



July 21, 2009

Mr. Dennis N. Simpson
Acting Director
Division of Capital Planning
Maryland Transportation Authority
2310 Broening Highway
Baltimore, MD 21224

Re: Traffic and Revenue Estimates – Intercounty Connector (ICC) Traffic and Revenue Update Study

Dear Mr. Simpson:

As requested, Wilbur Smith Associates (WSA) is pleased to submit traffic and revenue estimates for the proposed Intercounty Connector (ICC). The purpose of this study was to update our June 2006 traffic and revenue projections using the latest Metropolitan Washington Council of Governments (MWCOC) travel demand model and land use forecast, and to re-evaluate toll rates and tolling policies for the ICC. The latest MWCOC land use forecast was reviewed and adjusted by our independent Economic sub consultants, Economic and Planning Systems, Inc. (EPS) to reflect the impacts of the current economic recession and its effects on the timing of development in the study area. Our estimates assume that Phase I of the ICC project will be open by September 1, 2010 and that Phase II (Full Project) will be open to traffic by November 1, 2011.

STUDY OVERVIEW

The most recent version of the MWCOC travel demand model and socioeconomic files were obtained. The socioeconomic files are version 7.1 and contain population, household, and employment forecasts at the traffic analysis zone (TAZ) level for the entire modeled region. These population and employment forecasts were provided to our economic sub consultants for review and adjustment to reflect the impacts of the current recession and to update the timing of future development based upon their field research and meetings with MWCOC. The 7.1 land use data was developed pre-recession by the MWCOC. Our previous study in 2005/06 used an earlier MWCOC land use forecast called 6.4 that was updated by Market Economics in 2005. The most recent version of the MWCOC model also incorporates revised modeling procedures and revised external traffic and truck trip tables which were also incorporated into our new forecasts for the ICC. An aggregated summary comparison of the study area for the economic forecasts between those used in our last study, Version 7.1, and adjusted 7.1 from the sub consultant EPS is shown below in Table 1. Population and employment forecasts contained in Version 7.1 are lower than what was used in the 2005/06 study. In general, EPS made further downward adjustments to Version of 7.1 to reflect the latest information available. A draft report

Table 1
Summary of Socioeconomic Data

	Population			Employment		
	2005/06 Study	MWCOG v 7.1	Final EPS	2005/06 Study	MWCOG v 7.1	Final EPS
2010						
Study Area	1,102,900	1,043,500	1,032,700	665,700	631,200	599,800
<i>compare to 2005/06 Study</i>		-5.4%	-6.4%		-5.2%	-9.9%
Entire Model Area	6,950,200	6,808,800	6,756,000	4,140,100	4,072,900	3,995,500
<i>compare to 2005/06 Study</i>		-2.0%	-2.8%		-1.6%	-3.5%
2020						
Study Area	1,161,100	1,105,000	1,115,200	795,900	718,000	704,500
<i>compare to 2005/06 Study</i>		-4.8%	-4.0%		-9.8%	-11.5%
Entire Model Area	7,735,000	7,668,900	7,623,800	4,793,200	4,668,000	4,624,900
<i>compare to 2005/06 Study</i>		-0.9%	-1.4%		-2.6%	-3.5%
2030						
Study Area	1,172,600	1,162,500	1,152,900	864,300	805,500	818,200
<i>compare to 2005/06 Study</i>		-0.9%	-1.7%		-6.8%	-5.3%
Entire Model Area	8,147,300	8,282,400	8,248,000	5,267,700	5,156,600	5,200,400
<i>compare to 2005/06 Study</i>		1.7%	1.2%		-2.1%	-1.3%

is being prepared by EPS and will be incorporated into WSA’s overall traffic and revenue study report.

