



December 16, 2009

Mr. David Chapin
Senior Policy Analyst
Maryland Transportation Authority
2310 Broening Highway
Baltimore MD 21224

Re: ICC Additional Toll Scenario and Sensitivity Tests

Dear Mr. Chapin,

Wilbur Smith Associates (WSA) is pleased to submit these revised ICC transaction and revenue estimates for an alternative toll schedule, known hereafter as Scenario 3, as well as the results of requested sensitivity tests for reduced minimum tolls and reduced overnight tolls. Both sensitivity tests were carried out based on the original project phasing (not reflecting the delay to Contract E) under both Scenarios 1 and 2. The reduced minimum toll was included under the base conditions of Scenario 3 (thus no sensitivity test was needed), while the reduced overnight toll sensitivity test was carried out for Scenario 3 as well as Scenarios 1 and 2.

Scenario 3

MDTA requested that WSA run a full set of model assignments based on a new lower schedule of toll rates, assuming opening rates of 20 cents per mile during peak periods and 15 cents during off-peak (midday and overnight) periods. Table 1 shows the toll rate schedule that was developed for Scenario 3, as well as those assumed under Scenarios 1 and 2.

The model assignments for Scenario 3 assumed a reduced minimum toll of 40 cents or the equivalent of 2 miles driven times the per mile toll rate, whichever was greater (this new minimum toll was also tested under Scenarios 1 and 2 as a sensitivity test, discussed later in this letter). All other assumptions were unchanged from the previous scenarios.

Table 1
Per Mile Toll Rates for Passenger Cars (1)

Year	Scenario 1		Scenario 2		Scenario 3	
	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak
2011	\$0.25	\$0.20	\$0.30	\$0.25	\$0.20	\$0.15
2012	\$0.25	\$0.20	\$0.30	\$0.25	\$0.20	\$0.15
2013	\$0.25	\$0.20	\$0.30	\$0.25	\$0.20	\$0.15
2014	\$0.26	\$0.21	\$0.31	\$0.26	\$0.21	\$0.16
2015	\$0.26	\$0.21	\$0.31	\$0.26	\$0.21	\$0.16
2016	\$0.275	\$0.225	\$0.325	\$0.275	\$0.225	\$0.175
2017	\$0.275	\$0.225	\$0.325	\$0.275	\$0.225	\$0.175
2018	\$0.285	\$0.235	\$0.335	\$0.285	\$0.235	\$0.185
2019	\$0.285	\$0.235	\$0.335	\$0.285	\$0.235	\$0.185
2020	\$0.30	\$0.25	\$0.35	\$0.30	\$0.25	\$0.20
2021	\$0.30	\$0.25	\$0.35	\$0.30	\$0.25	\$0.20
2022	\$0.32	\$0.26	\$0.37	\$0.31	\$0.26	\$0.21
2023	\$0.32	\$0.26	\$0.37	\$0.31	\$0.26	\$0.21
2024	\$0.335	\$0.27	\$0.385	\$0.32	\$0.27	\$0.22
2025	\$0.335	\$0.27	\$0.385	\$0.32	\$0.27	\$0.22
2026	\$0.355	\$0.28	\$0.405	\$0.33	\$0.28	\$0.23
2027	\$0.355	\$0.28	\$0.405	\$0.33	\$0.28	\$0.23
2028	\$0.38	\$0.29	\$0.43	\$0.34	\$0.29	\$0.24
2029	\$0.38	\$0.29	\$0.43	\$0.34	\$0.29	\$0.24
2030	\$0.40	\$0.30	\$0.45	\$0.35	\$0.30	\$0.25
2031	\$0.40	\$0.30	\$0.45	\$0.35	\$0.30	\$0.25
2032	\$0.42	\$0.315	\$0.475	\$0.37	\$0.315	\$0.265
2033	\$0.42	\$0.315	\$0.475	\$0.37	\$0.315	\$0.265
2034	\$0.44	\$0.33	\$0.495	\$0.385	\$0.33	\$0.275
2035	\$0.44	\$0.33	\$0.495	\$0.385	\$0.33	\$0.275
2036	\$0.465	\$0.35	\$0.52	\$0.405	\$0.35	\$0.29
2037	\$0.465	\$0.35	\$0.52	\$0.405	\$0.35	\$0.29
2038	\$0.485	\$0.365	\$0.55	\$0.425	\$0.365	\$0.305
2039	\$0.485	\$0.365	\$0.55	\$0.425	\$0.365	\$0.305
2040	\$0.51	\$0.385	\$0.575	\$0.45	\$0.385	\$0.32
2041	\$0.51	\$0.385	\$0.575	\$0.45	\$0.385	\$0.32

Note: Model years are shown in boldface

(1) Toll rates are shown in future dollars. Tolls are assumed to increase on even numbered years beginning in 2014.

