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November 1, 2017

Ms. Jaclyn Hartman
Chief Financial Officer
Maryland Transportation Authority
Division of Finance
2310 Broening Highway
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Subject: **FINAL ICC 2017 Forecast Update**

Dear Ms. Hartman:

The objective of this update study was to develop a traffic and revenue forecast for the ICC using up to date actual traffic and revenue data. The forecast period extends ten years from FY 2018 through FY 2027, beginning on July 1, 2017 and ending on June 30, 2027. The study also evaluated whether future traffic levels on the ICC would be approaching capacity of the facility under the current toll rate levels.

CDM Smith has conducted previous traffic and revenue studies of the ICC for MDTA. The most recent Comprehensive Traffic and Revenue Study was conducted in 2015. A final report for that study was submitted in January 2016. The 2015 study represented the first comprehensive study effort since the ICC opened to traffic in 2011. Since the 2015 study, CDM Smith updated ICC forecasts in the "ICC 2016 Forecast Update" report, dated November 30, 2016. A review of the forecasts was also provided in the "Traffic and Revenue Forecast Update, Intercounty Connector" report, dated May 11, 2017, but no forecast changes were made.

ICC DESCRIPTION

The ICC opened to traffic in 2011 as the eighth MDTA toll facility and the first All-Electronic Toll (AET) road in Maryland. As shown in **Figure 1**, the ICC is an east-west limited access facility located in the Washington, D.C., and Baltimore Metropolitan Region. It connects I-370 in the Gaithersburg area to I-95 and US 1 in Laurel. The ICC is three lanes per direction between Shady Grove and I-95 and two lanes per direction between I-95 and US 1, with a posted speed limit of 60 MPH between I-370 and US 29 and 55 MPH between US 29 and US 1. **Figure 2** illustrates the existing configuration of the ICC and indicates the location of interchanges and toll gantries. There are currently six toll gantries per direction that cover movements between nine interchanges, as shown in **Table 1**.



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Figure 1
Regional Area Map

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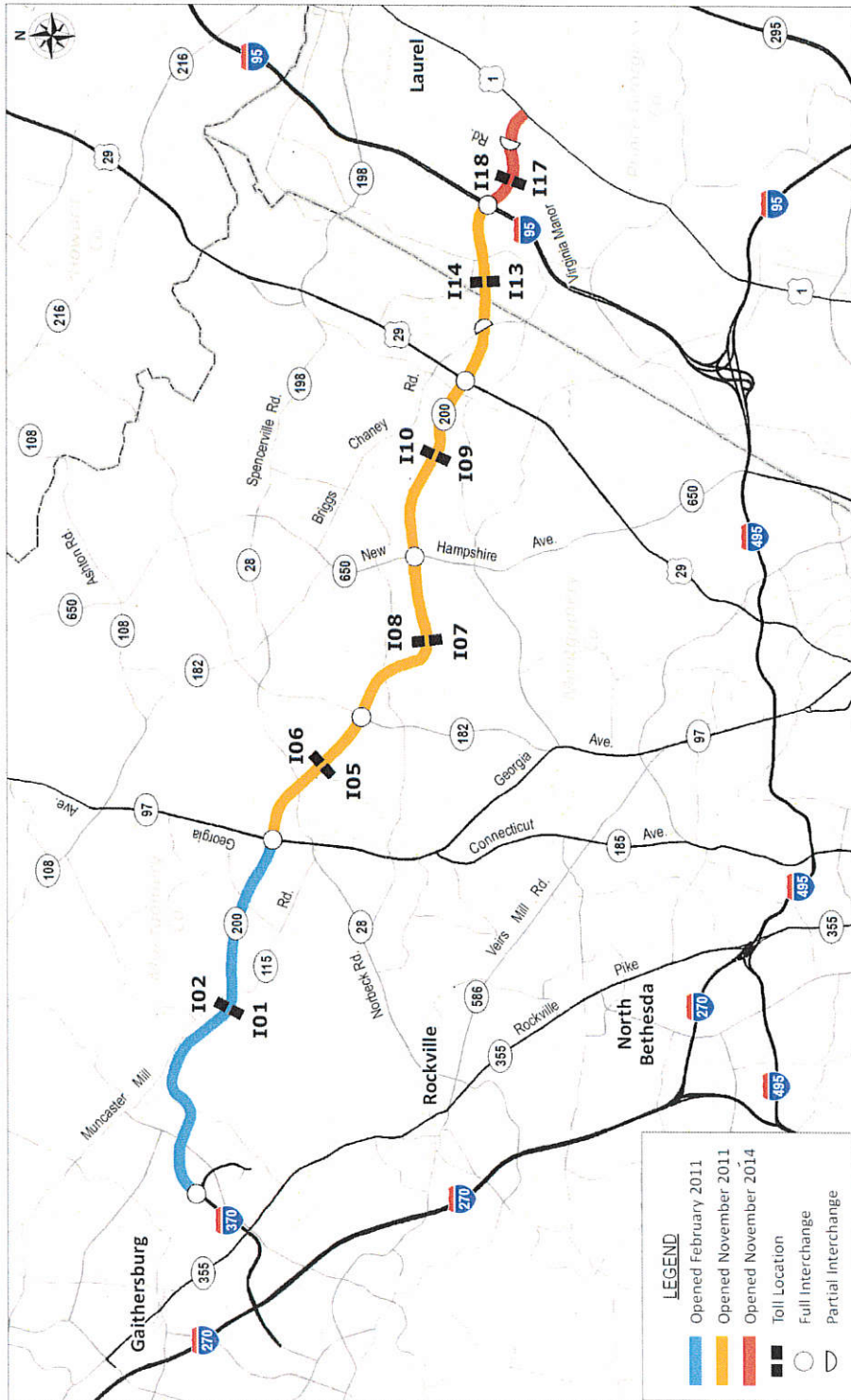


