BRENT SPENCE BRIDGE CORRIDOR

Moving the Economy, Creating Jobs

Traffic & Revenue Forecasting:

Forecasted Traffic Diversion

November 25, 2014

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Traffic & Revenue Forecasting Model

- Modeling Development Methodology
  - The OKI TDM is the starting point of the T&R Forecasting
  - Extract a study area to focus on BSB and alternate crossings
  - Use independent SE forecasts and an econometric model for trip growth
  - Add a route choice model based upon Values of Time from survey
  - Reduce Dan Beard model capacity to reflect merging impact of through lanes with entrance/exit lanes)
- The T&R forecasts will undergo a thorough review by investors and others and need to be conservative, especially concerning diversion

Note: the results presented are for the Louisville Scenario with 2017 $ toll rates

Vehicle Class	2017 $ Toll Rates
Auto ETC	$2.00
Auto Video	$4.00
Auto Discount	$1.00
SUT Medium	$5.00
SUT Medium Video	$7.00
MUT Heavy	$10.00
MUT Heavy Video	$12.00

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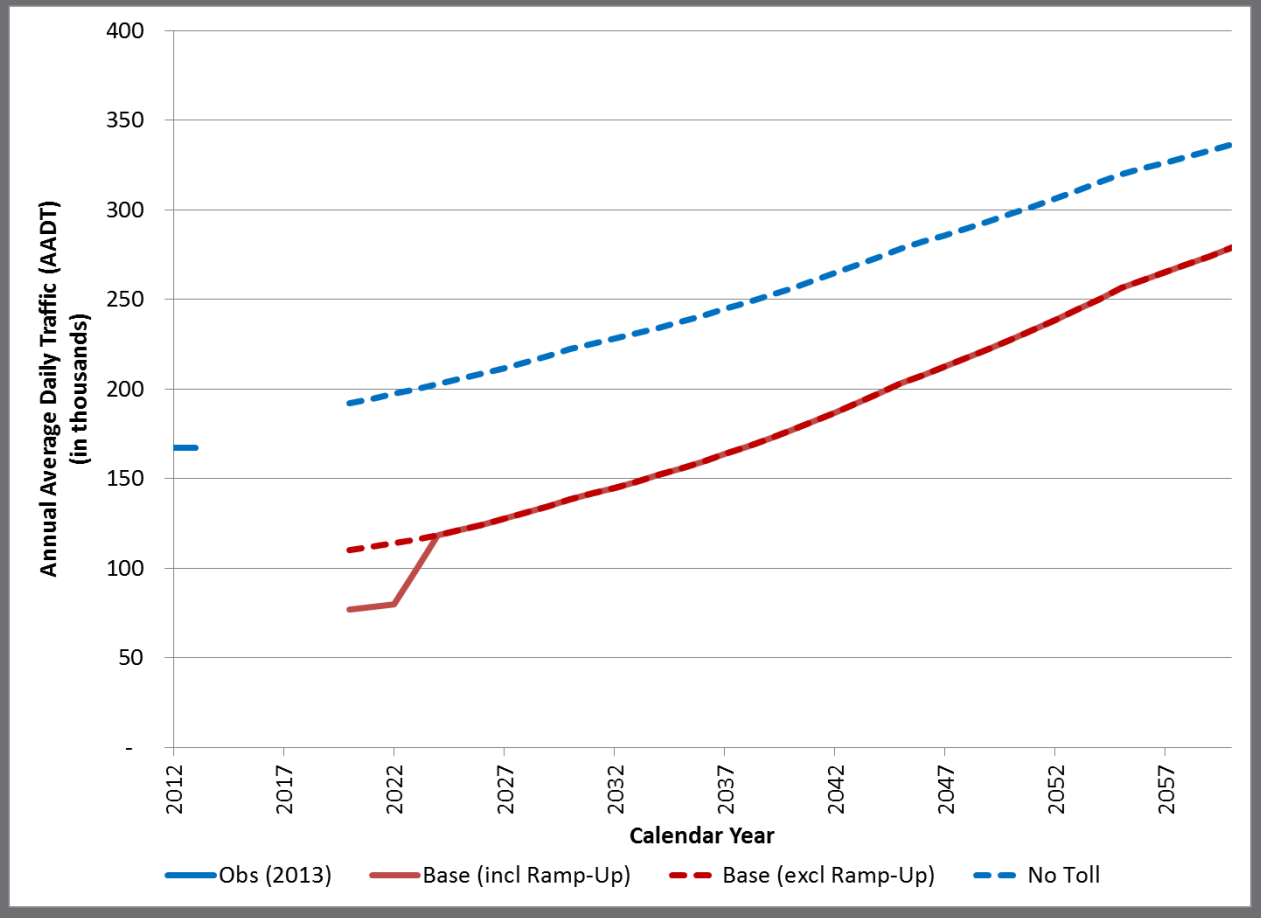
Brent Spence Bridge: Existing and Forecasted Traffic Levels



