HISTORY AND PROJECTION OF TRAFFIC, TOLL REVENUES AND EXPENSES

and

REVIEW OF PHYSICAL CONDITIONS

Of the Facilities of

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

April 29, 2005

Prepared for the
Triborough Bridge and Tunnel Authority

By

URS

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URS

April 29, 2005

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, revenues and expenses for the toll bridge and tunnel facilities operated by 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, toured the facilities in light of these inspection reports with TBTA Engineering and Facilities staff, 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 revenue data, reflecting the 12 toll increases since 1972; (3) the impact of the *E-ZPass* electronic toll collection system; (4) the toll structure; (5) 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) construction conditions on 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 traffic.

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 2004, these facilities carried 307 million total vehicles, of which 303 million were toll paying, and generated $1.1 billion 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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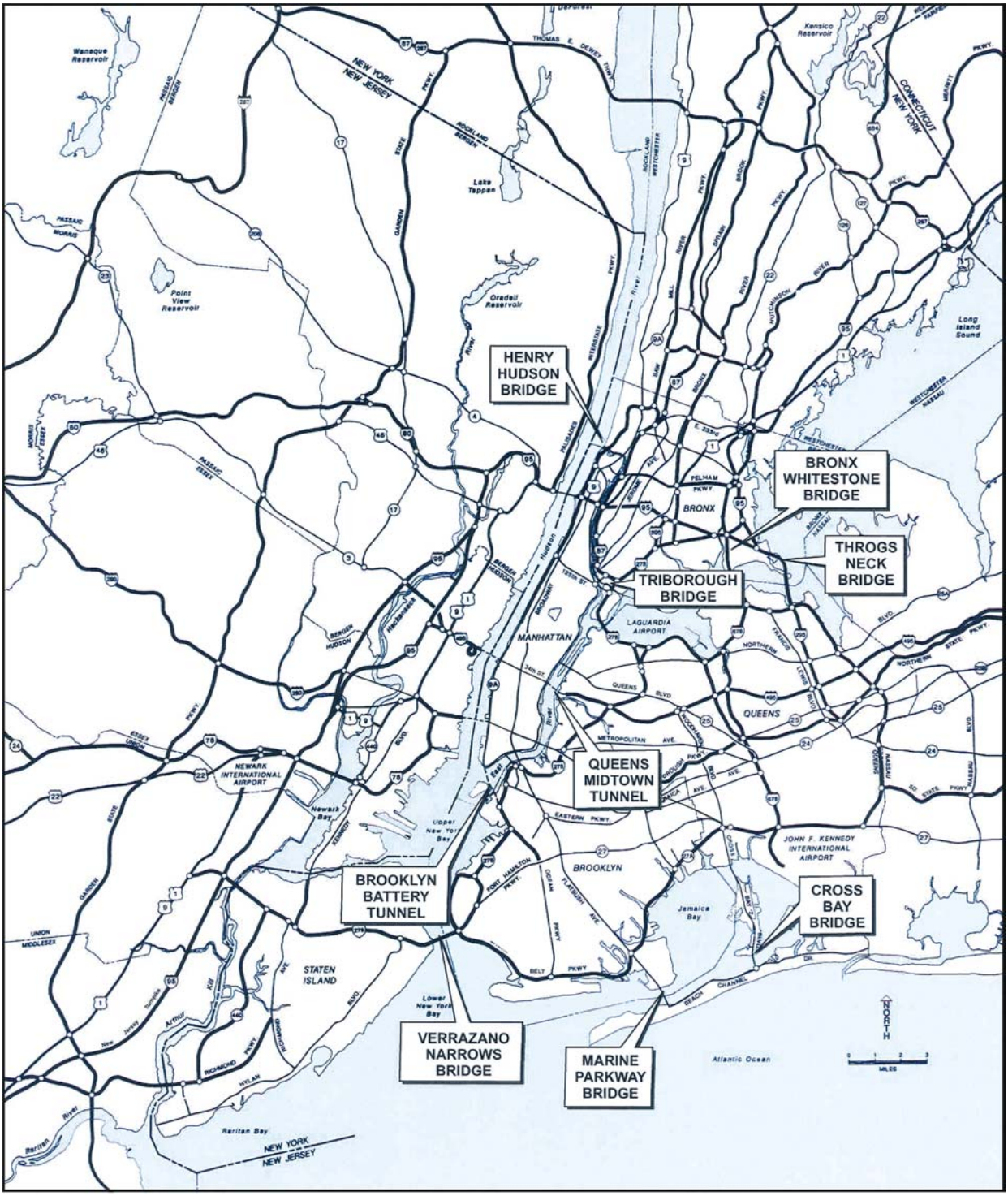
Figure 1: Location Map



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.

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 AM 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 AM 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 - a four-lane crossing of the Rockaway Inlet that connects the Rockaway peninsula in Queens with Brooklyn.

Cross Bay Veterans' Memorial Bridge - 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 5-2.

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 Triborough Bridge. The Queens Midtown Tunnel carries I-495 (Long Island Expressway) into Manhattan. The Triborough 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 the 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 Triborough, Bronx-Whitestone and Throgs Neck bridges via the expressway system in The Bronx (plus the George Washington-Triborough 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 sixteen others beyond the New York Metropolitan Area, are already linked, or are in the process of being linked through the *E-ZPass* Interagency Group (IAG) to better serve the regional traveler. *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 New York 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, 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). The MTA is also taking over the operations of seven private bus lines that operated under franchises from the City of New York. These operations include service to The Bronx and Queens. The take-over of the private bus lines is expected to be completed by the end of summer 2005. For those major TBTA facilities directly serving Manhattan — Triborough Bridge, Queens Midtown Tunnel and Brooklyn-Battery Tunnel — the motorist can, for the most part, choose to use transit; but for the outlying bridges, 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 Triborough 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.

Current Toll Structure and Operation

The current toll structure, in place since March 13, 2005, is shown in Table 1. 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

Table 1. New Toll Rates at TBTA Facilities, Effective March 13, 2005

Classification	Verrazano-Narrows Bridge [a]		Triborough 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, SUV's 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	$4.50	$4.00	$ 4.50	$4.00	$2.25	$1.75	$2.25	$1.50
Each additional axle costs	2.00	2.00	2.00	2.00	$1.25	$1.25	$1.25	$1.25
The following discounted prepaid charges are presently available for the two-axle vehicles referenced above:								
Prepaid charges through token roll purchases							1.50[b]	
Prepaid charges per crossing for registered Staten Island Residents using an eligible vehicle with three or more occupants	1.125							
Prepaid charges per crossing for registered Staten Island Residents using an eligible vehicle through token roll purchase	3.20[b]							
Registered Staten Island Residents using an eligible vehicle		2.40						
Prepaid charges per crossing for registered Rockaway Peninsula/Broad Channel Residents using an eligible vehicle							1.333[b]	1.00[c]
All two axle vehicles greater than 7,000 lbs. and buses (other than franchise buses and motor homes)	9.00	7.20	9.00	7.20	(d)	(d)	4.50	3.60
Each additional axle	5.00	4.00	5.00	4.00			2.50	2.00
Two-axle franchise buses	3.50	2.80	3.50	2.80	(d)	(d)	1.75	1.40
Three-axle franchise buses	4.25	3.40	4.25	3.40	(d)	(d)	2.25	1.80
Motorcycles	2.00	1.75	2.00	1.75	2.00	1.25	2.00	1.25
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 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, 1988.

(d) Passage prohibited.

Passenger Car Tolls

TBTA crossings are separated into major and minor categories for toll classification purposes. The passenger car cash toll is $4.50 for the major crossings. The minor crossing passenger car cash toll is $2.25. 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 *E-ZPass* are allowed a $0.50 discount per trip at all major facilities ($1.00 for Verrazano Narrows Bridge westbound only) and the Henry Hudson Bridge, and $0.75 at the Cross Bay and Marine Parkway-Gil Hodges Memorial Bridges.

Toll payment by token had provided a $0.50 discount per trip at major facilities and the Henry Hudson Bridge; a discount proportionate to the cash toll was provided at the Cross Bay and Marine Parkway-Gil Hodges Memorial Bridges. *E-ZPass,* which has replaced the tokens at most facilities, continues these discounts. 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 million annually in toll rebates.

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 (except for the Verrazano-Narrows Bridge), the cash rate for these vehicles is $9.00, and is $5.00 for each additional axle over two. For the Verrazano-Narrows Bridge, the cash rate for vehicles over 7,000 pounds is the same; however rates should be doubled, since the toll is collected in westbound direction only. These vehicles are eligible for a 20 percent discount with *E-ZPass.*

For the minor crossings, the two-axle cash rate for vehicles over 7,000 pounds is $4.50, with an additional per axle rate of $2.50. These vehicles are eligible for a 20 percent discount with *E-ZPass*. Commercial vehicles are not permitted on the Henry Hudson Bridge.

E-ZPass Electronic Toll Collection System (ETC)

The *E-ZPass* electronic toll collection 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 approximately 3.2 million *E-ZPass* tags in use. Currently, participation rates are at 71 percent of toll-paying traffic system-wide. The total number of active IAG tags in use as of December 2004 was approximately 11.0 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 2 lists the *E-ZPass* system-wide participation rates starting in January 1997, when 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.

Table 2. Systemwide *E-ZPass* Participation Rates

Month	*E-ZPass* Users as a Percent of Toll-Paying Vehicles – Overall Average							
	1997	1998	1999	2000	2001	2002	2003	2004
January	29%	55%	60%	62%	68%	69%	70%	71%
February	35	56	61	63	68	69	70	71
March	39	57	61	64	68	69	70	71
April	42	57	60	63	68	69	70	70
May	43	56	59	63	68	69	70	70
June	44	57	60	63	67	68	70	70
July	44	55	58	61	65	67	68	68
August	44	55	58	63	66	67	68	69
September	50	58	59	64	69	69	70	70
October	52	59	60	66	68	70	71	71
November	52	59	61	67	68	69	70	71
December	53	59	61	66	67	69	70	71

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.

Implementation of the *E-ZPass* system also continues, through IAG, to occur on other regional toll facilities, e.g., the six interstate crossings of the Port Authority of New York and New Jersey, the New Jersey Turnpike, the Garden State Parkway, 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 Port and 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 7 toll bridges between New Jersey and Pennsylvania operated by the Delaware River Joint Toll Road 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 and the New Hampshire Turnpike System. Illinois has recently joined the IAG and will bring their facilities on line in the near future. The growing number of *E-ZPass*-equipped toll plazas has resulted in an increasing number of tag-equipped vehicles.

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 now including Maryland, Massachusetts, Virginia, West Virginia, New Hampshire, Illinois, Maine and 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 entire region. In 1995, 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 implement electronic toll collection systems, the *E-ZPass* customer base will increase, which will help 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 2004, TBTA transferred $326.2 million to other members and received $191.3 million from other members within the IAG.

***E-ZPass* Plus**

E-ZPass Plus is a faster, more convenient way to pay for airport parking. It is currently available to *E-ZPass* customers who replenish their accounts with a credit card and established their accounts through the New York or New Jersey Customer Service Centers. It is in use at Albany International Airport, John F. Kennedy International Airport, LaGuardia Airport and Newark International Airport to pay for parking. If the parking fee is less than $20.00, it will appear as a charge on the user's monthly *E-ZPass* statement and will be deducted from the user's

E-ZPass account balance. If the fee is greater than $20.00, it will be charged directly to the credit card used to replenish the *E-ZPass* account.

Passenger Car Toll Rate Trends and Inflation

Since 1971, toll rates have been increased periodically on the TBTA facilities. Table 3 displays passenger car toll rates for the nine TBTA bridges and tunnels over the past 34 years.

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

- Major crossings - Triborough, 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 bridges; and
- Verrazano-Narrows Bridge — a major crossing with one-way toll collection.

Table 3. Historical Trends in Non-Discounted Cash Passenger Car Toll Rates

	Verrazano-Narrows Bridge	Triborough, 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 – 1992	2.50[(a)]	2.50	2.50	1.25	1.25
1993 – 1995	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[(b)]	4.50[(a)]	4.50	4.50	2.25	2.25

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) Last toll rate increase effective March 13, 2005.

Verrazano-Narrows Bridge

The Verrazano-Narrows Bridge one-way cash toll of $9.00 is collected westbound only. The current one-way cash passenger car toll rate, effective March 13, 2005, for the major crossings is $4.50, collected in each direction. Cash tolls on the three minor crossings are $2.25, collected in each direction.

Over the years, various discount programs have been introduced. In March 1987, the Staten Island Carpool Program was initiated. 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.

In general, tolls for vehicles over 7,000 pounds have also been adjusted upward whenever passenger car toll rates were increased. A notable exception was 1987 when these toll rates were not raised while there was a general increase for passenger cars. In 1989, tolls for vehicles over 7,000 pounds on the Verrazano-Narrows Bridge remained constant while all other tolls were raised. Historically, these vehicles received discounts on any TBTA facility when they used pre-paid accounts. This plan continues with *E-ZPass*.

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 4 displays the TBTA major crossing passenger car toll rates from the 1971 level of $0.25 to the toll rate of $4.50 set in 2005, alongside the CPI. Also shown is the CPI for March 2005 (the latest available) alongside the $4.50 toll.