Table 2 shows the final adjusted Traffic and Revenue for fiscal years 2011 through 2041. As with Scenarios 1 and 2, the model assignment years were 2011, 2012, 2020, and 2030, with interim years and those beyond 2030 estimated. The results for the years 2012 and 2013 reflect new portions of the roadway opening partway through both years, with the highway expected to be fully open on May 1, 2013. The results shown in Table 2 were adjusted to reflect the delayed opening of “Contract E,” which represents the easternmost segment of the ICC, between I-95 and US 1. Based on WSA’s analysis of Scenario 3, final adjusted transactions are expected to increase from 32.5 million trips in 2013 (the first year of full operation) to 54.8 million in 2030, and revenue is expected to increase from \$36.9 million in 2013 to \$110.5 million in 2030.

Table 2
Estimated Annual Transaction and Toll Revenue (1)
Scenario 3
(thousand)

Fiscal Year	Peak / Off Peak Per Mile Toll Rate (6)	ETC Transactions (Trips)	Video Transactions (Trips)	Total Transactions (Trips)	Total Transactions (Trips) With Ramp-Up Factors (7)	ETC Revenue	Video Toll Revenue	Total Toll Revenue	Administration Fee Revenue	Total Revenue	Total Revenue With Ramp-Up Factors (7)	Total Revenue With Assumed Evasion Impacts (8)
2011	(2) \$0.20 / \$0.15	5,291	337	5,628	3,264	\$5,608	\$391	\$5,999	\$7,000	\$7,000	\$4,060	\$3,834
2012	(3) \$0.20 / \$0.15	21,399	1,211	22,609	14,316	28,152	2,025	30,177	33,809	33,809	21,348	20,278
2013	(4) \$0.20 / \$0.15	30,890	1,642	32,532	25,755	41,164	2,978	44,141	49,066	49,066	38,845	36,942
2014	\$0.21 / \$0.16	38,276	1,797	40,073	35,263	49,349	3,204	52,552	57,942	57,942	53,666	51,160
2015	\$0.21 / \$0.16	38,019	1,805	39,823	39,670	51,594	3,304	54,943	60,357	60,357	60,124	57,351
2016	\$0.225 / \$0.175	38,916	1,771	40,687	40,687	56,225	3,332	59,557	64,871	64,871	64,871	62,017
2017	\$0.225 / \$0.175	40,734	1,777	42,511	42,511	58,723	3,480	62,203	67,534	67,534	67,534	64,598
2018	\$0.235 / \$0.185	41,748	1,746	43,494	43,494	60,069	3,466	63,535	72,775	72,775	72,775	69,753
2019	\$0.235 / \$0.185	44,062	1,766	45,829	45,829	67,471	3,466	70,937	76,419	76,419	76,419	73,280
2020	\$0.25 / \$0.20	44,786	1,722	46,508	46,508	73,019	3,606	76,625	81,791	81,791	81,791	78,576
2021	\$0.25 / \$0.20	45,973	1,710	47,683	47,683	74,859	3,697	78,556	83,665	83,665	83,665	80,423
2022	\$0.26 / \$0.21	46,373	1,669	48,042	48,042	78,694	3,604	82,297	87,304	87,304	87,304	84,008
2023	\$0.26 / \$0.21	47,571	1,656	49,227	49,227	80,631	3,692	84,324	89,292	89,292	89,292	85,947
2024	\$0.27 / \$0.22	48,018	1,618	49,635	49,635	84,812	3,602	88,413	93,266	93,266	93,266	89,879
2025	\$0.27 / \$0.22	48,229	1,604	49,833	49,833	86,856	3,688	90,544	95,357	95,357	95,357	91,920
2026	\$0.28 / \$0.23	49,721	1,568	51,289	51,289	91,408	3,600	95,007	99,711	99,711	99,711	96,222
2027	\$0.28 / \$0.23	50,949	1,554	52,503	52,503	93,569	3,685	97,254	101,916	101,916	101,916	98,375
2028	\$0.29 / \$0.24	51,486	1,520	53,005	53,005	98,520	3,598	102,118	106,676	106,676	106,676	103,074
2029	\$0.29 / \$0.24	52,731	1,505	54,237	54,237	100,808	3,681	104,489	109,006	109,006	109,006	105,350
2030	\$0.30 / \$0.25	53,313	1,473	54,786	54,786	106,188	3,596	109,784	114,202	114,202	114,202	110,476
2031	(5) \$0.30 / \$0.25	54,306	1,500	55,806	55,806	108,169	3,663	111,832	116,333	116,333	116,333	112,536
2032	\$0.315 / \$0.265	54,478	1,505	55,983	55,983	112,655	3,815	116,470	120,985	120,985	120,985	117,066
2033	\$0.315 / \$0.265	55,471	1,532	57,003	57,003	114,711	3,885	118,596	123,193	123,193	123,193	119,202
2034	\$0.33 / \$0.275	55,669	1,538	57,206	57,206	119,516	4,047	123,563	128,176	128,176	128,176	124,054
2035	\$0.33 / \$0.275	56,893	1,571	58,464	58,464	122,120	4,135	126,255	130,968	130,968	130,968	126,756
2036	\$0.35 / \$0.29	56,885	1,571	58,456	58,456	126,795	4,294	131,089	135,802	135,802	135,802	131,465
2037	\$0.35 / \$0.29	58,027	1,602	59,630	59,630	129,301	4,378	133,678	138,485	138,485	138,485	134,062
2038	\$0.365 / \$0.305	58,128	1,606	59,734	59,734	134,516	4,555	139,071	143,888	143,888	143,888	139,323
2039	\$0.365 / \$0.305	59,345	1,639	60,984	60,984	137,308	4,649	141,957	146,874	146,874	146,874	142,214
2040	\$0.385 / \$0.32	59,399	1,641	61,039	61,039	142,708	4,833	147,541	152,463	152,463	152,463	147,658
2041	\$0.385 / \$0.32	60,044	1,658	61,703	61,703	146,980	4,977	151,957	156,942	156,942	156,942	152,012