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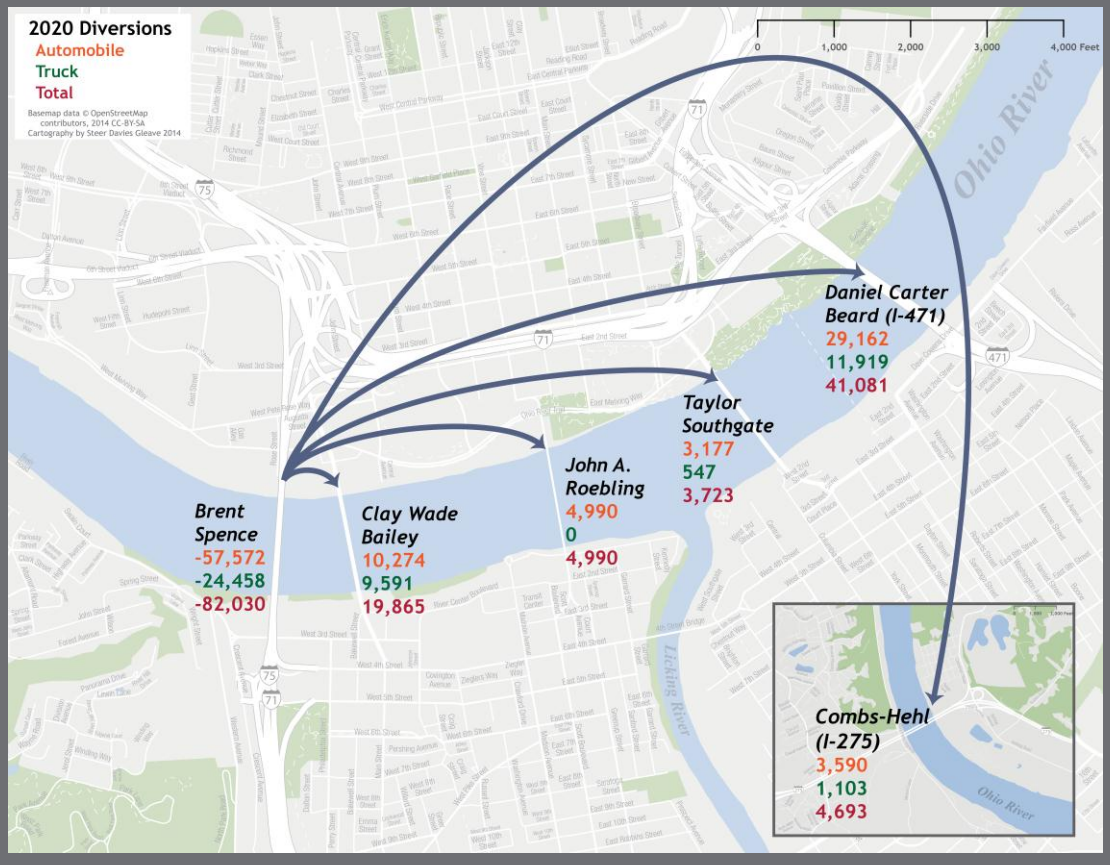
Forecasted Traffic Diversion

