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Submitted to:
New York State Thruway Authority

New York State Thruway Financial Requirements and Proposed Toll Adjustments 2012-2016

May 2012

Submitted by:

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May 2012

Mr. Thomas J. Madison, Jr.
Executive Director
New York State Thruway Authority
200 Southern Boulevard
Albany, NY, 12209

Dear Mr. Madison:

This reports serves to respond to the requirements contained in Section 2804 of the Public Authorities Law and also the requirements of the General Revenue Bond Resolution, Section 609(1)(b) with respect to the New York State Thruway Authority ("Authority").

Section 2804 specifies that public authorities should provide, prior to the consideration of any future increase in tolls or fees for any highway, bridge or tunnel in New York State, a detailed report of the need and the implication of such change in tolls or fees. The report specifically responds to paragraphs a) the need for such an increase, b) the Authority's revenues and expenses during the prior three fiscal years, e) future Authority operations, debt service and capital construction together with estimated future receipts and expenditures for the next five fiscal years, and f) projections and estimates as to the effect the proposed increases on future uses of the facilities and future revenues which will accrue as a result of the proposed increase. The Authority has provided their 2011 independent audit that responds to paragraphs c) its assets and liabilities at the end of the last fiscal year and d) a schedule of bonds and notes outstanding at the end of its fiscal year.

Section 609 (1)(b) of the General Revenue Bond Resolution requires that an Independent Consultant review the schedule of tolls, fees and charges to insure that they provide sufficient Net Revenues to comply with that section's revenue covenant. Satisfaction of those requirements of the revenue covenant will allow the Authority to meet its fiduciary obligations including those under Section 608 to operate the Thruway in a sound and economical manner and to maintain, preserve and reconstruct the Thruway in a state of good repair.

As the Thruway prepares to enter its seventh decade of operation, the need for reconstruction and rehabilitation of the aging infrastructure continues to require high levels of investment. At the same time, travelers on the roadway are experiencing delays resulting from congested traffic volumes. To continue to keep the infrastructure in acceptable condition and to provide the needed operational and service improvements the Authority

developed and is implementing a Capital Program for the period 2012 to 2015 exclusive of the investment that will be made for the new Tappan Zee Bridge program.

This report provides a baseline of projection of revenues and expenses for the Authority, as well as debt service and other funds through 2016, assuming a continuation of the present toll schedule and full implementation of the Capital Program for the period from 2012 through 2015. In this baseline case, operational deficits and very low Pay-As-You-Go financing levels are anticipated beginning in 2013 of the Multi-Year Financial Plan. However, of particular concern, debt service coverage ratios (the ratio of Net Revenues to Debt Service) beginning in the first year (2012) of the forecast is bellow limits established in the Authority's Board-adopted Fiscal Management Guidelines and the requirements of the General Revenue Bond Resolution are not met in the second year (2013) of the forecast.

Accordingly, Jacobs has been retained to, in consultation with the Authority, recommend a schedule of toll rates that will complement their cost containment and operational streamlining efforts to allow the Authority to sustain healthy financial metrics through the end of 2013 and provide a foundation for the future development and implementation of a financing plan for the Tappan Zee Bridge Project. It is important to understand that the current design-build procurement process for the replacement of the Tappan Zee Bridge is underway and a more complete picture of the cost of the new Tappan Zee Bridge, and any potential Federal aid for this important project or other capital purposes, will not be available until later this year. At that time, the Authority intends on advancing a long-term plan to finance the construction of the new Tappan Zee Bridge and allow the Authority to meet its other future capital, operational, and maintenance needs.

The proposed toll schedule would increase, on average, commercial toll rates for all classes, except 2H, by 45%. We have estimated the effects of these proposed toll adjustments on traffic, both in terms of the potential loss off traffic and shifts of traffic. In our opinion, if implemented in full, the toll adjustments will results in small changes to traffic patterns and provide adequate revenues to fund, to a reasonable level, the Pay-As-You-Go portion of the capital program, to pay for the necessary maintenance and operating expenses, to maintain the necessary levels of coverage on the revenue bond debt service, to meet the covenants of the of the General Revenue Bond Resolution and the requirements of the Authority's Fiscal Management Guidelines for the forecast period through the end of 2015. Specifically, we concur with the Authority, that the proposed toll adjustments analyzed in this report will comply with the covenant set forth in Section 609(1)(b) of the General Revenue Bond Resolution for the duration of the Multi-Year Capital Program through 2015. It will also allow the Authority to comply with the operating and maintenance covenants of the Thruway set forth in Section 608 of the general Revenue Bond Resolution.

With the recommended toll adjustments and planned operational efficiencies and streamlining, the Authority's Capital Program exclusive of the new Tappan Zee Bridge Project can be fully implemented providing for the needed reconstruction and assuring the

maintenance of the current condition of the highways and bridges. As a result we believe the Authority will continue to be able to provide good service to its customers and will continue to fulfill its critical role in supporting the State's economy through the forecast period. It is anticipated that further actions may be taken to address the financing of the new Tappan Zee Bridge and may also be required during the final year of the 2012-2015 Multi-Year Capital program when the debt service coverage ratios fall below the Authority Board's adopted Fiscal Management Guidelines.

We would like to thank the authority staff for all of their assistance in the preparation of this report.

Sincerely,

Richard J. Gobeille, P.E.
National Toll / Finance Unit Manager
Jacobs Civil Consultants, Inc.

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I. Introduction

Since its opening more than 55 years ago, the New York State Thruway ("Thruway") has served as the central artery of the State's transportation system, providing a vital link between its major cities from the Atlantic Ocean to Canada and the Great Lakes. Over the years, the Thruway Authority ("Authority") has taken actions that have allowed for safe and efficient travel for millions of passenger and commercial customers.

The Thruway serves travelers with a variety of needs and purposes, including commuters, business travelers, recreational travelers, and commercial vehicle traffic. The Thruway has provided a dependable roadway system for these travelers, sustaining and encouraging economic growth, fostering job creation and generating tax revenues to the State and its local governments. Underscoring its importance to the state, region and nation, in 2011 Thruway customers traveled approximately 8.1 billion vehicle-miles on the highway, averaging almost 22.1 million vehicle-miles per day.

Significant capital improvements and maintenance work is undertaken each year to keep its highways and bridges in a state of good repair, ensuring safe and efficient travel for the heavy traffic demands of today's world. In addition to on-going capital and maintenance tasks, the Thruway is also continually evolving to better serve its patrons, improving customer service with advances in technology and adding new capacity to highways and bridges in the corridors with high travel demand. Furthermore, the Thruway has the responsibility of maintaining the reliability of the historic Canal System, ensuring that it remains a viable waterway for boating, shipping and recreation and an important component of New York State's economy.

Over the last several years, the Authority has faced substantial challenges that have strained its ability to maintain its financial strength while financing the capital needs of the aging Thruway and Canal Systems. Principal among these challenges, the Authority had to manage budgets with historic declines in traffic and toll revenues resulting from high and volatile fuel prices, a deep and lengthy national and state recession and a slow and protracted recovery period. As experienced by other toll facilities across the nation, the number of trips and the length of trips taken by Thruway patrons have markedly declined over the past four years and traffic is not expected to reach pre-recession levels for many years to come. In addition, the prevalence of high fuel and construction commodity prices has placed enormous pressure on the Authority's operating budgets and capital programs, as have considerable declines in Federal aid allocated to support its growing infrastructure and service needs.

During these times of financial stress, the Authority downsized and reconfigured its capital program, implemented operational cost controls and issued short-term notes to bridge capital funding gaps. It is important to note that prior toll adjustments were originally designed to only provide sufficient revenues to finance the recently completed 2005-2011 Capital Program. As a result, in order for the Authority to successfully meet its future growing capital needs, refinance outstanding short term debt and provide reliable service to its patrons, additional revenues are needed at this time to complement enhanced operational streamlining efforts.

It is only with these additional revenue actions that the Authority will be able to refinance its outstanding short-term debt, continue to maintain its highway, bridge and canal systems in a state of good repair, fulfill its critical role in supporting the State's recovering economy and meet bondholder covenants established under its General Revenue Bond Resolution ("Bond Resolution").

Accordingly, in accordance with Section 609(1)(b) of the Bond Resolution, Jacobs has been retained to produce this study and recommend a schedule of toll rates that will allow the Authority to sustain healthy financial metrics through the end of 2013, providing a foundation for the future development of a financing plan for the Tappan Zee Bridge Project. It is important to understand that the current design-build procurement process for the replacement of the Tappan Zee Bridge is underway and a better understanding of the cost of the new Tappan Zee Bridge and any potential Federal aid or financing assistance for this important project or other capital purposes, will not be available until later this year. At that time, the Authority intends to advance a long-term plan to finance the construction of the new replacement Tappan Zee Bridge and allow the Authority to meet its other future capital, operational, and maintenance needs.

Based on this strategy, Jacobs recommends that the Authority complement its planned operational streamlining program with a 45 percent adjustment to commercial toll rates in 2012. However, in an effort to lessen the impact on local businesses that rely on the Thruway System, this recommended toll adjustment would exclude commercial vehicle with two-axles and over seven feet six inches in height (2H). The impact of the streamlining program and the recommended toll action on the Authority's revenues and long-term financial plan is described in more detail herein.

II. The New York State Thruway & Canal System

The following sections provide an overview of the Thruway System and the Authority's responsibilities.

A. The Thruway System

At 570 miles in length, the New York State Thruway is one of the largest tolled highway systems in the United States and is a critical component in the national interstate network. The Thruway connects the principal cities of the State from New York City to Albany, and on to Utica, Syracuse and Rochester through to Buffalo and the Pennsylvania State Line. The Thruway corridor serves 37 of the State's 62 counties and the majority of the State's population. Approximately 245.2 million toll transactions occurred on the Thruway in 2011, generating about $634.1 million in toll revenues.

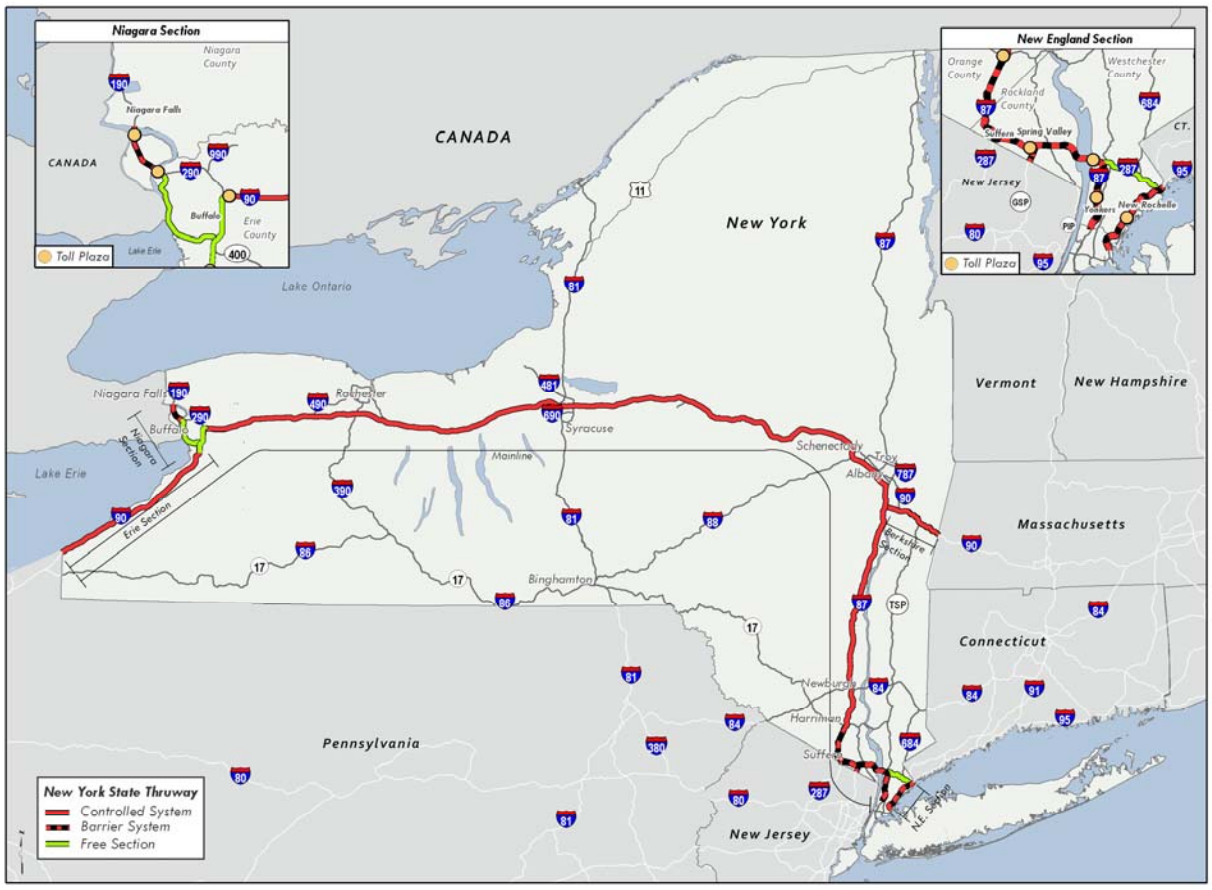
The Thruway is an important interstate connector, joining with the Massachusetts Turnpike (I-90), Connecticut Turnpike (I-95), New Jersey's Garden State Parkway, as well as several other Interstate routes such as I-287 from New Jersey; I-90 in Pennsylvania; I-290 around the north side of Buffalo; I-390 and I-490 serving Rochester; I-81, I-481 and I-690 at Syracuse; I-790 in Utica; I-87 (the Northway), I-88, I-90, I-787, and I-890 at Albany; and I-84 at Newburgh. It also makes direct connections with numerous major State highways.

The Thruway is comprised of two types of toll systems – a controlled (ticket) system and a barrier system. The controlled system (approximately 481 miles) makes up the largest portion of the Thruway, running from Woodbury (in the southeast corner of the State) north along I-87 to Albany, then west on I-90 to Buffalo and south of Lake Erie to the Pennsylvania border. In addition to this main stretch of the controlled system, there is a small branch south and east of Albany providing a connection to the Massachusetts border and the I-90 Massachusetts Turnpike.

On the controlled system, tolls are charged based on the actual distance traveled by the customer. Meanwhile, barrier toll plazas have a fixed toll rate for each vehicle class and payment type (e.g., Cash, *E-ZPass*, as well as Commuter and other *E-ZPass* Discounts). The barrier systems (one located in the southeast corner of the State and the other located in the northwest corner of the State) are comprised of the Tappan Zee Bridge, Yonkers Barrier, New Rochelle Barrier, Spring Valley Barrier, Harriman Barrier and the Grand Island Bridges. Under the existing policy, toll rates across the system are based on the vehicle classification, related to the number of axles per vehicle and the height of the vehicle over the first two axles.

It is important to note that there are portions of the roadways under the Thruway jurisdiction that are currently toll-free. These include a nine-mile section in the Buffalo area between the controlled sections; I-190 between Buffalo and Grand Island; I-90 between Albany (Interchange 24) and I-88 (Interchange 25A); and the Cross Westchester Expressway (I-287). In addition, there are stretches of roadway on the sections with fixed-toll barriers where short trips can be made without passing through a toll barrier.

Figure II-1: New York State Thruway Toll Systems



1. Roadways

The original 2,800 lane mile Thruway roadway system was constructed between 1949 and 1960 and is one of the oldest components of the national Interstate Highway System. In 1991, State legislation made the Authority additionally responsible for the operation and maintenance of 11 miles of I-287 Cross-Westchester Expressway. The New York State Department of Transportation (NYSDOT) remains responsible for capital improvements to this roadway. The Thruway System is now over 570 total miles in length and includes 134 interchanges. The various sections of roadway currently maintained by the Authority are listed in Table II-1.

Thruway pavements are typically nine inches of reinforced Portland cement concrete placed on 12 inches of granular sub-base. Shoulders are made up of treated granular material with asphaltic wearing surface. A large portion of the roadway's base dates back to its original construction, highlighting the need for heavy maintenance, reconstruction and rehabilitation activities to retain the riding surface in a state of good repair.

Table II-1: The Thruway System

Section	Controlled Section	Barrier Section	Length (in Miles)
The Mainline (New York City - Buffalo)	x	x	426
Erie Section (Buffalo - Pennsylvania Line)	x		70
Niagara Section I-190 (Buffalo - Niagara Falls)		x	21
Berkshire Section (Selkirk - Massachusetts Line)	x		24
New England Section (I-95) (Bronx - Connecticut Line)		x	15
Garden State Parkway Connection (Spring Valley - New Jersey)			3
Cross Westchester Expressway (I-287) (Mainline I-87 in Tarrytown - I-95 in Rye)			11
Total			570

2. Bridges

The Authority has maintenance responsibility for 811 bridges that carry local roads and state highways over the Thruway System. The structural characteristics of these bridges vary: about 15 percent are concrete structures, either pre-stressed girder, arch, rigid frame or box culverts. The remaining 85 percent of the bridges are steel structures with asphalt overlaid, reinforced concrete decks. As with the roadway, an overwhelming majority of the structures date back to the original opening of the Thruway System in the 1950's and require continual and significant repair, rehabilitation and reconstruction investments to prevent deteriorating conditions.

By far, the largest bridge on the Thruway System is the Tappan Zee Bridge over the Hudson River, located approximately 20 miles north of New York City. The Tappan Zee Bridge was opened to traffic in 1956 and is a three-mile long multi-span steel truss, deck truss and girder type structure. Due to its size and importance, a permanent Authority maintenance team is assigned to the Tappan Zee Bridge. The Tappan Zee Bridge routinely experiences peak hour traffic volumes that are 40 percent higher than normal operational volumes and to increase the Bridge's one-way traffic capacity, a movable barrier provides for the reversal of one of the seven traffic lanes to help accommodate directional peak traffic volumes. As described in more detail later in this report, the Tappan Zee Bridge is scheduled to be replaced in the near future.

Besides the Tappan Zee Bridge, the Thruway consists of seven other major bridge structures. These include the Castleton-on-Hudson Bridge across the Hudson River on the Berkshire Section; the four Grand Island Bridges spanning branches of the Niagara River north of Buffalo; the mile long Niagara Viaduct, and the Byram River Bridge on the New England Section.

3. Service Areas

The Authority owns 27 travel plazas located at intervals along the Thruway System, operated by three food service concessionaires: HMS Host Family Restaurants, Inc. (12 plazas), McDonald's Corporation (11 plazas) and Delaware North Companies Travel Hospitality Services, Inc. (4 plazas); and two fuel service operators: Lehigh Gas Corporation (12 plazas) and Sunoco, Inc. (R&M) (15 plazas).

To provide maximum customer service, all food and fuel centers are open 24 hours daily, 7 days a week and offer parking, fuel, public restrooms (including family assist restrooms equipped for persons with disabilities), ATMs, and free Wireless Internet Service. There is also a brand name food vendor at each travel plaza open to the public 24 hours a day, 7 days a week. Further, many travel plazas have seasonal farm markets, gift shops, fax machines, sell *E-ZPass* On-the-Go (retail *E-ZPass* transponders) and staff a number of Tourist Information Centers.

The Authority and its concessionaires continue to make various improvements at the travel plazas, including updating food concepts and the overall appearance of the interiors and exteriors of the buildings, gas station renovations, adding trucker's lounges and increased tractor trailer parking.

4. Safety, Incident Response and Traveler Information Systems

The Thruway Statewide Operations Center ("TSOC"), housed at the Authority's Administrative Headquarters in Albany, is the central location for the coordination of all traffic incident response, emergency management, and dissemination of traveler information along the entire Thruway. The TSOC operates 24 hours a day, 7 days a week, 365 days a year. The Authority exchanges traffic and Intelligent Transportation Systems ("ITS") data with NYSDOT through the Regional Traffic Operation Centers, providing the public with a view of traffic operations across New York State so they may make more informed travel choices.

To increase the functionality of the TSOC, the Authority recently implemented an Advanced Traffic Management System to integrate and control all current and future ITS devices and systems. Such devices include 73 Permanent Variable Message Signs, 154 Closed Circuit Television cameras, 13 Highway Advisory Radio stations, 119 real-time vehicle detector sites, and 26 Portable Variable Message Signs. The Authority also offers an email alert service (TRANSalert) to its customers to inform them of major unscheduled incidents that may affect their travel plans and the Thruway website (www.thruway.ny.gov) offers a centralized location to access a multitude of traveler information.

