APPENDIX E

HISTORY AND PROJECTION OF TRAFFIC, TOLL REVENUES AND EXPENSES

and

Review of Physical Conditions

Of the Facilities of

Triborough Bridge and Tunnel Authority

April 28, 2009

Prepared for the
Triborough Bridge and Tunnel Authority

By

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April 28, 2009

To Triborough Bridge and Tunnel Authority:

In accordance with your request, URS Corporation-New York (URS) conducted this annual study to develop projections of traffic, toll revenues and expenses for the toll bridge and tunnel facilities operated by Triborough Bridge and Tunnel Authority (TBTA), and to provide an overview of the physical conditions of each facility. We have reviewed the bridge and tunnel inspection reports provided by TBTA and discussed TBTA's on-going maintenance and capital programs with its engineering staff.

Our projections have taken into account: (1) the general physical condition of TBTA's toll facilities; (2) traffic and toll revenue data, reflecting the 13 toll increases since 1972; (3) the impact of the *E-ZPass* electronic toll collection system; (4) the toll structure; (5) planned and possible future toll increases; (6) population, employment and other demographic forecasts in the New York Metropolitan Area; (7) the traffic capacities of the bridges and tunnels and the existing roadway network that feeds the facilities in terms of the potential for future growth of peak versus non-peak period traffic; (8) current and programmed construction activities on TBTA's facilities and the arterial highway network serving the New York Metropolitan Area, including the toll-free East River bridges; (9) mass transit network projects; and (10) the impacts of recent economic and political events on metropolitan area traffic.

In 2008, actual total toll revenues for the TBTA facilities were $1,274.0 million, or 2.7 percent lower than the forecasted $1,309.4 million. Total revenue traffic was 295.7 million vehicles, or 1.4 percent lower than that forecasted of 299.8 million vehicles.

TRANSPORTATION INFRASTRUCTURE

The New York Metropolitan Area's transportation infrastructure consists of an extensive network of highways, tunnels and bridges (both tolled and toll-free), regional commuter rail and the New York City transit system.

Triborough Bridge and Tunnel Authority (TBTA)

TBTA operates nine toll facilities within New York City (the "City"), consisting of seven bridges and two tunnels that provide vital links across the City's rivers and bays. In 2008, these facilities carried 299.2 million total vehicles, of which 295.7 million were toll paying, and generated $1,274.0 million in toll revenue. (Non-revenue transactions include police, emergency and TBTA vehicles.) The locations of the facilities are shown on the following map in the context of the regional highway network.

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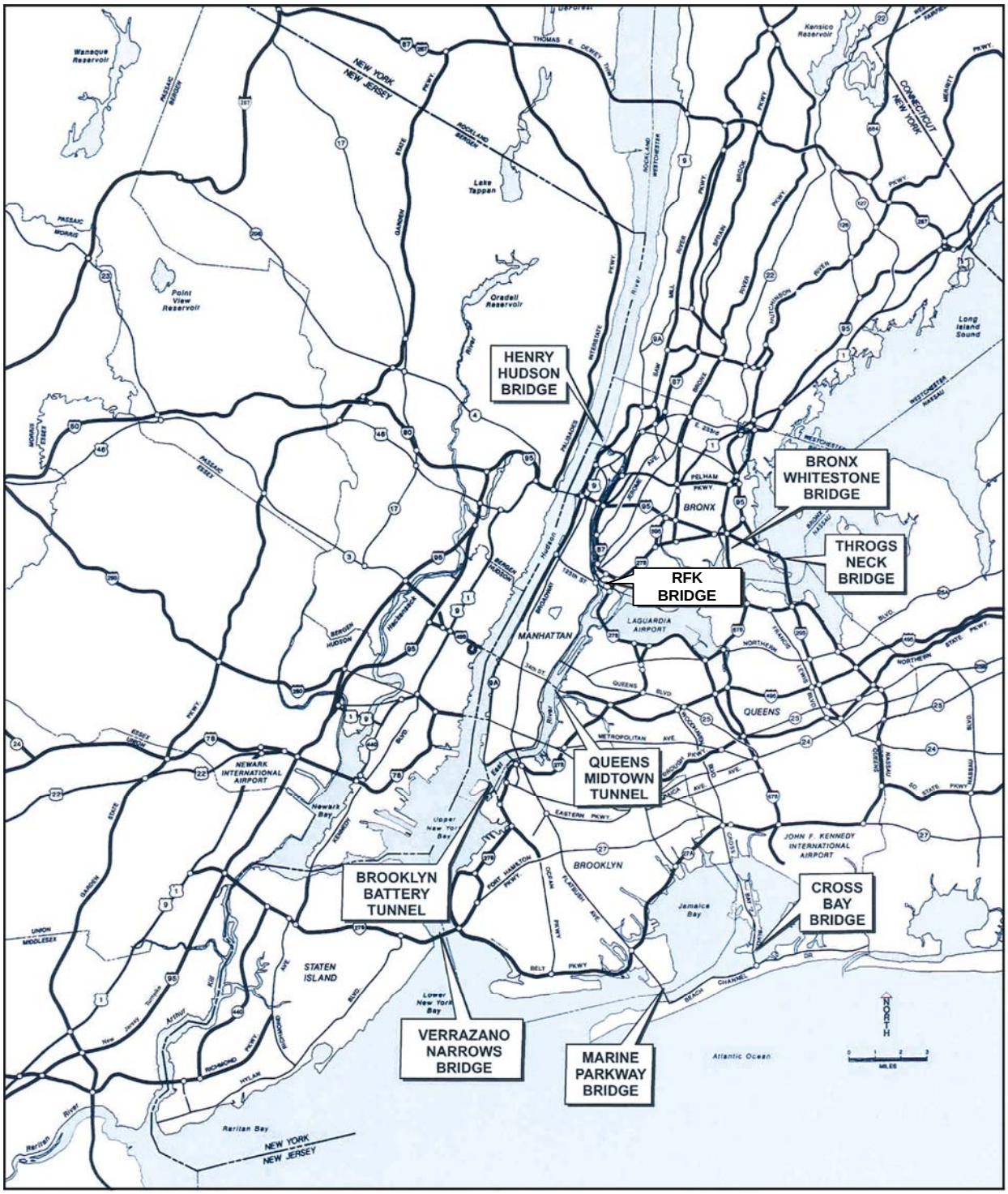
Figure 1: Location Map



The facilities are briefly described as follows:

Verrazano-Narrows Bridge - a two-level suspension bridge, with three lanes of traffic in each direction on both decks. It crosses the entrance to New York Harbor and connects Brooklyn and Staten Island.

Robert F. Kennedy (RFK) Bridge (formerly the *Triborough Bridge)* - a complex of three bridges connecting Manhattan, the Bronx and Queens, with a central connecting interchange on Randall's Island. Manhattan is reached via a six-lane vertical lift bridge over the Harlem River. The Bronx is accessed via a six-lane truss bridge over the Bronx Kill. An eight-lane suspension bridge over the East River leads to Queens.

Bronx-Whitestone Bridge - a suspension bridge, with three lanes of traffic in each direction, which crosses the East River connecting the boroughs of Queens and the Bronx.

Throgs Neck Bridge - a suspension bridge, with three lanes of traffic in each direction, which crosses the upper East River also connecting the boroughs of Queens and the Bronx.

Queens Midtown Tunnel - a twin-tube tunnel with each tube carrying two lanes of traffic under the East River between the boroughs of Queens and Manhattan. During normal morning commuting hours, three lanes are operated in the peak traffic direction.

Brooklyn-Battery Tunnel - a twin-tube tunnel with each tube carrying two lanes of traffic under the East River connecting the southern tip of Manhattan with Brooklyn. During normal morning commuting hours, three lanes are operated in the peak traffic direction.

Henry Hudson Bridge - a two-level steel arch bridge, with four southbound lanes on its lower deck and three northbound lanes on its upper deck that crosses the Harlem River to connect the northern tip of Manhattan with the Spuyten Duyvil section of the Bronx.

Marine Parkway - Gil Hodges Memorial Bridge (Marine Parkway) - a four-lane crossing of the Rockaway Inlet that connects the Rockaway peninsula in Queens with Brooklyn.

Cross Bay Veterans Memorial Bridge (Cross Bay) - a pre-stressed concrete viaduct with three lanes of traffic in each direction crossing Beach Channel in Jamaica Bay, connecting the Rockaway peninsula in Queens with the Queens mainland, via Broad Channel.

Metropolitan Area Arterial Network

The New York Metropolitan Area is served by an extensive network of highway facilities. Many of the bridges and tunnels operated by TBTA are links in the Interstate highway network, as these limited-access expressways pass through New York City to serve both local and long distance traffic. These regional facilities are shown on the map on page 2.

The Verrazano-Narrows Bridge is part of I-278 (Staten Island, Gowanus and Brooklyn-Queens Expressways), which connects with the Brooklyn-Battery Tunnel and the RFK Bridge. The

Queens Midtown Tunnel carries I-495 (Long Island Expressway) into Manhattan. The RFK Bridge joins I-87 (Major Deegan Expressway) and I-278 (Bruckner Expressway) with I-278/Grand Central Parkway in Queens and the FDR Drive in Manhattan. The Bronx-Whitestone Bridge carries traffic between the Hutchinson River and Merritt Parkways and Long Island via I-678 (Whitestone and Van Wyck Expressways) and the Cross Island Parkway. The Throgs Neck Bridge carries traffic between I-95 (New England Thruway and George Washington Bridge) and Long Island via I-295.

The Henry Hudson Bridge is part of the Henry Hudson Parkway, a major commuter route into Manhattan from the extensive parkway network in western Westchester County and beyond.

In addition to TBTA facilities and their expressway/parkway connections, New York City's toll-free East River bridges — Brooklyn, Manhattan, Williamsburg and Queensboro — also connect Manhattan with Brooklyn and Queens; and nine toll-free bridges over the Harlem River connect Manhattan with the Bronx. Unlike the TBTA facilities, the approaches to these bridges are mostly surface arterials, such as Flatbush Avenue and Queens Boulevard. Only a few have expressway ramp connections (such as the Brooklyn-Queens Expressway connection to the Williamsburg Bridge), and the Alexander Hamilton Bridge, or I-95, is part of the Cross Bronx Expressway.

Other Regional Toll Facilities

TBTA is one of a number of toll authorities that operate bridge, tunnel and highway facilities in the New York Metropolitan Area. The agency whose facilities are geographically closest to TBTA's bridges and tunnels is the Port Authority of New York and New Jersey. The Port Authority's George Washington Bridge is linked to the RFK, Bronx-Whitestone and Throgs Neck bridges via the expressway system in the Bronx (plus the George Washington-RFK Bridge connection in Manhattan via the Harlem River Drive and the George Washington-Henry Hudson Bridge connection in Manhattan via the Henry Hudson Parkway); while the Bayonne Bridge, Goethals Bridge and Outerbridge Crossing are linked to the Verrazano-Narrows Bridge via the expressway system in Staten Island. Only motorists using the Port Authority's two tunnels — Holland and Lincoln — must traverse surface streets (in Manhattan) to reach TBTA's and the City's East River crossings.

The other toll authorities in the region are the New York State Thruway Authority (Tappan Zee Bridge and several Thruway sections), New York State Bridge Authority (five Hudson River bridges) and the New Jersey Turnpike Authority (Garden State Parkway and New Jersey Turnpike).

All of these authorities, together with twenty others beyond the New York Metropolitan Area, are linked through the *E-ZPass* Interagency Group (IAG) to better serve the regional traveler through a common electronic toll collection tag. *E-ZPass* and its impact on the TBTA facilities are discussed further in this report.

Regional Public Transportation

In addition to the TBTA facilities, most of the public transportation facilities within the City and the suburban counties north and east of the City are part of the Metropolitan Transportation Authority (MTA) system. These include the New York City Transit Authority subway and buses, MTA Bus Company, Staten Island Rapid Transit, Metro-North Commuter Railroad, Long Island Rail Road, and the Long Island Bus system (in Nassau County, and serves adjacent portions of Queens and Suffolk County).

For those major TBTA facilities directly serving Manhattan — RFK Bridge, Queens Midtown Tunnel and Brooklyn-Battery Tunnel — the motorist can, for the most part, choose to use transit. For the outlying bridges, however, the choice is more difficult, due to a reduced level of transit service or different trip characteristics.

TOLL COLLECTION ON THE TBTA FACILITIES

The nine TBTA toll facilities have three toll structures, in terms of toll levels and methods of collection: major, minor and the Verrazano-Narrows Bridge. The major crossings include the RFK Bridge, Bronx-Whitestone Bridge, Throgs Neck Bridge, Queens Midtown Tunnel and Brooklyn-Battery Tunnel. The minor crossings are the Henry Hudson Bridge, Marine Parkway-Gil Hodges Memorial Bridge and Cross Bay Veterans Memorial Bridge. The Verrazano-Narrows Bridge is the only facility on which tolls are collected in one direction only, while the cash tolls for passenger cars on the minor bridges are half the level of those on the major facilities, with the exception of the Henry Hudson Bridge.

Present and Proposed Toll Structures and Operation

The current toll structure, in place since March 16, 2008, is shown in Table 1. The proposed toll structure, as approved by the MTA Board on March 25, 2009 and scheduled to go into effect on July 11, 2009, is shown in Table 2. Tolls are determined using a basic rate as modified by variables specific to a number of factors. These factors include:

- crossing used
- vehicle classification
- toll payment method
- place of residence
- vehicle occupancy

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Table 1 Current Toll Rates at TBTA Facilities

Classification	Verrazano-Narrows Bridge [a]		RFK Bridge Bronx-Whitestone Bridge Throgs Neck Bridge Queens Midtown Tunnel Brooklyn-Battery Tunnel		Henry Hudson Bridge		Marine Parkway-Gil Hodges Memorial Bridge Cross Bay Veterans Memorial Bridge	
	Cash	*E-ZPass*	Cash	*E-ZPass*	Cash	*E-ZPass*	Cash	*E-ZPass*
Two-axle vehicles, including: Passenger vehicles, SUVs, station wagons, self-propelled mobile homes, ambulances, hearses, vehicles with seating capacity of not more than 15 adult persons (including the driver) and trucks with maximum gross weight of 7,000 lbs. and under	$5.00	$4.15	$ 5.00	$4.15	$2.75	$1.90	$2.50	$1.55
Each additional axle costs	2.25	2.25	2.25	2.25	1.50	1.50	1.50	1.50
The following discounted prepaid charges are presently available for the two-axle vehicles referenced above:								
Prepaid charges through token roll purchases							1.67[b]	
Prepaid charges per crossing for registered Staten Island Residents using an eligible vehicle with three or more occupants	1.165							
Prepaid charges per crossing for registered Staten Island Residents using an eligible vehicle through token roll purchase	3.35[b]							
Registered Staten Island Residents using an eligible vehicle		2.49						
Prepaid charges per crossing for registered Rockaway Peninsula/Broad Channel Residents using an eligible vehicle							1.40[b]	1.03[c]
All two axle vehicles greater than 7,000 lbs. and buses (other than franchise buses and motor homes)	10.00	7.50	10.00	7.50	(d)	(d)	5.00	3.75
3 Axle	16.00	12.00	16.00	12.00			8.00	6.00
4 Axle	21.00	15.75	21.00	15.75			10.50	7.88
5 Axle	27.00	20.25	27.00	20.25			13.50	10.13
6 Axle	32.00	24.00	32.00	24.00			16.00	12.00
7 Axle	38.00	28.50	38.00	28.50			19.00	14.25
Each additional axle above 7	6.00	4.50	6.00	4.50			3.00	2.25
Two-axle franchise buses	4.00	3.00	4.00	3.00	(d)	(d)	2.00	1.50
Three-axle franchise buses	4.75	3.56	4.75	3.56	(d)	(d)	2.50	1.88
Motorcycles	2.25	1.81	2.25	1.81	2.25	1.29	2.25	1.29
Each additional axle costs	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Notes:

(a) Under the Verrazano-Narrows one-way crossing charge collection program, all per crossing charges shown should be doubled; toll is collected in the westbound direction only.
(b) Prepaid discount token roll sales may be discontinued when permissible.
(c) Rockaway Peninsula and Broad Channel residents using *E-ZPass* at the Cross Bay Veterans' Memorial Bridge receive a rebate of this amount, reimbursed to TBTA by MTA. This program was instituted January 1, 1998.
(d) Passage prohibited.

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Table 2 Toll Rates at TBTA Facilities, Effective July 11, 2009

Classification	Verrazano-Narrows Bridge [a]		RFK Bridge Bronx-Whitestone Bridge Throgs Neck Bridge Queens Midtown Tunnel Brooklyn-Battery Tunnel		Henry Hudson Bridge		Marine Parkway-Gil Hodges Memorial Bridge Cross Bay Veterans Memorial Bridge	
	Cash	*E-ZPass*[e]	Cash	*E-ZPass*[e]	Cash	*E-ZPass*[e]	Cash	*E-ZPass*[e]
Two-axle vehicles, including: Passenger vehicles, SUVs, station wagons, self-propelled mobile homes, ambulances, hearses, vehicles with seating capacity of not more than 15 adult persons (including the driver) and trucks with maximum gross weight of 7,000 lbs. and under	$6.50	$5.26	$6.50	$5.26	$3.50	$2.41	$3.25	$1.96
Each additional axle costs	3.00	3.00	3.00	3.00	2.00	2.00	2.00	2.00
The following discounted prepaid charges are presently available for the two-axle vehicles referenced above:								
Prepaid charges through token roll purchases							2.17[b]	
Prepaid charges per crossing for registered Staten Island Residents using an eligible vehicle with three or more occupants	1.475							
Prepaid charges per crossing for registered Staten Island Residents using an eligible vehicle through token roll purchase	4.25[b]							
Registered Staten Island Residents using an eligible vehicle		3.15						
Prepaid charges per crossing for registered Rockaway Peninsula/Broad Channel Residents using an eligible vehicle							1.78[b]	1.31[c]
All two axle vehicles greater than 7,000 lbs. and buses (other than franchise buses and motor homes)	13.00	9.75	13.00	9.75	(d)	(d)	6.50	4.88
3 Axle	21.00	15.75	21.00	15.75			10.50	7.88
4 Axle	27.00	20.25	27.00	20.25			13.50	10.13
5 Axle	35.00	26.25	35.00	26.25			17.50	13.13
6 Axle	42.00	31.50	42.00	31.50			21.00	15.75
7 Axle	49.00	36.75	49.00	36.75			24.50	18.38
Each additional axle above 7	7.00	5.25	7.00	5.25			3.50	2.63
Two-axle franchise buses	5.00	3.80	5.00	3.80	(d)	(d)	2.50	1.90
Three-axle franchise buses	6.00	4.51	6.00	4.51	(d)	(d)	3.00	2.38
Motorcycles	3.00	2.29	3.00	2.29	3.00	1.63	3.00	1.63
Each additional axle costs	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

Notes:

(a) Under the Verrazano-Narrows one-way crossing charge collection program, all per crossing charges shown should be doubled; toll is collected in the westbound direction only.
(b) Prepaid discount token roll sales may be discontinued when permissible.
(c) Rockaway Peninsula and Broad Channel residents using *E-ZPass* at the Cross Bay Veterans' Memorial Bridge receive a rebate of this amount, reimbursed to TBTA by MTA. This program was instituted January 1, 1998 and is to be discontinued no later than the scheduled toll increase.
(d) Passage prohibited.
(e) New York Customer Service Center transponders only.

Passenger Car Tolls

TBTA crossings are separated into major and minor categories plus the Verrazano-Narrows Bridge for toll classification purposes. The passenger car cash toll of $5.00 will increase $1.50 to $6.50 for the major crossings on July 11, 2009. On that date, the minor crossing passenger car cash toll of $2.50 will increase $0.75 to $3.25 on the Gil Hodges Memorial and Cross Bay Bridges and $0.75 from $2.75 to $3.50 on the Henry Hudson Bridge. All tolls are collected in each direction except on the Verrazano-Narrows Bridge where the round-trip tolls are collected only in the westbound (Staten Island-bound) direction in order to comply with a provision of Federal law.

