

*A Report to
Acting Governor Donald T. DiFrancesco*

Garden State Parkway Congestion Relief Plan

A Proposed Framework



*James Weinstein
Commissioner of Transportation
August 2001*

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Letter of Transmittal



DONALD T. DIFRANCESCO
ACTING GOVERNOR

JAMES WEINSTEIN
COMMISSIONER

August, 2001

STATE OF NEW JERSEY
DEPARTMENT OF TRANSPORTATION

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The Honorable Donald T. DiFrancesco
Acting Governor
State of New Jersey
State House
Trenton, New Jersey 08625

Dear Acting Governor DiFrancesco:

As directed by your Executive Order 128, signed on May 31st of this year, I am transmitting the "Garden State Parkway Congestion Relief Plan" – which, by definition, will phase out toll barrier plazas on the Parkway over a period of not more than 10 years. In addition, this plan contains a recommendation for the institution of an E-ZPass discount under congestion pricing. Under separate cover, as directed, I am also transmitting a report of the impacts – safety, administrative and financial – of a one-day *toll holiday* proposed for Labor Day, September 3, 2001, as prepared by the staff of the Highway Authority.

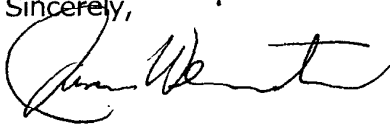
When issuing your Executive Order, by its very name, you understood that *Congestion Relief* was key to any proposed plan. Our intensive 60-day study of the Parkway verifies your assumption – eliminating toll barriers alone does not eliminate the congestion and safety problems drivers face on the Parkway daily.

Therefore, I am today sending you my best professional recommendation – a four-phase plan that, when fully implemented, will: complete nearly \$1 billion in major congestion relief and safety capital projects along the Parkway without requiring a toll increase or major subsidy from the State's General Fund; and transform the Parkway into a one-way toll system through free flow E-ZPass, and modification of the current toll barrier/ramp infrastructure.

The Honorable Donald T. DiFrancesco
August 1, 2001
Page Two

This plan is the result of an intense effort by the professional staff of the New Jersey Department of Transportation and the New Jersey Highway Authority, in collaboration with the New Jersey Institute of Technology, consultants and advisors to both agencies. I am pleased with the results of our efforts and hereby transmit this document for your review.

Sincerely,

A handwritten signature in black ink, appearing to read "James Weinstein". The signature is fluid and cursive, with a large initial "J" and "W".

James Weinstein
Commissioner, NJDOT

Executive Summary

Overview

On May 31, 2001 Acting Governor Donald T. DiFrancesco, in the face of growing public concern over congestion on the Garden State Parkway, issued Executive Order 128. This order directed the Commissioner of Transportation to submit within 60 days a plan to eliminate toll barriers on the Parkway over a period of not more than 10 years.

That plan – along with supporting documentation – is contained herein. The plan is responsive to the requirements of Executive Order 128.

As directed, the plan lays out an implementation schedule for achieving Acting Governor DiFrancesco's goal of toll barrier elimination that can begin almost immediately and be completed within 10 years.

Elimination of toll barriers in one direction and installation of free-flow E-ZPass in the other – as recommended - will result in varying levels of congestion relief for the traveling public. The level of relief, however, depends on the location of the particular barrier and the capacity of the adjacent sections of the Parkway.

However, eliminating toll barriers alone does not eliminate the congestion and safety problems drivers face on the Parkway daily.

Thus, this report recognizes that to fully address congestion and safety requires an investment of almost \$800 million in new capital projects that would provide needed improvements on the Garden State Parkway in the face of ever growing traffic demands (24% increase by 2011) by the traveling public - of which 70% are New Jerseyans.

This report lays out in detail a four-phase plan that:

- Upon full implementation, eliminates barrier and ramp tolls on the Garden State Parkway by initiating a one-way toll system with free-flow E-ZPass;
- Upon full implementation, constructs approximately \$800 million in capital improvements that will enhance safety and reduce congestion;
- Creates a special Transportation Trust Fund account to finance these capital improvements with taxpayer rather than toll payer dollars;
- Details the additional operational costs taxpayers would assume to replace toll revenues that currently support Parkway maintenance, operations and capital improvements;

- Details additional costs taxpayers must assume to repay debt service on outstanding Parkway bonds issued for past capital projects;
- Details repayment for obligations associated with implementation of E-ZPass; and,
- Identifies legislative actions that would be required to fully implement the plan and change the business model of the Garden State Parkway from a user-based payment system to a taxpayer supported highway.

In light of existing statutory limitations, it will be necessary to amend the New Jersey Highway Authority and the New Jersey Transportation Trust Fund Authority statutes to protect the holders of outstanding Highway Authority bonds. Additionally, it outlines the State financial resources that the Legislature would have to provide to implement this plan.

As the Acting Governor stated when announcing the Executive Order, "...there is no easy answer, quick fix or free ride. If it were as easy as some suggest ... it would have been done long ago."

This plan is the result of an intense effort over the last 60 days by the professional staff of the New Jersey Department of Transportation and the New Jersey Highway Authority in conjunction with consultants and advisors to both agencies. The work has been completed in a compressed time frame to meet the requirements of the executive order.

However, we believe it lays out in a realistic and viable way, the steps necessary to address the safety and congestion problems facing motorists who use the Garden State Parkway daily.

About the Parkway

Some 400 million trips - more than 1 million per day - were traveled on the Garden State Parkway in 2000, making it the second busiest toll road in America. And, that number is growing.

This dramatically illustrates the Garden State Parkway's critical role, not only as one of the primary commuter roadways in New Jersey, but just as importantly as the driveway to our State's second largest industry – tourism - which generated more than \$30 billion for the State's economy in 2000.

The New Jersey Highway Authority, which oversees the Parkway, employs approximately 1,100 individuals who operate and maintain the roadway. This is achieved with an annual budget of approximately \$225 million. Of the total budget, \$197 million is generated by tolls collected at the 11 barrier and 19 ramp toll facilities and the remainder comes from revenues generated at the 8 service areas, the PNC Arts Center and investment earnings.

A recent survey published by Public Works Financing magazine (June 2001), indicates that among the nation's toll roads, the Garden State Parkway has the lowest user cost in the nation - 2.2 cents per mile. This has been achieved by prudent financial management that is reflected by the authority's AA bond rating and a toll rate that when adjusted for inflation is lower than the day the Parkway opened in 1954.

In the intervening 48 years, the Highway Authority has invested \$1.25 billion in improvements beyond the original \$325 million spent to build it. This money was used to improve the Parkway from its original 692 lane miles to its current 1260 lane miles in order to more safely and effectively accommodate traffic during the last five decades.

