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November 1, 2018

Ms. Cheryl Lewis-Orr
Director of Revenue
Maryland Transportation Authority
2310 Broening Highway
Baltimore, MD 21224

Subject: **FINAL** ICC 2018 Forecast Update

Dear Ms. Lewis-Orr:

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 2019 through FY 2028, beginning on July 1, 2018 and ending on June 30, 2028. 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 and in the "ICC 2017 Forecast Update" report, dated November 1, 2017.

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**.



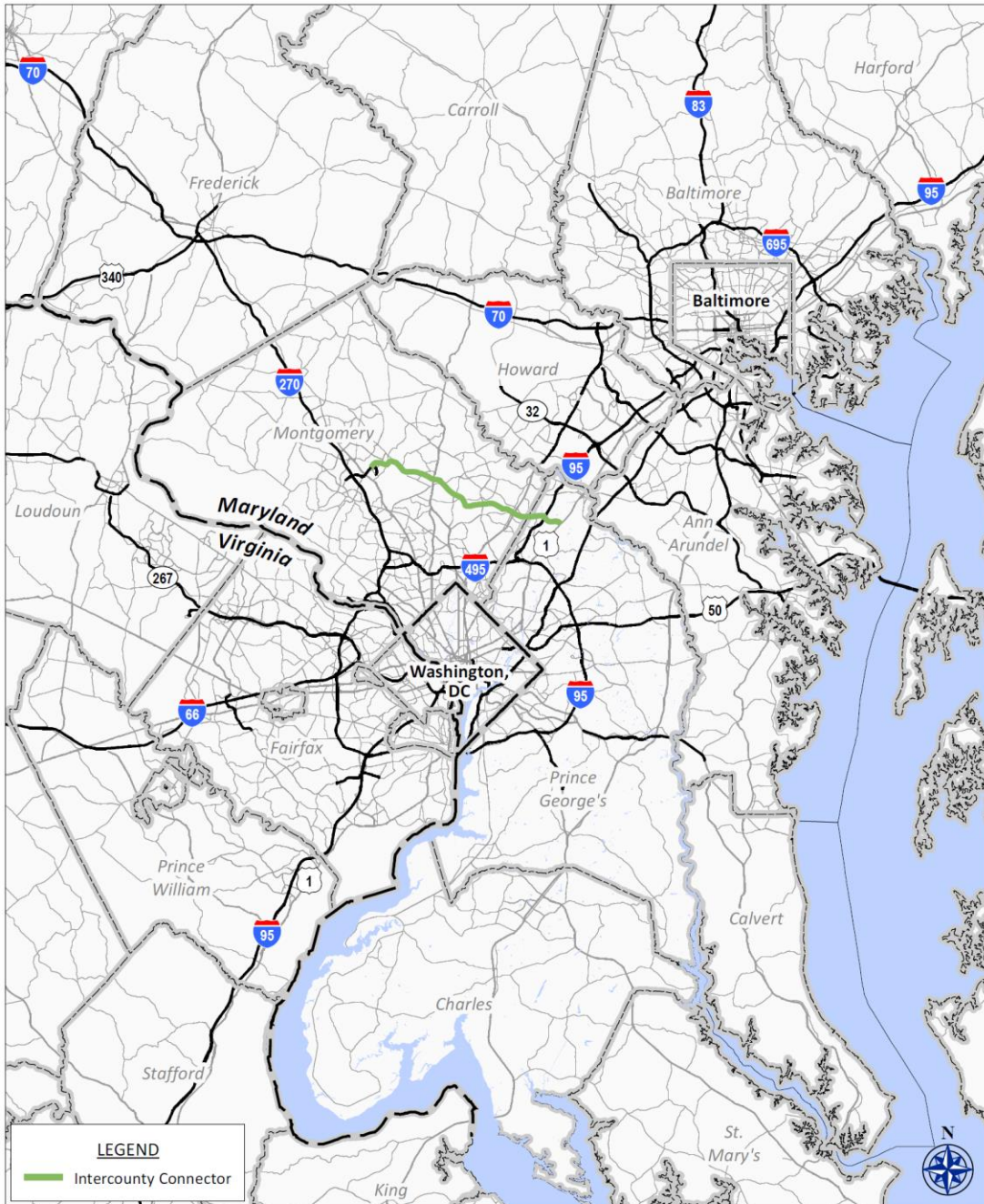


Figure 1
Regional Area Map

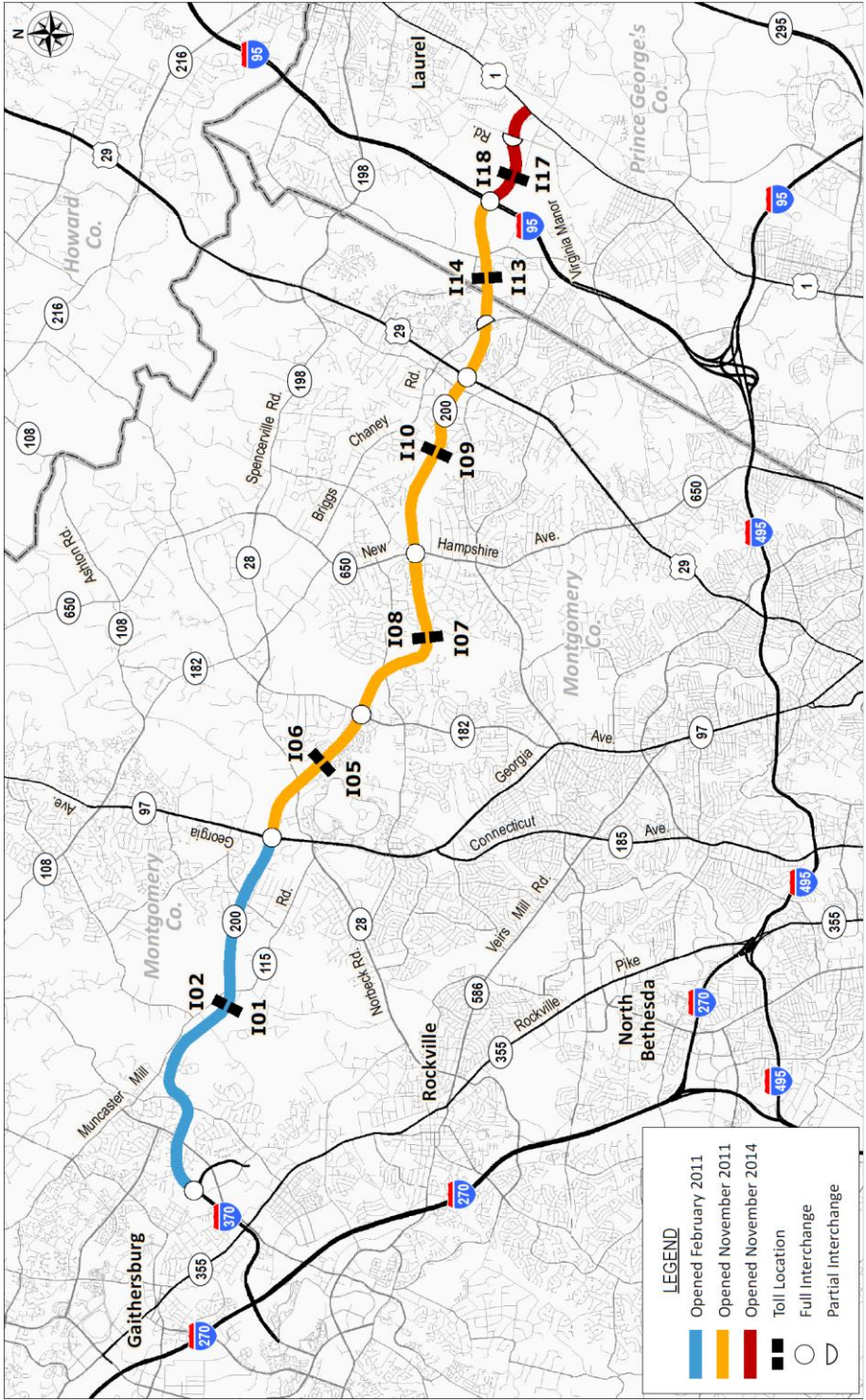


Figure 2
 Intercountry Connector Location Map

**Table 1
 Toll Gantry Locations on the Intercountry 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 and recreational (boat and camper) 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. 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.

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 trips, toll revenue, and transaction data for the ICC can be found in **Table 3**, **Table 4**, and **Table 5**, 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 be distorted by 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 Trips
 FY 2012 - 2018

Month	FY 2012 ⁽¹⁾	Percent Change	FY 2013	Percent Change	FY 2014	Percent Change	FY 2015 ⁽²⁾	Percent Change	FY 2016 ⁽³⁾	Percent Change	FY 2017	Percent Change	FY 2018	Percent Change	FY 2019