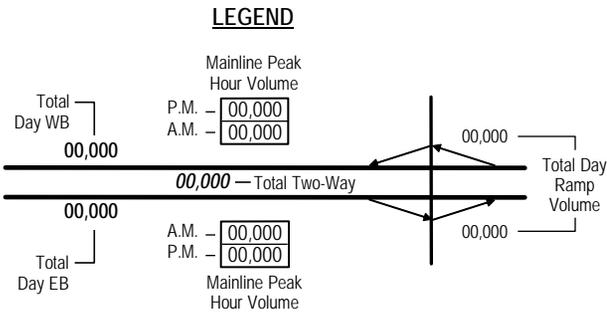
The impacts of the new MWCOG model and the most recent economic forecasts adjusted by our economic sub consultants were incorporated into our traffic and revenue forecast along with updates to our assumptions for ETC/Video market shares, values of time, operating costs, video surcharge toll, Phase 1 and Full Project opening dates, and model networks. Traffic assignments were run for fiscal year 2011, 2012, 2020, and 2030 at various toll rates. Based upon discussions with MdTA, a bi-annual toll increase policy was assumed, beginning in FY 2014. An assumed inflation rate in toll rates of approximately 2.5 percent per year over the forecast period was assumed. Table 2 displays the peak and off-peak period per mile toll rate schedule assumptions used in this study. Per mile toll rates were rounded to the nearest half-penny. For opening year FY 2011, toll rates were selected at \$0.25 per mile for the peak period and \$0.20 per mile for the off-peak period based upon toll sensitivity analysis and review with MdTA. These toll rates were assumed to increase for the first time in FY 2014 and every two years thereafter. Assignments were performed at 2011, 2012, 2020 and 2030. In 2020, a peak period toll rate of \$0.30 and an off peak per mile toll rate of \$0.25 was selected, increasing to \$0.40 and \$0.30 per mile by 2030, respectively.

ESTIMATED TRAFFIC

Traffic schematics displaying average weekday traffic are shown for fiscal years 2011, 2012, and 2030 (Figures 1-3). It is estimated that 21,600 vehicles on an average weekday will use the first section of the ICC during FY 2011. When the full project is opened in November 2011, this segment of the ICC is estimated to increase to 34,900 on an average weekday for FY 2012. These volumes are not adjusted for ramp-up. A comparison to the 2005 study shows estimated traffic in 2012 to be about 15 percent lower in this revised forecast, except within the segments between US 29 and I-95 where traffic is only about 5 percent lower. The lower traffic as compared to the 2005 study is a result of the higher per mile toll rates used in this study as compared to the 2005 study, and lower economic forecasts for the area. These new estimates also use the latest MWCOG traffic model, which coupled with the new economic forecasts will result in different travel patterns within the region. The latest MWCOG model also contains revised commercial vehicle and external trip tables. It is estimated that the highest traffic levels along the ICC will occur between Briggs Chaney Road and I-95, reaching an estimated 51,450 vehicles by 2012 and an estimated 81,590 by 2030 on an average weekday. Traffic estimates for 2030 follow similar patterns to the 2012 forecast, where ICC volumes are lower west of the US 29 interchange as compared to the 2005 study and similar in magnitude to the previous study along the ICC between US 29 and I-95. By 2030, traffic within the US 29 and I-95 segments are estimated to near an assumed threshold capacity of 5,000 vehicles per hour, per direction. Commercial vehicles are forecasted to account for about 4.5 to 5 percent of total transactions, which is significantly lower than the previous study.

