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FINAL MEMORANDUM

DATE: December 20, 2013

TO: New Hampshire Department of Transportation,
Bureau of Turnpikes

FROM: Jacobs Engineering Group, Inc.

SUBJECT: New Hampshire Turnpike System Traffic and Toll Revenue Forecast Update

Introduction

Jacobs developed traffic and toll revenue forecasts in July 2012 for the August 2012 New Hampshire Turnpike System Traffic and Revenue Study and subsequent Bond Sale. We had previously completed a forecast update in June 2011. Now that more than a year has passed since the Bond Sale, we are updating our forecasts once again. This memorandum presents our latest updated traffic and toll revenue forecasts for Fiscal Year (FY) 2014 through FY 2024. Please note that this update assumes *no future toll increases*, however, in a separate Addendum to this memorandum we have provided estimates that include a FY 2015 potential toll change and frequency discount program that are being contemplated to help support an expanded Turnpike Capital Improvement Program.

Update of the Traffic and Revenue Model

We updated our Traffic and Revenue model by first looking at how previous forecasts compared to actual traffic on the New Hampshire Turnpike System; secondly we estimated the FY 2014 traffic growth based on more than four months of actual data; and thirdly we updated the future traffic, E-ZPass market shares, and average toll rates, which are dependent on the percent of traffic at each toll location that pays the discounted toll using a NH E-ZPass transponder. The details of the changes to the T&R model are described below.

Background Growth

In preparing the forecasts for the 2012 Bond Sale – as in previous forecasts – we correlated historical car toll transaction growth to gross domestic product (GDP) and historical truck growth to increases in the U.S. total industrial production (IPI), then dampened the future growth to account for an expected reduction in the growth of VMT (vehicle-miles traveled) in the long term. As discussed in the Jacobs traffic and revenue study for the Bond Sale, traffic growth is not expected to continue at the high rate it was through the mid 2000s due to such factors as Baby Boomers retiring and driving less, new technology making road travel less necessary, and the Millennial Generation's preference for driving less when compared to the same age group from previous generations.

For this forecast update, we updated the correlations between car traffic and GDP, and truck traffic and IPI, using FY 2013 traffic data and future year projections of GDP and IPI as estimated by industry experts in the latest available *Blue Chip Economic Forecasts*. The fiscal year projections of GDP and IPI used for the June 2011 update, the August 2012 Bond Sale and this update are all compared in Table 1 below.

Table 1
Revisions to GDP and IPI Growth Rate Projections

		FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023-2024
GDP	June 2011 Update*	3.2%	3.0%	2.9%	2.8%	2.7%	2.7%	N/A	N/A	N/A	N/A
	August 2012 Bond Sale**	2.7%	3.0%	3.0%	2.9%	2.8%	2.6%	2.5%	2.5%	2.5%	N/A
	December 2013 Update***	2.1%	2.8%	2.9%	2.8%	2.7%	2.6%	2.5%	2.5%	2.5%	2.5%
IPI	June 2011 Update*	3.7%	3.4%	3.3%	3.2%	3.1%	3.1%	N/A	N/A	N/A	N/A
	August 2012 Bond Sale**	3.2%	3.3%	3.2%	3.0%	2.8%	2.8%	2.8%	2.8%	2.8%	N/A
	December 2013 Update***	2.6%	3.2%	3.3%	3.1%	2.9%	2.8%	2.7%	2.7%	2.7%	2.7%

*March 2011 *Blue Chip* used for long-term forecasts; June 2011 *Blue Chip* used for short-term
**March 2012 *Blue Chip* used for long-term forecasts; June 2012 *Blue Chip* used for short-term
***October 2013 *Blue Chip* used for short-term and long-term forecasts

As seen in the table, the Blue Chip forecasters have generally reduced their growth projections, especially in the near term. In this update, we kept the same dampening factors that were used in the August 2012 Bond Sale.

FY 2013 is the most recent full year of actual traffic data available. Table 2 compares the actual FY 2013 car and truck traffic by location to our previous 2012 forecast. The biggest differences were at the Exit 10 Ramp, which did not gain as much car traffic as expected from shopping outlet traffic, and better than expected truck growth at the Bedford Road Ramp which we had estimated to drop by the greatest percentage due to the free Manchester Airport Access Road ramp. In actuality, truck traffic declined fairly evenly across all four Merrimack toll locations. The Hooksett Barrier and Hooksett Ramp lost some traffic; this may have been due to open-road tolling (ORT) construction in the Hooksett area as the ORT lanes opened to traffic on May 22, 2013 at the Hooksett Barrier.

Table 2
Actual FY 2013 Traffic Growth over FY 2012 Compared to August 2012 Estimate

Location	Car Growth		Truck Growth	
	August 2012 Bond Sale Estimate	Actual	August 2012 Bond Sale Estimate	Actual
Hooksett Barrier	1.0%	-1.7%	1.8%	-2.8%
Hooksett Ramp	1.0%	-0.9%	1.8%	-2.1%
Bedford Barrier	-7.0%	-6.2%	-7.9%	-12.1%
Bedford Road Ramp	-8.3%	-8.7%	-34.2%	-14.5%
Exit 11 (Merrimack) Ramp	-5.9%	-2.6%	-1.9%	-13.4%
Exit 10 Merrimack Ind. Pk. Ramp	95.1%	47.7%	-15.3%	-18.9%
Hampton Barrier	0.6%	-0.3%	0.9%	-0.1%
Hampton Ramp	0.6%	0.1%	0.9%	0.7%
Dover Barrier	-1.1%	0.6%	-0.8%	0.7%
Rochester Barrier	0.4%	2.4%	0.7%	-0.4%

Since four full months of FY 2014 data are now available, plus weekly counts through late November, we overrode the FY 2014 growth estimates derived from the GDP and IPI growth shown in Table 1 with those shown in the "December 2013 Update" columns of Table 3. To arrive at these estimated growth rates, we compared traffic for the first four and a half months of FY 2014 to the same time period last year, and also considered other factors that have temporarily or permanently affected traffic such as the free interchange at the Manchester Airport Access Road, the Merrimack Premium Outlets which opened in June 2012, and the effects of weather and construction. Table 3 also shows the growth rates used in the August 2012 Bond Sale for comparison.