Figure 2
Intercounty Connector Location Map

**Table 1
 Toll Gantry Locations on the Intercounty Connector**

Toll Gantry	Western Interchange(s)	Eastern Interchange(s)	Distance (mi.)
I01 / I02	I-370; Shady Grove Rd.	MD 97 / Georgia Ave.	5.65
I05 / I06	MD 97 / Georgia Ave.	MD 182 / Layhill Rd.	2.28
I07 / I08	MD 182 / Layhill Rd.	MD 650 / New Hampshire Ave.	2.84
I09 / I10	MD 650 / New Hampshire Ave.	US 29	2.51
I13 / I14	US 29 and Briggs Chaney Rd.	I-95	2.72
I17 / I18	I-95	Konterra Dr. and US 1	1.53
Total			17.53

Tolls on the ICC are assessed based on particular interchange-to-interchange movements, as shown in **Table 2**. Passenger car tolls range from \$0.40 to \$3.86 for E-ZPass® customers depending on the length of the trip and time of day. Higher tolls are assessed on weekdays during Peak Period travel hours, which include 6:00 – 9:00 AM and 4:00 – 7:00 PM, than during Overnight Period hours (11:00 PM – 5:00 AM) or Off-Peak Period hours (all other hours). On the weekends, tolls also differ between the Overnight Period (11:00 PM – 5:00 AM) and Off-Peak Period (5:00 AM – 11:00 PM). Toll rates are greater for commercial vehicles based on the number of axles.

Tolls are collected using an AET system, through the use of an E-ZPass® transponder. For those customers without an E-ZPass® transponder, an image of the customer’s license plate is taken and the customer is then mailed a bill. In order to encourage E-ZPass® usage and offset the additional processing costs associated with video tolling, toll rates for video customers are 50 percent more than those using E-ZPass®, with differences ranging from \$1.00 to \$15.00 depending on vehicle class and trip length.

ICC toll rates were last changed on July 1, 2015 (beginning of FY 2016) which reduced prior toll rates by \$0.03 per mile for passenger car E-ZPass® customers. No future toll changes are assumed for the traffic and revenue forecasts.

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**Table 2
Passenger Car E-ZPass® Toll Rates by Movement and Time Period on the Intercounty Connector**

Entrance	Time Period	Exit											
		I-370; Shady Grove Rd.	SR 97 / Georgia Ave.	SR 182 / Layhill Rd.	SR 650 / New Hampshire Ave.	US 29 and Briggs Cheney Rd.	I-95	Konterra Dr. and US 1					
I-370; Shady Grove Rd.	Peak Period	\$	1.24	\$	1.74	\$	2.37	\$	2.92	\$	3.52	\$	3.86
	Off-Peak Period	\$	0.96	\$	1.35	\$	1.83	\$	2.26	\$	2.72	\$	2.98
	Overnight	\$	0.40	\$	0.56	\$	0.75	\$	0.93	\$	1.12	\$	1.23
SR 97 / Georgia Ave.	Peak Period	\$	1.24	\$	0.50	\$	1.13	\$	1.68	\$	2.28	\$	2.61
	Off-Peak Period	\$	0.96	\$	0.40	\$	0.87	\$	1.30	\$	1.76	\$	2.02
	Overnight	\$	0.40	\$	0.40	\$	0.40	\$	0.53	\$	0.72	\$	0.83
SR 182 / Layhill Rd.	Peak Period	\$	1.74	\$	0.50	\$	0.62	\$	1.18	\$	1.78	\$	2.11
	Off-Peak Period	\$	1.35	\$	0.40	\$	0.48	\$	0.91	\$	1.37	\$	1.63
	Overnight	\$	0.56	\$	0.40	\$	0.40	\$	0.40	\$	0.56	\$	0.67
SR 650 / New Hampshire Ave.	Peak Period	\$	2.37	\$	1.13	\$	0.62	\$	0.55	\$	1.15	\$	1.49
	Off-Peak Period	\$	1.83	\$	0.87	\$	0.48	\$	0.43	\$	0.89	\$	1.15
	Overnight	\$	0.75	\$	0.40	\$	0.40	\$	0.40	\$	0.40	\$	0.47
US 29 and Briggs Cheney Rd.	Peak Period	\$	2.92	\$	1.68	\$	1.18	\$	0.55	\$	0.60	\$	0.94
	Off-Peak Period	\$	2.26	\$	1.30	\$	0.91	\$	0.43	\$	0.46	\$	0.72
	Overnight	\$	0.93	\$	0.53	\$	0.40	\$	0.40	\$	0.40	\$	0.40
I-95	Peak Period	\$	3.52	\$	2.28	\$	1.78	\$	1.15	\$	0.60	\$	0.44
	Off-Peak Period	\$	2.72	\$	1.76	\$	1.37	\$	0.89	\$	0.46	\$	0.40
	Overnight	\$	1.12	\$	0.72	\$	0.56	\$	0.40	\$	0.40	\$	0.40
Konterra Dr. and US 1	Peak Period	\$	3.86	\$	2.61	\$	2.11	\$	1.49	\$	0.94	\$	0.44
	Off-Peak Period	\$	2.98	\$	2.02	\$	1.63	\$	1.15	\$	0.72	\$	0.40
	Overnight	\$	1.23	\$	0.83	\$	0.67	\$	0.47	\$	0.40	\$	0.40

Note:
 Peak Period is defined as 6:00 - 9:00 AM and 4:00 - 7:00 PM on Weekdays (excluding federal holidays).
 Off-Peak Period is defined as 5:00 - 6:00 AM, 9:00 AM - 4:00 PM, and 7:00 - 11:00 PM on Weekdays and 5:00 AM - 11:00 PM on Weekends and federal holidays.
 Overnight is defined as 11:00 PM - 5:00 AM every day.

ICC HISTORICAL TRANSACTIONS AND TOLL REVENUE TRENDS

Monthly transaction and toll revenue data for the ICC can be found in **Tables 3 and 4**, respectively. Transactions shown are based on in-lane traffic, which counts a transaction anytime a vehicle passes under a toll gantry, regardless of whether payment is collected. A trip which has an entrance and an exit on the ICC may pass through multiple gantries, and therefore would count as multiple transactions. Gantry transactions have been found to be a more consistent measure of historical performance than trips and collected revenue. Trips and collected revenue tend to fluctuate when video toll revenue is collected and can be impacted by some of the collection and enforcement policies evolving over time.