July	419,906	210.7	1,304,661	18.2	1,542,091	23.7	1,907,931	8.0	2,061,250	23.8	2,552,101	9.2	2,786,398	3.2	2,876,624
August	429,609	265.2	1,568,726	0.2	1,572,277	18.4	1,861,332	17.1	2,179,113	24.0	2,701,597	9.2	2,949,391	7.5	3,170,633
September	444,991	208.4	1,372,459	21.5	1,667,445	13.4	1,890,179	22.5	2,315,943	18.1	2,734,339	2.4	2,799,991	-	-
October	468,575	197.5	1,395,411	17.9	1,645,699	27.9	2,104,968	34.4	2,828,075	(1.5)	2,786,910	8.8	3,032,910	-	-
November	339,814	312.6	1,401,981	17.7	1,650,635	19.3	1,969,550	45.7	2,870,275	(6.8)	2,675,985	6.4	2,847,419	-	-
December	1,187,217	108	1,315,196	30.0	1,709,665	20.7	2,063,945	16.2	2,398,829	15.3	2,765,863	(3.0)	2,681,770	-	-
January	1,231,528	12.0	1,379,202	28.6	1,773,367	4.0	1,844,428	31.2	2,420,242	9.1	2,640,451	3.8	2,740,518	-	-
February	1,242,009	4.4	1,296,381	17.6	1,524,953	18.7	1,809,800	30.7	2,365,912	0.6	2,380,496	8.7	2,586,927	-	-
March	1,413,381	0.8	1,425,289	19.5	1,702,593	23.6	2,104,210	25.1	2,632,225	4.5	2,749,637	9.4	3,007,143	-	-
April	1,402,516	10.4	1,548,037	14.0	1,765,109	25.1	2,208,418	18.8	2,623,933	4.2	2,733,884	8.1	2,955,179	-	-
May	1,458,124	11.3	1,622,978	18.5	1,922,541	17.8	2,264,064	11.9	2,532,758	18.7	3,006,208	2.0	3,066,258	-	-
June	1,525,702	2.8	1,567,706	27.5	1,999,011	4.5	2,089,262	31.5	2,746,613	5.8	2,906,348	1.4	2,946,755	-	-
Total	11,563,772	48.7	17,198,027	19.1	20,475,586	17.8	24,118,087	24.3	29,975,168	8.9	32,633,819	5.4	34,400,659	-	6,047,257