Table 4. Cash Passenger Toll Rates Versus Consumer Price Index

Year	Triborough, Bronx-Whitestone and Throgs Neck Bridges and Queens Midtown Tunnel	Consumer Price Index[a]	Tolls Adjusted to 1982-84 Dollars[b]
1971	$0.25	40.5	0.62
1972	0.50	41.8	1.20
1975	0.75	53.8	1.39
1980	1.00	82.4	1.21
1982	1.25	96.5	1.30
1984	1.50	103.9	1.44
1986	1.75	109.6	1.60
1987	2.00	113.6	1.76
1989	2.50	124.0	2.02
1993	3.00	144.5	2.08
1996	3.50	156.9	2.23
2003	4.00	184.0	2.17
March 2005	4.50[c]	193.1	2.35
Ratio 2005/1971	18.0	4.77	3.78

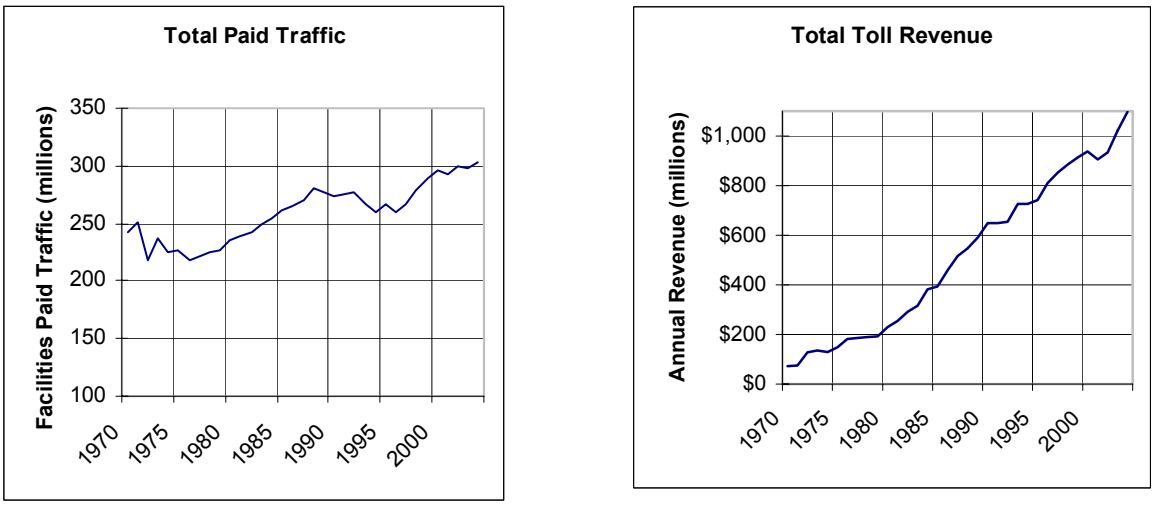
Notes: (a) United States City average, all Urban Consumers. Base period: 1982-1984 = 100.0
(b) The nominal toll divided by the CPI and expressed as a decimal.
(c) Effective March 13, 2005.
Source: US Department of Labor, Bureau of Labor Statistics.

As indicated in the table, TBTA tolls in nominal dollars have risen faster than the CPI during the 34-year period. As can be seen in Table 4, the current $4.50 toll in 2005 dollars is equivalent to a toll of $2.35 in 1982-1984 dollars. The actual 2005 cash toll for passenger cars is 18 times the actual toll in 1971. However, if adjusted for inflation, the toll today is only 3.78 times that in 1971 (in each case based on 1982-1984 dollars). Notwithstanding the aforementioned rise in tolls, traffic volumes have remained strong.

HISTORICAL TRAFFIC, REVENUES AND EXPENSES AND ESTIMATED/BUDGETED NUMBERS FOR 2004

Historical traffic, revenues and expenses were reviewed for the nine TBTA bridges and tunnels. Over the last 34 years, paid traffic volumes on the crossings have ranged from approximately 220 million in the 1970s to 303 million in 2004. 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 12 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 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 2004, with tolls having been increased again in 2003, revenue reached $1.1 billion, which is greater than the previous peak of $941 million.

Figure 2: Aggregated TBTA Facilities Paid Traffic and Toll Revenue, 1970 to 2004



Since 1970, annual operating expenses for the toll facilities have risen by 13 times, from $25 million to $319 million in 2004, during which time the CPI increased by 4.8 times.

Traffic and Toll Revenue, 1994 to 2004

Table 5 lists the traffic and toll revenue record for each of the nine crossings for the 1994-2004 period. Total TBTA traffic and toll revenue are shown in Table 6. The peak in toll-paying traffic during this period, 303 million crossings, occurred in 2004. The general system-wide pattern has been that when toll rates are increased, traffic declines moderately and then traffic begins to rise until the next rate increase. (The 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 shown in this table, in 1996 and 2003, are evident in the jump in average tolls in such years. The strong growth of over 3 percent per annum between 1996 and

2000 is due in part to increases in regional population and employment and the introduction of *E-ZPass*.

In 1994, toll revenue was reported at $726 million. As stated above, revenues rose to $941 million in 2000, an increase of approximately 30 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 Triborough Bridge. In 2002, residual effects due to September 11-related traffic restrictions can be seen particularly in the results for the Brooklyn-Battery Tunnel and in the positive impact on the Verrazano-Narrows Bridge due to 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 14 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. Traffic volumes increased 1.8 percent in 2004 and revenue rose to a high of $1.1 billion.

The Triborough Bridge reported the highest toll revenue for 2004 at $248 million, while the Cross Bay Bridge registered the lowest revenue at $9 million.

Table 5. Annual Toll-Paying Traffic and Toll Revenue:[a] 1994 to 2004
(000's)

Year	Verrazano-Narrows Bridge				Triborough Bridge				Bronx-Whitestone Bridge			
	Traffic		Revenue	Average Toll[c]	Traffic		Revenue	Average Toll	Traffic		Revenue	Average Toll
	Volume[b]	Change			Volume	Change			Volume	Change		
1994	60,213	–1.2%	$167,249	$2.78	54,871	–4.7%	$165,500	$3.02	36,042	2.3%	$112,259	$3.11
1995	61,351	1.9	169,766	2.77	56,913	3.7	171,103	3.01	40,215	11.6	125,106	3.11
1996	60,176	–1.9	178,444	2.97	54,976	–3.4	186,313	3.39	37,258	–7.3	132,434	3.55
1997	62,848	4.4	185,131	2.95	56,766	3.3	200,451	3.53	36,372	–2.4	135,593	3.73
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]	67,480	2.4	196,556	2.91	61,929	4.0	216,414	3.49	40,123	5.3	147,597	3.68
2000[d]	69,089	2.4	203,172	2.94	63,642	2.8	222,612	3.50	42,285	5.4	155,938	3.69
2001	70,929	2.7	208,164	2.93	62,506	–1.8	215,241	3.44	42,090	-0.5	152,881	3.63
2002	73,334	3.4	216,312	2.95	60,720	–2.9	208,905	3.44	44,301	+5.2	160,730	3.63
2003	71,108	–3.0	233,482	3.28	58,339	–3.9	222,224	3.81	44,413	0.3	175,393	3.95
2004[e]	71,395	0.4	246,322	3.45	61,632	5.6	247,937	4.02	45,207	1.8	187,231	4.14

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		
1994	35,707	–2.7%	$122,838	$3.44	18,550	1.5%	$53,068	$2.86	23,052	–9.3%	$67,402	$2.92
1995	33,440	–6.3	116,732	3.49	18,399	–0.8	52,742	2.87	22,812	–1.0	66,671	2.92
1996	35,208	5.3	136,948	3.89	17,064	–7.3	54,900	3.22	23,506	3.0	77,489	3.30
1997	36,711	4.3	147,106	4.01	17,029	–0.2	56,166	3.30	24,600	4.7	83,543	3.40
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]	38,069	1.1	152,134	4.00	20,766	5.7	67,080	3.23	25,961	2.4	87,284	3.36
2000[d]	37,525	-1.4	152,453	4.06	21,288	2.5	69,018	3.24	26,560	2.3	89,451	3.37
2001	37,802	0.7	150,764	3.99	16,452[f]	-22.7	52,188	3.17	26,177[f]	-1.4	87,067	3.33
2002	39,661	4.9	157,988	3.98	15,435[f]	-6.2	48,880	3.17	26,876[f]	2.7	88,865	3.31
2003	39,082	–1.5	172,603	4.42	17,806	15.4	61,810	3.47	27,512	2.4	99,994	3.63
2004[e]	39,433	0.9	184,338	4.67	17,697	–0.6	64,366	3.64	28,173	2.4	107,067	3.80

Year	Henry Hudson Bridge				Marine Parkway-Gil Hodges Memorial Bridge				Cross Bay Bridge			
	Traffic		Revenue	Average Toll	Traffic		Revenue	Average Toll	Traffic		Revenue	Average Toll
	Volume	Change			Volume	Change			Volume	Change		
1994	18,829	0.2%	$23,329	$1.24	7,456	–2.6%	$7,936	$1.06	5,208	–2.9%	$6,043	$1.16
1995	20,364	8.2	25,303	1.24	7,385	–1.0	8,178	1.11	5,184	–0.5	6,214	1.20
1996	19,922	–2.2	28,031	1.41	7,086	–4.0	8,219	1.16	4,967	–4.2	6,460	1.30
1997	19,757	–0.8	28,687	1.45	7,304	3.1	8,589	1.18	5,133	3.3	6,727	1.31
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]	21,285	4.8	30,068	1.41	7,391	0.9	8,461	1.14	6,009	6.4	7,199	1.20
2000[d]	22,541	5.9	31,938	1.42	7,206	-2.4	8,374	1.16	6,354	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	24,650	5.8	34,045	1.38	7,743	6.6	8,938	1.15	7,089	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[e]	24,699	0.5	40,149	1.63	7,718	0.2	10,102	1.31	6,989	1.0	9,477	1.36

Notes:
(a) Toll rate increases occurred on March 24, 1996 and May 18, 2003.
(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) Preliminary, subject to final audit.
(f) Reflects traffic restrictions and closures beginning September 11, 2001 and ending gradually through November 17, 2003

Traffic volumes and toll revenues on the Throgs Neck Bridge and Bronx-Whitestone Bridge should be considered together since they serve many of the same trips; and, when there is construction activity in the area, traffic shifts between the two facilities. For example, in 1995 some traffic diverted from the Throgs Neck Bridge to the Bronx-Whitestone Bridge when the approach ramps from the Cross Island Parkway to the Throgs Neck Bridge were rehabilitated. Since 2000, traffic again diverted from the Throgs Neck Bridge to the Bronx-Whitestone Bridge due to reconstruction activities on the Cross Bronx Expressway in the vicinity of the Throgs Neck Bridge. Growth in 2004 was approximately 1.4 percent combined for both facilities. However, the Bronx-Whitestone Bridge carries approximately 53 percent of corridor traffic.

Total annual TBTA toll traffic and revenue are shown in Table 6 for the period 1994 through 2004.

Table 6. Summary of Annual Paid Traffic and Toll Revenue:[(a)] 1994 to 2004

Year	Total Paying Traffic (000)	Total Revenue (000)
1994	259,928	$725,624
1995	266,063	741,815
1996	260,163	807,619
1997	266,520	851,993
1998	279,463	884,439[(b)]
1999	289,013	912,792[(b)]
2000	296,490	940,607[(c)]
2001	293,220	914,856
2002	299,995	933,134
2003	297,465	1,021,937
2004	302,944[(d)]	1,096,988

Notes: (a) Toll rate increases occurred on March 24, 1996 and May 18, 2003.
(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.
(d) Preliminary, subject to final audit.
Source: TBTA

Traffic by Facility and Vehicle Class, 2004

TBTA maintains traffic counts for each crossing in 13 toll-paying categories, ranging from passenger cars to trucks with seven axles. Displayed in Table 7 are the 2004 traffic volumes by facility. Passenger cars totaled 282 million crossings and represented 93 percent (which has remained relatively constant over time) of the total toll-paying vehicles. The Verrazano-Narrows Bridge registered the highest two-way traffic volume of 72.0 million toll-paying vehicles. The lowest volume, 7.1 million vehicles, was recorded at the Cross Bay Bridge.

Table 7. Traffic by Facility and Vehicle Class, 2004

(000's)

Facility	1 Passenger Cars	2 Pass. Cars W/ 1 Axle Trailer	3 Pass. Cars W/ 2 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	34,976	51	44	1,635	1		322	406
Bronx-Whitestone	42,238	17	10	1,340	150		301	206
Triborough Bridge	57,347	26	14	2,591	266	35	518	102
Queens Midtown Tunnel	26,134	6	6	1,435	261	54	197	20
Brooklyn Battery Tunnel	16,361	2	2	547	99	533	89	4
Verrazano-Narrows Bridge [a]	66,748	34	28	1,876	130	396	433	242
Henry Hudson Bridge [b]	24,551	2	2	100			2	1
Marine Parkway Bridge	7,481	1	1	145	48		18	2
Cross Bay Bridge	6,601	3	1	233	82		35	4
Total	282,436	144	108	9,902	1,037	1,018	1,916	988
Percent of Paid Vehicles	93.2%	0.0%	0.0%	3.3%	0.3%	0.3%	0.6%	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	1,848	58	90	1	2	39,433	301	39,735
Bronx-Whitestone	871	59	16		1	45,207	301	45,509
Triborough Bridge	605	86	39			61,632	1,152	62,784
Queens Midtown Tunnel	12	46	1			28,173	404	28,577
Brooklyn Battery Tunnel	8	51	1			17,697	488	18,185
Verrazano-Narrows Bridge [a]	1,328	120	59		1	71,395	651	72,046
Henry Hudson Bridge [b]	1	40				24,699	97	24,797
Marine Parkway Bridge	9	11	1			7,718	84	7,802
Cross Bay Bridge	14	14	2			6,989	140	7,129
Total	4,696	486	208	2	5	302,944	3,618	306,563
Percent of Paid Vehicles	1.6%	0.2%	0.1%	0.0%	0.0%	100.0%		

Notes: May not add due to rounding. VC = vehicle class
(a) Westbound traffic doubled.
(b) Truck passage prohibited
(c) Includes police, fire and other emergency vehicles and TBTA vehicles.
Source: TBTA.