Tolls for passenger cars are discounted under the following programs: (1) *E-ZPass* and tokens; (2) place of residence/crossing used; (3) place of residence/vehicle occupancy; and (4) some combination of the foregoing. *E-ZPass* electronic toll collection is available on all TBTA toll facilities (see the following section for a more complete description of *E-ZPass* and its impact). Motorists open a pre-paid *E-ZPass* account and receive a transponder that they mount on their windshields. TBTA toll plazas are all equipped with *E-ZPass* antennas that identify and read the on-board tags and electronically debit the toll from the motorist's prepaid account. Passenger cars equipped with an *E-ZPass* transponder presently receive an $0.85 discount at all major facilities ($1.70 for Verrazano-Narrows Bridge westbound only) and the Henry Hudson Bridge, and $0.95 at the Cross Bay Veterans Memorial and Marine Parkway-Gil Hodges Memorial bridges. Under the new toll schedule, passenger cars equipped with a New York Customer Service Center (NYCSC) *E-ZPass* will receive a $1.24 discount per trip at all major facilities ($2.48 for Verrazano-Narrows Bridge westbound only), $1.09 on the Henry Hudson Bridge, and $1.29 at the Cross Bay Veterans Memorial and Marine Parkway-Gil Hodges Memorial bridges. Passenger cars equipped with a non-NYCSC transponder will pay the same toll rate as cash customers resulting in larger increases in their toll rates.

A separate discount program is in place for registered Staten Island residents on the Verrazano-Narrows Bridge and for registered Rockaway peninsula and Broad Channel residents on the Cross Bay and Marine Parkway-Gil Hodges Memorial bridges. A toll-rebate program for the benefit of *E-ZPass* customers who are residents of Broad Channel and the Rockaway peninsula was implemented on January 1, 1998 for use on the Cross Bay Bridge. MTA reimburses the TBTA in the amount of approximately $3.4 million annually in toll rebates. This rebate program is to be discontinued no later than the scheduled toll increase.

Tolls for Vehicles over 7,000 Pounds

The toll charges for vehicles over 7,000 pounds are a function of weight/number of axles as well as the crossing used. For the major crossings, the present cash rate for these vehicles will increase $3.00 from $10.00 to $13.00 for two axles and increase $1.00 from $6.00 to $7.00 for each additional axle over seven (rates at the Verrazano-Narrows Bridge should be doubled since the toll is collected in the westbound direction only). Vehicles with three to seven axles pay varying rates, as shown in Tables 1 and 2. These vehicles presently receive, and will remain eligible for a 25 percent discount with a NYCSC *E-ZPass.*

For the minor crossings, the two-axle cash rate for vehicles over 7,000 pounds will increase $1.50 from $5.00 to $6.50, with the additional per axle rate over seven axles increasing $0.50 from $3.00 to $3.50. Vehicles with three to seven axles pay varying rates, as shown in Tables 1 and 2. These vehicles presently receive, and will remain eligible for, a 25 percent discount with a NYCSC *E-ZPass*. Commercial vehicles are not permitted on the Henry Hudson Bridge.

E-ZPass Electronic Toll Collection System

The *E-ZPass* Electronic Toll Collection (ETC) system has been fully installed at all TBTA bridges and tunnels since December 1996. *E-ZPass* usage at each facility has shown strong growth as motorists have become more familiar with the system and its time saving advantages. Unlike cash transactions, vehicles equipped with *E-ZPass* tags can use the gated *E-ZPass*-only lanes. An electronic reader identifies the tag code at the toll plaza and the toll is deducted from the customer's pre-paid account. TBTA has over 3.1 million *E-ZPass* tags in use. Currently, participation rates are at 74 percent of toll-paying traffic TBTA-wide. The total number of active Interagency Group (IAG) tags in use for all agencies in the extended region as of December 31, 2008 was over 18 million.

With the introduction of *E-ZPass* at all TBTA crossings, toll plaza operations have improved and vehicle-hours of delay have been reduced. This, in turn, has led to even more motorists enrolling in *E-ZPass*. Electronic payment of tolls has accelerated vehicle processing through the *E-ZPass* lanes, thereby reducing the overall vehicle queue at the plazas. TBTA estimates that manual toll lanes are able to process approximately 250 vehicles per hour, and dedicated *E-ZPass* lanes are able to process approximately 900 to 1,000 vehicles per hour. Prior to implementation of *E-ZPass,* vehicle processing through the TBTA toll plazas during peak periods was a primary cause of congestion at the crossings.

Table 3 lists the *E-ZPass* annual TBTA-wide participation rates starting in 2000, the fourth year since all nine crossings had *E-ZPass* in operation. Implementation of *E-ZPass* started in October 1995 on the Verrazano-Narrows Bridge and was phased in gradually on the remaining crossings through December 1996. Also shown are the participation rates for each of the facilities for 2008.

Table 3 *E ZPass* Participation Rates

Yearly Average	2000	2001	2002	2003	2004	2005	2006	2007	2008
Percent Participation (All Facilities)	63.7%	67.4%	68.5%	69.8%	70.1%	71.5%	72.6%	73.5%	74.0%
Facility	RFK	Bronx-Whitestone	Henry Hudson	Marine Parkway	Cross Bay	Queens Midtown	Brooklyn Battery	Throgs Neck	Verrazano-Narrows
Percent Participation (2008)	66.8%	67.0%	81.7%	80.4%	76.3%	78.3%	81.9%	73.6%	77.7%

Source: TBTA

Based on customer acceptance of the technology, TBTA expects that the *E-ZPass* share of total transactions will continue to increase, albeit marginally, over time.

E-ZPass is fully integrated at facilities operated by 24 agencies located in 13 states. The transportation network includes the six interstate crossings of the Port Authority of New York and New Jersey, the New Jersey Turnpike and Garden State Parkway operated by the New Jersey Turnpike Authority, the New York State Thruway including its Tappan Zee Bridge, the five bridges of the New York State Bridge Authority (from Bear Mountain northward), the Buffalo and Fort Erie Public Bridge Authority's Peace Bridge, the Atlantic City Expressway, the four toll bridges between New Jersey and Pennsylvania operated by the Delaware River Port Authority, the seven toll bridges between New Jersey and Pennsylvania operated by the Delaware River Joint Toll Bridge Commission, the Delaware Memorial Bridge between New Jersey and Delaware operated by the Delaware River and Bay Authority, the two toll roads in Delaware, toll facilities in Virginia and Maryland, the West Virginia Turnpike, the Maine Turnpike, the Massachusetts Turnpike, the Tobin Bridge operated by the Massachusetts Port Authority, the Pennsylvania Turnpike, the New Hampshire Turnpike System, two toll bridges between New Jersey and Pennsylvania operated by the Burlington County Bridge Commission, the toll roads maintained by the Illinois State Toll Highway Authority, the Chicago Skyway Bridge operated by the Skyway Concession Company, LLC, the Indiana Toll Road Concession Company, Chesapeake Bay Bridge and Tunnel Commission and the Rhode Island Turnpike and Bridge Authority. In addition, the Ohio Turnpike Commission joined the IAG in 2008 and they are expected to be fully operable by the end of 2009.

TBTA's Role in *E-ZPass*

TBTA was a founding member of the *E-ZPass* IAG, originally comprised of toll authorities in Delaware, Pennsylvania, New Jersey and New York, and the IAG now includes Maryland, Massachusetts, Virginia, West Virginia, New Hampshire, Illinois, Indiana and Maine, as well as the Peace Bridge between Buffalo and Fort Erie, Ontario. The IAG has been working since 1991 toward the development and delivery of a compatible electronic toll collection system for the tri-state region. In July 1998, TBTA entered into an inter-operability agreement with the IAG.

Customers of the member IAG agencies are able to use their tags at any *E-ZPass*-equipped facility operated by an IAG member. All IAG members provide inter-operability among agencies for their customers. As IAG members have implemented electronic toll collection systems, the *E-ZPass* customer base has increased, which has helped increase usage of *E-ZPass* on TBTA facilities.

TBTA customers must pre-pay their *E-ZPass* accounts. These pre-payments are based on a customer's *E-ZPass* usage at both TBTA and other IAG member facilities. Through the IAG system, TBTA and other member agencies transfer payments associated with inter-operability to each other on a routine basis. For 2008, TBTA transferred $452.3 million to other members and received $253.8 million from other members within the IAG.

Passenger Car Toll Rate Trends and Inflation

Since 1971, toll rates have been increased periodically on the TBTA facilities. Table 4 displays passenger car toll rates for the nine TBTA bridges and tunnels over the past 38 years.

Since 1982, passenger car toll rates have been separated into three categories, as follows:

- Major crossings - RFK, Bronx-Whitestone and Throgs Neck bridges, and the Queens Midtown and Brooklyn-Battery tunnels;
- Minor crossings - Henry Hudson, Marine Parkway-Gil Hodges Memorial and Cross Bay Veterans Memorial bridges; and
- Verrazano-Narrows Bridge – a major crossing with one-way toll collection.

Table 4 Historical Trends in Non-Discounted Cash Passenger Car Toll Rates

	Verrazano-Narrows Bridge	RFK, Bronx-Whitestone and Throgs Neck Bridges and Queens Midtown Tunnel	Brooklyn-Battery Tunnel	Henry Hudson Bridge	Marine Parkway-Gil Hodges Memorial & Cross Bay Bridges
1971	$0.50	$0.25	$0.35	$0.10	$0.10
1972 – 1975	0.75	0.50	0.70	0.25	0.25
1975 – 1980	1.00	0.75	0.75	0.50	0.50
1980 – 1982	1.00	1.00	1.00	0.60	0.75
1982 – 1984	1.25	1.25	1.25	0.90	0.90
1984 – 1986	1.50	1.50	1.50	0.90	0.90
1986 – 1987	1.75[(a)]	1.75	1.75	1.00	1.00
1987 – 1989	2.00[(a)]	2.00	2.00	1.00	1.00
1989 – 1993	2.50[(a)]	2.50	2.50	1.25	1.25
1993 – 1996	3.00[(a)]	3.00	3.00	1.50	1.50
1996 – 2003	3.50[(a)]	3.50	3.50	1.75	1.75
2003 – 2005	4.00[(a)]	4.00	4.00	2.00	2.00
2005 – 2008	4.50[(a)]	4.50	4.50	2.25	2.25
2008[(b)]	5.00[(a)]	5.00	5.00	2.75	2.50
2009[(c)]	6.50[(a)]	6.50	6.50	3.50	3.25

Notes:
(a) Effective March 20, 1986, round-trip tolls (twice the amount shown) have been collected on the Verrazano-Narrows Bridge in the westbound direction only in compliance with a Federal legislative mandate. Eastbound traffic uses the bridge toll-free. These amounts are the equivalents of collecting tolls in each direction.
(b) Effective March 16, 2008.
(c) Scheduled to go into effect on July 11, 2009.

On the minor crossings, cash tolls on the Henry Hudson Bridge are presently $2.75 and will increase to $3.50, while cash tolls on the Gil Hodges Memorial and Cross Bay bridges will rise from their present $2.50 to $3.25, collected in each direction.

The present Verrazano-Narrows Bridge one-way cash toll of $10.00 is collected westbound only and will increase to $13.00. The present one-way cash passenger car toll rate for the major crossings is $5.00, collected in each direction, and will increase to $6.50, effective July 11, 2009.

Over the years, various discount programs have been introduced. In March 1987, the Staten Island Carpool Program was initiated on the Verrazano-Narrows Bridge. Staten Island residents were offered 30-round trip coupons for vehicles with three or more occupants at a discounted price of $30.00. This program was revised to 24 coupons for $30.00 in July 1989, to 24 coupons for $42.00 in May 2003, and to 24 coupons for $54.00 in March 2005. Effective March 16, 2008, the cost of 24 coupons increased $1.92 to $55.92. On July 11, 2009 the cost of 24 coupons will increase $14.88 to $70.80.

In general, tolls for vehicles over 7,000 pounds have also been adjusted upward whenever passenger car toll rates were increased. Notable exceptions occurred in 1987 and 1989 when these toll rates were not raised while there was a general increase for passenger cars. Historically, these vehicles received discounts on any TBTA facility when they used pre-paid accounts. This plan continues with *E-ZPass* with the exception of non-NYCSC customers.

Inflation

The Consumer Price Index (CPI), compiled by the US Department of Labor, Bureau of Labor Statistics for United States Cities, is intended to represent the average inflation rate for all urban consumers. Table 5 displays the TBTA major crossing passenger car toll rates from the 1971 level of $0.25 to the present toll rate of $5.00 set in 2008, alongside the CPI.

Table 5 Cash Passenger Toll Rates Versus Consumer Price Index

Year	RFK, Bronx-Whitestone and Throgs Neck Bridges and Queens Midtown Tunnel	Consumer Price Index[(a)]	Tolls Adjusted to 1982-84 Dollars[(b)]
1971	$0.25	43.6	$0.57
1972	0.50	45.5	1.10
1975	0.75	57.6	1.30
1980	1.00	82.1	1.22
1982	1.25	95.3	1.31
1984	1.50	104.8	1.43
1986	1.75	112.3	1.56
1987	2.00	118.0	1.69
1989	2.50	130.6	1.91
1993	3.00	154.5	1.94
1996	3.50	166.9	2.10
2003	4.00	197.8	2.02
2005	4.50	212.7	2.12
2008	5.00[(c)]	235.8	2.12
Ratio 2008/1971	20.0	5.4	3.7

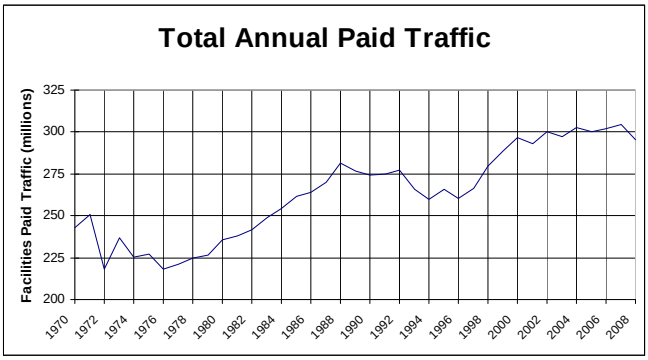
Notes: (a) New York Metropolitan Statistical Area: New York–Northern New Jersey-Long Island, NY-NJ-CT-PA, All Urban Consumers, All Items. Base period: 1982-1984 = 100.0. Not seasonally adjusted. Source: US Department of Labor, Bureau of Labor Statistics.
(b) The current toll divided by the CPI and expressed as a decimal.
(c) Effective March 16, 2008.

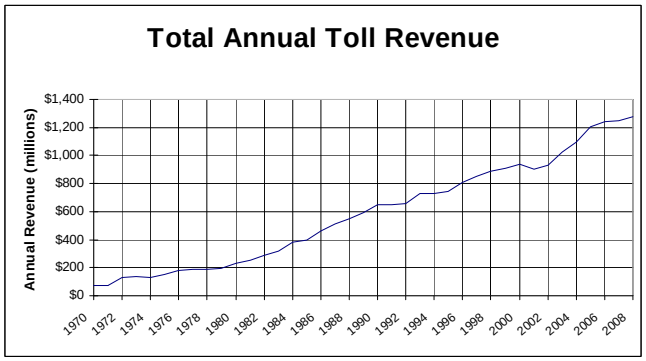
As indicated in the table, TBTA tolls in current dollars have risen faster than the CPI during the 37-year period. As can be seen in Table 5, the $5.00 toll effective on March 16, 2008 in 2008 dollars is equivalent to a toll of $2.12 in 1982-1984 dollars. The actual 2008 cash toll for passenger cars is 20 times the actual toll in 1971. However, if adjusted for inflation, the toll in 2008 was only 3.7 times that in 1971 (in each case based on 1982-1984 dollars).

HISTORICAL TRAFFIC, REVENUES AND EXPENSES AND ESTIMATED/BUDGETED NUMBERS FOR 2009

Historical traffic, toll revenues and expenses were reviewed for the nine TBTA bridges and tunnels. Over the last 38 years, paid traffic volumes on the crossings have ranged from approximately 220 million in the 1970s to 304 million in 2007. As displayed in Figure 2, the growth of traffic reflects the region's moderate overall growth in population and employment, offset by the impact of 13 periodic toll increases. By 2000, with tolls at 14 times the 1971 level, toll revenues had increased more than 13-fold, from $72 million to a high of $941 million in 2000. Revenues then declined to $915 million in 2001 primarily due to the closures and restrictions on TBTA facilities following the September 11 terrorist attack on the World Trade Center and the regional decline in employment. In 2007, with tolls having been increased again in 2003 and 2005, revenue reached $1,251 million, $9 million greater than revenues in 2006. With the toll increase in March of 2008 plus the impact of rising fuel prices and the weakening economy, revenue in 2008 reached $1,274 million, $23 million higher than revenues in 2007.

Figure 2: Aggregated TBTA Facilities Paid Traffic and Toll Revenue, 1970 to 2008





Since 1970, annual operating expenses for the toll facilities have risen by a multiple of 16.3, from $25 million to $408 million in 2008, during which time the CPI for the New York Metropolitan Statistical Area increased by a multiple of 5.7. Among the significant increases over this period were additional expenses to maintain the facilities and increased security costs after the events of September 11, 2001.

Traffic and Toll Revenue, 1998 to 2008

Table 6 lists the traffic and toll revenue record for each of the nine crossings for the 1998-2008 period. Total TBTA traffic and toll revenue are shown in Table 7. The peak in toll-paying traffic during this period, 304 million crossings, occurred in 2007. The general system-wide pattern had been that when toll rates are increased, traffic declines moderately and then traffic begins to rise until the next rate increase. However, as stated earlier, the toll rate increase in 2008 was also accompanied by rising fuel prices through mid-2008 and the deteriorating economy, resulting in a 2.9 percent drop in traffic. (The historical relationship between toll increases and traffic volume is described in the *Toll Impacts and Elasticity* section of this report.) The two most recent toll increases (prior to the 2008 toll increase) reflected in Tables 6 and 7, in

2003 and 2005, are evident in the jump in average tolls in those years. The strong growth of almost 10 percent in revenues between 2004 and 2005 is due to the toll increase in March 2005.

In 1998, toll revenue was reported at $884 million. Revenues rose to $941 million in 2000, an increase of over 6 percent, and then declined in 2001 due to the impact of September 11 and a decline in regional employment. The greatest impact from September 11 was due to closures and restrictions at the Brooklyn-Battery Tunnel, with negative impacts also occurring at the Queens Midtown Tunnel and at the RFK Bridge. In 2002, residual effects due to September 11-related traffic restrictions were seen particularly in the results for the Brooklyn-Battery Tunnel. Also in 2002, the positive impact on the Verrazano-Narrows Bridge was brought about by the truck restrictions at the Holland Tunnel as well as New York City's single occupancy vehicle restrictions. Since November 17, 2003, when the morning peak-period ban on Manhattan-bound single occupancy vehicles south of 14th Street was lifted, there have been no externally imposed traffic restrictions on any of TBTA's facilities. Revenue in 2003 topped $1 billion, as a result of the May 18, 2003 toll increase. After the March 13, 2005 toll increase, 2005 traffic volumes decreased 0.9 percent and revenue rose to $1,205 million in 2005 and then increased to $1,242 million in 2006 and increased further to $1,251 in 2007. In 2008 traffic volumes decreased 2.9 percent from 304.4 million in 2007 to 295.7 million, while toll revenues increased 1.9 percent over 2007 to $1,274.0 million, as a result of the March 16, 2008 toll increase.

Traffic on the Bronx-Whitestone and Throgs Neck bridges has been of essentially equal magnitude over the years. These two bridges generally serve the same areas in the Bronx and Queens, and historically traffic has shifted back and forth to the crossing providing the better level of service, at times based on lane restrictions due to construction activity.

The RFK Bridge reported the highest toll revenue for 2008 at $287.9 million, while the Marine Parkway-Gil Hodges Memorial Bridge registered the lowest revenue at $12.0 million.