Table 4
 ICC Historical Monthly Toll Revenue
 FY 2011 - 2018

Month	FY 2012 ⁽¹⁾	Percent Change	FY 2013	Percent Change	FY 2014	Percent Change	FY 2015 ⁽²⁾	Percent Change	FY 2016 ⁽³⁾	Percent Change	FY 2017	Percent Change	FY 2018	Percent Change	FY 2019
July	\$ 410,482	625.7	\$ 2,978,742	24.2	\$ 3,699,027	23.3	\$ 4,559,966	(3.7)	\$ 4,389,381	13.2	\$ 4,968,539	11.5	\$ 5,541,352	1.6	\$ 5,627,246
August	422,735	664.4	3,231,268	13.1	3,695,486	19.7	4,375,893	(2.8)	4,254,110	32.7	5,645,666	5.2	5,936,904	(0.4)	5,913,037
September	446,834	609.3	3,169,578	24.2	3,935,482	13.0	4,447,191	0.6	4,473,262	16.3	5,203,198	5.8	5,507,106	-	-
October	472,713	587.8	3,251,361	16.4	3,784,073	31.2	4,965,811	14.3	5,677,201	(2.9)	5,514,636	8.0	5,954,272	-	-
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	7.4	5,674,426	-	-
December	1,794,065	69.4	3,038,624	34.8	4,096,985	15.1	4,713,666	(4.3)	4,508,851	6.6	4,806,853	9.8	5,277,599	-	-
January	2,020,378	58.8	3,208,521	30.1	4,175,884	(1.3)	4,121,721	0.2	4,131,701	30.2	5,380,060	2.4	5,509,339	-	-
February	2,064,501	45.3	2,998,935	20.3	3,607,784	14.2	4,121,202	11.9	4,611,929	3.9	4,791,597	5.7	5,065,797	-	-
March	2,392,567	37.1	3,280,138	20.5	3,954,160	22.7	4,852,101	7.8	5,232,530	7.1	5,606,049	(0.1)	5,599,337	-	-
April	2,367,500	52.8	3,617,514	12.3	4,063,734	26.5	5,142,214	0.7	5,177,603	7.3	5,535,268	1.5	5,638,842	-	-
May	2,646,582	44.1	3,814,984	16.9	4,458,570	14.8	5,119,367	(3.1)	4,960,516	19.0	5,903,109	2.3	6,036,420	-	-
June	4,379,869	(16.2)	3,669,559	28.4	4,711,132	5.4	4,967,301	22.0	6,061,303	(6.6)	5,660,296	1.9	5,769,181	-	-
Total	\$ 19,733,024	100.6	\$ 39,586,280	21.3	\$ 48,028,779	16.6	\$ 56,017,601	5.9	\$ 59,312,440	8.4	\$ 64,316,849	5.0	\$ 67,510,574	-	\$ 11,540,283

⁽¹⁾ Toll Gannex 105/106, 107/108, 109/110, and 113/114 opened November 22, 2011 (FY 2012). Toll operations began December 5, 2011.
⁽²⁾ Toll Gannex 117/118 opened November 10, 2014 (FY 2015).
⁽³⁾ Toll Rates were decreased effective July 2015 (FY 2016).





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**Table 5
 ICC Historical Monthly 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	Percent Change	FY 2019
July	-	-	354,709	1051.7	4,085,069	21.6	4,968,063	22.0	6,059,285	22.0	7,393,525	8.7	8,037,215	6.5	8,560,179	3.1	8,826,612
August	-	-	369,438	1061.6	4,291,530	20.5	5,172,549	14.1	5,899,486	22.2	7,207,909	16.8	8,422,268	5.8	8,914,528	3.4	9,218,087
September	-	-	385,184	975.5	4,142,846	23.9	5,134,767	16.6	5,987,275	23.8	7,412,760	13.0	8,378,484	2.3	8,570,834	-	-
October	-	-	409,338	960.1	4,339,517	25.6	5,449,704	17.5	6,405,597	22.5	7,909,398	10.4	8,735,855	4.6	9,139,165	-	-
November	-	-	2,242,615	92.6	4,319,503	18.8	5,129,634	16.1	5,956,146	25.9	7,496,219	12.1	8,401,893	4.5	8,779,046	-	-
December	-	-	3,665,085	12.5	4,124,912	19.8	4,940,797	25.1	6,179,337	21.5	7,510,457	8.6	8,156,499	(0.1)	8,145,142	-	-
January	-	-	2,999,797	38.6	4,156,651	16.7	4,850,107	16.4	5,647,160	12.8	6,370,282	20.7	7,687,667	4.9	8,064,604	-	-
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	3.1	7,341,463	3.9	7,629,181	-	-
March	413,076	765.0	3,564,722	22.9	4,381,800	19.2	5,223,840	22.5	6,399,917	24.4	7,959,170	5.2	8,369,493	3.6	8,667,999	-	-
April	309,993	1034.2	3,515,991	36.8	4,811,301	18.2	5,685,357	20.1	6,829,125	17.6	8,029,474	5.7	8,486,724	4.5	8,868,669	-	-
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	10.2	9,166,564	3.4	9,482,368	-	-
June	376,182	990.2	4,101,215	19.9	4,915,597	21.6	5,976,215	20.6	7,204,505	19.6	8,618,803	6.5	9,179,108	(0.0)	9,176,122	-	-
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	9.9	100,361,193	3.6	103,997,837	-	108,044,099

⁽¹⁾ The segment between I-370 and MD 97 (location of Toll Gantries 101/102) opened February 23, 2011. The segment operated toll free until the beginning of E-ZPass® toll operations March 7, 2011 and the beginning of video toll operations April 6, 2011.
⁽²⁾ Toll Gantries 105/106, 107/108, 109/110, and 113/114 opened 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).



By January 2012, the first full month of toll operation, a total of 2,999,797 transactions were recorded for the ICC. Transactions increased by 84 percent in FY 2013 and 20 percent in 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,” when 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. FY 2017 growth was higher than national and regional trends on other toll facilities operated by other toll agencies that are regularly monitored by CDM Smith. FY 2018 continued the trend towards stabilization from previous years. In FY 2018, trips, toll revenue, and transactions grew by 5.4, 5.0, and 3.6 percent, respectively. FY 2019 growth is expected to be less than FY 2018 as the ICC continues to settle into a more long-term normal growth pattern. **Figure 3** graphically demonstrates the historical progression of monthly transactions and toll revenue on the ICC.