Table 3
Current Estimate of FY 2014 Traffic Growth over FY 2013
Compared to August 2012 Estimate

Location	Car Growth		Truck Growth	
	August 2012 Bond Sale Estimate	December 2013 Update* Estimate	August 2012 Bond Sale	December 2013 Update* Estimate
Hooksett Barrier	1.4%	2.7%	1.9%	4.8%
Hooksett Ramp	1.4%	5.0%	1.9%	10.0%
Bedford Barrier	-1.1%	1.0%	-1.2%	-0.3%
Bedford Road Ramp	-3.5%	-0.6%	-20.5%	-8.0%
Exit 11 (Merrimack) Ramp	-3.1%	0.4%	-0.4%	0.5%
Exit 10 Merrimack Ind. Pk. Ramp	18.6%	0.0%	1.9%	15.0%
Hampton Barrier	0.8%	0.5%	0.9%	-0.1%
Hampton Ramp	0.8%	2.2%	0.9%	0.0%
Dover Barrier	0.0%	2.0%	0.2%	3.5%
Rochester Barrier	1.5%	4.8%	1.7%	5.2%

*Annual estimates based on July through mid-November data

We can draw the following conclusions from this table:

- Hooksett traffic is recovering after the ORT construction, and growing.
- The shift of cars from the Merrimack ramps to the free Manchester Airport Access Road ramp has ceased, but some trucks continue to shift from the Bedford Road ramp.
- Dover and Rochester traffic is increasing since the Spaulding Turnpike widening project in Rochester has been completed.
- Car traffic at Exit 10 is not increasing due to the outlets, but truck traffic at that ramp is increasing.

Figure 1 further illustrates the historical changes in car traffic by comparing the year-over-year weekly total car traffic. While FY 2013 car traffic was slightly below FY 2012 levels, the weekly FY 2014 traffic has, to date, increased over FY 2013. We estimate that overall New Hampshire car toll transactions for the full FY 2014 will be 1.9 percent higher than FY 2013.

Figure 1
FY 2014 Weekly Car Traffic Compared to FY 2012 and 2013, Total Turnpike System

E-ZPass Market Share

Estimated FY 2013 E-ZPass market shares were updated in our traffic and revenue model to reflect actual observed data. Table 4 compares our previous estimates of FY 2013 E-ZPass market share to actual FY 2013 data. As seen in the table, car E-ZPass market shares generally grew faster than expected, while truck E-ZPass market shares were generally less than expected. The biggest differences occurred in the Bedford/Merrimack area, which were affected by traffic shifts due to the free Manchester Airport Access Road ramp plus new traffic at the Merrimack Premium outlets.

Table 4
Previous Estimate of FY 2013 E-ZPass Market Share vs. Actual

	FY 2013 Projections, August 2012 Bond Sale		FY 2013 Actual		Differences	
	Cars	Trucks	Cars	Trucks	Cars	Trucks
CENTRAL TURNPIKE						
Hooksett Barrier	**60.7%**	**81.7%**	**61.4%**	**81.8%**	0.7%	0.0%
Hooksett Ramp	**61.1%**	**84.1%**	**61.5%**	**82.5%**	0.4%	-1.6%
Bedford Barrier	**68.5%**	**85.8%**	**68.8%**	**84.7%**	0.3%	-1.1%
Bedford Road Ramp	**76.7%**	**77.5%**	**77.7%**	**71.5%**	1.0%	-6.0%
Exit 11 (Merrimack) Ramp	**75.5%**	**74.5%**	**74.5%**	**69.7%**	-1.0%	-4.7%
Exit 10 Merrimack Ind. Pk. Ramp	**60.5%**	**82.0%**	**68.3%**	**83.2%**	7.8%	1.2%
BLUE STAR TURNPIKE						
Hampton Barrier	**65.3%**	**83.9%**	**65.6%**	**83.6%**	0.3%	-0.3%
Hampton Ramp	**67.1%**	**86.5%**	**68.0%**	**86.0%**	0.9%	-0.4%
SPAULDING TURNPIKE						
Dover Barrier	**67.5%**	**86.4%**	**68.5%**	**85.6%**	1.0%	-0.9%
Rochester Barrier	**66.4%**	**82.0%**	**66.7%**	**80.6%**	0.2%	-1.4%

Similar to our previous forecasts, for this update we expect E-ZPass market share to grow over the forecast period, with a maximum market share for each facility reached in FY 2020. We have updated the maximum E-ZPass market shares by facility and vehicle type based on growth trends over the past seven years.

NHDOT (Home) Discounted E-ZPass

Since E-ZPass transponders issued by the New Hampshire DOT ("Home") are assessed a lower toll rate than transponders issued by other E-ZPass agencies("Away"), it was necessary to look at the actual FY 2013 Home E-ZPass shares for cars and trucks to develop revised shares of discounted E-ZPass vehicles in the future year revenue forecasts. Table 5 compares the actual FY 2013 overall Home E-ZPass share to the Home E-ZPass forecasts used for the 2012 Bond Sale.

Table 5
Previous Estimate of HOME E-ZPass as a Percent of Total E-ZPass vs. Actual For Total Car and Truck Traffic

Barriers/Ramps	August 2012 Bond Sale Projections for FY 2013	FY 2013 ACTUAL
CENTRAL TURNPIKE		
Hooksett Barrier	**72.8%**	**72.3%**
Hooksett Ramp	**87.7%**	**87.5%**
Bedford Barrier	**79.3%**	**78.7%**
Bedford Road Ramp	**89.9%**	**89.9%**
Exit 11 (Merrimack) Ramp	**89.3%**	**88.2%**
Exit 10 Merrimack Ind. Pk. Ramp	**64.5%**	**58.6%**
BLUE STAR TURNPIKE		
Hampton Barrier	**33.8%**	**33.6%**
Hampton Ramp	**71.1%**	**71.2%**
SPAULDING TURNPIKE		
Dover Barrier	**81.0%**	**80.8%**
Rochester Barrier	**80.6%**	**80.3%**

As the table shows, the estimated FY 2013 share of Home E-ZPass used for the August 2012 Bond Sale was similar to the actual Home E-ZPass share experienced in FY 2013, with the exception of the Exit 10 ramps. Though we knew that there would be significant traffic growth at this location due to the opening of the outlets, it was difficult at the time to determine how much of the outlet traffic would have NH E-ZPass transponders versus E-ZPass transponders from other states. The actual FY 2013 data shows that there are more E-ZPass transponders from other states than anticipated at the Exit 10 ramps.