The 5.65-mile segment from I-370 to MD-97 / Georgia Avenue was the only portion open from February to November 2011. Between February 23, 2011 and March 7, 2011, this segment operated toll free. E-ZPass® toll operation began March 7, 2011 and video toll operations began April 6, 2011. The second segment of the ICC opened from MD-97 / Georgia Avenue to I-95 on November 22, 2011. This segment was operated toll free until December 5, 2011.





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Table 3 ICC Historical Monthly Toll Transactions FY 2011 - 2018															
Month	FY 2011 (1)	Percent Change	FY 2012 (2)	Percent Change	FY 2013	Percent Change	FY 2014	Percent Change	FY 2015 (3)	Percent Change	FY 2016 (4)	Percent Change	FY 2017	Percent Change	FY 2018
July	-	-	354,709	1051.7	4,085,069	21.6	4,968,063	22.0	6,059,285	22.0	7,395,525	21.9	8,037,215	8.7	8,560,179
August	-	-	369,438	1061.6	4,291,530	20.5	5,172,549	14.1	5,899,486	22.2	7,207,909	22.2	8,422,268	16.8	8,914,528
September	-	-	385,184	975.5	4,142,846	23.9	5,134,846	16.6	5,987,275	23.8	7,412,760	23.8	8,378,444	13.0	8,733,855
October	-	-	409,338	960.1	4,339,517	25.6	5,449,704	17.5	6,405,597	23.5	7,909,398	23.5	8,733,855	10.4	8,401,893
November	-	-	2,242,615	92.6	4,319,303	18.8	5,129,634	16.1	5,958,146	25.9	7,496,219	25.9	8,401,893	12.1	8,156,499
December	-	-	3,665,085	12.5	4,124,912	19.8	4,940,797	25.1	6,179,337	21.5	7,510,457	21.5	8,156,499	8.6	7,687,667
January	-	-	2,999,797	38.6	4,156,651	16.7	4,850,107	16.4	5,647,160	12.8	6,370,282	12.8	7,687,667	20.7	8,486,724
February	189,556	1517.7	3,066,507	29.1	3,959,310	13.1	4,478,360	20.0	5,373,124	32.6	7,122,875	32.6	7,341,463	3.1	8,369,493
March	413,076	763.0	3,564,722	22.9	4,381,800	19.2	5,223,840	22.5	6,399,917	24.4	7,959,170	24.4	8,369,493	5.2	9,166,564
April	309,993	1034.2	3,515,991	36.8	4,811,301	18.2	5,685,337	20.1	6,829,125	17.6	8,029,474	17.6	8,486,724	5.7	9,166,564
May	352,666	1023.6	3,962,663	28.7	5,101,247	19.3	6,083,490	18.0	7,179,475	15.8	8,315,440	15.8	9,166,564	10.2	9,166,564
June	376,182	980.2	4,101,215	19.9	4,915,597	21.6	5,976,215	20.6	7,204,505	19.6	8,618,803	19.6	9,179,108	6.5	9,179,108
Total	1,641,473	1644.6	28,637,264	83.8	52,629,083	19.9	63,092,883	19.1	75,120,432	21.6	91,346,312	21.6	100,361,193	9.9	17,474,707

Table 4 ICC Historical Monthly Toll Revenue FY 2011 - 2018															
Month	FY 2011 (1)	Percent Change	FY 2012 (2)	Percent Change	FY 2013	Percent Change	FY 2014	Percent Change	FY 2015 (3)	Percent Change	FY 2016 (4)	Percent Change	FY 2017	Percent Change	FY 2018
July	\$ -	-	\$ 410,482	625.7	\$ 2,978,742	24.2	\$ 3,699,627	23.3	\$ 4,599,966	(3.7)	\$ 4,389,381	(3.7)	\$ 4,988,539	13.2	\$ 5,546,761
August	-	-	422,735	664.4	3,231,268	13.1	3,655,486	19.7	4,375,893	(2.8)	4,254,110	(2.8)	5,645,666	32.7	5,645,666
September	-	-	446,834	609.3	3,169,578	24.2	3,935,482	13.0	4,447,191	0.6	4,477,262	0.6	5,203,198	16.3	5,203,198
October	-	-	472,713	587.8	3,251,361	16.4	3,784,073	16.4	4,965,811	14.3	5,677,201	(2.9)	5,514,636	(2.9)	5,514,636
November	-	-	314,796	956.9	3,327,057	16.8	3,885,860	19.2	4,631,170	26.0	5,834,056	(9.4)	5,283,579	(9.4)	5,283,579
December	-	-	1,794,065	69.4	3,038,624	34.8	4,096,985	15.1	4,715,666	(4.3)	4,508,851	(4.3)	4,806,853	6.6	4,806,853
January	-	-	2,020,378	58.8	3,208,521	30.1	4,175,884	(1.3)	4,121,721	0.2	4,131,701	0.2	5,380,060	30.2	5,380,060
February	-	-	2,064,501	45.3	2,998,935	20.3	3,607,784	14.2	4,121,202	11.9	4,611,929	11.9	4,791,597	3.9	4,791,597
March	258,190	826.7	2,392,567	37.1	3,280,138	20.5	3,954,160	22.7	4,852,101	7.8	5,232,570	7.8	5,606,049	7.1	5,606,049
April	345,580	585.1	2,367,500	52.8	3,617,514	12.3	4,063,734	26.5	5,142,214	0.7	5,177,603	0.7	5,553,268	7.3	5,553,268
May	396,222	568.0	2,646,582	44.1	3,814,984	16.9	4,458,570	14.8	5,119,367	(3.1)	4,960,516	(3.1)	5,903,109	19.0	5,903,109
June	474,133	823.8	4,379,869	(16.2)	3,669,559	28.4	4,711,132	5.4	4,962,301	22.0	6,061,303	(6.6)	5,660,296	(6.6)	5,660,296
Total	\$ 1,474,125	1238.6	\$ 19,733,024	100.6	\$ 39,586,280	21.3	\$ 48,028,779	16.6	\$ 56,017,601	5.9	\$ 59,312,440	5.9	\$ 64,316,849	8.4	\$ 5,546,761

(1) The segment between I-370 and MD 97 (location of Toll Gantries 101/102) opened on February 23, 2011 and was the only segment open in FY 2011.
 The segment opened toll free until the beginning of EZPass® toll operations on March 7, 2011 and the beginning of video toll operations on April 6, 2011.
 (2) Toll Gantries 105/106, 107/108, 109/110, and 113/114 opened in November 22, 2011 (FY 2012). Toll operations began December 5, 2011.
 (3) Toll Gantries 117/118 opened November 10, 2014 (FY 2015).
 (4) Toll Rates were decreased effective July 2015 (FY 2016).



