

# Maryland Transportation Authority 2015 Traffic and Toll Revenue Forecast Update (Legacy Facilities)



**FINAL REPORT**  
January 2016



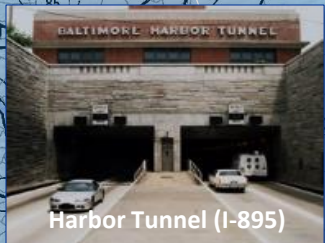
Kennedy Highway (I-95)



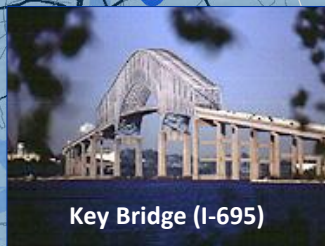
Hattem Bridge (US 40)



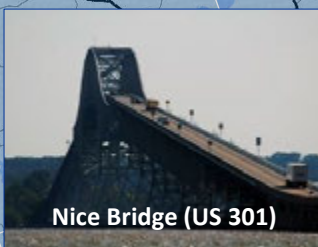
McHenry Tunnel (I-95)



Harbor Tunnel (I-895)



Key Bridge (I-695)



Nice Bridge (US 301)



Bay Bridge (US 50/301)



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# Executive Summary

As the traffic and revenue consultant for the Maryland Transportation Authority (MDTA), CDM Smith conducted a traffic and revenue study for the seven legacy toll facilities operated by the MDTA shown in Figure ES-1. These seven facilities provide critical transportation infrastructure links for both local and regional movement of people and goods, and fulfill varied roles within the local and regional transportation system. Accordingly, they therefore serve a varied mix of passenger car and commercial vehicle traffic that make toll payments by E-ZPass®, video and cash methods. Collectively, these facilities generated \$594.6 million of In-Lane Toll Revenue in Fiscal Year (FY) 2015.

The objective of this study was to develop updated 10-year forecasts for each of the seven legacy facilities. The forecasts, including the impacts associated with toll reductions effective July 1, 2015, covered the period extending from FY 2016, beginning July 1, 2015, through FY 2025, ending June 30, 2025. The study made maximum use of all available data, including historical trend information by vehicle classification and methods of toll payment for each facility. The analysis also included a general overview of socioeconomic trends, both nationally and around the service areas of the tolled facility. A review and update of the socioeconomic and demographic data that help explain travel demand in order to forecast transactions and revenue for each toll facility was also performed.

Transaction and toll revenue forecasts for the Intercounty Connector (ICC/MD 200), the State's first all-electronic, congestion-managed toll road, connecting the I-370 and I-95 corridors and the all-electronic, congestion-managed I-95 Express Toll Lanes<sup>SM</sup> project were not included in this report. Separate traffic and revenue studies have been performed for these facilities.

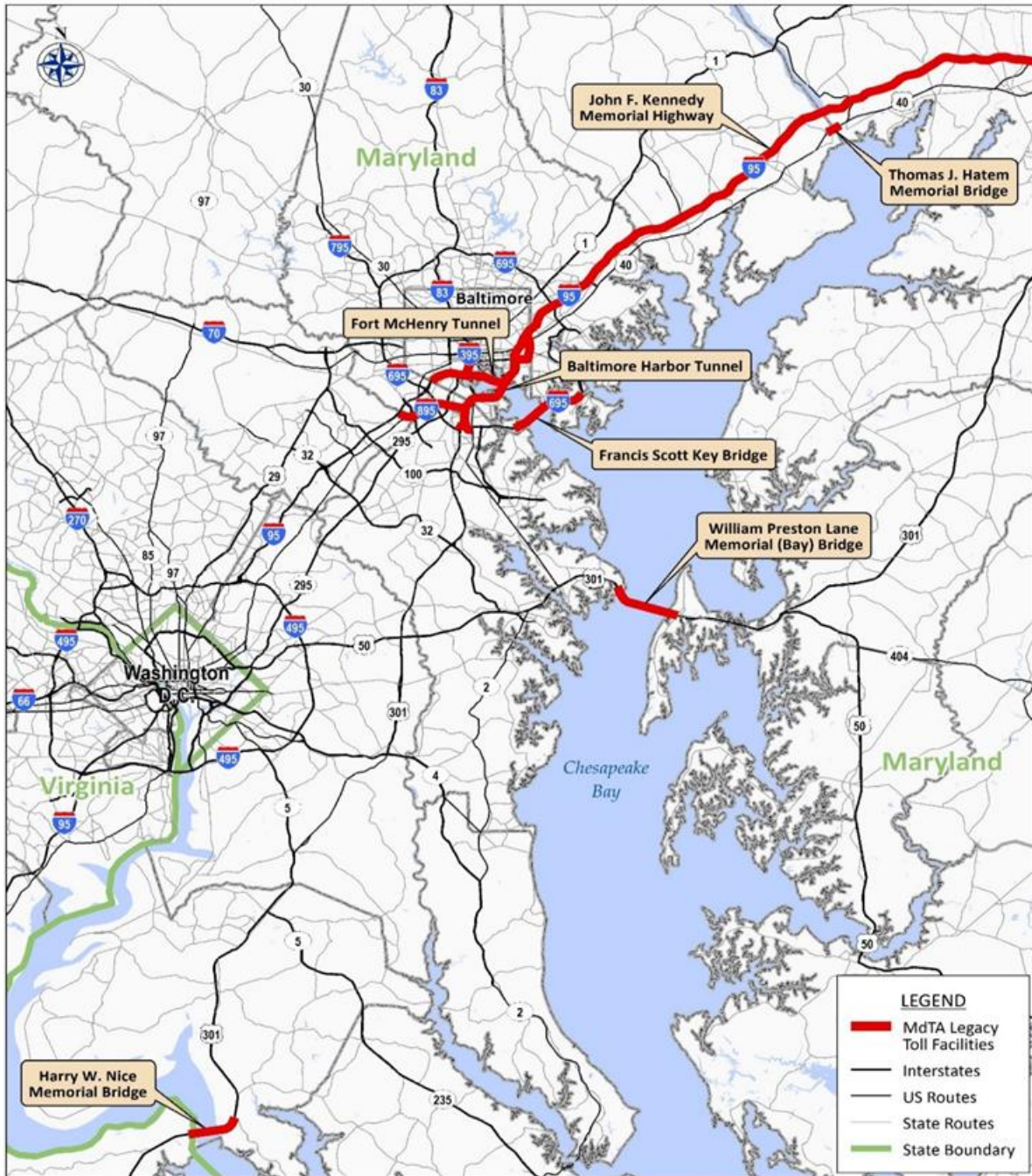
In addition to estimates of transactions and In-Lane Toll Revenue for the seven legacy toll facilities, estimates of "Other Toll Revenue," including concession revenue available to the MDTA were prepared to provide a full picture of revenue potential through FY 2025. While historical and forecasted revenue are provided in Table ES-1, "Other Toll Revenue" by category are provided in Table ES-2, including items such as unused pre-paid toll revenue, transponder sales, fees and discounts.

It should be noted that the forecasts are based on the current toll schedules, with toll reductions implemented on July 1, 2015 and presented in Tables 1-1 through 1-3 of Chapter 1 and in Appendix A of this report. Furthermore, these forecasts assume no toll rate or schedule adjustments will be made throughout the ten year forecast period.

The seven MDTA legacy facilities shown in Figure ES-1 have been grouped into three geographic regions of the state. These are the Northern, Central and Southern Regions. The Northern Region consists of the John F. Kennedy Memorial Highway and the Thomas J. Hatem Bridge; the Central Region the Fort McHenry Tunnel, the Baltimore Harbor Tunnel, and the Francis Scott Key Bridge; and the Southern Region the Harry W. Nice Memorial Bridge and the William Preston Lane Jr. Memorial (Bay) Bridge. All the facilities are on either Interstates or major US routes that cross bodies of water with very limited competing alternative routes.

In the Northern Region, the Thomas J. Hatem Bridge and the John F. Kennedy Memorial Highway form two parallel crossings of the Susquehanna River. The Hatem Bridge carries US 40 across the river and is the oldest of the MDTA's facilities, having been open to traffic since August 1940. The existing

**Figure ES-1  
Legacy Facility Location Map  
Maryland Toll Facilities**





**Table ES-1**  
**Historical and Forecasted Transactions and In-Lane Toll Revenue**

Fiscal Year	Transactions (Millions)								Percent Growth
	JFK	Hatem	BHT	FMT	FSK	Bay	Nice	Total <sup>(1)</sup>	
2005 <sup>(2)</sup>	15.00	5.60	25.50	43.50	12.10	13.00	3.20	<b>117.90</b>	
2006	14.74	5.56	26.26	43.57	11.89	13.27	3.36	<b>118.65</b>	0.6
2007	14.84	5.56	25.74	44.85	12.20	13.49	3.42	<b>120.10</b>	1.2
2008	14.65	5.56	25.77	44.83	12.34	13.37	3.39	<b>119.91</b>	(0.2)
2009	14.64	5.04	25.53	43.45	11.69	12.75	3.35	<b>116.45</b>	(2.9)
2010 <sup>(2)</sup>	14.75	4.99	25.23	44.06	10.96	12.99	3.35	<b>116.33</b>	(0.1)
2011	15.38	5.07	26.12	46.29	11.65	13.56	3.40	<b>121.47</b>	4.4
2012 <sup>(2)</sup>	14.82	5.03	25.75	44.52	11.05	13.63	3.29	<b>118.09</b>	(2.8)
2013 <sup>(2)</sup>	14.58	4.56	23.97	43.58	10.92	12.74	3.26	<b>113.61</b>	(3.8)
2014 <sup>(2)</sup>	14.38	4.95	24.90	41.88	10.42	12.76	3.24	<b>112.53</b>	(1.0)
2015	14.69	5.25	27.10	41.85	10.63	12.86	3.31	<b>115.67</b>	2.8
2016 <sup>(3)</sup>	14.85	5.04	25.86	44.04	11.13	13.12	3.34	<b>117.38</b>	1.5
2017	15.03	5.07	24.69	44.84	11.70	13.27	3.35	<b>117.96</b>	0.5
2018	15.15	5.11	24.50	45.15	11.92	13.38	3.36	<b>118.56</b>	0.5
2019	15.26	5.14	21.30	47.88	12.53	13.45	3.36	<b>118.93</b>	0.3
2020	15.38	5.17	20.96	48.64	12.55	13.55	3.36	<b>119.61</b>	0.6
2021	15.49	5.20	21.01	48.98	12.61	13.64	3.37	<b>120.31</b>	0.6
2022	15.63	5.23	26.17	46.07	11.57	13.74	3.37	<b>121.79</b>	1.2
2023	15.77	5.26	26.22	46.49	11.63	13.85	3.37	<b>122.60</b>	0.7
2024	15.90	5.30	26.28	46.87	11.69	13.96	3.38	<b>123.37</b>	0.6
2025	16.04	5.33	26.33	47.25	11.75	14.07	3.38	<b>124.14</b>	0.6

Fiscal Year	In-Lane Toll Revenue (\$ Millions)								Percent Growth
	JFK	Hatem	BHT	FMT	FSK	Bay	Nice	Total <sup>(1)</sup>	
2005 <sup>(2)</sup>	\$ 94.60	\$ 3.70	\$ 34.70	\$ 82.70	\$ 19.20	\$ 33.50	\$ 10.00	<b>\$ 278.40</b>	
2006	93.50	3.95	35.64	82.39	18.82	34.02	10.48	<b>278.80</b>	0.1
2007	94.62	3.82	35.11	84.68	19.24	34.39	10.43	<b>282.29</b>	1.3
2008	92.71	3.89	35.33	84.03	19.41	33.88	10.08	<b>279.33</b>	(1.0)
2009	95.14	2.07	35.61	82.97	18.56	32.51	9.77	<b>276.63</b>	(1.0)
2010 <sup>(2)</sup>	107.35	2.61	37.01	94.02	20.54	36.79	10.15	<b>308.47</b>	11.5
2011	107.39	2.82	37.85	95.32	20.78	37.62	10.15	<b>311.93</b>	1.1
2012 <sup>(2)</sup>	116.01	5.25	48.74	118.82	25.82	46.74	11.60	<b>372.98</b>	19.6
2013 <sup>(2)</sup>	121.86	7.80	52.05	135.61	28.94	52.40	12.97	<b>411.63</b>	10.4
2014 <sup>(2)</sup>	162.80	10.17	77.56	183.13	40.26	79.76	20.40	<b>574.08</b>	39.5
2015	166.54	11.19	85.54	185.78	42.97	81.16	21.41	<b>594.58</b>	3.6
2016 <sup>(3)</sup>	166.13	10.87	78.17	189.63	43.50	52.30	21.10	<b>561.69</b>	(5.5)
2017	168.19	10.95	74.36	192.12	45.31	52.82	21.34	<b>565.09</b>	0.6
2018	169.54	11.01	73.35	193.03	46.24	53.17	21.49	<b>567.82</b>	0.5
2019	170.53	11.06	62.08	203.52	48.37	53.44	21.54	<b>570.54</b>	0.5
2020	171.68	11.09	60.87	206.07	48.46	53.76	21.62	<b>573.55</b>	0.5
2021	172.84	11.13	61.04	207.18	48.68	54.08	21.70	<b>576.64</b>	0.5
2022	174.25	11.16	79.11	194.98	45.13	54.44	21.80	<b>580.86</b>	0.7
2023	175.67	11.20	79.28	196.07	45.36	54.80	21.90	<b>584.27</b>	0.6
2024	177.03	11.23	79.44	197.05	45.58	55.17	21.97	<b>587.47</b>	0.5
2025	178.41	11.27	79.60	198.04	45.81	55.53	22.05	<b>590.70</b>	0.5

<sup>(1)</sup> Summations may not equal total due to rounding.

<sup>(2)</sup> Year of toll increase.

<sup>(3)</sup> Year of toll decrease.

- Represents actual data.

**Table ES-2  
Historical and Forecasted In-Lane and "Other" Toll Revenue**

Fiscal Year	In-Lane Toll Revenue (\$ millions)	"Other Toll Revenue" (\$ millions)															
		Legacy Facilities							New Facilities "Other Toll Revenue" (5)								
		Service Fees and Sales			Violation Recovery				Commercial Vehicles			Service Fees and Sales				Violation Recovery	
	Unused Pre-Paid Trip Revenue	Transponder Sales	Monthly Account Fees	Hatm E-Z Pass Program	Notice of Toll Due Fees	Civil Penalties (3)	Violation Fees	Post-Usage Discount	High Frequency Discount	Over-size Permit Fee	Concession Revenue (4)	Transponder Sales	Monthly Account Fees	Violation Fees	Civil Penalties	Total "Other Toll Revenue" (3)	Total Revenue (6)
2004 (1)	\$ 251.30	\$ 2.00	-	\$ -	\$ -	\$ -	\$ 0.80	\$ (2.30)	\$ -	\$ -	\$ 8.10	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 259.90
2005 (1)	278.40	2.80	-	-	-	-	1.50	(3.90)	-	-	8.00	-	-	-	-	-	286.80
2006	278.80	3.50	-	-	-	-	2.80	(4.50)	-	-	7.80	-	-	-	-	-	288.40
2007	282.29	4.00	-	-	-	-	3.00	(4.80)	-	-	8.10	-	-	-	-	-	292.59
2008	279.33	4.30	-	-	-	-	3.00	(5.00)	-	-	8.00	-	-	-	-	-	289.63
2009	276.63	4.50	-	-	-	-	1.90	(4.80)	-	-	8.00	-	-	-	-	-	286.23
2010 (1)	308.47	6.60	1.40	9.60	-	1.10	2.30	(6.60)	(0.20)	1.00	8.20	-	-	-	-	-	331.87
2011	311.93	6.50	1.90	9.90	-	1.30	1.30	(6.70)	(0.30)	1.20	7.90	-	-	-	-	-	334.93
2012 (1)	372.98	9.10	1.70	4.70	0.30	0.80	2.80	(5.90)	(0.20)	1.30	7.60	-	-	-	-	-	395.18
2013 (1)	411.63	11.50	1.30	5.30	0.80	0.10	4.00	(4.60)	(0.70)	1.30	4.10	-	-	-	-	-	434.73
2014 (1)	574.08	18.69	1.22	5.75	1.49	-	4.55	(5.89)	(0.64)	1.04	3.23	0.16	0.76	0.10	2.35	32.85	606.93
2015	594.58	16.81	1.44	5.87	1.52	-	10.75	(6.34)	(0.62)	1.15	5.07	0.19	0.79	0.01	5.73	42.38	636.96
2016 (2)	561.69	16.90	1.45	-	1.53	-	7.39	(6.37)	(0.98)	1.16	5.72	0.20	-	-	3.97	30.96	592.65
2017	565.09	16.98	1.45	-	1.54	-	8.14	(6.40)	(0.99)	1.17	5.80	0.20	-	-	4.35	32.25	597.34
2018	567.82	17.07	1.46	-	1.55	-	8.22	(6.43)	(0.99)	1.19	5.87	0.20	-	-	4.37	32.50	600.32
2019	570.54	17.15	1.47	-	1.55	-	8.31	(6.46)	(1.00)	1.20	5.95	0.20	-	-	4.39	32.76	603.30
2020	573.55	17.24	1.48	-	1.56	-	8.39	(6.50)	(1.00)	1.21	6.03	0.20	-	-	4.41	33.02	606.57
2021	576.64	17.33	1.48	-	1.57	-	8.47	(6.53)	(1.01)	1.22	6.10	0.20	-	-	4.43	33.28	609.92
2022	580.86	17.41	1.49	-	1.58	-	8.56	(6.56)	(1.01)	1.23	6.48	0.20	-	-	4.46	33.84	614.70
2023	584.27	17.50	1.50	-	1.58	-	8.64	(6.59)	(1.02)	1.25	7.38	0.20	-	-	4.48	34.93	619.20
2024	587.47	17.59	1.51	-	1.59	-	8.73	(6.63)	(1.02)	1.26	7.48	0.20	-	-	4.50	35.21	622.68
2025	590.70	17.67	1.51	-	1.60	-	8.82	(6.66)	(1.03)	1.27	7.58	0.20	-	-	4.52	35.50	626.20

Source: Historical data from MdtA

(1) Year of toll increase.

(2) Year of toll decrease.

(3) Civil Penalties actuals and estimates provided by MDTA.

(4) Concession Revenue Forecast is 87% of the estimated concession revenue as previously prepared by Areas Inc.

(5) InterCounty Connector and I-95 ETLs

(6) Summations may not equal total revenue due to rounding.

- Represents actual data.

structure replaced an older bridge that first opened in 1910. The John F. Kennedy Memorial Highway is a 50-mile segment of I-95 that was opened in November 1963. The mainline toll plaza is located just east of the Susquehanna River.

The Central Region contains three alternative routes that cross Baltimore Harbor: the Baltimore Harbor Tunnel (I-895), the Francis Scott Key Bridge (I-695), and the Fort McHenry Tunnel (I-95). The oldest of the three Baltimore Harbor crossings is the Harbor Tunnel which opened in November 1957. The Key Bridge was built to alleviate congestion and delays at the Harbor Tunnel and was opened in March 1977. The newest MDTA facility, the McHenry Tunnel, an eight-lane, 1.5 mile crossing that opened in November 1985, completed the triplet of existing harbor crossings.

The Southern Region contains two facilities which carry US 301 to diverse destinations. The William Preston Lane Jr. Memorial (Bay) Bridge was first opened to traffic in July 1952 and crosses the Chesapeake Bay. Twenty-one years later in June 1973, a parallel span carrying westbound traffic was opened, with the original span carrying eastbound traffic. The Harry W. Nice Bridge was opened in December 1940, connecting Maryland with Virginia, thereby allowing travelers making regional through-trips to bypass the Washington DC area.

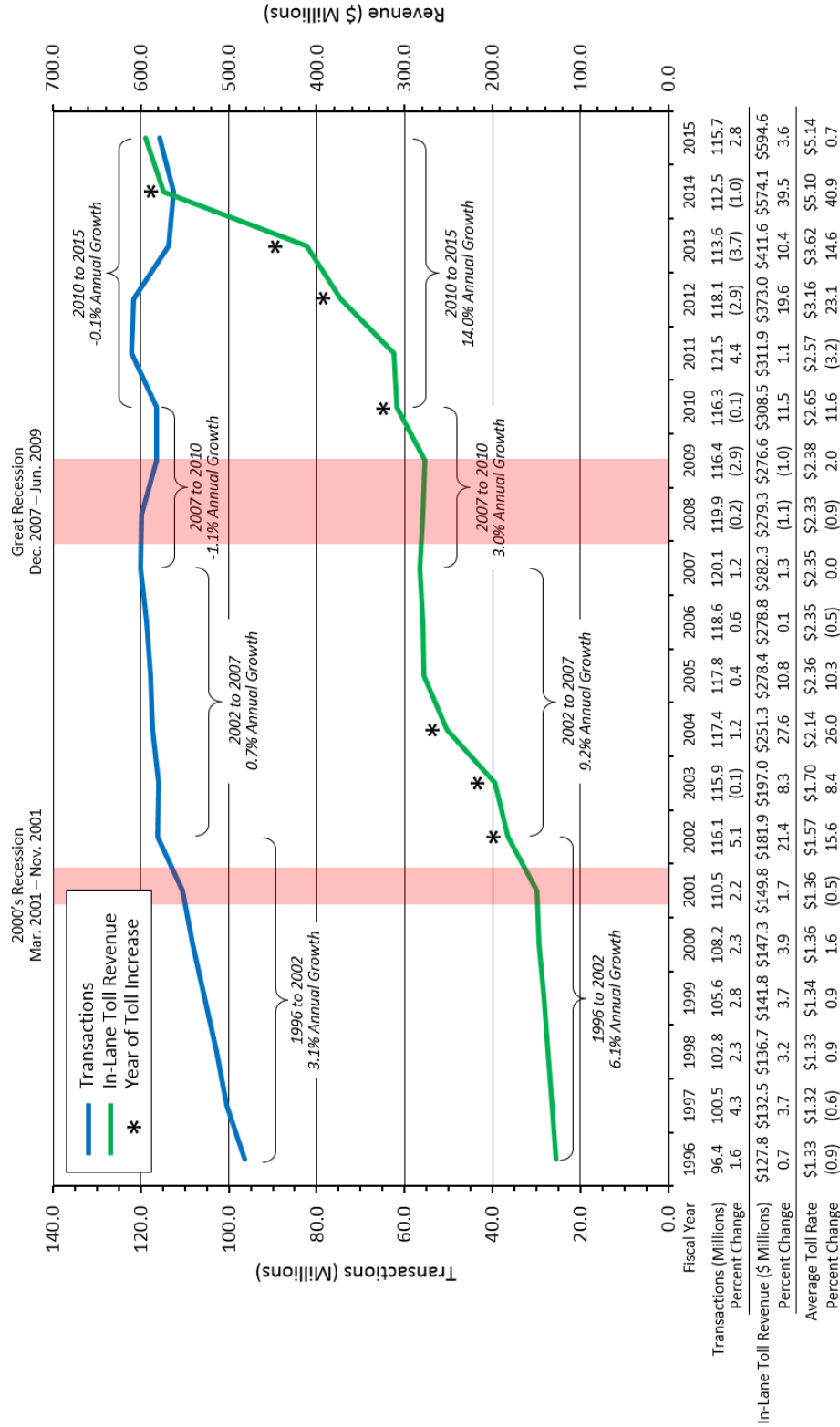
What follows in this executive summary is an overview of the full study effort including a review of historical transaction and revenue trends, relevant socioeconomic conditions, and the 10-year transaction and revenue forecasts.

## Historical Transaction and Revenue Trends

In the course of our work, a complete set of available historical traffic and economic data sets were compiled. Historical transaction and revenue trend data provided by the MDTA for each of the seven legacy toll facilities were reviewed, including regional traffic trends on adjacent competing highways. Regional trends were reviewed to better understand the context within which the MDTA facilities operate, including vehicle miles traveled (VMT) for Maryland and traffic counts on other major highways. Historical transaction and revenue trends for each of the legacy facilities were reviewed, as these trends served as inputs to the regression model used for developing the 10-year transaction and revenue forecasts. Additionally, E-ZPass® market penetration rates and vehicle classification distributions were also reviewed.

While transaction and revenue trends were reviewed for each facility, historical transaction and revenue data on a system-wide basis between FY 1996 and FY 2015 are described below and presented in Figure ES-2. Also shown in Figure ES-2 is the duration of recent recessions, as well as the year in which toll increases occurred. Even considering the recession which began in late FY 2001 and extended almost half way into FY 2002, transactions on a system-wide basis increased each year between FY 1996 and FY 2002 at a healthy average annual rate of 3.1 percent. However, during the five years from FY 2002 through FY 2007 which followed, transaction growth slowed to an average of 0.7 percent per annum. While this period predated the Great Recession, growth was likely influenced by the three toll increases which occurred in each year from FY 2002 through FY 2004. Following this period of continued annual growth (except for FY 2003), transactions declined between FY 2007 and FY 2010 by an average of 1.1 percent per year, most likely due to the impacts of the Great Recession and the FY 2010 toll increase. Transactions recovered in FY 2011, reaching a system high of 121.5 million, before decreasing annually through FY 2014 as a result of the toll increases which occurred each year from FY 2012 through FY 2014. Transactions rose by 2.8 percent in FY 2015 to 115.7

**Figure ES-2**  
**Systemwide Historical Transaction and Revenue Trends**  
**FY 1996 through FY 2015**



million. This higher level of growth is most likely due to the delayed recovery from the Great Recession of 2008-2009. Average annual transaction growth for the MDTA legacy facilities on a systemwide basis was 1.0 percent per year during the 19-year period from FY 1996 to FY 2015. However, during the last five years between FY 2010 and FY 2015, transactions decreased an average annual rate of 0.1 percent.

Systemwide, In-Lane Toll Revenue increased each year between FY 1996 and FY 2015, except in FY 2008 and FY 2009. As shown in Figure ES-2, between FY 1996 and FY 2002, toll revenue grew at an average annual rate of 6.1 percent, the result of the 3.1 percent per annum increase in transactions, combined with a 2.8 percent per annum growth in the average toll; the latter influenced almost exclusively by the FY 2002 toll increase. Over the next five years, a series of toll increases resulted in an average annual revenue increase of 9.2 percent per year. As a result of the decreases in transaction growth related to the Great Recession, revenues declined in FY 2008 by 1.1 percent and in FY 2009 by 1.0 percent. However, due to the FY 2010 toll increase, toll revenue between FY 2007 and FY 2010 grew at an average annual rate of 3.0 percent. Revenues have recovered in recent years, aided by a series of toll increases. Revenues were \$594.6 million in FY 2015, representing an average annual growth rate since FY 2010 of 14.0 percent. Overall, the average annual In-Lane Toll Revenue growth was 8.4 percent per year between FY 1996 and FY 2015.

As indicated in the two preceding paragraphs, legacy facility In-Lane Toll Revenues have increased significantly more than growth in transactions because of the adjustments to toll rates in recent years. Had these toll rate adjustments not been made, it is reasonable to assume that transactions might have been higher than has occurred, while growth in In-Lane Toll Revenue would have more closely tracked the rate of growth in transactions. Long-term historical growth, based on the historical transaction and revenue data during years without toll rate increases or economic downturns, was estimated to be roughly 0.5 percent per year.

## Socioeconomic Review

Economic growth is an important driving force for the region and is also linked with traffic growth. The growth in regional population and employment will tend to lead to an increase in traffic volumes for commuting purposes, as well as for other activities like shopping and recreation. Data for gross regional product, both state and the Baltimore region, were procured as a measure to reflect the relationship with the increasing trend of toll transactions at the legacy facilities. Historic and forecast data were also obtained from the United States Census Bureau, the United States Bureau of Economic Analysis (BEA), the United States Bureau Energy Information Administration (EIA), Maryland State Data Center (MD SDC), Woods & Poole Economics (W&P), and Moody's Analytics for population, employment, gross regional product (GRP), and gasoline prices, which were used for evaluation of the inputs used in deriving traffic growth forecasts as a function of these measures.

The econometric models developed and used for the traffic growth forecasts in the March 2015 traffic and revenue study sought to establish correlative relationships between various independent variables (such as population, employment, GRP, etc.) and the dependent variable (transactions). The selected independent variables were then used in the forecasting process together with the available-at-the-time future year forecast data. In some cases adjustments that would have a more local effect on the traffic volumes of the toll facilities were also incorporated. This included localized construction impacts associated with major planned highway improvements.

The latest historical and forecasts of socioeconomic/independent variable-related data were collected and analyzed in this update, with the findings summarized in Chapter 3. As a result of this analysis, it was concluded that the latest socioeconomic growth projections for the next 10 years are nearly the same or slightly slower than those developed for the earlier forecasts. Consequently, based on the econometric regression analysis, combined with updated forecasts of the explanatory socioeconomic variables, updated growth projections were developed. This update resulted in only minor adjustments, mostly based on the newly-released historical transaction data, to the early years of the forecast. These updated growth forecasts were incorporated into the traffic and toll revenue forecast model.

## Forecasts of Traffic and Revenue

A summary of both historical and forecasted transactions and In-Lane Toll Revenue from FY 2005 through FY 2025 by facility and aggregated to the total MDTA system is presented in Table ES-1 and shown graphically in Figure ES-3. The forecasts are also provided by facility and vehicle class in Appendix B. In FY 2016, the initial year of the forecast, transactions of 117.4 million have been forecasted, a 1.5 percent increase over FY 2015. In-Lane Toll Revenues are estimated at \$561.7 million, a 5.5 percent decrease over FY 2015. Without the July 1, 2015 toll decrease, transactions were estimated at 117.2 million, an annual growth rate of 1.3 percent, while In-Lane Toll Revenues were estimated at \$600.7 million, an increase of 1.0 percent. This “normal” growth rate is consistent with recent observed historical growth trends on the MDTA legacy facilities in years without toll increases or economic downturns. The impacts of the FY 2016 toll decrease are carried forward through the forecast period. Following the robust transaction and revenue increases in FY 2015, which were heavily influenced by historically low gas prices and the delayed economic recovery, transaction and revenue growth rates going forward were estimated to increase at more moderate rates ranging from 0.5 to 1.5 percent, consistent with long-term historical trends. Total transactions are forecasted to grow to 124.1 million by FY 2025, or a total of 5.7 percent during the forecast period. This equates to a growth rate of 0.6 percent per annum. In-Lane Toll Revenue follows similar growth trends, increasing by a total of 5.2 percent from \$561.7 million in FY 2016 to \$590.7 million in FY 2025, equating to an average annual change of 0.6 percent.

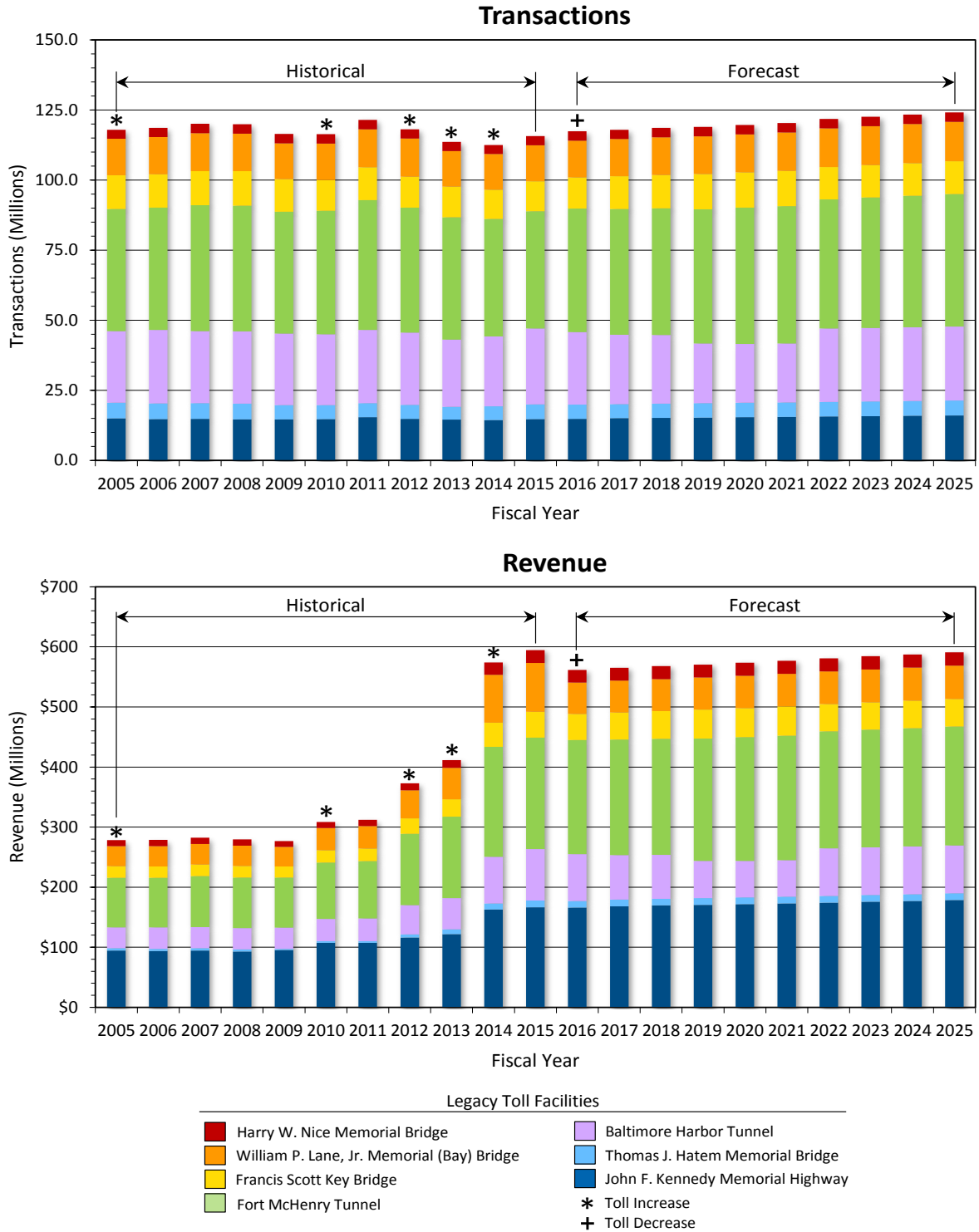
In addition to the forecasted transactions and In-Lane Toll Revenue, forecasts of various “Other Toll Revenue” sources for the MDTA were developed. These include unused toll revenue through the commuter program, transponder sales, civil penalties, commercial discounts, over-size permits, concession revenue and revenue associated with the Hatem E-Z Pass program. The “Other Toll Revenue” forecasts, along with In-Lane and total revenue are provided in Table ES-2.