Monthly Traffic, 2004

Monthly traffic variations on the nine crossings are normally attributed to several factors. Traffic volumes historically have been weather-related, e.g., severe winter weather may result in lower volumes. Conversely, traffic reaches its highest levels during the summer months when recreational travel peaks. Toll rate increases have also affected the traffic volumes in the after-math of a toll increase. Furthermore, individual facilities can be affected by construction projects on adjacent arterials or competing bridges. The limited number of crossings in the region 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.

Table 8. Monthly Traffic Variations, 2004

Month	Average Daily Toll-Paying Traffic										Ratio to AADT [(b)]
	Throgs Neck	Bronx-Whitestone	Tri-borough	Queens Midtown	B'klyn-Battery	Verrazano-Narrows[(a)]	Henry Hudson	Marine Pkwy	Cross Bay	Total	
January	90,330	106,765	141,652	66,064	43,427	173,150	58,558	17,199	16,049	713,194	0.86
February	98,338	117,184	155,711	74,054	49,655	187,135	64,874	18,328	17,077	782,356	0.95
March	101,711	120,837	163,720	78,346	50,892	192,253	66,639	19,714	18,380	812,492	0.98
April	108,729	125,596	170,210	79,869	49,958	198,250	71,087	19,772	18,584	842,056	1.02
May	112,397	128,336	174,437	79,575	47,912	200,003	70,480	21,847	19,661	854,649	1.03
June	117,559	131,417	181,313	83,463	52,250	207,128	71,818	24,692	21,657	891,298	1.08
July	116,844	130,337	170,760	77,352	47,452	201,022	66,308	25,684	22,029	857,787	1.04
August	116,862	132,769	172,818	73,348	44,993	201,961	64,935	24,277	20,775	852,738	1.03
September	111,678	126,099	173,277	76,010	46,417	196,188	66,412	21,960	19,745	837,785	1.01
October	110,669	122,041	176,122	79,151	48,620	195,732	71,330	19,877	18,852	842,394	1.02
November	105,693	122,446	170,816	79,074	49,001	192,716	70,261	19,769	18,340	828,116	1.00
December[(c)]	101,889	118,344	169,778	77,564	49,871	195,226	67,253	19,815	17,917	817,657	0.99
AADT[(d)]	107,741	123,517	168,393	76,977	48,352	195,069	67,484	21,088	19,095	827,716	1.00

Notes: May not add due to rounding.
(a) Westbound traffic doubled.
(b) For total traffic on the nine crossings.
(c) Preliminary subject to final audit
(d) Annual Average Daily Traffic.

The data in Table 8 indicate that total traffic on the nine crossings in 2004 peaked in June. July was the second highest month in 2004. For the combined facilities, the monthly variations in 2004 ranged from 14 percent below the annual average in January to 8 percent above in June. This is indicative of a stable traffic mix comprised of a solid base of commuting and commercial traffic.

Changes in Monthly Traffic 2003 to 2004

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 at the Holland Tunnel. The recovery of traffic has differed considerably between the crossings depending on the timing of the lifting of restrictions, but by this time (April 2005) traffic at most facilities has returned to or exceeded pre-September 2001 levels. At the Brooklyn Battery Tunnel, traffic volumes are below the level of 2000 due to the loss of employment in lower Manhattan.

Table 9 lists the monthly traffic changes that have occurred between 2003 and 2004.

Table 9. Changes in Monthly Traffic – 2003 to 2004

Month	Percent Change Comparing 2004 Monthly Traffic to 2003								
	Throgs Neck	Bronx Whitestone	Triborough	Queens Midtown	Brooklyn Battery	Verrazano Narrows	Henry Hudson	Marine Parkway	Cross Bay Bridge
January	-5.2%	-6.1%	-3.7%	-6.4%	-10.1%	-6.2%	-6.8%	-4.3%	-5.3%
February	11.5	10.5	13.5	12.5	13.2	12.4	12.3	13.3	9.9
March	0.4	1.0	5.4	8.1	4.4	-0.3	1.5	1.6	1.4
April	4.9	-0.2	6.5	6.7	0.5	0.3	3.5	1.8	1.6
May	2.1	0.7	4.8	3.8	-6.1	0.1	-0.8	2.1	2.9
June	4.1	0.4	6.9	5.7	2.5	1.1	0.2	2.0	1.1
July	-1.9	0.7	1.8	2.1	-0.9	-1.5	-1.9	-6.0	-5.8
August	-2.2	2.8	4.5	-4.7	-4.8	-1.3	-1.8	-3.5	-0.9
September	-1.0	5.2	6.9	-3.6	-6.0	-0.4	-4.5	0.7	1.8
October	-3.2	4.0	6.2	-0.8	-3.0	-0.8	-1.0	-2.5	1.6
November	-0.4	0.7	5.5	1.9	0.8	-0.5	0.5	-0.4	2.5
December	4.8	3.2	10.7	5.6	4.5	4.3	7.1	3.1	4.8
Annual	0.9	1.8	5.6	2.4	-0.6	0.4	0.5	0.2	1.0

Reasons for monthly traffic changes include:

- Weather, including blizzards, in February and December, 2003 and January, 2004, and heavy rains in July and August 2004;
- The Republican National Convention in August, 2004;
- The extra day in February, 2004 due to leap year; and
- The blackout in northeast United States on August 14, 2003.

Estimated Traffic and Toll Revenue, 2005

The development of the traffic and toll revenue estimates for 2005 took into account the forecast of normal growth and adjustments due to the toll revision implemented in 2005. The impacts in the long term, regarding the national and regional economies, projected employment in lower Manhattan and the traffic and revenue forecasts beyond 2005, are covered in the following chapters of the report. In developing the traffic and toll revenue estimates from 2005, we assumed that traffic changes for 2004 to 2005 would be at the same rate as the change in traffic from 2003 to 2004, adjusted to reflect the March 13, 2005 toll rate increase. There are two exceptions: growth at the Queens Midtown Tunnel between 2003 and 2004 was 2.4 percent. This was likely due to lane closures on the Queensboro Bridge for cleaning and repainting in March 2004. Growth at the Triborough Bridge between 2003 and 2004 was over 5 percent due to the completion of major construction on the bridge early in 2004. Also, the Queensboro project could have contributed to additional volumes. Accordingly, a reasonable growth rate for these two facilities for 2005 was estimated to be 1 percent. The forecasted percent changes are shown in Table 10.

Table 10. Estimated Changes in Annual Traffic – 2004 to 2005

Facility	Percent Change
Throgs Neck Bridge	0.02%
Bronx-Whitestone Bridge	0.88
Triborough Bridge	–1.11
Queens Midtown Tunnel	–1.29
Brooklyn-Battery Tunnel	–4.78
Verrazano-Narrows Bridge	–0.88
Henry Hudson Bridge	–3.25
Marine Parkway Bridge	–1.16
Cross Bay Bridge	–0.71

The percentages reflect the toll increase in March, ongoing construction, and the effects of an improving economy.

The traffic and toll revenue estimates for 2005 are presented in Table 11.

Table 11. Estimated 2005 Toll-Paying Traffic and Toll Revenue

Facility	Traffic (000s)	Average Toll[(a)]	Revenue (000s)
Throgs Neck Bridge	39,427	$5.17	$203,984
Bronx Whitestone Bridge	45,603	$4.58	$208,919
Triborough Bridge	60,947	$4.45	$271,208
Queens Midtown Tunnel	27,810	$4.21	$117,148
Brooklyn Battery Tunnel	16,852	$4.03	$67,869
Verrazano Narrows Bridge	70,767	$3.82	$270,086
Henry Hudson Bridge	23,896	$1.83	$43,635
Marine Parkway Bridge	7,629	$1.47	$11,197
Cross Bay Bridge	6,939	$1.51	$10,481
Total	299,870	$4.02	$1,204,527

Notes: (a) The average tolls in Table 11 are the weighted average rates for the full year taking into consideration the toll increase that was implemented on March 13, 2005.

Accordingly, the $1.2 billion revenue estimate for 2005 in Table 11 reflects the impact of the March 13, 2005 toll increase. The drop in traffic due to the toll increase is estimated to be slightly over 1 percent (1.01 percent). The overall increase in revenue is almost 10 percent (9.8 percent).

Table 11 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 starting in 2005 is discussed on pages 5-42 through 5-43.

Operating Expenses 1994 to 2004

Table 12 displays the historical operating expenses for the TBTA facilities from 1994 through 2004. TBTA divides operating expenses into two major categories: Personnel Services and Other Than Personnel Services (OTPS). Personnel services include salaries, overtime and fringe benefits, net of capital reimbursements. Maintenance, 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 OTPS.

TBTA personnel services expenses increased from $107.4 million in 1994 to $158.4 million in 2004. 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 the period.

OTPS expenses increased from $63.0 million in 1994 to $160.8 million in 2004. The primary driving factors in TBTA's OTPS expense growth were inflation, an increase in major maintenance and bridge painting activities; costs associated with *E-ZPass* including, particularly,

the issuance of new tags-and replacement of tags that will soon reach the end of their TBTA service life; and enhanced security measures since the events of September 11, 2001.

Timing of major expenses and extraordinary 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 OTPS expenses starting in 1995.

E-ZPass startup costs for tags and customer service center operations were primarily responsible for OTPS 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 OTPS costs in 1999, and rental expenses for TBTA administrative offices at 2 Broadway that were formerly in the New York Coliseum office building increased OTPS costs in 1999 and 2000.

Table 12. Historical Operating Expenses: 1994 to 2004

Year	Operating Expenses (000s)			Percent Change[(c)]
	Personnel [(a)]	OTPS [(b)]	Total	
1994	$107,417	$62,976	$170,393	
1995	112,212	84,858	197,070	15.7%
1996	109,256	95,915	205,171	4.1
1997	111,651	112,222	223,873	9.1
1998	106,603	101,587	208,190	–7.0
1999	107,430	120,561	227,991	9.5
2000	112,256	129,807	242,063	6.2
2001	123,316	133,198	256,514	6.0
2002	140,967	159,229	300,196	17.0
2003	159,976	169,041	329,017	9.6
2004	158,403	160,811	319,214	–3.0

Notes: (a) Includes salaries, overtime and fringe benefits, net of capital reimbursements.
(b) OTPS is Other Than Personnel Services and includes the following categories: maintenance and supplies, outside services, insurance, power, leases and rentals and other expenses.
(c) For discussion on expense fluctuations, see preceding 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 and traffic management, 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 assigning personnel to disaster recovery tasks and overtime incurred by represented employees required to make up for lost time as a result of the temporary closure of 2 Broadway. The increases associated with these additional costs have been reimbursed to TBTA 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 includes 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-Z*Pass Tag replacement.

The 2003 increase in personnel costs was caused by additional expenditures for security staff, worker's compensation adjustments and health and welfare benefits rate increases. The 2003 increase in personnel 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* Custom Service Center costs and other business expenses.

In 2004, non-labor expenses were 4.9 percent lower than 2003 due to a decrease in the required number of *E-ZPass* tag purchases.

2005 Budget

Operating expenses have been budgeted by TBTA for 2005 at $362.8 million. These expenses are divided into the following two categories: Personnel Services of $179.2 million and OTPS of $183.7 million.

The 2005 budget reflects a continuation of the security measures noted above and the replacement of outstanding *E-ZPass* tags that are approaching the end of their useful life.

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 on pages 5-8 and 5-9. 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 2015 is included in the following tables. In general, 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; however, the scale of the events of September 11 resulted in reduced traffic levels on the crossings serving lower Manhattan. The intermediate-term impacts of this event are discussed below based on information provided by regional agencies and organizations. 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, URS reviewed historical trends and forecasts by NYMTC and others.

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, traffic volumes generally decline.

The long-term trend in employment in the region is shown in Table 13. A downward trend in employment occurred between 1970 and 1980 in New York City. Jobs declined by 1.2 percent per year, from 4,084,000 in 1970 to 3,627,000 in 1980. Staten Island, where employment increased by 3.4 percent per year, was the exception. The most recent employment forecasts were released by NYMTC in September 2004. Year 2000 census data show that employment was the highest it has been since 1970. Projections show a slight decline in 2005 followed by steady growth through 2015.

Between 1970 and 1990, employment increased in the New York suburbs, in Northern New Jersey and in Southern Connecticut. NYMTC projected that employment in the region as a whole, would grow during the forecast period through 2015, in the range of 0.3 to 1.1 percent annually.

According to the Bureau of Labor Statistics, the region is experiencing the largest year-over-year decline in joblessness since 1995. In New York City the unemployment rate in February was 6.5 percent, down from 7.9 percent last year.

Table 13. 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	2,654.9	247.3	592.2	543.1	45.9	4,083.7	1493.8	2182.4	731.5
1980	2,364.8	211.9	485.7	499.7	64.4	3,626.6	1843.7	2466.6	874.0
1990	2,565.1	237.8	504.5	567.3	91.6	3,966.1	2231.1	2899.0	1028.0
2000	2,682.2	269.4	584.6	624.1	116.9	4,277.3	2422.5	3158.4	1064.9
2005 - Projected	2,545.8	282.0	590.5	635.4	123.4	4,177.1	2491.7	3241.6	1072.2
2010 - Projected	2,737.7	295.5	621.6	668.3	137.4	4,460.4	2611.8	3394.9	1135.3
2015 - Projected	2,850.1	307.1	650.0	693.3	150.1	4,650.7	2732.9	3550.8	1174.4
Average Annual Percent Change									
1970 to 1980	-1.2%	-1.5%	-2.0%	-0.8%	3.4%	-1.2%	2.1%	1.2%	1.8%
1980 to 1990	0.8	1.2	0.4	1.3	3.6	0.9	1.9	1.6	1.6
1990 to 2000	0.4	1.3	1.5	1.0	2.5	0.8	0.8	0.9	0.4
2000 to 2005	-0.5	0.5	0.1	0.2	0.5	-0.2	0.3	0.3	0.1
2005 to 2010	0.7	0.5	0.5	0.5	1.1	0.7	0.5	0.5	0.6
2010 to 2015	0.4	0.4	0.4	0.4	0.9	0.4	0.5	0.4	0.3

Notes: (a) Totals may not add due to rounding.
(b) Consists of the following counties: Dutchess, Nassau, Orange, Putnam, Rockland, Suffolk and Westchester.
(c) Consists of the following counties: Bergen, Essex, Hudson, Middlesex, Monmouth, Morris, Passaic, Somerset and Union.
(d) Consists of the following counties: Fairfield, Litchfield, New Haven.