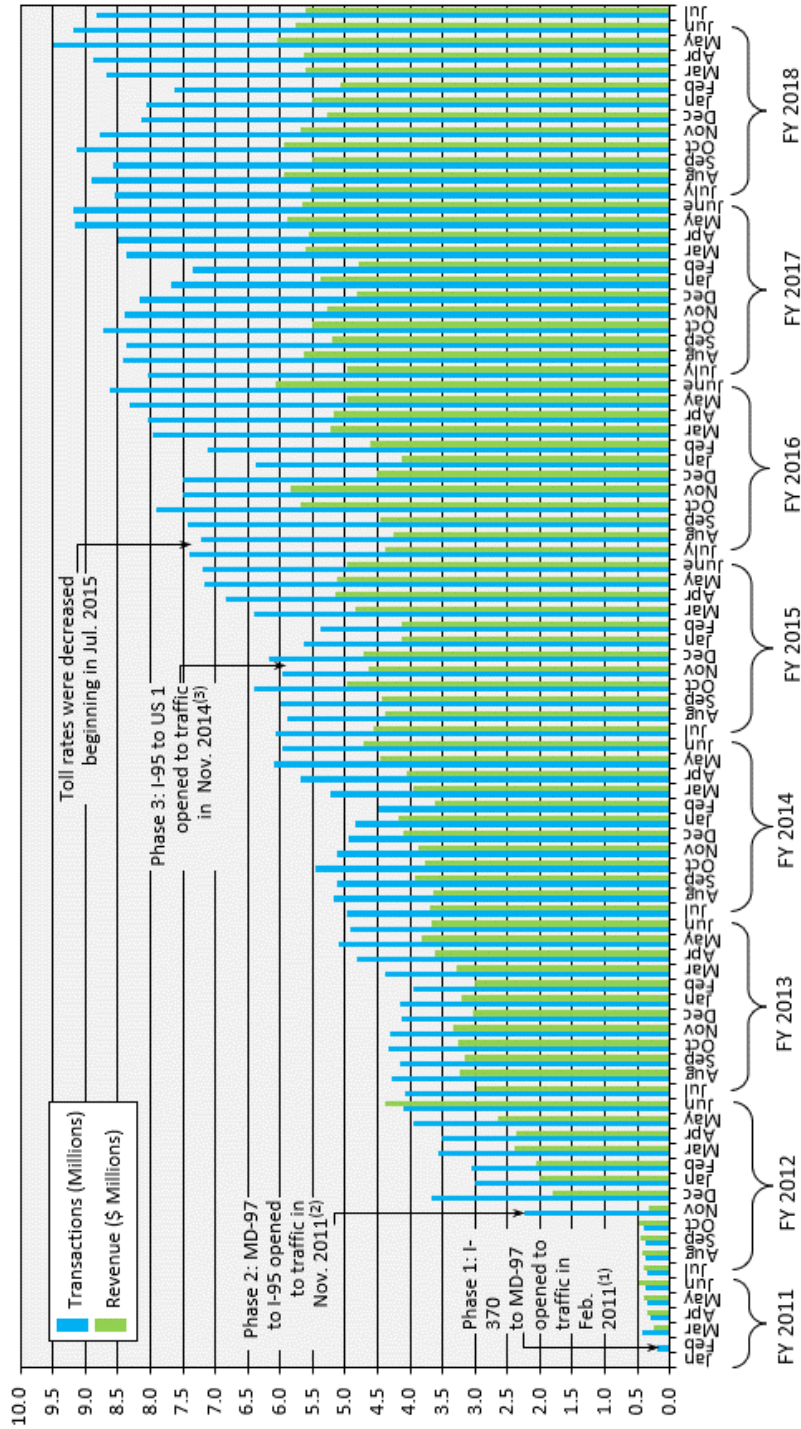
TRAFFIC AND REVENUE GROWTH EXPLANATORY FACTORS

Several factors are monitored to help explain trends traffic and toll revenue on the ICC. This section considers three factors, motor fuel prices, unemployment rate, and weather impacts, in more detail.

Fuel Prices

Figure 4 presents historical gasoline prices for the Central Atlantic Region from January 2013 through August 2018. Beginning around October 2014, gasoline prices began a noticeable decline. The declining fuel prices, in combination with 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 \$3.02 per gallon for the Central Atlantic Region for FY 2018 and beginning of FY 19 through August 2018. Based on current forecasts from the U.S. Energy Information Administration, fuel prices are expected to increase at relatively similar rates to recent experience over the 10-year forecasting period. Based on these forecasts, fuel prices are not expected to significantly impact long-term traffic and revenue growth on the ICC.