(1) Toll revenues are shown in future dollars and assume a 2 mile minimum toll and a \$3.00 video surcharge.

(2) Phase 1 (I-370 to MD 28 opens to traffic on October 1, 2010.

(3) Phase 2 (Interim) MD 28 to I-95 opens to traffic on November 1, 2011.

(4) Phase 2 (complete) I-95 to U.S. 1 opens to traffic on May 1, 2013.

(5) After 2030, transactions are assumed to increase at 1 percent per year and revenues at 3 percent per year, adjusted to reflect biannual toll increases, rather than annual.

(6) Per mile toll rates increase on even-numbered years, beginning in 2014.

(7) Both Phase 1 and Phase 2 of the CC are assumed to have three-year ramp-up periods.

(8) Total revenue is reduced to reflect impacts associated with potential toll evasion.

Sensitivity Tests

MDTA also requested that WSA test several modifications to the toll rate policy as sensitivity tests.

Reduced Minimum Toll

As previously mentioned, the new Scenario 3 incorporated a reduced minimum toll of 40 cents or 2 miles times the per mile toll rate, whichever was greater. The previous minimum toll used under the original Scenarios 1 and 2 was the greater of 50 cents or 3 miles times the per mile toll rate. This new reduced minimum was tested under Scenarios 1 and 2 to evaluate the impact on transactions and revenue. The sensitivity test was conducted for the years 2012 and 2030. The results of this analysis are shown in Table 3, expressed in terms of annual transactions and revenue. The impacts on transactions ranged from +1.3 percent and +2.6 percent, while the revenue impacts were between -1.6 percent and -2.0 percent. Transaction impacts were lower for earlier years and for lower toll rates, while revenue impacts were slightly lower for earlier years but for *higher* toll rates. Scenario 3 is included in Table 3 for illustrative purposes, although Scenario 3 was never tested at the higher minimum toll rate.