Source: New York Metropolitan Transportation Council, September 2004.

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, the most noticeable fluctuations occurred during the toll increase years, when traffic declined while revenues increased.

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 14. 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 8,000,000. Nearby New York and New Jersey counties also show increased growth. In Connecticut, population increases were in Fairfield County, the closest county to the TBTA facilities.

Table 14. 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	4,178	5,066	1,682
1980	1,428	1,169	2,231	1,891	352	7,072	4,314	4,915	1,725
1990	1,488	1,204	2,301	1,952	379	7,323	4,401	5,008	1,806
2000	1,537	1,333	2,465	2,229	444	8,008	4,681	5,431	1,889
2005 - Projected	1,583	1,367	2,515	2,273	471	8,209	4,882	5,614	1,958
2010 - Projected	1,626	1,391	2,566	2,334	495	8,412	5,060	5,726	2,016
2015 – Projected	1,651	1,432	2,622	2,445	524	8,674	5,196	5,850	2,078
Average Annual Percent Change									
1970 to 1980	–0.7%	–2.3%	–1.5%	–0.5%	1.8%	–1.1%	0.3%	–0.3%	0.3%
1980 to 1990	0.4	0.3	0.3	0.3	0.7	0.3	0.2	0.2	0.5
1990 to 2000	0.3	1.0	0.7	1.3	1.6	0.9	0.6	0.8	0.4
2000 to 2005	0.3	0.3	0.2	0.2	0.6	0.2	0.4	0.3	0.4
2005 to 2010	0.3	0.2	0.2	0.3	0.5	0.2	0.4	0.2	0.3
2010 to 2015	0.2	0.3	0.2	0.5	0.6	0.3	0.3	0.2	0.3

Notes: (a) Totals may not add due to rounding.
(b) Consists of the following counties: Dutchess, Nassau, Orange, Putnam, Rockland, Suffolk and Westchester.
(c) Consists of the following counties: Bergen, Essex, Hudson, Middlesex, Monmouth, Morris, Passaic, Somerset and Union.
(d) Consists of the following counties: Fairfield, Litchfield, New Haven.
Sources: New York Metropolitan Transportation Council, US Census Bureau.

NYMTC's latest population projections for the Tri-State region for 2005 to 2015 were prepared in 2004. NYMTC projects steady population growth throughout the region ranging from 0.2 percent to 0.6 percent.

With the 2000 Census exceeding previous expectations and population increases region-wide, population growth should have a positive effect on traffic demand on the TBTA crossings.

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 slightly for the period 1999 through 2004 in New Jersey and Connecticut, decreased slightly in New York City and remained relatively constant throughout New York State. The most recent data available indicate that between 1999 and 2004 vehicle registrations grew by an average annual rate of growth of 1.4 percent in New Jersey and 2.4 percent in Connecticut. As illustrated in Table 15, these figures represent an upward trend in motor vehicle registration growth for the Tri-State area.

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 15. Motor Vehicle Registrations
(000s)

Year	New York City	New York State [a]	New Jersey	Connecticut
1999	2,001	10,437	5,921	2,659
2000	2,044	10,661	5,951	2,735
2001	2,025	10,707	6,113	2,796
2002	1,946	10,445	6,275	2,893
2003	1,869	10,414	6,320	2,928
2004	1,849	10,450	6,361	2,989
Average Annual Growth				
1999-2004	–1.6%	0.0%	1.4%	2.4%

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

In summary, generally, employment indicators overall seem to have had a more noticeable effect on traffic volumes on the TBTA facilities than population growth. However, regional demographic trends are not always independently discernable relative to the yearly traffic variations. As discussed throughout this report, demand for the TBTA facilities has been strong overall, and NYMTC's regional population projections indicate an increasing trend throughout the forecast period. With regard to employment, a return to previous levels is anticipated within the next three years.

Fuel Conditions

The availability and pricing of motor fuel has affected the use of TBTA facilities. During the past 30 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 Persian Gulf tensions and war in 1990-1991 and, most recently, during 1999 and the beginning of 2000, and again in 2003 when prices increased due to restricted supplies. During the first week of April 2005, retail gasoline prices averaged $2.22 per gallon due to increases in crude oil prices propelled by growing demand.

In 1974, there was a 4.9 percent decline in TBTA traffic and slower growth in subsequent years (1.5 percent per year in contrast to the 3.8 percent prior to 1974) as the economy slowed and fuel prices rose. Succeeding fuel shortages caused temporary traffic decreases that resulted in no permanent effects on traffic growth in subsequent years.

The United States has established the Strategic Petroleum Reserve (SPR) to provide protection against short-term disruptions in petroleum supplies. Recent inventory levels provide 53 days of protection based on the United States net import rate for crude and petroleum products as of March 2005. Nevertheless, as the United States becomes increasingly dependent on foreign sources for petroleum and refined products, it becomes more susceptible to foreign disruptions in supplies. There are factors in the world petroleum market, however, that lower these risks.

These include the erosion in the market share held by the Organization of Petroleum Exporting Countries (OPEC) during the past 20 years due to the growth in production by non-OPEC nations and a diversity of interests among OPEC members that conditions OPEC's strategic objectives regarding pricing and resource development.

Unadjusted fuel prices declined from 1980 to 1985 and began to increase through the 1990s. However, when adjusted by the consumer price index, fuel prices actually declined between 1980 and 1997 by 51 percent. Prices have increased for the last four years due to OPEC controls on output and increased demand; however, these price increases did not adversely affect TBTA traffic. In March 2005, the average price was $2.08 per gallon, compared to $1.74 in March 2004. As of April 4, 2005, the retail price for a gallon of regular gasoline rose to $2.22, 43.7 cents higher than this time last year.

When adjusted to reflect changes in the CPI, the current price of gasoline is significantly below the March 1981 peak price, which, if adjusted for inflation, would be more than $3.00 per gallon in current dollars. It is anticipated that future increases in gasoline prices will not affect traffic unless they are of a magnitude exceeding that adjusted 1981 value.

For the past year gasoline prices have been near historic highs (not adjusted for inflation), and can be attributed to the increase in crude oil prices. These prices are driven by a strong growth in demand over the last year or so, both domestically and globally. Despite relatively high absolute levels for gasoline inventories, the days of cover (beginning inventories divided by demand per day) for gasoline has generally been declining for over two years, suggesting increasing short-term tightness for gasoline markets. Sustained domestic growth in gasoline demand, both seasonal and year-over-year, is expected to keep the days of cover relatively tight, keeping upward pressure on gasoline prices. Another factor influencing prices is the lack of spare production capacity, both upstream (crude oil production) and downstream (refinery capacity).

For 2004, prior to Hurricane Ivan in mid-September, Gulf of Mexico oil production had been expected to increase. However, in late September 2004, Hurricane Ivan caused significant disruptions to Gulf of Mexico operations, resulting in a loss of over 29 million barrels of oil through November 9, with a continuing disruption of more than 200,000 bbl/d (down from over 1 million bbl/d on September 14 and around 450,000 bbl/d in October) due to damage at platforms and other oil infrastructure in the Gulf.

Pump prices for regular gasoline are expected to remain high, at an expected average of $2.28 per gallon for the April to September summer season, 38 cents above last summer. Monthly average prices are projected to peak at about $2.35 per gallon in May.

On March 16, 2005 OPEC raised its production ceiling by half a million barrels per day and will likely raise it by another half a million by the time it meets again in June. This may help stabilize oil prices in the coming months.

The Annual Energy Outlook, 2005, issued by the EIA addresses the longer-term trends in energy demand and supply. Fuel supplies in the transportation sector are projected to be sufficient during the next 10 years. Motor gasoline use is projected to increase 1.7 percent per year

over the next 20 years. Alternative fuels are projected to displace about 2.2 percent of light-duty vehicle fuel consumption in 2025, in response to current environmental and energy legislation intended to reduce petroleum-based fuel use during that 20-year period. Gasoline's share of demand is expected to be sustained by low prices relative to the rate of inflation and slower fuel efficiency gains for conventional cars, vans, pickups and SUV's than were achieved in the 1980's. Over the longer term, economic growth is expected to lead to an increase in freight transportation with a corresponding annual increase of 2.3 percent in diesel use.

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.

URS developed a set of elasticity factors for each of the TBTA crossings based on historical toll increases to estimate the impact on traffic and toll revenue when tolls are increased in the future. 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. These historical factors are shown in Table 16.

Table 16. Historical Elasticity Factors

Facility	Elasticity[(a)] Factor
Throgs Neck Bridge, Bronx Whitestone Bridge	-0.085
Triborough Bridge	-0.196
Queens Midtown Tunnel	-0.208
Brooklyn Battery Tunnel	-0.386
Verrazano-Narrows Bridge	-0.120
Henry Hudson Bridge	-0.298
Marine Parkway-Gil Hodges Bridge	-0.110
Cross Bay Bridge	-0.149

Notes: (a) For each 1% increase in toll the volume is expected to decease by the elasticity factor; e.g. for each 1% increase in the toll at the Queens Midtown Tunnel, volume would decrease by .208 %

While URS has developed elasticity factors following the TBTA general rate increase in May 2003, the elasticity factors are not appropriate, in the opinion of URS, for use in projecting traffic and revenues in reaction to future toll increases on the TBTA facilities. This is due to the interaction among the toll increase and other conditions including ongoing construction on TBTA facilities or approach roads. With the March 2005 toll increase having occurred so recently, there are no data available at this time to evaluate the impact of this latest rise in tolls. The historical factors were increased by 10 percent for determining future toll impacts beginning

in 2007. This higher rate was deemed more appropriate for this report due to the frequency and amounts of the assumed toll increases.

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 Triborough Bridge and the Queens Midtown and Brooklyn-Battery tunnels in that order, 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.

If the historical increase patterns continue, it can be expected that tolls will be increased again during the forecast period (through 2015). Accordingly, for the purposes of projecting traffic and toll revenue, URS has prepared two sets of forecasts: one at constant tolls (at the present level); and the other with toll increases in January 2007, 2009, 2011, 2013 and again in January 2015.

For the toll-increase alternative, it was assumed that the toll levels (i.e., the cash toll for passenger cars) on the major and minor crossings would be increased to $5.00 and $2.50, respectively, in January 2007, $5.50 and $2.75 in January 2009, $6.00 and $3.00 in January 2011, $6.50 and $3.25, in 2013 and $7.00 and $3.75 in 2015. It was also assumed that the truck tolls would be increased proportionately, and that the *E-ZPass* tolls for passenger cars would consistently be $0.50 lower than the respective cash tolls. This is consistent with the experience of the March 2005 toll increase. The percent changes are shown in Table 17.

As for the impacts of the toll increases on traffic demand, the elasticity factors from Table 16 were increased by 10 percent as described above and then used to calculate traffic decreases as shown in Table 18. It was assumed the toll increases described previously would occur on January 1, 2007, 2009, 2011, 2013 and 2015. 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 17. Estimated Percent Change in Toll Rates and Traffic

Facility	Elasticity Factor	2007		2009		2011		2013		2015	
		Toll	Traffic	Toll	Traffic	Toll	Traffic	Toll	Traffic	Toll	Traffic
Throgs Neck and Bronx-Whitestone Bridge	-0.094	11.81%	-1.10%	10.56%	-0.99%	9.55%	-0.89%	8.71%	-0.81%	7.74%	-0.72%
Triborough Bridge	-0.216	11.81%	-2.55%	10.56%	-2.28%	9.55%	-2.06%	8.71%	-1.88%	7.74%	-1.67%
Queens Midtown Tunnel	-0.229	11.81%	-2.70%	10.56%	-2.42%	9.55%	-2.19%	8.71%	-1.99%	7.74%	-1.77%
Brooklyn Battery Tunnel	-0.425	11.81%	-5.01%	10.56%	-4.48%	9.55%	-4.05%	8.71%	-3.70%	7.74%	-3.29%
Verrazano-Narrows Bridge	-0.132	11.81%	-1.56%	10.56%	-1.39%	9.55%	-1.26%	8.71%	-1.15%	7.74%	-1.02%
Henry Hudson Bridge	-0.328	13.58%	-4.45%	12.14%	-3.98%	10.98%	-3.60%	10.02%	-3.28%	8.90%	-2.92%
Marine Parkway-Gil Hodges Bridge	-0.121	12.99%	-1.57%	11.62%	-1.41%	10.51%	-1.27%	9.58%	-1.16%	8.51%	-1.03%
Cross Bay Bridge	-0.164	12.40%	-2.03%	11.09%	-1.82%	10.03%	-1.64%	9.15%	-1.50%	8.13%	-1.33%

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.

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* use at approximately 70 percent during 2004, 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 2005), matching the 2004 traffic volumes against the highest annual volumes recorded, by facility, going back to 1970. Note in Table 18 that two of the nine TBTA crossings carried their highest volumes in 2004.

Table 18. Comparison of 2004 Traffic with Highest Recorded Levels Since 1970

Facility	Highest Volume Since 1970		2004 Volume* (000s)	2004 Percent of Highest Volumes
	Year	Volume (000s)		
Throgs Neck Bridge	2002	39,661	39,433	99%
Bronx - Whitestone Bridge	2004	45,207	45,207	100
Triborough Bridge	1988	64,215	61,632	96
Queens Midtown Tunnel	1971	28,742	28,173	98
Brooklyn-Battery Tunnel	1971	22,920	17,697	77
Verrazano-Narrows Bridge	2002	73,334	71,395	97
Henry Hudson Bridge	2004	24,699	24,699	100
Marine-Parkway- Gil Hodges Bridge	1971	9,150	7,718	84
Cross Bay Bridge	1972	7,562	6,989	92

* From Table 5

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. In addition to projects that are scheduled as part of long-term rehabilitation planning, any of the emergency measures that have been either implemented or proposed to address transportation deficiencies resulting from the events of September 11, 2001, and which are expected to remain in place beyond 2005, are discussed in this section.