Traffic Diversion - 2020

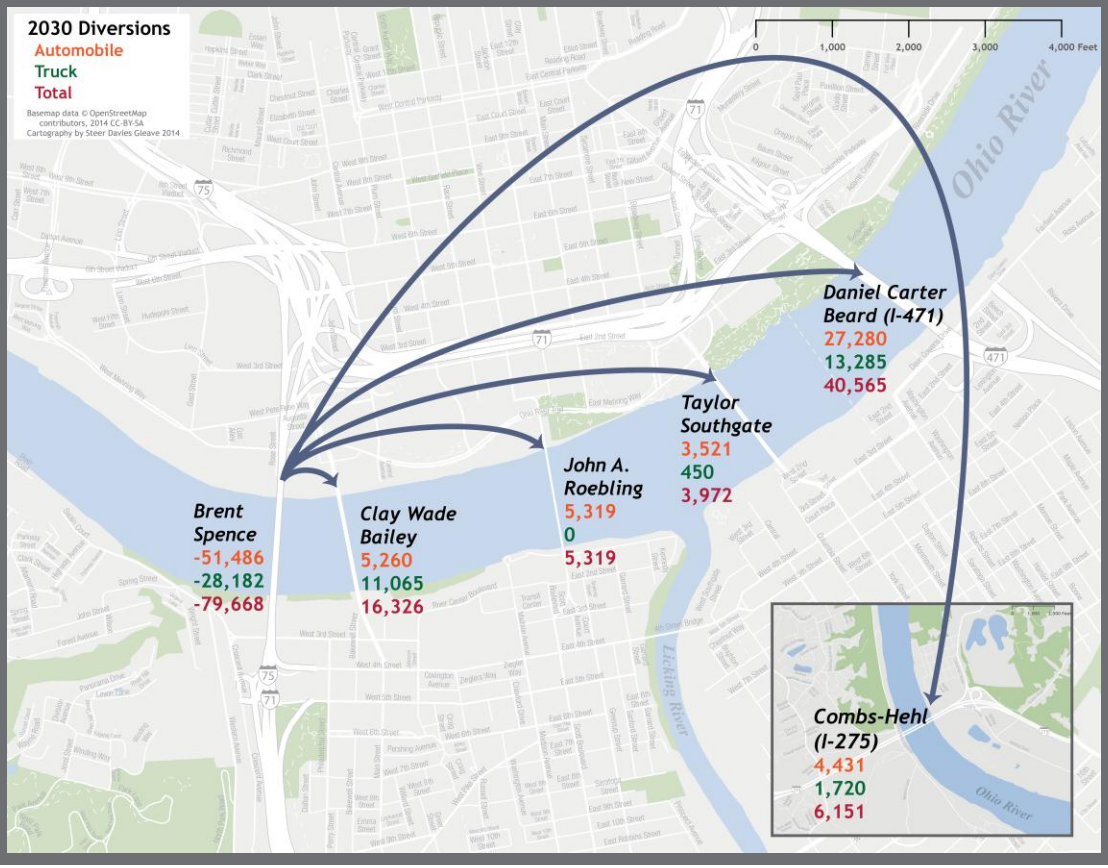
- 43% of BSB traffic from the No Toll Scenario diverts in 2020