Spaulding Turnpike Construction

The Spaulding Turnpike widening project in the Rochester area has now been completed, and FY 2014 traffic to date is 5 percent above last year's traffic for the same time period. Meanwhile, further south, the Newington-Dover Spaulding Turnpike Expansion Project has begun and is expected to cause slight reductions in traffic in FY 2015 and 2016.

We have assumed that the FY 2014 Rochester Barrier car and truck traffic will increase 4.8 percent and 5.2 percent, respectively, over FY 2013 levels based on four and a half months of FY 2014 data. The Dover Barrier is also seeing traffic increases this year, likely due to the widening of the Turnpike in Rochester. We have estimated that FY 2014 Dover cars and truck traffic will increase 2.0 percent and 3.5 percent, respectively, over last year's traffic.

We also assumed an additional increase of 1 percent in car and truck traffic at Rochester above background growth levels for FY 2015 – a ramp up in traffic due to the widened road. At the Dover Barrier, we have estimated traffic declines due to construction of 2.5 percent for cars and 5.0 percent for trucks in FY 2015, and 1.5 percent for cars and 3.0 percent for trucks in FY 2016. The widening project is expected to be completed in July 2016, therefore, we assumed that traffic would recover and then grow in FY 2017, with estimated growth rates of 3.7% for cars and 8.5 percent for trucks. Both vehicle types are estimated to grow an additional 1.0 percent in the following year, FY 2018.

Our previous estimates assumed smaller traffic reductions due to construction and smaller traffic increases once construction was complete. We have changed our assumptions once we discovered that the Rochester construction and completion of the Spaulding Turnpike widening project had bigger effects than previously anticipated.

Manchester Airport Access Road

The Manchester Airport Access Road opened on November 11, 2011. As expected, this free ramp to/from the Central Turnpike drew significant traffic away from the Bedford Toll Barrier and Bedford Ramp. While we also estimated that some traffic loss would occur at the Exit 11 Ramp toll location, the actual effects appear to be minimal. FY 2014 traffic data shows that there has been no additional shift in car traffic to the free ramp this year. The data also shows that the Bedford Barrier is no longer experiencing any truck traffic loss, but Bedford Road is continuing to lose some truck traffic. For this update we assumed that truck traffic losses at the Bedford Road ramps will continue through the end of FY 14.

Merrimack Premium Outlets

The Merrimack Premium Outlets opened in June 2012. While we had previously estimated a couple years of ramp up in Exit 10 traffic due to the new outlets, actual FY 2014 weekly car traffic is not higher than the comparable weeks in FY 2013, therefore we assumed no further ramp up in car traffic due to the outlets. Truck traffic experienced a significant bump in traffic starting in February 2013, which appears to have leveled off. This was considered in our FY 2014 forecasts.

Updated Forecasts

We applied the aforementioned changes to our traffic and revenue model and produced the following results.

Toll Transaction Projections by Turnpike

Our updated projections of annual toll transactions on the New Hampshire Turnpike System during the period FY 2013-2024 are presented in Table 6.

Table 6
Projected Annual Toll Transactions, Unadjusted[1]
FY 2013-2024 (in millions)

Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Total
2013[2]	49.7	35.3	21.5	106.5
2014[3]	50.7	35.7	22.2	108.5
2015	51.6	36.0	22.1	109.7
2016	52.5	36.4	22.1	111.0
2017	53.5	36.7	22.8	113.0
2018	54.4	37.1	23.1	114.6
2019	55.3	37.4	23.3	115.9
2020	56.1	37.7	23.4	117.3
2021	57.1	38.1	23.6	118.7
2022	58.0	38.4	23.7	120.1
2023	58.9	38.8	23.9	121.6
2024	59.9	39.1	24.1	123.0

[1]Projections do not include non-revenue vehicles or violators. No future toll increases are assumed.
[2]Actual
[3] Estimated based on more than 4 months of data
Note: Data will not necessarily add to totals because of rounding

For the purposes of developing toll revenue projections, we removed non-revenue and violation (i.e., non-toll paying) transactions from the traffic and toll revenue analysis. Total toll transactions are projected to increase from 106.5 million toll-paying transactions in FY 2013 to 108.5 million in FY 2014, representing a gain of 1.9 percent. The number of toll transactions is expected to further increase by a smaller amount in FY 2015 (a gain of 1.1 percent). The average annual growth rate in total toll transactions between FY 2013 and FY 2024 is 1.3 percent per year. The average annual growth rates in toll transactions for the Central, Blue Star and Spaulding Turnpikes are 1.7 percent, 0.9 percent and 1.0 percent respectively over the 11-year period.

Toll Revenue Projections by Turnpike

Our revised projections of annual toll revenue on the New Hampshire Turnpike System during the period FY 2013-2024 are presented in Table 7. Note that *no future toll increases* are assumed in these estimates.