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Table 6 Annual Toll-Paying Traffic and Toll Revenue: 1998 to 2008
(000's)[a]

Year	Verrazano-Narrows Bridge				RFK Bridge				Bronx-Whitestone Bridge			
	Traffic		Revenue	Average Toll[c]	Traffic		Revenue	Average Toll	Traffic		Revenue	Average Toll
	Volume[b]	Change			Volume	Change			Volume	Change		
1998[d]	65,886	4.8%	$192,788	$2.93	59,524	4.9%	$208,324	$3.50	38,112	4.8%	$140,083	$3.68
1999[d]	67,496	2.4	196,556	2.91	61,943	4.1	216,414	3.49	40,155	5.4	147,597	3.68
2000[d]	69,107	2.4	203,172	2.94	63,677	2.8	222,612	3.50	42,334	5.4	155,938	3.68
2001	70,929	2.6	208,164	2.93	62,506	–1.8	215,241	3.44	42,090	–0.6	152,881	3.63
2002	73,361	3.4	216,312	2.95	60,747	–2.8	208,905	3.44	44,359	5.4	160,730	3.62
2003	71,108	–3.1	233,482	3.28	58,339	–4.0	222,224	3.81	44,413	0.1	175,393	3.95
2004	71,404	0.4	246,322	3.45	61,638	5.7	247,937	4.02	45,223	1.8	187,231	4.14
2005	69,980	–2.0	267,276	3.82	62,841	2.0	280,516	4.46	41,198	–8.9	188,808	4.58
2006	70,381	0.6	274,100	3.89	63,063	0.4	288,300	4.57	39,488	–4.2	186,384	4.72
2007	70,382	0.0	272,837	3.88	62,511	–0.9	285,847	4.57	42,397	7.4	200,076	4.72
2008	68,884	–2.1	278,906	4.05	59,741	–4.4	287,877	4.82	42,803	1.0	212,125	4.96

Year	Throgs Neck Bridge				Brooklyn-Battery Tunnel				Queens Midtown Tunnel			
	Traffic		Revenue	Average Toll	Traffic		Revenue	Average Toll	Traffic		Revenue	Average Toll
	Volume	Change			Volume	Change			Volume	Change		
1998[d]	37,660	2.6%	$149,711	$3.98	19,651	15.4%	$63,578	$3.24	25,362	3.1%	$85,626	$3.38
1999[d]	38,076	1.1	152,134	4.00	20,778	5.7	67,080	3.23	25,969	2.4	87,284	3.36
2000[d]	37,535	–1.4	152,453	4.06	21,298	2.5	69,018	3.24	26,573	2.3	89,451	3.37
2001	37,802	0.7	150,764	3.99	16,452[e]	–22.8	52,188	3.17	26,177[e]	–1.5	87,067	3.33
2002	39,687	5.0	157,988	3.98	15,447[e]	–6.1	48,880	3.16	26,901[e]	2.8	88,865	3.30
2003	39,082	–1.5	172,603	4.42	17,806[e]	15.3	61,810	3.47	27,512[e]	2.3	99,994	3.63
2004	39,439	0.9	184,338	4.67	17,700	–0.6	64,366	3.64	28,181	2.4	107,067	3.80
2005	41,199	4.5	210,242	5.10	17,426	–1.5	70,294	4.03	28,751	2.0	121,666	4.23
2006	43,186	4.8	223,756	5.18	17,718	1.7	73,868	4.17	28,966	0.7	127,075	4.39
2007	41,931	–2.9	217,958	5.20	18,139	2.4	75,980	4.19	29,375	1.4	129,348	4.40
2008	40,492	–3.4	219,855	5.43	16,899	–6.8	73,590	4.35	28,620	–2.6	131,264	4.59

Year	Henry Hudson Bridge				Marine Parkway-Gil Hodges Memorial Bridge				Cross Bay Veterans Memorial Bridge			
	Traffic		Revenue	Average Toll	Traffic		Revenue	Average Toll	Traffic		Revenue	Average Toll
	Volume	Change			Volume	Change			Volume	Change		
1998[d]	20,300	2.7%	$28,731	$1.42	7,322	0.2%	$8,577	$1.17	5,647	10.0%	$7,021	$1.24
1999[d]	21,287	4.9	30,068	1.41	7,391	0.9	8,461	1.14	6,012	6.5	7,199	1.20
2000[d]	22,546	5.9	31,938	1.42	7,207	–2.5	8,374	1.16	6,356	5.7	7,651	1.20
2001	23,290	3.3	32,242	1.38	7,263	0.8	8,344	1.15	6,712	5.6	7,965	1.19
2002	24,657	5.9	34,045	1.38	7,745	6.6	8,938	1.15	7,091	5.6	8,471	1.19
2003	24,582	–0.3	37,744	1.54	7,704	–0.5	9,694	1.26	6,919	–2.4	8,993	1.30
2004	24,703	0.5	40,149	1.63	7,719	0.2	10,102	1.31	6,989	1.0	9,477	1.36
2005	24,136	–2.3	43,920	1.82	7,673	–0.6	11,234	1.46	7,182	2.8	10,988	1.53
2006	24,159	0.1	44,901	1.86	7,737	0.8	11,536	1.49	7,361	2.5	11,630	1.58
2007	24,117	–0.2	44,779	1.86	7,833	1.2	11,635	1.49	7,679	4.3	12,090	1.57
2008	22,823	–5.4	46,126	2.02	7,829	–0.1	12,019	1.54	7,589	–1.2	12,212	1.61

Notes:
(a) Toll rate increases occurred on May 18, 2003, March 13, 2005 and March 16, 2008.
(b) Westbound toll traffic volume doubled.
(c) Average toll on basis of revenues divided by doubled westbound volume.
(d) Includes write-offs due to unredeemed tokens and tickets.
(e) Reflects traffic restrictions and closures beginning September 11, 2001 and ending gradually through November 17, 2003.

Source: TBTA

Total annual TBTA toll traffic volume and revenue are shown in Table 7 for the period 1998 through 2008.

Table 7 Summary of Annual Paid Traffic and Toll Revenue: 1998 to 2008

Year	Total Paying Traffic Volume (000)	Total Toll Revenue (000)	Average Toll
1998[b]	279,463	$884,439	$3.16
1999[b]	289,107	912,793	3.16
2000[c]	296,633	940,607	3.17
2001	293,220	914,856	3.12
2002	299,995	933,134	3.11
2003[a]	297,465	1,021,937	3.44
2004	302,995	1,096,989	3.62
2005[a]	300,385	1,204,944	4.01
2006	302,059	1,241,551	4.11
2007	304,364	1,250,549	4.11
2008[a]	295,680	1,273,974	4.31

Notes: (a) Toll rate increases occurred on May 18, 2003, March 13, 2005 and March 16, 2008.
(b) Includes $2.5 million relating to the write-off of unredeemed tokens and tickets.
(c) Includes $9.7 million relating to the write-off of unredeemed tokens and tickets.
Source: TBTA

Traffic by Facility and Vehicle Class, 2008

TBTA maintains traffic counts for each crossing in 13 toll-paying categories, ranging from passenger cars to trucks with seven axles. Displayed in Table 8 are the 2008 traffic volumes by facility. Passenger cars totaled 273.8 million crossings and represented 93 percent of the total toll-paying vehicles (which has remained relatively constant over time). Of the TBTA facilities, the Verrazano-Narrows Bridge registered the highest two-way traffic volume of 68.9 million toll-paying vehicles. The lowest toll-paying volume, 7.6 million vehicles, was recorded at the Cross Bay Veterans Memorial Bridge.

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Table 8 Traffic by Facility and Vehicle Class, 2008

(000's)

Facility	1 Passenger Cars	2 Pass. Cars w/one-axle Trailer	3 Pass. Cars w/two-axle Trailer	4 Trucks 2 Axles	Franchise Buses		6 Trucks 3 Axles	7 Trucks 4 Axles
					5 2 Axles	11 3 Axles		
Throgs Neck Bridge	36,099	49	45	1,692	2	0	334	344
Bronx-Whitestone Bridge	39,683	12	8	1,404	161	3	354	218
RFK Bridge	54,909	22	9	2,959	110	287	599	106
Queens Midtown Tunnel	26,154	5	4	1,791	79	217	265	35
Brooklyn-Battery Tunnel	15,358	1	1	695	31	585	142	12
Verrazano-Narrows Bridge[(a)]	64,337	28	23	1,936	155	401	420	220
Henry Hudson Bridge[(b)]	22,644	1	1	126	0	0	3	1
Marine Parkway Bridge	7,567	2	1	165	50	0	19	2
Cross Bay Bridge	7,076	3	1	309	92	28	37	5
Total	273,826	123	91	11,076	680	1,521	2,175	943
Percent of Paid Vehicles	92.6%	0.0%	0.0%	3.7%	0.2%	0.5%	0.7%	0.3%

Facility	8 Trucks 5 Axles	9 Motor-cycles	12 Trucks 6 Axles	13 Trucks 7 Axles	14 Other Vehicles	Total Toll-Paying Vehicles	10 Non-Rev Vehicles[(c)]	Total Vehicles
Throgs Neck Bridge	1,750	75	99	1	2	40,492	247	40,739
Bronx-Whitestone Bridge	877	71	12	0	0	42,803	214	43,017
RFK Bridge	608	107	24	0	0	59,741	1,205	60,946
Queens Midtown Tunnel	18	48	2	0	0	28,620	421	29,040
Brooklyn-Battery Tunnel	7	65	1	0	0	16,899	492	17,391
Verrazano-Narrows Bridge[(a)]	1,173	156	35	1	1	68,884	700	69,584
Henry Hudson Bridge[(b)]	1	47	0	0	0	22,823	86	22,909
Marine Parkway Bridge	9	14	1	0	0	7,829	81	7,911
Cross Bay Bridge	17	20	1	0	0	7,589	119	7,708
Total	4,459	604	175	2	4	295,680	3,564	299,244
Percent of Paid Vehicles	1.5%	0.2%	0.1%	0.0%	0.0%	100.0%		

Notes: Totals may not add due to rounding.
Traffic numbers are final audited figures.
(a) Westbound traffic doubled.
(b) Truck passage prohibited.
(c) Includes police, fire and other emergency vehicles and TBTA vehicles.

Source: TBTA

Monthly Traffic, 2008

Monthly variations in traffic volumes on the nine crossings have historically been attributed to several factors, including severe winter weather which may result in lower volumes; and, conversely, traffic reaching its highest levels during the summer months when recreational travel peaks. Toll rate increases have also affected the traffic volumes in the aftermath of a toll increase. Furthermore, individual facilities can be affected by construction projects on the facility itself or its approaches, and on adjacent arterials or competing bridges. The limited number of crossings in the region; however, sustains the overall demand for TBTA's bridges and tunnels. In addition to these normal impacts, there are extraordinary events such as the effects of September 11.

The data in Table 9 indicate that total traffic on the nine crossings in 2008 peaked in June. August was the second highest month in 2008. For the combined facilities, the monthly variations in 2008 ranged from 6 percent below the annual average in January to 6 percent above in June. This is indicative of a stable traffic mix comprised of a solid base of commuting and commercial traffic. However, due to the high price of fuel in mid-2008 and the state of the economy, traffic during the peak month of June was diminished as compared to 2007, when June 2007 traffic was 8 percent above the annual average.

Table 9 Monthly Traffic Variations, 2008

Month	Average Daily Toll-Paying Traffic										Ratio to AADT
	Throgs Neck	Bronx-Whitestone	RFK	Queens Midtown	B'klyn Battery	Verrazano-Narrows[a]	Henry Hudson	Marine Pkwy	Cross Bay	Total	
January	102,862	107,188	154,658	74,593	45,798	179,864	60,204	18,710	19,141	763,017	0.94
February	102,702	107,051	155,965	75,883	46,816	178,905	59,849	18,458	18,930	764,558	0.95
March	109,243	113,632	162,516	79,813	47,757	187,482	62,273	19,604	19,701	802,022	0.99
April	112,618	117,790	167,523	79,189	47,254	190,115	64,334	20,225	20,598	819,644	1.01
May	114,916	119,826	171,340	80,151	47,141	192,395	65,598	21,793	21,212	834,371	1.03
June	112,281	127,711	173,730	81,489	48,481	196,878	65,621	24,625	23,749	854,565	1.06
July	116,833	124,989	167,326	77,893	45,004	192,070	61,324	26,052	23,536	835,026	1.03
August	119,565	127,641	168,126	79,174	44,694	196,394	60,967	25,101	22,345	844,007	1.04
September	111,241	117,198	164,140	79,144	46,161	187,438	62,978	21,804	20,872	810,977	1.00
October	112,364	115,838	161,278	78,598	45,952	186,955	63,489	20,225	20,154	804,853	1.00
November	109,726	113,524	156,957	76,683	44,372	184,384	63,092	19,861	19,388	787,987	0.98
December	102,837	110,639	154,998	75,715	44,726	185,192	58,626	20,089	19,117	771,939	0.96
AADT[b]	110,633	116,949	163,227	78,196	46,172	188,207	62,359	21,392	20,734	807,868	1.00

Notes: May not add due to rounding.
Traffic numbers are final audited figures.
(a) Westbound traffic doubled.
(b) Annual Average Daily Traffic

Changes in Monthly Traffic, 2007 to 2008

All of the traffic restrictions that were introduced at TBTA facilities following the September 11, 2001 attack have been removed. However, a ban on large commercial vehicles remains in effect on the lower level of the Verrazano-Narrows Bridge and at the Holland Tunnel and on the lower level of the George Washington Bridge. The recovery of traffic has differed considerably between the crossings depending on the timing of the lifting of restrictions, but traffic at most facilities returned to or exceeded pre-September 2001 levels through 2007. At the Brooklyn-

Battery Tunnel, traffic volumes continue to be below the 2000 level due to the loss of employment in lower Manhattan.

Table 10 lists the monthly average daily traffic changes that have occurred between 2007 and 2008.

Table 10 Changes in Monthly Average Daily Traffic – 2007 to 2008

Month	Percent Change Comparing 2008 Monthly Average Daily Traffic to 2007								
	Throgs Neck	Bronx-Whitestone	RFK	Queens Midtown	Brooklyn-Battery	Verrazano-Narrows	Henry Hudson	Marine Parkway	Cross Bay Bridge
January	–2.0%	1.5%	–1.2%	–1.1%	–4.8%	–1.4%	–2.5%	–0.2%	0.5%
February	–1.2	1.6	–0.1	–0.8	–4.7	–0.9	–2.4	2.5	2.9
March	0.0	2.7	–3.3	–1.6	–8.5	–1.3	–4.2	–0.9	–1.0
April	–0.9	3.1	–3.2	–1.9	–4.4	–1.5	–1.8	4.4	3.9
May	–5.1	–0.3	–5.6	–3.5	–8.8	–4.3	–7.0	–4.0	–4.6
June	–8.9	2.0	–6.4	–3.8	–9.6	–4.7	–7.0	–2.7	–1.3
July	–4.2	1.6	–4.8	0.9	–5.4	–2.4	–5.7	–0.2	–0.3
August	–4.5	1.7	–5.8	–3.7	–10.2	–2.6	–8.0	–1.7	–2.6
September	–6.8	–2.2	–6.1	–2.3	–3.3	–3.2	–6.4	–2.1	–4.0
October	–3.7	0.0	–7.4	–6.5	–9.5	–2.6	–8.7	–1.1	–5.2
November	–3.6	–2.7	–7.5	–6.8	–9.2	–2.3	–7.0	0.9	–3.4
December	–1.8	–0.4	–3.2	–2.0	–5.7	–1.1	–5.4	4.3	–0.1
Annual[(a)]	–3.7	0.7	–4.7	–2.8	–7.1	–2.4	–5.6	–0.3	–1.4

(a) The annual changes differ slightly from the corresponding 2008 changes in Table 6, due to the process of calculating the monthly average daily traffic changes that include the extra day in February 2008.

Reasons for monthly traffic changes include:

- The March 16, 2008 toll increase;
- The continuing worsening of the state of the economy;
- The steep increases in the price of motor fuel from early 2008 and continuing through the summer before abating due to the deepening recession;
- There was an extra day in February due to the leap year; and
- There were various construction projects on the Throgs Neck Bridge beginning in March 2008, resulting in diversions to the Bronx-Whitestone Bridge.

Estimated Traffic and Toll Revenue, 2009

The development of the traffic and toll revenue estimates for 2009 took into account the worsening economic condition of the region, as well as the impact of the last toll increase on March 16, 2008 and the impact of the proposed toll increase on July 11, 2009. The impacts in the long term, regarding the national and regional economies, projected employment in lower Manhattan and the traffic and toll revenue forecasts beyond 2009, are covered in the following sections of the report. In developing the traffic and toll revenue estimates for 2009, anticipated traffic volumes based upon historical understanding of traffic growth trends and price elasticity

of demand were compared to actual traffic volumes from April 2008 through February 2009, the most recent time period under a consistent toll rate schedule. This comparison represents the impact of the declining economy which was assumed to continue for the remainder of 2009. Traffic levels were further adjusted to reflect the proposed toll increase of July 11, 2009 using the adjusted historic elasticities, reflecting the increased usage of ETC transponders, observed from previous toll increases. The forecast percent changes are shown in Table 11. The percentages reflect the declining economy and the estimated effect of the proposed toll increase.

Table 11 Estimated Changes in Annual Traffic – 2008 to 2009

Facility	Percent Change(*)
Throgs Neck Bridge	–2.4%
Bronx-Whitestone Bridge	–2.9
RFK Bridge	–6.0
Queens Midtown Tunnel	–6.4
Brooklyn-Battery Tunnel	–10.3
Verrazano-Narrows Bridge	–2.8
Henry Hudson Bridge	–7.2
Marine Parkway-Gil Hodges Mem. Bridge	–6.5
Cross Bay Veterans Memorial Bridge	–10.3
All	–4.8

(*) Includes the effect of the discontinuance of the Rockaway resident discount.

The traffic and toll revenue estimates for 2009 are presented in Table 12.

Table 12 Estimated 2009 Toll-Paying Traffic and Toll Revenue

Facility	Traffic (000s)	Average Toll	Revenue(*) (000s)
Throgs Neck Bridge	39,535	$6.19	$244,684
Bronx Whitestone Bridge	41,551	5.71	237,331
RFK Bridge	56,154	5.54	311,241
Queens Midtown Tunnel	26,778	5.26	140,737
Brooklyn Battery Tunnel	15,160	5.01	75,923
Verrazano-Narrows Bridge	66,942	4.70	314,669
Henry Hudson Bridge	21,173	2.34	49,493
Marine Parkway Bridge	7,322	1.76	12,859
Cross Bay Bridge	6,808	1.84	12,544
Total	281,424	4.97	1,399,480

(*) Includes adjustment for increase in E-ZPass usage, shift in E-ZPass usage from non-NYCSC to NYCSC and the elimination of the Rockaway resident discount.

The 4.8 percent decrease in traffic and the overall increase in revenue of 9.9 percent over 2008 reflect actual performance through February 28, 2009, the proposed toll increase of July 11, 2009 and anticipated changes in traffic volumes for the remainder of the year.

Table 12 provides the transition between the historical traffic and revenue data presented on the preceding pages and the 10-year forecasts in Tables 20 and 21. The methodology used to develop the estimated growth rates beyond 2009 is discussed under the "Projected Traffic, Revenue and Expenses" section of this report.

Operating Expenses 1998 to 2008

Table 13 displays the historical operating expenses for the TBTA facilities from 1998 through 2008. TBTA divides operating expenses into two major categories: labor and non-labor. Labor includes salaries, overtime and fringe benefits, net of capital reimbursements. Major maintenance, bridge painting, outside services, insurance, Coliseum operations (until its sale in 1999), TBTA's share of the *E-ZPass* Customer Service Center, and other non-personnel expenses are included in non-labor.

TBTA labor expenses increased from $106.6 million in 1998 to 207.3 million in 2008. A significant part of this increase was due to the creation of 265 new security positions after the events of September 11, 2001. Because of the introduction of the *E-ZPass* system, TBTA was able to eliminate over 200 bridge and tunnel officer positions through attrition with *E-ZPass*, and these reductions were the primary offset to growth in wage and fringe benefit expenses in recent years.

Non-labor expenses increased from $101.6 million in 1998 to $200.7 million in 2008. The primary driving factors in TBTA's non-labor expense growth were inflation, an increase in major maintenance and bridge painting activities.

Timing of major expenses and other items has also resulted in some year-to-year fluctuations. An enhanced bridge painting program, including lead paint removal, implemented as part of TBTA's effort to extend the useful life of the structural elements of its facilities, began to increase non-labor expenses starting in 1995.

E-ZPass startup costs for tags and customer service center operations were primarily responsible for non-labor growth in 1996 and 1997. In 1998, *E-ZPass* startup costs eased and bridge painting activities were delayed due to an extensive evaluation of contractor experience. Resumption of the planned level of bridge painting increased non-labor costs in 1999, and rental expenses for TBTA administrative offices at 2 Broadway that were formerly in the New York Coliseum office building increased non-labor costs in 1999 and 2000.