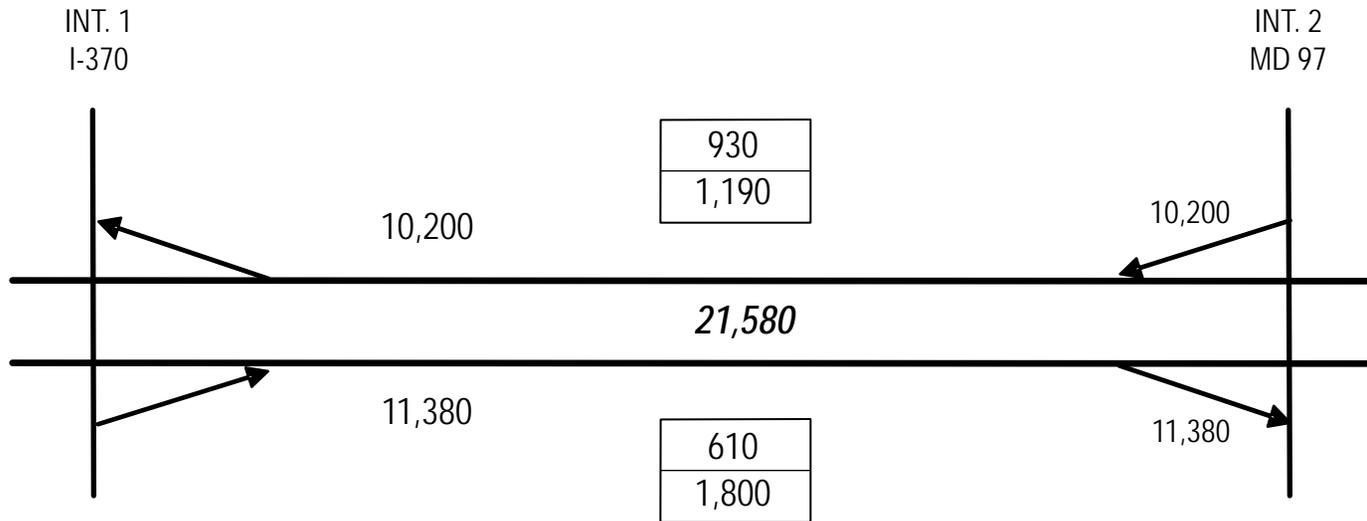
Table 2
Assumed Per Mile Toll Rates

<u>Year</u>	<u>Peak</u>	<u>Off Peak</u>
2011	\$0.25	\$0.20
2012	\$0.25	\$0.20
2012	\$0.25	\$0.20
2013	\$0.25	\$0.20
2014	\$0.26	\$0.21
2015	\$0.26	\$0.21
2016	\$0.275	\$0.225
2017	\$0.275	\$0.225
2018	\$0.285	\$0.235
2019	\$0.285	\$0.235
2020	\$0.30	\$0.25
2021	\$0.30	\$0.25
2022	\$0.32	\$0.26
2023	\$0.32	\$0.26
2024	\$0.335	\$0.27
2025	\$0.335	\$0.27
2026	\$0.355	\$0.28
2027	\$0.355	\$0.28
2028	\$0.38	\$0.29
2029	\$0.38	\$0.29
2030	\$0.40	\$0.30
2031	\$0.40	\$0.30
2032	\$0.42	\$0.315
2033	\$0.42	\$0.315
2034	\$0.44	\$0.33
2035	\$0.44	\$0.33
2036	\$0.465	\$0.35
2037	\$0.465	\$0.35
2038	\$0.485	\$0.365
2039	\$0.485	\$0.365
2040	\$0.51	\$0.385
2041	\$0.51	\$0.385



Note: Higher peak period per mile toll rates would be required to manage traffic demand where mainline peak hour traffic volumes exceed the 5,000 peak hour capacity target in a single travel direction.

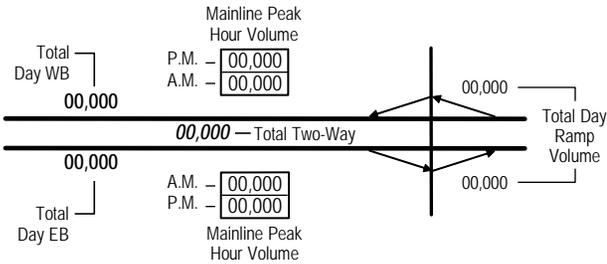
Note: Traffic volumes presented in this figure are not adjusted for ramp-up, the phenomenon whereby traffic during the first few years of operation of a toll facility is lower than would be expected under normal operating conditions. **Actual volumes during the first three years following opening of the ICC would be expected to be lower than those shown in this figure.**



ESTIMATED PHASE 1 - 2011 AVERAGE WEEKDAY TRAFFIC VOLUMES
 \$0.25 Per Mile Peak - \$0.20 Per Mile Off-Peak - \$3.00 Video Administration Fee