Finally, a troop of New York State Police (Troop T) is entirely dedicated to policing on the Thruway System. The principal mission concern for Troop T is to increase safety on the roadway and reduce fatal and personal injury auto accidents. They address the issue through enforcement and education. Through the years, Troop T has participated in traffic enforcement initiatives directed at drivers who engage in behavior known to cause fatalities or exacerbate the fatality rate: speed, failure to use seatbelts and drunk and/or drugged driving. However, the greatest proven method to reduce fatalities is the day-to-day visible enforcement of traffic laws by the patrol troopers on the highway.

In 2011, good overall highway conditions, traveler access to online and radio information services, good incidence and weather response and the efforts of Troop T contributed to a very low fatality rate. The fatality rate on the Thruway is among the lowest in the nation at 0.44 fatalities per 100 million miles traveled. This compares to an index of 1.13 for the national average and 0.8 for all of New York State.

5. Annual Routine Maintenance Activities

Over the years, the Authority has developed comprehensive plans for the maintenance of its facilities. Formal pavement and bridge management systems have been developed to address maintenance issues and provide input into the development of long-term infrastructure management programs. Routine maintenance activities are performed by Authority staff from 21 maintenance locations grouped into four divisions.

Additional specified routine maintenance activities are provided by the four division highway and bridge maintenance headquarters and by the Tappan Zee Bridge maintenance team. Responsibilities include snow and ice removal, pavement and bridge repair and maintenance, guiderail and safety work, responding to incidents and accident damage, and right-of-way maintenance. Additional specialized maintenance activities are provided by the four centralized division maintenance crews and the Tappan Zee Bridge crews. Maintenance activities also include innovative preventative maintenance operations to preserve the highway system and minimize added capital improvement costs.

In addition, environmental stewardship has become an important factor in on-going maintenance decisions. Some examples of what is included in these types of enhancements by the Authority are the use of solar-powered ITS elements, the planting of living snow fencing, the purchase of flex fuel vehicles and the planned construction of five wind turbines along the Thruway section south of Lake Erie between Buffalo and the Pennsylvania border, for the generation of electric power to provide heat and light for Thruway facilities.

B. Mandated Additions to the Authority

In addition to the original mandate of the Authority to operate and maintain the controlled ticket, bridge and barrier systems along the Thruway, the Authority was given responsibility over several other transportation facilities in the early 1990's, described below:

- In 1991, the Cross-Westchester Expressway (I-287), which starts at I-87 near Tarrytown and travels east for 11 miles to the Thruway's New England Section (I-95) in Rye became the Authority's responsibility for maintenance and operational expenditures only. Capital improvements remained the responsibility of NYSDOT.

- In 1991, the Authority began to operate and maintain I-84, a 71-mile section of roadway that connects the Pennsylvania State Line to the Connecticut State Line. After November 2007, the Authority was fully reimbursed by NYSDOT for all operating and maintenance costs. The

operation and maintenance responsibility of I-84 was transferred back to NYSDOT as of October 11, 2010.

- In 1992, the New York State Canal Corporation was formed, as a subsidiary of the Authority, and the Authority assumed control of the maintenance and operation of the 524-mile New York State Canal System. The Authority is also responsible for capital improvements to the Canal System. The Canal System is composed of the Erie, Champlain, Oswego, and Cayuga-Seneca canals. Since the Authority assumed such responsibility, federal funds have offset a portion of the Authority's related capital costs.

Financially, both I-84 and the Canal System projects have been considered to be "Other Authority Projects." Funds for the maintenance and operations of these types of projects can only be provided through the Other Authority Projects Operating Fund, which are junior to Thruway operations, debt service, and Thruway System capital responsibilities.

C. The New York State Canal System

For two centuries, the New York State Canal System has played a very important role in the history and development of the State and the nation. The ability to efficiently move people and goods across the State proved instrumental in the westward expansion of the nation, and the development of major cities in upstate New York including Buffalo, Rochester, Syracuse and Albany, as well as hundreds of smaller cities, towns and villages. The construction of the Erie Canal and the subsequent Canal System was primarily responsible for the dominance of New York City as the country's premier shipping port for many years.

Today, New York State's 524-mile Canal System is a world class recreation-way and tourist destination that cultivates historic preservation and spurs economic development in upstate New York. The Canal System links the Hudson River with Lake Champlain, Lake Ontario, the Finger Lakes, the Niagara River and Lake Erie, passes through 25 counties and is in close proximity to more than 200 villages, hamlets and towns. It is estimated that this extensive waterway network supports nearly $400 million in economic activity throughout the Canal corridor. For much of its length, it closely parallels the Thruway System.

The current Canal System, which began construction in 1905, provides extensive inter-modal linkages within and beyond the State's borders and includes four major canals, canalized natural waterways, five lakes, feeder reservoirs and numerous shipping terminals. It consists of 57 locks, 20 lift bridges, 22 reservoirs, 203 buildings, 114 dams and over 1,500 other structures critical to the maintenance and operations of the waterways and its feeder systems (water control devices, fixed bridges over the Canal System, terminals, terminal walls, aqueducts, culverts, roads and reservoirs). Due to the age of the infrastructure, substantial maintenance activities are required to ensure system reliability.

Figure II-2: New York State Canal System

In addition to maintaining these important facilities, the Authority also maintains more than 260 miles of multi-use, recreational trails across upstate New York that are adjacent to the waterways of the Canal System or follow remnants of the historic original canals that date back to the early 1800s.

According to a recent study, an estimated 2.4 million people use the trail network each year for bicycling, walking, jogging and other activities, providing an economic impact of more than $41 million per year. More information on the Canal System and Trail Network can be found at http://www.canals.ny.gov/.

III. Historical Review of the Authority's Finances

The following section provides an overview of the Authority's operating, capital and debt service costs and revenue trends from 2005 through 2011. The section concludes with an overall view of the financial health of the Authority during this period.

A. Operating and Maintenance Expenses

The Authority's operating expenses include the non-capitalized costs for the maintenance of highway, building and canal facilities; equipment purchases; snow and ice removal; Thruway toll collection; policing; administrative costs and fringe benefits; Thruway traffic operations; and provisions for funding environmental and other liability reserves. Table III-1 summarizes the Authority's operating and maintenance (O&M) expenses for the period 2005 through 2011, including I-287, I-84 and the Canal System for the period in which these facilities have been the responsibility of the Authority.

Table III-1: Operating and Maintenance Expenses, Thruway System (millions)

Year	Thruway Operations	Reserves[1]	I-84[2][4]	Canal System[2]	Total Operating Expenses
2005	$303.8	$3.5	$12.5	$38.2	$358.0
2006[3]	310.7	13.0	11.5	42.8	378.0
2007[3][4]	332.2	6.8	10.3	45.9	395.2
2008[4]	334.8	2.5	-	45.2	382.5
2009	339.4	7.3	-	48.7	395.4
2010[5]	358.2	6.0	-	46.0	410.2
2011	365.4	4.6	-	51.3	421.3
2005-2011 Total	**$2,344.5**	**$43.7**	**$34.3**	**$318.1**	**$2,740.6**

[1] The provisions for legal claims and indemnities and environmental remediation reserves.
[2] Canal and I-84 operating expenses are paid out of the Other Authority Projects Operating Fund and funds required are net of Federal Aid reimbursements.
[3] Operating expenses in 2006 and 2007 were adversely impacted due to the liability of two legal claims and increases in health insurance and snow and ice removal costs.
[4] As of November 2007, expenditures for I-84 were fully reimbursable from NYSDOT. As noted above, since 2010, the Autority has no operational or funding responsibility related to I-84.
[5] In 2010, operating expenses include $13.3 million for the special early retirement surcharge of which $11.4 million was for the Thruway and $1.9 million in Canal operating expenses. Also in 2010, $5.6 million in Federal funds was received for Canal operations.

Despite the intense pressure that rising benefit, fuel and other commodity prices caused since 2007, the Authority was able to enhance the efficiency of its operations through a cost containment strategy that limited operational expense growth to at or below the rate of inflation, depending on what inflation measure is utilized. After excluding indemnity and reserve allocations and the impacts of Tropical Storms Irene and Lee on Thruway and Canal operations and benefit costs, core operating expenses increased by an average of only 2.6 percent per year from 2007-2011. This rate of growth compares to

an annual average increase of 3.7 percent in construction costs and 2.5 percent in consumer price inflation over the same time frame. In addition, as noted in Table III-2, 2011 was the fifth consecutive year in which Thruway and Canal operating expenses were below budget estimates.

Table III-2: Thruway &Canal Operating Expenses – Net of Reserves, Storm, Pension and Health Insurance Costs (in millions)

Year	Original Thruway & Canal Operations Budget	Actual Thruway & Canal Operating Budget [1]	Less:			Net Expenses	Change	% Change
			Reserves	Storm (Irene & Lee) Costs	Pension & Health Insurance			
2005	$344.0	$350.0	$3.5	$0.0	$73.6	$272.9		
2006	372.0	376.2	13.0	0.0	75.9	287.3	14.4	5.3%
2007	391.4	390.8	6.8	0.0	79.8	304.2	16.9	5.9%
2008	404.6	386.5	2.5	0.0	81.0	303.0	-1.2	-0.4%
2009	412.1	398.9	7.3	0.0	79.2	312.4	9.4	3.1%
2010	420.6	416.8	6.0	0.0	101.7	309.1	-3.3	-1.1%
2011	443.3	426.6	4.6	6.8	98.4	316.8	7.7	2.5%

[1] Excludes I-84 costs that are no longer an Authority expense, as has been reimbursed since 2007 and eliminated in their entirety since 2010.

From 2005 through 2011, the Authority was able to limit the level of growth in Thruway and Canal operating costs primarily through staffing reductions and a stronger workforce management program. During this period, the Authority eliminated 314 positions, representing a workforce reduction of nearly 10 percent. In addition, the Authority reduced or eliminated expenditures for equipment and projects, cancelled scheduled salary increases and other employee benefits, relied more heavily upon part-time and seasonal workforces, reduced toll lane staffing hours, enhanced energy efficiency measures, reduced overtime and discretionary expenses and other actions.

As noted later in this report, the Authority will be significantly enhancing the efficiency of its operations through a new operational streamlining program, scheduled to begin in 2012. This new program will play an important role in the maintenance of future fiscal balance, involving structural reforms and other measures that will generate real reductions in Thruway operating expenses.

B. Capital Expenditures

Given the age of the Thruway and Canal Systems and the high percentage of their infrastructure that dates back to original construction, significant capital investments have been necessary to complement maintenance activities for the system to remain reliable and in a state of good repair. While the Authority's recently completed 2005-2011 Capital Program was primarily focused on maintaining infrastructure conditions, it did include some heavy reconstruction and capacity improvement activities.

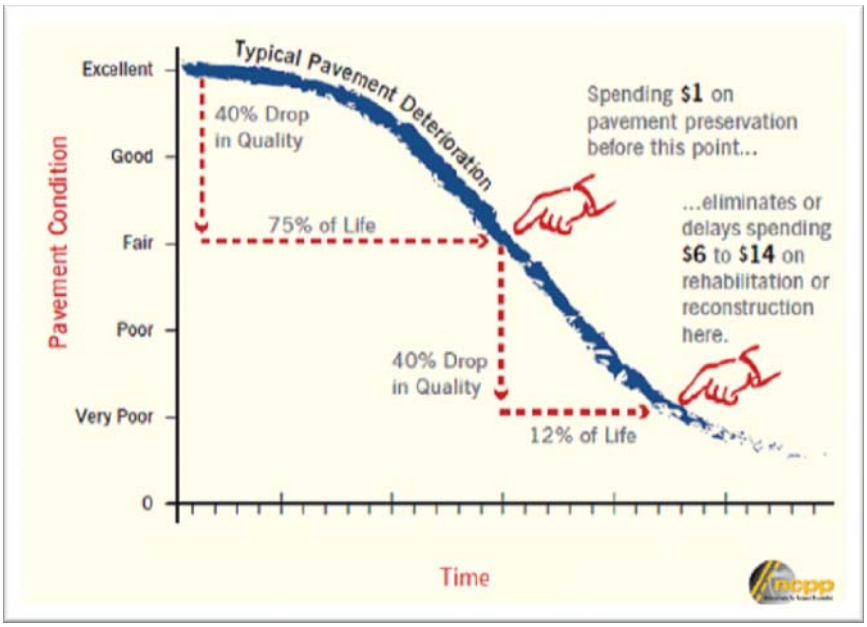
The 2005-2011 Capital Program was intended to address several key objectives that were critical to Thruway and Canal customers. Those goals were reliability, increased customer service, improved safety and mobility and environmental stewardship. The program included projects that addressed the need for reconstruction and rehabilitation of roadway, bridges, facilities and support systems of the

Thruway; congestion relief and mobility enhancements; equipment replacement needs; critical canal capital projects; and higher/highway speed *E-ZPass* lanes.

However, beginning in 2007, the fiscal distress resulting from declining traffic and high fuel and construction commodity prices required the Authority to re-examine the capital and equipment needs of the Thruway and Canal systems. As a result of this re-evaluation, a significant number of project scopes were reduced, projects were eliminated and others were delayed. These actions reduced the level of planned infrastructure and equipment investments in the 2005-2011 Capital Program by $300 million, reducing capital expenses from $2.6 billion to $2.3 billion during this period. Despite these actions, as noted in Figure V-1 and Figure V-2 later in this report, the Authority was able to maintain good overall highway and bridge conditions during this period.

Given that an overwhelming majority of the Authority's pavement, bridge and canal facilities date back to original construction, the postponement or re-scoping of treatments that occurred during the 2005-2011 Capital Program will likely increase the future cost of necessary repairs. Given the current high price of fuel and other construction commodities and anticipated future price increases, delaying required treatments will likely increase their ultimate cost. In addition, as noted in Figure III-1, deterioration of pavement conditions will be accelerated without appropriate action. A prolonged delay in addressing infrastructure needs could lead to much larger investments in the long-run in order to return the pavement to a good condition.

Figure III-1: Pavement Condition Over Time



As a result, Jacobs recommends that the Authority exercise caution as it develops and manages its future highway, bridge and canal capital needs (see Section V.D on page V-4). It is critical that the

Authority rely on existing asset management and capital program management systems (and scheduled improvements thereto) to maximize the impact its capital investments have upon its infrastructure. The growing needs of the aging Thruway and Canal Systems must be delicately balanced with the Authority's ability to finance capital projects, warranting closer attention to project selection.

Total capital expenditures and funding sources for the 2005-2011 Capital Program are shown in Table III-3 and Table III-4.

Table III-3: Capital Expenditures, Thruway Authority (millions)

Year	Highway and Bridge	Facilities, Travel Plaza and Equipment	Canal System and Economic Development Projects [1]	Total Capital Expenditures
2005	$97.1	$27.3	$21.0	$145.4
2006	179.3	50.9	14.4	244.6
2007	267.3	59.0	44.2	370.5
2008	288.7	36.2	30.3	355.2
2009	259.6	35.4	26.1	321.2
2010	311.0	39.9	26.8	377.7
2011	367.6	49.5	27.4	444.5
Total	**$1,770.6**	**$298.2**	**$190.2**	**$2,259.1**

[1] As noted above, these costs are payable only after Thruway operating and maintenance and debt service costs.

Table III-4: Funding Sources, Thruway Authority (millions)

Year	Funding Sources					
	Federal Aid	Other	Bond / Note Proceeds	Subtotal Exclusive of Thruway Revenues on Pay-As-You-Go Basis	Revenues Required from Tolls, etc.	Pay-As-You-Go %
2005	$43.1	$0.8	$60.4	$104.3	$41.1	58.5%
2006	22.7	7.4	154.8	184.9	59.7	36.7%
2007	30.9	1.2	198.3	230.4	140.1	46.5%
2008	17.6	1.3	299.5	318.4	36.8	15.7%
2009	10.0	2.7	258.4	271.1	50.1	19.6%
2010	8.7	4.9	305.8	319.4	58.3	19.0%
2011	0.0	6.4	366.0	372.4	72.1	17.6%
Total	**$133.0**	**$24.7**	**$1,643.2**	**$1,800.9**	**$458.2**	**27.3%**

It is important to note from Table III-4 that Federal aid allocated by the NYSDOT to the Authority declined significantly from 2005 through 2011. This decline is predominately the result of the expiration of an agreement with NYSDOT in 2005, which had previously authorized the allocation of Federal Interstate Maintenance Aid (I-M) and Transportation Enhancement Program (TEP) assistance to the Authority that supported its capital and operational needs. As noted, declining Federal aid and low revenue growth led to a reduction in the level of Pay-as-you-go financing for the 2005-2011 Capital Program.

C. Debt Service Expenses

As a result of reduced Pay-As-You-Go financing from reduced revenues and Federal aid, the Authority had to rely on greater levels of debt to finance commitments made in the 2005-2011 Capital Program. As noted in Table III-5, the elevated reliance on bonds and the issuance of short-term notes to finance programmed capital improvements resulted in annual debt service payments increasing from $108.4 million in 2005 to over $181.8 million in 2011, even in a recent low interest rate environment.

Table III-5: Debt Service, Thruway System (millions)

Year	Service on Outstanding Debt
2005	$108.4
2006	128.5
2007	135.8
2008	163.5
2009	176.9
2010	191.2
2011	181.8
2005-2011 Total	**$1,086.1**

D. Revenues

1. Traffic and Toll Revenues

With the exception of a small amount of Federal aid and other funds, tolls collected on the controlled system and through toll barriers support an overwhelming majority of the Authority's budget. As a result, the Authority closely monitors traffic volumes and toll revenues for the various Thruway sections.

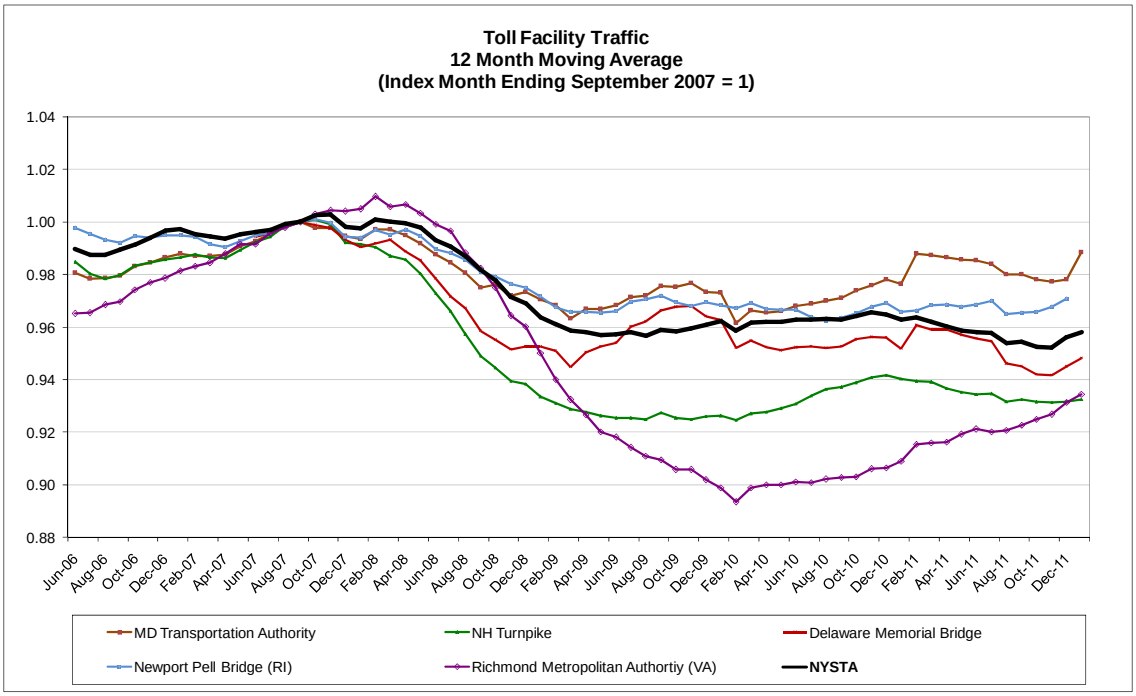
The Authority had originally planned to finance operating, maintenance and capital responsibilities from 2005 through 2011 through a series of two-staged toll rate adjustments approved in 2005. This was the first toll adjustment that was implemented in 17 years and was designed to only provide sufficient

funding for the Authority's operating, capital and maintenance needs through the end of the 2005-2011 Capital Program.