Table 13 Historical Operating Expenses: 1998 to 2008

Year	Operating Expenses (000s)			Percent Change[(c)]
	Labor [(a)]	Non-Labor [(b)]	Total	
1998	106,603	101,587	208,190	–7.0%
1999	107,430	120,561	227,991	9.5
2000	112,256	129,002	241,258	5.8
2001	123,316	133,198	256,514	6.3
2002	140,967	159,229	300,196	17.0
2003	159,976	169,039	329,015	9.6
2004	158,403	160,811	319,214	–3.0
2005	173,549	170,123	343,672	7.7
2006	183,268	169,642	352,910	2.7
2007	196,755	172,270	369,025	4.6
2008	207,305	200,686	407,991	10.6

Notes:
(a) Includes salaries, overtime and fringe benefits, net of capital reimbursements.
(b) Non-labor includes the following categories: major maintenance and supplies, bridge painting, outside services, insurance, power, leases and rentals and other expenses.
(c) For discussion on expense fluctuations, see accompanying text.
Source: TBTA

The 2001-2003 numbers reflect the additional expenses that were incurred in the aftermath of the attack on the World Trade Center. TBTA describes the added expenses as overtime labor costs for security, cleanup costs for the Brooklyn-Battery Tunnel and Battery Parking Garage, and emergency electricity generation for the Brooklyn-Battery Tunnel. Also included are costs associated with overtime incurred by represented employees required to make up for lost time as a result of the temporary closure of 2 Broadway. Some of the increases associated with these additional costs have been reimbursed to TBTA through MTA from a combination of insurance proceeds and emergency grants from the Federal Emergency Management Agency (FEMA).

The 2002 results reflect the additional expenses incurred after the terrorist attack that include an upgrade of communication and electrical systems and the replacement of a radio communication system. Also included is a delay in bridge painting from 2001 to 2002, additional security at all facilities, and *E-ZPass* tag replacement.

The 2003 increase in labor costs was caused by additional expenditures for security staff, worker's compensation adjustments and health and welfare benefits rate increases. The 2003 increase in labor costs was the result of the hiring of additional security staff, adjustments to worker's compensation and increases in health and welfare fringe benefit rates. In non-labor expenses, increases due to major maintenance and bridge painting were partially offset by decreases in insurance costs, *E-ZPass* Customer Service Center (CSC) costs and other business expenses.

In 2004, non-labor expenses were 4.9 percent lower than 2003 due to a decrease in the number of *E-ZPass* tag purchases. In 2005, expenses reflected a continuation of the security measures noted above, *E-ZPass* tag replacement, and increases in major maintenance and bridge painting, offset by a reduction in 2 Broadway lease charges. Labor costs increased in 2006 primarily due to rising payroll, pension and health and welfare expenses. Regarding non-labor expenses, increased funding for additional bridge painting needs in 2006 was offset by a decrease in *E-ZPass* tag purchases and lower insurance costs. In 2007, labor costs increased 7.4 percent primarily due to higher payroll expenses associated with collective bargaining agreements, inflation, higher pension expenses and a revised actual cost adjustment for worker's compensation, while non-labor expenses increased less than two percent primarily due to lower bridge painting program costs than in 2006. In 2008, labor costs increased 5.4 percent from 2007 primarily due to higher payroll and associated fringe costs, and non-labor expenses increased 16.5 percent primarily due to higher major maintenance needs in 2008.

2009 Budget

Operating expenses have been budgeted by TBTA for 2009 at $423.1 million. These expenses are split into the following categories: labor expenses of $223.3 million and non-labor expenses of $214.7 million, offset by expected savings from additional actions for budget balance of $14.9 million. Personnel costs are expected to increase 7.7 percent over 2008 primarily due to the anticipated filling of positions held vacant. The non-labor portion is also expected to increase by 7 percent over 2008 due primarily to the increase in credit card fees for E-ZPass accounts resulting from the anticipated toll increase, increase in bond service fees, higher E-ZPass tag inventory needs, and an increase in planning studies for a barrier-free tolling assessment, offset by lower bridge painting requirements. A reduction in expenses of $14.9 million were proposed for the additional actions for budget balance, which consist of a variety of actions, including reductions in administrative personnel and a re-estimate of bridge painting expenses.

Finally, we noted that the total 2008 operating expenses of $408.0 million were under the $426.9 million 2008 operating expense budget (prepared by TBTA in 2007) by $18.9 million, a savings of 4.4 percent.

FACTORS AFFECTING TRAFFIC GROWTH

The previous section of the report set forth the historical traffic, revenue and expense data for the nine TBTA bridges and tunnels. Before developing the forecasts, several factors affecting future traffic were considered, including projected growth (population and other demographics), TBTA and regional construction impacts, capacity constraints in the regional highway network, and toll and elasticity impacts. *E-ZPass* improvements were discussed previously. This section of the report concludes with a summary of the assumptions and conditions upon which the traffic and toll revenue forecasts were based.

Employment, Population and Motor Vehicle Registrations

Regional demographic data providing information on long-term trends are maintained by the New York Metropolitan Transportation Council (NYMTC). Information from NYMTC regarding employment and population history and projections from 1970 to 2035 is included in the following tables. In general, and in the recent past more than ever, traffic volumes in the region are affected by changes in employment and population. Normally the demand on the TBTA facilities tends to be less influenced by regional demographic trends because water crossings are limited. Another indicator of trends in traffic volumes is motor vehicle registrations, which have continued on an upward trend since 1970 in the tri-state region. To better understand how these indicators may influence traffic volumes on the TBTA crossings in the long term, URS first reviewed historical trends and forecasts by NYMTC and others, and adjusted the traffic forecasts in the short term to account for the present economic climate.

Employment Trends and Projections

Jobs traditionally influence traffic generation. Generally, when the economy is robust and jobs are plentiful, there is an increase in traffic. Conversely, when employment trends are downward, as is the present case, traffic volumes generally decline.

The long-term trend in employment in the region is shown in Table 14. A downward trend in employment occurred between 1970 and 1980 in New York City. Jobs declined by 1.2 percent per year, from 4,066,500 in 1970 to 3,614,000 in 1980. Staten Island, where employment increased by 3.5 percent per year, was the exception. The most recent employment forecasts were released by NYMTC in March 2008. Despite the worsening of the economic situation since then, NYMTC has stated that it will not be updating its long-term forecasts and thus its projections continue to show a steady growth through 2035.

Between 1970 and 2005, employment increased in the New York suburbs, in Northern and Central New Jersey and in Southern Connecticut. NYMTC projected that employment in the tri-state region (including New York City) as a whole, would grow during their forecast period through 2035, in the range of 0.7 to 1.4 percent annually.

URS

Table 14 Employment Trends and Projections

(000s)

Year	New York City						New York Region [b]	New Jersey Region [c]	Connecticut Region [d]
	Manhattan	Bronx	Brooklyn	Queens	Staten Island	Total [a]			
1970	2,550.3	251.3	631.9	586.0	47.1	4,066.5	1,554.6	2,447.6	727.4
1980	2,277.5	216.9	516.4	536.7	66.4	3,614.0	1,918.6	2,828.2	869.3
1990	2,565.1	237.8	504.5	567.3	91.6	3,966.1	2,339.0	3,403.9	1,008.9
2000	2,682.2	269.4	584.6	624.1	116.9	4,277.3	2,537.5	3,676.3	1,065.5
2005	2,680.7	306.1	605.4	646.1	122.6	4,360.9	2,715.9	3,894.6	1,099.6
2010 - Projected	2,824.2	342.1	707.7	724.4	149.3	4,747.8	2,888.6	4,148.3	1,176.6
2015 - Projected	2,885.1	367.6	760.3	751.2	164.5	4,928.8	3,017.7	4,352.9	1,229.7
2020 - Projected	2,948.0	388.9	809.3	776.7	177.8	5,100.7	3,129.1	4,521.5	1,277.0
2025 - Projected	3,069.7	408.8	855.2	806.6	192.0	5,332.4	3,250.5	4,717.2	1,324.9
2030 - Projected	3,171.5	425.8	896.1	831.5	205.1	5,530.0	3,367.0	4,905.4	1,378.8
2035 - Projected	3,288.7	442.3	936.7	858.2	218.4	5,744.3	3,491.8	5,078.7	1,440.9
Average Annual Percent Change									
1970 to 1980	–1.1%	–1.5%	–2.0%	–0.9%	3.5%	–1.2%	2.1%	1.5%	1.8%
1980 to 1990	1.2	0.9	–0.2	0.6	3.3	0.9	2.0	1.9	1.5
1990 to 2000	0.4	1.3	1.5	1.0	2.5	0.8	0.8	0.8	0.5
2000 to 2005	0.0	2.6	0.7	0.7	1.0	0.4	1.4	1.2	0.6
2005 to 2010	1.0	2.2	3.2	2.3	4.0	1.7	1.2	1.3	1.4
2010 to 2015	0.4	1.4	1.4	0.7	1.9	0.8	0.9	1.0	0.9
2015 to 2020	0.4	1.1	1.3	0.7	1.6	0.7	0.7	0.8	0.8
2020 to 2025	0.8	1.0	1.1	0.8	1.5	0.9	0.8	0.9	0.7
2025 to 2030	0.7	0.8	0.9	0.6	1.3	0.7	0.7	0.8	0.8
2030 to 2035	0.7	0.8	0.9	0.6	1.3	0.8	0.7	0.7	0.9

Notes: (a) Totals may not add due to rounding.
(b) Consists of the following counties: Dutchess, Nassau, Orange, Putnam, Rockland, Suffolk, Sullivan, Ulster and Westchester.
(c) Consists of the following counties: The 13 counties of the North Jersey Transportation Planning Authority (Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, Warren) plus Mercer.
(d) Consists of the following counties: Fairfield, Litchfield, New Haven.

Source: New York Metropolitan Transportation Council, March 2008.

A review of historical traffic demand for the TBTA crossings indicated that volumes did fluctuate system-wide during the 1970s and increased through the 1980s. During the 15-year period from 1985 to 2000, and again in 2003 and 2005, fluctuations occurred in response to toll increases, when traffic declined while toll revenues increased.

Looking to the short-term impacts of the current recession, in the New York Metropolitan Statistical Area (MSA), the unemployment rate (as calculated from the monthly data) for 2008 was 5.3 percent, up from the 4.4 percent in 2007 as reported by the Bureau of Labor Statistics. The MSA's highest monthly unemployment rate in the past ten years was forecasted for February 2009 to be at 8.2 percent. Previous to the economic downturn that began in April 2008, the MSA's unemployment had been generally decreasing since hitting a high of 7.2 percent in January 2003. According to New York City's Office of Management and Budget (OMB) Monthly Report on Economic Conditions, released March 20, 2009, "the City has lost jobs every

month since August 2008 and almost every major sector has contracted." These employment data correspond with the Class A commercial real estate vacancy rates for Manhattan from the OMB report. Vacancy rates were at their peak in mid-2003 and have since experienced steady decline. In 2007, the vacancy rate stood at 5.3 percent, and asking rents jumped 33 percent over the prior year. In 2008 the vacancy rate increased to 7.3 percent and the associated average square foot asking rent dropped 15.3 percent. According to the OMB report:

> Tenant activity essentially froze in the last quarter of 2008. Only one million square feet of space was leased per month on average from November through February in the Class A and Class B markets throughout the City. As demand dwindled, the amount of vacant space on the market rose to over 32 million square feet, up from about 19 million just two years ago. As a result, the average asking rent has fallen by approximately 11 percent for Class A and by 5 percent in Class B over the past six months.

As noted in the report, the real estate industry anticipates that vacancy rates will rise over the next five years to an estimated high of 13.5 percent in 2010 before beginning to decline and employment will decrease by 4.7 percent and 2.8 percent in 2009 and 2010, respectively, until a moderate rise in job growth begins in 2011. This estimate is more pessimistic than the NYMTC data shown in Table 14 due to the availability of more recent input data contained in the OMB Report.

Population Trends and Projections

Between 1970 and 1980, population in New York City declined in the Bronx, Brooklyn, Manhattan and Queens, but increased on Staten Island. For the five boroughs, population totaled 7.9 million in 1970 and 7.1 million in 1980, as displayed in Table 15. The 1990 Census indicated that there was a turnaround and population grew at an average annual rate of approximately 0.3 percent. The Census results for the year 2000 show the population of New York City grew by approximately one percent annually and now exceeds 8 million. Nearby New York, New Jersey and Connecticut counties also show increased growth.

Table 15 Population Trends and Projections

(000s)

Year	New York City						New York Region [b]	New Jersey Region [c]	Connecticut Region [d]
	Manhattan	Bronx	Brooklyn	Queens	Staten Island	Total [a]			
1970	1,539	1,472	2,602	1,987	296	7,895	4,372	5,800	1,682
1980	1,428	1,169	2,231	1,891	352	7,072	4,537	5,857	1,725
1990	1,488	1,204	2,301	1,952	379	7,323	4,635	6,097	1,806
2000	1,537	1,333	2,465	2,229	444	8,008	4,933	6,662	1,889
2005	1,606	1,365	2,511	2,257	475	8,214	5,072	6,874	1,935
2010 - Projected	1,663	1,372	2,525	2,279	481	8,320	5,188	6,994	1,968
2015 – Projected	1,691	1,382	2,534	2,297	487	8,391	5,314	7,184	2,018
2020 - Projected	1,743	1,415	2,609	2,370	509	8,646	5,467	7,422	2,079
2025 - Projected	1,778	1,450	2,694	2,462	528	8,911	5,664	7,656	2,151
2030 - Projected	1,820	1,489	2,778	2,585	546	9,218	5,898	7,940	2,249
2035 - Projected	1,885	1,528	2,860	2,752	561	9,586	6,123	8,230	2,368
Average Annual Percent Change									
1970 to 1980	–0.7%	–2.3%	–1.5%	–0.5%	1.8%	–1.1%	0.4%	0.1%	0.3%
1980 to 1990	0.4	0.3	0.3	0.3	0.7	0.3	0.2	0.4	0.5
1990 to 2000	0.3	1.0	0.7	1.3	1.6	0.9	0.6	0.9	0.4
2000 to 2005	0.9	0.5	0.4	0.2	1.4	0.5	0.6	0.6	0.5
2005 to 2010	0.7	0.1	0.1	0.2	0.3	0.3	0.5	0.3	0.3
2010 to 2015	0.3	0.1	0.1	0.2	0.3	0.2	0.5	0.5	0.5
2015 to 2020	0.6	0.5	0.6	0.6	0.9	0.6	0.6	0.7	0.6
2020 to 2025	0.4	0.5	0.6	0.8	0.7	0.6	0.7	0.6	0.7
2025 to 2030	0.5	0.5	0.6	1.0	0.7	0.7	0.8	0.7	0.9
2030 to 2035	0.7	0.5	0.6	1.3	0.5	0.8	0.7	0.7	1.0

Notes: (a) Totals may not add due to rounding.
(b) Consists of the following counties: Dutchess, Nassau, Orange, Putnam, Rockland, Suffolk, Sullivan, Ulster and Westchester.
(c) Consists of the following counties: The 13 counties of the North Jersey Transportation Planning Authority (Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, Warren) plus Mercer.
(e) Consists of the following counties: Fairfield, Litchfield, New Haven.

Source: New York Metropolitan Transportation Council, March 2008.

NYMTC's latest population projections for the tri-state region as a whole (including New York City) for 2010 to 2035 were released in March 2008. NYMTC projects steady population growth throughout the entire region as a whole ranging from 0.3 percent to 0.8 percent. As stated earlier, despite the change in economic conditions, NYMTC will not be updating its forecasts.

With the 2000 Census exceeding previous expectations and population increases region-wide, population growth should continue to have a positive effect on traffic demand on the TBTA crossings in the long-term. NYMTC's most recent projection is for a population of over 9 million for New York City by 2030.

In summary, generally, employment indicators overall appear to have had a more noticeable effect on traffic volumes on the TBTA facilities than population growth. However, TBTA traffic

variations do not always correlate year by year with the regional demographic trends. As discussed throughout this report, demand for the TBTA facilities has been strong overall, and NYMTC's long-term regional population projections indicate an increasing trend throughout the forecast period. With regard to employment, there may be some years that will show declines, but there will be other years that will be characterized by significant growth. Overall growth is expected in the long-term through the end of NYMTC's forecast period in 2035.

Motor Vehicle Registrations

One of the indicators of traffic stability and/or growth in an area is the trend in the number of motor vehicle registrations. As shown in the following table, motor vehicle registrations increased for the period 2000 through 2008 in New Jersey, decreased slightly in New York City and remained relatively constant throughout New York State. The most recent data available indicate that between 2000 and 2008 vehicle registrations grew by an average annual rate of growth of 1.4 percent in New Jersey. In Connecticut, registrations increased between 2007 and 2008, continuing an upward trend. From 2000 to 2008, registrations in Connecticut grew at an average rate of 1.3 percent per year. Note that, despite the recession, motor vehicle registrations in New York, New Jersey and Connecticut increased from 2007 to 2008. These data are illustrated in Table 16.

Motor vehicle registrations are not projected for future years. However, based on past trends, it is expected that growth will continue in regional motor vehicle registrations in parallel with the demographic indicators.

Table 16 Motor Vehicle Registrations
(000s)

Year	New York City	New York State [(a)]	New Jersey	Connecticut
2000	2,044	10,661	6,907	2,735
2001	2,025	10,707	7,086	2,796
2002	1,946	10,445	7,325	2,893
2003	1,869	10,414	7,420	2,928
2004	1,849	10,450	7,475	2,989
2005	1,857	10,477	7,545	3,011
2006	1,833	10,551	7,621	3,016
2007	1,926	10,665	7,728	3,035
2008	1,945	10,698	7,744	3,036
Average Annual Growth				
2000-2008	–0.6%	0.0%	1.4%	1.3%

Notes: (a) Including New York City.
Sources: New York State Department of Motor Vehicles, Connecticut Department of Motor Vehicles and New Jersey Department of Motor Vehicles.

Fuel Conditions

The availability and pricing of motor fuel has historically affected the use of TBTA facilities. During the previous 36 years, fluctuations in traffic volumes occurred when fuel was either in short supply and/or prices increased rapidly. These conditions existed in 1973-1974, the summer of 1979, during the first war in the Persian Gulf in 1990-1991 and again during the Iraq war and in the aftermath of Hurricane Katrina.

More recent history has shown that U.S. motor fuel prices reached $4.11 for regular gasoline in July 2008. Prices for regular gasoline in the New York City area averaged $4.01 per gallon during the summer, with the maximum being $4.18 per gallon the week of July 7, 2008. The price then dropped precipitously in the second half of the calendar year as the economy contracted. As of March 30, 2009, the average price for a gallon of regular gasoline in the U.S. was $2.05—down $1.24 per gallon (37.8 percent) from a year ago. The current price in the New York City area was $1.99 per gallon, a decrease of $1.22 per gallon (38.0 percent) from the same time last year. The $4.11 per gallon represents an all time high, surpassing the previous high set in March 1981, when a gallon of regular gasoline cost $3.39 in today's (March 2009) dollars.

Other factors currently driving the prices on fuel are:

- Steady incremental gas price increases caused by speculative investments in gasoline futures in the commodities markets;
- Gasoline consumption while currently down, is expected to continue to grow, albeit at modest rates;
- Similar demand for gasoline and petroleum products from China and other developing nations is also down because of their contracting economies;
- The supply of gasoline in the United States in storage continues to expand, and
- Volatility and political unrest continues in oil producing countries, particularly in the Middle East.

During 2008, transactions on the TBTA facilities decreased from their 2007 levels as gasoline prices fluctuated, first up and then down, and the economy continued to worsen. Also affecting traffic was the March 2008 toll increase.

Gasoline prices in New York City are currently hovering near $2.00 per gallon. The travel benefits of this reduced price, however, are being offset by the impact of the recession. This occurs since most of the trips on the TBTA facilities are commuter or work-oriented and they will be affected by the level of employment, discussed previously.

According to the Energy Information Administration's (EIA) *This Week In Petroleum* of April 1, 2009 regarding the possibility of gasoline prices returning to $3.00 per gallon level or higher:

> Although future market conditions are highly uncertain, EIA does not see gasoline prices climbing to such levels this year. It does seem likely, however, that gasoline prices will average more than $2 per gallon this summer. On average, prices of crude oils used by U.S. refiners have risen by about $17 per barrel, which translates to about 42 cents per gallon. As such, higher crude oil costs account for most of the increase in retail gasoline prices seen over this period. Production cuts from OPEC are one factor strengthening crude oil markets, but steadying gasoline demand may also be bolstering both crude oil and gasoline prices.

The article goes on to say that "Retail gasoline prices approaching $3 per gallon, however, are probably not reachable, let alone sustainable, this summer due to continuing surplus refining capacity and the continuing effect of the economic downturn on fuel demand."

