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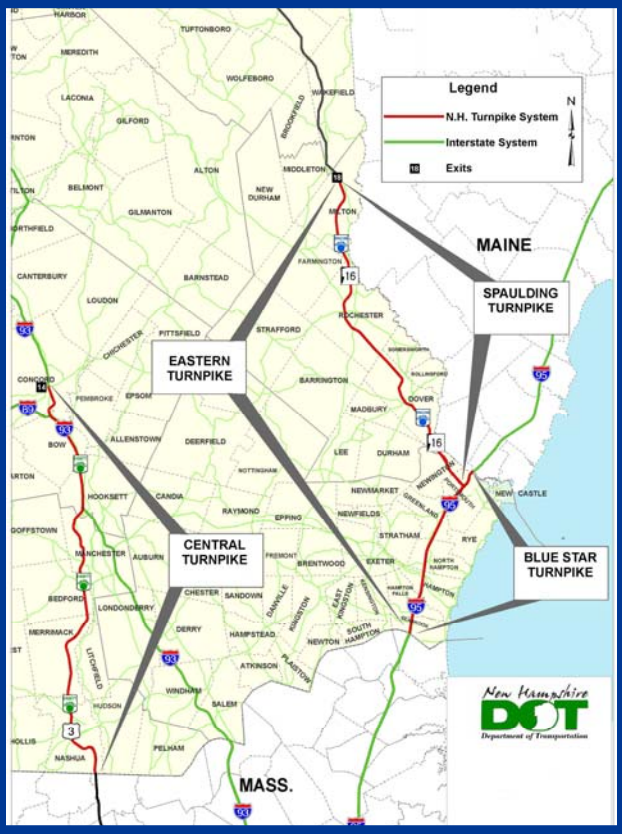

Submitted to:
New Hampshire Department of Transportation

New Hampshire Turnpike System Traffic and Revenue Study

May 29, 2015

Submitted by:

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Tables

1. EXECUTIVE SUMMARY

Jacobs Engineering was retained by the New Hampshire Department of Transportation (NHDOT) to conduct this traffic and revenue study for the New Hampshire Turnpike System (the "Turnpike System"). Jacobs analyzed historical traffic and revenue data for the entire Turnpike System to determine historical trends, correlated traffic with key economic indicators, and researched demographic data and other factors that have affected recent traffic and/or will affect future traffic. 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 the ten-year period from Fiscal Year 2015 (i.e., July 2014 – June 2015) through Fiscal Year 2024. Fiscal Year (FY) 2014 and projected annual toll revenue is summarized in Table ES-1. These forecasts assume no future toll increases. They take into account the estimated loss in Central Turnpike toll traffic due to the removal of the Bedford Road (Exit 12) ramp tolls in July 2014, as well as growth in traffic from the widening and improvement projects on the Spaulding Turnpike.

Table ES- 1: FY 2014 and Projected Annual Toll Revenue, FY 2015-2024 (in millions)

Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Total
2014 Actual (Cash Basis)	$43.2	$59.6	$15.1	$117.9
2014 Actual (Accrual Basis)	$43.5	$59.2	$14.8	$117.5
2015	$43.6	$60.6	$15.6	$119.8
2016	$44.4	$61.5	$15.8	$121.6
2017	$45.2	$62.3	$16.0	$123.5
2018	$46.0	$63.1	$16.2	$125.4
2019	$46.9	$63.8	$16.5	$127.1
2020	$47.7	$64.5	$16.9	$129.1
2021	$48.5	$65.3	$17.2	$131.0
2022	$49.4	$66.0	$17.6	$132.9
2023	$50.2	$66.7	$17.9	$134.8
2024	$51.0	$67.4	$18.3	$136.8

Notes: Future year revenues were forecasted using 2014 cash basis revenues as a base.
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 state's bond resolution's minimum debt

service coverage requirements as well as the Turnpike's internal minimum requirements for the ten-year forecast period, FY 2015-2024.

2. INTRODUCTION

Jacobs was retained by NHDOT to conduct a traffic and revenue study for the 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 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 2015 through 2024. 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

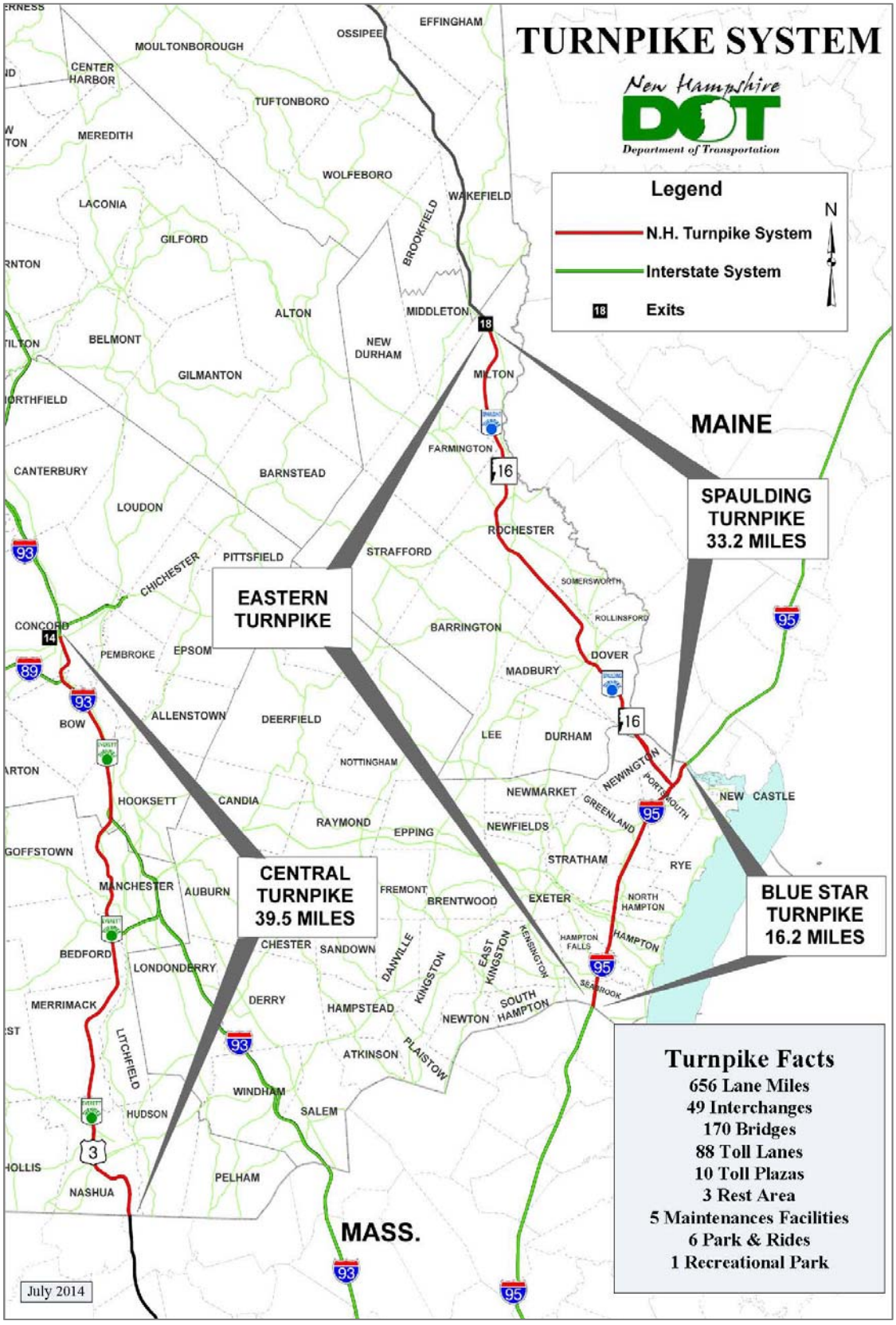
The current Turnpike System is an open barrier toll system comprised of 49 interchanges, 9 toll plazas, 84 toll lanes, and approximately 89 linear miles. The system is composed of three independent turnpike systems; the Central (F.E. Everett) Turnpike, the Blue Star Turnpike and the Spaulding Turnpike, as shown in Figure 1.

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 U.S. 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 three ramp plazas at Hooksett (I-93 Exit 11), Continental Boulevard (FEET Exit 11), and Merrimack Industrial Drive (FEET Exit 10). Tolling at Bedford Road (FEET Exit 12) ramp plaza was discontinued in late July 2014.

The Blue Star Turnpike extends from the Massachusetts state line in Seabrook, New Hampshire to the Maine state line in Portsmouth, New Hampshire. It is 16.2 miles in length and constitutes a portion of Interstate 95. The Blue Star Turnpike 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 miles long, 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.

Figure 1: New Hampshire Turnpike System



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

Table 1: Major Events on the New Hampshire Turnpike

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.
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%.

Date	Activity
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 at 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.
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%) applies 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.

Date	Activity
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.)	Two seasonal toll lanes added to Hooksett Main Toll Plaza.
1994 (Jun.)	Hampton Main Toll Plaza changed to all-attended operation.
1994 (Nov. 1)	Increased 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.
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.

Date	Activity
2004 (Jun. 30)	One-way toll collection reinstated at the Hampton Toll Plaza.
2004 (Oct. 21)	Two way tolling returns to Hampton Main Toll Plaza.
2005 (Mar.)	Hampton Ramp converted to an all attended plaza just like Hampton Main.
2005 (Apr. 12)	Hooksett Ramp converted back to a 24/7/365 plaza.
2005 (Jul. 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 (Jul. 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 (Aug. 3)	The price of transponders increased 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.
2005 (Sept. 26)	Price of transponders increased – from $23.85 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 $1.00-$1.50
2008 (May 1)	New terms, conditions, application and transponder price change went into effect. Price changed for interior tag from $24.61 to $20.95, and exterior tag from $31.83 to $33.04
2008 (Jun. 9 & 16)	Granite Street ramps open to traffic at Exit 5 in Manchester
2009 (Jun. 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 Open Road Tolling (“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 (Jul. 1)	New toll rate implemented at Hampton Main $1.50 – $2.00
2010 (Jun. 17)	ORT lanes opened at Hampton Main plaza, allowing high-speed toll collection for ***E-ZPass*** customers

Date	Activity
2011 (Nov. 11)	Manchester Airport Access Road opens, connecting to the Central Turnpike near the Bedford Main plaza. Vehicles using this road avoid all tolls in the Bedford/Merrimack area.
2012 (Apr. 1)	***E-ZPass*** transponder prices changed. Price dropped for interior tag from to $20.95 to $8.90, and exterior tag from $33.04 to $15.19.
2012 (Jun. 14)	Premium Outlets, with 100 stores and more than 400,000 square feet, opens adjacent to Exit 10 in Merrimack, increasing toll transactions at the Exit 10 ramp.
2013 (May 22)	ORT lanes opened at Hooksett Main plaza, allowing high-speed toll collection for ***E-ZPass*** customers
2014 (Jul. 18)	Tolls were discontinued at the Bedford Road ramps (Exit 12 of the Central Turnpike)

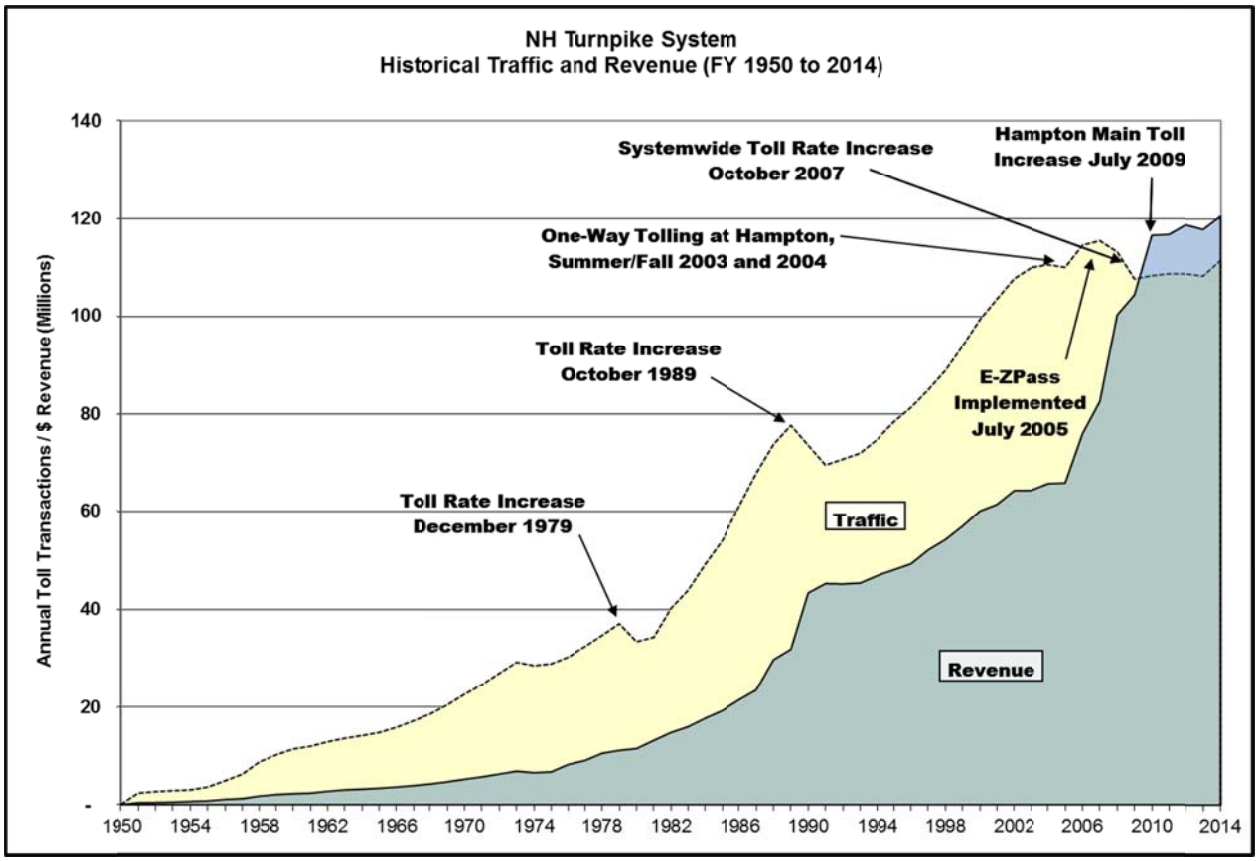
4. HISTORICAL TRAFFIC AND REVENUE

This section discusses historical traffic and toll revenue trends of the 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 2014. Both toll transaction and revenue graphs are generally upward sloping throughout time, 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 economic recessions and 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 system wide 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 but 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, gas prices, and factors that caused traffic levels to flatten, then decrease, throughout the nation (as further discussed in Section 7.1). The Hampton Main Plaza saw a toll increase from $1.50 to $2.00 which had little effect on traffic but increased revenues at that location. In November 2011 the Manchester Airport Access Road opened, causing some losses in traffic and revenue at the Bedford toll locations primarily due to traffic to and from the south having free access into the airport. FY 2013 saw the opening of an outlet mall in Merrimack, which has contributed to most of the growth in traffic observed at Exit 10. In July 2014 – a few weeks into FY 2015 - the Bedford Ramp Toll was discontinued. The impact of this toll removal is discussed along with the rest of FY 2015 later in this report in Section 9.2.

Figure 2: NH Turnpike System Historical Toll Transactions and Toll Revenue Trends



4.2. TOLL TRANSACTION TRENDS

Table 2 summarizes the annual toll transactions between FY 1991 and FY 2014 for each of the three Turnpikes as well as the entire Turnpike System. Annual toll transactions have generally increased every year across the Turnpike 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. The diversion caused by the October 2007 toll increase contributed to both the FY 2008 and 2009 decrease in Turnpike traffic, and the Central Turnpike's free interchange with the Manchester Airport Access Road in November 2011 contributed to some toll traffic loss in the Bedford area in FY 2012 and FY 2013.

Table 2: NH Turnpike System Historical Annual Toll Transactions (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
2010[4]	51.9	35.3	21.1	108.3
2011	52.4	35.3	21.1	108.7
2012[5]	51.5	35.8	21.5	108.7
2013	50.7	35.8	21.8	108.2
2014	52.2	36.8	22.5	111.5

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

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

[3] General toll Increase October 22, 2007

[4] Hampton Main toll Increase July 1, 2009

[5] Manchester Airport Access Road opened November 2011

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

Data will not necessarily sum to totals due to 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, through about 2007, followed by 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. This was followed by low growth rates of 0.6 percent in FY 2010 and 0.4 percent in FY 2011. There was no overall growth from FY 2011 to FY 2012, mainly due to a shift in traffic to the free Manchester Airport Access Road (MAAR) interchange on the Central Turnpike. FY 2013 had a slight decrease in traffic of 0.4 percent

with more Central Turnpike traffic shifting to the free MAAR interchange, while FY 2014 saw some recovery with 3.0 percent growth in toll transactions. Toll transactions on the individual Turnpikes increased at an average annual rate of 2.1 percent on the Central Turnpike, 2.2 percent on the Spaulding Turnpike, and 2.0 percent on the Blue Star Turnpike during the FY 1991 to FY 2014 time period, for a systemwide growth rate of 2.1 percent.

Historical toll transaction trends between FY 1950 and FY 2014 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 Transaction Trends

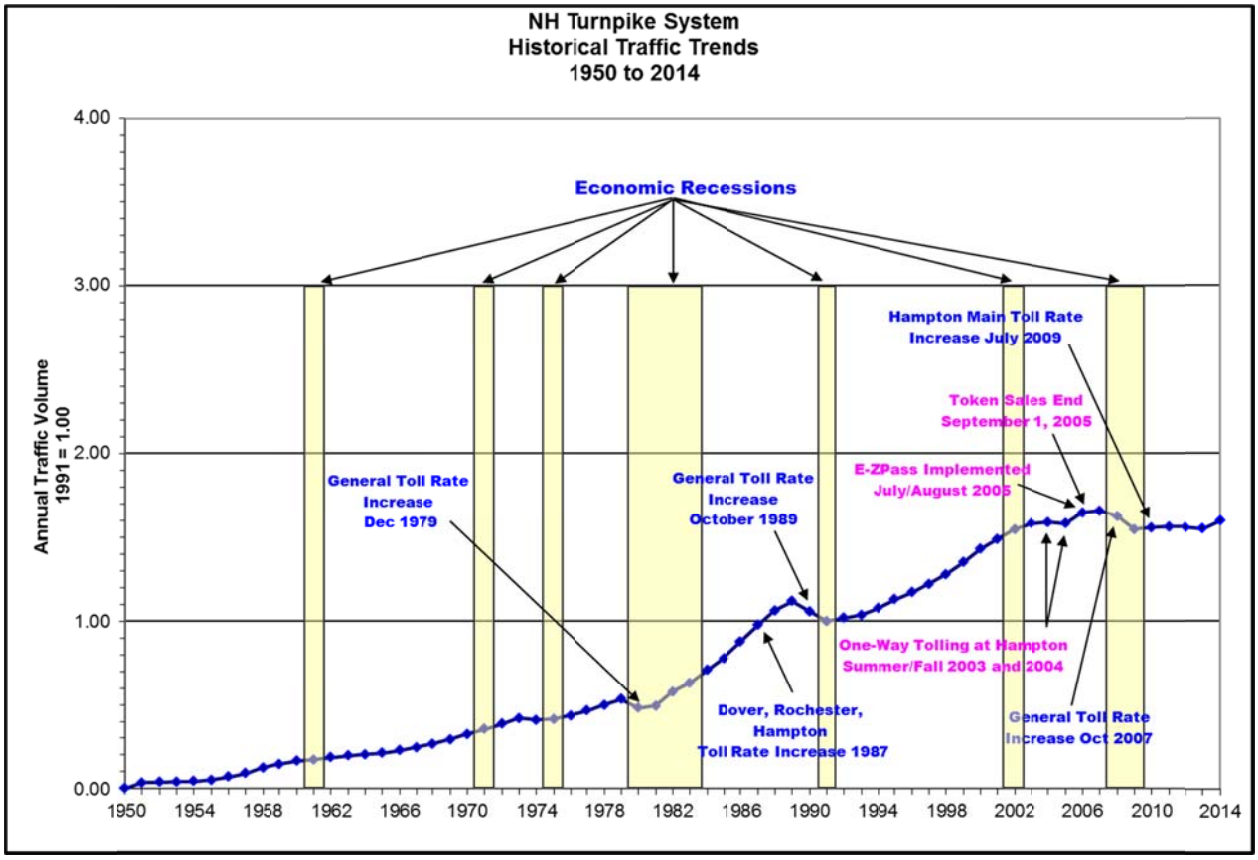


Figure 4 shows the historical toll transaction trends for cars and trucks on each of the three Turnpikes for the FY 1991-2014 period. The three turnpikes exhibited similar patterns in car traffic, growing steadily from FY 1991 through the early 2000s, followed by flat growth in FY 2006 and 2007 and declines in FY 2009 and 2010. Annual traffic between FY 2010 and FY 2013 remained virtually unchanged, while FY 2014 has shown some recovery toward previously higher traffic volumes.

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 saw a decline in truck traffic in FY 2009 and FY 2010 due to the downturn in the economy and FY 2008 toll increases. Similar to the car traffic, the truck traffic changed very little between FY 2010 and FY 2013, except at the Central Turnpike which saw some traffic loss due to the free MAAR interchange. Some promising growth was seen in FY 2014 on all three turnpikes, with overall passenger car traffic growth of 2.9 percent over FY 2013 and truck traffic growth of 5.3 percent over FY 2013.

Figure 4: Historical Toll Transaction Trends by Turnpike, FY 1991-2014

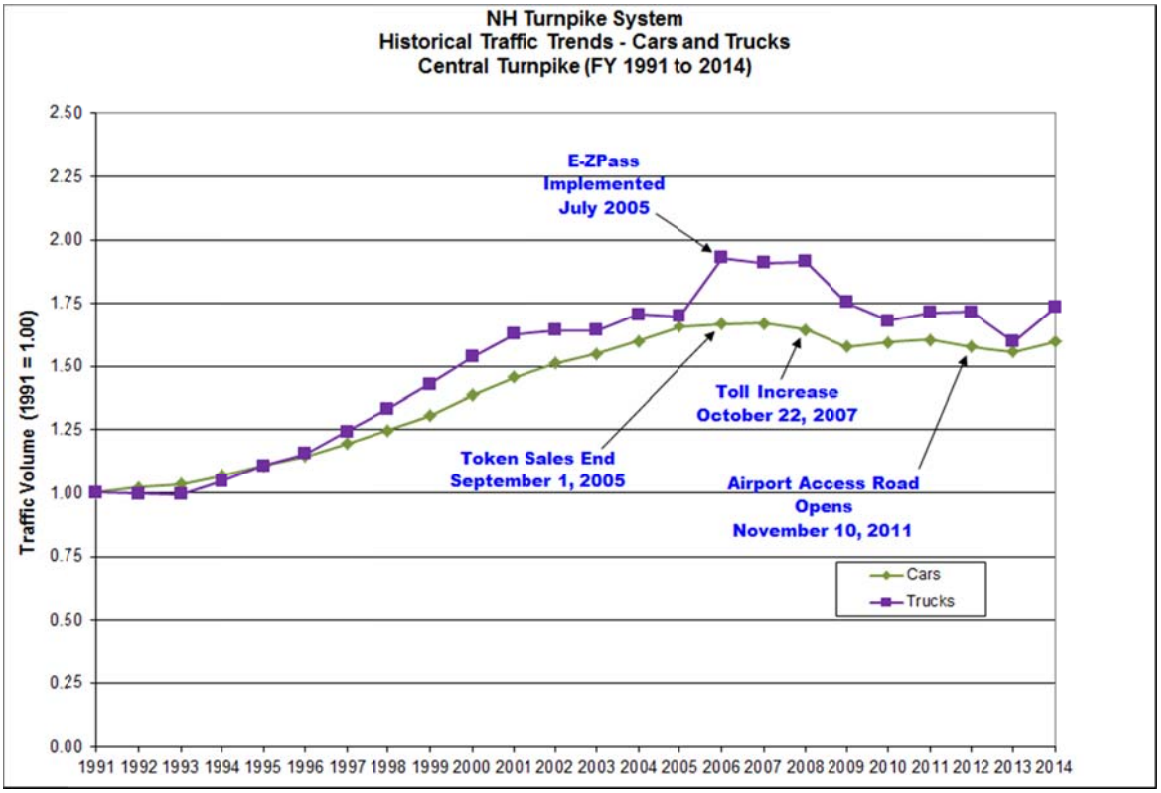
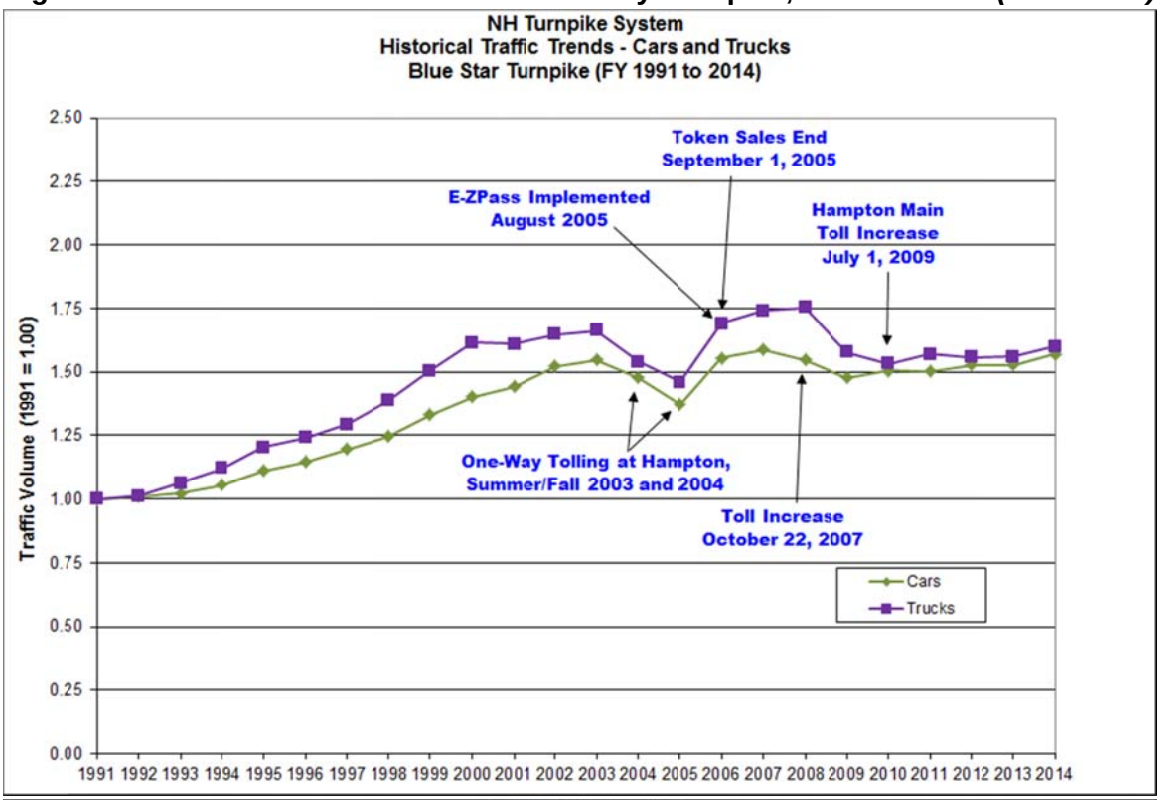
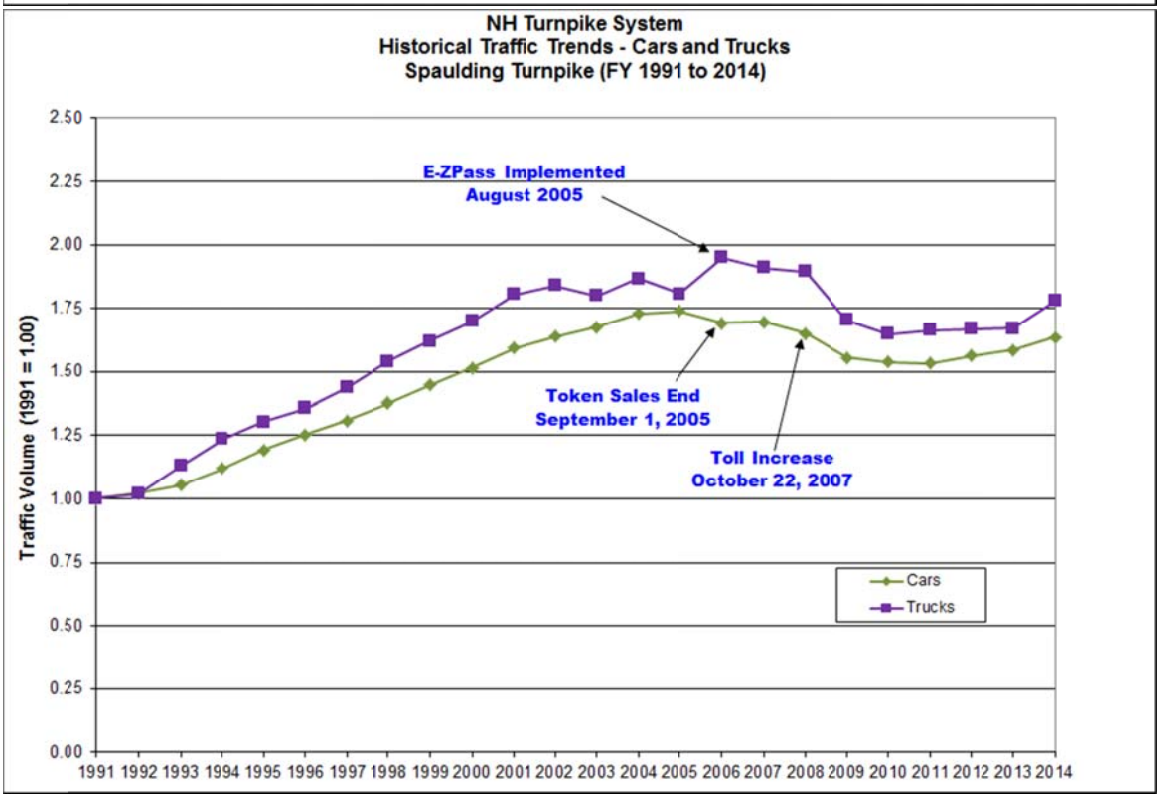


Figure 4: Historical Toll Transaction Trends by Turnpike, FY 1991-2014 *(continued)*





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 2014.

Table 3: NH Turnpike System Historical Annual Toll Revenues (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[1]	$28.1	$29.1	$8.6	$65.8
2005[1,2]	$28.7	$28.4	$8.8	$65.9
2006[2]	$33.6	$32.3	$10.1	$76.0
2007	$36.7	$34.8	$11.1	$82.6
2008[3]	$42.9	$43.4	$14.1	$100.3
2009	$43.5	$46.3	$14.7	$104.4
2010[4]	$44.0	$58.1	$14.5	$116.6
2011	$44.2	$58.2	$14.4	$116.7
2012[5]	$43.3	$58.8	$14.6	$116.6
2013	$41.9	$58.8	$14.7	$115.4
2014	$43.2	$59.6	$15.1	$117.9

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

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

[3] General toll Increase October 22, 2007

[4] Hampton Main toll Increase July 1, 2009

[5] The free Manchester Airport Access Road interchange on the Central Turnpike opened November 11, 2011

Notes: This table shows the historical toll revenues recorded on a cash basis.

*FY 1991-2006 reported figures are derived from the Turnpike System's internal, monthly traffic and revenue report, which is prepared from information from the Turnpike System's **E-ZPass** and toll collection system vendors and does not include other income such as property sales.*

Fiscal Years 2006-2011 figures are derived from the Turnpike System's internal accounting system and do not include property sales or other income.

Data will not necessarily add to totals because of rounding.

The table shows that annual toll revenues have generally increased each year across the Turnpike System throughout the period shown. The first large increase in toll revenues occurred between FY 2005 and FY 2006 due to the implementation of ***E-ZPass*** on the Turnpike System and discontinuation of token usage, which coincided with a decrease in the toll discount rate. In FY 2008, there was another significant increase in revenues - $17.7 million or 21.4 percent over FY 2007– due to the October 2007 toll increase, and FY 2009 also saw a revenue increase of 4.1 percent due to this toll increase. The July 1, 2009 toll increase at the Hampton Main Plaza increased systemwide revenue by 11.6 percent in FY 2010 compared to the previous year. There was little change in total system revenue between FY 2010 and FY 2012, however, some losses were seen in FY 2012 and FY 2013 on the Central Turnpike due to the opening of the Manchester Airport Access Road on November 11, 2011 and the following shift in traffic from the Bedford area toll plazas to this free interchange. This reduced systemwide toll revenues for those two years. As the economy started improving, FY 2014 saw 2.2 percent revenue growth over FY 2013.

Between FY 1991 and FY 2014, toll revenues increased annually by an average of 4.2 percent across the entire Turnpike System. The individual turnpikes experienced annual revenue growth rates of 3.7 percent on the Central Turnpike, 4.5 percent on the Spaulding Turnpike, and 4.7 percent on the Blue Star Turnpike.

Figure 5 shows historical annual toll revenues between FY 1950 and FY 2014. This graphic shows that total system wide 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 the recent recession, due to the general toll increase in October 2007 and the Hampton Main toll increase in July 2009. Even after the official end of the recent recession, toll revenue remained flat for several years. However, the slowly-improving economy is finally leading to some traffic growth, both on the New Hampshire Turnpike System and on a nationwide basis, which produced toll revenue growth in FY 2014.