The 2005 toll adjustment generally increased toll rates by 25 percent for passenger vehicles and 35 percent for commercial customers in 2005 and increased cash tolls for both passenger and commercial vehicles by 10 percent in 2008. In addition, the toll adjustment also implemented a new vehicle classification system (reducing the number of classifications from 43 to 9), created a new *E-ZPass* discount program, continued a graduated volume discount program for commercial customers and expanded the availability of commuter plans to bridges and barriers on the Thruway System.

In late 2007, rising fuel prices and the recession's impact on employment, industrial production, housing starts and other aspects of the economy significantly impacted passenger and commercial traffic patterns nationwide. As noted in Figure III-2, total traffic on the Thruway System and on other selected toll facilities began to decline significantly at that time as travelers reduced the number and distance of their trips.

Figure III-2: Comparison of the Thruway System to Regional Toll Facilities



In response to the financial pressures brought on by fuel prices and the state of the national economy, the Authority implemented another series of staged, though smaller adjustments to toll rates in 2008. This adjustment was only designed to provide additional funding to assist the Authority in financing operational, maintenance and capital commitments made in the 2005-2011 period. The 2008 toll adjustment maintained a 5 percent *E-ZPass* discount for all patrons and added two five percent across-

the-board increases, which took effect in 2009 and 2010. Table III-6 summarizes passenger and commercial traffic and toll revenues from 2005 through 2011, respectively.

Table III-6: Traffic Trends (millions of trips)

Year	Passenger		Commercial		Total	Percent Change
	Control	Barrier	Control	Barrier		
2005	125.8	115.7	19.9	12.5	274.0	-
2006	127.8	112.6	17.7	11.3	269.4	-1.7%
2007	127.7	100.6	17.7	10.1	256.0	-5.0%
2008	125.5	96.5	16.9	9.7	248.5	-2.9%
2009	128.2	94.3	15.4	8.8	246.7	-0.7%
2010	129.0	93.8	15.7	9.1	247.6	0.4%
2011	126.6	93.5	15.8	9.3	245.0	-1.0%

2. Other Revenues

The Authority collects a variety of non-toll revenues derived from payments received from concessionaires at the Thruway service areas restaurant and gasoline stations, sales of surplus property, revenues from special hauling permits, *E-ZPass* fees, fiber optic agreements, interest on various invested funds, and other miscellaneous sources. These revenues have varied considerably over the last fifteen years. The Authority's income from all other revenue sources was $31.4 million in 2011, including interest earnings. Interest earnings have dropped substantially due to several factors including the reduced level of funds available for investment and lower market interest rates. Historical collections of other revenues are outlined in Table III-7.

Table III-7: Summary of Total Thruway System Revenues (Millions)

Year	Passenger	Commercial	Total Toll Revenue	Other Revenue	Total Revenue
2005	$311.1	$200.1	$511.2	$36.4	$547.6
2006	333.7	220.7	554.4	39.6	594.0
2007	324.7	215.6	540.3	41.4	581.7
2008	347.1	215.6	562.7	33.5	596.2
2009	400.8	210.8	611.6	26.7	638.3
2010	413.1	228.1	641.2	31.3	672.5
2011	403.9	230.2	634.1	31.4	665.5
2005-2011 Total	**$2,534.4**	**$1,521.1**	**$4,055.5**	**$240.3**	**$4,295.8**

E. Historical Flow of Funds Analysis

Table III-8 presents total revenue and expenses for 2005 through 2011 in a format that is consistent with the flow of funds required by the Authority's Bond Resolution. As noted in this table, from 2005 through 2011 the Authority was able to maintain fiscal stability and a debt service coverage ratio that warranted its current favorable credit investment grade credit rating. This was accomplished by the aforementioned capital program reductions, operational cost containment efforts and toll rate adjustments. However, these actions were insufficient to fully maintain net revenues at a level that would result in good coverage and fiscal balance. As a result the Authority relied on the issuance of short term notes to bridge financing gaps in lieu of taking other actions. The combination of these measures allowed the Authority to maintain a balanced flow of funds and achieve budget surpluses that were used to enhance its working capital reserves.

Table III-8: Revenues, Operating Expenses and Reserve Fund Requirements, 2005 – 2011 (in millions)

	Actual 2005	Actual 2006	Actual 2007	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Total 2005-2011
Total Revenues	$ 547.3	$ 594.0	$ 581.6	$ 596.2	$ 638.3	$ 672.5	$ 665.5	$ 4,295.4
Less: CWE Debt Service & Reserve	0.3							0.3
Available Revenues	547.6	594.0	581.6	596.2	638.3	672.5	665.5	4,295.7
Less:								
Operating Expenses	305.3	310.7	332.2	334.8	339.3	358.2	365.5	2,346.1
Operating Reserves	2.0	13.0	6.8	2.5	7.3	6.0	4.6	42.1
Total	307.3	323.7	339.0	337.3	346.7	364.2	370.0	2,388.2
Net Revenues	240.3	270.3	242.6	258.9	291.7	308.3	295.5	1,907.5
Less: Debt Service	103.8	127.4	135.8	163.5	166.3	167.3	167.4	1,031.5
Net Revenues After Debt Service	136.5	142.9	106.8	95.4	125.4	141.0	128.1	876.0
Less: Retained for Operating Reserves	5.2	-5.0	-5.0	5.1	(1.8)	2.3	(4.3)	(3.6)
Net Revenues	141.7	137.9	101.8	100.5	123.5	143.2	123.8	872.4
Less:								
Reserve Maintenance Provisions (2)	60.9	69.8	20.7	30.7	34.5	31.0	10.0	257.6
Other Authority Projects (3)	50.7	54.3	53.7	45.2	48.7	46.0	51.3	349.9
General Reserve Fund	24.9	12.8	26.8	24.4	25.1	21.2	48.2	183.5
General Reserve Fund - CP1, CP 2 & BAN's	4.6		-	-	10.6	23.8	14.4	53.4
Balance After Reserve Maintenance Provisions, Other Authority Projects and General Reserve Fund	0.6	1.0	0.6	0.0	4.7	21.1	-0.1	28.0
Adjustments for Cash Basis	(0.6)	(1.0)	(0.6)	-	0.2	(0.1)	0.1	(1.9)
Net Balance Available for Working Capital	$0.0	$0.0	$0.0	$0.0	$5.0	$21.1	$0.0	$26.1
Debt Service Coverage Ratios	2.31	2.12	1.79	1.58	1.75	1.84	1.77	
Pay-As-You-Go Percentage	58.5%	36.7%	46.5%	15.7%	19.6%	19.0%	17.6%	

(1) Totals may not add due to rounding.

(2) Shows the Reserve Maintenance Fund provision will be funded from debt proceeds when sufficient revenues are not available.

(3) As of 10/31/2007, expenditures for I-84 are to be funded from NYSDOT.

IV. Special Reports and Analysis

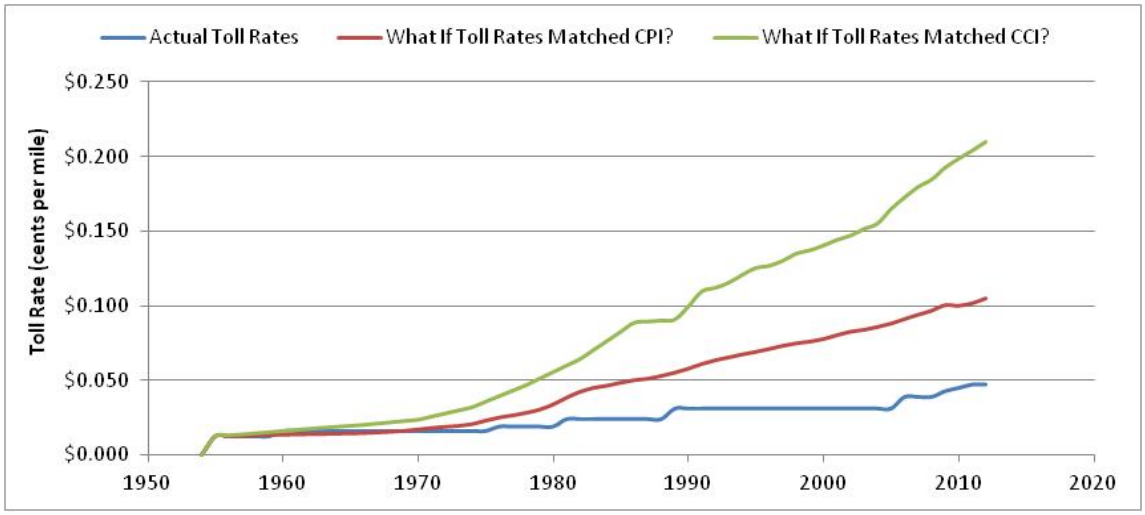
The Authority recently commissioned Jacobs to study (i) what toll revenues may have been generated if toll rates had followed two common measures of increasing costs, (ii) the economic impact of the Thruway and Canal Systems and (iii) the typical Thruway customer. A summary of these analyses are included below and provide important context to the discussion in the remaining sections of this report.

A. The Impact of Infrequent Toll Adjustments on Authority Finances

Jacobs measured what toll revenues may have been generated if the toll rates had followed each of two common measures of increasing costs - the Consumer Price index (CPI) measured by the Bureau of Labor Statistics and the Construction Cost Index (CCI) developed by the Engineering News Record. The CPI is a common and often used measure of price inflation for consumer goods and services and the CCI is a composite measure of the cost to construct infrastructure.

Jacobs found that since the Thruway System was established, tolls rates have grown well below both indices. As shown in Figure IV-1, the actual per-mile passenger car rate on the Ticket System is over four times less than they would be today if toll rates had followed the construction cost index.

Figure IV-1: Comparison of Actual and Hypothetical Toll Rates for Passenger Cars on the Ticket System



In addition, Jacobs analyzed what toll revenue would have been collected if toll rates were indexed beginning in 1988 (the start of the longest period between toll modifications on the Thruway System). The infrequent toll modifications implemented by the Authority since 1988 resulted in large portions of the Authority's capital program being funded from debt. The significant additional toll revenues that may have been available if a regular toll adjustment program had been followed indexed to either CPI or CCI would have altered the Thruway finances significantly, generating an additional $1.5 billion to $2.5 billion in additional revenues since 1988.

Among the outcomes that may have resulted if the additional toll revenues were collected include:

- Lower level of bond financing;
- Higher pay-as-you-go percentage preserving available revenues for future bond sales;
- Larger capital program moving some rehabilitation and reconstruction projects forward to potentially save on the life cycle cost for the improvements; and
- Reduced pressure to increase tolls to fund the current capital program.

While it is impossible to look back and determine precisely what program should have been followed, nevertheless, significant additional revenues gained by more frequent toll rate increases would have placed the Thruway in a much stronger financial position as it recapitalized the Thruway System.

Further discussion and analyses considering additional revenues the Authority may have collected had they implemented regular toll increases over the past 25 years is provided in Appendix B, in the form of a Technical Memorandum entitled "Hypothetical Toll Analysis", dated April 4, 2012.

B. The Economic Impact of the Authority's Capital, Operating and Maintenance Activities on the New York State Economy

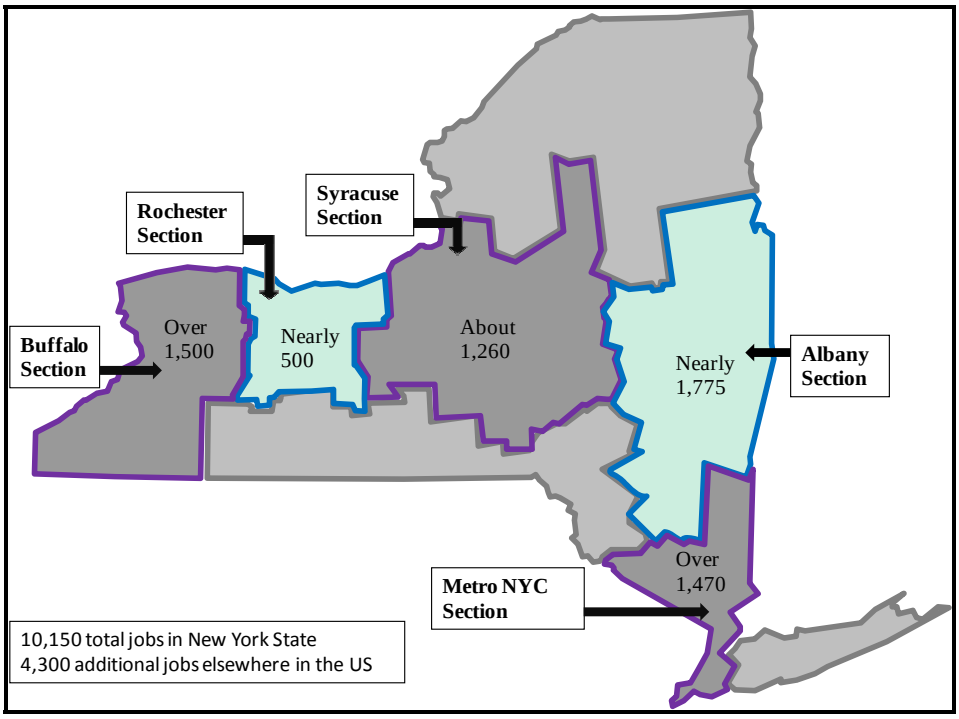
Jacobs estimated the economic impact of the Authority's operations and infrastructure investments on the New York State and local economies. In dynamic economic conditions, we found that the transportation systems managed by the Authority (roadways, bridges and canals) are essential to supporting businesses and communities across the state. The Thruway and Canal Systems are key arteries of commerce and they transport products, facilitate tourism and recreational activities, and connect residents with their work places, all of which generate substantial economic activity.

The Thruway and Canal Systems are extensive, with 570 miles of roadways and 524 miles of canals, making it one of the largest State networks in the nation. From 2005-2011, the operation, maintenance and capital improvements of these systems including the privately operated travel plazas supported:

- 6,725 on-site public and private sector jobs annually;
- 10,150 total jobs throughout New York State annually;
- $575.2 million in personal income and benefits annually;
- $1.2 billion in business sales and production annually; and
- $207.5 million in Federal, State and local tax revenues annually:
    - Local and State Tax Revenue: $130.1 million.
    - Federal Tax Revenue: $77.4 million.

Additionally, the impact was analyzed on a regional basis. Figure IV-2 shows the five major regions for which the economic impact (supporting jobs) was estimated.

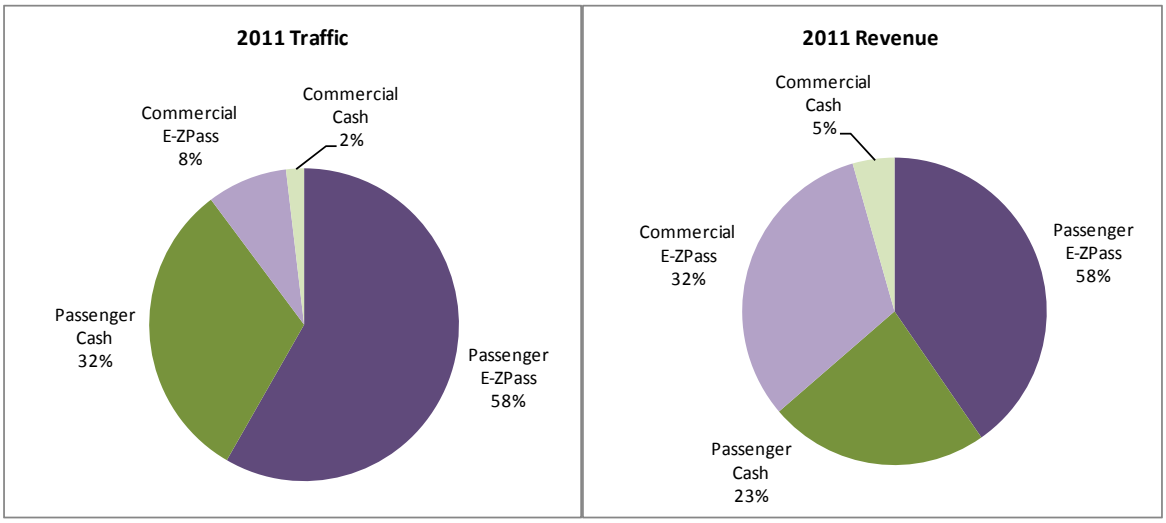
Figure IV-2: Annual Economic Impact Analysis Regions - Supporting Jobs



C. Thruway Trips and Customers

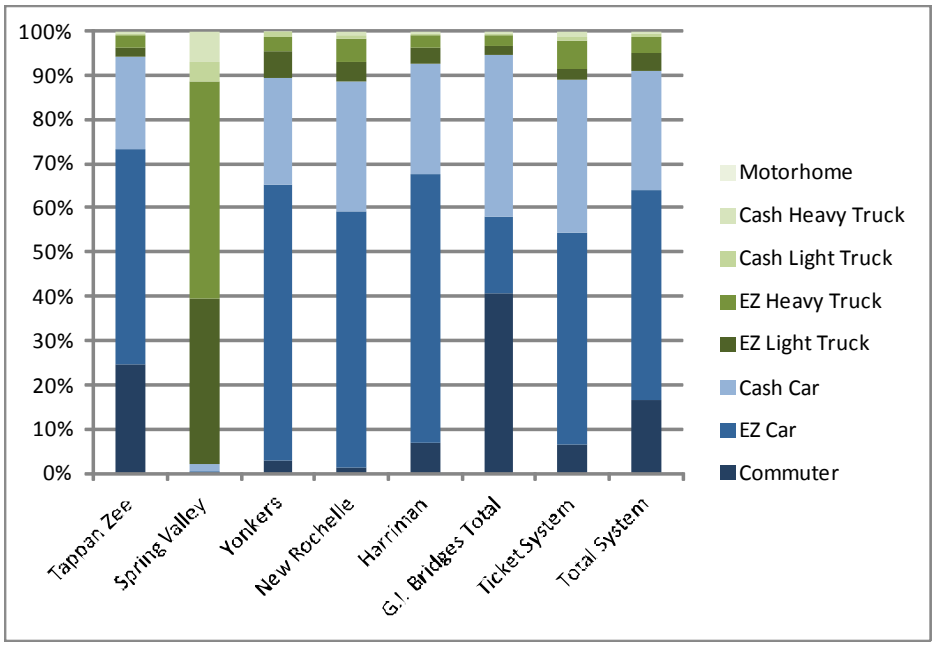
To better understand how toll policy impacts the Thruway customer, it is important to appreciate the make-up of traffic on the Thruway System and its customer base. As shown in Figure IV-3, in 2011 the majority of traffic on the Thruway System was comprised of passenger cars, making up roughly 90 percent of traffic. The remaining ten percent of traffic is from a variety of different commercial vehicle types. Though commercial traffic comprises only a small percentage of system-wide traffic, trucks accounted 37 percent of Thruway revenues. In addition, in 2011 approximately 66 percent of vehicles paid a toll with an *E-ZPass* transponder. For passenger cars, the *E-ZPass* market share equaled approximately 65 percent, while trucks utilized *E-ZPass* more frequently, averaging a market share of about 82 percent.