Toll Impacts and Elasticity

Tolls that are increased periodically affect traffic usage, especially if they outpace the rate of inflation, as they have on the TBTA facilities, as well as in those instances where competing facilities provide a good alternative. Elasticity, as used herein, is the relationship between traffic volume and the toll rate change, and represents the relative decrease in traffic corresponding to a given increase in toll. Elasticity is expressed as a negative value and the higher the absolute value, the more apt a facility is to lose traffic, which can be due to diversions to competing facilities, switches in travel modes, consolidation of trips and elimination of trips. Elasticity, in this sense, is used to analyze the relationship between tolls and use, i.e., when tolls are increased, motorists react and travel patterns may change.

Elasticity factors vary, demonstrating that users react differently to toll increases depending on influencing conditions. On the TBTA crossings, elasticity tends to be influenced by the proximity of the toll-free City bridges and other considerations. The low factors for the Throgs Neck and Bronx-Whitestone bridges indicate their relative isolation from the nearest toll-free competitor, the Queensboro Bridge. Further south on the East River at the RFK Bridge and the Queens Midtown and Brooklyn-Battery tunnels, elasticity increases as the degree of toll-free competition increases. The TBTA tunnels tend to lose traffic particularly when the competing crossings are operating under reasonable levels of traffic service and providing motorists with viable toll-free alternatives during non-peak periods. In addition, trip purpose influences demand, i.e., peak-period, work-related trips are less elastic than off-peak trips that have fewer travel-time constraints.

It is our understanding that TBTA intends to implement future toll increases of 5 percent every two years in the future, after the planned toll increase on July 11, 2009. For the forecast period of this report, this would be toll increases in 2011, 2013, 2015, 2017 and 2019. The 5 percent biennial increases (2.47 percent per year, compounded) will be at approximately the same level as recent general cost increases due to inflation. This relatively small increase coupled with the

high usage of Electronic Toll Collection (ETC) on TBTA facilities would tend to reduce the elasticity factors seen in past toll increases. Also, the elasticities resulting from the 2003 and 2005 toll increases (the first two toll increases of the ETC era) were lower than the historical elasticities. Such results for TBTA – that show that ETC users are not as affected by toll increases as those who pay cash tolls – are consistent with results of other toll agencies with substantial ETC usage..

The new toll increase implemented on March 16, 2008 recognized this modest change to the historical elasticities. Going forward, however, due to the simultaneous impacts of the toll increase, the steep rise and fall of fuel prices and the worsening economy, it was not possible to isolate and evaluate the specific effects of this increase and to determine if the elasticity factors have changed significantly. In the absence of any definitive/empirical data it was determined to be prudent to continue to use elasticity factors in projecting toll facility volumes for 2009 through 2019 which continue to reflect this adjustment from the historical elasticity factors seen in toll increases occurring prior to the ETC era. These are shown on Table 17.

Table 17 Elasticity Factors for 2009-2019

Location	Elasticity Factors
Throgs Neck Bridge	–0.063
Bronx-Whitestone Bridge	–0.063
RFK Bridge	–0.125
Queens-Midtown Tunnel	–0.115
Brooklyn-Battery Tunnel	–0.215
Verrazano Narrows Bridge	–0.076
Henry Hudson Bridge	–0.174
Marine Parkway Bridge	–0.061
Cross Bay Bridge	–0.082

Note: For each 1% increase in toll the volume is expected to decrease by the elasticity factor; e.g. for each 1% increase in the toll at the Queens-Midtown Tunnel, volume would decrease by .115%.

Two sets of forecasts have been prepared: one at constant tolls (at the July 2009 level); and the other with toll increases assumed by URS to occur in January 2011, 2013, 2015, 2017 and 2019.

For the periodic toll-increase scenario, it was assumed that the toll levels (i.e., the cash toll for passenger cars) on the major and minor crossings would be increased by 5 percent every two years from 2011 to 2019. It was also assumed that the truck tolls would be increased proportionately, and that the relationships between cash and *E-ZPass* tolls for passenger cars would remain the same as those implemented for the upcoming toll increase on July 11, 2009.

As for the impacts of the toll increases on traffic demand, the elasticity factors from Table 17, as described above, were used to calculate traffic decreases, as shown in Table 18. These traffic impacts represent the reduction in values from the corresponding annual traffic levels that would be expected if the tolls were not increased.

Table 18 Estimated Percent Change in Average Toll Rates and Traffic

Facility	Elasticity Factor	2009		2011		2013		2015		2017		2019	
		Toll	Traffic	Toll	Traffic	Toll	Traffic	Toll	Traffic	Toll	Traffic	Toll	Traffic
Throgs Neck	–0.063	29.6%	–1.9%	5.0%	–0.3%	5.0%	–0.3%	5.0%	–0.3%	5.0%	–0.3%	5.0%	–0.3%
Bronx-Whitestone	–0.063	29.4	–1.9	5.0	–0.3	5.0	–0.3	5.0	–0.3	5.0	–0.3	5.0	–0.3
RFK	–0.125	29.4	–3.7	5.0	–0.6	5.0	–0.6	5.0	–0.6	5.0	–0.6	5.0	–0.6
Queens-Midtown	–0.115	29.2	–3.4	5.0	–0.6	5.0	–0.6	5.0	–0.6	5.0	–0.6	5.0	–0.6
Brooklyn-Battery	–0.215	29.0	–6.2	5.0	–1.1	5.0	–1.1	5.0	–1.1	5.0	–1.1	5.0	–1.1
Verrazano Narrows	–0.076	29.6	–2.2	5.0	–0.4	5.0	–0.4	5.0	–0.4	5.0	–0.4	5.0	–0.4
Henry Hudson	–0.174	29.1	–5.1	5.0	–0.9	5.0	–0.9	5.0	–0.9	5.0	–0.9	5.0	–0.9
Marine Parkway	–0.061	33.5	–2.0	5.0	–0.3	5.0	–0.3	5.0	–0.3	5.0	–0.3	5.0	–0.3
Cross Bay	–0.082	33.0	–2.7	5.0	–0.4	5.0	–0.4	5.0	–0.4	5.0	–0.4	5.0	–0.4

The periodic toll increases indicated above were selected by URS to provide increases for cash passenger cars of 5 percent, and corresponding increases for the other vehicle classifications, every two years on all facilities. These increases have been assumed by URS for forecasting purposes only.

Bridge and Tunnel Capacities

URS assessed the peak-hour capacity level of each facility at the mid-point of the bridge or tunnel, based on a highway-type capacity analysis. We recognize, however, that the TBTA bridges and tunnels have different physical and operational characteristics than do highways. Therefore, in our capacity assessment, we considered operational factors such as ramp approaches, vehicle merges, grades, sight lines, lane widths, lack of shoulders, and vehicle spacing and lane configuration at toll plazas, including *E-ZPass* lanes. The local street system feeding the TBTA crossings also becomes constrained during peak periods, with unstable traffic flows occurring on congested roadways. This could have an impact on TBTA facility operations during various travel periods.

We also reviewed toll plaza operations with the electronic toll payment system. Characteristics of the *E-ZPass* system are discussed throughout this report. The acceleration of vehicle throughput for *E-ZPass* customers has mitigated congestion at the toll plazas. With *E-ZPass* participation rate at 74 percent in 2008, and the customer base increasing, efficient toll plaza operations are anticipated throughout the forecast period.

Additionally, we have reviewed past annual traffic volumes at each facility for comparison with the current traffic levels. URS conducted this review (in early 2009), matching the 2008 traffic volumes against the highest annual volumes recorded, by facility, going back to 1970. Note in

Table 19 that the Cross Bay Bridge and the Queens Midtown Tunnel carried their highest volumes in 2007.

Table 19 Comparison of 2008 Traffic with Highest Recorded Levels Since 1970

Facility	Highest Volume Since 1970		2008 Volume* (000s)	2008 Percent of Highest Volumes
	Year	Volume (000s)		
Throgs Neck Bridge	2006	43,186	40,492	93.8%
Bronx - Whitestone Bridge	2004	45,223	42,803	94.6
RFK Bridge	1988	64,215	59,741	93.0
Queens Midtown Tunnel	2007	29,366	28,620	97.5
Brooklyn-Battery Tunnel	1971	22,920	16,899	73.7
Verrazano-Narrows Bridge	2002	73,361	68,884	93.9
Henry Hudson Bridge	2004	24,703	22,823	92.4
Marine-Parkway- Gil Hodges Bridge	1971	9,150	7,829	85.6
Cross Bay Veterans Memorial Bridge	2007	7,676	7,589	98.9

* From Table 6

While traffic volumes during peak hours may approach capacity and limit traffic growth during these hours, there is room for traffic growth during non-peak conditions through peak spreading. Traffic volumes can continue to grow, but growth would be at a slower pace.

TBTA and Regional Operational and Construction Impacts

Traffic volumes on TBTA facilities are influenced by construction and rehabilitation projects involving roadways and bridges in the New York City area.

Major projects that result in long-term closures on the competing bridges may increase volumes on TBTA's facilities. Also, long-term lane closures on the roadway network serving the TBTA crossings or on the TBTA crossings themselves may affect TBTA traffic volumes or cause traffic to shift from the affected crossing to either another TBTA facility or to one of the City's toll-free bridges. For example, when the replacement of the deck on the Bronx-Whitestone Bridge began in June of 2005, some traffic diverted to the Throgs Neck Bridge.

A number of roadway construction/rehabilitation projects, over the past few years, have influenced traffic volumes on TBTA facilities, and future construction will also affect traffic. The following descriptions also highlight area construction activities and measures that have influenced TBTA volumes and other planned and proposed projects that may affect traffic during the forecast period. Information on future construction activity was obtained from the New York State Department of Transportation, New York City Department of Transportation, NYMTC, and the Port Authority of New York and New Jersey.

In general, the majority of construction activities programmed for the TBTA facilities themselves are scheduled to take place during off-peak hours, including nighttime lane closures in the tunnels. Therefore, they are expected to have no discernible effect on toll revenue.

- On the **Verrazano-Narrows Bridge**, widening of the Belt Parkway ramps in future capital programs is not anticipated to require lane restrictions since the ramps will be widened to accommodate staged construction. Peak hour flow of three lanes will be maintained during upper level redecking in 2010 with a movable barrier, so no effect on traffic is anticipated.

- The **Cross Bay Veterans Memorial Bridge** superstructure/deck rehabilitation began in 2007. The roadway is to be reduced to two lanes in each direction through 2010. Due to low traffic volumes, this has not had a detrimental effect on traffic flows.

- The **Marine Parkway-Gil Hodges Memorial Bridge** had daily lane closures until April 2009 for on-going construction.

- On the **Bronx-Whitestone Bridge**, the replacement of the approach decks began in the Bronx in 2008, and in Queens are expected to be scheduled in 2011-2012 once the Bronx approach is completed. Three lanes will be maintained in the peak direction, with two lanes in the reverse direction during staged construction.

- The **Throgs Neck Bridge** has multiple rehabilitation projects scheduled, including replacing the concrete deck. Installation of an orthotropic deck is expected to begin in the next capital program. With a contraflow lane, three lanes will be maintained in the peak direction. Cross Island Parkway ramp closures will occur this summer (for 35 days on each ramp). It is anticipated that traffic will divert to the Bronx-Whitestone Bridge during these construction projects, or in the case of the Cross Island Parkway ramps, to the Clearview Expressway (Queens) approach to the Throgs Neck Bridge.

- Redecking of the lower level of the **Henry Hudson Bridge** is underway, with completion scheduled by 2010. Construction is staged to minimize traffic impacts. Replacement of the upper level deck in the vicinity of the toll plaza that was scheduled for 2008 remains on hold. Construction to replace curb stringers and remove upper level sidewalks will necessitate closing one lane to traffic in 2010.

- **RFK Bridge** deck widening and repair on Wards and Randalls Islands and at the Bronx and Manhattan toll plazas requires off-peak closures but no peak restrictions.

- **Queens-Midtown Tunnel** has no on-going work. Roadway slab work, which is anticipated in future capital programs, will be performed during off-peak weekend or night closures.

Operational Changes Resulting from September 11, 2001

- The ban on eastbound commercial vehicles remains in effect at the Holland Tunnel. Some commercial vehicles (classes 1, 2 and 3 - 2 and 3-axle single unit trucks) may now use the westbound Holland Tunnel to exit New York City. Vehicle classes 4, 5 and 6 (larger trucks) are banned in both directions. In addition, no trailers or towed vehicles are allowed in both directions.

Competing Ferry Service

- **New York Water Taxi** operates East River ferry service between Manhattan, Brooklyn and Queens. A new commuter service was instituted on May 12, 2008 between Pier 11/Wall Street and Breezy Point in Rockaway with an intermediate stop at Brooklyn Army Terminal in Bay Ridge Brooklyn. The East River ferry service resumed during July 2008. The East River routes include Pier 11/Wall Street and East 35th Street to Fulton Ferry Landing, Hunters Point and Schaefer Landing. In addition to the East River routes, New York Water Taxi provides service between Yonkers and both the World Financial Center and Pier 11/Wall Street. Service generally operates during peak periods.

- As part of the NYCDOT's proposed expansion of East River ferry service, there is a plan to further expand service by adding new stops at North Williamsburg and Greenpoint in Brooklyn. Studies conducted by the New York City Economic Development Corporation and NYC Department of Transportation have concluded that this arrangement on the East River will provide the most useful service for commuters in Manhattan, Queens and Brooklyn. This phase of the plan will also include the construction of a new landing at Roosevelt Island that will be used by a private operator.

- NYC Department of Transportation operates the **Staten Island Ferry** between the Battery and St. George. Ferries carry vehicles and passengers on frequent schedules around the clock. Additional weekend service began in 2006 with 30-minute service during the day.

Since ferries have limited or no capacity for vehicles, ferry services will not significantly affect TBTA facilities.

Competing East River Crossings Construction

- **Queensboro Bridge** – Continuing numerous rehabilitation projects have involved the upper or lower levels, or ramp approaches to the bridge, including miscellaneous items at various locations throughout the bridge, approaches and ramps that were not addressed or were deleted from previous contracts. The rehabilitation of the north and south lower outer roadways was recently completed. A total of one lane in each direction may be closed on the lower level from 10:00 PM to 5:30 AM Monday to Friday; Saturday 12:01 AM to 7:00 AM; and Sunday from 1:00 AM to 11:00 AM. Additionally one of the two lanes on the north upper roadway to Manhattan may be closed for roadway repairs from 10:00 PM to 5:00 AM Sunday nights to Friday mornings. The south outer roadway to Queens may be closed 1:00 AM to 6:00 AM , weeknights and Saturday 1:00 AM to 7:00 AM. The south upper roadway to Queens may be closed 1:00 AM to 5:30 AM Sunday night to Friday morning, 2:00 AM to 7:00 AM Saturday, and 2:00 AM to 8:00 AM Sunday. The north upper roadway to Manhattan may have one of two lanes closed 10:00 PM to 5:00 AM weeknights, and 12:01 AM to 7 AM Saturday and Sunday. These lane closures are necessary to facilitate NYCDOT bridge maintenance, repairs and/or painting until the end of November 2009. Seismic retrofitting of the Queensboro Bridge is programmed to be completed in 2013.

- **Williamsburg Bridge** – There are four lanes westbound (Manhattan-bound) and two lanes eastbound (Brooklyn-bound) with two lanes closed for construction in the off-peak direction weekdays from 6:00 AM to 10:00 AM. Weekdays from 10:00 AM to 3:00 PM there are three lanes maintained inbound, and two lanes maintained for traffic outbound, with three lanes closed for construction activity. There are four lanes eastbound and four lanes westbound all other times. These off-peak hour lane closures are required to facilitate NYCDOT bridge maintenance and rehabilitation work until December 2009. Truck traffic is allowed on the bridge in both directions on the outer roadways only. Pedestrian and bicycle access maintained at all times.

- **Manhattan Bridge** – There are five lanes from 6:00 :00 AM to 10:00 :00 AM Monday to Friday westbound (Manhattan-bound) of which two are on the north upper roadway (the left lane HOV2+) and three on the lower roadway; two lanes are maintained on the south upper roadway eastbound (Brooklyn bound). There are three lanes westbound and two eastbound 10:00 AM to 3:00 PM Monday to Friday. No trucks are permitted on the north upper westbound roadway from 5:00 AM to 3:00 PM Monday to Friday. Overnight Monday to Friday from 3:00 PM to 5:00 AM the next day, there are five lanes eastbound and two lanes westbound. There are five lanes westbound to Manhattan and two lanes eastbound to Brooklyn over the weekend from 9:00 PM Friday to 10:00 AM Monday. Lane closures may occur on weekends and overnight for maintenance and construction activity on an as needed basis through June 2009. Replacement of the Manhattan Bridge suspender ropes and rewrapping all cables is expected to be complete in 2012. Seismic retrofitting is scheduled to be completed in 2014.

- **Brooklyn Bridge** – The reconstruction program that began in 1980 is expected to be complete in 2014. Maintenance and inspection of the maintenance travelers on the main

span of the Brooklyn Bridge is expected to be completed in June 2009. At that time, rehabilitation of the approaches and ramps and the painting of the bridge is scheduled to begin. One of three lanes may be closed in the eastbound direction to Brooklyn as needed 10:00 AM to 3:00 PM weekdays, 11:00 PM to 6:00 AM Monday to Friday, and Saturday and/or Sunday 2:00 AM to 2:00 PM to facilitate NYCDOT bridge maintenance through June 2009. Beginning in June 2010, all Manhattan-bound lanes will be closed for 24 summer weekends to be spread out from 2010 through 2013. An Intelligent Transportation System is scheduled to be implemented after 2009 allowing for traffic routings to the Brooklyn-Battery Tunnel and Manhattan Bridge. All construction projects, including seismic retrofitting of the Brooklyn Bridge, are programmed to be complete in 2014.

It is unlikely any of the TBTA facilities will gain materially from these construction projects, but it is possible that the Brooklyn-Battery Tunnel will experience slightly higher usage levels.

Other Major Bridge and Roadway Construction

During the forecast period, several major roadway and bridge projects, which are part of NYMTC's Transportation Improvement Program (TIP) for 2008-2012, will potentially have traffic implications for the TBTA facilities. The TIP includes the planned year of construction; however, adherence to this schedule is not mandated. Some of these projects do not yet have lane closure plans, which will be developed in coordination with NYCDOT and local community boards. As a matter of policy, NYCDOT seeks to restrict lane closures to off-peak and nighttime hours.

Other bridges, roads and overpasses programmed for construction include:

- **Willis Avenue Bridge** – Connects the FDR Drive, Major Deegan Expressway and Bruckner Expressway. Construction of a new Willis Avenue Bridge started in 2007 and is scheduled to be completed by the end of 2012. A new off-line bridge is to be constructed south of the existing bridge, which will be maintained in service until the new bridge is opened to traffic. Any restrictions on the Willis Avenue Bridge or approach ramps would induce some diversions to the RFK Bridge.

- **Third Avenue Bridge** – Replacement of the span over the Harlem River was completed in 2006. All five lanes are open to traffic, and approaches in the Bronx have been restored. Whatever diversions to the RFK Bridge that had occurred during reconstruction should have returned to routings based on normal driver preferences.

- **Broadway Bridge —** Rehabilitation of the Broadway Bridge over the Harlem River is scheduled to begin in 2010 and finish in 2013, which may divert some traffic to the Henry Hudson Bridge.

- **Madison Avenue Bridge —** Rehabilitation of the Madison Avenue Bridge over the Harlem River is scheduled to begin in 2011.

- **I-87/Major Deegan Expressway** – Rehabilitation of various overpasses along the Major Deegan Expressway between 138th Street and Mosholu Parkway is scheduled for design and construction thorough 2010. Safety improvements northbound at West 230th Street are scheduled for 2009. Traffic impacts at the RFK Bridge should not be significant.

- **Three Bridges —** The Three Bridges Project in the Bronx included reconstruction of:
  - I-295 (Cross Bronx Extension) bridge over Randall Avenue;
  - East Tremont Ave. over I-295 (Cross Bronx Expressway); and
  - I-95 bridge over I-695 (Throgs Neck Expressway).

  Reconstruction of these overpasses has reached substantial completion. The first two projects necessitated the closing of one lane in each direction of the Cross Bronx Expressway between East Tremont Avenue and Randall Avenue during midday. This allowed for two lanes in each direction during peak hours. More lane closures occurred during the off-peak and night hours to facilitate project work. Motorists experienced lane closures on I-95 northbound and I-695 north and southbound during off-peak hours. Service roads in this area were subject to shifts to temporary lanes. Because of these construction projects, traffic may have shifted from the Throgs Neck Bridge to the Bronx-Whitestone Bridge or possibly the RFK Bridge. Intelligent Transportation System (ITS) components were installed.