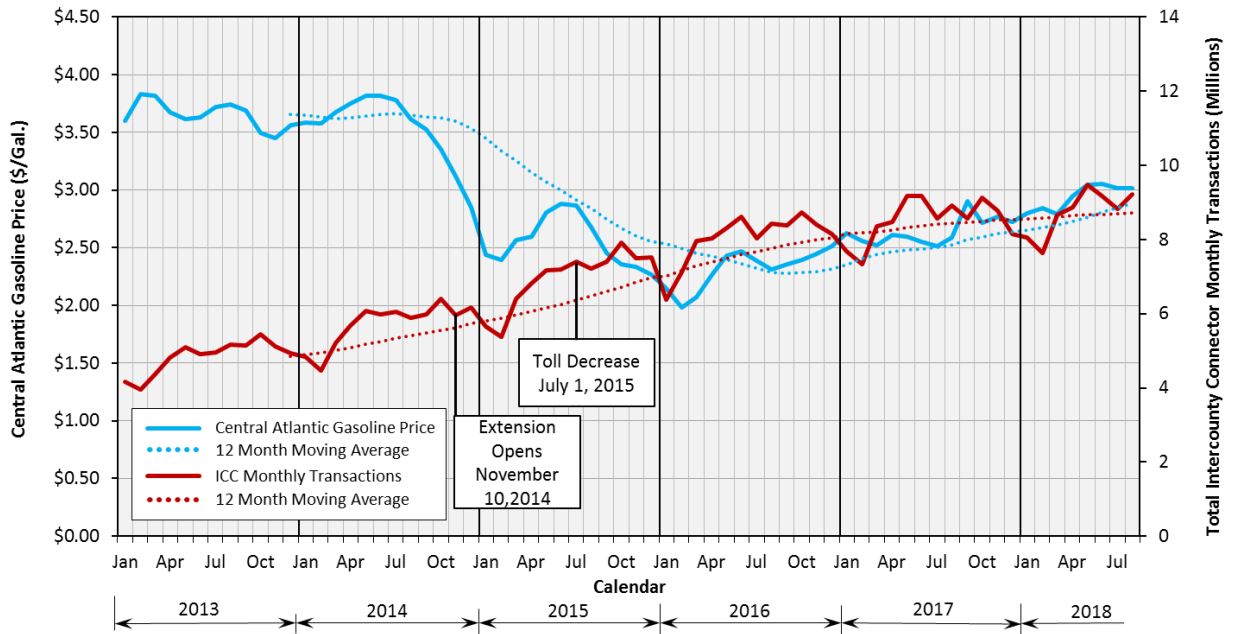
Figure 3
Intercountry Connector Historical Monthly Transactions and Toll Revenue



(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 operated toll free until the beginning of E-2Pass[®] 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).



Figure 4
Comparison of Monthly Central Atlantic Gasoline Prices and
Intercounty Connector Toll Transactions, 2013-2018



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

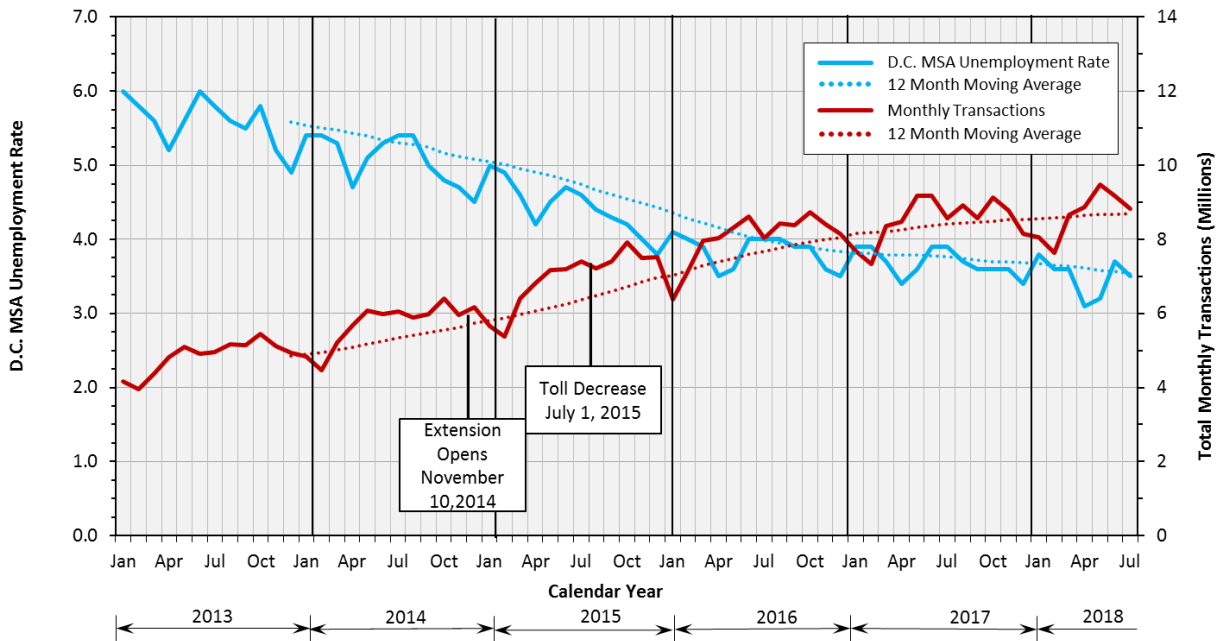
Unemployment Rate

The ICC is now showing normal, long-term growth patterns after the years of high ramp-up. Thus, regional macroeconomic trends are becoming more important to facility growth. One macroeconomic factor that has been found to be important for passenger car growth on other toll facilities is the unemployment rate. Because the ICC has a relatively high percentage of passenger cars and commuting traffic, low unemployment and other positive labor market indicators are especially important to ICC transaction growth. **Figure 5** presents a similar graph to **Figure 4** but includes Washington D.C. Metropolitan Statistical Area (MSA) unemployment rate instead of gasoline prices. The Washington D.C. MSA includes Washington D.C., several counties in northeastern Virginia, Jefferson County in West Virginia, and several counties in southern Maryland – including those surrounding the ICC facility.

The Washington D.C. MSA unemployment rate has trended steadily downward in the past several years, from rates between 5.0 and 6.0 percent in 2013 to between 3.0 and 4.0 percent since February 2016. National forecasts indicate unemployment rates are expected to be relatively flat in the remainder of calendar year 2018 and in 2019, which is also expected to apply to the Washington D.C. MSA. After 2019, national unemployment rates are anticipated to increase slightly

and then level off in 2022 and after based on available forecasts, including those from Moody’s and the Congressional Budget Office. Based on forecasts from Woods & Poole and the Maryland State Data Center, growth in employment is expected to continue at rates similar to overall average 2010-2017 post-recession trends over the 10-year forecast period. Based on these forecasts in unemployment and employment, labor markets are anticipated to continue to be stable in the areas served by the ICC, which is anticipated to lead to stability in long-term traffic growth trends.