Figure IV-3: 2011 System Wide Traffic and Revenue Distribution



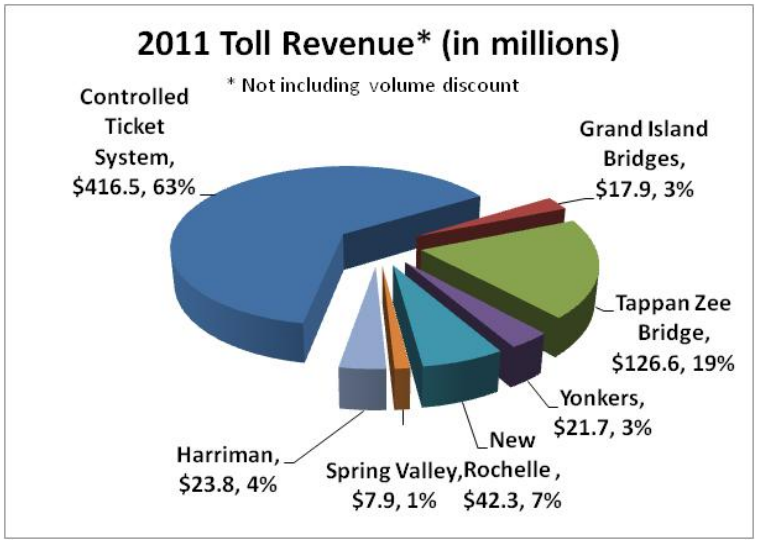
Jacobs further found that the distributions of vehicle class and payment type vary by facility, as shown in Figure IV-4. The highest passenger car participation in *E-ZPass* is seen at the Tappan Zee Bridge, while the highest truck participation rate in *E-ZPass* payment is seen at the nearby Spring Valley Barrier, which is a truck-only toll facility that offers open road tolling. It should be noted that although *E-ZPass* transactions account for about two-thirds of annual transactions on the Thruway, the majority of customers (individual people) using the Thruway over the course of a year travel infrequently and pay with cash.

Figure IV-4: 2011 Traffic Distribution by Facility



Jacobs further analyzed the breakdown of 2011 annual toll revenues by Thruway facility, as presented in Figure IV-5. Of the Thruway's facilities, the Ticket System and the Tappan Zee Bridge generate the most significant portion of the Thruway's traffic and revenue. In 2011, the Ticket System generated $416.5 million or more than half (approximately 63 percent) of all Thruway toll revenues and the Tappan Zee Bridge generated $126.6 million (approximately 19 percent) of total toll revenues. The New York Metropolitan area barrier tolls (other than the Tappan Zee Bridge) generated about $95.7 million or a combined 15 percent of 2011 revenues. In the Buffalo area – the Grand Island Bridges plus the Erie Section of the mainline - generated approximately 11 percent of 2011 revenues.

Figure IV-5: Distribution of 2011 Toll Revenues by Thruway Facility



Specific regions within the Ticket System that see the most volume include the Albany area, the Buffalo Mainline plazas, and the Woodbury Mainline toll Plaza. The top six plaza volumes for the ticket system in 2011 are shown in Table IV-1.

Table IV-1: Ticket System Toll Plazas with the Highest Volumes, 2011

Plaza / Interchange	Transactions
Exit 24: Albany, Montreal, I-90 East, I-87 North	12,700,000
Williamsville	8,900,000
Lackawanna	8,300,000
Woodbury	7,500,000
Exit 25: Schenectady, I-890, NY Routes 7 & 146	6,900,000
Exit 45: Rochester, Victor, I-490	5,900,000

Finally, in 2011 approximately 62 percent of the Thruway's *E-ZPass* toll revenues were generated by the Authority's customers. Customers that had a transponder issued by a New York State toll agency (the Authority or the Metropolitan Transportation Authority) accounted for about 78 percent of total *E-ZPass* toll revenues. As a result, 22 percent of *E-ZPass* toll revenues were collected from customers that had a non-New York issued transponder, underscoring the importance of the Thruway System in the regional and national economy.

V. 2012-2015 Multi-Year Capital Program

In order to better understand the Authority's current and future financial condition, consideration must be given to the size, complexity and capital needs if its highway, bridge and canal infrastructure. The Authority's Thruway and Canal Systems are vast and aging and require considerable investments to remain reliable. This section summarizes the Authority's 2012-2015 Capital Program, the infrastructure investments and program changes that were made therein and the impact that these investments will likely have on facility condition ratings.

A. Program Details

The 2012-2015 Multi-Year Capital Program will complete major, job sustaining reconstruction projects that were let during the previous 2005-2011 Capital Program and includes new highway, bridge and canal construction projects and equipment purchases. The program was originally planned at $1.8 billion (and excluded the new Tappan Zee Bridge Project described in the next section of this report). However, due to fiscal constraints brought on by continued high fuel and construction commodity prices and a sluggish economic recovery, many projects contained in the original plan have been delayed, reduced or eliminated. These actions resulted in the program being reduced by $300 million, to its current investment level of $1.5 billion. In essence, fiscal constraints required the Authority to pursue a more balanced approach to the program's project mix, focusing more on high priority and high impact investments to maintain the useful life of Thruway and Canal infrastructure rather than pursuing major reconstruction, rehabilitation and capacity improvements that were familiar in the 2005-2011 Capital Program.

New Thruway projects included in the four-year program include:

- Grand Island Bridge Deck Replacements and Repairs (2012 and 2013 lettings);
- Exit 59 (Dunkirk) to Exit 60 (Westfield) Pavement Resurfacing (2013 letting);
- Exit 17 (Newburgh) to Exit 18 (New Paltz) Pavement Rehabilitation (2013 letting);
- Exit 33 (Verona) to Exit 34 (Canastota) Pavement Resurfacing (2014 letting);
- I-95, Exit 8B (New Rochelle) to Port Chester Pavement Restoration (2014 letting); and
- Exit 54 (West Seneca) to Lackawanna Barrier Pavement Resurfacing and Bridge Replacements (2015 letting).

Since the transfer of the Canal System to the Authority in the 1990s, the Authority has made significant maintenance and capital investments into the waterway's infrastructure. However, given the age of the Canal System, revitalization of infrastructure is necessary to meet the demands of recreational boaters, tour and rental boats and a resurgent commercial shipping sector. While the Authority undertakes an ambitious annual maintenance program, Canal structure conditions continue to deteriorate, with nearly 50 percent of critical Canal structures rated in the fair and poor categories. Complicating efforts to

reduce this rate of deterioration, a substantial portion of the Canal's current floating plant equipment consists of a variety of vessels that need to be replaced and Tropical Storms Irene and Lee caused nearly $100 million in damages to many components of the Canal System in 2011. In April 2012, the Authority entered into a $60 million loan agreement with Citibank, N.A. to finance a portion of these emergency capital repairs and expects Federal Emergency Management Agency to reimburse a substantial portion of the loan.

Due to fiscal restraints, new Canal projects in the 2012-2015 Capital Program are limited and primarily focused on repairing storm damaged facilities. They include the following:

- Canal Dredging, Lock Repairs and Other Contracts – Tropical Storms Irene and Lee Recovery Projects (2012 lettings);
- Utica Taintor Gate and Dam Rehabilitation (2012 letting)
- Amsterdam Movable Dam Rehabilitation (2012 letting);
- Scotia Moveable Dam Rehabilitation (2014 letting); and
- Oswego Lock Rehabilitation (2015 letting).

It is also important to note that a considerable portion of the 2012-2015 Capital Program (some $400 million) is dedicated to financing several ongoing and large-scale Thruway reconstruction and rehabilitation improvement projects that were contained in the 2005-2011 Capital Program. Thruway projects currently underway that have a financial impact in 2012 and beyond include:

- Exit 39 (I-690) to Exit 40 (Weedsport) Pavement Reconstruction;
- Exit 23 (I-787) to Exit 24 (Northway) Pavement Reconstruction and Capacity Improvements;
- Exit 57 (Hamburg) to Exit 58 (Silver Creek) Pavement Reconstruction and Bridge Rehabilitations; and
- Phase 2 of the Tappan Zee Bridge Deck Replacement.

As mentioned earlier in this report, as the Authority progresses through the 2012-2015 Capital Program, it must rely on existing and enhanced asset management and capital program management systems to ensure that changes to the program maintain the proper project mix, to maximize investment value and impact as the economy and pricing environments change.

B. The New Tappan Zee Bridge Project

The Authority has moved toward undertaking a massive transportation project, the replacement of the Tappan Zee Bridge. This project is one of the Country's most extensive transportation enhancement projects ever envisioned and, in 2011 the Tappan Zee Bridge Project became one of fourteen infrastructure projects that President Obama tapped for expedited Federal environmental review, with

construction estimated to begin in late 2012. Pursuant to new statutory authority for the Authority to undertake procurements on a design build contracting basis, In February 2012, four separate private joint ventures made up of large domestic and international firms, were short-listed and have recently been invited to submit Design-Build bids under a recently released formal Request for Proposals.

The newly authorized design-build procurement process being followed allows the private sector to compete and offer innovative, cost-effective designs for this major transportation infrastructure replacement project. The design-build process further permits an expedited construction schedule which can take advantage of significant cost savings and provides for less risk if delays and cost overruns should occur during the process.

The Authority had previously focused on earlier concepts for the Tappan Zee Bridge project and included a significant public involvement process over the last decade. The re-launch of the process in October 2011 has resulted in numerous public presentations and meetings which have been heightened by the hearings on the Draft Environmental Impact Statement for the project.

The Authority continues to guide the process forward. As noted earlier, a specific financing plan for this project will be developed in late 2012 or early 2013 when more information is available on the cost of the Project (i.e. when the design-build procurement process has been completed) and when there is more certainty on the level of Federal aid or financing assistance that will be received for this Project. As a result, Tappan Zee Bridge Project costs are not reflected in the financial analysis of this report. Current, up-to-date information on the Tappan Zee Bridge Project can be found at the following website: *http://www.thenewtzb.ny.gov/*.

C. Planned Capital Program Expenditures

Table V-1 shows the total planned expenditures over the period 2012 to 2016, excluding the costs of the Tappan Zee Bridge project. Actual expenditures from 2011 are included as a reference point and the figures shaded in green make up the adopted 2012-2015 Capital Program.

Table V-1: Projected Total Capital Program Expenditures (millions)

Year	Thruway Highway and Bridges Capital Expenditures	Equipment Replacement and Other Facility Capital Needs	Canal Capital Program	Total Capital Program Expenditures
2011 (A)	$367.6	$49.5	$27.4	$444.5
2012	285.4	47.1	51.4	384.0
2013	263.1	48.8	62.1	374.0
2014	282.5	43.7	50.8	377.0
2015	291.6	40.7	51.2	383.5
2016	380.8	39.2	54.4	474.3
Total 2012-2016	**$1,503.4**	**$219.5**	**$269.9**	**$1,992.8**

D. The Impact of the 2012-2015 Capital Program on Conditions

As previously noted, the main goals of the Authority's capital and maintenance program is to preserve a high level of patron safety and service, maintain facilities in a state of good repair and ensure the overall reliability of the highway system. One measure of the effectiveness of these maintenance and capital programs is the condition ratings of highway and bridge facilities.

Figure V-1 displays the historic average rating of Thruway pavement surface conditions since 1988 and the projected ratings as a result of the current Capital Program. During the life of the proposed capital program, it is projected that the pavement ratings for the Thruway facilities will remain in the "good" range, though at a level slightly below that of previous years. Similarly, the Authority maintains ratings of all of the Bridge Structures. Figure V-2 shows the Bridge ratings since 1988. The current plan will maintain the average rating of all Bridges at an average rating of "good". However, it is important to note that the average bridge condition rating is closely approaching the "fair" category. Table V-2 presents a summary of Bridge and Pavement ratings on the Thruway as of December 31, 2011. Roughly half of the bridges are in poor or fair condition and almost all pavement miles (shown as a two directional total in 1/10th miles) are in good or excellent condition. The Authority strictly complies with all State and Federal bridge inspection requirements and the assessments in this report reflect results of such inspections.

Table V-2: Current Bridge and Pavement Conditions

Condition	Number of Bridges	Pavement Miles (in 1/10th)
Excellent	35	3,400
Good	364	7,708
Fair	363	70
Poor	49	0
Total	811	11,178

Figure V-1 Thruway Pavement Condition Ratings, 1988 -2016

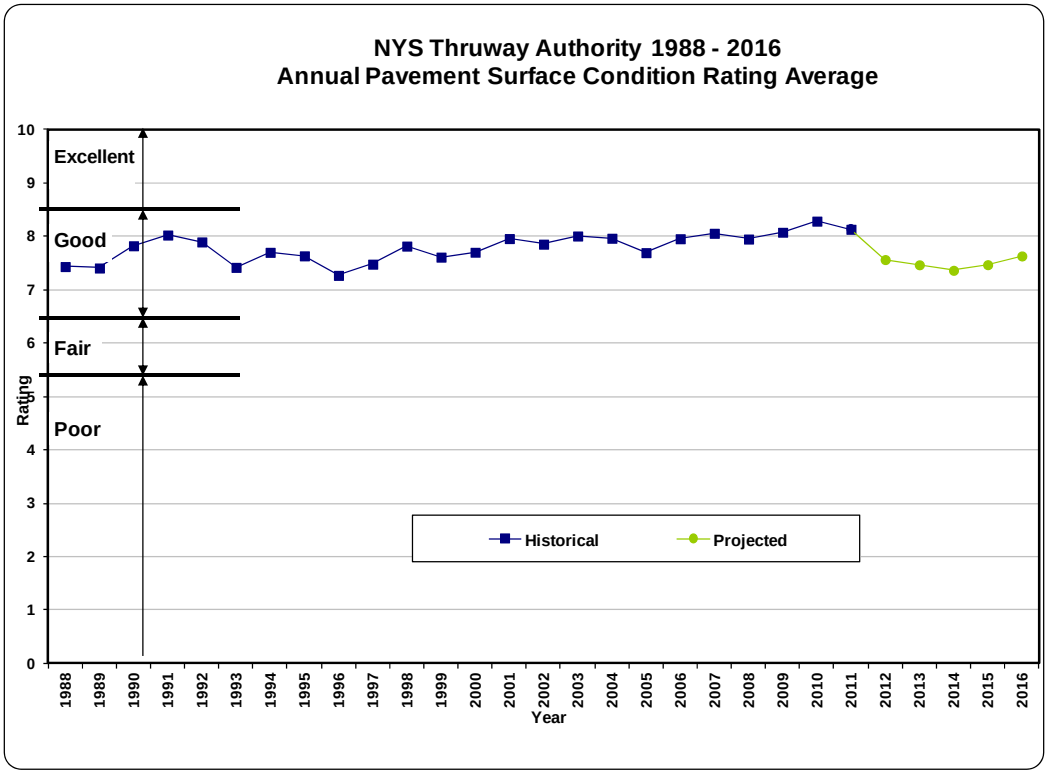
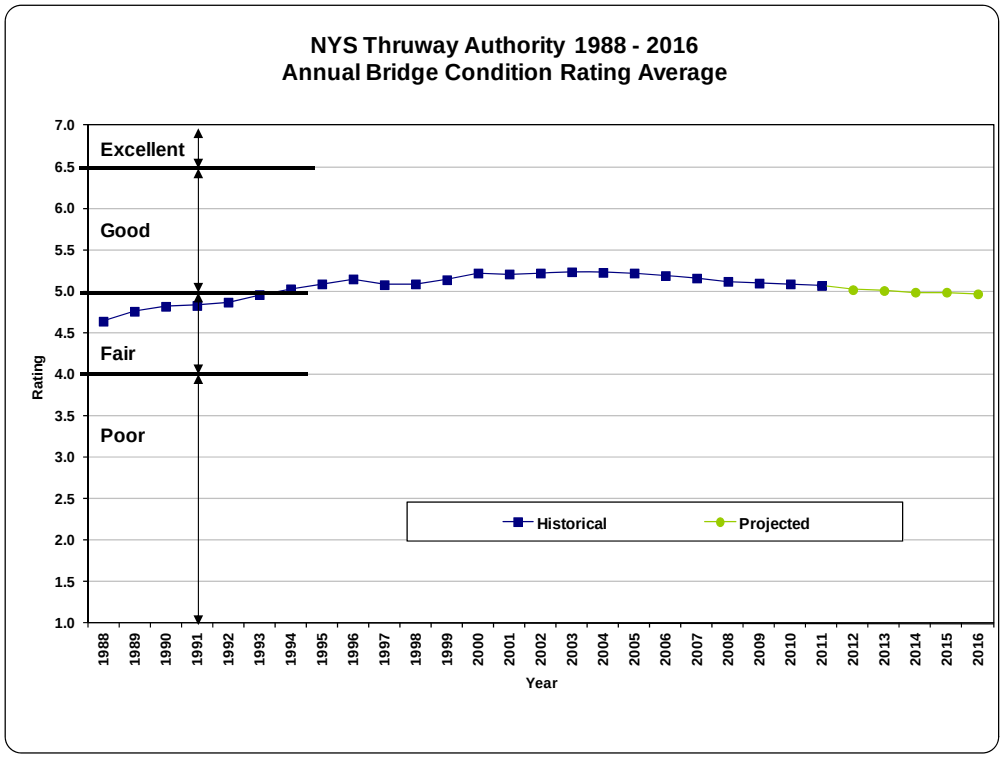


Figure V-2 Thruway Bridge Condition Ratings, 1988 – 2016



VI. Expenses and Revenues with the Current Toll Schedule

As noted earlier in this report, the current toll schedule implemented by the Authority was only intended to provide revenues necessary to fulfill operating, capital, maintenance and other commitments through the end of the 2005-2011 Capital Program. The following section summarizes the important components of the Authority's current long-term financial plan based on the current toll structure, the 2012-2015 Capital Program and operating expenses under a new program of operational streamlining.

A. Projected Operating and Maintenance Expenses

Table VI-1 shows estimated operating and maintenance expenses for the Thruway and Canal Systems assuming the impact of the Authority's new operational streamlining program. As noted earlier in this report, over the last five years the Authority has been able to limit core operating expense growth. However, the Authority is currently initiating a new operational streamlining program that is expected to significantly reduce future operating expenses in 2012 and beyond. Underscoring the significance of this program, as seen in Table VI-1, the Authority expects to hold operating costs at relatively the same level from 2011 through 2014, involving a reduction in operating costs by some $119.5 million over prior forecasts from 2012 through 2016.

The Authority's streamlining program will likely consist of further workforce reductions, a realignment of employee benefits reductions to comport with the State benefit plans, additional departmental consolidations and reorganizations, reductions in vehicle and equipment fleets, further reductions in overtime and the number of toll lanes that are staffed, bulk purchasing of goods and services with other entities to reduce pricing, and many other initiatives.

Table VI-1: Projected Operating and Maintenance Expenses (millions)

Year	Thruway	Enhanced Operating Cuts	Canal System	Enhanced Operating Cuts	Total Operating and Maintenance Expenses
2011 (A)	$370.0	$0.0	$51.3	$0.0	$421.3
2012	375.3	0.0	55.7	0.0	431.0
2013	389.9	-21.0	53.2	-0.5	421.7
2014	401.5	-31.0	54.8	-1.0	424.4
2015	413.5	-31.0	56.5	-1.6	437.4
2016	425.7	-31.8	58.2	-1.6	450.5
Total 2012-2016	**$2,005.9**	**-$114.8**	**$278.4**	**-$4.7**	**$2,165.0**

B. Projected (Non-Tappan Zee) Debt Service Expenses

Table VI-2 shows debt service expenses on general revenue bonds and notes issued under the Bond Resolution to support the Authority's current and future capital needs, as manifested in the 2012-2015 Capital Program. As noted, debt service expenses are expected to increase as the Authority issues

additional bonds to refinance outstanding notes and finance the future infrastructure needs of the Thruway and Canal Systems. As noted above, in the absence of a final approved alternative and financial plan, this analysis excludes the new Tappan Zee Bridge Project.

Table VI-2: Projected Annual Debt Service (millions)

Year	Debt Service on Outstanding Bonds & Notes	Debt service on New Debt issued (non-TZ)	Total Debt Service and Requirements
2011 (A)	$181.8	$0.0	$181.8
2012	167.6	35.2	202.8
2013	167.6	78.9	246.5
2014	167.6	96.5	264.1
2015	167.6	117.4	285.0
2016	167.6	144.8	312.4
Total 2012-2016	**$838.0**	**$472.8**	**$1,310.8**

C. Projected Toll and Other Revenues

Recently, traffic on the Thruway System and on other facilities in certain regions of the economy are exhibiting signs of growth, suggesting the economic recovery is gaining strength. However, the slow and deliberate pace of the economic recovery is expected to result in relatively flat growth in passenger car toll revenues from 2011 to 2012, with only slight growth thereafter. Commercial traffic, however, is currently showing stronger signs of growth and is expected to lead to healthy revenue growth from 2011 to 2012, with continued growth thereafter. It is important to note that while traffic growth is expected in the future, total traffic levels are not expected to return to pre-recession levels within the forecast period. In addition, Other Revenue, including interest earnings, *E-ZPass* fees and other sources is expected to remain flat from 2012 through 2016. Traffic and revenue projections are contained in Table VI-3 and Table VI-4.