Figure 5: NH Turnpike System Historical Toll Revenues

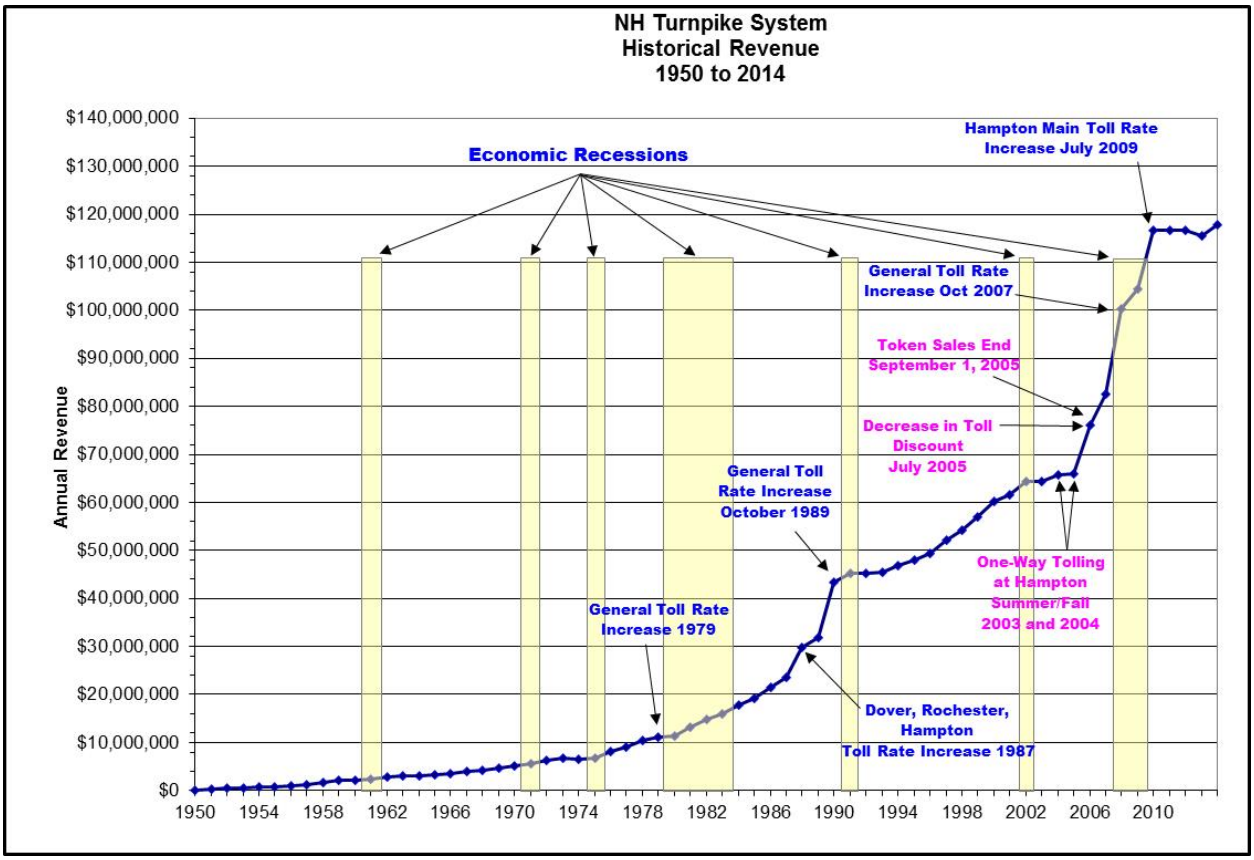
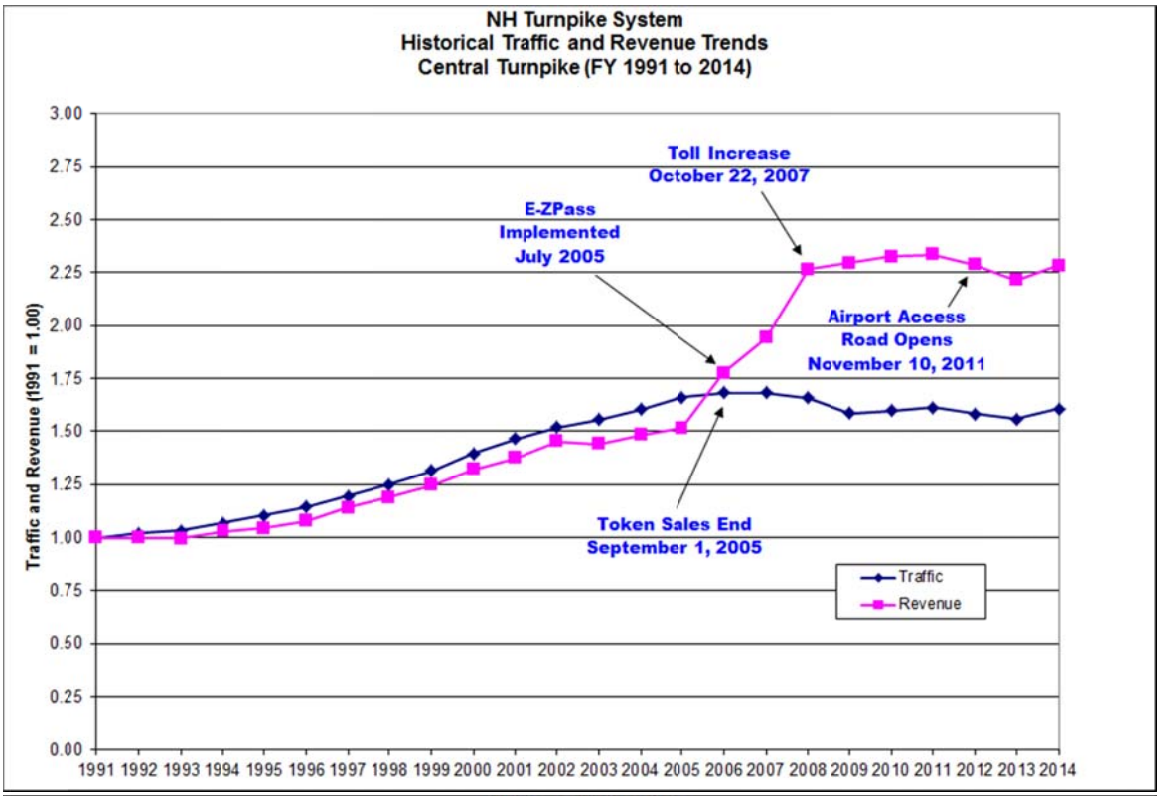


Figure 6 shows historical toll transaction and revenue trends for each of the three Turnpikes for the FY 1991 to FY 2014 period. Through about FY 2005, total toll revenue generally increased consistently on each turnpike, with a small decrease on the Blue Star Turnpike in FY 2005. Also, toll revenues on the Blue Star Turnpike experienced very little growth between FY 2002 and FY 2005, due in part to the one-way tolling experiment. In FY 2005/2006 through FY 2007, all three Turnpikes experienced a flattening and then a decline in traffic after the October 2007 toll increase. After FY 2009 traffic has remained nearly flat on all three turnpikes until FY 2014, when it increased by three percent over FY 2013. Toll revenues grew at a greater rate than usual in the past decade due to ***E-ZPass*** implementation and the end of token sales in FY 2006 (increasing the tolls for discounted trips), the October 2007 systemwide toll increase, and the July 2009 Hampton Main toll increase. The recovering traffic growth in FY 2014 increased total toll revenue by 2.2 percent.

Figure 6: Historical Toll Transaction and Revenue Trends by Turnpike



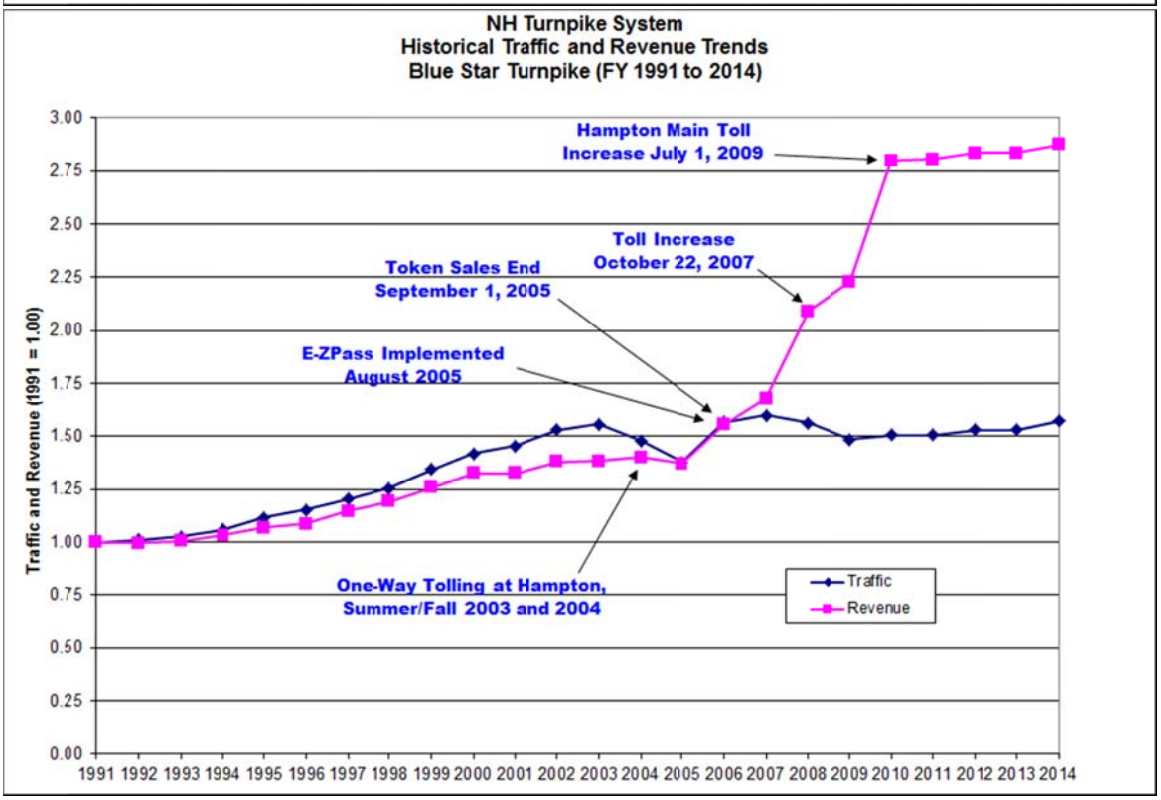
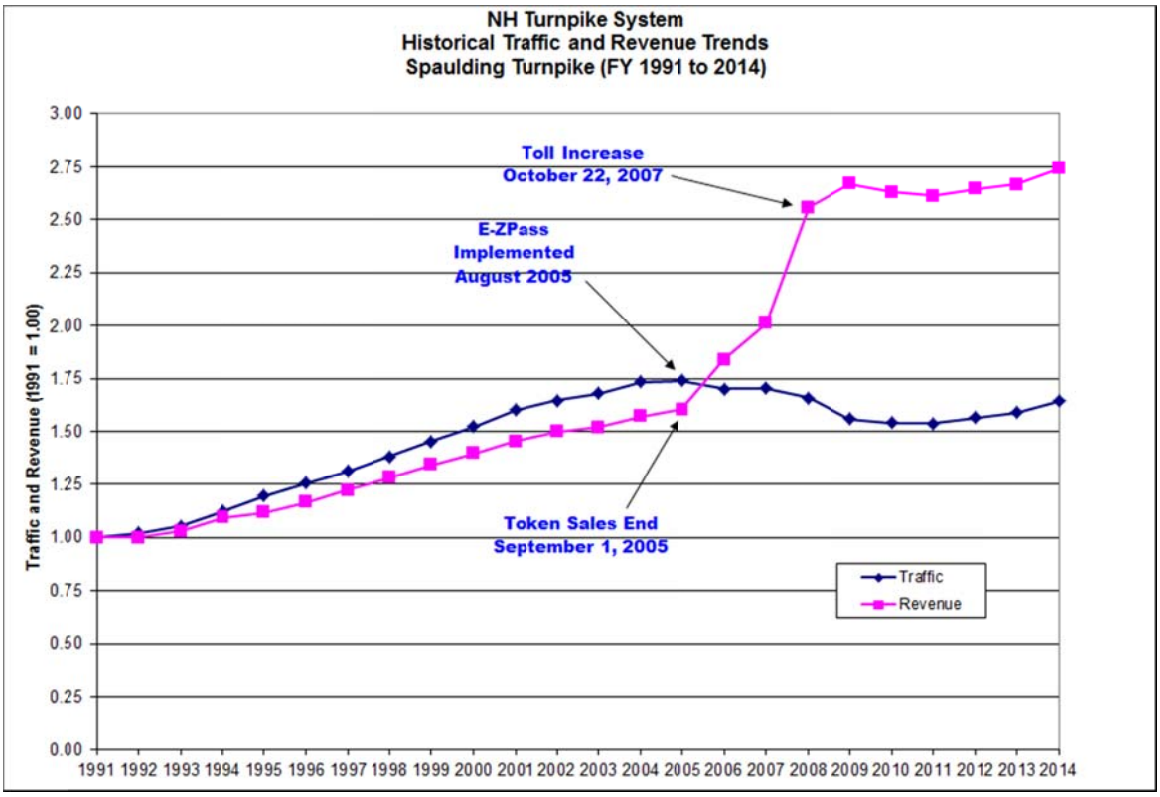


Figure 6: Historical Toll Transaction and Revenue Trends by Turnpike *(continued)*



4.4. COMPARISON OF ACTUAL TOLL REVENUES TO RECENT PROJECTIONS

Jacobs previously projected traffic and revenue on the Turnpike System for the August 2012 bond issuance. Table 4 compares Jacobs' projections against the actual toll revenues collected by the Turnpike System for the fiscal years 2012 through 2014. Note that the revenues projected for August 2012 bond issuance did not include adjustments for violation revenue; therefore, FY 2012 the actual revenues collected were slightly more than projected (0.4 percent). FY 2013 actual revenues were 0.4 percent below the forecast, due to traffic losses on the Central Turnpike that were slightly greater than expected, and no growth on the Blue Star Turnpike that year. In FY 2014, the actual traffic was 1.0 percent over Jacobs' forecast.

Table 4: Actual Toll Revenues vs. 2012 Projections, Millions

Fiscal Year	August 2012 Projected Revenue	Actual Revenue
2012	$116.1	$116.6
2013	$115.9	$115.4
2014	$116.7	$117.9

Note: Violation revenue not included in projected revenues, but is included in actual revenues.

5. REVIEW OF PROPOSED CAPITAL IMPROVEMENT PROGRAM

This section presents a review of the Turnpike System's historical and proposed capital improvement program for the 20-year period FY 2005-2024 as shown in Table 5 below.

Table 5: Historical and Proposed NHDOT Capital Expenditures, Millions

Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Other Projects[1]	Total Turnpike
2005	$1.2		$0.2	$19.0	$20.4
2006	$2.5		$1.9	$8.8	$13.2
2007	$2.0			$6.5	$8.5
2008	$0.4	$0.2	$7.4	$3.0	$11.0
2009	$6.5	$0.2	$18.5	$0.9	$26.1
2010	$9.8	$11.8	$42.0	$2.9	$66.4
2011	$7.2	$4.3	$40.0	$1.2	$52.8
2012	$12.5	$1.0	$32.7	$0.7	$46.9
2013	$27.3	$5.0	$32.4	$4.9	$69.6
2014	$21.2	$2.4	$20.4	$5.8	$49.7
Total '05-'14	$90.6	$24.9	$195.5	$53.7	$364.6
2015	$14.7	$0.9	$22.7	$2.6	$40.9
2016	$15.4	$4.4	$21.7	$0.5	$42.0
2017	$11.9	$5.0	$14.5	$0.5	$31.9
2018	$5.0	$2.4	$16.2	$0.5	$24.1
2019	$3.0	$1.0	$18.9	$0.5	$23.4
2020	$5.0	$1.0	$27.8	$0.5	$34.3
2021	$4.0	$-	$30.2	$0.5	$34.7
2022	$20.0	$-	$16.1	$0.5	$36.6
2023	$24.0			$0.5	$24.5
2024	$21.0			$0.5	$21.5
Total '15-'24	$126.0	$14.7	$168.1	$7.1	$313.9

[1] *Miscellaneous Turnpike System Projects funded with Federal Aid and matched with Turnpike funds, and/or Systemwide projects.*

Notes:

-Central Turnpike Projects include: Bow-Concord I-93 Bridge Redecking, Manchester Interstate 293 Exit 4 Bridge Replacements, Bedford ORT, and Nashua-Bedford Turnpike widening.

-Blue Star Turnpike Projects include: I-95 Bridge over the Taylor River.

-Spaulding Turnpike Projects include: Newington-Dover Little Bay Bridges and Roadway Expansion Exits 3-6

-Data will not necessarily add to totals because of rounding.

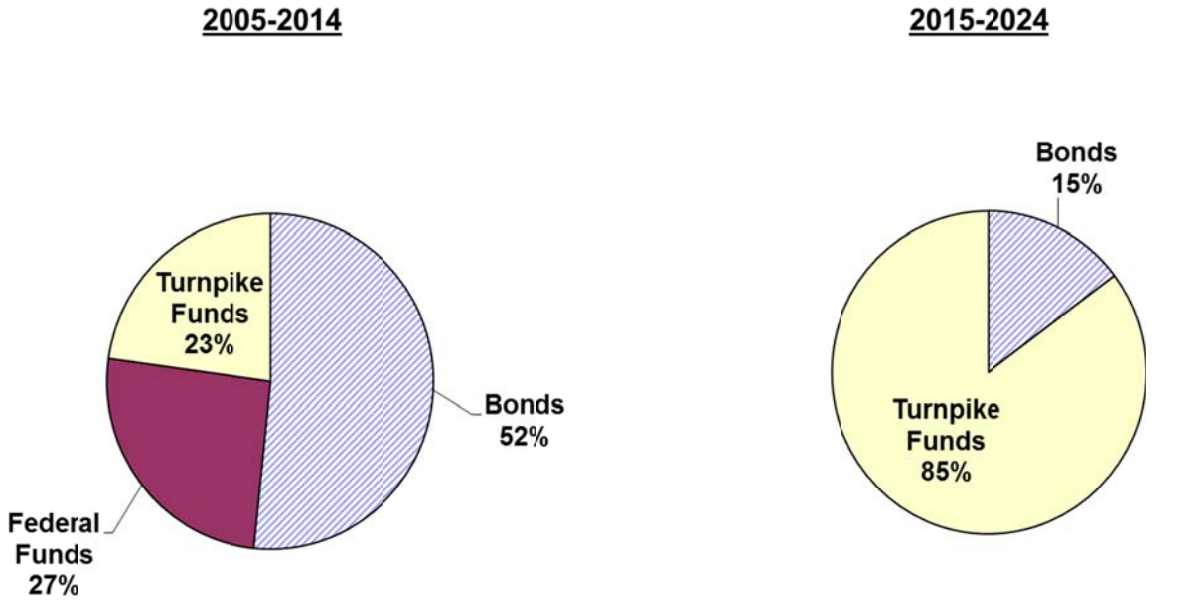
Over the ten-year period FY 2005-2014 Turnpike System-funded capital expenditures totaled $364.6 million. The largest share of this - $195.5 million - was spent on Spaulding Turnpike projects. Funding sources for these projects include toll revenues, other Turnpike System revenues and Turnpike System bond proceeds. Not included in these numbers are a total of $125.1 million of federal funds expended on Turnpike System fixed assets during the FY 2005-FY 2014 period. Turnpike System-funded capital expenditures are programmed at a total of $313.9 million over the FY 2015-2024 period.

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 be priorities to address red listed bridges and improve safety and congestion on the Turnpike System.

Forty percent of Turnpike System capital expenditures over the next ten years will be for projects on the Spaulding Turnpike, including widening and improvements from Exits 3 to 6 and the completion of the Newington-Dover Little Bay Bridges. Upcoming capital expenditures on the Central Turnpike include Bow-Concord I-93 Bridge Replacement, Manchester Interstate 293 Exit 4 Bridge Replacements, and Bedford ORT. Towards the end of the forecast period, Nashua-Bedford Turnpike widening is expected to commence. The I-95 Taylor River Bridge and Dam Replacement is the largest upcoming project planned for the Blue Star Turnpike in terms of capital expenditures.

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 Turnpike System funds are expected to grow, while there will be no projects funded by federal funds 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 Turnpike System 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 Star Turnpike (I-95). It also includes a review of the Turnpike System's historical and projected debt service expenditures.

Administrative costs include administrative salaries, benefits, expenses, equipment, indirect costs, cleaning, utilities, travel costs, audit expenses, and payments to other state agencies or DOT Bureaus for services.

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 related to construction projects to preserve, maintain and upgrade the 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 2005 through 2024.

Table 6: Toll Processing Costs, Millions

Fiscal Year	Banking/ Credit Card Fees	EZPass CSC Costs	Toll Maintenance Costs	EZPass Transponder Expenses	Total Toll Processing Costs
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	$5.1	$1.3	$0.7	$8.9
2010	$2.1	$5.3	$1.6	$0.8	$9.8
2011	$2.2	$5.8	$1.8	$0.8	$10.6

Fiscal Year	Banking/ Credit Card Fees	EZPass CSC Costs	Toll Maintenance Costs	EZPass Transponder Expenses	Total Toll Processing Costs
2012	$2.1	$5.3	$1.4	$0.8	$9.6
2013	$2.1	$5.0	$1.3	$0.5	$8.9
2014	$2.2	$5.9	$0.8	$0.6	$9.5
Total '05-'14	$18.0	$44.9	$11.0	$13.1	$87.0
2015	$2.3	$7.2	$2.1	$1.5	$13.1
2016	$2.5	$11.0	$2.0	$1.5	$17.0
2017	$2.6	$9.4	$2.1	$0.5	$14.6
2018	$2.7	$7.5	$2.1	$0.5	$12.8
2019	$2.7	$7.7	$2.2	$0.5	$13.1
2020	$2.8	$7.9	$2.3	$0.5	$13.5
2021	$2.8	$8.2	$2.3	$0.5	$13.8
2022	$2.9	$8.4	$2.4	$0.5	$14.2
2023	$2.9	$8.7	$2.5	$0.5	$14.6
2024	$3.0	$8.9	$2.5	$0.5	$14.9
Total '15-'24	$27.1	$84.9	$22.5	$7.0	$141.5

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

Toll processing costs increased fairly rapidly from $3.7 million in FY 2005 to $10.8 million in FY 2006 primarily due to $5.5 million in ***E-ZPass*** transponder purchases and $3.7 million in ***E-ZPass*** customer service center costs with the inception of ***E-ZPass*** on the Turnpike System. Transponder purchase costs dropped to $0.5-$0.8 million per year in the FY 2009-2012 period as the market became more saturated.

NHDOT estimates that approximately $141.5 million will be spent on toll processing between FY 2015 and FY 2024, with ***E-ZPass*** customer service center costs accounting for $84.9 million or 60 percent. Approximately $7.0 million in transponder purchases is estimated over the ten-year period FY 2015-2024; this includes transponder replacement costs. NHDOT recovers the transponder costs from selling the transponder to the customer at cost; private cars are charged $8.90 for an interior or $15.19 for an exterior ***E-ZPass*** tag. The Bureau is planning to increase its transponder inventory in FY 2015 and FY 2016 in order for customers to replace transponders that will have reached the end of their useful life. Of the 300,850 transponders that were sold to customers in the fall of 2005, and are reaching ten years of age, the Bureau anticipates customers replacing approximately 200,000 over the next 18 months.

6.2. OPERATING EXPENDITURES

Table 7 summarizes historical and projected NHDOT expenses for the 20-year period FY 2005 through FY 2024.

Table 7: Historical and Projected NHDOT Operating Expenditures, Millions

FY	Admin	Toll Ops	Maint.	State Police Enforcement	Toll Processing	Welcome Centers & Rest Areas	Tpk Funding of DOT-Hwy	O&M Lapse	Total O&M	R&R	I-95 Payments from General Reserve	I-95 Advance Payment	Addl R&R	Total Operating Expense
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	$4.5	$10.5	$9.8	$5.4	$8.9		$1.2		$40.3	$7.8				$48.1
2010	$5.7	$10.9	$7.6	$5.0	$9.8		$1.1		$40.1	$7.8	$30.0			$77.9
2011	$6.3	$10.9	$8.6	$4.9	$10.6		$1.0		$42.3	$14.3	$20.0			$76.6
2012	$6.1	$9.7	$7.6	$4.9	$9.6	$1.2	$1.6		$40.7	$9.3	$26.0			$76.0
2013	$6.9	$9.1	$8.7	$5.5	$8.9	$1.2	$1.9		$42.2	$9.6	$5.9	$20.1		$77.8
2014	$6.2	$8.7	$8.7	$5.8	$9.5	$1.2	$2.4		$42.5	$11.3	$5.9	$9.1		$68.8
Total '05-'14	$54.0	$98.8	$84.1	$50.3	$87.0	$3.6	$11.0	$-	$388.8	$88.1	$87.8	$29.2	$-	$593.9
2015	$9.2	$11.1	$10.8	$7.0	$13.1	$1.4	$3.4	$(6.3)	$49.7	$8.9	$5.9	$8.2	$2.6	$75.3
2016	$8.7	$10.8	$9.2	$7.3	$17.0	$1.3	$2.8	$(2.5)	$54.6	$9.7	$0.4			$64.7
2017	$9.0	$11.1	$9.5	$7.4	$14.6	$1.3	$2.9	$(2.5)	$53.3	$9.6				$62.9
2018	$9.2	$11.3	$9.7	$7.5	$12.8	$1.4	$3.0	$(2.5)	$52.4	$11.5				$63.9
2019	$9.4	$11.5	$9.9	$7.7	$13.1	$1.4	$3.0	$(2.5)	$53.5	$11.9				$65.4
2020	$9.5	$11.8	$10.1	$7.9	$13.5	$1.4	$3.1	$(2.5)	$54.7	$10.4				$65.1
2021	$9.8	$12.0	$10.3	$8.0	$13.8	$1.4	$3.1	$(2.5)	$55.9	$10.7				$66.6
2022	$9.9	$12.3	$10.5	$8.2	$14.2	$1.5	$3.2	$(2.5)	$57.2	$11.0				$68.2
2023	$10.1	$12.5	$10.7	$8.3	$14.6	$1.5	$3.3	$(2.5)	$58.5	$11.4				$69.9
2024	$10.5	$12.8	$10.9	$8.5	$14.9	$1.5	$3.3	$(2.5)	$59.8	$11.7				$71.5
Total '15-'24	$95.3	$117.2	$101.5	$77.8	$141.5	$14.1	$31.1	$(28.8)	$549.6	$106.8	$6.3	$8.2	$2.6	$673.5

Notes: O&M lapse in FY 2015 is the projected lapse based on O&M spending through January 2015 and projected spending for the rest of the fiscal year. O&M lapse in FY 2016 and FY 2017 is a self-imposed reduction in operating expenditures (both budgeted and projected) due to savings projected from the lean staffing initiative in toll operations.

The dollar values shown from 2005 to 2014, provided by Finance & Contracts, are on the GAAP basis (General accepted accounting principles), and the dollar values from 2015 to 2024, from the Bureau of Turnpike's O&M model, are on a cash basis.

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

Data will not necessarily add to totals because of rounding.

The Turnpike System total annual operating expenditures (Operating and Maintenance, Renewal and Replacement and I-95 Payments Costs) over the past ten years ranged from a low of $32.3 million in FY 2005 to a high of $77.9 million in FY 2010; FY 2014 operating expenditures were $68.8 million. Total operating expenditures amounted to $593.9 million over the ten-year period FY 2005-2014 and about 17 percent or $98.8 million was spent on toll operations. The large increase in operating expenses in FY 2006 was largely due to implementation of ***E-ZPass***. 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 and by $29.8 million or some 62 percent from FY 2009 to FY 2010 due to payments from the Bureau of Turnpikes' General Reserve Fund for the acquisition of a portion of I-95 into the Blue Star Turnpike. As this payment became smaller in FY 2014, total operating expenses declined by $9.0 million or 11.6 percent from FY 2013 to FY 2014.

Turnpike System renewal and replacement expenditures also increased in recent years, from a low of $3.3 million in FY 2005 to a high of $14.3 million in FY 2011.

Total operating expenditures for the period FY 2015-2024 are projected to total $673.5 million, about 13 percent higher than the expenditures of the previous ten year period. Factors that contribute to this projected increase include more lane miles to maintain due to the recent acquisition of an additional part of I-95, the purchase of new and replacement ***E-ZPass*** transponders, a more robust renewal and replacement program, and inflation.

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 2005 through 2014. The lapse has ranged from $2.3 million in FY 2005 to $11.0 million in FY 2013. Over the last three years, the Bureau of Turnpikes averaged a net lapse of $8.3 million. Of these funds, Turnpike System renewal and replacement funds are carried forward to the following year; all other lapses for operating expenses return to retained earnings or the Bureau of Turnpikes' General Reserve Account.

Table 8: Historical Lapse

FY	Lapse	Transfer from Retained Earnings	Net
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
2010	$6,048,294		$6,048,294
2011	$8,267,563		$8,267,563
2012	$6,218,459	$75,000	$6,143,459
2013	$11,017,323		$11,017,323
2014	$8,716,260	$1,105,000	$7,611,260
Total '05-'14	$57,757,278	$7,780,950	$49,976,071

6.3. DEBT SERVICE REQUIREMENTS

Table 9 presents historical and scheduled debt service requirements for the period FY 2005-2024. The 2015 revenue bonds are based on $50M issuance on 10-year bonds with level debt service payments with a 2.5 percent interest rate.

Table 9: Historical and Scheduled Debt Service Expenditures, Millions

FY	Existing Revenue Bonds	FY 2015 Revenue Bonds [1]	Total Revenue Bond Debt Service	BABs Interest Subsidy [2]	Net Total Revenue Bond Debt Service	GO Bonds
2005	$27.0		$27.0	$0.0	$27.0	$4.3
2006	$25.8		$25.8	$0.0	$25.8	$4.2
2007	$28.1		$28.1	$0.0	$28.1	$3.0
2008	$25.7		$25.7	$0.0	$25.7	$1.7
2009	$25.9		$25.9	$0.0	$25.9	$1.6
2010	$30.9		$30.9	-$1.3	$29.6	$0.7
2011	$36.9		$36.9	-$3.1	$33.8	$0.6
2012	$36.4		$36.4	-$3.1	$33.3	
2013	$41.4		$41.4	-$3.1	$38.3	
2014	$41.9		$41.9	-$2.9	$39.0	
Total '05-'14	$320.0	$0.0	$320.0	-$13.5	$306.5	$16.1
2015	$42.0	$0.0	$42.0	-$2.9	$39.1	
2016	$42.0	$2.3	$44.3	-$2.9	$41.4	
2017	$40.3	$4.0	$44.3	-$2.9	$41.4	
2018	$35.9	$8.3	$44.3	-$2.9	$41.4	
2019	$35.9	$8.3	$44.3	-$2.9	$41.4	
2020	$33.8	$10.4	$44.3	-$2.9	$41.4	
2021	$29.2	$15.0	$44.3	-$2.9	$41.4	
2022	$29.4	$7.9	$37.4	-$2.9	$34.5	
2023	$29.3	$1.3	$30.5	-$2.9	$27.6	
2024	$29.0	$0.0	$29.0	-$2.8	$26.2	
Total '15-'24	$346.9	$57.7	$404.6	-$28.9	$375.7	$0.0

[1] Based on $50M issuance on 10-year bonds with level debt service payments of 2.5 percent interest rate. Assumes 2015 bonds are delivered in June 2015.

[2] The federal budget agreement enacted at the end of 2013 did not include sequestration relief on reimbursements for direct-pay bonds (BABs) and it extended the sequestration for two years beyond the original termination date of 2021 (through FFY 2023). The reduction in funding as a result of sequestration is 7.2% for FFY2014 and 7.3% for FFY2015. Revenue Interest Rebate has been reduced by 7.3% through 2023.

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

Historical total revenue bond debt service payments ranged from a low of $25.7 million in FY 2008 to a high of $41.9 million in FY 2014. Over the ten-year period FY 2005-2014, the cumulative total revenue bond debt service was $320.0 million. The historical BABs interest subsidy over this ten-year period totaled $13.5 million, resulting in a net total revenue bond debt service of $306.5 million. Furthermore, there were $16.1 million in general obligation bonds paid during FY 2005-2011.

Scheduled total revenue bond debt service expenditures are projected to range over the period FY 2015-2024 from a low of $29.0 million in FY 2024 to a high of $44.3 million in FY 2016 through FY 2021. The cumulative total revenue bond debt service payment over this period is estimated to be $404.6 million or about 26 percent more than the previous ten-year period. The majority of this amount will be for existing revenue bond payments. Over the ten year forecast period FY 2015-2024, the total BABs interest subsidy is estimated to total $28.9 million, resulting in a net total revenue bond debt service of $375.7 million.

7. REVIEW OF NATIONAL AND REGIONAL SOCIOECONOMIC FACTORS

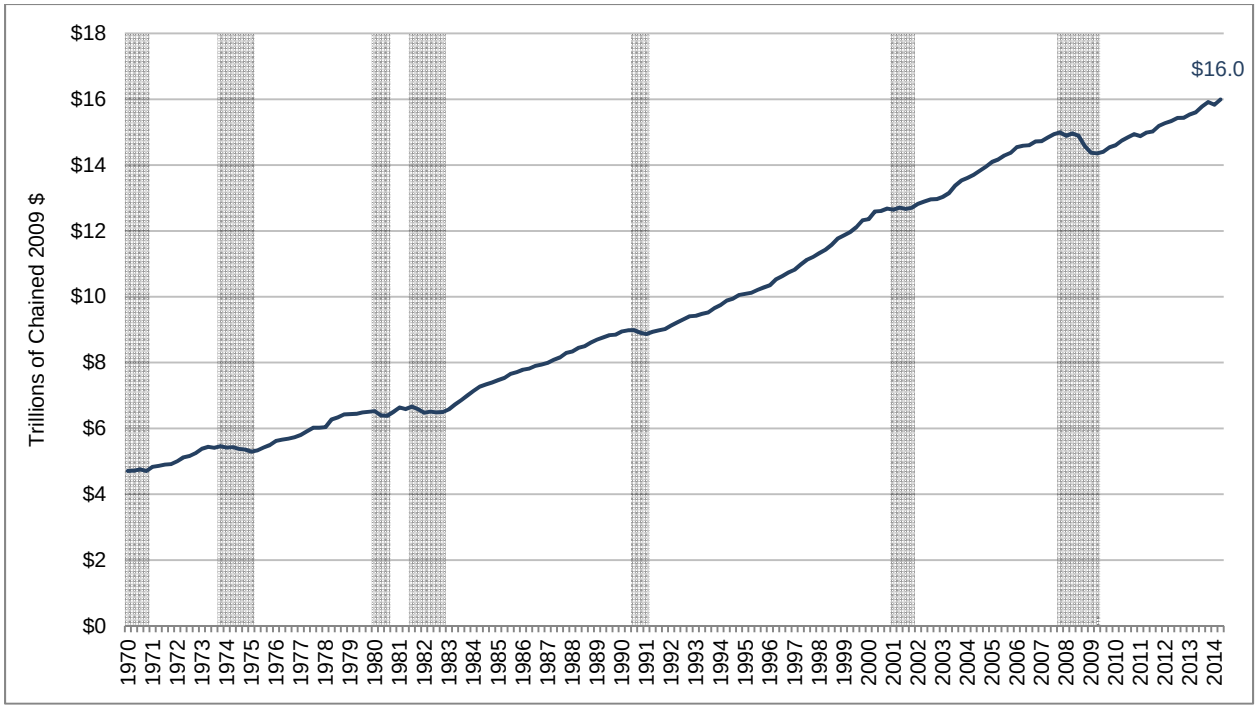
7.1. NATIONAL ECONOMIC TRENDS

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 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. have been driving less in recent years, 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. Note that gray shaded areas on graphs indicate periods of U.S. recessions.

7.1.1. Output and Growth

Real gross domestic product (GDP) measures the real value of goods and services produced by the U.S. economy. Real GDP reached approximately $16.0 trillion in the second quarter of 2014. As shown in Figure 8, real GDP has continued to grow since the end of the most recent recession in 2009. In fact, since the third quarter of 2009, real GDP has increased approximately 11.1 percent.

