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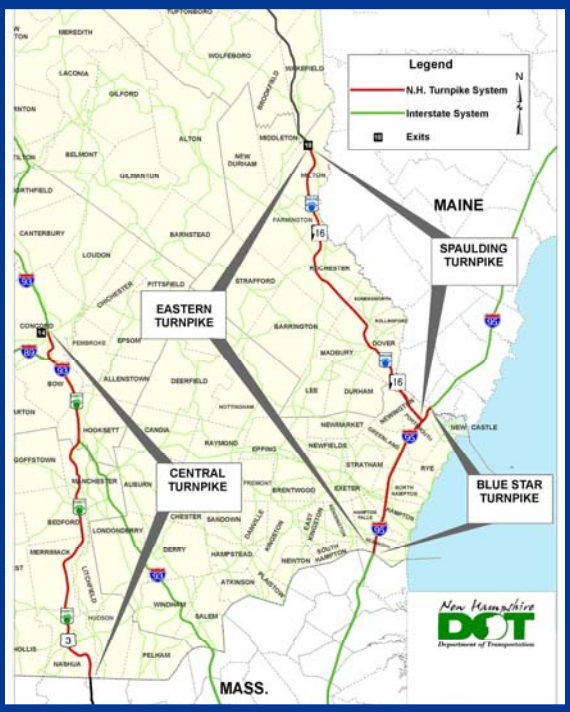

Submitted to:
New Hampshire Department of Transportation

New Hampshire Turnpike System Traffic and Revenue Study

In Reference to:
Statewide On-Call Toll System Services 15355

November 6, 2009

Submitted by:

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1 EXECUTIVE SUMMARY

Jacobs Engineering conducted a traffic and revenue study for the New Hampshire Turnpike System (the "Turnpike System") upon the request of the New Hampshire Department of Transportation (NHDOT). Jacobs analyzed historical traffic and revenue data for the entire Turnpike System to determine historical trends, and reviewed previous traffic and revenue projections made by others and compared them to actual traffic and revenue data recorded by NHDOT. In addition, Jacobs reviewed the historical and proposed Turnpike Capital Improvement Program as well as historical and projected expenditures for the Turnpike System related to operations, maintenance, renewal and replacement, and toll processing.

All of this information and analyses were then used to develop a traffic and revenue model to estimate annual traffic and toll revenue for Fiscal Year 2010 (i.e., July 2009 – June 2010) through Fiscal Year 2019. Projected annual toll revenue is summarized in Table ES-1. These forecasts take into account two toll increases: the recent increase at the Hampton Mainline Barrier, which occurred on July 1, 2009 (FY 2010), and a systemwide toll increase on July 1, 2011 (FY 2012). The forecasts account for the estimated loss in Central Turnpike toll traffic due to the free Manchester Airport Access Road interchange, which is expected to open in FY 2013.

Table ES-1: Projected Annual Toll Revenue[1], FY 2010-2019 (in millions)

Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Total
2010[2]	$ 42.7	$ 54.4	$ 14.6	$ 111.7
2011	$ 43.1	$ 54.4	$ 14.7	$ 112.2
2012[3]	$ 59.5	$ 54.9	$ 18.7	$ 133.1
2013[4]	$ 55.8	$ 55.5	$ 18.8	$ 130.0
2014[5]	$ 54.4	$ 56.0	$ 18.9	$ 129.3
2015	$ 55.0	$ 56.5	$ 19.0	$ 130.6
2016	$ 55.9	$ 57.1	$ 19.2	$ 132.1
2017	$ 57.0	$ 57.7	$ 19.3	$ 134.0
2018	$ 58.1	$ 58.3	$ 19.5	$ 135.9
2019	$ 59.2	$ 58.9	$ 19.7	$ 137.8

[1]Does not include administrative fees or violation revenue

[2]Toll increase at Hampton Barrier 7/1/09; open-road tolling begins at Hampton Barrier 5/31/10

[3]Systemwide toll increase 7/1/11; open-road tolling begins at Hooksett Barrier 5/31/12

[4]Planned opening year for the Manchester Airport Access Road

[5]Open-road tolling begins at Bedford Mainline Barrier 5/31/14

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

The study also included the use of a financial model to estimate net revenues, operating costs, debt service requirements, and bond coverage ratios and cash reserves for the Turnpike System. The analysis of the financial plan showed that sufficient revenues will be generated to fund the proposed capital plan and to meet both the external bond resolution's minimum debt service coverage requirements as well as the Turnpike's internal minimum requirements for the ten-year forecast period, FY 2010-2019.

2 INTRODUCTION

Jacobs Engineering is one of the world's largest and most diverse providers of professional technical consulting services with a network of 57,000 employees in more than 20 countries. Our Transportation Consultancy Group includes former employees from Vollmer/Stantec and URS who specialized in a full range of toll services ranging from toll feasibility and traffic and revenue studies to toll collection system upgrades. Additionally, our Consultancy Group has been at the forefront in helping clients implement toll initiatives including congestion pricing, HOT lanes and open road tolling.

Jacobs was retained by the New Hampshire Department of Transportation (NHDOT) to conduct a traffic and revenue study for the New Hampshire Turnpike System. In conducting this study, historical traffic and revenue data for the entire Turnpike System were collected and analyzed to determine historical trends and travel characteristics. Previous traffic and revenue projections made by others were reviewed and compared to actual traffic and revenue data recorded by NHDOT.

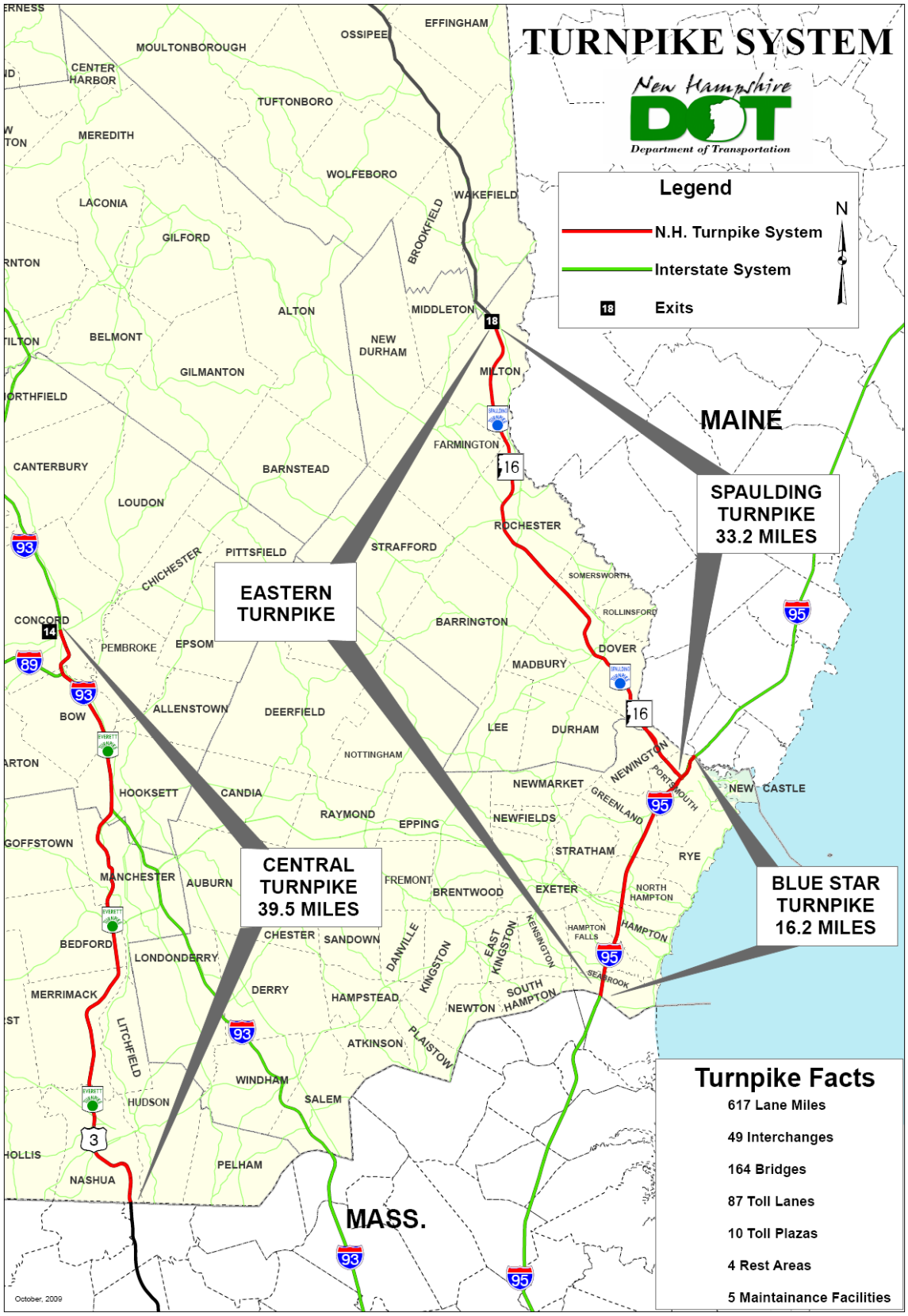
This study also included a review of the historical and proposed Turnpike Capital Improvement Program, as well as historical and projected expenditures for the Turnpike System related to operations, maintenance, renewal and replacement, and toll processing. An additional review was conducted for regional and national economic factors such as gross domestic product, fuel cost impacts, housing and employment. The study also examined feeder and competitive roads and their impact on traffic on the Turnpike System.

All of this information and analyses were then used to develop a traffic and revenue model to estimate annual traffic and toll revenue for Fiscal Years 2010 through 2019. The study also included the development of a financial model to estimate net revenues, operating costs, debt service requirements and bond coverage ratios. An assessment was made to determine whether the toll revenues would be sufficient to meet the Turnpike bond requirements.

3 DESCRIPTION OF NEW HAMPSHIRE TURNPIKE SYSTEM

The current New Hampshire Turnpike System is an open barrier toll system comprised of 48 interchanges, 10 toll plazas, 87 toll lanes, and approximately 89 linear miles. The system is composed of three independent turnpike systems; the Central (F.E. Everett) Turnpike, the Blue Star Turnpike and the Spaulding Turnpike, as shown in Figure 1.

Figure 1: New Hampshire Turnpike System



The Central Turnpike, also known as the F.E. Everett Turnpike (or "FEET") is the longest at 39.5 miles, extending from the Massachusetts State Line in Nashua, New Hampshire to Exit 14 in Concord, New Hampshire. It comprises, in part, a portion of the US Interstate Highways 93 and 293 and connects the three largest cities in New Hampshire (Nashua, Manchester and Concord). The Central Turnpike also connects with major east-west highways such as NH 101, US 4 as well as Interstate 89. Currently there are two mainline toll plazas at Hooksett and Bedford, and 4 ramp plazas at Hooksett (I-93 Exit 11), Bedford Road (FEET Exit 12), Continental Boulevard (FEET Exit 11), and Merrimack Industrial Drive (FEET Exit 10).

The Blue Star Turnpike extends from the Massachusetts state line in Seabrook, New Hampshire to Portsmouth Circle near the Maine state line in Portsmouth, New Hampshire. It is 16.2 miles in length and constitutes a portion of Interstate 95. The 16.2 mile length includes a 1.6-mile piece of I-95 just recently acquired by the NHDOT Bureau of Turnpikes, which extends from the Spaulding Turnpike to the Maine state line. The Blue Star Turnpike also connects with major highways that include NH 101 and US 4. There is a mainline toll plaza and an entry/exit ("side") toll plaza on the Blue Star Turnpike, both located in the Town of Hampton.

The Spaulding Turnpike is 33.2 linear miles, extending from Portsmouth, New Hampshire, to Exit 18 in Milton, New Hampshire. It is the major north-south road in the eastern portion of the state, and connects the Blue Star Turnpike to NH 16, which is the major roadway to northern New Hampshire along the eastern border of New Hampshire. It also connects the three major cities in eastern New Hampshire (Portsmouth, Dover and Rochester) and connects to several major highways that include US 4, NH 16, NH 125 and Interstate 95. There are two mainline toll locations at Dover and Rochester. The Spaulding Turnpike and Blue Star Turnpike are also collectively known as the Eastern Turnpike.

The major events that occurred in the development of the NH Turnpike System are summarized in Table 1, as follows:

Table 1: Major Events on the NH Turnpike System

Date	Activity
1950 (Jun. 24)	First toll plaza opens - Hampton (toll was 20¢ for a passenger car).
1955	Completion of the Nashua to Manchester segment of the Central Turnpike.
1955 (Aug. 21)	Merrimack Toll Plaza opens. Toll was 25¢ for a passenger car.
1955	Tokens authorized providing a 1/3 discount. Two types of tokens were authorized. An "A" token had a trip fare value of 10¢ and a "B" token had a trip fare value of 15¢. Tokens could be used by any class of vehicle.
1956	The Portsmouth to Dover segment of the Spaulding Turnpike was completed.
1956 (Oct. 3)	Dover Toll Plaza opens. Toll was 10¢ for a passenger car.
1957	Increase in toll rate at Dover Toll to 15¢ for a passenger car.
1957	The Manchester to Concord segment of the Central Turnpike was completed.
1957	The Dover to Rochester segment of the Spaulding Turnpike was completed.
1957 (Aug. 29)	The Rochester Toll Plaza opens. Toll was 15¢ for a passenger car.

Table 1: Major Events on the NH Turnpike System

Date	Activity
1957 (Aug. 30)	The Hooksett Toll Plaza opens. Toll was 25¢ for a passenger car.
1961	The rate decreased at Dover Toll to 10¢ for a passenger car.
1961 (Jun. 21)	Toll rate increased at Hampton Toll to 25¢ for a passenger car.
1972	Initiated charge program for commercial accounts. A 1/3 discount was provided in the program.
1975 (Jul. 1)	Toll rate increase at Hampton Toll to 40¢ for a passenger car.
1977	Eastern Turnpike (I-95) widened from 4 to 8 lanes.
1977 (Feb. 1)	Reconstruction and relocation of Hampton Toll completed with new ramp and mainline plazas opened to traffic.
1977 (Apr. 1)	Toll rates at Hooksett and Merrimack Tolls increased to 40¢ for a passenger car. Discontinued the sale of "A" tokens. Tokens restricted to two axle or four tire vehicles. Eliminated the 1/3 discount for commercial charge accounts.
1979 (Aug. 23)	Tolls eliminated at the Hampton Ramp Toll Plaza.
1979	Central Turnpike widened from 4 to 6 lanes from the junction of I-93/I-293 in Hooksett to I-93/I-89 in Bow.
1979 (Dec. 3)	Reconstruction completed on new Hooksett Toll Plaza ramp and mainline barrier.
1979 (Dec. 3)	Toll rates increased as follows. Merrimack, Hooksett & Hampton (main) 50¢ for a passenger car. Dover 15¢ for a passenger car. Rochester 20¢ for a passenger car.
1979 (Dec. 3)	Discount for commuter tokens increased to 50%.
1981 (Jul. 1)	Toll reinstated on the Hampton Ramp Toll Plaza.
1981 (Aug. 20)	Spaulding Turnpike Extension opened from Rochester to Milton.
1986 (Dec. 1)	Automated truck charge system initiated.
1987 (Apr. 15)	Toll rates increased at Dover & Rochester Toll to 25¢ for a passenger car.
1987 (Jul. 1)	Toll increased at Hampton Toll (mainline to 75¢ and ramp to 40¢ for a passenger car).
1987 (Oct. 28)	Toll reduced at Hampton Toll (mainline to 50¢ and ramp to 25¢ for a passenger car).
1987	Exit 8 Interchange, Nashua, New Hampshire. The first project to be completed in the Ten Year Plan to expand and improve the New Hampshire Turnpike System (Chapter 203, Laws of 1986) was the Exit 8 Interchange in Nashua, New Hampshire that opened to traffic in June 1987.
1988 (Jan. 1)	Toll increased at Hampton Main Toll to 75¢ for passenger cars, Hampton Ramp remains @ 25¢.
1989 (Jan. 4)	Merrimack Toll Plaza (Mainline and Ramps) Closed. On this date, the Merrimack Toll Plaza discontinued collection of tolls and was dismantled.
1989 (Jan. 4)	Bedford Toll Plaza Opened to Traffic.

Table 1: Major Events on the NH Turnpike System

Date	Activity
1989 (Jan. 4)	Exit 11 Ramp (Temporary) Toll Plaza Opened to Traffic. On this date, the Exit 11 Toll Plaza opened to traffic replacing the dismantled Merrimack Toll (Ramps).
1989 (Oct 16)	General toll rate increase for entire turnpike system. Increase of 25 cents at each plaza for passenger cars. Substantial increase for commercial vehicles (to recognize weight on turnpike infrastructure). Discount for commercial charge program 5% to 30% graduated. Discount for commuters decreased from 50% to 40%.
1990 (Jul 11)	Commuter discount (Tokens) revised from 40% to 50%. Change in commercial charge discount (5-30%) will apply to total transactions monthly.
1990 (Oct. 2)	Merrimack Industrial Interchange Toll Plaza Opened to Traffic.
1990 (Nov. 29)	Bedford Road Interchange Toll Plaza Opened to Traffic.
1991 (Feb. 4)	"Honor System" Toll Collection Began at Exit 11 Toll Plaza. Initiated unattended toll collection at Exit 11 Toll Plaza between the hours of 9 PM and 5 AM daily.
1991 (May 15)	Hampton Main Toll Plaza Expansion Completed.
1991 (Aug. 30)	Cheshire Toll Bridge Began Operation by the Bureau of Turnpikes.
1991 (Oct. 1)	Bedford Toll Plaza Toll Collection System Conversion.
1991 (Nov. 18)	Exit 11 Interchange Toll Plaza Opens to Traffic.
1991 (Dec. 1)	Hampton Main Toll Plaza Toll Collection System Conversion.
1992 (Feb.)	Hampton Ramp Toll Plaza Toll Collection System Conversion.
1992 (Apr. 1)	Dover Toll Plaza Toll Collection System Conversion.
1992 (Jun. 1)	Rochester Toll Plaza Toll Collection System Conversion.
1992 (Aug 3)	Cheshire Bridge closed for rehabilitation.
1992 (Nov. 14)	Exit 11 Toll Plaza Toll Collection System Conversion.
1993 (Aug. 9)	"Honor System" Toll Collection Begins at Cheshire Toll Bridge.
1993 (Jul 30)	Exit 11 Interchange (Merrimack) completed as part of the Capital Improvement Program.
1993 (Nov. 18)	Gosling Road Interchange on the Spaulding Turnpike Opened.
1993 (Dec. 20)	"Honor System" Toll Collection Begins at Exit 10 and Exit 12.
1994 (Jun.)	Add Two Seasonal Toll Lanes to Hooksett Main Toll Plaza.
1994 (Jun.)	Hampton Main Toll Plaza Changed to All Attended Operation.
1994 (Nov. 1)	Increase Discount in Commercial Charge Program to 50%.
1995 (Jul 30)	Changes at Hampton Main Toll Plaza adding one reversible lane (replacing standard ACM lane) allowing 10 operational lanes in one direction of travel for the first time.
1995 (Aug. 4)	Initiated Tandem Toll Collection at Hampton Main Toll Plaza.
1995 (Aug. 14)	"Honor System" Toll Collection Began at Hooksett Ramp Toll Plaza.

Table 1: Major Events on the NH Turnpike System

Date	Activity
1995 (Aug. 14)	"Bi-directional" Toll Collection Began at Rochester Toll Plaza.
1995 (Aug. 14)	"HOV" (High Occupancy Vehicle) Test began at Bedford Toll.
1995 (Oct.)	Reactivated Automatic Toll Lanes at Hampton Main Toll.
1995 (Nov 1)	Truck charge card discount set at a flat 30% rate.
1996 (May)	Hampton Main Toll Plaza converted to entirely attended operation with all automatic lane equipment taken out of service.
1997 (Jun.)	Expanded Hampton Ramp Toll Plaza from 5 to 7 toll lanes.
1997 (Nov.)	Ended a two-year HOV Test at Bedford Toll Plaza.
2000 (Jul 19)	Expansion of Dover Toll Plaza complete.
2001 (Jul 1)	Toll collection ceased at Cheshire Toll Bridge - per legislation.
2002 (Apr 5)	Rochester Toll Plaza staffing changed back to conventional staffing.
2002	Completed the 5th lane project at the Hampton Toll Plaza on I-95.
2003 (Jul 23)	Opened an additional lane for the first time at the Hooksett Ramp toll facility.
2003 (Aug 21)	One-way toll collection test initiated at the Hampton Toll Plaza.
2003 (Nov 1)	Two-way tolling returns to Hampton Main Toll Plaza for the winter months.
2004 (Jan 9)	Hampton Ramp Toll Plaza converted to all attended capability.
2004 (Jan 29)	Two new toll lanes, one north and one south, at Bedford Toll Plaza, were opened to revenue collection today.
2004 (June 30)	One-way toll collection reinstated at the Hampton Toll Plaza.
2004 (Oct 21)	Two way tolling returns to Hampton Main Toll Plaza.
2005 (March)	Hampton Ramp converted to an all attended plaza just like Hampton Main.
2005 (April 12)	Hooksett Ramp converted back to a 24/7/365 plaza.
2005 (July 11)	The first NH toll facilities to be converted to E-ZPass – Hooksett Main, Hooksett Ramp and Bedford Toll. Cars with NH E-ZPass tags receive a 30% discount from cash (compared to a 50% discount for tokens) and trucks with NH E-ZPass receive a 10% discount from cash (compared to a 30% discount with the Commercial Charge program). Non-New Hampshire E-ZPass tagholders pay the cash rates.
2005 (July 18)	Phase Two of E-ZPass conversion takes place: Merrimack Ramp Toll Plazas (Exits 10, 11 and 12).
2005 (Aug 2)	Phase Three of E-ZPass deployed at Hampton Main and Hampton Ramp.
2005 (August 3)	The price of transponders increase from $5.00 to $23.85 each.
2005 (Aug 15)	Phase Four of E-ZPass deployed at Dover and Rochester Toll Plazas.
2005 (Sept 1)	NH Turnpike Token Sales cease per HB 2 of the FY 2006/FY 2007 biennial budget.

Table 1: Major Events on the NH Turnpike System

Date	Activity
2005 (Sept 26)	Price of transponders increases – from $23.84 to $24.61 for flat packs
2005 (Sept 30)	Commercial Charge Program ends at 11:59:59. Magnetically encoded card system replaced by E-ZPass.
2006 (Jan 1)	NH Turnpike Tokens (B) are no longer accepted as valid toll fare payment per state law. Staffed ACM lanes from 1-1 through 1-9-2006 to ensure that motorists were aware that tokens are no longer accepted.
2007 (Oct 22)	New toll rate implemented at Dover $0.50-$0.75; Rochester $0.50-$0.75, Hampton Ramp $0.50-$0.75; Bedford and Hooksett $0.75-$1.00; and Hampton main line $1.00-$1.50
2008 (May 1)	New terms, conditions, application and transponder price change goes into effect. Price drop for interior tag $24.61 to $20.95, exterior $31.83 to $33.04
2008 (Jun 9 & 16)	Granite Street ramps open to traffic at Exit 5 in Manchester
2009 (June 30)	HB 391 passes, authorizing the Turnpike Bureau to purchase the 1.6 miles of I-95 from the Portsmouth Traffic Circle to the Maine Border, and authorizing the following projects: Hampton ORT, Bedford ORT, Hooksett ORT, Portsmouth I-95 Soundwall, Seabrook NH 107 Bridge over I-95 and the Dover segment of the Newington –Dover Projects.
2009 (July 1)	New toll rate implemented at Hampton $1.50 – $2.00

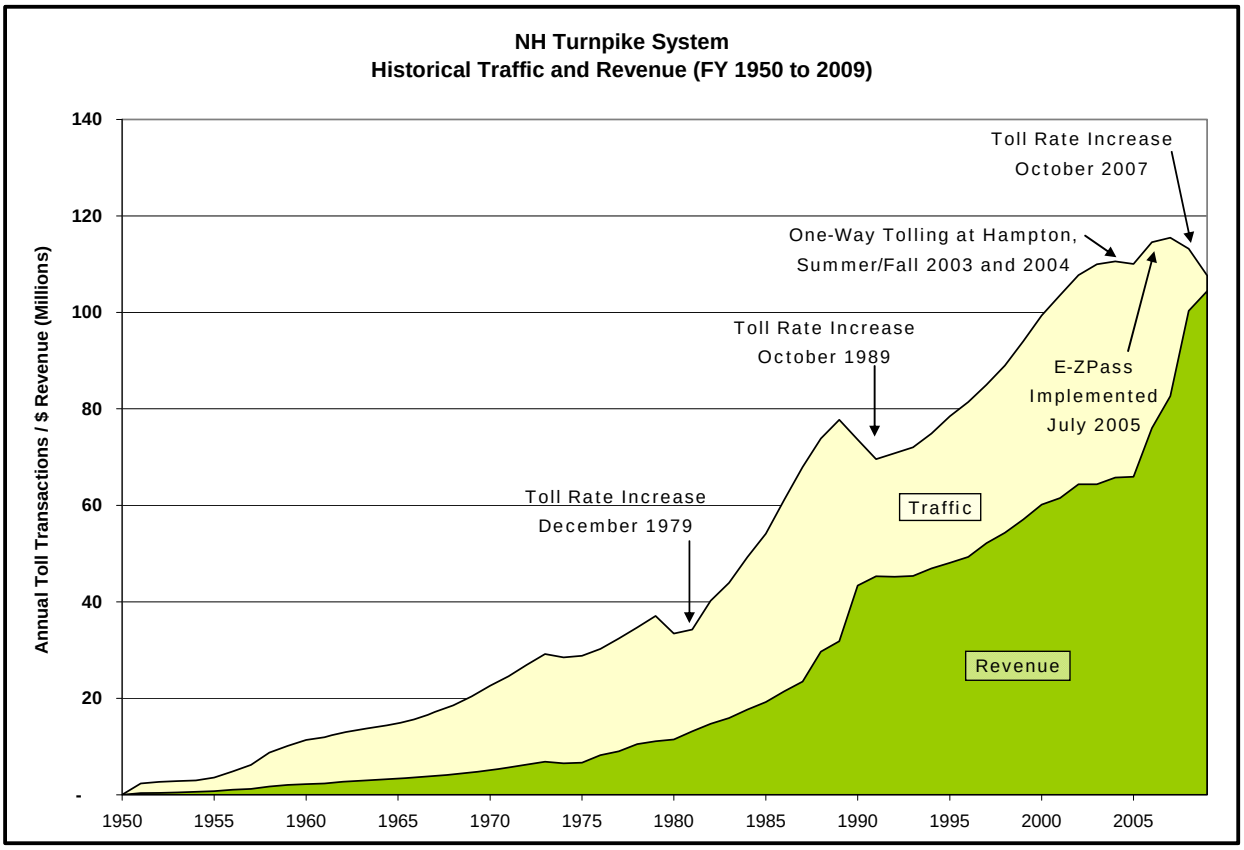
4 HISTORICAL TRAFFIC AND REVENUE

This section discusses historical traffic and toll revenue trends of the New Hampshire Turnpike System.

4.1 HISTORICAL TOLL TRANSACTIONS AND TOLL REVENUE TRENDS

Figure 2 illustrates toll transactions and revenue for the entire Turnpike System for FY 1950 through FY 2009. Both toll transaction and revenue graphs are generally upward sloping, indicating that toll transactions and revenues have generally increased consistently across the Turnpike System. The graph shows that there were some short periods where toll transactions decreased but later recovered, and these appear to coincide with toll rate increases. Revenues generally increased across the Turnpike System, although the growth was relatively flat for some short time periods. Tolls were last increased in October 2007; the toll increases prior to that were in October 1989 and December 1979. After the 1989 toll increase, both traffic and revenue increased steadily until 2005. In July 2005, ***E-ZPass*** was implemented on the Turnpike System, and the toll discount was lowered from 50 percent to 30 percent for passenger cars and from 30 percent to 10 percent for commercial vehicles. NHDOT stopped accepting tokens (which provided a 50 percent discount for passenger cars) in January 2006. The October 2007 toll increase – 25 cents for cars and 50 cents for trucks at most locations – brought about a small decline in traffic but a significant increase in toll revenue. In FY 2009, traffic continued to decrease and revenue increased over the previous year due to the October 2007 toll increase, though some of the traffic decrease could also be attributed to economic conditions.

Figure 2: NH Turnpike System Historical Toll Transactions and Toll Revenue Trends, FY 1950-2009



4.2 TOLL TRANSACTION TRENDS

Table 2 summarizes the annual toll transactions between FY 1991 and FY 2009 for each of the three Turnpikes as well as the entire NH Turnpike System. Annual toll transactions have generally increased every year across the System. However, Blue Star Turnpike transactions decreased in both FY 2004 and FY 2005 due to the inability to count southbound traffic data at the Hampton Toll Plaza during the one-way tolling experiments conducted by NHDOT in the summer/fall of 2003 and 2004. More recently, overall Turnpike traffic declined both in FY 2008 and 2009 from the previous year, similar to the nationwide trend of total vehicle-miles traveled (VMT), which also declined during that timeframe. The diversion caused by the October 2007 toll increase contributed to both the FY 2008 and 2009 decrease in Turnpike traffic.

Table 2: NH Turnpike System Annual Toll Transactions, FY 1991-2009 and First Quarter of 2010 (in millions)

Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Total System
1991	32.5	23.4	13.7	69.6
1992	33.2	23.6	14.0	70.8
1993	33.5	24.0	14.5	72.0
1994	34.7	24.8	15.4	74.9
1995	35.9	26.1	16.5	78.5
1996	37.2	27.0	17.2	81.4
1997	38.9	28.1	18.0	85.0
1998	40.6	29.4	19.0	89.0
1999	42.6	31.4	20.0	94.0
2000	45.3	33.2	20.9	99.4
2001	47.6	34.0	22.0	103.6
2002	49.3	35.8	22.6	107.7
2003	50.5	36.4	23.1	110.0
2004[1]	52.2	34.6	23.8	110.6
2005[1,2]	53.9	32.2	23.9	110.0
2006[2]	54.6	36.6	23.3	114.6
2007	54.7	37.4	23.4	115.5
2008[3]	53.8	36.6	22.8	113.2
2009	51.5	34.7	21.4	107.7
1st Quarter FY 2009	14.0	10.6	5.9	30.5
1st Quarter FY 2010	14.0	10.9	5.8	30.7

[1] One-way tolling at Hampton Mainline Toll Plaza

[2] Conversion to new toll system and implementation of E-ZPass

[3] Toll Increase October 22, 2007

Notes:

Non-paying transactions (valid and violations) are included in these numbers.

Data will not necessarily add to totals because of rounding.

Between FY 1991 and FY 2003, total toll transactions across the entire Turnpike System increased annually by an average of 3.9 percent per year. After that time there was a period of

flattened traffic for several years, some growth in 2006 and 2007, and a 2.0 percent decrease in FY 2008. Traffic continued to decline another 4.9 percent in FY 2009 both as a result of the mid-FY 2008 toll increase and the economic downturn. Toll transactions on the individual Turnpikes increased at an average annual rate of 2.6 percent on the Central Turnpike, 2.2 percent on the Blue Star Turnpike and 2.5 percent on the Spaulding Turnpike during the FY 1991 to FY 2009 time period; however, from FY 1991 to FY 2006, these average annual growth rates had been 3.5, 3.0, and 3.6 percent, respectively.

From FY 2010 first quarter traffic data, it appears that traffic loss has subsided as compared to the same quarter in FY 2009, however, this first quarter data is not likely indicative of a full year, when one considers the following:

- This summer's gas prices were significantly lower than last summer's, when they peaked at more than $4.00 nationwide (see Section 7.2.2 for more information)
- Labor Day this year was almost a week later than last year, adding to vacation traffic

These factors would likely affect the Blue Star Turnpike (I-95) to a larger degree than the other two turnpikes because it is used more as a long-haul and vacation route than the other routes.