Today, the Highway Authority has \$650 million in outstanding debt incurred to make capital improvements to meet the growing demand. Additionally, if it is to address the real and growing congestion and safety problems it faces beyond that caused by toll barriers, the agency must spend nearly \$800 million during the next eight years.

The most critical of these safety and congestion relief projects are:

1. Construction of the new Driscoll Bridge and reconstruction of the existing bridge (\$175 million);
2. Construction of the interchange between the northbound Parkway and westbound Interstate 78 (\$58.7 million);
3. Widening of the Parkway to three lanes in each direction from mile post 83 in Ocean County to mile post 30 in Atlantic County (\$249 million); and,
4. Construction of the grade separations in Cape May County to replace the dangerous and congested at-grade intersections that currently exist (\$65 million).

The current annual budget of the Parkway consists of:

- \$95 million for maintenance, operations and administration;
- \$40 million for toll collection and administration;
- \$59 million for debt service; and,
- \$30 million for dedicated reserves.

The Parkway already is part of the federal National Highway System - as are all of New Jersey's toll roads. Consequently, the federal government today includes the Parkway in calculating New Jersey's share of federal highway funds. And, the federal government recognizes the toll revenues spent by the Highway Authority to maintain and operate the Parkway as part of the matching funds required of New Jersey to draw down federal transportation aid.

In view of this, New Jersey would not be eligible for additional federal funds when Parkway tolls are eliminated. Thus, revenues eliminated by abolishing tolls would have to be replaced with new general fund revenues in order to operate, maintain and improve the Garden State Parkway.

The Plan

Against this backdrop and in recognition of the growing public concern about Parkway congestion, we offer the following four-phase implementation plan. It is designed to:

- Provide toll and congestion relief from the outset;
- Make needed improvements to the roadway in a fiscally responsible way that does not add to the long term indebtedness of the New Jersey Highway Authority;
- Minimize the impact on the General Fund of the state as the plan is phased in; and,
- Maintain the Garden State Parkway as a premier transportation facility for the people of New Jersey and visitors to our State.

Beyond these goals, there are several fundamental principles that have been followed in terms of implementation:

- 1) At the outset of each phase, the specified mainline toll barriers and associated ramp toll barriers will be eliminated in one direction so that upon implementation of Phase 3 beginning in 2006, the Parkway would have a one-way tolls system;
- 2) As the toll barriers are eliminated in one direction, free-flow E-ZPass would be installed in the opposite direction and, upon completion, the toll in the remaining direction would be less than what the E-ZPass motorist pays under today's rates.
- 3) Under the one-way toll system, motorists would pay 70 cents for cash, 62 cents for E-ZPass users and 55 cents for off-peak period E-ZPass users;

- 4) Upon full implementation, Parkway users will be relieved of an annual cost of approximately \$30 million due to the removal of ramp tolls not associated with the remaining barriers.
- 5) Revenues not generated by tolls would be replaced by revenues from the State General Fund in order to meet the coverage requirements of existing outstanding debt; and,
- 6) All new capital projects undertaken on the Parkway would be financed through a special account established in the Transportation Trust Fund and supported by general fund revenues of the State;

Based on these principles, the 2001 Garden State Parkway Congestion Relief and Safety Improvement Plan would be implemented as outlined below.

PHASE 1 (One-Year Duration)

- E-ZPass discount and congestion relief pricing implemented.
- Tokens eliminated.
- Raritan South barrier removed.
- Essex North barrier and Watchung northbound ramp toll removed.
- Installation of free-flow E-ZPass at Raritan North, Essex South, and Watchung Southbound ramp begins.
- Construction of Driscoll Bridge begins.
- Engineering of new Interchange 142 with I-78 begins.

State General Fund contributes \$36.139 million to support operations and capital construction.

PHASE 2 (Years 2 through 4)

- Toms River South toll barrier removed and installation of free-flow E-ZPass at Toms River North barrier.
- Union South barrier and Union South ramp tolls removed, installation of free-flow E-ZPass at Union North and Union North ramp.
- Driscoll Bridge and Interchange 142 under construction.
- Widening of Parkway from Interchange 83 to Interchange 30 begins.

State General Fund contributions for operations and capital grows to \$50.439 million in 2003; \$55.798 million in 2004, and \$73.403 million in 2005.

PHASE 3 (Years 5 through 7)

- Toll barriers/associated barrier ramps and tolls will be removed at the remaining two-way locations - Hillsdale North, Bergen South with Saddle Brook southbound ramp, Asbury Park North with Eatontown northbound ramp, Barnegat North, New Gretna South, Great Egg Harbor North with Somers Point northbound ramp and Cape May South – while constructing free-flow E-ZPass for use in opposite direction.
- Alternating one-way tolls fully implemented with free-flow E-ZPass in the opposite direction.
- Remove one-half of remaining ramp toll plazas (sequence to be determined).
- Remaining interchange improvements continue.
- Outstanding Highway Authority bonds defeased, if necessary.

State General Fund contributes \$100.780 million in 2006; \$105.107 million in 2007 and \$126.502 million in 2008.

PHASE 4 (Years 8 through 10)

- Remove remaining half of ramp toll plazas (sequence to be determined).
- Major congestion relief and safety projects are complete.

State General Fund contributes \$114.464 million in 2009, \$115.444 million in 2010 and \$116.490 in 2011.

Financial Impact

The total financial impact on the State Budget General Fund over the 10-year phase out would be \$894.566 million. Beyond the phase out period it is estimated that there would be an on-going cost of \$116.490 million annually, of which \$45.141 million is needed to pay for maintenance and operation of the Parkway and \$71.349 million is required to retire the debt incurred by the Transportation Trust Fund for constructing the needed safety improvement and congestion relief projects.

Congestion Relief

One significant purpose of toll barrier elimination is congestion relief. This report recommends achieving this through a combination of eliminating barriers in one direction and installing free-flow E-ZPass in the opposite direction. These steps combined with the E-ZPass peak and off-peak discounts, token elimination and

the congestion relief and safety improvement capital projects recommended in the report will reduce congestion.

The New Jersey Institute of Technology (NJIT) was commissioned by the Department of Transportation to analyze the impacts on congestion that would result by the initiation of one-way tolls. The analysis and modeling done by NJIT was based on data provided by Vollmer Associates, the long-term traffic engineers for the Garden State Parkway.

This analysis and modeling was limited to the stretch of the Parkway from the Hillsdale Toll Plaza at the northern end of the roadway in Bergen County to the Raritan Toll Plaza below the Raritan River in Middlesex County. The stretch of roadway analyzed was limited because of the 60-day turnaround time for the study required by Executive Order 128.

The time savings and congestion relief projected by NJIT is for the peak weekday morning/evening traffic hours on the Parkway.

