service	Tested at the PSRC established level of service for state routes but removed from analysis
Number of travel sheds	25 total (6 mixed urban & rural)	13 total (6 urban, 7 rural), no mixed travel sheds
Number of failing travel sheds	5	1

*Rural Area - B with the following exceptions:

Rural Neighborhood Commercial Centers: D

Rural Mobility Areas: E

Minor developments and public and educational facilities: F

3. Concurrency test results

Of the 13 travel sheds, all urban sheds pass, and six of seven rural sheds pass. Travel shed seven is failing due to the unique nature of this rural pocket in the urban area. Travel shed seven contains the rural-designated Green River Agricultural Production District and there is no significant development potential in this shed. This shed is surrounded by the cities of Kent, Auburn, and Des Moines.

Travel Shed	Total Travel Shed Mileage	Travel Shed Total Failed Mileage	Percent Travel Shed Failing Standards	Travel Shed Concurrency Test (85% Compliance)*
1	13.3	0.0	0%	PASS
2	32.8	4.1	12.5%	PASS
3	25.2	1.6	6%	PASS
4	30.3	1.4	5%	PASS
5	44.1	0.0	0%	PASS
6	0.0	0.0	0%	PASS
7	2.0	1.0	51%	FAIL
A	6.4	0	0%	PASS
B	3.0	0.0	0%	PASS
C	2.2	0.0	0%	PASS
D	8.2	0.0	0%	PASS
E	9.7	0.0	0%	PASS
F	1.9	0.0	0%	PASS

*The transportation concurrency program tests arterials within a shed against their level of service standard and calculates the percentage of failing arterial segments in that travel shed. If more than 15 percent of tested miles fail, the travel shed fails the concurrency test and the shed is closed for development. The designated Rural Towns (Fall City, Snoqualmie Pass, and Vashon) and Rural Neighborhood Commercial Centers (Cottage Lake, Cumberland, Maple Valley, and Preston) all pass concurrency testing.

2016 Failing Route Segments by Travel Shed

Travel Shed	Route Segment	Arterial Classification	Distance in Miles	LOS Standard	Speed	LOS	Status
2	N. E. 124th St. (Redmond City Limits to SR-202)	Principal	0.99	B	25	C	Fail
2	Novelty Hill Road (218th Ave. N. E. to 234th Ave. NE)	Principal	0.16	B	26	C	Fail
2	Novelty Hill Road (Redmond City limits to 218th Ave. N. E.)	Principal	2.00	B	26	C	Fail
2	Woodinville-Duvall Road (W. Snoqualmie Valley Road N. E. to Duvall City limits)	Principal	0.97	B	22	D	Fail
3	236th/238th Ave N. E. (Union Hill Road to SR-202)	Minor	1.61	B	24	C	Fail
4	Issaquah-Hobart Road (Issaquah City limits to SE 127th St.)	Principal	1.44	B	26	C	Fail
7	83rd Ave. S. /Central Ave. (Auburn City limits to Kent City limits)	Minor	0.50	B	15	D	Fail
7	S 277th St. (55th Ave. S. to Urban Growth Boundary)	Principal	0.50	B	28	C	Fail

4. Other technical changes

All annexed areas and related route segments were removed from the testing process.

Regionally-significant¹ state routes were also removed from concurrency testing. Portions of SR-202, SR-203, and SR-900 are located within unincorporated King County travel sheds; however, they are the state's responsibility to manage. They are subject to different level of service standards adopted by the Puget Sound Regional Council. Those standards are lower than the County's standards, and the routes are meeting their established standards. These routes were not considered in testing concurrency for County arterials.

¹ State routes are defined as either being statewide-significant (e. g. I-5, I-90, portions of SR 99) or regionally-significant (all other state routes). Statewide-significant routes are explicitly exempt from concurrency, while regionally-significant routes have level of service standards adopted into the Puget Sound Regional Council's regional transportation plan.