## Forecast Comparison

In order to set the context for the current forecast, this section provides a comparison of prior revenue forecasts to the actual revenue collected by MDTA, as well as a comparison of the most recent prior forecast to the current forecast.

Table ES-3 provides prior forecasts of In-Lane Toll Revenue and Total Revenue from FY 2010 through FY 2015, as well as the actual In-Lane Toll Revenue and Total Revenue collected by MDTA. In general, this table provides an indication of the reasonableness of recent forecasts. The table identifies the year the forecast was prepared, the fiscal year being forecasted and the accuracy of those forecasts for both In-Lane Toll Revenue and Total Revenue. Actual revenue has always been higher than the forecasts,

**Figure ES-3**  
**Historical and Forecasted Transactions and In-Lane Toll Revenue**



**Table ES-3**  
**Comparison of MDTA Forecasted versus Actual Revenue, FY 2010 through FY 2015**

Year Forecast Prepared	Fiscal Year Forecasted	Forecast		Actual		Percent Difference	
		In-Lane Toll	Total	In-Lane Toll	Total	In-Lane Toll	Total
		Revenue	Revenue	Revenue	Revenue	Revenue	Revenue
2009	<sup>(1)</sup> 2010	\$ 294.4	\$ 315.3	\$ 308.5	\$ 331.8	4.8	5.2
2009	<sup>(1)</sup> 2011	295.6	315.9	312.0	335.0	5.5	6.0
2010	<sup>(1)</sup> 2011	307.6	331.0	312.0	335.0	1.4	1.2
2011	<sup>(1)</sup> 2012	367.1	387.2	373.0	395.2	1.6	2.1
2011	<sup>(1)</sup> 2013	409.0	425.9	411.6	434.7	0.6	2.1
2012	<sup>(1)</sup> 2013	411.4	434.4	411.6	434.7	0.0	0.1
2013	<sup>(1)</sup> 2014	540.3	570.3	574.1	606.9	6.3	6.4
2014	<sup>(2)</sup> 2015	575.1	611.1	594.6	637.0	3.4	4.2

<sup>(1)</sup> Forecasts prepared by others.  
<sup>(2)</sup> Forecasts prepared by CDM Smith.

with the most recent fiscal year, FY 2015, being 4.2 percent above the forecast. This higher level of growth is most likely due to the delayed recovery from the Great Recession of 2008-2009.

Table ES-4 provides a comparison of the last 10-year forecast for legacy facilities (prepared in November 2014 prior to consideration of any toll rate reductions), to the current 2015 forecast which includes the estimated impact of the July 1, 2015 toll reductions. These forecasts include both In-Lane and "Other" Toll Revenue. Highlighted in blue is the 2015 actual total revenue collected, which was 4.9 percent or \$30.0 million higher than the forecast. The latest forecast of total revenue, including the toll reduction impacts, is 2.6 percent or \$161.5 million lower from FY 2015 to FY 2024.

Table ES-5 provides the estimated impact of the toll rate and fee reductions to MDTA legacy facility In-Lane Toll Revenue over the ten-year forecast period. Presented are forecasts both with and without the July 1, 2015 toll reductions. With the toll reductions, the estimated FY 2016 systemwide revenue is \$561.7 million or \$39.0 million less than if the toll reductions had not been implemented. The revenue difference increases to an estimated -\$41.4 million by FY 2025. Through the ten-year period the change in legacy facility revenues is approximately \$401 million.


The July 1, 2015 decreases in toll rates also affected In-Lane Toll Revenue on the Intercounty Connector and the I-95 Express Toll Lanes project, which are not the subject of this report.



**Table ES-4**  
**Comparison of 2014 versus 2015 Forecasts**  
**of Total Revenue (In-Lane and "Other" Toll Revenue)**

Fiscal Year	Total Revenue			
	2014 Forecast	2015 Forecast <sup>(1)</sup>	Difference	Percent Difference
2015	\$ 607.0	\$ 637.0	\$ 30.0	4.9
2016	610.9	592.6	(18.2)	(3.0)
2017	615.5	597.3	(18.2)	(3.0)
2018	619.6	600.3	(19.3)	(3.1)
2019	623.0	603.3	(19.8)	(3.2)
2020	626.5	606.6	(20.0)	(3.2)
2021	633.6	609.9	(23.7)	(3.7)
2022	638.2	614.7	(23.5)	(3.7)
2023	643.3	619.2	(24.1)	(3.7)
2024	647.3	622.7	(24.6)	(3.8)
<b>Total</b>	<b>\$ 6,265.0</b>	<b>\$ 6,103.6</b>	<b>(161.5)</b>	<b>(2.6)</b>

<sup>(1)</sup> The 2015 forecast includes the estimated reduction impacts of the July 1, 2015 toll rate reduction.

 - Represents actual data.

**Table ES-5**  
**Comparison of Legacy Facility In-Lane Toll Revenue Estimates**  
**Toll Reduction versus No Toll Reduction**

Fiscal Year	Toll Reduction		Revenue Impact	
	Without	With	Numeric	Percent
2015	\$ 594.6	\$ 594.6	\$ -	
2016	600.7	561.7	(39.0)	(6.5)
2017	604.4	565.1	(39.3)	(6.5)
2018	607.4	567.8	(39.5)	(6.5)
2019	610.1	570.5	(39.6)	(6.5)
2020	613.4	573.5	(39.8)	(6.5)
2021	616.7	576.6	(40.1)	(6.5)
2022	621.5	580.9	(40.6)	(6.5)
2023	625.1	584.3	(40.9)	(6.5)
2024	628.6	587.5	(41.2)	(6.5)
2025	632.1	590.7	(41.4)	(6.6)
<b>Total</b>	<b>\$ 6,754.6</b>	<b>\$ 6,353.2</b>	<b>(401.4)</b>	

# Chapter 1

## Introduction

Under contract to the Maryland Transportation Authority (MDTA), CDM Smith conducted a Traffic and Revenue Update Study for the legacy bridges, tunnels, and highways currently operated by the MDTA. The study culminated in the development of 10-year transaction and revenue estimates for each facility through FY 2025. This report summarizes the study analysis, including a presentation of historical and current traffic trends, relevant socioeconomic conditions and forecasts, traffic and revenue impacts associated with select toll reductions implemented July 1, 2015, and the 10-year transaction and revenue forecasts.

### 1.1 System Description and History

The seven legacy toll facilities currently owned and operated by the MDTA include:

- Thomas J. Hatem Memorial Bridge (Hatem Bridge)
- John F. Kennedy Memorial Highway, excluding the Express Toll Lanes (Kennedy Highway)
- Baltimore Harbor Tunnel (Harbor Tunnel)
- Fort McHenry Tunnel (Fort McHenry Tunnel)
- Francis Scott Key Bridge (Key Bridge)
- William Preston Lane Jr. Memorial Bridge (Bay Bridge)
- Harry W. Nice Memorial Bridge (Nice Bridge)

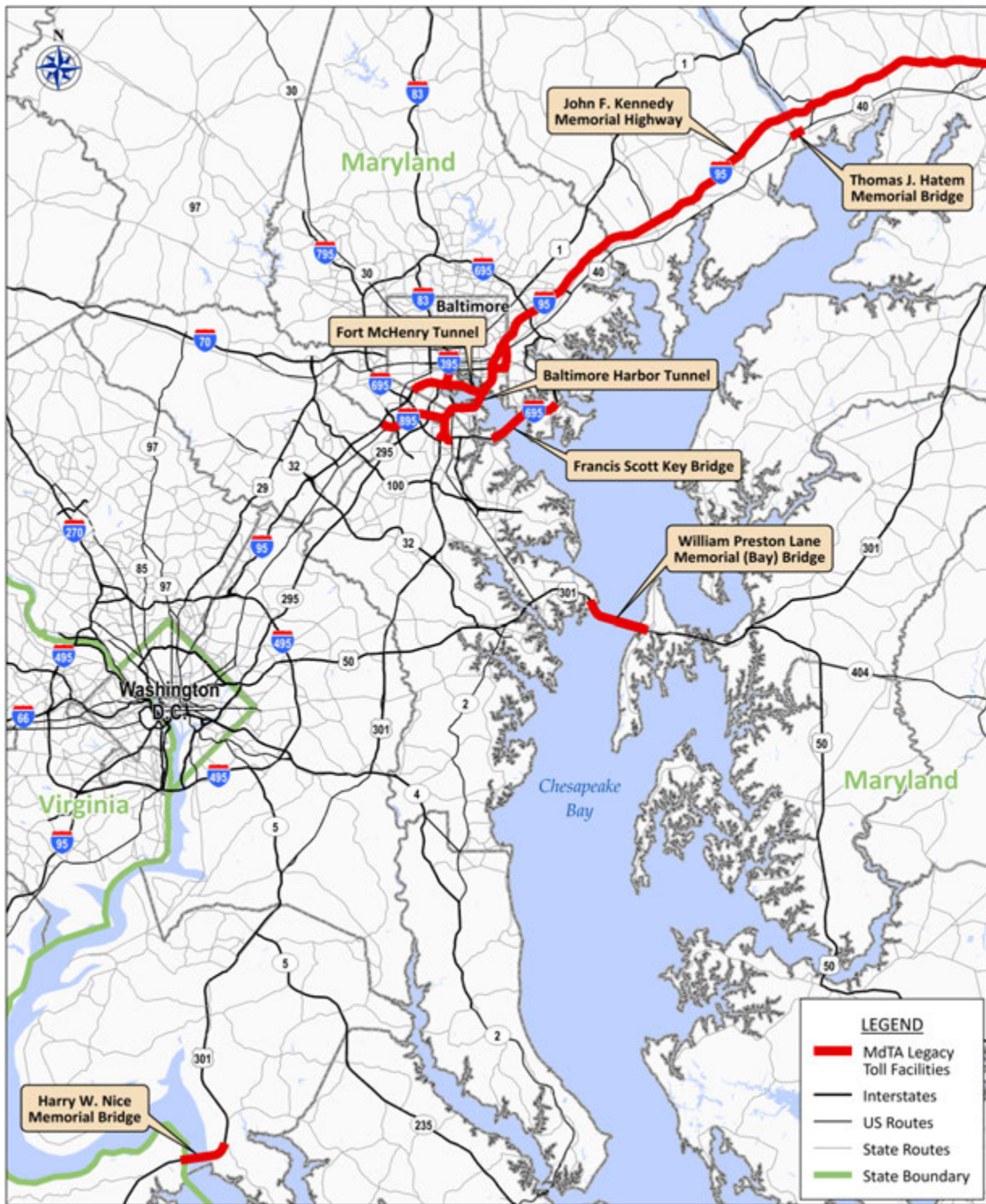
The Intercounty Connector (ICC/MD 200), the State's first all-electronic, congestion-managed toll road connecting the I-370 and I-95 corridors and the all-electronic congestion-managed I-95 Express Toll Lanes<sup>SM</sup> project are *not addressed* in this report. Separate traffic and revenue studies have been performed for these facilities.

The objective of this analysis was to develop updated 10-year forecasts for each of the seven legacy facilities following the introduction of select toll rate decreases, the specifics of which are detailed later in this chapter. The forecast period extends from FY 2016, beginning July 1, 2015, through FY 2025, ending June 30, 2025. The study made maximum use of all available data, including historical traffic trend information by vehicle category and method of toll payment for each facility. The analysis also includes a general overview of economic trends, both nationally and within the service areas of each facility.

#### 1.1.1 System Description

Figure 1-1 shows the locations of the seven MDTA legacy facilities in a regional context. The legacy facilities fulfill varied roles within the local and regional transportation system and consequently have a mix of traffic, including both E-ZPass<sup>®</sup>, video and cash customers. Collectively, these facilities generated \$594.6 million of In-Lane Toll Revenue in FY 2015.

**Figure 1-1**  
**Legacy Facility Location Map**  
**Maryland Toll Facilities**



The MDTA has separated the seven toll facilities into three regions. The Northern Region consists of the John F. Kennedy Memorial Highway and the Thomas J. Hatem Bridge. The Central Region consists of the Fort McHenry Tunnel, the Baltimore Harbor Tunnel, and the Francis Scott Key Bridge. The Southern Region consists of the Harry W. Nice Memorial Bridge and the William Preston Lane Jr. Memorial (Bay) Bridge.

In the Northern Region, the Thomas J. Hatem Bridge and the John F. Kennedy Memorial Highway form two parallel crossings of the Susquehanna River. The Hatem Bridge carries US 40 across the river and is the oldest of the MDTA's facilities, having been open to traffic since August 1940. The existing structure replaced an older bridge that first opened in 1910. The John F. Kennedy Memorial Highway is a 50-mile segment of I-95 that was opened in November 1963. The mainline toll plaza is located just northeast of the Susquehanna River.

The Central Region contains three alternative routes that cross Baltimore Harbor: the Baltimore Harbor Tunnel (I-895), the Francis Scott Key Bridge (I-695), and the Fort McHenry Tunnel (I-95). The oldest of the three Baltimore Harbor crossings is the Harbor Tunnel which opened in November 1957. The Key Bridge was built to alleviate congestion and delays at the Harbor Tunnel and was opened in March 1977. The newest of these facilities, the Fort McHenry Tunnel, an eight-lane crossing that opened in November 1985, completed the triplet of existing harbor crossings.

The Southern Region contains two facilities which carry US 301 to diverse destinations. The William Preston Lane Jr. Memorial (Bay) Bridge was first opened to traffic in July 1952 and crosses the Chesapeake Bay. Twenty-one years later in June 1973, a parallel span carrying westbound traffic was opened, with the original span carrying eastbound traffic. The Harry W. Nice Bridge was opened in December 1940, connecting Maryland with Virginia, thereby allowing travelers making regional through-trips to bypass the Washington DC area.

### 1.1.2 Toll Rate Structure and History

An understanding of the structure of payment options for MDTA customers was necessary in developing the traffic and revenue forecasts. Since different method of payment categories tend to have different travel patterns, values of time and trip frequencies, the traffic and revenue forecasts were also developed by method of payment category. This necessitated an understanding of the various payment options offered by MDTA, a summary of which is provided here.

MDTA customers have the option of paying their toll through a variety of toll payment options. The MDTA legacy facility customers can pay via E-ZPass®, video tolling or cash methods. In general, Maryland registered E-ZPass® customers receive a discount over cash customers, while E-ZPass® customers with transponders from out-of-state pay the same base toll rate as the cash customers. Video tolling customers pay a 50 percent surcharge over the base toll rate. MDTA also offers several discount programs for commuters, shoppers using the Bay Bridge, motorists using the Hatem Bridge, and high volume and frequent-user commercial vehicle accounts. Some of these discounts are substantial, such as the Hatem Discount Plans, which provide customers with unlimited trips on the Hatem Bridge for a flat annual fee of \$20. The current toll schedule including select toll reductions effective on July 1, 2015 are provided by Region in Tables 1-1 through 1-3.

The two Northern Region facilities employ a one-way toll collection system; that is round-trip tolls are collected in the eastbound and northbound directions only. Hence, the round-trip tolls are generally the same as those of the Central Region toll facilities. The base toll is \$8.00 for passenger cars, with a video toll of \$12.00 including a 50 percent surcharge. Maryland two-axle, E-ZPass® customers receive

**Table 1-1  
Northern Region Tolls**

Method of Payment	Vehicle Class	John F. Kennedy Memorial Highway (I-95)		Thomas J. Hatem Memorial Bridge (US 40) <sup>(1)</sup>	
		Before	After	Before	After
		July 1, 2015	July 1, 2015	July 1, 2015	July 1, 2015
Maryland E-Zpass	Commuter, 2-axes <sup>(2)</sup>	\$2.80	**	\$2.80	\$2.80
	Class 2 2-axes	\$7.20	\$6.00	\$7.20	\$6.00
	Class 3 3-axes	\$16.00	**	\$16.00	\$11.20
	Class 4 4-axes	\$24.00	**	\$24.00	\$16.80
	Class 5 5-axes <sup>(3)(4)</sup>	\$48.00	**	\$48.00	**
	Class 6 6+-axes <sup>(3)(4)</sup>	\$60.00	**	\$60.00	**
Cash / Base	Class 2 2-axes	\$8.00	**	\$8.00	**
	Class 3 3-axes	\$16.00	**	\$16.00	**
	Class 4 4-axes	\$24.00	**	\$24.00	**
	Class 5 5-axes	\$48.00	**	\$48.00	**
	Class 6 6+-axes	\$60.00	**	\$60.00	**
	Video	Class 2 2-axes	\$12.00	**	\$12.00
Class 3 3-axes		\$24.00	**	\$24.00	**
Class 4 4-axes		\$36.00	**	\$36.00	**
Class 5 5-axes		\$63.00	**	\$63.00	**
Class 6 6+-axes		\$75.00	**	\$75.00	**

\*\* Indicates no change from previous toll rate.

**Notes:**

<sup>(1)</sup> Two E-Zpass Hatem Bridge plans were made available as of Sept. 30, 2012:

- The first replaced the Hatem Bridge AVI Decal Program and was offered for two-axle vehicles only with an existing valid transponder beginning Feb. 1, 2012, providing unlimited trips on the Hatem Bridge only. The plan cost \$10 beginning on Feb. 1, 2012 and increased to \$20 on July 1, 2013.
- The second plan opened The Hatem Bridge-Only Plan to existing or new E-Zpass Maryland customers. The primary difference is that accounts under the second plan are subject to account and transponder fees and pre-paid toll deposits, while those under the first plan are not.

<sup>(2)</sup> Commuter rates are for two-axle vehicles with a Maryland E-ZPass Commuter Plan, which includes 50 trips and costs \$70.00. Two "trips" are required per transaction for the Northern Region facilities per trip. All commuter plans (E-ZPass) are valid for 45 days.

<sup>(3)</sup> Business accounts operating five-or-more-axle vehicles may qualify for an E-ZPass post-usage discount based on the tolls paid in every 30-day period, with a 10 percent discount offered for total monthly tolls of \$150.00 to \$1,999.99, 15 percent for total monthly tolls of \$2,000.00 to \$7,500.00 and 20 percent for total monthly tolls of over \$7,500.00.

<sup>(4)</sup> A supplemental rebate program is offered to five-or-more-axle vehicles with individual transponders making 60 or more trips per month. As of July 1, 2015, a 10 percent discount is offered for five- or more-axle vehicle transponders making 60-79 trips per month, 15 percent for 80-99 trips per month, and 20 percent for 100 or more per month.

**Table 1-2  
Central Region Tolls**

Method of Payment	Vehicle Class	Baltimore Harbor Tunnel (I-895), Fort McHenry Tunnel (I-95/I-395) and Francis Scott Key Bridge (I-695)	
		Before	After
		July 1, 2015	July 1, 2015
Maryland E-Zpass	Commuter, 2-axes <sup>(1)</sup>	\$1.40	**
	Class 2 2-axes	\$3.60	\$3.00
	Class 3 3-axes	\$8.00	**
	Class 4 4-axes	\$12.00	**
	Class 5 5-axes <sup>(2)(3)</sup>	\$24.00	**
	Class 6 6+-axes <sup>(2)(3)</sup>	\$30.00	**
Cash / Base	Class 2 2-axes	\$4.00	**
	Class 3 3-axes	\$8.00	**
	Class 4 4-axes	\$12.00	**
	Class 5 5-axes	\$24.00	**
	Class 6 6+-axes	\$30.00	**
	Video	Class 2 2-axes	\$6.00
Class 3 3-axes		\$12.00	**
Class 4 4-axes		\$18.00	**
Class 5 5-axes		\$36.00	**
Class 6 6+-axes		\$45.00	**

\*\* Indicates no change from previous toll rate.

Notes:

- <sup>(1)</sup> Commuter rates are for two-axle vehicles with a Maryland E-ZPass Commuter Plan, which includes 50 trips and costs \$70.00. All commuter plans (E-ZPass) are valid for 45 days.
- <sup>(2)</sup> Business accounts operating five-or-more-axle vehicles may qualify for an E-ZPass post-usage discount based on the tolls paid in every 30-day period, with a 10 percent discount offered for total monthly tolls of \$150.00 to \$1,999.99, 15 percent for total monthly tolls of \$2,000.00 to \$7,500.00 and 20 percent for total monthly tolls of over \$7,500.00.
- <sup>(3)</sup> A supplemental rebate program is offered to five-or-more-axle vehicles with individual transponders making 60 or more trips per month. As of July 1, 2015, a 10 percent discount is offered for five- or more-axle vehicle transponders making 60-79 trips per month, 15 percent for 80-99 trips per month, and 20 percent for 100 or more per month.

**Table 1-3  
Southern Region Tolls**

Method of Payment	Vehicle Class	William Preston Lane, Jr. Memorial (Bay) Bridge (US 50/301)		Gov. Harry W. Nice Memorial Bridge (US 301)	
		Before	After	Before	After
		July 1, 2015	July 1, 2015	July 1, 2015	July 1, 2015
Maryland E-Zpass	Commuter, 2-axes <sup>(1)</sup>	\$2.10	\$1.40	\$2.10	**
	Shoppers, 2-axes <sup>(2)</sup>	\$3.00	\$2.00	Not Applicable at this Facility	
	Class 2 2-axes	\$5.40	\$2.50	\$5.40	\$4.50
	Class 3 3-axes	\$12.00	\$8.00	\$12.00	**
	Class 4 4-axes	\$18.00	\$12.00	\$18.00	**
	Class 5 5-axes <sup>(3)(4)</sup>	\$36.00	\$24.00	\$36.00	**
Cash / Base	Class 6 6+-axes <sup>(3)(4)</sup>	\$45.00	\$30.00	\$45.00	**
	Class 2 2-axes	\$6.00	\$4.00	\$6.00	**
	Class 3 3-axes	\$12.00	\$8.00	\$12.00	**
	Class 4 4-axes	\$18.00	\$12.00	\$18.00	**
	Class 5 5-axes	\$36.00	\$24.00	\$36.00	**
	Class 6 6+-axes	\$45.00	\$30.00	\$45.00	**
Video	Class 2 2-axes	\$9.00	\$6.00	\$9.00	**
	Class 3 3-axes	\$18.00	\$12.00	\$18.00	**
	Class 4 4-axes	\$27.00	\$18.00	\$27.00	**
	Class 5 5-axes	\$51.00	\$36.00	\$51.00	**
	Class 6 6+-axes	\$60.00	\$45.00	\$60.00	**

\*\* Indicates no change from previous toll rate.

Notes:

- <sup>(1)</sup> Commuter rates are for two-axle vehicles with a Maryland E-ZPass Commuter Plan, which includes 25 trips and costs \$52.50. Commuter plans are valid for 45 days.
- <sup>(2)</sup> Shopper rates are for two-axle vehicles with a Maryland E-ZPass Commuter Plan, which includes 10 trips and costs \$20.00. All shopper plans are valid for 90 days.
- <sup>(3)</sup> Business accounts operating five-or-more-axle vehicles may qualify for an E-ZPass post-usage discount based on the tolls paid in every 30-day period, with a 10 percent discount offered for total monthly tolls of \$150.00 to \$1,999.99, 15 percent for total monthly tolls of \$2,000.00 to \$7,500.00 and 20 percent for total monthly tolls of over \$7,500.00.
- <sup>(4)</sup> A supplemental rebate program is offered to five-or-more-axle vehicles with individual transponders making 60 or more trips per month. As of July 1, 2015, a 10 percent discount is offered for five- or more-axle vehicle transponders making 60-79 trips per month, 15 percent for 80-99 trips per month, and 20 percent for 100 or more per month.

a 25 percent discount, or a toll of \$6.00. For the Northern Region facilities, commuter tolls are offered for two-axle vehicles with a Maryland E-ZPass® Commuter Plan, which includes 50 trips and costs \$70.00 or \$1.40 per trip. Since the Northern Region facilities utilize one-way tolling, two "trips" are required per transaction, making the effective toll rate \$2.80 per transaction or a 65 percent discount over the base toll rate. Vehicles with three-or-more axles are charged progressively higher rates. While this is true, as of July 1, 2015, tolls for three and four-axle vehicles with Maryland E-ZPass® using the Hatem Bridge were reduced by 30 percent, reducing the toll for three-axle vehicles from \$16.00 to \$11.20 and for four-axle vehicles from \$24.00 to \$16.80. The current tolls for the Northern Region toll facilities are shown in Table 1-1.

Special discounts are available at the Hatem Bridge. Currently, two plans are offered: Hatem Plan A and Hatem Plan B. Both plans provide unlimited trips to two-axle E-ZPass® account holders for a flat annual fee of \$20. Plan A does not include account fees, prepaid toll deposits or account statements. However, an E-ZPass® account under Plan A cannot be used at other toll facilities or combined with other Maryland E-ZPass® discounts. Plan B is an add-on to a standard Maryland E-ZPass® account and is subject to the standard fees and pre-paid toll deposits. In addition, E-ZPass® accounts under Plan B can be used at other toll facilities and combined with other Maryland E-ZPass® discounts, with the exception of the Intercounty Connector.

Tolls are collected in both directions at the three Baltimore Harbor crossings that comprise the Central Region. Passenger cars pay a base toll of \$4.00. Video customers pay \$6.00, which includes a 50 percent surcharge, while Maryland two-axle, E-ZPass® customers receive a 25 percent discount with a toll of \$3.00. Commuter discounts are offered to two-axle vehicles with a Maryland E-ZPass® Commuter Plan, which includes 50 trips at a cost of \$70.00, making the effective toll rate \$1.40 per transaction or a 65 percent discount over the base toll rate. As shown in Table 1-2, vehicles with three-or-more axles are charged progressively higher rates.

The two Southern Region facilities employ one-way toll collection. The base toll at the Harry W. Nice Bridge is \$6.00 for passenger cars, with a video toll of \$9.00, including a 50 percent surcharge. Maryland two-axle, E-ZPass® customers receive a 25 percent discount, or a toll of \$4.50. Also at the Harry W. Nice Bridge, commuter discounts are offered to two-axle vehicles with a Maryland E-ZPass® Commuter Plan, which includes 25 trips at a cost of \$52.50, making the effective toll \$2.10 per transaction or a 65 percent discount over the base toll. Vehicles with three-or-more-axles are charged progressively higher tolls.

Following the July 1, 2015 toll reductions, the base toll at the William Preston Lane Memorial Bridge was reduced from \$6.00 to \$4.00 for passenger cars. The video toll is \$6.00, including a 50 percent surcharge. Maryland two-axle, E-ZPass® customers received a 37.5 percent discount reducing the toll from \$5.40 to \$2.50. Also at the William Preston Lane Memorial Bridge, commuter discounts are offered to two-axle vehicles with a Maryland E-ZPass® Commuter Plan, which includes 25 trips at a cost of \$35.00, making the effective toll \$1.40 per transaction or a 65 percent discount over the base toll. While the tolls charged to three-or-more-axle vehicles are progressively higher, on July 1, 2015 the tolls for these vehicles were reduced by 33.3 percent. The current tolls for the Southern Region toll facilities are shown in Table 1-3.

Another discount option is offered specifically to motorists using the Bay Bridge. The E-ZPass® Maryland Shoppers' Plan is for MDTA E-ZPass® holders. Following the July 1, 2015 toll reductions, the plan costs \$20.00 for 10 trips, an average cost of \$2.00 per trip. The plan is valid for 90 days and can be used on Sundays through Thursdays only.



Business accounts that operate vehicles with five-or-more-axes may qualify for a post-usage discount based on total tolls paid in 30-day cycles. The first 30-day cycle begins with the first use of the transponder. Discounts vary from 10 to 20 percent based on the total toll usage during the cycle and are credited back to the account 30 days after the completion of a cycle. In addition, the supplemental rebate program provides rebates to individual vehicles with five-or-more-axes and Maryland E-ZPass® transponders that make 60 or more trips per month.

## 1.2 Report Structure

Chapter 2, Historical Traffic and Revenue Trends, provides a summary of historical trends and variations of traffic and revenue on the legacy bridges, tunnels, and highways currently operated by the MDTA.

Chapter 3, Socioeconomic Review, provides a summary of updated recent historical trends and forecasts of socioeconomic variables to provide the context for the traffic and revenue growth projections. The socioeconomic trends review and analysis entailed data collection efforts that included compiling and updating a host of different pertinent variables such as total population, employment, income, gasoline prices, and real gross regional product from a variety of public and private sources such as the Bureau of Economic Analysis (BEA), US Census, Bureau of Labor Statistics (BLS), Maryland State Data Center (MD SDC), U.S. Energy Information Administration (EIA), Woods & Poole Economics (W&P), and Moody's Analytics (Moody's).

Chapter 4, Traffic and Revenue Forecast, provides a summary of the basic underlying assumptions used in the traffic and revenue forecasting process. Also presented are the 10-year traffic and revenue forecasts by facility and vehicle class for each of the legacy facilities and the system as a whole.

## Chapter 2

# Historical Traffic and Revenue Trends

CDM Smith reviewed regional traffic trends as well as historical transactions and revenue provided by MDTA for each of the seven legacy toll facilities. Regional trends were reviewed to understand the context within which the MDTA facilities operate, including vehicle miles traveled (VMT) and traffic counts on major highways. Historical transaction and revenue trends for each of the legacy facilities were reviewed, as these trends served as inputs to the regression model used to develop the 10-year transaction and revenue forecasts. Current E-ZPass® market penetration rates and vehicle classification distributions were also reviewed.

## 2.1 Regional Traffic Review

Regional traffic patterns and trends were analyzed in order to better understand the factors influencing traffic demand on the MDTA legacy facilities. Included in this analysis was a review of regional VMT trends and historical traffic counts on nearby competing routes. This data was used to ensure that near-term and future traffic growth rates developed for the MDTA facilities were reasonable within the context of these historical regional traffic patterns and trends.

### 2.1.1 Vehicle Miles Traveled

VMT represents the total number of miles travelled by all vehicles annually. VMT trends are important to better understand general trends in historic traffic growth nationally and, more specifically, within a state or region. The Federal Highway Administration develops annual estimates of national and state-wide VMT by roadway type, which have been summarized in Table 2-1 for the years FY 1994 through FY 2014 for the United States and Maryland.

Maryland VMT trends during the last 20 years have generally followed those of the United States. Prior to 2003, VMT increased at an average annual rate of 2.3 and 2.4 percent in the United States and Maryland, respectively. Between 2003 and 2007, growth in VMT slowed to an average annual rate of 1.2 percent nationally and 0.8 percent in Maryland. Concurrent with the onset of the Great Recession in 2007 and 2008, VMT declined for the first time since 1980. The average annual percent change in VMT was -0.2 percent nationally and 0.1 percent in Maryland between 2007 and 2013. The proportion of VMT occurring on Interstate routes has remained fairly constant throughout the same time period at approximately 24 percent on the national level and 30 percent on Maryland Interstates, which account for only 2.5 percent and 3.9 percent of all roads in the nation and in Maryland, respectively.

These recent trends in VMT represent a significant change from prior long-term historical trends, with VMT levels remaining at or below the peak levels of 2007. Several factors may be responsible for the change. First, the reduction in employment caused by the Great Recession has led to general reductions in travel by commuters. Additionally the changes may be indicative of longer-term trends such as adjustments to gasoline prices, shifts in development patterns to revitalize traditional urban centers, and increases in telecommuting, carpooling and transit use.

The transaction and revenue forecasts presented in Chapter 4, Traffic and Revenue Forecast, were reviewed to ensure that growth rates were reasonable in light of these trends in VMT.