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By January 2012, the first full month of toll operation, a total of 2,999,797 transactions were recorded for the ICC system as a whole.

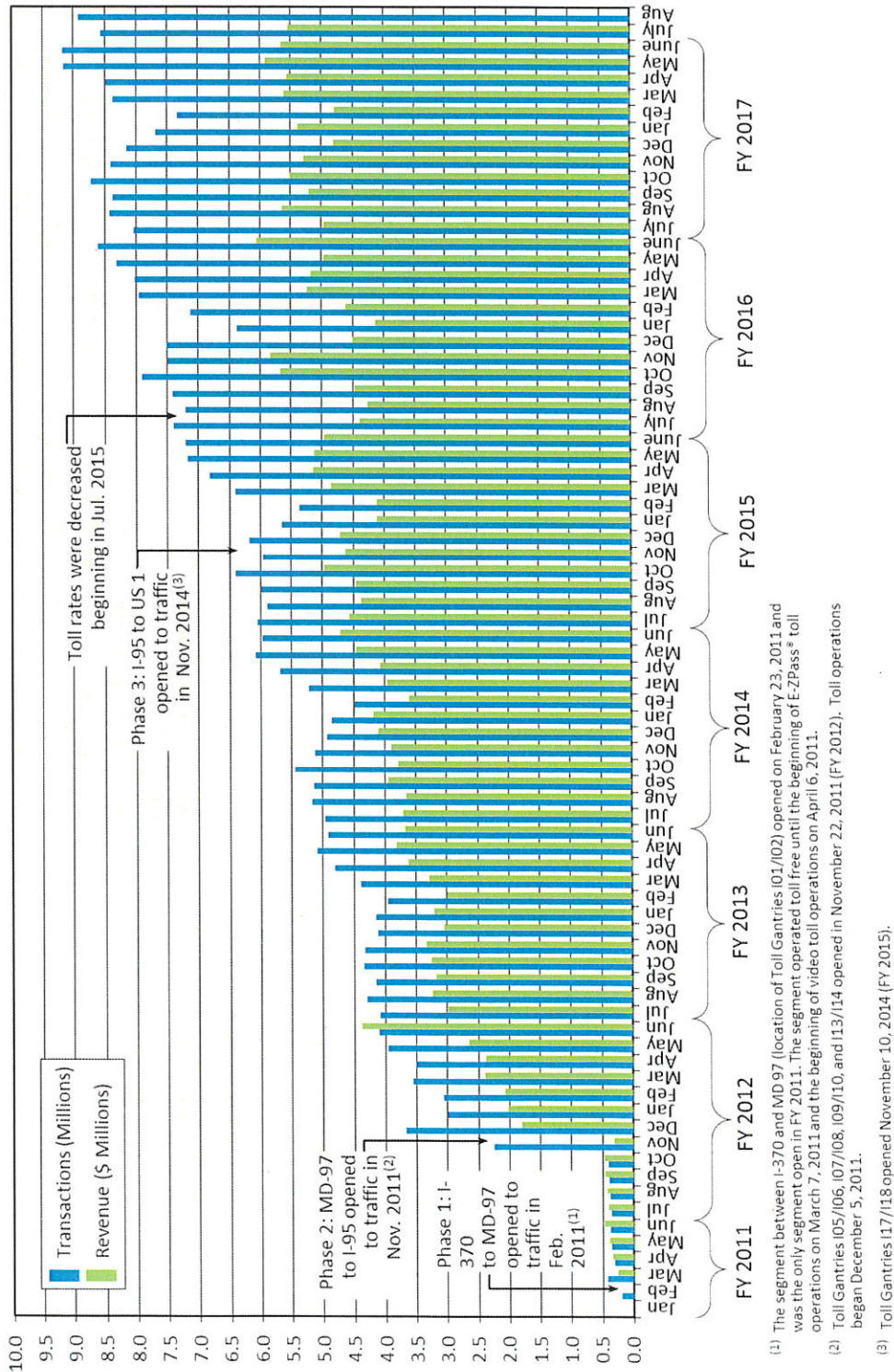
Transactions increased by a total of 84 percent from FY 2012 to FY 2013 and 20 percent from FY 2013 to FY 2014. This was due primarily to both the opening of the second segment of the ICC in November 2011 and to the phenomenon of facility “ramp-up,” where motorists adjust their travel patterns over time as they become aware of a new facility and the benefits that it offers over their current route of travel. This ramp-up period continued into FY 2015, with a 19.1 percent growth in transactions and a 16.6 percent growth in toll revenue. FY 2015 also included the opening of the final segment of the ICC in November 2014; a 1.53-mile extension on the eastern end between I-95 and US 1. Transactions in FY 2016 (July 2015 through June 2016) grew at a faster rate than FY 2015, which can be attributed to the continued recovery in the economy, lower gas prices, relatively good weather, and the toll reduction implemented on July 1, 2015. Toll revenue for FY 2016 was 5.9 percent higher than FY 2015, which reflects the negative revenue impact of the lower toll in combination with continued robust growth in transactions. Had ICC toll rates not been reduced in FY 2016; it is estimated toll revenue would have been roughly 17 percent higher than FY 2015. Transaction and revenue growth for FY 2017 was very strong at 9.9 percent and 8.4 percent, respectively, considering national and regional trends on other toll facilities. FY 2018 growth is expected to be less than the FY 2017 average as the facility transitions into a more long-term normal growth pattern after the initial years of high ramp-up, coupled with stabilizing gas prices and economy. **Figure 3** graphically demonstrates the historical progression of monthly transactions and toll revenue on the ICC.