Table VI-3: Traffic Projections with Existing Toll Schedule (millions of Trips)

Year	Passenger	Commercial	Total	Growth
2011(A)	220.1	25.2	245	
2012	222.6	25.6	248.2	1.2%
2013	223.4	25.9	249.3	0.4%
2014	225.5	26.4	251.9	1.0%
2015	228.5	26.9	255.4	1.4%
2016	231.6	27.4	259.0	1.4%

Table VI-4: Estimated Annual Revenues with Existing Toll Schedule (millions)

Year	Passenger	Commercial	Total Toll Revenue	Other Revenue	Total Revenue
2011 (A)	$403.9	$230.2	$634.1	$31.4	$665.5
2012	409.4	234.0	643.4	32.0	675.4
2013	410.4	235.4	645.8	32.5	678.3
2014	413.8	239.3	653.0	33.8	686.8
2015	418.9	243.1	661.9	34.8	696.7
2016	424.1	246.9	671.0	35.8	706.8
Total 2012-2016	**$2,076.6**	**$1,198.6**	**$3,275.1**	**$168.9**	**$3,444.0**

D. Total Sources and Uses

Table VI-5 and Table VI-6 identify the total projected annual financial requirements for the period 2012 through 2016, reflecting the Authority's capital, operational, maintenance and other needs exclusive of the Tappan Zee Bridge Project and inclusive of the operational streamlining program.

Table VI-5: Total Projected Annual Financial Requirements (millions)

Year	Capital Program	Operating and Maintenance Expenses	Debt Service	Total Requirements
2012	$384.0	$431.0	$202.8	$1,017.8
2013	374.0	421.7	246.5	1,042.2
2014	377.0	424.4	246.1	1,065.5
2015	383.5	437.4	285.0	1,105.9
2016	474.3	450.5	312.4	1,237.2
Total 2012-2016	**$1,992.8**	**$2,165.0**	**$1,310.8**	**$5,468.6**

Table VI-6: Projected Funding Sources with Existing Toll Schedule (millions)

Year	Total Requirements without Tappan Zee Replacement	Funding Sources				
		Federal Aid	Other	Debt Proceeds	Subtotal Exclusive of Thruway Revenues	Revenues Required from Tolls, etc.
2012	$1,017.8	$2.9	$37.5	$277.4	$317.8	$700.0
2013	1,042.2	1.0	41.9	235.4	278.3	763.9
2014	1,065.5	0.7	12.2	278.9	291.8	773.7
2015	1,105.9	0.0	12.4	308.3	320.7	785.2
2016	1,237.2	0.0	13.1	424.5	437.6	799.6
Total 2012-2016	**$5,468.6**	**$4.6**	**$117.1**	**$1,524.5**	**$1,646.2**	**$3,822.4**

E. Flow of Funds Analysis with Current Toll Schedule

As noted in Table VI-7, despite the implementation of operational streamlining and reductions to the 2012-2015 Capital Program, the Authority's current toll schedule provides insufficient funding to pay for planned expenses from 2013 through 2016, resulting in a funding shortage of approximately $374.2 million.

Table VI-7: Projected Available Revenues vs. Required Revenues with Existing Toll Schedule (millions)

Year	Revenues Required from Tolls, etc.	Revenues with Existing Toll Schedule	Annual Shortage	Cumulative Shortage
2012	$700.0	$679.6	-$20.4	-$20.4
2013	763.9	678.3	-85.6	-106.0
2014	773.7	686.8	-86.9	-192.9
2015	785.2	696.7	-88.5	-281.4
2016	799.6	706.8	-92.8	-374.2
Total 2012-2016	**$3,822.4**	**$3,448.2**	**-$374.2**	

In addition, as shown in Table VI-8, the Authority's current toll schedule is insufficient to maintain debt service coverage and Pay-As-You-Go financing levels. The Authority's Bond Resolution requires a minimum debt service coverage ratio of 1.2x and the Authority's Fiscal Management Guidelines requires a minimum coverage ratio of 1.5x. As noted in this table, despite capital program reductions and operational streamlining program, in 2012 the Authority's debt service coverage ratio is expected to equal 1.49x and by 2016 the coverage ratio will be as low as 0.97x. Furthermore, Pay-As-You-Go financing of the Authority's 2012-2015 Capital Program will decline to very low levels, ending up in 2016 near 10 percent.

As a result of funding shortages and poor financial metrics, Jacobs is recommending that the Authority supplement its operational streamlining efforts with an action to enhance revenues so that it may meet its goal of preserving fiscal stability until a more long-term plan can be developed that includes the Tappan Zee Bridge Project.

Table VI-8: Flow of Funds with the Existing Toll Schedule

	ACTUAL	PROJECTED					
	2011	2012	2013	2014	2015	2016	Total (2012-2016)
Total Revenues	$665.5	$675.4	$678.3	$686.8	$696.7	$706.8	$3,444.0
Less:							
Operating Expenses	365.5	372.3	365.9	367.5	379.6	390.9	1,876.2
Operating Reserves	4.6	3.0	3.0	3.0	3.0	3.0	15.0
Total	370.0	375.3	368.9	370.5	382.6	393.9	1,891.2
Net Revenues	295.5	300.1	309.4	316.3	314.1	312.9	1,552.8
Less: Debt Service	167.4	200.9	250.3	272.0	295.5	323.5	1,342.2
Net Revenues After Debt Service	128.1	99.2	59.1	44.2	18.6	(10.6)	210.6
Less: Retained for Operating Reserves	(4.3)	4.2	-	-	-	-	4.2
Net Revenues	123.8	103.4	59.1	44.2	18.6	(10.6)	214.7
Less:							
Reserve Maintenance Provisions (2)	10.0	40.6	-	-	-	-	40.6
Other Authority Projects	51.3	55.7	52.7	53.8	54.9	56.6	273.8
General Reserve Fund	48.2	5.2	28.6	33.3	30.4	36.7	134.2
General Reserve Fund - CP1, CP 2 & BAN's	14.4	1.9	0.6	0.6	0.6	0.6	4.3
Balance After Reserve Maintenance Provisions, Other Authority Projects and General Reserve Fund	-0.1	0.0	-22.9	-43.6	-67.3	-104.5	-238.2
Adjustments for Cash Basis	-	-	-	-	-	-	-
Net Balance Available for Working Capital	-$0.1	$0.0	-$22.9	-$43.6	-$67.3	-$104.5	-$238.2

(1) Totals may not add due to rounding.
(2) Shows the Reserve Maintenance Fund provision would be funded from Debt proceeds when sufficient revenues are not available.

Debt Service Coverage	1.77	1.49	1.24	1.16	1.06	0.97
Pay go %	17.6%	27.8%	14.3%	12.3%	11.2%	10.5%

VII. Proposed Modifications to Current Toll Rates and the Impact to the Authority's Financials

As concluded in the previous section of this report, funding shortages, inadequate debt service coverage ratios and low Pay-As-You-Go financing generated from the current toll scheduled will require the Authority to pursue new revenue sources to complement its program of enhancing operational efficiency. This section recommends a specific toll adjustment that will provide fiscal stability and healthy financial metrics until a more holistic financing plan, that includes the Tappan Zee Bridge Project, is developed later in 2012 or in early 2013.

A. Current Toll Rates

The 2010 rates are in effect today and the Authority's current toll rate structure is outlined in Table VII-1. Toll collections for passenger and commercial vehicles from 2005 through 2011 are summarized in Table III-7.

Table VII-1: Current Thruway Toll Structure ($)

2010	Controlled (Cents/Mile)		Yonkers		Harriman		Spring Valley		New Rochelle		Tappan Zee		Grand Island	
	Cash	E-Z Pass	Cash	E-Z Pass	Cash	E-Z Pass	Cash	E-Z Pass(1)	Cash	E-Z Pass	Cash	E-Z Pass(1)	Cash	E-Z Pass
Commuter	-	*	-	0.55	-	0.55	-	-	-	1.10	-	3.00	-	0.28
Motor Cycle	-	0.0235	-	0.63	-	0.63	-	-	-	0.88	-	2.50	-	0.50
2L	0.0470	0.0447	1.25	1.19	1.25	1.19	-	-	1.75	1.66	5.00	4.75 / 4.75	1.00	0.95
3L	0.0728	0.0691	1.50	1.43	1.50	1.43	3.00	3.00 / 1.50	2.50	2.38	11.50	11.50 / 5.75	1.50	1.43
4L	0.0864	0.0821	1.75	1.66	1.75	1.66	4.50	4.50 / 2.25	3.00	2.85	13.75	13.75 / 6.88	1.75	1.66
2H	0.0933	0.0886	2.00	1.90	2.00	1.90	5.25	5.25 / 2.63	3.50	3.33	14.75	14.75 / 7.38	2.00	1.90
3H	0.1604	0.1524	2.25	2.14	2.75	2.61	8.25	8.25 / 4.13	4.25	4.04	20.75	20.75 / 10.38	2.25	2.14
4H	0.1768	0.1680	2.75	2.61	3.00	2.85	8.25	8.25 / 4.13	5.00	4.75	24.75	24.75 / 12.38	2.75	2.61
5H	0.2390	0.2271	4.25	4.04	4.25	4.04	13.50	13.50 / 6.75	8.00	7.60	32.75	32.75 / 16.38	4.25	4.04
6H	0.2963	0.2815	4.50	4.28	5.00	4.75	14.75	14.75 / 7.38	8.75	8.31	41.00	41.00 / 20.50	4.50	4.28
7H	0.3536	0.3359	5.00	4.75	5.75	5.46	16.50	16.50 / 8.25	9.75	9.26	49.25	49.25 / 24.63	5.00	4.75

B. Recommended Increase to Commercial Tolls

Jacobs is recommending that the Authority advance a 45 percent increase on commercial toll rates as a means to meet the goals established above. However, in an effort to lessen the impact on local businesses that rely on the Thruway System, this recommended toll adjustment would exclude 2H commercial vehicle types.

Commercial vehicles and overweight trucks represent the single greatest demand on highway and bridge infrastructure from both an engineering and financial standpoint. It is this impact that supports our recommendation to implement an adjustment to only commercial toll rates at this time. According to information received from the Authority, based on a NYSDOT report:

- An average passenger vehicle (typically 2-axle) operating at 4,000 pounds causes minimal harm to highway pavement or bridges;
- Pavement damage increases exponentially as vehicle weight increases;
- One legally loaded 80,000 pound gross weight (typically 5-axle) commercial vehicle causes wear-and-tear on the road equal to approximately 9,600 passenger vehicles; and
- If a truck is loaded to 95,000 pounds (15,000 pounds overweight/beyond the legal limit), its pavement damaging impact will nearly double to the similar degree of the damage caused by 19,000 passenger vehicles.

Figure VII-1 compares five-axle trucks' toll rates per mile on the Thruway ticket system to those charged on other toll roads in the northeast. Figure VII-2 compares Tappan Zee Bridge five-axle truck tolls to round-trip tolls on other major river crossings in the northeast. It is important to note that many of the other toll facilities analyzed are not as old nor do they experience the same heavy weather conditions as the Thruway. As seen from these figures, current commercial toll rates on both the ticket system and the Tappan Zee Bridge are below the average in the region.

With the proposed 45 percent increase, ticket system commercial tolls will still remain below the average for toll roads and the commercial toll rate in the Tappan Zee Bridge toll increase will bring tolls within the range of rates currently charged at the MTA Bridges & Tunnels and Port Authority of NY and NJ crossings. It is important to keep in mind that large toll increases are either planned or are likely to occur at many of the other facilities shown in these figures. As a result, the recommended 45 percent commercial toll adjustment will maintain the Thruway's position as a relatively inexpensive toll facility.

Figure VII-1: NYSTA Ticket System Toll Rates Compared to Other Toll Roads in the Northeast, 5-Axle Trucks

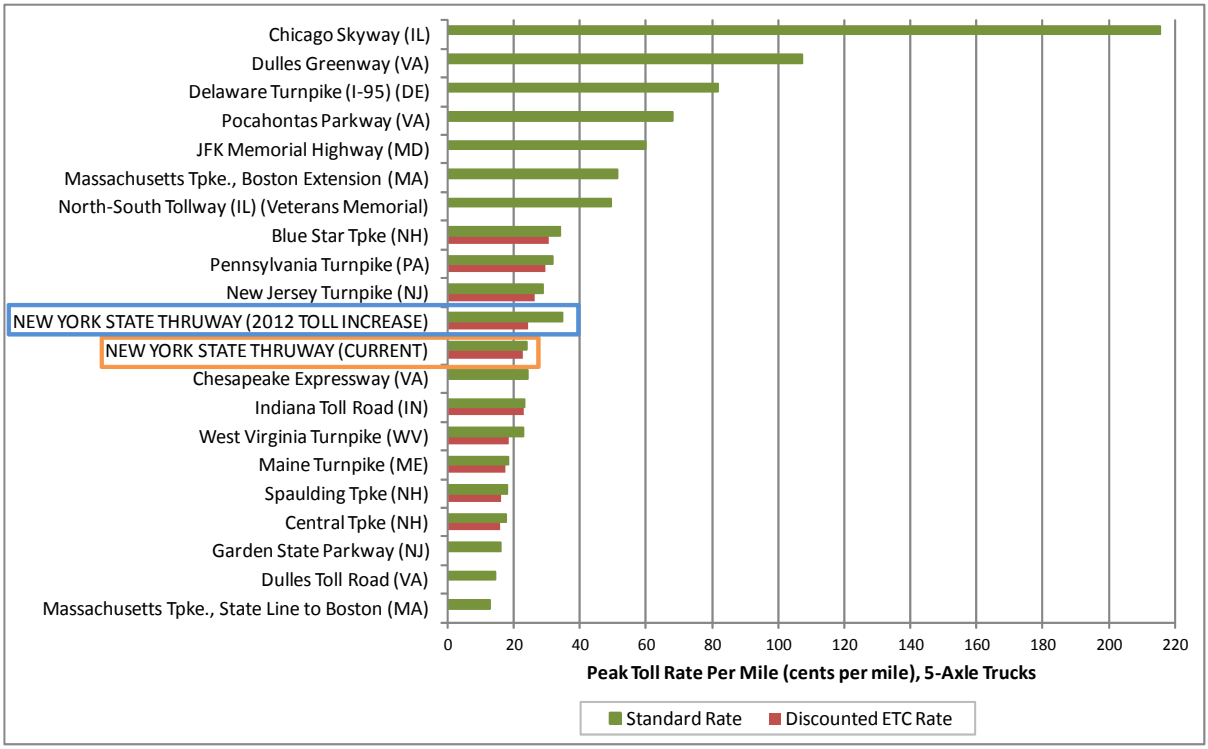
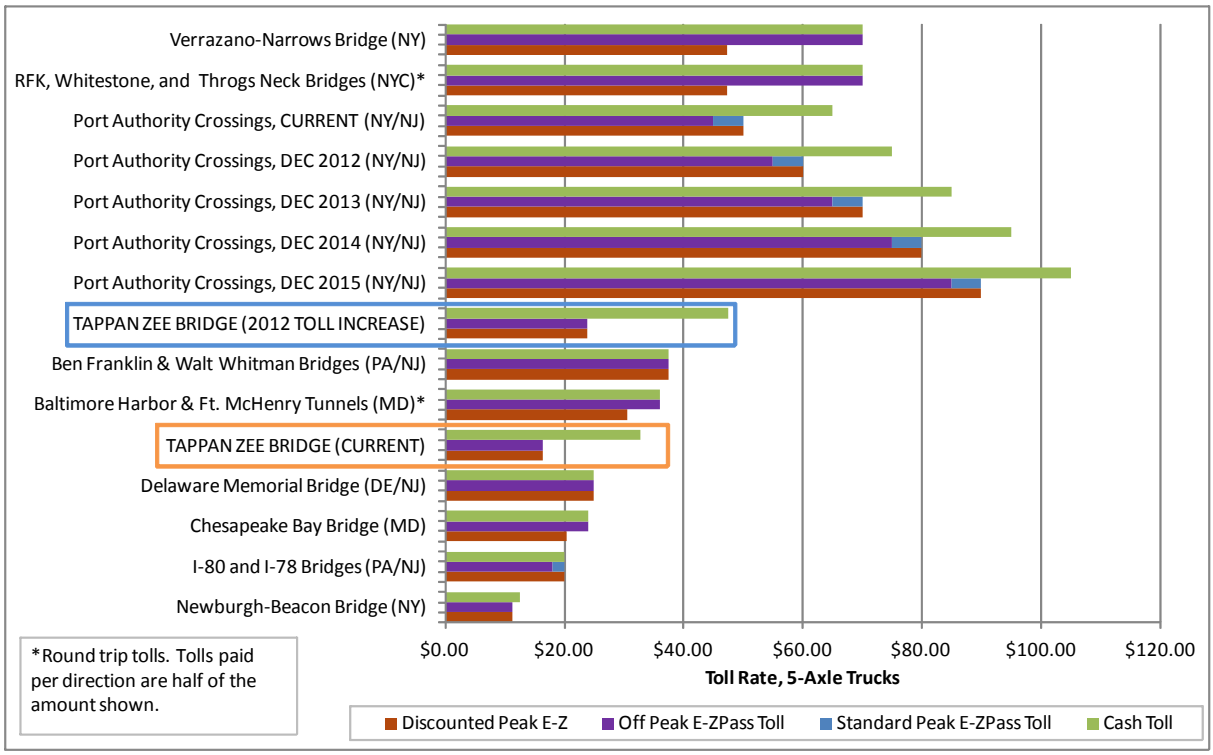


Figure VII-2: Tappan Zee Bridge Toll Rates Compared to Other Tolled Crossings in the Northeast, 5-Axle Trucks



It is important to note that previous toll increases indicate that Thruway traffic is relatively insensitive to increases in the toll rates. This is due in part to the fact that there are few effective competitive routes, and that the physical condition of the Thruway is generally better than that of alternative routes. The safety and security related services, such as snow plowing and police patrols, are better on the Thruway than on alternative routes. Additionally, travel plazas along the length of the Thruway provide 24-hour fuel, rest stop, and food services without the need to exit the system. As a result of any toll increase, slight declines in traffic volumes are expected. The decline in volumes includes operators that choose an alternative route, combine trips or choose not to travel at all. The amount of diverted traffic from the recommended 45 percent adjustment to certain commercial toll rates is not expected to be significant as a result of the proposed toll modifications. Table VII-2 presents the proposed commercial toll schedule.

Table VII-2: Proposed Commercial Toll Rates, 2012

2012	Controlled		Yonkers		Harriman		Spring Valley		New Rochelle		Tappan Zee		Grand Island	
	Cash	E-Z Pass	Cash	E-Z Pass	Cash	E-Z Pass	Cash	E-Z Pass[1]	Cash	E-Z Pass	Cash	E-Z Pass[1]	Cash	E-Z Pass
3H	0.2326	0.2210	3.50	3.33	4.00	3.80	12.00	12.00/6.00	6.25	5.94	30.25	30.25/15.13	3.50	3.33
4H	0.2564	0.2436	4.00	3.80	4.50	4.28	12.00	12.00/6.00	7.25	6.89	36.00	36.00/18.00	4.00	3.80
5H	0.3466	0.3293	6.25	5.94	6.25	5.94	19.75	19.75/9.88	11.75	11.16	47.50	47.50/23.75	6.25	5.94
6H	0.4296	0.4081	6.75	6.41	7.25	6.89	21.50	21.50/10.75	12.75	12.11	59.50	59.50/29.75	6.75	6.41
7H	0.5127	0.4871	7.25	6.89	8.50	8.08	24.00	24.00/12.00	14.25	13.54	71.50	71.50/35.75	7.25	6.89

[1] Peak/Off Peak *E-ZPass* Rates

Table VII-3 provides a comparison of existing and proposed toll rates for sample trips along the Thruway System for Class 5H vehicles.