Table 7
Projected Annual Gross Toll Revenues, Unadjusted[1]
FY 2013-2024 (in millions)

Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Total
2013[2]	$ 41.7	$ 58.1	$ 14.7	$ 114.4
2014[3]	$ 42.4	$ 58.5	$ 15.1	$ 116.0
2015	$ 43.1	$ 59.0	$ 15.0	$ 117.1
2016	$ 43.8	$ 59.6	$ 15.0	$ 118.3
2017	$ 44.5	$ 60.1	$ 15.4	$ 120.1
2018	$ 45.3	$ 60.7	$ 15.6	$ 121.5
2019	$ 46.0	$ 61.2	$ 15.7	$ 122.9
2020	$ 46.7	$ 61.7	$ 15.8	$ 124.2
2021	$ 47.5	$ 62.3	$ 15.9	$ 125.7
2022	$ 48.2	$ 62.9	$ 16.0	$ 127.1
2023	$ 49.0	$ 63.4	$ 16.1	$ 128.5
2024	$ 49.8	$ 64.0	$ 16.2	$ 130.0

[1]Does not include administrative fees, violation revenue, or losses due to violations. No future toll increases are assumed.

[2]Actual

[3] Estimated based on more than 4 months of data

Note: Data will not necessarily add to totals because of rounding

Actual toll revenues for FY 2013, without adjustments due to violations, were $114.4 million. Toll revenue is expected to increase by 1.3 percent from FY 2013 to FY 2014, based on four and a half months of data, to $116.0 million. It is estimated that toll revenue will increase by only 1.0 percent from FY 2014 to FY 2015 as well as from FY 2015 to FY 2016 partially due to construction on the Spaulding Turnpike. This is followed by a 1.5 percent revenue increase from FY 2016 to FY 2017 as traffic is expected to recover and grow on the widened Spaulding Turnpike. Toll revenues on the Central, Blue Star and Spaulding Turnpikes are expected to grow at an average annual rate of 1.6 percent, 0.9 percent and 0.9 percent respectively between FY 2013 and FY 2024, and the overall Turnpike annual revenue growth rate is estimated to be 1.2 percent.

A detailed summary of the updated traffic, revenue, and E-ZPass forecasts by toll facility is presented in Table 8. Note that these model results have not been adjusted to account for violations and unclassified and non-revenue vehicles.

Table 8: Detailed Traffic and Revenue Projections and Growth Rates, Unadjusted, FY 2013-2024 (in millions)

Total Revenue Paying Traffic Volumes (millions)

Barriers/Ramps	2013 Actual	13-14 Projected Growth	2014 Projected	14-15 Projected Growth	2015 Projected	15-16 Projected Growth	2016 Projected	16-17 Projected Growth	2017 Projected	17-18 Projected Growth	2018 Projected	18-19 Projected Growth	2019 Projected	19-20 Projected Growth	2020 Projected	20-21 Projected Growth	2021 Projected	21-22 Projected Growth	2022 Projected	22-23 Projected Growth	2023 Projected	23-24 Projected Growth	2024 Projected
CENTRAL TURNPIKE																							
Hooksett Barrier	23.9	2.80%	24.6	1.81%	25.0	1.82%	25.5	1.82%	25.9	1.72%	26.4	1.62%	26.8	1.61%	27.2	1.61%	27.7	1.61%	28.1	1.61%	28.6	1.61%	29.0
Hooksett Ramp	2.4	5.37%	2.5	1.82%	2.5	1.82%	2.6	1.82%	2.6	1.72%	2.7	1.62%	2.7	1.62%	2.8	1.62%	2.8	1.62%	2.9	1.62%	2.9	1.62%	3.0
Bedford Barrier	15.3	0.94%	15.5	1.81%	15.8	1.81%	16.0	1.81%	16.3	1.71%	16.6	1.61%	16.9	1.61%	17.2	1.61%	17.4	1.61%	17.7	1.61%	18.0	1.61%	18.3
Bedford Road Ramp	2.4	-0.73%	2.3	1.80%	2.4	1.80%	2.4	1.80%	2.5	1.70%	2.5	1.60%	2.6	1.60%	2.6	1.60%	2.6	1.60%	2.7	1.60%	2.7	1.60%	2.8
Exit 11 (Merrimack) Ramp	3.3	0.40%	3.3	1.80%	3.3	1.81%	3.4	1.81%	3.5	1.71%	3.5	1.61%	3.6	1.60%	3.6	1.60%	3.7	1.60%	3.8	1.60%	3.8	1.60%	3.9
Exit 10 Merrimack Industrial Park Ramp	2.5	0.36%	2.5	1.81%	2.5	1.81%	2.6	1.81%	2.6	1.71%	2.7	1.61%	2.7	1.61%	2.7	1.61%	2.8	1.61%	2.8	1.61%	2.9	1.61%	2.9
Subtotal	**49.7**	**1.90%**	**50.7**	**1.81%**	**51.6**	**1.81%**	**52.5**	**1.81%**	**53.5**	**1.71%**	**54.4**	**1.61%**	**55.3**	**1.61%**	**56.1**	**1.61%**	**57.1**	**1.61%**	**58.0**	**1.61%**	**58.9**	**1.61%**	**59.9**
BLUE STAR TURNPIKE																							
Hampton Barrier	22.3	0.44%	22.4	0.98%	22.6	0.99%	22.9	0.99%	23.1	0.98%	23.3	0.89%	23.5	0.89%	23.7	0.89%	23.9	0.89%	24.2	0.89%	24.4	0.89%	24.6
Hampton Ramp	13.0	2.09%	13.2	0.99%	13.4	0.99%	13.5	0.99%	13.6	0.99%	13.8	0.90%	13.9	0.90%	14.0	0.90%	14.1	0.90%	14.3	0.90%	14.4	0.90%	14.5
Subtotal	**35.3**	**1.05%**	**35.7**	**0.98%**	**36.0**	**0.99%**	**36.4**	**0.99%**	**36.7**	**0.98%**	**37.1**	**0.89%**	**37.4**	**0.89%**	**37.7**	**0.89%**	**38.1**	**0.89%**	**38.4**	**0.89%**	**38.8**	**0.89%**	**39.1**
SPAULDING TURNPIKE																							
Dover Barrier	13.1	2.06%	13.4	-1.80%	13.2	-0.75%	13.1	4.67%	13.7	1.70%	13.9	0.70%	14.0	0.70%	14.1	0.70%	14.2	0.70%	14.3	0.70%	14.4	0.70%	14.5
Rochester Barrier	8.4	4.81%	8.8	1.80%	9.0	0.80%	9.1	0.80%	9.1	0.70%	9.2	0.70%	9.3	0.70%	9.3	0.70%	9.4	0.70%	9.5	0.70%	9.5	0.70%	9.6
Subtotal	**21.5**	**3.13%**	**22.2**	**-0.37%**	**22.1**	**-0.12%**	**22.1**	**3.08%**	**22.8**	**1.30%**	**23.1**	**0.70%**	**23.3**	**0.70%**	**23.4**	**0.70%**	**23.6**	**0.70%**	**23.7**	**0.70%**	**23.9**	**0.70%**	**24.1**
TOTAL:	**106.5**	**1.87%**	**108.5**	**1.09%**	**109.7**	**1.15%**	**111.0**	**1.80%**	**113.0**	**1.39%**	**114.6**	**1.20%**	**115.9**	**1.19%**	**117.3**	**1.20%**	**118.7**	**1.20%**	**120.1**	**1.20%**	**121.6**	**1.20%**	**123.0**