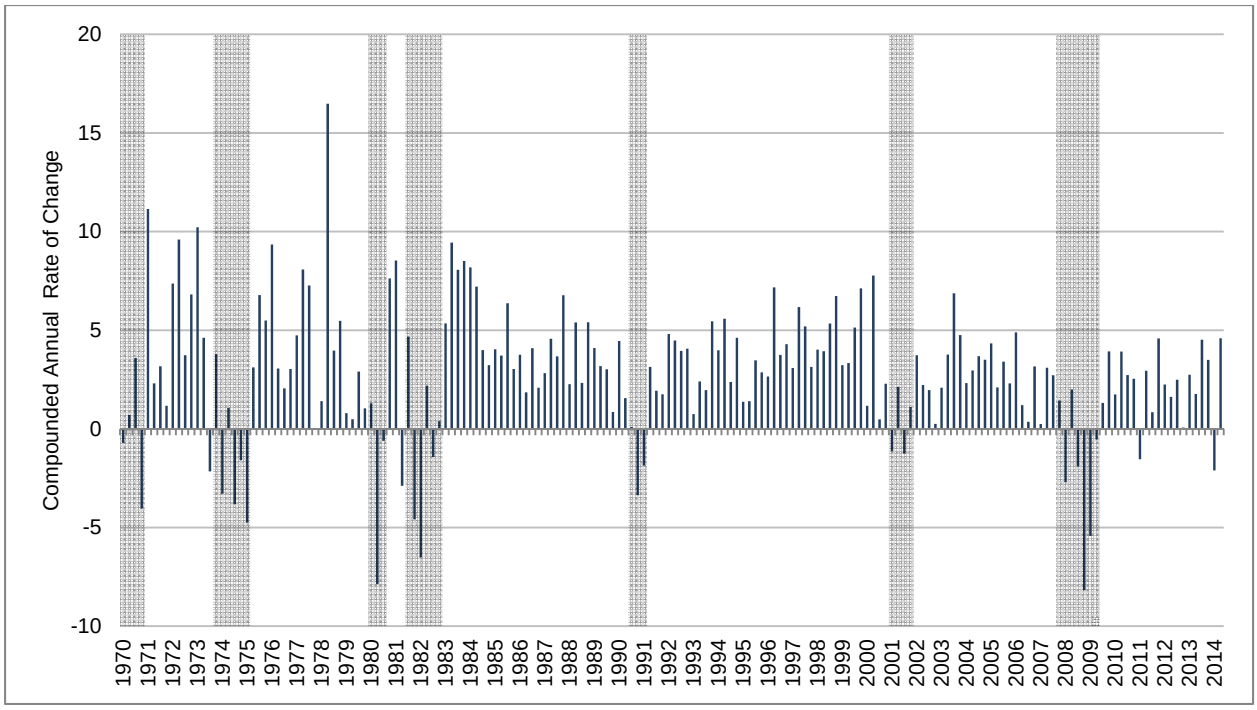
Figure 8: Real Growth Domestic Product



Source: Bureau of Economic Analysis

Although economic output has increased since the end of the most recent recession, consistently high growth in real GDP has remained elusive for the U.S. economy. As shown in Figure 9, the seasonally adjusted annual rate of change in real GDP, measured on a quarterly basis, has fluctuated between -2.1 percent and 4.6 percent since the third quarter of 2009 when the most recent recession ended. In the four most recent quarters, however, real GDP has changed at annualized rates of 4.5, 3.5, -2.1, and 4.6 percent, suggesting that higher, more consistent levels of growth may be returning.

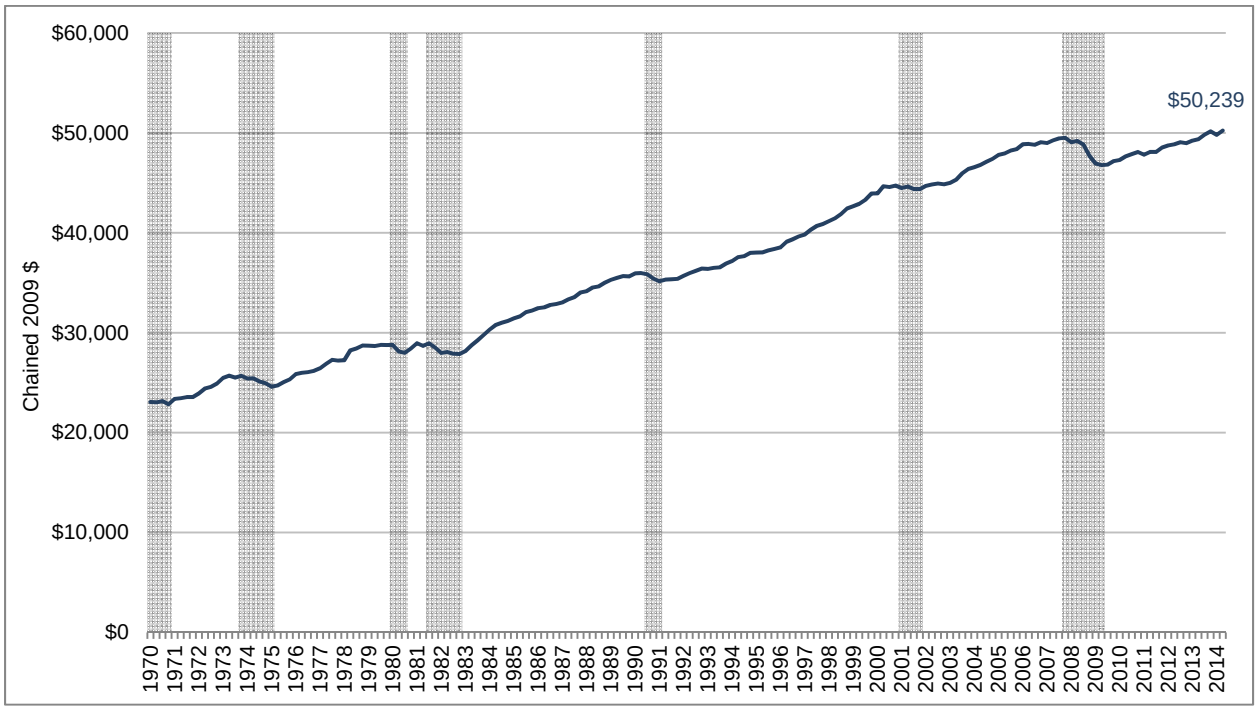
Figure 9: Annual Rate of Change in Real Domestic Product



Source: Bureau of Economic Analysis

Real GDP has also increased on a per capita basis, although it only recently surpassed levels last observed in 2007. In the fourth quarter of 2007, per capita real GDP stood at $49,506 before falling approximately 5.5 percent to $46,781 in the second quarter of 2009. Since the end of the most recent recession, it has rebounded to reach $50,239 in the second quarter of 2014; in fact, per capita real GDP has increased in 10 of the last 12 quarters.

Figure 10: Per Capita Real Gross Domestic Product



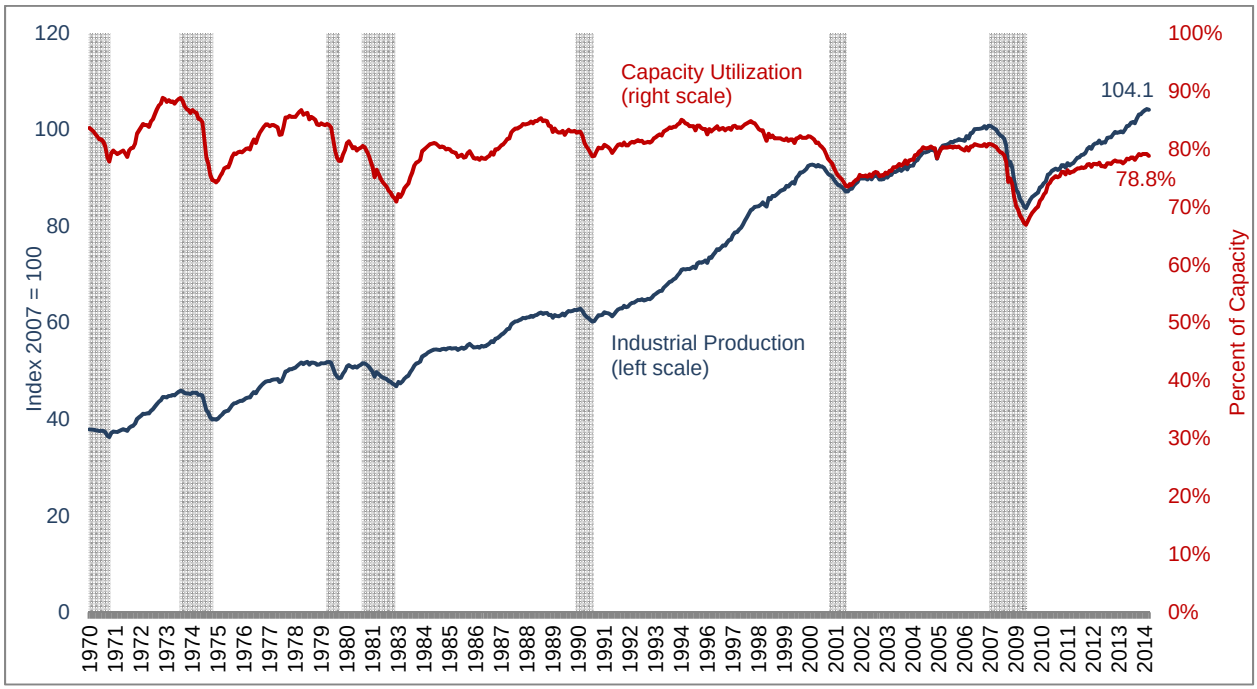
Source: Bureau of Economic Analysis

Industrial production and capacity utilization are two other measures of the output of the U.S. economy. The Industrial Production Index (IPI), maintained by the Board of Governors of the Federal Reserve System, measures output in the manufacturing, mining, and gas and electric utilities industries. According to the Board of Governors of the Federal Reserve, capacity utilization is the percentage of resources utilized by firms and factories to create products in the manufacturing, mining, and electric and gas utilities industries for all facilities located in the United States.

As shown in Figure 11, both industrial production and capacity utilization in the U.S. economy decreased sharply during the most recent recession. Capacity utilization was hit particularly hard during the 2008-2009 economic downturn, reaching a low of 66.9 percent in June of 2009, the lowest level observed in over 40 years.

Since the end of the recession, however, both measures have rebounded, with capacity utilization reaching 78.8 percent and the IPI reaching 104.1 as of August 2014. This represents a return to more normal levels of activity for both measures.

Figure 11: Industrial Production Index and Capacity Utilization



Source: Board of Governors of the Federal Reserve System

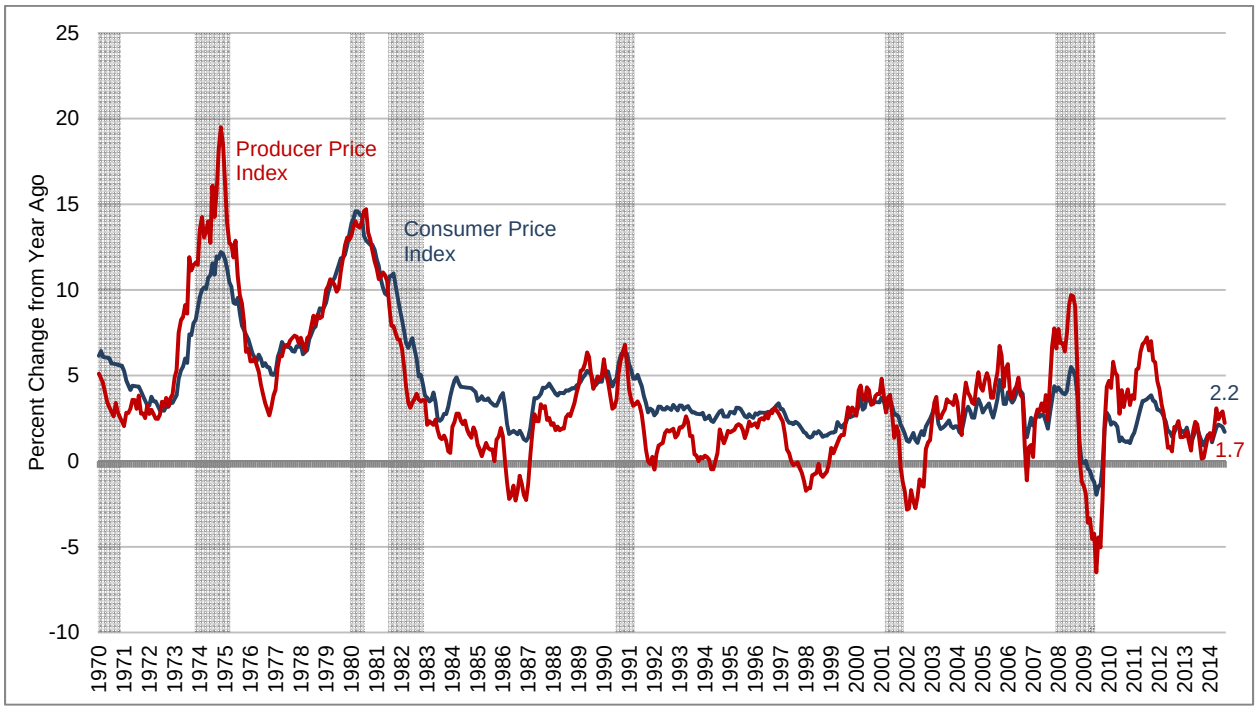
7.1.2. Prices

The Consumer Price Index (CPI) and the Producer Price Index (PPI) are two measures of the level of prices experienced by different segments of the U.S. economy. As expected, both consumer and producers prices declined during the most recent recession as economic activity in the United States slowed. Since the return of economic growth, both the CPI and PPI have been increasing at varying rates.

Since the beginning of 2010, shortly after the end of the 2008-2009 recession, the annual change in consumer prices has remained positive although the rate of change has fluctuated between 0.9 percent and 3.8 percent. For the year to August 2014, the CPI increased 1.7 percent.

Producer prices have behaved in a similar manner since the beginning of 2010, although the PPI tends to be a bit more volatile than the CPI. Since the start of 2010, the rate of change in producer prices has oscillated between 0.2 percent and 7.2 percent. The most recent PPI report, which measures the change in producer prices in the year to August 2014, shows that prices increased by 2.2 percent.

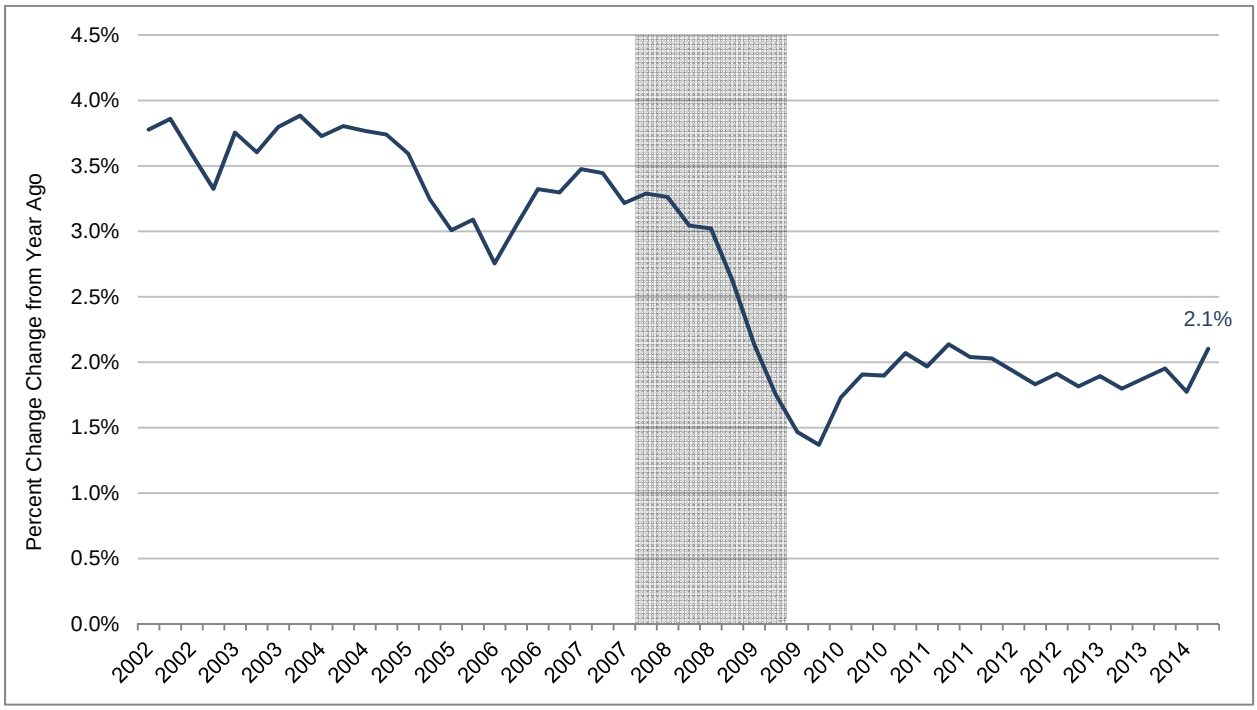
Figure 12: Consumer and Producer Price Indices



Source: Bureau of Labor Statistics

The employment cost index (ECI) measures the change in the cost of labor over time. As shown in Figure 13, employment costs have been increasing over the past 12 years. The latest recession, however, tempered the pace of cost increases; since 2010, the ECI has increased at an average annual rate of 1.9 percent. This is close to the rate of change experienced by the CPI and slightly lower than the rate of changed experienced by the PPI.

Figure 13: Employment Cost Index



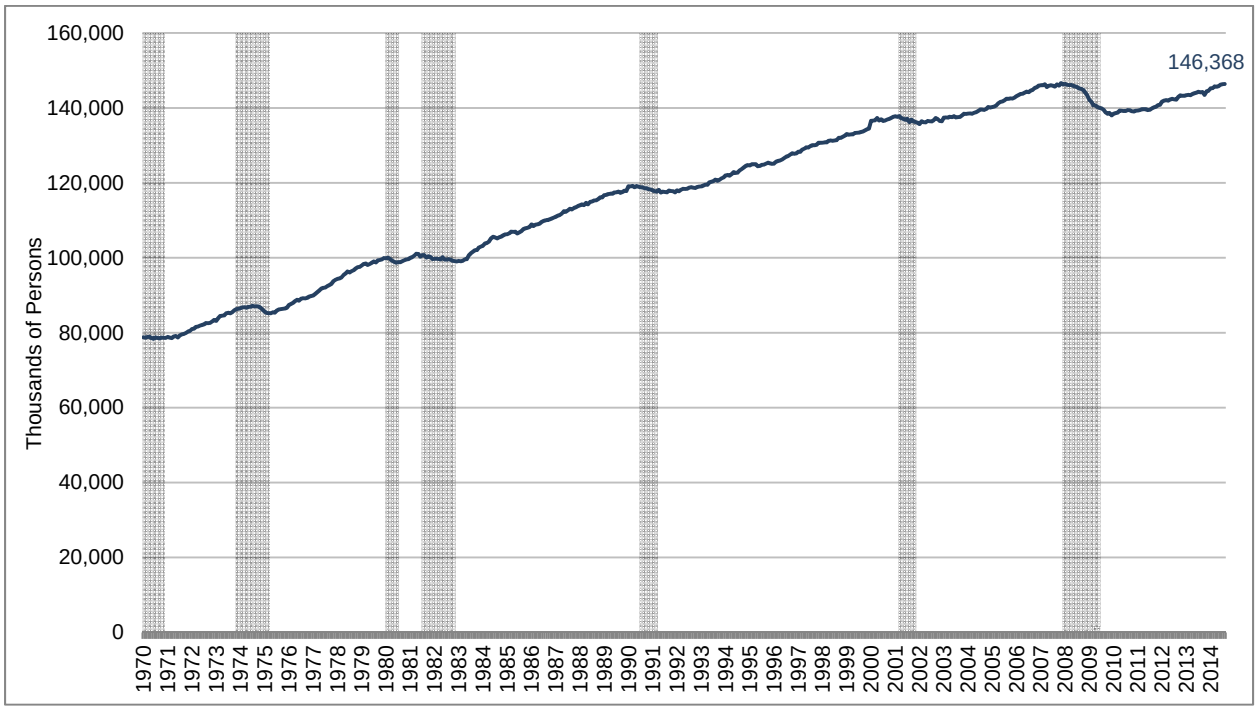
Source: Bureau of Labor Statistics

7.1.3. Employment

As demonstrated by Figure 14 the drop in employment experienced by the U.S. economy during the 2007-2009 recession was severe. From December 2007 to June 2009, civilian employment fell from 146.6 million persons to 140.0 million persons, a decrease of 4.5 percent.

With the economy improving in recent months, civilian employment in the United States reached approximately 146.4 million persons in August, 2014. This represents a 6.1 percent increase from the lowest civilian employment level observed during the last recession. Note that the level of civilian employment in August 2014 is still lower than the level experienced by the economy before the recession started.

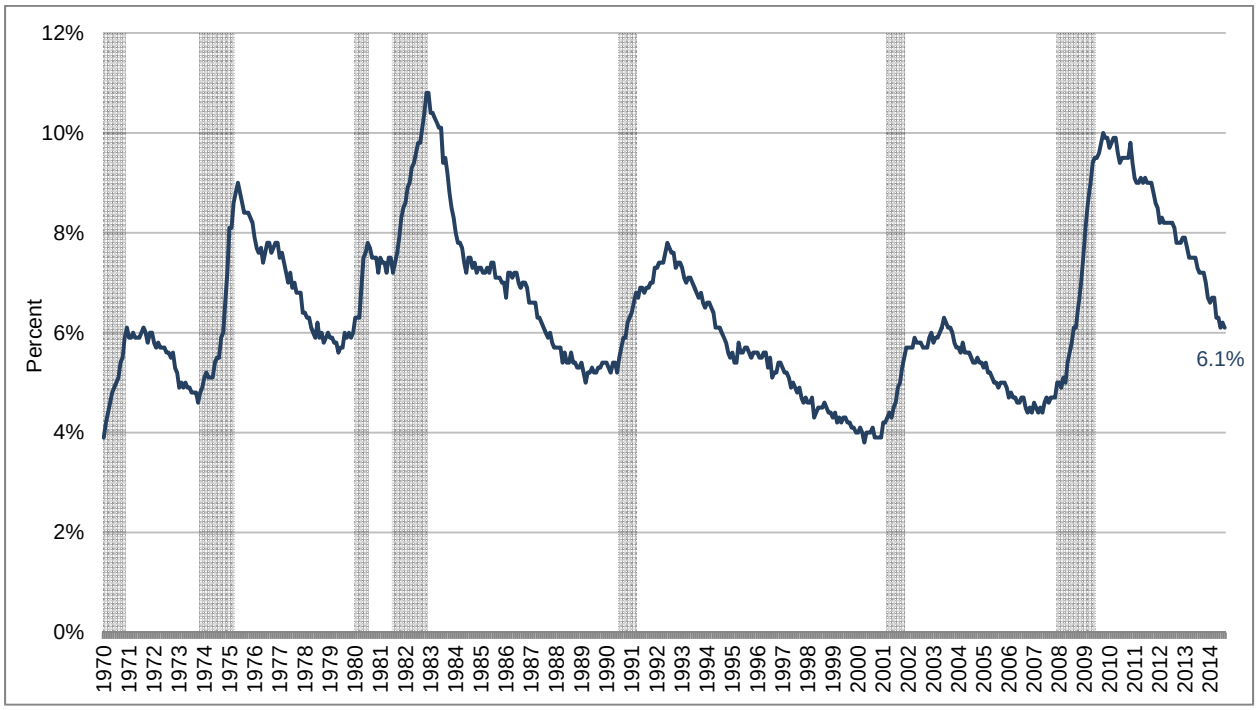
Figure 14: Civilian Employment



Source: Bureau of Labor Statistics

The increase in the level of civilian employment in the U.S. economy coincided with a decrease in the unemployment rate. At its recent peak shortly after the end of the most recent recession, the unemployment rate reached 10.0 percent in October 2009. As shown in Figure 15, this is a historically high rate last observed in the U.S. economy in the early 1980s, after another relatively severe recession. Since October 2009, however, the unemployment rate has fallen steadily to 6.1 percent in August 2014.

Figure 15: Unemployment Rate

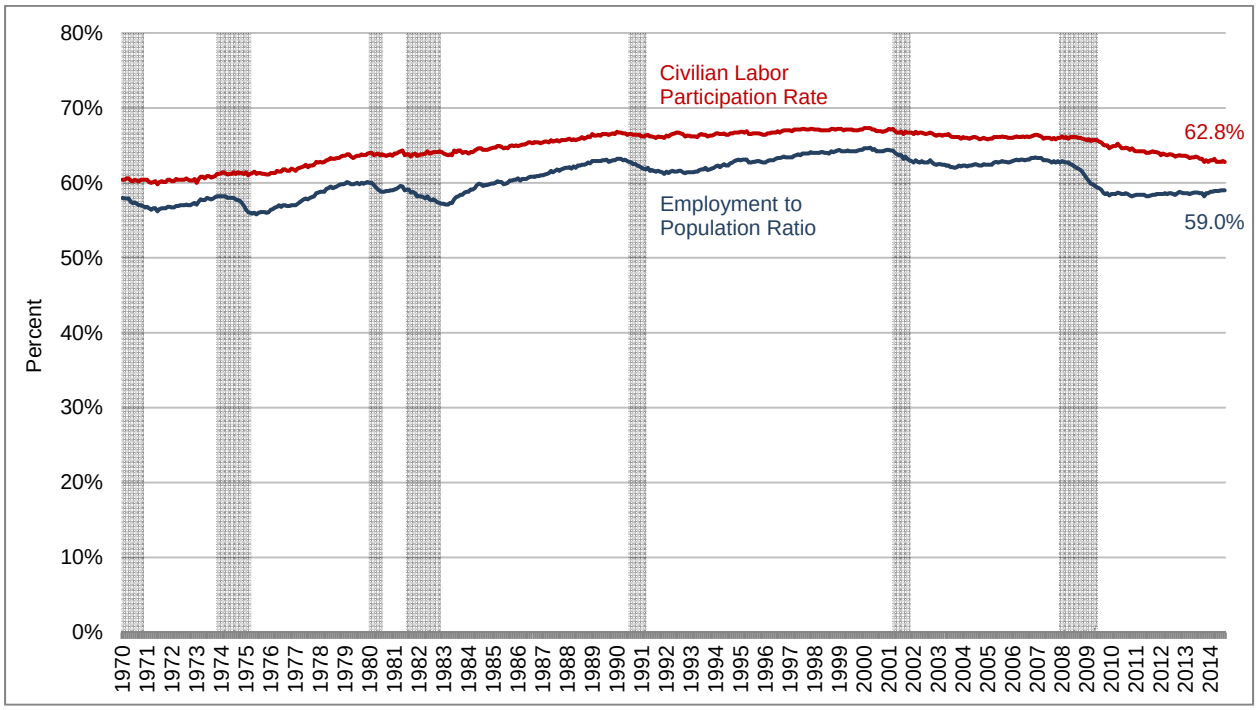


Source: Bureau of Labor Statistics

The number of civilian employees and the unemployment rate, however, do not reveal the full employment picture in the U.S. economy, which remains less than robust. Figure 16 depicts the labor participation rate and the employment to population ratio for the U.S. economy since 1970.

As the figure shows, both measures of labor market participation have declined since the beginning of the 2007-2009 recession. Since December of 2007, the technical start date of the last recession, the employment to population ratio declined by 3.7 percentage points, from 62.7 percent in December 2007 to 59.0 percent in August 2014. This is the first time since the mid-1980s that the employment to population ratio has spent any meaningful amount of time below 60.0 percent. Over the same time period, the civilian labor participation rate declined by 3.2 percentage points, from 66.0 percent to 62.8 percent.

Figure 16: Labor Participation and Employment to Population Ratio

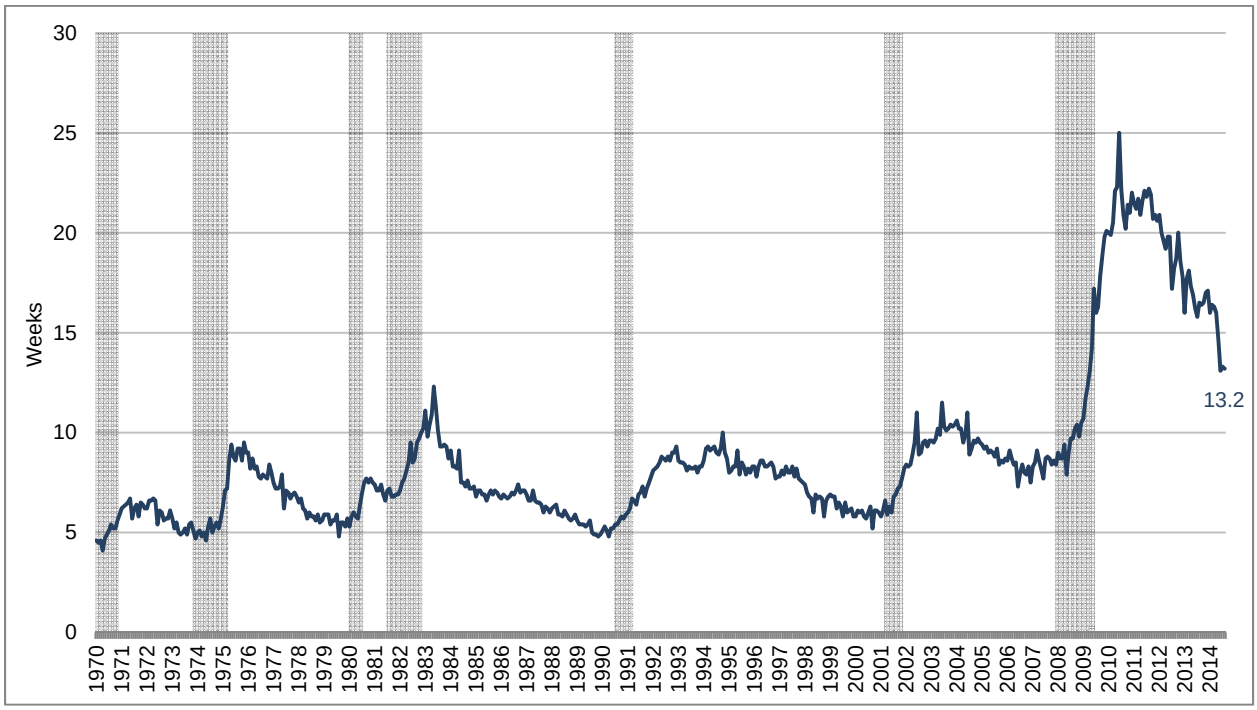


Source: Bureau of Labor Statistics

In addition to the declining measures of labor market participation, the duration of unemployment during and after the recession has remained high by recent historical standards, suggesting that businesses are reluctant to hire and persons seeking employment are encountering a difficult job market.

Figure 17 displays the median duration of unemployment measured in weeks. As shown by the shape of the graph, the median number of weeks of unemployment increased dramatically during the 2007 to 2009 recession. Less than 10 weeks before the recession, the median duration of unemployment peaked at 25 weeks exactly one year after the conclusion of the recession. As of August 2014, median duration stood at 13.2 weeks, still high by historical standards although it is on a downward trajectory, which may prove to be a promising sign for the U.S. economy.

Figure 17: Median Duration of Unemployment

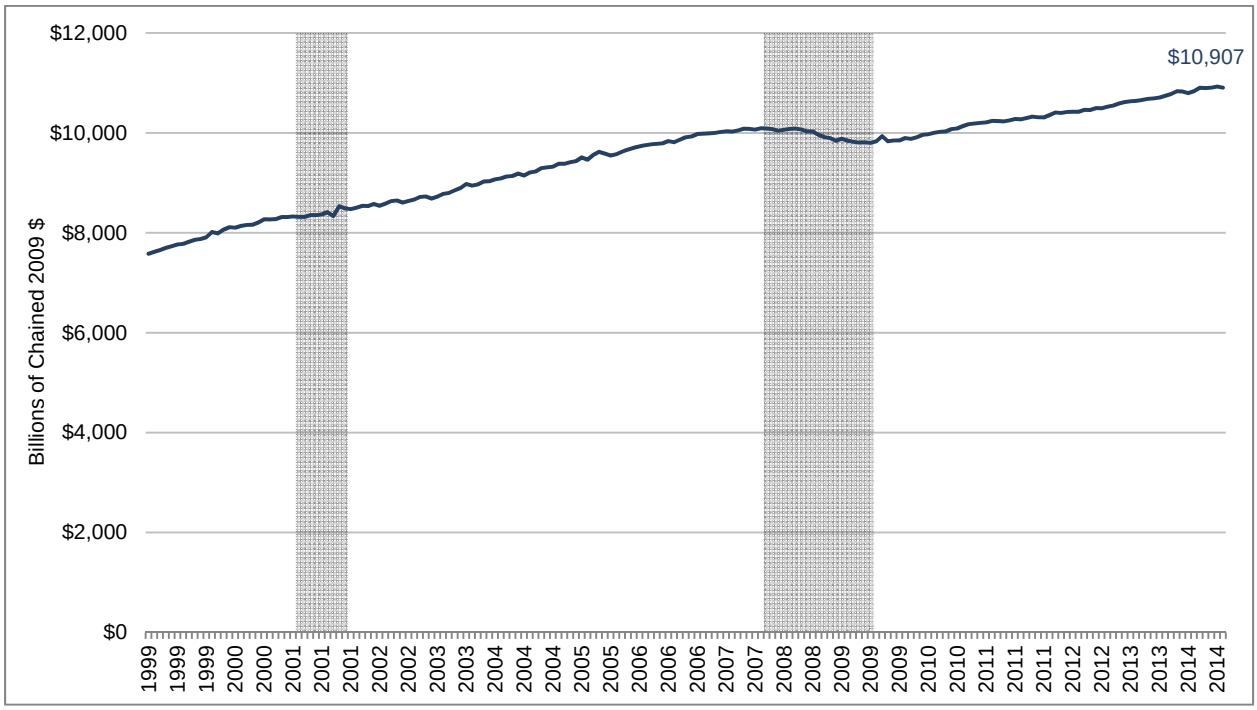


Source: Bureau of Labor Statistics

7.1.4. Consumer and Investment Spending

Much of the growth in the U.S. economy is driven by increases in consumer and investment spending by citizens and businesses. Figure 18 displays real personal consumption in the United States from January 1999 to July 2014. As shown by the shape of the graph, consumer spending increased at a fairly steady rate from January 1999 to January 2008 near the start of the most recent recession. In fact, over that time period, personal consumption increased at an average annual rate of 3.2 percent, rising from $7,582 to $10,074. From January 2008 to January 2014, the average annual growth rate of real personal consumption slowed to 1.2 percent, and only reached $10,906 in August 2014, the last month for which data are available.