Table VII-3: Current and Proposed Toll Rates for Sample Class 5H Trips

Sample Trip	Payment Type	Class 5H Trip Toll			
		Current	Proposed	$ Change	% Change
Woodbury (15) to Newburgh (17)	Cash	$7.10	$10.30	$3.20	45.1%
	E-ZPass	$6.75	$9.79	$3.04	45.1%
Woodbury (15) to Albany (24)	Cash	$28.10	$40.75	$12.65	45.0%
	E-ZPass	$26.70	$38.71	$12.02	45.0%
Albany (23) to Schenectady (26)	Cash	$4.90	$7.05	$2.15	43.9%
	E-ZPass	$4.66	$6.69	$2.04	43.7%
Syracuse (36) to Rochester (45)	Cash	$16.30	$23.60	$7.30	44.8%
	E-ZPass	$15.49	$22.42	$6.93	44.8%
Geneva (42) to Rochester (45)	Cash	$5.75	$8.30	$2.55	44.3%
	E-ZPass	$5.46	$7.89	$2.43	44.5%
Leroy (47) to Williamsville (50)	Cash	$10.00	$14.50	$4.50	45.0%
	E-ZPass	$9.50	$13.78	$4.28	45.0%
Lackawanna (55) to Hamburg (57)	Cash	$1.65	$2.35	$0.70	42.4%
	E-ZPass	$1.57	$2.23	$0.67	42.4%

C. Toll and Other Revenues

Table VII-5 presents the projected toll revenues based on the recommended 45 percent increase in commercial tolls. The forecast assumes that commercial traffic will be tempered in 2012 and 2013 as the proposed toll increase takes effect later in 2012, prompting some commercial customers to reduce their driving on the Thruway, either by using a different route, combining trips, or not making their trip. As noted earlier, diversion off the Authority system in response to toll changes has been historically low and temporary. Modest passenger and commercial traffic growth is projected after 2013 as the economy recovers from the recent recession. Traffic estimates, inclusive of the recommended commercial rate adjustment, are contained in Table VII-4. Figure VII-3 and Figure VII-4 show corresponding graphs of historical and projected traffic and revenue for passenger, commercial and total vehicles.

Table VII-4: Estimated Traffic with Proposed Toll Schedule (millions)

Year	Passenger Cars		Commercial Vehicles		Total	Percent Change
	Control	Barrier	Control	Barrier		
2010 [1]	129.0	93.8	15.7	9.1	247.6	-
2011 [1]	126.6	93.5	15.8	9.3	245	-1.0%
2012 [2]	128.0	94.6	15.9	9.4	247.9	1.1%
2013	128.5	94.9	15.4	9.3	248.1	0.1%
2014	129.7	95.8	15.7	9.4	250.6	1.0%
2015	131.5	97.0	16.0	9.6	254.2	1.4%
2016	133.3	98.4	16.3	9.8	257.8	1.4%

[1] Actual
[2] Toll Increase September 30, 2012

Table VII-5: Estimated Annual Revenues with Proposed Toll Schedule (millions)

Year	Passenger Revenue	Commercial Revenue	Total Toll Revenue	Other Revenue(1)	Total Revenue
2012	$409.4	$254.5	$663.9	$31.9	$695.8
2013	410.4	320.9	731.3	32.5	763.8
2014	413.8	326.1	739.9	33.9	773.7
2015	418.9	331.5	750.4	34.9	785.2
2016	424.2	336.6	760.7	35.9	796.7
Total 2012-2016	**$2,076.6**	**$1,569.6**	**$3,646.1**	**$169.1**	**$3,815.2**

(1) Due to interest earnings on additional revenue

Figure VII-3: Historical and Projected Toll Traffic with Proposed Toll Schedule, Thruway System, 1987 - 2016

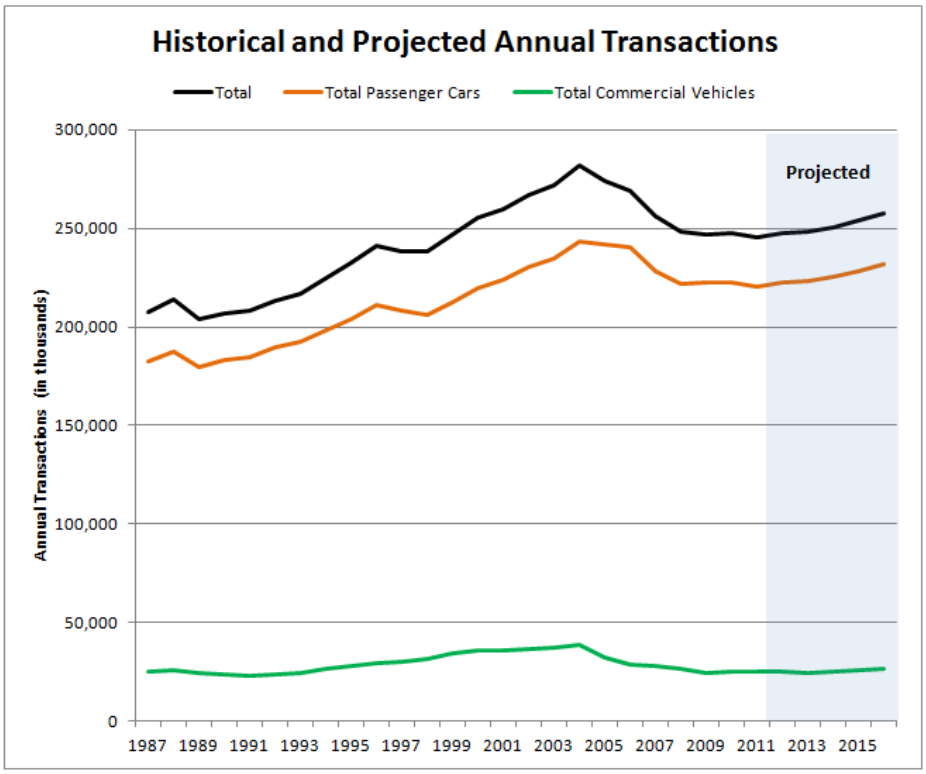
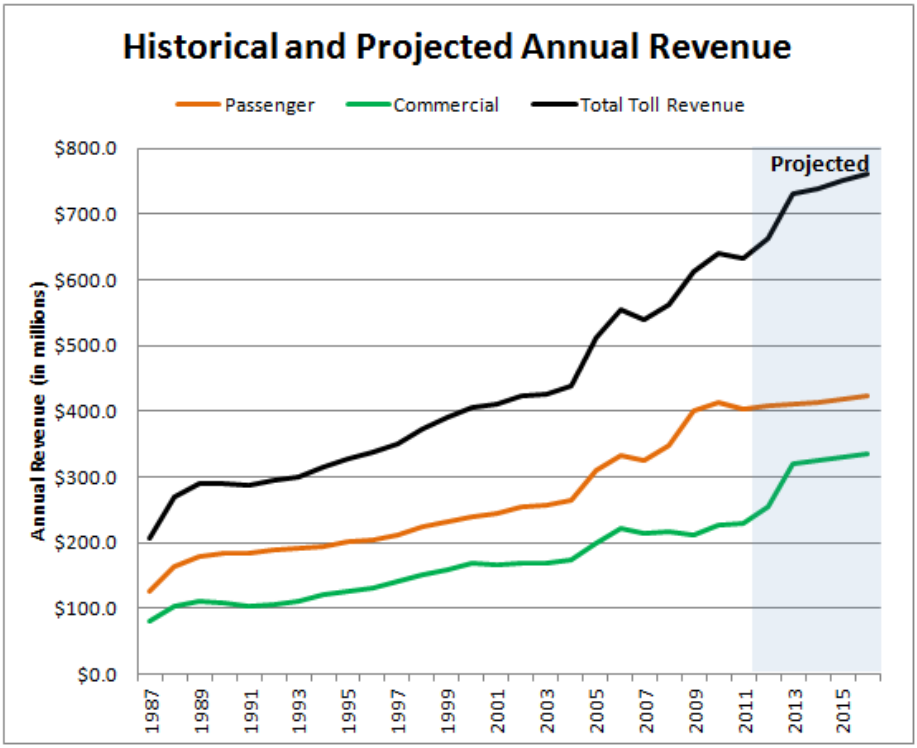


Figure VII-4: Historical and Projected Toll Revenue with Proposed Toll Schedule, Thruway System, 1987 - 2016



D. Funding Requirement and Sources

Table VII-6 through Table VII-8 show the estimated projected expenses and revenues for the Authority, based on the recommended 45 percent commercial toll adjustment and the operational streamlining actions outlined earlier. As noted in Table VII-8, the 45 percent toll adjustment will provide the revenues required to meet expenses and meet the requirements of the Bond Resolution.

Table VII-6: Total Projected Annual Requirements with Proposed Toll Schedule (millions)

Year	Capital Program	Operating and Maintenance	Debt Service	Total Requirements
2012	$384.0	$431.0	$202.8	$1,017.8
2013	374.0	421.7	246.5	1,042.2
2014	377.0	424.4	264.1	1,065.5
2015	383.5	437.4	285.0	1,105.9
2016	474.3	450.5	312.4	1,237.2
Total 2012-2016	**$1,992.8**	**$2,165.0**	**$1,310.8**	**$5,468.6**

Table VII-7: Projected Funding Sources with Proposed Toll Schedule (millions)

Year	Total Sources	Funding Sources				
		Federal Aid	Other	Debt Proceeds	Subtotal Exclusive of Thruway Revenues	Revenues Required from Tolls, etc.
2012	$1,017.8	$2.9	$37.5	$277.4	$317.8	$700.0
2013	1,042.2	1.0	41.9	235.4	278.3	763.9
2014	1,065.5	0.7	12.2	278.9	291.8	773.7
2015	1,105.9	0.0	12.4	308.3	320.7	785.2
2016	1,237.2	0.0	13.1	424.5	437.6	799.6
Total 2012-2016	**$5,468.6**	**$4.6**	**$117.1**	**$1,524.5**	**$1,646.2**	**$3,822.4**

Table VII-8: Available Revenues vs. Required Revenues with Proposed Toll Schedule (millions)

Year	Revenues Required from Tolls, etc.	Revenues with Proposed Toll Schedule	Amount Over/Under Minimum Required	Cumulative Amount Over/Under
2012	$700.0	$700.0	$0.0	$0.0
2013	763.9	763.8	-0.1	-0.1
2014	773.7	773.7	0.0	-0.1
2015	785.2	785.2	0.0	-0.1
2016	799.6	796.7	-2.9	-3.0

VIII. SUMMARY OF FINDINGS

Table VIII-1 shows the projected Flow of Funds, as defined by the Authority's Bond Resolution, inclusive of a 45 percent commercial toll adjustment implemented in December 2012. As noted, this adjustment, coupled with operational streamlining, will allow debt service coverage to be 1.6x in 2012, 1.6x in 2013 and decreasing to 1.53x in 2014, 1.42x in 2015 and 1.29x in 2016. As a result, Jacobs believes that the revised toll rate structure will allow the Authority to build a strong foundation under which it can maintain its system in a state of good repair, fulfill its critical role in supporting the State's growing economy, preserve its strong financial credit rating and comply with bond holder covenants until a financing plan is developed to address the Tappan Zee Bridge Project and the Authority's long-term capital needs in late 2012 or early 2013.

Table VIII-1: Flow of Funds with the Proposed Toll Schedule

	ACTUAL	PROJECTED					
	2011	2012	2013	2014	2015	2016	Total (2012 to 2016)
Available Revenues	$665.5	$695.8	$763.8	$773.7	$785.2	$796.7	$3,815.2
Less:							
Operating Expenses	365.5	372.3	365.9	367.5	379.6	390.9	1,876.2
Operating Reserves	4.6	3.0	3.0	3.0	3.0	3.0	15.0
Total	370.0	375.3	368.9	370.5	382.6	393.9	1,891.2
Net Revenues	295.5	320.5	394.8	403.2	402.7	402.7	1,924.0
Less: Debt Service	167.4	200.8	245.9	263.5	284.4	311.8	1,306.5
Net Revenues After Debt Service	128.1	119.7	148.9	139.7	118.3	90.9	617.5
Less: Retained for Operating Reserves	(4.3)	4.2	-	-	-	-	4.2
Net Revenues	123.8	123.8	148.9	139.7	118.3	90.9	321.7
Less:							
Reserve Maintenance Provisions (2)	10.0	61.0	67.0	51.9	32.3	-	212.2
Other Authority Projects	51.3	55.7	52.7	53.8	54.9	56.6	273.8
General Reserve Fund	48.2	5.2	28.6	33.3	30.4	36.7	134.2
General Reserve Fund - BAN's/Line of Credit	14.4	1.9	0.6	0.6	0.6	0.6	4.3
Balance After Reserve Maintenance Provisions, Other Authority Projects and General Reserve Fund	-0.1	0.0	0.0	0.0	0.0	-3.0	-3.0
Adjustments for Cash Basis	0.1	-	-	-	-	-	-
Net Balance Available for Working Capital	$0.0	$0.0	$0.0	$0.0	$0.0	-$3.0	-$3.0

(1) Totals may not add due to rounding.
(2) Shows the Reserve Maintenance Fund provision will be funded from Debt proceeds when sufficient revenues are not available.

Debt Service Coverage	1.76	1.60	1.61	1.53	1.42	1.29
Pay go %	17.6%	27.8%	37.1%	26.0%	19.6%	10.5%

APPENDIX A

Hypothetical Toll Analysis

JACOBS

Technical Memorandum

Date	4 April 2012
To	John Bryan, Dorraine Steele; NYSTA
From	Richard Gobeille, Jacobs
Subject	Hypothetical Toll Analysis

At the request of the New York State Thruway Authority, Jacobs prepared estimates of toll revenues that may have been generated by the Authority if a regular program of toll modifications had been followed since 1988.

The financing of the Thruway's original construction was accomplished through the issuance of Toll Revenue Bonds. Thereafter, during the first quarter century of usage on the facility, capital needs were generally limited to expansion projects and could be funded directly from toll revenues. As the facilities began to age, the need for large re-investments of capital into the infrastructure became necessary to assure the continued safe and efficient operation of the toll facilities. It is this reinvestment need that has placed significant pressure on the Authority's ability to maintain its system in a state of good repair while preserving its financial health.

The history of toll increases is shown in the Appendix Table A-1. During the period from 1959 to 1988, there were five changes in toll rates that occurred on a fairly regular basis. In the ensuing period from 1988 through 2004, there were very limited modifications to the toll rate structure. These included (i) 1991 toll increase at the Spring Valley Barrier that was phased from the 1988 toll increase; and (ii) the 1997 Tappan Zee Bridge Corridor Relief Initiative, which resulted in the removal of passenger car tolls from the Spring Valley Barrier, the conversion of truck tolls to one-way northbound, peak-period pricing of truck tolls, and a $0.50 increase in passenger car tolls at the Tappan Zee Bridge. Between 2005 and 2011, to fund a new $2.6 billion Multi-Year Capital Program, several modifications to the toll rate structure were implemented. It is important to note that those most recent toll adjustments were only designed to fund capital and operational costs for the 2005 through 2011 Multi-Year Capital Program. It was expected that a toll adjustment would be necessary in 2012 to fund the operating and capital needs for 2012 and thereafter.

Jacobs utilized two commonly used indices that historically are used to measure changes in cost over time, the Consumer Price Index (CPI by the Bureau of Labor Statistic) and the Construction Cost Index (CCI from the Engineering News Record). For the period from the Thruway's opening in 1954 through 2012, both measures of cost escalation increased at a substantially higher rate than the Thruway toll rates. If mainline toll rates grew at a rate comparable to CPI, tolls would be some two times greater than they are today and over four times greater if toll rates tracked the CCI. A comparison is shown in Figures 1 for the mainline. Appendix Figure A-1 shows the comparison for the Tappan Zee Bridge. Similarly, Figure A-2 in the Appendix shows that the growth of traffic also has not kept pace with either measure of cost growth.

Figure 1: Comparison of Actual and Hypothetical Toll Rates for Passenger Cars on the Ticket System

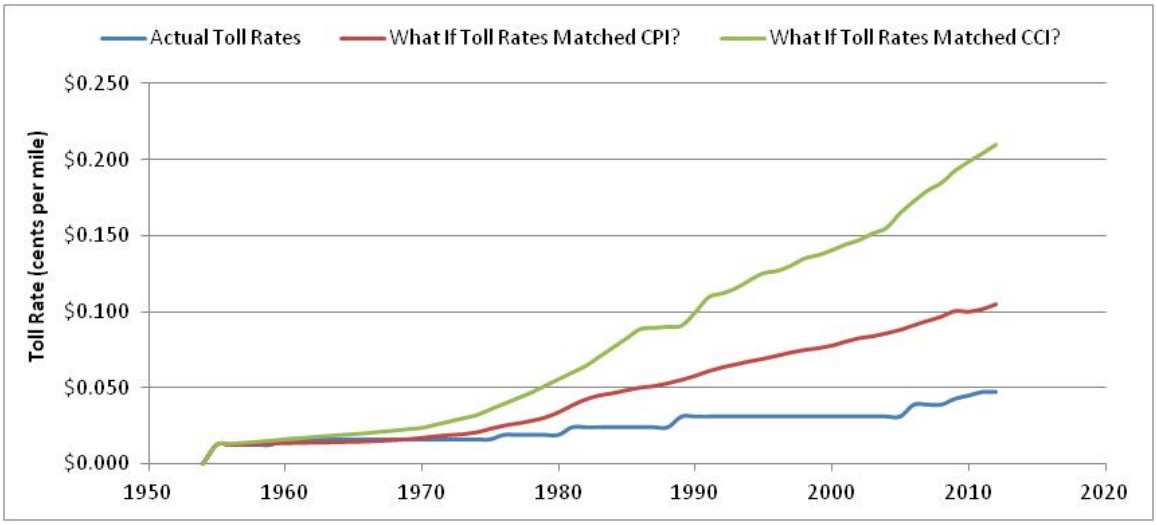


Table A-2 in the appendix shows Revenues, Operating and Maintenance (O&M) Costs, Debt Service, and Revenues Available for Capital for the period 1988 through 2011. Over this period, operating costs appear to have increased significantly during the period from 1988 through 2005. However, there were two onetime changes to the O&M requirements that were the primary contributors to the increase. In 1992, the Authority assumed responsibility for the Canal that added approximately $30 million of additional expenses annually, which have grown to over $80 million today. In addition, operating expenses were impacted in 2002 due to implementation of GASB 34 (Statement #34 of the Governmental Accounting Standards Board), which required certain capital and equipment expenditures to be treated as operating expenses. To help offset these increases, the Authority implemented a significant cost containment program that, among other savings, resulted in the elimination of 613 positions since 1995.

From 1988 through 2005, Debt Service also escalated significantly. During this period, the Thruway completed numerous capacity expansion and safety projects. Also, given the Thruway's age, significant reinvestment of capital has been required to maintain the quality of service and safety that is expected by the users of the System. Since 1988, a large portion of this capital program was funded through bonding with increasing debt service being a reflection of the continued investment in the Authority's aging highway and bridge infrastructure.

The Authority's capital program since 1988 is summarized in Table A-3. As noted in this table, total revenues collected in 2011 are more than double what was collected in 1988, while the pay-as-you-go funding for capital programs has been reduced by almost 50 percent. Figure A-2 shows the change over time in the pay-as-you-go share of capital expenses. As the differential between revenues and costs increased over this period, the Thruway was required to take on more debt to fund its primary capital needs and maintain good highway and bridge conditions. With toll rates lagging behind the rising costs of maintenance and construction, the Thruways constantly re-evaluated the types of infrastructure investments that were necessary to preserve good overall highway and bridge conditions. Those improvements, though effective, were not necessarily the optimum investment from a full life-cycle perspective due to funding pressures.

If tolls had increased periodically in line with CPI over the period 1988 through 2011, it is estimated that the Thruway would have collected some $1.5 billion in additional toll revenues. If tolls had instead increased periodically in line with the CCI over the same period, it is estimated that the Thruway would have collected nearly $2.5 billion in additional revenues. Total revenues for each scenario are shown in Figure 2.