In general, NJIT found that:

- The greatest time savings during the peak travel time came in those areas where the adjacent sections of the Parkway are best able to handle high volumes of traffic.
- Removal of toll barriers where the adjacent sections of roadway are constrained will result in lower time savings during the peak hour simply because of the lower roadway capacity.

Based on these principles, the NJIT model projects the following times savings as a result of the installation of one-way tolls with free-flow E-ZPass:

- Hillsdale – 1 minute or more
- Bergen – 1 minute or less
- Essex – 1 minute or less
- Union – 1 minute or less
- Raritan – in excess of 2 minutes

While the time savings listed above may seem insignificant, it is not. If you're an E-ZPass commuter who travels during peak hours on the Parkway between Hillsdale and Raritan five days a week, after this plan is implemented you will save 25 hours a year in travel time, and almost \$650/year in "congestion costs" – i.e., costs associated with delay, fuel consumption and wear-and-tear on your vehicle. (1)

(1) Based on numbers from the "Mobility and the Costs of Congestion in New Jersey" Report to the Foundation of the New Jersey Alliance for Action; February 2000, by the National Center for Transportation and Industrial Productivity at the New Jersey Institute of Technology.

Recommended Phased Plan

Synopsis

Phased Plan Objective

Upon completion of the four-phased plan, the Garden State Parkway shall assume the following toll location structure:

Mainline Barrier Location	No Toll Collection			One-Way Toll Collection (All with free-flow E-ZPass)	
	Barrier To Be Removed	Associated Ramp To Be Removed	Planned Removal Phase	Mainline Toll Location	Ramp Toll Collection
Hillsdale	North		3	South	
Bergen	South	Saddle Brook South	3	North	Saddle Brook North
Essex	North	Watchung North	1	South	Watchung South
Union	South	Union South	2	North	Union North
Raritan	South		1	North	
Asbury Park	North	Eatontown North	3	South	Eatontown South
Toms River	South		2	North	
Barnegat	North		3	South	
New Gretna	South		3	North	
Great Egg Harbor	North	Somers Point North	3	South	Somers Point South
Cape May	South		3	North	

In addition, the following ramps will be removed by the end of the plan and no tolls will be collected at these sites:

Milepost	Ramp Tolls to be Removed
165	PARAMUS
154	CLIFTON
153	PASSAIC
148	BLOOMFIELD
145	EAST ORANGE
144	IRVINGTON
117	MATAWAN, KEYPORT, HAZLET
114	HOLMDEL
109	RED BANK
98	BELMAR-WALL
91	LAKEWOOD-BRICK
88	LAKEHURST
74	LACEY ROAD
4	WILDWOOD

Upon completion of the plan, there will be only one-way toll collection at locations and directions noted on the previous page. A congestion-pricing structure will be implemented along with free-flow E-ZPass to reduce congestion and driver imposition. The new rate structure with congestion pricing is as follows:

Cash Payment (at all times)	\$0.70
E-ZPass (Peak Hours) *	\$0.62
E-ZPass (Off-peak hours)	\$0.55

* Peak period is: 7 to 9 am and 4 to 6 pm, Monday through Friday; Saturday 10 am to 2 pm.; Sunday 3 pm to 7 pm

Note: Under this proposal, the rate per mile for passenger cars decreases from today's cost (2.2 cents per mile) for E-ZPass users to 2.1 (peak) and 1.9 cents per mile (off-peak)

Ramp tolls, other than those associated with mainline barriers, will remain at 25-cents until they are removed in Phases 3 and 4.

The four-phase plan as described in the next sections will describe how the Plan will be implemented to achieve these objectives and outcomes.

Phase 1 – Year 1 (Start through 2002)

Phase 1 begins the implementation process by enacting legislation and regulatory changes that will allow the plan to proceed. During this period major impediments to traffic flow are addressed through congestion relief projects, barrier removal, installation of free-flow E-ZPass, and initiation of a congestion pricing structure.

1) Legislation Requirements

To implement the plan in Phase 1, specific legislation will be required. Provisions in both the Transportation Trust Fund Authority Act and the New Jersey Highway Authority Act must be amended to initiate the plan. These provisions include, but are not limited to the following:

- Amend the New Jersey Highway Authority Act to permit the NJHA receipt of appropriations by the Legislature.
- Authorize the Treasurer to enter into a subsidy agreement with the NJHA to provide funds to the NJHA in consideration of the Authority's operation of the facility. This would allow for the payment by the Treasurer payment to the NJHA for the loss of revenue due to toll plaza removal and E-ZPass discounts.
- Establish a new "New Jersey Highway Authority" account within the Transportation Trust Fund, separate and apart from current accounts, to fund capital congestion relief, barrier removal, and free-flow E-ZPass projects.
- Establish a New Jersey Highway Authority account within the Transportation Trust Fund with separate authority for the TTFA to defease NJHA bonds, if necessary.
- Eliminate the need for regulatory changes to amend the NJHA toll structure.

2) Toll Rate Structure

During this phase, two new elements of toll collection will be implemented. First, token sales will cease and, after a short redemption period, tokens will no longer be collected. This step will decrease the number of payment methods which will help ease congestion and diminish lane-changing at toll plazas. Second, congestion pricing will implemented in the following manner:

- 1) At toll plazas where barriers are removed in one direction and free-flow E-ZPass has been installed, one-way tolls will be collected in the opposite direction. The new rate structure with congestion pricing is as follows:

Cash Payment (at all times)	\$0.70
E-ZPass (Peak Hours) *	\$0.62
E-ZPass (Off-peak hours)	\$0.55

- 2) At the remaining toll plazas where there is still two-way collection (i.e. barriers still remain in both directions), the new toll rate with congestion pricing is as follows:

Cash Payment (at all times)	\$0.35
E-ZPass (Peak Hours) *	\$0.33
E-ZPass (Off-peak hours)	\$0.30

* Peak period is: 7 to 9 am and 4 to 6 pm, Monday through Friday; Saturday 10 am to 2 pm.; Sunday 3 pm to 7 pm

- 3) Ramp tolls will remain at 25-cents until they are removed in Phases 3 and 4.

Note: Upon completion of the plan, there will be only one-way toll collection.