Historical toll transaction trends between FY 1950 and FY 2009 are illustrated in Figure 3 with volumes indexed to FY 1991 values. From this graphic, we can observe that the three general toll rate increases occurred close to periods of economic recessions, and in all cases, toll traffic transactions decreased. Transaction growth also slowed down during the other economic recession periods.

Figure 3: NH Turnpike System Historical Toll Transactions Trends, FY 1950 to 2009

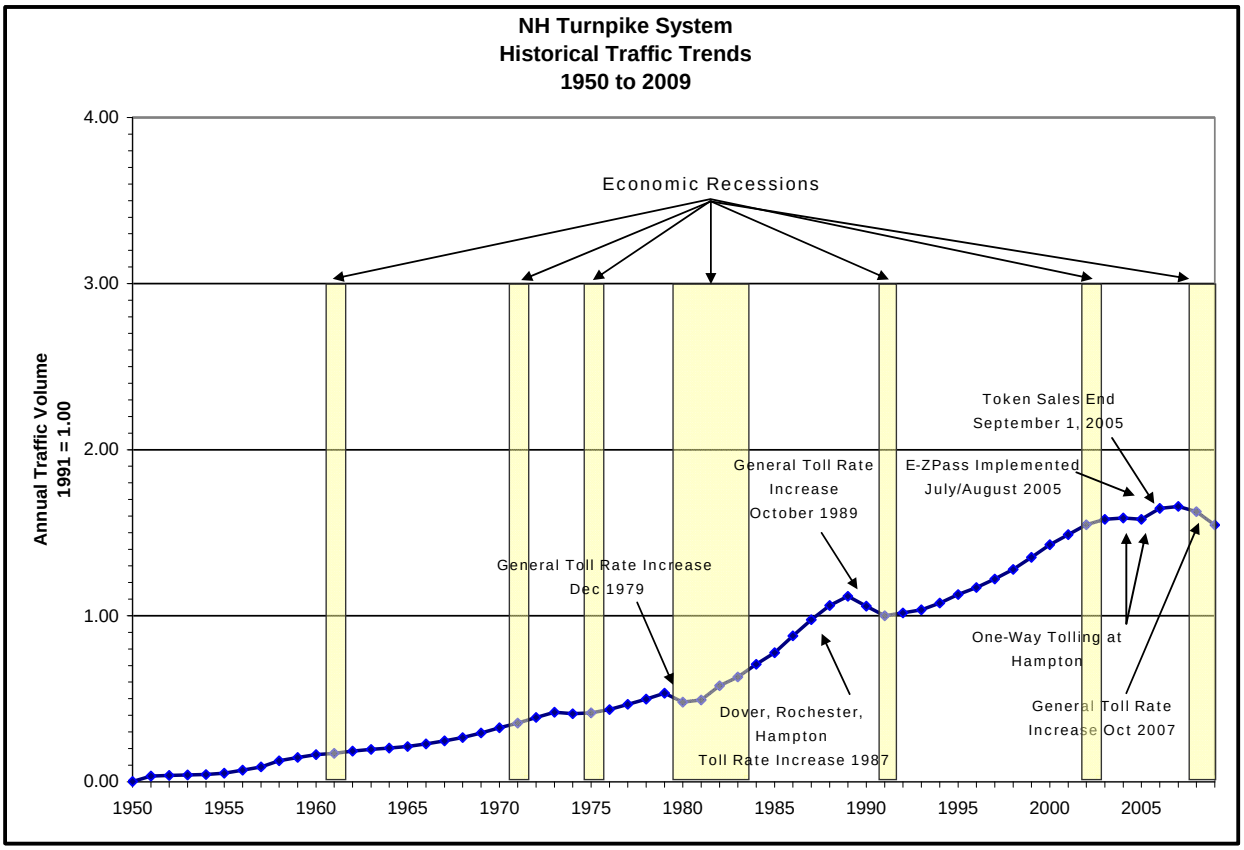
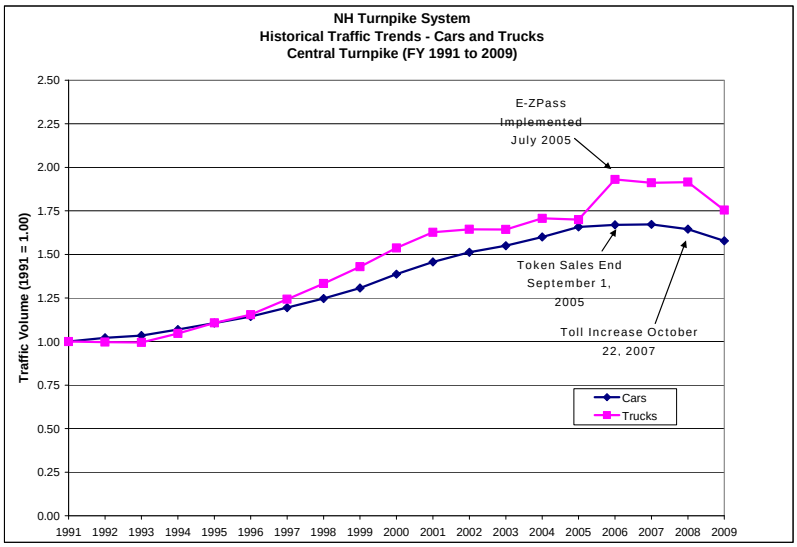
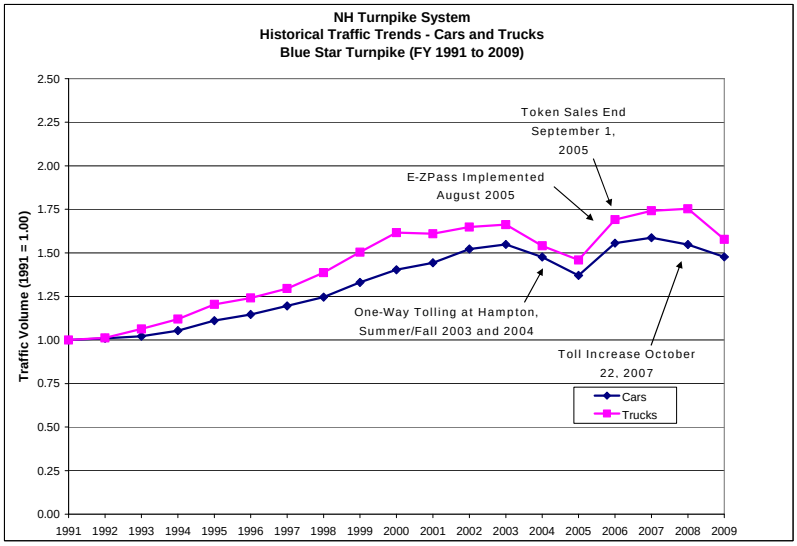
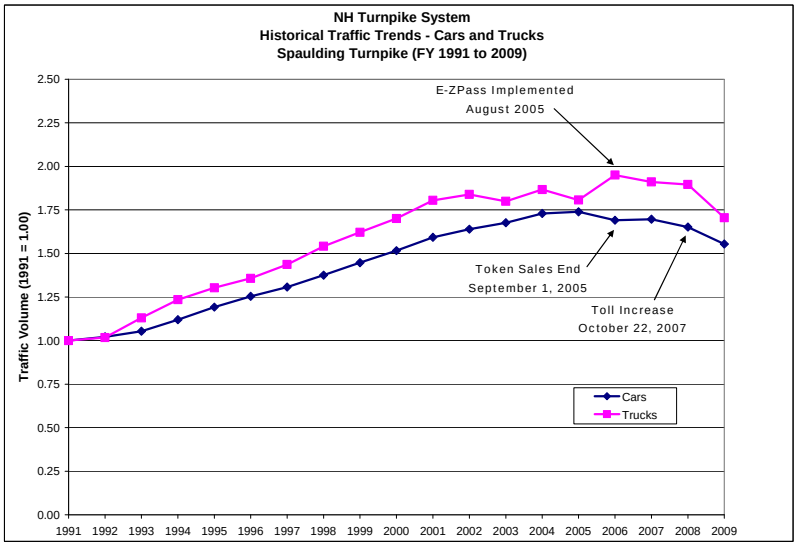


Figure 4 shows the historical toll transaction trends for cars and trucks on each of the three Turnpikes for the FY 1991-2009 period. The three turnpikes exhibited similar patterns in car traffic, with flat growth in FY 2006 and 2007, and declines in FY 2008 and 2009. The Central and Spaulding Turnpikes, both serving more local than long-distance traffic, had flat to declining truck growth in 2006 through 2008, while the Blue Star Turnpike – more of a long-haul route – had increasing truck traffic from FY 2006 through 2008. All three facilities had a sharp decline in trucks in FY 2009 due to the downturn in the economy.

Figure 4: Historical Toll Transaction Trends for the Central, Blue Star and Spaulding Turnpikes, FY 1991-2009







4.3 TOLL REVENUE TRENDS

Annual toll revenues for each of the three Turnpikes as well as the entire system are summarized in Table 3 for the period FY 1991 to FY 2009.

Table 3: NHDOT Annual Toll Revenues, FY 1991-2009 (in millions)

Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Total System
1991	$18.9	$20.8	$5.5	$45.3
1992	$18.9	$20.7	$5.5	$45.2
1993	$18.8	$20.8	$5.7	$45.4
1994	$19.5	$21.4	$6.0	$46.9
1995	$19.8	$22.2	$6.2	$48.1
1996	$20.4	$22.5	$6.4	$49.3
1997	$21.6	$23.8	$6.7	$52.2
1998	$22.5	$24.8	$7.1	$54.3
1999	$23.6	$26.1	$7.4	$57.1
2000	$25.0	$27.5	$7.7	$60.2
2001	$26.0	$27.5	$8.0	$61.5
2002	$27.5	$28.6	$8.2	$64.4
2003	$27.3	$28.7	$8.4	$64.4
2004	$28.1	$29.1	$8.6	$65.8
2005	$28.7	$28.4	$8.8	$65.9
2006	$33.6	$32.3	$10.1	$76.0
2007	$36.7	$34.8	$11.1	$82.6
2008	$42.9	$43.4	$14.1	$100.3
2009	$43.5	$46.3	$14.7	$104.4

Notes:

Beginning in Fiscal Year 2006, the figures tie to the Comprehensive Annual Financial Reports, and do not include property sales or other income. Prior reported figures are cash-based and derived from Turnpike's Traffic and Revenue report and include other income such as property sales. Fiscal Year 2009 toll revenues are preliminary estimates.

Data will not necessarily add to totals because of rounding.

The table shows that, in general, annual toll revenues have increased each year across the Turnpike System. However, annual toll revenues decreased slightly in FY 1992 and there was no increase between FY 2002 and FY 2003. Annual toll revenues also remained nearly flat from FY 2004 to FY 2005; there was little revenue growth due to the decrease in the toll discount rate and the discontinuing of token usage. In FY 2008, there was a significant increase in revenues - $17.7 million or 21.4 percent over FY 2007– due to the October 2007 toll increase.

Between FY 1991 and FY 2009, toll revenues increased annually by an average of 4.8 percent across the entire Turnpike System. The individual turnpikes experienced annual revenue growth rates of 4.7 percent on the Central Turnpike, 4.6 percent on the Blue Star Turnpike and 5.6 percent increase on the Spaulding Turnpike.

Figure 5 shows historical annual toll revenues between FY 1950 and FY 2009. This graphic shows that total systemwide toll revenues generally showed little to no growth during all periods of economic recession. The exceptions were the economic recession in the early 1980s when revenue actually increased, and FY 2008-2009, due to the toll increase in October 2007. Annual revenues were flat in FY 2002 through FY 2005, partially a result of the one-way tolling experiment conducted at the Hampton Mainline toll plaza during the summer/fall of 2003 and 2004.

Figure 5: NH Turnpike System Historical Toll Revenues, FY 1950 to 2009

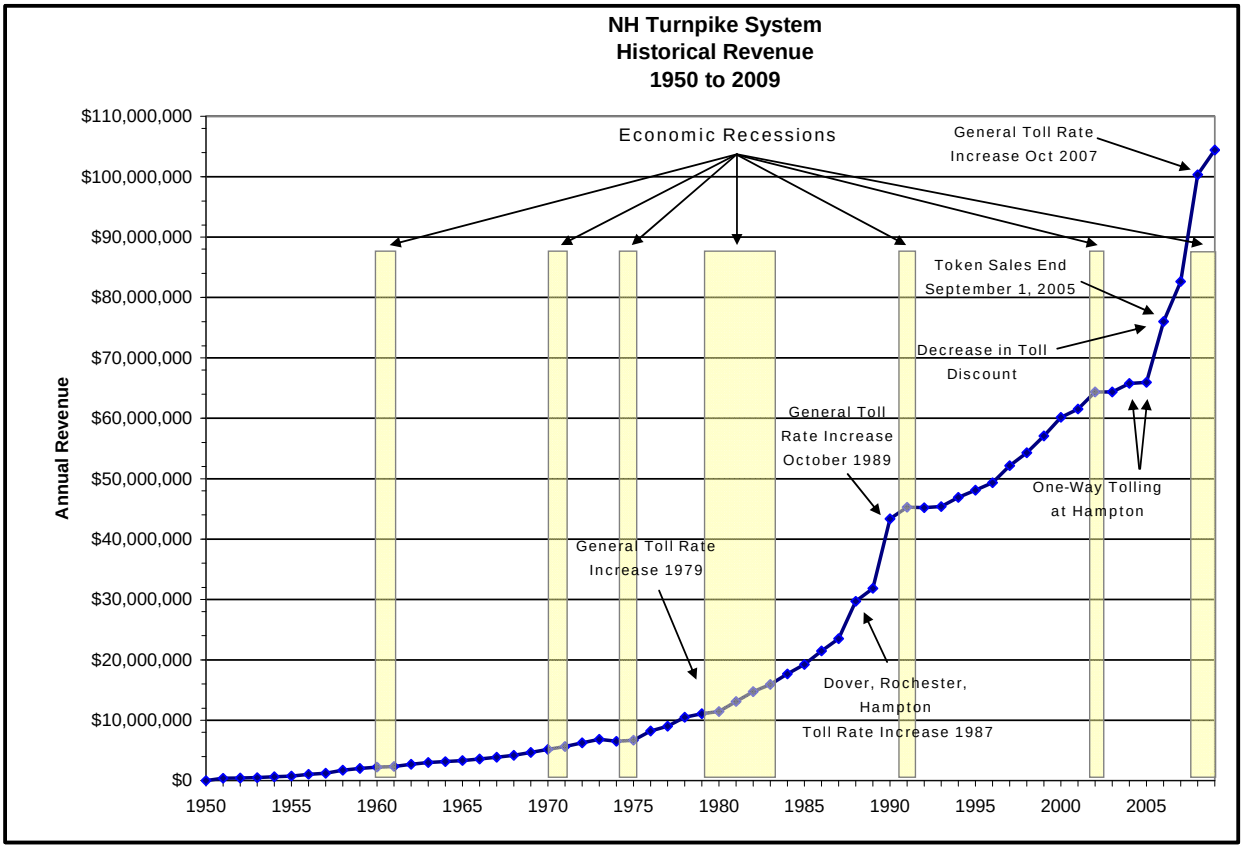


Figure 6 shows historical toll transaction and revenue trends for each of the three Turnpikes for the FY 1991 to FY 2009 period. The figure shows that total toll revenue generally increased consistently on each turnpike, with a small decrease on the Blue Star Turnpike in FY 2005. Also, toll revenues on the Blue Star Turnpike experienced very little growth between FY 2002 and FY 2005, due in part to the one-way tolling experiment. Recently, all three Turnpikes experienced a flattening (FY 2005 or 2006 through 2007) and decline (FY 2008-2009) in traffic. Toll revenues grew at a greater rate than usual in the past several years due to ***E-ZPass*** implementation and the end of token sales in FY 2006 (increasing the tolls for discounted trips), and the October 2007 toll increase.

Figure 6: Historical Toll Transaction and Revenue Trends for the Central, Blue Star and Spaulding Turnpikes, FY 1991-2009

4.4 COMPARISON OF ACTUAL TOLL REVENUES TO RECENT PROJECTIONS

Vollmer Associates (now Stantec) projected traffic and revenue for the NH Turnpike System in February 2007, and tested various toll increase scenarios through September 2007. Table 4 compares Vollmer's projections against the actual toll revenues collected by the NH Turnpike System for the fiscal years 2007 and 2008.

Table 4: Actual Toll Revenues vs. 2007 Projections, FY 2007-2008 (in millions)

Fiscal Year	Projected Revenue	Actual Revenue
2007	$82.6	$82.6
2008[1]	$100.2	$100.3

[1] Vollmer's FY 08 projections have been prorated to estimate the effect of an October 22, 2007 increase

In FY 2007, revenue matched the Vollmer Associates projections. For FY 2008, Vollmer had estimated revenue both with and without toll increases, however, since the toll increase occurred several months into the fiscal year, it was necessary to prorate these numbers. This was accomplished by determining the actual proportion of FY 08 revenues before and after October 22, 2007, the date of the toll increase; roughly 30 percent of FY 08 revenues were collected before that date. In FY 2008, actual toll revenues were $0.1 million, or 0.1 percent, above Vollmer's revenue forecasts.

5 REVIEW OF PROPOSED CAPITAL IMPROVEMENT PROGRAM

This section presents a review of the NH Turnpike's historical and proposed capital improvement program for the 20-year period FY 2000-2019 as shown in Table 5 below.

Table 5: Historical and Proposed NHDOT Capital Expenditures, FY 2000-2019 (in millions)

Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Other Projects[1]	Total Turnpike	Spaulding Tpke. Federal Earmark Funds[2]
2000	$16.3		$1.7	$1.7	$19.7	
2001	$7.3		$1.0	$1.8	$10.1	
2002	$2.8	$1.2	$1.5	$1.0	$6.5	
2003	$5.5	$1.2	$2.5	$1.0	$10.2	
2004	$12.0	$0.4	$4.0	$3.0	$19.4	
2005	$1.2		$0.2	$19.0	$20.5	
2006	$2.5		$1.9	$8.8	$13.2	
2007	$2.0			$6.5	$8.5	
2008	$0.4	$0.2	$7.4	$1.3	$9.2	
2009	$4.0	$0.2	$18.5	$0.6	$23.3	
Total ('00-'09)	$54.0	$3.2	$38.7	$44.8	$140.6	$0.0
2010	$12.6	$14.7	$51.4	$4.3	$83.0	$1.1
2011	$23.7	$6.3	$44.9	$0.5	$75.4	$12.9
2012	$26.6	$4.8	$46.7	$0.5	$78.6	$12.9
2013	$27.4	$4.8	$46.6	$0.5	$79.3	$6.7
2014	$21.2		$47.2	$0.5	$68.9	
2015	$10.2		$52.2	$0.5	$62.9	
2016			$42.5	$0.5	$43.0	
2017			$14.2	$0.5	$14.7	
2018				$0.5	$0.5	
2019				$0.5	$0.5	
Total ('10-'19)	$121.6	$30.6	$345.8	$8.8	$506.8	$33.6

[1] Miscellaneous Turnpike Projects funded with Federal Aid, i.e., FY 05 and 06 CMAQ funding for E-ZPass implementation, FY 07 and 08 Manchester I-293 Exit 5 – Granite Street construction, and Turnpike P.E. & ROW Costs

[2] Federal earmark funding designated for the Newington-Dover Little Bay Bridges. This is not included in the Capital Program total.

Notes:

Central Turnpike Projects include: Souhegan River Bridge, Manchester Reconstruction Exit 4 Millyard Bridges, Manchester Black Brook Bridges, Bow Concord I-93 Re-decking Red List Bridges, Bedford US 3 Bridge over FEET, Hooksett ORT, and Bedford ORT

Blue Star Turnpike Projects include: I-95 Taylor River, Hampton ORT

Spaulding Turnpike Projects include: Rochester Exits 11-16 and Newington-Dover Little Bay Bridges

Data will not necessarily add to totals because of rounding.

Over the ten-year period FY 2000-2009, turnpike-funded capital expenditures totaled $140.6 million. The largest share of this - $54.0 million - was spent on Central Turnpike projects. Funding sources for these projects include toll revenues, other Turnpike revenues and Turnpike bond proceeds. Turnpike-funded capital expenditures are programmed at a total of $506.8

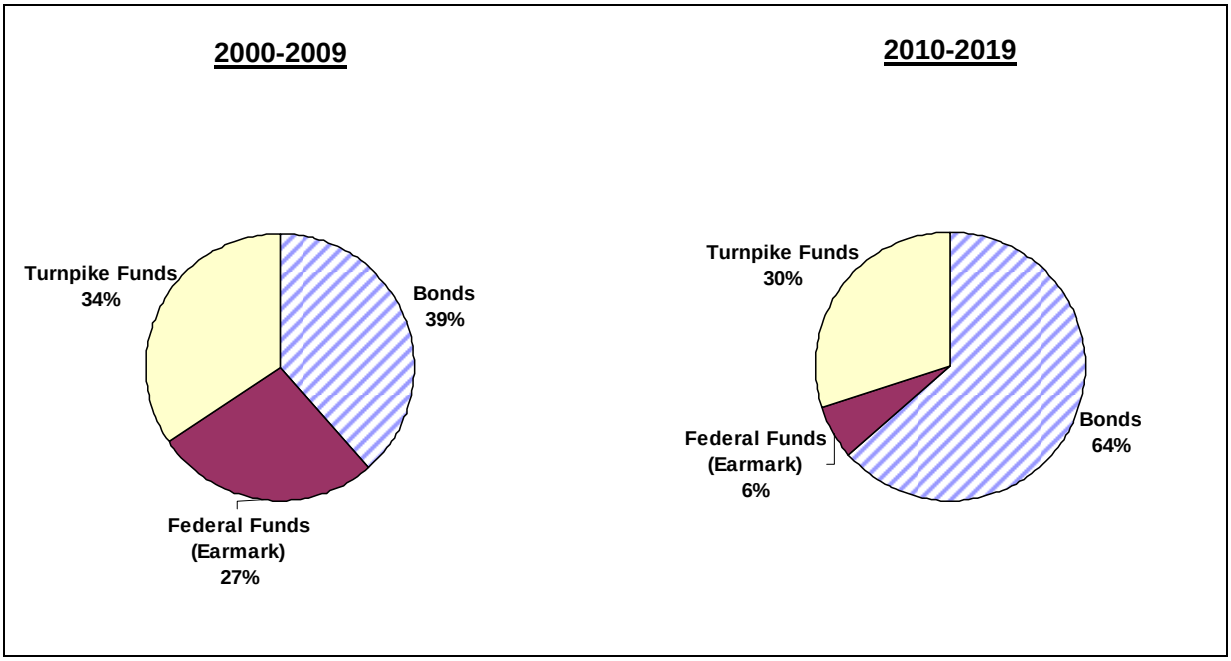
million over the FY 2010-2019 period, 3.6 times the expenditures of previous ten-year capital program. Not included in this number are $33.6 million in federal earmark funds designated for the Newington-Dover Little Bay Bridges project.

After the completion of the turnpike expansion in Nashua in the late 1990s, the ten-year capital improvement program had few major projects with the exception of the implementation of E-ZPass and the construction of the Granite Street interchange in Manchester. The toll rate increase in 2007, the first since 1989, has allowed the capital improvement program to move forward with the expansion of the Spaulding Turnpike in Rochester along with several other major turnpike projects. These are improvement projects that are considered to priorities to address fourteen (14) red listed bridges and improve safety and congestion on the Turnpike System.

The majority of the New Hampshire Turnpike capital expenditures over the next ten years – 68 percent - will be for projects on the Spaulding Turnpike, including widening and improvements from Exits 11 to 16, and Newington-Dover Little Bay Bridges (this is in addition to the federal funding). Programmed capital improvements on the Central Turnpike include the Souhegan River Bridge, Concord and Manchester Bridges, and Hooksett and Bedford open-road tolling (ORT). Capital improvements on the Blue Star Turnpike include the I-95 Taylor River Bridge project and Hampton ORT.

Figure 7 shows how the capital plan was funded in the past ten years versus how it will be funded over the next ten years. The shares of funding by bonds and Turnpike funds are both expected to grow, while the share funded by federal earmarks will be less in future years.

Figure 7: Funding Sources for Capital Improvement Program



6 REVIEW OF HISTORICAL AND PROJECTED OPERATION, MAINTENANCE, RENEWAL AND REPLACEMENT, AND DEBT SERVICE EXPENDITURES

This section presents a review of historical and projected NH Turnpike operational expenditures that consist of administrative costs, toll operations costs, maintenance costs, state police enforcement costs, welcome centers and rest areas, renewal and replacement (R&R) costs, toll processing costs, and payment for the new section of the Blue StarTurnpike (I-95). It also includes a review of the Turnpikes' historical and projected debt service expenditures.

Administrative costs include administrative salaries, benefits, expenses, equipment, indirect costs, cleaning, utilities, travel costs and audit expenses.

Toll operations costs include toll operations salaries, benefits, expenses, utilities, toll system warranty, equipment and travel costs.

Maintenance costs include maintenance salaries, benefits, expenses, rents and lease costs, utilities, equipment and travel costs.

Renewal and replacement costs are construction projects to preserve, maintain and upgrade our existing infrastructure i.e. paving, signing, guardrail, bridge rehabilitation, building and toll plaza repairs, bridge painting etc.

Toll processing costs include banking and credit card fees, ***E-ZPass***-related costs (customer service center expenses, walk-in center expenses, Interagency Group (IAG) organizational dues, violation processing expenses, and vehicle registration look-up fees), toll system maintenance expenses through a vendor, and transponder purchases and replacement.

6.1 TOLL PROCESSING COSTS

Table 6 summarizes historical and projected NHDOT toll processing expenses for the period FY 2000 through 2019.

Table 6: Toll Processing Costs, FY 2000-2019 (in millions)

Fiscal Year	Banking/ Credit Card Fees	E-ZPass CSC Costs	Toll Maintenance Costs	E-Zpass Transponder Expenses	Total Toll Processing Costs
2000	$0.7		$0.4		$1.1
2001	$0.7		$0.4		$1.1
2002	$0.8		$0.4		$1.2
2003	$0.8		$0.5		$1.3
2004	$0.8		$0.5		$1.3
2005	$0.9	$0.7	$0.5	$1.6	$3.7
2006	$1.5	$3.7	$0.1	$5.5	$10.8
2007	$1.4	$3.8	$1.2	$1.0	$7.4
2008	$1.7	$4.3	$1.0	$0.8	$7.8
2009	$1.8	$5.5	$1.3	$0.7	$9.3
Total ('00-'09)	$11.1	$18.0	$6.3	$9.6	$45.0
2010	$2.1	$5.5	$1.8	$0.7	$10.1
2011	$2.2	$5.8	$1.8	$0.6	$10.4
2012	$2.3	$6.0	$1.9	$7.7 [1]	$17.8
2013	$2.3	$6.2	$1.9	$0.6	$11.0
2014	$2.4	$6.3	$2.0	$2.0 [1]	$12.7
2015	$2.5	$6.5	$2.0	$1.5 [1]	$12.5
2016	$2.6	$6.7	$2.1	$1.3 [1]	$12.7
2017	$2.6	$6.9	$2.1	$1.4 [1]	$13.1
2018	$2.7	$7.1	$2.2	$0.6	$12.7
2019	$2.8	$7.3	$2.3	$0.6	$13.0
Total ('10-'19)	$24.5	$64.4	$20.1	$17.0	$126.0

[1]*Includes future tag swap*

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

NH Turnpike toll processing costs increased relatively slowly from $1.1 million in FY 2000 to $1.3 million in FY 2004. However, during FY 2005, toll processing costs increased to $3.7 million primarily due to $1.6 million in ***E-ZPass*** transponder purchases. In FY 2006, toll processing costs further increased to $10.8 million mainly due to $5.5 million in ***E-ZPass*** transponder purchases and $3.7 million in ***E-ZPass*** customer service center costs. Transponder purchase costs dropped to $1.0 million in FY 2007 and $0.7 million in FY 2009 as the market became more saturated. NHDOT estimates that approximately $126.0 million will be spent on toll processing between FY 2010-2019, with ***E-ZPass*** customer service center costs accounting for $64.4 million or 51 percent. Approximately $17.0 million in transponder purchases is estimated over ten-year period FY 2010-2019; this includes transponder replacement costs. NHDOT recovers the transponder costs from selling the transponder at a purchase price, which is currently $20.95 for an interior and $33.04 for an exterior ***E-ZPass*** tag. This “tag swap” begins in FY 2012 to replace transponders that will have reached the end of their useful life span.

6.2 OPERATING EXPENDITURES

Table 7 summarizes historical and projected NHDOT expenses for the 20-year period FY 2000 through 2019.

Table 7: Historical and Projected NHDOT Operating Expenditures, FY 2000-2019 (in millions)

Fiscal Year	Admin.	Toll Ops.	Maint-enance	State Police Enforce-ment	Toll Process-ing	Welcome Centers & Rest Areas[1]	Turnpike Funding to HWY	Total O & M	R&R[2]	Add'l Bridge Maint. I-95	I-95 Payments[3]	Total Operating Expenses
2000	$3.4	$6.8	$4.9	$3.6	$1.1			$19.8	$4.5			$24.3
2001	$3.6	$7.3	$6.2	$3.7	$1.1			$21.9	$6.1			$28.0
2002	$4.4	$8.1	$6.3	$3.8	$1.2			$23.8	$6.2			$30.0
2003	$4.4	$8.5	$7.2	$3.8	$1.3			$25.2	$7.3			$32.5
2004	$4.7	$8.7	$6.5	$3.9	$1.3			$25.1	$5.1			$30.2
2005	$4.4	$9.3	$7.5	$4.1	$3.7			$29.0	$3.3			$32.3
2006	$4.8	$9.6	$8.8	$4.5	$10.8			$38.5	$4.3			$42.8
2007	$5.0	$9.8	$8.0	$5.0	$7.4		$0.9	$36.1	$8.6			$44.7
2008	$4.1	$10.3	$8.8	$5.2	$7.8		$0.9	$37.1	$11.8			$48.9
2009	$5.4	$10.5	$9.8	$5.4	$9.3		$1.2	$41.6	$8.5			$50.1
Total ('00-'09)	$44.2	$88.9	$74.0	$43.0	$45.0	$0.0	$3.0	$298.1	$65.7	$0.0	$0.0	$363.8
2010	$6.9	$12.1	$11.4	$5.4	$10.1	$1.3	$1.2	$48.5	$9.6			$58.1
2011	$6.9	$12.6	$11.4	$5.6	$10.4	$1.4	$1.2	$49.6	$9.8			$59.4
2012	$7.1	$13.0	$11.8	$5.8	$17.8	$1.5	$1.3	$58.2	$9.2	$0.8	$5.9	$74.1
2013	$7.3	$13.3	$12.1	$6.0	$11.0	$1.5	$1.3	$52.6	$9.8	$0.8	$5.9	$69.1
2014	$7.5	$13.7	$12.5	$6.1	$12.7	$1.6	$1.4	$55.5	$10.5	$0.8	$5.9	$72.7
2015	$7.7	$14.2	$12.9	$6.3	$12.5	$1.6	$1.4	$56.6	$10.8	$0.8	$5.9	$74.1
2016	$7.9	$14.6	$13.2	$6.5	$12.7	$1.6	$1.4	$58.0	$11.6	$0.8	$5.9	$76.3
2017	$8.2	$15.0	$13.6	$6.7	$13.1	$1.7	$1.5	$59.9	$11.5	$0.9	$5.9	$78.2
2018	$8.4	$15.5	$14.1	$6.9	$12.7	$1.7	$1.5	$60.8	$11.8	$0.9	$5.9	$79.4
2019	$8.7	$15.9	$14.5	$7.1	$13.0	$1.8	$1.6	$62.6	$12.2	$0.9	$5.9	$81.6
Total ('10-'19)	$76.6	$139.9	$127.5	$62.6	$126.0	$15.8	$13.8	$562.1	$106.8	$6.7	$47.2	$722.8

[1]Included in Maintenance through 2009

[2]Does not include $3.8M carry-forward of additional R&R available for expenditure

[3]$30M in FY 2010 and $20M in FY 2011 paid out of the general reserve account which had an unaudited balance of $60.4M at the end of FY 2009

Notes:

The dollar values shown from 2000 to 2008, provided by Finance & Contracts, are on the GAAP basis (General accepted accounting principles), and the dollar values from 2009 to 2019, from the Turnpikes O&M model, are on a cash basis.