Figure 5
Comparison of Monthly Washington D.C. Metropolitan Statistical Area Unemployment Rate and Intercounty Connector Toll Transactions, 2013-2018



Source: US Bureau of Labor Statistics; Maryland Transportation Authority (MDTA).

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 6 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, the 3 closed days in January 2018, and the 1 closed day in February 2018, which were due to federal government shutdowns. The 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 5**). This was partially due to seven federal dismissal days in January 2016 compared to only two in January 2015.

**Table 5
 Federal Dismissal Procedures
 January 2013 to March 2018**

<u>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
2018	Jan (1)	1		3
2018	Feb (1)	1		1
2018	Mar	1		2
2018	Total (1)	3	0	6

(1) Oct 2013, Jan 2018, and Feb 2018 closures were due to federal gov. shutdowns

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 future project information on transportation agency websites and in news articles. 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 7 includes a summary of significant projects near the ICC. The first five projects listed are the same as included in last year's ICC forecast update. As was the case last year, these projects are not anticipated to have a significant impact on the ICC forecasts. The final project shown in **Table 7**, the I-495 and I-270 Managed Lanes project, may have a significant impact on the ICC. The most current information available on this project was taken from the Maryland Department of Transportation State Highway Administration project website (<https://495-270-p3.com/transcript/>). No potential construction timeline is currently available, but the website states a Final Environmental Impact Statement and Record of Decision is planned to be completed by spring of 2020. Assuming construction begins soon after, the project may be open by the outer years of this ICC forecast update through FY 2028.

Preliminary, sketch-level modeling of the impacts of the I-495 and I-270 Managed Lanes project on the ICC for this forecast update showed the potential for an over 10 percent negative impact on ICC traffic due to the project. The sketch-level modeling assumed two priced managed lanes in both directions for the entirety of the I-495 and I-270 project limits. The ICC impacts appeared to be most dependent on managed lanes on the I-495 north beltway between I-270 and I-95, as this section of I-495 is parallel to and serves as an alternative route to the ICC for some trips. Because information on project assumptions and construction timeline is not currently available for the I-495 and I-270 project, impacts are not included in this forecast update. However, especially due to the potential for significant negative impacts on ICC transactions and revenue, I-495 and I-270 project updates will continue to be closely monitored. Once more detailed information becomes available, CDM Smith recommends that a detailed modeling and analysis exercise be undertaken to understand and quantify the potential impacts on the ICC and determine whether forecast adjustments are warranted.

**Table 7
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
I-495 and I-270 Managed Lanes	Add managed lanes to the entire I-495 corridor in Maryland and to I-270 from I-495 to I-370	Project is currently being studied using a P3 delivery model. The number of managed lanes and access points are currently being studied.	Unknown. Final EIS and ROD planned for completion by Spring 2020

ANNUAL TRIPS AND TOLL REVENUE FORECAST

Estimates of annual toll trips and toll revenue for the ICC through FY 2028 are presented in **Table 8**. Actual data between FY 2011 and FY 2018 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 2017 Forecast Update” report, dated November 1, 2017. 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 2.3 percent increase in trips to 35.2 million and a 1.8 percent increase in collected toll revenues to \$68.7 million is estimated for FY 2019. Trips in FY 2020 are estimated to increase by 2.0 percent to 35.9 million. Collected toll revenues in FY 2020 are estimated to increase by 2.2 percent to \$70.2 million.

By FY 2028, annual total trips are estimated to reach 42.2 million, representing an average annual increase of 2.0 percent from FY 2019. These trips are forecasted to produce \$82.6 million in annual toll revenue. The average annual growth increase of 2.0 percent is based on the long-term growth projections from the January 2016 ICC Comprehensive Traffic and Revenue Study, with some adjustments to near-term growth based on recent performance. 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. Also, as described previously in the “Regional Transportation Improvements” section, the forecast does not include potential negative impacts on the ICC due to the proposed I-495 and I-270 Managed Lanes project. Once more detailed information becomes available on this project, CDM Smith recommends that a detailed modeling and analysis exercise be undertaken to understand and quantify the potential impacts on the ICC.

MONTHLY TRIPS AND TOLL REVENUE FORECAST

CDM Smith developed estimates of monthly trips and toll revenue for the ICC for all months of FY 2019 and FY 2020. The estimates are presented in **Table 9**. FY 2019 estimates incorporate actuals for July.