	Scenario 1 (\$0.25 peak / \$0.20 off peak)		Scenario 2 (\$0.30 peak / \$0.25 off peak)		Scenario 3 (2) (\$0.20 peak / \$0.15 off peak)	
	<u>Annual Transactions</u>	<u>Annual Revenue</u>	<u>Annual Transactions</u>	<u>Annual Revenue</u>	<u>Annual Transactions</u>	<u>Annual Revenue</u>
2012						
3-mile / 50¢ minimum	15,186	26,205	13,718	28,168		
2-mile / 40¢ minimum	15,379	25,742	13,981	27,707	16,681	22,672
Percent Impact	1.3%	-1.8%	1.9%	-1.6%	N/A	N/A
2030						
3-mile / 50¢ minimum	49,196	125,149	45,799	131,481		
2-mile / 40¢ minimum	50,190	122,705	46,986	129,046	54,786	110,476
Percent Impact	2.0%	-2.0%	2.6%	-1.9%	N/A	N/A
<p>(1) Annual transaction and revenue data reflect ramp-up and toll evasion impacts, but not the revised Contract E schedule.</p> <p>(2) Scenario 3 was run only with the reduced minimum toll.</p>						

Reduced Overnight Rate

MDTA also requested that WSA test the sensitivity of transactions and revenue to the establishment of a third tier of toll rates to be applied during the overnight period of 11pm to 5am. Two overnight rate schedules were selected. The lower of the two began at 10 cents per mile in 2011 and increased to 15 cents per mile by 2030. The second rate schedule began at 15

cents per mile in 2011 and increased to 25 cents by 2030. This latter rate schedule is identical to the off-peak rate schedule under Scenario 3, and therefore no sensitivity test was necessary for the 15 cent rate under Scenario 3.

The results of the reduced overnight rate sensitivity tests are shown in Tables 4 and 5, expressed in terms of average weekday transactions and revenue. All impacts were estimated to be less than 1 percent, with the exception of the lower (10 cents) overnight toll under the highest toll scenario (Scenario 2).

Table 4
Impact of \$0.10 Overnight Toll on Weekday Transactions and Revenue (1)
Summary of Scenarios 1, 2 and 3

	Scenario 1 (\$0.25 peak / \$0.20 off peak)		Scenario 2 (\$0.30 peak / \$0.25 off peak)		Scenario 3 (\$0.20 peak / \$0.15 off peak)	
	<u>Weekday Transactions</u>	<u>Weekday Revenue</u>	<u>Weekday Transactions</u>	<u>Weekday Revenue</u>	<u>Weekday Transactions</u>	<u>Weekday Revenue</u>
2012						
No Overnight Discount	99,570	187,800	89,720	199,820	109,730	164,320
\$0.10 Overnight Rate	<u>100,240</u>	<u>186,490</u>	<u>90,810</u>	<u>198,160</u>	<u>109,970</u>	<u>163,500</u>
Percent Impact	0.7%	-0.7%	1.2%	-0.8%	0.2%	-0.5%
2030						
No Overnight Discount	151,490	409,800	141,040	428,850	168,690	358,520
\$0.10 Overnight Rate	<u>152,850</u>	<u>406,090</u>	<u>142,860</u>	<u>424,580</u>	<u>169,480</u>	<u>355,610</u>
Percent Impact	0.9%	-0.9%	1.3%	-1.0%	0.5%	-0.8%

(1) Transactions and revenue do not reflect ramp-up, toll evasion, or the revised Contract E schedule.

Table 5
Impact of \$0.15 Overnight Toll on Weekday Transactions and Revenue (1)
Summary of Scenarios 1 and 2

	Scenario 1 (\$0.25 peak / \$0.20 off peak)		Scenario 2 (\$0.30 peak / \$0.25 off peak)	
	<u>Weekday Transactions</u>	<u>Weekday Revenue</u>	<u>Weekday Transactions</u>	<u>Weekday Revenue</u>
2012				
No Overnight Discount	99,570	187,800	89,720	199,820
\$0.15 Overnight Rate	<u>99,940</u>	<u>187,200</u>	<u>90,500</u>	<u>198,860</u>
Percent Impact	0.4%	-0.3%	0.9%	-0.5%
2030				
No Overnight Discount	151,490	409,800	141,040	428,850
\$0.15 Overnight Rate	<u>151,980</u>	<u>408,930</u>	<u>141,990</u>	<u>427,450</u>
Percent Impact	0.3%	-0.2%	0.7%	-0.3%

(1) Transaction and revenue does not reflect ramp-up, toll evasion, or the revised Contract E schedule.

We hope that this letter meets your needs. Please do not hesitate to contact us regarding any aspect of this analysis, or with any further questions or concerns.

Very truly yours,

WILBUR SMITH ASSOCIATES

Scott A. Allaire

Scott Allaire
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