Figure 18: Real Personal Consumption Expenditures

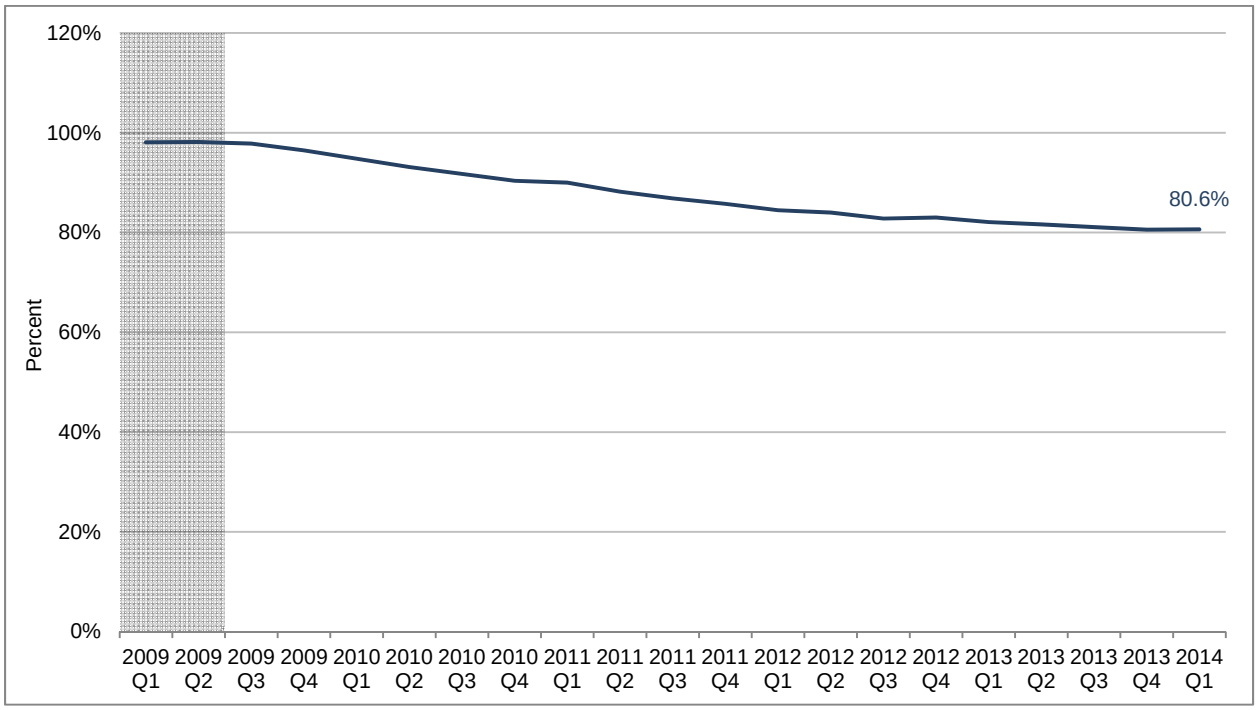


Source: Bureau of Economic Analysis

While the most recent recession slowed real personal consumption, it also spurred households to pay down their debts, causing the debt to GDP ratio to decline as shown in Figure 19. From the first quarter of 2009 to the first quarter of 2014, the household debt to GDP ratio declined by 17.4 percentage points, from 98.1 percent to 80.6 percent, a significant decrease in a relatively short period of time.

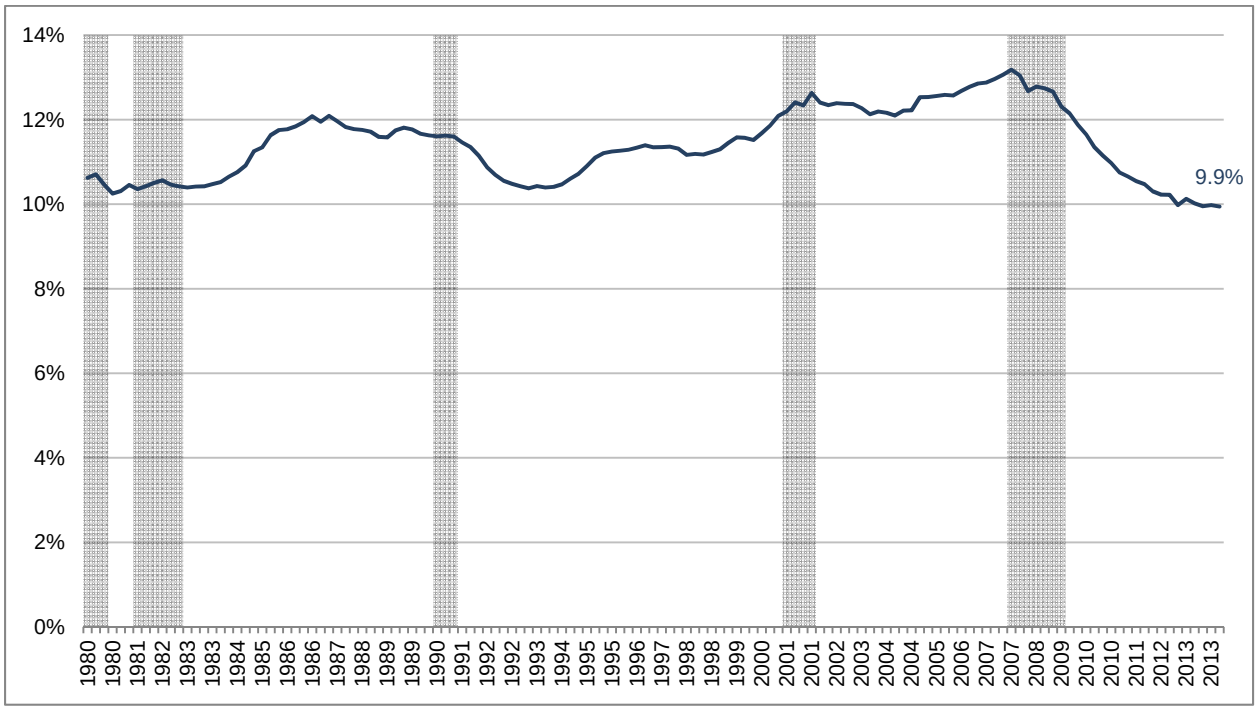
Concurrently, household debt service payments as a percent of disposable personal income also declined. It seems that the most recent recession shifted households' priorities from personal consumption to deleveraging of debts. As shown in Figure 20, debt service payments fell to 9.9 percent of personal disposable income in the first quarter of 2014 from a peak of 13.2 percent in the fourth quarter of 2007 at the beginning of the most recent recession.

Figure 19: Household Debt to GDP Ratio



Source: International Monetary Fund

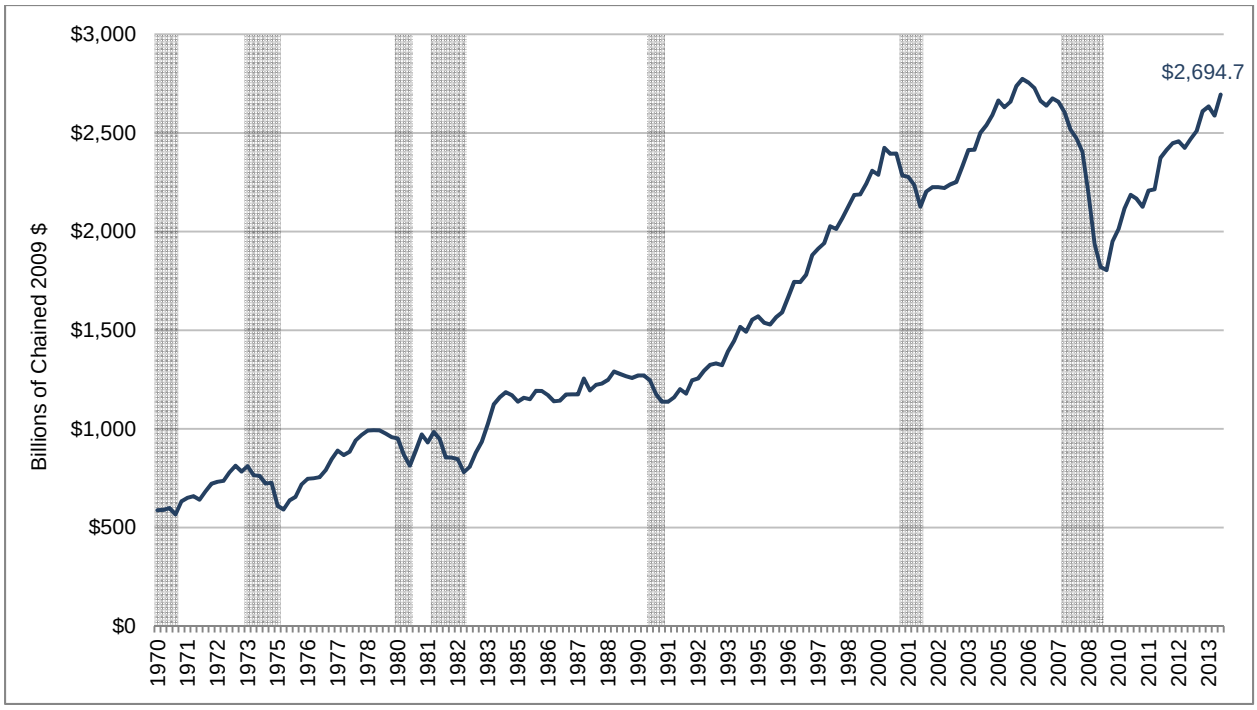
Figure 20: Household Debt Service Payments as a Percent of Disposable Income



Source: Board of Governors of the Federal Reserve System

Investment spending in the United States, similar to other forms of economic activity, decreased sharply during the 2007 to 2009 recession, as shown in Figure 21. Real gross private investment, an important component of GDP, fell from $2,605.2 billion in the fourth quarter of 2007 to $1,804.7 billion in the third quarter of 2009, a decrease of 30.7 percent. Since the end of the recession, real gross private domestic investment increased sharply, rising to $2,694.7 billion in the second quarter of 2014. Rising levels of private domestic investment will be important to the future growth of the U.S. economy.

Figure 21: Real Gross Private Investment



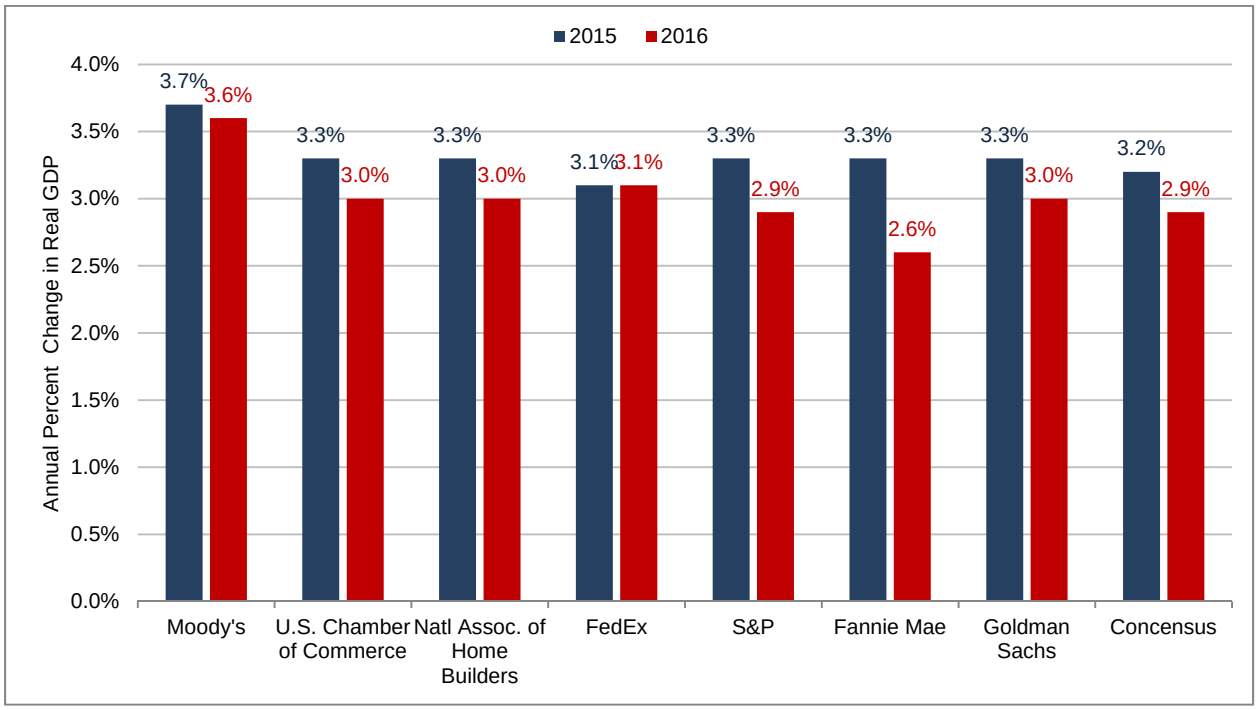
Source Bureau of Economic Analysis

7.1.5. Short Term Economic Forecast

Economic forecasters are optimistic that growth in real GDP will eclipse 3.0 percent in 2015. As shown in Figure 22, a sample of forecasters is predicting growth between 3.2 percent and 3.7 percent. The consensus forecast believes the U.S. economy will grow by 3.2 percent in real terms in 2015. Forecasters are not as optimistic about 2016 but still expect the economy to expand in real terms. Forecasts for real GDP growth in the year 2016 range from 2.6 percent to 3.6 percent but the consensus is that the economy will expand at an annual rate of 2.9 percent.

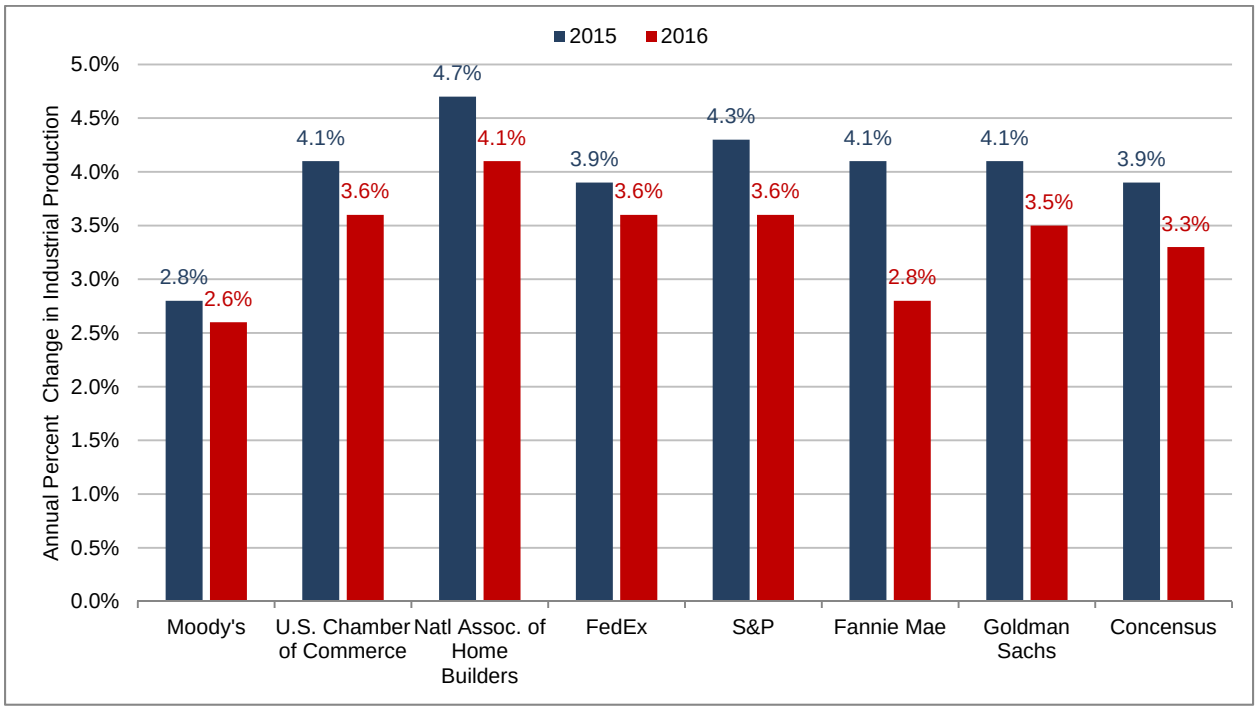
Forecasts for the change in industrial production in 2015 and 2016 are similar to those for real GDP. The consensus for economic forecasters is that industrial production will expand by 3.9 percent in 2015 and 3.3 percent in 2016, as shown in Figure 23.

Figure 22: Forecast Change in Real GDP, 2015 and 2016



Source: Blue Chip Economic Indicators

Figure 23: Forecast Change in Industrial Production, 2015 and 2016

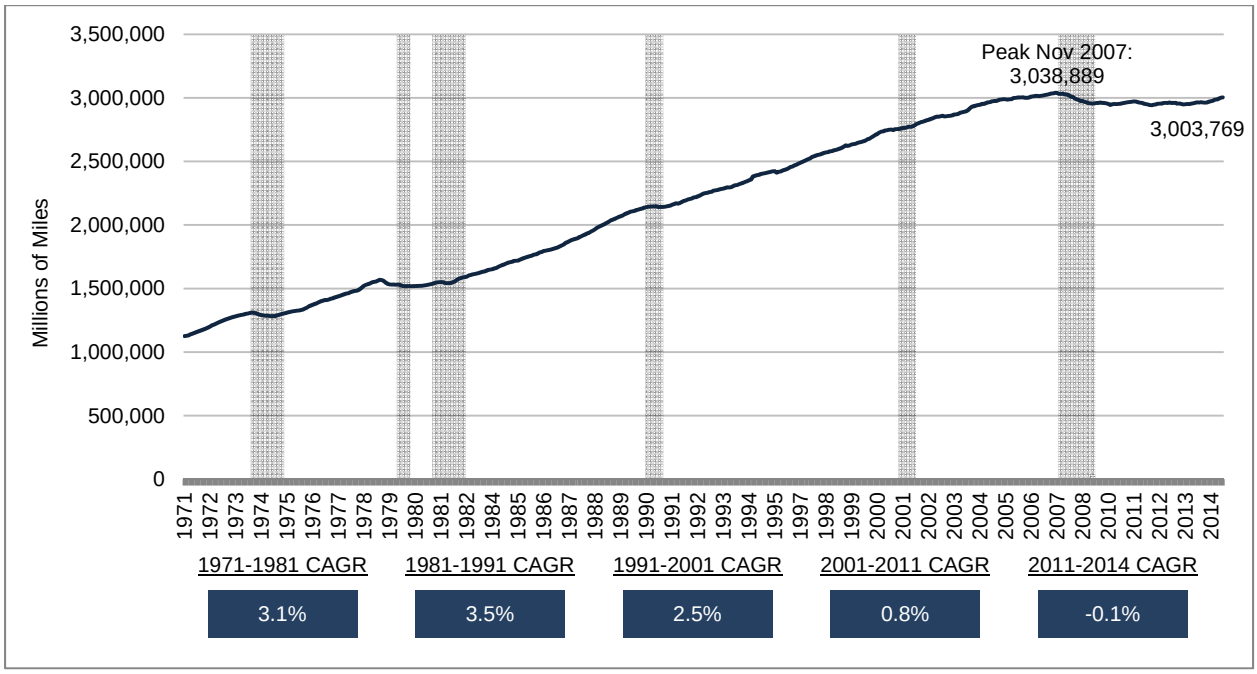


Source: Blue Chip Economic Indicators

7.1.6. Transportation Trends and Energy Prices

Figure 24 displays the 12-month total vehicle miles traveled (VMT) from 1971 to 2014. As shown by the shape of the graph, VMT in the United States plateaued from about 2005 to 2007 after a long period of relatively sustained growth. As shown in the figure, the moving 12-month total VMT peaked in November 2007 at 3.038 trillion miles. For several years after, the United States has experienced a reduction in VMT. From its peak in November 2007, national VMT fell to its lowest point of 2,942 trillion miles in November 2011, a decrease of 3.2 percent. From November 2011 to November 2014, VMT has increased to 3,004 trillion miles – a slow growth of 2.1 percent over the three-year period. However, this is still 1.2 percent below the November 2007 peak.

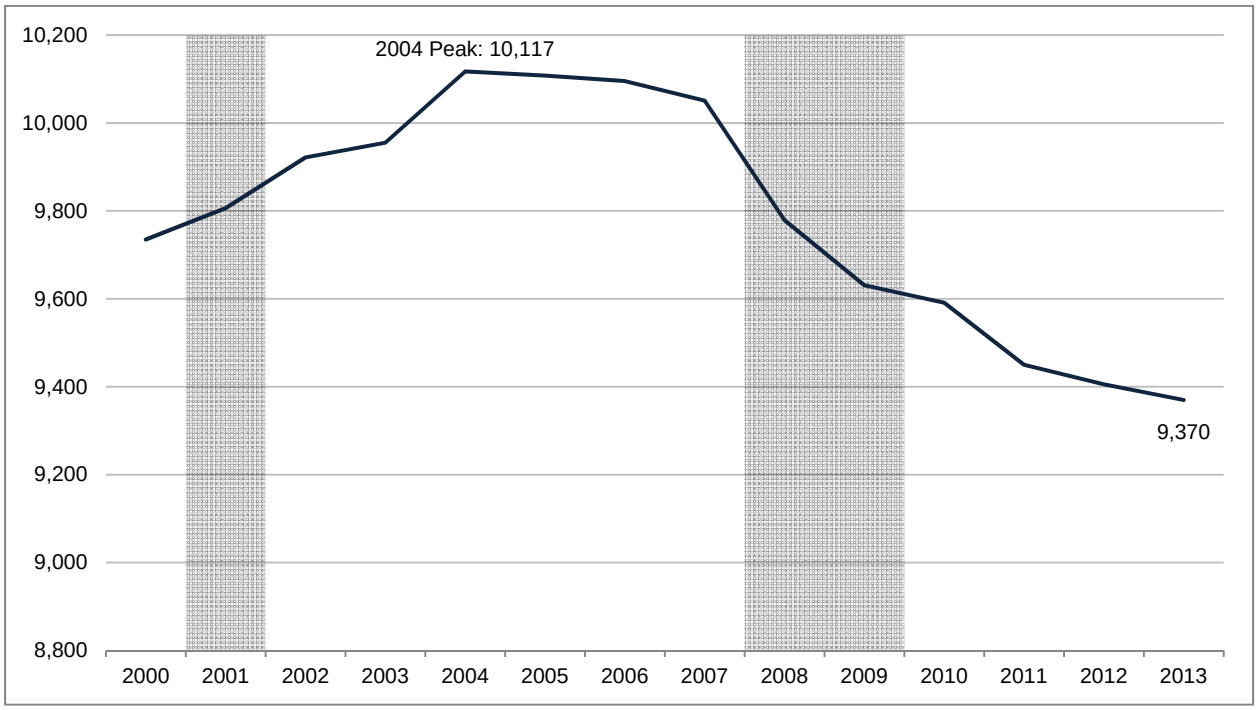
Figure 24: Moving 12-Month Total Vehicle Miles Traveled, 1971-2014



Source: Federal Highway Administration

The reduction in VMT has resulted in a significant decrease in revenues generated from fuel taxes and tolls, which are major sources of funding for transportation projects around the country. Several factors have contributed to this phenomenon, including volatility in oil and gasoline prices, the aging of the population, periodic decreases in economic output and employment, and changes in technology that have made some trips unnecessary. The decline in VMT has been also been observed on a per capita basis, as shown in Figure 25. In fact, as shown in the graph, per capita VMT peaked much earlier than total VMT.

Figure 25: Per Capita Vehicle Miles Traveled



Source: Federal Highway Administration

While these long term trends are worrisome for transportation planners, it is important to note that this measure of motor vehicle travel has increased in recent months, although it has not regained its 2007 peak. This recent increase in VMT is likely driven in part by a recent decrease in retail gasoline prices and a general improvement in the economy. Factors that may contribute to this rebound in VMT are discussed later in this section.

Surveys conducted by the federal government found that vehicle miles traveled by households and individuals have also decreased in recent years. The National Household Travel Survey (NHTS) tracks household travel patterns over time; the most recent survey occurred in 2009 and revealed that households and persons are traveling fewer miles than in the past. As shown in Table 10, both household VMT and person miles of travel increased from 1990 to 2000. From 2001 to 2009, however, both household VMT and person miles of traveled decreased by 1.30 percent and 1.35 percent, respectively.

Table 10: Annual Highway Travel Trends

Year	Household (millions)		Person (millions)	
	Vehicle Trips	VMT	Trips	Miles of Travel
1990	193,916	1,695,290	304,471	2,829,936
1995	229,745	2,068,368	378,930	3,411,122
2001	233,030	2,274,769	384,485	3,783,979
2009	233,849	2,245,111	392,023	3,732,791
'90 – '09 Change	20.59%	32.43%	28.76%	31.90%
'90 – '09 CAGR	0.99%	1.49%	1.34%	1.47%
'01 – '09 Change	0.35%	-1.30%	1.96%	-1.35%
'01 – '09 CAGR	0.04%	-0.16%	0.24%	-0.17%

Source: Federal Highway Administration, 2013 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance

As shown in Table 11, average daily trips and average daily person miles traveled per person also declined from 2001 to 2009. The decrease in these two measures of highway travel occurred in almost all age groups and in both men and women. Interestingly, the most pronounced declines in trips and miles occurred in the 16 to 20 and 21 to 35 age cohorts. The Federal Highway Administration, in its biennial *Conditions & Performance* report to Congress cites a number of reasons why younger generations are traveling less, "including:

- High unemployment;
- Personal income constraints due to the recession limit resources for travel;
- Youth are still living at home with parents and sharing the family vehicle;
- Increases in driver's licensing restrictions have resulted in more youth waiting longer to get their licenses;
- Youth prefer to live in high-density areas where there are more modal options and shorter trip lengths;
- Technology influences travel and how youth get their information; and
- Youth concerns for the environment play a role in their environmental decisions."

Table 11: Per Capita Daily Highway Travel Trends by Age and Sex

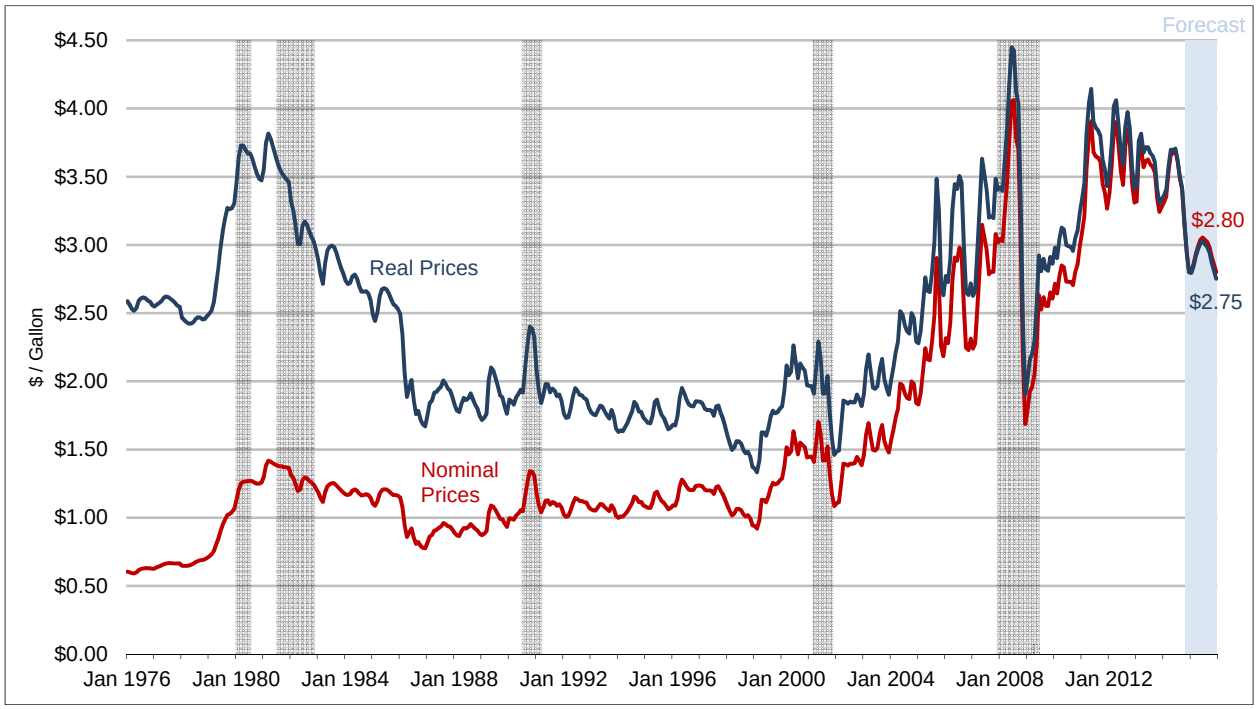
Age	Total			Men			Women		
	2001	2009	Change	2001	2009	Change	2001	2009	Change
Average Daily Person Trips per Person									
Under 16	3.4	3.2	-5.9%	3.5	3.2	-8.6%	3.4	3.2	-5.9%
16 to 20	4.1	3.5	-14.6%	4.0	3.3	-17.5%	4.2	3.7	-11.9%
21 to 35	4.3	3.9	-9.3%	4.2	3.7	-11.9%	4.5	4.1	-8.9%
36 to 65	4.5	4.2	-6.7%	4.4	4.1	-6.8%	4.5	4.3	-4.4%
Over 65	3.4	3.2	-5.9%	3.8	3.5	-7.9%	3.1	2.9	-6.5%
Average Daily Person Miles per Person									
Under 16	24.5	25.3	3.3%	24.6	27.2	10.6%	24.4	23.3	-4.5%
16 to 20	38.1	29.5	-22.6%	34.1	28.2	-17.3%	42.5	31.0	-27.1%
21 to 35	45.6	37.7	-17.3%	49.8	40.5	-18.7%	41.5	35.0	-15.7%
36 to 65	48.8	44.0	-9.8%	57.7	50.9	-11.8%	40.4	37.0	-8.4%
Over 65	27.5	24.0	-12.7%	32.9	30.5	-7.3%	23.5	19.3	-17.9%

Source: Federal Highway Administration, 2013 Status of the Nation's Highways, Bridges, and Transit: Conditions & Performance

These trends may change, however, as the cost of driving on the nation's highways declines. Figure 26 displays the real and nominal retail prices for regular grade motor gasoline from January 1976 to November 2015 (forecast). As shown in the figure, prices (both real and nominal) increased substantially between the 2001 and 2007 to 2009 recessions, driving up the cost of motor vehicle travel in the United States. The 2007 to 2009 recession caused substantial downward pressure on retail prices as consumers cut back on gasoline and other purchases. While prices rebounded after the most recent recession, they are falling again, and are expected to stay low for the very near future.

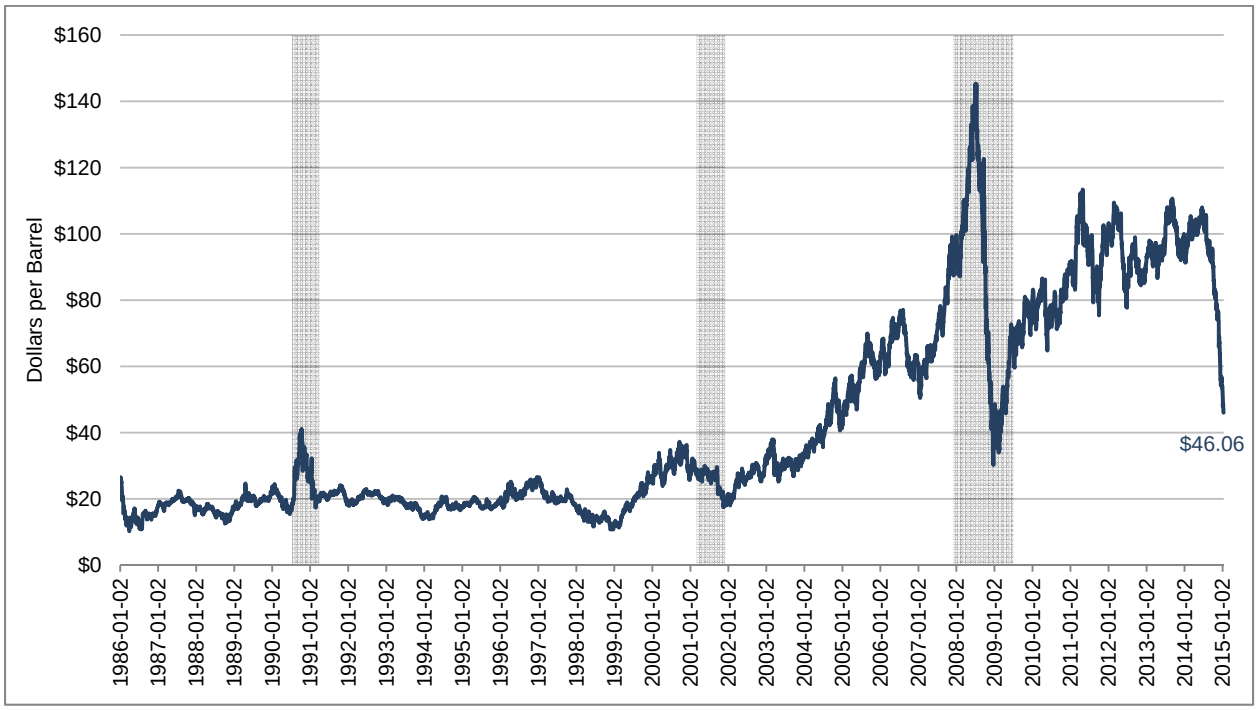
Part of the decline in retail gasoline prices is due to the fall in the price of oil. As shown in Figure 27, the price of crude oil has fallen precipitously since the beginning of 2014, decreasing from $95.14 per barrel on January 2, 2014 to $46.06 per barrel on January 12, 2015, a decline of 51.6 percent. The price of oil is determined by global market. Many factors, including a relatively weak world economy, advances in technology, and an increase in oil substitutes influence these markets and may have contributed to falling prices.

Figure 26: Motor Gasoline Regular Grade Retail Price



Source: U.S. Energy Information Administration

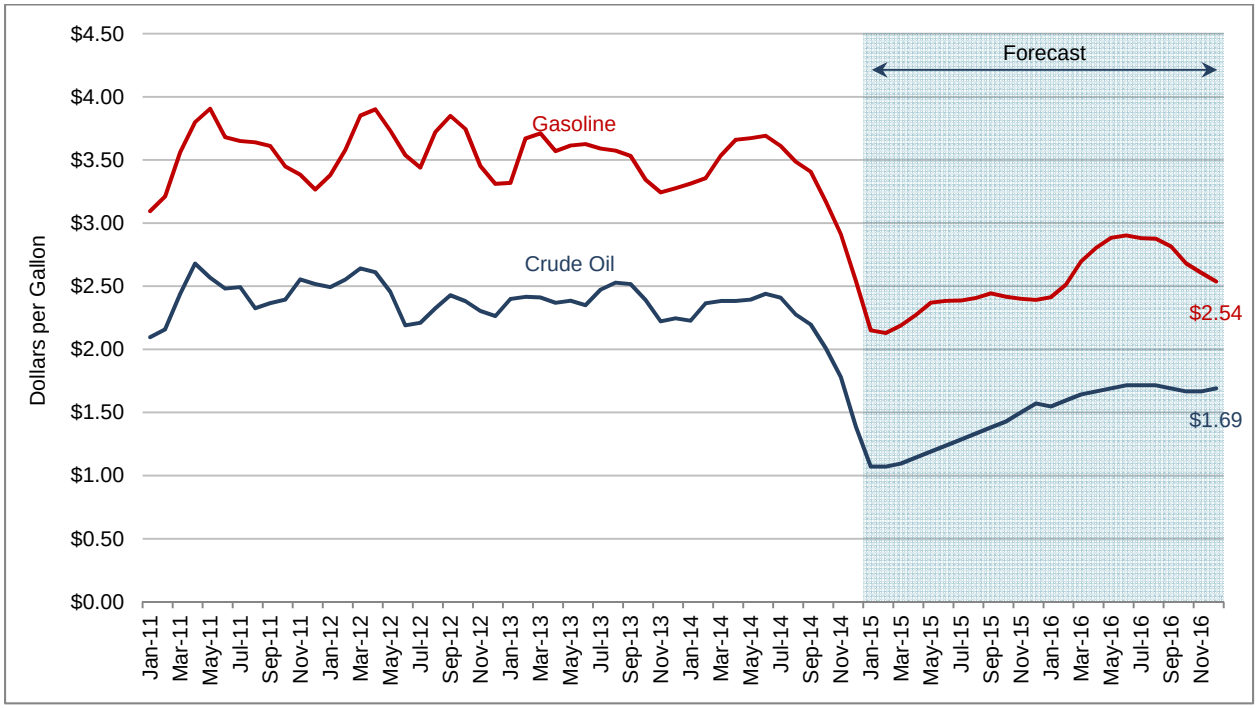
Figure 27: West Texas Intermediary Crude Oil Prices



Source: U.S. Energy Information Administration

Perhaps equally important for motorists and the U.S. economy, the prices of oil and gasoline are expected to stay relatively low in the near term future. The U.S. Energy Information Administration forecasts prices for crude oil and retail gasoline as part of its Short-Term Energy Outlook. As shown in Figure 28, retail gasoline prices are expected to stay below $3.00 per gallon through 2016.