TRAFFIC AND REVENUE GROWTH EXPLANATORY FACTORS

Several factors have been found to impact traffic and toll revenue on the ICC. This section considers two factors, motor fuel prices and weather impacts, in more detail.

Fuel Prices

Figure 4 presents historical gasoline prices for the Central Atlantic Region from January 2013 through June 2017. Beginning around October 2014, gasoline prices began a noticeable decline. The declining fuel prices, in combination to ramp-up from the I-95 to US 1 extension opening in November 2014, caused continued rapid growth on the ICC in calendar year 2015 and early 2016. Most recently, gasoline has averaged \$2.49 per gallon for the Central Atlantic Region for FY 2017 through June 2017. Based on current forecasts from the U.S. Energy Information Administration, underlying near-term gasoline prices are expected to remain low.

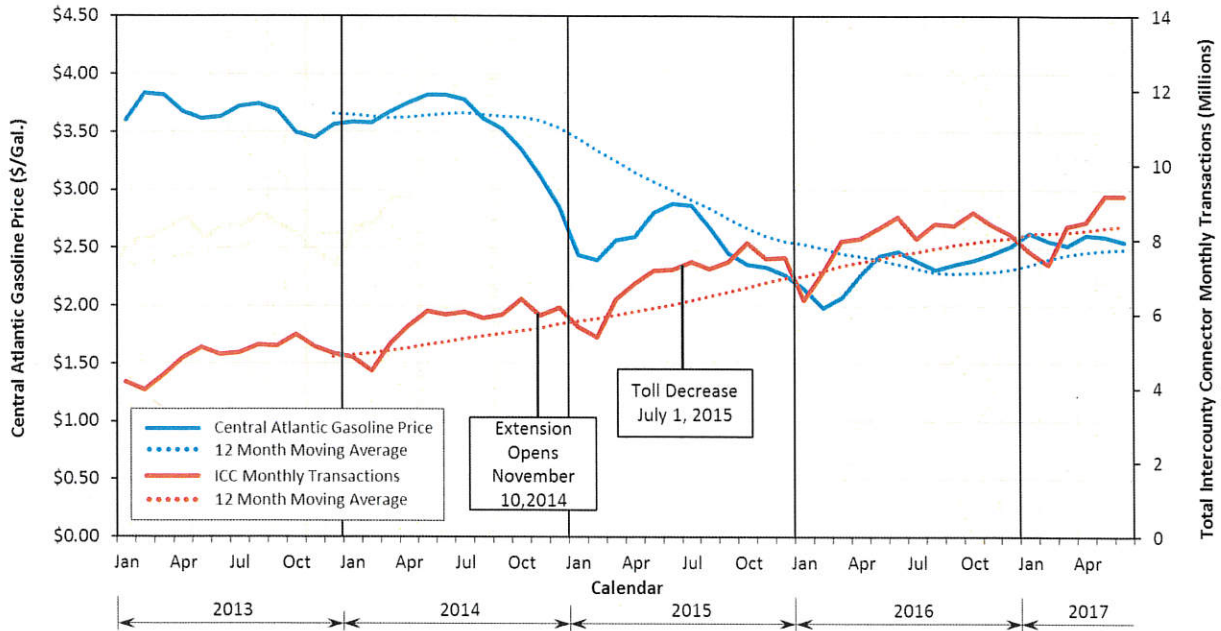


(1) The segment between I-370 and MD 97 (location of Toll Gantries I01/I02) opened on February 23, 2011 and was the only segment open in FY 2011. The segment operated toll free until the beginning of E-ZPass® toll operations on March 7, 2011 and the beginning of video toll operations on April 6, 2011.
 (2) Toll Gantries I05/I06, I07/I08, I09/I10, and I13/I14 opened in November 22, 2011 (FY 2012). Toll operations began December 5, 2011.
 (3) Toll Gantries I17/I18 opened November 10, 2014 (FY 2015).

Figure 3
 Intercounty Connector Historical Monthly Transactions and Toll Revenue



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Source: US Energy Information Administration; Maryland Transportation Authority (MDTA).

Figure 4
Comparison of Monthly Central Atlantic Gasoline Prices and
Intercounty Connector Toll Transactions, 2013-2017

Weather Impacts

Traffic is often impacted by weather events, especially in the winter months due to snow, icy conditions, and very low temperatures. Because of its vicinity to federal governmental related employment, traffic on the ICC has been found to be especially impacted by federal government dismissal days. These days are normally related to winter weather events.

Table 5 includes a summary of federal dismissal procedures since 2013 broken down by delayed, early closure, and closed days. The data used to create this table was taken from the United States Office of Personnel Management website. All dismissals shown are related to weather except the 16 closed days in October 2013 which were due to the federal government shutdown. These dismissal days can sometimes help to explain certain monthly trends compared to previous years. For example, January 2016 had the lowest gantry transaction growth in FY 2016, at 12.8 percent (see **Table 3**). This was partially due to having seven federal dismissal days in January 2016 compared to only two in January 2015.



**Table 5
 Federal Dismissal Procedures
 January 2013 to March 2017**

<u>Calendar Year</u>	<u>Month</u>	<u>Delayed</u>	<u>Early Closure</u>	<u>Closed</u>
2013	Jan	1		
2013	Mar			1
2013	Oct (1)			16
2013	Dec	1		1
2013	Total (1)	2	0	18
2014	Jan	1		1
2014	Feb	1		1
2014	Mar	1		2
2014	Total	3	0	4
2015	Jan	2		
2015	Feb	1		1
2015	Mar	2		1
2015	Total	5	0	2
2016	Jan	2	1	4
2016	Feb	1		
2016	Total	3	1	4
2017	Mar	1		
2017	Total	1	0	0

(1) Oct 2013 closures were due to the federal government shutdown

REGIONAL TRANSPORTATION IMPROVEMENTS

A review of regional transportation improvement projects was conducted as part of this update to assess whether any changes in future project assumptions may have an impact on the ICC forecasts. The review was conducted by evaluating the latest regional transportation improvement plans and discussing projects with Montgomery County Transportation Planning staff. The plans reviewed included the following:

- Financially Constrained Long-Range Transportation Plan for the National Capital Region (CLRP 2016 Amendment)
- 2017 Montgomery County Transportation Priorities Letter
- 2016 Prince George's County Transportation Priorities Letter

- Baltimore Metropolitan Council 2018—2021 Transportation Improvement Program (TIP)

Table 6 includes a summary of significant projects near the ICC. After review, no changes in future project assumptions were identified that would have a significant impact on the ICC forecasts.