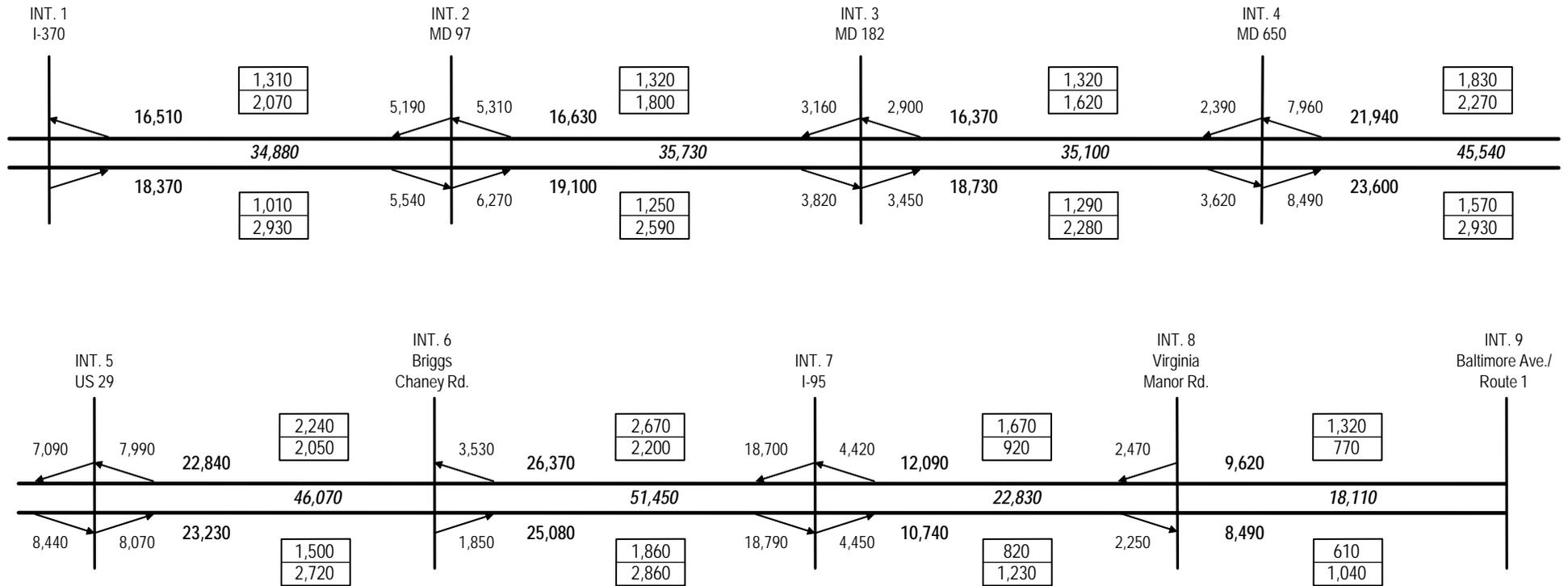


LEGEND



Note: Higher peak period per mile toll rates would be required to manage traffic demand where mainline peak hour traffic volumes exceed the 5,000 peak hour capacity target in a single travel direction.

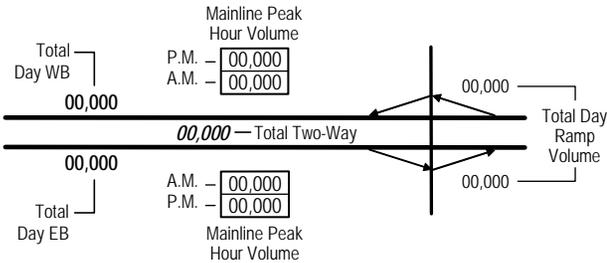
Note: Traffic volumes presented in this figure are not adjusted for ramp-up, the phenomenon whereby traffic during the first few years of operation of a toll facility is lower than would be expected under normal operating conditions. **Actual volumes during the first three years following opening of the ICC would be expected to be lower than those shown in this figure.**