**Table 2-1**  
**National and State-wide Trends in Vehicle Miles Traveled**

Year	United States <sup>(1)</sup>					Maryland				
	Interstate			Total		Interstate			Total	
	VMT (Millions)	Percent Change	Percent of Total	VMT (Millions)	Percent Change	VMT (Millions)	Percent Change	Percent of Total	VMT (Millions)	Percent Change
1994	550,096	---	23.2	2,372,026	---	12,674	---	28.7	44,165	---
1995	569,024	3.4	23.3	2,438,244	2.8	13,263	4.6	29.6	44,882	1.6
1996 <sup>(2)</sup>	581,579	2.2	23.4	2,482,201	1.8	13,721	3.5	29.8	46,033	2.6
1997	606,067	4.2	23.5	2,576,543	3.8	14,013	2.1	30.1	46,609	1.3
1998	630,157	4.0	23.9	2,641,891	2.5	14,407	2.8	29.8	48,343	3.7
1999	648,124	2.9	23.9	2,708,328	2.5	14,499	0.6	29.5	49,126	1.6
2000	667,603	3.0	24.1	2,767,363	2.2	15,208	4.9	30.3	50,174	2.1
2001	678,723	1.7	24.1	2,815,135	1.7	15,633	2.8	30.1	51,996	3.6
2002	693,942	2.2	24.1	2,873,866	2.1	16,214	3.7	30.2	53,702	3.3
2003	708,173	2.1	24.3	2,909,567	1.2	16,536	2.0	30.2	54,701	1.9
2004	727,163	2.7	24.4	2,982,017	2.5	16,668	0.8	30.1	55,284	1.1
2005	733,655	0.9	24.4	3,009,217	0.9	16,807	0.8	29.8	56,319	1.9
2006	741,000	1.0	24.4	3,033,752	0.8	16,850	0.3	29.9	56,302	(0.0)
2007	745,457	0.6	24.4	3,049,027	0.5	17,015	1.0	30.1	56,503	0.4
2008	725,078	(2.7)	24.2	2,992,705	(1.8)	16,710	(1.8)	30.4	55,023	(2.6)
2009	722,655	(0.3)	24.3	2,975,804	(0.6)	16,965	1.5	30.7	55,293	0.5
2010	729,015	0.9	24.4	2,985,854	0.3	17,040	0.4	30.4	56,126	1.5
2011	725,787	(0.4)	24.4	2,968,990	(0.6)	16,964	1.3	30.2	56,221	0.2
2012	735,915	1.4	24.6	2,988,021	0.6	17,054	0.9	30.2	56,475	0.5
2013	745,106	1.2	24.8	3,006,911	0.6	17,064	1.0	30.1	56,688	0.4
2014	N/A	---	---	3,015,620	0.3	N/A	---	---	N/A	---
<b>Average Annual Percent Change</b>										
<b>1994-2013</b>		<b>1.6</b>			<b>1.3</b>		<b>1.6</b>			<b>1.3</b>
1994-2003		2.8			2.3		3.0			2.4
2003-2013		0.5			0.3		0.3			0.4
2003-2007		1.3			1.2		0.7			0.8
2007-2013		(0.0)			(0.2)		0.0			0.1
<b>2013-2014</b>		---			<b>0.3</b>		---			---

1994-2013 VMT Data source: Table VM-2, Highway Statistics 1994-2013, USDOT FHWA Office of Policy Information.  
2014 VMT Data source: USDOT FHWA Office of Policy Information.  
<sup>(1)</sup> Includes Puerto Rico.  
<sup>(2)</sup> Interstate-level VMT data unavailable for 1996, and was estimated based on the average 1995 and 1997 interstate miles as a percent of total VMT.

### 2.1.2 Historical Traffic on Other Major Highways

In order to better understand regional traffic growth patterns, historical traffic counts on select competing major routes were reviewed dating back to FY 1995. These roads include interstates and major highways that compete with or compliment the MDTA legacy facilities. The data presented in this section are based on historical average annual daily traffic volumes and associated growth rates at each location. At MDTA locations where there is a one-way toll, the one-way average annual daily traffic volume was doubled to be more comparable to other locations. For comparative purposes, the roadways are grouped into three regions: Northern, Central, and Southern, corresponding to the MDTA regions.

Historical average traffic volumes and annual growth rates for the Northern Region facilities, which are primarily located in proximity to the Susquehanna River, are presented in Table 2-2. Volumes are provided through FY 2014 for comparative purposes. Traffic volumes on the two Northern Region MDTA facilities have generally followed the regional trends over the last 20 years. Between FY 1995 and FY 2005, average annual traffic growth was 2.2 percent per year for the MDTA facilities and a comparable 2.4 percent per year for the region. Between FY 2005 and FY 2014, average annual traffic growth was -0.7 percent per year for the MDTA facilities and -0.6 percent per year for the region, with the most significant decreases occurring in FY 2008 and FY 2009, and in FY 2013. This overall trend may be related to reductions in travel associated with the immediate and long-term impacts of the Great Recession of 2008/2009.

Table 2-3 presents the historical average traffic volumes and annual growth rates for the Central Region, located in the Baltimore area. Historical average traffic volumes are provided through FY 2014 for comparative purposes. Traffic volumes at the three Central Region MDTA facilities have also generally followed the regional trends over the last 20 years. Between FY 1995 and FY 2005, average annual traffic growth was 2.1 percent per year for the MDTA facilities as compared with a slightly higher 2.6 percent per year for the region. Although traffic volumes on the Maryland State Highway Administration (MSHA) facilities decreased by 1.4 percent in FY 2008, most likely due to the impacts of the Great Recession of 2008/2009, traffic volumes on the Central Region MDTA facilities increased by an average of 0.2 percent. On the MDTA facilities, traffic volumes did decrease in FY 2009 and FY 2010. These impacts resulted, at least in part, from the Great Recession and the FY 2010 toll increase. Sizeable traffic volume decreases occurred in both FY 2013 and FY 2014. Toll increases implemented in these years were likely the primary catalyst for the declines. Overall, average annual traffic growth between FY 1995 and FY 2014 was 0.9 percent per year for the MDTA facilities and 1.4 percent per year for select other regional highways.

Historical average traffic volumes and annual growth rates for the Southern Region are presented in Table 2-4. Due to the proximity to Virginia, two county locations in northern Virginia have also been included. Historical average traffic volumes are provided through FY 2014. Traffic volumes on the two Southern Region MDTA facilities have generally followed the regional trends over the last 20 years. Between FY 1995 and FY 2005, average annual traffic growth was 2.5 percent per year for the MDTA facilities and a slightly higher 2.8 percent per year for the region. During the FY 2005 to FY 2014 period, MSHA and Virginia roadways experienced decreases in volumes during FY 2008. MDTA facilities experienced decreases in volume in FY 2008 and FY 2009. This pattern may be the result of some immediate and some lagging impacts of the Great Recession. A traffic volume decrease also occurred in FY 2013, with no growth occurring in FY 2014. Both of these impacts are likely the result of toll increases. However, overall average annual traffic growth between FY 1995 and FY 2014 was 1.2 percent per year for the MDTA facilities as compared with 1.3 percent per year for the region.

Based on the data available for the selected facilities, the MDTA legacy facilities have generally exhibited traffic growth in line with that of the region. Moreover, traffic volumes have grown at similar rates among the three regions, averaging between 2.0 to 2.5 percent between FY 1995 and FY 2005, with slight increases of approximately 1.0 percent between FY 1995 and FY 2014. These trends were used as a guide in estimating future year traffic growth for the traffic and revenue forecasts presented in Chapter 4.

**Table 2-2  
Average Annual Daily Traffic for Selected Northern Region Facilities**

Calendar Year	MDTA Facilities				MSHA Facilities <sup>(1)</sup>				Northern Region Average	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>
	John F. Kennedy Mem. Highway	Thomas J. Hatem Mem. Bridge	I-83 S of Belfast Rd.	US 301 E of Cedar Church Rd.	US 301 S of River Rd.	MDTA Facilities Average	MSHA Facilities Average				
1995	67,890	22,521	46,539	8,675	9,450	45,206	31,015	---	---	---	
2000	78,466	25,205	50,219	9,650	10,475	51,836	40,885	2.8	2.8	5.7	
2005	81,957	30,520	61,975	9,950	11,425	56,239	39,165	1.6	1.6	(0.9)	
2006	80,744	30,450	66,760	9,852	11,650	55,597	39,891	(1.1)	(1.1)	1.9	
2007	81,317	30,474	62,068	11,640	11,531	55,896	39,406	0.5	0.5	(1.2)	
2008	80,283	30,445	59,830	11,061	10,952	55,364	38,514	(1.0)	(1.0)	(2.3)	
2009	80,229	27,617	61,620	11,282	10,370	53,923	38,224	(2.6)	(2.6)	(0.8)	
2010	80,815	27,325	61,971	10,050	10,451	54,070	38,122	0.3	0.3	(0.3)	
2011	84,739	27,797	60,988	9,861	10,252	56,268	38,727	4.1	4.1	1.6	
2012	84,402	27,810	60,165	9,882	10,620	56,106	38,576	(0.3)	(0.3)	(0.4)	
2013	80,448	25,002	60,401	9,310	10,571	52,725	37,146	(6.0)	(6.0)	(3.7)	
2014	78,780	27,115	60,041	9,301	10,562	52,948	37,160	0.4	0.4	0.0	
<b>Average Annual Percent Change</b>											
1995-2005	1.9										2.4
2005-2014	(0.4)										(0.6)
1995-2014	0.8										1.0

Source: MDTA and MSHA AADT Reports.  
<sup>(1)</sup> Maryland State Highway Administration.  
<sup>(2)</sup> Annual Average Percent Change.

**Table 2-3**  
**Average Annual Daily Traffic for Selected Central Region Facilities**

Calendar Year	MSHA Facilities <sup>(1)</sup>											MDTA Facilities		Central Region Average	
	I-83 N of N Charles St.	I-95 N of MD 48	I-95 N of MD 100	I-97 N of MD 176	I-695 S of I-70	I-695 E of MD 146	MD 295 N of MD 100	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>
1995	46,900	134,475	153,275	70,500	156,175	142,475	59,075	---	---	---	---	---	---	---	---
2000	50,850	139,575	192,575	95,575	175,125	147,725	58,025	1.6	2.3	0.7	58,025	(0.4)	0.7	58,025	(0.4)
2005	113,475	173,825	189,825	99,325	188,325	152,650	86,250	17.4	1.5	0.7	86,250	8.3	0.7	86,250	8.3
2006	113,481	161,780	191,880	102,610	188,333	152,652	85,392	0.0	0.0	0.0	85,392	(1.0)	0.0	85,392	(1.0)
2007	113,482	161,781	191,881	102,611	193,050	155,270	91,630	0.0	2.5	1.7	91,630	7.3	1.7	91,630	7.3
2008	111,230	157,742	188,042	100,562	189,191	152,171	88,881	(2.0)	(2.0)	(2.0)	88,881	(3.0)	(2.0)	88,881	(3.0)
2009	112,341	160,880	192,100	105,110	188,860	153,692	88,882	2.2	(0.2)	1.0	88,882	0.0	1.0	88,882	0.0
2010	112,792	161,521	192,871	105,531	189,621	150,850	89,423	0.4	0.4	(1.8)	89,423	0.6	(1.8)	89,423	0.6
2011	102,860	161,682	193,062	105,642	189,812	151,001	93,390	0.1	0.1	0.1	93,390	4.4	0.1	93,390	4.4
2012	103,371	162,493	191,280	106,210	190,763	151,762	92,641	0.5	0.5	0.5	92,641	(0.8)	0.5	92,641	(0.8)
2013	104,302	165,972	193,001	107,171	192,484	149,460	92,832	0.9	0.9	0.9	92,832	0.2	0.9	92,832	0.2
2014	116,260	165,815	192,812	107,062	192,295	149,311	107,730	11.5	(0.1)	(0.1)	107,730	16.0	(0.1)	107,730	16.0
<b>Average Annual Percent Change</b>															
1995-2005	9.2	2.6	2.2	3.5	1.9	0.7	3.9	2.2	1.9	0.7	3.9	3.9	0.7	3.9	3.9
2005-2014	0.3	(0.5)	0.2	0.8	0.2	(0.2)	2.5	0.2	0.2	(0.2)	2.5	2.5	(0.2)	2.5	2.5
1995-2014	4.9	1.1	1.2	2.2	1.1	0.2	3.2	1.2	1.1	0.2	3.2	3.2	0.2	3.2	3.2
Calendar Year	MDTA Facilities											MDTA Facilities Average		Central Region Average	
	Baltimore Harbor Tunnel	Francis Scott Key Bridge	Fort McHenry Tunnel	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>	AAPC <sup>(2)</sup>
1995	109,096	52,603	198,356	---	---	---	---	---	---	---	---	---	---	---	---
2000	126,192	59,945	223,342	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
2005	139,720	66,324	238,453	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
2006	143,902	65,171	238,754	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
2007	141,042	66,867	245,776	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
2008	141,209	67,632	245,639	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
2009	139,914	64,045	238,059	(3.1)	(3.1)	(3.1)	(3.1)	(3.1)	(3.1)	(3.1)	(3.1)	(3.1)	(3.1)	(3.1)	(3.1)
2010	138,222	60,050	241,443	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
2011	143,746	64,410	255,169	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
2012	144,402	63,992	253,771	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)
2013	131,354	59,847	238,775	(5.9)	(5.9)	(5.9)	(5.9)	(5.9)	(5.9)	(5.9)	(5.9)	(5.9)	(5.9)	(5.9)	(5.9)
2014	136,398	57,093	229,454	(3.9)	(3.9)	(3.9)	(3.9)	(3.9)	(3.9)	(3.9)	(3.9)	(3.9)	(3.9)	(3.9)	(3.9)
<b>Average Annual Percent Change</b>															
1995-2005	2.5	2.3	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
2005-2014	(0.3)	(1.7)	0.4	0.8	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
1995-2014	1.2	0.4	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Source: MDTA and MSHA ADT Reports.  
<sup>(1)</sup> Maryland State Highway Administration.  
<sup>(2)</sup> Annual Average Percent Change.

**Table 2-4  
Average Annual Daily Traffic for Selected Southern Region Facilities**

Calendar Year	MDTA Facilities			MSHA Facilities <sup>(1)</sup>			Virginia DOT Facilities			MDTA Facilities Average		Southern Region Average	
	William P. Lane, Jr. Mem. (Bay) Bridge	Harry W. Nice Mem. Bridge	AAPC <sup>(2)</sup>	US 301 S of MD 234	AAPC <sup>(2)</sup>	I-95 (Virginia) N of Courthouse Rd	AAPC <sup>(2)</sup>	US 301 (Virginia) N of Kings Hwy	AAPC <sup>(2)</sup>	Average	AAPC <sup>(2)</sup>	Average	AAPC <sup>(2)</sup>
1995	55,233	14,137	---	17,350	---	99,000	---	N/A	---	34,685	---	46,430	---
2000	64,877	14,849	1.0	25,400	7.9	120,000	3.9	N/A	---	39,863	2.8	56,282	3.9
2005	71,123	17,592	3.4	22,975	(2.0)	134,000	2.2	13,000	---	44,358	2.2	51,738	1.8 <sup>(3)</sup>
2006	72,716	18,385	4.5	22,751	(1.0)	138,000	3.0	14,000	7.7	45,551	2.7	53,170	2.8
2007	73,941	18,731	1.9	22,522	(1.0)	137,000	(0.7)	14,000	-	46,336	1.7	53,239	0.1
2008	73,260	18,580	(0.8)	21,403	(5.0)	133,000	(2.9)	13,000	(7.1)	45,920	(0.9)	51,849	(2.6)
2009	69,874	18,341	(1.3)	21,834	2.0	136,000	2.3	13,000	-	44,108	(3.9)	51,810	(0.1)
2010	71,200	18,378	0.2	22,520	3.1	136,000	-	12,000	(7.7)	44,789	1.5	52,020	0.4
2011	74,651	18,693	1.7	22,091	(1.9)	135,000	(0.7)	12,000	-	46,672	4.2	52,487	0.9
2012	74,248	18,308	(2.1)	22,142	0.2	135,000	-	12,000	-	46,278	(0.8)	52,340	(0.3)
2013	69,783	17,868	(2.4)	20,840	(5.9)	132,000	(2.2)	13,000	8.3	43,826	(5.3)	50,698	(3.1)
2014	69,911	17,770	(0.5)	20,821	(0.1)	131,000	(0.8)	14,000	7.7	43,841	0.0	50,700	0.0
<b>Average Annual Percent Change</b>													
1995-2005	2.6	2.2	2.2	2.8	2.8	3.1	3.1	---	---	2.5	2.5	2.8 <sup>(3)</sup>	2.8 <sup>(3)</sup>
2005-2014	(0.2)	0.1	0.1	(1.1)	(1.1)	(0.3)	(0.3)	-	-	(0.1)	(0.1)	(0.2)	(0.2)
1995-2014	1.2	1.2	1.2	1.0	1.0	1.5	1.5	---	---	1.2	1.2	1.3 <sup>(3)</sup>	1.3 <sup>(3)</sup>

Source: MDTA, MSHA and Virginia DOT AADT Reports.

<sup>(1)</sup> Maryland State Highway Administration.

<sup>(2)</sup> Annual Average Percent Change.

<sup>(3)</sup> For comparative purposes, percent change calculated based on averages that excludes US 301 (Virginia) traffic volumes.

## 2.2 MDTA Toll Transaction and In-Lane Revenue Trends

A review of the historical toll transaction and In-Lane Toll Revenue trends for each of the seven MDTA legacy facilities follows. In-Lane Toll Revenue is the revenue that is collected at the point of transaction and excludes any fees. “Other Toll Revenue”, which will be discussed further in Chapter 4, is the revenue produced by service fees and sales, violation recovery, concession revenue, and additional commercial vehicle revenue. Data are presented on a fiscal year (July 1 to June 30) basis. Current E-ZPass® market penetration rates and vehicle classification percentages were also reviewed. This data served as important inputs used in developing the 10-year transaction and revenue forecasts.

### 2.2.1 Thomas J. Hatem Memorial Bridge

Historical transactions and revenue for the Thomas J. Hatem Memorial Bridge between FY 1996 and FY 2015 are provided in Figure 2-1. Toll rate increases are represented in Figures 2-1 through 2-8 with an asterisk for each fiscal year that an increase occurred. It should be noted that toll rate increases did not necessarily occur in the beginning of the fiscal year, but in fact varied by year. Transactions grew steadily between FY 1996 and FY 2002 at an average annual rate of 2.6 percent. Transactions decreased in FY 2000 prior to the 2001 recession, but then recovered the following year. Despite three toll increases, transactions then continued to grow between FY 2002 and FY 2007 at an average annual rate of 2.6 percent. Transactions peaked in FY 2005 at 5.6 million prior to the 2008/2009 Great Recession. The recession may have begun influencing transactions on the Thomas J. Hatem Memorial Bridge as early as FY 2006, as transactions dipped 0.8 percent in that year. Transactions remained at 5.6 million until FY 2009 when they decreased by 9.3 percent, the largest decrease occurring in a year without a toll increase. Following this decrease, continued economic uncertainty and several toll increases decreased transactions further to 4.6 million in FY 2013. Transactions recovered slightly to 4.9 million in FY 2014, despite the toll increase that year, and grew again in FY 2015 by 6.0 percent to 5.2 million, resulting in an average annual post-recession growth rate of 0.8 percent between FY 2010 and FY 2015. Overall, average annual transaction growth was 1.1 percent per year between FY 1996 and FY 2015.

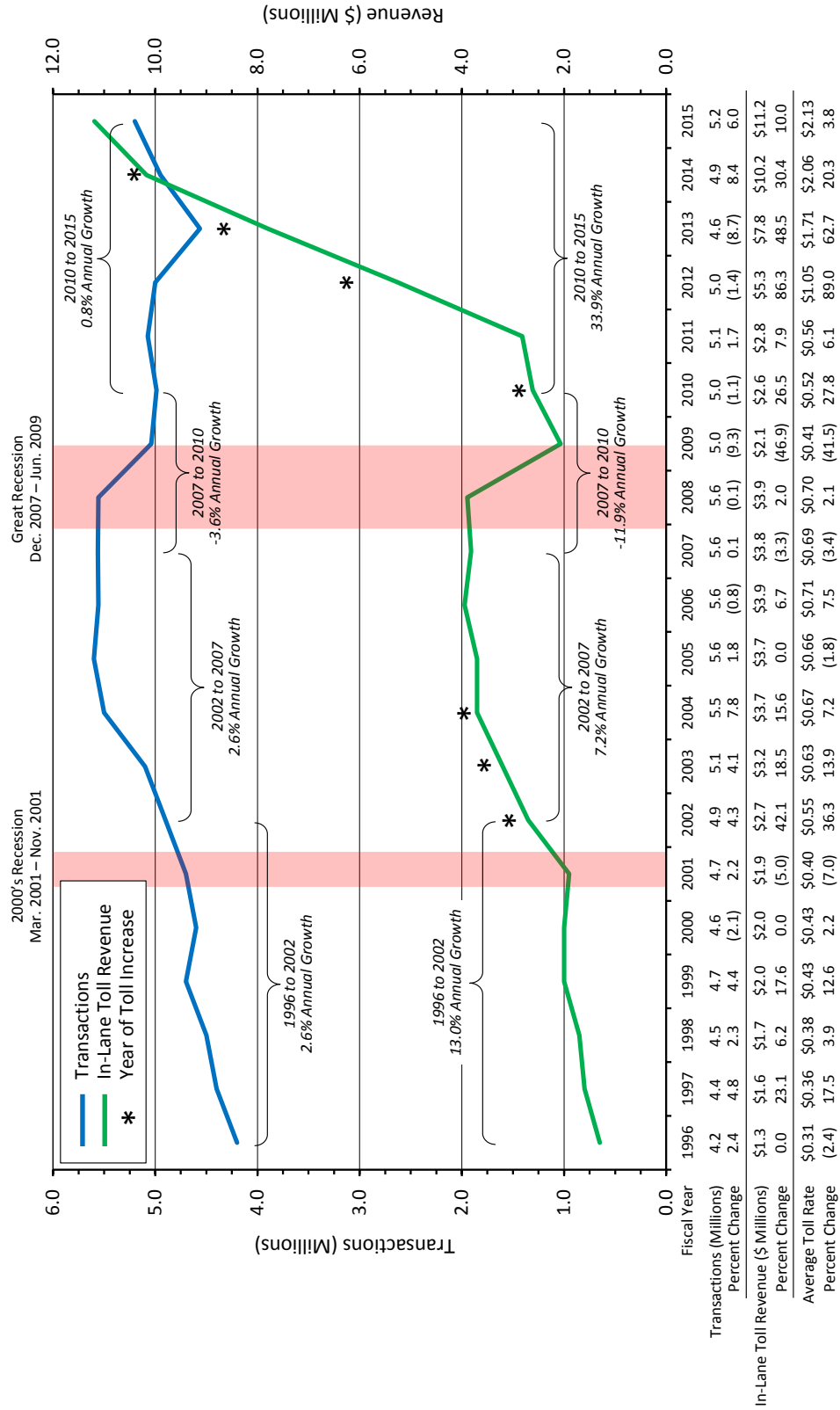
Revenue increased steadily between FY 1996 and FY 2002 at an average annual rate of 13.0 percent. Over the next three years, a series of toll increases resulted in an average annual increase of about 25 percent per year. Revenues then remained relatively stable between FY 2004 and FY 2008, at about \$3.8 million. After experiencing a large dip between FY 2008 and FY 2009 as a result of the decrease in transactions associated with the Great Recession, revenue has steadily grown reaching \$11.2 million in FY 2015. This growth in revenue has been aided by a series of toll increases indicated by the increases in average toll rate, leading to an average annual growth rate of 33.9 percent between FY 2010 and FY 2015. Overall average annual In-Lane Toll Revenue growth was 12.0 percent between FY 1996 and FY 2015, with the primary growth in revenues occurring during the last five years.

### 2.2.2 John F. Kennedy Memorial Highway

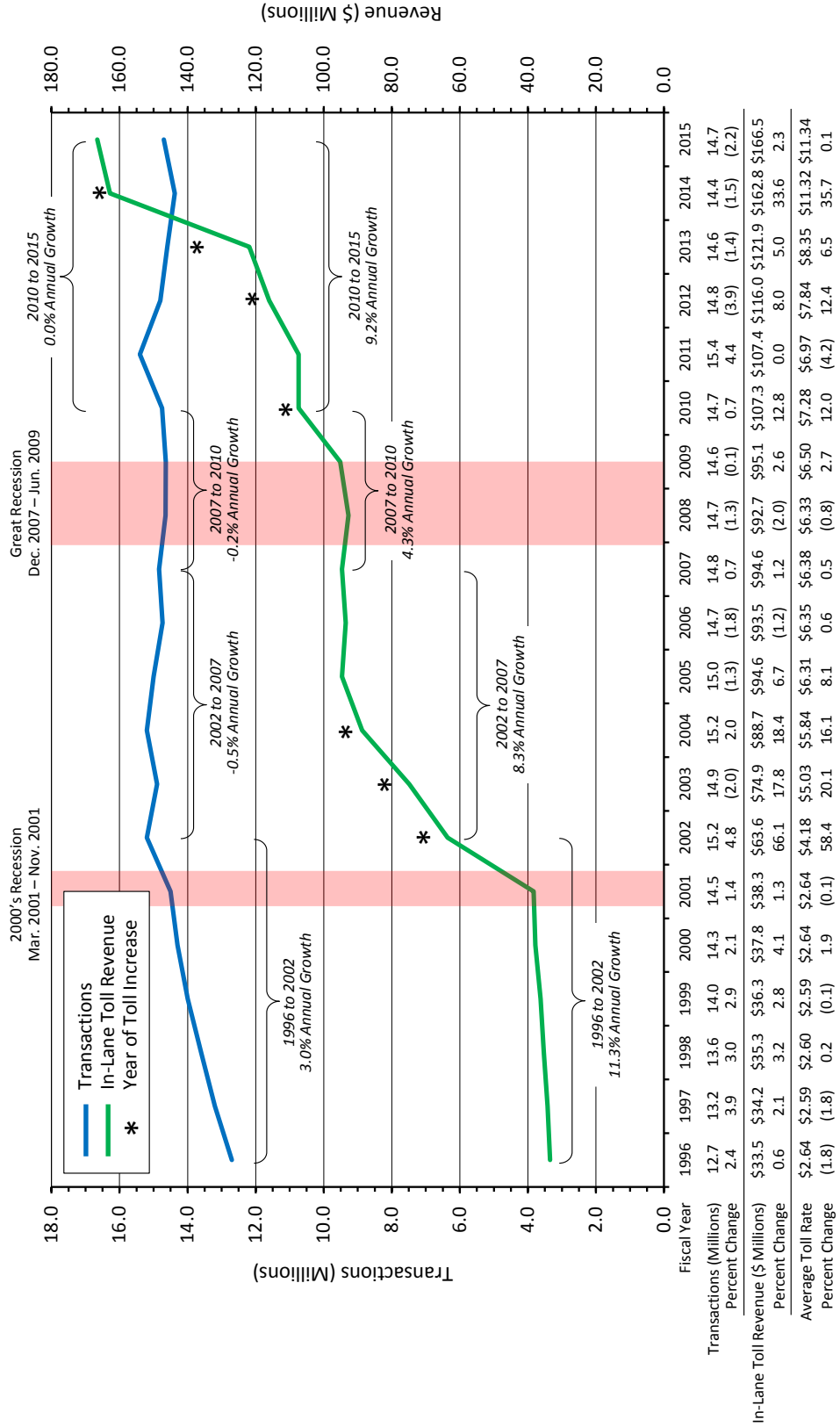
Historical transactions and revenue for the John F. Kennedy Memorial Highway between FY 1996 and FY 2015 are provided in Figure 2-2. Between FY 1996 and FY 2002, transactions grew at an average annual rate of 3.0 percent, despite the 2001 recession. Between FY 2002 and FY 2007, transactions remained at about 15.0 million. Transactions then declined in FY 2008 by 1.3 percent and in FY 2009 by 0.1 percent, as a result of the impacts of the Great Recession. Transactions then recovered and reached a peak of 15.4 million in FY 2011 despite the FY 2010 toll increase. The toll increases in FY



**Figure 2-1**  
**Historical Transactions and In-Lane Toll Revenue, FY 1996 through FY 2015**  
**Thomas J. Hatem Memorial Bridge**



**Figure 2-2**  
**Historical Transactions and In-Lane Toll Revenue, FY 1996 through FY 2015**  
**John F. Kennedy Memorial Highway**



2012 through FY 2014 are likely the impetus for the annual decreases in transactions to 14.4 million by FY 2014. The number of transactions increased in FY 2015 to 14.7 million, a growth of 2.1 percent over FY 2014. However, notwithstanding individual years of robust growth over the last 20 years, average annual transaction growth was 0.8 percent per year between FY 1996 and FY 2015, and 0.0 percent per year between FY 2010 and FY 2015.

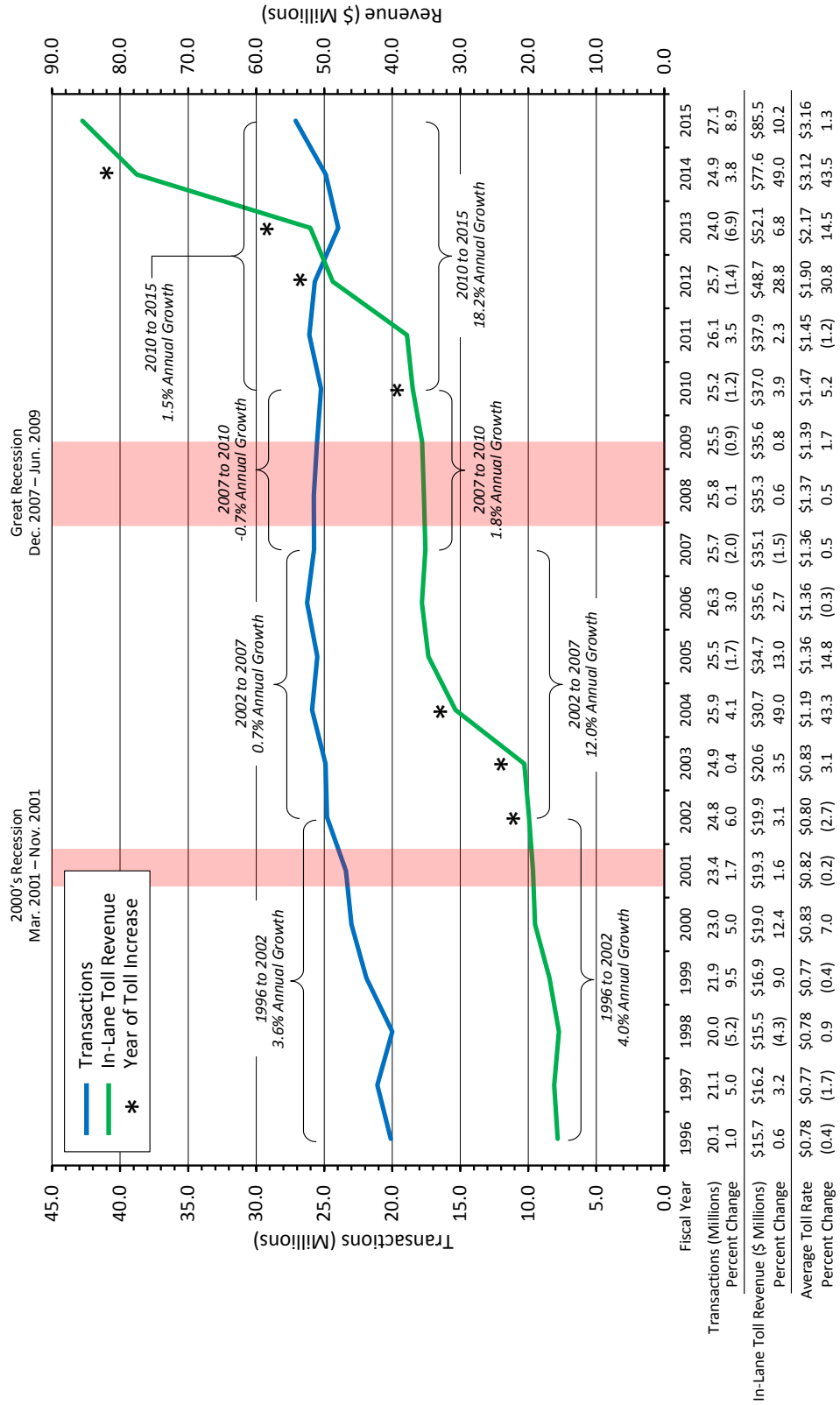
Revenue increased steadily between FY 1996 and FY 2002 at an average annual rate of 11.3 percent. Over the next three years, a series of toll increases resulted in an average annual revenue increase of 32.3 percent per year. Revenues then increased to \$94.6 million in FY 2005 and remained at that level until FY 2009. This included a 2.0 percent decrease in FY 2008, most likely associated with the impacts of the Great Recession, and a 2.6 percent recovery in FY 2009. Since FY 2009, revenues have grown steadily, reaching \$166.5 million in FY 2015. This growth in revenue has been aided by a series of toll increases indicated by the increases in average toll rate provided in the legend of Figure 2-2. The increases have led to an average annual growth rate of 9.2 percent between FY 2010 and FY 2015. Overall, average annual In-Lane Toll Revenue growth was 8.8 percent per year between FY 1996 and FY 2015, with the primary growth in revenues occurring between FY 2001 and FY 2004 and during the last five years.

### 2.2.3 Baltimore Harbor Tunnel

Historical transactions and revenue for Baltimore Harbor Tunnel between FY 1996 and FY 2015 are shown in Figure 2-3. Transactions increased every year between FY 1996 and FY 2002, except for a slight one-year decrease in FY 1998. This was despite the impacts of the 2001 recession and three toll increases. The average annual growth rate for this period was 3.6 percent. Transactions declined in FY 2005 by 1.7 percent and in FY 2007 by 2.0, possibly as a result of the considerable increases in the average price of gasoline that occurred in those years. Even with these setbacks, transactions reached a pre-recession peak of 25.8 million in FY 2008, before declining by 0.9 percent in FY 2009 in the wake of the Great Recession. Despite a 1.2 percent decrease in FY 2010, transaction growth recovered in FY 2011 and reached 26.1 million in FY 2012. Transactions of 27.1 million were recorded in FY 2015, an increase of 8.9 percent over FY 2014. This considerable increase is in part the result of traffic diversions from deck rehabilitation on I-95 south of the Fort McHenry Tunnel. On average, transactions at the Baltimore Harbor Tunnel have exhibited long-term growth of 1.6 percent per year between FY 1996 and FY 2015, and a similar 1.5 percent in the short-term between FY 2010 and FY 2015.