**Table 6
 Regional Transportation Improvements**

Facility	Improvement	Additional Comments	Assumed Opening Year(s)
Montrose Parkway East	Construct new 4-lane facility between MD 355 and MD 586	Construction funding is expected soon	2022
MD-28 (Norbeck Rd)/ MD-198 (Spencerville Rd)	Widen to 4-6 lanes on several segments between Georgia Ave and I-95	Project is split into 5 segments, with each segment having different improvement alternatives. Project is approaching end of planning phase. Three segments most likely to proceed to construction are Old Columbia Rd to US-29, MD 650 to Old Columbia Rd, and Georgia Ave to Layhill Rd	2025-2030 (Three segments)
I-270 Corridor/ I-495 West Side	HOT lanes between Shady Grove Rd and Frederick County Line and between I-270 West Spur and Virginia State Line	The \$100M ICM (Innovative Congestion Management) Project is currently being implemented on I-270. It is likely that the HOT lanes will be re-evaluated after the ICM project is fully implemented	Unknown
US 29 (Columbia Pike)	Upgrade two at-grade intersections to grade separated interchanges	Interchange near Fairland Rd/Musgrove Rd is currently on hold. Interchange near Technology Rd/Industrial Pkwy is moving forward because of several expected developments near this interchange	2027 (one interchange)
Midcounty Highway	Construct new highway sections between Clarksburg and Gaithersburg	Included in the Master Plan but has significant opposition making timeline uncertain. Small extension section between Shady Grove Rd and the ICC has less opposition so could open by 2030	Unknown

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ANNUAL TRIPS AND TOLL REVENUE FORECAST

Estimates of annual toll trips and toll revenue for the ICC through FY 2040 are presented in **Table 7**. Actual data between FY 2011 and FY 2017 are also provided for comparative purposes. Short-term annual trip and toll revenue forecasts are based on a review and analysis of the most recent historical trends and adjusting growth rates estimated in "ICC 2016 Forecast Update" report, dated November 30, 2016. Estimated revenue reflects collected toll revenue by MDTA after assumed reductions due to unbillable and unpaid trips. Leakage rates were assumed to be constant throughout the forecast period.

A 4.4 percent increase in trips to 34.1 million and a 4.3 percent increase in collected toll revenues to \$67.1 million is estimated for FY 2018, as compared to FY 2017. Trips in FY 2019 are estimated to increase by 2.3 percent over FY 2018 to 34.8 million. Collected toll revenues in FY 2019 are estimated to increase by 2.3 percent over FY 2018 to \$68.6 million.

By FY 2027, annual total trips are estimated to reach more than 41.1 million, representing an average annual increase of 2.1 percent from FY 2019. These trips are forecasted to produce \$81.0 million in annual toll revenue. It should be noted that while the current forecast does not assume any toll rate increases, there may be a need to increase tolls during peak periods in the future to manage congestion.

MONTHLY TRIPS AND TOLL REVENUE FORECAST

CDM Smith developed estimates of monthly trips and toll revenue for the ICC for all months of FY 2018 and FY 2019. The estimates are presented in **Table 8**. FY 2018 estimates incorporate actuals for July.

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Table 7
 Estimated Annual Trips and Toll Revenue
 October 2, 2017 Forecast

Fiscal Year	Peak / Off Peak / Overnight / Per Mile Toll Rate	ETC			Percent			Estimated Annual Trips (millions)			ETC			Estimated Collected Revenue (\$millions) ⁽¹⁾			Total		
		Trips	AAPC ⁽²⁾	ETC	Trips	AAPC ⁽²⁾	ETC	Trips	AAPC ⁽²⁾	ETC	Toll Revenue	AAPC ⁽²⁾	Average Toll	Toll Revenue	AAPC ⁽²⁾	Average Toll	Toll Revenue	AAPC ⁽²⁾	Average Toll
2011 ⁽³⁾	\$0.25 / \$0.20 / \$0.10	1.64	74.7	74.7	0.55	10.04	2.19	18.06	1,159.6	1.92	\$ 0.04	\$ 0.87	\$ 0.04	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2012 ⁽³⁾	\$0.25 / \$0.20 / \$0.10	9.41	93.7	93.7	0.63	13.7	10.04	358.0	18.06	1,159.6	1.92	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2013 ⁽³⁾	\$0.25 / \$0.20 / \$0.10	15.68	91.2	89.6	1.52	140.5	17.20	71.2	34.70	92.1	2.21	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2014 ⁽³⁾	\$0.25 / \$0.20 / \$0.10	18.36	89.6	89.6	2.12	39.9	20.48	19.1	40.92	18.0	2.23	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2015 ⁽³⁾	\$0.25 / \$0.20 / \$0.10	21.60	89.6	89.6	2.52	18.9	24.12	17.8	47.71	16.6	2.21	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2016 ⁽³⁾	\$0.22 / \$0.17 / \$0.07	25.83	86.2	86.2	4.15	64.6	29.98	24.3	47.70	(0.0)	1.85	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2017 ⁽³⁾	\$0.22 / \$0.17 / \$0.07	28.40	87.0	87.0	4.23	2.0	32.63	8.9	52.35	9.7	1.84	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2018	\$0.22 / \$0.17 / \$0.07	29.75	87.3	87.3	4.31	1.8	34.06	4.4	54.90	4.9	1.85	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2019	\$0.22 / \$0.17 / \$0.07	30.51	87.6	87.6	4.34	0.7	34.85	2.3	56.36	2.6	1.85	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2020	\$0.22 / \$0.17 / \$0.07	31.18	87.6	87.6	4.43	2.2	35.61	2.2	57.59	2.2	1.85	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2021	\$0.22 / \$0.17 / \$0.07	31.86	87.6	87.6	4.53	2.2	36.39	2.2	58.86	2.2	1.85	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2022	\$0.22 / \$0.17 / \$0.07	32.56	87.6	87.6	4.63	2.2	37.19	2.2	60.15	2.2	1.85	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2023	\$0.22 / \$0.17 / \$0.07	33.28	87.6	87.6	4.73	2.2	38.01	2.2	61.47	2.2	1.85	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2024	\$0.22 / \$0.17 / \$0.07	33.94	87.6	87.6	4.83	2.0	38.76	2.0	62.69	2.0	1.85	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2025	\$0.22 / \$0.17 / \$0.07	34.61	87.6	87.6	4.92	2.0	39.53	2.0	63.93	2.0	1.85	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2026	\$0.22 / \$0.17 / \$0.07	35.30	87.6	87.6	5.02	2.0	40.32	2.0	65.20	2.0	1.85	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	
2027	\$0.22 / \$0.17 / \$0.07	36.00	87.6	87.6	5.12	2.0	41.12	2.0	66.50	2.0	1.85	\$ 0.04	\$ 0.87	\$ 0.07	\$ 0.07	\$ 1.47	\$ 1.47	\$ 0.67	