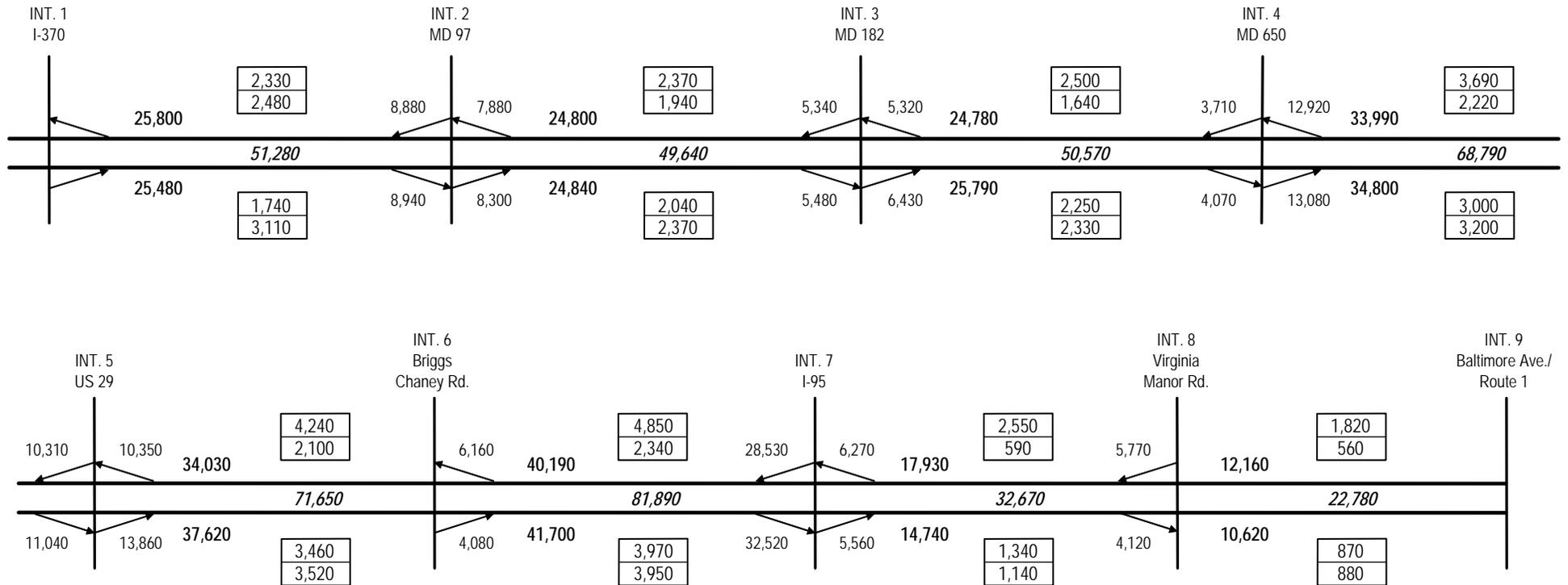
ESTIMATED FULL PROJECT - 2012 AVERAGE WEEKDAY TRAFFIC VOLUMES
 \$0.25 Per Mile Peak - \$0.20 Per Mile Off-Peak
 \$3.00 Video Administration Fee With Minimum Toll / No Maximum



LEGEND



Note: Higher peak period per mile toll rates would be required to manage traffic demand where mainline peak hour traffic volumes exceed the 5,000 peak hour capacity target in a single travel direction.



ESTIMATED FULL PROJECT - 2030 AVERAGE WEEKDAY TRAFFIC VOLUMES
 \$0.40 Per Mile Peak - \$0.30 Per Mile Off-Peak
 \$3.00 Video Administration Fee With Minimum Toll / No Maximum

ESTIMATED AVERAGE WEEKDAY TRANSACTIONS AND TOLL REVENUE

Estimated average weekday transactions are shown in Table 3 for fiscal years 2011, 2012, 2020, and 2030. These estimates have not been adjusted to reflect partial year openings or ramp-up. For FY 2011, 21,580 vehicles on an average weekday are estimated to use Phase 1 of the ICC, increasing to 99,570 vehicles for FY 2012 when the full ICC project is opened. Average weekday traffic is estimated to increase to 130,680 vehicles by 2020 and to 151,490 vehicles by 2030. Video transactions are estimated to account for nearly 6 percent of total transactions in 2011, decreasing to about 2.6% in 2030. This reflects our assumption that ETC market share will increase over time. Market share assumptions (pre-toll assignment) assumed an 85 percent ETC share, increasing to 95 percent by 2030. The resulting market share of video transactions after our traffic assignments is significantly lower than our input assumptions into the assignments. This is a result of a lower capture rate of video transactions as compared to ETC users, due to the significant \$3.00 surcharge which is added to the toll for a video user's trip. The influence of the surcharge toll is also evident in the higher average toll shown for video users as compared to ETC users. Since the \$3.00 surcharge is added to any video trip, and is not dependent on trip length, longer trips will tend to be retained at a higher rate than shorter trips, as the surcharge accounts for a smaller percentage of their toll and overall trip cost. The result is an increase in trip length for video users, and thus an increase in the overall average toll. Furthermore, since passenger cars were shown to be on the downside of the revenue curve at a \$3.00 surcharge for video payment, while trucks were not due to the surcharge being a smaller percentage of their toll and overall trip cost, a higher capture rate of commercial vehicles for the video payment category will occur as compared to passenger cars. These two impacts result in an overall higher average toll for video users as compared to ETC users.

Average weekday revenue estimates are also presented in Table 3. Average weekday revenue for FY 2011 is estimated at \$34,370 for Phase I conditions, increasing to \$187,800 for FY 2012 under the Full Project conditions. Average weekday revenue is estimated to increase to \$287,610 by 2020 and to \$409,800 by 2030.