- **Grand Central Parkway**/94th Street interchange – This project involves implementing safety and operational improvements at the intersection of 94th Street and Ditmars Boulevard, plus bridge rehabilitation of the 94th Street bridge and the 62nd Drive pedestrian bridge over Grand Central Parkway. The project is expected to begin in 2009 and be completed in early 2013.

- **I-95/Alexander Hamilton Bridge** and Highbridge interchange ramps rehabilitation – This project will rehabilitate the I-95 corridor between Amsterdam Avenue in Manhattan and Undercliff Avenue in the Bronx. Major construction is expected to begin in the spring of 2009 and be completed by the winter of 2011/2012. URS will review the Maintenance and Protection of Traffic (MPT) plans when they become available to determine what, if any, impacts there will be on TBTA facilities.

- **I-278**/**Gowanus Expressway** repair and interim deck replacement **—** The project includes replacement of the concrete deck and deteriorated elements, until a permanent improvement is constructed. The New York State Department of Transportation (NYSDOT) is currently preparing a Draft Environmental Impact Statement (DEIS) in support of permanent improvements to the Expressway. The DEIS, which is examining both roadway and tunnel alternatives, is not expected to be completed until 2010, with an earliest anticipated construction start date of 2013. Until a permanent replacement option is built, an interim solution is needed to maintain the viability and safety of the structure. One construction contract between the Brooklyn-Battery Tunnel and Sixth Avenue was completed in 2007. Construction on the eastbound Brooklyn-Queens Expressway connector ramp, from the Brooklyn-Battery Tunnel to the Prospect Expressway, the Prospect Expressway to the Belt Parkway and the southern section of the Gowanus

Expressway is currently underway and is scheduled for completion in the summer of 2009. Brooklyn-Battery Tunnel approaches and Prospect Expressway interchange construction are scheduled from summer 2008 to fall 2010. The Belt Parkway interchange is scheduled from 2009 to 2011. The project is being designed to minimize lane closures and traffic disruption. The eastbound Bus/HOV lane is being maintained from the Verrazano-Narrows Bridge to the Brooklyn-Battery Tunnel during the AM peak period, and a westbound Bus/HOV lane is to be operated from 2009 to 2010.

- **I-278/Brooklyn-Queens Expressway —** Park Avenue viaduct. NYSDOT began reconstruction of the Brooklyn-Queens Expressway between Flushing Avenue and Sands Street in 2005, which is anticipated to be completed in 2009. Six travel lanes are generally available at all times except 12:00 AM to 5:00 AM, during which two travel lanes will be closed one direction at a time until the end of 2009.

- **I-278/Brooklyn-Queens Expressway -** Reconstruction of the cantilever section between Atlantic Avenue and Sands Street is programmed for design in 2010-2012 and is currently scheduled to begin construction in 2017.

- **I-278/BQE Kosciusko Bridge —** NYSDOT completed the Final Environmental Impact Statement (FEIS) for the Kosciuszko Bridge project. The FEIS recommended a replacement of the existing bridge by building a new permanent, parallel structure on the east side of the existing bridge. The recommended alternative provides for maintaining all lanes on the Brooklyn-Queens Expressway and local connections, while constructing a replacement bridge. Construction is programmed to begin no sooner than 2012.

- **I-678/Whitestone Expressway** bridge over the Flushing River – The estimated completion date of the project is November 2009. All existing travel lanes will be maintained during peak hours. Lane closures will take place during non-peak hours. There will be no lane closures two hours before and two hours after a New York Mets home game. Rehabilitation of the northbound and southbound Whitestone Expressway and construction of the new northbound Van Wyck Expressway ramp to the northbound Whitestone Expressway, as well as an Intelligent Transportation System, have been completed. There should be no significant effect on Bronx-Whitestone Bridge traffic.

- **Route 9A** – After Route 9A (West Street) was heavily damaged when the World Trade Center was attacked, a six-lane temporary road was opened, allowing the Brooklyn-Battery Tunnel to re-open. Further construction to improve Route 9A to a six- to eight-lane urban highway is scheduled for completion in June 2009. This will have a positive impact on traffic using the Brooklyn-Battery Tunnel as motorists achieve the comfort level with the permanent traffic patterns that will be in place after completion.

- **I-495/Long Island Expressway** –Van Wyck Expressway to Grand Central Parkway **—** Alternatives include: (1) rehabilitation of overpasses, or (2) rehabilitation plus three new connecting ramps. No further information is available.

- **I-278/Brooklyn-Queens Expressway —** Rehabilitation of the Grand Central Parkway interchange complex from 25th Avenue to 71st Street is scheduled to begin in 2009 and from Astoria Boulevard to 44th Street in 2010.

- **I-295/Clearview Expressway —** Rehabilitation of the Grand Central Parkway interchange is scheduled to begin in 2012 and is expected to be completed in 2021.

- **I-678/Van Wyck Expressway** – Rehabilitation of Roosevelt Avenue bridge is scheduled to begin in 2011.

- **Belt Parkway** – Provides access to the Verrazano-Narrows Bridge from southern Brooklyn, JFK Airport, Queens and the Long Island parkway system. Rehabilitation of bridges over four waterways and three overpasses are underway or scheduled for 2008-2014. Traffic impacts should be limited to detours or alternative access routes during off-peak periods, when construction severely limits capacity. Traffic to/from the Verrazano-Narrows Bridge could be affected.

- **I-278/Staten Island Expressway** – NYSDOT is operating exclusive bus lanes in both directions in the median of the Staten Island Expressway on a 24-hour/7-day basis, between Slosson Avenue and the Verrazano-Narrows Bridge toll plaza. A recent Bus Lane/Priority Lane Study analyzed the feasibility of extending the bus lanes west to the Goethals Bridge toll plaza; and allowing use of the lanes by high-occupancy vehicles (HOV3+). These improvements would provide alternatives to single-occupant automobile use, particularly during peak periods. Construction between Slosson Avenue and Victory Boulevard is programmed to begin in 2015 and is scheduled for completion in the summer of 2017. One of the feasible scenarios would allow off-peak and weekend use of the lanes by all traffic, which would make the Verrazano-Narrows Bridge more attractive to motorists at those times.

- **I-278/Staten Island Expressway** access improvement between the Verrazano-Narrows Bridge toll plaza and Renwick Avenue is programmed for construction beginning in fall 2009 and to be completed in fall 2011. The project will include the construction of five new ramps, relocating/reconfiguring three ramps and adding auxiliary lanes. These improvements will improve traffic flows between the Staten Island Expressway and Verrazano-Narrows Bridge**,** as well as reduce accidents**.**

- **FDR Drive –** Design of reconstruction of the FDR Drive viaduct from East 24th to East 42nd Street. The project will reconstruct this section of the FDR Drive to reasonable standards and improve safety. It is anticipated that the construction schedule (indefinite) will resemble the current project on the FDR Drive extending from East 53rd to East 64th Streets.

- **Harlem River Drive —** Design of safety alignment improvements between East 116th and East 125th Streets is scheduled to begin in 2009, followed in 2011 by reconstruction between East 125th and East 132nd Streets, including a new entrance ramp from the Third Avenue bridge onto southbound Harlem River Drive.

- **Henry Hudson Parkway —** The viaduct from West 72nd to West 82nd Streets is programmed for rehabilitation beginning in 2009.

- **Bruckner/Sheridan Expressway Interchange -** Preliminary engineering and Draft Environmental Impact Statement are currently underway on reconstructing the interchange of Bruckner Expressway (I-278) and Sheridan Expressway (I-895). The project will relieve the four-lane bottleneck on the six-lane Bruckner Expressway and improve access to the Hunts Point peninsula. The scenarios include deconstructing the Sheridan Expressway altogether or replacing it with a lower-speed boulevard. It is anticipated that construction will be initiated by 2014/2015. Traffic patterns to/from the RFK Bridge would be altered somewhat, depending on the alternative selected.

- **I-278/Goethals Bridge** Replacement **–** According to the Winter 2008/2009 Goethals Bridge Replacement Newsletter, "Based on the screening process conducted to identify project alternatives for evaluation in the DEIS, on input received during public outreach meetings, and on design studies conducted to address height limitations set for any bridge replacement due to the Goethals Bridge's proximity to Newark Liberty International Airport, four refined bridge-replacement alternatives have been studied for the DEIS." The newsletter goes on to say that "each of the two roadway decks contain three 12-ft.-wide lanes, one 12-ft.-wide outer shoulder, one 5-ft.-wide inner shoulder, and one 10-ft.-wide bikeway/ sidewalk (on the northern deck only)."

- **Staten Island Expressway–West Shore Expressway** (I-278/NY-440) interchange **—** Design of reconstruction is scheduled to begin in 2012. This project is to support potential Bus/HOV lanes on the Staten Island Expressway and reconstruction of the Goethals Bridge, and provide better connections to Howland Hook intermodal marine/rail/highway facilities.

The Goethals Bridge and Staten Island Expressway-West Shore Expressway improvements would positively affect traffic volumes on the Verrazano-Narrows Bridge.

- **Intelligent Transportation Systems** – Installation began in 2008 in Brooklyn, including on the Gowanus Expressway (I-278), on State routes in Queens including the Long Island Expressway, on the New England Thruway (I-95), and in Manhattan on the Henry Hudson Parkway and FDR Drive. Substantial funds are programmed for ITS planning, coordination and management, and for operational support of NYCDOT's Traffic Management Center and Integrated Incident Management System. Active management of traffic and incidents should result in smoother flow on the highway system including TBTA facilities, and increase reliability and motorists' satisfaction.

Transit Improvements - Significant transit improvements, when completed, are expected to affect TBTA traffic levels during the forecast period through the year 2019

- **MTA Second Avenue Subway**: Construction of Phase 1 started in April 2007 and is scheduled for completion in 2013. Service from new stations at 96th, 86th and 72nd Streets

along Second Avenue will connect to the 63rd Street line. Phases 2, 3 and 4 will extend service to 125th Street and to Lower Manhattan by 2018 as funding becomes available, resulting in the creation of 16 new subway stations on Second Avenue. Four traffic lanes will be maintained through construction zones, and cross streets will be kept open.

The second section from 96th Street north to 125th Street is not yet funded and construction will probably be included in the 2010-2014 Capital Plan. Construction of the Second Avenue/34th Street station might result in a loss of capacity on the access routes to the Queens Midtown Tunnel due to inefficient flow during peak hours and closure of side streets adjacent to the construction area. During the construction on the northern portion of Second Avenue adjacent to the RFK Bridge, the ramps between the RFK Bridge and 125th Street may experience a loss of capacity. The high-volume ramps between the FDR Drive and the RFK Bridge would not be affected.

- **MTA/LIRR East Side Access:** This project will result in a new connection from the LIRR mainline tracks in Queens under Sunnyside Yard, connecting to the 63rd Street Tunnel leading to Grand Central Terminal. New tunnels are being bored in Manhattan west from Second Avenue, then under Park Avenue and into the lower level of Grand Central Terminal. Completion is scheduled for 2013. MTA anticipates that some travelers to the East Side will shift to the LIRR from other modes, including TBTA facilities.

- **Yankee Stadium Station** for a new MTA Metro-North construction continued through 2008 for an opening in May, 2009. It is estimated that between 6,000 and 10,000 people will use the station for Yankee home games, which will also provide service to the area on non-game days. Although the new station is located on Metro-North's Hudson Line south of the Morris Heights station, the intent is to provide service on game days from all three Metro-North services via the Mott Haven, wye rail complex. In addition to scheduled service on the Hudson, Harlem and New Haven lines, there will be special shuttles from Grand Central Terminal and 125th Street. Regular weekday and weekend train service from the new station to Grand Central Terminal and to points north will also be provided.

- **MTA Transit Service Changes.** Due to the impending 2009 MTA Budget balancing issues, there will be service cutbacks to the NYC subways, surface transit, and Long Island Railroad. This could result in positive revenue effects on the TBTA facilities as travelers may switch to automobiles.

Summary of Assumptions and Conditions

TBTA traffic, toll revenues and expenses have been projected by URS on the basis of the historical record of traffic, toll revenues and expenses, the capacities of the TBTA facilities, traffic growth forecasts, the estimated traffic elasticity due to toll variations, impacts of construction projects and the following assumptions and conditions, which we believe are reasonable.

- All TBTA facilities will be operated efficiently and maintained in good physical condition in order to attract customers and to sustain traffic demand levels.

- The TBTA adopted capital program for 2005-2009 will be carried out throughout the forecast period. Future capital programs sufficient to maintain the structural integrity of bridges and tunnels will be adopted and implemented throughout the forecast period.

- Electronic toll payment by *E-ZPass* will continue to be available on all TBTA crossings, and the payment of revenue in full to TBTA will continue to be in accordance with current interagency agreements.

- Congestion pricing in Manhattan will not be implemented in the near future.

- For the scenario with periodic toll increases, following the scheduled toll increase on July 11, 2009, tolls on TBTA facilities will be increased every other year by approximately five percent (2.47 percent per year compounded) beginning in 2011 and continuing through 2019. These increases are very close to recent increases due to normal inflation. Almost three-quarters of all tolls paid on TBTA facilities are ETC transactions.

- Capacity constraints which may be somewhat mitigated by stagnant or no traffic growth in the near term on the arterial highway network will, however, continue to limit traffic growth on the nine TBTA crossings.

- Highway/crossing improvements, in general, for the competing bridges and roadway network will be made in accordance with the plans and schedules described herein.

- Major TBTA roadway and structural improvements will continue to be performed during nighttime and non-peak hours, and/or in the off-peak direction, and approaches to the nine TBTA crossings will not be significantly impaired by construction work beyond the items discussed in this report.

- The forecasts are based on the assumption that *E-ZPass* usage will grow at the rate of 0.5 percent annually during the period included in these forecasts. While usage at a higher level would improve toll plaza operating conditions, it would also result in lower average tolls and, therefore, could reduce the rate of increase in gross toll revenues relative to traffic growth. However, growth in traffic volumes would be limited without *E-ZPass* at the toll plazas.

- Competing East River crossings will continue to operate toll-free and to be maintained in efficient operating condition.

- The long-term trends in regional employment and population, forecast by the New York Metropolitan Transportation Council and presented in this report, will be realized in the Tri-State area and in New York City.

- The price of regular gasoline in the New York metropolitan area will not exceed $3.00 per gallon during the next 12 months. If prices were to increase again as they did last year and prices rise substantially above the $3.00 level, discretionary travel could decline and there may be fewer recreational trips. In general, however, TBTA facilities carry regular commuters and other non-discretionary trips so that the overall impact on toll volumes and toll revenues is not expected to be significant if prices remain at or near the $3.00 per gallon level.

- LIRR East Side Access may shift some Long Island auto commuters to rail, after its planned completion in 2015.

- Current toll discount programs remain in effect at current projected levels, including the discount for *E-ZPass* customers and the Staten Island residents' discount program for the Verrazano-Narrows Bridge. The only exception to this is the elimination of *E-ZPass* discounts for non-NYCSC customers.

- The toll-rebate program, implemented in January 1998, for the benefit of *E-ZPass* customers who are residents of Broad Channel and Rockaway peninsula traveling on the Cross Bay Bridge, will be discontinued no later than the date of the next toll increase, currently scheduled for July 11, 2009.

- No other toll discount programs will be introduced that would adversely affect the TBTA toll facilities' revenue stream.

- Economic conditions, nationally and in the New York Metropolitan Area, will "bottom out" in 2010 and start to improve in 2011.

- No material natural disaster or local, state or national emergency will occur that would alter travel patterns and divert traffic from the TBTA facilities.

While the projections are made and presented year-by-year by URS, they are intended to show trends on the basis of its analysis of historical data and the assumptions and conditions set forth above. Variations in the year-to-year forecasted results may occur and such variations may be significant.

PROJECTED TRAFFIC, REVENUES AND EXPENSES

Future traffic and toll revenues are estimated for the 10-year (2009-2019) forecast period for each TBTA facility based on historical trends in traffic and toll revenue, elasticity factors for future toll increases, toll collection operations, capacities of the nine crossings, facility maintenance, *E-ZPass* participation levels, externalities such as area roadway improvement plans and regional demographic projections, and the assumptions and conditions summarized previously. Changes in these factors, which may potentially affect future traffic and toll revenue, are detailed throughout this report.

Trends in operating expenses for the toll facilities, TBTA's 2009 budget and 2010 through 2012 financial plans, and growth estimates based on the Consumer Price Index and historical trends, are input to the future operating expense forecast. Future operating expense estimates are used to develop net toll revenue projections over the forecast period.

Traffic and toll revenues were first projected on the basis that the tolls that will be placed into effect on July 11, 2009 will be continued throughout the forecast period. Then, using these estimates as a base, URS applied the elasticity impact factors listed in Table 17 and adjusted the traffic volumes and average tolls to develop the toll revenue forecast with periodic toll increases.

Traffic and Toll Revenue at Current Tolls

The methodology employed by URS to forecast traffic was based on the development of an annual growth rate for each facility (based on the historical traffic trends), the construction activities (historical and projected) throughout the highway network (bridges, tunnels and arterials) and the traffic capacity constraints in the network. Regional demographic projections were also taken into consideration.

All indicators point to the potential for negative to no traffic growth in the short-term due to the recession and the forecasted impacts of (a) the July 11, 2009 toll increase and (b) traffic increases in the future at low rates of growth. URS estimates that traffic on the Throgs Neck, Bronx-Whitestone, RFK, Henry Hudson, Verrazano-Narrows, and Cross Bay bridges and Queens Midtown Tunnel will increase primarily during the off-peak period, since these facilities are presently near (92 percent +) or at their capacity levels with respect to the highest recorded levels achieved since 1970 (from Table 19). Capacity constraints in the highway network are contributing factors.

The technique used in the forecast was to reduce the potential growth rates to reflect lower overall growth due to the expected slow emergence from the recession and the approaching of facility capacity. This approach produces conservative forecasts even though the introduction of *E-ZPass* has provided some additional capacity at the toll plazas.

On this basis, starting with the 2009 estimated average toll from Table 12 and the estimated traffic by facility based on assumed growth rates and the impact of the planned July 11, 2009 toll increase, URS calculated the corresponding toll revenue for the forecast period through 2019 (at constant tolls after 2009), as shown in Table 20.

Changes in traffic volumes in the range of –10.3 to +0.5 percent annually, depending on the facility, is estimated in the forecast period. This growth is based on the actual growth in traffic on each facility during the last 11 years, after the impact of toll increases were taken into account, and an assessment of the state of the economy in the region. With respect to employment forecasts, our growth assumptions are based on the OMB employment projections in the short-term and NYMTC's employment projections in the long-term. Note that the average tolls are anticipated to decline gradually starting in 2011, due to the expected increases in *E-ZPass* usage (at the discounted toll rates).

Traffic and Toll Revenue with Periodic Toll Increases

As mentioned previously, the traffic forecast with periodic toll increases was built upon the base forecast (from Table 20), to which the elasticity impacts (from Table 18) were applied. URS then applied the appropriate increased average tolls increased by the percentages, also shown in Table 18, in the years 2011, 2013, 2015, 2017 and 2019 (effective January 1) to calculate the corresponding toll revenues in the respective years. The traffic and revenue forecasts with periodic toll increases are listed in Table 21.