Figure 2: Estimated Annual Revenues (in millions) for Hypothetical Toll Increase Scenarios

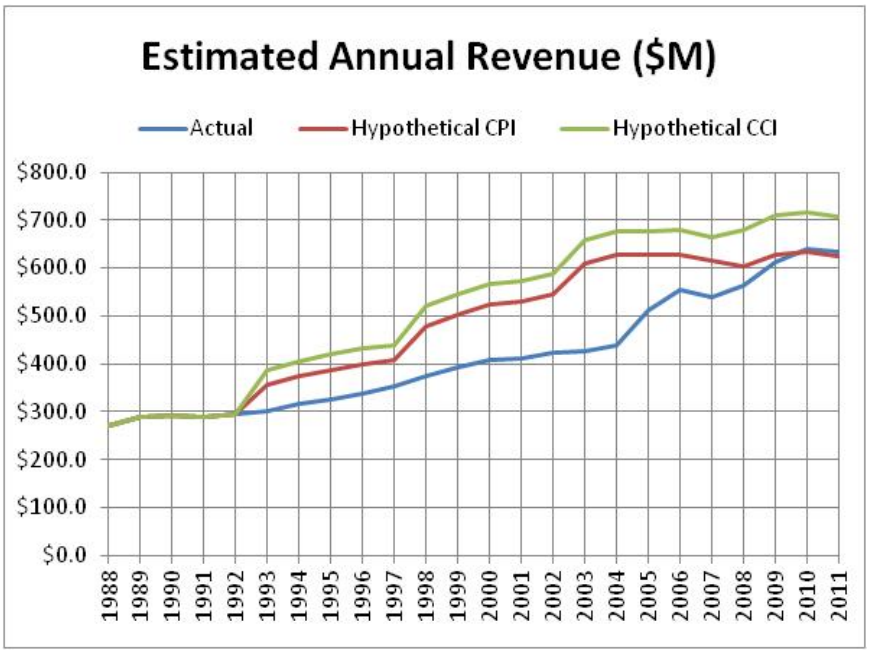


Figure A-4 in the Appendix shows a detailed estimation of toll revenues by year for the period 1988 through 2011, compared to actual toll revenues for this period. Overall, the series of toll increases implemented by the Thruway in the late 2000's effectively caught up to the toll rates for the CPI scenario in 2010 (again, applying rates of inflation only since 1988, not since Thruway opening). However, the current rates are still well below those hypothetical rates indexed to the CCI.

Summary

Since 1988, the Thruway has implemented a robust capital program that has improved the safety, expanded the capacity in several sections, and began the process of investing in the preservation of the Thruway and Canal infrastructure. The limited toll modifications from 1988 through 2005 have resulted in large portions of the capital program being funded from debt. The significant additional toll revenues that may have been available if a regular toll adjustment program had been followed tied to either CPI or CCI would have altered the Thruway finances significantly. Among the outcomes that may have resulted if the additional toll revenues were collected include:

- Lower level of bond financing,
- Higher pay-as-you-go percentage preserving available revenues for future bond sales,

- Larger capital program moving some rehabilitation and reconstruction projects forward to potentially save on the life cycle cost for the improvements.
- Reduced pressure to increase tolls to fund the current capital program.

It is impossible to look back and determine precisely what program would have been followed through 2011. However, regardless of the program followed, the significant additional revenues shown in Table 1 would have placed the Thruway in a very strong financial position going forward in the recapitalization of the Thruway System.

Table 1: Estimated Annual Revenues (in millions) for Hypothetical Toll Increase Scenarios

Year	Estimated Annual Revenue ($M)				
	Actual Total	Hypothetical Total		Hypothetical Additional Revenue	
		CPI	CCI	CPI	CCI
1988	$269.2	$269.2	$269.2	$0.0	$0.0
1989	$289.9	$289.9	$289.9	$0.0	$0.0
1990	$290.7	$290.7	$290.7	$0.0	$0.0
1991	$287.9	$287.9	$287.9	$0.0	$0.0
1992	$294.3	$294.3	$294.3	$0.0	$0.0
1993	$300.6	$356.7	$385.0	$56.1	$84.4
1994	$315.4	$374.3	$404.0	$58.9	$88.6
1995	$326.9	$387.9	$418.8	$61.0	$91.9
1996	$336.8	$399.7	$431.5	$62.9	$94.7
1997	$351.8	$406.9	$439.2	$55.1	$87.4
1998	$373.9	$479.5	$519.4	$105.6	$145.5
1999	$391.8	$502.6	$544.5	$110.9	$152.7
2000	$407.1	$522.6	$566.3	$115.6	$159.2
2001	$411.8	$528.6	$572.7	$116.8	$160.9
2002	$423.4	$544.0	$589.4	$120.6	$166.0
2003	$427.2	$610.7	$658.5	$183.5	$231.3
2004	$439.6	$628.6	$677.7	$189.0	$238.1
2005	$511.2	$626.1	$675.6	$114.9	$164.4
2006	$554.4	$628.8	$679.1	$74.5	$124.7
2007	$540.3	$614.7	$663.8	$74.4	$123.5
2008	$562.7	$601.8	$680.8	$39.1	$118.1
2009	$611.6	$626.9	$709.1	$15.2	$97.5
2010	$641.2	$632.8	$715.9	-$8.4	$74.7
2011	$634.1	$625.0	$707.2	-$9.0	$73.1
Cumulative	$9,993.7	$11,530.4	$12,470.6	$1,536.7	$2,476.8

Notes:

Green Shading Indicates Actual Toll Increase
Orange Shading Indicates Hypothetical Increases at Regular Intervals

APPENDIX

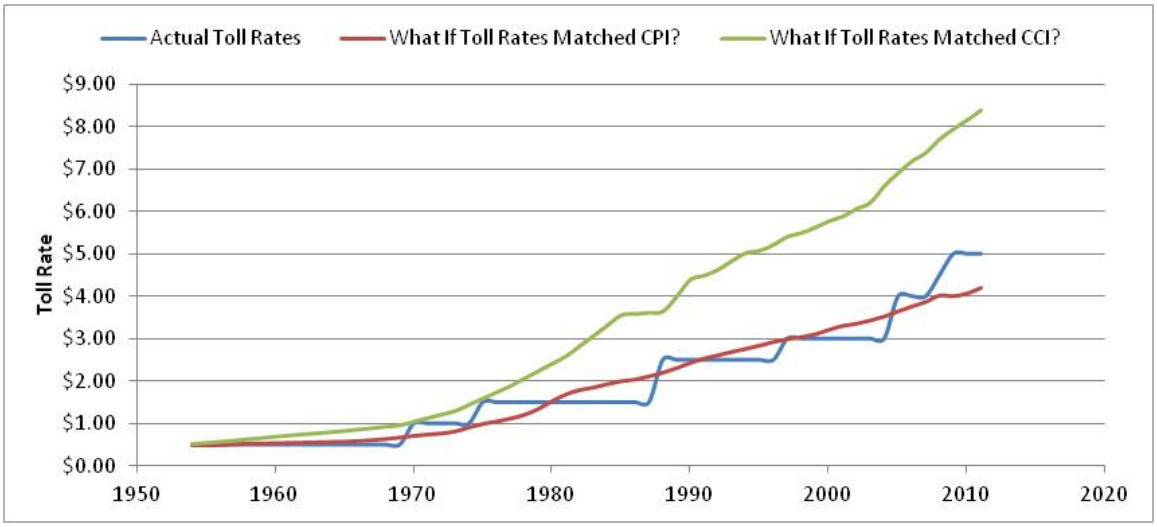
Average toll increases from 1959 through 2010.

Table A-1: Average Toll Increases 1959 through 2010

Year	Average Increase		Notes
	Cars	Trucks	
1959	28%	18%	Only Class 1-4 increased
1970	0%	19.0%	Class Change
1975	15%	8.0%	Varied by Location
1980	25%	30%	
1988	32%	38%	
1991	14%	0%	Spring Valley Passenger Cars Only
1997	20%	100% in Peak-Period	Tappan Zee Corridor Relief (Congestion Pricing)
2005	25%	35%	Class Change
2008	10%	10%	
2008			July E-ZPass Only, Discount Decreased to 5% from cash rate
2009	5%	5%	
2010	5%	5%	

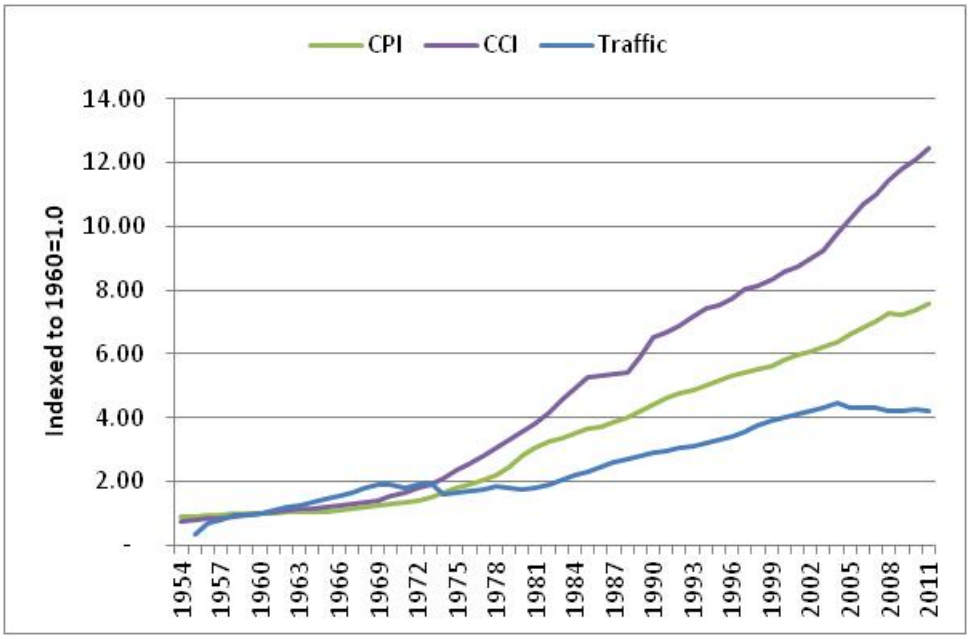
Average Toll Rate compared to CPI and CCI.

Figure A-1: Comparison of Actual and Hypothetical Toll Rates for Passenger Cars on the Tappan Zee Bridge



Thruway traffic growth compared to CPI and CCI.

Figure A-2: Comparison of Thruway Traffic with Inflation and CCI



Pay-as-you-go revenues available for capital Program.

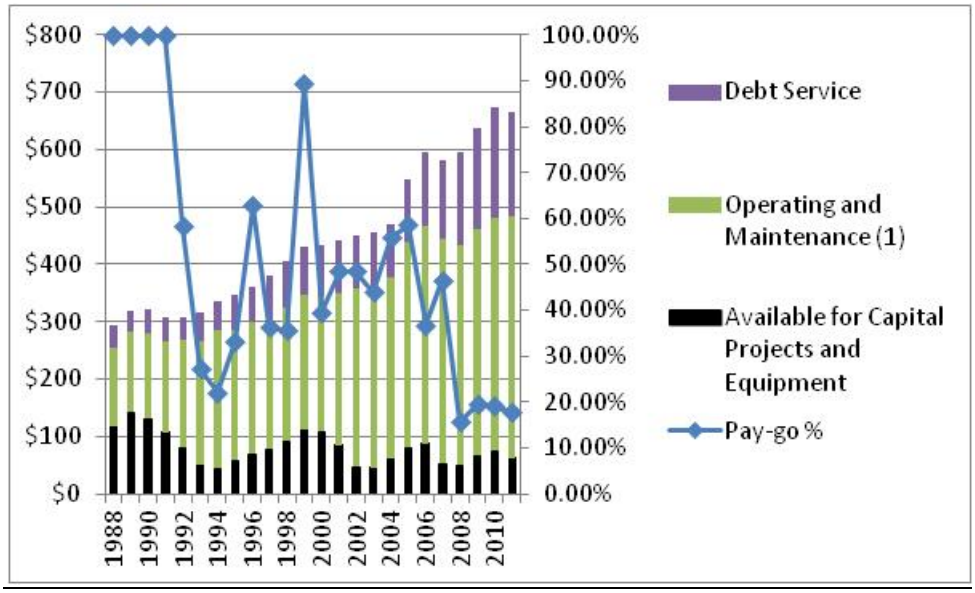
Table A-2: Revenues Available for Reserve Funds (in millions)

Year	Total Revenues	Operating and Maintenance			Debt Service[3]	Total Costs	Available for Capital Projects and Equipment
		Thruway[1]	I-84[2]	Canal[2]			
1988	$293.5	$135.0	-	-	$40.2	$175.2	$118.3
1989	319.1	139.6	-	-	37.6	$177.2	141.9
1990	321.2	147.2	-	-	42.9	$190.1	131.1
1991	308.7	157.9	-	-	43.7	$201.6	107.1
1992	307.4	168.8	$5.5	$14.1	39.1	$227.5	79.9
1993	315.4	182.2	10.9	20.7	50.9	$264.7	50.7
1994	335.1	197.6	12.2	32.9	48.7	$291.4	43.7
1995	346.7	194.4	9.0	22.9	62.6	$288.9	57.8
1996	359.5	195.8	9.4	25.3	60.2	$290.7	68.8
1997	380.0	189.5	8.8	26.1	78.3	$302.7	77.3
1998	404.3	198.9	8.3	25.7	80.4	$313.3	91.0
1999	429.9	202.5	8.1	22.2	84.4	$317.2	112.7
2000	434.3	221.6	9.5	5.2	89.7	$326.0	108.3
2001	441.9	229.1	10.3	25.9	92.0	$357.3	84.6
2002	449.9	267.9	10.5	31.9	93.2	$403.5	46.4
2003	454.6	272.5	11.8	30.7	94.0	$409.0	45.6
2004	470.0	299.2	11.9	5.5	92.7	$409.3	60.3
2005	547.3	307.3	12.5	38.2	108.4	$466.4	80.9
2006	594.0	323.7	11.5	42.8	128.5	$506.5	87.5
2007	581.6	339.0	10.3	43.4	135.8	$528.5	53.1
2008	596.2	337.3	-	45.2	163.5	$546.0	50.2
2009	638.3	346.7	-	48.7	176.9	$572.3	66.0
2010	672.5	364.2	-	46.0	191.2	$601.4	74.3
2011	665.5	370.0	-	51.3	181.8	$603.1	62.4

(1) Includes provisions for claims and indemnities and environmental remediation reserves.
(2) Transfers to Other Authority Projects Operating Fund.
(3) Includes CWE Bonds and interest expense on Notes.

Pay-as-you-go percentage, revenues available for capital Program.

Figure A-3: Comparison of Thruway Finances with Percent Pay-as-you-Go



Pay-as-you-go percentage, revenues available for capital Program.

Table A-3: Capital Spending and Available Funds, 2005-2011 (millions)

Year	Total Capital Expenditures	Revenues Available for Capital Projects and Equipment (Pay-Go)	Funding Required from Debt and Other Sources	Percent of Capital Funding Required from Debt and Other Sources
1988	$130.2	$118.3	$11.9	9%
1989	158.3	141.9	16.4	10%
1990	187.5	131.1	56.4	30%
1991	196.0	107.1	88.9	45%
1992	189.8	79.9	109.9	58%
1993	328.1	50.7	277.4	85%
1994	297.4	43.7	253.7	85%
1995	186.7	57.8	128.9	69%
1996	146.3	68.8	77.5	53%
1997	158.5	77.3	81.2	51%
1998	250.7	91.0	159.7	64%
1999	305.2	112.7	192.5	63%
2000	233.7	108.3	125.4	54%
2001	283.2	84.6	198.6	70%
2002	234.0	46.4	187.6	80%
2003	229.0	45.6	183.4	80%
2004	188.6	60.3	128.3	68%
2005	145.4	81.2	64.2	44%
2006	244.6	87.5	157.1	64%
2007	370.5	53.2	317.3	86%
2008	355.2	50.2	305.0	86%
2009	321.2	66.0	255.2	79%
2010	377.7	74.3	303.4	80%
2011	445.5	62.4	383.1	86%

APPENDIX B

Economic Impact of the Thruway Authority Investments and Operations

The Economic Impact of New York State Thruway Authority Investments and Operations

April 2012

Prepared by:

JACOBS™

A. Strauss-Wieder, Inc.

analyses for informed decision-making

Executive Summary

- In changing economic conditions, the transportation systems managed by the New York State Thruway Authority – roadways, bridges and canals – are essential to supporting businesses and communities.
- The system is vast – 570 miles of roadways and 524 miles of canals – one of the largest State transportation networks in the Nation.
- Over the 2005-2011 period, the operations, maintenance and capital improvements of these systems, including the privately operated travel plazas, accounted for an estimated:
  - 6,725 on-site public and private sector jobs annually
  - 10,150 total jobs throughout New York State annually
  - 4,300 additional jobs elsewhere throughout the US annually
  - $575 million in personal income and benefits annually
  - $1.23 billion in business sales and production annually
  - $207.5 million in federal, state and local tax revenues
    - Local and State Tax Revenue: $130.1 million
    - Federal Tax Revenue: $77.4 million
- These impacts do not include the economic value of the commerce that traverses the Thruway roadways and canals.

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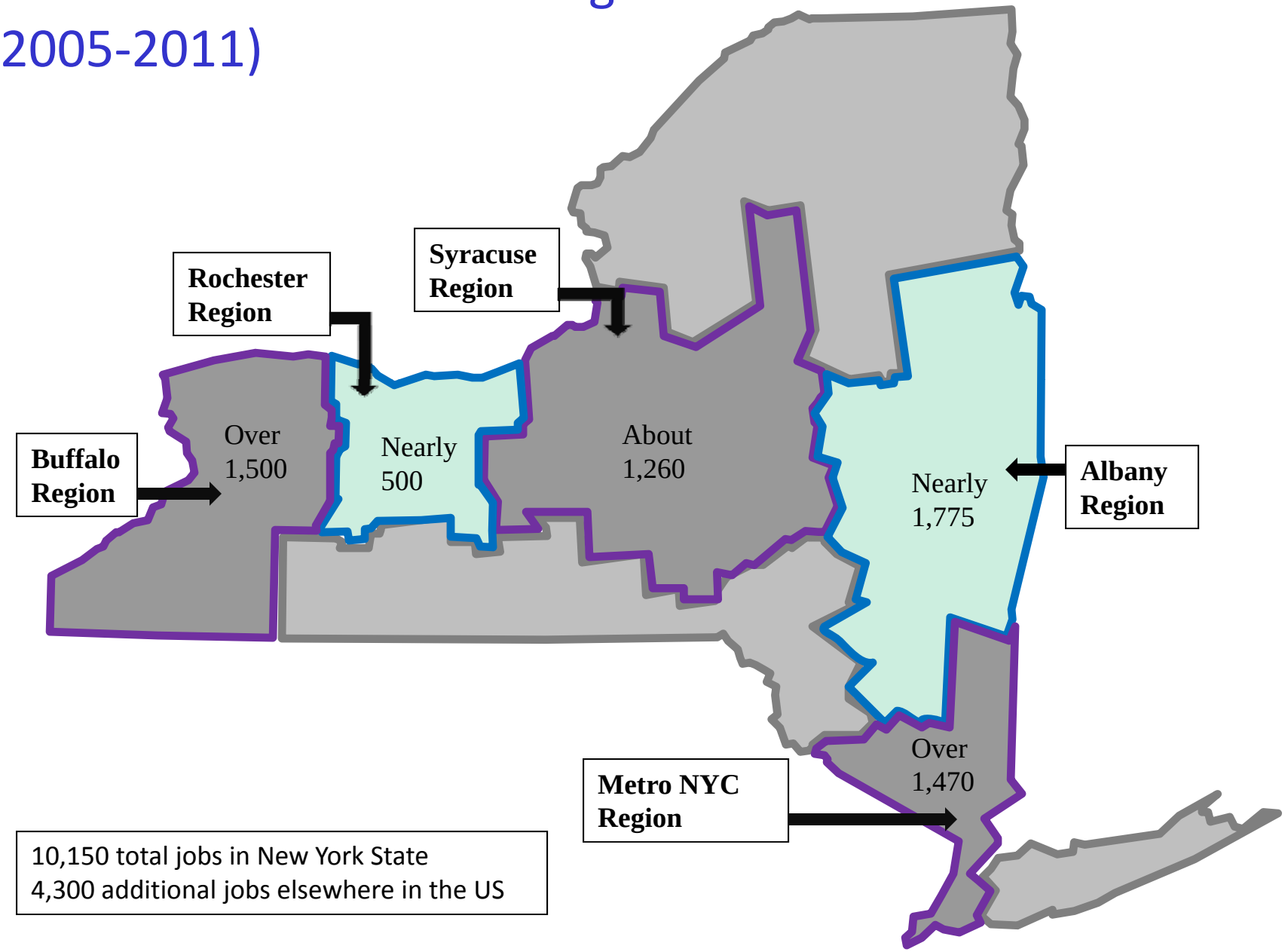
NEW YORK THRUWAY