Annual revenue increased each year between FY 1996 and FY 2002, aside from a one-year decline from FY 1997 to FY 1998. The average annual increase during this period was 4.0 percent. Over the next five years, a series of toll increases resulted in an average annual revenue increase of 12.0 percent per year. Between FY 2007 and FY 2010, toll revenues increased from \$35.1 million to \$37.0 million, despite declines related to the impacts of the Great Recession. Since FY 2010, revenues have grown steadily to \$85.5 million in FY 2015, aided by a series of toll increases and the aforementioned traffic diversions. The average annual growth rate in revenue between FY 2010 and FY 2015 was 18.2 percent. Overall average annual In-Lane Toll Revenue growth was 9.5 percent per year between FY 1996 and FY 2015, with the primary growth in revenues, resulting from toll increases occurring between FY 2001 and FY 2004 and during the last five years.

**Figure 2-3**  
**Historical Transactions and In-Lane Toll Revenue, FY 1996 through FY 2015**  
**Baltimore Harbor Tunnel**



### 2.2.4 Fort McHenry Tunnel

Historical transactions and revenue for the Fort McHenry Tunnel between FY 1996 and FY 2015 are provided in Figure 2-4. Transactions increased each year between FY 1996 and FY 2002 at an average annual rate of 3.0 percent per year despite the 2001 recession, aside from a 1.0 percent decrease in FY 1999. In FY 2003 and FY 2004, transactions decreased to 42.7 million, possibly due to the impacts of the FY 2002 to FY 2004 toll increases. By FY 2007, transactions had recovered to FY 2002 levels. However, transactions then declined in FY 2008 by 0.1 percent and in FY 2009 by 3.1 percent, as a result of the impacts of the Great Recession. Transactions then recovered and reached a peak in FY 2011 at 46.3 million notwithstanding the FY 2010 toll increase. The toll increases in FY 2012 through FY 2014 were likely the primary impetus resulting in the decreases in transactions to 41.9 million by FY 2014. Transactions in FY 2015 declined slightly to 41.8 million, the result of the deck rehabilitation on I-95 south of the tunnel. Hence, despite individual years of robust growth over the last 20 years, transactions grew by a modest average of 0.6 percent per year between FY 1996 and FY 2015. However, in the last five years (FY 2010 and FY 2015), transactions declined by 1.1 percent per year.

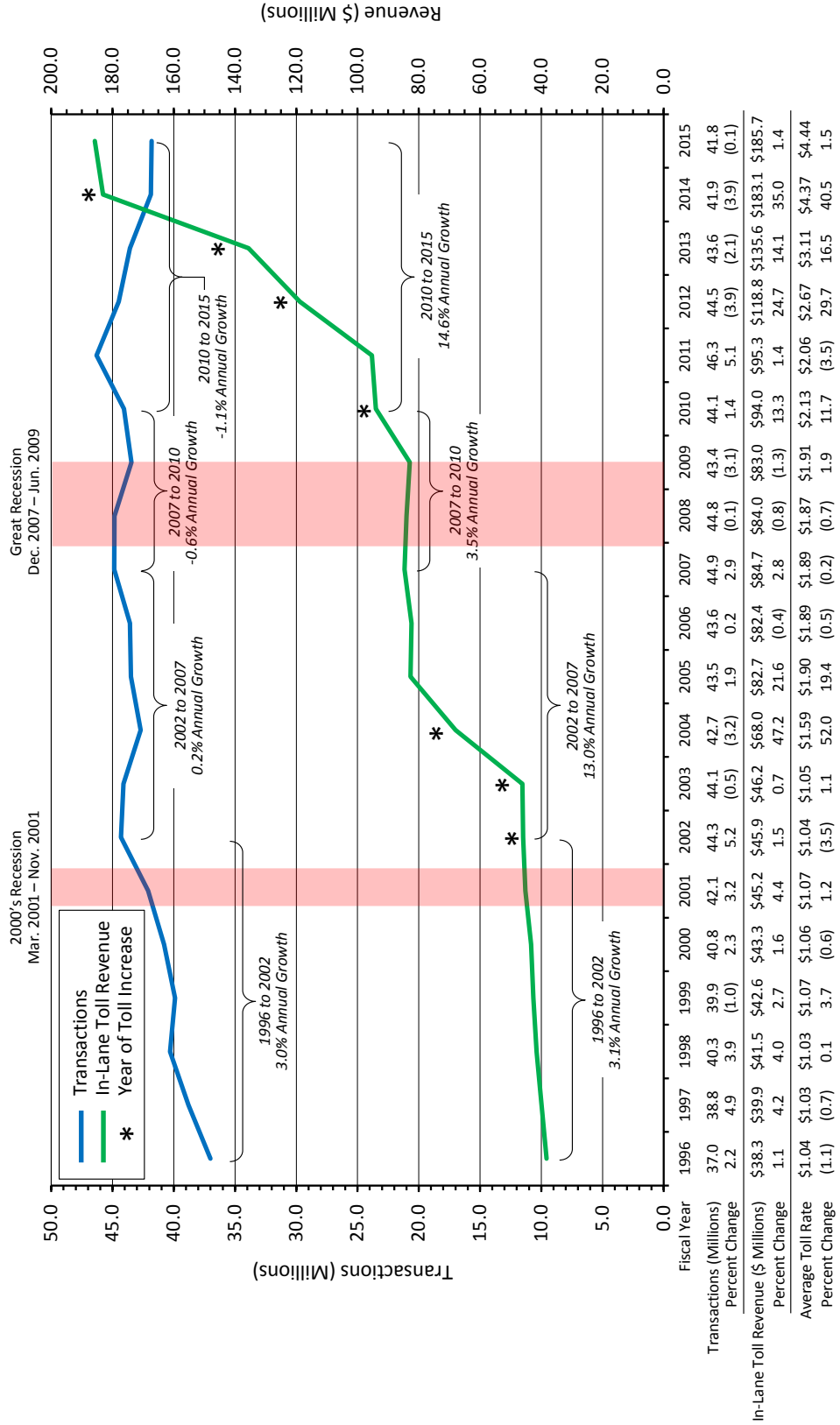
Revenue has grown in 16 of the last 19 years, with minor declines in FY 2006 and in FY 2008 and FY 2009. Between FY 1996 and FY 2002, revenues grew at an average annual rate of 3.1 percent. Over the next three years, a series of toll increases resulted in an average annual revenue increase of 14.6 percent per year. Revenues then increased to \$82.7 million in FY 2005 and remained at about that level until FY 2009. Since FY 2010, aided by a series of toll increases, revenues have grown steadily and have reached \$185.7 million in FY 2015. During this five year period, the average annual revenue growth rate was 14.6 percent. Overall average annual In-Lane Toll Revenue growth was 8.7 percent per year between 1996 and 2015.

### 2.2.5 Francis Scott Key Bridge

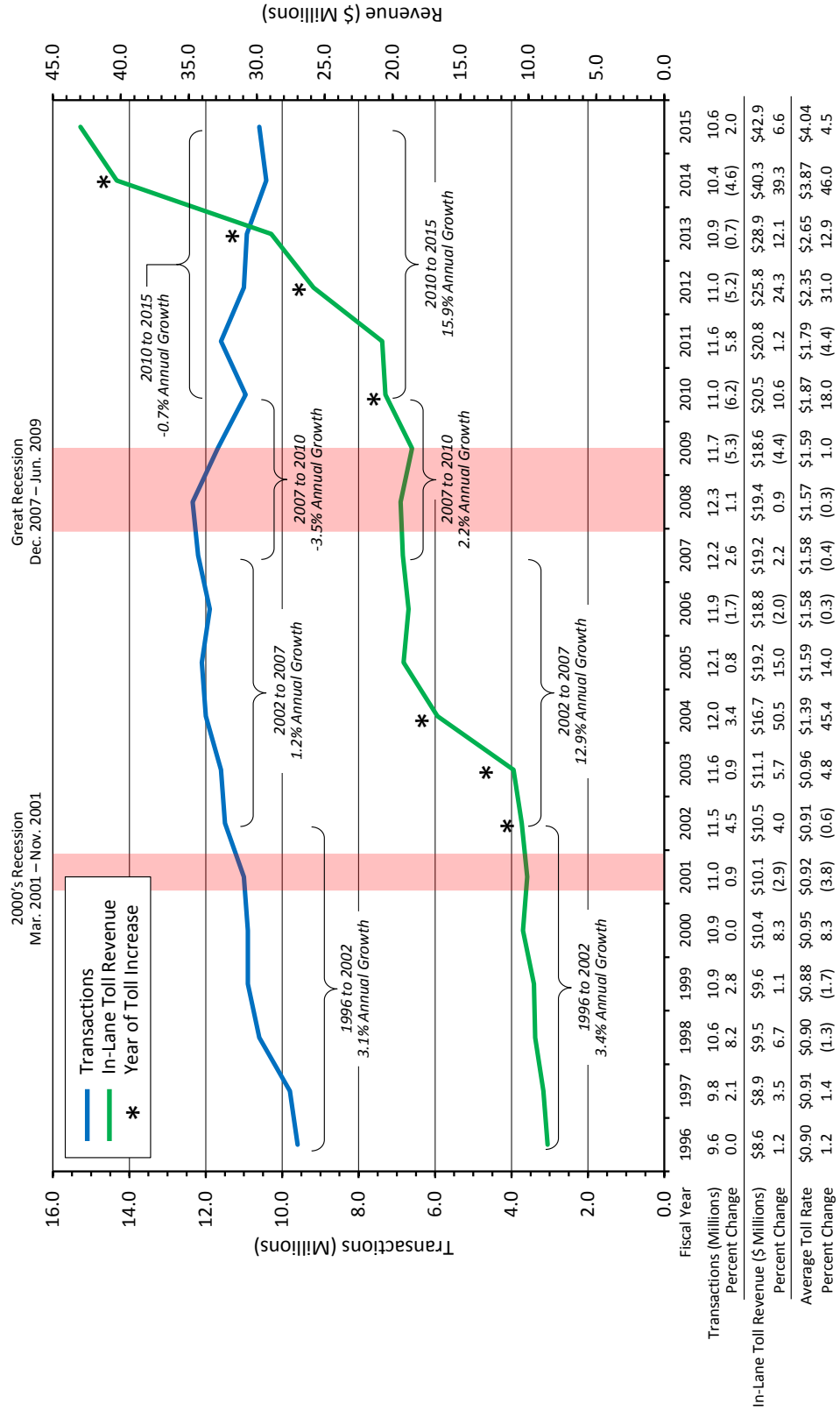
Historical transactions and revenue for the Francis Scott Key Bridge between FY 1996 and FY 2015 are provided in Figure 2-5. Transactions increased between FY 1996 through FY 2005 at an average annual rate of 2.6 percent. In the years prior to the 2001 recession, transaction growth slowed to 0.6 percent in both FY 2000 and FY 2001. Following a decrease of 1.7 percent in FY 2006, transactions peaked in FY 2008 at 12.3 million. Transactions then declined in FY 2009 by 5.3 percent as a result of the impacts of the Great Recession. Following this, transactions decreased again in FY 2010 by 6.2 percent, most likely due to a combination of the lingering impacts of the Great Recession and the impacts of the FY 2010 toll increase. Transactions recovered slightly in FY 2011 before decreasing each year from FY 2012 through FY 2014. The toll increases in FY 2012 through FY 2014 were likely the primary impetus for the declines. Transactions increased by 2.0 percent to 10.6 million in FY 2015. Overall, transactions grew at an average annual rate of 0.5 percent per year between FY 1996 and FY 2015. However, in spite of the increase in FY 2015, over the past five years (FY 2010 through FY 2015), transactions have declined by an average of 0.7 percent per year.

In-Lane Toll Revenue on the Francis Scott Key Bridge has increased each year between FY 1996 and FY 2005 except for a one-year drop between FY 2001 and FY 2002. Between FY 1995 and FY 2002, revenues grew at an average annual rate of 3.1 percent. Over the next three years, a series of toll increases resulted in an average annual increase of 18.2 percent per year. Revenues then increased to \$19.2 million in FY 2005 and remained at about that level until FY 2008. After experiencing a 4.4 percent decrease in FY 2009 as a result of the impact of the Great Recession, revenues have grown steadily reaching \$42.9 million in FY 2015. The recent growth in In-Lane Toll Revenue is primarily

**Figure 2-4**  
**Historical Transactions and In-Lane Toll Revenue, FY 1996 through FY 2015**  
**Fort McHenry Tunnel**



**Figure 2-5**  
**Historical Transactions and In-Lane Toll Revenue, FY 1996 through FY 2015**  
**Francis Scott Key Bridge**



due to a series of toll increases. Revenue has grown at an average annual rate of 15.9 percent between FY 2010 and FY 2015. Overall average annual In-Lane Toll Revenue growth has been 8.8 percent per year between FY 1996 and FY 2015.

### 2.2.6 William Preston Lane Jr. Memorial (Bay) Bridge

Historical transaction and revenue data for the William Preston Lane Jr. Memorial (Bay) Bridge between FY 1996 and FY 2015 are provided in Figure 2-6. Transactions increased each year from FY 1996 to FY 2007, at an average of 2.5 percent per year, except for a one-year decrease between FY 2002 and FY 2003, likely related to the toll increase that year. Transactions declined in FY 2008 by 0.9 percent and in FY 2009 by 4.6 percent as a result of the Great Recession. Transactions then recovered and reached a peak of 13.6 million in FY 2012 despite the FY 2010 toll increase. The toll increases in FY 2012 through FY 2014 were likely the primary impetus for the decline in transactions to 12.8 million in FY 2014. Transactions increased by 0.8 percent to 12.9 million in FY 2015. Transactions grew by an average of 1.2 percent per year between FY 1996 and FY 2015.

In-Lane Toll Revenue has increased each year between FY 1996 and FY 2003 except between FY 2000 and FY 2001 and between FY 2002 and FY 2003, where no growth occurred. Between FY 1996 and FY 2002, revenues grew at an average annual rate of 3.4 percent. Over the next three years, a series of toll increases had limited impacts on toll revenue, with an average annual increase of 3.5 percent per year occurring in those years. After a small decrease of 0.3 percent in FY 2005, most likely due to the changes in gasoline prices that year, transactions continued to grow at about 1.3 percent through FY 2007. Annual decreases in FY 2008 and FY 2009 are most likely related to the impacts of the Great Recession. Since FY 2009, revenues have grown steadily due, in part, to a series of toll increases, reaching \$81.2 million in FY 2015. Between FY 2010 and FY 2015, revenue has grown at an average annual rate of 17.2 percent. Overall, In-Lane Toll Revenue has grown by 6.2 percent per year between 1996 and 2015.

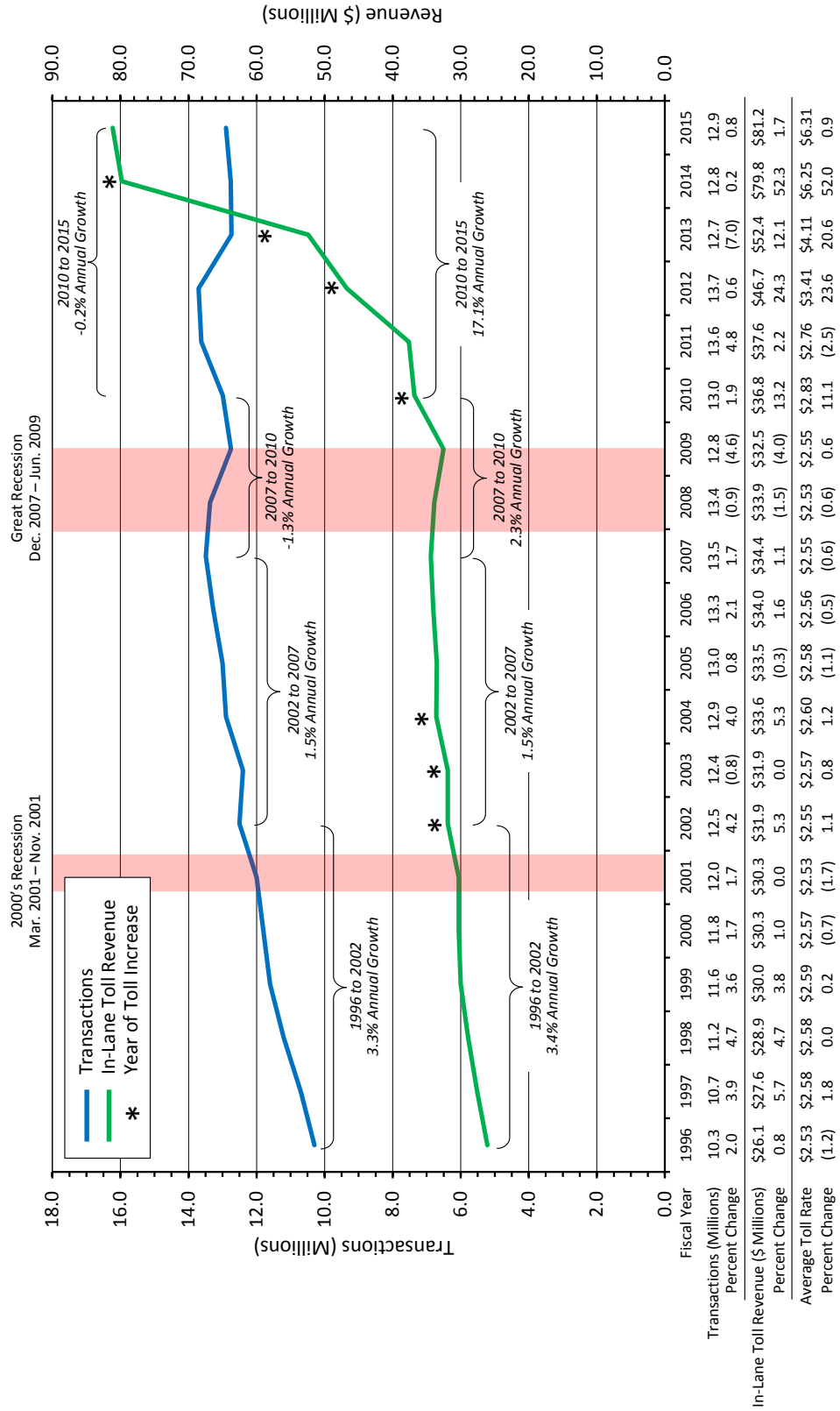
### 2.2.7 Harry W. Nice Memorial Bridge

Historical transaction and revenue data for the Harry W. Nice Memorial Bridge between FY 1996 and FY 2015 are provided in Figure 2-7. Transactions declined during the first two years shown in the figure, between FY 1996 and FY 1997, before recovering and steadily growing through FY 2007. Between FY 1997 and FY 2007, transactions grew at an average annual rate of 3.1 percent, despite the 2001 recession and three toll increases. FY 2007 represented the peak transaction level of 3.4 million transactions. Transactions declined in FY 2008 by 0.8 percent and in FY 2009 by 1.3 percent, as a result of the impacts of the Great Recession. The toll increases in FY 2012 through FY 2014 were likely the primary impetus for the decline in transactions to 3.2 million through FY 2014. Transactions increased by 1.9 percent to 3.3 million in FY 2015. Average annual transaction growth was 1.5 percent per year between FY 1996 and FY 2015, but in the last five years (FY 2010 through FY 2015) transactions decreased by an average of 0.6 percent per year even with the FY 2015 increase.

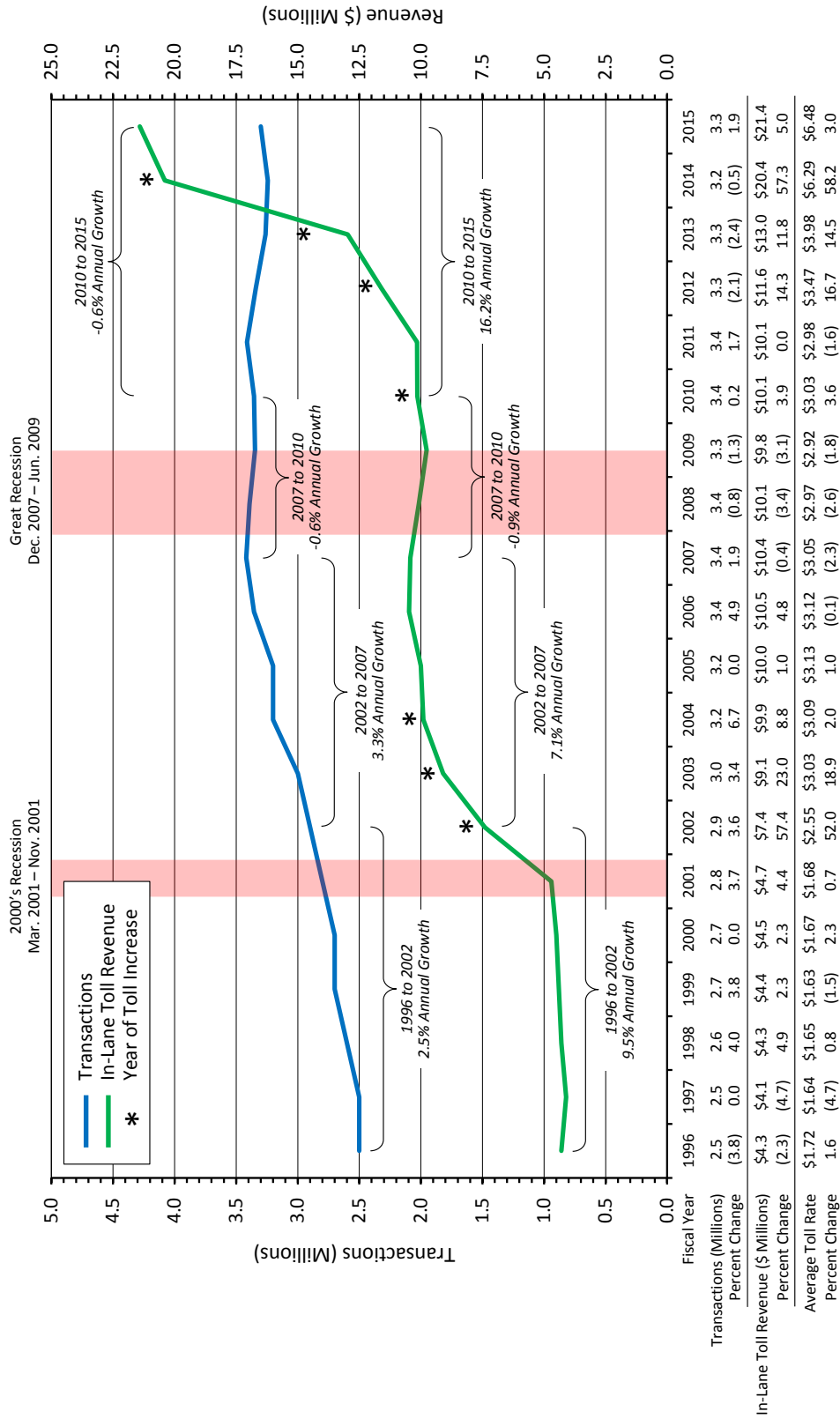
In-Lane Toll Revenue totals for the Harry W. Nice Memorial Bridge display a similar pattern of growth to those of transactions between FY 1996 and FY 2001, decreasing in both FY 1996 and FY 1997, before growing steadily through FY 2006. Between FY 1996 and FY 2002, revenues grew at an average annual rate of 9.5 percent. Over the next three years, a series of toll increases resulted in an average annual increase of 28.2 percent per year. As a result of the decreases in transactions related to the Great Recession, revenues declined between FY 2007 and FY 2010 by an average of 0.9 percent per



**Figure 2-6**  
**Historical Transactions and In-Lane Toll Revenue, FY 1996 through FY 2015**  
**William Preston Lane Jr. Memorial (Bay) Bridge**



**Figure 2-7**  
**Historical Transactions and In-Lane Toll Revenue, FY 1996 through FY 2015**  
**Harry W. Nice Memorial Bridge**



year. Revenues have recovered in recent years, aided by series of toll increases. Revenues were \$21.4million in FY 2015, representing an average annual growth rate since FY 2010 of 16.2 percent. Overall average annual In-Lane Toll Revenue growth was 8.8 percent per year between 1996 and 2015, with the primary growth in revenues occurring between FY 2002 and FY 2004 and during the last five years.

### 2.2.8 MDTA Legacy Facilities Total

Historical transaction and revenue data for the MDTA legacy facilities on a system-wide basis between FY 1996 and FY 2015 are provided in Figure 2-8. Transactions on a system-wide basis have increased each year between FY 1996 and FY 2007 at an average annual rate of 2.0 percent, except for a very minor decline between FY 2002 and FY 2003, possibly related to the toll increase that year. However, following this steady growth, transactions declined between FY 2007 and FY 2010 by an average of 1.1 percent per year, most likely due to the impacts of the Great Recession and the FY 2010 toll increase. Transactions recovered in FY 2011, reaching a system high of 121.5 million, before decreasing annually through FY 2014. The decline in transactions by FY 2014 to 112.5 million were likely the result of toll increases implemented each year from FY 2012 through FY 2014. Transactions increased by 2.8 percent to 115.7 million in FY 2015. The higher level of growth in FY 2015 is most likely due to the delayed recovery from the Great Recession of 2008-2009 and other short-term factors, such as the historically low gas prices in FY 2015. There may also be some recovery in FY 2015 from the impacts of the toll increases in FY 2012, FY 2013 and FY 2014, as some motorists return to the MDTA legacy facilities. Average annual transaction growth for the MDTA legacy facilities on a system-wide basis was 1.0 percent per year between FY 1996 and FY 2015.

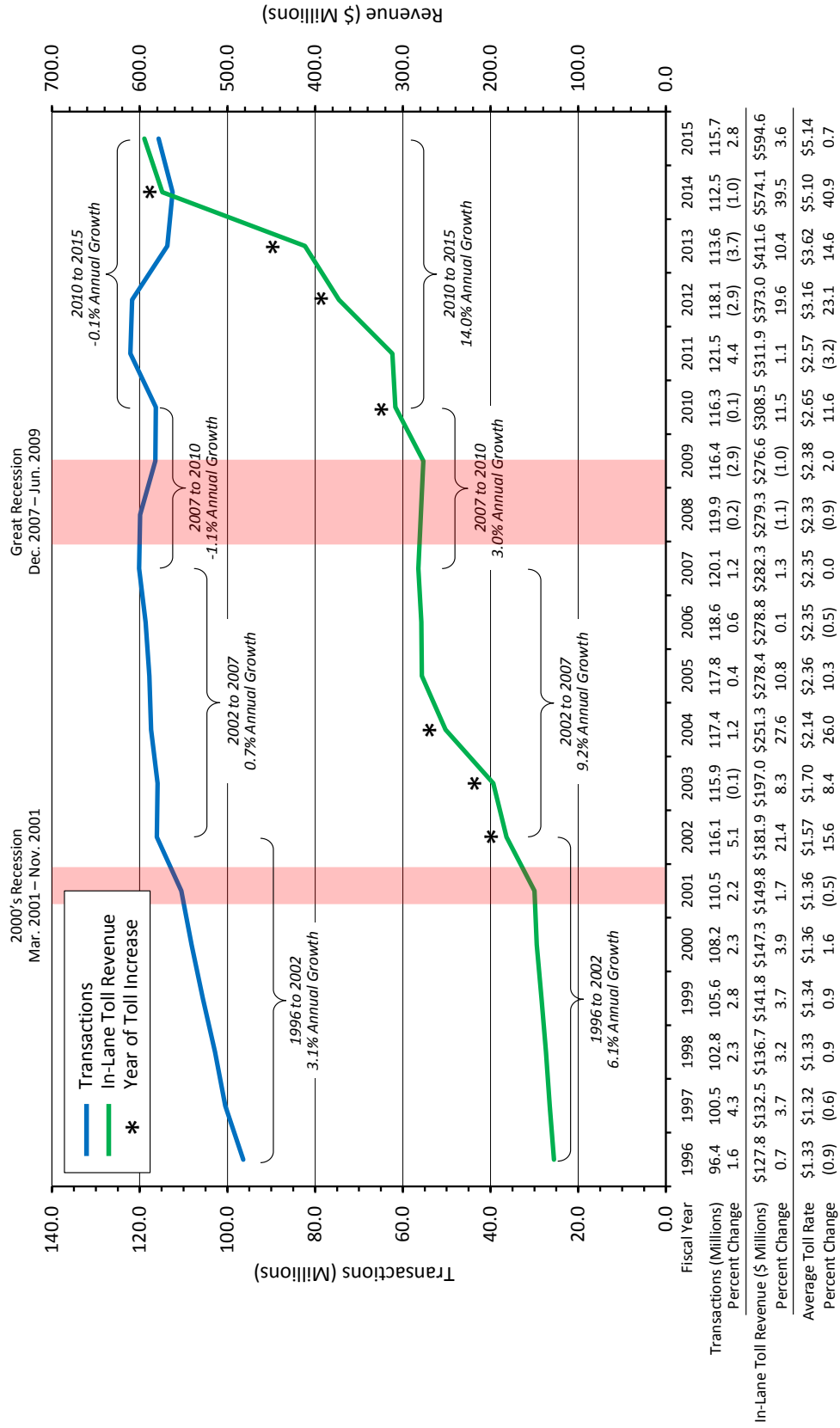
In-Lane Toll Revenue for the MDTA legacy facilities on a system-wide basis has increased each year between FY 1996 and FY 2015, except in FY 2008 and FY 2009. Between FY 1996 and FY 2002, revenues grew at an average annual rate of 6.1 percent. Over the next three years, during which a series of toll increases were implemented, revenue increased at an average of 18.8 percent per year. As a result of the decreases in transaction growth related to the Great Recession, revenues declined in FY 2008 by 1.1 percent and in FY 2009 by 1.0 percent. Revenues have recovered in recent years, aided by a series of toll increases. Revenues increased by 3.5 percent to \$594.6 million in FY 2015, resulting in an average annual growth rate of 14.0 percent per annum since FY 2010. Overall, annual In-Lane Toll Revenue growth has averaged 8.4 percent per year between 1996 and 2015.

As indicated in the two preceding paragraphs, legacy facility In-Lane Toll Revenue has increased significantly more than growth in transactions because of the adjustments to toll rates in recent years. Had these toll rate adjustments not been made, it is reasonable to assume that transactions might have been higher than has occurred, while growth in In-Lane Revenues would have more closely tracked the rate of growth in transactions. Long-term historical growth, based on the historical transaction and revenue data during years without toll rate increases or economic downturns, is assumed to be roughly 0.5 percent per year.

### 2.2.9 Vehicle Class Distribution

Table 2-5 presents a summary of the distribution of annual transactions by vehicle class for FY 2015 for each of the MDTA legacy facilities and on a total system basis. Two-axle vehicles, which include passenger cars, motorcycles, vans and SUVs, comprised 93.0 percent of all transactions. Vehicles with three-or-more-axles, which include trucks, buses and other commercial vehicles, accounted for the remaining 7.0 percent. The John F. Kennedy Memorial Highway (I-95) had the

**Figure 2-8**  
**Historical Transactions and In-Lane Toll Revenue, FY 1996 through FY 2015**  
**MDTA Legacy Facilities Total**



**Table 2-5  
Vehicle Class Distribution for the MDTA Legacy Facilities**

Vehicle Class	FY 2015 Transactions (000) <sup>(1)</sup>										
	John F. Kennedy Mem. Highway	Thomas J. Hatem Mem. Bridge	Baltimore Harbor Tunnel	Francis Scott Key Bridge	Fort McHenry Tunnel	William P. Lane, Jr. Mem. (Bay) Bridge	Harry W. Nice Mem. Bridge	Total			
2-Axle	13,002	5,063	26,511	9,622	38,308	12,000	3,092	<b>107,599</b>			
Percent of Total	88.5	96.5	97.8	90.6	91.6	93.3	93.6	<b>93.0</b>			
3+-Axle	1,687	183	587	1,003	3,531	855	213	<b>8,059</b>			
Percent of Total	11.5	3.5	2.2	9.4	8.4	6.7	6.4	<b>7.0</b>			
<b>Total</b>	<b>14,689</b>	<b>5,246</b>	<b>27,099</b>	<b>10,626</b>	<b>41,840</b>	<b>12,855</b>	<b>3,304</b>	<b>115,658</b>			
Percent of Total	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>			

Source: MDTA

<sup>(1)</sup> Includes Violation Transactions

greatest percentage of commercial vehicle transactions with 11.5 percent, while the Baltimore Harbor Tunnel had the lowest percentage with 2.2 percent of total transactions.

### 2.2.10 E-ZPass® Market Share

In recent years, electronic toll collection has played an increasingly important role in transaction processing for toll agencies across the nation. MDTA collects electronic tolls via E-ZPass®. Toll collection through E-ZPass® provides faster toll processing and decreased collection costs and leakage rates over the alternative video and cash options. As such, increases in E-ZPass® market share represent potential increases in total paid (net) revenues.

Table 2-6 provides a concise summary of transactions by method of payment in FY 2015. They are shown individually for each of the seven legacy facilities, as well as on a total system basis. E-ZPass® transactions accounted for 71.3 percent of all transactions. Of these, 47.3 percent were made by Maryland E-ZPass® customers, including in-state E-ZPass® customers, commuter plans, shopper plans and Hatem Bridge plans. In terms of individual facilities, the Thomas J. Hatem Memorial Bridge had the greatest percentage of E-ZPass® customers at 92.8 percent of total transactions, primarily due to the Hatem Bridge Toll Plan. The Hatem Bridge Toll Plan provides local residents and commuters with greater access to local businesses and employment centers while also providing the convenience of E-ZPass® and significant travel cost savings. The Harry W. Nice Memorial Bridge had the smallest percentage of transaction made by E-ZPass® customers at 52.5 percent of total transactions. On a total system basis, cash and video transactions accounted for a combined 26.4 percent of all transactions. Transactions made by non-revenue vehicles represented 1.3 percent of transactions, while violations represented 1.0 percent.