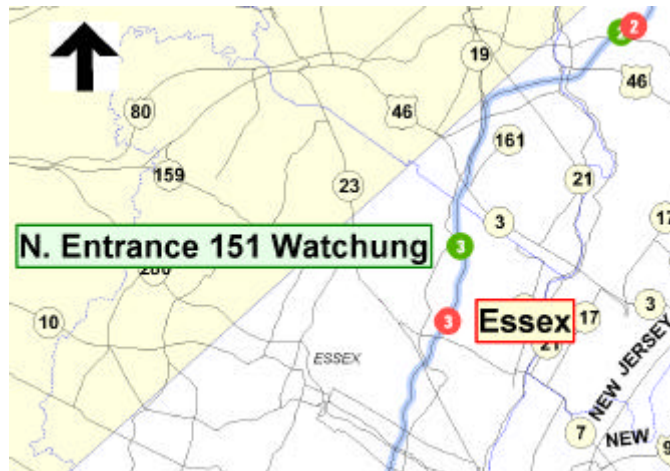
3) Barrier / Ramp Toll Removals and Installation of Free-Flow E-ZPass

Barrier Removal: Toll barriers and ramp toll plaza will be removed at the following locations:

a. Raritan-Southbound



b. Essex-Northbound and the Northbound Watchung Ramp



Free-Flow E-ZPass: During the barrier / ramp toll barrier removal process, free-flow E-ZPass will be constructed at each site, namely,

- **Raritan Northbound**
- **Essex Southbound and Southbound Watchung Ramp**

Toll Collection: Toll collection will continue at Raritan Northbound and Essex Southbound at the two-way pricing structure until free-flow E-ZPass is installed. Upon completion, the one-way toll structure will become effective.

4) **Congestion Relief Projects**

As addressed by the NJIT analysis, toll barrier removal alone will not relieve roadway congestion and time delays on the Garden State Parkway. For this reason, the first series of projects to be implemented are those that are considered to provide the greatest benefits; namely,

- **Driscoll Bridge over the Raritan River (\$175 million)**
Currently, the Driscoll Bridge carries six narrow travel lanes each northbound and southbound with no shoulders. The deck of the existing northbound bridge is severely deteriorated and in need of total replacement. Additionally, many main load carrying members of the existing northbound bridge are significantly over stressed. To provide traffic mitigation during the reconstruction of the bridge, a new bridge will be built to carry seven 11-foot lanes plus shoulders. Upon completion of the reconstruction of the existing bridge, both bridges will be reconfigured to provide eight full width travel lanes northbound, seven lanes southbound and shoulders for both directions. This project will also include ramp and approach roadway alignment improvements. The widening will

also eliminate the bottleneck at the bridge, which currently has fewer lanes than the approaches.

- **Interchange 142 at Interstate 78 (\$58.7 million, of which \$9 million is NJHA, \$49.7M is NJDOT Federal funds)**

Currently, there are no direct connections between the Garden State Parkway northbound and I-78 westbound and from Garden State Parkway southbound to I-78 eastbound. The existing movements from the southbound Garden State Parkway to eastbound Interstate 78 and from the northbound Garden State Parkway to westbound I-78 are indirect and awkward, requiring drivers to travel in the opposite direction, exiting and re-entering the highway. This project includes the construction of missing ramp movements for Garden State Parkway northbound to I-78 westbound and Garden State Parkway southbound to I-78 eastbound. The project will also include all associated improvements in Union, Hillside and Irvington Townships in Union County. The completion of the interchange will not only provide improved Parkway / I-78 operation, but also relieve local congestion.

- **Widening of the Parkway from between Interchanges 63 – 80 (\$83.0M)**

This project is one of three projects that will complete the widening of the Parkway from Interchange 30 to Interchange 80. During Phase 1, design will commence with construction projected to begin in 2003 – 2004.

This project will add a third lane in each direction between Interchange 63 and Interchange 80 to handle existing congestion and projected traffic growth. The inability to provide improvements along Route 9 in this area makes this project a necessity. This section of the Parkway is currently at capacity and is projected to increase an average of 2.5 to 3.0% annually to the year 2010.

- **Widening of the Parkway from between Interchanges 80 – 83 (\$4.2M) Last Contract**

This is the last contract in a series of projects that will provide three lanes in each direction with shoulders between Interchange 80 and Interchange 83 to alleviate congestion.

- **Cape May County Interchanges (\$65.0M)**

- Interchange 10 (Stone Harbor Blvd), Cape May(\$20.0M)

First project of the three proposed interchanges

Preliminary Design will commence on the proposed grade separation at Stone Harbor Blvd. The project will construct bridges and ramps needed to grade separate the intersection thereby eliminating the traffic signals. The final alignment will carry the Garden State Parkway over the intersection.

- **Interchange Improvements at Various Locations**

There are sixteen interchange locations where improvements are planned that will enhance safety, relieve congestion, and provide for operational upgrades.

Construction sequencing and schedules noted here and in subsequent phases may be adjusted to provide for better traffic management during

mainline barrier removal, free-flow E-ZPass installation and construction of major congestion relief projects on the mainline of the Parkway.

- Projects scheduled during Phase 1 are the following:

Interchange 6 (Rt.147), Cape May (\$3.1M)

Design will begin for the construction of access ramps to and from the south. Current interchange provides access to and from the north. The project will align with the improvements made by NJDOT in 1995. Completion of the interchange will relieve traffic congestion along Route 9 and other local roads.

Interchange 89 (Cedar Bridge Road), Ocean (\$6.0M)

Construction of a new interchange that will provide access to and from the north and will align with improvements made by Ocean County on Cedar Bridge Road. It will relieve traffic congestion at Interchanges 88 and 91 as well as local roads. Access to and from the south will be provided with service road connections proposed as part of interchange 88 improvements.

Interchange 109 (Northbound exit ramp), Monmouth (\$1.1M)

Design will begin to reconstruct the present NB exit ramp and extend the deceleration lane extended. The existing ramp will be separated and connect to Newman Springs Road at 2 intersections and turning movements will be changed along Newman Springs Road (CR520) to alleviate severe traffic congestion.

Interchange 114 Ramps, Monmouth (\$3.45M)

Design and reconstruction of the GSP southbound exit ramp and signalized intersection improvements on Red Hill Road and construction of a new northbound exit ramp to westbound Red Hill Road. Coordinated with Red Hill Road expansion and realignment by Monmouth County.

- **Other Congestion Relief Measures**

- Park and Ride Improvements, Various Locations (\$7.47M)

- ITS Deployment Projects, Various Locations (\$5.60M)

A program of projects over a five-year period that will construct, install, and implement CCTV for traffic management, kiosks with real-time public transportation information, variable message signs, highway advisory radio, etc.

- TRANSMIT System Expansion

Using E-ZPass technology and infrastructure, traffic flow will be monitored to determine areas of blockage and congestion by calculating average travel speed and detecting late arrivals at downstream locations. Information will be transmitted back to the Traffic Operations Center for 24-hour monitoring.