Estimated Annual On-Going On-Site and Part-Time Jobs (2005-2011)



10,150 total jobs in New York State
4,300 additional jobs elsewhere in the US

The New York State Thruway and Canal System

A. Strauss-Wieder, Inc.
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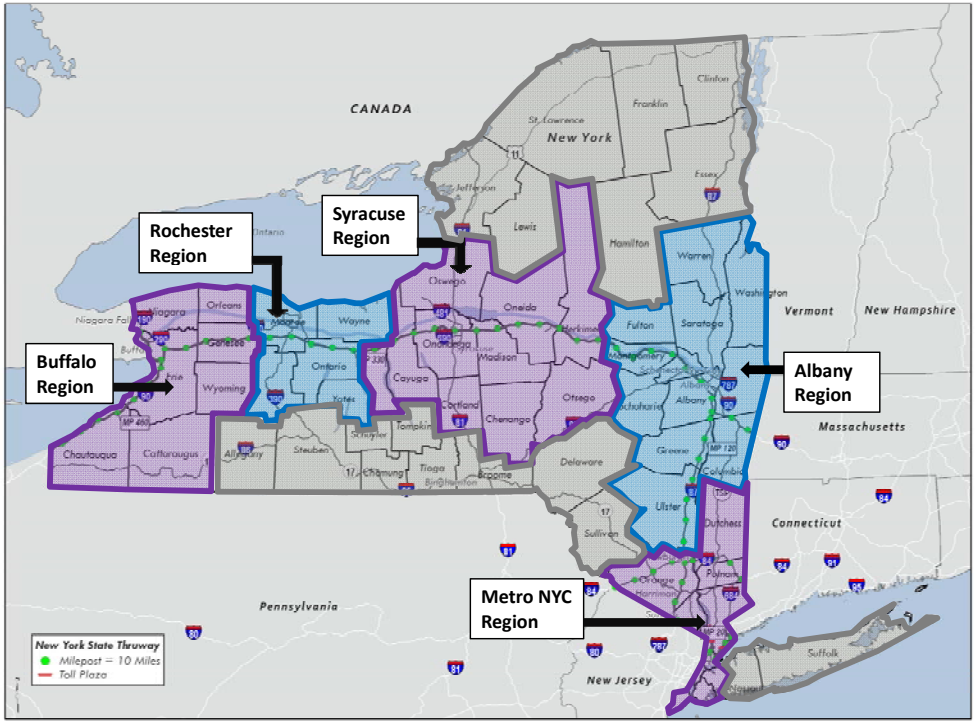
NEW YORK THRUWAY

Introduction

- The Thruway and Canal Systems are key arteries of commerce in New York State – transporting products and services, facilitating tourism and recreational activities, and connecting residents with their work places.
- The Thruway's origins begin in 1942 when New York recognized that the State needed a modern and robust highway system that could serve post-World War II needs.
  - The Authority, created in 1950, invested in and operates a 570 mile highway system, one of the largest toll roads in the Nation.
  - In 1992, the Authority also assumed responsibility for the operations and maintenance of the 524 mile New York State Canal System, which includes the historic Erie Canal.
  - The Authority also maintains 27 travel plazas, many with award winning designs, reflecting the heritage of their areas.
- This report summarizes the economic impacts associated with:
  - The ongoing operation and maintenance of the highway, bridge and canal systems.
  - The substantial capital investments that have and continue to be made in this important infrastructure network.

The Authority's Regions

- Economic impacts were assessed at both the New York State and National levels, as well as the following five local regions that the Authority's facilities are located in:
  - The Metropolitan New York City Region
  - The Albany Region
  - The Syracuse Region
  - The Rochester Region
  - The Buffalo Region



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NEW YORK THRUWAY

Economic Impacts of Past Capital Expenditures (2005-2011)

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Thruway Construction and Investment Create Additional Economic Impact

- Capital improvement economic impacts occur only when the construction and investment activities are taking place.
  - These impacts are separate from the ongoing economic value generated by Thruway operations discussed later.
  - When the construction activities are completed, the workers move on to other areas and other projects.
- The Thruway has invested substantially since 2005, with nearly $1.9 billion spent in capital improvement projects.
- In New York State, the Thruway-related construction and investment activity between 2005 and 2011 accounted for the following jobs and economic benefit over the investment period:
  - 6,820 on-site full- and part-time jobs in New York State or about **974 jobs annually**
  - 14,850 total jobs throughout New York State or about **2,121 jobs annually**
  - An additional 10,790 jobs elsewhere in the US or about **1,541 jobs annually**, which includes the many businesses that supply goods and services in support of Thruway construction and capital investments.
  - Over $1.13 billion in personal wages and benefits in New York State.
  - Nearly $3.2 billion in business sales in New York State
  - Over $451 million in federal, state and local tax revenues
    - Local and State Tax Revenue: $185 million
    - Federal Tax Revenue: $266 million

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NEW YORK THRUWAY

The Economic Value Generated by Thruway Investments Made Between 2005 and 2011

Total Impacts Over the Construction Period of 2005-2011

Not Annualized

Geographical Level of Impacts

		Regions					
	New York State	**Rochester**	**Buffalo**	**Metro NY**	**Albany**	**Syracuse**	**US Level**
Direct employment	6,819	251	1,400	2,342	618	704	8,463
Total employment	14,847	559	2,966	4,465	1,272	1,617	25,635
Personal income (in millions $)	$ 1,135.3	$ 35.8	$ 165.4	$ 390.9	$ 71.4	$ 104.3	$ 1,521.8
Business activity (in millions $)	$ 3,186.6	$ 100.1	$ 555.0	$ 937.0	$ 249.4	$ 333.2	$ 4,691.8
State and Local Taxes (in millions $)	$ 185.3	$ 6.0	$ 34.7	$ 50.6	$ 16.0	$ 22.0	$ 207.7
Federal Tax Revenue (in millions $)	$ 266.0	$ 8.6	$ 44.7	$ 81.6	$ 20.1	$ 28.5	$ 345.7
Total Tax Revenue (in millions $)	$ 451.3	$ 14.5	$ 79.4	$ 132.2	$ 36.0	$ 50.4	$ 553.4

All dollar amounts in millions of 2012 dollars.

Employment includes both full- and part-time workers. The proportion of full-time workers varies by industry. For example, the construction sectors also entirely consist of full-time workers. The food service industry has one of the higher amounts of part-time workers.

Total jobs includes the full multiplier effect – direct, indirect and induced jobs in the region.

Business activity is defined as the value of industry production or, in the case of service industries, sales.

The economic impact assessment was conducted using customized Implan models developed by the team for each of the five regions and for New York State.

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NEW YORK THRUWAY

The Thruway Made Substantial Investments

Capital Investments Undertaken From 2005 through 2011

Project Type		Expenditure in Millions
Architectural Services	$	80.5
Bridge Projects	$	650.4
Canal Projects	$	128.4
Highway Projects	$	978.2
Intelligent Transportation Systems (ITS)	$	42.3
Rehabilitation Work	$	1.9
Trails	$	11.9
TOTAL	**$**	**1,893.6**

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Thruway Construction and Capital Investments Support Many Businesses throughout the State

- Capital and construction expenditures made between 2005 and 2011 rippled through the State's economy.
- The businesses supported by the expenditures by agencies, suppliers and workers include:

	Employment
Construction	5,134
Architectural and Engineering Services	1,289
Food Services	608
Health Services	594
Steel Product Manufacturing	567
Wholesale Businesses	320
Real Estate Businesses	317
Concrete Products	278
Mgmt and Technical Consulting	251
All Other	5,489

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Economic Impacts of Planned Capital Expenditures (2012-2015)

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The Investments are Continuous

- Additional investments are programmed for the Thruway's transportation systems.
  - Nearly $1.2 billion in capital and construction projects are planned to occur between 2012 and 2015.
  - These investments and analysis do not include the proposed $5.3 billion project to replace the Tappan Zee Bridge.
- The impacts of expected 2012-2015 investments are anticipated to produce the following jobs and economic benefit over the construction period:
  - 4,350 on-site full- and part-time jobs in New York State or about **1,088 jobs annually**
  - 9,460 total jobs throughout New York State or about **2,364 jobs annually**
  - An additional 6,790 jobs elsewhere in the US or about **1,698 jobs annually**, which includes the many businesses that supply goods and services in support of Thruway construction and capital investments.
  - $723 million in personal wages and benefits in New York State.
  - Over $2 billion in business sales in New York State
  - $287 million in federal, state and local tax revenues
    - Local and State Tax Revenue: $118 million
    - Federal Tax Revenue: $169 million

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Estimated Economic Value Generated by Thruway Programmed Investments Between 2012 and 2015

Total Impacts Over the Construction Period of Future Anticipated Investments

Not Annualized

Geographical Level of Impacts

		Regions					
	New York State	**Rochester**	**Buffalo**	**Metro NY**	**Albany**	**Syracuse**	**US Level**
Direct employment	4,351	55	1,334	623	597	282	5,399
Total employment	9,456	113	2,803	1,163	1,279	599	16,242
Personal income (in millions $)	$ 723.3	$ 6.5	$ 155.4	$ 99.5	$ 73.2	$ 34.9	$ 964.4
Business activity (in millions $)	$ 2,009.5	$ 17.4	$ 513.2	$ 231.8	$ 259.8	$ 109.3	$ 2,943.5
State and Local Taxes (in millions $)	$ 117.9	$ 0.9	$ 31.0	$ 11.8	$ 16.0	$ 6.6	$ 131.5
Federal Tax Revenue (in millions $)	$ 169.0	$ 1.4	$ 41.1	$ 20.2	$ 20.5	$ 9.1	$ 218.5
Total Tax Revenue (in millions $)	$ 286.9	$ 2.3	$ 72.1	$ 31.9	$ 36.5	$ 15.7	$ 350.0

All dollar amounts in millions of 2012 dollars.

Employment includes both full- and part-time workers. The proportion of full-time workers varies by industry. For example, the construction sectors also entirely consist of full-time workers. The food service industry has one of the higher amounts of part-time workers.

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Significant Investments Will Continue to be Made

Capital Investments Planned for 2012 through 2015

Project Type		Expenditure in Millions
Architectural Services	$	23.3
Bridge Projects	$	433.2
Canal Projects	$	166.3
Highway Projects	$	531.8
Intelligent Transportation Systems (ITS)	$	13.2
Rehabilitation Work	$	10.3
Trails	$	9.4
TOTAL	**$**	**1,187.5**

Replacement of the Tappan Zee Bridge is not included.

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Planned Construction and Capital Investment Will Continue Support Many Businesses throughout the State

- Similar to the investments already made, the planned capital and construction expenditures will ripple through the State's economy.
- The New York businesses supported by the expenditures by agencies, suppliers and workers include:

	Employment
Construction	3,179
Architectural and Engineering Services	886
Food Services	390
Health Services	379
Steel Product Manufacturing	362
Real Estate Businesses	202
Wholesale Businesses	201
Mgmt and Technical Consulting	185
All Other	3,673

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Economic Impacts of Operations and Maintenance Expenditures (2005-2011)

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The Economic Value of Thruway Operations Are Spread throughout New York State

- In 2011, the New York State Thruway handled 245.2 million vehicle trips.
- The operation and maintenance of the Authority's transportation systems, including the privately operated travel plazas, account for:
  - 5,750 on-site public and private sector jobs annually
  - 8,030 total jobs throughout New York State annually
  - 2,760 additional jobs throughout the US annually
  - $413 million in personal income and benefits annually
  - $772 million in business sales and production annually
  - $143 million in federal, state and local tax revenues annually
    - Local and State Tax Revenue: $50.9 million
    - Federal Tax Revenue: $92 million
- Ongoing on-site full and part-time jobs include:
  - Nearly 1,690 jobs in the Albany region annually
  - Over 1,300 jobs in the Buffalo region annually
  - About 1,160 jobs in the Syracuse region annually
  - Nearly 1,140 jobs in the Metropolitan New York region annually
  - Over 460 jobs in the Rochester region annually

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Annual Value of Ongoing Thruway and Canal Operations

Geographical Level of Impacts

		Regions					
	New York State	**Rochester**	**Buffalo**	**Metro NY**	**Albany**	**Syracuse**	**US Level**
Direct employment	5,751	462	1,304	1,137	1,687	1,161	5,751
Total employment	8,029	653	1,863	1,515	2,408	1,590	10,793
Personal income (in millions $)	$ 413.0	$ 31.2	$ 91.2	$ 99.5	$ 123.2	$ 67.9	$ 529.7
Business activity (in millions $)	$ 772.0	$ 59.8	$ 174.3	$ 168.1	$ 230.2	$ 139.6	$ 1,142.9
State and Local Taxes (in millions $)	$ 50.9	$ 4.0	$ 11.4	$ 10.1	$ 15.7	$ 9.6	$ 53.3
Federal Tax Revenue (in millions $)	$ 92.1	$ 7.2	$ 21.0	$ 19.6	$ 28.3	$ 16.0	$ 111.5
Total Tax Revenue (in millions $)	$ 143.0	$ 11.2	$ 32.3	$ 29.7	$ 44.0	$ 25.7	$ 164.8

All dollar amounts in millions of 2012 dollars.

Employment includes both full- and part-time workers. The proportion of full-time workers varies by industry. For example, the construction sectors also entirely consist of full-time workers. The food service industry has one of the higher proportion of part-time workers.

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A Wide Range of New York State Businesses and Jobs are Supported

- Annual Authority operations and maintenance efforts support jobs in a wide range of industries, reflecting the spending of agencies, businesses and households.
- The jobs supported include:

	Employment
New York State Thruway Authority	4,000
Food Services (Service Areas)	1,856
Health Services	240
Real Estate Businesses	123
Food and Beverage Stores	79
Other Government Agencies	54
All Other	1,677

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Definitions and Terminology

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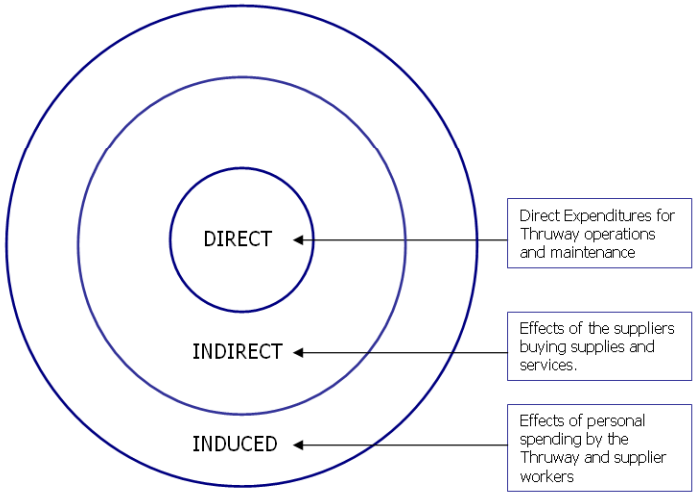
Economic Impact Definitions – What is a Multiplier?

- The economic impact assessment estimates the total impacts, which are defined to include:
  - **Direct** – the spending by the New York State Thruway and its private partners (e.g., restaurants and gasoline stations in the travel centers). Direct effects are the focal point of an impact analysis.
  - **Indirect** – the purchases of goods and services by suppliers. By definition, the first round of indirect impacts includes the purchase of supplies and services that are required to produce the direct effects. Subsequent purchases of supplies and services generate other rounds of indirect impacts. Such purchases continue to ripple through the regional economy.
  - **Induced** – the purchases (of such items as food, clothing, personal services, vehicles, etc.) that arise, in turn, from the increase in the aggregate labor income of households.
- The total economic impact consists of the direct, indirect and induced effects.



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Economic Impact Measurements

- Employment Effects –Jobs generated or supported , including:
  - Direct employment: onsite full- and part-time equivalent jobs or jobs.
  - Total employment: The total number of full-time equivalent jobs (direct, indirect and induced) generated in each of the geographically defined regions.
- Total Business Outputs – Output represents the value of industry production. In IMPLAN, these are annual production estimates for the year of the data set and are in producer prices. For manufacturers this would be sales plus/minus change in inventory. For service sectors production = sales. For Retail and wholesale trade, output = gross margin and not gross sales.
- Total Personal Income Effects – Includes all forms of employment income, including Employee Compensation (wages and benefits) and Proprietor Income.
- Total State and Local Tax Effects – defined as revenues collected by state and sub-state governments. The taxes include employee, personal proprietor, business, household and corporate taxes.
- Total Federal Tax Effects – defined as revenues collected by the federal government from corporate income, personal income, social security, and excise taxes.

About the Approach

- Jacobs and A. Strauss-Wieder, Inc. worked closely with New York State Thruway Authority staff to:
  - Receive and compile information on capital investments and operations, including information on restaurant and gasoline stations at the travel plazas.
  - Define the five sub-state regions included in the economic impact assessment.
  - Separate the capital and operational information into the five regions.
  - Create customized versions of the IMPLAN model for New York State and the five regions.
  - Translate the capital and operational expenditures into the information needed to undertake the economic impact assessment and conducted the analysis.
  - Undertake post-assessment checks, including comparing model-generated estimates of public full- and part-time operations employment with actual jobs.

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About the Economic Impact Model

- The IMPLAN version 3.0 model was used for this assessment. Implan is a complete economic assessment package including data and software. The New York State and county-level information were acquired for this assessment. More information on Implan can be found at http://implan.com/V4/
- The basic framework for input-output (I-O) analysis originated nearly 250 years ago when François Quesenay published *Tableau Economique* in 1758. Quesenay's "tableau" graphically and numerically portrayed the relationships between sales and purchases of the various industries of an economy. More than a century later, his description was adapted by Leon Walras, who advanced input-output (I-O) modeling by providing a concise theoretical formulation of an economic system (including consumer purchases and the economic representation of "technology").
- Wassily Leontief greatly advanced Walras's theoretical formulation and was awarded the Nobel Prize in 1973. Leontief first used his approach in 1936 when he developed a model of the 1919 and 1929 U.S. economies to estimate the effects of the end of World War I on national employment. Recognition of his work awaited wider acceptance and use of the approach. This meant development of a standardized procedure for compiling the requisite data (today's national economic census of industries) and enhanced capability for calculations (i.e., the computer). The federal government immediately recognized the importance of Leontief's development and has been publishing input-output tables of the U.S. economy since 1939.

Background on Input-Output Analysis

- I-O modeling focuses on the interrelationships among sectors in an economy. Within the I-O model, the economy of an area is mapped out in table form, with each industry listed across the top as a consuming sector (or market) and down the side as a producing sector.
- Input-output modeling is among the most accepted means for assessing economic impacts, as previously indicated. The approach provides a concise and accurate means for articulating the interrelationships among industry sectors. The models can be quite detailed. As noted previously, the current U.S. and IMPLAN models have more than 400 sectors. This level of detail provides a consistent and systematic approach, as well as a more accurate means for assessing the multiplier effects of changes in economic activity.
- I-O Analysis makes several key assumptions. First, the information used to create an input-output model is for *a given point in time*. The information in the model reflects a "snapshot" of the technical requirements and industry relationships at a given point in time. Because of this, input-output models are regularly updated.
- Regional input-output models, such as the one used in this economic impact assessment, need to account for the percentage of the demand for an industry's output or the requirements for a transportation project that can be readily supplied by firms within the specified region. Firms within the specified region may not be able to supply all the products needed. Therefore, goods and services may need to be purchased from outside of the specified region.
- Regional purchase information contained within IMPLAN was generally assumed except where discussions with the New York State Thruway indicated unique sourcing, such as the purchase of steel, which comes entirely from New York mills.