Forecasted Traffic Diversion

Traffic Diversion - 2030

- 36% of BSB traffic from the No Toll Scenario diverts in 2030



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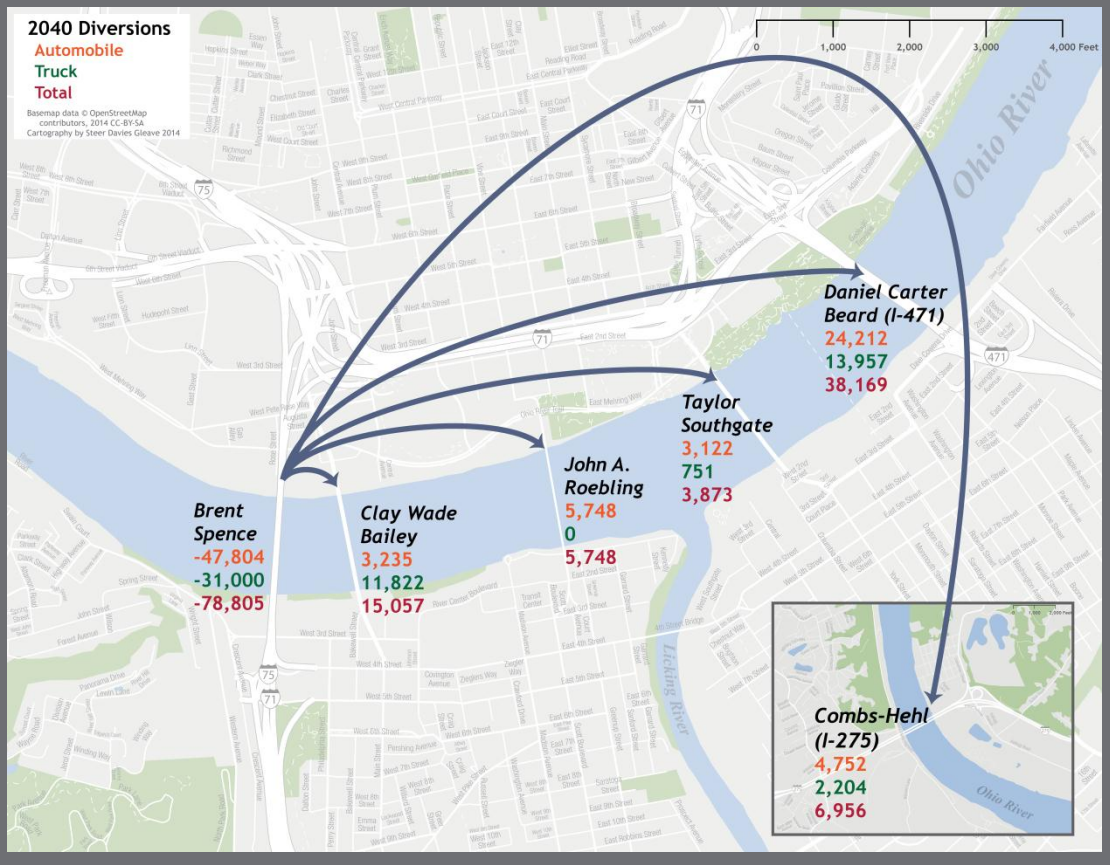
Forecasted Traffic Diversion

Traffic Diversion - 2040

- 31% of BSB traffic from the No Toll Scenario diverts in 2040



Forecasted Traffic Diversion

Traffic Levels on Alternate Bridges

- The following slides compare forecasted bridge volumes to current observed traffic levels as well as model capacities
- Local road bridge peak volumes tend to be similar to observed peak volumes or are sufficiently below capacity
  - The Dan Beard does experience higher forecasted peak period volumes
- Most local roads show large nighttime and midday increases because of the relatively high toll (compared to smaller time savings) in the off peak periods on Brent Spence. Their hourly volumes are still within reason

Forecasted Traffic Diversion

Capacities, Observed Volumes, Modelled Volumes

The maximum hourly volume on C.W. Bailey increases from the observed 1,056 in the 5pm period to 1,512 in the 7am period in 2040. The 500 vehicle increase is reasonable and still below model capacity.

C.W. Bailey

	Capacity		2013 (observed)		2020		2030		2040	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
6am-7am	1,860	930	399	252	1,337	500	1,367	532	1,331	516
7am-8am	1,860	930	956	485	1,464	597	1,487	615	1,512	611
8am-9am	1,860	930	892	428	1,367	542	1,344	527	1,365	565
9am-3pm	11,160	5,580	2,364	2,280	7,251	3,276	7,136	3,241	7,361	3,116
3pm-4pm	930	1,860	560	602	721	1,076	732	1,050	716	1,063
4pm-5pm	930	1,860	709	971	666	1,348	699	1,377	683	1,386
5pm-6pm	930	1,860	722	1,056	750	1,363	736	1,328	732	1,335
6pm-7pm	930	1,860	439	521	604	680	651	776	608	725
7pm-6am	10,230	20,460	1,509	1,507	9,029	5,774	8,653	4,798	8,909	4,975
Total	30,690	36,270	8,550	8,104	23,188	15,156	22,806	14,244	23,217	14,291

Color-Coding

Volume / Capacity	Color
0 – 0.6	
0.6 – 0.8	
0.8 – 1.0	
> 1.0	

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Forecasted Traffic Diversion

Capacities, Observed Volumes, Modelled Volumes

Observed hourly traffic on Roebling Bridge were already over model capacity at 627 vehicles an hour in the 4pm period. The modeled hourly volumes do not increase above this maximum observed hourly volume.