ESTIMATED ANNUAL TRANSACTIONS AND TOLL REVENUE

Annual estimates of transactions and toll revenue are shown in Table 4. For calculating annual transaction and revenue estimates, traffic on an average weekend day was assumed to be 65 percent of an average weekday. This traffic was then multiplied by the off peak toll rate to estimate revenue for an average weekend day. Annual estimates were then calculated assuming 250 effective weekdays and 115 effective weekend days. Before ramp-up and toll evasion assumptions are applied, annual toll revenue is estimated to be \$9.1 million in FY 2011, increasing to \$43.5 million in 2012, to \$91.6 million by 2020, and to \$129.1 million by 2030. Three years of ramp-up were assumed for both the Phase 1 and Full Project configurations. Since the opening dates are different from the previous study it is somewhat difficult to compare early year transaction and revenue results due to partial year operation and ramp-up. Table 3 can provide a comparison against the previous study at 2012 levels. By 2020, annual transactions are about 10 percent lower, while revenue is about 0.8 percent higher when compared to the 2005/06 study. The higher toll rates offset the reduction in transactions, and therefore result in 2020

**Table 3
Estimated Average Weekday Trips and Revenues**

	Electronic Toll Collection			Video Toll Collection				Total			
	<u>Weekday Trips</u>	<u>Average Toll</u>	<u>Weekday Toll Revenue</u>	<u>Weekday Trips</u>	<u>Average Toll</u>	<u>Weekday Toll Revenue</u>	<u>Surcharge Revenue</u>	<u>Weekday Trips</u>	<u>Weekday Toll Revenue</u>	<u>Surcharge Revenue</u>	<u>Weekday Revenue</u>
2011 - Phase 1											
Peak	11,360	\$1.50	\$17,000	780	\$1.54	\$1,200	\$2,340	12,140	\$18,200	\$2,340	\$20,540
Off-Peak	8,940	\$1.30	11,590	500	\$1.46	730	1,510	9,440	12,320	1,510	13,830
Total	20,300	\$1.41	\$28,590	1,280	\$1.51	\$1,930	\$3,850	21,580	\$30,520	\$3,850	\$34,370
2012 - Full Project											
Peak	45,710	\$1.95	\$89,080	2,760	\$2.34	\$6,470	\$8,290	48,470	\$95,550	\$8,290	\$103,840
Off-Peak	48,920	\$1.49	72,800	2,180	\$2.11	4,610	6,550	51,100	77,410	6,550	83,960
Total	94,630	\$1.71	\$161,880	4,940	\$2.24	\$11,080	\$14,840	99,570	\$172,960	\$14,840	\$187,800
2020											
Peak	61,070	\$2.25	\$137,700	2,680	\$2.81	\$7,530	\$8,050	63,750	\$145,230	\$8,050	\$153,280
Off-Peak	64,800	\$1.89	122,510	2,130	\$2.54	5,420	6,400	66,930	127,930	6,400	134,330
Total	125,870	\$2.07	\$260,210	4,810	\$2.69	\$12,950	\$14,450	130,680	\$273,160	\$14,450	\$287,610
2030											
Peak	70,150	\$2.94	\$205,910	2,060	\$3.38	\$6,970	\$6,170	72,210	\$212,880	\$6,170	\$219,050
Off-Peak	77,430	\$2.32	179,710	1,850	\$2.96	5,480	5,560	79,280	185,190	5,560	190,750
Total	147,580	\$2.61	\$385,620	3,910	\$3.18	\$12,450	\$11,730	151,490	\$398,070	\$11,730	\$409,800

Note: Estimated weekday trips and revenue have not been adjusted to reflect ramp-up or potential evasion impacts.

**Table 4
Estimated Annual Transaction and Toll Revenue (1)**

(thousand)