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 may adversely affect TBTA traffic volumes or cause traffic to shift from the affected crossing to another TBTA facility. For example, when the approach ramps from the Cross Island Parkway to the Throgs Neck Bridge were rehabilitated in 1995, some traffic diverted from the Throgs Neck Bridge to the Bronx-Whitestone 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, the replacement of the upper level suspended deck anticipated for the end of 2008 is not likely to have major traffic impacts since a movable barrier will be used to allow maintenance of traffic in the peak flow direction and because the lower deck will be unimpeded. Currently there is no commitment to re-deck the lower level of the bridge.

The Cross Bay Bridge re-decking will begin in 2006 and the roadway will be reduced to two lanes in each direction. Due to low traffic volumes, this is not anticipated to have a detrimental effect on traffic flows.

On the Bronx Whitestone Bridge, the replacement of the deck on the suspended span with an orthotropic deck will begin in June 2005 and will be completed by the end of 2006. A movable barrier will be used to maintain three lanes in the peak direction; however, there may be an impact with some diversion to the Throgs Neck Bridge due to heavy volume in the reverse direction. Also, approach decks will be replaced in the Bronx in 2008 and in Queens under the next capital program. Three lanes will be maintained in each direction.

Redecking of the lower level of the Henry Hudson Bridge is scheduled for 2006-2009. Impacts on traffic are presently under study.

Operational Changes Resulting from September 11, 2001

Of all the measures introduced following the events of September 11, only the following two remain in place as of April 2005:

- Brooklyn Ferry Service, which the New York City DOT implemented between Manhattan and Brooklyn on September 17, 2001, was funded until April 30, 2003. Since April 30, the ferry has continued in service as a fee based service.

- The ban on large commercial vehicles remains in effect at the Holland Tunnel.

Competing Ferry Service

Following September 11, a comprehensive review of all transportation services between Manhattan, the other boroughs and New Jersey was undertaken by FEMA, and a number of changes to the existing transportation services have been implemented. Ferry ridership doubled after September 11, with ferry companies and agencies investing in new routes and infrastructure. However, as other transit such as the PATH and subway came back on line, ferry ridership dropped. This has been especially true for New York Waterway. On March 21, 2005 Billybey Ferry Company, LLC took over operations of New York Waterway service between Hoboken Ferry Terminal, Newport, Harborside and Port Liberty Terminals and Manhattan sites.

Port Authority officials agreed in February to reduce sharply the monthly fee they had charged New York Waterway to carry passengers between Hoboken and Lower Manhattan.

New York Water Taxi, which serves East River routes, appears to be more financially stable. Currently, New York Water Taxi operates East River ferry service between Manhattan, Brooklyn and Queens from various locations including: Hunters Point, East 34 Street, Pier 11, Wall Street, Fulton Ferry Landing, Red Hook, South Street Seaport, Pier 45 Greenwich Village, Pier 63 Chelsea Pier/23 Street, Pier 84 West 44 Street, World Financial Center and Slip 6 Battery Park. Service generally operates during peak periods and some routes do not operate during the winter. While the subsidy debate is ongoing, ferry service along East River routes seems to have stabilized over the past few years. Since routes are not likely to be added or dropped, ferry service will not likely affect TBTA facilities.

The City Council and the Port Authority of New York and New Jersey (PANYNJ) are currently debating to what extent ferry service should be subsidized and who will pay. They are also debating the form subsidies should take, e.g. fare subsidy vs. infrastructure upgrades. For example, PANYNJ will construct a new $40 million ferry terminal at the World Financial Center. Construction is to begin soon.

A proposal to institute ferry service from Staten Island to Downtown is currently being considered. This proposal would allow for the implementation of a new private ferry service from Staten Island's south shore to downtown Manhattan. The primary purpose of this proposed service is to provide an additional viable transportation service for residents who live in the central portion of Staten Island to access Manhattan.

Competing East River Crossings Construction

- Queensboro Bridge – Since 1989, numerous rehabilitation projects have involved the upper or lower levels, or ramp approaches to the bridge. Miscellaneous items at various locations throughout the bridge, approaches and ramps that were not addressed or were deleted from previous contracts were begun in November of 2003 and are scheduled for completion in spring of 2006. During this time several local streets will be closed during off peak (night hours) in Manhattan and Queens. New York City DOT will continue to maintain pedestrian/bike access across the bridge during the current reconstruction contracts. However, upcoming work will require a temporary/partial closure of the pedestrian/bike path.

  In March 2004, the New York City DOT started to clean and repaint the structural steel of the main spans and approach roadways of the Queensboro Bridge. The cleaning (removal of old paint) and painting of the bridge is performed in segments and is scheduled to be completed in January 2009. Throughout the Painting Contract, the North Lower Outer Roadway may be partially closed while providing a 5-foot access for bicyclists and pedestrians.

  Lane closures associated with the above may have resulted in some traffic diversions to the Queens Midtown Tunnel and Triborough Bridge.

- Williamsburg Bridge - As of 2003 all work on the bridge's supports, roadways, walkways and subway tracks has been completed. At present work is being performed under Contract Number 8 for miscellaneous rehabilitation of the main bridge. This work began in March 2003 and is expected to be complete in early 2006. This $173 million project will include the rehabilitation of the tower bearings, the truss system, the steel structure of all eight towers, and the north comfort station houses, the replacement or adjustment of the cable suspenders, the installation of maintenance travelers (inspection platforms) under the main span, and painting of the stiffening trusses.

  Architectural work will include the restoration of decorative lights and the Brooklyn granite stone monument. Work inside the anchorage houses on both the Manhattan and Brooklyn sides will include the construction of new stairs, a hoisting system, ventilation and lighting, and oiling platforms. The project will also include the installation of an Intelligent Transportation System (ITS). Stages 1A and B, the painting of trusses on South and North sides were completed on November 25, 2003. Following the completion of the painting work, eight lanes are currently available to traffic. The contractor is allowed to close two lanes for construction purposes, but will always maintain four lanes in the peak travel direction.

  Whatever diversions to the Queens Midtown Tunnel that had occurred during earlier lane closures should have returned to routings based on normal driver preferences.

- Manhattan Bridge - Presently, the lower roadway is undergoing replacement. The contract to rehabilitate the lower roadway was started in January 2005 and is scheduled for completion in April 2008. The contract includes the complete removal and replacement of the lower roadway and these work items: replacement of the north upper roadway and lower roadway lighting, cleaning of more than 200,000 square feet of masonry at 16 structures in Brooklyn and Manhattan, restoration of the Brooklyn plaza park at the entrance to the south walkway, milling of Sands Street in Brooklyn to create additional clearance for trucks, and rehabilitation of the interior of the anchorages. The most significant item of this contract will be the replacement of the lower roadway. This task will begin in October 2006 and will require the closure of the roadway for one year. This should induce some traffic to divert to the Brooklyn Battery Tunnel.

Major Roadway Construction

During the forecast period, several major roadway projects, which are part of NYMTC's Transportation Improvement Program (TIP) for 2006-2010, 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.

Roads programmed for construction include:

- Willis Avenue Bridge – Connecting the FDR Drive, Major Deegan Expressway and Bruckner Expressway. The use of the contra-flow lane for passenger cars on business

days has been discontinued. However, during intermittent roadway closures on the Third Avenue Bridge for purposes of testing and adjusting the machinery of the new span, the contra-flow lane will be implemented Manhattan-bound. According to the TIP, reconstruction is scheduled for Federal Fiscal Year (FFY) 2006. Any restrictions on the Willis Avenue Bridge would induce some diversions to the Triborough Bridge.

- Third Avenue Bridge – The replacement of the span over the Harlem River is now in its final stages and is expected to be completed by late fall of 2005. At present, all five lanes are open to traffic. Whatever diversions to the Triborough Bridge that had occurred during the reconstruction period should have returned to routings based on normal driver preferences.

- Major Deegan Expressway – Rehabilitation of various bridges along the Major Deegan Expressway between 138th Street and Mosholu Parkway are scheduled between 2006 and 2009. Safety improvements northbound at West Fordham Road and 230th Street are scheduled for 2006 and 2008 respectively. Traffic impacts at the Triborough Bridge should not be significant.

- Cross Bronx Expressway – Rehabilitation of various bridges and interchange, signing and lighting improvements are scheduled through 2009. The reconstruction of the East Tremont Bridge over the Cross Bronx Expressway is scheduled to be complete in the fall of 2006. During this reconstruction project there will be periodic daily nighttime crossovers for a two-week period. One lane will be closed in each direction with two lanes maintained in each direction. There will also be periodic nighttime two-lane closures with one lane maintained in each direction. The reconstruction of the Randall Avenue bridge is scheduled to be completed in Fall 2006 and will necessitate a one-lane closure and two lanes maintained in each direction between the Randall and Tremont Avenue bridges. Because route choices are limited, especially for trucks, traffic impacts on the TBTA bridges serving The Bronx should not be significant.

- Bruckner Expressway /Pelham Parkway- Beginning in the summer of 2004, the New York State Department of Transportation (NYSDOT) began preparatory work to facilitate the reconstruction of three bridges in the Bronx. These bridge facilities include: the I-295 (Cross Bronx Extension) bridge over Randall Avenue; the East Tremont Avenue bridge (at Dewey Ave.) over I-295 (Cross Bronx Extension), and the I-95 bridge over I-695 (Throgs Neck Expressway). Scheduled for completion in the fall of 2006, this project will combine multiple stages of demolition and reconstruction to replace all three bridge structures. Daily lane closures may occur during non-peak hours (10:00 AM to 3:00 PM and 10:00 PM to 5:00 AM). Some traffic shifts between the Triborough and Bronx-Whitestone bridges could occur.

- Gowanus Expressway Viaduct Emergency Repairs - This project is expected to be completed in July 2006. The project includes concrete, steel, bridge rail, viaduct painting and other emergency repairs. During this project, there will be single-lane closures in both directions during the mid-day weekday periods. On Friday and Saturday nights (lasting until late morning the next day), there will be single-lane operation. During the next 12 months, some traffic (to/from New Jersey) could divert to the Holland Tunnel, avoiding

the Verrazano-Narrows Bridge, and some passenger cars could divert to the Belt Parkway, but still use the Verrazano-Narrows Bridge.

- Brooklyn Queens Expressway (BQE) and Grand Central Parkway (GCP) (Queens) – Reconstruction of the BQE between Broadway and 25th Avenue is nearly complete. The final stage, reconstruction and realignment of the BQE/GCP Connector is scheduled to be completed in June 2005. There will be single-lane closures between Broadway and 25th Avenue in both directions during weekdays from 10:00 AM to 3:00 PM. Installation of sign structures along the BQE and GCP have an estimated completion date of September 2005. Daytime single-lane closures will occur at various locations on the GCP from the Triborough Bridge to 168 Street. There will also be possible nighttime two-lane closures on the GCP from Northern Boulevard to Kew Gardens. In addition to these changes, trucks will be permitted to use the GCP for a limited time. This work is not expected to have a significant impact on Triborough Bridge traffic.

- Long Island Expressway (LIE) – The LIE interchange at the Cross Island Parkway improvement project has an expected completion date of July 2005. There will be occasional single-lane closures on the Cross Island Parkway in each direction on weekdays between 10:00 AM and 3:00 PM.

- Whitestone Expressway Bridge over the Flushing River – Rehabilitation of the northbound roadway and pavement rehabilitation is expected to be completed in August 2006. There will be lane shifting with traffic maintained during the peak hours. There will also be sporadic mid-day lane closures to the northbound Astoria Boulevard approach to the northbound expressway.

- Throgs Neck Bridge/Expressway approach in the Bronx –Work continues on the Bruckner Expressway reconstruction between the Throgs Neck Expressway and Pelham Parkway. This project is scheduled for completion in summer 2005 and involves the closure of one of three lanes in a northbound or southbound direction on the Bruckner Expressway, as necessary, between the hours of 9:00 AM and 3:00 PM. Some passenger car traffic has diverted from the Throgs Neck Bridge to the Bronx-Whitestone Bridge and Hutchison River Parkway, but trucks are limited to their normal routings, whether that be via the Bronx-Whitestone or Throgs Neck bridges.

- Grand Central Parkway – The installation of an Intelligent Transportation System (ITS) is estimated to be completed on June 2006. Single lane closures are possible during the day and two-lane closures possible at night. Traffic impacts on the Triborough Bridge should not be significant.

- FDR Rehabilitation Project from 54th Street to 63rd Street - Rehabilitation project from 54 Street to 63 Street. This project, expected to be complete by April 2007, will rehabilitate the three-level tiered FDR Drive structure. Work includes repaving, safety improvements to correct roadway geometry and add an acceleration lane to the 63 Street entrance and new drainage, signage and lighting systems. Southbound traffic detours onto the northbound roadway while northbound traffic detours onto the outboard detour roadway. During Stage 5 (the present stage) there will be 23 consecutive weekend closures of the

FDR Drive northbound between January 2006 and May 2006. After that, there will be some infrequent weekend closures. Some traffic shifts between the Triborough and Queensboro bridges could occur.

- Belt Parkway –Rehabilitation of seven bridges over four waterways and three roadways is scheduled to be carried out between fiscal years 2006 and 2008. Reconstruction of the Belt Parkway Bridge over Ocean Parkway was completed in November 2004. Included in this work was a reconfiguration of the interchange. Traffic impacts at the Verrazano-Narrows Bridge should not be significant.