5) Financial Summary – Phase 1

Financial Summary for Phase 1 (Millions \$)	2002
Revenue Loss from Barrier / Ramp Toll Removal and E-ZPass Discounts	\$15.109
Capital Construction Debt Service - Cumulative Yearly Payment to TTFA	\$21.030
Total Phase 1 Cost to the State	\$36.139

Phase 2 – Years 2 through 4 2005)

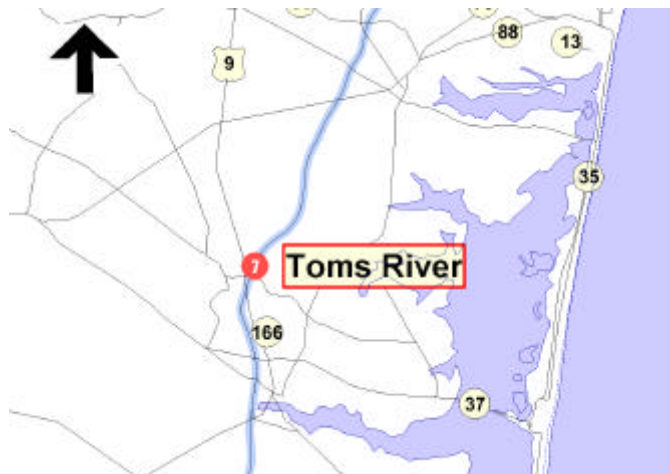
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In Phase 2 implementation progresses by the continued advancement of congestion relief projects. In addition, two more toll barriers will be removed with one associated ramp, bringing the total to four barriers and two associated ramp barriers removed. In Phase 2, no legislative action is required and no changes will be made to the toll structure that was established in Phase 1.

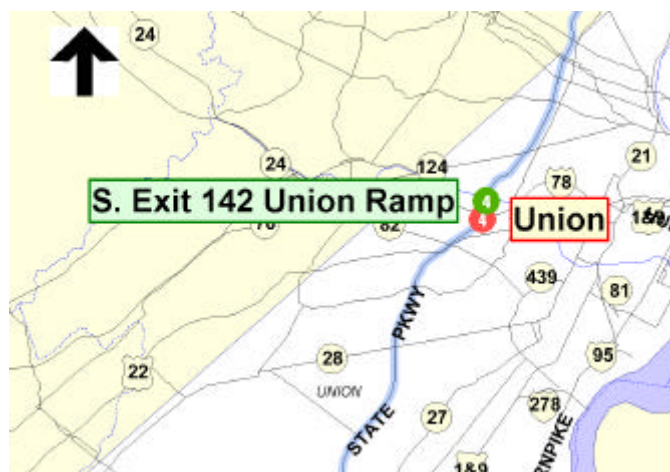
1) Barrier / Ramp Toll Removals and Installation of Free-Flow E-ZPass

Barrier Removal: Toll barriers and ramp toll plaza will be removed at the following locations:

- Toms River Southbound



- Union Southbound and the Southbound Union Ramp



Free-Flow E-ZPass: During the barrier / ramp toll barrier removal process, free-flow E-ZPass will be constructed at each site, namely,

- **Toms River-Northbound**
- **Union-Northbound and Union Ramp Northbound**

Toll Collection: Toll collection will continue at Toms River Northbound and Union Northbound at the two-way pricing structure until free-flow E-ZPass is installed. Upon completion, the one-way toll structure will become effective.

2) Congestion Relief Projects

Projects That Will Continue or Begin Construction

- **Driscoll Bridge Over the Raritan River**
- **Interchange 142 at Interstate 78**
- **Widening of the Parkway between Interchanges 63 – 80**
- **Cape May County Interchanges**
 - Interchange 10 (Stone Harbor Blvd) Cape May (Site 1)
- **Interchange Improvements at various locations**
 - Interchange 6 (Rt.147), Cape May
 - Interchange 89 (Cedar Bridge Road), Ocean
 - Interchange 109 (Northbound exit ramp), Monmouth
 - Interchange 114 Ramps, Monmouth

Interchange 13 Improvements, Cape May (\$3.27M)

The existing southbound entrance ramp is a left side entrance ramp with poor sight distance. This ramp will be either relocated or realigned to improve traffic flow and safety based on outcome of permitting process.

Interchange 17 Improvements, Sea Isle Blvd., Cape May (\$5.8M)

This project will complete the interchange and construct new ramps to and from the south. Completion of this interchange will relieve traffic congestion along Route 9 and other local roadways.

Interchange 20 Improvements, Cape May (\$10.0M)

Construction of new ramps to and from the north will connect the Garden State Parkway to Rt. 50 Extension. These ramps will help relieve traffic congestion along Route 9.

Interchange 69, Waretown Rd., Ocean (\$13.4)

Construction of new Garden State Parkway access ramps to and from the north. These ramps will help relieve traffic congestion along Route 9 and provide emergency evacuation route for coastal communities.

Interchange 83/84 Improvements, Ocean (\$12.2M)

The existing northbound entrance and exit ramps will be reconstructed to connect to a new public (County) road connecting Route 166 and Indian Head Road as well as a new northbound entrance ramp from Dugans Lane. Additionally, a new southbound exit and entrance ramp will be constructed, connecting to Whitty Road.

Interchange 91 Public Trans. Improvements, Ocean (\$4.1M)

Construction of two new entrance ramps onto the Parkway southbound; new exit and entrance ramps from the Parkway northbound will be provided for congestion relief. The project also consists of a new "Bus Only" direct access ramp from the Parkway southbound into the current NJ Transit Park-n-Ride lot. It provides an overhead walkway for pedestrian safety and easier bus operations that result in a shortened bus commute.

Interchange 123 Improvements, Route 9, Middlesex (\$5.6M)

This project will widen the entrance ramp from Route 9 north to the Garden State Parkway north and the exit ramp from the Parkway south to Route 9 south from one to two lanes.

Interchange 124 Improvements, Middlesex (\$15.0M)

This project will provide a new full interchange that will connect via a service road to Kennedy Street in the National Lead property. In later phases this service road can be extended to connect to Raritan Street and Route 9.

Interchange 145 Improvements (I-280), Middlesex (\$0.36M)

This project consists of widening and rehabilitating a ramp from the Garden State Parkway to Interstate 80 westbound to two lanes; realigning part of westbound service road and acceleration lane on I-280 westbound to accommodate an additional lane of traffic in the westbound direction. Feasibility of this scheme is under review by the NJDOT.

Projects That Will Commence Design Only

• **Widening of the Parkway between Interchanges 30 – 48**

Design will be completed and construction will begin on the widening between Interchanges 30 and 48.

• **Widening of the Parkway between Interchanges 48 – 63**

Design will be underway for the widening between Interchanges 48 and 63.

• **Cape May County Interchanges (Three Sites)**

Design will commence on the two remaining Cape May interchanges, namely:

- Shell Bay Avenue (Site 2)
- Crest Haven Road (Site 3)

These projects will construct bridges and ramps needed to grade separate the intersections; thereby eliminating the traffic signals. The final alignment will carry the Garden State Parkway over the intersections.