Total Toll Revenue (millions)

Barriers/Ramps	2013 Actual	13-14 Projected Growth	2014 Projected	14-15 Projected Growth	2015 Projected	15-16 Projected Growth	2016 Projected	16-17 Projected Growth	2017 Projected	17-18 Projected Growth	2018 Projected	18-19 Projected Growth	2019 Projected	19-20 Projected Growth	2020 Projected	20-21 Projected Growth	2021 Projected	21-22 Projected Growth	2022 Projected	22-23 Projected Growth	2023 Projected	23-24 Projected Growth	2024 Projected
CENTRAL TURNPIKE																							
Hooksett Barrier	$22.9	2.52%	$23.5	1.58%	$23.8	1.63%	$24.2	1.68%	$24.6	1.63%	$25.0	1.57%	$25.4	1.60%	$25.8	1.61%	$26.2	1.61%	$26.7	1.61%	$27.1	1.61%	$27.5
Hooksett Ramp	$1.2	5.23%	$1.3	1.71%	$1.3	1.75%	$1.3	1.77%	$1.3	1.70%	$1.3	1.63%	$1.4	1.64%	$1.4	1.62%	$1.4	1.62%	$1.4	1.62%	$1.5	1.62%	$1.5
Bedford Barrier	$14.1	0.71%	$14.2	1.61%	$14.4	1.65%	$14.7	1.69%	$14.9	1.63%	$15.2	1.57%	$15.4	1.59%	$15.6	1.61%	$15.9	1.61%	$16.2	1.61%	$16.4	1.61%	$16.7
Bedford Road Ramp	$1.0	-1.20%	$1.0	1.40%	$1.0	1.49%	$1.0	1.57%	$1.0	1.56%	$1.0	1.55%	$1.0	1.60%	$1.1	1.60%	$1.1	1.60%	$1.1	1.60%	$1.1	1.60%	$1.1
Exit 11 (Merrimack) Ramp	$1.4	0.17%	$1.4	1.61%	$1.4	1.65%	$1.4	1.69%	$1.4	1.63%	$1.5	1.57%	$1.5	1.59%	$1.5	1.60%	$1.5	1.60%	$1.6	1.60%	$1.6	1.60%	$1.6
Exit 10 Merrimack Industrial Park Ramp	$1.2	0.22%	$1.2	1.70%	$1.2	1.72%	$1.2	1.74%	$1.2	1.65%	$1.2	1.57%	$1.3	1.58%	$1.3	1.61%	$1.3	1.61%	$1.3	1.61%	$1.3	1.61%	$1.4
Subtotal	**$41.7**	**1.76%**	**$42.4**	**1.59%**	**$43.1**	**1.64%**	**$43.8**	**1.69%**	**$44.5**	**1.63%**	**$45.3**	**1.57%**	**$46.0**	**1.60%**	**$46.7**	**1.61%**	**$47.5**	**1.61%**	**$48.2**	**1.61%**	**$49.0**	**1.61%**	**$49.8**
BLUE STAR TURNPIKE																							
Hampton Barrier	$48.6	0.43%	$48.8	0.96%	$49.3	0.97%	$49.8	0.97%	$50.3	0.95%	$50.7	0.86%	$51.2	0.85%	$51.6	0.89%	$52.1	0.89%	$52.5	0.89%	$53.0	0.89%	$53.5
Hampton Ramp	$9.4	1.87%	$9.6	0.81%	$9.7	0.85%	$9.8	0.88%	$9.9	0.91%	$10.0	0.85%	$10.0	0.87%	$10.1	0.90%	$10.2	0.90%	$10.3	0.90%	$10.4	0.90%	$10.5
Subtotal	**$58.1**	**0.66%**	**$58.5**	**0.94%**	**$59.0**	**0.95%**	**$59.6**	**0.95%**	**$60.1**	**0.95%**	**$60.7**	**0.86%**	**$61.2**	**0.86%**	**$61.7**	**0.89%**	**$62.3**	**0.89%**	**$62.9**	**0.89%**	**$63.4**	**0.89%**	**$64.0**
SPAULDING TURNPIKE																							
Dover Barrier	$9.0	1.75%	$9.1	-2.04%	$8.9	-0.95%	$8.8	4.51%	$9.2	1.61%	$9.4	0.65%	$9.4	0.69%	$9.5	0.70%	$9.6	0.70%	$9.6	0.70%	$9.7	0.70%	$9.8
Rochester Barrier	$5.7	4.50%	$6.0	1.54%	$6.1	0.60%	$6.1	0.65%	$6.2	0.61%	$6.2	0.66%	$6.2	0.69%	$6.3	0.70%	$6.3	0.70%	$6.4	0.70%	$6.4	0.70%	$6.5
Subtotal	**$14.7**	**2.82%**	**$15.1**	**-0.62%**	**$15.0**	**-0.32%**	**$15.0**	**2.93%**	**$15.4**	**1.21%**	**$15.6**	**0.66%**	**$15.7**	**0.69%**	**$15.8**	**0.70%**	**$15.9**	**0.70%**	**$16.0**	**0.70%**	**$16.1**	**0.70%**	**$16.2**
TOTAL:	**$114.4**	**1.34%**	**$116.0**	**0.98%**	**$117.1**	**1.04%**	**$118.3**	**1.48%**	**$120.1**	**1.23%**	**$121.5**	**1.10%**	**$122.9**	**1.11%**	**$124.2**	**1.14%**	**$125.7**	**1.14%**	**$127.1**	**1.14%**	**$128.5**	**1.14%**	**$130.0**