John A. Roebling

	Capacity		2013 (observed)		2020		2030		2040	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
6am-7am	480	480	420	254	470	490	479	504	488	500
7am-8am	480	480	348	245	499	496	539	496	555	496
8am-9am	480	480	213	188	441	473	452	478	456	479
9am-3pm	2,880	2,880	1,311	1,857	2,727	3,115	2,808	3,081	3,004	3,260
3pm-4pm	480	480	276	576	458	490	445	497	457	502
4pm-5pm	480	480	259	627	469	532	454	537	458	587
5pm-6pm	480	480	195	346	450	544	440	543	458	577
6pm-7pm	480	480	153	226	418	471	406	470	429	472
7pm-6am	5,280	5,280	1,013	1,089	1,288	3,088	1,651	4,092	2,056	4,054
Total	11,520	11,520	4,186	5,409	7,219	9,698	7,675	10,698	8,362	10,928

Color-Coding

Volume / Capacity	Color
0 – 0.6	
0.6 – 0.8	
0.8 – 1.0	
> 1.0	

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Forecasted Traffic Diversion

Capacities, Observed Volumes, Modelled Volumes

Observed hourly traffic on Taylor Southgate Bridge were also over model capacity at 1,257 vehicles an hour in the 5pm period. The modelled hourly volumes do not increase much above this observed volume.

Taylor Southgate

	Capacity		2013 (observed)		2020		2030		2040	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
6am-7am	980	980	221	74	871	365	921	477	998	571
7am-8am	980	980	577	146	987	619	1,037	651	1,133	681
8am-9am	980	980	545	185	837	320	909	335	873	401
9am-3pm	5,880	5,880	1,331	1,270	3,700	3,916	4,104	3,936	4,332	4,321
3pm-4pm	980	980	227	369	768	941	789	933	857	1,018
4pm-5pm	980	980	268	757	792	1,068	827	1,130	878	1,263
5pm-6pm	980	980	263	1,257	560	1,259	671	1,239	726	1,309
6pm-7pm	980	980	226	481	723	717	746	741	781	782
7pm-6am	10,780	10,780	896	981	2,314	1,630	2,131	1,543	2,245	1,822
Total	23,520	23,520	4,555	5,520	11,552	10,834	12,134	10,986	12,823	12,168

Color-Coding

Volume / Capacity	Color
0 – 0.6	
0.6 – 0.8	
0.8 – 1.0	
> 1.0	

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Forecasted Traffic Diversion

Capacities, Observed Volumes, Modelled Volumes

The highest observed volume on Dan Beard is 6,267 in the 7am period, which is above model capacity. This increases to 7,824 in the 5pm period in 2040 which, while above capacity, is a reasonable growth in 27 years.

Dan C. Beard

	Capacity		2013 (observed)		2020		2030		2040	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
6am-7am	5,500	5,500	4,939	1,443	5,783	2,861	6,184	3,304	6,509	3,625
7am-8am	5,500	5,500	6,267	2,196	6,685	3,480	7,033	3,614	7,451	3,677
8am-9am	5,500	5,500	4,665	2,091	5,503	3,312	5,575	3,393	5,760	3,526
9am-3pm	33,000	33,000	15,330	16,109	22,519	23,017	23,568	24,285	25,158	26,252
3pm-4pm	5,500	5,500	2,664	4,947	4,101	5,575	4,324	5,981	4,527	6,202
4pm-5pm	5,500	5,500	2,715	5,634	3,987	6,765	4,175	7,307	4,301	7,824
5pm-6pm	5,500	5,500	2,733	5,302	3,679	6,545	3,811	6,929	3,919	7,480
6pm-7pm	5,500	5,500	2,515	3,499	3,610	4,940	3,801	5,315	3,771	5,372
7pm-6am	60,500	60,500	10,165	11,171	18,681	20,617	19,831	23,167	21,286	25,289
Total	132,000	132,000	51,992	52,392	74,548	77,111	78,303	83,296	82,671	89,247