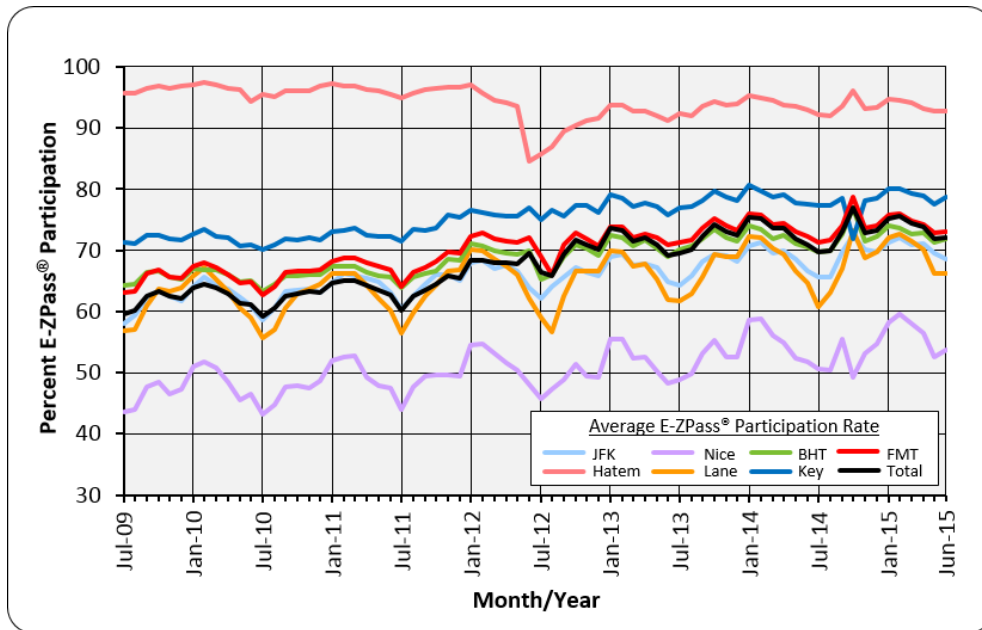
**Table 2-6**  
**Method of Payment Distribution for the MDTA Legacy Facilities**

Method of Payment	FY 2015 Transactions (000)							Total
	John F. Kennedy Mem. Highway	Thomas J. Hatem Mem. Bridge	Baltimore Harbor Tunnel	Francis Scott Key Bridge	Fort McHenry Tunnel	William P. Lane, Jr. Mem. (Bay) Bridge	Harry W. Nice Mem. Bridge	
<b>E-ZPass</b>								
Commuter / Shopper / Hatem Plans	970	4,401	10,021	4,804	13,273	3,774	760	<b>38,002</b>
Percent of Total	6.6	83.9	37.0	45.2	31.7	29.4	23.0	<b>32.9</b>
MDTA (2-axle only)	1,586	154	4,262	1,843	5,835	2,620	383	<b>16,683</b>
Percent of Total	10.8	2.9	15.7	17.3	13.9	20.4	11.6	<b>14.4</b>
Non-MDTA (2-axle and 3+-axle)	7,482	316	4,774	1,286	11,146	2,154	593	<b>27,752</b>
Percent of Total	50.9	6.0	17.6	12.1	26.6	16.8	18.0	<b>24.0</b>
<b>Total E-ZPass</b>	<b>10,038</b>	<b>4,871</b>	<b>19,057</b>	<b>7,933</b>	<b>30,254</b>	<b>8,548</b>	<b>1,736</b>	<b>82,437</b>
Percent of Total	<b>68.3</b>	<b>92.8</b>	<b>70.3</b>	<b>74.6</b>	<b>72.3</b>	<b>66.5</b>	<b>52.5</b>	<b>71.3</b>
<b>Cash/Video</b>								
2-axle and 3+-axle	4,428	303	7,306	2,267	10,623	4,067	1,509	<b>30,501</b>
Percent of Total	30.1	5.8	27.0	21.3	25.4	31.6	45.6	<b>26.4</b>
<b>Non-Revenue</b>								
Official Duty	102	47	452	295	491	129	37	<b>1,553</b>
Percent of Total	0.7	0.9	1.7	2.8	1.2	1.0	1.1	<b>1.3</b>
<b>Violations</b>								
Violations	122	26	283	133	478	111	23	<b>1,178</b>
Percent of Total	0.8	0.5	1.0	1.3	1.1	0.9	0.7	<b>1.0</b>
<b>Total</b>	<b>14,690</b>	<b>5,246</b>	<b>27,098</b>	<b>10,627</b>	<b>41,847</b>	<b>12,856</b>	<b>3,305</b>	<b>115,670</b>
Percent of Total	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: MDTA

While Table 2-6 presents a snapshot of the E-ZPass® market share in FY 2015, Figure 2-9 provides a summary for each of the seven legacy facilities and for the system as a whole for FY 2010 through FY 2015.

**Figure 2-9**  
**E-ZPass® Market Share Trends**



As shown, the E-ZPass® market share has gradually increased since FY 2010. In FY 2010, the E-ZPass® share ranged from about a low of 47 percent at the Harry W. Nice Memorial Bridge to a high of 96 percent at the Thomas J. Hatem Memorial Bridge. By Region, the E-ZPass® shares were 59 percent for the combined Southern Region facilities, 67 percent for the combined Central Region facilities and 71 percent for the Northern Region facilities. For all legacy facilities combined the E-ZPass® share was 66 percent. By FY 2015, the E-ZPass® market share for all legacy facilities combined increased to 71 percent and ranged from a low of 53 percent at the Harry W. Nice Memorial Bridge to a high of 93 percent at the Thomas J. Hatem Memorial Bridge. By Region, the E-ZPass® shares increased in the range of 4 to 6 percent. E-ZPass® shares increased to 65 percent for the combined Southern Region facilities, 73 percent for the combined Central Region facilities and 75 percent for the Northern Region facilities. Approximately one-quarter of all transactions are made by customers that still preferred the cash option.

# Chapter 3

## Socioeconomic Review

### 3.1 Introduction

Vehicle trips on Maryland’s tolled facilities occur for various reasons, including, but not limited to: commuting, recreation, and commerce. Forecasting the expected use of the Maryland Transportation Authority (MDTA) System for the aforementioned reasons or otherwise is, to an extent, a function of determining projections of socioeconomic variables, such as population, employment, and income, as these types of variables generally explain the levels of and growth in commuting, commerce, etc. Economic forecasts are often seen as one of the key sources of uncertainty in the forecasting process. Consequently, for any toll transaction and toll revenue projection, including those for the MDTA System, the economic growth forecast is one of the critical input data elements. The purpose of this chapter is to describe the historical and forecasted trends in the study area socioeconomics to provide the context for updating travel demand growth projections. The socioeconomic trends review and analysis entailed a comprehensive data collection effort that included gathering a host of different pertinent variables from a variety of public and private sources.

#### 3.1.1 Review of Socioeconomic Historical Trends and Forecasts

An evaluation of socioeconomic trends and forecasts for the geographies along and surrounding the MDTA legacy toll facilities was conducted as part of the traffic forecasting update process. Such trends serve as inputs to the traffic growth analysis. Subsections below provide a summary of various demographic and economic measures reviewed for this study, including total population, employment, income, real gross regional product (GRP), inflation, and gasoline prices.

The various governmental agencies and private sector forecasting companies from which data were obtained included: the United States Census Bureau, the United States Bureau of Labor Statistics (BLS), the United States Bureau of Economic Analysis (BEA), the Energy Information Administration (EIA), the MD State Data Center (MD SDC), Woods & Poole Complete Economic and Demographic Data Source (CEDDS) by Woods & Poole Economics, Inc., 2015 (Woods & Poole), and Moody’s Analytics.

In the following tables, the socioeconomic growth rates are presented as compound average annual growth (CAAGR) percentages, reported in three- to five-year increments from 2000 through 2025, as applicable. In regards to the geographic coverage, this review started with the “big picture” at the U.S. national and regional levels<sup>1</sup>, and then focuses on the State of Maryland with sub-state groupings. County compositions of the respective geographic areas are included within footnotes.

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<sup>1</sup> South Atlantic and Middle Atlantic, with the former for the most part consisting of the states of Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia, West Virginia, and D.C.; while the latter includes New Jersey, New York, and Pennsylvania.



## 3.2 National and Larger Regional Level

### Historical Trends

#### 3.2.1 Population

The historical population data were obtained from the United States Census Bureau (census years and intercensal estimates). As presented in Table 3-1 below, population in the United States grew from about 281 million in the year 2000 to almost 319 million by 2014, averaging about a 0.9 percent per year growth rate over that timeframe. Comparatively, the South Atlantic Region, which includes Maryland, grew at a faster pace of 1.4 percent, while the Mid-Atlantic Region lagged behind at a fractional growth of 0.3 percent per year.

**Table 3-1**  
**Population – Historical Growth Trends**

Area	Levels				Compound Average Annual Growth Rate (Percent)			
	2000	2005	2010	2014	2000 - 2005	2005 - 2010	2010 - 2014	2000 - 2014
<b>United States</b>	281,421,906	295,516,599	308,745,538	318,857,056	1.0%	0.9%	0.8%	0.9%
<b>Mid Atlantic</b>	39,671,861	40,234,574	40,872,375	41,471,611	0.3%	0.3%	0.4%	0.3%
<b>South Atlantic</b>	51,769,160	56,145,779	59,777,037	62,514,615	1.6%	1.3%	1.1%	1.4%

Source: U.S. Census data

#### 3.2.2 Employment and Unemployment

The historical employment data were collected from the Bureau of Economic Analysis (BEA). Employment trends presented in Table 3-2 are typically more volatile than population and more closely resemble overall economic cycles, with relatively higher growth during pre-recession years (2000-2005), followed by notable declines in the period encompassing a recession (2005-2010), and then a subsequent recovery (2010-2014). Overall, the South Atlantic Region experienced average annual growth in employment of about 0.5 percent since 2000, while the Mid-Atlantic region showed a slower overall growth of 0.2 percent per year, and the Nation as a whole grew by 0.4 percent per annum over that time period.

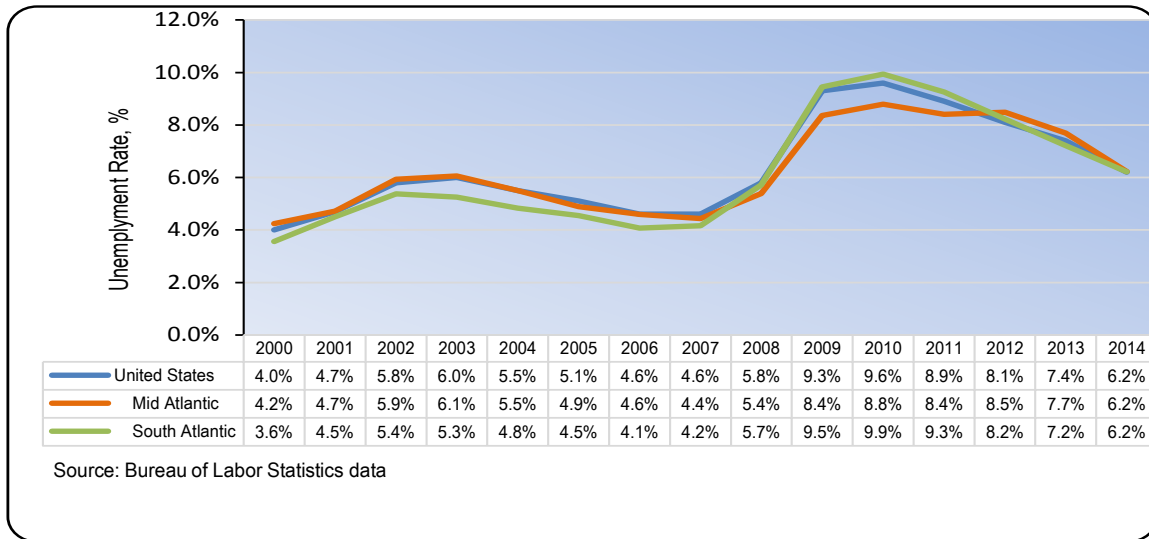
**Table 3-2**  
**Employment – Historical Growth Trends**

Area	Levels				Compound Average Annual Growth Rate (Percent)			
	2000	2005	2010	2014	2000 - 2005	2005 - 2010	2010 - 2014	2000 - 2014
<b>United States</b>	137,610,000	139,560,000	135,526,000	144,891,000	0.3%	-0.6%	1.7%	0.4%
<b>Mid Atlantic</b>	18,774,163	18,730,677	18,430,980	19,246,853	0.0%	-0.3%	1.1%	0.2%
<b>South Atlantic</b>	25,857,475	27,004,726	25,958,746	27,622,450	0.9%	-0.8%	1.6%	0.5%

Source: Bureau of Economic Analysis data for wage and salary employment

Figure 3-1 depicts annual unemployment rates over the 2000 through 2014 period, based on Bureau of Labor Statistics (BLS) data. Unemployment rates for the South and Mid-Atlantic Regions have generally tracked fairly closely with those for the Nation, with the South showing wider moves in both directions. Unemployment rates were all around 4 percent to 6 percent during the pre-recession years in the past decade. The unemployment rates then spiked closer to 10 percent in 2009, and gradually decreased to near 6 percent by the end of 2014. The unemployment rate continued to improve in 2015 with the national rate at 5.1 percent as of September 2015.

**Figure 3-1**  
**Historical Trends in Unemployment Rate**



### 3.2.3 Per Capita Real Income

Historical per capita real income is presented in Table 3-3. Nationwide, per capita annual income stood at over \$41,000 (in 2009 dollars) in 2013, which represents real growth of close to 1.0 percent per annum during the 2000-2013 time period. The corresponding income level in the South Atlantic Region is about \$2,000 less than the national average, and has in the recent past grown at rates at or below 0.7 percent per annum, which is also below the national average. Per capita income levels are substantially higher in the Mid-Atlantic Region, averaging about \$5,000-\$7,000 per year more than the national average, and have also increased faster than in the South Atlantic Region and the U.S. average during the 2000-2013 time period.

**Table 3-3**  
**Income Per Capita (real, 2009 Dollars) – Historical Growth Trends**

Area	2000	2005	2010	2013	Compound Average Annual Growth Rate (Percent)			
					2000 - 2005	2005 - 2010	2010 - 2013	2000 - 2013
United States	36,788	38,864	39,617	41,276	1.1%	0.4%	1.4%	0.9%
Mid Atlantic	41,634	43,895	46,600	48,349	1.1%	1.2%	1.2%	1.2%
South Atlantic	35,691	38,645	38,290	39,329	1.6%	-0.2%	0.9%	0.7%

Source: Moody's Analytics, September 2015 based on BEA data

### 3.2.4 Real Gross Domestic Product (GDP)

Another fundamental economic indicator that has bearing on traffic demand is gross domestic product (or gross state product/gross regional product, depending on the geographic focus). Historical real GDP is shown in Table 3-4. Based on the BEA data, national real gross domestic product has averaged 1.7 percent annually from 2000-2014. This is similar to the 1.6 percent per year growth rate in the South Atlantic Region. The real GDP in the Mid-Atlantic Region has expanded relatively more slowly since 2000, averaging 1.4 percent per year.

**Table 3-4**  
**Gross Domestic Product (real, in Millions of 2009 Dollars) – Historical Growth Trends**

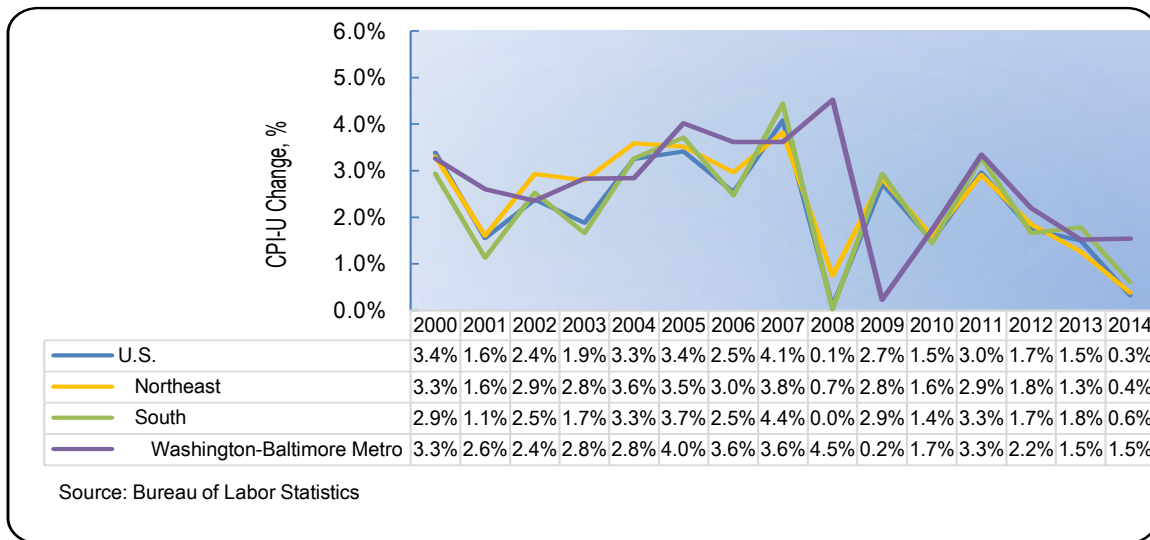
Area	2000	2005	2010	2014	Compound Average Annual Growth Rate (Percent)			
					2000 - 2005	2005 - 2010	2010 - 2014	2000 - 2014
United States	12,559,700	14,234,200	14,783,800	15,961,700	2.5%	0.8%	1.9%	1.7%
Mid Atlantic	1,974,027	2,171,022	2,251,894	2,393,221	1.9%	0.7%	1.5%	1.4%
South Atlantic	2,247,491	2,639,799	2,668,454	2,798,523	3.3%	0.2%	1.2%	1.6%

Source: Bureau of Economic Analysis data

### 3.2.5 Inflation

Inflation, as measured by the popular Consumer Price Index, averaged about 2.2 percent per year in the U.S. over the 2000 to 2014 timeframe, and reached a high of 4.1 percent in 2007, in the pre-recession period. It then dropped sharply in 2008, and more recently slipped to under 1 percent annually, as shown in Figure 3-2. Inflation in the Northeast Region (proxy for Mid-Atlantic States) averaged 2.4 percent annually, which was slightly higher than the national rate, while general prices in the South, including Maryland, trended at 2.3 percent annually, or slightly below the national average since 2000. The Washington-Baltimore Metro area, however, experienced a higher inflation rate compared to the rest of the South and the Nation, averaging 2.7 percent during the same period.

**Figure 3-2**  
**Inflation (CPI-U) – Historical Trends**

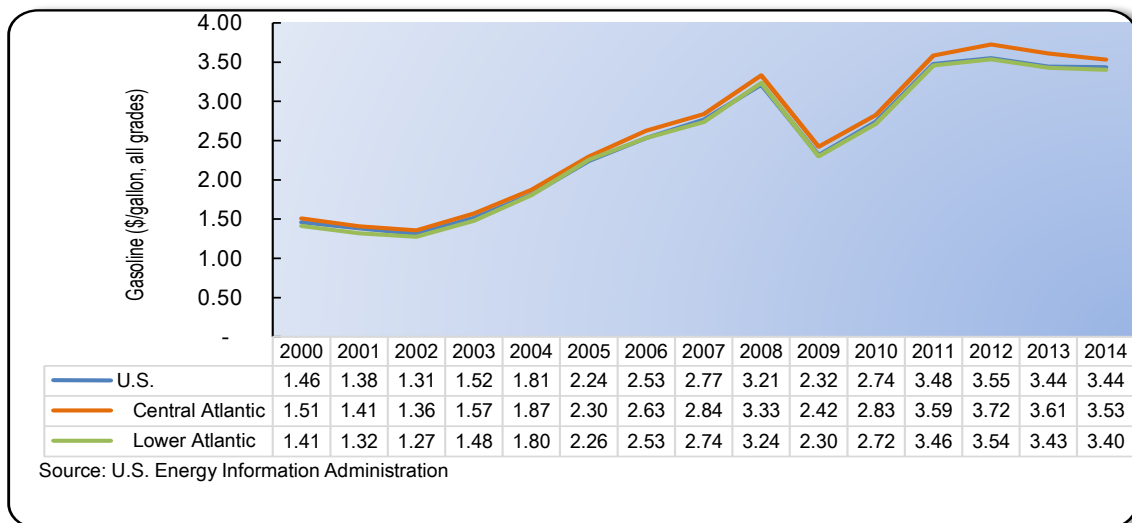


### 3.2.6 Gasoline Prices

Another factor that can influence travel demand is the price of gasoline. Figure 3-3 displays the annual average nominal retail price per gallon (in current dollars) of unleaded gasoline (all grades, all formulations) from years 2000 to 2014. The historical data from the U.S. Energy Information Administration (EIA) are shown for the United States, the Central Atlantic Region (including Maryland, and the rest of the Mid-Atlantic States)<sup>2</sup> and Lower Atlantic Region (largely equivalent to the South Regional definition by the U.S. Census).<sup>3</sup> Between these regions, price variation is relatively narrow, with the Lower Atlantic Region closely tracking the national average, and the Central Atlantic Region at somewhat higher levels (typically \$0.03 to \$0.11 cents more per gallon). Overall, between 2000 and 2014 average national gasoline prices increased from about \$1.46 per gallon to \$3.44 per gallon, with an annual low over that time period at \$1.31 in 2002. However, average national gasoline prices have most recently declined significantly, staying firmly under \$3.00 per gallon, and lately (as of September 2015) even leveling at under \$2.50 per gallon.

It should be kept in mind that on this legacy, or mature part, of the MDTA system, the overall toll transactions and revenue do not appear to be particularly sensitive to changes in gas prices. Depending on the timeframes analyzed, correlations between these variables change. There are, of course, other factors, beyond gas prices, that influence the traffic and revenue on the MDTA system.

**Figure 3-3**  
**Trends in Retail Gasoline Price**

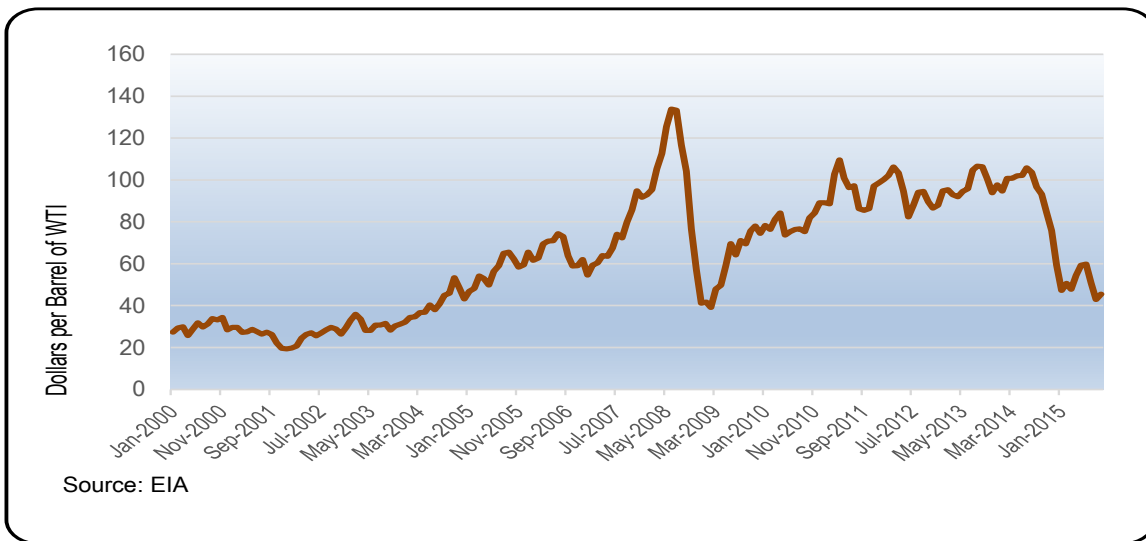


<sup>2</sup> Central Atlantic region includes: Delaware, District of Columbia, Maryland, New Jersey, New York and Pennsylvania.

<sup>3</sup> Lower Atlantic region includes: Florida, Georgia, North Carolina, South Carolina, Virginia and West Virginia.

It should also be noted that retail gasoline prices are strongly influenced by larger trends in crude oil prices. The latter can be quite volatile, and are challenging to accurately predict going forward. Since 2000, monthly crude oils prices (for WTI- West Texas Intermediate benchmark) fluctuated in the \$19.4 per barrel (in December 2001) to \$133.9 per barrel (June 2008), as illustrated in Figure 3-4. As an example of this volatility in crude oil prices, the most recent monthly quote (for September 2015) of \$45.5 was more than 50 percent lower than the \$93.2 equivalent price in September of 2014.

**Figure 3-4**  
**Crude Oil Prices – Monthly Historical Trends**



## Forecasts

### 3.2.7 Population

As presented in Table 3-5, U.S. population is forecasted to increase over the next decade at an annual rate of 0.8 percent, according to both the U.S. Census Bureau and Moody's Analytics, while Woods & Poole Economics (W&P)<sup>4</sup> projects the national population growth to be at 0.9 percent per year, which is marginally slower than the pace experienced in the past decade as previously shown in Table 3-1. Population in the South Atlantic Region is projected to increase faster, at 1.5 percent per year according to Moody's Analytics, and 1.2 percent annually according to W&P. The Mid-Atlantic Region is forecasted to experience a relatively very modest growth of around 0.1 percent per annum by Moody's and 0.4 percent per annum by W&P.

<sup>4</sup> Source: Woods & Poole Economics, Inc. Washington, D.C. Copyright 2015. Complete Economic and Demographic Data Source (CEDDS). Woods & Poole does not guarantee the accuracy of this data. The use of this data and the conclusion drawn from it are solely the responsibility of the Consultant.

**Table 3-5**  
**Projected Population Growth <sup>(1)</sup>**

Area	Census Bureau		Moody's Analytics		Woods & Poole	
	2014 - 2020	2020 - 2025	2014 - 2020	2020 - 2025	2014 - 2020	2020 - 2025
<b>United States</b>	0.8%	0.8%	0.8%	0.8%	0.9%	0.9%
<b>Mid Atlantic</b>	N/A	N/A	0.1%	0.1%	0.4%	0.4%
<b>South Atlantic</b>	N/A	N/A	1.5%	1.4%	1.2%	1.2%

Source: U.S. Census Bureau, December 2014; Moody's Analytics, September 2015; and Woods & Poole, 2015 CEDDS.

<sup>(1)</sup> Percentages are presented as compound average annual growth.

### 3.2.8 Employment and Unemployment

Employment in the Nation is projected to grow by an average of 1.4 percent per year through 2025 according to W&P, while Moody's Analytics expects a sharp deceleration from 1.0 percent annually through 2020 to 0.5 per annum during the subsequent 2020-2025 interval, as shown in Table 3-6. Regionally, with future growth averaging around 1.1 percent annually, the South Atlantic Region is expected to outperform both the Nation and the Mid-Atlantic Region, according to Moody's. The Mid-Atlantic Region is forecasted to have employment increases about 0.2 percent per annum, or 0.6 percent below the U.S. as a whole, according to Moody's. The South Atlantic and the National economies are projected to experience average employment growth at a rate stronger than in the recent past, while the Mid Atlantic is projected to grow at about par with the recent historical pace (as previously presented in Table 3-2).

**Table 3-6**  
**Projected Employment Growth <sup>(1)</sup>**

Area	Moody's Analytics		Woods & Poole	
	2014 - 2020	2020 - 2025	2014 - 2020	2020 - 2025
<b>United States</b>	1.0%	0.5%	1.5%	1.3%
<b>Mid Atlantic</b>	0.3%	0.0%	1.2%	1.0%
<b>South Atlantic</b>	1.4%	0.8%	1.6%	1.5%

Source: Moody's Analytics, September 2015; and Woods & Poole, 2015 CEDDS.

<sup>(1)</sup> Percentages are presented as compound average annual growth.

As employment grows in the coming years, the national unemployment rate is also forecasted to improve and approach full employment. According to a handful of key national sources that forecast medium to long-term U.S. unemployment, the average rates through year 2025 are projected to decrease from the 2014 rate of 6.2 percent to about 5.0 percent, as shown in Table 3-7.

**Table 3-7**  
**Projected U.S. Unemployment Rates <sup>(1)</sup>**

Source	Release Date	2015 - 2019	2020 - 2025
Congressional Budget Office	August 2015	5.1%	5.2%
Federal Reserve Bank, FOMC*	September 2015	4.9%	5.1%
Office of Management and Budget	July 2015	4.8%	4.9%
Moody's Analytics	October 2015	4.8%	4.9%
<b>Average</b>		<b>4.9%</b>	<b>5.0%</b>

\* Federal Open Market Committee, average of the upper and lower bound.  
<sup>(1)</sup> Percentages represent average rates of unemployment per timeframe.

### 3.2.9 Per Capita Real Income

As shown in Table 3-8, per capita real income for the U.S. is forecasted to increase at an average annual rate of around 2.4 percent through 2020, then decelerating to 1.0 percent through 2025, with the South Atlantic Region projected to experience a similar average pace through 2025, according to Moody's Analytics. As in the past, the Mid-Atlantic Region is forecasted to experience stronger income growth relative to the national average.

**Table 3-8**  
**Projected Real Growth in Per Capita Income <sup>(1)</sup>**

Area	Moody's Analytics		Woods & Poole	
	2013 - 2020	2020 - 2025	2013 - 2020	2020 - 2025
<b>United States</b>	2.4%	1.0%	1.5%	1.4%
<b>Mid Atlantic</b>	2.5%	1.4%	1.6%	1.6%
<b>South Atlantic</b>	2.3%	1.1%	1.5%	1.4%

Source: Moody's Analytics, September 2015; and Woods & Poole, 2015 CEDDS  
<sup>(1)</sup> Percentages are presented as compound average annual growth.

### 3.2.10 Real Gross Domestic Product

Following a 2.1 percent average annual growth in the first half of 2015, the U.S. real GDP is projected by major macroeconomic forecasters to increase by around 2.4 percent per year through 2019, followed by a deceleration to around 2.1 percent annually in subsequent years, as summarized in Table 3-9.

**Table 3-9**  
**Projected Growth in U.S. Real Gross Domestic Product <sup>(1)</sup>**

Source	Release Date	2015 - 2019	2020 - 2025
Congressional Budget Office	August 2015	2.5%	2.1%
Federal Reserve Bank, FOMC*	September 2015	2.2%	2.0%
Office of Management and Budget	July 2015	2.6%	2.3%
Woods & Poole Economics	April 2015	2.3%	2.1%
Moody's Analytics	September 2015	2.7%	1.9%
<b>Average</b>		<b>2.4%</b>	<b>2.1%</b>

\* Federal Open Market Committee, average of the upper and lower bound  
<sup>(1)</sup> Percentages represent average rates of unemployment per timeframe.

### 3.2.11 Inflation

As the post-recessionary capacity slack still lingers, inflation is expected to remain relatively moderate and inch upward in the near term, but needs to be watched for potential increases in the medium- to longer-term. Further removal of spare capacity in the labor markets may lead to increased pressures on wages as markets tighten and approach full employment later in the business cycle. A sample of major macroeconomic forecasters expect U.S. annual inflation to generally increase to about 1.8 percent through 2019, with further acceleration to about 2.3 percent on average per year over the subsequent years through 2025 as shown in Table 3-10.

**Table 3-10**  
**Projected Growth in Inflation <sup>(1)</sup>**

Source	Release Date	2015 - 2019	2020 - 2025
Congressional Budget Office	August 2015	1.8%	2.4%
Federal Reserve Bank, FOMC*	September 2015	1.6%	2.0%
Office of Management and Budget	July 2015	1.7%	2.3%
Moody's Analytics	August 2015	2.2%	2.3%
<b>Average</b>		<b>1.8%</b>	<b>2.3%</b>

\*Federal Open Market Committee, average of the upper and lower bound, using the PCE measure.  
<sup>(1)</sup> Percentages represent average rates of unemployment per timeframe.

### 3.2.12 Gasoline Prices

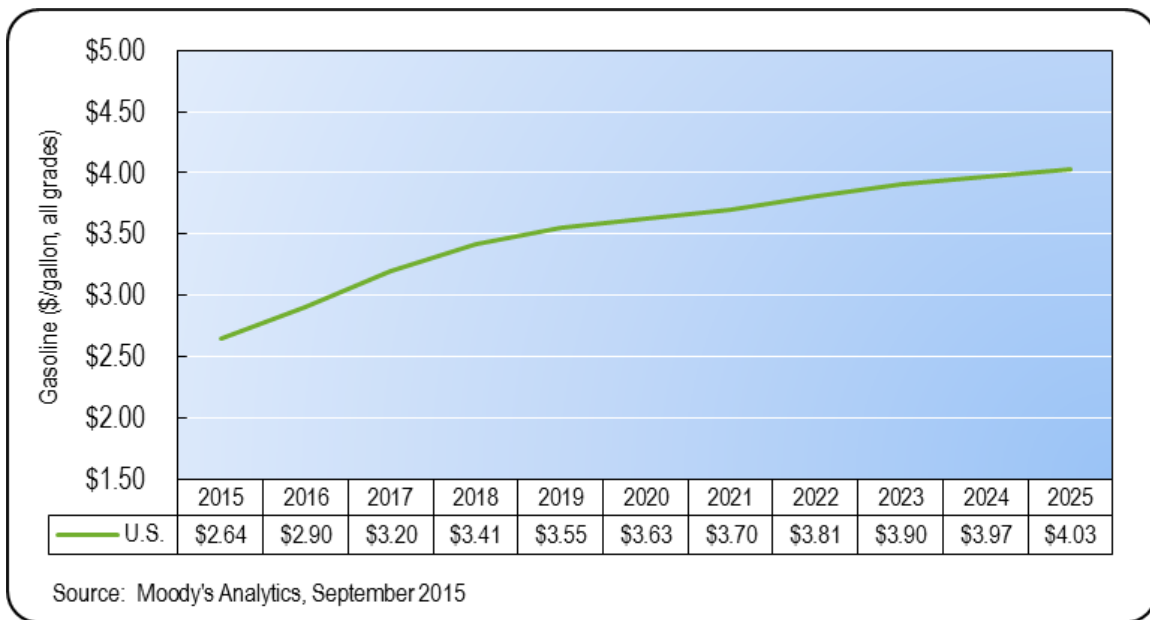
The relatively low oil prices of late are attributable to an imbalance between global oil supply and demand, with additional oil exploration in North America and slower global economic growth, particularly in major overseas markets such as China and Brazil, as main factors. Additionally, fuel



efficiency gains and environmental concerns have continued to lessen demand for crude oil as the major energy source.