5. Actions to address failing travel sheds

In 2016, only travel shed seven is failing the concurrency test. The situation is unique as it is located in an agricultural production district that will remain rural forever while being surrounded by dense urban area. There are only three arterials in this shed, which carry heavy, urban pass-through traffic. These urban roads are tested at the rural level of service standard of B rather than at the urban level of service standard of E since they are located in the rural unincorporated area, outside of the Urban Growth Boundary. It is impossible for these urban roadways to meet the rural, B level of service standard. These road segments do meet the urban level of service standard E.

Despite the fact that this travel shed is failing the concurrency and level of standard tests, the shed consists primarily of land dedicated to agriculture with no significant development potential. Since the prospect of widening roads in a King County's Agricultural Production District is inconsistent with Comprehensive Plan policy, the recommendation to resolve this shed failure is to test the urban pass-through roads at the urban level of service standard E.

Figure 1. 2016 Transportation Concurrency Test Results Map

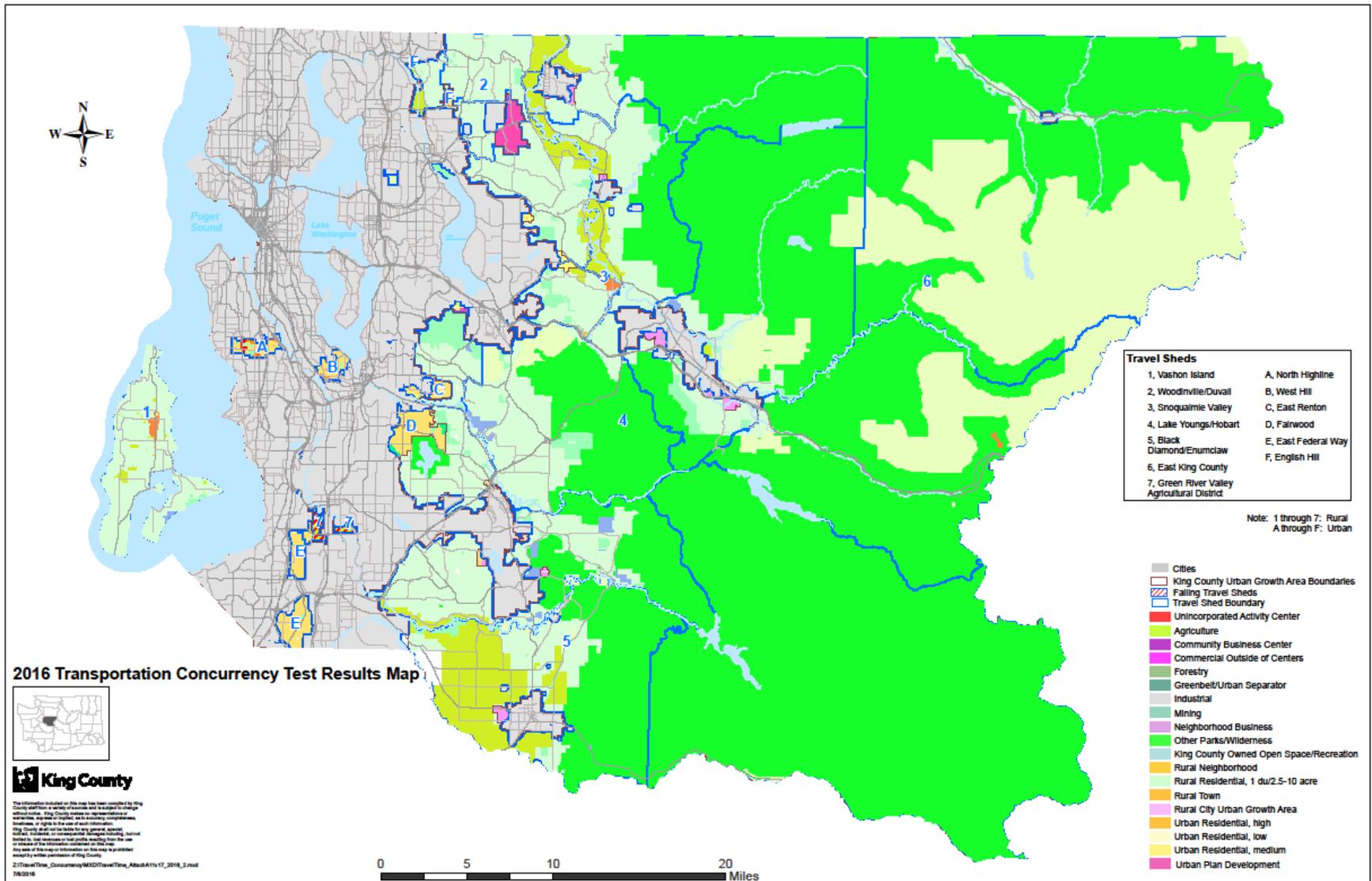
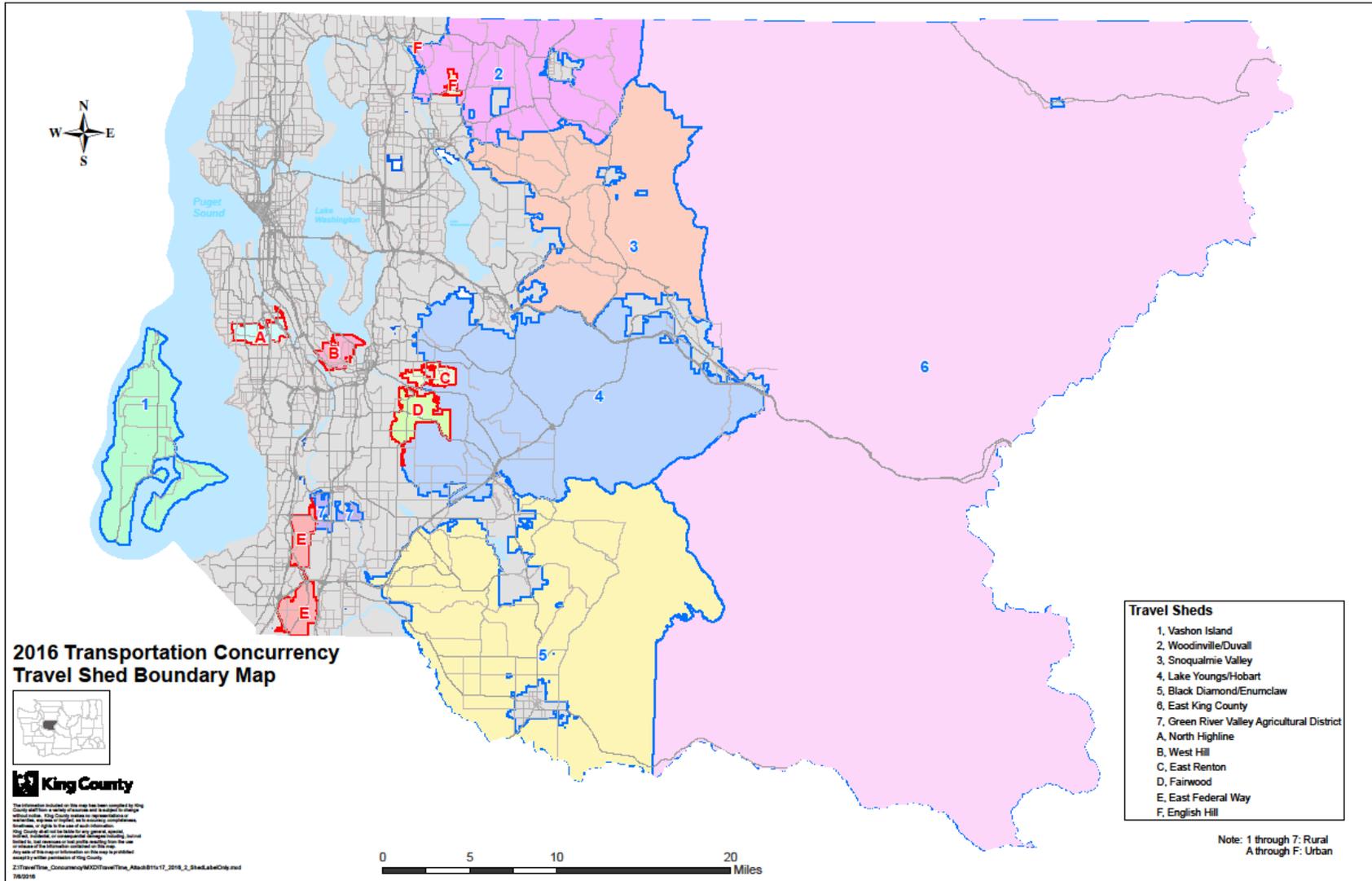