All numbers are tied to the Operating and Maintenance Report (Turnpikes), except for certain financial categories for FY07 and FY08 which tie to the Comprehensive Annual Financial Reports.

Data will not necessarily add to totals because of rounding.

NH Turnpike annual operating expenditures increased from $24.3 million in FY 2000 to $50.1 million in FY 2009. Total operating expenditures amounted to $363.8 million over the ten-year period of from FY 2000-2009, and about 24 percent or $88.9 million was spent on toll operations. The large increase in operating expenses in FY 2006 was largely due to implementation of E-ZPass. The total annual operating expenditures increased by $10.5 million or about 33 percent from FY 2005 to 2006, with $5.5 million due to the purchase of new ***E-ZPass*** transponders. Turnpike renewal and replacement expenditures also increased in recent years, from $4.3 million in 2006 to $11.8 million in 2008.

Total operating expenditures for the period FY 2010-2019 are projected to total $722.8 million, twice the expenditures of the previous ten year period. Factors that contribute to this projected increase include the recent acquisition of an additional part of I-95, more lane miles to maintain, the purchase of new and replacement ***E-ZPass*** transponders, a more robust renewal and replacement program, and higher fuel, maintenance, and operation costs.

Operation and maintenance expenditures are budgeted to provide for unforeseen costs; the amount not spent - the lapse - is shown in Table 8 over the ten-year period from FY 2000 through 2009. The net lapse has ranged from $0.3 million in 2001 to $4.7 million in 2009. Over the last three years, the Bureau of Turnpikes averaged a net lapse of $3.2 million. Of these funds, Turnpike renewal and replacement funds are carried forward to the following year; all other lapses for operating expenses return to retained earnings or the Turnpikes Reserve Account.

Table 8: Historical Lapse, FY 2000-2009 (in millions)

Fiscal Year	Lapse	Transfer from Retained Earnings	Net
2000	$592,815	$148,600	$444,215
2001	$367,429	$65,975	$301,455
2002	$1,806,622		$1,806,622
2003	$3,000,124		$3,000,124
2004	$3,085,133	$1,044,000	$2,041,133
2005	$2,317,726	$1,518,500	$799,226
2006	$2,648,078	$2,015,000	$633,078
2007	$3,068,083	$2,058,500	$1,009,583
2008	$4,719,937	$1,008,950	$3,710,987
2009	$4,735,298		$4,735,298
Total ('00-'09)	$26,341,246	$7,859,525	$18,481,721

6.3 DEBT SERVICE REQUIREMENTS

Table 9 presents historical and scheduled debt service requirements for the period FY 2000-2019.

Table 9: Historical and Scheduled Debt Service Expenditures, FY 2000-2019 (in millions)

Fiscal Year	General Obligation Bonds	Existing Revenue Bonds	Proposed Revenue Bonds[1]	Total Debt Service
2000	$6.0	$26.4		$32.4
2001	$5.7	$25.3		$31.0
2002	$5.4	$26.5		$31.9
2003	$5.2	$24.7		$29.9
2004	$4.8	$23.9		$28.7
2005	$4.3	$27.0		$31.3
2006	$4.2	$25.8		$30.0
2007	$3.0	$28.1		$31.1
2008	$1.7	$25.7		$27.4
2009	$1.6	$25.9		$27.5
Total ('00-'09)	$41.9	$259.3	$0.0	$301.2
2010	$0.7	$25.9	$3.2	$29.8
2011	$0.6	$25.9	$9.0	$35.5
2012		$25.9	$12.2	$38.1
2013		$26.0	$17.9	$43.9
2014		$26.0	$19.4	$45.4
2015		$25.9	$22.2	$48.1
2016		$26.5	$22.2	$48.6
2017		$26.5	$22.2	$48.6
2018		$19.6	$22.2	$41.7
2019		$19.6	$22.2	$41.8
Total ('10-'19)	$1.3	$247.7	$172.5	$421.5

[1] *Includes FY 2012, FY 2012 and FY 2014 bond issuances*

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

Historical total debt service payments ranged from $32.4 million in FY 2000 to $27.5 million in FY 2009. Over the ten-year period FY 2000-2009, the cumulative total debt service was $301.2 million, 86 percent of which were for revenue bond payments.

Scheduled total debt service expenditures are projected to increase over the period FY 2010-2019 from $29.8 million in FY 2010 to $41.8 million in FY 2019. The cumulative debt service payment over this period, including the proposed revenue bonds, is estimated to be $421.5 million or about 40 percent more than the previous ten-year period. The majority of this amount will be for existing revenue bond payments. The proposed revenue bond terms are: 30-year bond, 4.31% interest and a semi-annual fixed payment amortization schedule.

7 REVIEW OF REGIONAL AND NATIONAL SOCIOECONOMIC FACTORS

During the course of this study, Jacobs analyzed key socioeconomic factors related to the growth in traffic and toll revenues for the New Hampshire Turnpike. Factors that are relevant to the long term background growth of traffic on the facilities were studied, as was the relationship of traffic to specific economic indices for passenger car and truck traffic. Jacobs also researched the possible causes of why people in the U.S. are driving less, and what this means for the future of road travel. In addition, Jacobs conducted extensive background research into the specific dynamics of past economic recessions in order to better understand the current phenomenon and to aid in giving context to the most recent economic downturn when compared with past recessions. The analyses are summarized in the following sections.

7.1 GENERAL NATIONAL AND REGIONAL ECONOMIC CONDITIONS

At the national level, the U.S. has experienced a downturn in general economic conditions since late 2007. It is anticipated that the current recession may be one of the longest and deepest recessions since the World War II period.

Table 10 summarizes the historical and consensus forecast of the top economic analysts for year-over-year growth in Real Gross Domestic Product (GDP) and Industrial Production in the United States since the year 2000. Except for 2001-02, Real GDP and industrial production grew steadily each year between 2000 and 2007. In 2008, GDP increased at a relatively sluggish 1.1 percent while industrial production decreased by 1.8 percent.

For 2009, it is expected that GDP will decrease by 2.6 percent and industrial production will decrease by an additional 10.5 percent. However, it is expected that output and industrial production will both recover in 2010. GDP and industrial production are forecasted to increase by 2.0 percent and 1.8 percent, respectively. GDP is anticipated to increase by 3.4 percent in 2011-12, 3.0 percent in 2013, tapering down to 2.6 percent by 2020. Industrial production is expected to grow by more than 4 percent in 2011-2, tapering to 2.8 percent by 2016-20.

Table 10: Historical and Consensus Forecast of Growth in Real Gross Domestic Product and Industrial Production in the U.S., 2000-2020

Year	Real GDP Growth in 2000$[1] (Year/Year)	Industrial Production (Year/Year)[2]
2000	3.7%	5.2%
2001	0.8%	0.4%
2002	1.6%	-3.3%
2003	2.5%	1.1%
2004	3.6%	2.5%
2005	2.9%	3.3%
2006	2.8%	2.2%
2007	2.0%	1.7%
2008	1.1%	-1.8%
2009[3]	-2.6%	-10.5%
2010[3]	2.0%	1.8%
2011	3.4%	4.2%
2012	3.4%	4.1%

Table 10: Historical and Consensus Forecast of Growth in Real Gross Domestic Product and Industrial Production in the U.S., 2000-2020

Year	Real GDP Growth in 2000$[1] (Year/Year)	Industrial Production (Year/Year)[2]
2013	3.0%	3.5%
2014	2.9%	3.2%
2015	2.7%	2.9%
2016-20	2.6%	2.8%

[1] Bureau of Economic Analysis (BEA), US Department of Commerce

[2] Blue Chip Economic Indicators, Consensus Forecast, March 10, 2009 and March 10, 2008

[3] Blue Chip Economic Indicators, Consensus Forecast, July 10, 2009

Based on data from the Bureau of Economic Analysis (BEA), the current recession took hold in New Hampshire in 2007 with real Gross State Product (GSP) contracting mildly by 0.1 percent. For New England, Gross Regional Product (GRP) increased by 2.1 percent. Preliminary economic output data drawn from the Federal Reserve Bank of Philadelphia indicates that GSP in New Hampshire decreased by 0.8%, which is less than the 2.3 percent decrease in output for the region. Table 11 summarizes the annual percentage change in output for New Hampshire and for the New England region from 2000 to 2008.

Table 11: Historical Growth in Real Gross Domestic Product in New Hampshire and in New England, 2000-08

Year	New Hampshire Real GSP Growth in 2000$ (Year/Year)	New England Real GRP Growth in 2000$ (Year/Year)
2000	7.2%	6.4%
2001	0.2%	0.8%
2002	2.3%	-0.3%
2003	2.9%	1.9%
2004	4.0%	3.0%
2005	1.3%	1.5%
2006	1.8%	2.8%
2007	-0.1%	2.1%
2008*	-0.8%	-2.3%

** Preliminary*

Sources: Bureau of Economic Analysis, US Department of Commerce, Federal Reserve Bank of Boston, and Federal Reserve Bank of Philadelphia

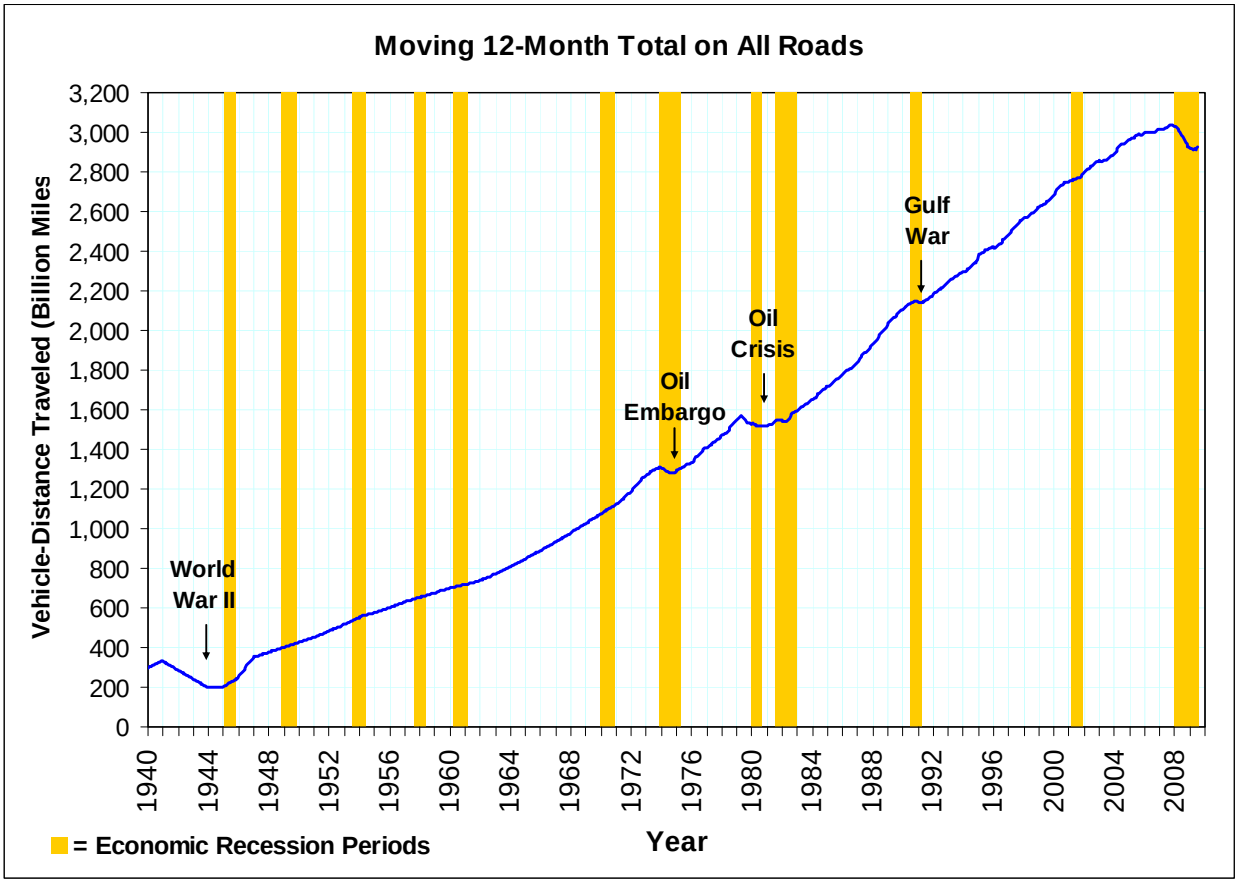
The future success of New Hampshire's economy is highly dependent on that of the New England Region, particularly Massachusetts where many New Hampshire residents work, as well as the greater U.S. economy. Key economic indicators of the New Hampshire Economy and their potential impacts on transportation activity in the state are discussed later in this chapter.

7.2 NATIONAL TRENDS IN VEHICLE MILES TRAVELED

The United States has experienced a never before seen flattening, then drop, in vehicle-miles traveled (VMT) on its highways over the past several years. A reduction in VMT means less revenue – in the form of gas tax or tolls - for funding transportation projects. Jacobs reviewed and compiled available reports and data to investigate the possible factors contributing to this phenomenon.

Figure 8 depicts the 12-month moving total of national travel mileage from 1940 through July 2009 on all U.S. highways. As seen in this figure, there were temporary reductions in VMT during World War II, oil crises and economic recessions. Despite these temporary "dips", the VMT continued to grow rapidly over the years. It shows that, in recent years, with the exception of short, flat periods during the 1991 and 2001 recessions (each less than one year), VMT grew at a steady pace through about 2005. VMT then grew at a much slower pace through 2008. The increase in gas prices and the downturn in economic activity that took hold in late 2008 resulted in a significant reduction in total national travel mileage after December 2007 peak. While VMT declined throughout 2008, it has remained flat in 2009 until the summer months, when there was a slight increase over the previous year. This perceived growth is due in part to the large reduction in summer gas prices from 2008 to 2009. Comparing July 2009 to July 2008, there has been an increase in VMT of 1.4% in the Northeastern U.S.

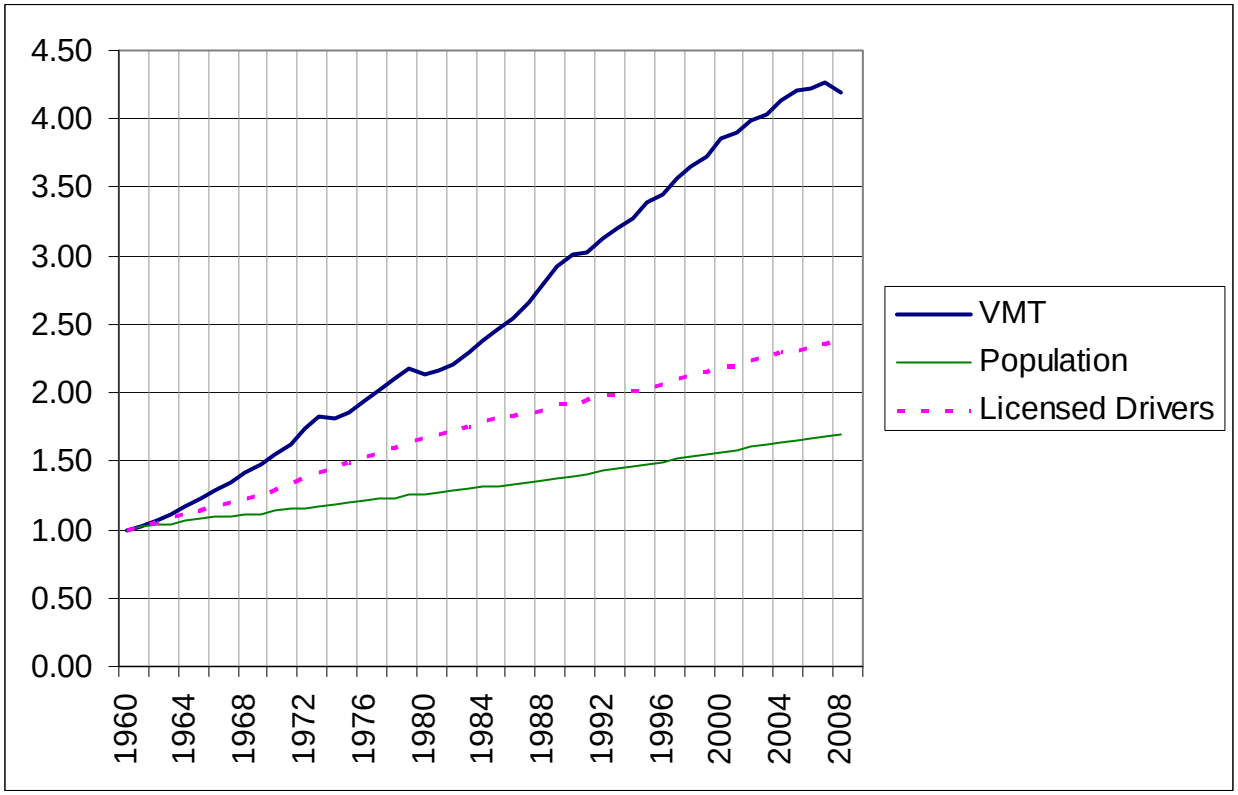
Figure 8: US Annual Vehicle Miles Traveled (VMT)



Source: FHWA

For the sake of comparison, Figure 9 relates the VMT to the U.S. population as well as to the number of licensed drivers. As indicated, the VMT has been growing at a much faster rate than both.

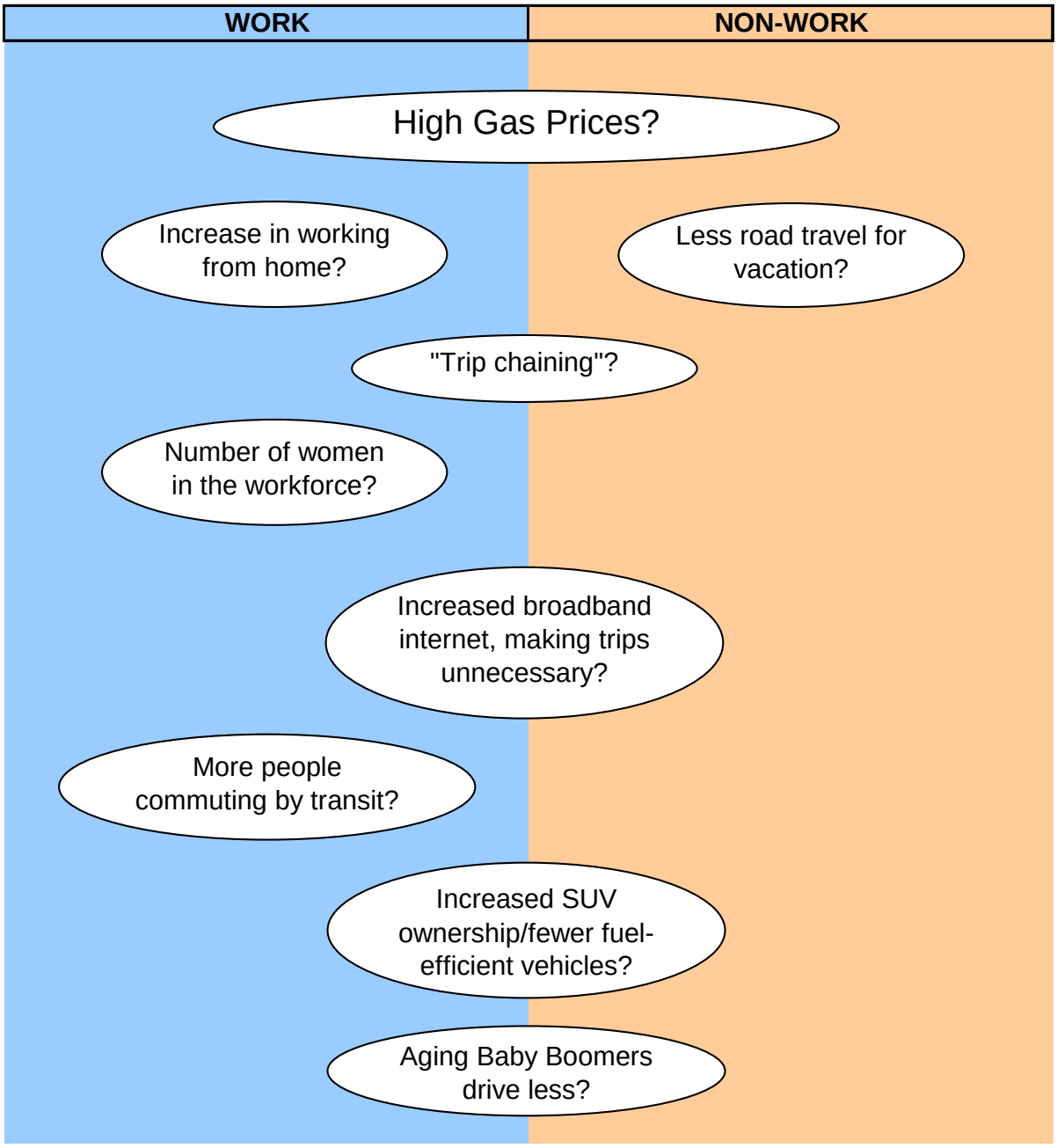
Figure 9: US Population and Licensed Drivers vs. VMT (Indexed to 1960=1)



Sources: FHWA; U.S. Census

Figure 10 lists a number of factors that may have caused the recent VMT and New Hampshire Turnpike transaction leveling and decrease in traffic. These have been separated into factors that could affect work and non-work trips, with some affecting both trip types. The jump in gas prices in recent years is often seen as the logical culprit in the reduction of VMT, and gas prices are at least partially responsible for a change in some other factors listed, such as higher transit usage, working from home, and trip chaining (i.e., combining several purposes into one trip), however, there have been other changes in recent years that have affected travel and will continue to affect it in the long term. Historic statistics for some of these factors are compared to VMT throughout this section to provide context to the current experience.

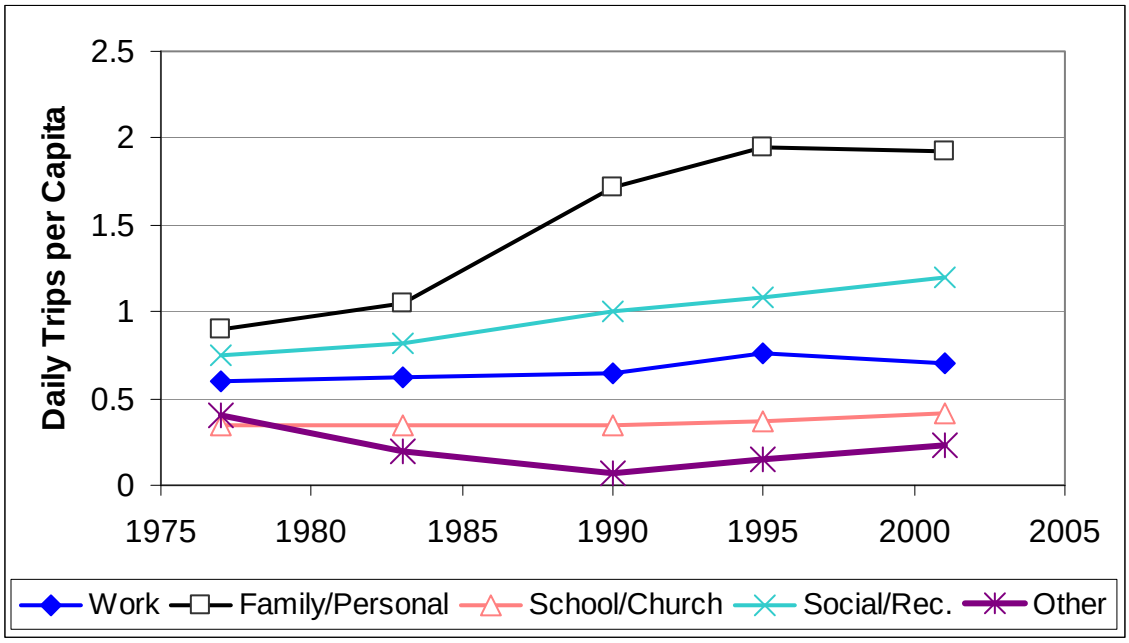
Figure 10: Possible Factors Contributing to Recent VMT Phenomenon



7.2.1 Work vs. Non-Work Travel

As shown in the previous figure, changes to certain sociological, economic, and technological factors either affect work travel, non-work travel or both. Work travel in 2001 constituted about 16 percent of trips but as Figure 11 shows, that is attributable to the dramatic growth in other activities rather than diminished work travel.[1] While data for more recent years is not available, evidence suggests that it is these discretionary trips that have been substantially reduced over the past several years, perhaps to pre-1990 levels.

Figure 11: Historic Trips per Capita by Purpose



Source: Commuting in America III, Transportation Research Board

The 2001 National Household Travel Survey converted the number of trips by purpose and distance into vehicle miles traveled, as shown in Table 12. Commutation trips comprise only slightly over one-quarter of all VMT. This section will concentrate on factors that affect the primary trip purposes.

[1] Alan Pisarski, " Commuting in America III," *Transportation Research Board*, 2006

Table 12: Share of VMT by Purpose

Purpose	Share of VMT
To/from work	27.0%
Work-related business	8.4%
Shopping	14.5%
Other family/personal business	18.7%
School/church	3.7%
Medical/dental	2.2%
Vacation	1.8%
Visit friends/relatives	9.4%
Other social/recreational	13.2%
Other	1.0%

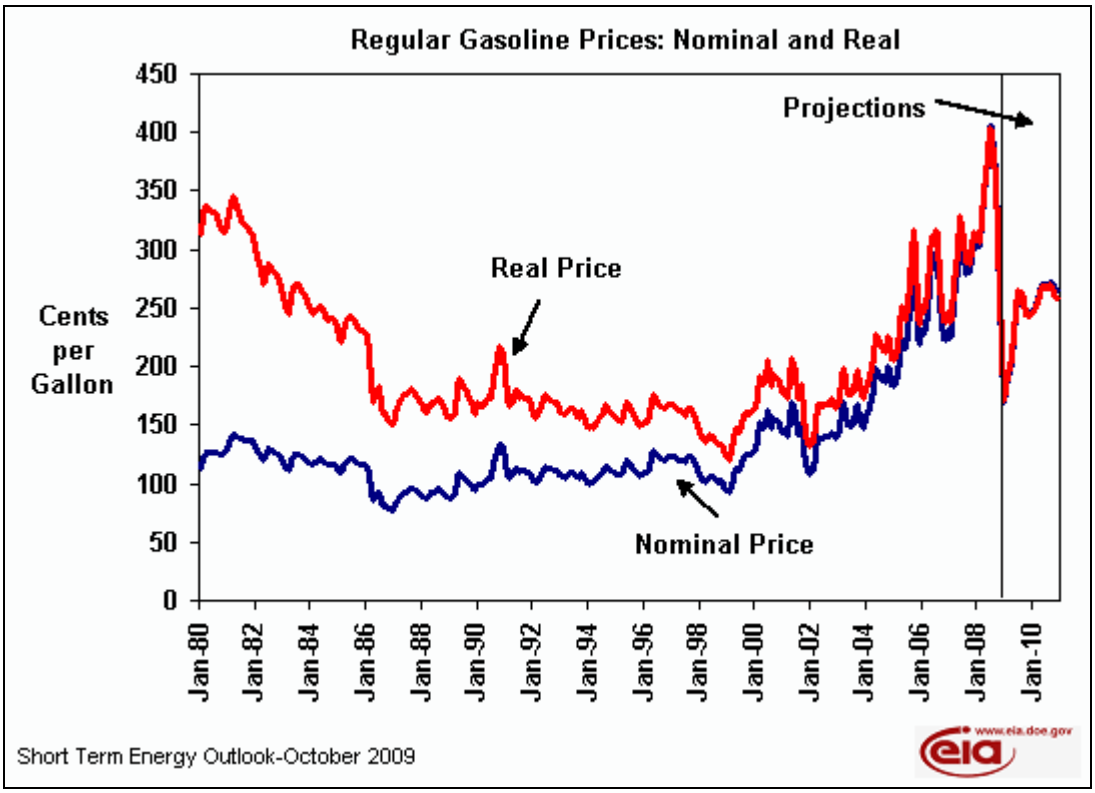
Source: 2001 National Household Travel Survey, U.S. Department of Transportation

7.2.2 Fuel Cost Impacts on Travel

Gasoline prices in New Hampshire, as well as the rest of the nation, increased steadily beginning in the fall of 2005 through mid-2008 before dropping significantly during the latter part of the year as a result of lower demand. Retail gasoline prices reached as high as $3.60 in some New Hampshire locations during the first week of September 2008 before falling back to $1.70 in December 2008. As of April 2009, gas prices increased to about $1.95 per gallon, and by August 2009, it peaked at $2.61. By October 2009, New Hampshire gas prices decreased to about $2.42 per gallon.

Of particular concern is the effect of the volatility in gasoline prices on traffic and travel patterns. Figure 12 shows nationwide historical pump gas prices as well as real gas prices which are adjusted for inflation to 1981 levels using the Consumer Price Index.

Figure 12: Pump and Real (Inflation Adjusted) Average National Gas Prices, 1980-2010



Source: Energy Information Administration (EIA), US Department of Energy

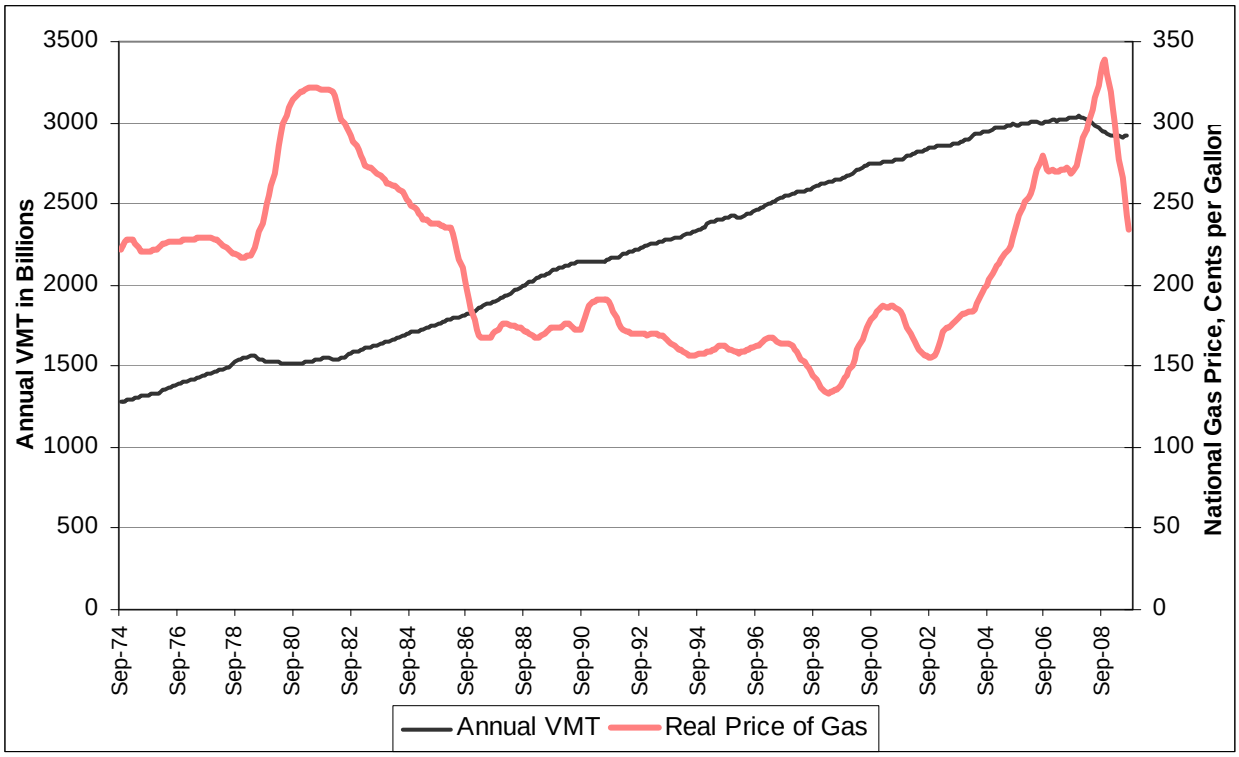
The figure clearly shows that pump gasoline prices have increased gradually throughout the past seven years, soaring to historically high levels in 2008. Until the significant reduction in gasoline price in late 2008, inflation adjusted (real) gas prices had approached, then exceeded, the high 1981 levels that were produced as a result of the 1979 oil shock. The worldwide price for crude oil in July 2008 was $147/barrel, dropping to $42/barrel in January 2009, increasing to $69/barrel in September 2009. The summer of 2008 spike had a noticeable effect on travel nationwide, an effect usually seen during recessionary periods. The latest fall in real (and nominal) gas prices clearly illustrates the current recessionary state of the country.