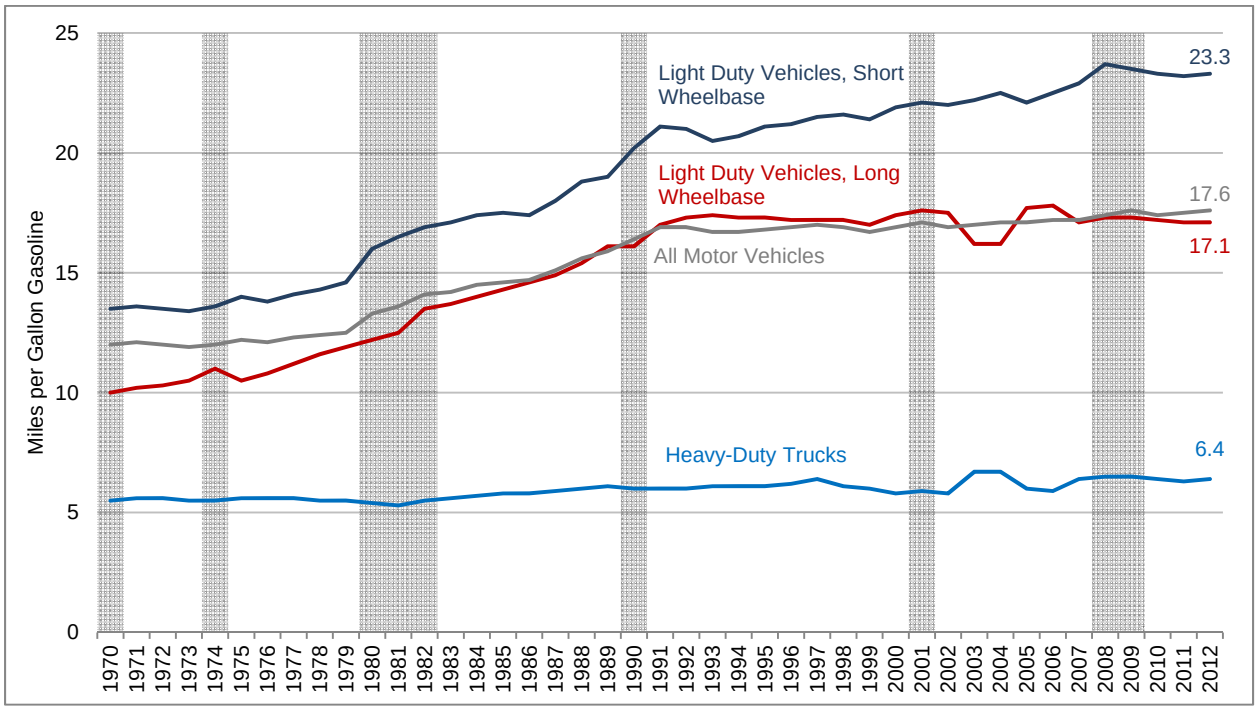
Figure 28: U.S. Gasoline and Crude Oil Price Forecasts



Source: U.S. Energy Information Administration

Another factor that may be driving down the cost of motor vehicle travel is the increase in vehicle fuel economy. Fuel economy for light duty vehicles in particular has increased significantly in the last four decades as shown in Figure 29. This has been driven in part by more stringent regulations and the emergence of more technologically advanced vehicles.

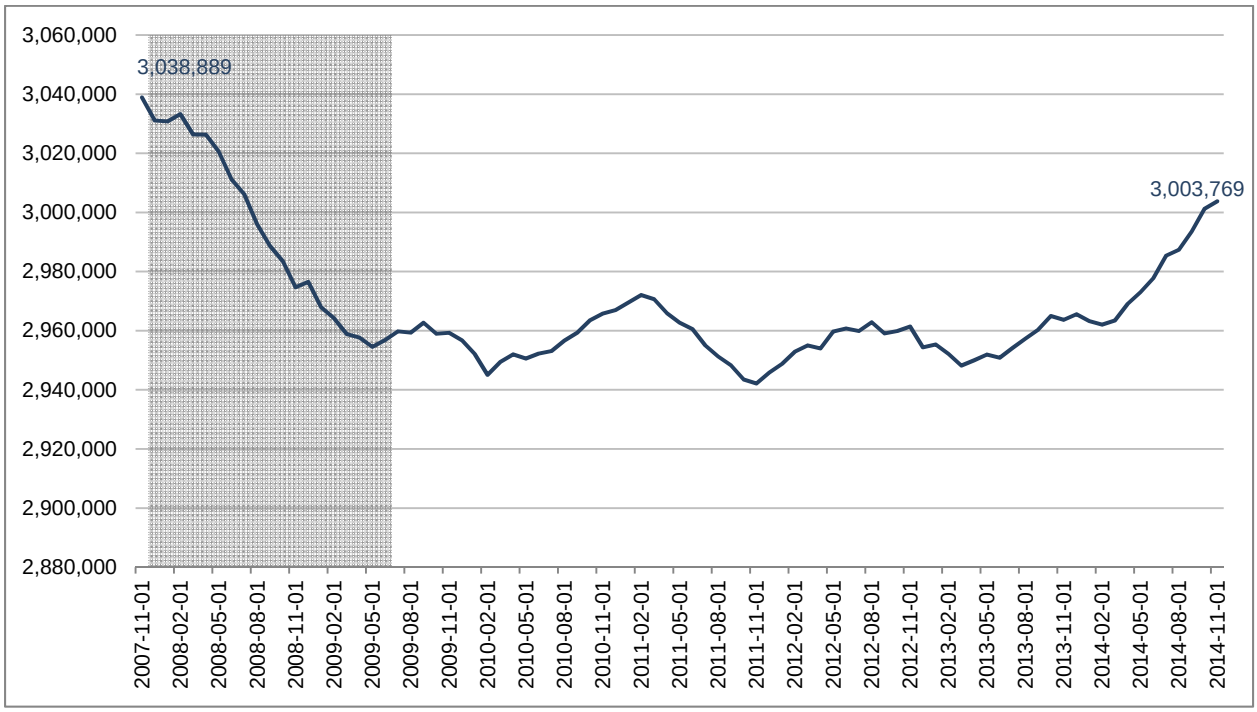
Figure 29: Motor Vehicle Fuel Economy



Source: U.S. Energy Information Administration

Will these factors – relatively low gasoline prices, increasingly efficient vehicles, and improving economic growth – result in more VMT in the future? The very recent history, as shown in Figure 30, suggests that VMT may be increasing again on a trend similar to that witnessed before 2007. As discussed in the following sections, however, there are some long term demographic, cultural, and technological challenges that may continue to suppress VMT growth.

Figure 30: Moving 12-Month Total Vehicle Miles Traveled, Nov. 2007-Nov. 2014



Source: Federal Highway Administration

7.1.7. Long Term Economic and Travel Trends

Even prior to the recent recession, there have also been a number of long-term structural trends in the U.S. and internationally which have encumbered economic growth and employment creation. First, there have been significant productivity improvements in the form of advances in information technology, computing power, transportation, and communications. Initially, these advances encouraged the transfer of manufacturing facilities and jobs to areas with higher unemployment and lower wages. This also shifted the engine for economic growth from manufacturing (from 31 percent of GDP in 1970 to 23 percent GDP in 2010) to services (from 32 percent of GDP in 1970 to 47 percent of GDP in 2010). These trends intensified after the technology boom of the 1990s and the subsequent bust that took place during the early 2000s, which encouraged the rapid and widespread expansion of inexpensive communications technologies and further flattened factor and wage costs. Increasingly, this has led to the outsourcing of professional services. For example, X-rays can be evaluated or financial statements can be prepared cheaply and rapidly almost anywhere in the world where technical capacity exists. It is expected that this structural trend will continue in the medium term.

Second, there has been a restructuring of the international economy with traditional trading partners (Europe and Japan) generating a decreasing share of global GDP, with other economies including Brazil, Russia, India and China ("the BRIC countries"), comprising a larger share of the global economy. For the United States, this has resulted in greater competition not just in manufacturing, but also in professional services. A third trend has been the aging of the U.S population—the median age has increased from 29.5 in 1960 to 37.2 in 2010. This trend

has also taken hold in Europe and Japan and is expected to eventually impact China due to its one-child policy. Finally, there has been a rapid and significant expansion in consumer credit, which has reached unsustainable levels during the previous decade. These factors tend to further dampen economic growth and employment over the short-term.

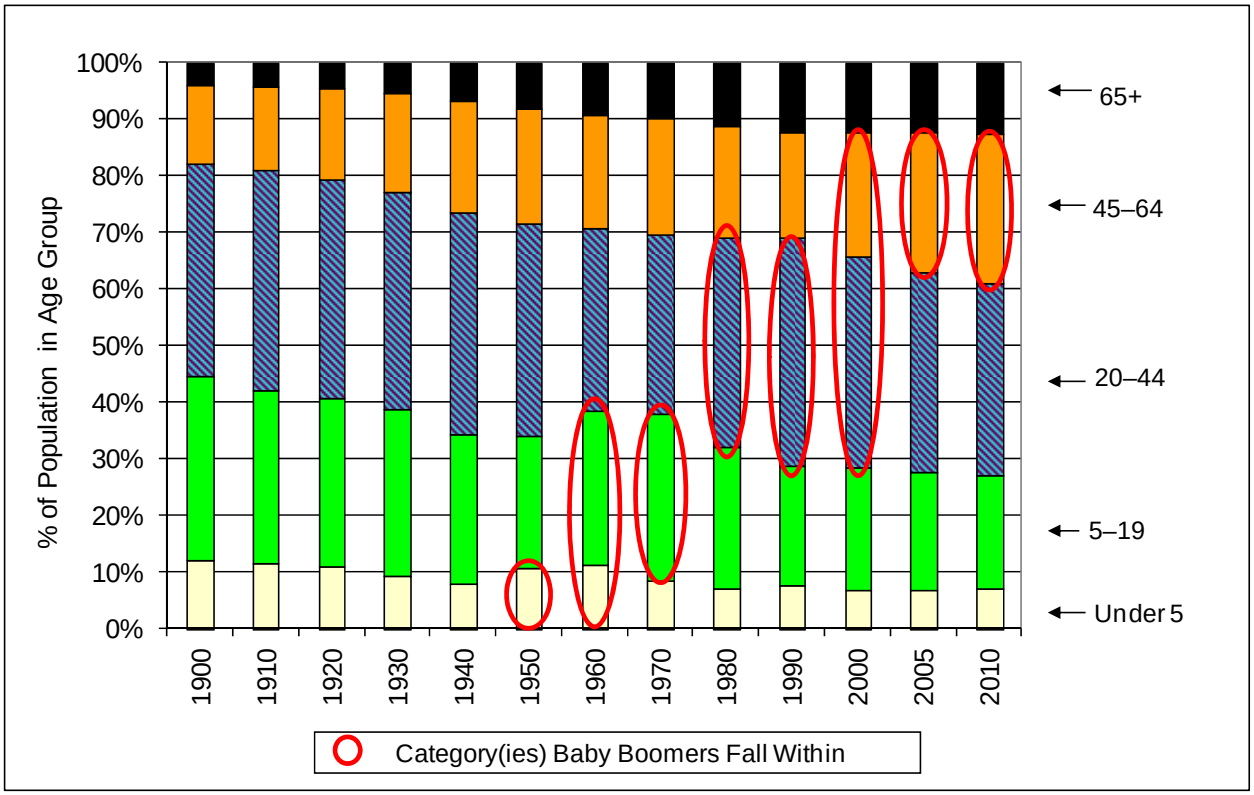
From a travel perspective, the advent and widespread usage of high-speed internet over the past fifteen years has brought about a whole new information age whereby many people now use it as the main tool for the retrieval and exchange of information, social communication, entertainment, and the purchase of goods and services. In theory, increased internet usage makes some vehicle trips unnecessary. According to the Federal Communications Commission (FCC), the share of U.S. households with broadband internet increased from 4 percent in 2000 to 64 percent in October 2009. According to Nielsen Online, Americans currently spend an average of nearly 60 hours per month on the internet or about two hours per day. A 2000 study by the Stanford Institute for the Quantitative Study of Society (SIQSS) included a survey of more than 4,000 adults nationwide, which sought to evaluate how the internet has affected society. This study revealed that with more time spent online, there is a decrease in social contact, time spent commuting, and time spent shopping. More recent studies indicate that people are often spending more time communicating with friends online or through text messaging rather than driving to see them (see Figure 33). These studies suggest that increases in internet speed and usage have likely caused a decrease in discretionary travel.

An increase in telecommuting may have also caused a small decrease in national VMT. Individuals who work from home save on the time and expense of commuting. With the widespread availability of cell phones, high-speed internet service, and laptop computers, it has become increasingly easier for work in certain employment sectors, e.g. sales, management, professional services, and information technology, to be conducted from home. The Dieringer Research Group, Inc. in their February 2009 survey brief, *"Telework Trendlines 2009,"* found that the number of employees telecommuting at least once a month doubled from 17 million in 2001 to 34 million in 2008. Nearly 14 million workers in 2008, which constituted 9 percent of the labor force, telecommuted almost every day. The decrease in trips to the office likely had a small effect on the decline in VMT.

Technology has also made it possible to use public transportation more effectively; smartphone applications allow people to determine when the next bus or train will arrive.

As previously mentioned, changing demographics are also affecting VMT growth. Figure 31 shows how the population within each U.S. age group changed from 1900 to 2010. The post-World War II baby boom brought about a significant spike in birth rates between 1946 and 1964. However, the percentage of the population in the 20 to 44 age group, which has historically produced the most VMT, has declined since 1990. At the same time, the 45 to 64 age group and the 65+ age groups have steadily increased in size.

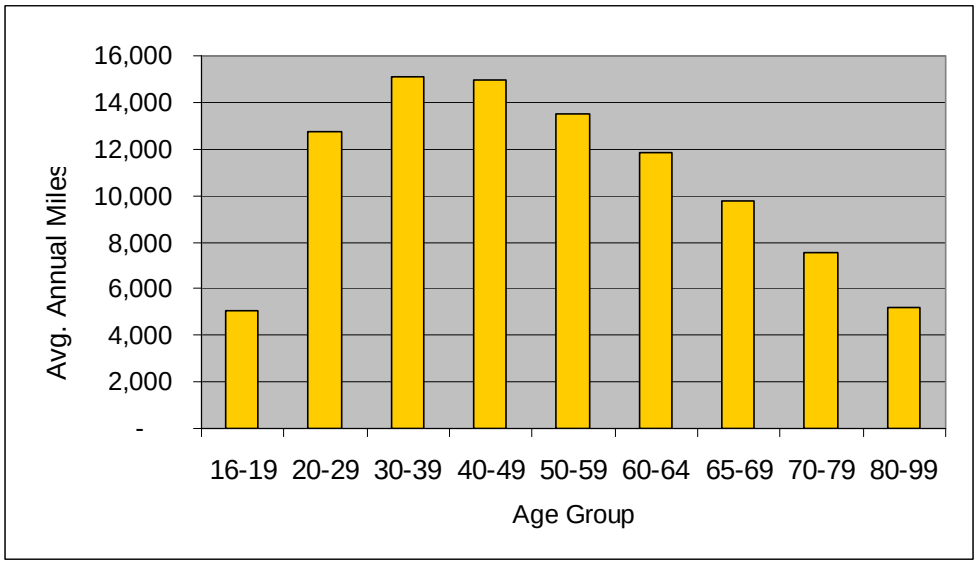
Figure 31: U.S. Population Distribution by Age Group



Source: U.S. Census

Based on previous studies, individuals tend to gradually drive less as they age, especially after the age of 40. Figure 32 summarizes the results from the 2009 National Household Travel Survey on the average VMT per person by age group. With the aging of the population as shown in the previous charts, the average VMT per person had been decreasing over the past decade. This, plus increased longevity, is expected to have a long-term effect on VMT; per capita traffic growth is not expected to return to the rates achieved in the 1980s and 1990s.

Figure 32: Average VMT per Person by Age Group in 2009

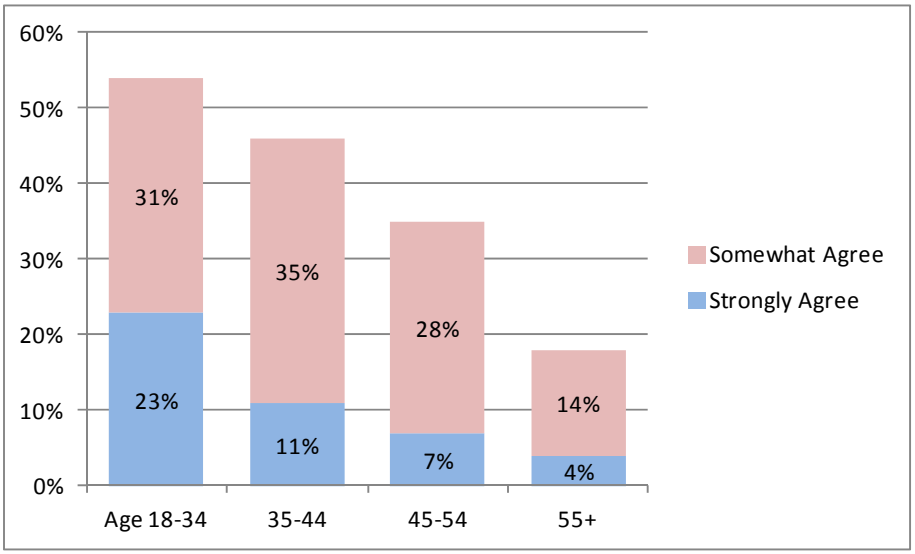


Source: 2009 National Household Travel Survey, U.S. Department of Transportation

The figure also shows that teenagers and 20-somethings (aka, the "Millennial Generation") drive fewer miles per capita than people in their 30s, 40s, and 50s. As numerous studies have been conducted in the past couple of years in an attempt to understand the decline in nationwide VMT, it has become more and more apparent that younger people – those in their teens and 20s – are also driving significantly less than their age group did in years past. According to a recent study by the University of Michigan Transportation Institute, a significantly smaller proportion young people have a driver's license today than their counterparts in the early 1980s.

As previously stated in this section, technology has made many driving trips unnecessary and nowhere is that more apparent than with the younger generation. Results of a 2010 survey conducted by KRC Research for Zipcar (see Figure 33) show that nearly a quarter of people age 34 and under strongly agree with the statement "With access to social networking sites such as Facebook and Twitter, text messaging and online gaming, I sometimes choose to spend time with friends online instead of driving to see them." Another 31 percent of this age group agrees somewhat with this statement. As the age of the surveyed group increases, fewer people agree with this statement.

Figure 33: Survey Respondents Who Stated They Sometimes Choose to Spend Time with Friends Online Instead of Driving to See Them



Source: Survey by KRC and Zipcar

In addition, the survey showed that Millennials have made a conscious effort to drive less and take public transportation more than older generations. A higher percentage of Millennials stated that they drive less to protect the environment, and prefer to live in walkable, smart-growth communities compared to their older counterparts.

Another demographic factor affecting VMT is female participation in the workforce. It rose dramatically from 38 percent in the mid-1960s to a maximum of about 60 percent in 2000. This was a contributor to the large growth in VMT over this time period, but because it is no longer increasing, its effects on VMT will no longer be seen.

These demographic factors, combined with the reduced necessity of travel due to internet access, imply that VMT growth in general may not return to the levels it had reached in the 1980s and 90s. However, as very recent trends suggest, at specific locations or times there may be periods of higher growth due to local developments or other economic activities.

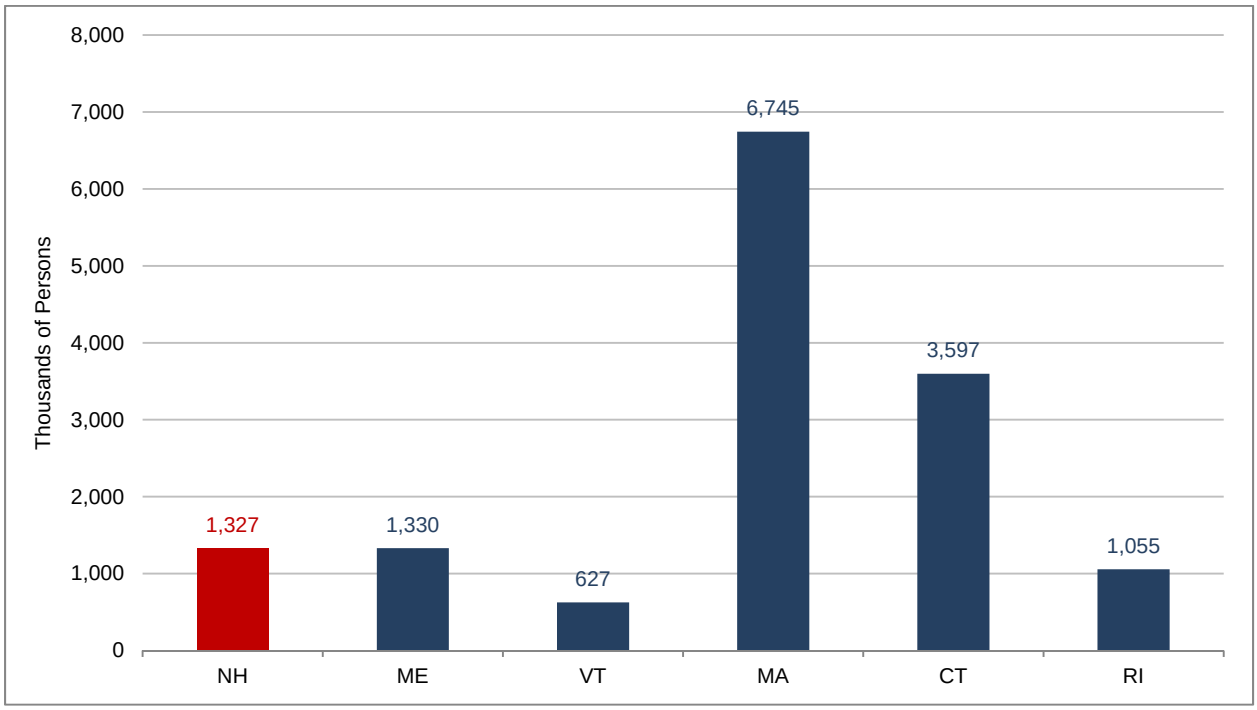
7.2. NEW HAMPSHIRE DEMOGRAPHIC TRENDS

This section of the report summarizes historical and future demographic and economic conditions for the state of New Hampshire, including population and employment trends and developments in income, tourism, and commuting patterns.

7.2.1. Population

New Hampshire's current population, estimated at 1.33 million makes it the fourth most populous state in the region, as shown in Figure 34, and one of the least populous states in the United States.

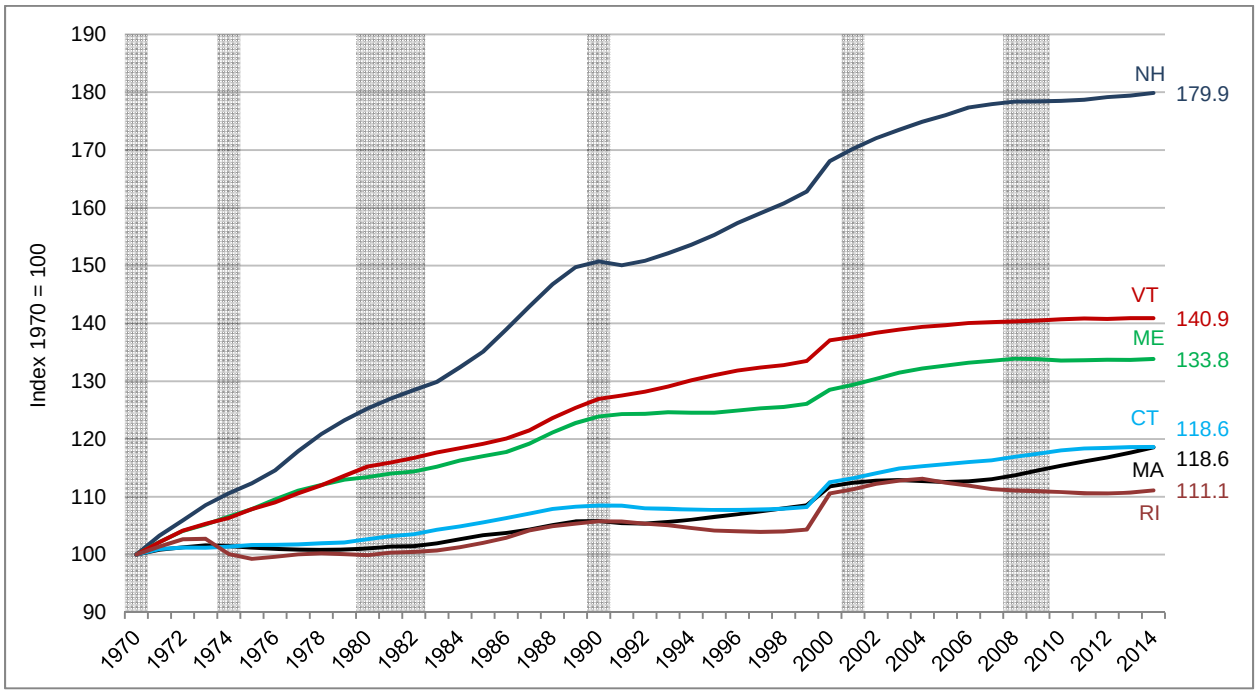
Figure 34: Resident Population in New England States in 2014



Source: U.S. Census Bureau

New Hampshire's population has grown significantly over the past 45 years, and is expected to continue to grow, albeit at slower rates than the past. From 1970 to 2014, the resident population in New Hampshire grew from 738,000 to 1.33 million, an increase of nearly 80 percent. This rate of population growth was the highest achieved in New England over this time period, as shown in Figure 35. In fact, the population growth rate in New Hampshire was almost double that of any other state in the region.

Figure 35: Index of Resident Population in New England from 1970 to 2014

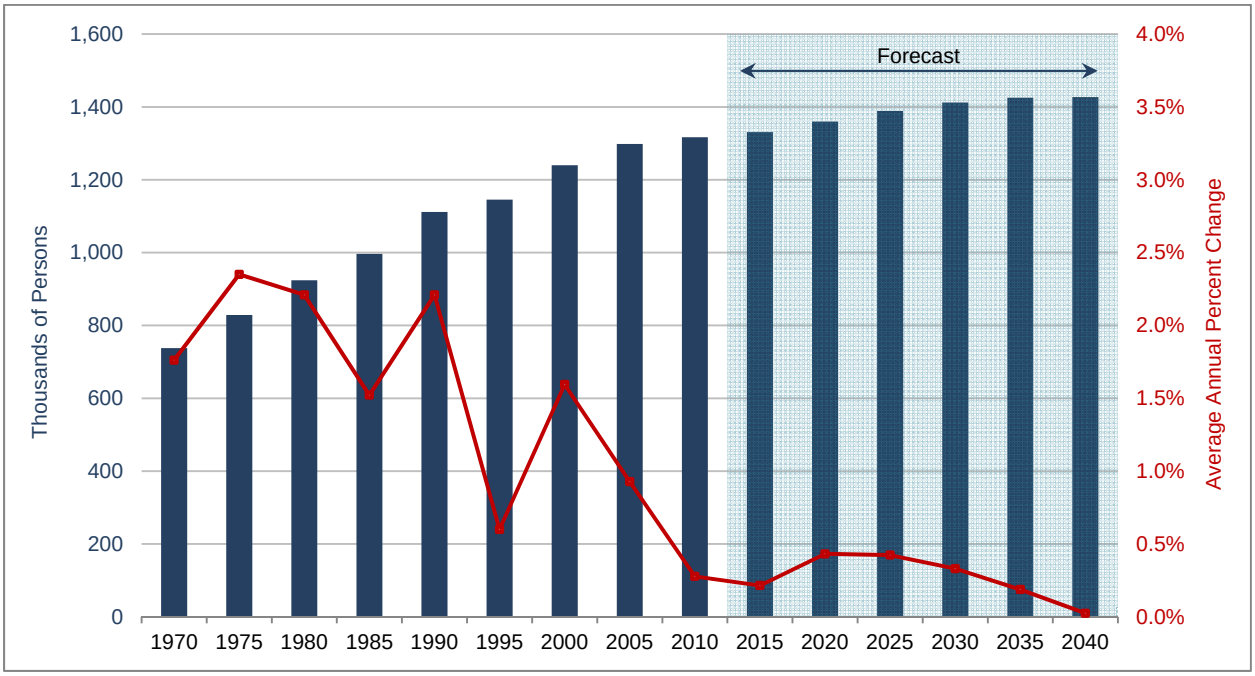


Source: U.S. Census Bureau

A closer look at population growth in New Hampshire, however, shows that it is weakening. From 1970 to 1979, the population grew at an average annual rate of 2.3 percent. Average annual growth in population decreased to 2.0 percent from 1980 to 1989, and again to 0.9 percent from 1990 to 1999. The trend continued in the 2000s, with average annual growth in population only reaching 0.7 percent from 2000 to 2009.

This trend of declining population growth is expected to continue into the near future. While the population is expected to reach1.43 million in 2040, average annual rates of growth are expected to remain below 0.5 percent in the future. These trends are depicted in Figure 36.

Figure 36: Resident Population in New Hampshire



Source: U.S. Census Bureau, State of New Hampshire, Office of Energy and Planning Commissions, County Population Projections, 2013, by Age and Sex

For regional planning purposes, the State of New Hampshire also publishes county population projections in 5 year intervals to the year 2040, as shown in Table 12. According to the projections, the total population is slated to grow from 1.33 million in 2015 to 1.43 million in 2040, an increase of approximately 7.2 percent. Among the various counties, Belknap, Carrol, and Sullivan counties are expected to see the highest rates of growth. Coos County is the only county expected to lose population over the 25-year period.

Table 12: Resident Population Projections for New Hampshire Counties

Jurisdiction	2015	2020	2025	2030	2035	2040
New Hampshire	1,330,834	1,359,836	1,388,884	1,412,041	1,425,357	1,427,098
Belknap County	60,671	62,678	64,460	65,852	66,796	67,269
Carroll County	48,377	50,115	51,945	53,484	54,522	54,997
Cheshire County	77,128	78,052	79,085	79,861	80,381	80,471
Coos County	32,292	31,791	31,233	30,442	29,461	28,209
Grafton County	89,666	91,614	93,224	94,359	95,018	95,275
Hillsborough County	405,380	414,356	423,117	429,776	433,266	433,381
Merrimack County	148,043	150,652	154,354	157,495	159,377	159,845
Rockingham County	299,277	306,867	313,619	319,065	321,840	321,226
Strafford County	125,489	128,219	131,197	133,867	135,972	137,176
Sullivan County	44,511	45,492	46,650	47,840	48,724	49,249

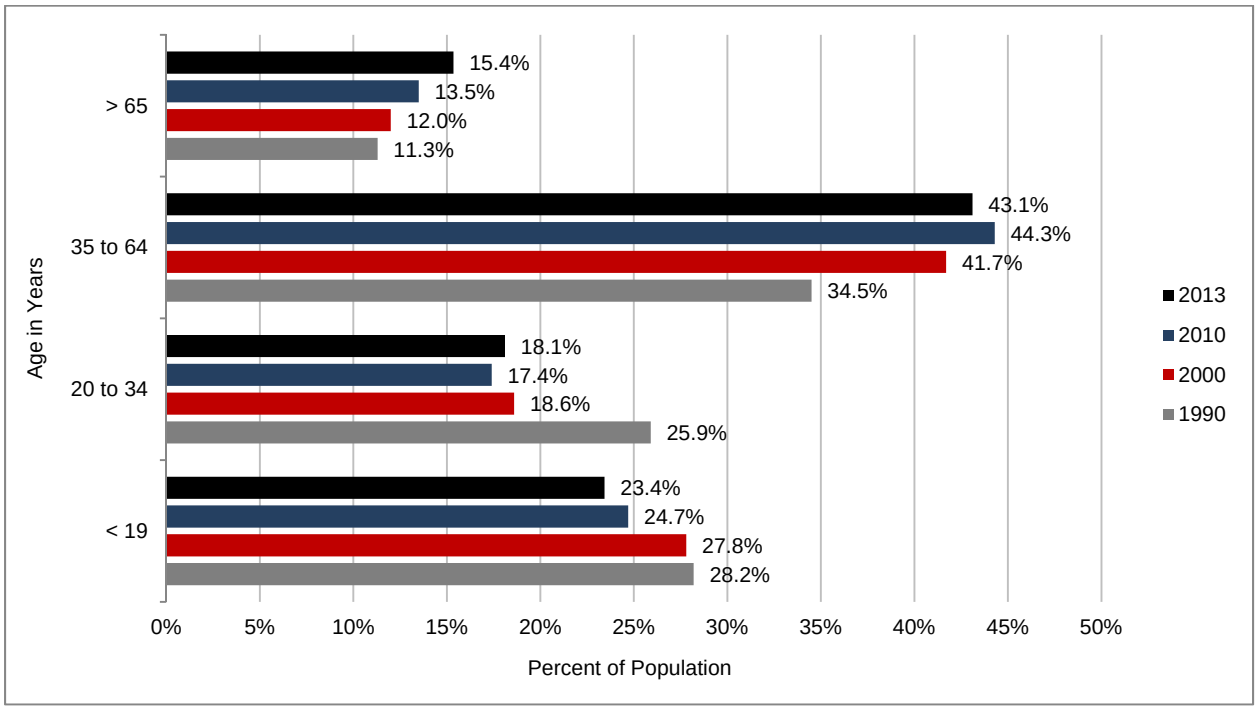
Source: U.S. Census Bureau, State of New Hampshire, Office of Energy and Planning Commissions, County Population Projections, 2013, by Age and Sex

7.2.2. Population Age Distribution

Similar to national trends, the median age of the population in New Hampshire is increasing. In 1990, the median age in New Hampshire was 32.8 years, increasing to 37.1 years in 2000. By the 2010 Census, New Hampshire had a median age of 41.1 years, making it the 4th oldest state in the United States behind Maine (42.7 years), Vermont (41.5 years), and West Virginia (41.3 years). In 2013, the last year for which data are available, the median age had inched up to 42.3 years.