(1) Includes revenue impacts due to leakage, including unpaid transactions.

(2) Average Annual Percent Change.

(3) Actual, also indicated with blue shading.



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Table 8
Estimated ICC Monthly Trips and Collected Toll Revenue
October 2, 2017 Forecast

FY 2018								
Month	Estimated Trips (millions)				Estimated Collected Toll Revenue (\$millions) ⁽¹⁾			
	PC ETC	CV ETC	Video	Total	PC ETC	CV ETC	Video	Total
Jul ⁽²⁾	2.366	0.065	0.472	2.903	\$ 4.048	\$ 0.453	\$ 1.046	\$ 5.547
Aug	2.434	0.070	0.377	2.881	4.155	0.490	1.096	5.740
Sep	2.403	0.064	0.353	2.820	4.102	0.447	1.026	5.575
Oct	2.571	0.070	0.372	3.013	4.389	0.491	1.080	5.960
Nov	2.430	0.063	0.352	2.846	4.148	0.445	1.023	5.616
Dec	2.273	0.059	0.341	2.673	3.879	0.416	0.991	5.287
Jan	2.225	0.055	0.301	2.582	3.798	0.389	0.875	5.062
Feb	2.077	0.052	0.276	2.405	3.545	0.367	0.802	4.714
Mar	2.460	0.063	0.335	2.858	4.198	0.445	0.972	5.615
Apr	2.500	0.067	0.352	2.919	4.266	0.473	1.023	5.762
May	2.651	0.072	0.379	3.102	4.525	0.505	1.099	6.130
Jun	2.588	0.073	0.398	3.058	4.417	0.511	1.155	6.083
Total	28.978	0.774	4.309	34.061	\$ 49.471	\$ 5.432	\$ 12.187	\$ 67.090

FY 2019								
Month	Estimated Trips (millions)				Estimated Collected Toll Revenue (\$millions) ⁽¹⁾			
	PC ETC	CV ETC	Video	Total	PC ETC	CV ETC	Video	Total
Jul	2.442	0.069	0.390	2.902	\$ 4.169	\$ 0.485	\$ 1.104	\$ 5.759
Aug	2.504	0.073	0.390	2.967	4.275	0.511	1.104	5.889
Sep	2.426	0.064	0.361	2.851	4.142	0.448	1.022	5.612
Oct	2.675	0.075	0.385	3.134	4.566	0.527	1.088	6.181
Nov	2.493	0.066	0.363	2.922	4.256	0.462	1.026	5.745
Dec	2.331	0.062	0.352	2.745	3.980	0.433	0.995	5.407
Jan	2.283	0.058	0.310	2.650	3.897	0.404	0.876	5.177
Feb	2.130	0.054	0.284	2.469	3.637	0.381	0.804	4.821
Mar	2.489	0.064	0.340	2.893	4.249	0.446	0.962	5.657
Apr	2.592	0.072	0.365	3.030	4.426	0.506	1.033	5.965
May	2.720	0.075	0.390	3.184	4.643	0.525	1.102	6.271
Jun	2.619	0.073	0.408	3.101	4.472	0.514	1.155	6.140
Total	29.705	0.804	4.338	34.847	\$ 50.713	\$ 5.643	\$ 12.269	\$ 68.624

(1) Includes revenue impacts due to leakage, including unpaid transactions.
 (2) From July Final TVI Report, also indicated with blue shading.