Figure 2. 2016 Transportation Concurrency Travel Shed Boundary Map



Technical Appendix

Standards Used for Concurrency Testing – Level of Service (LOS)

The level of service (LOS) standards adopted in the King County Comprehensive Plan are used to appropriately encourage growth in the urban area and to determine if future growth can be accommodated on the existing roadways. Levels of service on roadways range from standard A for free flowing traffic to standard F for heavily congested traffic. The LOS for different arterial classifications is identified by travel speeds in the following table from the King County Code.

There is a different LOS standard for urban areas (standard E) than for rural areas (standard B). Mobility areas established in the rural areas have their own LOS standard. Rural Towns (Fall City, Vashon, and Snoqualmie Pass) have a standard of E, and selected Rural Neighborhood Commercial Centers (Cumberland, Cottage Lake, Maple Valley, Preston) have a standard of D.

LEVEL OF SERVICE STANDARDS & TRAVEL SPEEDS		
	Principal Arterials	Minor Arterials
LEVEL OF SERVICE STANDARD	AVERAGE TRAVEL SPEED (MILES PER HOUR)	
A	>35	>30
B	>28 – 35	>24 – 30
C	>22 – 28	>18 – 24
D	>17 – 22	>14 – 18
E	>13 – 17	>10 – 14
F	<=13	<=10

From King County Code 14.70.220.B.2

Travel Time Collection Methodology

Data Collection

INRIX data is organized into segments called Traffic Message Channel (TMC) codes, and for every tested roadway segment, there are two TMC codes (one for each direction). For each TMC code, King County obtained hourly average travel speed data.

Data Processing and Analysis

The travel time analysis took the average speed of travel in each direction from 4:00 to 7:00 p.m. The analysis combined 12 days of data: Tuesday, Wednesday, and Thursday for the four weeks of March 2016.

A sample of the INRIX data is shown below.

TMC CODE	NAME	MILES	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
114+09175	GREEN RIVER RD/S	0.79	35.07	35.97	35.39	33.56	33.93	35.2	35.71	35.99	36.08	37.74	36.78	37.38
114+09183	NE 68TH ST	1.85	26.38	25.34	25.31	23.45	22.26	20.47	21.98	24.62	26.37	26.87	26.5	26.03
114+09185	S 277TH ST	0.39	30.43	30.13	27.75	29.12	31.05	31.59	32.63	32.14	33.44	32.94	32.76	32.45
114P09185	S 277TH ST	0.05	28.48	26.89	25.84	23.91	27.34	29.67	28.83	25.89	28.35	29.89	30.61	30.64
114+09195	SE 281ST ST	1.40	34.23	33.83	34.36	33.85	34.22	34.85	35.41	35.21	36.15	36.87	35.63	35.81
114+09218	NE 70TH PL/NE 72	2.69	29.28	28.71	29.27	27.46	25.97	24.65	25.35	30.29	30.48	31.6	29.97	30.02
114P09218	NE 70TH PL/NE 72	0.04	11.57	11.94	10.11	11.59	11.41	9.84	8	8.02	7.92	9.19	11.24	10.58

Each number shown above is the average speed for that road segment for the entire month. The lowest average speed was used to test the road segment against its designated level of service standard. This determined the concurrency test result of passing or failing.