Figure 37 shows the proportion of New Hampshire population in each of the four main age groups for the years 1990, 2000, 2010, and 2013. The 0-19 age group declined from 28.2 percent of the total population in 1990 to 23.4 percent in 2013. More dramatically, the 20-34 age cohort decreased from 25.9 percent in 1990 to 18.1 percent in 2013. During this period, the 35-64 age group increased from 34.5 percent to 43.1 percent and the 65+ age group increased from 11.3 percent to 15.4 percent.

Figure 37: Age Distribution of Population in New Hampshire



Source: U.S. Census Bureau

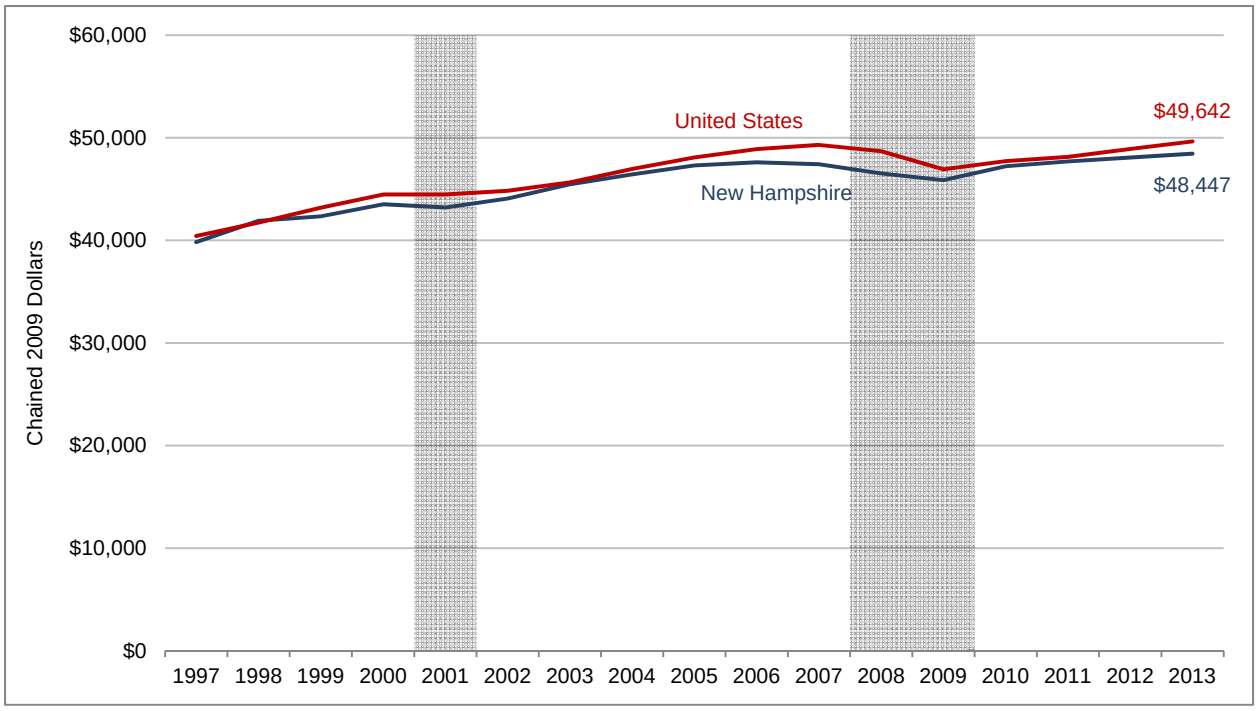
7.3. NEW HAMPSHIRE ECONOMIC TRENDS

The national and regional economies have a large impact on economic conditions in New Hampshire. Economic performance at the state tends to mirror the economic performance of the nation but there are some areas, such as household income and unemployment, where New Hampshire tends to outperform the rest of the country.

7.3.1. Output and Growth

Real per capita GDP in New Hampshire reached $48,447 in 2013, slightly less than the level of real per capita GDP observed in the United States as a whole ($49,642). In fact, since 1997, the trend in real per capita GDP in New Hampshire has mirrored the trend observed in the United States – it generally increased from 1997 to 2007 and then decreased during the most recent recession before rebounding in 2010.

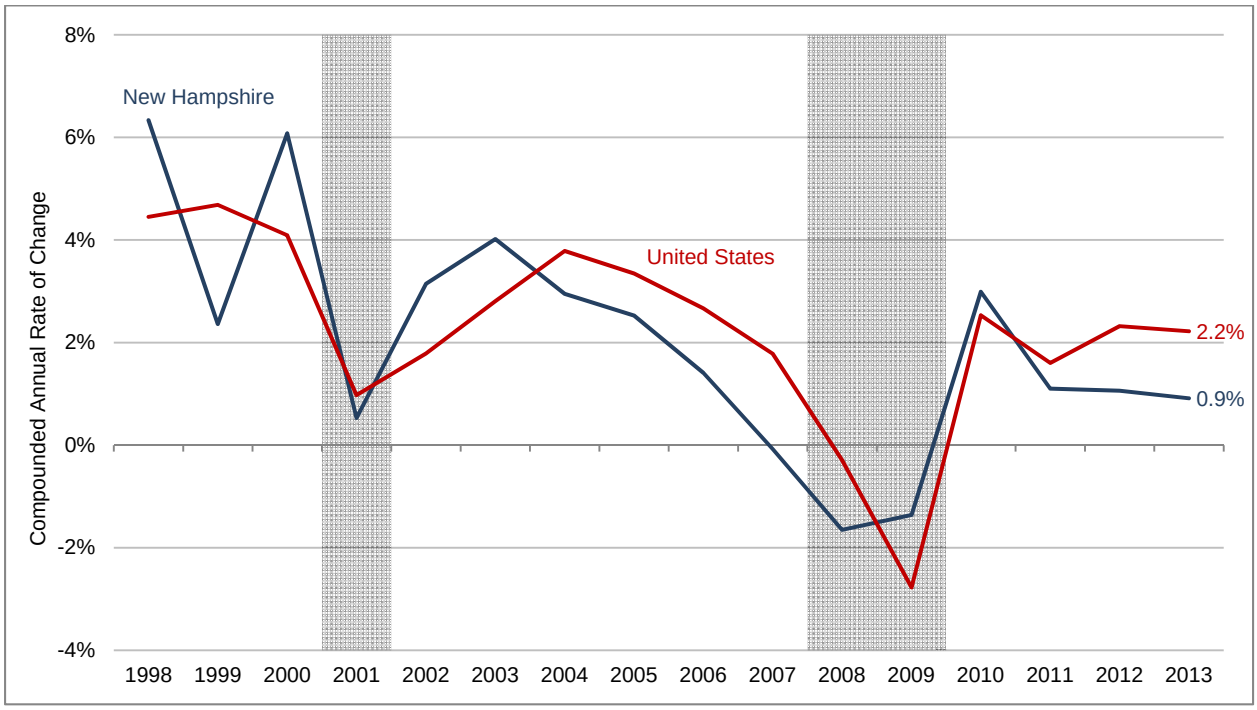
Figure 38: Real per Capita Gross Domestic Product in New Hampshire and the United States



Source: Bureau of Economic Analysis

With respect to total output, the New Hampshire economy has performed very similarly to the United States economy as a whole over the past decade and a half. At the end of the 1990s and the very beginning of the 2000s, real total GDP was increasing rapidly, growing between 2.4 and 6.3 percent per year. The 2001 recession caused growth in real total GDP to slow significantly but from 2002 to 2006, the annual change in real total GDP fluctuated between 1.4 and 4.0 percent. The 2007 to 2009 recession caused real total GDP to contract in the state although it shrank at a slightly slower pace than that observed in the country as a whole. Following the recession, real total GDP started to grow again, achieving a 2.9 percent increase in 2010 with subsequent increases of around one percent each year since then.

Figure 39: Change in Real Total Gross Domestic Product in New Hampshire and the United States

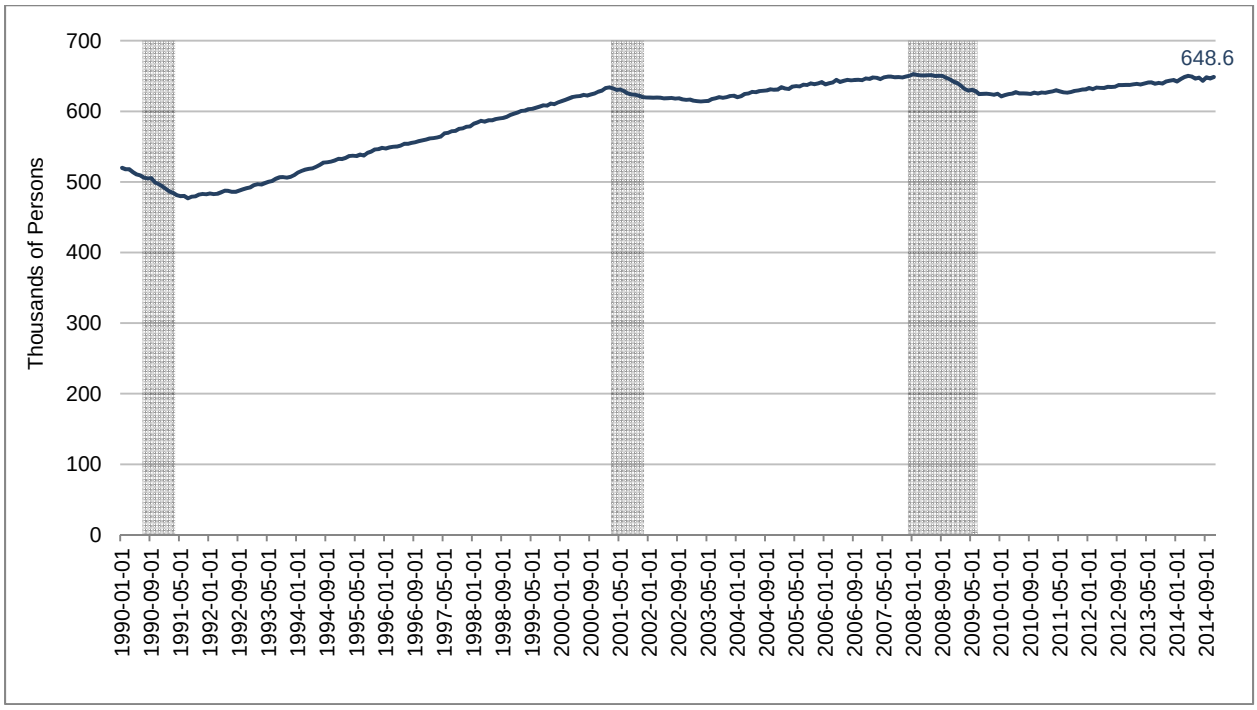


Source: Bureau of Economic Analysis

7.3.2. Employment

Nonfarm employment in New Hampshire increased to 648,600 in November 2014, a change of 0.8 percent from the previous year. Since July 2009, the end of the last recession, employment has increased by 3.9 percent. While this broad measure of employment has increased since the last recession, it is important to note that employment in the state is still below its peak, which reached 652,700 in January of 2008.

Figure 40: Nonfarm Employment in New Hampshire

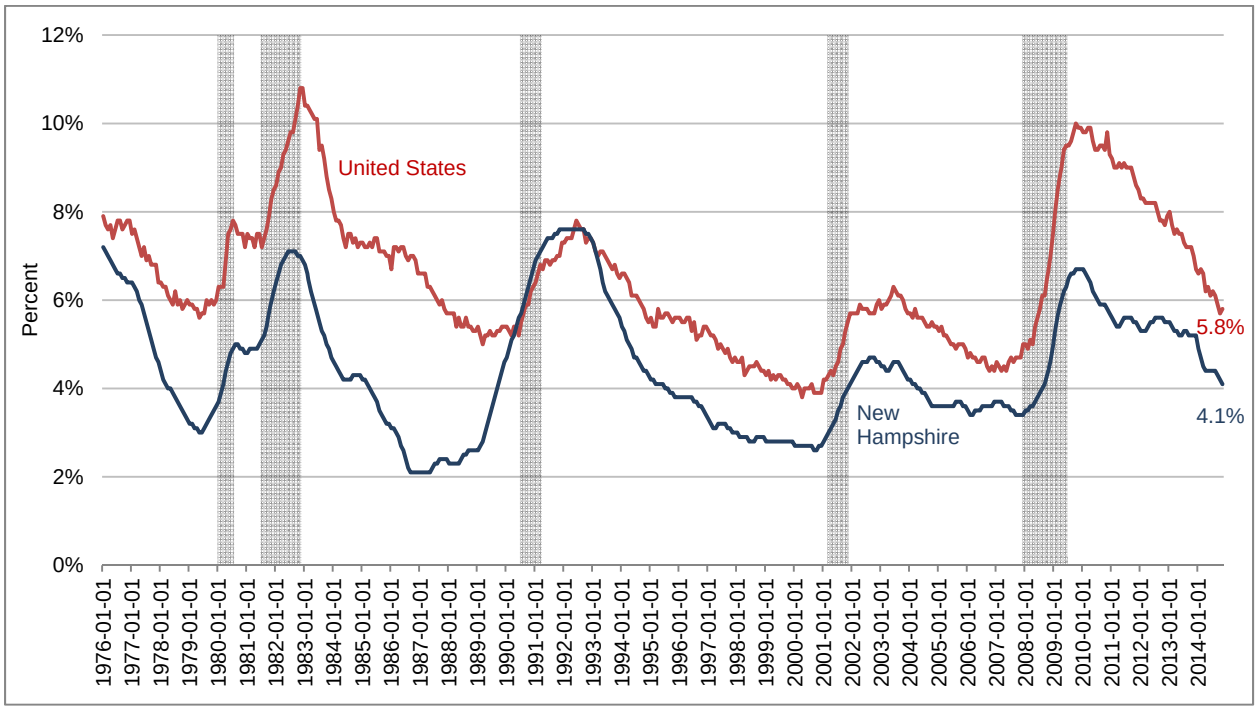


Source: U.S. Bureau of Labor Statistics

Figure 41 displays the unemployment rate in both New Hampshire and the United States from January 1976 to November 2014. As shown by the graph, the labor market in New Hampshire with respect to unemployment has historically outperformed the labor market in the United States except for a brief period in the early 1990s.

As expected, unemployment tends to rise during recessionary periods and fall during periods of economic expansion. The labor market in the United States was hit particularly hard by the most recent recession. The unemployment rate in the country increased from 5.0 percent in January 2008 to 10.0 percent in October 2009. The labor market fared better in New Hampshire during the same period, where the unemployment rate reached a high of only 6.7 percent. The most recent data available from the Bureau of Labor Statistics suggest that the unemployment rates for both the United States and New Hampshire are returning to healthier levels. The unemployment rate in New Hampshire and the United States stood at 4.1 and 5.8 percent, respectively, in November 2014.

Figure 41: Unemployment Rate in New Hampshire and the United States

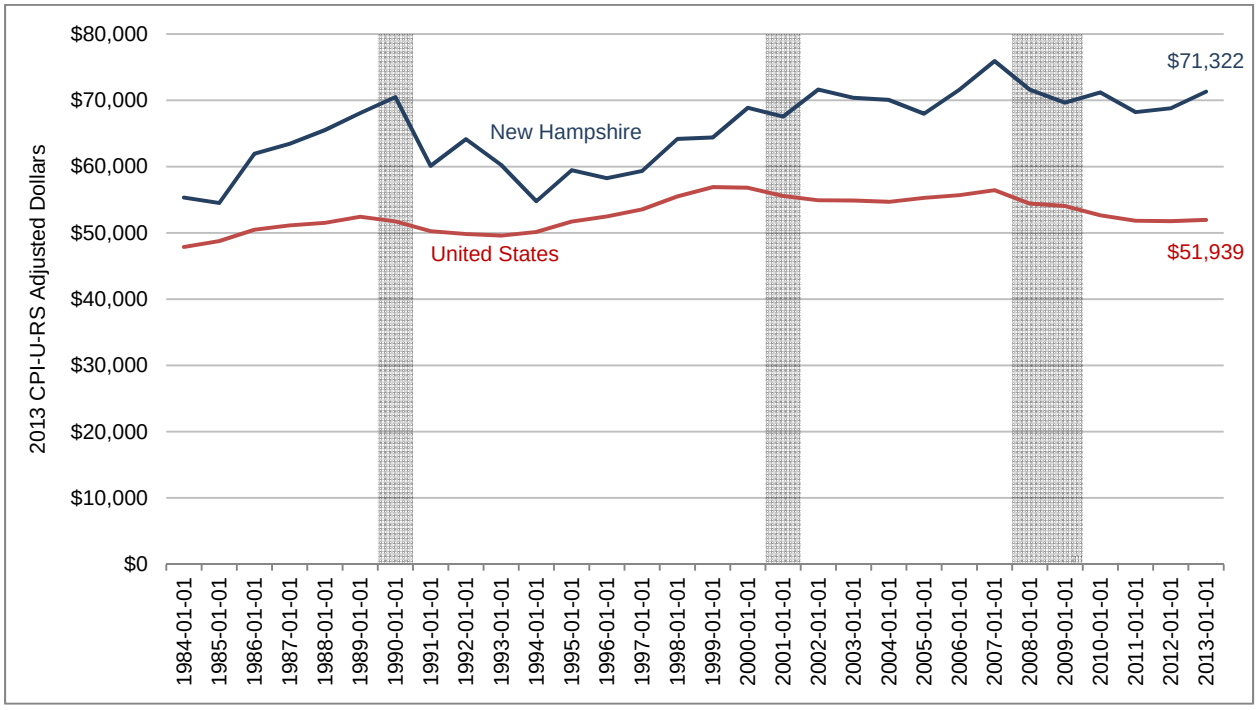


Source: U.S. Bureau of Labor Statistics

7.3.3. Income

New Hampshire consistently ranks high among states in household income. In 2013, real median household income in New Hampshire, as shown in Figure 42, reached $71,322. This ranked first among all states in the nation but was still lower than the level of real household income achieved in the state before the most recent recession. Nevertheless, real household income increased in New Hampshire by 28.9 percent over the last 30 years, growing at an average annual rate of 0.9 percent. As shown in Figure 42, it is substantially higher than the level of real household income in the broader United States.

Figure 42: Real Median Household Income in New Hampshire and the United States



Source: U.S. Census Bureau

7.3.4. Tourism and Travel Trends

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 state economy. Visitors to New Hampshire were far more likely to be on a leisure trip, rather than on a business trip. 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. Because New Hampshire has no sales tax, many residents from neighboring states often travel to New Hampshire for retail shopping.

Tourist activity in New Hampshire has continued to improve since the most recent recession. Visitor trips increased from 33.8 million in 2008 to 36.6 million in 2014, an increase of 8.1 percent. The number of visitor days also increased from 52.9 million in 2008 to 57.1 million in 2014, an increase of 8.0 percent. The continued improvement in the U.S. and regional

economies, combined with the very recent decrease in retail gasoline prices, should help these trends continue into the near future.

Table 13: Tourist Activity in New Hampshire

Fiscal Year	Visitor Trips (millions)	Visitor Days (millions)
2008	33.8	52.9
2009	33.4	51.7
2010	33.6	51.4
2011	34.0	52.9
2012	34.2	53.7
2013	34.2	53.8
2014	36.6	57.1
'08 - '14 Change	8.1%	8.0%
CAGR	1.3%	1.3%

Source: New Hampshire Division of Travel and Tourism Development and Institute of New Hampshire Studies at Plymouth State University

7.3.5. Commuting Trends

Average commuting time in New Hampshire increased from 21.5 minutes in 1990 to 25.5 minutes in 2010. At the county level, there was a marked increase in average commuting time in most New Hampshire counties. From 1990 to 2000, there was also marked increase in the percentage of commuters that drove alone, especially in Hillsborough and Rockingham counties. Statewide, the percentage of commuters that drove alone was 81 percent in 2010.

Table 14: Mean Time to Commute to Work in New Hampshire Counties

NH County	1990		2000		2010	
	% Drive Alone	Travel Time in Minutes	% Drive Alone	Travel Time in Minutes	% Drive Alone	Travel Time in Minutes
Belknap	80	20.5	80	24.8	83	24.4
Carroll	77	19.6	80	26.0	81	24.6
Cheshire	80	18.1	80	22.3	77	21.1
Coos	70	14.5	80	19.3	78	23.0
Grafton	70	17.1	70	21.3	74	21.6
Hillsborough	66	22.5	83	25.5	82	25.9
Merrimack	N/A	21.5	81	24.3	83	25.2
Rockingham	67	25.5	85	28.6	81	28.6
Strafford	79	21.5	80	24.1	78	24.9
Sullivan	N/A	18.9	N/A	23.2	79	23.8
New Hampshire	N/A	21.5	81	25.3	81	25.5

Sources: U.S. Census Bureau and the New Hampshire Employment Security (NHES) Office

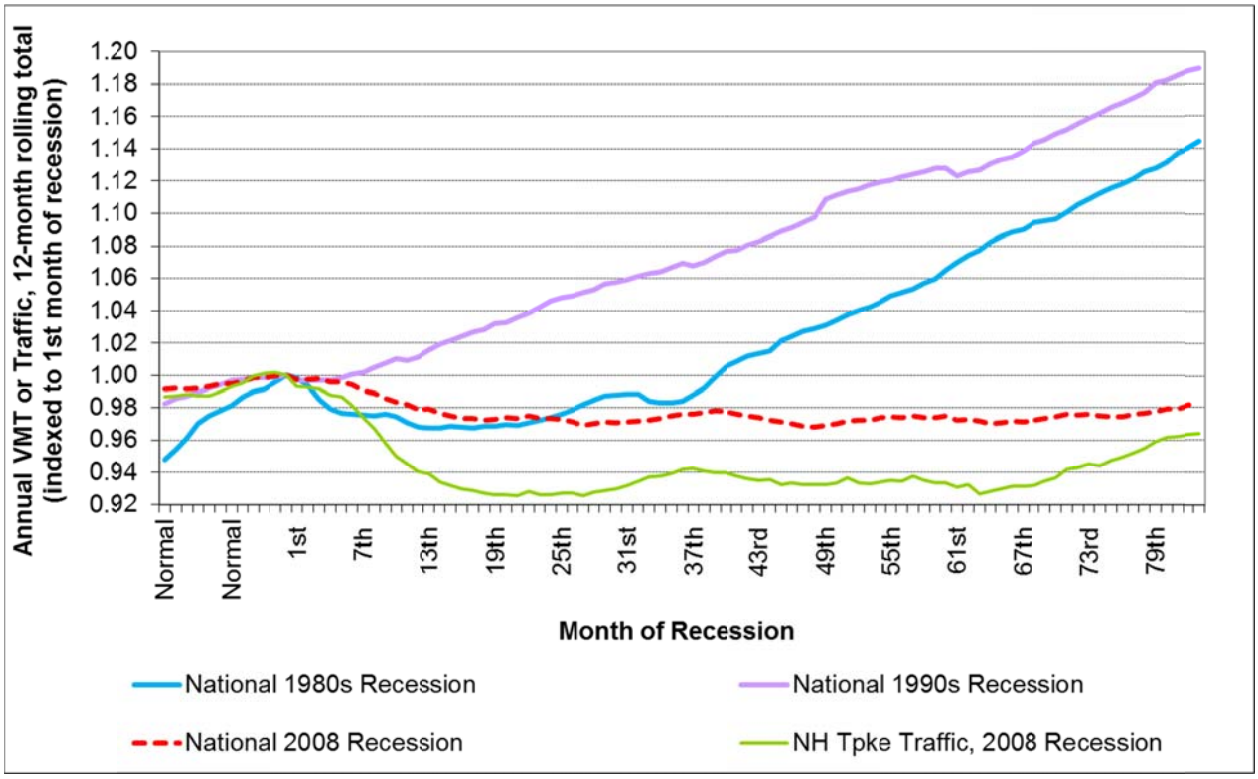
7.4. HISTORICAL TRAFFIC AND ECONOMIC RECESSIONS

The recent recession in the United States officially lasted from December 2007 to June 2009 (herein referred to as the "2008 recession"). The effects of this recession have been reflected in all transportation indicators, but are seen most clearly in the change of the number of national vehicle-miles traveled (VMT) on highways.

Jacobs reviewed VMT characteristics exhibited during past economic recessions to the most recent recession on a national level. The purpose of these comparisons is to develop additional guidance in forecasting future traffic growth trends as the economy improves. We have selected the recession of the 1980s, the recession of the 1990s, and the 2008 recession for comparison purposes. Other recessions like that of 2001/2002 were much smaller in duration and magnitude than the 2008 recession and have not been included in the analysis. The three recessionary periods were indexed based on their respective peak points so that they could be compared against the VMT during and after the most recent recession.

Figure 43 is a plot of VMT indexed to the first month of the three selected recent national recessions. National traffic is based on VMT at the national level. While VMT started to increase only six months into the 1990 recession, it took longer to recover from the 1980s recession - 36 months. With the 2008 recession, however, nationwide VMT has not returned to its peak November 2007 level, even after 83 months.

Figure 43: National VMT and New Hampshire Turnpike Traffic Reflecting Recent and Historical Recessions



December 2007 officially marked the beginning of the most recent economic recession. The 2008 recession VMT is illustrated as the dashed trend line in Figure 43 which was indexed from November 2007. In 2006 and 2007 VMT remained relatively the same as late 2005 levels, peaking slightly in November 2007, but by March 2008 it began to decline. This is explicitly visible in Figure 24 (shown previously on page 44) which shows the flattening of the VMT growth around 2005 and a significant drop in 2008.

By early 2009, VMT was 2.3 percent below the previous year's values. Though the recession was officially declared over in June 2009, the U.S. remained in a state of relatively slow economic growth for several years post-recession, which was reflected by virtually no change in VMT. A closer look at more recent VMT (see Figure 30 on page 51), however, reveals that, in fact, the VMT has been slowly growing since February 2013.

The New Hampshire Turnpike's monthly tolled transactions, based on an average of the rolling 12-month total to remove seasonality, have also been indexed to November 2007; these are represented by the thin green line in the chart. The Turnpike's tolled transactions have historically followed national VMT trends; however, due to the overlap of the October 2007 toll increase at the onset of the 2008 recession the Turnpike's tolled transactions dropped faster than the national VMT trends over the first year or so of the 2008 recession. After this point, tolled transactions followed national VMT trends.

The Turnpike's tolled transactions have not yet recovered to their peak levels; however, as indicated in the graph, they have been increasing over the last two years. Over the 22-month period from February 2013 to December 2014, Turnpike transactions have increased by 4.2 percent. Over a similar timeframe, the nationwide VMT increased by 1.9 percent. This corresponds with other economic indicators that show that New Hampshire has typically mirrored or outperformed the national average in terms of economic growth.

It should be noted that there is still some uncertainty in the direction that the current economy is heading. While almost six years 'officially' out of the recession, the economy continues to grow at a slow rate; however, the outlook is much more positive than it has been in recent years.

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
- Manchester Airport Access Road (Raymond Wieczorek Drive)

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 parallel routes as the most likely free alternatives for each New Hampshire Turnpike segment:

- Central Turnpike – US Route 3 / NH 3A
- Spaulding Turnpike – Dover Point Rd / NH 9 / NH 108

- Blue Star Turnpike – US Route 1

8.2.1. Central Turnpike Parallel Routes - US Route 3 and NH 3A

US Route 3 and NH 3A are parallel routes to the Central Turnpike (see Figure 44). From Nashua, US Route 3 is located west of the Merrimack River until it crosses the river via the Queen City Bridge in Manchester. US Route 3 then 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 and joins I-293 at Exit 2 in Manchester where it crosses the river and continues north along I-293 until it diverges from I-293 at Exit 7. NH 3A then continues north along the west side of the river to Concord where it converges with US Route 3 when US Route 3 crosses back 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, Merrimack Industrial). An alternative route to US Route 3 to bypass Manchester would be to take I-93 Exit 9 from the north to I-293 southbound and reconnect with US Route 3 at Exit 3.

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

- Exit 13 – I-93 / FEE Turnpike in Concord
- Exit 4 – I-293 / FEE Turnpike in Manchester
- Exit 3 – I-293 / US Route 3 / NH 3A Interchange
- Exit 7 –FEE Turnpike / NH101A / US Route 3 split in Nashua

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

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

NH 3A intersects I-93 at Exit 10, which is just south of the I-93 junction with the FEE Turnpike.

US Route 3 runs parallel to the Central Turnpike from Nashua to Manchester and drivers going to or from Merrimack can use this alternate route to avoid the Merrimack ramp toll plazas (Merrimack Industrial, Exit 11 and Bedford Road). Drivers traveling on the Central Turnpike can avoid the Bedford Toll Plaza by using the recently built Manchester Airport Access Road (Raymond Wieczorek Drive, FEE Turnpike Exit 13). Drivers can easily take this exit (from both northbound and southbound directions), make a series of short turns, and re-enter the Turnpike at the same exit, thus bypassing the Bedford Toll Plaza quickly.

NH 3A runs parallel to the Central Turnpike and is an alternate route that can be taken to avoid the Hooksett Toll Plaza. The Central Turnpike is toll free between Exit 3 (FEE Turnpike junction with I-293) in Bedford and Exit 10 (FEE Turnpike junction with I-93) just north of Manchester. NH 3A connects to the Turnpike at Exit 11 in Hooksett, at Hackett Hill Road where the Hooksett Ramp Toll Plaza is situated as well as at Exit 12 in Concord.

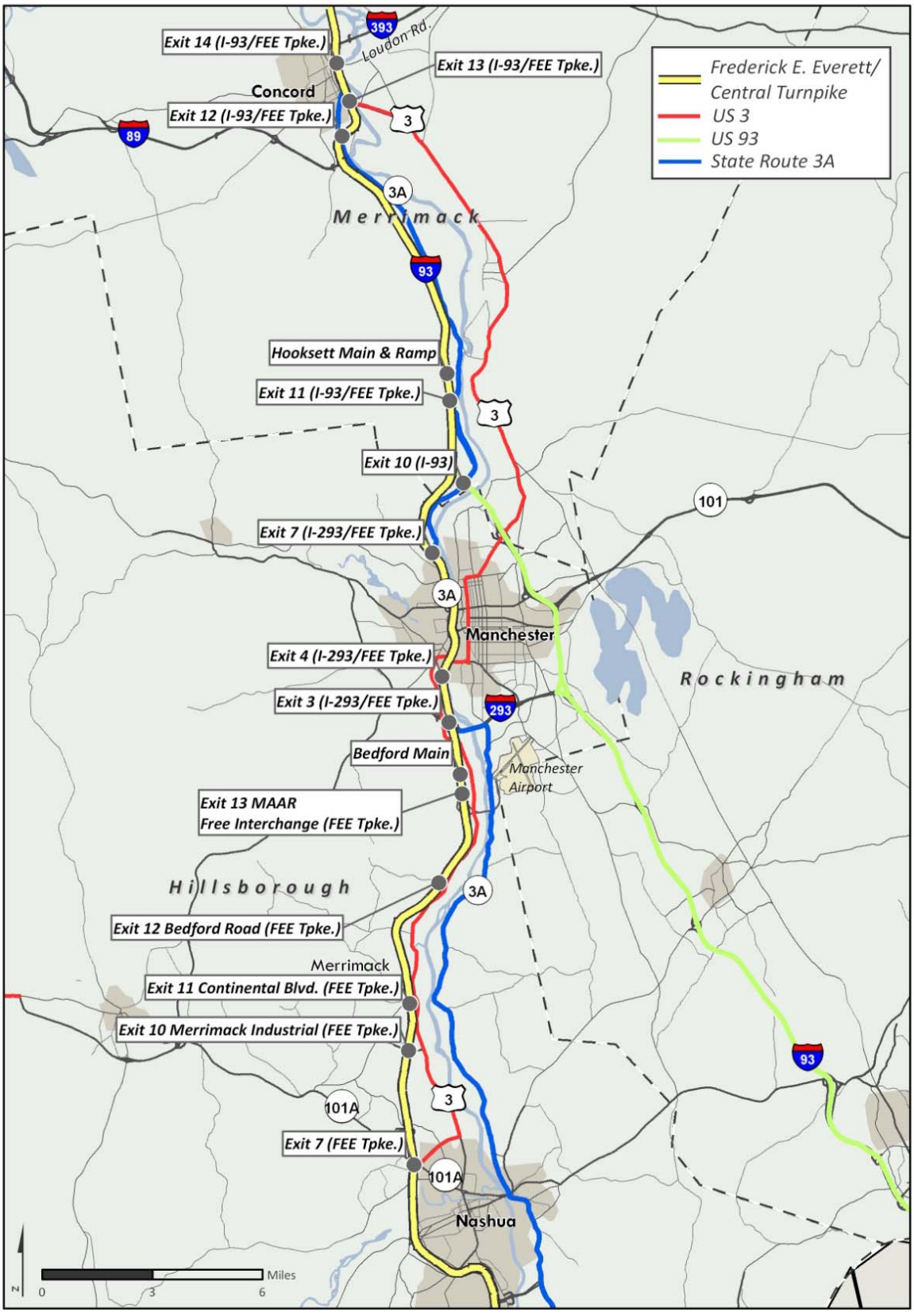
A longer alternate route to the Central Turnpike would be a composite route consisting of the US Route 3 and NH 3A routes from the state line to Concord. Though toll-free, the US Route 3 / NH 3A option is a slower, more congested route than the Central Turnpike, with numerous signalized intersections.

A driver traveling between Exit 3 (FEE Turnpike at I-293) in Manchester and Exit 7 (FEE Turnpike at NH 101A / US Route 3) in the north Nashua area would take approximately 12 minutes on the Central Turnpike versus about 26 minutes on the parallel US Route.

In the Concord area, a driver traveling between Exit 14 (FEE Turnpike at Loudon Road) and Exit 10 (FEE Turnpike at I-93) on the Central Turnpike would take approximately 11 minutes whereas it would take more than twice as long to make the trip on the parallel NH 3A (approximately 24 minutes).

Travel times runs were conducted to estimate the length of time it would take for a driver to bypass the Bedford Toll Plaza by using the Manchester Airport Access Road. Results show that this total movement would add approximately 3.5 to 4.5 minutes to the total travel time on the Central Turnpike. Due to the configuration of the interchange, it takes less time to make this diversion when traveling northbound compared to traveling southbound.