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Table 20 Traffic and Toll Revenue Forecast, Constant Tolls

Year	Throgs Neck	Bronx-Whitestone	RFK	Queens Midtown	Brooklyn Battery	Verrazano-Narrows	Henry Hudson	Marine Parkway-Gil Hodges Memorial Bridge	Cross Bay Veterans Memorial Bridge	Total
Traffic Change										
2008-2009	–2.4%	–2.9%	–6.0%	–6.4%	–10.3%	–2.8%	–7.2%	–6.5%	–10.3%	–4.8%
2009-2010	–1.0	–1.0	–2.0	–1.8	–3.4	–1.2	–2.7	–5.8	–6.3	–1.8
2010-2011	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2011-2012	0.5	0.5	0.5	0.8	0.5	0.5	0.5	0.2	1.1	0.5
2012-2013	0.5	0.5	0.5	0.8	0.5	0.5	0.5	0.2	1.1	0.5
2013-2014	0.5	0.5	0.5	0.8	0.5	0.5	0.5	0.2	1.1	0.5
2014-2015	0.5	0.5	0.5	0.8	0.5	0.5	0.5	0.2	1.1	0.5
2015-2016	0.5	0.5	0.5	0.8	0.5	0.5	0.5	0.3	1.1	0.5
2016-2017	0.5	0.5	0.5	0.8	0.5	0.5	0.5	0.2	1.1	0.5
2017-2018	0.5	0.5	0.5	0.8	0.5	0.5	0.5	0.3	1.1	0.5
2018-2019	0.5	0.5	0.5	0.8	0.5	0.5	0.5	0.2	1.1	0.5
Annual Traffic (000s)										
2008	40,492	42,803	59,741	28,620	16,899	68,884	22,823	7,829	7,589	295,680
2009	39,535	41,551	56,154	26,778	15,160	66,942	21,173	7,322	6,808	281,424
2010	39,149	41,144	55,051	26,297	14,643	66,149	20,596	6,898	6,380	276,308
2011	39,149	41,144	55,051	26,297	14,643	66,149	20,596	6,898	6,380	276,308
2012	39,345	41,350	55,326	26,496	14,716	66,480	20,699	6,916	6,451	277,779
2013	39,542	41,557	55,603	26,696	14,789	66,812	20,803	6,933	6,524	279,258
2014	39,739	41,764	55,881	26,898	14,863	67,146	20,907	6,950	6,597	280,746
2015	39,938	41,973	56,160	27,102	14,938	67,482	21,011	6,968	6,670	282,242
2016	40,138	42,183	56,441	27,306	15,012	67,819	21,117	6,985	6,745	283,747
2017	40,338	42,394	56,723	27,513	15,087	68,158	21,222	7,002	6,821	285,260
2018	40,540	42,606	57,007	27,721	15,163	68,499	21,328	7,020	6,897	286,781
2019	40,743	42,819	57,292	27,930	15,239	68,842	21,435	7,037	6,974	288,311
Average Toll										
2008	$5.43	$4.96	$4.82	$4.59	$4.35	$4.05	$2.02	$1.54	$1.61	$4.31
2009	6.19	5.71	5.54	5.26	5.01	4.70	2.34	1.76	1.84	4.97
2010	7.09	6.49	6.32	5.99	5.79	5.45	2.67	2.04	2.19	5.71
2011	7.08	6.49	6.31	5.98	5.79	5.44	2.66	2.04	2.19	5.71
2012	7.07	6.48	6.31	5.97	5.78	5.44	2.66	2.04	2.19	5.70
2013	7.06	6.47	6.30	5.96	5.77	5.43	2.66	2.04	2.18	5.69
2014	7.06	6.46	6.29	5.96	5.76	5.42	2.65	2.03	2.18	5.68
2015	7.05	6.45	6.28	5.95	5.76	5.41	2.65	2.03	2.18	5.68
2016	7.04	6.44	6.27	5.94	5.75	5.41	2.64	2.03	2.18	5.67
2017	7.03	6.43	6.26	5.93	5.74	5.40	2.64	2.03	2.17	5.66
2018	7.02	6.43	6.26	5.93	5.73	5.39	2.64	2.02	2.17	5.65
2019	7.01	6.42	6.25	5.92	5.73	5.39	2.63	2.02	2.17	5.64
Toll Revenue (000s)										
2008	$219,855	$212,125	$287,877	$131,264	$73,590	$278,906	$46,126	$12,019	$12,212	$1,273,974
2009	244,684	237,332	311,242	140,738	75,925	314,670	49,493	12,859	12,544	1,399,486
2010	277,654	267,208	348,074	157,473	84,842	360,513	54,902	14,104	13,989	1,578,759
2011	277,289	266,858	347,617	157,266	84,731	360,040	54,830	14,086	13,970	1,576,686
2012	278,310	267,840	348,896	158,247	85,043	361,365	55,031	14,102	14,108	1,582,943
2013	279,334	268,826	350,180	159,234	85,356	362,695	55,234	14,119	14,247	1,589,225
2014	280,362	269,815	351,469	160,227	85,670	364,030	55,437	14,136	14,388	1,595,535
2015	281,394	270,808	352,763	161,226	85,985	365,370	55,641	14,153	14,530	1,601,870
2016	282,430	271,805	354,061	162,232	86,302	366,715	55,846	14,169	14,673	1,608,233
2017	283,469	272,805	355,364	163,244	86,619	368,064	56,052	14,186	14,818	1,614,622
2018	284,513	273,809	356,672	164,262	86,938	369,419	56,258	14,203	14,964	1,621,039
2019	285,560	274,817	357,985	165,287	87,258	370,779	56,465	14,220	15,112	1,627,482

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Table 21 Traffic and Toll Revenue Forecast, Periodic Toll Increases

Year	Throgs Neck	Bronx-Whitestone	RFK	Queens Midtown	Brooklyn Battery	Verrazano-Narrows	Henry Hudson	Marine Parkway-Gil Hodges Memorial Bridge	Cross Bay Veterans Memorial Bridge	Total
Traffic Change										
2008-2009	–2.4%	–2.9%	–6.0%	–6.4%	–10.3%	–2.8%	–7.2%	–6.5%	–10.3%	–4.8%
2009-2010	–1.0	–1.0	–2.0	–1.8	–3.4	–1.2	–2.7	–5.8	–6.3	–1.8
2010-2011	–0.3	–0.3	–0.6	–0.6	–1.1	–0.4	–0.9	–0.3	–0.4	–0.5
2011-2012	0.5	0.5	0.5	0.8	0.5	0.5	0.5	0.2	1.1	0.5
2012-2013	0.2	0.2	–0.1	0.2	–0.6	0.1	–0.4	–0.1	0.7	0.0
2013-2014	0.5	0.5	0.5	0.8	0.5	0.5	0.5	0.2	1.1	0.5
2014-2015	0.2	0.2	–0.1	0.2	–0.6	0.1	–0.4	–0.1	0.7	0.0
2015-2016	0.5	0.5	0.5	0.8	0.5	0.5	0.5	0.2	1.1	0.5
2016-2017	0.2	0.2	–0.1	0.2	–0.6	0.1	–0.4	–0.1	0.7	0.0
2017-2018	0.5	0.5	0.5	0.8	0.5	0.5	0.5	0.2	1.1	0.5
2018-2019	0.2	0.2	–0.1	0.2	–0.6	0.1	–0.4	–0.1	0.7	0.0
Annual Traffic (000s)										
2008	40,492	42,803	59,741	28,620	16,899	68,884	22,823	7,829	7,589	295,680
2009	39,535	41,551	56,154	26,778	15,160	66,942	21,173	7,322	6,808	281,424
2010	39,149	41,144	55,051	26,297	14,643	66,149	20,596	6,898	6,380	276,308
2011	39,025	41,014	54,707	26,146	14,485	65,898	20,418	6,877	6,354	274,924
2012	39,220	41,219	54,981	26,343	14,558	66,227	20,520	6,895	6,425	276,387
2013	39,291	41,294	54,911	26,389	14,473	66,306	20,443	6,891	6,470	276,469
2014	39,488	41,500	55,185	26,589	14,546	66,638	20,545	6,908	6,543	277,942
2015	39,560	41,575	55,115	26,635	14,461	66,717	20,469	6,905	6,589	278,026
2016	39,757	41,783	55,391	26,837	14,534	67,050	20,571	6,922	6,663	279,507
2017	39,830	41,859	55,320	26,883	14,449	67,130	20,494	6,918	6,710	279,594
2018	40,029	42,068	55,597	27,087	14,522	67,465	20,597	6,935	6,785	281,085
2019	40,101	42,145	55,526	27,134	14,438	67,545	20,520	6,932	6,833	281,174
Average Toll										
2008	$5.43	$4.96	$4.82	$4.59	$4.35	$4.05	$2.02	$1.54	$1.61	$4.31
2009	6.19	5.71	5.54	5.26	5.01	4.70	2.34	1.76	1.84	4.97
2010	7.09	6.49	6.32	5.99	5.79	5.45	2.67	2.04	2.19	5.71
2011	7.44	6.81	6.63	6.28	6.08	5.72	2.80	2.14	2.30	5.99
2012	7.43	6.80	6.62	6.27	6.07	5.71	2.79	2.14	2.30	5.98
2013	7.79	7.13	6.94	6.58	6.36	5.99	2.93	2.25	2.41	6.28
2014	7.78	7.12	6.93	6.57	6.35	5.98	2.92	2.24	2.40	6.27
2015	8.16	7.47	7.27	6.89	6.66	6.27	3.07	2.35	2.52	6.57
2016	8.15	7.46	7.26	6.88	6.65	6.26	3.06	2.35	2.52	6.56
2017	8.54	7.82	7.62	7.21	6.98	6.56	3.21	2.46	2.64	6.88
2018	8.53	7.81	7.61	7.20	6.97	6.56	3.21	2.46	2.64	6.87
2019	8.95	8.19	7.97	7.55	7.31	6.87	3.36	2.58	2.77	7.21
Toll Revenue (000s)										
2008	$219,855	$212,125	$287,877	$131,264	$73,590	$278,906	$46,126	$12,019	$12,212	$1,273,974
2009	244,684	237,332	311,242	140,738	75,925	314,670	49,493	12,859	12,544	1,399,486
2010	277,654	267,208	348,074	157,473	84,842	360,513	54,902	14,104	13,989	1,578,759
2011	290,231	279,312	362,720	164,177	88,012	376,607	57,071	14,745	14,609	1,647,484
2012	291,299	280,340	364,055	165,201	88,336	377,994	57,281	14,763	14,753	1,654,021
2013	306,017	294,504	381,271	173,536	92,094	396,842	59,842	15,472	15,579	1,735,157
2014	307,143	295,588	382,674	174,618	92,433	398,303	60,063	15,491	15,733	1,742,045
2015	322,661	310,523	400,770	183,428	96,365	418,164	62,748	16,235	16,614	1,827,509
2016	323,849	311,666	402,245	184,572	96,720	419,703	62,979	16,254	16,778	1,834,767
2017	340,211	327,412	421,267	193,884	100,835	440,632	65,795	17,036	17,718	1,924,790
2018	341,463	328,618	422,817	195,094	101,206	442,253	66,037	17,056	17,893	1,932,437
2019	358,716	345,221	442,811	204,937	105,512	464,306	68,990	17,876	18,895	2,027,263

Effects of Second Avenue Subway Construction in Forecast Years

The foregoing tables forecasting traffic and toll revenues incorporate estimated effects of the construction of the Second Avenue Subway. Activity associated with such construction could result in changes to traffic patterns, possibly resulting in a shift of traffic volumes to other TBTA facilities, as well as the toll-free East River Bridges or a diversion to mass transit. Such changes in traffic patterns could have an adverse effect on the forecasts set forth in the foregoing tables as described in the following paragraphs.

Various stages of the project will result in visible construction activity on segments of Second Avenue at any given time. In addition, tunnel construction, either through the use of a tunnel boring machine or cut-and-cover, will affect vehicular activity not only on Second Avenue, but also on adjacent avenues and streets.

The first phase of the project will be between 96th Street and 63rd Street. URS anticipates some changes to current traffic volumes for TBTA's facilities when construction begins, thereby necessitating the rerouting of some traffic, as well as a change of street rules (traffic movements, parking restrictions and enforcement). Accordingly, URS has made an order-of-magnitude estimate of potential impacts on TBTA traffic on the RFK Bridge.

For the RFK Bridge, 28 percent of the traffic exits onto Second Avenue at 125th Street, 56 percent exits onto the FDR Drive, and 17 percent exits onto the Harlem River Drive via the 125th Street/Second Avenue intersection. Construction may result in a shift of traffic to the FDR Drive, if capacity were to be available during the peak. If capacity is not available, it is estimated that the RFK Bridge will lose up to 2 percent of total traffic (3 to 5 percent of traffic on the Manhattan span) for the period when construction is in the vicinity of the bridge.

The relocation of utility lines beneath Second Avenue in the vicinity of the Queens Midtown Tunnel would affect traffic patterns. This could also have an impact on the access route to the Queensboro Bridge. As mentioned previously, a 20 percent decrease in access route capacity may be anticipated and could result in a decrease in total traffic of approximately 3 to 6 percent during the period when construction is in the vicinity of the tunnel; however, this is not anticipated in the period included in the current estimates.

In addition to the potential reduction in traffic noted, it is possible that construction activities limiting access to the toll-free East River crossings could result in traffic diversions to the TBTA facilities. While this was not taken into account, it could have a positive impact on TBTA revenues.

Operating Expenses

The projection of operating expenses is shown in Table 22. Total operating expenses, consisting of labor and non-labor, are estimated to increase from $408.0 million in 2008 to $618.2 million in 2019. Labor expenses consist of wages, salaries, overtime and fringe benefits. Non-labor expenses include items such as maintenance, supplies, utilities and other expenses.

Operating expenses have been budgeted by TBTA for 2009 through 2012 as shown in Table 22. Nonrecurring costs include additional bridge painting requirements in 2009 and the start of the next *E-ZPass* Tag Replacement Program in 2010.

The *E-ZPass* Tag Replacement Program is estimated to be in effect for a five-year period, with an approximate cost of $20.3 million in 2010 and $23.1 million in 2011 and around half that level for 2012 through 2014.

URS projected that labor expenses would increase at a rate of 4.25 percent annually while non-labor expenses would increase at a rate of 2.50 percent per year.

URS does not project any variation in operating expenses resulting from the reduced traffic levels brought about by periodic toll increases.

Table 22 Projected Operating Expenses
(000s)

Year	Labor[a]	Non-Labor[b]	Additional Actions for Budget Balance[c]	Total[d]
2009[e]	$223,284	$214,694	$–14,913	$423,065
2010[e]	229,790	241,249	–20,559	450,480
2011[e]	237,288	236,891	–3,778	470,401
2012[e]	244,142	245,196	–7,129	482,208
2013	254,518	251,326	–	505,843
2014	265,335	257,609	–	522,943
2015	276,611	264,049	–	540,660
2016	288,367	270,650	–	559,017
2017	300,623	277,416	–	578,039
2018	313,399	284,352	–	597,751
2019	326,719	291,461	–	618,179

(a) Salaries, overtime and fringe benefits, net of capital reimbursement.
(b) Non-labor includes the following categories: maintenance and supplies, outside services, insurance, power, leases, rentals and other expenses.
(c) Expected savings from additional actions for budget balance, as provided by TBTA.
(d) Totals may not add due to rounding
(e) From TBTA estimates.

Net Revenues from Toll Operations

Finally, the projected operating expenses were deducted from the respective toll revenue forecasts to produce the two sets of estimated net toll revenues, one at constant tolls and the other with periodic toll increases, as shown in Table 23. For 2009, net toll revenue under either scenario is estimated at $976.4 million. In year 2019, net toll revenue at constant tolls is estimated to be $1,009.3 million and, with periodic toll increases, net toll revenue is estimated to be $1,409.1 million.

Table 23 Net Toll Revenue Forecast
(000s)

Year	Gross Toll Revenues		Operating Expenses	Net Toll Revenues	
	Constant Tolls	Periodic Toll Increases		Constant Tolls	Periodic Toll Increases
2009	$1,399,486	$1,399,486	$423,065	$976,421	$976,421
2010	1,578,759	1,578,759	450,480	1,128,279	1,128,279
2011	1,576,686	1,647,484	470,401	1,106,285	1,177,083
2012	1,582,943	1,654,021	482,208	1,100,734	1,171,813
2013	1,589,225	1,735,157	505,843	1,083,382	1,229,314
2014	1,595,535	1,742,045	522,943	1,072,591	1,219,102
2015	1,601,870	1,827,509	540,660	1,061,210	1,286,849
2016	1,608,233	1,834,767	559,017	1,049,215	1,275,749
2017	1,614,622	1,924,790	578,039	1,036,583	1,346,751
2018	1,621,039	1,932,437	597,751	1,023,287	1,334,686
2019	1,627,482	2,027,263	618,179	1,009,302	1,409,084

REVIEW OF PHYSICAL CONDITION

The facilities under TBTA's jurisdiction include two tunnels and seven bridges listed in Table 24, together with Randall's Island Facilities and a parking garage in Manhattan near the Brooklyn-Battery Tunnel. Some of these crossings have been in service since the 1930s, i.e., the RFK, Henry Hudson, Marine Parkway-Gil Hodges Memorial and Bronx-Whitestone bridges. The Queens Midtown Tunnel opened to traffic in 1940, and the Brooklyn-Battery Tunnel in 1950. Two bridges opened to traffic in the 1960s: the Throgs Neck in 1961 and the Verrazano-Narrows in 1964 (lower level in 1969). The present Cross Bay Veterans Memorial Bridge, replacing the previous span, opened to traffic in 1970. The aging of the TBTA facilities will influence the overall upkeep and capital improvements that will be necessary to maintain the infrastructure over the forecast period and beyond. Table 25 lists TBTA's capital commitments for each facility from 2005 through 2009 (as amended in July 2008).

Table 24 Opening Dates of TBTA Facilities

Facility	Open to Traffic	Years in Use
RFK Bridge	1936	73
Bronx-Whitestone Bridge	1939	70
Throgs Neck Bridge	1961	48
Henry Hudson Bridge	1936[(a)]	73
Queens Midtown Tunnel	1940	69
Brooklyn-Battery Tunnel	1950	59
Verrazano-Narrows Bridge	1964[(b)]	45
Cross Bay Veterans Memorial Bridge	1970[(c)]	39
Marine Parkway-Gil Hodges Memorial Bridge	1937	72

Notes: (a) Upper deck was added and opened in 1938.
(b) Lower level opened in 1969.
(c) The present structure replaced the previous structure that had been in service since 1939.

Table 25 Capital Commitments by Facility, 2005 to 2009
(Millions of dollars)

Facility	Total by Facility 2005 through 2009[a, b]
Agency Wide[c]	$52.7
Brooklyn-Battery Tunnel	56.9
Bronx-Whitestone Bridge	217.8
Cross Bay Bridge	69.3
Henry Hudson Bridge	94.4
Marine Parkway Bridge	22.8
Queens Midtown Tunnel	21.5
RFK Bridge	395.4
Throgs Neck Bridge	104.9
Verrazano-Narrows Bridge	173.4
Total	$1,209.1

Notes: (a) Does not add due to rounding.
(b) Amended July 2008.
(c) Agency-wide refers to projects that have been, or will be, carried out at two or more facilities.

Periodic contact with TBTA personnel is maintained by URS to monitor and review material, as it becomes available, pertaining to the physical condition of their seven bridges and two tunnels. This review material includes pertinent sections and updates of the following:

- Biennial Bridge Inspection Reports;
- Scheduled Tunnel Inspection Reports;
- Interim Inspection Reports;
- TBTA's current Capital Program;
- Current Quality Assurance Plan; and
- TBTA's Routine and Major Maintenance Program.

The review by URS of the pertinent material consists of the following subtasks:

- Comparison of Conclusions and Recommendations sections of the current inspection reports with the previous inspection reports to note significant changes in observed deterioration, and repairs to priority conditions from previous inspections, if any;
- Review of the current Capital Program to verify that the repairs recommended by the latest inspection reports are being addressed; and
- Review of TBTA's Routine Maintenance Program with the facility engineers to verify that the maintenance-related recommendations of the current inspection reports are being addressed.

Review of Inspection Reports

TBTA's seven bridges and two tunnel facilities undergo periodic condition inspections. Bridges are inspected biennially per federal and state mandate, with interim yearly inspections of any components that require monitoring. The purpose of the biennial inspection program is to maintain the safety and structural integrity of bridges. TBTA's Bridge Inspection Program was assessed from 2006 to 2007 by an independent engineering firm well known in the field of structural inspection and appraisal, which noted that "the program is meeting the minimum state and federal standards" and "In several respects the program exceeds the minimum standards" and "with respect to the accuracy, clarity, and thoroughness of the reports generated, we find them to be of the highest quality".

While there is no federal or state mandate, TBTA has decided that it will adopt biennial inspections for their tunnels as well, with more comprehensive inspections every ten years. The FHA/FTA Tunnel Inspection Manual recommends an interval of 2-5 years between inspections, thus TBTA is in conformance with this guideline. The regular biennial inspection of the Queens Midtown Tunnel was awarded in 2007 and completed in 2008. The contract for the regular biennial inspection of the Brooklyn-Battery Tunnel is expected to be awarded in June of 2009.