Interchange Improvements at various locations

Interchange 67 Improvements, Bay Ave., Ocean (\$13.0M)

Construction of new Garden State Parkway access ramps to and from the north. These ramps will help relieve traffic congestion along Route 9 and provide emergency evacuation route for coastal communities.

Interchange 125 Improvements, Middlesex (\$35.0M)

This project will provide new ramps to and from the north at Chevalier Avenue as well as reconstructing the existing ramps to and from the south. These improvements will tie into the state's plans for reconstructing the 9/35/Chevalier Avenue Circle.

3) Financial Summary – Phase 2

Financial Summary for Phase 2 (Millions \$)	2003	2004	2005
Revenue Loss from Barrier / Ramp Toll Removal and E-ZPass Discounts	\$17.016	\$17.338	\$17.646
Capital Construction – Cumulative Yearly Payment to TTFA	\$33.423	\$38.460	\$55.757
Total Phase 2 Cost to the State	\$50.439	\$55.798	\$73.403

Phase 3 – Years 5 through 7 (2006 - 2008)

Phase 3 continues the implementation process with the on-going advancement of congestion relief projects. Seven additional toll barriers will be removed with associated ramps, where applicable. During this phase, all barrier sites will be one-way tolls. Also, one-half of ramp toll plazas will be removed.

In Phase 3, no legislative action is required and no changes will be made to the toll structure that was established in Phase 1.

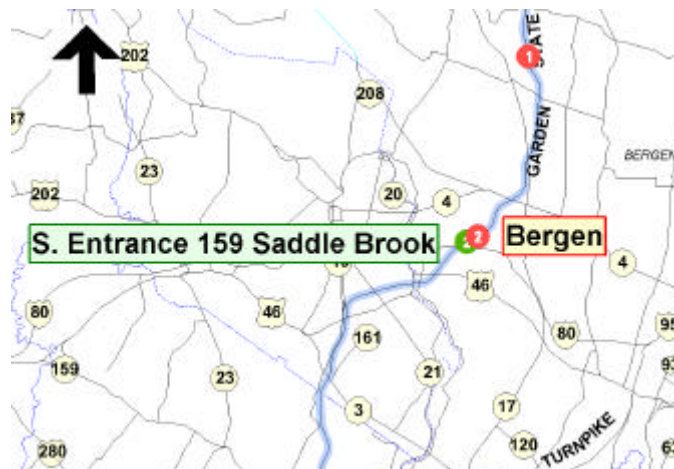
1) Barrier / Ramp Toll Removals and Installation of Free-Flow E-ZPass

Barrier Removal: Toll barriers / tolls will be removed at the remaining two-way toll barrier locations:

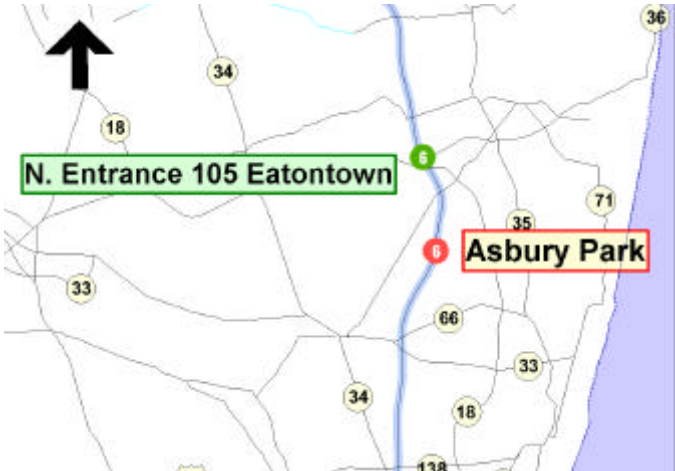
a. Hillsdale Northbound



b. Bergen Southbound and Southbound Saddle Brook Ramp



c. Asbury Park Northbound and Northbound Eatontown Ramp



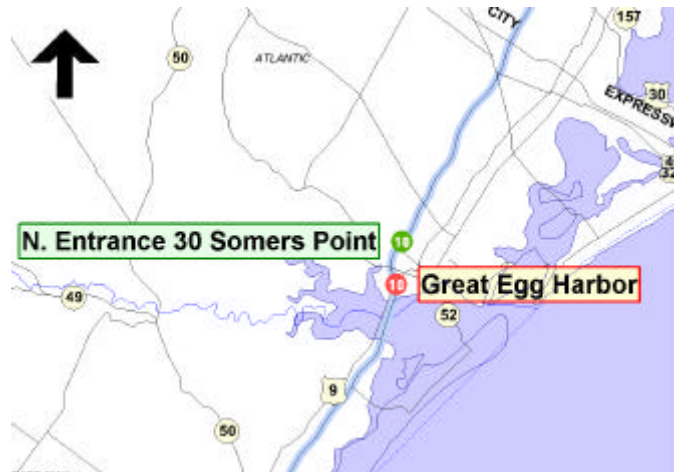
d. Barnegat Northbound



e. New Gretna Southbound



f. **Great Egg Harbor Northbound and Northbound Somers Point Ramp**



g. **Cape May Southbound**



h. **Various Ramp Toll Barriers**

One-half of ramp toll plazas will be removed during this phase. At this juncture, the precise sequence of barrier removal is uncertain. This determination will be best made just prior to Phase 3 so that the traffic impacts of mainline and interchange projects can be considered to minimize delays for motorists.

Note: This will not apply to ramps associated with and which act as part of the mainline barrier plaza. As such, ramp toll plazas at Saddle Brook, Watchung, Union, Eatontown, and Somers Point will have barriers removed and free-flow E-ZPass installed in the same direction as the mainline barrier.

Free-Flow E-ZPass: During the barrier / ramp toll barrier removal process, free-flow E-ZPass will be constructed at each site, namely,

- a. **Hillsdale Southbound**
- b. **Bergen Northbound and Northbound Saddle Brook Ramp**
- c. **Asbury Park Southbound and Southbound Eatontown Ramp**
- d. **Barneget Southbound**
- e. **New Gretna Northbound**
- f. **Great Egg Harbor Southbound and Southbound Somers Point Ramp**
- g. **Cape May Northbound**

Toll Collection: Toll collection will continue at Toms River Northbound, Union Northbound and Union Ramp Northbound at the two-way pricing structure until free-flow E-ZPass is installed. Upon completion, the one-way toll structure will become effective.