Figure 44: Central Turnpike and Parallel Routes



8.2.2. Spaulding Turnpike Parallel Routes - Dover Point Rd / NH 9 / NH 108

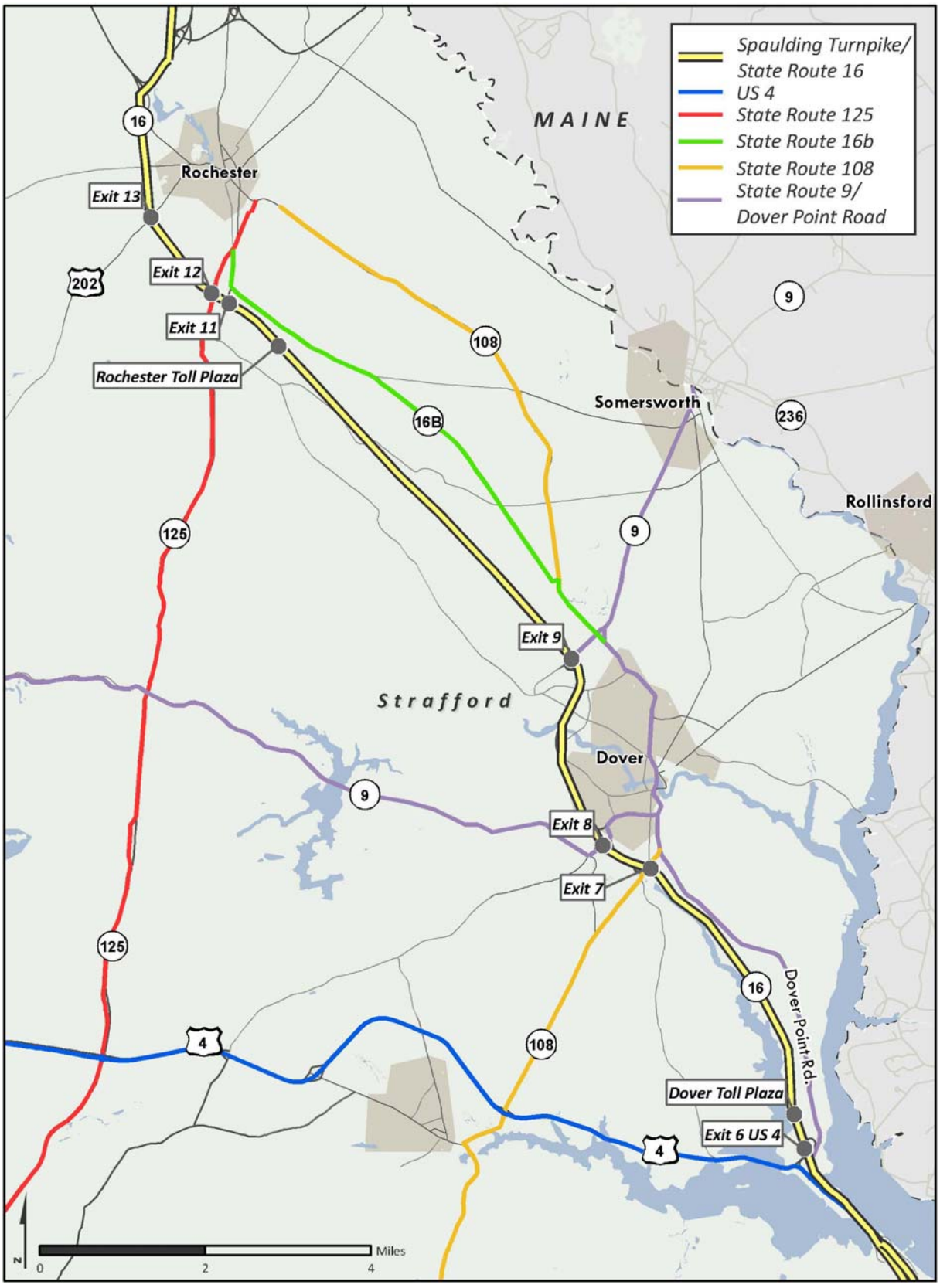
The combination of Dover Point Road, NH 9, and NH 108 make up a parallel route that can be used as an alternative to taking the Spaulding Turnpike (see Figure 45). Dover Point Road runs parallel with Spaulding Turnpike (NH 16) beginning just south of Exit 6 and ending at NH 108 in downtown Dover, where 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 8 showed that vehicles that use Dover Point Road would take approximately 2 minutes longer than if they used the Spaulding Turnpike (8 minutes on Dover Point Road, versus 6 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 also runs parallel to the turnpike through this region.

Travel time run comparisons in the Rochester area between Exit 8 and Exit 12 showed that vehicles that use the combined NH 9 / NH 108 route would take more than double the time than if they used the Spaulding Turnpike (20 minutes on NH 9 / NH 108, versus 8 to 9 minutes on the Turnpike). Travel time runs along NH 16B showed similar travel times to those seen on NH 108 (ranging from 17 to 19 minutes).

Figure 45: Spaulding Turnpike and Parallel Routes



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8.2.3. Blue Star Turnpike Parallel Route - US Route 1

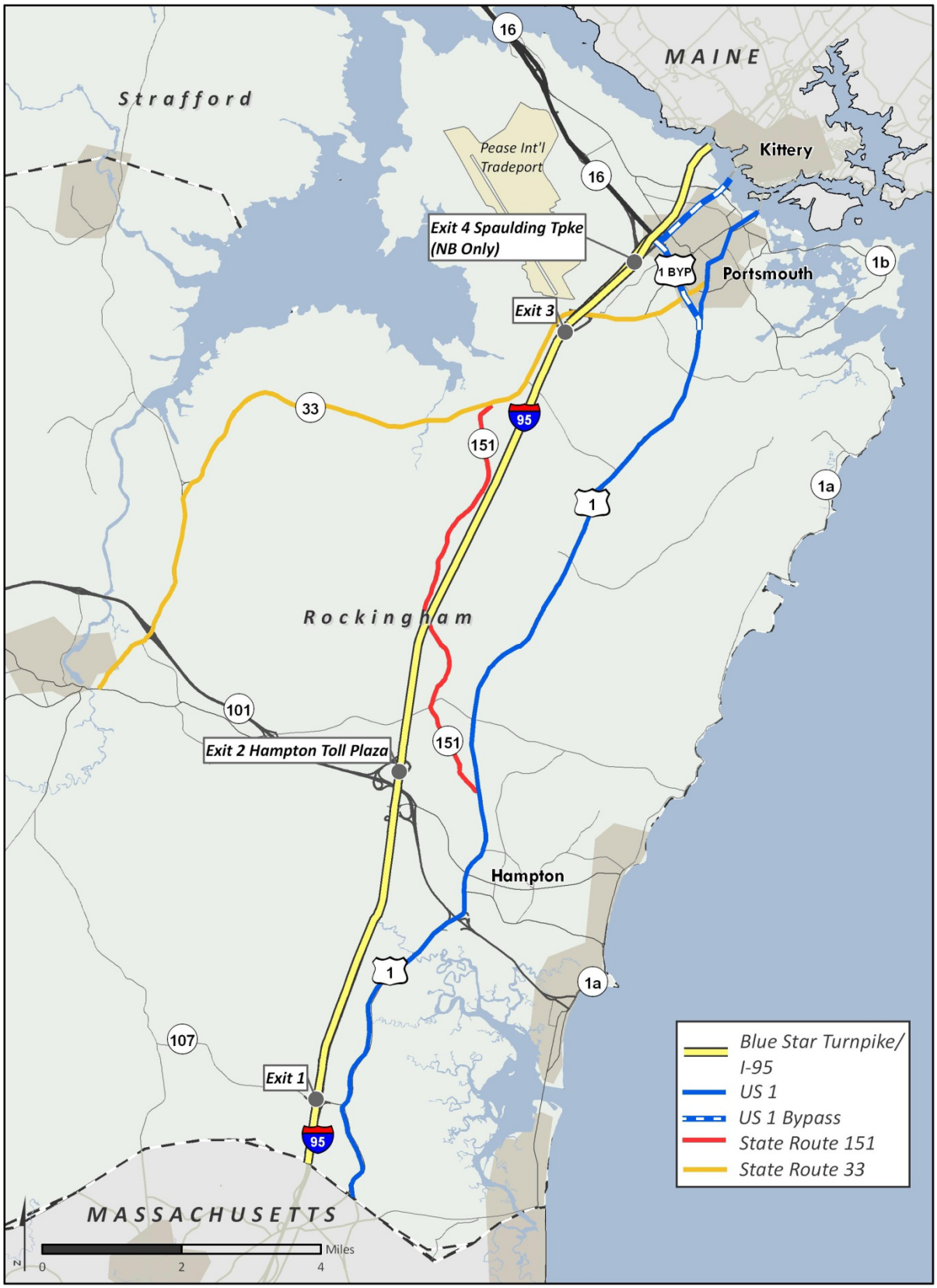
The best alternate route to the Blue Star Turnpike is US Route 1. Like US Route 3 in Merrimack, US Route 1 was the only major north-south arterial before the Turnpike was built. US Route 1 is the only accessible route that allows a bypass of the Hampton Toll Plaza (Exit 2) from Massachusetts (see Figure 46). 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 the Hampton Main Toll Plaza is 6.9 miles, where NH 33 carries commercial traffic from the Pease International Tradeport.

Travel time runs in the Hampton area between Exit 1 (NH 107) and Exit 6 (NH 16) revealed that the use of the alternate route of US Route 1 would take more than twice as long at 22 to 27 minutes compared to the Blue Star Turnpike which would take approximately 12 minutes.

8.2.4. Summary of Alternate Routes

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.

Figure 46: Blue Star Turnpike and Parallel Routes



8.3. POTENTIAL FUTURE TRANSPORTATION PROJECTS

There are several potential highway projects scheduled for completion in the forecast period 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 2015 to 2024, as well as from regional Transportation Improvement Programs (TIPs) developed by the largest metropolitan planning organizations (MPOs) in the state. Projects from the Priority Capital Program are identified by the State Number in parentheses for clarification. Potential future highway and 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 or recently completed that could affect volumes on the Central Turnpike are:

- Exit 12/Bedford Road Toll Removal (29306)– Tolling was discontinued at Exit 12 on July 18, 2014. This toll location had collected about $0.9 to $1.0M annually. In addition, recent data indicates a small amount of traffic is diverting from the Exit 11 toll ramps - located six miles to the south – to Exit 12, now that it is toll-free. This diversion is already evident in the Exit 11 traffic data, and additional diversion is expected in FY 2016.
- Hooksett Rest Area Redevelopment (15970) – This project, currently under construction, involves redeveloping 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 concession sales, fuel sales, visitor centers, and two new state Liquor and Wine Outlet Stores. Although these facilities are expected to be an attractive option for travelers on the Turnpike, the project is not expected to have an effect on traffic or toll revenue.
- Manchester Interstate 293 Exit 4 Bridge Replacements (14966) – This project, located in Manchester, includes the reconstruction of I-293 between NH 101 and Granite Street as well as the rehabilitation or replacement of five bridges. Work began in 2013. All construction is estimated to be completed in November 2016. This work could potentially lead to a slight decrease in traffic during construction period.
- Open Road Tolling (ORT) Implementation at Bedford (16100) – ORT is planned at the Bedford mainline toll plaza. Hooksett ORT was completed in 2013, while Bedford ORT is planned to be completed in FY 18. 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.
- Bow-Concord I-93 (13742) – Four different bridges on the I-93 corridor are scheduled to be re-decked by June 2016. Almost two-thirds of the construction was completed as of December 2014.
- Deployment of Intelligent Transportation Systems along Central (F.E. Everett) Turnpike – The project's scope is now completed and completion is expected by October 2016. This could result in improvements in future traffic flow.
- Nashua-Bedford I-93 Turnpike Widening (13761) – This project will widen the Turnpike from Exit 8 in Nashua to I-293 in Bedford. Design work has not yet begun, but construction is

expected in FY 2022-2024. No traffic changes have been assumed during the forecast period.

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 (13408-B and C) – This bridge replacement project will replace the I-95 Bridge over the Taylor River near Hampton. Construction is expected to occur between April 2015 and October 2017. The dam replacement will occur between August 2018 and October 2019. These projects could temporarily reduce traffic on the Blue Star Turnpike from friction that routinely occurs with construction activity, however, all traffic lanes would be available during construction.
- Route 1 Bypass Bridge Replacement – The Blue Star Turnpike (I-95), Route 1 Bypass and Route 1 serve as the only three crossings over the Piscataqua River between Portsmouth, NH and Kittery, ME. Route 1's Memorial Bridge was closed permanently to vehicle traffic on July 27, 2011, with a replacement bridge open in August of 2013. The Route 1 Bypass / Sarah Mildred Long Bridge construction began in January 2015; traffic will be impacted for 10 months at the end of the project at the Maine side of the bridge. The new bridge will be fully open in both directions in September 2017. There may be temporary diversion to the Turnpike during construction.

8.3.3. Spaulding Turnpike Region

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

- Spaulding Turnpike Expansion at Rochester (10620) – The widening of the Spaulding Turnpike from exit 12 to exit 16 was completed in FY 2013. The project widened the original two-lane segment to a four-lane segment. This improvement resulted in additional traffic at the Rochester toll plaza.
- Newington-Dover Turnpike Widening (11238) – This project involves the widening of the Spaulding Turnpike between Exit 1 and the Dover Toll Plaza, just north of Exit 6, with improvements to interchanges, bridge widening and rehabilitation, and construction of park 'n ride lots. The southbound Little Bay Bridge widening and park n' ride lots at Dover and Rochester have been completed, while the Newington portion of the widening – currently under construction - is expected to be completed in November 2015. The Dover portion of the widening is anticipated to be completed in FY 2021. The northbound Little Bay Bridge rehabilitation is expected to be completed in FY 2018. Similar to the turnpike in Rochester, some additional traffic and revenue growth is expected after the roadway is fully widened.
- Improvements at Dover and Rochester Toll Plazas (29440) – The procurement of consulting and design services for the improvements to the Dover and Rochester Toll Plazas is not expected before 2016. The project schedule is driven by the availability of funding but is currently expected to be complete by 2021.

Nearly $317 million in funded capital improvements that are planned for the FY 2015 through FY 2024 time period 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 2015-2024

This section discusses the methodologies and assumptions used in projecting traffic and revenue for the New Hampshire Turnpike System. It presents the traffic and revenue projections for FY 2015 through FY 2024.

9.1. TOLL RATES

9.1.1. Assumed Toll Rates

No toll increases have been assumed during the forecast period. Table 15 shows the cash and ***E-ZPass*** toll rates for passenger cars (Class 1) and Class 8 (five-axle) trucks. Note that the ***E-ZPass*** toll applies only for New Hampshire ***E-ZPass*** accounts. Patrons with ***E-ZPass*** from other agencies are charged the same toll rate as cash.

Table 15: Toll Rates for Selected Vehicle Classes on the New Hampshire Turnpike System

Turnpike	Toll Plaza	Car (Class 1) Tolls		Five-Axle Truck (Class 8) Tolls	
		Cash	*E-ZPass*[2]	Cash	*E-ZPass*[2]
Central Turnpike	Hooksett Main	$ 1.00	$ 0.70	$ 3.50	$ 3.15
	Hooksett Ramp	$ 0.50	$ 0.35	$ 2.50	$ 2.25
	Bedford Main	$ 1.00	$ 0.70	$ 3.50	$ 3.15
	Bedford Road[1]	$ 0.50	$ 0.35	$ 2.50	$ 2.25
	Exit 11	$ 0.50	$ 0.35	$ 2.50	$ 2.25
	Exit 10/Merrimack Industrial	$ 0.50	$ 0.35	$ 2.50	$ 2.25
Blue Star Turnpike	Hampton Main	$ 2.00	$ 1.40	$ 5.50	$ 4.95
	Hampton Side	$ 0.75	$ 0.53	$ 3.00	$ 2.70
Spaulding Turnpike	Dover Toll	$ 0.75	$ 0.53	$ 3.00	$ 2.70
	Rochester Toll	$ 0.75	$ 0.53	$ 3.00	$ 2.70

[1] *Tolls were removed from Bedford Road ramps on July 18, 2014*

[2] *Tolls for patrons with New Hampshire-issued **E-ZPass** transponders. Patrons with **E-ZPass** transponders issued by other agencies pay the cash toll rate.*

The complete toll schedule for all classes and all tolling locations can be found on this webpage: http://www.nh.gov/dot/org/operations/turnpikes/documents/newtollrates-july12009hampton.pdf.

9.1.2. Reasonableness of Tolls / Comparison to Other *E-ZPass* Toll Facilities

Figure 47 compares the passenger car toll rates in cents per mile on the Blue Star, Spaulding and Central Turnpikes to other various ***E-ZPass*** toll roads in the northeastern quadrant of the U.S.A. Standard peak period toll rates are shown for each facility. A discounted ***E-ZPass*** toll rate is shown for those facilities that offer discounted ***E-ZPass***. The Blue Star Turnpike has the highest passenger car per-mile toll rate of the three New Hampshire Turnpikes, but there are still ten major ***E-ZPass*** toll roads that have higher cash toll rates. The Central Turnpike and Spaulding Turnpikes are among the toll facilities with low passenger car toll rates per mile. It

can be said that the New Hampshire Turnpike passenger car toll rates are reasonable compared to toll rates at other ***E-ZPass*** toll facilities.

Figure 47: Passenger Car Toll Rates per Mile on Select *E-ZPass* Toll Facilities

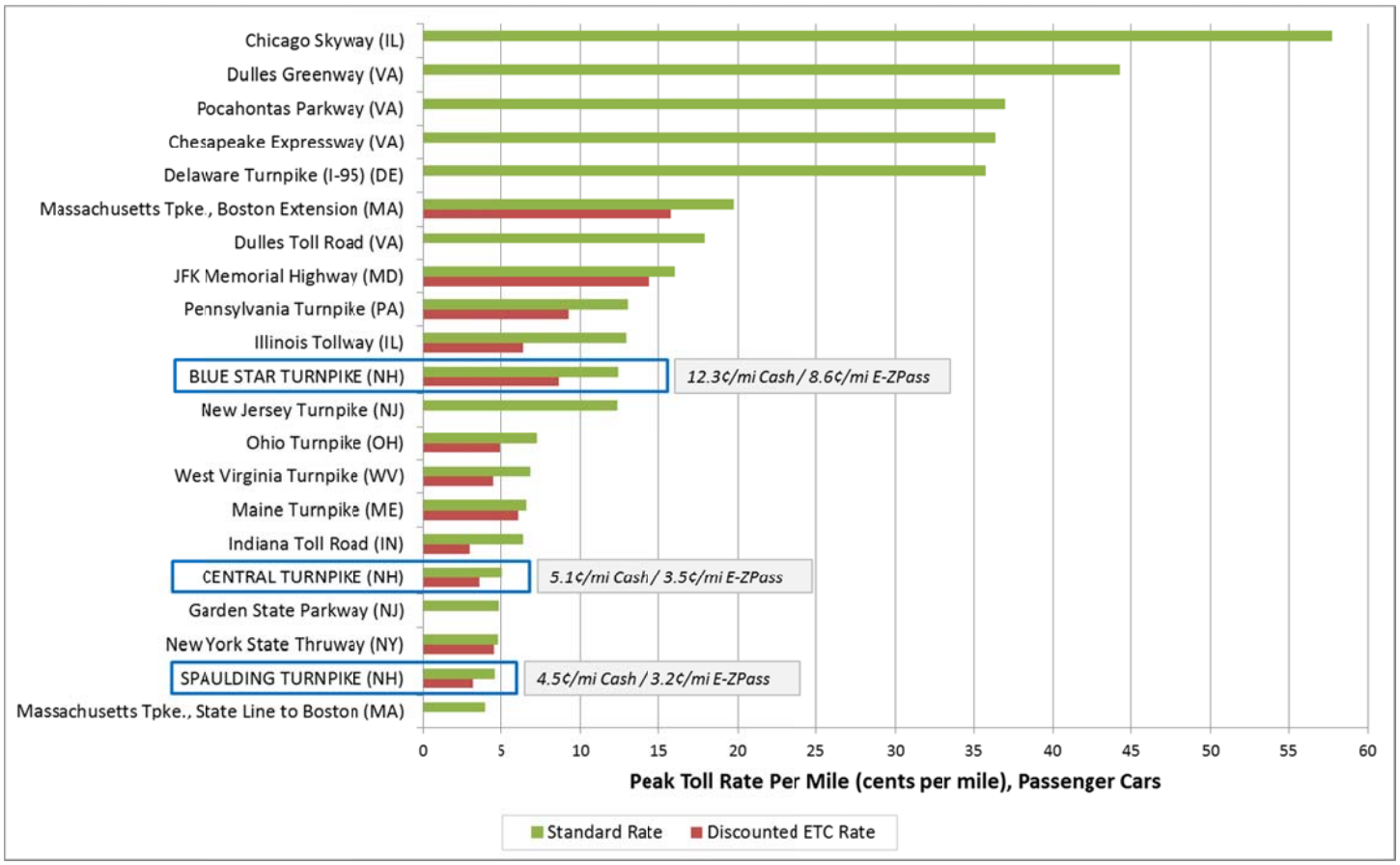
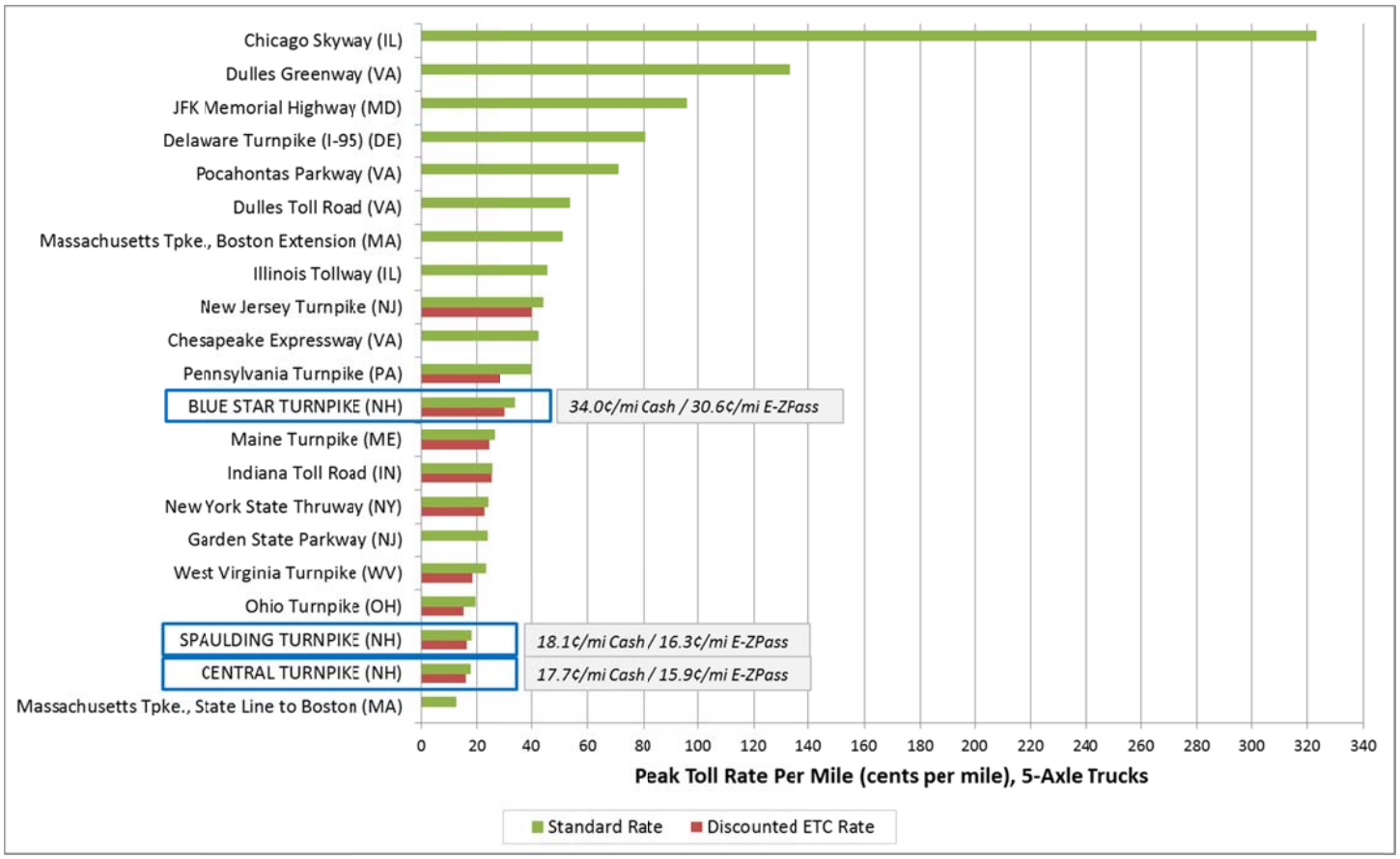


Figure 48 shows a similar comparison for five-axle vehicles. Again, the Blue Star Turnpike has the highest toll rates of the three New Hampshire toll facilities; there are eleven major ***E-ZPass*** toll facilities that have higher five-axle truck toll rates. Both the Central and Spaulding Turnpikes are among the toll facilities with low commercial toll rates per mile. It can be said that the New Hampshire Turnpike commercial vehicle toll rates are reasonable compared to other ***E-ZPass*** toll facilities.

Figure 48: Commercial Vehicle Toll Rates on Select *E-ZPass* Toll Facilities



9.2. METHODOLOGY USED FOR TRAFFIC AND REVENUE FORECASTS

9.2.1. Fiscal Year 2015 Estimates

The first step in the forecasting process was to develop estimates for FY 2015 based on six months of actual data. The actual growth rates over the same timeframe in FY 2014 were used, but reduced slightly to account for the bad winter storms of early 2015 and any unforeseen future circumstances that could negatively affect traffic for the rest of this fiscal year.

9.2.2. Correlation to Economic Factors

The second step in developing the traffic and revenue projections was to develop a base of FY 2003 through FY 2014 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*. It is expected that traffic growth throughout the forecast period will not be as high as it was from the 1990s through about 2003, due to such factors as Baby Boomers retiring, young people driving less and technology making road travel less necessary,

as discussed in Section 7.1.7 of this report. Therefore, some dampening was also applied to traffic growth rates over the forecast years.

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 2021. 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. In recent years, the "Home" share of ***E-ZPass*** trips at each toll location has generally declined slightly, as other states such as Ohio and Rhode Island installed electronic tolling technology at their facilities and began issuing ***E-ZPass*** tags themselves. We assumed that the future ratio of "Home" to "Away" transactions would stay the same as it is today, and not continue to decline. This may be a slightly conservative assumption, as a declining "Home" share means an increasing "Away" share, and "Away" ***E-ZPass*** traffic is not charged the discounted rate.

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 2015-2024.

9.2.4. System Changes and Developments

Some recent and future changes to the New Hampshire Turnpike System and its environs were investigated further to determine their effects on traffic and toll revenue. The opening of the Manchester Airport Access Road (MAAR) with its free interchange on the Turnpike in November 2011 and the opening of the Merrimack Premium Outlets in June 2012 affected traffic at certain plazas on the Central Turnpike for a couple of years; however, no further traffic shifts are expected. In addition, open-road tolling (ORT) has commenced at several mainline plazas in recent years, and has not caused any noticeable traffic or revenue changes; therefore, we have estimated that converting other plazas to include ORT will not affect their traffic or the revenue collected.

Two system changes *are* expected to have an effect on traffic and revenue: the removal of tolls at the Bedford Road Ramp (Exit 12), and the widening of sections of the Spaulding Turnpike.

9.2.4.1. Bedford Road Ramp Toll Removal

Tolling was discontinued at the Bedford Road Ramps (Exit 12) on July 18, 2014 - just a few weeks into FY 2015 - and the toll plazas were subsequently removed. This toll location had

averaged about 6,500 vehicles per day and brought in $0.9M annually in FY 2014. In an earlier study, Jacobs had estimated that the Exit 12 toll removal would cause a small amount of traffic and revenue loss on the Exit 11 toll ramps due to vehicles exiting the Turnpike at Exit 12 instead of Exit 11 in order to avoid the toll. Looking at available FY 2015 data, this appears to be the case. Other toll locations do not appear to have been affected by the Exit 12 toll removal.

To estimate the Exit 11 losses due to Exit 12 toll removal, we compared August 2014 through January 2015 monthly volumes to those of the previous year, then subtracted out the background growth – which we had estimated to be the weighted average growth of Hooksett Main and Bedford Main. Using this method, we calculated Exit 11 monthly passenger car traffic losses that increased gradually to 7 or 8 percent strictly due to the Exit 12 toll removal. For the whole of FY 2015, while the Central Turnpike barrier passenger car traffic is estimated to grow about 3 percent, Exit 11 passenger traffic is estimated to decline by 4.5 percent. Similar to what occurred when the MAAR opened, we expect these effects to ramp up. In FY 2016 we estimated a 6.5 percent passenger car traffic loss at Exit 11 due to Exit 12 toll removal; with background growth included this loss is reduced to 4.3 percent. Likewise, in FY 2017 we estimated a small additional loss of 2 percent due to Exit 12, which is reduced to a 0.1 percent traffic loss after accounting for background growth.

In the first six months of FY 15, trucks did not exhibit a shift from Exit 11 to the newly-free Exit 12. However, to maintain slight conservatism in our forecasts we have estimated Exit 11 truck traffic losses of 3 percent in FY 2016 and 1 percent in FY 2017 due to the Exit 12 toll removal alone. With background growth added, the FY 2016 and FY 2017 truck growth rates at Exit 11 are estimated at -0.7 percent and +1.1 percent, respectively.

Translating this into revenues, about $0.11 million of revenue loss is expected at Exit 11 due to the recent Exit 12 toll removal in FY 2015, ramping up to about a $0.22 million loss by FY 2017 and a $0.25 million loss by FY 2024.

The overall estimated revenue loss effects due to Exit 12 toll removal are shown in Table 16.

Table 16: Estimated Losses in Annual Revenues ($M) at Bedford/Merrimack Plazas due to Exit 12 Toll Removal[1]

Fiscal Year	Continental Blvd. Exit 11	Bedford Road Exit 12	Total Loss in Toll Revenues
2015[2]	$0.11	$0.93	$1.04
2016	$0.19	$1.00	$1.19
2017-2024[3]	$0.22 - $0.25	$1.02-1.15	$1.24-1.40

[1] *Compared to a "no Exit 12 toll removal" condition*

[2] *Exit 12 tolls were discontinued July 18, 2014*

9.2.4.2. Spaulding Turnpike Construction and Widening

About five miles of the Spaulding Turnpike were widened in the Rochester area between FY 2008 and FY 2013. Traffic growth has been strong since the completion of the widening at the Rochester Toll Plaza: 4.7 percent growth in FY 2014, and 4.4 percent growth in the first six months of FY 2015. Continued growth is expected due to the new roadway capacity. We have assumed an additional 1.0 percent growth on top of the background growth already estimated through correlation to GDP and IPI, which had been based on a narrower roadway.

Currently, NHDOT is widening the Spaulding Turnpike and Little Bay Bridges in the Dover area. As this project has been under construction for several years without any apparent reduction in traffic volumes – since the NHDOT has maintained and will continue to maintain two lanes of traffic during construction – no traffic reductions have been assumed in our Dover Toll Plaza traffic forecasts. In addition, since this project adds new capacity to the Turnpike, we have assumed that when the construction is essentially completed in FY 2020 that there will be an additional increase in traffic of 2.0 percent (beyond forecasted background growth) and an additional increase in traffic of 1.0 percent each year for the following years until the end of the 10-year forecast period.

9.3. TOLL TRANSACTION PROJECTIONS BY TURNPIKE

The FY 2014 actual and projected future annual toll transactions on the New Hampshire Turnpike System during the period FY 2015-2024 are presented in Table 17. No toll increases are assumed in these forecasts. For reference, historical annual toll transactions were shown earlier in Table 2. A detailed summary of traffic, revenue, and ***E-ZPass*** market share by facility is presented in Table 18.