The TBTA bridges were last inspected and their physical condition appraised in 2006/2007 by various consultants, under the New York State Biennial Bridge Inspection Program. New cycles of NYSDOT Biennial Bridge Inspection are currently underway. In addition, separate under-water and substructure inspections were performed in accordance with the five-year cycles of NYSDOT to obtain riverbed contours and to assess potential scour conditions at the substructure. These ongoing inspections, performed by the inspection consultants, consisted of close visual examination, 100% hands on inspection of designated critical elements, sounding and chipping concrete, scraping and cleaning steel, and taking appropriate measurements to determine the physical conditions of the bridges and tunnels. The biennial bridge inspection is performed per the guidelines of the New York State Bridge Inspection Manual and the Federal Guidelines. Under these guidelines, each bridge component is inspected and assigned a rating. Any priority conditions are reported immediately to the TBTA for prompt attention. The ratings are reviewed by TBTA personnel to assess what components of the bridge require more comprehensive inspection and rehabilitation, which is then awarded as contracts under the Capital and Maintenance Programs. Bridge components which warrant more frequent monitoring to ensure public safety are monitored annually with a special inspection.

The biennial inspections of the tunnels fills a similar function. The biennial tunnel inspections consist of an overall assessment and rating of the various tunnel components, as documented in TBTA's ECP-318 guidelines, and provide a method of documenting ongoing monitoring of the tunnels for safety, operations and overall structural integrity. Since some tunnel components are not as readily accessible as bridge components, the comprehensive inspections will complement the biennials by providing a more in-depth assessment at regularly spaced intervals.

The consulting engineering firms who performed the 2007 and 2008 biennial or special inspections and those who performed the 2001 and 2008 tunnel inspections for each facility were/are:

Facility	*Consulting Firm*
RFK Bridge	HNTB/Hardesty & Hanover (2008)
Throgs Neck Bridge	Charles H. Sells, Inc. (2007/2008)
Bronx-Whitestone Bridge	Hardesty and Hanover (2007/2008)
Henry Hudson Bridge	HAKS (2007/2008)
Queens Midtown Tunnel	Jenny Engineering (2008) facility approach bridges: HAKS (2007)
Brooklyn-Battery Tunnel	Parsons Brinckerhoff (2001)
Verrazano-Narrows Bridge	Charles H. Sells/Lichtenstein Engineering Associates (2008)
Marine Parkway/Gil Hodges Mem. Br.	HNTB (2007/2008)
Cross Bay Bridge	HNTB (2007/2008)

These firms are well known in the field of structural inspection and appraisal. Copies of pertinent sections of the final inspection reports for the various facilities were requested and made available by TBTA. Bridges that are part of the odd-year inspection cycle listed above will be undergoing inspections this summer, and therefore the results of these inspections are not available at this time. The results of these inspections, also done by experts in the field, will generally be available at the end of the year.

Funds programmed for TBTA's 2005-2009 Capital Program total approximately $1.2 billion dollars. The plan breaks this amount into specific projects by facility as well as agency-wide projects. Comparisons between the Capital Program projects and total repair item lists for each facility, as prepared by inspection consultants, confirm that the Capital Program gives high priority to key rehabilitation projects. Conclusions, recommendations and cost estimates for each facility can be found in the latest biennial bridge and tunnel inspection reports. By prioritizing necessary facility rehabilitation projects, TBTA addresses all high priority recommendations in the current Capital Program or under maintenance programs that have not been addressed as part of the previous Capital Program.

Current major rehabilitation projects (and designs) addressing the recommendations of the latest inspection consultants' reports include:

RFK Bridge - The design phase of the contract for the deck replacement for the Bronx toll plaza and ramps is underway. Construction is anticipated for 2011/2012. The Manhattan toll plaza design will be completed in 2009 with construction anticipated for 2015. Deck widening and replacement construction of Ward's Island and Randall's Island viaducts began in August 2005, and completion is anticipated for June of 2009. The Ward's Island Approach Deck Replacement will include widening by one lane in each direction to minimize the traffic impacts. High priority structural repairs to address flag conditions from the most recent biennial inspection have been completed, and lower priority repairs as well as stringer upgrades are ongoing.

Maintenance painting of the Ward's Island Viaduct and the superstructure of the suspended spans is complete. A contract to perform anchorage rehabilitation and dehumidification was awarded in August 2006 and should be complete by June of 2009. A construction contract for the rehabilitation of Building 104 was awarded in March of 2009. Projects completed within recent years include the main cable rewrapping and anchorage rehabilitation, and bridge deck replacement at the Queens approach. Numerous repair projects such as repair of the bridge deck joint drains, cracked deck, piers, superstructure, substructure, and suspended span deck replacement, and mechanical rehabilitation associated with the Harlem River and Manhattan lift span have also been completed.

Bronx-Whitestone Bridge - A major program to paint the main cables, suspender ropes and towers will continue through 2009. Exterior concrete anchorage repair construction is scheduled to begin in August of 2009. Design of interior anchorage rehabilitation is ongoing and construction is scheduled to begin in 2010. Selected main cable openings were performed in November of 2008 as part of an ongoing program to inspect and monitor the condition of the main cables. Portions of the recommendations from studies that investigated deck replacement with a lightweight deck and improving the aerodynamic and seismic performance of the bridge are continuing to be implemented through TBTA's capital projects. The following describes these projects and their status. The construction of the lightweight windfaring to replace the stiffening truss on the suspended span and the installation of a lightweight orthotropic deck, required to replace the roadway deck were completed. The feasibility study for complete replacement of the main cables, should that become necessary in the future, is complete, and it has been concluded that replacement is feasible if it becomes necessary. Several replacement options are being studied, including some that could increase the structure's traffic capacity. There is no need to replace the cable in the near future, thus monitoring and maintenance of the main cables is ongoing. Construction of the replacement of the Bronx approach span began in fall of 2008. The Queens approach span replacement design began in June of 2008, with construction planned in 2011-2015. Flag repairs in the approaches will continue until the approaches are replaced. Projects completed within recent years include: replacement of the stiffening truss with lightweight windfaring, painting and replacement of the collars of the suspender ropes, construction and testing of the prototype deck replacement for the suspended span, installation of orthotropic bridge deck in the suspended span, addition of three new tollbooths, the installation of acoustic sensors for cable monitoring at the main cables, and the rehabilitation of the Bronx/Queens approach ramps.

Throgs Neck Bridge - A full-scale design study of how to best implement orthotropic deck replacement has been awarded, with design anticipated for 2012. Construction of a major rehabilitation contract is ongoing that includes tower and structural steel painting, steel repairs of the suspended span superstructure, main cables and suspender ropes investigation and catwalk replacement, with completion anticipated in the fall of 2009. Full-scale lighting replacement on the structure began in 2008, phased with the deck replacements. Deck rehabilitation and replacement construction on the Queens approach was let in July of 2008. Design for rehabilitation of the fenders at the towers and anchorages began in April of 2006 with construction anticipated soon. Structural repairs to address flag conditions from the most recent biennial inspection have been completed at many locations, and will be completed at all remaining locations this summer. Projects completed within recent years include: the new bridge electrical system upgrade,

including the installation of new electrical switchgear at the four electrical substations, reconstruction of the Bronx approach slab north of the tollbooths, rehabilitation of the Bronx approach, south of the tollbooths, scour backfilling at piers 20, 42, 47, 49, 52, 55 and 56 and protection of piers 19, 20, and 46 to 57, structural steel rehabilitation, drainage system improvements, roadway barrier painting and replacement of the slab on grade in the toll plazas.

Henry Hudson Bridge - The study for the southbound lower level toll plaza expansion, replacement of the garage and the south approach replacement is in the scoping phase, and design is anticipated to start in 2010. The garage and south approach is expected to be replaced in 2015. The lower level toll plaza expansion is expected to take place in 2020-2023. The design for the replacement of the upper level deck in the vicinity of the toll plaza is on hold pending discussions of how to implement new tolling options. Funds for this work are programmed in the 2010-2014 Capital Program. Construction of the lower level deck replacement will continue through 2010. The design for the removal of the sidewalk and the curb stringers on the upper level, and the widening of the bridge is ongoing with construction anticipated for 2010. The cross drainage of the approaches between Dyckman Street and the main span are undergoing rehabilitation/replacement design which was let in November of 2008. Construction for the replacement of pier caps in the approaches is ongoing to address flagged conditions from a previous biennial inspection. Full depth deck repairs are ongoing and will be complete before summer. Ongoing major maintenance includes limited rehabilitation of the lower level garage consisting of concrete repairs, and repaving and waterproofing the roadway above the garage which will be complete in 2009. Miscellaneous rehabilitation of the Staff Street. and Dyckman Street. bridges and the northbound parkway are scheduled. Projects completed within recent years include: replacement of deck joints at Staff Street and spall repairs on abutments, and rock bolting, netting and scaling of the slopes adjacent to the approaches, comprehensive maintenance painting and steel repairs for the entire bridge structure including the main span and approaches, and major maintenance projects including spall repairs at the towers, resealing the upper level deck, and light pole rehabilitation on the parkway approaches. The stone wall guide rail was repaired, repair of steel stringer pedestal defects on the main bridge were completed, as well as the repair of bearings and installation of safety ladders and platforms to the Dyckman Street electrical rooms.

Queens Midtown Tunnel - Design for the electrical rehabilitation and upgrades on the vent buildings, including upgrading of the emergency generator service at the service building and Manhattan plaza pump rooms was awarded in 2008, with construction planned in the next capital program. A construction contract to replace all the tunnel ventilation exhaust fans and to perform some minor repair to the supply fans to be completed in June of 2009. The rehabilitation of two overpasses including deck repair and beam encasement repair in the Manhattan approach area was completed. Construction of an annex to the service building and replacement of the facility engineer's building with connection to the service building, and exterior rehabilitation of the service building is under design with construction scheduled to be let in fall/winter of 2009. Major maintenance projects include paving in portions of the tunnel and plazas, which is ongoing. Projects completed within recent years include the following: the rehabilitation of the pipe gallery connection between the service building and the Queens emergency garage, replacement of drainage pumps inside the ventilation building and at the plazas, rehabilitation of tunnel ceiling and walls (tunnel finish and leak repairs and upgrading of

the fire standpipe system), reconfiguration of the traffic island in the Manhattan entrance plaza to provide better traffic flow, and various structural repairs in the ventilation buildings.

Brooklyn-Battery Tunnel - The rehabilitation of the Brooklyn plaza pipe chase is complete. The design of structural and architectural repairs for vent structures is complete and construction is proceeding in phases from 2007 through 2014. The second phase of rehabilitation of the tunnel walls and fire suppression system is anticipated for award in the next capital program. Modernization and upgrade of the control room was completed in fall of 2008. On Governor's Island, a new pump system to get water runoff into the sanitary system was completed. Design for repair of the exhaust fans in the ventilation structure is completed, with construction planned for 2010 through 2013. Electrical design to replace the tunnel feeders and switchgears is ongoing with construction planned for the next capital program. Projects completed within recent years include: the construction of the elevator upgrades in the ventilation structures, egress improvements and the replacement of the facade in the Governor's Island building, construction of a second story addition with recladding, window replacement and masonry and roof repairs to the existing service building, construction of tunnel roadway and drainage system rehabilitation, tunnel leakage repairs and wall tile replacement, fire standpipe and waterline valve replacement, installation of a new ethanol fuel tank, and installation of new electrical generators.

Verrazano-Narrows Bridge - Design for the widening of the Belt Parkway ramps is scheduled to begin in August of 2009. The toll plaza east and west bound ramps are currently in design and are scheduled to be re-decked in 2010-2012. A construction contract for the utility relocation necessary for re-decking of the upper level suspended span was awarded in December of 2008. Redecking is planned for 2010. Design for tower/suspended spans seismic retrofit is scheduled for 2010. Contracts to address miscellaneous steel repairs for priority conditions noted in the most recent biennial inspection reports have been awarded and are ongoing. Rehabilitation and expansion of the service building is being considered. General maintenance paving is ongoing. Rehabilitation of the traveler is complete. The rehabilitation of the electrical substation design is complete and construction should be awarded in 2011. The installation of sensors with the provision of real time under bridge clearance is under development. Projects completed within recent years include: deck replacement on the lower level and Lily Pond Avenue bridge, maintenance bridge painting of the entire suspended spans, rehabilitation, sealing and dehumidifying of the Brooklyn and Staten Island anchorages, rehabilitation of the service building roof, construction of the salt storage facility, and maintenance painting of the Brooklyn approaches and tower painting including drainage rehabilitation of the lower level and top lower strut of the Brooklyn approaches.

Marine Parkway-Gil Hodges Memorial Bridge - Repairs of secondary members and at lower priority locations are in construction and are expected to be completed in spring of 2009. Ongoing maintenance work includes replacement of the span locks, painting of the deck trusses and repairs to the steel roadway and grating, which will be complete in spring of 2009. Toll plaza drainage improvement design has been completed and construction will be let in 2009. A construction project for cleaning of marine growth on the piers will be let in April of 2009. Service building roof repairs are also planned to be let in 2009. Projects completed within recent years include: the installation of a pre-engineered service building, major maintenance painting of the superstructure, east and west side structural steel repairs, deck replacement and bridge

widening, boiler replacement, navigation lights and signs for mariners, replacement of on-grade slab prototype with pre-cast slab in the toll plaza, priority steel repairs, refurbishing of the toll booths and main motor shaft west, bearing replacement in the towers and replacement of the elevators in the towers.

Cross Bay Veterans Memorial Bridge - A contract to rehabilitate the deck and superstructure is ongoing with construction scheduled to be completed in 2010. A design to rehabilitate the substructure of the bridge, including the concrete piles and pile caps is complete and will be bid with construction scheduled for 2010. Painting and refurbishing of the exteriors of the toll booths is planned. Fender repair, and bike path rehabilitation are planned for the next capital program. Projects completed within recent years include: installation of a facility engineer's trailer, a salt dome, rehabilitation of the air conditioning system in the service building, boiler replacement, installation of continuity plates in the median barrier, the construction of structural and electrical rehabilitation of the concrete slab on grade at Ramp 'D' (southbound ramp extending from the main bridge lanes), the replacement of the main high voltage feeders from the south abutment to the main service building, the rehabilitation of the drainage system at the promenade at the Rockaway approach, repair to the office trailers, refurbishing of the interior of the toll booths, and the complete concrete and drainage rehabilitation of the promenade and seawall.

Other System-wide Improvements

Agency-Wide - Since the September 11 attack on the World Trade Center, TBTA has engaged consultants to assess security risks of their facilities. As a result of these risk assessments, increased security improvements including various monitoring, surveillance and hardening projects have been implemented or will enter construction shortly at TBTA facilities. TBTA has also maintained a security department and incorporates mitigation measures into their operations, capital and maintenance programs.

TBTA is currently in the process of conducting a prototype Weigh-In-Motion (WIM) project, which uses WIM technology to identify and restrict the passage of overweight vehicles on their facilities to dissuade illegal overweight vehicles from using their structures. The project will be put out for bids in fall of 2009. Trucks up to the bridge formula with a maximum weight of 80,000 lbs are currently allowed by permit on TBTA facilities. Heavier trucks are allowed on the Throgs Neck Bridge only, driving in the center lane with their speed restricted to 30 mph, for a type T6 configuration up to 105,000 pounds, and five axle milk trucks up to 100,000 pounds. Three and four axle concrete trucks with up to 11 cubic yards of concrete are allowed through the Queens Midtown and Brooklyn Battery tunnels. Overload trucks, above these limits, may be allowed on and through TBTA facilities with special handling and a permit. According to the TBTA, these increases in allowable load were demonstrated by computations performed by its consultants to be within safe limits for the structures. Bridges generally can accommodate overweight vehicles safely, but over time, these vehicles can contribute to increased wear on the facility, requiring increased maintenance repairs. In order to mitigate this, future rehabilitation designs on bridges, where feasible, will allow for heavier vehicles on some facilities, while more stringent enforcement is maintained.

Current Intelligent Transportation System project initiatives include:

- Further enhancements (additional sensors, redundant communication paths, and backup power supplies) to the previously completed weather recording systems at all facilities.
- Installation of additional Closed Circuit Television (CCTV) equipment for effective monitoring and managing of traffic and incidents as well as upgrading of the communications network with fiber.
- Installation and expansion of TRANSMIT (an *E-ZPass*-based system) and other incident detection systems is continuing to proceed well. TRANSMIT is now operational at all facilities. Travel times (between TRANSMIT locations) is being measured, stored, and displayed on the internal website. An initiative to put this information out to the public is underway.
- The Variable Message Sign (VMS) program is proceeding well. Eleven new VMS have been installed and approximately 19 more are in various stages of design and procurement. Even more are planned in the next capital program.
- The program to install variable speed limit signs continues as well. Approximately 64 additional signs are at various stages of design and construction.
- With respect to the *E-ZPass* toll collection system, a number of major improvements are now complete. All lane controllers and Plaza Host computers have been replaced. New Central Toll Registry (CTR) computers are being tested prior to final implementation. Further, TBTA is in the process of replacing a number of sensor and control devices in each toll lane. The Authority has also commissioned two studies designed to determine the long-term future of the tolling system.

Other projects completed within recent years include: the installation of the Computer Aided Drafting and Design (CADD) system, traffic, safety improvements, tank testing and replacements, installation of weather recording system and inspection platform, Randall's Island garage roof replacement, *E-ZPass* initial installation at 119 toll booths system-wide, facility improvements to comply with Americans with Disabilities Act requirements, the installation of main electrical feeders to increase capacity at Randall's Island, and the installation of the heating, ventilation and air conditioning system at the Robert Moses building. Restoration of the Robert Moses building at Randall's Island, and the installation of CCTV to allow observation of traffic and activity at all bridges and tunnels were also completed.

As part of the Capital Program planning process, TBTA personnel conduct a 20-year capital needs assessment every five years. The assessment is compiled from data from biennial inspections, and system improvements suggested by the technical departments, and include factors such as service life of various structural components and normal replacement cycles. Plans for scheduling major maintenance under the 20-year capital needs assessment are developed with input from operating personnel, which consider how to implement construction properly to maintain the optimal level of service to the traveling public both locally and system wide.

URS' review of pertinent sections of the recent facility inspection reports found them to be extensive and detailed. Report conclusions and rehabilitation recommendations, based on URS'

limited review, appear, in the opinion of URS, to be reasonable appraisals of the required effort to maintain the operational integrity of each facility.

URS performed a facility review of each TBTA facility with the facility engineer. The review included an interview with each facility's engineer to obtain an update of the respective facility's status relative to the following issues:

- Ongoing rehabilitation projects;
- Ongoing maintenance projects;
- Rehabilitation projects addressing the recommendations of the previous inspection reports; and
- Repairs to alleviate the flagged conditions of the previous inspection reports.

The reviews proved informative. Facility projects and agency-wide projects specific to each structure were discussed.

It is important to note, however, that URS' testing or inspection of portions of the work of other parties shall not relieve such other parties from their responsibility for performing their work in accordance with applicable requirements and the customary standard of care. URS shall not be responsible for the acts or omissions of other parties engaged by TBTA.

URS

Long-Term Outlook for TBTA Facilities

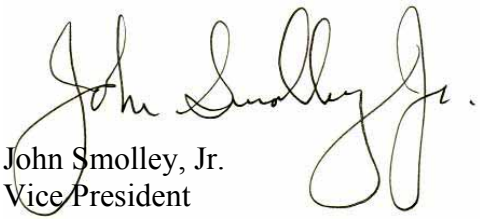
The useful lives of bridges and tunnels, in general, could possibly be cut short for two main reasons: (a) they are geometrically and functionally unsatisfactory because they are too narrow, too steep, lacking in clearance or sufficient spatial capacity to handle the traffic; or (b) they are structurally unsafe because of deterioration or because their load-carrying capacity is inadequate to handle the loads imposed under current conditions. Deterioration may occur for a variety of reasons, including aging, but it will occur sooner if there has been inadequate or improper maintenance.

On the basis of the foregoing review and information available to us, from reports of others, it is our opinion that the TBTA bridges, tunnels and approaches are all geometrically and functionally adequate and structurally sound and generally maintained to good standards. Ongoing maintenance requirements of the structures are assessed, prioritized and addressed in an appropriate manner by TBTA to maintain a high level of safety to the traveling public, and maintain the structures for many years to come.

TBTA is looking forward, and planning to add lanes, and sometimes use peak counterflow principles on its structures, in addition to maintaining the structures, to ensure their future serviceability. We are of the opinion that all the TBTA facilities are and will be physically capable of accommodating traffic volumes at the levels projected for 2019 through the duration of the outstanding bonds that have been issued and future bonds to be issued based on a pledge of TBTA revenues through 2039, assuming maintenance consistent with past practice.

Respectfully,

URS CORPORATION – NEW YORK



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