2) Congestion Relief Projects

Projects That Will Continue or Begin Construction

- **Widening of the Parkway between Interchanges 48 - 63 and Interchanges 30 – 48.**
- **Cape May County Interchanges**
 - Interchange 10 (Stone Harbor Blvd) Cape May
 - Shell Bay Avenue
 - Crest Haven Road
- **Interchange Improvements at Various Locations**
 - Interchange 6 (Rt.147), Cape May
 - Interchange 13
 - Interchange 17
 - Interchange 20
 - Interchange 69
 - Interchange 83/84
 - Interchange 91 Public Transportation Improvements
 - Interchange 124
 - Interchange 145

Interchange 88 Improvements, Ocean (\$7.6M)

This project consists of construction of two new southbound entrance ramps and three new northbound exit ramps. A collector / distributor roadway will be constructed between this location and new Interchange 89. Shorrock Street will be extended from Route 70 north to connect with the northbound collector/distributor roadway. The

improvement will relieve traffic congestion on a number of local roads including Hooper Avenue, Brick Blvd., Shorrock Street and Route 70.

3) Financial Summary – Phase 3

Financial Summary for Phase 3 (Millions \$)	2006	2007	2008
Revenue Loss from Barrier / Ramp Toll Removal and E-ZPass Discounts	\$33.068	\$33.758	\$34.353
Capital Construction – Cumulative Yearly Payment to TTFA	\$67.712	\$71.349	\$71.349
E-ZPass True-Up Costs			\$20.800
Total Phase 3 Cost to the State	\$100.780	\$105.107	\$126.502

Phase 4 – Years 8 through 10 (2009 – 2011)

Phase 4 completes the construction of congestion relief projects. During this phase all barrier sites will be one-way tolls. Also, the remaining half of the ramp toll plazas will be removed.

In Phase 4, no legislative action is required and no changes will be made to the toll structure that was established in Phase 1.

1) Barrier / Ramp Toll Removals and Installation

The remaining one-half of ramp toll plazas will be removed during this phase. As noted in Phase 3, the precise sequence of barrier removal is uncertain. This determination will be best made just prior to Phase 4 so that the traffic impacts of mainline and interchange projects can be considered to minimize delays for motorists.

2) Congestion Relief Projects

All congestion relief projects are projected to be completed.

3) Financial Summary – Phase 4

Financial Summary for Phase 4 (Millions \$)	2009	2010	2011
Revenue Loss from Barrier / Ramp Toll Removal and E-ZPass Discounts	\$53.115	\$44.095	\$45.141
Capital Construction – Cumulative Yearly Payment to TTFA	\$71.349	\$71.349	\$71.349
Total Phase 4 Cost to the State	\$114.464	\$115.444	\$116.490

Financial Summary

	Phase 1	Phase 2			Phase 3			Phase 4			
	Remove Raritan South, Essex North Barriers, and Watchung Ramp. Begin 35 cents cash, 33 cents EZ Pass Discount On- Peak, 30 cents Off-Peak. Where barrier is removed begin 70 cents cash, 62 cents EZ Pass Discount On- Peak, 55 cents Off-Peak, No Tokens	Remove Union South, Toms River South Barriers, and Union Ramp			Remove Hillsade North, Bergen South, Asbury Park North, Barnegat North, New Gretna South, Great Egg Harbor North, and Cape May South with one-half of ramp tolls removed.			Remove last half of Ramp Tolls			
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
Current Expected Revenue	197.800	200.400	203.000	205.700	208.400	211.200	214.000	216.900	219.800	222.800	
Toll Removal Revenue Loss	-3.791	-6.508	-6.561	-6.665	-6.442	-6.554	-6.615	-42.852	-43.530	-44.269	
EZ Pass Discount	-14.738	-16.755	-17.024	-17.228	-40.403	-40.981	-41.515	-24.052	-24.354	-24.661	
Net Revenue	179.271	177.137	179.415	181.807	161.555	163.665	165.870	149.996	151.916	153.870	
Revenue Loss	18.529	23.263	23.585	23.893	46.845	47.535	48.130	66.904	67.884	68.930	
Reduced Costs-Tolls	-3.420	-6.247	-6.247	-6.247	-13.777	-13.777	-13.777	-\$23.789	-\$23.789	-\$23.789	
Admin Reductions											
Net Costs w/o Capital	15.109	17.016	17.338	17.646	33.068	33.758	34.353	43.115	44.095	45.141	
Congestion Capital Projects	194.350	109.830	55.400	160.270	97.900	40.000					657.750
Barrier / Ramp Removal- EZ Pass Installation	36.980	26.495		30.000	33.610						127.085
Total Capital	231.330	136.325	55.400	190.270	131.510	40.000	0.000	0.000	0.000	0.000	784.835
TTFA Leverage @11:1	21.030	12.393	5.036	17.297	11.955	3.636	0.000	0.000	0.000	0.000	
Cumulative Yearly TTFA	21.030	33.423	38.460	55.757	67.712	71.349	71.349	71.349	71.349	71.349	
Net Costs with Capital	36.139	50.439	55.798	73.403	100.780	105.107	105.702	114.464	115.444	116.490	
EZ Pass True-Up Costs							20.800				
Total Net Costs	36.139	50.439	55.798	73.403	100.780	105.107	126.502	114.464	115.444	116.490	

	In 2000 Constant (Million \$)
Revenue	
Toll Collections	\$195.300
Service Areas	\$13.450
PNC Arts Center	\$2.600
Investments	\$9.900
Other	\$3.900
Total Revenue	\$225.150
Expenses	
- Operating	
Maintenance	\$42.403
Administration	\$32.737
Toll Collection	\$40.000
State Police	\$20.660
-Capital / Debt	
Senior Debt Service	\$56.586
Junior Debt	\$2.705
Dedicated Reserves	\$30.059
Total Expenses	\$225.150

The financial analysis considers the loss of revenue and change in variable costs (Expenses) associated with toll collection only.

The Cost of Complete Toll Removal

The Cost of Complete Toll Removal

An analysis of toll revenue loss and capital needs as a result of completely removing tolls from the Parkway is shown below.