The Energy Information Administration (EIA) of the US Department of Energy forecasts a gradual increase in crude oil price from an average of $60/barrel in 2009 to $72/barrel in 2010. EIA anticipates that global consumption will increase in response to expected positive global economic growth, particularly in Asia. Moreover, EIA projects that the average national gas prices are expected to increase from an estimated $2.31 in 2009 to $2.65/gallon during 2010.

The level of global fuel consumption and future price levels will largely depend upon the timing and pace of the recovery of the global economy, which is anticipated to occur in late 2009 or in 2010. If economic growth rebounds sooner than expected, then the demand for crude oil may outpace production, leading to rising prices. To the extent that there is a steep increase in crude oil prices, then there may be a similarly sharp decrease in national vehicle miles traveled (VMT), similar to the 2008 decline. Alternatively, other unanticipated factors could lead to steep increases in fuel prices, which could diminish economic recovery and VMT.

Studies have been conducted to determine the effect of gas prices on road travel; however, none were recent enough to see the jump from about $1.25 to $4.25 per gallon of regular gasoline from 2002 through 2008. As seen in the previous figure, while the nominal price of gas remained relatively stable throughout the 80s and 90s, the real price (in 2008$) actually *decreased* over that period. The 2007 real price of gas was similar to that of 1980-1981. Figure 13 compares real gas prices and VMT.

Figure 13: Gas Prices vs. VMT, 1973-2009, 12-Month Moving Average



Sources: FHWA, EIA

The figure shows little overall correlation between historical gas prices and VMT. But it appears when the price reaches a certain threshold, as it did in 1980 and 2008, traffic begins its decline. The unprecedented spike in gas prices over the past six years has made people today more aware of gas prices, the fuel efficiency of their vehicles, and the possibility of changing their driving behavior to compensate. The automotive industry is responding to higher gas prices and consumer demand by manufacturing more fuel-efficient vehicles and offering alternative fuel compounds.

7.2.3 Working from Home

The Reason Foundation's November 2005 report entitled, "The Quiet Success: Telecommuting's Impact on Transportation and Beyond," states that:

- Roughly 4.5 million Americans telecommute most work days.
- Roughly 20 million telecommute for some period at least once per month.
- Nearly 45 million telecommute at least once per year.

With cell phones, high-speed internet, and laptop computers it has become increasingly easier for certain employment sectors – especially sales, management and technology - to work from home. Those who work from home save on the time and expense of commuting.

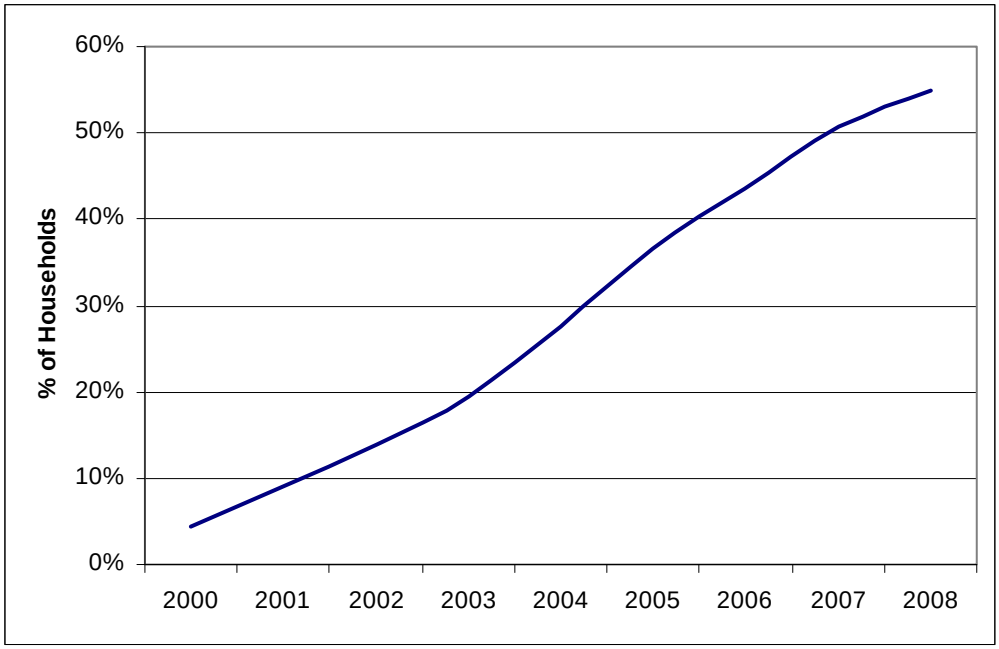
U.S. Census numbers indicate there has been more than a 40 percent growth in telecommuting between 1980 and 2000. In 2000 this constituted 3.3 percent of the work market share. In 2007, 4.1 percent of workers over age 16 claimed to work from home. While the telecommuting share is expected to increase, if all current telecommuters traveled to work it would only make about a one (1) percent difference in overall VMT.

7.2.4 Internet

The advent of the internet more than ten years ago brought about a whole new information age whereby many people now use it as their main source of information, and increasingly for communication and as a "store" to browse for and purchase goods. With more and more households and offices connecting to broadband – which receives web pages significantly faster than the older dialup version – a person can complete errands, do social networking, and find entertainment without ever leaving their seat. In theory, it makes some vehicle trips unnecessary, and as seen earlier on page 30, it is likely these discretionary trips that have been reduced in the past few years.

The total number of broadband lines in the United States has grown from almost 6.8 million lines in December 2000 to 121 million in December 2007 – an increase of nearly 1,700 percent - according to the FCC. US households with broadband internet increased from less than five (5) percent in 2000 to more than 55 percent in 2008 as shown in Figure 14. The FCC's proposed National Broadband Plan - and $7.2 billion of economic stimulus dollars - aims to bring broadband internet access to currently underserved areas of the U.S.

Figure 14: Growth in Households with Broadband Internet



Source: National Telecommunications and Information Association

7.2.4.1 Behavior of Internet Users

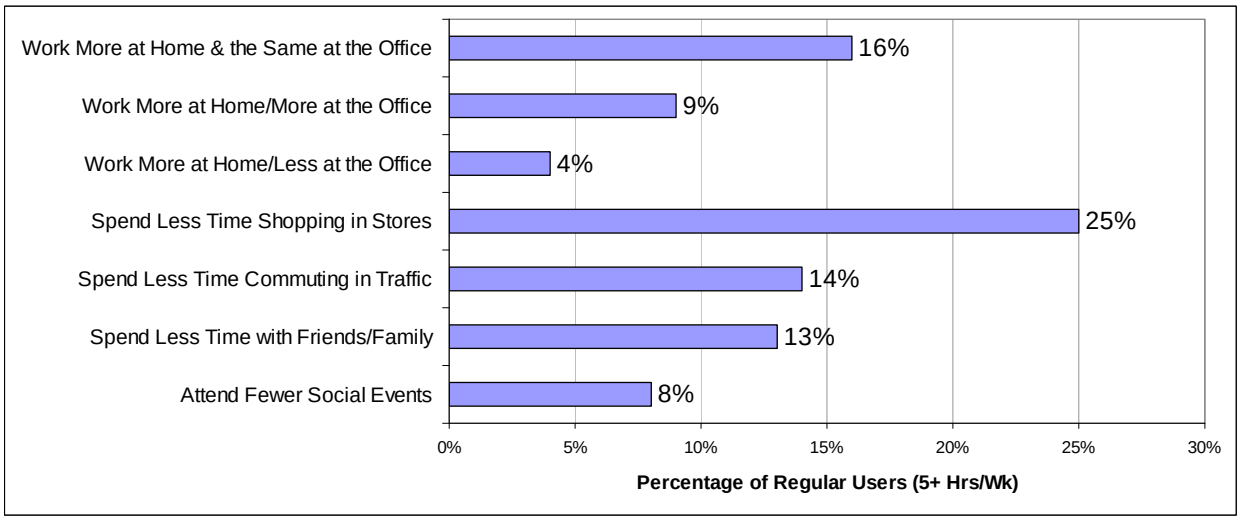
According to Nielsen Online, Americans currently spend an average of nearly 68 hours per month on the internet – more than two hours per day – at home and/or work. There has been a shift in how people spend their time since the days before internet.

A 2000 study by the Stanford Institute for the Quantitative Study of Society (SIQSS) included a survey of more than 4,000 adults nationwide to determine how internet has affected society. The study revealed that the more time people spend on the internet:

- the more they lose contact with their social environment
- the more time they spend working, both at home and at the office
- the less time they spend shopping in stores
- the less time they spend commuting in traffic

Figure 15 shows how survey respondents answered when asked how the internet has changed their behavior. Of these regular internet users, 25 percent reported spending less time shopping in stores and 14 percent reported spending less time commuting in traffic. While making some tasks more convenient, the internet has also taken away time once spent doing other things, and has contributed to us becoming a more isolated society where there is less of a necessity to leave home or the office as much as before.

Figure 15: Behavioral Changes of Internet Users



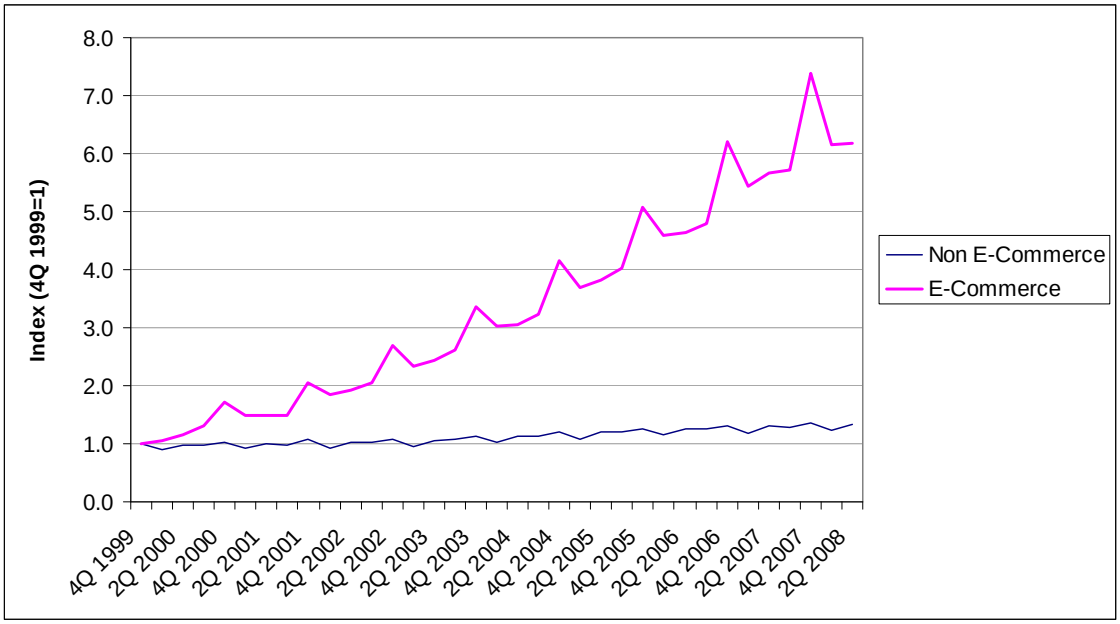
Source: "Internet and Society: A Preliminary Report," Stanford Institute for the Quantitative Study of Society (SIQSS), 2000

Further demonstrating the effects of internet on society, a 2008 study by the Center for the Digital Future at USC states that 15 percent of internet users are currently a member of one or more online communities, typically relating to a person's hobbies or social or professional lives. Of online community members, 16 percent report that being a member of online communities has decreased their participation in offline communities. Fifty-five (55) percent of online community members claim to feel as strongly about their online communities as they feel about their real-world communities - an increase from 43 percent in 2006.

7.2.4.2 Online Retail Sales

The share of retail dollars spent on the internet has grown from less than one (1) percent in 1999 to more than 3.5 percent in 2008. Figure 16 shows how e-commerce sales have grown since 1999 relative to non e-commerce sales. E-commerce sales are now nearly seven times those in 1999. This is expected to grow as more and more people become comfortable with buying products and services over the internet.

Figure 16: US Retail Sales, 1999-2008, E-Commerce vs. Non E-Commerce (Indexed to 4Q 1999=1)

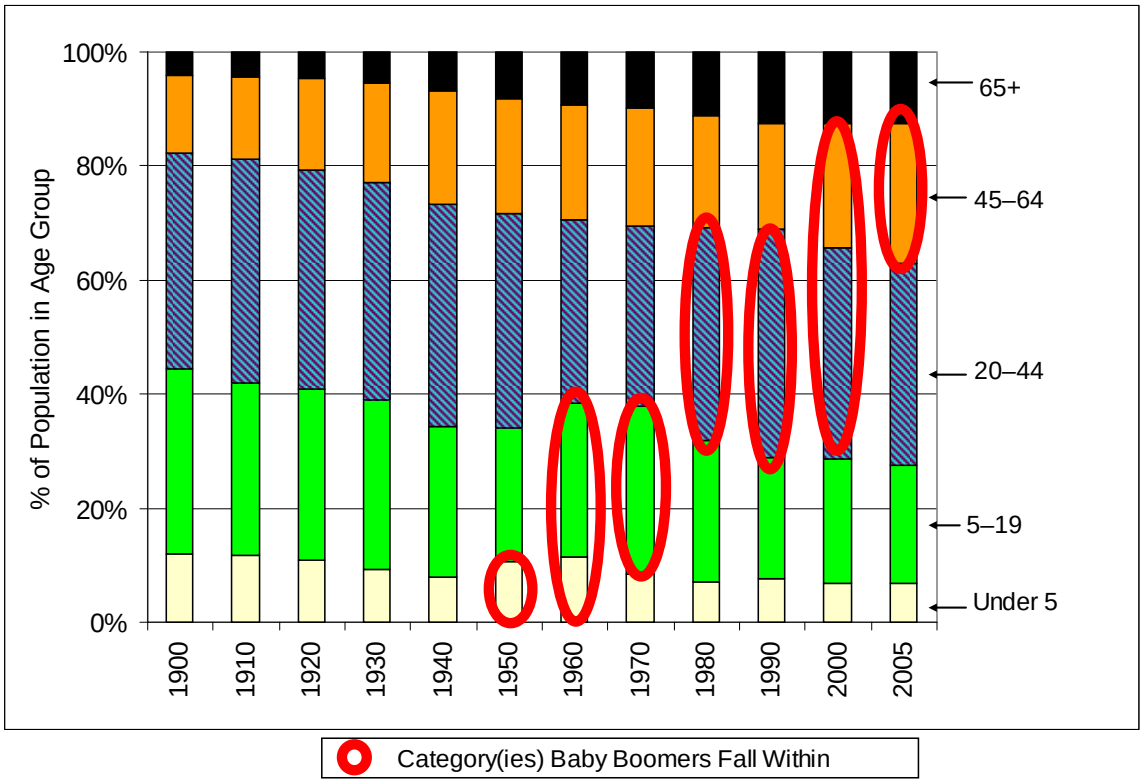


Source: U.S. Census

7.2.5 Age of Population

Shifts in the age of the U.S. population are also likely contributing to the recent VMT phenomenon. Figure 17 shows how the percent population in each age group has changed over time. The post-World War II baby boom brought about a spike in birth rates between 1946 and 1964. The age group that produces the most VMT – the 20 to 44 group – has seen a decline in the share of the population it represents since 1990. Meanwhile, the 45 to 64 and 65+ age groups, who drive less and less each year, have grown in proportion.

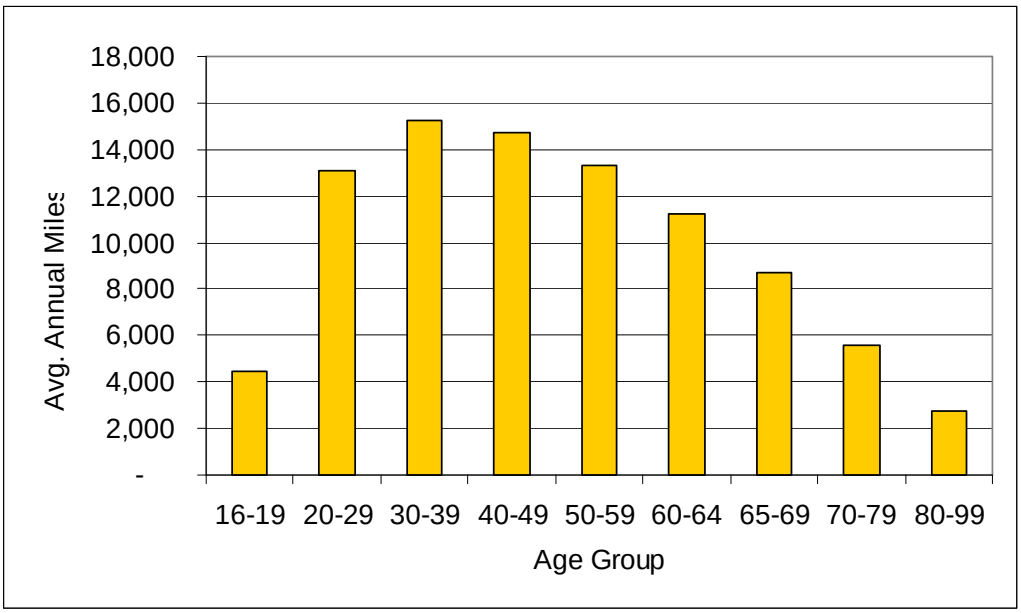
Figure 17: US Population Distribution by Age Group



Source: US Census

Figure 18 represents results from the 2001 National Household Travel Survey. It shows how the aging population of drivers – since older drivers drive fewer miles annually - is contributing to the decline in VMT. The 30-39 age group had the highest annual VMT per person, and the youngest of the baby boomers are now age 45.

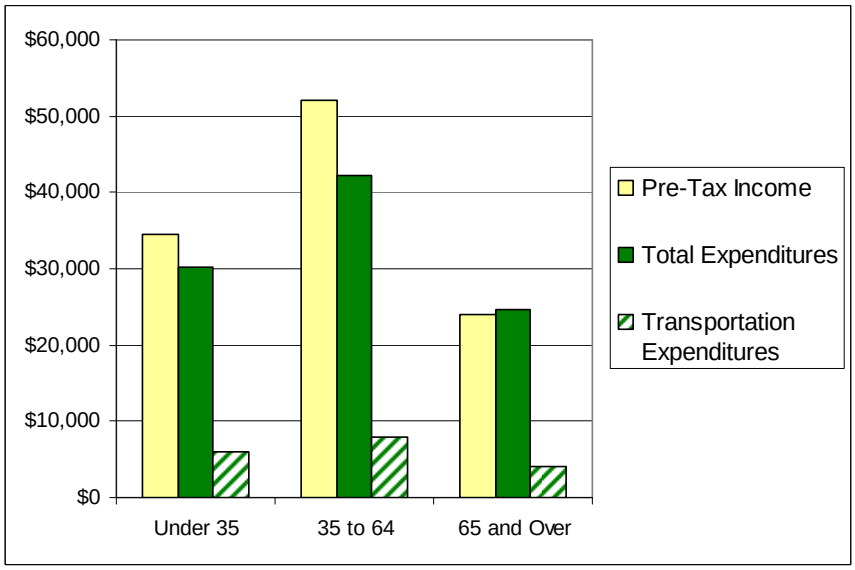
Figure 18: Average VMT per Person by Age Range



Source: 2001 National Household Travel Survey, U.S. Department of Transportation

Overall income and spending by age group – including transportation spending – is a major contributor to the decline in driving. The Bureau of Labor and Statistics compiled data on spending patterns by age in the year 2000, shown in Figure 19. Due mainly to retirement, income per household for those age 65 and over was less than half that for the 35-to-64 age group. Expenditures on all items by the 65 and over population was 59 percent of the 35-to-64 age group, and transportation spending was about half. As the oldest of the baby boomer generation have already begun retiring from their jobs, and will reach age 65 in 2011, the trends suggest that consumer spending has and is likely to continue declining in the near future.

Figure 19: Household Income and Expenditures by Age Group, 2000

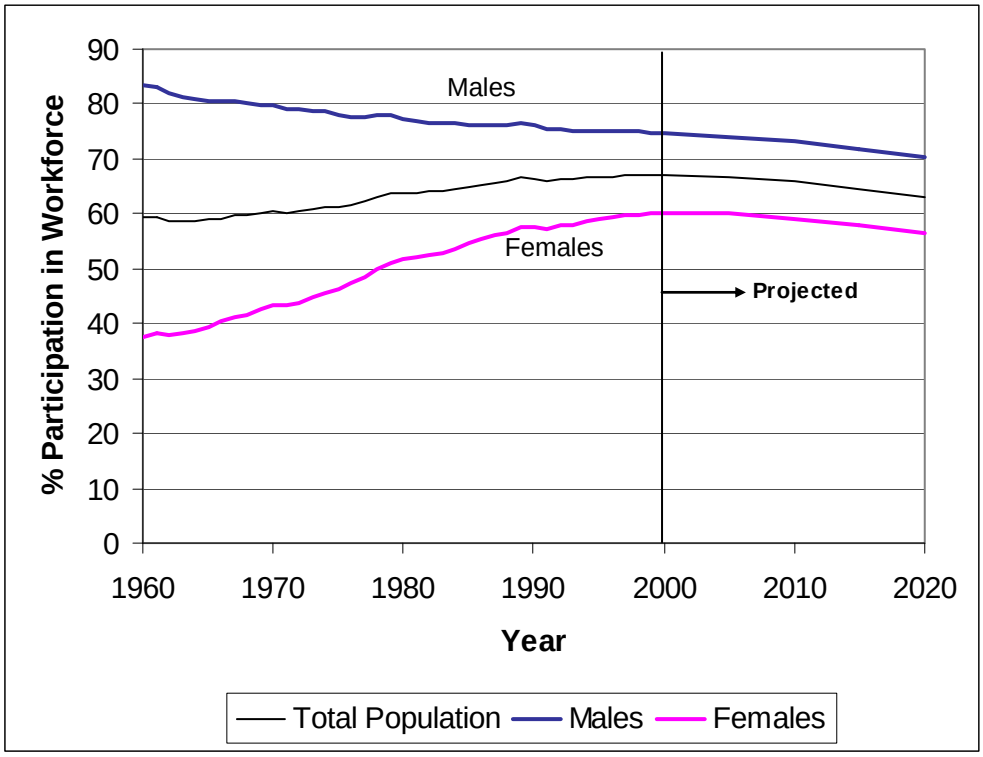


Source: US Department of Labor Bureau of Labor Statistics

7.2.6 Women in the Workforce

Female participation in the U.S. workforce increased dramatically from the mid-1960s to the early 1990s, from 38 percent to 58 percent, which likely contributed to the large growth in vehicle miles during that period. The participation in the workforce of each sex now remains flat at 60 percent of women and 75 percent of men, as shown in Figure 20, and is expected to decline as the baby boomer population ages. The flattening percentage of women in the workforce has recently, and will in the near future, cause a slowdown in commuter trip growth.

Figure 20: Participation in the Workforce



Source: US Department of Labor Bureau of Labor Statistics

7.2.7 The Future of Road Travel

The future of U.S. road travel has been adversely affected as discussed above. Since July 2008, gas prices have begun a steady, yet unexpected, decline, an economic recession was declared, and consumer spending reached an all-time low. While these factors have affected the recent VMT, other, more predictable factors will contribute to the future growth in driving. Broadband internet is making it easier to shop, work, access your social network, conduct personal business, and access entertainment from home, likely causing a reduction in discretionary road trips; its market share continues to grow. The percent of women in the workforce, which has been growing over the past 40 years, has flattened. The baby boomer generation has just begun to retire, and evidence shows that older people drive less and spend less on transportation. While some of these factors will not reduce overall travel because population continues to grow, they will inevitably reduce the huge VMT growth seen in previous years.

The implications of these dynamics are clear: while VMT will likely continue to increase over time, one can no longer assume that the growth in road travel will be what it once was.

7.3 REVIEW OF NEW HAMPSHIRE SOCIOECONOMIC FACTORS

This section discusses historical and forecasted economic conditions for the state of New Hampshire, including population and employment trends, income, housing, tourism, commuter trends, and the age of the population.

7.3.1 Population Trends

Table 13 shows historical population in the State of New Hampshire that was obtained from the U.S. Census Bureau. Projections for 2010 through 2020 were drawn from the New Hampshire Office of Energy and Planning (OEP).

Table 13: Historical and Projected Population in New Hampshire, FY 2000-2020 (in thousands)

Fiscal Year	Population	Avg. Annual Growth (%)
2000	1,240	N/A
2001	1,257	1.4%
2002	1,271	1.1%
2003	1,281	0.8%
2004	1,292	0.9%
2005	1,301	0.7%
2006	1,309	0.7%
2007	1,312	0.2%
2008	1,316	0.3%
2009	1,341	1.9%
2010	1,365	1.8%
2015	1.420	0.8%
2020	1.470	0.7%

Sources: 2000-2008: US Census Bureau published for July of each year

2009: Estimate

2010-2020: New Hampshire Office of Energy and Planning

Between FY 2000 and FY 2008, total New Hampshire population grew by an estimated 6.1 percent or some 76,000 residents at an average annual rate of 0.8 percent or about 9,500 residents per year. Most of this growth occurred from people relocating from other states, primarily neighboring Massachusetts as well as from new immigrants and refugees to the U.S.

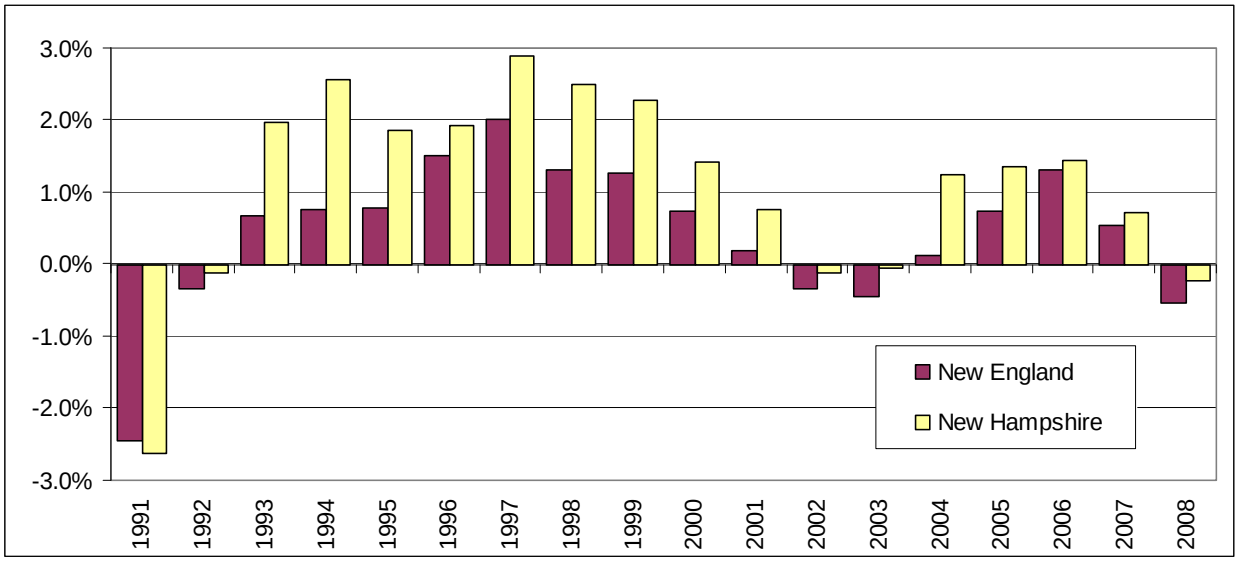
The most recent forecasts prepared by the New Hampshire Office of Energy & Planning (OEP) in 2007 project New Hampshire's population to be 1,316,120 in 2010. From 2010 onward, population will increase at approximately 0.8 percent annually from 2010-15 and 0.7 percent from 2015-2020. The long-term growth forecasts are generally consistent with historical population growth patterns.

7.3.2 Employment Trends

The growing population in New Hampshire has a direct influence on the state's labor force. From 1998 to 2008, the civilian labor force has increased by 54,000 with an average annual growth rate of 0.9 percent. New Hampshire labor force growth has outpaced the the New England region, which had an average annual growth rate of 0.4 percent for the same time period.

Total employment growth in New Hampshire was fairly robust following the recession in the early 1990s, but has slowed somewhat during this decade. Total employment decreased in 2002 and 2003 by 0.1 percent each year. Since the end of that downturn until 2007, the annual increase in total employment in New Hampshire has been approximately 1.2 percent. From 2007 to 2008, employment levels decreased as a result of the current recession. Similar to labor force levels, growth in New Hampshire employment has been consistently higher than the New England Region. Figure 21 presents the annual change in employment from 1990 to 2008 for New Hampshire and New England.

Figure 21: Annual Change in Employment for New England and New Hampshire, 1991 to 2008



Sources: Bureau of Labor Statistics

In the most recent projections published by the New Hampshire Economic and Labor Market Information Bureau, total employment is anticipated to increase from 694,800 in 2006 to 791,245 in 2016. This would represent an increase in total employment of roughly 96,000. Based on these projections, total employment would increase by an average annual rate of 1.3 percent which is in line with historical increases in statewide employment exhibited in non-recessionary years of this decade from 2003 to 2007. Table 14 summarizes historical and forecast employment for New Hampshire and for the metropolitan planning organization (MPO) that encompasses the four most populous counties in the state.

Table 14: Historical and Forecast Total Employment, New Hampshire and the Planning Regions for the Four Most Populous Counties

	2000	2006	Change 2000-06	2016	Change 2006-16
New Hampshire	650,871	694,800	6.7%	791,245	13.9%
Southern NH (Hillsborough, Rockingham)	132,762	135,978	2.4%	155,112	14.1%
Nashua (Hillsborough)	93,327	108,954	16.7%	123,888	13.7%
Central NH (Hillsborough, Merrimack)	63,406	67,309	6.2%	77,532	15.2%
Rockingham (Rockingham)	96,531	118,844	23.1%	137,458	15.7%
Strafford (Strafford)	N/A	52,874	N/A	59,707	12.9%

Nearly all projected growth in employment is expected to be concentrated in the service industries. Professional, scientific and technical services, health care services, educational services, and wholesale trade are expected to increase during forecast period. Outside of the services sector, the construction is expected to increase by about 4,000 jobs or about 14 percent through 2016. Manufacturing employment is expected to continue to decline; however, job losses over the ten-year period will not be as severe as in previous years. Most of these losses are expected to be concentrated in the manufacturing paper, computer, and electronic products.