Fiscal Year	Peak / Off Peak Per Mile Toll Rate (5)	ETC		Video		Total		ETC		Video Toll		Total		Administration		Total		Total Revenue With Ramp-Up Factors (6)	Total Revenue With Assumed Evasion Impacts (7)
		Transactions (Trips)	Revenue	Transactions (Trips)	Revenue														
2011	(2) \$0.25 / \$0.20	5,494	\$7,528	348	\$508	5,842	\$8,036	39,892	\$1,043	3,644	43,536	27,649	\$5,357		\$9,079	27,649	\$5,357	\$5,085	
2012	(3) \$0.25 / \$0.20	22,816	37,350	1,215	2,542	24,030	39,892	3,644	43,536	27,649	26,389	49,250	47,049		62,030	49,250	47,049	47,049	
2013	\$0.25 / \$0.20	32,164	53,521	1,617	3,657	33,782	57,178	4,852	62,030	49,250	58,708	61,341	58,708		66,201	61,341	58,708	58,708	
2014	\$0.26 / \$0.21	33,003	57,766	1,596	3,646	34,600	61,412	4,789	66,201	61,341	68,842	69,108	65,915		64,279	69,108	68,842	65,915	
2015	\$0.26 / \$0.21	34,599	60,462	1,610	3,816	36,209	64,279	4,830	69,108	68,842	70,661	73,674	70,661		68,842	73,674	70,661	70,661	
2016	\$0.275 / \$0.225	35,443	65,122	1,586	3,795	37,029	68,917	4,757	73,674	73,674	73,674	76,666	73,674		73,674	76,666	73,674	73,674	
2017	\$0.275 / \$0.225	37,037	67,928	1,593	3,958	38,630	71,886	4,780	76,666	76,666	78,894	82,097	78,894		76,666	82,097	78,894	78,894	
2018	\$0.285 / \$0.235	38,063	73,421	1,575	3,951	39,638	77,372	4,726	82,097	82,097	82,097	86,035	82,097		82,097	86,035	82,097	82,097	
2019	\$0.285 / \$0.235	40,046	77,107	1,593	4,148	41,639	81,255	4,780	86,035	86,035	88,175	91,592	88,175		86,035	91,592	88,175	88,175	
2020	\$0.30 / \$0.25	40,877	82,786	1,565	4,112	42,441	86,898	4,694	91,592	91,592	90,130	93,595	90,130		91,592	93,595	90,130	90,130	
2021	\$0.30 / \$0.25	41,904	84,747	1,546	4,209	43,450	88,956	4,638	93,595	93,595	94,441	93,595	94,441		93,595	93,595	94,441	94,441	
2022	\$0.32 / \$0.26	42,197	89,369	1,501	4,072	43,698	93,441	4,502	97,943	97,943	96,308	99,852	96,308		97,943	99,852	96,308	96,308	
2023	\$0.32 / \$0.26	43,156	91,258	1,479	4,157	44,634	95,415	4,437	99,852	99,852	101,228	104,828	101,228		99,852	104,828	101,228	101,228	
2024	\$0.335 / \$0.27	43,561	96,477	1,439	4,033	45,000	100,510	4,317	104,828	104,828	103,384	107,033	103,384		104,828	107,033	103,384	103,384	
2025	\$0.335 / \$0.27	44,598	98,649	1,420	4,123	46,018	102,772	4,261	107,033	107,033	108,578	112,289	108,578		107,033	112,289	108,578	108,578	
2026	\$0.355 / \$0.28	44,969	104,153	1,380	3,994	46,350	108,147	4,141	112,289	112,289	110,848	114,610	110,848		112,289	114,610	110,848	110,848	
2027	\$0.355 / \$0.28	46,014	106,444	1,362	4,082	47,375	110,525	4,085	114,610	114,610	116,536	120,371	116,536		114,610	120,371	116,536	116,536	
2028	\$0.38 / \$0.29	46,423	112,442	1,324	3,956	47,748	116,398	3,973	120,371	120,371	118,927	122,816	118,927		120,371	122,816	118,927	118,927	
2029	\$0.38 / \$0.29	47,476	114,858	1,306	4,041	48,782	118,899	3,917	122,816	122,816	125,149	127,708	125,149		122,816	127,708	125,149	125,149	
2030	\$0.40 / \$0.30	47,925	121,393	1,271	3,919	49,196	125,311	3,812	129,123	129,123	127,708	131,763	127,708		129,123	131,763	127,708	127,708	
2031	(4) \$0.40 / \$0.30	48,922	123,875	1,297	3,998	50,218	127,873	3,890	131,763	131,763	132,651	136,837	132,651		131,763	136,837	132,651	132,651	
2032	\$0.42 / \$0.315	48,965	128,785	1,298	4,157	50,264	132,943	3,895	136,837	136,837	135,304	139,574	135,304		136,837	139,574	135,304	135,304	
2033	\$0.42 / \$0.315	49,961	131,361	1,324	4,240	51,285	135,601	3,973	139,574	139,574	140,607	145,018	140,607		139,574	145,018	140,607	140,607	
2034	\$0.44 / \$0.33	50,028	136,628	1,326	4,411	51,354	141,039	3,979	145,018	145,018	143,531	149,628	143,531		145,018	149,628	143,531	143,531	
2035	\$0.44 / \$0.33	51,075	139,469	1,354	4,502	52,429	143,971	4,062	148,033	148,033	149,046	153,693	149,046		148,033	153,693	149,046	149,046	
2036	\$0.465 / \$0.35	51,114	144,949	1,355	4,679	52,469	149,628	4,065	153,693	153,693	151,454	156,177	151,454		153,693	156,177	151,454	151,454	
2037	\$0.465 / \$0.35	51,939	147,292	1,377	4,755	53,316	152,046	4,131	156,177	156,177	157,995	162,894	157,995		156,177	162,894	157,995	157,995	
2038	\$0.485 / \$0.365	52,223	153,776	1,384	4,964	53,607	158,741	4,153	162,894	162,894	161,134	166,130	161,134		162,894	166,130	161,134	161,134	
2039	\$0.485 / \$0.365	53,267	156,832	1,412	5,062	54,679	161,894	4,236	166,130	166,130	167,487	172,651	167,487		166,130	172,651	167,487	167,487	
2040	\$0.51 / \$0.385	53,356	163,141	1,415	5,266	54,770	168,408	4,244	172,651	172,651	172,446	177,749	172,446		172,651	177,749	172,446	172,446	
2041	\$0.51 / \$0.385	53,932	168,036	1,430	5,424	55,362	173,460	4,289	177,749	177,749					177,749				