Color-Coding

Volume / Capacity	Color
0 – 0.6	
0.6 – 0.8	
0.8 – 1.0	
> 1.0	

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Traffic Diversion Comparison: Ohio River Bridges

East End Crossing and Downtown Crossing have lower forecasted diversion rates, but fewer toll-free alternatives and further toll-free interstate option

Forecasted Diversion Rates	East End Crossing	I-65 (Downtown / Kennedy Bridges)
2018	21%	30%
2023	20%	29%
2030	19%	27%

Toll Rates (2017 $)

	Car	Medium Truck	Heavy Truck
Discount	$1.00	NA	NA
ETC	$2.00	$5.00	$10.00
Registered Video	$3.00	$6.00	$11.00
Unregistered Video	$4.00	$7.00	$12.00

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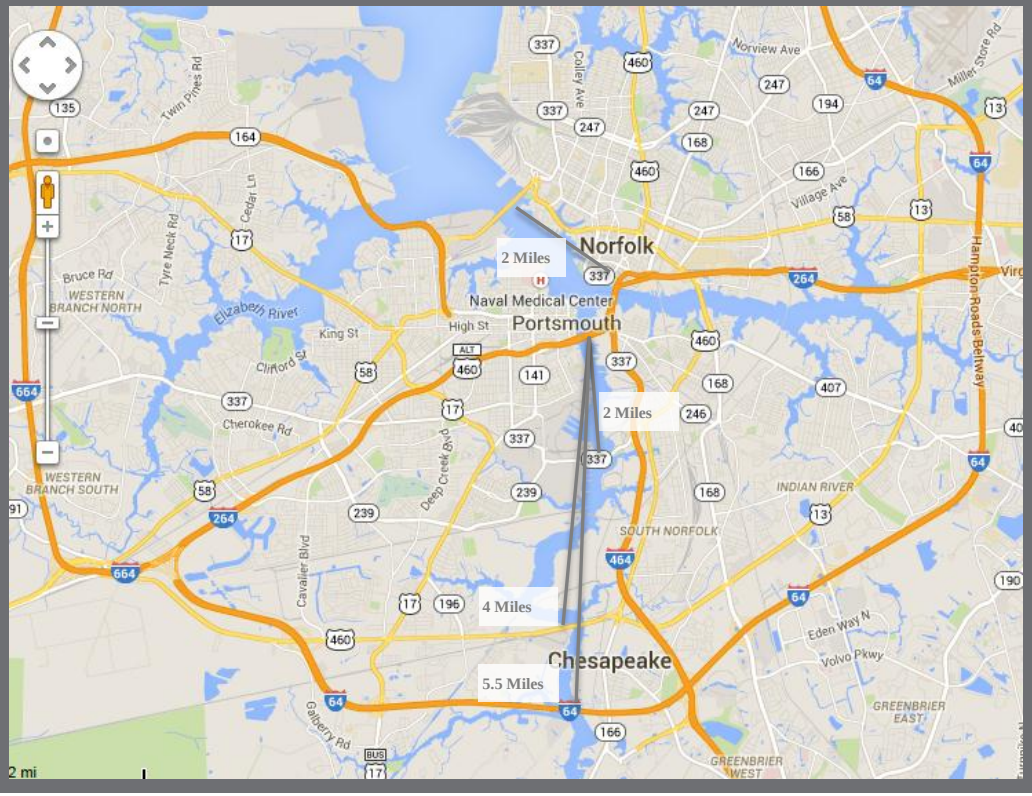
Traffic Diversion Comparison: Midtown Tunnel / Downtown Tunnel

Midtown & Downtown Tunnels started tolling in 2014 and have experienced lower diversion rates, but also lower toll rates, and fewer and further toll-free alternatives



Source: Google Maps

Diversion Rates	Midtown Tunnel	Downtown Tunnel
2014	15%	20%

Source: HRTPO

Toll Rates

	Car		Truck	
	Off-Peak	Peak	Off-Peak	Peak
ETC	$0.75	$1.00	$2.25	$4.00
Registered Video	$1.50	$1.75	$3.00	$4.75
Unregistered Video	$2.25	$2.50	$3.75	$5.50