New Hampshire's unemployment rate has historically been one to one and a half percentage points lower than the national unemployment rate. From July 2005 to July 2008, unemployment rates in New Hampshire have ranged from 3.4 percent to 3.8 percent. The unemployment rates for Hillsborough, Merrimack, Rockingham and Strafford counties (the four largest counties in terms of population and the location of the Turnpike System) were commensurate to statewide unemployment rates during this period. In contrast, until the current year, the U.S. unemployment rate has historically ranged between 4.7 percent and 5.8 percent. The most recent change in economic conditions has lead to an increase in the unemployment rate in New Hampshire—from 3.8 percent in July 2008 to 6.8 percent in July-August 2009. This rate still remains below the national rate, which increased from 5.8 percent to 9.6 percent during the same period. Table 15 summarizes historical unemployment rates for New Hampshire, the New England region, and for the United States.

Table 15: Historical Unemployment Rates for the Four Most Populous Counties in New Hampshire, All of New Hampshire, New England, and the United States

NH County	July 2005	July 2006	July 2007	July 2008	July 2009	August 2009
Hillsborough	3.6%	3.7%	3.5%	3.7%	7.1%	7.3%
Merrimack	3.1%	3.2%	3.2%	3.4%	5.8%	5.9%
Rockingham	4.0%	3.8%	3.7%	4.1%	7.2%	7.5%
Strafford	3.4%	3.4%	3.4%	3.6%	6.9%	6.9%
New Hampshire	3.6%	3.5%	3.5%	3.8%	6.8%	6.8%
New England	4.7%	4.5%	4.5%	5.4%	8.6%	8.5%
United States	5.1%	4.6%	4.6%	5.8%	9.4%	9.6%

Sources: New Hampshire Employment Security, Economic and Labor Market Information Bureau, Bureau of Labor Statistics

In Hillsborough County, which includes the cities of Nashua and Manchester, unemployment rates increased from 3.7 percent to 7.3 percent from July 2008 to August 2009. Merrimack

County, which includes the state capital of Concord, did not fare as poorly; unemployment increased from 3.4 percent to 5.9 percent during this same period. Although these increases are significant, unemployment rates as with the other employment figures, remain better than the regional and national figures.

7.3.3 Wages and Income

New Hampshire consistently ranks relatively high in the United States in terms of personal income. In 2008, New Hampshire was ranked ninth with a per capita income of $42,830. Hillsborough County and Rockingham County exceeded the statewide levels, as these counties recorded per capita personal income of $43,625 and $47,196, respectively, in the year 2007, compared to $41,639 for the entire state. Merrimack County and Strafford County recorded per capita income of approximately $38,661 and $33,662, respectively, in 2007.

Income levels appear to have increased at fairly respectable rates in recent years. In New Hampshire, per capita personal income grew at an average annual rate of 3.8 percent from 2003 to 2007. Merrimack County's per capital income also grew 3.8 percent annually. Rockingham County, which includes the cities of Salem, Londonderry, Derry, and Portsmouth, had per capita income growth of 3.7 percent annually from 2003 to 2007, While the income of Hillsborough County grew 3.6 percent annually. Strafford County, which includes the cities of Dover, Rochester, and Farmington, experienced the slowest growth of the four counties, with an average annual increase of per capita income of 3.3 percent during this period.

Overall, income in the U.S. increased annually by 4.1 percent from 2003 to 2007, while the average annual income growth in New England was 4.5 percent. The growth in income in New Hampshire has outpaced the inflation rate, as measured by the Consumer Price Index, which increased at an average annual rate of 2.8 percent. Table 16 summarizes per capita income levels in the four largest counties in New Hampshire, the state of New Hampshire, New England, and the United States. As seen in the table, growth in per capita income has slowed from 2007 to 2008.

Table 16: Per Capita Personal Income, New Hampshire Counties, New Hampshire, New England, and U.S.

State	2003	2004	2005	2006	2007	5-Yr. Avg. Growth Rate	2008
Hillsborough County	36,481	38,782	39,240	41,435	43,625	*3.6%*	N/A
Merrimack County	32,059	33,655	34,619	36,805	38,661	*3.8%*	
Rockingham County	39,263	41,122	42,581	45,061	47,196	*3.7%*	
Strafford County	28,566	29,962	30,750	32,104	33,662	*3.3%*	
New Hampshire	34,596	36,523	37,432	39,703	41,639	*3.8%*	42,830
New England	37,966	40,081	41,736	44,574	47,221	*4.5%*	48,715
United States	31,530	33,157	34,690	36,794	38,615	*4.1%*	39,751

7.3.4 Housing

Table 17 shows the historical housing unit estimates prepared by the U.S. Census Bureau for Hillsborough, Merrimack, Rockingham and Strafford Counties, as well as for the entire State of New Hampshire for the period FY 2000-07. Hillsborough and Rockingham counties have the most housing units as they are also the most populous counties.

Table 17: Annual Housing Unit Estimates for New Hampshire Counties (in thousands), FY 2000-07

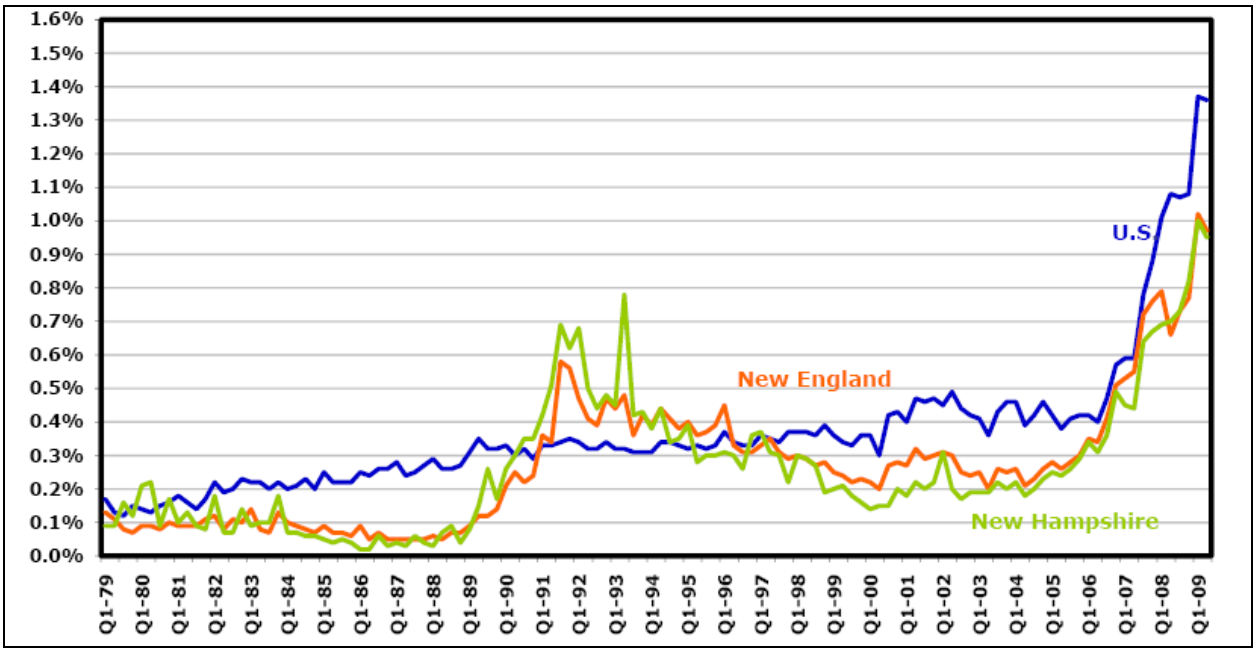
Fiscal Year	Hillsborough	Merrimack	Rockingham	Strafford	New Hampshire
2000	150.4	56.4	113.4	45.7	548.6
2001	152.0	57.1	115.1	46.3	554.7
2002	153.6	57.8	116.4	46.8	560.5
2003	155.7	58.7	117.9	47.5	568.0
2004	157.5	59.7	119.7	48.4	575.7
2005	159.3	60.6	121.4	49.1	583.3
2006	160.9	61.3	122.8	49.7	589.8
2007	161.9	61.7	123.5	50.3	594.1

Source: US Census Bureau

Based on the U.S. Census Bureau data, the total number of housing units in New Hampshire increased by 8.3 percent between FY 2000 and FY 2007, which translates into an annual increase of about 1.1 percent. While all the four counties presented in Table 17 experienced stable growth in the total number of housing units, Strafford and Merrimack counties increased at relatively fast rates during this period. Strafford County grew by 10.1 percent and Merrimack County by 9.4 percent.

Between 2000 and 2006, the median purchase price of homes in New Hampshire increased by 76 percent while median family income increased by only 33 percent. By the peak of the market in mid-2007, the median home price was roughly 3.5 times the median household income, while this ratio was about 2.8 times income in 2001. While New Hampshire has not been immune to the general decrease in housing prices, this downturn has not been as severe as in other parts of the country. Moreover, foreclosure rates have been significantly lower in New Hampshire and New England in comparison to the national rate. In the first quarter of 2008, the housing foreclosure rate was about 1.0 percent in New Hampshire compared to 1.4 percent for the United States. Figure 22 summarizes foreclosure rates for New Hampshire, New England and the United States from 1979 to the second quarter of 2009.

Figure 22: Foreclosure Rates for New Hampshire, New England, the U.S., 1979-2009



Sources: Federal Reserve Bank of Boston and the New Hampshire Housing Finance Authority

7.3.5 Travel and Tourism

According to the state's Division of Travel and Tourism Development, New Hampshire ranks as one of the top ten states with respect to the importance of tourism to the total state economy. Tourism is driven, in large part, by outdoor seasonal attractions, such as skiing during winter months. There are also periodic attractions such as NASCAR races and Bike Week. Tourism levels are generally affected by prevailing economic conditions, fuel and travel costs, and weather conditions.

In FY08, there were 33.8 million trips, an increase of 0.1 percent from the previous year. In particular, the winter and spring months of FY08 (corresponding to the 2007-8 ski season) generated 19.5 percent more skiers than did the 2006-7 ski season. The number of visitor days also increased by an estimated 0.4 percent to 52.9 million days. The seasonal breakdown by season is the following: summer, 39 percent of total visitor days; fall, 23 percent; winter, 19 percent; and spring, 19 percent.

Automobile travel on Saturdays, which is indicator of the number of leisure trips taken, was down by 2.1 percent from the previous year at the twelve traffic counters located near to tourist attractions or on major travel routes. However, airline passenger enplanements at Manchester Airport and Lebanon Airport increased by 3.5 percent during the most recent fiscal year.

In FY08, travelers and tourists spent some $4.45 billion in New Hampshire, an increase of 3.2 percent over FY07. This increase was driven by a 6.3 percent increase in hotel receipts, a 0.4 increase in restaurant sales, and a 6.8 percent increase in vehicle rental receipts. The hotel occupancy rate also increased by 0.5 percent. Because New Hampshire has no sales tax, many residents from neighboring states often travel to New Hampshire for retail shopping. The increase in the Canadian dollar relative to the US dollar also led to an increase in visitors from Canada.

7.3.6 Commuting Trends

The Bedford mainline toll plaza and the three ramp toll plazas in the Merrimack Valley region are all located in Hillsborough County, while the Hooksett mainline and ramp toll plazas are located in Merrimack County. The Hampton mainline and ramp toll plazas are located in Rockingham County, while the Dover and Rochester toll plazas are located in Strafford County. The following is a summary of commuting patterns for the four most populous counties in New Hampshire, which was prepared by the New Hampshire Housing Finance Authority using information gathered in the 2000 U.S. Census. Table 18 summarizes the commuting patterns of residents from all New Hampshire counties from home to work.

Table 18: Commuting Trends for All New Hampshire Counties from Home to Work, 2000

NH County	In-County	NH, not In-County	Out-of-State	Total	Percent In-County	Percent NH, not In-County	Percent Out-Of State
Belknap	19,044	8,184	1,020	28,248	67%	29%	4%
Carroll	15,816	3,583	1,372	20,771	76%	17%	7%
Cheshire	28,611	3,000	5,649	37,260	77%	8%	15%
Coos	12,591	1,657	982	15,230	83%	11%	6%
Grafton	33,872	4,465	2,977	41,314	82%	11%	7%
Hillsborough	142,472	22,743	33,548	198,763	72%	11%	17%
Merrimack	48,051	19,190	2,416	69,657	69%	28%	3%
Rockingham	78,659	25,350	44,512	148,521	53%	17%	30%
Strafford	34,364	18,733	5,282	58,379	59%	32%	9%
Sullivan	12,578	5,494	1,998	20,070	63%	27%	10%

7.3.6.1 Hillsborough County

In 2000, there were nearly 200,000 employed residents age 16 and over in Hillsborough County and about 72 percent of these residents worked within Hillsborough County. Of the 56,000 residents that commuted out of Hillsborough County to work, some 57 percent commuted south to Massachusetts which borders Hillsborough County, 20 percent commuted northeast to neighboring Rockingham County, and 16 percent commuted north to neighboring Merrimack County. The mean travel time to work in 2000 was 25.5 minutes and about 83 percent of Hillsborough County residents drove alone to work.

In addition, there were nearly 46,000 people commuting to work in Hillsborough County. Of this amount, approximately 37 percent come from Rockingham County, 27 percent from out of state, 25 percent from Merrimack County and, and 11 percent from other counties within New Hampshire.

7.3.6.2 Merrimack County

Merrimack County had about 70,000 employed residents age 16 and over in 2000. Approximately 97 percent of employed residents worked in-state, 69 percent of employed residents worked within the Merrimack County, and 17 percent of employed residents worked in neighboring Hillsborough County. Among New Hampshire counties, Merrimack County has the smallest share of residents that commute out of state for work.

Some 22,000 workers commuted into Merrimack County for work, 40 percent of which came from neighboring Hillsborough County, 56 percent from other counties within New Hampshire,

and 5 percent commuted from out of state. The mean travel time to work in 2000 was 24.3 minutes and about 81 percent of Merrimack County residents drove alone to work.

7.3.6.3 Rockingham County

There were approximately 149,000 employed residents age 16 and over in 2000 in Rockingham County, 53 percent of whom worked in the same county. Among New Hampshire counties, Rockingham County has the largest share of residents that commute out of state for work—nearly 30 percent of total commuters. Most of these commuters traveled to Massachusetts, while less than 2 percent of out-of-state commuters travel to Vermont, Maine or another state. In all, the 70,000 residents traveled out of Rockingham County to work, 60 percent work in neighboring Massachusetts, 24 percent work in Hillsborough County, 6 percent in Strafford County, and 5 percent in Merrimack County.

In addition, about 49,000 people commuted into Rockingham County for work. Of this amount, 31 percent traveled from Strafford County, 23 percent traveled from Hillsborough County, 21 percent traveled from Massachusetts, and 6 percent traveled from Maine. The remaining commuters to Rockingham County traveled from other counties within New Hampshire (7 percent) or from other states (1 percent). The mean travel time to work in 2000 was 28.6 minutes and about 85 percent of Rockingham County residents drove alone to work.

7.3.6.4 Strafford County

Strafford County had about 58,000 employed residents age 16 and over in 2000, and approximately 59 percent worked in that county. About 27 percent of residents traveled south to Rockingham County for work. Moreover, another 9 percent of commuters traveled out of the state, almost of all which went to either Maine or Massachusetts.

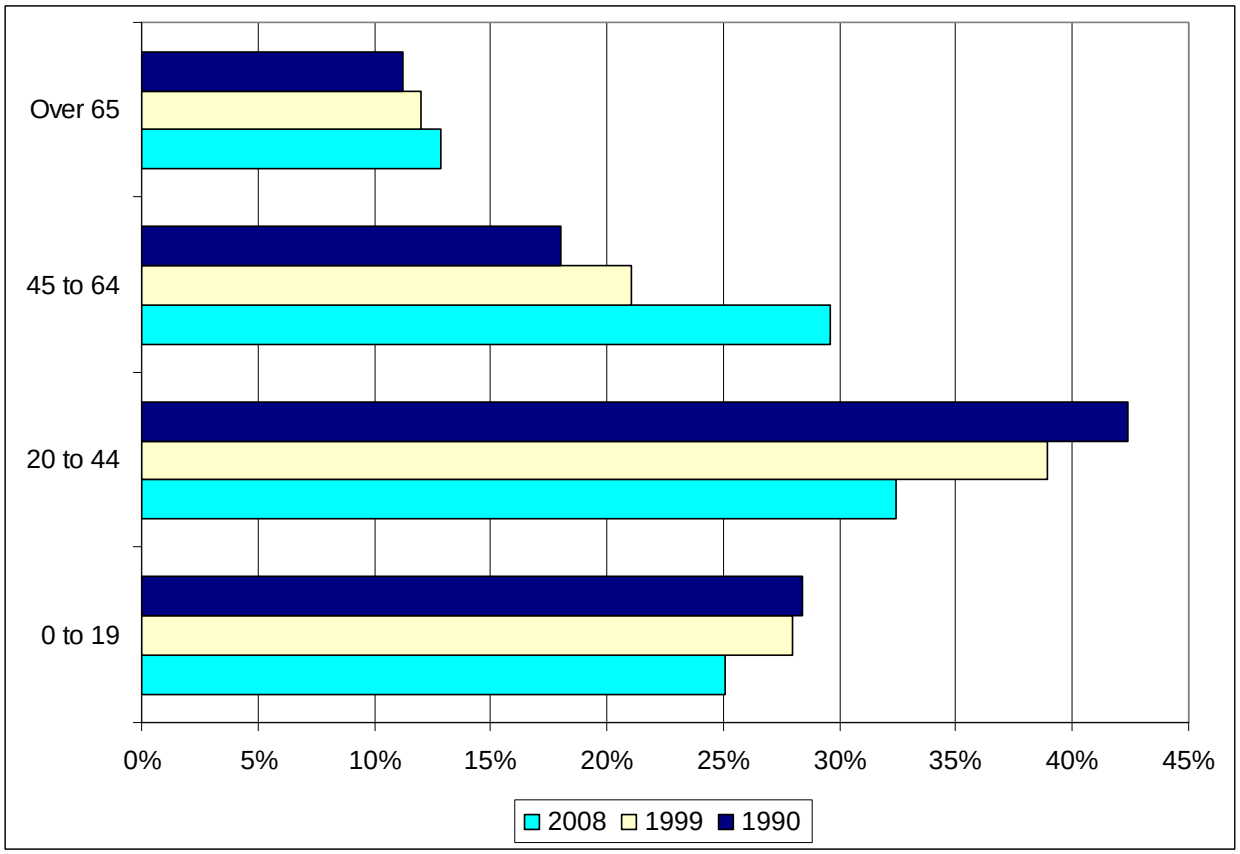
About 11,000 commuters came to Strafford County for employment. Of this amount, 41 percent traveled from Maine and 37 percent were living in Rockingham County, 15 percent came from other New Hampshire Counties, and 7 percent commuted from states other than Maine. The mean travel time to work in 2000 was 24.1 minutes and about 80 percent of Strafford County residents drove alone to work.

7.3.7 Age of the Population

As stated previously in this chapter, the average age of the U.S. population is increasing. This is one of the major factors contributing to slower traffic growth, as the older generations tend to travel less and spend less on transportation in general.

New Hampshire exhibits a similar aging trend. Figure 23 shows the proportion of New Hampshire population in each of four age groups for the years 1990, 2000 and 2008. The 20-to-44 age group, which drives the most vehicle miles per capita on average, has the most people in each year analyzed, but the proportion of residents in this category has been declining, from 42 percent in 1990 to 32 percent in 2008. This, however, will soon be overtaken by the 45-to-64 Baby Boomer age group, which drives fewer miles per capita. Nearly 30 percent of residents were in this age group in 2008, up from 18 percent in 1990. The over 65 group has also been growing, from 11 percent of the population in 1990 to 13 percent in 2008.

Figure 23: New Hampshire Population Split by Age Group, 1990-2008



7.4 NATIONWIDE HISTORICAL TRAFFIC AND ECONOMIC RECESSIONS

The government has declared that the United States has been in a recession as of December 2007. This recession is reflected in all transportation and economic indicators, but is seen most clearly in the number of vehicle-miles traveled (VMT) on highways. This is explicitly visible in Figure 8, annual VMT (a 12-month moving total) for the years 1940 through 2009 (shown earlier on page 27), which shows the flattening of the VMT curve around 2005 with a significant drop as of late 2007.

Jacobs has analyzed the current economic situation as it compares to major historical recessions in the past century. The most significant declines in historical VMT were four (4) points in time: during World War II, the 1970s and 1980s oil crises and in the early 1990s during the Gulf War. In 2006 and 2007, VMT remained the same as late 2005 levels, and in by March 2008 it began to decline. In November 2008 traffic was 3.6 percent below the previous year's, and by the summer of 2009 some improvement was seen; July 2009 numbers were down just 1.7% from the previous year. As stated previously, some of this improvement may be due to the large reduction in gas process from the summer of 2008 to the summer of 2009.

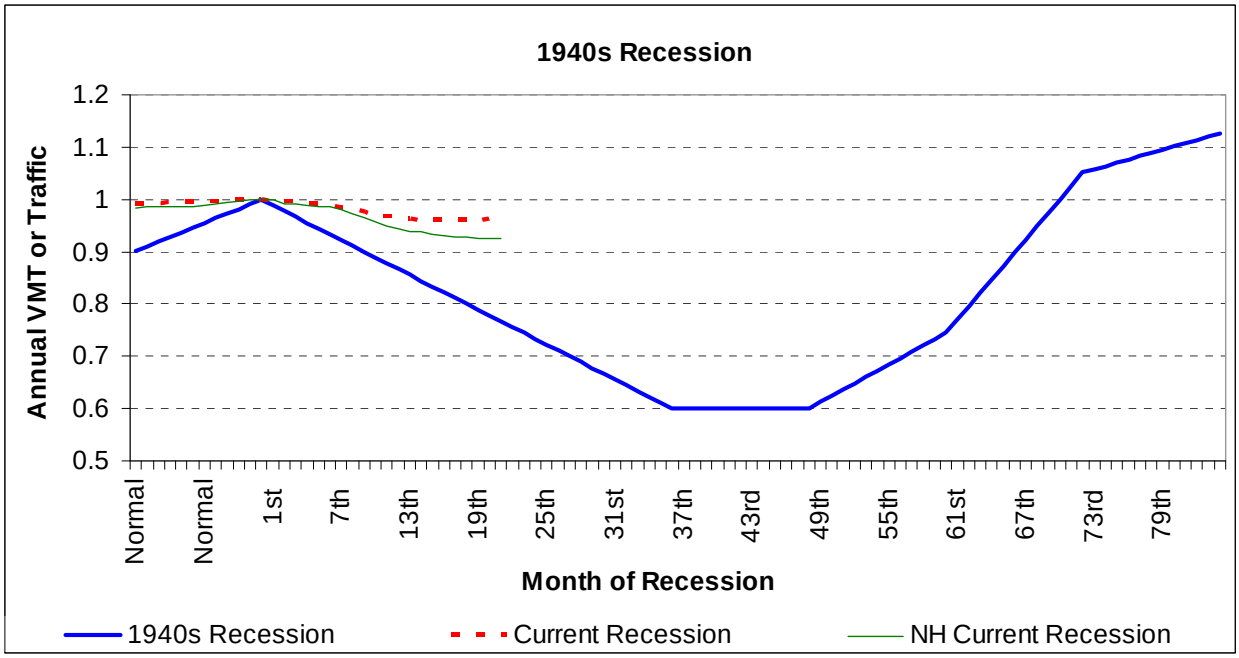
Annual VMT data were compiled from 1940 to July 2009. A review of VMT from 2006 to 2009 revealed that nationwide VMT was rising until October 2007 when it reached its peak and then began to decline. December 2007 officially marked the beginning of the first recession of the

twenty-first century. The 2008 recession VMT is illustrated as the dashed trend line on Figures 24 thru 27, which was indexed from November 2007. The New Hampshire transactions are indexed to its pre-recession peak in October 2007, as represented by the green line. As noted previously, New Hampshire transactions have historically followed national VMT trends, however, due to the overlap of the October 2007 toll increase and the onset of the current economic recession, the graphs illustrate that New Hampshire has seen a deeper dive in Turnpike traffic than the national VMT trends. The four (4) recession periods were subsequently indexed based on their respective peak points so that they could be compared against the current decline in VMT.

7.4.1 Comparative Recession Analysis

The recession of 1940 occurred in the middle of World War II. Figure 24 demonstrates how the escalation of the War corresponds with the rapid decline in traffic as it reached a sharp peak in the beginning of 1941 before experiencing a steep decline to early 1944. At this point traffic is seen to have reached a plateau at approximately 200 billion vehicle-miles traveled. This is almost five (5) years of declining traffic levels until late 1945 when VMT began to rise again.

Figure 24: VMT of the 1940s Recession vs. VMT of the 2008 Recession, Indexed



Both the recessions in the 1970s and 1980s were partially due to the oil crises. Figure 25 shows that traffic began to decline in late 1973. Two (2) years later traffic started to rise making this recession's recovery shorter in comparison to both the 1940s and what later came in the early 1980s.

Figure 25: VMT of the 1970s Recession vs. VMT of the 2008 Recession, Indexed

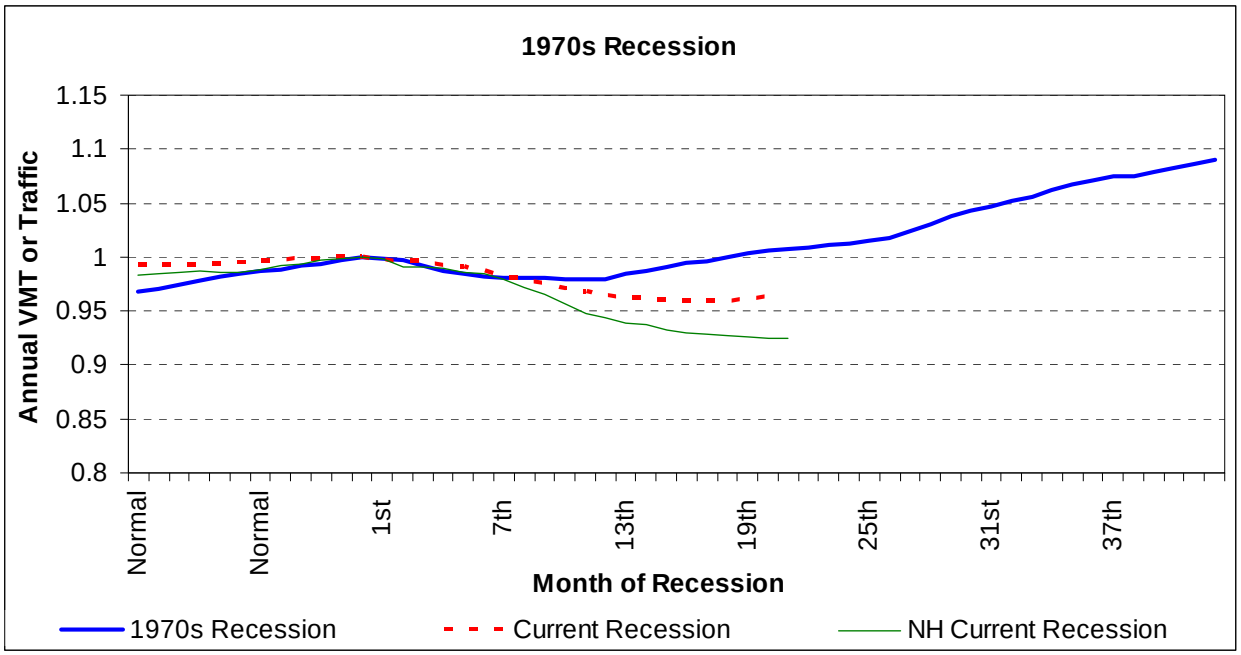
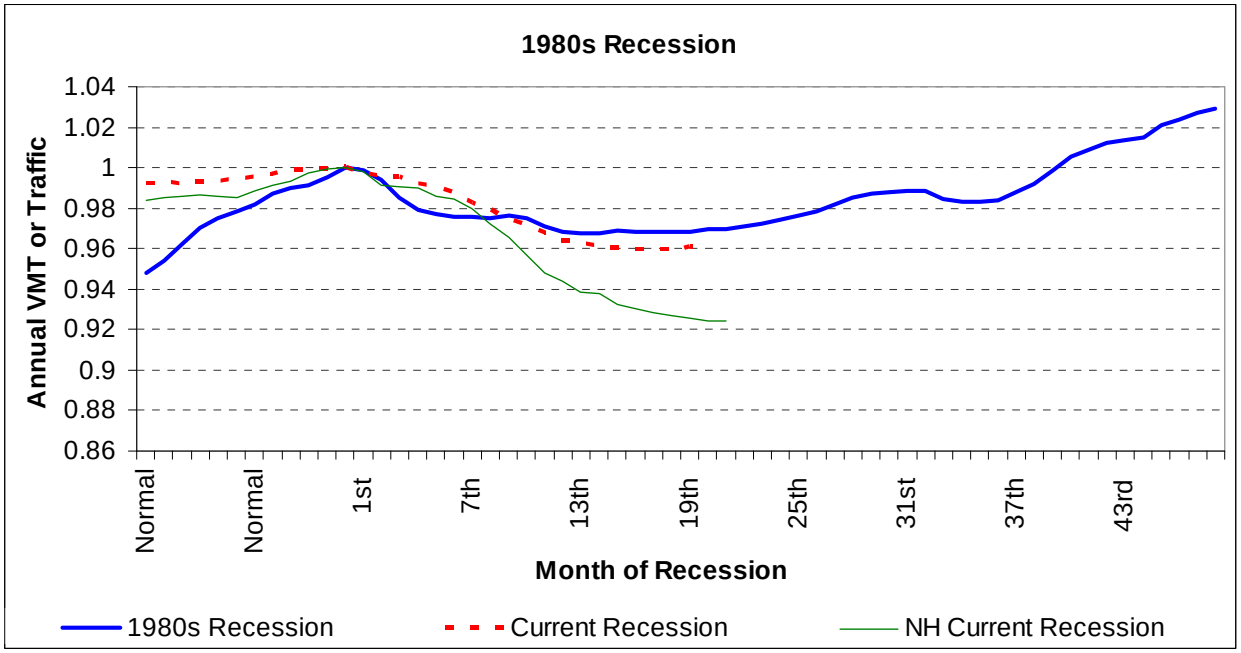


Figure 26 illustrates the recession of the early 1980s. Traffic reached its peak in the beginning of 1979 at approximately 1,569 billion vehicle miles traveled, and quickly fell to its low point in 1980. Traffic saw a slight increase in early 1980, but proceeded to decline further for almost two (2) years. This further decline created more volatility in traffic causing a longer and more gradual visible ascent to recovery.

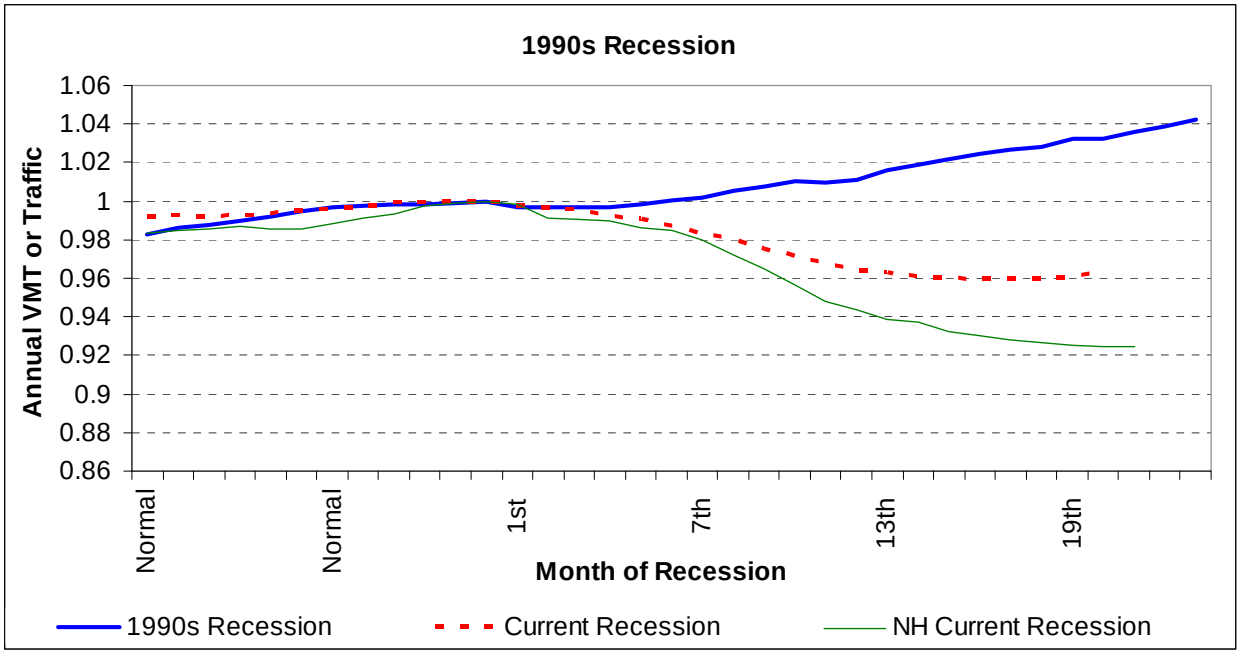
In both Figure 25 and Figure 26, the 2008 VMT trend line continues to decline at the point where it crosses the lowest, respective, historical point in VMT. This is most visible in Figure 25 but Figure 26 illustrates a constant decline in VMT in the 1980s, which can be more easily compared to the current 2008 trend line because of their parallel steady decreases in traffic.