E-ZPass Market Shares

Barriers/Ramps	2013 Actual	13-14 Projected Increase	2014 Projected	14-15 Projected Increase	2015 Projected	15-16 Projected Increase	2016 Projected	16-17 Projected Increase	2017 Projected	17-18 Projected Increase	2018 Projected	18-19 Projected Growth	2019 Projected	19-20 Projected Growth	2020 Projected	20-21 Projected Growth	2021 Projected	21-22 Projected Growth	2022 Projected	22-23 Projected Growth	2023 Projected	23-24 Projected Growth	2024 Projected
CENTRAL TURNPIKE																							
Hooksett Barrier	62.4%	1.89%	64.3%	1.55%	65.8%	1.23%	67.1%	0.90%	68.0%	0.58%	68.5%	0.26%	68.8%	0.07%	68.9%	0.00%	68.9%	0.00%	68.9%	0.00%	68.9%	0.00%	68.9%
Hooksett Ramp	63.1%	1.59%	64.6%	1.27%	65.9%	1.00%	66.9%	0.74%	67.7%	0.48%	68.1%	0.21%	68.3%	0.06%	68.4%	0.00%	68.4%	0.00%	68.4%	0.00%	68.4%	0.00%	68.4%
Bedford Barrier	69.6%	1.18%	70.7%	0.98%	71.7%	0.78%	72.5%	0.57%	73.1%	0.37%	73.4%	0.17%	73.6%	0.04%	73.6%	0.00%	73.6%	0.00%	73.6%	0.00%	73.6%	0.00%	73.7%
Bedford Road Ramp	77.6%	1.53%	79.1%	1.26%	80.4%	1.00%	81.4%	0.73%	82.1%	0.47%	82.6%	0.21%	82.8%	0.05%	82.9%	0.00%	82.9%	0.00%	82.9%	0.00%	82.9%	0.00%	82.9%
Exit 11 (Merrimack) Ramp	74.4%	0.73%	75.2%	0.60%	75.8%	0.48%	76.3%	0.35%	76.6%	0.23%	76.8%	0.10%	76.9%	0.03%	77.0%	0.00%	77.0%	0.00%	77.0%	0.00%	77.0%	0.00%	77.0%
Exit 10 Merrimack Industrial Park Ramp	68.7%	0.83%	69.5%	0.65%	70.1%	0.51%	70.7%	0.38%	71.0%	0.24%	71.3%	0.11%	71.4%	0.03%	71.4%	0.00%	71.4%	0.00%	71.4%	0.00%	71.4%	0.00%	71.4%
Subtotal	**66.5%**	**1.46%**	**67.9%**	**1.24%**	**69.2%**	**0.98%**	**70.2%**	**0.73%**	**70.9%**	**0.47%**	**71.3%**	**0.21%**	**71.6%**	**0.05%**	**71.6%**	**0.00%**	**71.6%**	**0.00%**	**71.6%**	**0.00%**	**71.6%**	**0.00%**	**71.6%**
BLUE STAR TURNPIKE																							
Hampton Barrier	67.4%	1.80%	69.2%	1.49%	70.6%	1.18%	71.8%	0.87%	72.7%	0.56%	73.3%	0.25%	73.5%	0.06%	73.6%	0.00%	73.6%	0.00%	73.6%	0.00%	73.6%	0.00%	73.6%
Hampton Ramp	68.9%	1.67%	70.6%	1.40%	72.0%	1.11%	73.1%	0.82%	73.9%	0.52%	74.5%	0.23%	74.7%	0.06%	74.7%	0.00%	74.7%	0.00%	74.7%	0.00%	74.7%	0.00%	74.7%
Subtotal	**67.9%**	**1.76%**	**69.7%**	**1.46%**	**71.2%**	**1.15%**	**72.3%**	**0.85%**	**73.2%**	**0.54%**	**73.7%**	**0.24%**	**73.9%**	**0.06%**	**74.0%**	**0.00%**	**74.0%**	**0.00%**	**74.0%**	**0.00%**	**74.0%**	**0.00%**	**74.0%**
SPAULDING TURNPIKE																							
Dover Barrier	69.1%	1.57%	70.7%	1.28%	72.0%	1.01%	73.0%	0.78%	73.8%	0.48%	74.3%	0.21%	74.5%	0.05%	74.5%	0.00%	74.5%	0.00%	74.5%	0.00%	74.5%	0.00%	74.5%
Rochester Barrier	67.2%	1.51%	68.7%	1.25%	69.9%	0.99%	70.9%	0.73%	71.6%	0.47%	72.1%	0.21%	72.3%	0.05%	72.4%	0.00%	72.4%	0.00%	72.4%	0.00%	72.4%	0.00%	72.4%
Subtotal	**68.4%**	**1.53%**	**69.9%**	**1.25%**	**71.1%**	**1.00%**	**72.1%**	**0.78%**	**72.9%**	**0.48%**	**73.4%**	**0.21%**	**73.6%**	**0.05%**	**73.7%**	**0.00%**	**73.7%**	**0.00%**	**73.7%**	**0.00%**	**73.7%**	**0.00%**	**73.7%**
TOTAL:	**67.3%**	**1.57%**	**68.9%**	**1.31%**	**70.2%**	**1.04%**	**71.3%**	**0.78%**	**72.0%**	**0.49%**	**72.5%**	**0.22%**	**72.7%**	**0.05%**	**72.8%**	**0.00%**	**72.8%**	**0.0%**	**72.8%**	**0.00%**	**72.8%**	**0.00%**	**72.8%**

Adjustments to Traffic and Revenue Forecasts

The traffic and toll revenue results produced by our traffic and revenue model are calculated from traffic by vehicle class, Home vs. Away E-ZPass share, and toll rates. They do not account for non-revenue vehicles, unclassified vehicles, or violations. Therefore there are slight differences between the modeled traffic and toll revenue and the actual observed traffic and toll revenue. For example, the actual FY 2013 total revenue was $115.4M, while our model had calculated $114.4M, a difference of -0.9%. To resolve these differences, we compared FY 2013 modeled vs. actual traffic and revenue for each of the ten toll locations, developing adjustment factors for each, and applied these adjustment factors to the future years of the forecast. Table 9 presents the traffic and toll revenue forecasts with these adjustments.