Source: Elizabeth River Crossings

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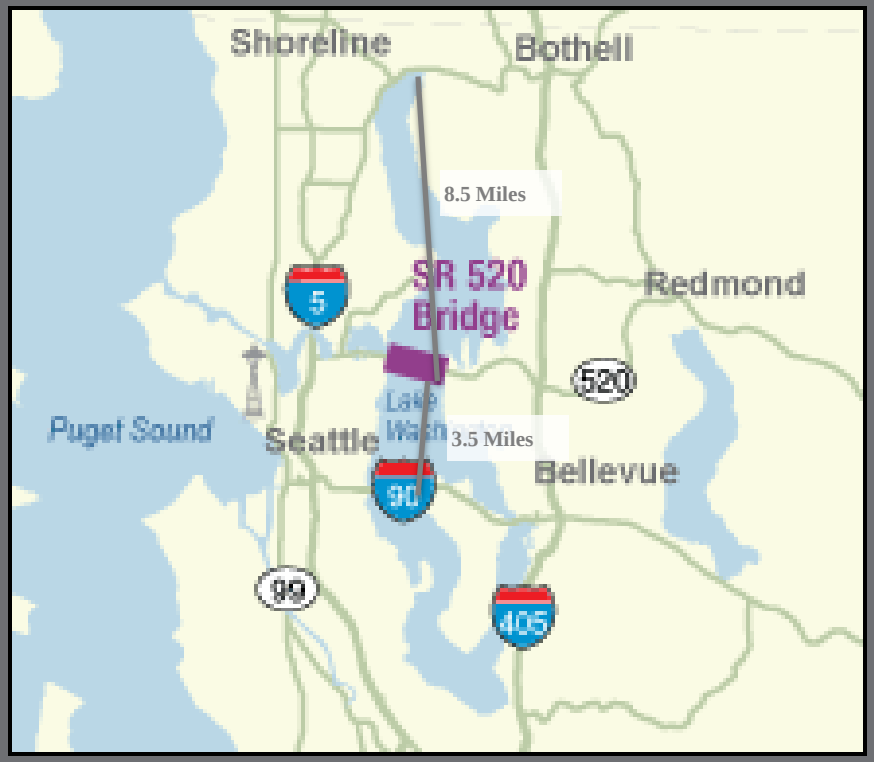
Traffic Diversion Comparison: WA SR 520

SR 520 began tolling in 2012 with traffic levels 36% lower than the year before



Source: WSDOT,

Diversion Rates	
	SR 520
2012	36%

Source: CDM Smith

Toll Rates

	Car		5-Axle Truck	
	Off-Peak	Peak	Off-Peak	Peak
ETC	$1.60	$3.50	$4.00	$8.75
Unregistered Video	$3.10	$5.00	$7.75	$12.50

Source: CDM Smith,

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Traffic Diversion Comparison Summary

The BSB has the lowest % of tolled crossings and the most nearby toll-free alternatives, and has higher toll rates than the Midtown and Downtown Tunnels, explaining its higher diversion rate

Project – crossing	Auto ETC Toll (2017 $)	Truck ETC Toll (2017 $)	Toll-Free Alternatives	% of Crossings Tolled	Opening Year Diversion Rate
Brent Spence	$2 (w/ $1 discount)	$5 & $10	4 within 2 miles	20%	43%
ORB – Downtown	$2 (w/ $1 discount)	$5 & $10	2 within 4.5 miles	50%	30%
ORB – East End	$2 (w/ $1 discount)	$5 & $10	2 within 12 miles	50%	21%
Midtown Tunnel	$0.80 off-peak $1.10 peak	$2.40 off-peak $4.30 peak	2 within 7.5 miles	60%	15%
Downtown Tunnel	$0.80 off-peak $1.10 peak	$2.40 off-peak $4.30 peak	2 within 5.5 miles	60%	20%
SR 520	$1.80 off-peak $4.00 peak	$4.50 off-peak $9.90 peak	2 within 8.5 miles	33%	36%