Figure 26: VMT of the 1980s Recession vs. VMT of the 2008 Recession, Indexed



Most recently, the current economic situation can be looked at in comparison to the last recession that occurred in the 1990s, shown in Figure 27. This recession coincided with the Gulf War. The early 1990s VMT decline was small in that it lasted less than a year before returning to its previous traffic level in June 1991. The 2008 recession traffic reduction appears to be far greater than that in the early 1990s.

Figure 27: VMT of the 1990s Recession vs. VMT of the 2008 Recession, Indexed



For these reasons, it is the opinion of Jacobs that the current economic recession is best compared to the 1980s recession. Note that it took over five (5) years for traffic to return to the pre-recession levels during that period. This comparison will serve as the baseline recession to model for the 2008 Long Term Projections.

7.4.2 NH Forecasted Traffic and Its Relationship to Economic Recessions

Clearly, there is a great deal of uncertainty in the direction the current economy is heading. The most recent reports from economists is that the economy has now recovered from the recession. From the September 2009 issue of *Blue Chip Economic Indicators*, a clearinghouse of over 50 economic forecasting entities, over 81 percent of experts questioned agreed that the recession is over. Approximately the same percentage predicts that the unemployment rate will not fall back beneath 7 percent on a sustained basis until the second half of 2012. While the economy is possibly, by definition, recovering, it is important to understand the type of recovery and the anticipated impact on traffic. The initial recovery appears to be jobless (i.e., it is not producing strong growth in employment); improvements will be achieved through increases in productivity and lowering of inventory, rather than investing in new jobs, therefore delaying the recovery in VMT.

8 TRANSPORTATION PROJECTS RELATIVE TO THE NH TURNPIKE SYSTEM

This section identifies the existing feeder and competitive (diversionary) roads to the New Hampshire Turnpike System and includes future transportation projects slated for New Hampshire that may affect traffic on the System.

8.1 FEEDER ROADS

Several roadways direct traffic, or feed, into the Turnpike System. The classification of these roadways varies from interstate highways to arterials and collectors. Some of the feeder roads to the Central Turnpike are:

- US Route 3 from Massachusetts
- I-93
- I-293
- I-89
- NH Route 101A
- NH Route 130
- NH Route 111
- Somerset Parkway
- Industrial Drive
- Continental Boulevard
- Bedford Road
- East Dunstable Road

For the Blue Star Highway, some of the feeder roads are:

- I-95 from Massachusetts
- I-95 from Maine
- NH Route 107
- NH Route 101
- NH Route 33
- Spaulding Turnpike
- Market Street
-

For the Spaulding Turnpike, some of the feeder roads are:

- I-95, the Blue Star Highway
- US Route 4
- NH Route 108
- NH Route 55
- NH Route 125
- US Route 202
- NH Route 11

8.2 COMPETITIVE ROADS

Several roadways compete with the Turnpike System, varying from arterials to collectors. We identified the following alternative parallel routes for each New Hampshire Turnpike segment:

- Central Turnpike – US Route 3; NH 3A
- Spaulding Turnpike – Dover Point Rd / NH 9 / NH 108; Dover Point Rd / NH 9 / NH 16B; NH 125
- Blue Star Turnpike – US Route 1; US 1/ NH 151 / NH 33

8.2.1 US Route 3 and NH 3A

US Route 3 and NH 3A are parallel routes to the Central Turnpike (see Figure 28). From Massachusetts, US Route 3 is located west of the Merrimack River until it crosses the river via the Queen City Bridge. The US Route 3 route continues north along the east side of the river, cutting through downtown Manchester until the route crosses the river again in Concord to run through downtown Concord. NH 3A follows the Merrimack River along the eastern side from Massachusetts to the Queen City Bridge where it crosses west of the river. NH 3A continues north along the river to Concord where it converges with US Route 3 when US Route 3 crosses over from the Merrimack River.

The areas of congestion along US Route 3 are generally focused around Webster Street / Elm Street in downtown Manchester to the Budweiser Plant located in Merrimack (FEE Turnpike Exit 10). An alternative route to bypass Manchester would be to take I-93 Exit 9 from the north to I-293 Exit 5 and reconnect with US Route 3 at Exit 3.

US Route 3 intersect three times with the Central Turnpike along the route. The three turnpike exit interchanges are:

- Exit 13 – I-93 / FEE Turnpike in Concord
- Exit 4 – I-293 / FEE Turnpike merge in Manchester
- Exit 7 – US Route 3 / FEE Turnpike split in Nashua

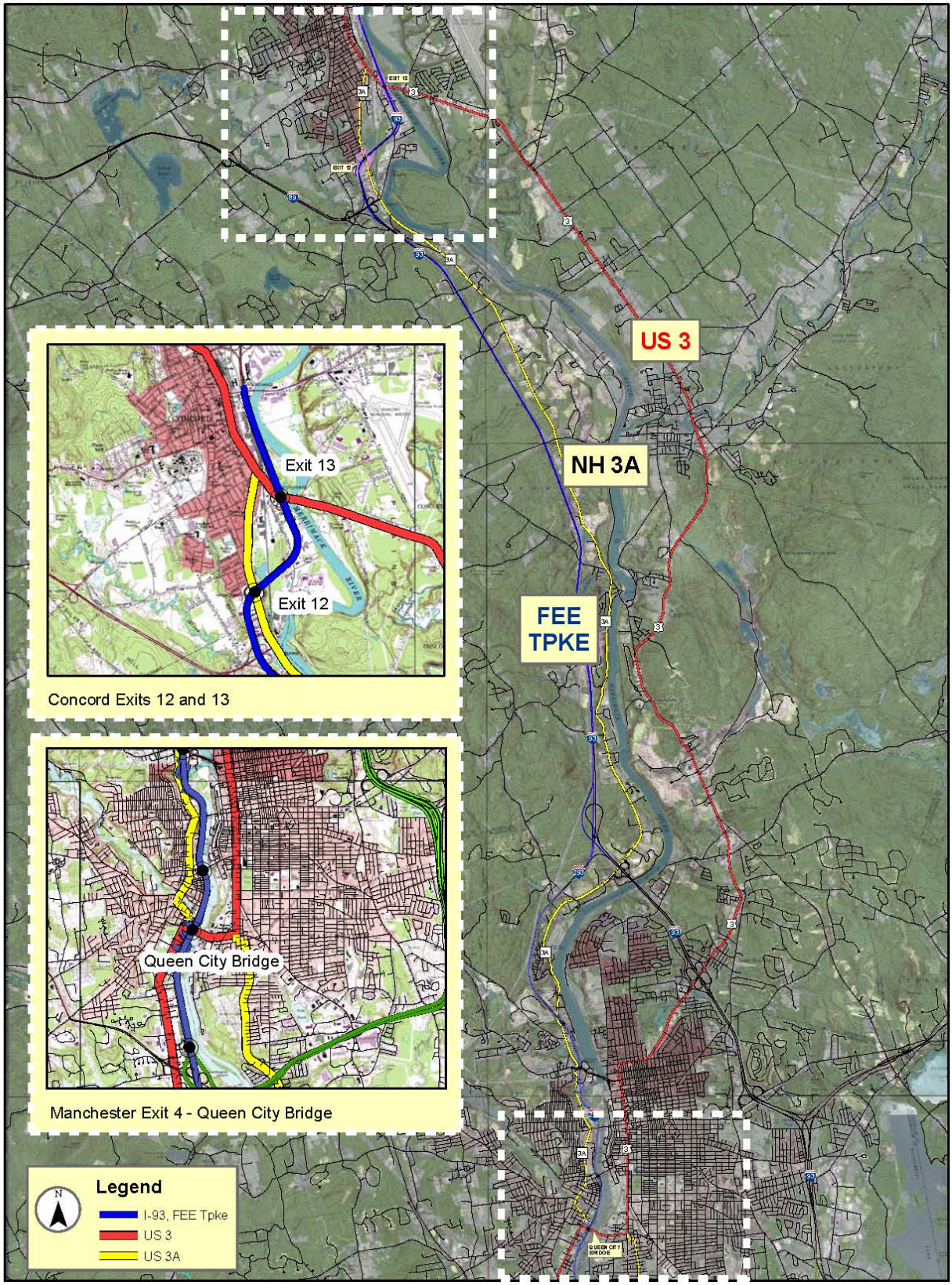
NH 3A intersects with the Central Turnpike along these turnpike junctions:

- Exit 12 – NH 3A in Concord
- Exit 11 – Hooksett Toll Plaza
- Exit 10A – I-93 Interchange in Hooksett
- Exit 7 (NB Exit only) – NH 3A
- Exit 4 – I-293 / US Route 3 / NH 3A Interchange

A toll-free alternate route to the Central Turnpike would be a composite route consisting of the US Route 3 and NH 3A routes from the state line to Concord. NH 3A is an alternate route to take to avoid the Hooksett Toll Plaza. The NH 3A route between I-93 Exit 12 and Exit 10 runs parallel to the Central Turnpike and connects with Hackett Hill Road where the Hooksett Toll Plaza is situated. Continuing south on NH 3A, the route reconnects with the toll-free portion of the I-293 at Exit 7. This Turnpike segment remains toll free until Exit 3 in Bedford. Though toll-free, the Route 3/3A option is a slower, more congested route than the Central Turnpike, with numerous signalized intersections.

Travel time runs conducted on the Central Turnpike and the parallel US Route 3 indicated that a driver traveling between Exit 12 (NH 3A) and Exit 10A (I-93) in the Hooksett area would take approximately just over 9 minutes on the Central Turnpike whereas it would take twice as long (some 17 to 18 minutes) on US Route 3. Similarly, in the Merrimack area a driver traveling between Exit 3 (I-293) and Merrimack Industrial Drive would take about 9 minutes on the Central Turnpike versus about 17 minutes on the parallel US Route 3.

Figure 28: Central Turnpike and Parallel Routes US 3, NH 3A



8.2.2 Dover Point Rd / NH 9 / NH 108; Dover Point Rd / NH 9 / NH 16B; NH 125

The combination of Dover Point Road, NH 9, NH 16B and NH 108 routes make up parallel route segments that can be used as an alternative to taking the Spaulding Turnpike (see Figure 29). Dover Point Road runs parallel with Spaulding Turnpike (NH 16) beginning just south of Exit 6 and ending at NH 108 in downtown Dover, where Exit 7 also intersects with NH 108. The Dover Mainline Toll Plaza is located between Exits 6 and Exit 7. The travel route path similarity to the Dover Toll Segment makes Dover Point Road a viable alternate route to bypass the toll plaza.

Travel time run comparisons in the Dover area between Exit 6 and Exit 7 showed that vehicles that use Dover Point Road would take just 1 to 2 minutes longer than if they used the Spaulding Turnpike (6 minutes on Dover Point Road versus 4 to 5 minutes on the Turnpike).

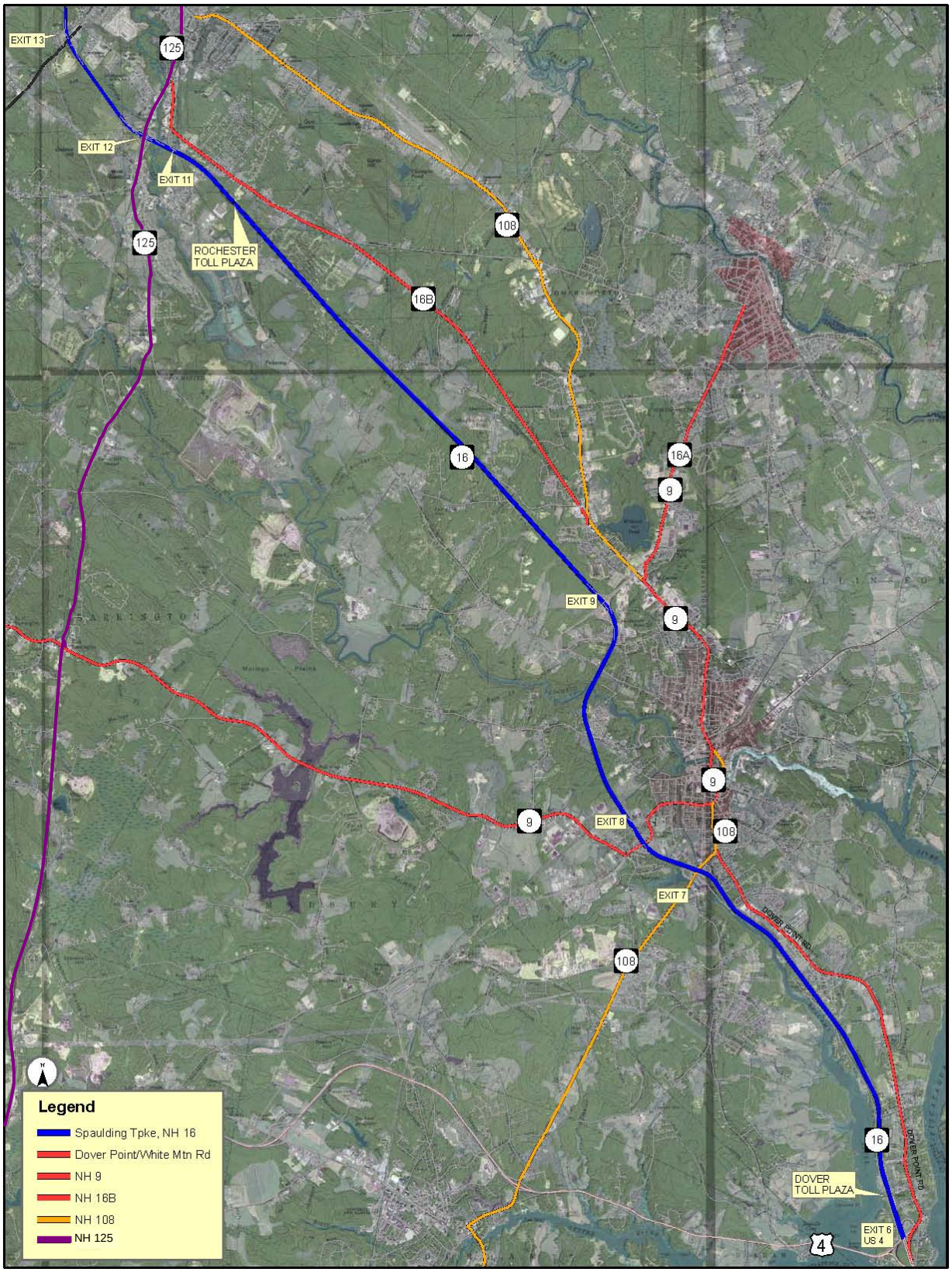
NH 108 traverses through downtown Dover and joins with NH 9, which leads to Spaulding Turnpike Exit 8. The two routes share the same travel path until they intersect with NH 16A and the Spaulding Turnpike at Exit 9. NH 108 continues to travel at a parallel path with the Rochester Toll Segment while NH 9 diverts away. NH 108, a major arterial through route in the region, runs along Rochester Hill Road and connects Dover with Rochester.

NH 16B is a two-lane street that runs parallel NH 108 and the Rochester Toll Segment situated between Exit 9 and Exit 11. It is a lesser-known two-lane route that goes through an urban compact area. It also does not provide an alternative travel route for the Spaulding Turnpike.

Travel time run comparisons in the Rochester area between Exit 12 (NH 125) and Exit 8 (NH 9) showed that vehicles that using the alternate NH 9/NH 16B would take approximately twice as long (18 to 21 minutes) than those using the Spaulding Turnpike (about 9 minutes).

NH 125 is a possible alternative route to the Spaulding Turnpike for some drivers whose trip origin or destination is in Rochester or points north. NH 125 connects into the Spaulding Turnpike at Exit 12 just south of Rochester, and runs southward for 36 miles connecting with I-495 just south of the Massachussetts border. Because this two-lane arterial is not entirely parallel to the Spaulding Turnpike, it may be considered both a feeder and a competitive route.

Figure 29: Spaulding Turnpike and Parallel Routes NH 9 / NH 108, US 1 / NH 9 / NH 16B, NH 125



8.2.3 US Route 1; US Route 1 / NH 151 / NH 33

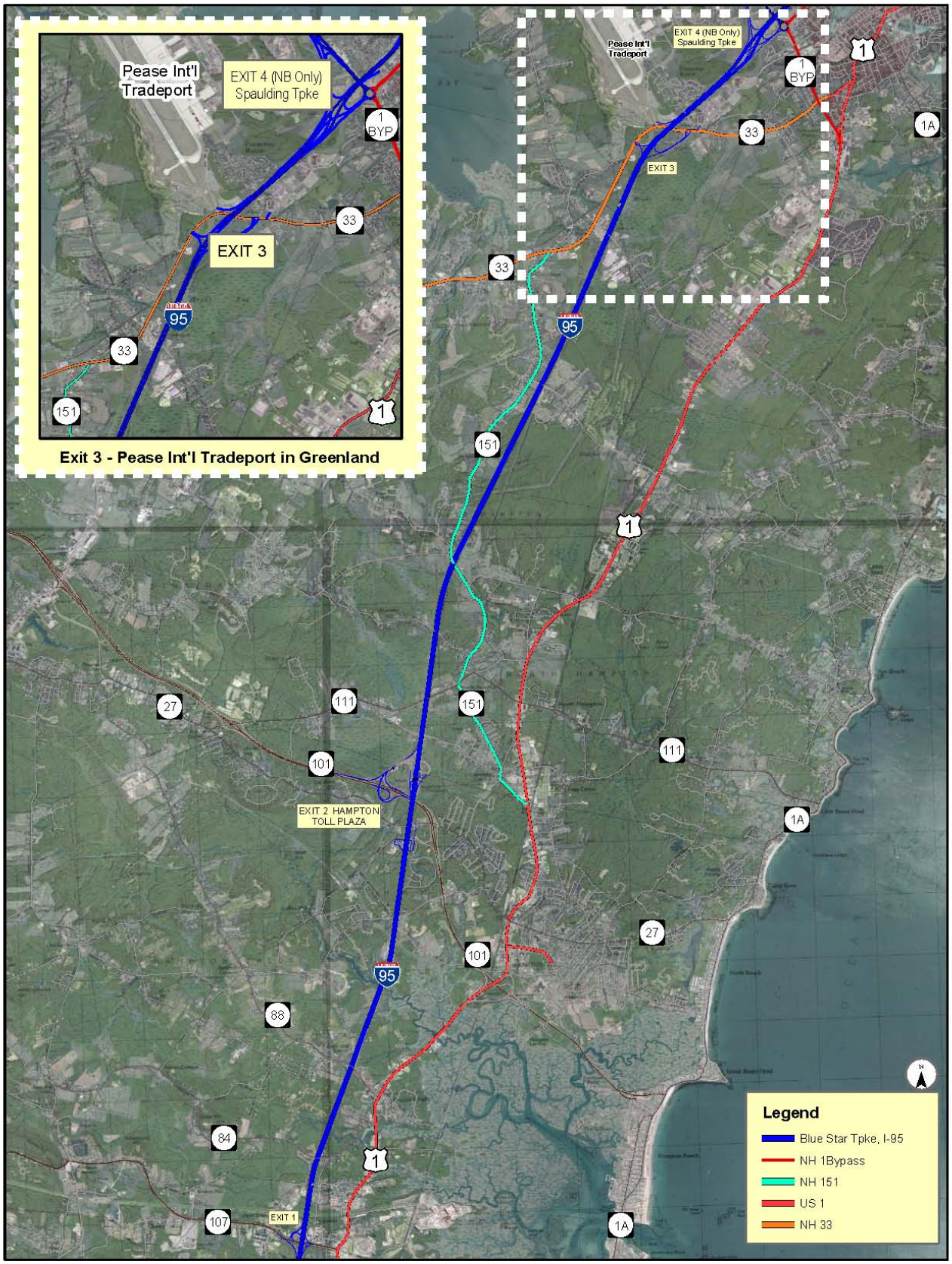
The best alternate route to the Blue Star Turnpike is US Route 1. Like US Route 3 in Merrimack, US Route 1 was the only major north-south arterial before the Turnpike was built. US Route 1 is the only accessible route that allows a bypass of the Hampton Toll Plaza (Exit 2) from Massachusetts (see Figure 30). Starting at Blue Star Turnpike Exit 1 Junction, US Route 1 runs parallel with the Turnpike and reconnects with the Blue Star and Spaulding Turnpikes at Portsmouth Circle. The next toll-free interchange access to the Blue Star Turnpike after Hampton Toll Plaza is 6.9 miles, where NH 33 carries commercial traffic from the Pease International Tradeport.

The US Route 1 / NH 151 / NH 33 combination route is not the preferred alternate route to take as a viable full-length route from Seabrook to Portsmouth. Traversing along this route requires knowledge and familiarity with NH 151 and NH 33, where both are two-lane local roads that are going through an urban compact area. From Hampton, NH 151 splits with US Route 1 just north of the Hampton Toll Plaza and merges with NH 33 in Greenland. Traffic congestion along NH 33 is concentrated within the vicinity of the Pease International Tradeport facility.

Travel time runs in the Hampton area between Exit 1 (NH 107) and Exit 3 (NH 101) revealed that the use of the alternate route of US Route 1/NH 151 would take more than twice as long at 24 to 27 minutes compared to the Blue Star Turnpike which would take just 11 to 12 minutes.

A review of the alternate routes suggest that at all toll locations on the entire New Hampshire Turnpike System, there are often alternate routes for those choosing not to pay a toll. For longer trips, free alternative routes are not preferable, due to their slower speeds, varying degrees of congestion, and often, traffic signals. In the Merrimack area, however, there were only one to two minute variations in travel time on tolled and free routes for short, local trips. The local ramp toll facilities appear to be primarily used by long distance trips either beginning or terminating at locations in relatively close proximity to these exits. While the ramps provide additional access, the ramp tolls protect the mainline barriers and adjacent free parallel routes from traffic diverting to avoid paying the mainline tolls.

Figure 30: Blue Star Turnpike and Parallel Routes US 1, US 1 / NH 151 / NH 33



8.3 POTENTIAL FUTURE TRANSPORTATION PROJECTS

There are several potential highway projects scheduled for completion in the forecast period FY 2010-2019 that may impact traffic volumes on the NH Turnpike System. These projects were drawn from the Turnpike System Priority Capital Program and the Ten-Year Improvement Plan for 2010 to 2019, as well as from regional Transportation Improvement Programs (TIPs) developed by the largest MPOs in the state. Projects from the Priority Capital Program are identified by the State Number in parentheses for clarification. Under the American Recovery and Reinvestment Act (ARRA), New Hampshire received approximately $127 million for highway and road projects, which is commensurate to annual federal spending for highway infrastructure in New Hampshire. ARRA funding was provided for works related to the widening I-93 and Central (Everett) Turnpike. Another $123 million may be eligible for redistribution after 1 year. Potential future highway and rail projects that can potentially impact traffic on the NH Turnpike System are summarized in the following sections.

8.3.1 Central (Everett) Turnpike Region

Major transportation improvement projects programmed for funding that could affect volumes on the Central Turnpike are:

- Manchester Airport Access Road – This new road will connect the Central Turnpike with the Manchester Airport via Londonderry. This project includes a new full interchange between the Central Turnpike and Route 3 in the vicinity of the Bedford Mainline Toll Plaza. This interchange is currently planned to be toll-free and would provide a bypass around the Bedford Mainline Toll Plaza as well as provide northbound toll-free access to the airport. This project would increase traffic on the Central Turnpike south of the Bedford toll plaza and decrease toll transactions at the Bedford Mainline Toll Plaza as well as the three Merrimack ramp toll plazas. The Manchester Airport Access Road is anticipated to be completed July 1, 2012.
- Interstate 93 Widening – This widening project will provide two additional travel lanes in each direction over the 20-mile segment between the Massachusetts State Line and Manchester, NH. When this project is completed, it is possible that traffic will increase on sections of the Central Turnpike north of Manchester and possibly decrease south of Manchester, due to congestion relief on I-93. A completion date is not known at this time since the project is only partially funded.
- Manchester Interstate 293 Exit 4 Bridge Rehabilitation (14966) – This project, located in Manchester, includes the reconstruction of I-293 between NH 101 and Granite Street as well as the rehabilitation of five bridges. Bridge work is anticipated to begin in February 2011 and turnpike work to begin in September 2012. All construction is estimated to be completed in November 2014. This work could lead to a slight decrease in traffic during construction period.
- Nashua Commuter Rail and Park & Ride – This project consists of the development of a 1,000 space Park & Ride facility for van pool, car pool, and commuter rail activities near the turnpike and the purchase of rolling stock. This project is part of the development and start-up of a commuter rail service between Lowell, MA and Nashua, NH—commuter rail service currently exists between Lowell, MA and Boston, MA. This service could potentially be extended to Manchester, NH. The effect of the commuter rail and park and ride on turnpike traffic would be negligible. At this time, the start and completion dated for this project are undetermined due to funding issues.

- Merrimack F.E.E.T. Bridge Rehabilitation over the Souhegan River (12105) – Construction began in August 2008 and is anticipated to be substantially completed in September 2010. This project could temporarily decrease traffic on the Central Turnpike during construction as all traffic lanes would be impacted. Based on the experience to date, traffic will not be adversely affected by this improvement project.
- Manchester I-293 Bridge Replacement over Black Brook (14048) – This project involves the rehabilitation of the I-293 bridge over Black Brook between Exits 6 and 7. During the construction period from July 2012 to May 2014, traffic will only be affected by the closure of Exit 6 NB traffic due to the closure of Front Street.
- Open Road Tolling (ORT) Implementation – ORT will be implemented at the Hooksett and Bedford mainline toll plazas. Construction is anticipated to begin in November 2010. Hooksett ORT is expected to be completed and open on May 31, 2012, and Bedford on May 31, 2014. It is estimated that traffic will not be adversely affected because the Bureau will maintain the necessary number of toll plaza lanes in each direction during construction. Once completed, the Department of Transportation believes the Turnpike will be a more attractive alternative to motorists.
- Hooksett Rest Area Redevelopment – This project proposes to redevelop the existing northbound and southbound rest areas and State liquor stores, which are located north of the Hooksett Toll Plaza into new service area facilities with new State liquor stores. The redevelopment proposal involves the issuance of a request for proposals (RFP) to procure a developer/operator through a ground lease arrangement. The new service areas are envisioned to offer major branded and/or locally recognized food concepts and will be anchored with the new State liquor stores. Although these facilities will be an attractive option for travelers on the Turnpike, the project is not envisioned to have an effect on traffic. Any potential added revenue to the Turnpike System is deemed to be immaterial, and will be determined through the RFP process. The project is anticipated to be completed in November 2011.

8.3.2 Blue Star Turnpike Region

Future planned transportation improvement projects that could affect traffic volumes on the Blue Star Turnpike include:

- Hampton Falls – Hampton I-95 Bridge Replacement over Taylor River (13408B) – This project will replace the I-95 Bridge over the Taylor River near Hampton. Construction will begin in April 2011 with anticipated completion in October 2014. This project could temporarily decrease traffic on the Blue Star Turnpike as all traffic lanes would be impacted during construction.
- ORT Implementation Hampton Mainline Toll Plaza (15678A-D) – Construction for this project started in August 2009; it is expected to be open on May 31, 2010. It is estimated that during construction traffic will not be adversely affected because the Bureau will maintain six toll lanes in each direction; this will be adequate to process the traffic volumes while the plaza is under construction. Once completed, the Department of Transportation believes the Turnpike will be a more attractive alternative to motorists.
- Route 1 Bypass – Improvements to the Route 1 Bypass in Portsmouth, including the rehabilitation of the Sara Mildred Long Bridge and Memorial Bridge as well as the replacement of the Scott Avenue Bridge over the Piscataqua River. These projects may divert traffic to the Turnpike during construction. The Department has submitted a TIGER (Transportation Investment Generating Economic Recovery) discretionary grant application

for the Sarah Mildred Long Bridge, Memorial Bridge, and Market Street Marine Terminal. Upon approval of the application, construction is targeted to begin in May 2010 and be completed in November 2014.

- Turnpike Variable Message Signs – This project will involve the deployment of Variable Message Signs (VMS) between Seabrook and Portsmouth. This project is intended to improve safety conditions and traffic flow along the Blue Star Turnpike.
- Hampton High Volume Discount Gas Facilities – This project proposes to develop high volume discount gas facilities at the existing Liquor Store locations on I-95. The development proposal involves the issuance of a Request for Proposals (RFP) to procure a gas station developer/operator through a ground lease arrangement. The gas dispensation facilities are envisioned to include a small convenience food store and sell gasoline at a competitively discounted rate. Although these gas facilities will be an attractive option for travelers on the Turnpike, the project is not envisioned to have an effect on traffic. Any potential added revenue to the Turnpike System is deemed to be immaterial, and will be determined through the RFP process. This project is envisioned to be completed in Fiscal Year 2011.

8.3.3 Spaulding Turnpike Region

Planned transportation improvement projects that could affect traffic volumes on the Spaulding Turnpike include:

- Rochester Turnpike Widening (10620G-L) – This project involves the widening of the Spaulding Turnpike between Exit 11 and Exit 16 in Rochester and is expected to include bridge improvements. Construction began in December 2007 and is anticipated to be completed in June 2013. Construction activities have resulted in only minor traffic losses in recent months, and are not expected to have any significant impact on overall revenues.
- Newington-Dover Turnpike Widening (11238) – This project involves the widening of the Spaulding Turnpike between Exit 3 and Exit 6. Construction is expected to begin in May 2010 and be completed in October 2017. It is anticipated that Turnpike traffic will not be adversely affected during the construction phases.

The more than $500 million in capital improvements over the next ten years will have a positive effect on the New Hampshire Turnpike System, in terms of customer satisfaction and safer, less-congested travel. In terms of traffic and revenue, the improvements will allow room for the growth that has been projected.

9 TRAFFIC AND REVENUE PROJECTIONS, FY 2010-2019

This section discusses the methodologies and assumptions used in projecting traffic and revenue for the New Hampshire Turnpike System. It presents the existing and proposed toll rates and the traffic and revenue projections for the forecast period FY 2010-2019. The main assumptions for the forecasts are:

- A FY 2010 toll increase at the Hampton Mainline Barrier (which recently occurred on July 1, 2009)
- A FY 2012 systemwide toll increase (July 1, 2011)
- The opening of a the Manchester Airport Access Road with a free interchange on the Turnpike in FY 2013
- Open-road tolling (ORT) at the Hampton Mainline Barrier for E-ZPass vehicles on May 31, 2010
- Open-road tolling (ORT) at the Hooksett Mainline Barrier for E-ZPass vehicles on May 31, 2012
- Open-road tolling (ORT) at the Bedford Mainline Barrier for E-ZPass vehicles on May 31, 2014

9.1 TOLL RATES

9.1.1 Fiscal Year 2010 Toll Rate Increases

Two toll increases were planned during the forecast period. The first just recently occurred on the first day of FY 2010, and the second is planned for July 1, 2011, the beginning of FY 2012. Toll transaction and revenue projections reflect these toll rate changes.