Historical and updated projections of toll transaction and revenue for the entire New Hampshire Turnpike System over the period FY 1950 to FY 2024 are presented in Figure 2.

Table 9
Projected Annual Traffic and Gross Toll Revenues, Adjusted
FY 2013-2024 (in millions)

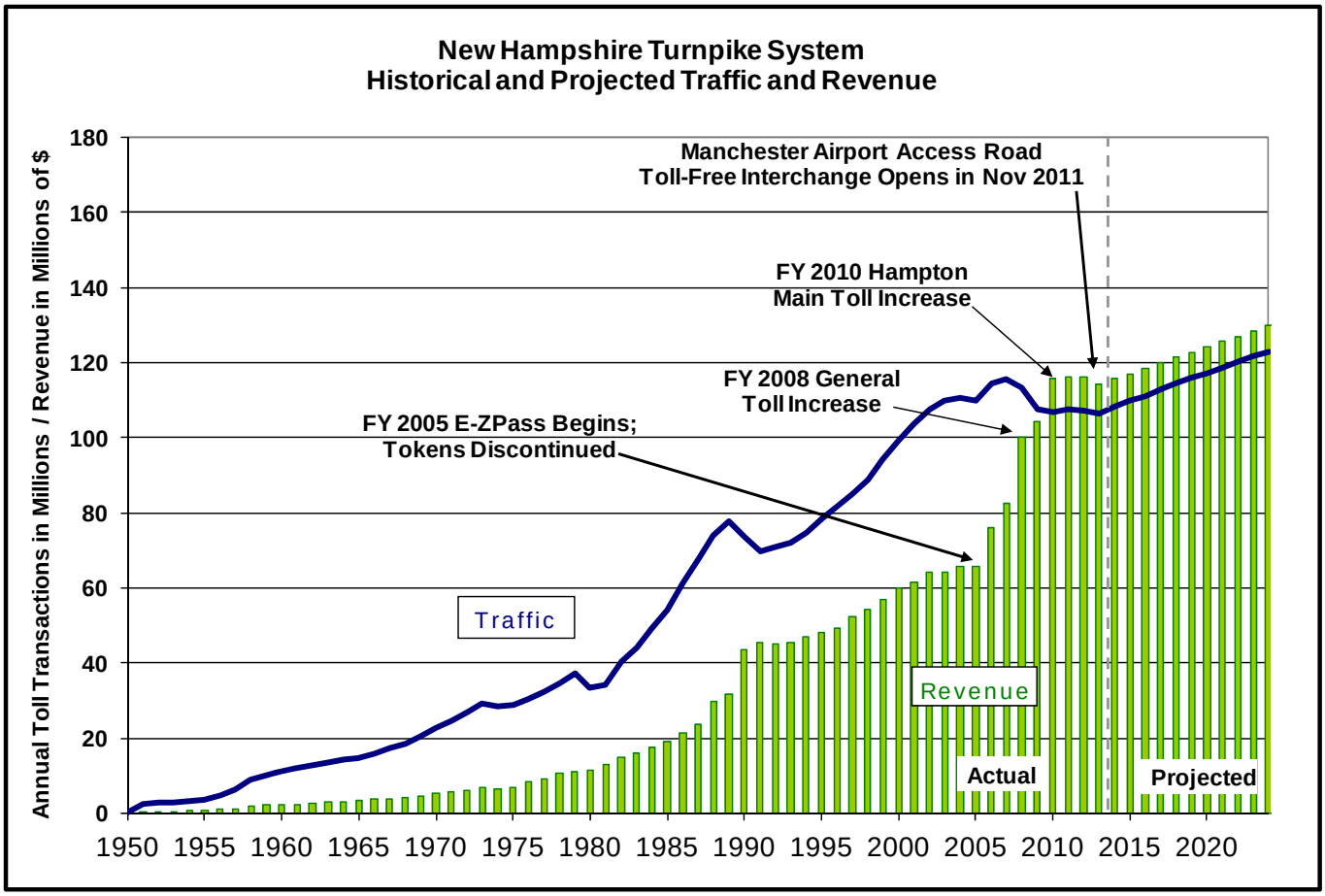
Total Traffic Volumes (millions)

Barriers/Ramps	2013 Actual	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
CENTRAL TPKE												
Hooksett Barrier	24.5	25.1	25.6	26.1	26.5	27.0	27.4	27.9	28.3	28.8	29.2	29.7
Hooksett Ramp	2.4	2.5	2.6	2.6	2.7	2.7	2.8	2.8	2.9	2.9	2.9	3.0
Bedford Barrier	15.6	15.7	16.0	16.3	16.6	16.9	17.2	17.4	17.7	18.0	18.3	18.6
Bedford Rd Ramp	2.4	2.4	2.4	2.5	2.5	2.6	2.6	2.6	2.7	2.7	2.8	2.8
Exit 11 Ramp	3.3	3.3	3.4	3.4	3.5	3.6	3.6	3.7	3.7	3.8	3.9	3.9
Exit 10 Ramp	2.5	2.5	2.6	2.6	2.7	2.7	2.7	2.8	2.8	2.9	2.9	3.0
Subtotal	**50.7**	**51.6**	**52.6**	**53.5**	**54.5**	**55.4**	**56.3**	**57.2**	**58.1**	**59.1**	**60.0**	**61.0**
BLUE STAR TPKE												
Hampton Barrier	22.6	22.7	22.9	23.1	23.4	23.6	23.8	24.0	24.2	24.5	24.7	24.9
Hampton Ramp	13.2	13.5	13.6	13.7	13.9	14.0	14.1	14.3	14.4	14.5	14.6	14.8
Subtotal	**35.8**	**36.2**	**36.5**	**36.9**	**37.2**	**37.6**	**37.9**	**38.3**	**38.6**	**39.0**	**39.3**	**39.7**
SPAULDING TPKE												
Dover Barrier	13.3	13.6	13.3	13.2	13.8	14.1	14.2	14.3	14.4	14.5	14.6	14.7
Rochester Barrier	8.5	8.9	9.1	9.2	9.2	9.3	9.4	9.4	9.5	9.6	9.6	9.7
Subtotal	**21.8**	**22.5**	**22.4**	**22.4**	**23.1**	**23.4**	**23.5**	**23.7**	**23.9**	**24.0**	**24.2**	**24.4**
TOTAL:	**108.2**	**110.3**	**111.5**	**112.8**	**114.8**	**116.4**	**117.8**	**119.2**	**120.6**	**122.1**	**123.5**	**125.0**