- In September 2003, the Board of Commissioners of the Port Authority of New York and New Jersey approved plans to explore future options for the modernization and expansion of the Goethals Bridge. An Environmental Impact Statement (EIS) is currently in process, studying options, and make recommendations for a preferred alternative to upgrade the bridge in terms of: improving customer service, providing capacity for transit options and enhancing the safety and reliability of the crossing. The draft EIS and public hearings are scheduled for early 2006.

Other Considerations

Other considerations in the development of traffic and revenue forecasts for the TBTA facilities include the potential impacts of transit improvements and Clean Air regulations in the metropolitan area.

- *Impact of Transit Improvements.* There are significant transit improvements that, when implemented, are expected to affect TBTA traffic levels during the forecast period through the year 2015.

    o Second Avenue Subway: work on the $16 billion project will affect approximately nine miles of Second Avenue and adjacent side streets. No official construction commencement date has been announced. The 21-foot wide, 8.5-mile, twin tunnels from 125 Street at the north to Hanover Square on the southern tip of Manhattan will provide direct subway access to residents along the east side of Manhattan. The 16-year project will result in the creation of 16 new subway stations on Second Avenue.

    For the duration of the project, at least one half of the lanes for three to five block segments of Second Avenue in the vicinity of the proposed stations would be closed. This would permit construction of temporary roadway decking that will provide areas for storage of material and equipment, removal of tunnel debris and construction of the stations. Relocation of on-street parking and temporary suspension of standing rules for trucks will also be required.

    During construction on Second Avenue of the 34 Street Station there would be 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 Triborough Bridge, the 125 Street ramps between the Triborough Bridge and 125 Street would experience a loss of capacity. The high volume ramps between the FDR Drive and the Triborough Bridge would not be affected.

- o The JFK *Airtrain* with connections to the subway line at Howard Beach and the LIRR and subway at Jamaica construction was completed in 2002 and the system became fully operational in December 2003.

- o *Eastside Access Project* to bring LIRR trains into Grand Central Terminal, which LIRR anticipates will result in shifts from other modes, including TBTA facilities.

- o Other long-range projects include the lower Manhattan-Brooklyn improvements to the existing subway tunnels (signalization, etc.).

- *Clean Air Regulations*. In response to Section 182(d)(1)(B) of the Clean Air Act, the State of New York imposes voluntary regulations aimed at increasing the average vehicle occupancy of work-related trips. Known as the Employee Commute Options (ECO) program, the plan encourages employers of 100 or more persons in the severe ozone non-attainment areas to submit a compliance plan that is aimed, through ride sharing, at reducing the number of employees that commute to work alone by automobile. Included in New York State's severe ozone non-attainment areas are all five boroughs of New York City, and the counties of Nassau, Suffolk, Rockland, Westchester, and portions of Orange. Similar programs are currently in place for severe non-attainment areas in New Jersey, Connecticut and Pennsylvania. Since URS' traffic estimates are derived from 2001 and 2002 annual levels that already take into account any impacts the ECO program may have, no further adjustments are necessary to reflect any negative effects this might have on TBTA revenues.

Summary of Assumptions and Conditions

TBTA traffic, revenues and expenses have been projected by URS on the basis of the historical record of traffic, revenues and expenses, the capacities of the TBTA facilities, traffic growth forecasts, the estimated traffic elasticity due to toll variations 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 implemented 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.

- For the scenario with periodic toll increases, toll rate increases will be implemented in accordance with the schedule contained in this report.

- Elasticity factors, prepared by URS based on historical toll increases prior to 2005, are valid in their application to future toll rate increases to estimate future traffic and toll revenue.

- 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.

- Capacity constraints in the arterial highway network will 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 level of increase in gross toll revenues. Growth in traffic volumes would be limited without *E-ZPass* at toll plazas.

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

- The 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.

- Should fuel shortages occur, they will be limited in duration, and motor fuel prices (i.e., the average price for regular gasoline) in the foreseeable future will not increase above the 1981 peak, which, if adjusted for inflation, in current dollars would not be more than $3.00 per gallon.

- Public transportation systems will not undergo any major construction programs nor schedule changes that would materially alter regional commuter patterns and result in significant traffic diversions from TBTA facilities.

- Current toll discount programs remain in effect at current projected levels, including the $0.50 discount for *E-ZPass* auto customers and the Staten Island residents' discount program for the Verrazano-Narrows Bridge.

- The effects of 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, are fully reflected in the results since 1998 and, therefore, no further impact will occur.

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

- 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 (2005-2015) forecast period for each TBTA facility based on historical trends in traffic and 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 2005 budget, and growth estimates based on the CPI-U for "All Urban Consumers–New York PMSA" for labor items and CPI-U for "All Urban Consumers–U.S. City Average" for non-labor items are input to the future operating expense forecast. Future operating expense estimates are used to develop net revenue projections over the forecast period.

Traffic and toll revenues were first projected on the basis that the current tolls will be continued throughout the forecast period. Then, using these estimates as a base, URS applied the elasticity impact factors listed in Table 16 and adjusted the average tolls to develop the 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), modified by any residual impact of September 11, 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 traffic increases in the future at modest rates of growth. URS estimates that traffic on the Throgs Neck, Triborough, Bronx-Whitestone and Henry Hudson bridges and Queens Midtown Tunnel will increase primarily during the off-peak period, since these bridges have already exceeded or are very close (within 1-4 percent) to attaining or exceeding their capacity levels with respect to the highest recorded levels achieved since 1970 (from Table 18). Capacity constraints in the highway network are contributing factors.

The technique used in the forecast was to reduce the potential growth rates by 50 percent to reflect lower overall growth once the capacity level is reached in the peak period. This approach produces conservative forecasts inasmuch as the introduction of *E-ZPass* has provided some additional capacity at the toll plazas. If grown at its full growth rate, the Verrazano Narrows Bridge will reach capacity early in 2008. After that, an application of the 50 percent growth factor was used for the remainder of the forecast period. For the other facilities, the use of the selected growth rates will result in volume increases during the forecast period that will remain below the previous highest levels achieved.

On this basis, starting with the 2005 estimated traffic by facility from Table 11 (that now reflects the impact of the March 2005 toll increase and the impact of the use of *E-ZPass* on TBTA facilities as well as the traffic constraints in the highway network), URS projected the traffic by facility as shown in Table 20, and calculated the corresponding toll revenue based on the 2005 average tolls after the March 2005 toll increase by facility (also from Table 11).

General traffic growth in the range of 0.55 to 1.7 percent annually is estimated in the forecast period. This growth is based on the actual growth in traffic on each facility during the last 10 years, after the impact of toll increases were taken into account, and a review of actual and forecast population and employment growth in the region.

Traffic and Toll Revenue with Periodic Toll Increases

As mentioned previously, the traffic forecast with periodic toll increases was built upon the base (current tolls) forecast (from Table 19), to which the elasticity impacts (from Table 17) were applied. URS then applied the appropriate increased average tolls (the 2004 averages from Table 11 increased by the percentages in Table 17) in the years 2007, 2009, 2011, 2013 and 2015 (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 20.

Table 19. Traffic and Toll Revenue Forecast, Constant Tolls

Year	Throgs Neck [b]	Bronx-Whitestone [b]	Tri-borough [b] [c]	Queens Midtown [b]	Brooklyn Battery [b]	Verrazano-Narrows	Henry Hudson	Marine-Park-way-Gil Hodges Bridge	Cross Bay	Total[e]
Annual Traffic (000s)										
2004	39,433	45,207	61,632	28,173	17,697	71,395	24,699	7,718	6,989	302,943
2005[a]	39,427	45,603	60,947	27,810	16,852	70,767	23,896	7,629	6,939	299,870
2006	39,644	45,854	61,282	28,032	16,987	71,970	24,231	7,759	7,057	302,815
2007	39,862	46,106	61,619	28,257	17,123	73,194	24,570	7,891	7,177	305,797
2008	40,081	46,360	61,958	28,483	17,260	73,816	24,742	8,025	7,299	308,022
2009	40,302	46,615	62,299	28,711	17,398	74,443	24,915	8,161	7,423	310,266
2010	40,523	46,871	62,642	28,940	17,537	75,076	25,089	8,300	7,549	312,527
2011	40,746	47,129	62,986	29,172	17,677	75,714	25,265	8,441	7,678	314,808
2012	40,970	47,388	63,333	29,405	17,819	76,358	25,442	8,584	7,808	317,107
2013	41,196	47,649	63,681	29,640	17,961	77,007	25,620	8,730	7,941	319,424
2014	41,422	47,911	64,031	29,878	18,105	77,661	25,799	8,879	8,076	321,761
2015	41,650	48,174	64,383	30,117	18,250	78,321	25,980	9,030	8,213	324,118
Traffic Growth (Percent)										
2004-2005	0.02	0.88	-1.11	-1.29	-4.78	-0.88	-3.25	-1.16	-0.71	-1.01
2005-2006	0.55	0.55	0.55	0.80	0.80	1.70	1.40	1.70	1.70	0.98
2006-2007	0.55	0.55	0.55	0.80	0.80	1.70	1.40	1.70	1.70	0.98
2007-2008	0.55	0.55	0.55	0.80	0.80	0.85	0.70	1.70	1.70	0.79
2008-2009	0.55	0.55	0.55	0.80	0.80	0.85	0.70	1.70	1.70	0.73
2009-2010	0.55	0.55	0.55	0.80	0.80	0.85	0.70	1.70	1.70	0.73
2010-2011	0.55	0.55	0.55	0.80	0.80	0.85	0.70	1.70	1.70	0.73
2011-2012	0.55	0.55	0.55	0.80	0.80	0.85	0.70	1.70	1.70	0.73
2012-2013	0.55	0.55	0.55	0.80	0.80	0.85	0.70	1.70	1.70	0.73
2013-2014	0.55	0.55	0.55	0.80	0.80	0.85	0.70	1.70	1.70	0.73
2014-2015	0.55	0.55	0.55	0.80	0.80	0.85	0.70	1.70	1.70	0.73
Average Toll										
2004	$4.67	$4.14	$4.02	$3.80	$3.64	$3.45	$1.63	$1.31	$1.36	$3.62
2005[a]	5.17	4.58	4.45	4.21	4.03	3.82	1.83	1.47	1.51	4.02
2006	5.29	4.68	4.55	4.31	4.13	3.91	1.88	1.50	1.55	4.11
Toll Revenues (000s)										
2004	$184,338	$187,231	$247,937	$107,067	$64,366	$246,322	$40,149	$10,102	$9,477	1,096,989
2005(a)	203,984	208,919	271,208	117,148	67,869	270,086	43,635	11,197	10,481	1,204,527
2006[d]	209,690	214,569	278,799	120,805	70,147	281,368	45,548	11,637	10,937	1,243,499
2007	210,843	215,749	280,333	121,771	70,708	286,151	46,185	11,834	11,123	1,254,698
2008	212,003	216,936	281,874	122,745	71,274	288,583	46,509	12,036	11,312	1,263,271
2009	213,169	218,129	283,425	123,727	71,844	291,036	46,834	12,240	11,504	1,271,908
2010	214,341	219,329	284,984	124,717	72,419	293,510	47,162	12,448	11,700	1,280,609
2011	215,520	220,535	286,551	125,715	72,998	296,005	47,492	12,660	11,899	1,289,374
2012	216,705	221,748	288,127	126,721	73,582	298,521	47,825	12,875	12,101	1,298,205
2013	217,897	222,968	289,712	127,735	74,171	301,058	48,159	13,094	12,307	1,307,100
2014	219,096	224,194	291,305	128,756	74,764	303,617	48,497	13,317	12,516	1,316,061
2015	220,301	225,427	292,907	129,786	75,362	306,198	48,836	13,543	12,729	1,325,089

(a) From Table 11

(b) Growth rates reduced by 50 percent because volume is at or near capacity level

(c) Reflects toll increase on March 13, 2005

(d) Average toll adjusted in 2006 and thereafter to reflect increase in EZ Pass usage of 0.5% per year