A 33 percent cash toll increase from $1.50 to $2.00 for passenger cars at the Hampton Mainline Barrier just recently occurred on July 1, 2009, the first day of fiscal year 2010. Cars paying with New Hampshire ***E-ZPass*** received the same percentage increase: 33 percent, or a toll increase from $1.05 to $1.40. All Hampton Mainline truck tolls increased an equal percent for both cash and ***E-ZPass***; e.g., 22 percent for five-axle trucks.

The forecasts also include a systemwide toll rate increase at the beginning of FY 2012, on July 1, 2011. This would increase the car cash tolls by $0.25 for Dover, Rochester, and Hooksett Ramp, and $0.50 for Hooksett Main and Bedford Main, with respectively larger toll rate increases for trucks at these locations. The toll discount for New Hampshire ***E-ZPass*** tagholders will remain the same as today: 30 percent for cars and 10 percent for commercial vehicles. Table 19 shows the cash toll rates for cars and Class 8 trucks today and after the systemwide increase on July 1, 2011.

Table 19: Current and Future Cash Toll Rates on New Hampshire Turnpike System

Turnpike	Toll Plaza	Car (Class 1) Cash Tolls		5-Axle Truck (Class 8) Cash Tolls	
		Current	July 1, 2011	Current	July 1, 2011
Central Turnpike	Hooksett Main	$ 1.00	$ 1.50	$ 3.50	$ 4.50
	Hooksett Ramp	$ 0.50	$ 0.75	$ 2.50	$ 3.00
	Bedford Main	$ 1.00	$ 1.50	$ 3.50	$ 4.50
	Bedford Road	$ 0.50	$ 0.50	$ 2.50	$ 2.50
	Exit 11	$ 0.50	$ 0.50	$ 2.50	$ 2.50
	Merrimack Industrial	$ 0.50	$ 0.50	$ 2.50	$ 2.50
Blue Star Turnpike	Hampton Main*	$ 2.00	$ 2.00	$ 5.50	$ 5.50
	Hampton Side	$ 0.75	$ 0.75	$ 3.00	$ 3.00
Spaulding Turnpike	Dover Toll	$ 0.75	$ 1.00	$ 3.00	$ 3.50
	Rochester Toll	$ 0.75	$ 1.00	$ 3.00	$ 3.50

**On July 1, 2009, the toll was increased from $1.50 to $2.00 for cars, and $4.50 to $5.50 for 5-axle trucks*

9.1.2 Reasonableness of Tolls / Comparison to Other Facilities

Figure 31 compares current and future (July 1, 2011) passenger car toll rates in cents per mile on the Blue Star, Spaulding and Central Turnpikes to other various ***E-ZPass*** toll facilities. For toll facilities that offer ***E-ZPass*** discounts, the figure shows the incremental amount added to the ***E-ZPass*** toll rate to determine the total cash toll rate. The Blue Star Turnpike has the highest passenger car per mile toll rate of the three New Hampshire Turnpikes, but there are still five major ***E-ZPass*** toll facilities that have higher toll rates. The Central Turnpike and Spaulding Turnpikes are among the toll facilities with low passenger car toll rates. The neighboring Massachusetts Turnpike indicates a lower rate, but that includes some 50 free miles for passenger cars in Western Massachusetts. It can be said that the New Hampshire Turnpike passenger car toll rates are reasonable compared to rates at other ***E-ZPass*** toll facilities.

Figure 31: Passenger Car Toll Rates per Mile on Select E-ZPass Toll Facilities as of October 2009

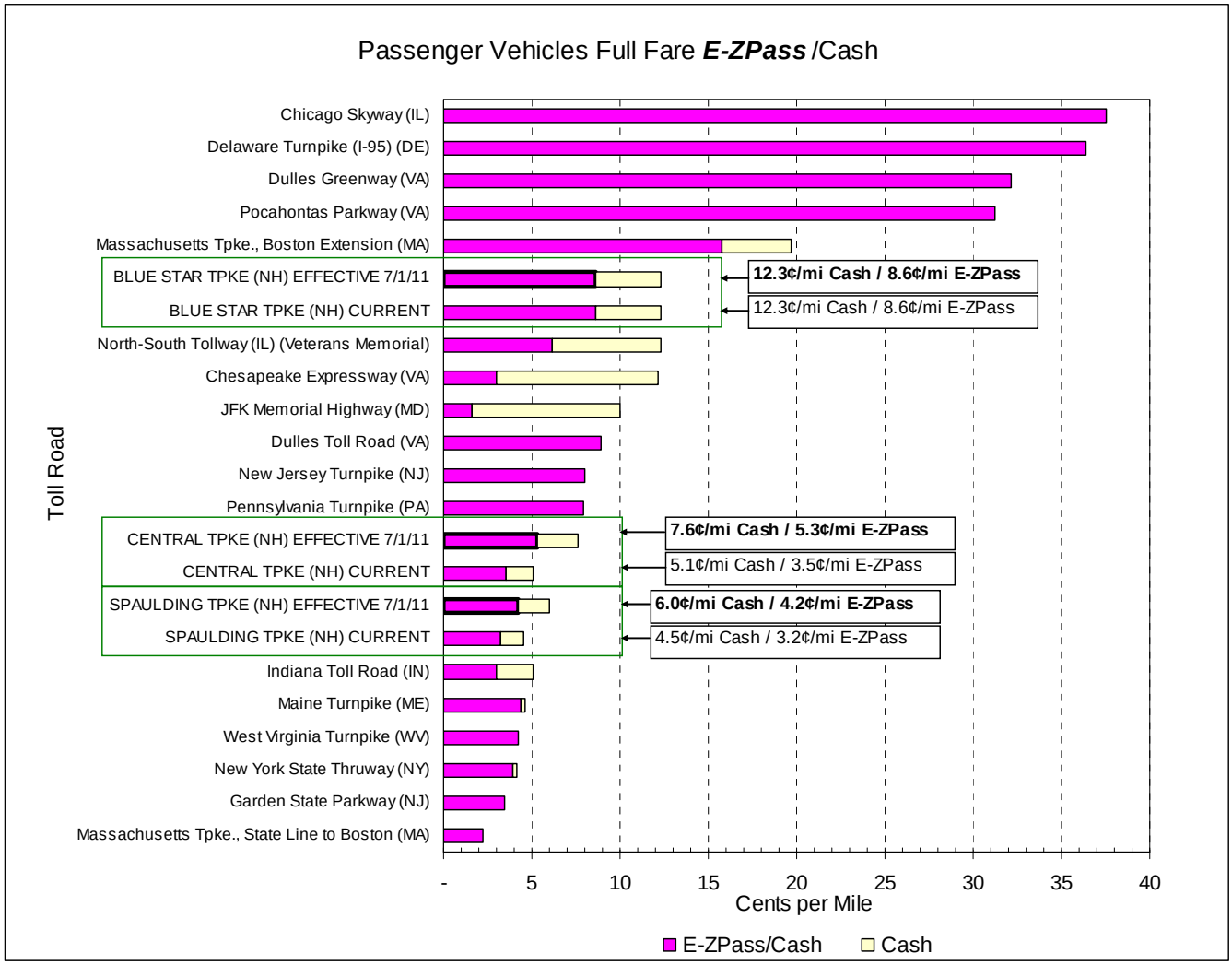
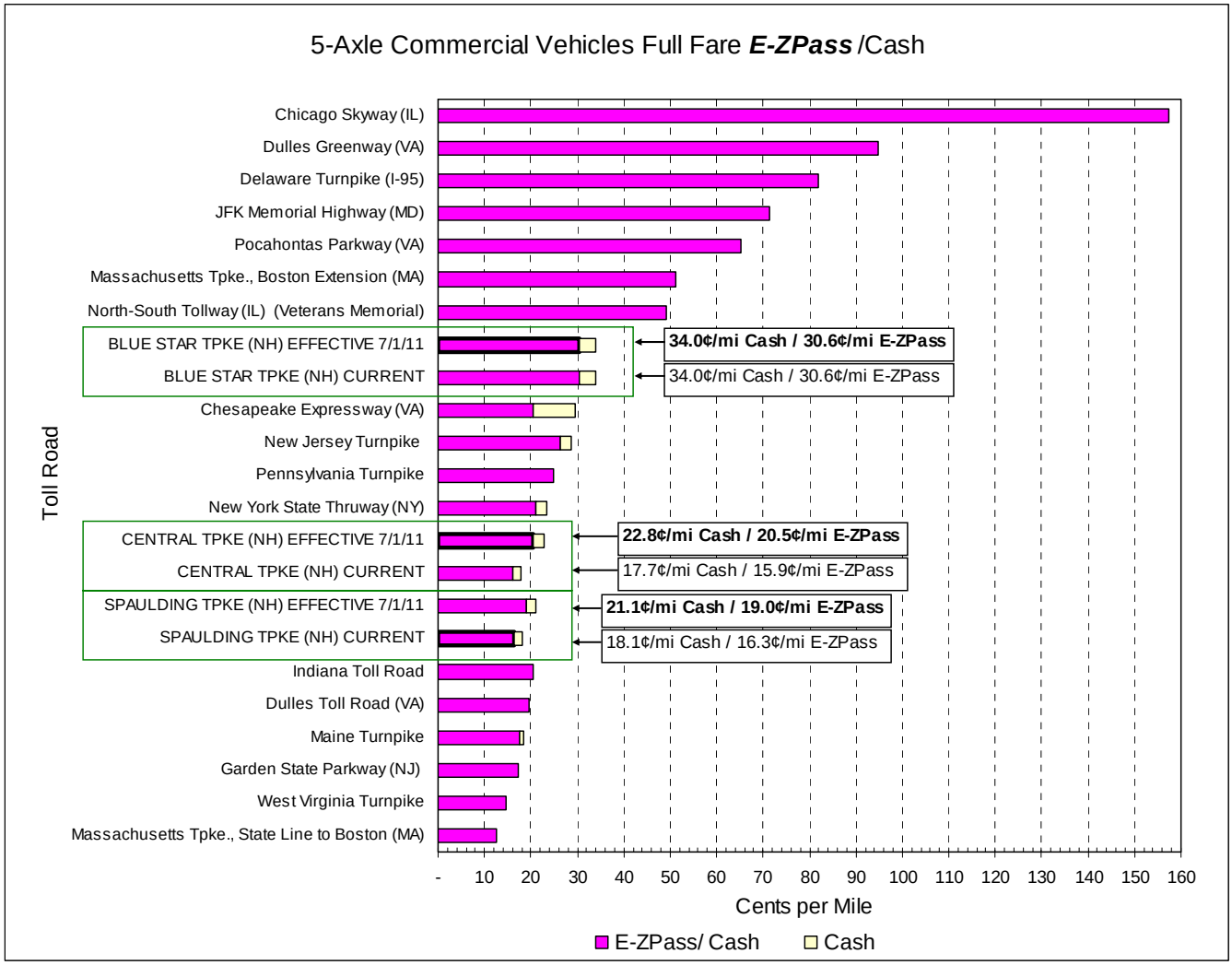


Figure 32 shows a similar comparison for 5-axle vehicles. Again, the Blue Star Turnpike has the highest toll rates of the three New Hampshire toll facilities; there are seven major ***E-ZPass*** toll facilities that have higher toll rates. Both the Central and Spaulding Turnpikes are among the toll facilities with low commercial toll rates. It can be said that the New Hampshire Turnpike commercial vehicle toll rates are reasonable compared to other ***E-ZPass*** toll facilities.

Figure 32: Commercial Vehicle Toll Rates on Select E-ZPass Toll Facilities as of October 2009



9.2 METHODOLOGY USED FOR PROJECTIONS

9.2.1 Correlation to Economic Factors

The first step in developing the traffic and revenue projections was to develop a base of FY 1996 through FY 2009 toll transactions. Historical car toll transaction growth was then correlated to gross domestic product (GDP) and historical truck growth was correlated to increases in the U.S. total industrial production (IPI).

Future car and truck toll transactions were projected separately by applying the historical correlations to projected GDP and total IPI growth rates estimated by industry experts in the *Blue Chip Economic Forecasts*. FY 2010 toll transaction growth was further reduced due to the recent dampening effects of the economic downturn on travel. In addition, it is expected in the years beyond that overall traffic growth will not be as high as it has been throughout the 1990s through the first half of this decade, due to such factors as Baby Boomers retiring and driving

less and new technology making road travel less necessary (as discussed in Chapter 7 of this report). Therefore, some dampening was also applied to traffic growth rates over the long term.

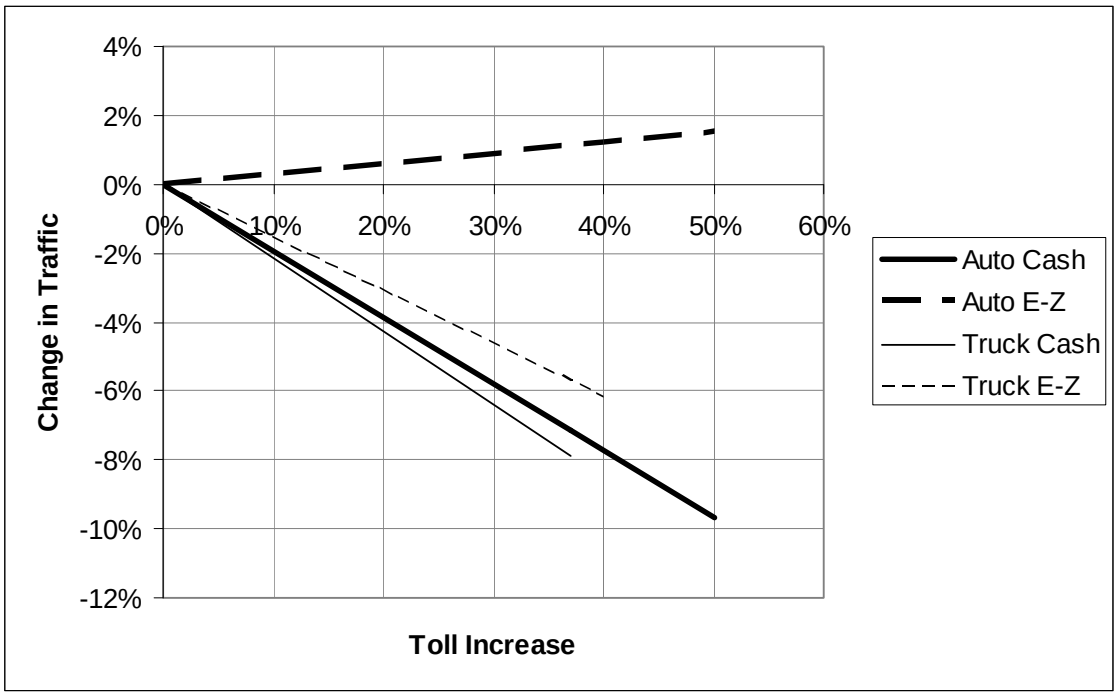
9.2.2 Toll Rate Increases

The effects of the October 22, 2007 toll increase were analyzed for both cars and trucks, separated by ***E-ZPass*** and cash, and elasticity factors were developed to account for the proposed toll increases. In order to develop these elasticity factors, it was necessary to remove any background growth. By looking at the NH facilities that did not have any toll increase, we estimated the following background growth rates. As seen below, there was a noticeable overall loss in traffic even at these facilities which did not have a toll increase. Note that auto E-ZPass traffic did not experience as big a loss as auto cash traffic, and truck E-ZPass traffic actually increased; this indicates that the E-ZPass market share was growing, especially among trucks.

	Background Traffic Growth at Plazas with No Toll Increase
Auto Cash	-7%
Auto E-ZPass	-3%
Truck Cash	-16%
Truck E-ZPass	3%

From graphing the change in transactions versus the change in tolls for cars and trucks, ***E-ZPass*** and cash separately, and removing the effects of background growth, it was possible to estimate the amount of traffic for each of these four payment types that might divert off of the facility if the toll were increased by a particular amount. Figure 33 relates the change in transactions to the change in toll rates for exactly one year before and one year after the October 22, 2007 toll increase. As seen in the graph, there was actually a small increase in car ***E-ZPass*** traffic when tolls were increased, as people switched from cash payment to the discounted New Hampshire ***E-ZPass*** toll rate.

Figure 33: Actual Change in Transactions vs. Change in Toll Rates, October 22, 2007 Toll Increase, Background Growth Removed



"Toll elasticities" were calculated from this graphed data. Toll elasticity is defined as the percent traffic change if there were a 100 percent increase (i.e., a doubling) in toll rates. The table below shows the actual New Hampshire toll elasticity. Since tolls were just recently increased in FY 2008, the FY 10 increases may compound the rate of traffic loss; therefore, the elasticities were adjusted as follows:

	FY 08 Actual Toll Elasticity		Assumed Elasticity for FY 10 and FY 12 Toll Increases
Auto Cash	-0.19	➔	-0.26
Auto E-ZPass	+0.03	➔	+0.015
Truck Cash	-0.21	➔	-0.28
Truck E-ZPass	-0.15	➔	-0.21

The elasticity of -0.26 for auto cash transactions means, for example, that a doubling of auto cash tolls would result in a 26 percent traffic loss for this vehicle and payment type. Similarly, a 50 percent increase in auto cash tolls would cause cash-paying auto traffic to drop by half that amount, or 13 percent. These elasticity factors were applied to traffic forecasts after the July 1 Hampton Barrier increase and the planned systemwide FY 2012 toll increase.

Using these factors, it was estimated that 4.0 percent of total annual revenue traffic would divert from the Hampton Barrier due to the July 1, 2009 toll increase, while the systemwide increase in FY 2012 toll would cause a further 2.8 percent loss in systemwide transactions.

As shown earlier in Table 2 and explained in Section 4.2, rather than a loss due to the July 1 Hampton toll increase, the first quarter FY 2010 traffic shows a 2.8 percent *gain* over the first

quarter of FY 2009 on the Blue Star Turnpike; the peaking gas prices last summer caused traffic to dip, plus a longer summer (i.e., later Labor Day) this year increased vacation traffic this year. Therefore, we cannot rely on these first quarter traffic numbers to be indicative of the toll increase's effect on a full year of traffic.

9.2.3 E-ZPass Market Shares

E-ZPass market shares were then projected for each facility separately for cars and trucks, and these market shares were applied to obtain projected cash and ***E-ZPass*** transactions. The market share projections were based on observing the growth in ***E-ZPass*** market share over the past several years. A maximum market share for each facility was assumed to be reached by FY 2016. Most of the growth in market share would be in the first few years of the forecast, with gradually less growth in market share in each subsequent year until the maximum is reached.

Additionally, as ***E-ZPass*** tags that are issued by the New Hampshire DOT ("Home") are assessed a lower toll rate than other ***E-ZPass*** tags ("Away"), it was necessary to estimate future "Home" versus "Away" ***E-ZPass*** customers to calculate toll revenue correctly. We estimated from recent trends that most of the growth (95 percent) in ***E-ZPass*** usage would be from "Home" customers, except at the Hampton Barrier, which currently has much lower "Home" market share, as it serves mainly long-distance, non-commuter trips. At the Hampton Barrier, 50 percent of the future growth in ***E-ZPass*** transactions was estimated to be from "Home" tags. As the percentage of trips paying with "Home" ***E-ZPass*** increases, the average toll collected per vehicle decreases due to the "Home" ***E-ZPass*** discount.

The average cash and ***E-ZPass*** toll rates were then applied to the projected annual cash and ***E-ZPass*** transactions, respectively, in order to determine total cash and ***E-ZPass*** toll revenues for the period FY 2010-2019.

9.2.4 Future System Changes

Two future changes to the New Hampshire Turnpike System – the addition of open-road tolling (ORT) at several mainline toll plazas for ***E-ZPass*** customers, and the opening of the Manchester Airport Access Road with a free interchange on the Turnpike – are expected to reduce the toll transaction and revenue projections. Factors were applied to account for these changes.

The free Manchester Airport Access Road interchange, scheduled for opening on July 1, 2012, would allow vehicles to avoid other toll plazas by entering/exiting there instead. Drivers from the south going to the airport would no longer use a toll plaza, and some drivers from the north going to the Merrimack area would likely use the free ramp to avoid the toll. Other drivers will discover that it is possible to avoid paying a toll by exiting the Turnpike, using the new ramp and a section of Route 3, and re-entering the Turnpike. It was estimated that the Airport Access Road free interchange would cause a 32 percent loss in traffic from the toll plazas in the Bedford-Merrimack corridor.

Open-road tolling (ORT) has been planned for several mainline toll plazas. ORT lanes are scheduled to open May 31, 2010 at the Hampton Barrier, May 31, 2012 at the Hooksett Barrier, and May 31, 2014 at the Bedford Mainline Barrier. ORT will allow ***E-ZPass*** customers to drive at highway speeds without stopping or slowing down through the tolling zone. Traditional tollbooths will be available off to one side for those customers preferring to pay their tolls via cash. It is expected that there will be some "leakage" (i.e., uncollected revenue from unread ***E-***

ZPass tags, or violations) from which there will be a small *net* loss in revenue at that location, estimated to be 1 percent of that plaza's toll revenues.

9.3 TOLL TRANSACTION PROJECTIONS BY TURNPIKE

The projected annual toll transactions on the New Hampshire Turnpike System during the period FY 2010-2019 are presented in Table 20. For reference, historical annual toll transactions were shown earlier in Table 2. A detailed summary of traffic, revenue, and E-ZPass by facility is presented in Table 21.

Table 20: Projected Annual Toll Transactions[1], FY 2010-2019 (in millions)

Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Total
2010[2]	50.3	33.1	21.1	104.4
2011	51.0	33.2	21.4	105.6
2012[3]	49.7	33.6	20.9	104.2
2013[4]	45.1	34.0	21.1	100.2
2014[5]	43.3	34.4	21.3	99.0
2015	44.1	34.7	21.5	100.3
2016	44.9	35.1	21.7	101.7
2017	45.8	35.5	21.9	103.1
2018	46.6	35.9	22.1	104.6
2019	47.5	36.3	22.3	106.1

[1]*Projections do not include non-revenue vehicles or violators*

[2]*Toll increase at Hampton Barrier July 1, 2009; Open-road tolling begins at Hampton Mainline Barrier May 31, 2010*

[3]*Systemwide toll increase July 1, 2011; ORT begins at Hooksett Mainline Barrier May 31, 2012*

[4]*Planned opening year for the Manchester Airport Access Road*

[5]*ORT begins at Bedford Mainline Barrier May 31, 2014*

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

For purposes of revenue projection, Jacobs removed non-revenue and violation (i.e., non-toll paying) transactions from the traffic and revenue analysis. Total toll transactions are projected to decrease from 106.4 million toll-paying transactions in FY 2009 to 104.4 million in FY 2010, a loss of 1.8 percent due to estimated negative growth rates and the FY 2010 toll increase at the Hampton Barrier. The number of transactions is expected to then increase 1.1 percent in FY 2011, followed by a loss of 1.4 percent in FY 2012 due to the systemwide toll increase. Once the toll-free interchange from the Central Turnpike to Route 3 via the Manchester Airport access road opens, it is anticipated that there will be traffic diversion from the three Merrimack ramp toll plazas and the Bedford mainline toll plaza. Total toll transactions are estimated to decrease by 3.8 percent from 104.2 million vehicles in FY 2012 to 100.2 million vehicles in FY 2013, followed by a further decrease of 1.2 percent to 99.0 million vehicles in FY 2014 due to a ramp-up in usage of the toll free interchange, as drivers discover over time that this toll-free ramp exists. Between FY 2014 and 2019, total toll transactions are estimated to grow by an average annual rate of 1.4 percent, or about 1.3 to 1.5 million vehicles per year. Between FY 2009 and FY 2019, the projected average annual growth rates in paid toll transactions for the Central, Blue Star and Spaulding Turnpikes are -0.7 percent, 0.6 percent and 0.5 percent respectively, with the overall Turnpike toll transaction average growth rate at 0.0 percent.

Table 21: Detailed Traffic and Revenue Projections, FY 2010-2019 (in millions)

Total Revenue Paying Traffic Volumes (millions) WITH MANCHESTER AIRPORT ACCESS ROAD AND ORT PROJECTS

Hampton ORT Begins; Hooksett ORT Begins; AIRPORT RD OPENING; AIRPORT RD 2nd Yr; Bedford ORT Begins

Barriers/Ramps	2009 Actual*	09-10 Projected Growth	2010 Projected	10-11 Projected Growth	2011 Projected	11-12 Projected Growth	2012 Projected	12-13 Projected Growth	2013 Projected	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
CENTRAL TURNPIKE																					
Hooksett Barrier	23.7	-1.43%	23.4	1.50%	23.7	-3.93%	22.8	1.07%	23.0	2.00%	23.5	2.00%	24.0	1.90%	24.4	1.90%	24.9	1.90%	25.3	1.90%	25.8
Hooksett Ramp	2.2	-1.53%	2.2	1.50%	2.2	-3.59%	2.1	2.01%	2.2	2.00%	2.2	2.00%	2.2	1.90%	2.3	1.90%	2.3	1.90%	2.4	1.90%	2.4
Bedford Barrier	17.3	-1.41%	17.0	1.50%	17.3	-2.56%	16.8	-11.66%	14.9	-5.85%	14.0	1.06%	14.1	1.90%	14.4	1.90%	14.7	1.90%	15.0	1.90%	15.2
Bedford Road Ramp	2.8	-1.31%	2.7	1.50%	2.8	2.00%	2.8	-43.79%	1.6	-38.92%	1.0	2.00%	1.0	1.90%	1.0	1.90%	1.0	1.90%	1.1	1.90%	1.1
Exit 11 (Merrimack) Ramp	3.4	-1.28%	3.3	1.50%	3.4	2.00%	3.4	-32.17%	2.3	-23.31%	1.8	2.00%	1.8	1.90%	1.9	1.90%	1.9	1.90%	1.9	1.90%	2.0
Exit 10 Merrimack Industrial Park Ramp	1.7	-1.31%	1.7	1.50%	1.7	2.00%	1.7	-32.17%	1.2	-23.31%	0.9	2.00%	0.9	1.90%	0.9	1.90%	1.0	1.90%	1.0	1.90%	1.0
Subtotal	**51.0**	**-1.41%**	**50.3**	**1.50%**	**51.0**	**-2.54%**	**49.7**	**-9.20%**	**45.1**	**-3.99%**	**43.3**	**1.70%**	**44.1**	**1.90%**	**44.9**	**1.90%**	**45.8**	**1.90%**	**46.6**	**1.90%**	**47.5**
BLUE STAR TURNPIKE																					
Hampton Barrier	21.7	-4.76%	20.7	-0.04%	20.7	1.11%	20.9	1.11%	21.2	1.10%	21.4	1.10%	21.6	1.09%	21.9	1.09%	22.1	1.09%	22.3	1.09%	22.6
Hampton Ramp	12.5	-0.67%	12.4	0.89%	12.5	1.11%	12.7	1.11%	12.8	1.10%	13.0	1.10%	13.1	1.09%	13.2	1.09%	13.4	1.09%	13.5	1.09%	13.7
Subtotal	**34.3**	**-3.27%**	**33.1**	**0.31%**	**33.2**	**1.11%**	**33.6**	**1.11%**	**34.0**	**1.10%**	**34.4**	**1.10%**	**34.7**	**1.09%**	**35.1**	**1.09%**	**35.5**	**1.09%**	**35.9**	**1.09%**	**36.3**
SPAULDING TURNPIKE																					
Dover Barrier	12.9	-0.61%	12.9	1.46%	13.0	-2.35%	12.7	0.99%	12.9	0.99%	13.0	0.98%	13.1	0.98%	13.2	0.89%	13.4	0.89%	13.5	0.89%	13.6
Rochester Barrier	8.3	-0.61%	8.2	1.47%	8.3	-2.51%	8.1	0.99%	8.2	0.99%	8.3	0.98%	8.4	0.98%	8.4	0.89%	8.5	0.89%	8.6	0.89%	8.7
Subtotal	**21.2**	**-0.61%**	**21.1**	**1.46%**	**21.4**	**-2.41%**	**20.9**	**0.99%**	**21.1**	**0.99%**	**21.3**	**0.98%**	**21.5**	**0.98%**	**21.7**	**0.89%**	**21.9**	**0.89%**	**22.1**	**0.89%**	**22.3**
TOTAL:	**106.4**	**-1.85%**	**104.4**	**1.12%**	**105.6**	**-1.37%**	**104.2**	**-3.84%**	**100.2**	**-1.22%**	**99.0**	**1.34%**	**100.3**	**1.42%**	**101.7**	**1.40%**	**103.1**	**1.41%**	**104.6**	**1.41%**	**106.1**

Total Toll Revenue (millions) WITH MANCHESTER AIRPORT ACCESS ROAD AND ORT PROJECTS

Hampton ORT Begins; Hooksett ORT Begins; AIRPORT RD OPENING; AIRPORT RD 2nd Yr; Bedford ORT Begins

Barriers/Ramps	2009 Actual*	09-10 Projected Growth	2010 Projected	10-11 Projected Growth	2011 Projected	11-12 Projected Growth	2012 Projected	12-13 Projected Growth	2013 Projected	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
CENTRAL TURNPIKE																					
Hooksett Barrier	$23.1	-2.11%	$22.6	0.85%	$22.8	40.20%	$31.9	0.59%	$32.1	1.58%	$32.6	1.64%	$33.2	1.59%	$33.7	1.90%	$34.3	1.90%	$35.0	1.90%	$35.6
Hooksett Ramp	$1.1	-2.27%	$1.1	1.09%	$1.1	38.60%	$1.5	1.72%	$1.5	1.76%	$1.6	1.80%	$1.6	1.73%	$1.6	1.90%	$1.7	1.90%	$1.7	1.90%	$1.7
Bedford Barrier	$16.1	-2.07%	$15.8	1.00%	$15.9	42.38%	$22.7	-11.95%	$20.0	-6.19%	$18.7	-0.09%	$18.7	1.72%	$19.0	1.90%	$19.4	1.90%	$19.8	1.90%	$20.1
Bedford Road Ramp	$1.2	-1.72%	$1.2	0.83%	$1.2	1.44%	$1.2	-44.05%	$0.7	-39.14%	$0.4	1.72%	$0.4	1.72%	$0.4	1.90%	$0.4	1.90%	$0.4	1.90%	$0.4
Exit 11 (Merrimack) Ramp	$1.4	-1.81%	$1.4	0.66%	$1.4	1.30%	$1.4	-32.56%	$1.0	-23.65%	$0.7	1.67%	$0.7	1.69%	$0.8	1.90%	$0.8	1.90%	$0.8	1.90%	$0.8
Exit 10 Merrimack Industrial Park Ramp	$0.8	-2.02%	$0.7	0.91%	$0.8	1.48%	$0.8	-32.48%	$0.5	-23.61%	$0.4	1.66%	$0.4	1.61%	$0.4	1.90%	$0.4	1.90%	$0.4	1.90%	$0.4
Subtotal	**$43.6**	**-2.08%**	**$42.7**	**0.91%**	**$43.1**	**37.97%**	**$59.5**	**-6.27%**	**$55.8**	**-2.35%**	**$54.4**	**1.05%**	**$55.0**	**1.64%**	**$55.9**	**1.90%**	**$57.0**	**1.90%**	**$58.1**	**1.90%**	**$59.2**
BLUE STAR TURNPIKE																					
Hampton Barrier	$36.5	23.89%	$45.2	-0.13%	$45.1	1.00%	$45.6	1.00%	$46.0	0.98%	$46.5	0.97%	$46.9	0.95%	$47.4	1.09%	$47.9	1.09%	$48.4	1.09%	$48.9
Hampton Ramp	$9.3	-1.16%	$9.2	0.55%	$9.3	0.79%	$9.4	0.81%	$9.4	0.84%	$9.5	0.87%	$9.6	0.89%	$9.7	1.09%	$9.8	1.09%	$9.9	1.09%	$10.0
Subtotal	**$45.8**	**18.78%**	**$54.4**	**-0.02%**	**$54.4**	**0.97%**	**$54.9**	**0.96%**	**$55.5**	**0.95%**	**$56.0**	**0.95%**	**$56.5**	**0.94%**	**$57.1**	**1.09%**	**$57.7**	**1.09%**	**$58.3**	**1.09%**	**$58.9**
SPAULDING TURNPIKE																					
Dover Barrier	$9.0	-1.06%	$8.9	0.87%	$9.0	27.43%	$11.4	0.52%	$11.5	0.61%	$11.6	0.68%	$11.6	0.75%	$11.7	0.89%	$11.8	0.89%	$11.9	0.89%	$12.0
Rochester Barrier	$5.7	-1.08%	$5.7	0.70%	$5.7	27.13%	$7.3	0.40%	$7.3	0.51%	$7.3	0.61%	$7.4	0.70%	$7.4	0.89%	$7.5	0.89%	$7.5	0.89%	$7.6
Subtotal	**$14.7**	**-1.07%**	**$14.6**	**0.81%**	**$14.7**	**27.31%**	**$18.7**	**0.47%**	**$18.8**	**0.57%**	**$18.9**	**0.65%**	**$19.0**	**0.73%**	**$19.2**	**0.89%**	**$19.3**	**0.89%**	**$19.5**	**0.89%**	**$19.7**
TOTAL:	**$104.2**	**7.24%**	**$111.7**	**0.45%**	**$112.2**	**18.63%**	**$133.1**	**-2.34%**	**$130.0**	**-0.52%**	**$129.3**	**0.95%**	**$130.6**	**1.21%**	**$132.1**	**1.40%**	**$134.0**	**1.41%**	**$135.9**	**1.41%**	**$137.8**