Consequently, there are winners (energy consumers/importers) and losers (producers/exporters) stemming from the recent crude oil price declines, and the U.S. and global economy as a whole tends to benefit as prices remain relatively low. U.S. retail prices which hovered around \$2.46 per gallon in September 2015 are expected to remain below the \$3.00 per gallon levels through 2016, according to the EIA’s recent (October) Short-Term Energy Outlook report. It is, however, important to recognize that short-term fluctuations in energy prices can be quite volatile, both to the downside as well as the upside. Moody’s Analytics recent (September 2015-generated<sup>5</sup>) projection of U.S. retail gasoline prices called for average annual 2015 prices of \$2.64 per gallon, rising to about \$4.03 per gallon by the year 2025, as illustrated in Figure 3-5. As shown in Figure 3-5, the previous national annual peak in fuel price of \$3.55 per gallon (in nominal terms) is not forecasted to be reached again until year 2018, although in real (inflation adjusted) terms that will not be the case until the next decade. The average per gallon price over this ten-year period is projected to be about \$3.52. This ten-year growth rate of about 4.3 percent per year is also consistent with that projected by the EIA in its latest (2015) Annual Energy Outlook.

**Figure 3-5**  
**Retail Gasoline Price – National Projected Growth Trend**



<sup>5</sup> Current as of the time of the forecasts development in the fall of 2015.

### 3.3 Maryland and Sub-State Regional Level

This section provides the historical socioeconomic growth context as well as forecasts for the State of Maryland and its major planning regions<sup>6</sup>.

#### Historical Trends

##### 3.3.1 Population

As presented in Table 3-11, the historical statewide population of Maryland grew by about 680 thousand from 5.3 million in 2000 to almost 6.0 million in 2014, or 0.9 percent annually. The largest region in the State, Baltimore, expanded its population base at the relatively slowest pace of 0.6 percent annually during the 2000-2014 period, while Southern Maryland grew almost three times faster at 1.7 percent per year. The population in the remaining three major regions increased in the range of 0.9 to 1.1 percent per annum.

**Table 3-11**  
**Population – Regional Historical Growth Trend**

Area	Levels				Compound Average Annual Growth Rate (Percent)			
	2000	2005	2010	2014	2000 - 2005	2005 - 2010	2010 - 2014	2000 - 2014
<b>Maryland Statewide</b>	5,296,647	5,592,379	5,773,552	5,976,407	1.1%	0.6%	0.9%	0.9%
<b>Baltimore Region</b>	2,512,557	2,599,352	2,662,691	2,737,070	0.7%	0.5%	0.7%	0.6%
<b>Washington Suburban</b>	1,870,242	1,996,003	2,068,582	2,178,552	1.3%	0.7%	1.3%	1.1%
<b>Southern MD</b>	281,276	321,725	340,439	355,742	2.7%	1.1%	1.1%	1.7%
<b>Upper Eastern Shore</b>	209,286	229,249	239,951	241,188	1.8%	0.9%	0.1%	1.0%
<b>Lower Eastern Shore</b>	186,614	199,904	209,275	211,651	1.4%	0.9%	0.3%	0.9%

Source: U.S. Census data

##### 3.3.2 Employment

Employment in Maryland grew considerably slower than population in the 2000 to 2013 period, which included the impacts of the Great Recession<sup>7</sup>. Statewide employment change averaged 0.3 percent per year, which included a dip of around -0.4 percent annually in the 2005-2010 time period that included the economic recession, as presented in Table 3-12. Employment in the Baltimore Region grew (at 0.4 percent on average) slightly higher than the average statewide pace, while employment in Maryland's Washington suburbs increased at a 0.2 percent annual rate. The Lower

<sup>6</sup> The Maryland Department of Planning along with its State Data Center (SDC) groups all the counties/equivalents in the state into the following 6 planning regions:

Baltimore consisting of Anne Arundel, Baltimore, Carroll, Harford, Howard Counties and Baltimore City; Washington Suburban consisting of: Frederick, Montgomery and Prince George's Counties; Southern Maryland consisting of: Calvert, Charles, and St Mary's Counties; Upper Eastern Shore consisting of: Caroline, Cecil, Kent and Queen Anne's Counties; Lower Eastern Shore consisting of: Dorchester, Somerset, Wicomico and Worcester Counties; and Western Maryland consisting of: Alleghany, Garret and Washington Counties. Please note that due to its relative remoteness from the MDTA facilities, the Western Maryland Region in the Maryland Panhandle was not included in this review update.

<sup>7</sup> 2007-2009. National Bureau of Economic Research.

Eastern Shore performed the weakest, increasing at 0.1 percent per year. Southern Maryland saw the fastest rate of employment growth at 1.3 percent per annum.

**Table 3-12**  
**Employment – MD Regional Historical Growth Trend**

Area	Levels				Compound Average Annual Growth Rate (Percent)			
	2000	2005	2010	2013	2000 - 2005	2005 - 2010	2010 - 2013	2000 - 2013
<b>Maryland Statewide</b>	<u>2,581,832</u>	<u>2,677,583</u>	<u>2,625,019</u>	<u>2,709,290</u>	<u>0.7%</u>	<u>-0.4%</u>	<u>0.8%</u>	<u>0.3%</u>
<b>Baltimore Region</b>	1,303,524	1,336,483	1,314,076	1,376,571	0.5%	-0.3%	1.2%	0.4%
<b>Washington Suburban</b>	906,899	938,396	914,128	926,836	0.7%	-0.5%	0.3%	0.2%
<b>Southern MD</b>	96,233	109,750	113,404	114,945	2.7%	0.7%	0.3%	1.3%
<b>Upper Eastern Shore</b>	74,373	83,557	81,874	84,788	2.4%	-0.4%	0.9%	0.9%
<b>Lower Eastern Shore</b>	89,594	94,327	89,570	90,943	1.0%	-1.0%	0.4%	0.1%

Source: Bureau of Economic Analysis data for wage and salary employment

### 3.3.3 Per Capita Real Income

Historical per capita real income in Maryland as a whole and its two largest regions, Baltimore and Washington Suburban, have recently reached income levels and growth rates above or close to the statewide averages, as presented in Table 3-13. The Baltimore Region's per capita income growth between 2000 and 2013 was the fastest in the state, which may be partly attributable to its relatively slow population growth. The Washington Suburban Region experienced an average rate of per capita income growth of 0.8 percent annually, which was the slowest in among the five regions over the time frame.

**Table 3-13**  
**Income Per Capita (real) – MD Regional Historical Growth Trend**

Area	Levels (in millions of 2009\$)				Compound Average Annual Growth Rate (Percent)			
	2000	2005	2010	2013	2000 - 2005	2005 - 2010	2010 - 2013	2000 - 2013
<b>Maryland Statewide</b>	<u>42,501</u>	<u>47,467</u>	<u>49,221</u>	<u>50,149</u>	<u>2.2%</u>	<u>0.7%</u>	<u>0.6%</u>	<u>1.3%</u>
<b>Baltimore Region</b>	41,240	46,709	48,850	50,731	2.5%	0.9%	1.3%	1.6%
<b>Washington Suburban</b>	48,357	53,167	54,395	53,906	1.9%	0.5%	-0.3%	0.8%
<b>Southern MD</b>	37,765	41,536	44,827	44,830	1.9%	1.5%	0.0%	1.3%
<b>Upper Eastern Shore</b>	37,822	42,076	42,110	44,575	2.2%	0.0%	1.9%	1.3%
<b>Lower Eastern Shore</b>	30,646	34,698	35,873	37,229	2.5%	0.7%	1.2%	1.5%

Source: Woods & Poole, 2015 based on BEA data

### 3.3.4 Real Gross Regional Product

Total economic output in Maryland, as measured in terms of Gross State Product, exceeded \$318 billion (in 2009\$), having grown at the average pace of 2.3 percent per annum from 2000 to 2013, as shown in Table 3-14. Growth rates that exceeded the national average were also experienced by all of Maryland's five major planning regions, with the Lower Eastern Shore growing the slowest at 1.8 percent per annum, and Southern Maryland expanding at a more robust real annual rate of 3.4 percent.

**Table 3-14**  
**Gross Regional Product (real) – MD Regional Historical Growth Trend**

Area	Levels (in millions of 2009\$)				Compound Average Annual Growth Rate (Percent)			
	2000	2005	2010	2013	2000 - 2005	2005 - 2010	2010 - 2013	2000 - 2013
<b>Maryland Statewide</b>	232,801	287,169	311,023	318,045	4.3%	1.6%	0.6%	2.3%
<b>Baltimore Region</b>	115,902	142,602	152,619	159,394	4.2%	1.4%	1.1%	2.3%
<b>Washington Suburban</b>	90,101	110,303	121,903	121,612	4.1%	2.0%	-0.1%	2.2%
<b>Southern MD</b>	7,882	10,778	12,410	12,512	6.5%	2.9%	0.2%	3.4%
<b>Upper Eastern Shore</b>	5,448	7,230	7,421	7,651	5.8%	0.5%	0.8%	2.5%
<b>Lower Eastern Shore</b>	5,859	7,192	7,446	7,498	4.2%	0.7%	0.2%	1.8%

Source: Woods & Poole, 2015 based on BEA data

## Forecasts

### 3.3.5 Population

Maryland's population is forecast to grow at an average rate of 0.7 percent per annum, according to the Maryland State Data Center, and at a faster pace of 0.9 percent annually according to W&P, as shown in Table 3-15<sup>8</sup>. While the Washington Suburban Region is projected to equal the statewide population growth rate, according to both sources, the Baltimore Region is forecasted to somewhat lag the State in population growth. Southern Maryland is expected to continue to outperform the rest of the State, with future population growth at about twice the statewide rate through 2025.

**Table 3-15**  
**Projected Regional Population Growth <sup>(1)</sup>**

Area	Maryland State Data Center		Woods & Poole	
	2015 - 2020	2020 - 2025	2015 - 2020	2020 - 2025
<b>Maryland Statewide</b>	0.7%	0.7%	0.9%	0.9%
<b>Baltimore Region</b>	0.6%	0.4%	0.8%	0.8%
<b>Washington Suburban</b>	0.6%	0.7%	1.0%	0.9%
<b>Southern MD</b>	1.7%	1.5%	1.6%	1.5%
<b>Upper Eastern Shore</b>	1.0%	1.2%	1.2%	1.2%
<b>Lower Eastern Shore</b>	1.1%	0.9%	0.7%	0.7%

Source: MD SDC, July 2014; and Woods & Poole, 2015 CEDDS

<sup>(1)</sup> Percentages are presented as compound average annual growth.

<sup>8</sup> While county-level forecast from Moody' Analytics were also procured, not all the counties were included to fully match each of the Maryland major planning regions. Consequently, for population and the other variables covered in this section the two main sources used are MD SDC and W&P.

Also, MD SDC provides projections in five-year intervals, hence the future years anchored around years 2015, 2020 and 2025.

### 3.3.6 Employment

Similar to the national trends, employment in Maryland is expected to rebound relative to both its recent historical trend and population growth. Statewide employment is forecasted to increase on average in the 0.7 percent to 1.1 percent per annum range through 2025, according to the MD SDC, and somewhat faster according to W&P, as shown in Table 3-16. While most of the other regions are projected to experience employment growth rates relatively similar to the statewide average, Southern Maryland and Upper Maryland are forecasted to experience a higher pace of growth.

**Table 3-16**  
Projected Regional Employment Growth <sup>(1)</sup>

Area	Maryland State Data Center		Woods & Poole	
	2015 - 2020	2020 - 2025	2015 - 2020	2020 - 2025
<b>Maryland Statewide</b>	<u>1.1%</u>	<u>0.7%</u>	<u>1.4%</u>	<u>1.3%</u>
<b>Baltimore Region</b>	1.0%	0.6%	1.4%	1.3%
<b>Washington Suburba</b>	1.1%	0.7%	1.4%	1.3%
<b>Southern MD</b>	1.4%	1.2%	1.8%	1.7%
<b>Upper Eastern Shore</b>	1.5%	1.0%	1.6%	1.5%
<b>Lower Eastern Shore</b>	1.3%	0.6%	1.3%	1.1%

Source: MD SDC, January 2015; and Woods & Poole, 2015 CEDDS

<sup>(1)</sup> Percentages are presented as compound average annual growth.

### 3.3.7 Per Capita Real Income

In line with national trends, per capita real income in Maryland is projected to grow through 2025 at a rate faster than in the recent past. Statewide per capita real income is forecasted to increase by about 1.5 percent annually on average. It is the temporal distribution of that growth that differs between the two sources. The State Data Center (SDC) predicts a substantial deceleration of growth past 2020, while the W&P forecast calls for a relatively steady pace through 2025, as shown in Table 3-17.

**Table 3-17**  
Projected Regional Real Per Capita Income Growth <sup>(1)</sup>

Area	Maryland State Data Center		Woods & Poole	
	2015 - 2020	2020 - 2025	2015 - 2020	2020 - 2025
<b>Maryland Statewide</b>	<u>1.8%</u>	<u>1.1%</u>	<u>1.4%</u>	<u>1.4%</u>
<b>Baltimore Region</b>	2.0%	1.2%	1.6%	1.5%
<b>Washington Suburban</b>	1.6%	1.0%	1.3%	1.3%
<b>Southern MD</b>	1.9%	1.2%	1.1%	1.1%
<b>Upper Eastern Shore</b>	2.0%	1.2%	1.4%	1.3%
<b>Lower Eastern Shore</b>	1.8%	1.1%	1.6%	1.5%

Source: MD SDC, January 2015; and Woods & Poole, 2015 CEDDS

<sup>(1)</sup> Percentages are presented as compound average annual growth.

### 3.3.8 Real Gross Regional Product

According to W&P, Maryland's Statewide Gross Regional Product (GRP) is forecasted to show real growth of close to 2.2 percent per annum as presented in Table 3-18. This is slightly below the State's recent historical pace and to the forecasted average GDP rate for the Nation as a whole for the next decade. The Baltimore and Washington Suburban planning regions are projected to match the statewide GRP real growth, while the Lower Eastern Shore is expected to lag behind at closer to 2.0 percent per year, and Southern Maryland is again in the growth leadership position with a real GRP forecasted to expand at about 2.5 percent annually through 2025.

**Table 3-18**  
**Projected Real Growth in Gross Regional Product <sup>(1)</sup>**

Area	Woods & Poole	
	2015 - 2020	2020 - 2025
<b>Maryland Statewide</b>	<u>2.2%</u>	<u>2.1%</u>
<b>Baltimore Region</b>	2.2%	2.1%
<b>Washington Suburban</b>	2.2%	2.1%
<b>Southern MD</b>	2.6%	2.4%
<b>Upper Eastern Shore</b>	2.4%	2.2%
<b>Lower Eastern Shore</b>	2.1%	2.0%

Source: MD SDC, January 2015; and Woods & Poole, 2015 CEDDS  
<sup>(1)</sup> Percentages are presented as compound average annual growth.

## 3.4 Summary and Conclusion

Having endured the Great Recession and the relatively sluggish recovery in the recent past, the general macroeconomic environment in the U.S., Maryland, the South and Mid-Atlantic Regions has lately been strengthening, which is likely to bode well for the area in the near future. Within Maryland, the Southern sub-state planning region is projected to experience particularly strong growth with respect to most of the analyzed measures relative to the other Maryland regional groupings.

A majority of credible forecasting agencies (both public and private) are now publishing expectations for continued economic output, employment and income expansion, accompanied by only moderate inflation within the short to medium-term future. While labor markets along with the larger economic activity measures, have continued to improve into 2015, the uneven nature of this strengthening has persisted. A number of risks, such as the fragility of the nascent European recovery, a slowdown in some of the major Asian and Latin American trading partners, exacerbated threats of extremism in the Middle East, fluctuations in commodity (particularly gasoline) and currency markets, and the public sector fiscal difficulties and constraints still remain a headwind on growth in the short-term, as the larger U.S. and global economies are trying to gain a stronger expansionary momentum.

In conclusion, while the growth momentum is generally strengthening and broadening, one can be cautiously optimistic about the ongoing economic expansion that is likely to be experienced in the MDTA geographic influence area. It is believed that this may translate into continued modest increases in traffic demand on the MDTA legacy facilities over the coming decade, similar to the growth rates projected about a year ago. There are, however, other factors, e.g., toll rates and/or transportation network changes, etc., beyond the overall socioeconomic growth that will also influence the pace of traffic growth on the legacy system as will be summarized in Chapter 4.

# Chapter 4

## Traffic and Revenue Forecast

This chapter summarizes the development of the forecasts of future year transactions and toll revenue for the seven legacy toll facilities of the MDTA. These 10-year annual forecasts have been prepared by facility and vehicle category through FY 2025 and include monthly forecasts for FY 2016 and 2017.

### 4.1 Traffic and Toll Revenue Forecasts

This section provides an overview of the development of the traffic and toll revenue forecasts including a description of how the traffic and toll revenue model was developed and the major model data inputs. These data inputs including toll rates and the impacts of the recent toll rate reductions, traffic growth forecasts, and the impacts associated with planned improvements to the legacy facilities.

#### 4.1.1 Traffic and Toll Revenue Forecast Model

The traffic and toll revenue model with resulting transaction and toll revenue forecasts were made independently by facility based on actual transaction and revenue data from FY 2010 through August 2015, including the full 2015 fiscal year and the first two months of FY 2016.

The model developed for this study consisted of a No Toll Decrease Scenario/Model which used actual transaction and toll revenue data provided by the MDTA as the foundation. The data was provided by facility, month and vehicle classification through August 2015. The end product of the No Toll Decrease Model was forecasts of transactions by the following vehicle and payment classes:

- **Passenger Cars:**
  - Cash
  - MD Plan E-ZPass®
  - Non-MD Plan E-ZPass®
  - Video
  - Commuter/Shopper
  - Hatem A and B
  - Official Duty
- **Commercial Vehicles (3+ axles):**
  - Cash
  - MD Plan E-ZPass®
  - Non-MD Plan E-ZPass®
  - Video

A passenger car is defined as a two-axle vehicle, while commercial vehicles are those having 3-or-more axles. Passenger car and commercial vehicle transactions were forecasted independently by facility based upon growth rates of the historical and projected correlation with the economic variables described in more detail in Chapter 3. The forecasts by vehicle type were then disaggregated into applicable payment categories based upon historical and projected participation trends. These forecasted transactions by payment type were then converted to toll revenue estimates based on the toll levied for the respective vehicle and payment classes.

The Toll Decrease Scenario/Model was developed to accommodate the toll reductions implemented on July 1, 2015, specifically for two-axle vehicles with a Maryland E-ZPass® and identified below and shown previously in Tables 1-1 through 1-3. Appendix A also provides the toll schedules by facility



and payment class. The Toll Decrease Scenario/Model used the No Toll Decrease Scenario/Model forecasts as its basis. Then, using actual traffic data prior to (April through June) and following (July and August) the July 1, 2015 toll decrease, elasticity factors for relevant payment types and vehicle classes were developed. It should be noted that the elasticity factors were estimated for each facility and were based on two months of actual data following the toll decrease. The toll elasticities should be reviewed and refined once more actual data becomes available. However, based on the data available at the time of the forecast, these factors were estimated, reviewed and adjusted to arrive at a reasonable forecast of future transactions including the toll adjustments.

Overall elasticity rates for the analysis were generally between -0.10 and -0.30, meaning for a 100 percent toll decrease it would be expected that there would be an increase in transactions of between 10 to 30 percent. However, based on the actual data available, the toll decrease did not generate significant amounts of new traffic. In fact, and particularly for two-axle Maryland E-ZPass® vehicles, of the increase in transactions to this vehicle/method of payment category, the data suggests that approximately 65 percent were former cash transactions, 30 percent Non-Maryland E-ZPass® transactions, and 5 percent new transactions.

Once traffic by payment and vehicle class under the toll decreases was estimated and incorporated in the model, gross toll revenue was calculated for each vehicle category. Following this, the transaction and revenue impacts of planned roadway improvements were then incorporated.

The major traffic and toll revenue model data input variables included the following.

#### 4.1.1.1 Toll Rates and Fee Adjustments

The transaction and toll revenue forecast model incorporated the estimated impacts of the toll reductions implemented by MDTA on July 1, 2015 (FY 2016) as previously shown in Tables 1-1 through 1-3. The toll reductions were as follows:

- The discount for Maryland E-ZPass® was increased from 10 percent to 25 percent for the Baltimore Harbor (I-895) and Fort McHenry (I-95) tunnels, the Francis Scott Key Bridge (I-695), the Thomas J. Hatem Memorial Bridge (US 40) and the John F. Kennedy Memorial Highway (I-95), reducing the round-trip toll from \$7.20 to \$6.00. The round-trip toll at the Governor Harry W. Nice Memorial Bridge (US 301) was reduced from \$5.40 to \$4.50;
- Eliminated the Maryland E-ZPass® \$1.50 monthly account fee for Maryland residents;
- Reduced all cash, video, commuter and shoppers' toll rates at the Bay Bridge (US 50/301), including reducing the two-axle cash rate from \$6.00 to \$4.00 round trip and the commuter rate from \$2.10 to \$1.40. In addition, the Maryland E-ZPass® toll rate was reduced from \$5.40 to \$2.50;
- Reduced the toll at the Hatem Bridge by 30 percent for three- and four-axle vehicles with Maryland E-ZPass®. The three-axle toll was reduced from \$16.00 to \$11.20, while four-axle toll was reduced from \$24.00 to \$16.80;
- Increased the Maryland E-ZPass® supplemental rebate program for vehicles with five-or-more axles by 5 percent per trip. Prior to July 1, 2015 discounts were 5 percent for 60-79 trips, 10 percent for 80-99 trips, and 15 percent for 100 or more trips per transponder in a calendar

month. These were changed to 10 percent for 60-79 trips, 15 percent for 80-99 trips, and 20 percent for 100 or more trips; and

- Effective January 1, 2016, for vehicles using the Childs Street and I-695 turnaround exits at the Baltimore Harbor Tunnel and Key Bridge respectively, Maryland E-ZPass toll rates will decrease to \$2.00 per axle for three-to-six-plus-axle vehicles. For example, three-axle vehicles will see a toll reduction from \$8.00 to \$6.00 and four-axle vehicles from \$12.00 to \$8.00.

#### 4.1.1.2 Traffic Growth

Economic growth is an important driving force for the region and is also linked with traffic growth. The growth in regional population and employment will tend to lead to an increase in traffic volumes for commuting purposes, as well as for other activities like shopping and recreation. Data for gross regional product, both state and the Baltimore region, were procured as a measure to reflect the relationship with the increasing trend of toll transactions at the legacy facilities. Historic and forecast data were also obtained from:

- The United States Census Bureau;
- The United States Bureau of Economic Analysis (BEA);
- The United States Bureau Energy Information Administration (EIA);
- Maryland State Data Center (MD SDC), Woods & Poole Economics (W&P); and
- Moody's Analytics.

Population, employment, gross regional product (GRP), and gasoline prices were obtained from these sources and were used for evaluation of the inputs used in deriving traffic growth forecasts as a function of these measures.

The econometric models developed and used for the traffic growth forecasts in the March 2015 traffic and revenue study sought to establish correlative relationships between various independent variables (such as population, employment, GRP, etc.) and the dependent variable (transactions). The selected independent variables were then used in the forecasting process together with the available-at-the-time future year forecast data. In some cases adjustments that would have a more local effect on the traffic volumes of the toll facilities were also incorporated. This included localized construction impacts associated with major planned highway improvements.

The latest historical and forecasts of socioeconomic/independent variable-related data were collected and analyzed in this update, with the findings summarized in Chapter 3. As a result of this analysis, it was concluded that the latest socioeconomic growth projections for the next 10 years are nearly the same or slightly slower than those developed for the earlier forecasts. Consequently, based on the econometric regression analysis, combined with updated forecasts of the explanatory socioeconomic variables, updated growth projections were developed. This update resulted in only minor adjustments, mostly based on the newly-released historical transaction data, to the early years of the forecasts horizon. These updated growth forecasts were incorporated into the traffic and toll revenue forecast model.

#### 4.1.1.3 Planned Roadway Improvements

The major improvements expected to impact the MDTA legacy facilities and included in the forecast model are described below.

- **Baltimore Harbor Tunnel (I-895)** - Replace the deck and superstructure of the bridge over the Patapsco Flats (north of MD 295 to the I-895 Spur merge). Construction is scheduled to extend from September 2016 to May 2019. Plans call for one lane in each direction to be maintained throughout construction;
- **Fort McHenry Tunnel (I-95)** - This project involves improvements from the tunnel to the I-895 merge. When completed, continuous 4-lanes in each direction will be provided. Construction is scheduled to run from December 2016 to October 2018 and will only involve off-peak lane closures. This project will also provide capacity on I-95 allowing for some diversion from I-895 when the I-895 Canton Viaduct replacement project begins.
- **Canton Viaduct Replacement (I-895)** - This project, extending from the tunnel to Interstate Avenue, will be replacing the Canton Viaduct and ramp to Holabird Avenue. Construction is scheduled to run from June 2018 to June 2021. One lane in each direction will be maintained from November 2018 to June 2021. As part of the considerations of this project, lane closures would not occur until November 2018, allowing for the I-95 improvements to be completed to help facilitate any traffic diversions to I-95.

## 4.2 Basic Assumptions

Transaction and revenue estimates for the MDTA legacy toll facilities were predicated upon the following assumptions, which are considered reasonable by CDM Smith for purposes of the forecast:

1. This study is limited to the seven MDTA legacy facilities and does not include forecasts for the Intercounty Connector or the I-95 Express Toll Lanes<sup>SM</sup> ;
2. The seven legacy toll facilities and approach roads will continue to be well-maintained and effectively signed;
3. No competing highway projects other than those identified in this report will be constructed or significantly improved during the forecast period;
4. MDTA will continue to operate within its business rules and practices;
5. The existing toll collection concept and toll schedules will be in effect throughout the forecast period;
6. For the purposes of this report, it is assumed that no toll adjustments will be made during the forecasting period and that any conversion of facilities to all-electronic tolling will be revenue neutral;
7. Annual revenue estimates are expressed in future year dollars (nominal);
8. No major recession, natural disasters or other significant exogenous events will occur that would significantly reduce travel in the region;
9. Population and employment growth will occur as presented in this study; and
10. Motor fuel will remain in adequate supply, and future price increases will not significantly exceed the long term rate of inflation.

Any significant departure from these basic assumptions could materially affect forecasted transactions and toll revenue for the seven facilities.

## 4.3 Transaction and In-Lane Toll Revenue Forecasts

### 4.3.1 Annual Transactions and In-Lane Toll Revenue by Facility

A summary of estimated transactions and In-Lane Toll Revenue forecasts from FY 2015 through FY 2025 for each of the seven MDTA legacy facilities is presented in this section by passenger car and commercial vehicle classes in Tables 4-1 through 4-7, which are also provided in Appendix A. The forecasts were developed based on the spreadsheet model and modeling process discussed previously in this chapter.

#### 4.3.1.1 John F. Kennedy Memorial Highway (I-95)

Estimates of transactions and In-Lane Toll Revenue for the John F. Kennedy Memorial Highway (I-95) are provided in Table 4-1. The John F. Kennedy Memorial Highway processed 14.7 million transactions in FY 2015. With the commercial vehicles accounting for 12 percent of the transactions, revenue of \$166.5 million was generated in FY 2015. Including normal growth along with the positive impacts of the toll reductions, this is estimated to increase to 14.9 million transactions in FY 2016, generating an estimated \$166.1 million in In-Lane Toll Revenue under the new toll rates. Following an estimated normal growth rate of 1.2 percent in FY 2017, transactions and In-Lane Toll Revenue on John F. Kennedy Memorial Highway are estimated to increase at a normal growth rate of just under 1.0 percent. Transactions are expected to grow to an estimated 16.0 million by 2025, an average annual percent growth of 0.9 percent, generating an estimated \$178.4 million in In-Lane Toll Revenue.

#### 4.3.1.2 Thomas J. Hatem Memorial Bridge

Estimates of transactions and In-Lane Toll Revenue for the Thomas J. Hatem Memorial Bridge (US 40) are provided in Table 4-2. In FY 2016, a decline in passenger car transactions is forecasted, resulting from unexpectedly high transactions in October FY 2015. Transactions on the Hatem Memorial Bridge grew from 412,774 in October of FY 2014 to 664,788 in October of FY 2015, a growth of 61.1 percent. This magnitude of growth is not consistent with prior years, yielding the conclusion that this is a trend that will not continue in FY 2016. In accounting for the return of October traffic to historical monthly trends, the overall growth from FY 2015 to FY 2016 is expected to decrease. Hatem Memorial Bridge is forecasted to have an average annual growth in transactions of 0.6 percent over the remaining 9 years of the forecast period, as presented in Table 4-2. By FY 2020, the mid-point in the forecast period, transactions are estimated at 5.2 million, resulting in revenue of \$ 11.1 million. By FY 2025, transactions are estimated to increase to 5.3 million, resulting in revenue growing to \$ 11.3 million. The percent of commercial vehicles on the Bridge is estimated at 4 percent during the 10-year forecast period.

#### 4.3.1.3 Baltimore Harbor Tunnel

The Baltimore Harbor Tunnel transactions and In-Lane Toll Revenue are presented in Table 4-3. Between FY 2016 and FY 2020, transactions and revenue are estimated to decrease as a result of traffic diversion to other parallel MDTA facilities as a result of planned construction on the approaches to the Baltimore Harbor Tunnel. Transactions in FY 2015 were 27.1 million, generating \$85.5 million in toll revenue. In FY 2020, transactions are estimated to decline to 21.0 million, the result of traffic diversions due to the aforementioned construction project. Due in part to the construction impacts revenue in FY 2020 is estimated at \$60.9 million. By FY 2025, transactions are forecasted to increase to 26.3 million generating an estimated \$79.6 million in toll revenue. These increases are in part due

to the return of diverted traffic to the Baltimore Harbor Tunnel upon the completion of the construction at the approaches. The percentage of commercial vehicles remains relatively constant during the forecast period at 2 percent.