(e) Total may not add due to rounding

Table 20. Traffic and Toll Revenue Forecast, Periodic Toll Increases

Year	Throgs Neck [b]	Bronx-Whitestone [b]	Tri-borough [b]	Queens Midtown [b]	Brooklyn Battery [b]	Verrazano-Narrows	Henry Hudson	Marine-Park-way-Gil Hodges Bridge	Cross Bay	Total
Traffic Change (from Table 18) due to Toll Elasticity										
2007-2008	-1.10%	-1.10%	-2.55%	-2.70%	-5.01%	-1.56%	-4.45%	-1.57%	-2.03%	
2009-2010	-0.99%	-0.99%	-2.28%	-2.42%	-4.48%	-1.39%	-3.98%	-1.41%	-1.82%	
2011-2012	-0.89%	-0.89%	-2.06%	-2.19%	-4.05%	-1.26%	-3.60%	-1.27%	-1.64%	
2013-2014	-0.81%	-0.81%	-1.88%	-1.99%	-3.70%	-1.15%	-3.28%	-1.16%	-1.50%	
2015	-0.72%	-0.72%	-1.67%	-1.77%	-3.29%	-1.02%	-2.92%	-1.03%	-1.33%	
Annual Traffic (000s)										
2004[a]	39,433	45,207	61,632	28,173	17,697	71,395	24,699	7,718	6,989	302,943
2005	39,427	45,603	60,947	27,810	16,852	70,767	23,896	7,629	6,939	299,870
2006	39,644	45,854	61,282	28,032	16,987	71,970	24,231	7,759	7,057	302,815
2007	39,423	45,599	60,048	27,494	16,265	72,052	23,476	7,767	7,031	299,155
2008	39,640	45,850	60,378	27,714	16,395	72,664	23,641	7,899	7,151	301,331
2009	39,464	45,645	59,326	27,259	15,786	72,263	22,859	7,920	7,140	297,662
2010	39,681	45,896	59,652	27,478	15,912	72,877	23,019	8,054	7,261	299,831
2011	39,544	45,738	58,745	27,091	15,390	72,571	22,345	8,087	7,264	296,775
2012	39,761	45,990	59,068	27,307	15,513	73,188	22,502	8,225	7,387	298,941
2013	39,656	45,868	58,276	26,978	15,058	72,961	21,916	8,268	7,400	296,382
2014	39,874	46,120	58,597	27,194	15,179	73,581	22,070	8,408	7,526	298,549
2015	39,805	46,040	57,935	26,926	14,797	73,450	21,575	8,463	7,552	296,543
Average Toll										
2004	$4.67	$4.14	$4.02	$3.80	$3.64	$3.45	$1.63	$1.31	$1.36	$3.62
2005[c]	5.17	4.58	4.45	4.21	4.03	3.82	1.83	1.47	1.51	4.02
2006	5.29	4.68	4.55	4.31	4.13	3.91	1.88	1.50	1.55	4.11
2007-2008	5.91	5.23	5.09	4.82	4.62	4.37	2.14	1.69	1.74	4.60
2009-2010	6.54	5.79	5.62	5.33	5.11	4.83	2.39	1.89	1.94	5.09
2011-2012	7.16	6.34	6.16	5.84	5.59	5.30	2.66	2.09	2.13	5.58
2013-2014	7.79	6.89	6.70	6.35	6.08	5.76	2.92	2.29	2.32	6.07
2015	8.39	7.42	7.22	6.84	6.55	6.20	3.18	2.49	2.51	6.54
Toll Revenue (000s)										
2004	$184,338	$187,231	$247,937	$107,067	$64,366	$246,322	$40,149	$10,102	$9,477	$1,096,989
2005	$203,984	$208,919	$271,208	$117,148	$67,869	$270,086	$43,635	$11,197	$10,481	$1,204,527
2006[d]	$209,690	$214,569	$278,799	$120,805	$70,147	$281,368	$45,548	$11,637	$10,937	$1,243,499
2007	$233,150	$238,576	$305,447	$132,476	$75,098	$314,954	$50,124	$13,162	$12,248	$1,375,235
2008	$234,433	$239,888	$307,127	$133,536	$75,699	$317,631	$50,475	$13,386	$12,457	$1,384,630
2009	$258,034	$264,039	$333,643	$145,217	$80,582	$349,235	$54,732	$14,980	$13,817	$1,514,280
2010	$259,453	$265,491	$335,478	$146,379	$81,227	$352,204	$55,115	$15,235	$14,052	$1,524,634
2011	$283,251	$289,842	$361,925	$158,101	$86,063	$384,216	$59,379	$16,904	$15,466	$1,655,147
2012	$284,809	$291,436	$363,915	$159,366	$86,752	$387,482	$59,794	$17,191	$15,729	$1,666,475
2013	$308,797	$315,982	$390,310	$171,158	$91,545	$419,927	$64,071	$18,937	$17,197	$1,797,924
2014	$310,495	$317,720	$392,457	$172,527	$92,278	$423,496	$64,520	$19,259	$17,489	$1,810,240
2015	$333,946	$341,716	$418,058	$184,051	$96,918	$455,459	$68,600	$21,070	$18,953	$1,938,772

(a) From Table 11

(b) Growth rates reduced by 50 percent because volume is at or near capacity level

(c) Reflects toll increase on March 13, 2005

(d) Average toll adjusted in 2006 and thereafter to reflect increase in EZ Pass usage of 0.5% per year

Effects of Second Avenue Subway Construction in Forecast Years

The forgoing tables forecasting traffic and toll revenues do not incorporate the anticipated effects of the construction of the Second Avenue Subway. While no official construction commencement date has been announced, when commenced, activity associated with such construction will result in changes to traffic patterns, possibly resulting in a shift of traffic volumes to other TBTA facilities, as well as the untolled 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 results in visible construction activity on one or more three to five block 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 north-south roadways.

The current MTA capital plan anticipates that the first phase of the project will begin at 96 Street and end at 63 Street. While construction is anticipated to start in the vicinity of 96 Street, UTRS does not anticipate any changes to current traffic volumes for TBTA's facilities until approximately one year thereafter when construction beings on the new subway stations and subway tunnels, 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 Triborough Bridge and Queens Midtown tunnel

For the Triborough Bridge, 27.6 percent of the traffic exits onto Second Avenue at 125 Street, 56.0 percent exits onto the FDR Drive, and 17.4 percent exits onto the Harlem River Drive via the 125 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, the Triborough Bridge may lose from 3 to 5 percent of total traffic (6 to 9 percent of traffic on the Manhattan span) for the period when construction is in the vicinity of the bridge.

During the first stage of the project, the relocation of utility lines beneath Second Avenue in the vicinity of the Queens Midtown Tunnel, would affect traffic patterns. As mentioned previously, a 33 percent decrease in access route capacity may be anticipated and could result in a decrease in total traffic of approximately 6 to 8 percent during the period when construction is in the vicinity of the tunnel.

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; however, it is not possible to estimate this impact until the construction plan is finalized.

Operating Expenses

The projection of operating expenses is shown in Table 21. Total operating expenses, consisting of personnel and OTPS (other than personnel services), are estimated to increase from $362.8 million in 2005 to $519.7 million in 2015. Personnel expenses consist of wages, salaries, overtime and fringe benefits. OTPS includes items such as maintenance, supplies, utilities and other expenses.

The operating expense projections for the year 2005 through 2009 were based on TBTA estimates. For the remainder of the forecast period (2010-2015), URS estimated operating expenses related to labor based on the Consumer Price Index (CPI) (All Urban Consumers–New York PMSA and for non-labor items based on the CPI for "All Urban Consumers–U.S. City Average") provided by TBTA. For personnel expenses estimated increases were 3.3 percent per year; OTPS estimated increases were 2.6 percent per year.

TBTA will continue to replace the outstanding *E-ZPass* tags that are approaching the end of their useful life through 2007. The estimated total cost is $57.5 million, spread over the five-year period, with annual costs of $19.0 in 2003, $9.1 in 2004, $11.5 in 2005, $8.8 in 2006, and $9.1 in 2007. These costs have been included in the OTPS expenses for the appropriate years.

Bridge painting expenses are anticipated to increase from $25.4 million in 2005 to $39.5 million in 2006 for additional requirements at the Henry Hudson, Verrazano Narrows and Tri-borough Bridges, which will continue through 2008.

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

Table 21. Projected Operating Expenses[(c)]
(000s)

Year	Personnel [(a)]	OTPS [(b)]	Total[(d)]
2005	$179,172	$183,663	$362,835
2006	188,615	196,103	384,718
2007	198,445	209,940	408,385
2008	206,923	215,128	422,051
2009	216,029	220,685	436,714
2010	223,180	225,937	449,117
2011	230,611	231,947	462,559
2012	238,199	238,140	476,339
2013	246,083	244,237	490,320
2014	254,327	250,465	504,791
2015	262,765	256,887	519,652

(a) Includes salaries, overtime and fringe benefits, net of capital reimbursements.
(b) OTPS is Other Than Personnel Services and includes the following categories: maintenance and supplies, outside services, insurance, power, leases and rentals and other expenses. Also includes the replacement of outstanding *E-ZPass* Tags.
(c) For discussion on expense fluctuations, see preceding text.
(d) Totals may not add due to rounding

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 revenues, one at constant tolls and the other with periodic toll increases, as shown in Table 22. For 2005, net toll revenue under either scenario is estimated at $841.7 million. In year 2015, net toll revenue at constant tolls is estimated to be $805.4 million and, with periodic toll increases, net toll revenue is estimated to be $1,419.1 million.

Table 22. Net Toll Revenue Forecast

(000s)

Year	Gross Toll Revenues		Operating Expenses	Net Toll Revenues	
	Constant Tolls	Periodic Toll Increases	Operating Expenses	Constant Tolls	Periodic Toll Increases
2005	$1,204,527	$ 1,204,527	$ 362,835	$ 841,692	$ 841,692
2006	1,243,499	1,243,499	384,718	858,781	858,781
2007	1,254,698	1,375,235	408,385	846,313	966,850
2008	1,263,271	1,384,630	422,051	841,220	962.579
2009	1,271,908	1,514,280	436,714	835,194	1,077,566
2010	1,280,609	1,524,634	449,117	831,492	1,075,517
2011	1,289,374	1,655,147	462,559	826,815	1,192,588
2012	1,298,205	1,666,475	476,339	821,866	1,190,136
2013	1,307,100	1,797,924	490,320	816,780	1,307,604
2014	1,316,061	1,810,240	504,791	811,270	1,305,449
2015	1,325,089	1,938,772	519,652	805,437	1,419,120

It is our opinion that the revenue and expense projections are reasonable and that they have been prepared in accordance with accepted practice for investment-grade studies. However, given the uncertainties within the current international and economic climate, it is important to note the following limitations:

1. This report presents the results of our consideration of the information available to us as of the date hereof and the application of our experience and professional judgment to that information. It is not a guarantee of any future events or trends.

2. The traffic, revenue and expense forecasts will be subject to future economic and social conditions, demographic developments and metropolitan area transportation construction activities that cannot be predicted with certainty.

3. The projections contained in this report, while presented with numerical specificity, are based on a number of estimates and assumptions which, though considered reasonable to us, are inherently subject to significant economic and competitive uncertainties and contingencies, many of which will be beyond the control of TBTA and cannot be predicted with certainty. In many instances, a broad range of alternative assumptions could be considered reasonable. Changes in the assumptions used could result in material differences in projected outcomes.

4. URS' net toll revenue projections only represent its best judgment and URS does not warrant or represent that actual net toll revenues will not vary from its projections, estimates and forecasts.

5. If, for any reason, any of these conditions should change due to changes in the economy or competitive environment, or other factors, URS' opinions or estimates may be affected.

Many statements contained in this report that are not historical facts are forward-looking statements, which are based on TBTA's and the Independent Engineers' beliefs, as well as assumptions made by, and information currently available to, the management and staff of TBTA and the Independent Engineers. Because the statements are based on expectations about future events and economic performance and are not statements of fact, actual results may differ materially from those projected. The words "anticipate," "assume," "estimate," "expect," "objective," "projection," "plan," "forecast," "goal," "budget" or similar words are intended to identify forward-looking statements. The words or phrases "to date," "now," "currently," and the like are intended to mean to identify forward-looking statements. The words or phrases "to date," "now," "currently," and the like are intended to mean as of the date of this official statement.

REVIEW OF PHYSICAL CONDITION

The facilities under TBTA's jurisdiction include two tunnels and seven bridges listed in Table 23, 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 Triborough, 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 Bridge 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 24 lists the agency's capital commitments for each facility from 1992 through 2004.

Table 23. Opening Dates of TBTA Facilities

Facility	Open to Traffic	Years in Use
Triborough Bridge	1936	69
Bronx-Whitestone Bridge	1939	66
Throgs Neck Bridge	1961	44
Henry Hudson Bridge	1936	69
Queens Midtown Tunnel	1940	65
Brooklyn-Battery Tunnel	1950	55
Verrazano-Narrows Bridge	1964[a]	41
Cross Bay Bridge	1970[b]	35
Marine Parkway-Gil Hodges Memorial Br.	1937	68

Notes: (a) Lower level opened in 1969.
(b) The present structure replaced the previous structure that had been in service since 1939.

Table 24. Capital Commitments by Facility, 1992 to 2004
(Millions of dollars)

Facility	Total by Facility 1992 through 2004[a]
Agency Wide[b]	$ 252.3
Brooklyn-Battery Tunnel	270.3
Bronx-Whitestone Bridge	330.7
Cross Bay Bridge	14.2
Henry Hudson Bridge	85.0
Marine Parkway Bridge	123.9
Queens Midtown Tunnel	231.0
Triborough Bridge	598.3
Throgs Neck Bridge	145.0
Verrazano-Narrows Bridge	126.6
	$ 2,177.5

Notes: (a) May not add due to rounding.
(b) 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 Report,
- Scheduled Tunnel Inspection Report,
- Interim Inspection Report,
- 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, 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 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, comprehensive condition inspections. The tunnel inspection frequency is generally every ten years, whereas the bridges are inspected every two years. The TBTA's bridges were last inspected and their physical condition appraised in 2003/2004 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 underwater 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.

The condition inspection of the Queens Midtown Tunnel is ongoing. The Brooklyn-Battery Tunnel underwent an inspection in 2001. Unlike bridges, federal and state mandated inspection cycles are not specified for tunnels; however, ongoing tunnel rehabilitation projects create ideal access conditions for the monitoring of these structures. As contract work progresses, construction inspection of the work and adjacent areas allows new areas of deterioration to be identified and addressed as part of the ongoing contract. TBTA has performed an assessment of the vulnerability of its tunnels to a major fire, such as the recent one in Mont Blanc, France. Results of this assessment identify significant differences between the TBTA's tunnels and Mont Blanc Tunnel. These include the fact that TBTA's tunnels have two tubes each, with cross passages to allow motorists access to the opposite tube. In addition, TBTA's tunnels provide much better ventilation, a wet fire standpipe system, patrols, several times an hour, 24-hour closed-circuit TV system monitoring, and a superior communication system for emergencies.

These foregoing inspections, performed by the inspection consultants, consisted of visual examination, sounding and chipping concrete, scraping and cleaning steel, and taking appropriate measurements to determine the physical conditions of the bridges and tunnels.

The inspection consultants also prioritized the necessary repairs and provided the TBTA with cost estimates. The results of these facility inspections and appraisals form the basis for much of the rehabilitation and improvement projects to be funded under the 2005-2009 and future TBTA Capital Programs. Results of inspections requiring priority action are addressed on an as needed basis as part of the TBTA maintenance program.