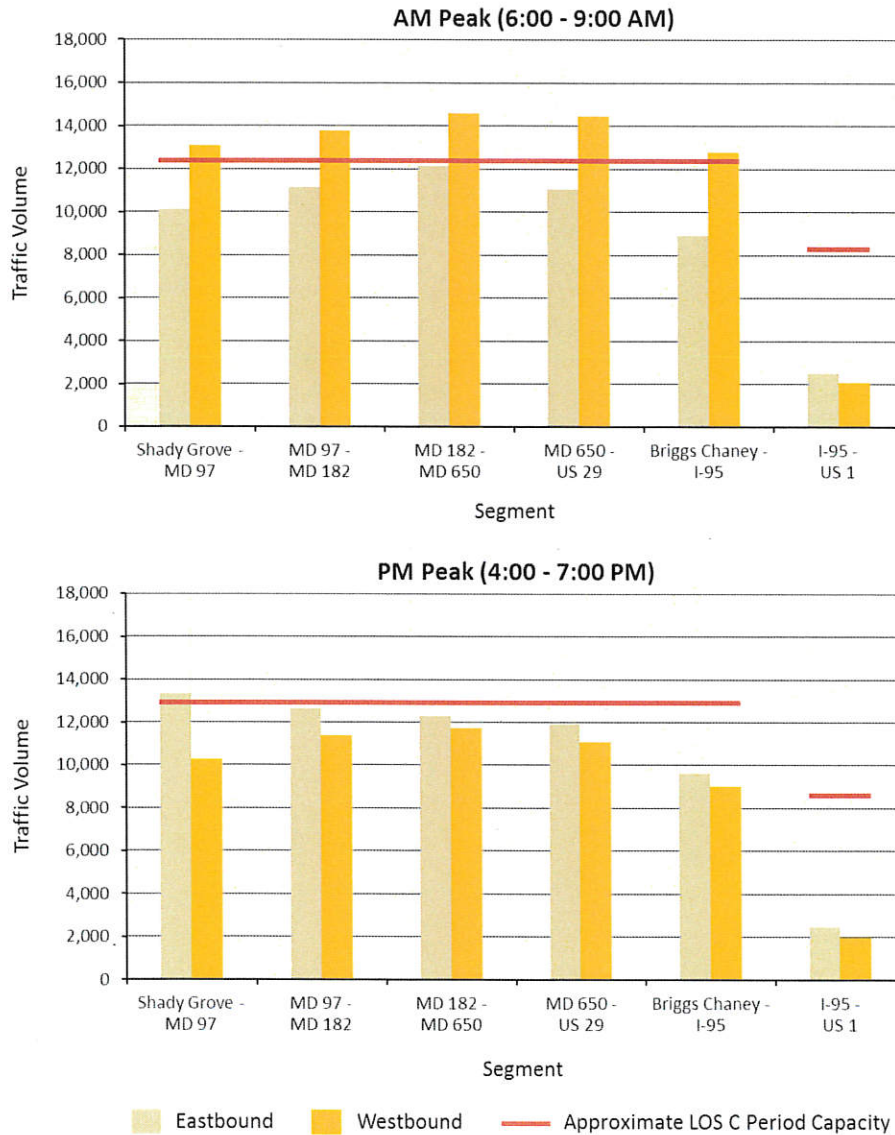
CAPACITY ANALYSIS

One consideration for the future-year traffic volumes was whether travel demand along the individual mainline segments would exceed a theoretical capacity of the ICC. Although MDTA has not determined what threshold might trigger congestion-managed toll increases, for the purposes of this analysis it was assumed that “Level of Service C” represented that threshold. **Figure 5** illustrates the relationship between the theoretical “Level of Service C” Peak Period capacity and the estimated FY 2040 volumes during the AM Peak (6:00 – 9:00 AM) and PM Peak (4:00 – 7:00 PM) Periods on the ICC by segment and direction. Note that this analysis focused on the mainlines of the ICC and not any potential future operational issues that could be experienced at ramp junctions or intersections.

As is shown in the figure, FY 2040 estimated average Peak Period volumes on the ICC range between about 9,000 and 15,000 vehicles during the AM and PM Peak Periods west of I-95, with the westbound direction in the AM Peak forecasted to exceed “Level of Service C” by 2040. The eastbound direction in the PM Peak is forecasted to be approaching capacity at the three middle gantries west of I-95 and just exceed capacity in the Shady Grove to MD 97 gantry. The ICC Extension between I-95 and US 1 is estimated to carry between 2,000 and 3,000 vehicles during both the AM and PM Peak Periods, which is much less than the theoretical “Level of Service C” capacity for this section.

This analysis, which is based on estimated annual average weekday travel volumes along the ICC mainline travel segments, indicates toll increases would be required to maintain “Level of Service C” travel conditions. It is estimated that the westbound travel direction during the AM Peak could begin exceeding capacity in FY 2030 and the eastbound direction between Shady Grove to MD 97 in the PM Peak in FY 2038. However, specific hourly traffic volumes will vary by day and time of the year, and it is probable that the “Level of Service C” threshold will be reached in certain segments, travel directions, and at certain times of the year considerably sooner than FY 2030.

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Note: Although MDTA has not determined what Level of Service threshold might trigger congestion managed toll increases, for purposes of this analysis, it is assumed that "Level of Service C" would be the maximum threshold (indicated by the red line).

Figure 5
FY 2040 Estimated AM and PM Period Segment Volumes
by Mainline Segment and Direction



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DISCLAIMER

CDM Smith used currently-accepted professional practices and procedures in the development of the traffic and revenue estimates in this report. However, as with any forecast, it should be understood that differences between forecasted and actual results may occur, as caused by events and circumstances beyond the control of the forecasters. In formulating the estimates, CDM Smith reasonably relied upon the accuracy and completeness of information provided (both written and oral) by MDTA. CDM Smith also relied upon the reasonable assurances of independent parties and is not aware of any material facts that would make such information misleading.

CDM Smith made qualitative judgments related to several key variables in the development and analysis of the traffic and revenue estimates 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. CDM Smith gives no opinion as to the value or merit of partial information extracted from this report.

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

While CDM Smith believes that the projections and other forward-looking statements contained within the report are based on reasonable assumptions as of the date of the report, such forward-looking statements involve risks and uncertainties that may cause actual results to differ materially from the results predicted. Therefore, following the date of this report, CDM Smith will take no responsibility or assume any obligation to advise of changes that may affect its assumptions contained within the report, as they pertain to socioeconomic and demographic forecasts, proposed residential or commercial land use development projects and/or potential improvements to the regional transportation network.

The report and its contents are intended solely for use by the MDTA and designated parties approved by MDTA and CDM Smith. Any use by third-parties, other than as noted above, is expressly prohibited. In addition, any publication of the report without the express written consent of CDM Smith is prohibited.





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CDM Smith is not, and has not been, a municipal advisor as defined in Federal law (the Dodd Frank Bill) to MDTA and does not owe a fiduciary duty pursuant to Section 15B of the Exchange Act to MDTA with respect to the information and material contained in this report. CDM Smith is not recommending and has not recommended any action to MDTA. MDTA should discuss the information and material contained in this report with any and all internal and external advisors that it deems appropriate before acting on this information.

Sincerely,

Scott A. Allaire

Scott A. Allaire
Vice President
CDM Smith Inc.

cc: Cheryl Lewis-Orr