**Table 4-1**  
**John F. Kennedy Memorial Highway (I-95)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	13.00		1.69		14.69	
2016	13.15	1.1%	1.70	0.7%	14.85	1.1%
2017	13.30	1.2%	1.72	1.3%	15.03	1.2%
2018	13.41	0.8%	1.74	0.8%	15.15	0.8%
2019	13.52	0.8%	1.74	0.3%	15.26	0.7%
2020	13.63	0.8%	1.75	0.5%	15.38	0.8%
2021	13.74	0.8%	1.76	0.5%	15.49	0.8%
2022	13.86	0.9%	1.77	0.7%	15.63	0.9%
2023	13.98	0.9%	1.78	0.7%	15.77	0.9%
2024	14.11	0.9%	1.79	0.6%	15.90	0.9%
2025	14.24	0.9%	1.80	0.6%	16.04	0.9%

Fiscal Year	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$97.30		\$69.23		\$166.54	
2016	96.15	-1.2%	69.98	1.1%	166.13	-0.2%
2017	97.30	1.2%	70.89	1.3%	168.19	1.2%
2018	98.08	0.8%	71.46	0.8%	169.54	0.8%
2019	98.86	0.8%	71.67	0.3%	170.53	0.6%
2020	99.65	0.8%	72.03	0.5%	171.68	0.7%
2021	100.45	0.8%	72.39	0.5%	172.84	0.7%
2022	101.35	0.9%	72.90	0.7%	174.25	0.8%
2023	102.27	0.9%	73.41	0.7%	175.67	0.8%
2024	103.19	0.9%	73.85	0.6%	177.03	0.8%
2025	104.12	0.9%	74.29	0.6%	178.41	0.8%

<sup>(1)</sup> Average Annual Percent Change

**Table 4-2**  
**Thomas J. Hatem Memorial Bridge (US 40)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	5.06		0.18		5.25	
2016	4.84	-4.5%	0.20	11.1%	5.04	-3.9%
2017	4.87	0.7%	0.21	0.8%	5.07	0.7%
2018	4.90	0.7%	0.21	0.4%	5.11	0.7%
2019	4.94	0.7%	0.21	0.2%	5.14	0.7%
2020	4.97	0.6%	0.21	0.1%	5.17	0.6%
2021	5.00	0.6%	0.21	0.1%	5.20	0.6%
2022	5.03	0.6%	0.21	0.1%	5.23	0.6%
2023	5.06	0.6%	0.21	0.1%	5.26	0.6%
2024	5.09	0.6%	0.21	0.1%	5.30	0.6%
2025	5.12	0.6%	0.21	0.1%	5.33	0.6%

Fiscal Year	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$5.11		\$6.08		\$11.19	
2016	4.64	-9.3%	6.23	2.6%	10.87	-2.8%
2017	4.67	0.7%	6.28	0.8%	10.95	0.8%
2018	4.70	0.7%	6.31	0.4%	11.01	0.5%
2019	4.74	0.7%	6.32	0.2%	11.06	0.4%
2020	4.77	0.6%	6.33	0.1%	11.09	0.3%
2021	4.79	0.6%	6.33	0.1%	11.13	0.3%
2022	4.82	0.6%	6.34	0.1%	11.16	0.3%
2023	4.85	0.6%	6.34	0.1%	11.20	0.3%
2024	4.88	0.6%	6.35	0.1%	11.23	0.3%
2025	4.91	0.6%	6.36	0.1%	11.27	0.3%

<sup>(1)</sup> Average Annual Percent Change

**Table 4-3**  
**Baltimore Harbor Tunnel (I-895)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	26.51		0.59		27.10	
2016	25.28	-4.7%	0.58	-0.5%	25.86	-4.6%
2017 <sup>(2)</sup>	24.16	-4.4%	0.53	-8.7%	24.69	-4.5%
2018	24.01	-0.6%	0.49	-7.9%	24.50	-0.8%
2019 <sup>(3)</sup>	21.02	-12.5%	0.28	-42.6%	21.30	-13.1%
2020	20.70	-1.5%	0.26	-8.2%	20.96	-1.6%
2021	20.75	0.2%	0.26	0.7%	21.01	0.2%
2022	25.58	23.3%	0.59	126.8%	26.17	24.6%
2023	25.63	0.2%	0.59	0.3%	26.22	0.2%
2024	25.68	0.2%	0.59	0.2%	26.28	0.2%
2025	25.73	0.2%	0.60	0.2%	26.33	0.2%

Fiscal Year	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$77.03		\$8.50		\$85.54	
2016	69.81	-9.4%	8.36	-1.7%	78.17	-8.6%
2017 <sup>(2)</sup>	66.72	-4.4%	7.64	-8.7%	74.36	-4.9%
2018	66.32	-0.6%	7.04	-7.9%	73.35	-1.4%
2019 <sup>(3)</sup>	58.05	-12.5%	4.04	-42.6%	62.08	-15.4%
2020	57.16	-1.5%	3.70	-8.2%	60.87	-2.0%
2021	57.30	0.2%	3.73	0.7%	61.04	0.3%
2022	70.65	23.3%	8.46	126.8%	79.11	29.6%
2023	70.79	0.2%	8.49	0.3%	79.28	0.2%
2024	70.93	0.2%	8.51	0.2%	79.44	0.2%
2025	71.07	0.2%	8.52	0.2%	79.60	0.2%

<sup>(1)</sup> Average Annual Percent Change

<sup>(2)</sup> Construction begins September 2016

<sup>(3)</sup> Construction ends May 2019

#### 4.3.1.4 Fort McHenry Tunnel

The Fort McHenry Tunnel transactions and In-Lane Toll Revenue forecasts are presented in Table 4-4. This facility recorded the highest total transactions of all the legacy toll facilities at 41.9 million in FY 2015, and is forecasted to grow to an estimated 48.6 million by FY 2020, partly the result of traffic diversions from the construction activities at the Baltimore Harbor Tunnel (BHT). With the return of traffic to the BHT following completion of construction activities, transactions in FY 2025 were forecasted at 47.3 million, a growth of 1.2 percent over the 10-year forecast period. These transactions resulted in the highest toll revenue among the legacy facilities at \$185.8 million in FY 2015, and is forecasted to increase to \$198.0 million by FY 2025. The percentage of commercial vehicles remains relatively unchanged at 8 percent throughout the 10-year forecast period.

#### 4.3.1.5 Francis Scott Key Bridge

Table 4-5 provides forecasts of transactions and In-Lane Toll Revenue for the Francis Scott Key Bridge. In 2015, the total transactions were 10.6 million. By FY 2020 they are forecasted to increase to 12.6 million, partly as a result of traffic diversions from the construction activities at the Baltimore Harbor Tunnel (BHT). With the return of traffic to the BHT following completion of construction activities, transactions are estimated to be 11.8 million by FY 2025, an average annual percent growth of 1.0 percent over the ten year forecast period. Commercial vehicles represent approximately 9 percent of all transactions throughout the forecast period. The revenue for this facility is estimated to increase from \$43.0 million in FY 2015 to \$45.8 million in FY 2025.

#### 4.3.1.6 William Preston Lane Jr. Memorial (Bay) Bridge

In FY 2015, the William Preston Lane Jr. Memorial (Bay) Bridge processed a total of 12.9 million transactions, as shown in Table 4-6. Of these, 7 percent or 0.9 million were commercial vehicle transactions. Transactions are forecasted to reach an estimated 14.1 million by FY 2025, resulting in an average annual percent growth of 0.9 percent. Actual revenue of \$81.2 million was generated in FY 2015, and as a result of the sizeable toll reductions across all vehicle categories and methods of toll payment on July 1, 2015, is forecasted to decrease to \$52.3 million in FY 2016 and increasing to \$55.5 million by FY 2025.

#### 4.3.1.7 Harry W. Nice Memorial Bridge

Estimates of transactions and In-Lane Toll Revenue for the Harry W. Nice Memorial Bridge are provided in Table 4-7. The Bridge produced the lowest number of total transaction of the seven legacy facilities, reaching 3.3 million in FY 2015, with commercial vehicles accounting for 6 percent of the total. Although passenger car transactions are estimated to increase by 1.2 percent in FY 2016 based on available year-to-date data, commercial vehicles are estimated to decrease by 1.2 percent based on the same data. This may be due to normal, short-term fluctuations in traffic that have been magnified by the small number of commercial vehicles involved (i.e. this estimated decrease is equivalent to an average of 220 vehicles per month or 7 trucks per day). This facility is estimated to have an average annual growth in transactions of 0.2 percent through FY 2025, when transactions are expected to reach 3.4 million, with the percent of commercial vehicles increasing slightly to 7 percent. Revenue in FY 2015 reached \$21.4 million and is forecasted to grow by 0.5 percent per year on average to FY 2020, when revenue of \$21.6 million is forecasted. From FY 2020 to FY 2025 revenue is estimated to grow at an average of 0.4 percent per year, reaching \$22.1 million.



**Table 4-4**  
**Fort McHenry Tunnel (I-95)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	38.32		3.53		41.85	
2016	40.42	5.5%	3.62	2.4%	44.04	5.2%
2017 <sup>(2)</sup>	41.21	2.0%	3.63	0.3%	44.84	1.8%
2018	41.52	0.8%	3.63	0.0%	45.15	0.7%
2019 <sup>(3)</sup>	44.11	6.2%	3.78	4.1%	47.88	6.1%
2020	44.85	1.7%	3.80	0.5%	48.64	1.6%
2021	45.18	0.7%	3.80	0.2%	48.98	0.7%
2022	42.49	-6.0%	3.58	-5.8%	46.07	-5.9%
2023	42.91	1.0%	3.58	-0.2%	46.49	0.9%
2024	43.30	0.9%	3.57	-0.2%	46.87	0.8%
2025	43.69	0.9%	3.56	-0.2%	47.25	0.8%

Fiscal Year	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$115.29		\$70.49		\$185.78	
2016	117.45	1.9%	72.18	2.4%	189.63	2.1%
2017 <sup>(2)</sup>	119.75	2.0%	72.38	0.3%	192.12	1.3%
2018	120.65	0.8%	72.39	0.0%	193.03	0.5%
2019 <sup>(3)</sup>	128.16	6.2%	75.36	4.1%	203.52	5.4%
2020	130.30	1.7%	75.77	0.5%	206.07	1.3%
2021	131.28	0.7%	75.90	0.2%	207.18	0.5%
2022	123.45	-6.0%	71.53	-5.8%	194.98	-5.9%
2023	124.68	1.0%	71.39	-0.2%	196.07	0.6%
2024	125.80	0.9%	71.24	-0.2%	197.05	0.5%
2025	126.94	0.9%	71.10	-0.2%	198.04	0.5%

<sup>(1)</sup> Average Annual Percent Change

<sup>(2)</sup> Construction begins December 2016

<sup>(3)</sup> Construction ends October 2018

**Table 4-5**  
**Francis Scott Key Bridge (I-695)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	9.62		1.00		10.63	
2016	10.10	4.9%	1.03	3.0%	11.13	4.7%
2017	10.64	5.4%	1.06	2.6%	11.70	5.1%
2018	10.83	1.8%	1.08	2.4%	11.92	1.9%
2019	11.41	5.3%	1.13	3.7%	12.53	5.1%
2020	11.43	0.2%	1.13	0.2%	12.55	0.2%
2021	11.48	0.5%	1.13	0.5%	12.61	0.5%
2022	10.51	-8.5%	1.07	-5.8%	11.57	-8.2%
2023	10.56	0.5%	1.07	0.5%	11.63	0.5%
2024	10.61	0.5%	1.08	0.5%	11.69	0.5%
2025	10.66	0.5%	1.08	0.5%	11.75	0.5%

Fiscal Year	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$24.33		\$18.64		\$42.97	
2016	24.32	0.0%	19.18	2.9%	43.50	1.2%
2017	25.63	5.4%	19.68	2.6%	45.31	4.2%
2018	26.10	1.8%	20.14	2.4%	46.24	2.0%
2019	27.48	5.3%	20.89	3.7%	48.37	4.6%
2020	27.52	0.2%	20.94	0.2%	48.46	0.2%
2021	27.65	0.5%	21.04	0.5%	48.68	0.5%
2022	25.31	-8.5%	19.82	-5.8%	45.13	-7.3%
2023	25.43	0.5%	19.92	0.5%	45.36	0.5%
2024	25.56	0.5%	20.02	0.5%	45.58	0.5%
2025	25.69	0.5%	20.12	0.5%	45.81	0.5%

<sup>(1)</sup> Average Annual Percent Change

**Table 4-6**  
**William Preston Lane Jr. Memorial Bridge (US 50/301)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	12.00		0.86		12.86	
2016	12.23	1.9%	0.89	4.1%	13.12	2.1%
2017	12.38	1.2%	0.90	0.6%	13.27	1.2%
2018	12.48	0.8%	0.90	0.4%	13.38	0.8%
2019	12.55	0.6%	0.90	0.3%	13.45	0.6%
2020	12.64	0.7%	0.91	0.4%	13.55	0.7%
2021	12.73	0.7%	0.91	0.4%	13.64	0.7%
2022	12.83	0.8%	0.91	0.4%	13.74	0.8%
2023	12.93	0.8%	0.92	0.4%	13.85	0.8%
2024	13.04	0.8%	0.92	0.4%	13.96	0.8%
2025	13.14	0.8%	0.92	0.4%	14.07	0.8%

Fiscal Year	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$55.63		\$25.53		\$81.16	
2016	34.57	-37.9%	17.73	-30.6%	52.30	-35.6%
2017	34.99	1.2%	17.83	0.6%	52.82	1.0%
2018	35.27	0.8%	17.91	0.4%	53.17	0.7%
2019	35.48	0.6%	17.96	0.3%	53.44	0.5%
2020	35.73	0.7%	18.03	0.4%	53.76	0.6%
2021	35.98	0.7%	18.10	0.4%	54.08	0.6%
2022	36.26	0.8%	18.18	0.4%	54.44	0.7%
2023	36.55	0.8%	18.25	0.4%	54.80	0.7%
2024	36.85	0.8%	18.32	0.4%	55.17	0.7%
2025	37.14	0.8%	18.39	0.4%	55.53	0.7%

<sup>(1)</sup> Average Annual Percent Change

**Table 4-7**  
**Harry W. Nice Memorial Bridge (US 301)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	3.09		0.21		3.31	
2016	3.13	1.2%	0.21	-1.2%	3.34	1.0%
2017	3.13	0.0%	0.22	3.9%	3.35	0.3%
2018	3.13	0.0%	0.22	2.2%	3.36	0.2%
2019	3.13	0.0%	0.22	0.8%	3.36	0.1%
2020	3.13	0.0%	0.23	1.0%	3.36	0.1%
2021	3.14	0.0%	0.23	1.1%	3.37	0.1%
2022	3.14	0.0%	0.23	1.4%	3.37	0.1%
2023	3.14	0.0%	0.24	1.4%	3.37	0.1%
2024	3.14	0.0%	0.24	1.0%	3.38	0.1%
2025	3.14	0.0%	0.24	1.0%	3.38	0.1%

Fiscal Year	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$15.20		\$6.21		\$21.41	
2016	14.96	-1.6%	6.14	-1.3%	21.10	-1.5%
2017	14.97	0.0%	6.38	3.9%	21.34	1.2%
2018	14.97	0.0%	6.52	2.2%	21.49	0.7%
2019	14.98	0.0%	6.57	0.8%	21.54	0.3%
2020	14.98	0.0%	6.63	1.0%	21.62	0.3%
2021	14.99	0.0%	6.71	1.1%	21.70	0.4%
2022	15.00	0.0%	6.80	1.4%	21.80	0.5%
2023	15.00	0.0%	6.90	1.4%	21.90	0.5%
2024	15.01	0.0%	6.96	1.0%	21.97	0.3%
2025	15.01	0.0%	7.03	1.0%	22.05	0.3%

<sup>(1)</sup> Average Annual Percent Change

### 4.3.2 Systemwide Annual Transactions and In-Lane Toll Revenue Forecasts

Table 4-8 presents historical and forecasted In-Lane Toll Revenue from FY 2005 to FY 2025. Systemwide transactions have fluctuated between FY 2005 and FY 2015, but overall have decreased from 117.9 million on MDTA facilities in FY 2005 to 115.7 million in FY 2015, a total decrease of 1.9 percent, or 0.2 percent per annum. The historical fluctuations are largely due to both the negative effects of the Great Recession and a series of toll increases, most recently in FY 2012, FY 2013 and FY 2014. During the FY 2005 to FY 2015 period, the number of systemwide transactions peaked at 121.5 million in FY 2011, resulting in revenue of \$311.9 million. The higher level of growth in FY 2015 is most likely due to the delayed recovery from the Great Recession of 2008-2009 and other short-term factors, such as the historically low gas prices in FY 2015. There may also be some recovery in FY 2015 from the impacts of the recent toll increases, as motorists return to the MDTA legacy facilities.

In FY 2016, the initial year of the forecast, transactions of 117.4 million have been forecasted, a 1.5 percent increase over FY 2015. In-Lane Toll Revenue is estimated at \$561.7 million, a 5.5 percent decrease over FY 2015. Without the July 1, 2015 toll decrease, transactions were estimated at 117.2 million, an annual growth rate of 1.3 percent, while In-Lane Toll Revenue was estimated at \$600.7 million, an increase of 1.0 percent. This “normal” growth rate is consistent with recent observed historical growth trends on the MDTA legacy facilities in years without toll increases or economic downturns. The impacts of the FY 2016 toll decrease are carried forward through the forecast period. Recent observed historical growth trends are carried through to FY 2017, before transactions and revenue growth are assumed to increase at rates more consistent with long-term historical trends. Total transactions are forecasted to grow to 124.1 million by FY 2025, or a total of 5.7 percent during the forecast period. This equates to a growth rate of 0.6 percent per annum. In-Lane Toll Revenue follows similar growth trends, increasing by a total of 5.2 percent from \$561.7 million in FY 2016 to \$590.7 million in FY 2025, an average annual change of 0.6 percent.

## 4.4 Other Revenue

In addition to In-Lane Toll Revenue, MDTA also collects Other Revenue associated with the operation of its facilities. These have been summarized into six categories:

1. Unused Commuter and Shoppers Plan Trips
2. Transponder Fees and Sales
  - a. Transponder sales (legacy and ICC)
  - b. Monthly Service Fees (legacy and ICC)
3. Violation Recovery
4. Commercial Vehicles Fees and Discounts
  - a. Post-Usage Discount
  - b. High Frequency Discount
  - c. Over-Size Permit Fee
5. Concession Revenues
6. Hatem E-ZPass® program

The following provides a description of each of the Other Revenue categories. The forecasts of these annual revenue streams are provided in Tables 4-9 through 4-11.

**Table 4-8**  
**Historical and Forecasted Transactions and In-Lane Toll Revenue**

Fiscal Year	Transactions (Millions)								Percent Growth
	JFK	Hatem	BHT	FMT	FSK	Bay	Nice	Total <sup>(1)</sup>	
2005 <sup>(2)</sup>	15.00	5.60	25.50	43.50	12.10	13.00	3.20	<b>117.90</b>	
2006	14.74	5.56	26.26	43.57	11.89	13.27	3.36	<b>118.65</b>	0.6
2007	14.84	5.56	25.74	44.85	12.20	13.49	3.42	<b>120.10</b>	1.2
2008	14.65	5.56	25.77	44.83	12.34	13.37	3.39	<b>119.91</b>	(0.2)
2009	14.64	5.04	25.53	43.45	11.69	12.75	3.35	<b>116.45</b>	(2.9)
2010 <sup>(2)</sup>	14.75	4.99	25.23	44.06	10.96	12.99	3.35	<b>116.33</b>	(0.1)
2011	15.38	5.07	26.12	46.29	11.65	13.56	3.40	<b>121.47</b>	4.4
2012 <sup>(2)</sup>	14.82	5.03	25.75	44.52	11.05	13.63	3.29	<b>118.09</b>	(2.8)
2013 <sup>(2)</sup>	14.58	4.56	23.97	43.58	10.92	12.74	3.26	<b>113.61</b>	(3.8)
2014 <sup>(2)</sup>	14.38	4.95	24.90	41.88	10.42	12.76	3.24	<b>112.53</b>	(1.0)
2015	14.69	5.25	27.10	41.85	10.63	12.86	3.31	<b>115.67</b>	2.8
2016 <sup>(3)</sup>	14.85	5.04	25.86	44.04	11.13	13.12	3.34	<b>117.38</b>	1.5
2017	15.03	5.07	24.69	44.84	11.70	13.27	3.35	<b>117.96</b>	0.5
2018	15.15	5.11	24.50	45.15	11.92	13.38	3.36	<b>118.56</b>	0.5
2019	15.26	5.14	21.30	47.88	12.53	13.45	3.36	<b>118.93</b>	0.3
2020	15.38	5.17	20.96	48.64	12.55	13.55	3.36	<b>119.61</b>	0.6
2021	15.49	5.20	21.01	48.98	12.61	13.64	3.37	<b>120.31</b>	0.6
2022	15.63	5.23	26.17	46.07	11.57	13.74	3.37	<b>121.79</b>	1.2
2023	15.77	5.26	26.22	46.49	11.63	13.85	3.37	<b>122.60</b>	0.7
2024	15.90	5.30	26.28	46.87	11.69	13.96	3.38	<b>123.37</b>	0.6
2025	16.04	5.33	26.33	47.25	11.75	14.07	3.38	<b>124.14</b>	0.6

Fiscal Year	In-Lane Toll Revenue (\$ Millions)								Percent Growth
	JFK	Hatem	BHT	FMT	FSK	Bay	Nice	Total <sup>(1)</sup>	
2005 <sup>(2)</sup>	\$ 94.60	\$ 3.70	\$ 34.70	\$ 82.70	\$ 19.20	\$ 33.50	\$ 10.00	<b>\$ 278.40</b>	
2006	93.50	3.95	35.64	82.39	18.82	34.02	10.48	<b>278.80</b>	0.1
2007	94.62	3.82	35.11	84.68	19.24	34.39	10.43	<b>282.29</b>	1.3
2008	92.71	3.89	35.33	84.03	19.41	33.88	10.08	<b>279.33</b>	(1.0)
2009	95.14	2.07	35.61	82.97	18.56	32.51	9.77	<b>276.63</b>	(1.0)
2010 <sup>(2)</sup>	107.35	2.61	37.01	94.02	20.54	36.79	10.15	<b>308.47</b>	11.5
2011	107.39	2.82	37.85	95.32	20.78	37.62	10.15	<b>311.93</b>	1.1
2012 <sup>(2)</sup>	116.01	5.25	48.74	118.82	25.82	46.74	11.60	<b>372.98</b>	19.6
2013 <sup>(2)</sup>	121.86	7.80	52.05	135.61	28.94	52.40	12.97	<b>411.63</b>	10.4
2014 <sup>(2)</sup>	162.80	10.17	77.56	183.13	40.26	79.76	20.40	<b>574.08</b>	39.5
2015	166.54	11.19	85.54	185.78	42.97	81.16	21.41	<b>594.58</b>	3.6
2016 <sup>(3)</sup>	166.13	10.87	78.17	189.63	43.50	52.30	21.10	<b>561.69</b>	(5.5)
2017	168.19	10.95	74.36	192.12	45.31	52.82	21.34	<b>565.09</b>	0.6
2018	169.54	11.01	73.35	193.03	46.24	53.17	21.49	<b>567.82</b>	0.5
2019	170.53	11.06	62.08	203.52	48.37	53.44	21.54	<b>570.54</b>	0.5
2020	171.68	11.09	60.87	206.07	48.46	53.76	21.62	<b>573.55</b>	0.5
2021	172.84	11.13	61.04	207.18	48.68	54.08	21.70	<b>576.64</b>	0.5
2022	174.25	11.16	79.11	194.98	45.13	54.44	21.80	<b>580.86</b>	0.7
2023	175.67	11.20	79.28	196.07	45.36	54.80	21.90	<b>584.27</b>	0.6
2024	177.03	11.23	79.44	197.05	45.58	55.17	21.97	<b>587.47</b>	0.5
2025	178.41	11.27	79.60	198.04	45.81	55.53	22.05	<b>590.70</b>	0.5

<sup>(1)</sup> Summations may not equal total due to rounding.

<sup>(2)</sup> Year of toll increase.

<sup>(3)</sup> Year of toll decrease.

  - Represents actual data.

**Table 4-9  
Historical and Forecasted Legacy Facilities “Other Toll Revenue”**

Fiscal Year	Service Fees and Sales				Violation Recovery			Commercial Vehicles				Concession Revenue <sup>(4)</sup>	Total Legacy Other Revenue <sup>(5)</sup>
	Unused Pre-Paid Trip Revenue	Transponder Sales	Monthly Account Fees	Hatem E-Z Pass Program	Notice of Toll Due Fees	Civil Penalties <sup>(3)</sup>	Violation Fees	Post-Usage Discount	Vehicle High Frequency Discount	Over-size Permit Fee			
2004	<sup>(1)</sup> \$ 2.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 0.80	\$ (2.30)	\$ -	\$ -	\$ 8.10	\$ 8.60	
2005	<sup>(1)</sup> 2.80	-	-	-	-	-	1.50	(3.90)	-	-	8.00	8.40	
2006	3.50	-	-	-	-	-	2.80	(4.50)	-	-	7.80	9.60	
2007	4.00	-	-	-	-	-	3.00	(4.80)	-	-	8.10	10.30	
2008	4.30	-	-	-	-	-	3.00	(5.00)	-	-	8.00	10.30	
2009	4.50	-	-	-	-	-	1.90	(4.80)	-	-	8.00	9.60	
2010	<sup>(1)</sup> 6.60	1.40	9.60	-	1.10	-	2.30	(6.60)	(0.20)	1.00	8.20	23.40	
2011	6.50	1.90	9.90	-	1.30	-	1.30	(6.70)	(0.30)	1.20	7.90	23.00	
2012	<sup>(1)</sup> 9.10	1.70	4.70	0.30	0.80	-	2.80	(5.90)	(0.20)	1.30	7.60	22.20	
2013	<sup>(1)</sup> 11.50	1.30	5.30	0.80	0.10	-	4.00	(4.60)	(0.70)	1.30	4.10	23.10	
2014	<sup>(1)</sup> 18.69	1.22	5.75	1.49	-	4.55	0.04	(5.89)	(0.64)	1.04	3.23	29.48	
2015	16.81	1.44	5.87	1.52	-	10.75	0.01	(6.34)	(0.62)	1.15	5.07	35.66	
2016	<sup>(2)</sup> 16.89	1.45	-	1.53	-	7.39	-	(6.37)	(0.98)	1.16	5.72	26.78	
2017	16.98	1.45	-	1.54	-	8.14	-	(6.40)	(0.99)	1.17	5.80	27.69	
2018	17.06	1.46	-	1.54	-	8.22	-	(6.44)	(0.99)	1.18	5.87	27.92	
2019	17.15	1.47	-	1.55	-	8.31	-	(6.47)	(1.00)	1.20	5.95	28.16	
2020	17.23	1.48	-	1.56	-	8.39	-	(6.50)	(1.00)	1.21	6.03	28.39	
2021	17.32	1.48	-	1.57	-	8.47	-	(6.53)	(1.01)	1.22	6.10	28.63	
2022	17.41	1.49	-	1.57	-	8.56	-	(6.57)	(1.01)	1.23	6.48	29.17	
2023	17.49	1.50	-	1.58	-	8.64	-	(6.60)	(1.02)	1.25	7.38	30.23	
2024	17.58	1.51	-	1.59	-	8.73	-	(6.63)	(1.02)	1.26	7.48	30.50	
2025	17.67	1.51	-	1.60	-	8.82	-	(6.66)	(1.03)	1.27	7.58	30.76	

Source: Historical data from MDTA

<sup>(1)</sup> Year of toll increase.

<sup>(2)</sup> Year of toll decrease.

<sup>(3)</sup> Civil Penalties actuals and estimates provided by MDTA.

<sup>(4)</sup> Concession Revenue Forecast is 87% of the estimated concession revenue as previously prepared by Areas Inc.

<sup>(5)</sup> Summations may not match total due to rounding.

- Represents actual data.

**Table 4-10  
New Facilities Historical and Forecast "Other Toll Revenue"**

Fiscal Year	New Facilities Other Revenue (\$ millions)										New Facilities Total			
	InterCounty Connector					I-95 ETLs					New Facilities Total			
	Service Fees and Sales		Violation Recovery		Notice of Toll Due Fees (4)	Service Fees and Sales		Violation Recovery		Service Fees and Sales		Violation Recovery		
	Transponder Sales	Monthly Account Fees	Violation Fees	Civil Penalties (3)		Transponder Sales	Monthly Account Fees	Violation Fees	Civil Penalties (3)	Transponder Sales	Monthly Account Fees	Violation Fees	Civil Penalties (3)	Total New Facilities Other Revenue (4)
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2014	0.16	0.76	0.10	2.35	0	0	0	0	0	0.16	0.76	0.10	2.35	3.37
2015	0.18	0.72	0.01	5.61	0	0.01	0.06	0.01	0.12	0.19	0.79	0.01	5.73	6.72
2016	0.18	0	0	3.86	0	0.01	0	0	0.12	0.19	0	0	3.97	4.16
2017	0.18	0	0	4.23	0	0.01	0	0	0.12	0.19	0	0	4.35	4.54
2018	0.18	0	0	4.25	0	0.01	0	0	0.12	0.19	0	0	4.37	4.57
2019	0.18	0	0	4.27	0	0.01	0	0	0.12	0.19	0	0	4.39	4.59
2020	0.18	0	0	4.29	0	0.01	0	0	0.12	0.19	0	0	4.41	4.60
2021	0.19	0	0	4.31	0	0.01	0	0	0.12	0.20	0	0	4.43	4.62
2022	0.19	0	0	4.34	0	0.01	0	0	0.12	0.20	0	0	4.46	4.66
2023	0.19	0	0	4.36	0	0.01	0	0	0.12	0.20	0	0	4.48	4.68
2024	0.19	0	0	4.38	0	0.01	0	0	0.13	0.20	0	0	4.50	4.70
2025	0.19	0	0	4.40	0	0.01	0	0	0.13	0.20	0	0	4.52	4.72

Source: Historical data from MdTA

(1) Year of toll increase.

(2) Year of toll decrease.

(3) Civil Penalties actuals and estimates provided by MDTA.

(4) Summations may not match total due to rounding.

- Represents actual data.



**Table 4-11**  
**Historical and Forecasted In-Lane and "Other" Toll Revenue**

Fiscal Year		In-Lane Toll Revenue		"Other Toll Revenue"		Total Revenue <sup>(4)</sup>
		Legacy Facilities	Legacy Facilities	New Facilities <sup>(3)</sup>	Total <sup>(4)</sup>	
2004	<sup>(1)</sup>	\$ 251.30	\$ 8.60	\$ -	\$ 8.60	\$ 259.90
2005	<sup>(1)</sup>	278.50	8.40	-	8.40	286.90
2006		278.80	9.60	-	9.60	288.40
2007		282.30	10.30	-	10.30	292.60
2008		279.30	10.30	-	10.30	289.60
2009		276.60	9.60	-	9.60	286.20
2010	<sup>(1)</sup>	308.50	23.40	-	23.40	331.90
2011		312.00	23.00	-	23.00	335.00
2012	<sup>(1)</sup>	373.00	22.20	-	22.20	395.20
2013	<sup>(1)</sup>	411.60	23.10	-	23.10	434.70
2014	<sup>(1)</sup>	574.08	29.48	3.37	32.85	606.93
2015		594.58	35.66	6.72	42.38	636.96
2016	<sup>(2)</sup>	561.69	26.78	4.17	30.96	592.65
2017		565.09	27.69	4.54	32.25	597.34
2018		567.82	27.92	4.56	32.50	600.32
2019		570.54	28.16	4.59	32.76	603.30
2020		573.55	28.39	4.61	33.02	606.57
2021		576.64	28.63	4.63	33.28	609.92
2022		580.86	29.17	4.66	33.84	614.70
2023		584.27	30.23	4.68	34.93	619.20
2024		587.47	30.50	4.70	35.21	622.68
2025		590.70	30.76	4.73	35.50	626.20

Source: Historical data from MdTA

<sup>(1)</sup> Year of toll increase.

<sup>(2)</sup> Year of toll decrease.

<sup>(3)</sup> Intercounty Connector and I-95 ETLs

<sup>(4)</sup> Summations may not match total due to rounding.

- Represents actual data.

#### 4.4.1 Unused Commuter and Shoppers Plan Trips

MDTA provides customers the option to enroll in the Commuter Plan, which provides discounts for frequent trips. MDTA offers two Commuter Plans based on the facilities included in the plan. The first plan allows commuters to pay \$1.40 per trip for 50 trips at the Fort McHenry Tunnel, Baltimore Harbor Tunnel, Francis Scott Key Bridge, JFK Memorial Highway, and the Hatem Bridge. However, these trips must be used within 45 days. Another plan gives customers the option to pay \$2.10 per trip for 25 trips at the Nice Bridge, and similar to the first plan must be used within 45 days. As of July 1, 2015, the toll per trip for this plan at the Bay Bridge was reduced by one-third from \$2.10 to \$1.40.

The Shoppers Plan is slightly different. As of July 1, 2015, MDTA gives customers the option to pay \$2.00 per trip for 10 trips crossing the Bay Bridge that can be used Sunday through Thursday, with an expiration of 90 days. Prior to July 1, 2015 the toll was \$3.00 per trip.

Any remaining balance after time period from the Commuter or Shoppers Plans have expired is added to a separate account and referred to as Unused Toll Revenue. As seen in Table 4-9 (shown previously), this value is expected to increase gradually through FY 2025 as participation in the program increases due to normal traffic growth.

#### 4.4.2 Transponder Fees and Sales

As of July 1, 2009, the cost of an E-ZPass® transponder is \$9.00 for the Standard, \$15.00 for the Exterior, and \$50.00 for the Fusion. The Standard is the more typical windshield mounted transponder, the Exterior is mounted to a passenger car's front license plate, and the Fusion is for commercial vehicles such as trucks and RVs. The forecast of future sales revenue is based on data provided by MDTA showing historical trends and the share of each transponder type as a percent of total sales.

In addition to transponder fees, prior to July 1, 2015, account holders were subject to a monthly account fee of \$1.50. Accounts making three-or-more transactions per month were exempt from this fee, but any user with less than three transactions were charged. As of July 1, 2015, this monthly account fee was eliminated for Maryland residents. The estimates for these fees for both the ICC and the legacy facilities are presented separately in Table 4-9 (shown previously).

#### 4.4.3 Violation Recovery

Prior to FY 2016, violation fees were charged to drivers who choose not to initially pay their toll. Historical data through FY 2015 were provided by MDTA. Since video customers are no longer assessed violations fees, but are instead assessed civil penalties if they do not pay their video tolls within 30 days, no estimates of future violation fee revenue for the legacy facilities, the ICC and I-95 Express Toll Lanes<sup>SM</sup> are included in Table 4-9 (shown previously).

MDTA staff indicated that two factors related to future civil penalty fees should be considered. First, the payment rate for Notice of Toll Dues (NOTDs) is expected to rise as more enforcement tools come online. Second, MDTA implemented a civil penalty waiver program, available through November 2015, which provided a one-time opportunity for video customers to pay their unpaid toll balance and be excused from any associated civil penalties. The potential impact of the civil penalty waiver program is anticipated to reduce revenues from this "Other Toll Revenue" source by 8.3 percent, at a minimum. In order to assume a conservative estimate of future civil penalty fees, MDTA recommended that a new baseline for civil penalty revenues for FY 2016 be estimated by reducing FY 2015 actuals by 25 percent and then including an additional one-time reduction of 8.3 percent, for a

total of a 31.25 percent reduction. This recommended procedure would be used for both the legacy and ICC baseline amounts to reflect the civil penalty waiver program. In FY 2017, and thereafter, legacy facility civil penalties would be expected to increase by 1 percent per year and ICC civil penalties would be expected to increase by 0.5 percent per year.