The consulting engineering firms who performed the 2003 and 2004 biennial inspections and those who performed the 2001 and 2005 tunnel inspections for each facility were/are:

Facility	*Consulting Firm*
Triborough Bridge	Hardesty & Hanover (2004)
Throgs Neck Bridge	Lichtenstein Engineering Assoc. (2003)
Bronx-Whitestone Bridge	Lichtenstein Engineering Assoc. (2001 & 2002) HNTB Engineering & Architecture (2003)
Henry Hudson Bridge	Hardesty & Hanover (2003)
Queens Midtown Tunnel	Parsons Brinckerhoff (2004-2005); facilities: Hardesty & Hanover (2003)
Brooklyn-Battery Tunnel	Parsons Brinckerhoff (2001)
Verrazano-Narrows Bridge	Charles H. Sells, Inc, (2004)
Marine Parkway/ Gil Hodges Mem. Br.	Parsons Transportation Group (2003)
Cross Bay Bridge	Parsons Transportation Group (2003)

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 are currently undergoing inspections, but the results of these inspections are not available at this time. These 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:

Triborough Bridge - The design phase of the contract for the deck replacement for the Manhattan toll plaza and ramps is underway with construction anticipated for 2010. Design of the Ward's Island and Randall's Island viaducts is complete, with construction expected to start

in May of 2005. This project will also include priority maintenance steel repair of components noted in the most recent inspection. The mechanical work associated with the Harlem River and Manhattan lift span is complete and deck replacement is substantially complete. Projects completed within recent years include: the electrical, mechanical and deck rehabilitation of the Bronx truss, the rehabilitation of the Bronx approach and the reconstruction of the cellular concrete junction structure, the replacement of the suspender ropes the at the East River suspended span, main cable rewrapping and anchorage rehabilitation, bridge deck rehabilitation at the Queens approach, Harlem River Lift Span mechanical/electrical rehabilitation, relocation of salt dome and numerous repair projects such as repair of the bridge deck joint drains, cracked deck, piers, superstructure, and substructure.

Bronx-Whitestone Bridge - A major program to paint the main cables, suspender ropes and towers is scheduled to be let in 2007 to 2009. Oiling of the cable strands in the anchorages is designed and will begin construction in 2007 to avoid conflicts with ongoing construction projects at this facility. 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 being 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 was completed in 2004. The design of a lightweight orthotropic deck, required to replace the roadway deck, is complete and the deck panels are undergoing fabrication, and actual installation is anticipated to begin in June of 2005. 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. There is no immediate need to replace the cable at this time, thus monitoring and maintenance of the main cables is ongoing. Repairs of flagged conditions noted in the most recent biennial inspection reports are completed, and any new flags will be addressed in ongoing maintenance and capital programs. The conceptual design of the replacement of the Bronx/Queens approach spans and all on-grade approaches was completed with construction anticipated to be phased. The design of the Bronx Approach span will begin this year, with construction anticipated in early 2008. The Queens replacement design will follow. Projects completed within recent years include: Painting and replacement of the collars of the suspender ropes, construction and testing of the prototype deck replacement for the suspended span, addition of three new tollbooths, the installation of acoustic sensors for cable monitoring at the main cables, the rehabilitation of the Bronx/Queens approach ramps, and an electrical system upgrade.

Throgs Neck Bridge - The orthotropic deck prototype construction and the testing associated with it are ongoing, and scheduled for completion by the end of 2005. The prototype will be monitored for a certain period, and full-scale design will begin in 2007, with possible construction to follow by 2008-2009. The design of the rehabilitation of the main cable, including lubrication and rewrapping in the suspended span and suspender rope testing is ongoing, and should be complete by the end of 2005. Construction will be let in 2006, as part of a major rehabilitation contract to also include painting and steel repair of the suspended span superstructure, towers, main cables and suspender ropes and anchorage. The design of the scour backfilling at piers 20, 42, 47, 49, 52, 55 and 56 and protection of piers 19, 20, and 46 to 57 is complete, with construction completion scheduled by the end of 2005. A construction project including structural steel rehabilitation and drainage system improvements and roadway barrier painting, is substantially

complete. The monitoring of the prototype light pole and luminaire replacement project is ongoing, with full-scale lighting replacement on the structure scheduled to occur from 2008 to 2010. Design of deck rehabilitation and replacement in the Queens approach is scheduled for 2005 to 2006, with construction from 2007 to 2008. 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, and deck rehabilitation at the suspended span.

Henry Hudson Bridge - The conceptual study for the southbound lower level toll plaza expansion is complete and design is anticipated to start in the 2010-2014 Capital Program. The design of the replacement of the upper level deck in the vicinity of the toll plaza will occur from 2005 to 2007, with construction anticipated in 2008. Design of the lower level deck replacement is ongoing with construction to occur in 2006 to 2009. Spall repairs in the decks is continuing until re-decking can be done. Comprehensive maintenance painting and steel repairs are substantially complete for the entire bridge structure. Major maintenance projects have included spall repairs at the towers, jacking and repairing bearings, resealing the upper level deck, light pole rehabilitation, steel repairs and spall removal at the lower level garage and the enlargement of the boiler room door for improved access. Safety ladders and platforms will be added to the Dyckman Street electrical rooms. On the bridge, steel stringer pedestal defects identified in the biennial inspections are being addressed: repair design and construction is complete. Projects completed within recent years include: replacement of the Dyckman Street Bridge deck and superstructure with reinforced concrete beams and slab, replacement of deck joints and spall repairs on abutments, rock bolting and scaling of the slopes adjacent to the approaches, the installation of a discharge recovery system for groundwater, repair of retaining walls at the Bronx approach, construction of an additional tollbooth at the southbound lower level plaza. Replacement of the northbound approach roadway and drainage system have been completed, upper deck roadway replacement has occurred, the service building has been expanded, and a new tollbooth HVAC system has been installed.

Queens Midtown Tunnel - A contract for a study and the development of a master plan for a tunnel ventilation system and electrical controls project has been completed. As a result, a construction contract to replace the exhaust fans and rehabilitate the supply fans was awarded in October of 2004 for completion in 2008. Design of electrical rehabilitation on the vent building may occur later in the capital program, with construction in the next capital program. The design of the rehabilitation of the 36 Street and Second Avenue overpasses including concrete core testing is complete, and will be let for construction in 2005. This project will rehabilitate the decks from below, repair the encasement on the beams, and replace the crash wall of these two tunnel approach bridges. Replacement of the facility engineers building as an addendum to the service building, and rehabilitation of the service building is planned. Major maintenance projects include the repair and replacement of sidewalks at the ventilation and service buildings that has been completed, and the design of a new air conditioning system at the service building that should be complete this year. Reconfiguration of the traffic island in the Manhattan entrance plaza to provide better traffic flow is ongoing, and will be complete in mid-2005. Paving in portions of the tunnel and around tollbooths is complete and will continue periodically as necessary. Rehabilitation of the pipe gallery connection between the service building garage is ongoing, and

will be complete in mid-2005. Projects completed within recent years include 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), and various structural repairs in the ventilation building.

Brooklyn-Battery Tunnel - Construction of masonry and roof repairs to the existing service building has begun. Construction of tunnel roadway and drainage system rehabilitation, tunnel leakage repairs and wall tile replacement, and fire standpipe and waterline valve replacement is ongoing and will be complete in November 2006. In the ventilation structures the construction of the elevator upgrades, egress improvements and the replacement of the facade in the Governors Island building will be completed in the nest few months. The repair investigation and design of the Brooklyn plaza pipe chase is ongoing. Projects completed within recent years include: replacement of the exhaust fans in the ventilation, pump replacement, traffic control and signal system replacement, repaving of the Brooklyn plaza, replacement of all underground fuel tanks, and rehabilitation of the Manhattan plaza, as well as replacement of the tunnel ceiling and lighting system.

Rehabilitation of the Battery Parking Garage (located near the Manhattan portal of the Brooklyn-Battery Tunnel) Phase II (facade replacement and related structural rehabilitation) is underway and is complete. In addition, also at the Garage, construction of Phase III (mechanical/electrical system replacement) is complete.

Verrazano-Narrows Bridge - Rehabilitation and sealing of the anchorages is complete. Rehabilitation and upgrade of the electrical system in the suspended spans is substantially complete. As part of the major maintenance program, miscellaneous concrete repairs at the service building and steel repairs near the towers of the bridge have been completed. Design of the rehabilitation of the Staten Island and Brooklyn Approach viaducts (lower level) and the Lily Pond Avenue Bridge is ongoing with construction planned to begin in 2006.. Detailed scoping analysis to replace the upper level suspended span deck has begun, with construction planned for the end of 2008. Rehabilitation of the service building roof is planned in 2005. Maintenance painting of the Brooklyn approaches and towers, including drainage rehabilitation has just begun. Projects completed within recent years include: Painting of the entire suspended spans except the towers and the side and center parapets of the upper roadways, Brooklyn approach pavement rehabilitation, feasibility study to investigate widening of the Belt Parkway ramps, a feasibility study for the rehabilitation of the tollbooths, plaza, pavement, utility and lighting systems and signage and traffic interchange in the vicinity of the toll plaza, dehumidifying of the Brooklyn and Staten Island anchorages and repaving of the Staten Island approach and toll plaza, and fire standpipe system rehabilitation.

Marine Parkway-Gil Hodges Memorial Bridge - A design contract to replace the elevators in the towers is complete with construction planned for completion in 2005. The design-build contract for a pre-engineered service building annex and rehabilitation of the existing service building is planned. The refurbishing of the tollbooths will be complete by summer of 2005. Priority steel repairs have been completed, and repairs on secondary members and at lower priority locations are ongoing. Projects completed within recent years include: major maintenance painting of the superstructure, east and west side structural steel repairs, deck

replacement and bridge widening, and main motor shaft west bearing replacement in the towers.

Cross Bay Bridge - The construction of structural and electrical rehabilitation of the concrete slab on grade at Ramp 'D' (southbound ramp extending from the main bridge lanes), and the replacement of the main high voltage feeders from the south abutment to the main service building is anticipated to be completed by mid-2005. The construction of the rehabilitation of the drainage system at the promenade at the Rockaway approach and the seawall is complete. The refurbishing of the tollbooths is ongoing, and will be complete by summer of 2005. A contract to design deck superstructure and substructure rehabilitation including piles and pile caps in ongoing, with construction to begin in 2006. A new salt dome will be installed at the facility. Projects completed within recent years include: rehabilitation of the air conditioning system in the service building, boiler replacement, tollbooth painting, door replacement at Pier 8, installation of continuity plates in the median barrier, unit heater replacement inside the garage, and rumble strip repairs have also be completed.

Agency Wide - Increased security measures including added security and additional cameras have been implemented at all TBTA facilities since the September 11th attack at the World Trade Center. Additional measures are being considered such as additional lighting and alarms, and expansion of the CCTV system. Some security enhancement projects have been completed and some others will enter construction shortly. The design for expansion of the Variable Message Sign System (VMS) has been re-evaluated, and will be addressed on a facility by facility basis. Variable Speed Limit Signs (VSLS) prototypes are being tested, and will proceed based upon the results of the tests.

Intelligent Transportation System (ITS) projects scheduled for the 2005-2009 Capital Program include:

- The installation of weather recording systems at the Cross Bay, Henry Hudson and Marine Parkway-Gil Hodges Memorial bridges which has been substantially completed;
- The design for the upgrading and installation of a CCTV network for effective monitoring and managing of traffic and incidents as well as upgrading of the communications network with fiber has been completed and a contract for the installation has been awarded;
- Upgrading of the operations centers at all TBTA's facilities is underway as well as internal integration with the Randall's Island Operations Control Center (RIOCC). The RIOCC has been upgraded and linked externally to regional transportation operations centers such as TRANSCOM, for improving transportation services both at TBTA facilities and the region as a whole; and
- Installation and expansion of TRANSMIT (an *E-ZPass*-based system) and other incident detection systems, traveler information and traffic management systems at TBTA's facilities, and upgrading of the toll registry system which will improve the efficiency and enhance the integrity and reliability of the toll revenue collection.

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 (ADA) requirements, the installation of main electrical feeders to increase capacity at Randall's Island, and the installation of the HVAC system at the Robert Moses Building. Restoration of the Robert Moses Building at Randall's Island, and the installation of Closed Circuit Television (CCTV) to allow observation of traffic and activity at all bridges and tunnels were also completed. A Capital Programming System has been developed by the TBTA Engineering and Construction Department as part of TBTA's long-term needs assessment to help determine long-range capital and maintenance priorities. The system calculates estimated repair and rehabilitation costs based on mathematical modeling of structural deterioration. The output of this system for previous capital programs provided the foundation upon which the current 20-year needs assessment was prepared by the TBTA.

The 20-year needs assessment is reviewed annually by TBTA personnel. The assessment is compiled from data from biennial inspections, and system improvements suggested by the technical departments, and includes factors such as service life of various structural components and normal replacement cycles. Strategic business plans for scheduling major maintenance under the 20 year 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's 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 actying facility engineer or his assistant. The review included an on-site meeting with each facility's engineer/assistant or 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.

Long-Term Outlook for TBTA Facilities

The useful lives of bridges and tunnels, in general, may 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.

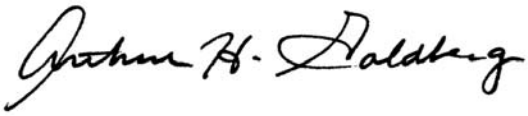
On the basis of the foregoing review and other information available to us, it is our opinion that the TBTA bridges, tunnels and approaches are all geometrically and functionally adequate and structurally sound and generally maintained to good standards. Ongoing maintenance requirements of the structures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

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 2015 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 2035, assuming maintenance consistent with past practice.

Respectfully,

URS CORPORATION – NEW YORK

Kathleen Massarelli, AICP
Vice President



Arthur H. Goldberg, P.E.
Vice President

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