**Table 8
Estimated Annual Trips and Toll Revenue
October 1, 2018 Forecast**

Fiscal Year	Peak / Off Peak / Overnight Per Mile Toll Rate	ETC			Video			Percent			ETC			Video			Estimated Collected Revenue (\$millions) ⁽¹⁾					
		Trips		AAPC ⁽²⁾	Trips		AAPC ⁽²⁾	Trips		AAPC ⁽²⁾	Trips		AAPC ⁽²⁾	Revenue		Average	Toll		Revenue		Average	
		Toll	Revenue	AAPC ⁽²⁾	Toll	Revenue	AAPC ⁽²⁾	Toll	Revenue	AAPC ⁽²⁾	Toll	Revenue	AAPC ⁽²⁾	Toll	Revenue	AAPC ⁽²⁾	Toll	Revenue	AAPC ⁽²⁾	Toll	Revenue	AAPC ⁽²⁾
2011 ⁽³⁾	\$0.25 / \$0.20 / \$0.10	1.64	74.7	0.55	2.19	358.0	\$ 1.43	18.06	1,159.6	\$ 0.87	\$ 0.04	1.67	4,077.5	19.73	1,238.7	\$ 0.67	19.73	1,238.7	19.73	\$ 1.47	19.73	1,238.7
2012 ⁽³⁾	\$0.25 / \$0.20 / \$0.10	9.41	93.7	0.63	10.04	358.0	18.06	1,159.6	1.92	1.67	4,077.5	2.65	19.73	1,238.7	1.96	19.73	1,238.7	1.96	19.73	1,238.7		
2013 ⁽³⁾	\$0.25 / \$0.20 / \$0.10	15.68	91.2	1.52	17.20	71.2	34.70	92.1	2.21	4.89	192.7	3.23	39.59	100.6	2.30	39.59	100.6	2.30	39.59	100.6		
2014 ⁽³⁾	\$0.25 / \$0.20 / \$0.10	18.36	89.6	2.12	20.48	19.1	40.92	18.0	2.23	7.10	45.2	3.35	48.03	21.3	2.35	48.03	21.3	2.35	48.03	21.3		
2015 ⁽³⁾	\$0.25 / \$0.20 / \$0.10	21.60	89.6	2.52	24.12	17.8	47.71	16.6	2.21	8.31	17.0	3.30	56.02	16.6	2.32	56.02	16.6	2.32	56.02	16.6		
2016 ⁽³⁾	\$0.22 / \$0.17 / \$0.07	25.83	86.2	4.15	29.98	24.3	47.70	(0.0)	1.85	11.61	39.7	2.80	59.31	5.9	1.98	59.31	5.9	1.98	59.31	5.9		
2017 ⁽³⁾	\$0.22 / \$0.17 / \$0.07	28.40	87.0	4.23	32.63	8.9	52.35	9.7	1.84	11.97	3.1	2.83	64.32	8.4	1.97	64.32	8.4	1.97	64.32	8.4		
2018 ⁽³⁾	\$0.22 / \$0.17 / \$0.07	30.59	88.9	3.82	34.40	5.4	55.94	6.9	1.83	11.57	(3.3)	3.03	67.51	5.0	1.96	67.51	5.0	1.96	67.51	5.0		
2019	\$0.22 / \$0.17 / \$0.07	31.35	89.1	3.83	35.18	2.3	57.61	3.0	1.84	11.09	(4.1)	2.90	68.71	1.8	1.95	68.71	1.8	1.95	68.71	1.8		
2020	\$0.22 / \$0.17 / \$0.07	32.07	89.3	3.82	35.89	2.0	59.14	2.7	1.84	11.09	(0.1)	2.90	70.23	2.2	1.96	70.23	2.2	1.96	70.23	2.2		
2021	\$0.22 / \$0.17 / \$0.07	32.75	89.3	3.90	36.66	2.1	60.41	2.1	1.84	11.32	2.1	2.90	71.73	2.1	1.96	71.73	2.1	1.96	71.73	2.1		
2022	\$0.22 / \$0.17 / \$0.07	33.45	89.3	3.99	37.44	2.1	61.70	2.1	1.84	11.57	2.1	2.90	73.27	2.1	1.96	73.27	2.1	1.96	73.27	2.1		
2023	\$0.22 / \$0.17 / \$0.07	34.17	89.3	4.07	38.24	2.1	63.02	2.1	1.84	11.81	2.1	2.90	74.84	2.1	1.96	74.84	2.1	1.96	74.84	2.1		
2024	\$0.22 / \$0.17 / \$0.07	34.85	89.3	4.15	39.00	2.0	64.27	2.0	1.84	12.05	2.0	2.90	76.32	2.0	1.96	76.32	2.0	1.96	76.32	2.0		
2025	\$0.22 / \$0.17 / \$0.07	35.54	89.3	4.24	39.78	2.0	65.55	2.0	1.84	12.29	2.0	2.90	77.84	2.0	1.96	77.84	2.0	1.96	77.84	2.0		
2026	\$0.22 / \$0.17 / \$0.07	36.25	89.3	4.32	40.57	2.0	66.85	2.0	1.84	12.53	2.0	2.90	79.39	2.0	1.96	79.39	2.0	1.96	79.39	2.0		
2027	\$0.22 / \$0.17 / \$0.07	36.97	89.3	4.41	41.37	2.0	68.18	2.0	1.84	12.78	2.0	2.90	80.96	2.0	1.96	80.96	2.0	1.96	80.96	2.0		
2028	\$0.22 / \$0.17 / \$0.07	37.70	89.3	4.50	42.20	2.0	69.54	2.0	1.84	13.04	2.0	2.90	82.57	2.0	1.96	82.57	2.0	1.96	82.57	2.0		

(1) Includes revenue impacts due to leakage, including unpaid transactions.
(2) Average Annual Percent Change.
(3) Actual, also indicated with blue shading.



Table 9
Estimated ICC Monthly Trips and Collected Toll Revenue
October 1, 2018 Forecast

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⁾	2.514	0.076	0.287	2.877	\$ 4.234	\$ 0.532	\$ 0.861	\$ 5.627
Aug ⁽²⁾	2.778	0.088	0.304	3.171	4.447	0.566	0.900	5.913
Sep	2.439	0.068	0.334	2.841	4.135	0.472	0.965	5.572
Oct	2.693	0.078	0.352	3.123	4.565	0.546	1.015	6.126
Nov	2.548	0.076	0.332	2.955	4.319	0.528	0.957	5.804
Dec	2.344	0.071	0.298	2.714	3.975	0.497	0.861	5.333
Jan	2.349	0.068	0.288	2.705	3.982	0.473	0.830	5.286
Feb	2.195	0.063	0.260	2.518	3.722	0.439	0.749	4.910
Mar	2.585	0.078	0.335	2.998	4.383	0.542	0.966	5.891
Apr	2.631	0.080	0.323	3.035	4.461	0.559	0.933	5.952
May	2.758	0.083	0.357	3.198	4.675	0.577	1.031	6.283
Jun	2.606	0.081	0.356	3.043	4.417	0.568	1.027	6.012
Total	30.440	0.910	3.826	35.175	\$ 51.314	\$ 6.301	\$ 11.094	\$ 68.709