(1) Toll revenues are shown in future dollars and assume a 3 mile minimum toll and a \$3.00 video surcharge.

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

(3) Phase 2 MD 28 to U.S. 1 opens to traffic on November 1, 2011.

(4) 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.

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

(6) Both Phase I and Phase II of the ICC are assumed to have three-year ramp-up periods.

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

revenue that is similar to the previous study. By 2030, annual transactions are estimated to be nearly 12 percent lower than the previous study, while revenue is estimated to be 10.5 percent lower. While the toll increase is offsetting the 12 percent reduction in transactions to an extent, as a percentage, it is a smaller toll increase than is seen in year 2020 as compared to the previous study toll rate assumptions. Additionally, there are significantly less commercial vehicles forecasted for 2030 as compared to the 2005/06 study which also negatively affects the revenue.

Toll evasion assumptions were also revisited as a part of this study. The 2005/06 study assumed a straight 8 percent reduction to all revenue. For this study, toll evasion assumptions were applied to ETC and video revenue forecasts separately. For ETC revenue, a 2 percent evasion assumption was used, while for video users a 20 percent evasion assumption was used to reflect a combination of different components. First, it was assumed that 10 percent of all video users would have an unreadable plate, and therefore their toll would be uncollectible. An additional 10 percent was assumed to occur because of successful reads that were either unbillable or the user refused to pay. The combination of the ETC and video toll evasion assumptions results in an annual revenue reduction of 5 percent in FY 2011, reducing to 3 percent in FY 2041. The decreasing evasion percentage over the forecast period is due to an increasing share of ETC revenue over time.

DISCLAIMER

Current accepted professional practices and procedures were used in the development of these traffic and revenue forecasts. However, as with any forecast of the future, it should be understood that there may be differences between forecasted and actual results caused by events and circumstances beyond the control of the forecasters. WSA also has relied upon the reasonable assurances of some independent parties and are not aware of any facts that would make such information misleading.

WSA has made qualitative judgments related to several key variables in the development and analysis of the traffic and revenue forecasts that must be considered as a whole; therefore selecting portions of any individual result without consideration of the intent of the whole may create a misleading or incomplete view of the results and the underlying methodologies used to obtain the results. WSA gives no opinion as to the value or merit to partial information extracted from this letter.

All estimates and projections reported herein are based on WSA' experience and judgment and on a review of information obtained from state agencies. These estimates and projections may not be indicative of actual or future values, and are therefore subject to substantial uncertainty. Future developments cannot be predicted with certainty, and may affect the estimates or projections expressed in this letter, such that WSA does not specifically guarantee or warrant any estimate or projections contained within this letter.



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We look forward to discussing these results with you.

Respectfully submitted,

WILBUR SMITH ASSOCIATES

Scott Allaire

Scott Allaire
Project Manager