Table 17: FY 2014 and Projected Annual Toll Transactions, FY 2015-2024 (in millions)

Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Total
2014 (Actual)	52.2	36.8	22.5	111.5
2015	51.3	37.6	23.2	112.1
2016	52.2	38.1	23.6	113.8
2017	53.2	38.6	23.9	115.8
2018	54.2	39.1	24.3	117.6
2019	55.2	39.6	24.6	119.4
2020	56.2	40.0	25.3	121.5
2021	57.2	40.5	25.8	123.5
2022	58.1	41.0	26.3	125.4
2023	59.1	41.4	26.8	127.4
2024	60.1	41.8	27.4	129.4

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

Table 18: Detailed Traffic and Revenue, FY 2014 Actual and FY 2015-2024 Projections

Total Traffic Volumes (millions)

Barriers/Ramps	2014 Actual	14-15 Projected Growth	2015 Projected	15-16 Projected Growth	2016 Projected	16-17 Projected Growth	2017 Projected	17-18 Projected Growth	2018 Projected	18-19 Projected Growth	2019 Projected	19-20 Projected Growth	2020 Projected	20-21 Projected Growth	2021 Projected	21-22 Projected Growth	2022 Projected	22-23 Projected Growth	2023 Projected	23-24 Projected Growth	2024 Projected
CENTRAL TURNPIKE																					
Hooksett Barrier	25.2	2.33%	25.8	2.21%	26.3	2.10%	26.9	1.90%	27.4	1.80%	27.9	1.80%	28.4	1.79%	28.9	1.70%	29.4	1.70%	29.9	1.70%	30.4
Hooksett Ramp	2.6	8.26%	2.8	2.21%	2.9	2.10%	2.9	1.90%	3.0	1.80%	3.0	1.80%	3.1	1.79%	3.1	1.70%	3.2	1.70%	3.2	1.70%	3.3
Bedford Barrier	16.1	4.23%	16.8	2.20%	17.2	2.10%	17.5	1.90%	17.8	1.80%	18.2	1.80%	18.5	1.80%	18.8	1.70%	19.1	1.70%	19.5	1.70%	19.8
Bedford Road Ramp	2.4	-95.22%	0.1																		
Exit 11 (Merrimack) Ramp	3.3	-4.21%	3.2	-4.22%	3.1	0.12%	3.1	1.90%	3.1	1.80%	3.2	1.80%	3.2	1.80%	3.3	1.70%	3.4	1.70%	3.4	1.70%	3.5
Exit 10 Merrimack Industrial Park Ramp	2.6	3.72%	2.7	2.20%	2.7	2.10%	2.8	1.90%	2.8	1.80%	2.9	1.80%	2.9	1.80%	3.0	1.70%	3.0	1.70%	3.1	1.70%	3.2
Subtotal	**52.2**	**-1.57%**	**51.3**	**1.58%**	**52.2**	**1.98%**	**53.2**	**1.90%**	**54.2**	**1.80%**	**55.2**	**1.80%**	**56.2**	**1.79%**	**57.2**	**1.70%**	**58.1**	**1.70%**	**59.1**	**1.70%**	**60.1**
BLUE STAR TURNPIKE																					
Hampton Barrier	23.0	1.45%	23.4	1.38%	23.7	1.37%	24.0	1.27%	24.3	1.17%	24.6	1.17%	24.9	1.17%	25.2	1.08%	25.4	1.08%	25.7	1.08%	26.0
Hampton Ramp	13.8	3.38%	14.2	1.39%	14.4	1.38%	14.6	1.28%	14.8	1.18%	15.0	1.18%	15.2	1.18%	15.3	1.09%	15.5	1.09%	15.7	1.09%	15.9
Subtotal	**36.8**	**2.17%**	**37.6**	**1.38%**	**38.1**	**1.38%**	**38.6**	**1.28%**	**39.1**	**1.18%**	**39.6**	**1.18%**	**40.0**	**1.18%**	**40.5**	**1.08%**	**41.0**	**1.08%**	**41.4**	**1.08%**	**41.8**
SPAULDING TURNPIKE																					
Dover Barrier	13.6	2.23%	13.9	1.21%	14.1	1.21%	14.3	1.11%	14.4	1.01%	14.6	3.00%	15.0	2.00%	15.3	2.00%	15.6	2.00%	15.9	2.00%	16.2
Rochester Barrier	8.9	3.93%	9.3	2.21%	9.5	2.21%	9.7	2.11%	9.9	2.01%	10.1	2.00%	10.3	2.00%	10.5	2.00%	10.7	2.00%	10.9	2.00%	11.1
Subtotal	**22.5**	**2.90%**	**23.2**	**1.61%**	**23.6**	**1.61%**	**23.9**	**1.51%**	**24.3**	**1.41%**	**24.6**	**2.59%**	**25.3**	**2.00%**	**25.8**	**2.00%**	**26.3**	**2.00%**	**26.8**	**2.00%**	**27.4**
TOTAL:	**111.5**	**0.57%**	**112.1**	**1.52%**	**113.8**	**1.70%**	**115.8**	**1.61%**	**117.6**	**1.51%**	**119.4**	**1.76%**	**121.5**	**1.63%**	**123.5**	**1.56%**	**125.4**	**1.56%**	**127.4**	**1.56%**	**129.4**

Total Toll Revenue (millions)

Barriers/Ramps	2014 Actual	14-15 Projected Growth	2015 Projected	15-16 Projected Growth	2016 Projected	16-17 Projected Growth	2017 Projected	17-18 Projected Growth	2018 Projected	18-19 Projected Growth	2019 Projected	19-20 Projected Growth	2020 Projected	20-21 Projected Growth	2021 Projected	21-22 Projected Growth	2022 Projected	22-23 Projected Growth	2023 Projected	23-24 Projected Growth	2024 Projected
CENTRAL TURNPIKE																					
Hooksett Barrier	$23.8	1.88%	$24.3	2.03%	$24.7	1.96%	$25.2	1.79%	$25.7	1.73%	$26.1	1.76%	$26.6	1.78%	$27.1	1.70%	$27.5	1.70%	$28.0	1.70%	$28.5
Hooksett Ramp	$1.3	10.22%	$1.4	2.13%	$1.4	2.03%	$1.5	1.84%	$1.5	1.75%	$1.5	1.76%	$1.6	1.76%	$1.6	1.70%	$1.6	1.70%	$1.6	1.70%	$1.7
Bedford Barrier	$14.6	4.67%	$15.3	2.09%	$15.6	2.01%	$15.9	1.83%	$16.2	1.75%	$16.5	1.78%	$16.8	1.79%	$17.1	1.70%	$17.4	1.70%	$17.7	1.70%	$18.0
Bedford Road Ramp	$0.9	-95.12%	$0.0																		
Exit 11 (Merrimack) Ramp	$1.4	-3.77%	$1.3	-4.36%	$1.3	0.01%	$1.3	1.81%	$1.3	1.75%	$1.3	1.78%	$1.3	1.79%	$1.4	1.70%	$1.4	1.70%	$1.4	1.70%	$1.4
Exit 10 Merrimack Industrial Park Ramp	$1.2	3.90%	$1.3	2.12%	$1.3	2.03%	$1.3	1.85%	$1.3	1.76%	$1.4	1.78%	$1.4	1.78%	$1.4	1.70%	$1.4	1.70%	$1.5	1.70%	$1.5
Subtotal	**$43.2**	**0.84%**	**$43.6**	**1.76%**	**$44.4**	**1.93%**	**$45.2**	**1.81%**	**$46.0**	**1.74%**	**$46.9**	**1.77%**	**$47.7**	**1.78%**	**$48.5**	**1.70%**	**$49.4**	**1.70%**	**$50.2**	**1.70%**	**$51.0**
BLUE STAR TURNPIKE																					
Hampton Barrier	$49.7	1.26%	$50.4	1.38%	$51.1	1.37%	$51.8	1.26%	$52.4	1.16%	$53.0	1.15%	$53.6	1.15%	$54.3	1.08%	$54.8	1.08%	$55.4	1.08%	$56.0
Hampton Ramp	$9.9	4.17%	$10.3	1.28%	$10.4	1.29%	$10.5	1.21%	$10.7	1.14%	$10.8	1.16%	$10.9	1.17%	$11.0	1.09%	$11.2	1.09%	$11.3	1.09%	$11.4
Subtotal	**$59.6**	**1.74%**	**$60.6**	**1.36%**	**$61.5**	**1.35%**	**$62.3**	**1.25%**	**$63.1**	**1.15%**	**$63.8**	**1.15%**	**$64.5**	**1.15%**	**$65.3**	**1.08%**	**$66.0**	**1.08%**	**$66.7**	**1.08%**	**$67.4**
SPAULDING TURNPIKE																					
Dover Barrier	$9.1	2.66%	$9.4	1.06%	$9.5	1.08%	$9.6	1.02%	$9.7	0.95%	$9.7	2.98%	$10.0	1.99%	$10.2	2.00%	$10.4	2.00%	$10.7	2.00%	$10.9
Rochester Barrier	$6.0	4.09%	$6.2	2.01%	$6.3	2.05%	$6.5	1.99%	$6.6	1.93%	$6.7	1.97%	$6.8	1.99%	$7.0	2.00%	$7.1	2.00%	$7.3	2.00%	$7.4
Subtotal	**$15.1**	**3.23%**	**$15.6**	**1.44%**	**$15.8**	**1.47%**	**$16.0**	**1.41%**	**$16.2**	**1.35%**	**$16.5**	**2.56%**	**$16.9**	**1.99%**	**$17.2**	**2.00%**	**$17.6**	**2.00%**	**$17.9**	**2.00%**	**$18.3**
TOTAL:	**$117.9**	**1.60%**	**$119.8**	**1.51%**	**$121.6**	**1.58%**	**$123.5**	**1.48%**	**$125.4**	**1.39%**	**$127.1**	**1.56%**	**$129.1**	**1.50%**	**$131.0**	**1.43%**	**$132.9**	**1.43%**	**$134.8**	**1.43%**	**$136.8**

E-ZPass Market Shares

Barriers/Ramps	2014 Actual	14-15 Projected Increase	2015 Projected	15-16 Projected Increase	2016 Projected	16-17 Projected Increase	2017 Projected	17-18 Projected Increase	2018 Projected	18-19 Projected Growth	2019 Projected	19-20 Projected Growth	2020 Projected	20-21 Projected Growth	2021 Projected	21-22 Projected Growth	2022 Projected	22-23 Projected Growth	2023 Projected	23-24 Projected Growth	2024 Projected
CENTRAL TURNPIKE																					
Hooksett Barrier	67.0%	1.38%	68.4%	1.15%	69.5%	0.91%	70.4%	0.67%	71.1%	0.43%	71.5%	0.19%	71.7%	0.05%	71.8%	0.00%	71.8%	0.00%	71.8%	0.00%	71.8%
Hooksett Ramp	66.2%	1.42%	67.6%	1.01%	68.6%	0.80%	69.4%	0.59%	70.0%	0.38%	70.4%	0.17%	70.6%	0.04%	70.6%	0.00%	70.6%	0.00%	70.6%	0.00%	70.6%
Bedford Barrier	71.6%	0.84%	72.5%	0.66%	73.1%	0.52%	73.7%	0.38%	74.0%	0.25%	74.3%	0.11%	74.4%	0.03%	74.4%	0.00%	74.4%	0.00%	74.4%	0.00%	74.4%
Bedford Road Ramp	81.5%	-0.40%	81.1%																		
Exit 11 (Merrimack) Ramp	77.1%	0.59%	77.7%	0.49%	78.2%	0.39%	78.6%	0.29%	78.8%	0.19%	79.0%	0.08%	79.1%	0.02%	79.1%	0.00%	79.1%	0.00%	79.1%	0.00%	79.1%
Exit 10 Merrimack Industrial Park Ramp	71.5%	1.09%	72.6%	0.88%	73.5%	0.70%	74.2%	0.52%	74.7%	0.33%	75.0%	0.15%	75.2%	0.04%	75.2%	0.00%	75.2%	0.00%	75.2%	0.00%	75.2%
Subtotal	**69.9%**	**0.58%**	**70.5%**	**0.88%**	**71.4%**	**0.73%**	**72.1%**	**0.54%**	**72.6%**	**0.35%**	**73.0%**	**0.15%**	**73.1%**	**0.04%**	**73.2%**	**0.00%**	**73.2%**	**0.00%**	**73.2%**	**0.00%**	**73.2%**
BLUE STAR TURNPIKE																					
Hampton Barrier	70.2%	1.38%	71.5%	1.14%	72.7%	0.90%	73.6%	0.67%	74.3%	0.43%	74.7%	0.19%	74.9%	0.04%	74.9%	0.00%	74.9%	0.00%	74.9%	0.00%	74.9%
Hampton Ramp	71.6%	1.24%	72.8%	0.96%	73.8%	0.76%	74.5%	0.56%	75.1%	0.36%	75.4%	0.16%	75.6%	0.04%	75.6%	0.00%	75.6%	0.00%	75.6%	0.00%	75.6%
Subtotal	**70.7%**	**1.33%**	**72.0%**	**1.08%**	**73.1%**	**0.85%**	**73.9%**	**0.63%**	**74.6%**	**0.40%**	**75.0%**	**0.18%**	**75.1%**	**0.04%**	**75.2%**	**0.00%**	**75.2%**	**0.00%**	**75.2%**	**0.00%**	**75.2%**
SPAULDING TURNPIKE																					
Dover Barrier	72.3%	1.05%	73.4%	0.83%	74.2%	0.66%	74.8%	0.48%	75.3%	0.31%	75.6%	0.14%	75.8%	0.04%	75.8%	0.00%	75.8%	0.00%	75.8%	0.00%	75.8%
Rochester Barrier	70.6%	1.24%	71.8%	1.00%	72.8%	0.79%	73.6%	0.58%	74.2%	0.38%	74.6%	0.17%	74.7%	0.04%	74.8%	0.00%	74.8%	0.00%	74.8%	0.00%	74.8%
Subtotal	**71.6%**	**1.12%**	**72.7%**	**0.90%**	**73.6%**	**0.71%**	**74.4%**	**0.52%**	**74.9%**	**0.34%**	**75.2%**	**0.15%**	**75.4%**	**0.04%**	**75.4%**	**0.00%**	**75.4%**	**0.00%**	**75.4%**	**0.00%**	**75.4%**
TOTAL:	**70.5%**	**0.96%**	**71.5%**	**0.95%**	**72.4%**	**0.76%**	**73.2%**	**0.56%**	**73.7%**	**0.36%**	**74.1%**	**0.16%**	**74.3%**	**0.04%**	**74.3%**	**0.0%**	**74.3%**	**0.00%**	**74.3%**	**0.00%**	**74.3%**

Total toll transactions are projected to increase from 111.5 million toll transactions in FY 2014 to 112.1 million in FY 2015, a gain of 0.6 percent. This growth would have been greater if the Exit 12/Bedford Road toll were not removed in early FY 2015. If we remove the effects of toll removal at Bedford Road, the overall traffic growth would have been 2.9 percent from FY 2014 to FY 2015. This increase is similar to the FY 2014 growth of 3.0 percent over FY 2013, and indicates that there has been some economic recovery. The number of transactions is forecasted to then increase 1.5 percent in FY 2016, with larger growth rates ranging from 1.5 to 1.8 percent per year over the following four years as the widening of the Spaulding Turnpike is completed. For the final four years of the forecast period, it is forecasted that Turnpike toll traffic will grow 1.6 percent per year. Between FY 2014 and FY 2024, the projected average annual growth rates in paid toll transactions for the Central, Blue Star and Spaulding Turnpikes are 1.4 percent, 1.3 percent and 2.0 percent respectively, with the overall Turnpike toll transaction average growth rate at 1.5 percent.

9.4. TOLL REVENUE PROJECTIONS BY TURNPIKE

The actual and projected annual toll revenue on the New Hampshire Turnpike System during the period FY 2014-2024 is presented in Table 19. No toll increases are assumed in these forecasts. Detailed toll revenue projections for each toll plaza were presented previously in Table 18 (see Table 3 for historical toll revenues recorded on a cash basis).

Table 19: FY 2014 and Projected Annual Toll Revenue, FY 2015-2024 (in millions)

Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Total
2014 Actual (Cash Basis)	$43.2	$59.6	$15.1	$117.9
2014 Actual (Accrual Basis)	$43.5	$59.2	$14.8	$117.5
2015	$43.6	$60.6	$15.6	$119.8
2016	$44.4	$61.5	$15.8	$121.6
2017	$45.2	$62.3	$16.0	$123.5
2018	$46.0	$63.1	$16.2	$125.4
2019	$46.9	$63.8	$16.5	$127.1
2020	$47.7	$64.5	$16.9	$129.1
2021	$48.5	$65.3	$17.2	$131.0
2022	$49.4	$66.0	$17.6	$132.9
2023	$50.2	$66.7	$17.9	$134.8
2024	$51.0	$67.4	$18.3	$136.8

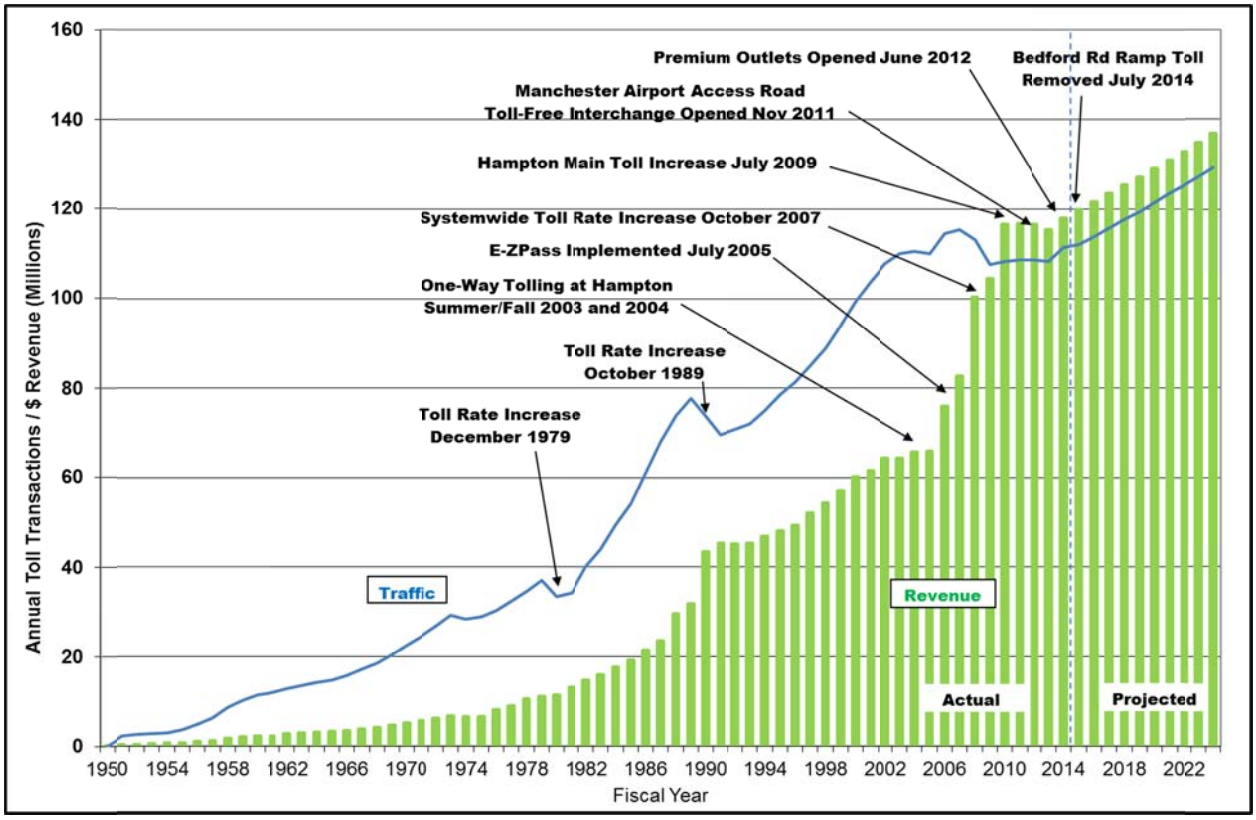
Notes: Future year revenues were forecasted using 2014 cash basis revenues as a base.
Data will not necessarily add to totals because of rounding.

Projected toll revenues for FY 2015 are $119.8 million – about a 1.6 percent increase from FY 2014 cash basis revenues. Without the Bedford Road ramp toll removal effects, the FY 2015 revenue growth would have been about 2.5 percent. For the remainder of the forecast period,

revenue is expected to grow 1.4 to 1.6 percent per year. Toll revenues on the Central, Blue Star and Spaulding Turnpikes are expected to grow at an average annual rate of 1.7 percent, 1.2 percent and 1.9 percent respectively between FY 2014 and FY 2024, and the overall Turnpike annual revenue growth rate is estimated to be 1.5 percent.

Historical and projected toll transactions and revenues for the entire New Hampshire Turnpike System over the period FY 1950 to 2024 are presented in Figure 49.

Figure 49: NH Turnpike System Historical and Projected Toll Transaction and Revenue Trends, FY 1950-2024



9.5. *E-ZPASS* MARKET SHARE PROJECTIONS

Table 20 presents the FY 2014 and projected ***E-ZPass*** market shares on the New Hampshire Turnpike System through FY 2024. Detailed ***E-ZPass*** market shares for each toll plaza were presented previously in Table 18.

Table 20: Actual and Projected *E-ZPass* Market Shares, FY 2014-2024

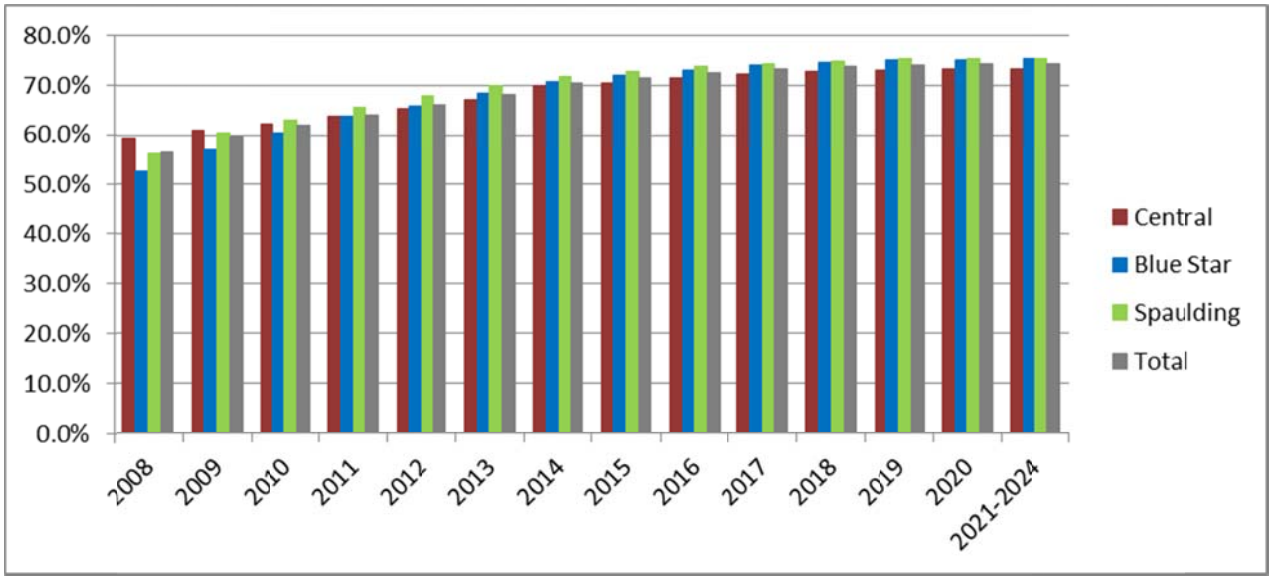
Fiscal Year	Central Turnpike	Blue Star Turnpike	Spaulding Turnpike	Total
2014[1]	69.9%	70.7%	71.6%	70.5%
2015	70.5%	72.0%	72.7%	71.5%
2016	71.4%	73.1%	73.6%	72.4%
2017	72.1%	73.9%	74.4%	73.2%
2018	72.6%	74.6%	74.9%	73.7%
2019	73.0%	75.0%	75.2%	74.1%
2020	73.1%	75.1%	75.4%	74.3%
2021-2024	73.2%	75.2%	75.4%	74.3%

[1] *Actual*

Total New Hampshire ***E-ZPass*** market share is projected to increase from 70.5 percent in FY 2014 to 71.4 percent in FY 2015. Growth in ***E-ZPass*** market share is expected to slow and flatten over time, as shown in the table. It is assumed to reach an overall maximum share of about 74.3 percent in FY 2021. The market share will differ by plaza, as it does currently. The Blue Star Turnpike, which has fewer commuters and more long-distance travelers than the Central and Spaulding Turnpikes, is expected to have slightly higher growth in market share than the others because ***E-ZPass*** continues to be adopted by drivers from other states, as more and more agencies implement electronic toll collection.

Figure 50 shows the historical and projected ***E-ZPass*** market shares for the period FY 2008 to FY 2024.

Figure 50: NH Turnpike System Historical and Projected *E-ZPass* Market Shares, FY 2008-2024



10. FINANCIAL MODEL ANALYSIS

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

10.1. TOTAL TURNPIKE SYSTEM EXPENDITURES

Table 21 shows historical and projected capital, operating and debt service expenditures for the 20-year period FY 2005 to FY 2024.

Table 21: Historical and Projected Total NH Turnpike Expenditures, Millions

FY	CapEx	O&M	Debt Service	Renewal and Replacement	I-95 Payments	Total Expenditures
2005	$20.5	$29.0	$35.4	$3.3	$0.0	$88.2
2006	$13.2	$38.5	$34.2	$4.3	$0.0	$90.2
2007	$8.5	$36.1	$31.1	$8.6	$0.0	$84.3
2008	$11.0	$37.1	$27.4	$11.8	$0.0	$87.3
2009	$26.1	$40.3	$27.5	$7.8	$0.0	$101.7
2010	$66.4	$40.1	$30.3	$7.8	$0.0	$144.6
2011	$52.7	$42.3	$34.4	$14.3	$0.0	$143.7
2012	$46.9	$40.7	$33.3	$9.3	$0.0	$130.2
2013	$69.6	$42.2	$38.3	$9.6	$20.1	$179.8
2014	$49.7	$42.5	$39.0	$11.3	$9.1	$151.6
Total 05-'14	**$364.6**	**$388.8**	**$330.8**	**$88.1**	**$29.2**	**$1,201.5**
2015	$40.9	$49.7	$39.1	$8.9	$8.2	$146.8
2016	$42.0	$54.6	$41.4	$9.7	$0.0	$147.7
2017	$31.9	$53.3	$41.4	$9.6	$0.0	$136.2
2018	$24.1	$52.4	$41.4	$11.5	$0.0	$129.4
2019	$23.4	$53.5	$41.4	$11.9	$0.0	$130.2
2020	$34.3	$54.7	$41.4	$10.4	$0.0	$140.8
2021	$34.7	$55.9	$41.4	$10.7	$0.0	$142.7
2022	$36.6	$57.2	$34.5	$11.0	$0.0	$139.3
2023	$24.5	$58.5	$27.6	$11.4	$0.0	$122.0
2024	$21.5	$59.8	$26.2	$11.7	$0.0	$119.3
Total '15–'24	**$313.9**	**$549.6**	**$375.7**	**$106.8**	**$8.2**	**$1,354.2**

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

Historical total Turnpike System expenditures over the FY 2005-2014 period have ranged from a low of $84.3 million in FY 2007 to a high of $179.8 million in FY 2013. Cumulative Turnpike System expenditures for the ten-year period FY 2005-2014 totaled $1,201.5 million with 59.9 percent or $719.7 million accounting for the sum of operating expenses and debt service expenditures. Total Turnpike System expenditures are projected to vary in the ten-year FY 2015-2024 forecast period, ranging from a low of $119.3 million in FY 2024 to a high of $147.7 million in FY 2016. Cumulative Turnpike System expenditures over the ten-year forecast period FY 2015-2024 are projected to be $1,354.2 million or 1.13 times what was spent over the

previous ten years. Some 40.6 percent or $549.6 million of this total amount is estimated to be for O&M expenditures and 27.7 percent of the total or $375.7 million will be for Turnpike System debt service requirements. Some 23.2 percent, or $313.9 million, of total expenditures over this ten-year period are expected to be capital expenditures, while 7.9 percent, or $106.8 million, is expected for renewal and replacement.

10.2. TURNPIKE SYSTEM FUNDS

Table 22 presents historical and projected toll revenues, other revenues, interest income, and bond proceeds for the Turnpike System over the 20-year period FY 2005-2024.

Table 22: Historical and Projected NH Turnpike Funds, Millions

FY	Toll Revenue[1]	Transponder Revenue	Other Revenue[2]	Interest Income[3]	Total Revenues	Net Bond Proceeds for Construction[4]	Total Turnpike Funds
2005	$64.4	$0.0	$2.4	$0.0	$66.8	$0.0	$66.8
2006	$65.8	$0.0	$6.4	$0.0	$72.2	$0.0	$72.2
2007	$82.2	$1.2	$2.7	$3.3	$89.4	$0.0	$89.4
2008	$100.4	$0.9	$3.2	$2.5	$107.0	$0.0	$107.0
2009	$103.9	$0.7	$2.2	$0.8	$107.6	$0.0	$107.6
2010	$116.0	$0.7	$1.8	$0.8	$119.3	$140.9	$260.2
2011	$116.7	$0.8	$1.2	$0.2	$118.9	$0.0	$118.9
2012	$116.8	$0.7	$1.1	$0.1	$118.7	$0.0	$118.7
2013	$115.6	$0.5	$1.6	$0.1	$117.8	$112.0	$229.8
2014	$117.5	$0.6	$1.0	$0.2	$119.3	$0.0	$119.3
Total '05 - '14	**$999.3**	**$6.1**	**$23.6**	**$8.0**	**$1,037.0**	**$252.9**	**$1,289.9**
2015	$119.8	$1.5	$1.0	$0.2	$122.6	$50.0	$172.6
2016	$121.6	$1.5	$1.5	$0.2	$124.9	$0.0	$124.9
2017	$123.5	$0.5	$1.6	$0.2	$125.8	$0.0	$125.8
2018	$125.4	$0.5	$1.6	$0.2	$127.7	$0.0	$127.7
2019	$127.1	$0.5	$1.6	$0.2	$129.4	$0.0	$129.4
2020	$129.1	$0.5	$1.6	$0.3	$131.5	$0.0	$131.5
2021	$131.0	$0.5	$1.7	$0.2	$133.4	$0.0	$133.4
2022	$132.9	$0.5	$1.7	$0.2	$135.3	$0.0	$135.3
2023	$134.8	$0.5	$1.7	$0.2	$137.3	$0.0	$137.3
2024	$136.8	$0.5	$1.8	$0.3	$139.3	$0.0	$139.3
Total '15 – '24	$1,282.0	$7.0	$15.9	$2.3	$1,307.1	$50.0	$1,357.1

[1] Historical toll revenues are from the Bureau of Turnpikes Financial Model Plan and are measured on an accrual instead of a cash basis. Historical revenues shown previously in Table 3 were measured on a cash basis and were used as a base for the toll revenue forecast.

[2] From Bureau of Turnpikes Financial Model Plan

[3] FY 2005 through 2006 Interest Income included in Other Revenue (includes claim reimbursement and sale of land)

[4] Does not include cost for issuance premiums or payments into restricted debt service accounts

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

Historical annual Turnpike System revenues which include toll revenue, transponder revenue, interest income and other revenue, ranged from a low of $66.8 million in FY 2005 to a high of $119.3M in FY 2010 and FY 2014. Total revenue including bond proceeds ranged from a low of

$66.8 million in FY 2005 to a high of $260.2 million in FY 2010. Cumulative funds including net bond proceeds over the ten-year FY 2005-2014 period totaled $1,289.9 million with toll revenues accounting for 77.5 percent of this amount or $999.3 million. Over the forecast period FY 2015-2024, annual Turnpike System revenues without bond proceeds are projected to range from a low of $122.6 million in FY 2015 to a high of $139.3 million in FY 2024. Total Turnpike revenues over the ten-year forecast period including net bond proceeds are $1,357.1 million or approximately 5.2 percent more than revenues accumulated in the previous ten years.

Toll revenues are estimated to account for 94.5 percent or $1,282.0 million of the projected $1,357.1 in total Turnpike System funds over the next ten years, while net bond proceeds for construction are expected to account for 3.7 percent or $50.0 million of the projected total funds.

10.3. TURNPIKE COVERAGE RATIO ANALYSIS

Table 23 presents an analysis of the Bureau of Turnpikes' revenue bond debt service coverage ratios and all obligation bond coverage ratios for the forecast period FY 2015-2024.

Table 23: NH Turnpike Debt Coverage Analysis, FY 2015-2024, Millions

Item	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Turnpike Revenues[1]	$122.6	$124.9	$125.8	$127.7	$129.4	$131.5	$133.4	$135.3	$137.3	$139.3
O&M Expenses[2]	$49.7	$54.6	$53.3	$52.4	$53.5	$54.7	$55.9	$57.2	$58.5	$59.8
Net Revenues (Sub-Total) (A)	$72.9	$70.3	$72.4	$75.3	$75.9	$76.8	$77.5	$78.1	$78.8	$79.5
Revenue Bond Debt Service (B)[3]	$39.1	$41.4	$41.4	$41.4	$41.4	$41.4	$41.4	$34.5	$27.6	$26.2
Revenue Bond Debt Service Coverage Ratio (A/B)	1.87	1.70	1.75	1.82	1.83	1.86	1.87	2.27	2.85	3.03
General Obligation Bond Debt Service	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Existing Turnpike R&R Expenses[4]	$8.9	$9.7	$9.6	$11.5	$11.9	$10.4	$10.7	$11.0	$11.4	$11.7
I-95 Advanced Payment & Payments from General Reserves for I-95 Acquisition	$14.1	$0.4	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Additional R&R	$2.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Other Obligations (Sub-Total) (C)[5]	$8.9	$9.7	$9.6	$11.5	$11.9	$10.4	$10.7	$11.0	$11.4	$11.7
All Obligation Coverage Ratio (A/(B+C))	1.52	1.38	1.42	1.42	1.43	1.48	1.49	1.72	2.02	2.10

[1] Includes Toll Revenue, Other Revenue, Transponder Revenue, and Interest Income.

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

[3] Assumes a $50 million issuance in FY 2015.

[4] FY 2015 through FY 2019 R&R expenditures were projected based on budgeted R&R amounts from HNTB's Renewal and Replacement Program Assessment Report dated January 12, 2012 (with increased R&R costs for I-95 Bridge deck rehab in FY 2018 & FY 2019), and were increased by 3% annually thereafter.

[5] FY 2015 payment from general reserves for I-95 acquisition of $8.2M and $2.6M carry-forward of additional R+R available for expenditure in FY 2015 have been excluded from the all obligation sub-total and coverage ratio.

The analysis shows that the Bureau of Turnpikes' revenue bond debt service coverage ratio is expected to range from a high of 3.03 in FY 2024 to a low of 1.70 in FY 2016. The low 1.70 revenue bond debt service coverage ratio in FY 2016 satisfies both the bond resolution's minimum requirement of 1.2 as well as the Bureau of Turnpikes' internal minimum coverage requirement of 1.3.

In comparison, the all obligation coverage ratio is projected to range from a high of 2.10 in FY 2024 to a low of 1.38 in FY 2016. The low all obligation coverage ratio of 1.38 in FY 2016 satisfies the both the bond resolution's minimum requirement of 1.0 and the Bureau of Turnpikes' internal minimum requirement of 1.1.

Table 24 is a projected cash flow analysis of the Turnpike System. The analysis reveals that the projected Bureau of Turnpikes cash reserves will be positive throughout the ten-year forecast period. Cash reserves as a percentage of Bureau of Turnpikes toll revenues are projected to range from a high of 55 percent in FY 2015 to a low of 13 percent in FY 2021.

Table 24: Projected Cash Flow Analysis, FY 2015-2024 (in millions)

Item	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Net Income[1]	$24.9	$19.2	$21.5	$22.4	$22.6	$25.0	$25.4	$32.7	$39.8	$41.6
Net Bond Proceeds for Construction (minus issuance costs)	$50.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Set Aside Reserve on Bonds/Debt Service Reserve Funds Release	-$2.3	$0.0	$0.0	$0.0	$0.0	$0.0	$6.9	$6.8	$1.3	$5.4
Capital Expenditures	$40.9	$42.0	$31.9	$24.1	$23.4	$34.3	$34.7	$36.6	$24.5	$21.5
Beginning Cash	$58.6	$75.9	$52.6	$42.2	$40.5	$39.8	$30.5	$28.1	$30.9	$47.5
Annual Capital Surplus / (Deficit)	$19.6	-$23.2	-$10.4	-$1.7	-$0.8	-$9.3	-$9.3	-$3.9	$15.3	$20.1
I-95 Payments	$8.2	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Additional R&R	$2.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Deferred Revenue Acct - Prepaid Tolls (restricted)	$10.5	$10.5	$10.5	$10.5	$10.5	$10.5	$10.5	$10.5	$10.5	$10.5
Ending Cash	$65.4	$42.1	$31.7	$30.0	$29.3	$20.0	$17.6	$20.4	$37.0	$62.5
Percent of Toll Revenues	55%	35%	26%	24%	23%	15%	13%	15%	27%	46%

[1] *Net Revenues less Revenue Bond Debt Service less Other Obligations*

10.4. LIMITS AND DISCLAIMERS

It is Jacobs' opinion that the traffic and toll revenue estimates provided herein represent reasonable and achievable levels of traffic and toll revenues that can be expected to accrue on the Turnpike System over the forecast period and that they have been prepared in accordance with accepted industry-wide practice. However, as should be expected with any forecast, and given the uncertainties within the current economic climate, it is important to note the following assumptions which, in our opinion, are reasonable:

- This report presents the results of Jacobs' consideration of the information available as of the date hereof and the application of our experience and professional judgment to that information. It is not a guarantee of any future events or trends.
- The traffic and gross toll revenue estimates will be subject to future economic and social conditions, demographic developments and regional transportation construction activities that cannot be predicted with certainty.
- The estimates contained in this report, while presented with numeric specificity, are based on a number of estimates and assumptions which, though considered reasonable to us, are inherently subject to economic and competitive uncertainties and contingencies, most of which are beyond the control of any tolling authority and cannot be predicted with certainty. In many instances, a broad range of alternative assumptions could be considered reasonable. Changes in the assumptions used could result in material differences in estimated outcomes.
- Jacobs' traffic and gross toll revenue estimations only represent our best judgment and we do not warrant or represent that the actual gross toll revenues will not vary from our estimates.
- We do not express any opinion on the following items: socioeconomic and demographic forecasts, proposed land use development projects and potential improvements to the regional transportation network.
- The standards of operation and maintenance on all of the system will be maintained as planned within the business rules and practices.
- The general configuration and location of the system and its interchanges will remain as discussed in this report.
- Access to and from the system will remain as discussed in this report.
- No other competing highway projects, tolled or non-tolled are assumed to be constructed or significantly improved in the Turnpike System corridors during the forecast period, except those identified within this report.
- Major highway improvements that are currently underway or fully funded will be completed as planned.
- The system will be well maintained, efficiently operated, and effectively signed to encourage maximum usage.
- No reduced growth initiatives or related controls that would significantly inhibit normal development patterns will be introduced during the estimate period.
- There will be no future serious protracted recession during the estimate period.

- There will be no protracted fuel shortage during the estimate period.
- No local, regional, or national emergency will arise that will abnormally restrict the use of motor vehicles.

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

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