#### 4.4.4 Commercial Vehicles Fees and Discounts

There are two available discount programs for commercial vehicles with five-or-more-axles. The first plan is the post-usage plan, which is account specific and can be used on all eligible facilities. With this plan each account is assessed after 30 days and the post-usage discount is calculated based on the total toll usage. The fee estimates for this program were developed from existing data and historical trends.

The other available discount plan is similar in that it is account specific and can be used on all eligible facilities. With this plan however, the account assessment after 30 days calculates the discount based on the total trips per transponder.

In addition to the two discount plans available to commercial vehicles, there is a fee for over-sized and/or overweight vehicles. As of May 1, 2009, a \$25 permit fee was charged and covered all Authority maintained roadways along the vehicle's route. This fee is a one-time charge and will not be applied at any tolling location.

#### 4.4.5 Concession Revenues

There are two travel plazas along the JFK Highway that provide additional revenue to MDTA through concessions. Both facilities were newly renovated and reopened to the public in 2014. The Maryland House Travel Plaza opened on January 16, 2014 and the Chesapeake House Travel Plaza opened on August 5, 2014. As can be seen in Table 4-9 (shown previously), concession revenue was lower in 2014, a result of closures due to construction activity. However, revenue increased in FY 2015 by approximately \$1.8 million and is forecasted to continually increase through 2025. The data and information used to develop the concession revenue forecast was provided by MDTA based on revenue projections developed by Areas USA MDTP, LLC, the company that redeveloped and currently operates the two travel plazas. For purposes of this report, revenues paid to MDTA by Areas USA are assumed to be 87 percent of Areas USA's original estimates, which reflects performance to date.

#### 4.4.6 Hatem E-ZPass® Program

The Hatem Bridge E-ZPass® Program provides drivers with two possible plan options. Choice A allows drivers with a two-axle vehicle to pay \$20 per year for unlimited trips plus a transponder fee without any additional fees or prepaid toll deposits. However, this plan allows the E-ZPass® to only be used on the Hatem Bridge, and cannot be used at other toll facilities or with other E-ZPass® discount plans. Choice B is an add-on to a standard E-ZPass® Maryland account. This allows drivers to pay \$20 per year for unlimited trips, plus a transponder charge if it's a new account. There are associated account maintenance fees for non-Maryland accounts as well as a pre-paid toll balance, but this plan also gives drivers a discount off the cash rate for two-axle vehicle at all Maryland toll facilities, excluding the Intercounty Connector and I-95 Express Toll Lanes, and can be combined with other discount plans. The discount provided is 37.5 percent for the Bay Bridge and 25 percent for all other facilities.

## 4.5 Total Annual Revenue Forecasts

Table 4-12 presents a summary of the total systemwide In-Lane Toll Revenue and Other Revenue forecast for FY 2016 through FY 2025, as well as historical data from FY 2011 to FY 2015. Figure 4-1 provides a graphical representation of the systemwide forecasted transactions and In-Lane and “Other Toll Revenue” presented in Table 4-12. The historical data presented in the figure from FY 2011 through FY 2015 sets the forecast in perspective relative to recent actual trends. Total revenues increased considerably between FY 2011 and FY 2014, growing from \$335.0 million to \$607.0 million, primarily as a result of the toll increases implemented in these years. Revenues in FY 2015 then increased by 4.9 percent to \$636.9 million. This growth is higher than the average annual increase in revenue in previous years not impacted by toll increases. In those years, growth averaged less than 1 percent. This higher level of growth in FY 2015 is most likely due to the delayed economic recovery/expansion from the Great Recession of 2008-2009 and other short-term factors such as the historically low fuel prices in FY 2015. There may also be some recovery in FY 2015 from the impacts of the toll increases in FY 2012, FY 2013 and FY 2014, as some motorists return to the MDTA legacy facilities.

In FY 2016, the initial year of the forecast, total revenues are estimated at \$592.6 million, a 7.0 percent decrease over FY 2015. This decrease is primarily due to the impacts of the toll and fee decreases effective July 1, 2015. The impacts of the FY 2016 toll decrease are carried forward throughout the forecast period. Following the robust transaction and revenue increases in FY 2015, which were heavily influenced by historically low gas prices and the delayed economic recovery, transaction and revenue growth rates going forward were estimated to increase at more moderate rates ranging from 0.5 to 1.5 percent, consistent with long-term historical trends. In-Lane Toll Revenue is forecasted to increase to \$573.5 million in FY 2020, and to \$590.7 million in FY 2025. Other Revenue, representing approximately 5 to 6 percent of the total revenue, is forecasted to grow from \$31.0 million in FY 2016, to \$33.0 million in FY 2020, and to \$35.5 million in FY 2025. As discussed previously, In-Lane Toll Revenue is forecasted to increase by 0.6 percent per annum over the 9-year forecast period, while Other Revenue is forecasted to increase by 1.5 percent per annum.

**Table 4-12**  
**In-Lane, “Other” and Total Revenue Forecasts**

Fiscal Year	Toll Revenue (\$ Millions)					Percent Change
	In-Lane	Percent Change	Other <sup>(1)</sup>	Percent Change	Total	
2011	\$ 312.0		\$ 23.0		\$ 335.0	
2012	373.0	19.6	22.2	(3.5)	395.2	18.0
2013	411.6	10.3	23.1	4.1	434.7	10.0
2014	574.1	39.5	32.9	42.2	607.0	39.6
2015	594.6	3.6	42.4	28.9	636.9	4.9
2016	561.7	(5.5)	31.0	(26.9)	592.6	-7.0
2017	565.1	0.6	32.2	4.1	597.3	0.8
2018	567.8	0.5	32.5	0.8	600.3	0.5
2019	570.5	0.5	32.7	0.8	603.3	0.5
2020	573.5	0.5	33.0	0.8	606.6	0.5
2021	576.6	0.5	33.3	0.8	609.9	0.6
2022	580.9	0.7	33.8	1.7	614.7	0.8
2023	584.3	0.6	34.9	3.2	619.2	0.7
2024	587.5	0.5	35.2	0.8	622.7	0.6
2025	590.7	0.5	35.5	0.8	626.2	0.6

<sup>(1)</sup> Includes “Other Revenue” from the ICC and I-95 ETL  
  - Represents actual data.

**Figure 4-1  
Historical and Forecasted Transactions and Total Toll Revenue**



## 4.6 Total Monthly Transaction and Toll Revenue Forecasts

For purposes of budgeting and the tracking of actual versus forecasted transactions and revenue by MDTA, monthly forecasts of transactions and In-Lane Toll Revenue were also developed for FY 2016 and FY 2017. Tables 4-13 and 4-14 summarize the forecasts of transactions and In-Lane Toll Revenue for the seven legacy facilities.

October was estimated to have the greatest number of transactions with 11.1 million in both FY 2016 and FY 2017. Alternatively, February represents the month with the fewest number of transactions at 7.7 million in FY 2016 and 7.8 million in FY 2017. In both years, the total number of E-ZPass® transactions is approximately 31 percent greater than the cash/video transactions for two-axle vehicles. Additionally, in both FY 2016 and FY 2017, E-ZPass® transactions represent approximately 36 percent of all two-axle vehicle transactions, and 84 percent of all three-or-more-axle vehicle transactions.

The highest In-Lane Toll Revenue is forecasted to occur in August of FY 2016 and FY 2017, with totals of \$53.2 million and \$53.6 million, respectively. Further, the lowest revenue is forecasted in February FY 2016 and FY 2017 at \$37.0 million and \$37.1 million, respectively. The total forecasted In-Lane Toll Revenue is \$561.7 million in FY 2016 and \$565.1 million in FY 2017.

Table 4-15 provides a summary of the monthly In-Lane Toll Revenue, as well as “Other Toll Revenue” and Total Toll Revenue.

**Table 4-13**  
**Monthly Transactions by Method of Payment**  
**FY 2016 and FY 2017**

Month	Transactions (000)																		
	2 Axle							3+ Axle											
	E-ZPass			Cash/Video				Official Duty			Hattem Plan A + B		Total 2 Axle		Cash/Video			Total 3+ Axle	
	Commuters + Shoppers	MDTA	Non-MDTA	Total	Cash/Video	Video	Total	Duty	Plan A + B	Total	E-ZPass	Cash/Video	Total	Cash/Video	Total				
July-15	3,074	1,613	1,938	3,551	2,713	141	344	9,822	593	120	713	10,535							
August-15	3,175	1,671	2,003	3,674	2,809	145	350	10,154	577	117	694	10,848							
September-15	2,809	1,451	1,674	3,125	2,407	129	327	8,797	565	113	678	9,476							
October-15	3,192	1,660	1,989	3,649	2,778	144	545	10,309	625	123	748	11,056							
November-15	2,709	1,408	1,696	3,104	2,364	124	310	8,611	526	104	630	9,241							
December-15	2,787	1,443	1,731	3,174	2,420	128	324	8,833	551	107	658	9,491							
January-16	2,474	1,267	1,484	2,751	2,109	113	298	7,744	513	99	613	8,357							
February-16	2,294	1,171	1,368	2,539	1,945	105	280	7,164	480	92	572	7,736							
March-16	2,731	1,403	1,663	3,066	2,341	125	319	8,582	574	111	686	9,267							
April-16	2,998	1,553	1,856	3,409	2,599	138	346	9,490	614	121	735	10,225							
May-16	3,119	1,631	1,953	3,585	2,735	143	348	9,929	628	125	753	10,683							
June-16	3,067	1,599	1,882	3,481	2,670	141	343	9,702	633	125	759	10,460							
<b>FY 2016</b>	<b>34,430</b>	<b>17,871</b>	<b>21,237</b>	<b>39,108</b>	<b>29,890</b>	<b>1,577</b>	<b>4,134</b>	<b>109,138</b>	<b>6,880</b>	<b>1,358</b>	<b>8,238</b>	<b>117,375</b>							
July-16	3,097	1,626	1,954	3,580	2,734	142	346	9,899	596	120	716	10,616							
August-16	3,199	1,685	2,020	3,705	2,831	146	352	10,234	580	117	697	10,931							
September-16	2,827	1,461	1,685	3,146	2,421	130	329	8,853	567	113	681	9,534							
October-16	3,205	1,668	2,002	3,670	2,791	145	549	10,359	626	124	750	11,109							
November-16	2,726	1,417	1,708	3,126	2,378	125	312	8,667	528	104	632	9,299							
December-16	2,799	1,449	1,736	3,185	2,427	129	327	8,867	552	107	659	9,526							
January-17	2,484	1,273	1,487	2,760	2,115	114	300	7,774	514	100	614	8,388							
February-17	2,304	1,177	1,372	2,548	1,951	106	282	7,192	481	92	573	7,765							
March-17	2,744	1,410	1,667	3,077	2,349	126	321	8,617	575	112	687	9,304							
April-17	3,011	1,560	1,861	3,421	2,606	139	348	9,526	615	121	736	10,262							
May-17	3,132	1,639	1,959	3,597	2,743	144	350	9,967	629	126	755	10,722							
June-17	3,081	1,607	1,887	3,494	2,679	142	345	9,740	635	126	760	10,501							
<b>FY 2017</b>	<b>34,611</b>	<b>17,973</b>	<b>21,337</b>	<b>39,310</b>	<b>30,025</b>	<b>1,587</b>	<b>4,163</b>	<b>109,697</b>	<b>6,898</b>	<b>1,363</b>	<b>8,261</b>	<b>117,957</b>							

Fiscal Year 2016 - Transactions (000's)

Fiscal Year 2017 - Transactions (000's)





**Table 4-15**  
**Monthly Forecasted In-Lane and "Other" Toll Revenue**

		<b>Toll Revenue (\$ millions)</b>			
		<b>Month</b>	<b>In-Lane</b>	<b>Other<sup>(1)</sup></b>	<b>Total</b>
<b>Fiscal Year 2016</b>		Jul-15	\$ 51.55	\$ 2.88	\$ <b>54.95</b>
		Aug-15	\$ 53.16	\$ 2.97	\$ <b>56.67</b>
		Sep-15	\$ 46.17	\$ 2.52	\$ <b>49.15</b>
		Oct-15	\$ 47.65	\$ 2.58	\$ <b>50.70</b>
		Nov-15	\$ 45.25	\$ 2.48	\$ <b>48.18</b>
		Dec-15	\$ 44.61	\$ 2.46	\$ <b>47.52</b>
		Jan-16	\$ 40.14	\$ 2.15	\$ <b>42.69</b>
		Feb-16	\$ 36.95	\$ 2.10	\$ <b>39.43</b>
		Mar-16	\$ 44.74	\$ 2.43	\$ <b>47.61</b>
		Apr-16	\$ 49.29	\$ 2.70	\$ <b>52.48</b>
		May-16	\$ 51.73	\$ 2.86	\$ <b>55.11</b>
		Jun-16	\$ 50.44	\$ 2.81	\$ <b>53.76</b>
<b>Fiscal Year 2017</b>		Jul-16	\$ 51.96	\$ 2.99	\$ <b>55.38</b>
		Aug-16	\$ 53.59	\$ 3.09	\$ <b>57.12</b>
		Sep-16	\$ 46.50	\$ 2.63	\$ <b>49.51</b>
		Oct-16	\$ 47.98	\$ 2.69	\$ <b>51.05</b>
		Nov-16	\$ 45.57	\$ 2.58	\$ <b>48.52</b>
		Dec-16	\$ 44.83	\$ 2.57	\$ <b>47.77</b>
		Jan-17	\$ 40.33	\$ 2.24	\$ <b>42.90</b>
		Feb-17	\$ 37.13	\$ 2.18	\$ <b>39.62</b>
		Mar-17	\$ 44.96	\$ 2.53	\$ <b>47.85</b>
		Apr-17	\$ 49.54	\$ 2.81	\$ <b>52.76</b>
		May-17	\$ 51.99	\$ 2.98	\$ <b>55.40</b>
		Jun-17	\$ 50.70	\$ 2.93	\$ <b>54.05</b>

<sup>(1)</sup> Includes "Other Toll Revenue" from the ICC and I-95 ETL

## 4.7 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 the Maryland Transportation Authority. 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 the Maryland Transportation Authority. 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 Maryland Transportation Authority and designated parties approved by the Maryland Transportation Authority 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.

CDM Smith is not, and has not been, a municipal advisor as defined in Federal law (the Dodd Frank Bill) to the Maryland Transportation Authority and does not owe a fiduciary duty pursuant to Section 15B of the Exchange Act to the Maryland Transportation Authority with respect to the information and material contained in this report. CDM Smith is not recommending and has not recommended any action to the Maryland Transportation Authority. The Maryland Transportation Authority 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.

# Appendix A

## Approved Toll Schedule

### New Lower Toll Rates Effective July 1

**William Preston Lane, Jr., Memorial (Bay) Bridge (US 50/301)\***  
 Increased E-ZPass Maryland discount from 10% to 37.5%  
 Decreased Cash/Base, Commuter and Shoppers rates by 33%

Cash/Base Rates		
	Current	7/1/2015
2-axle	\$ 6.00	\$ 4.00
3-axle	\$ 12.00	\$ 8.00
4-axle	\$ 18.00	\$ 12.00
5-axle	\$ 36.00	\$ 24.00
6+axle	\$ 45.00	\$ 30.00

E-ZPass Maryland Rates		
	Current	7/1/2015
Commuter	\$ 2.10	\$ 1.40
2-axle	\$ 5.40	\$ 2.50
Shoppers	\$ 3.00	\$ 2.00

Video Toll Rates		
	Current	7/1/2015
2-axle	\$ 9.00	\$ 6.00
3-axle	\$ 18.00	\$ 12.00
4-axle	\$ 27.00	\$ 18.00
5-axle	\$ 51.00	\$ 36.00
6+axle	\$ 60.00	\$ 45.00

**Intercounty Connector (ICC)/MD 200  
 I-95 Express Toll Lanes (ETL)**  
 Reduced 2-axle rate ranges by \$0.03/mile

E-ZPass/Base Rates (Toll/Mile)		
	Current	7/1/2015
<b>2-axle</b>		
Peak	\$ 0.25	\$ 0.22
Off-peak	\$ 0.20	\$ 0.17
Overnight	\$ 0.10	\$ 0.07
<b>3-axle</b>		
Peak	\$ 0.75	\$ 0.44
Off-peak	\$ 0.60	\$ 0.34
Overnight	\$ 0.30	\$ 0.14
<b>4-axle</b>		
Peak	\$ 1.125	\$ 0.68
Off-peak	\$ 0.90	\$ 0.51
Overnight	\$ 0.45	\$ 0.21
<b>5-axle</b>		
Peak	\$ 1.50	\$ 1.32
Off-peak	\$ 1.20	\$ 1.02
Overnight	\$ 0.60	\$ 0.42
<b>6+axle</b>		
Peak	\$ 1.875	\$ 1.65
Off-peak	\$ 1.50	\$ 1.275
Overnight	\$ 0.75	\$ 0.525

**Baltimore Harbor Tunnel (I-895),  
 Fort McHenry Tunnel (I-95/I-395)  
 and Francis Scott Key Bridge (I-695)**  
 Increased E-ZPass Maryland discount from 10% to 25%

E-ZPass Maryland Rates		
	Current	7/1/2015
2-axle	\$ 3.60	\$ 3.00

**John F. Kennedy Memorial Highway (I-95)\***  
 Increased E-ZPass Maryland discount from 10% to 25%

E-ZPass Maryland Rates		
	Current	7/1/2015
2-axle	\$ 7.20	\$ 6.00

**Thomas J. Hatem Memorial Bridge (US 40)\***  
 Increased E-ZPass Maryland discount from 10% to 25%  
 30% discount for 3- and 4-axle vehicles

E-ZPass Maryland Rates		
	Current	7/1/2015
2-axle	\$ 7.20	\$ 6.00
3-axle	\$ 16.00	\$ 11.20
4-axle	\$ 24.00	\$ 16.80

**Gov. Harry W. Nice Memorial Bridge (US 301)\***  
 Increased E-ZPass Maryland discount from 10% to 25%

E-ZPass Maryland Rates		
	Current	7/1/2015
2-axle	\$ 5.40	\$ 4.50

\* tolls collected in one direction only

**Additional approved changes effective July 1, 2015:**

- No \$1.50 E-ZPass monthly account maintenance fee for Maryland addresses and for out-of-state addresses with three or more trips at Maryland toll facilities in the previous statement period.
- Increase E-ZPass Maryland supplemental rebate program by 5 percentage points per trip level for vehicles with 5+ axles.

**Additional approved changes effective January 1, 2016:**

- Decrease toll rates to \$2 per axle for commercial vehicle drivers with E-ZPass Maryland using the Childs Street (I-895) and Francis Scott Key Bridge (I-695) turnaround exits.

Supplemental Rebate Program (%)		
Current	7/1/2015	Trips
5	10	60-79
10	15	80-99
15	20	100+

New Childs Street and I-695 Turnaround Discount		
	Current	1/1/2016
3-axle	\$ 8.00	\$ 6.00
4-axle	\$ 12.00	\$ 8.00
5-axle	\$ 24.00	\$ 10.00
6+axle	\$ 30.00	\$ 12.00

For a full list of toll rates, ICC/ETL pricing periods and additional information, visit [mdta.maryland.gov](http://mdta.maryland.gov).

## Appendix B

# Detailed Traffic and Revenue Forecasts by Facility

**Table B-1**  
**John F. Kennedy Memorial Highway (I-95)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	13.00		1.69		14.69	
2016	13.15	1.1%	1.70	0.7%	14.85	1.1%
2017	13.30	1.2%	1.72	1.3%	15.03	1.2%
2018	13.41	0.8%	1.74	0.8%	15.15	0.8%
2019	13.52	0.8%	1.74	0.3%	15.26	0.7%
2020	13.63	0.8%	1.75	0.5%	15.38	0.8%
2021	13.74	0.8%	1.76	0.5%	15.49	0.8%
2022	13.86	0.9%	1.77	0.7%	15.63	0.9%
2023	13.98	0.9%	1.78	0.7%	15.77	0.9%
2024	14.11	0.9%	1.79	0.6%	15.90	0.9%
2025	14.24	0.9%	1.80	0.6%	16.04	0.9%
	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$97.30		\$69.23		\$166.54	
2016	96.15	-1.2%	69.98	1.1%	166.13	-0.2%
2017	97.30	1.2%	70.89	1.3%	168.19	1.2%
2018	98.08	0.8%	71.46	0.8%	169.54	0.8%
2019	98.86	0.8%	71.67	0.3%	170.53	0.6%
2020	99.65	0.8%	72.03	0.5%	171.68	0.7%
2021	100.45	0.8%	72.39	0.5%	172.84	0.7%
2022	101.35	0.9%	72.90	0.7%	174.25	0.8%
2023	102.27	0.9%	73.41	0.7%	175.67	0.8%
2024	103.19	0.9%	73.85	0.6%	177.03	0.8%
2025	104.12	0.9%	74.29	0.6%	178.41	0.8%
<sup>(1)</sup> Average Annual Percent Change						

**Table B-2**  
**Thomas J. Hatem Memorial Bridge (US 40)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	5.06		0.18		5.25	
2016	4.84	-4.5%	0.20	11.1%	5.04	-3.9%
2017	4.87	0.7%	0.21	0.8%	5.07	0.7%
2018	4.90	0.7%	0.21	0.4%	5.11	0.7%
2019	4.94	0.7%	0.21	0.2%	5.14	0.7%
2020	4.97	0.6%	0.21	0.1%	5.17	0.6%
2021	5.00	0.6%	0.21	0.1%	5.20	0.6%
2022	5.03	0.6%	0.21	0.1%	5.23	0.6%
2023	5.06	0.6%	0.21	0.1%	5.26	0.6%
2024	5.09	0.6%	0.21	0.1%	5.30	0.6%
2025	5.12	0.6%	0.21	0.1%	5.33	0.6%
	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$5.11		\$6.08		\$11.19	
2016	4.64	-9.3%	6.23	2.6%	10.87	-2.8%
2017	4.67	0.7%	6.28	0.8%	10.95	0.8%
2018	4.70	0.7%	6.31	0.4%	11.01	0.5%
2019	4.74	0.7%	6.32	0.2%	11.06	0.4%
2020	4.77	0.6%	6.33	0.1%	11.09	0.3%
2021	4.79	0.6%	6.33	0.1%	11.13	0.3%
2022	4.82	0.6%	6.34	0.1%	11.16	0.3%
2023	4.85	0.6%	6.34	0.1%	11.20	0.3%
2024	4.88	0.6%	6.35	0.1%	11.23	0.3%
2025	4.91	0.6%	6.36	0.1%	11.27	0.3%
<sup>(1)</sup> Average Annual Percent Change						

**Table B-3**  
**Baltimore Harbor Tunnel (I-895)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	26.51		0.59		27.10	
2016	25.28	-4.7%	0.58	-0.5%	25.86	-4.6%
2017 <sup>(2)</sup>	24.16	-4.4%	0.53	-8.7%	24.69	-4.5%
2018	24.01	-0.6%	0.49	-7.9%	24.50	-0.8%
2019 <sup>(3)</sup>	21.02	-12.5%	0.28	-42.6%	21.30	-13.1%
2020	20.70	-1.5%	0.26	-8.2%	20.96	-1.6%
2021	20.75	0.2%	0.26	0.7%	21.01	0.2%
2022	25.58	23.3%	0.59	126.8%	26.17	24.6%
2023	25.63	0.2%	0.59	0.3%	26.22	0.2%
2024	25.68	0.2%	0.59	0.2%	26.28	0.2%
2025	25.73	0.2%	0.60	0.2%	26.33	0.2%
	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$77.03		\$8.50		\$85.54	
2016	69.81	-9.4%	8.36	-1.7%	78.17	-8.6%
2017 <sup>(2)</sup>	66.72	-4.4%	7.64	-8.7%	74.36	-4.9%
2018	66.32	-0.6%	7.04	-7.9%	73.35	-1.4%
2019 <sup>(3)</sup>	58.05	-12.5%	4.04	-42.6%	62.08	-15.4%
2020	57.16	-1.5%	3.70	-8.2%	60.87	-2.0%
2021	57.30	0.2%	3.73	0.7%	61.04	0.3%
2022	70.65	23.3%	8.46	126.8%	79.11	29.6%
2023	70.79	0.2%	8.49	0.3%	79.28	0.2%
2024	70.93	0.2%	8.51	0.2%	79.44	0.2%
2025	71.07	0.2%	8.52	0.2%	79.60	0.2%
<sup>(1)</sup> Average Annual Percent Change						
<sup>(2)</sup> Construction begins September 2016						
<sup>(3)</sup> Construction ends May 2019						

**Table B-4**  
**Fort McHenry Tunnel (I-95)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	38.32		3.53		41.85	
2016	40.42	5.5%	3.62	2.4%	44.04	5.2%
2017 <sup>(2)</sup>	41.21	2.0%	3.63	0.3%	44.84	1.8%
2018	41.52	0.8%	3.63	0.0%	45.15	0.7%
2019 <sup>(3)</sup>	44.11	6.2%	3.78	4.1%	47.88	6.1%
2020	44.85	1.7%	3.80	0.5%	48.64	1.6%
2021	45.18	0.7%	3.80	0.2%	48.98	0.7%
2022	42.49	-6.0%	3.58	-5.8%	46.07	-5.9%
2023	42.91	1.0%	3.58	-0.2%	46.49	0.9%
2024	43.30	0.9%	3.57	-0.2%	46.87	0.8%
2025	43.69	0.9%	3.56	-0.2%	47.25	0.8%
	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$115.29		\$70.49		\$185.78	
2016	117.45	1.9%	72.18	2.4%	189.63	2.1%
2017 <sup>(2)</sup>	119.75	2.0%	72.38	0.3%	192.12	1.3%
2018	120.65	0.8%	72.39	0.0%	193.03	0.5%
2019 <sup>(3)</sup>	128.16	6.2%	75.36	4.1%	203.52	5.4%
2020	130.30	1.7%	75.77	0.5%	206.07	1.3%
2021	131.28	0.7%	75.90	0.2%	207.18	0.5%
2022	123.45	-6.0%	71.53	-5.8%	194.98	-5.9%
2023	124.68	1.0%	71.39	-0.2%	196.07	0.6%
2024	125.80	0.9%	71.24	-0.2%	197.05	0.5%
2025	126.94	0.9%	71.10	-0.2%	198.04	0.5%
<sup>(1)</sup> Average Annual Percent Change						
<sup>(2)</sup> Construction begins December 2016						
<sup>(3)</sup> Construction ends October 2018						

**Table B-5**  
**Francis Scott Key Bridge (I-695)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	9.62		1.00		10.63	
2016	10.10	4.9%	1.03	3.0%	11.13	4.7%
2017	10.64	5.4%	1.06	2.6%	11.70	5.1%
2018	10.83	1.8%	1.08	2.4%	11.92	1.9%
2019	11.41	5.3%	1.13	3.7%	12.53	5.1%
2020	11.43	0.2%	1.13	0.2%	12.55	0.2%
2021	11.48	0.5%	1.13	0.5%	12.61	0.5%
2022	10.51	-8.5%	1.07	-5.8%	11.57	-8.2%
2023	10.56	0.5%	1.07	0.5%	11.63	0.5%
2024	10.61	0.5%	1.08	0.5%	11.69	0.5%
2025	10.66	0.5%	1.08	0.5%	11.75	0.5%
	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$24.33		\$18.64		\$42.97	
2016	24.32	0.0%	19.18	2.9%	43.50	1.2%
2017	25.63	5.4%	19.68	2.6%	45.31	4.2%
2018	26.10	1.8%	20.14	2.4%	46.24	2.0%
2019	27.48	5.3%	20.89	3.7%	48.37	4.6%
2020	27.52	0.2%	20.94	0.2%	48.46	0.2%
2021	27.65	0.5%	21.04	0.5%	48.68	0.5%
2022	25.31	-8.5%	19.82	-5.8%	45.13	-7.3%
2023	25.43	0.5%	19.92	0.5%	45.36	0.5%
2024	25.56	0.5%	20.02	0.5%	45.58	0.5%
2025	25.69	0.5%	20.12	0.5%	45.81	0.5%
<sup>(1)</sup> Average Annual Percent Change						



**Table B-6**  
**William Preston Lane Jr. Memorial Bridge (US 50/301)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	12.00		0.86		12.86	
2016	12.23	1.9%	0.89	4.1%	13.12	2.1%
2017	12.38	1.2%	0.90	0.6%	13.27	1.2%
2018	12.48	0.8%	0.90	0.4%	13.38	0.8%
2019	12.55	0.6%	0.90	0.3%	13.45	0.6%
2020	12.64	0.7%	0.91	0.4%	13.55	0.7%
2021	12.73	0.7%	0.91	0.4%	13.64	0.7%
2022	12.83	0.8%	0.91	0.4%	13.74	0.8%
2023	12.93	0.8%	0.92	0.4%	13.85	0.8%
2024	13.04	0.8%	0.92	0.4%	13.96	0.8%
2025	13.14	0.8%	0.92	0.4%	14.07	0.8%
	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$55.63		\$25.53		\$81.16	
2016	34.57	-37.9%	17.73	-30.6%	52.30	-35.6%
2017	34.99	1.2%	17.83	0.6%	52.82	1.0%
2018	35.27	0.8%	17.91	0.4%	53.17	0.7%
2019	35.48	0.6%	17.96	0.3%	53.44	0.5%
2020	35.73	0.7%	18.03	0.4%	53.76	0.6%
2021	35.98	0.7%	18.10	0.4%	54.08	0.6%
2022	36.26	0.8%	18.18	0.4%	54.44	0.7%
2023	36.55	0.8%	18.25	0.4%	54.80	0.7%
2024	36.85	0.8%	18.32	0.4%	55.17	0.7%
2025	37.14	0.8%	18.39	0.4%	55.53	0.7%
<sup>(1)</sup> Average Annual Percent Change						

**Table B-7**  
**Harry W. Nice Memorial Bridge (US 301)**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>	Transactions	AAPC <sup>(1)</sup>
2015	3.09		0.21		3.31	
2016	3.13	1.2%	0.21	-1.2%	3.34	1.0%
2017	3.13	0.0%	0.22	3.9%	3.35	0.3%
2018	3.13	0.0%	0.22	2.2%	3.36	0.2%
2019	3.13	0.0%	0.22	0.8%	3.36	0.1%
2020	3.13	0.0%	0.23	1.0%	3.36	0.1%
2021	3.14	0.0%	0.23	1.1%	3.37	0.1%
2022	3.14	0.0%	0.23	1.4%	3.37	0.1%
2023	3.14	0.0%	0.24	1.4%	3.37	0.1%
2024	3.14	0.0%	0.24	1.0%	3.38	0.1%
2025	3.14	0.0%	0.24	1.0%	3.38	0.1%
Fiscal Year	In-Lane Toll Revenues (millions)					
	Passenger Cars		Commercial Vehicles		Total	
	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>	Revenue	AAPC <sup>(1)</sup>
2015	\$15.20		\$6.21		\$21.41	
2016	14.96	-1.6%	6.14	-1.3%	21.10	-1.5%
2017	14.97	0.0%	6.38	3.9%	21.34	1.2%
2018	14.97	0.0%	6.52	2.2%	21.49	0.7%
2019	14.98	0.0%	6.57	0.8%	21.54	0.3%
2020	14.98	0.0%	6.63	1.0%	21.62	0.3%
2021	14.99	0.0%	6.71	1.1%	21.70	0.4%
2022	15.00	0.0%	6.80	1.4%	21.80	0.5%
2023	15.00	0.0%	6.90	1.4%	21.90	0.5%
2024	15.01	0.0%	6.96	1.0%	21.97	0.3%
2025	15.01	0.0%	7.03	1.0%	22.05	0.3%

<sup>(1)</sup> Average Annual Percent Change

**Table B-8**  
**Total Legacy Facilities**  
**Transactions and In-Lane Toll Revenue Estimates by Vehicle Class**

Fiscal Year	Transactions (millions)					
	PC		CV		Total	
	Transactions	AAPC	Transactions	AAPC	Transactions	AAPC
2015	107.61		8.06		115.67	
2016	109.14	1.4%	8.24	2.2%	117.38	1.5%
2017	109.70	0.5%	8.26	0.3%	117.96	0.5%
2018	110.29	0.5%	8.27	0.1%	118.56	0.5%
2019	110.67	0.3%	8.26	-0.1%	118.93	0.3%
2020	111.34	0.6%	8.27	0.2%	119.61	0.6%
2021	112.00	0.6%	8.30	0.3%	120.31	0.6%
2022	113.43	1.3%	8.37	0.8%	121.79	1.2%
2023	114.21	0.7%	8.39	0.2%	122.60	0.7%
2024	114.97	0.7%	8.40	0.2%	123.37	0.6%
2025	115.72	0.7%	8.42	0.2%	124.14	0.6%
Fiscal Year	In-Lane Toll Revenues (millions)					
	PC		CV		Total	
	Revenue	AAPC	Revenue	AAPC	Revenue	AAPC
2015	\$389.90		\$204.69		\$594.59	
2016	361.89	-7.2%	199.80	-2.4%	561.69	-5.5%
2017	364.02	0.6%	201.07	0.6%	565.09	0.6%
2018	366.08	0.6%	201.75	0.3%	567.82	0.5%
2019	367.74	0.5%	202.81	0.5%	570.54	0.5%
2020	370.12	0.6%	203.43	0.3%	573.55	0.5%
2021	372.44	0.6%	204.20	0.4%	576.64	0.5%
2022	376.84	1.2%	204.03	-0.1%	580.86	0.7%
2023	379.58	0.7%	204.69	0.3%	584.27	0.6%
2024	382.22	0.7%	205.26	0.3%	587.47	0.5%
2025	384.88	0.7%	205.82	0.3%	590.70	0.5%