FY 2020								
Month	Estimated Trips (millions)				Estimated Collected Toll Revenue (\$millions) ⁽¹⁾			
	PC ETC	CV ETC	Video	Total	PC ETC	CV ETC	Video	Total
Jul	2.564	0.084	0.348	2.996	\$ 4.322	\$ 0.582	\$ 1.009	\$ 5.913
Aug	2.632	0.085	0.336	3.053	4.437	0.591	0.975	6.002
Sep	2.538	0.075	0.326	2.940	4.279	0.521	0.945	5.745
Oct	2.760	0.084	0.340	3.184	4.652	0.582	0.987	6.221
Nov	2.569	0.078	0.318	2.965	4.331	0.542	0.922	5.795
Dec	2.443	0.079	0.291	2.814	4.119	0.546	0.845	5.510
Jan	2.407	0.073	0.278	2.758	4.058	0.502	0.806	5.367
Feb	2.303	0.068	0.258	2.628	3.882	0.470	0.748	5.100
Mar	2.690	0.085	0.326	3.101	4.534	0.592	0.945	6.072
Apr	2.697	0.085	0.312	3.094	4.546	0.590	0.906	6.042
May	2.742	0.082	0.340	3.165	4.623	0.570	0.986	6.179
Jun	2.749	0.092	0.350	3.190	4.634	0.638	1.014	6.285
Total	31.094	0.971	3.823	35.888	\$ 52.416	\$ 6.727	\$ 11.087	\$ 70.231

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

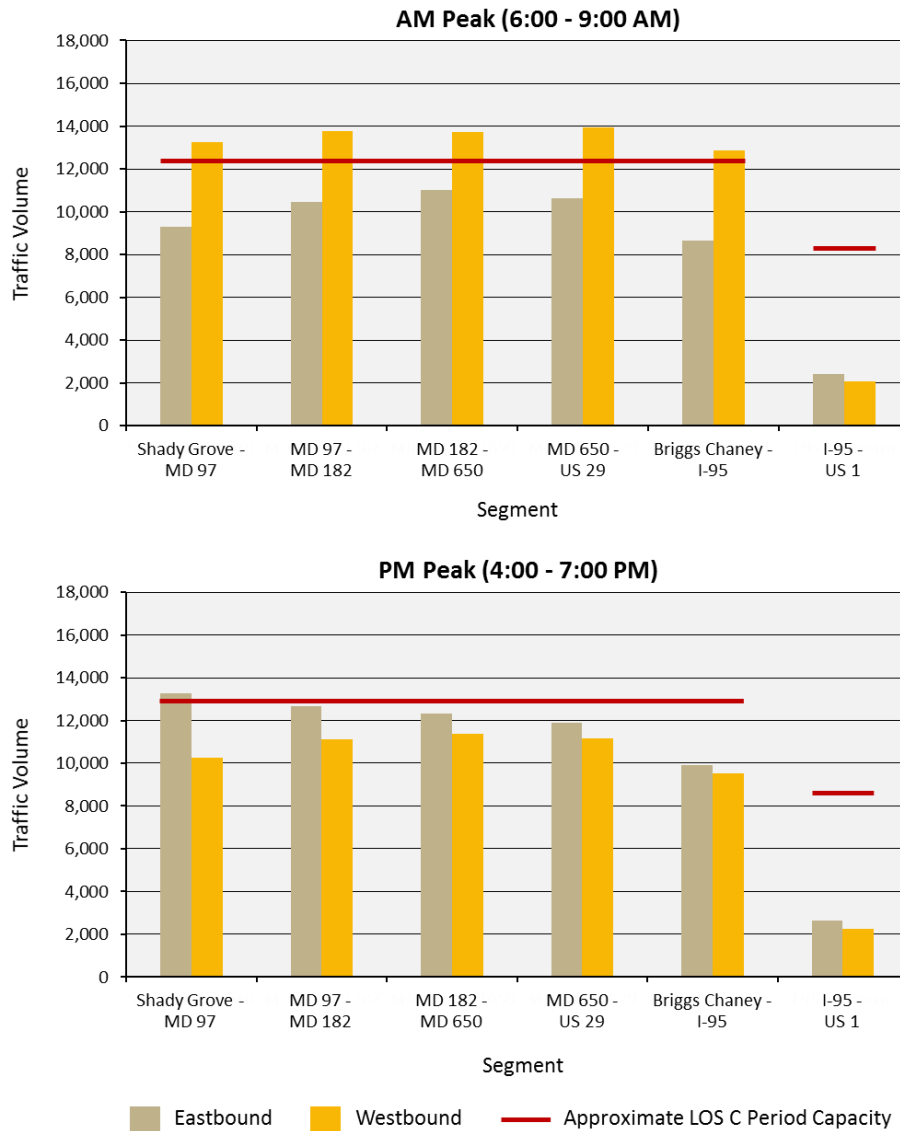
CAPACITY ANALYSIS

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 8,500 and 14,000 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 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 2,500 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 average weekday travel volumes along the ICC mainline travel segments in the peak month of travel, 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 2033 and the eastbound direction between Shady Grove to MD 97 in the PM Peak in FY 2039. However, specific hourly traffic volumes will vary by day and hour within the peaks, and it is probable that the “Level of Service C” threshold will be reached in certain segments, travel directions, and hours sooner than FY 2030.

Note that this capacity analysis does not include potential negative impacts on the ICC due to the proposed I-495 and I-270 Managed Lanes project.



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

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.



Ms. Cheryl Lewis-Orr

November 1, 2018

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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.

Very truly yours,

A handwritten signature in blue ink, appearing to read "Ronald Davis, III".

Ronald Davis, III
Project Manager
CDM Smith Inc.