Total Toll Revenue (millions)

Barriers/Ramps	2013 Actual	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
CENTRAL TPKE												
Hooksett Barrier	$23.1	$23.6	$24.0	$24.4	$24.8	$25.2	$25.6	$26.0	$26.5	$26.9	$27.3	$27.8
Hooksett Ramp	$1.2	$1.2	$1.3	$1.3	$1.3	$1.3	$1.3	$1.4	$1.4	$1.4	$1.4	$1.5
Bedford Barrier	$14.2	$14.3	$14.5	$14.8	$15.0	$15.3	$15.5	$15.8	$16.0	$16.3	$16.5	$16.8
Bedford Rd Ramp	$1.0	$0.9	$1.0	$1.0	$1.0	$1.0	$1.0	$1.0	$1.1	$1.1	$1.1	$1.1
Exit 11 Ramp	$1.4	$1.4	$1.4	$1.4	$1.4	$1.4	$1.5	$1.5	$1.5	$1.5	$1.6	$1.6
Exit 10 Ramp	$1.2	$1.2	$1.2	$1.2	$1.2	$1.2	$1.3	$1.3	$1.3	$1.3	$1.3	$1.4
Subtotal	**$41.9**	**$42.7**	**$43.3**	**$44.1**	**$44.8**	**$45.5**	**$46.2**	**$47.0**	**$47.7**	**$48.5**	**$49.3**	**$50.1**
BLUE STAR TPKE												
Hampton Barrier	$49.3	$49.5	$50.0	$50.5	$50.9	$51.4	$51.9	$52.3	$52.8	$53.2	$53.7	$54.2
Hampton Ramp	$9.5	$9.7	$9.8	$9.9	$10.0	$10.1	$10.2	$10.2	$10.3	$10.4	$10.5	$10.6
Subtotal	**$58.8**	**$59.2**	**$59.8**	**$60.3**	**$60.9**	**$61.5**	**$62.0**	**$62.6**	**$63.1**	**$63.7**	**$64.2**	**$64.8**
SPAULDING TPKE												
Dover Barrier	$9.0	$9.1	$8.9	$8.8	$9.2	$9.4	$9.5	$9.5	$9.6	$9.7	$9.7	$9.8
Rochester Barrier	$5.7	$6.0	$6.1	$6.1	$6.1	$6.2	$6.2	$6.3	$6.3	$6.3	$6.4	$6.4
Subtotal	**$14.7**	**$15.1**	**$15.0**	**$14.9**	**$15.4**	**$15.6**	**$15.7**	**$15.8**	**$15.9**	**$16.0**	**$16.1**	**$16.2**
TOTAL:	**$115.4**	**$117.0**	**$118.1**	**$119.3**	**$121.1**	**$122.6**	**$123.9**	**$125.3**	**$126.7**	**$128.2**	**$129.6**	**$131.1**

Figure 2
NH Turnpike System Historical and Projected Toll Transaction and Revenue Trends
FY 1950-2024



Limits

It is Jacobs' opinion that the traffic and gross toll revenue estimates provided herein are reasonable and that they have been prepared in accordance with accepted industry-wide practice. However, given the uncertainties within the current economic climate, it is important to note the following assumptions which, in our opinion, are reasonable:

- This report presents the results of Jacobs' consideration of the information available as of the date hereof and the application of our experience and professional judgment to that information. It is not a guarantee of any future events or trends.
- The traffic and gross toll revenue estimates will be subject to future economic and social conditions, demographic developments and regional transportation construction activities that cannot be predicted with certainty.

- Jacobs' traffic and gross toll revenue estimations only represent our best judgment and we do not warrant or represent that the actual gross toll revenues will not vary from our estimates.
- We do not express any opinion on the following items: socioeconomic and demographic forecasts, proposed land use development projects and potential improvements to the regional transportation network.
- The standards of operation and maintenance on all of the system will be maintained as planned within the business rules and practices.
- No other competing projects, tolled or non-tolled are assumed to be constructed or significantly improved in the project corridor during the project period, as to negatively impact traffic, except those identified within this report.
- Major highway improvements that are currently underway or fully funded will be completed as planned.
- The system will be well maintained, efficiently operated, and effectively signed to encourage maximum usage.
- No reduced growth initiatives or related controls that would significantly inhibit normal development patterns will be introduced during the estimate period.
- There will be no future serious protracted recession during the estimate period.
- There will be no protracted fuel shortage during the estimate period.
- No local, regional, or national emergency will arise that will abnormally restrict the use of motor vehicles.

In Jacobs' opinion, the assumptions underlying the projections provide a reasonable basis for the revenue projections and operating expenses. However, any financial projection is subject to uncertainties. Inevitably, some assumptions used to develop the projections will not be realized, and unanticipated events and circumstances may occur. There are likely to be differences between the projections and actual results, and those differences may be material. Because of these uncertainties, Jacobs makes no guaranty or warranty with respect to the projections disclosed in this Study.