E-ZPass Market Shares

Barriers/Ramps	2009 Actual*	09-10 Projected Increase	2010 Projected	10-11 Projected Increase	2011 Projected	11-12 Projected Increase	2012 Projected	12-13 Projected Increase	2013 Projected	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	17-18 Projected Increase	2019 Projected
CENTRAL TURNPIKE																					
Hooksett Barrier	54.4%	1.13%	55.5%	2.93%	58.5%	3.48%	62.0%	1.56%	63.5%	1.15%	64.7%	0.82%	65.5%	0.49%	66.0%	0.00%	66.0%	0.00%	66.0%	0.00%	66.0%
Hooksett Ramp	57.1%	0.07%	57.2%	2.58%	59.8%	3.66%	63.4%	1.14%	64.6%	0.84%	65.4%	0.60%	66.0%	0.36%	66.4%	0.00%	66.4%	0.00%	66.4%	0.00%	66.4%
Bedford Barrier	63.8%	1.03%	64.9%	2.16%	67.0%	2.79%	69.8%	1.07%	70.9%	0.79%	71.7%	0.56%	72.2%	0.34%	72.6%	0.00%	72.6%	0.00%	72.6%	0.00%	72.6%
Bedford Road Ramp	71.9%	0.68%	72.6%	2.11%	74.7%	1.73%	76.4%	1.43%	77.9%	1.05%	78.9%	0.75%	79.7%	0.45%	80.1%	0.00%	80.1%	0.00%	80.1%	0.00%	80.1%
Exit 11 (Merrimack) Ramp	69.8%	1.07%	70.9%	2.52%	73.4%	2.07%	75.5%	1.71%	77.2%	1.26%	78.5%	0.90%	79.4%	0.54%	79.9%	0.00%	79.9%	0.00%	79.9%	0.00%	79.9%
Exit 10 Merrimack Industrial Park Ramp	71.9%	1.59%	73.5%	1.86%	75.3%	1.53%	76.9%	1.26%	78.1%	0.93%	79.1%	0.66%	79.7%	0.40%	80.1%	0.00%	80.1%	0.00%	80.1%	0.00%	80.1%
Subtotal	**60.3%**	**1.04%**	**61.3%**	**2.55%**	**63.9%**	**3.10%**	**67.0%**	**1.37%**	**68.3%**	**1.01%**	**69.3%**	**0.72%**	**70.1%**	**0.43%**	**70.5%**	**0.00%**	**70.5%**	**0.00%**	**70.5%**	**0.00%**	**70.5%**
BLUE STAR TURNPIKE																					
Hampton Barrier	54.7%	2.09%	56.8%	2.84%	59.6%	2.34%	62.0%	1.93%	63.9%	1.42%	65.3%	1.01%	66.3%	0.61%	66.9%	0.00%	66.9%	0.00%	66.9%	0.00%	66.9%
Hampton Ramp	60.6%	1.74%	62.3%	2.38%	64.7%	1.96%	66.7%	1.62%	68.3%	1.19%	69.5%	0.85%	70.3%	0.51%	70.8%	0.00%	70.8%	0.00%	70.8%	0.00%	70.8%
Subtotal	**56.8%**	**2.02%**	**58.9%**	**2.67%**	**61.5%**	**2.19%**	**63.7%**	**1.81%**	**65.5%**	**1.33%**	**66.9%**	**0.95%**	**67.8%**	**0.57%**	**68.4%**	**0.00%**	**68.4%**	**0.00%**	**68.4%**	**0.00%**	**68.4%**
SPAULDING TURNPIKE																					
Dover Barrier	59.9%	1.74%	61.7%	2.49%	64.1%	2.25%	66.4%	1.61%	68.0%	1.18%	69.2%	0.84%	70.0%	0.51%	70.5%	0.00%	70.5%	0.00%	70.5%	0.00%	70.5%
Rochester Barrier	57.9%	1.62%	59.5%	3.08%	62.6%	2.82%	65.4%	1.98%	67.4%	1.46%	68.8%	1.04%	69.9%	0.62%	70.5%	0.00%	70.5%	0.00%	70.5%	0.00%	70.5%
Subtotal	**59.1%**	**1.70%**	**60.8%**	**2.72%**	**63.5%**	**2.47%**	**66.0%**	**1.75%**	**67.8%**	**1.29%**	**69.0%**	**0.92%**	**70.0%**	**0.55%**	**70.5%**	**0.00%**	**70.5%**	**0.00%**	**70.5%**	**0.00%**	**70.5%**
TOTAL:	**58.9%**	**1.50%**	**60.4%**	**2.62%**	**63.1%**	**2.66%**	**65.7%**	**1.59%**	**67.3%**	**1.17%**	**68.5%**	**0.84%**	**69.3%**	**0.50%**	**69.8%**	**0.00%**	**69.8%**	**0.00%**	**69.8%**	**0.00%**	**69.8%**

* Non-paying traffic and revenue (violators and non-revenue vehicles) have been removed for forecasting purposes

It should be noted that these toll transaction projections do not take into account any temporary diversions to the Turnpike System resulting from construction on neighboring highways, such as Interstate 93, or any temporary diversions from the Turnpike System due to construction on the Turnpike.

If not for the toll increases (including the recent Hampton increase) and the diversion to the planned toll-free airport access road interchange, projected growth rates would have averaged 1.2 percent annually between FY 2009 and FY 2019. This projected growth rate is comparable with those recently forecasted over the same timeframe for other mature toll facilities such as the Delaware River Joint Toll Bridge Commission, with average annual growth projections of 1.3 percent, and West Virginia Turnpike with 1.9 percent average annual growth (this is for a no toll increase scenario, and West Virginia has one of the lowest per-mile toll rates in the U.S.). The Triborough Bridge and Tunnel Authority of New York City has recent projections of 0.5 percent average annual traffic growth for this timeframe, with periodic toll increases assumed in the forecasts.

9.4 TOLL REVENUE PROJECTIONS BY TURNPIKE

The projected annual toll revenue on the New Hampshire Turnpike System during the period FY 2010-2019 is presented in Table 22. Detailed toll revenue projections for each toll plaza are presented in the previously in Table 21 (see Table 3 for toll revenues received in past years).

Table 22: Projected Annual Toll Revenue[1], FY 2010-2019 (in millions)

Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Total
2010[2]	$ 42.7	$ 54.4	$ 14.6	$ 111.7
2011	$ 43.1	$ 54.4	$ 14.7	$ 112.2
2012[3]	$ 59.5	$ 54.9	$ 18.7	$ 133.1
2013[4]	$ 55.8	$ 55.5	$ 18.8	$ 130.0
2014[5]	$ 54.4	$ 56.0	$ 18.9	$ 129.3
2015	$ 55.0	$ 56.5	$ 19.0	$ 130.6
2016	$ 55.9	$ 57.1	$ 19.2	$ 132.1
2017	$ 57.0	$ 57.7	$ 19.3	$ 134.0
2018	$ 58.1	$ 58.3	$ 19.5	$ 135.9
2019	$ 59.2	$ 58.9	$ 19.7	$ 137.8

[1]Does not include administrative fees or violation revenue

[2]Toll increase at Hampton Barrier 7/1/09; Open-road tolling begins at Hampton Barrier 5/31/10

[3] Systemwide toll increase 7/1/11; Open-road tolling begins at Hooksett Barrier 5/31/12

[4]Planned opening year for the Manchester Airport Access Road

[5]Open-road tolling begins at Bedford Mainline Barrier 5/31/14

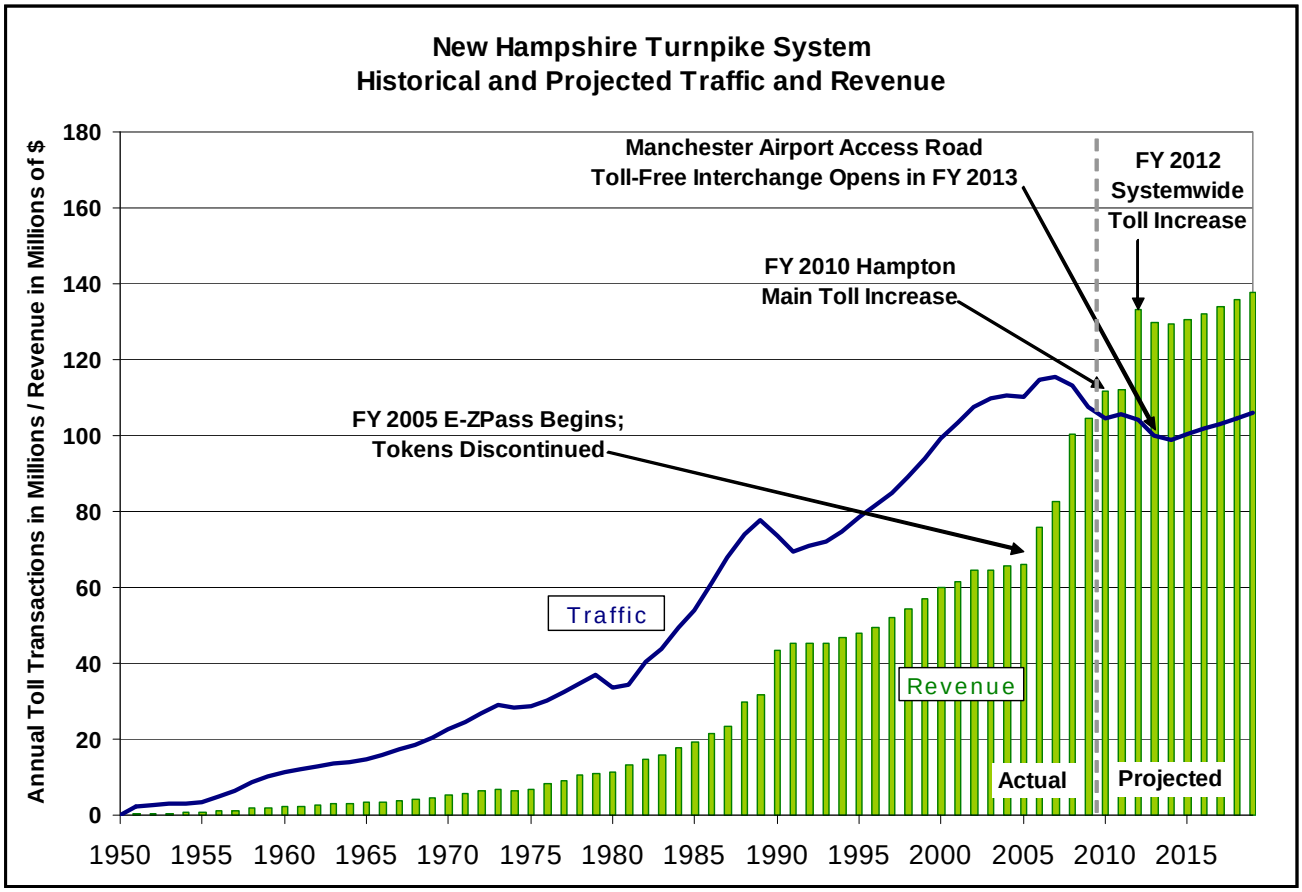
Note: Data will not necessarily add to totals because of rounding

Projected toll revenues for FY 2010, the year of the Hampton Barrier toll increase and Hampton ORT are $111.7 million – about a 7 percent increase over FY 2009. Revenue will increase 18.6 percent from FY 2011 to FY 2012 due to the systemwide toll increase at the beginning of FY 2012. Revenues will then drop 2.3 percent in FY 2013, to $130.0M, due to the opening of the toll-free interchange from the Central Turnpike to Route 3 via the Manchester Airport access

road. This will be followed by a slight decrease of 0.5 percent in FY 2014 to $129.3 million due to a ramp-up in usage of the toll-free interchange. Between FY 2014 and FY 2019, total toll revenues are expected to increase annually by an average of 1.3 percent, or about $1.3 to $1.9 million per year. Toll revenues on the Central, Blue Star and Spaulding Turnpikes are expected to grow at an average annual rate of 3.1 percent, 2.5 percent and 3.0 percent respectively between FY 2009 and FY 2019, and the overall Turnpike annual revenue growth rate is estimated to be 2.8 percent.

Historical and projected toll transaction and revenue for the entire New Hampshire Turnpike System over the period FY 1950 to 2019 are presented in Figure 34.

Figure 34: NH Turnpike System Historical and Projected Toll Transaction and Revenue Trends, FY 1950-2019



9.5 E-ZPASS MARKET SHARE PROJECTIONS

Table 23 presents the historical and projected ***E-ZPass*** market shares on the New Hampshire Turnpike System for the period FY 2008-2019. Detailed ***E-ZPass*** market shares for each toll plaza was presented previously in Table 21.

Table 23: Historical and Projected E-ZPass Market Shares, FY 2008-2019

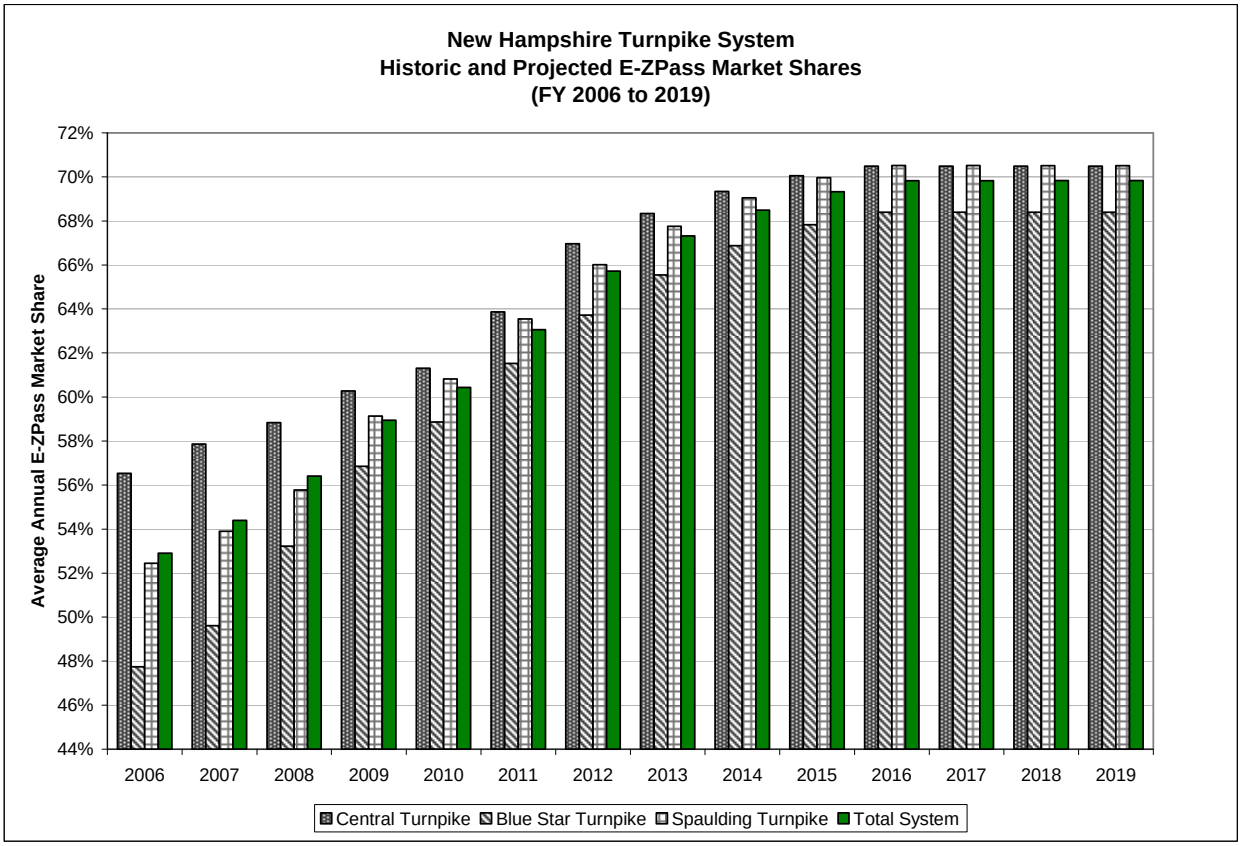
Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Total
2008[1]	58.8%	53.2%	55.8%	56.4%
2009[1]	60.3%	56.8%	59.1%	58.9%
2010	61.3%	58.9%	60.8%	60.4%
2011	63.9%	61.5%	63.5%	63.1%
2012	67.0%	63.7%	66.0%	65.7%
2013	68.3%	65.5%	67.8%	67.3%
2014	69.3%	66.9%	69.0%	68.5%
2015	70.1%	67.8%	70.0%	69.3%
2016-2019	70.5%	68.4%	70.5%	69.8%

[1] *Actual*

Total New Hampshire ***E-ZPass*** market share increased from 56.4 percent in FY 2008 to 58.9 percent in FY 2009. Large jumps of 2.6 to 2.7 percent are expected in the early years of the forecast as a result of the toll increases, which are expected to spur some cash-paying vehicles to switch to the less-expensive ***E-ZPass***. Over time, the total ***E-ZPass*** market share growth rate is expected to slow down and flatten, and is assumed to reach an overall maximum share close to 70 percent by FY 2016. The market share will differ by plaza, as it does currently. The Blue Star Turnpike, which has fewer commuters and more long-distance and low-frequency customers than the Central and Spaulding Turnpikes, is not expected to have as high a market share as the others.

Figure 35 shows the historical and projected ***E-ZPass*** market shares for the period FY 2006 to 2019.

Figure 35: NH Turnpike System Historical and Projected E-ZPass Market Shares, FY 2006-2019



10 FINANCIAL MODEL ANALYSIS

This section presents a financial analysis of the NH Turnpike System. The analysis considers Turnpike capital expenditures, operating expenditures and debt service requirements as well as Turnpike toll revenues and other revenues. The analysis also includes a cash flow analysis of the Turnpike, as well as an analysis of the Turnpike's debt service coverage ratios.

10.1 TOTAL TURNPIKE EXPENDITURES

Table 24 shows historical and projected capital, operating and debt service expenditures for the 20-year period FY 2000-2019.

Table 24: Historical and Projected Total NH Turnpike Expenditures, FY 2000-2019 (in millions)

Fiscal Year	Capital Expenditures	O&M Expenditures	Debt Service	R&R, Incl. I-95 Payments	Total Turnpike Expenditures
2000	$19.7	$19.8	$32.4	$4.5	$76.4
2001	$10.1	$21.9	$31.0	$6.1	$69.1
2002	$6.5	$23.8	$31.9	$6.2	$68.4
2003	$10.2	$25.2	$29.9	$7.3	$72.6
2004	$19.4	$25.1	$28.7	$5.1	$78.3
2005	$20.5	$29.0	$31.3	$3.3	$84.0
2006	$13.2	$38.5	$30.0	$4.3	$86.1
2007	$8.5	$36.1	$31.1	$8.6	$84.3
2008	$9.2	$37.1	$27.4	$11.8	$85.5
2009	$23.3	$41.6	$27.5	$8.5	$100.9
Total ('00-'09)	$140.6	$298.1	$301.2	$65.7	$805.7
2010	$83.0	$48.5	$29.8	$9.6	$170.9
2011	$75.4	$49.6	$35.5	$9.8	$170.3
2012	$78.6	$58.2	$38.1	$15.9	$190.7
2013	$79.3	$52.6	$43.9	$16.5	$192.2
2014	$68.9	$55.5	$45.4	$17.2	$187.0
2015	$62.9	$56.6	$48.1	$17.5	$185.0
2016	$43.0	$58.0	$48.6	$18.3	$167.9
2017	$14.7	$59.9	$48.6	$18.3	$141.5
2018	$0.5	$60.8	$41.7	$18.6	$121.6
2019	$0.5	$62.6	$41.8	$19.0	$123.9
Total ('10-'19)	$506.8	$562.1	$421.5	$160.7	$1,651.1

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

Historical total Turnpike expenditures ranged from a low of $68.4 million in FY 2002 to a high of $100.9 million in FY 2009. Cumulative Turnpike expenditures for the ten-year period FY 2000-2009 totaled $805.7 million with 74 percent or $599.3 million accounting for operating and debt service expenditures. Total Turnpike expenditures are projected to vary in the FY 2010-2019 forecast period, ranging from a low of $121.6 million in FY 2018 to a high of $192.2 million in FY 2013. Cumulative Turnpike expenditures over the ten-year forecast period FY 2010-2019 are projected to be $1,651.1 million, more than double what was spent over the previous ten years. Some 34 percent or $562.1 million of this total amount is estimated to be for O&M expenditures and almost 26 percent or $421.5 million for Turnpike debt service requirements. Nearly 31

percent ($506.8 million) of total expenditures over this ten-year period are expected to be capital expenditures, while almost 10 percent, or $160.7M, are expected for renewal and replacement, which also includes I-95 payments.

10.2 TURNPIKE FUNDS

Table 25 presents historical and projected toll revenues, other revenues, interest income, and bond proceeds for the NH Turnpike System over the 20-year period FY 2000-2019.

Table 25: Historical and Projected NH Turnpike Funds, FY 2000-2019 (in millions)

Fiscal Year	Toll Revenue[1]	Transponder Revenue	Other Revenue[2]	Interest Income[3]	Total Turnpike Revenues	Bond Proceeds	Bond Issuance Costs	Total Turnpike Funds
2000	$60.2		$2.8		$63.0			$63.0
2001	$61.5		$2.6		$64.1			$64.1
2002	$64.4		$1.8		$66.2			$66.2
2003	$64.4		$2.6		$67.0			$67.0
2004	$65.8		$1.7		$67.5			$67.5
2005	$65.9		$2.4		$68.3			$68.3
2006	$76.0		$6.4		$82.4			$82.4
2007	$82.2	$1.2	$2.7	$3.3	$89.4			$89.4
2008	$100.4	$0.9	$3.2	$2.5	$107.0			$107.0
2009	$104.4	$0.6	$2.0	$0.8	$107.8			$107.8
Total ('00-'09)	$745.2	$2.7	$28.2	$6.6	$782.7	$0.0	$0.0	$782.7
2010	$111.7	$0.7	$2.6	$3.5	$118.5	$150.0	-$1.2	$267.3
2011	$112.2	$0.6	$2.7	$3.3	$118.7			$118.7
2012	$133.1	$0.6	$2.7	$3.4	$139.9	$150.0	-$1.2	$288.7
2013	$130.0	$0.6	$2.8	$3.9	$137.3			$137.3
2014	$129.3	$0.6	$2.9	$3.5	$136.2	$71.0	-$0.6	$206.6
2015	$130.6	$0.8	$2.9	$3.2	$137.5			$137.5
2016	$132.1	$0.6	$3.0	$2.2	$137.9			$137.9
2017	$134.0	$1.4	$3.0	$1.9	$140.3			$140.3
2018	$135.9	$0.6	$3.1	$2.1	$141.7			$141.7
2019	$137.8	$0.3	$3.1	$2.6	$143.8			$143.8
Total ('10-'19)	$1,286.7	$6.8	$28.8	$29.5	$1,351.9	$371.0	-$3.0	$1,719.9

[1] Future toll revenue does not include revenue from toll violators

[2] From Turnpike Financial Model Plan

[3] FY 2000 through 2006 Interest Income included in Other Revenue

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

Historical annual Turnpike revenues which include toll revenue, other revenue, and bond proceeds ranged from a high of $107.8 million in FY 2009 to a low of $63.0 million in FY 2000. Cumulative funds over the ten-year FY 2000-2009 period totaled $782.7 million with toll revenues accounting for 95 percent of this amount or $745.2 million. For FY 2007-2009 and the FY 2010-2019 forecast period, interest income has also been included in total revenues for each year. Annual Turnpike revenues are projected to range from a high of $288.7 million in FY 2012 to a low of $118.7 million in FY 2011. Cumulative funds amount over the ten-year forecast period are $1,719.9 million, more than double the amount accumulated in the previous ten years. Toll revenues are estimated to account for some 75 percent or $1,286.7 million of the

projected ten-year total turnpike revenues, while bond proceeds will account for 22 percent or $371.0 million of the projected total revenues.

10.3 TURNPIKE COVERAGE RATIO ANALYSIS

Table 26 presents an analysis of the NH Turnpike's revenue bond debt service coverage ratios and all obligation bond coverage ratios for the forecast period FY 2010-2019.

Table 26: NH Turnpike Debt Coverage Analysis, FY 2010-2019 (in millions)

	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Turnpike Revenues[1]	*$118.5*	*$118.7*	*$139.9*	*$137.3*	*$136.2*	*$137.5*	*$137.9*	*$140.3*	*$141.7*	*$143.8*
O&M Expenses[2]	*$48.5*	*$49.6*	*$58.2*	*$52.6*	*$55.5*	*$56.6*	*$58.0*	*$59.9*	*$60.8*	*$62.6*
Net Revenues (Sub-Total) (A)	*$70.0*	*$69.2*	*$81.7*	*$84.8*	*$80.8*	*$80.9*	*$79.9*	*$80.4*	*$80.9*	*$81.2*
Revenue Bond Debt Service (B)	*$29.1*	*$34.9*	*$38.1*	*$43.9*	*$45.4*	*$48.1*	*$48.6*	*$48.6*	*$41.7*	*$41.8*
Revenue Bond Debt Service Coverage Ratio (A/B)	**2.40**	**1.98**	**2.14**	**1.93**	**1.78**	**1.68**	**1.64**	**1.65**	**1.94**	**1.94**
General Obligation Bond Debt Service	*$0.7*	*$0.6*	*$0.0*	*$0.0*	*$0.0*	*$0.0*	*$0.0*	*$0.0*	*$0.0*	*$0.0*
Existing Turnpike R&R Expenses	*$9.6*	*$9.8*	*$9.2*	*$9.8*	*$10.5*	*$10.8*	*$11.6*	*$11.5*	*$11.8*	*$12.2*
Payments from General Reserves for I-95 Acquisition	*	*	*$5.9*	*$5.9*	*$5.9*	*$5.9*	*$5.9*	*$5.9*	*$5.9*	*$5.9*
Other Obligations (Sub-Total) (C)	$10.3	$10.4	$15.1	$15.7	$16.4	$16.7	$17.5	$17.4	$17.7	$18.1
All Obligation Coverage Ratio (A/(B+C))	**1.78**	**1.53**	**1.54**	**1.42**	**1.31**	**1.25**	**1.21**	**1.22**	**1.36**	**1.36**

[1] Includes Toll Revenue, Other Revenue, Transponder Revenue, and Interest Income. The turnpike revenues assume a toll increase that is planned to be effective in 2012 but has not yet been approved or implemented.

[2] Includes Administrative Expenses, Toll Operations, Maintenance, Enforcement, Toll Processing, Welcome Centers and Rest Areas, and Turnpike Funding to Highway. R&R, I-95 Payments, and Additional I-95 Bridge Maintenance not included.

** Payments of $30M in FY 2010 and $20M in FY 2011 are made from sufficient general reserves at June 30, 2009 and are therefore not included in the all obligation coverage ratio.*

The analysis shows that the Turnpike's revenue bond debt service coverage ratio is expected to range from a high of 2.40 in FY 2010 to a low of 1.64 in FY 2016. The low 1.64 revenue bond debt service coverage ratio in FY 2016 satisfies both the bond resolution's minimum requirement of 1.2 and the Turnpike's internal minimum coverage requirement of 1.3. In comparison, the all obligation coverage ratio is projected to range from a high of 1.78 in FY 2010 to a low of 1.21 in FY 2016. The low all obligation coverage ratio of 1.21 in FY 2016 satisfies the bond resolution's minimum requirement of 1.0 and the Turnpike's internal minimum requirement of 1.1.

Table 27 is a projected cash flow analysis of the Turnpike System. The analysis reveals that the projected Turnpike cash reserves will be positive throughout the ten-year forecast period. Cash reserves as a percentage of Turnpike toll revenues are projected to range from a high of 102 percent in FY 2010 to a low of 10 percent in FY 2017.

Table 27: Projected Cash Flow Analysis, FY 2010-2019 (in millions)

	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
Net Income	$30.5	$23.9	$28.5	$25.2	$19.0	$16.1	$13.8	$14.4	$21.5	$21.3
Bond Proceeds (minus issuance costs)[1]	*$148.8*	*$0.0*	*$148.8*	*$0.0*	*$70.4*	*$0.0*	*$0.0*	*$0.0*	*$0.0*	*$0.0*
Capital Expenditures	*-$83.0*	*-$75.4*	*-$78.6*	*-$79.3*	*-$68.9*	*-$62.9*	*-$43.0*	*-$14.7*	*-$0.5*	*-$0.5*
Additional R&R - Bridge Maintenance (I-95 Acquisition)[2]	*$0.0*	*$0.0*	*-$0.8*	*-$0.8*	*-$0.8*	*-$0.8*	*-$0.8*	*-$0.9*	*-$0.9*	*-$0.9*
Additional R&R[3]	*-$3.8*									
Payments from General Reserves for I-95 Acquisition[4]	*-$30.0*	*-$20.0*								
Beginning Cash[1]	$60.0	$113.6	$42.1	$131.0	$76.1	$91.6	$44.0	$14.0	$12.8	$39.8
Annual Capital Surplus/(Deficit)	*$62.6*	*-$71.5*	*$97.9*	*-$54.9*	*$19.7*	*-$47.6*	*-$30.0*	*-$1.2*	*$20.1*	*$19.9*
Set Aside Reserve on Proposed Bonds[5]	-$9.0		-$9.0		-$4.2				$6.9	
Ending Cash	**$113.6**	**$42.1**	**$131.0**	**$76.1**	**$91.6**	**$44.0**	**$14.0**	**$12.8**	**$39.8**	**$59.8**
Percent of Toll Revenues	102%	38%	98%	59%	71%	34%	11%	10%	29%	43%

[1] From Turnpikes Cash Flow Model (10/16/09)

[2] Not included in coverage ratios.

[3] Carry-forward of additional R&R available for expenditure. Not included in coverage ratios.

[4] Payments of $30M in FY 2010 and $20M in FY 2011 are made from sufficient general reserves at June 30, 2009 and are therefore not included in the all obligation coverage ratio.

[5] Debt Service reserves are based on the projected maximum annual debt service; accordingly, additional reserves are set aside for additional annual debt service requirements when new bonds are issued. $6.9M in reserves is released in FY18 due to a like decrease in the projected maximum annual debt service requirement.