Financial Summary

	Phase 1	Phase 2			Phase 3			Phase 4			Total
	Remove Raritan South, Essex North Barriers, and Watchung Ramp. Begin 35 cents cash, 33 cents EZ Pass Discount On- Peak, 30 cents Off-Peak, No Tokens	Remove Union South, Toms River South Barriers, and Union Ramp			Remove Hillsdale North, Bergen South, Asbury Park North, Barnegat North, New Gretna South, Great Egg Harbor North, and Cape May South with one-half of ramp tolls removed			Remove all remaining Barriers and Ramps			
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
Current Expected Revenue	197.800	200.400	203.000	205.700	208.400	211.200	214.000	216.900	219.800	222.800	
Toll Removal Revenue Loss	-24.930	-44.712	-45.174	-45.695	-82.391	-83.462	-84.499	-216.900	-219.800	-222.800	
EZ Pass Discount	-9.852	-8.635	-8.744	-8.855	-23.423	-23.788	-24.163				
Net Revenue	163.018	147.053	149.082	151.150	102.586	103.950	105.338	0.000	0.000	0.000	
Revenue Loss	34.782	53.347	53.918	54.550	105.814	107.250	108.662	216.900	219.800	222.800	
Reduced Costs-Tolls	-3.420	-6.247	-6.247	-6.247	-13.777	-13.777	-13.777	-51.343	-51.343	-51.343	
Admin Reductions								-27.700	-27.700	-27.700	
Net Costs w/o Capital	31.362	47.100	47.671	48.303	92.037	93.473	94.885	137.857	140.757	143.757	
Congestion Capital Projects	194.350	109.830	55.400	160.270	97.900	40.000					657.750
Barrier / Ramp Removal	20.600	13.800			30.800			65.400			130.600
Total Capital	214.950	123.630	55.400	160.270	128.700	40.000	0.000	65.400	0.000	0.000	788.350
TTFA Leverage @11:1	19.541	11.239	5.036	14.570	11.700	3.636	0.000	5.945	0.000	0.000	
Cumulative Yearly TTFA	19.541	30.780	35.816	50.386	62.086	65.723	65.723	71.668	71.668	71.668	
Net Costs with Capital	50.903	77.880	83.487	98.689	154.123	159.196	160.608	209.525	212.425	215.425	
EZ Pass True-Up Costs							20.800				
Total Net Costs	50.903	77.880	83.487	98.689	154.123	159.196	181.408	209.525	212.425	215.425	

Observations:

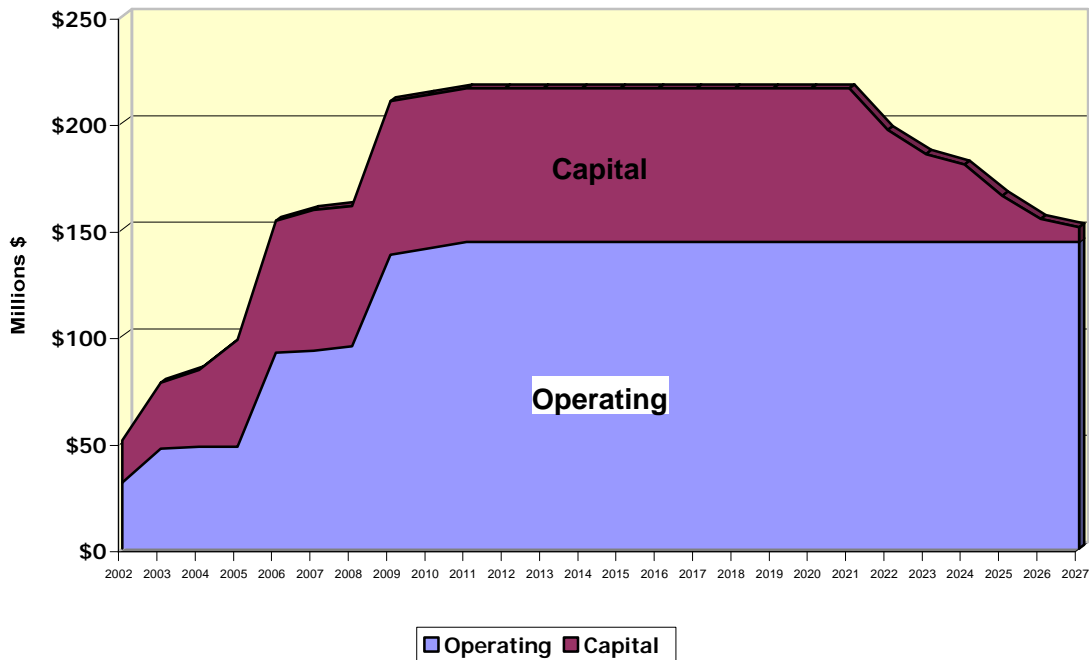
- The cost of barrier removal and associated roadway modifications (\$130.6 million) is equivalent to free-flow E-ZPass installation (\$127.1 million).
- Congestion relief projects capital costs are the same for each alternative.
- The 10-year cost to remove barriers and tolls from the Parkway is approximately \$580 million more than the cost of implementing free-flow E-fZPass.

10-Year Cost Comparison

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Ten Year Cost
Complete Toll Elimination	\$50.903	\$77.880	\$83.487	\$98.689	\$154.123	\$159.196	\$181.408	\$209.525	\$212.425	\$215.425	\$1,443.061
Free-Flow EZ Pass Alternative	\$36.139	\$50.439	\$55.798	\$73.403	\$100.780	\$105.107	\$126.502	\$114.464	\$115.444	\$116.490	\$894.566

- Traffic-flow and travel time improvements for complete toll removal and free-flow E-ZPass are equivalent.

Beyond 2011, the General Fund will need to provide indefinitely an annual appropriation of approximately \$143.7 million (Operating) to cover net toll revenue losses, plus funding to the Transportation Trust Fund to pay down the debt incurred to construct congestion relief projects (Capital).



Appendix A

Executive Order 128

**STATE OF NEW JERSEY
EXECUTIVE DEPARTMENT**

EXECUTIVE ORDER NO. 128

WHEREAS, when the New Jersey Highway Authority (the "Authority") was first established in 1952, it was widely understood by the public that tolls on the Garden State Parkway (the "Parkway") would only be necessary until such time as the bonds financing the cost of the construction of the Parkway could be retired; and

WHEREAS, the Parkway has been a toll road for nearly 50 years and there is no existing plan or timetable to either permanently retire the bonds of the Authority or to phase out tolls on the Parkway; and

WHEREAS, the Authority was established and authorized to take, construct, maintain and operate the Parkway to facilitate vehicular traffic and remove the then existing handicaps and hazards on congested highways, and now the Parkway's toll barrier plazas constructed for the collection of tolls by means of periodic main line toll barriers is economically inefficient, directly impedes and interferes with the free flow of traffic, increases energy consumption, and contributes to the creation of traffic congestion and delay; and

WHEREAS, the Authority and the State will fully and affirmatively honor its financial and other obligations to its bondholders, and further, will honor its financial and other obligations as part of the electronic toll collection consortium, it must also be affirmatively stated that the first priority of the Authority is to serve the citizens of the State of New Jersey and the Parkway users; and

WHEREAS, the institution of a 24-hour, one-day, toll holiday on Labor Day 2001, which is a peak summer travel day, whereby the Authority would permit the passage of vehicles on the Parkway without the imposition of a toll or charge, will contribute to the free flow of traffic and provide much needed traffic congestion relief; and

WHEREAS, the institution of a discounted charge for EZ-Pass users will encourage greater utilization of the EZ-Pass electronic toll system, which will also contribute to the freeflow of traffic and provide traffic congestion relief; and

WHEREAS, the public expects and demands relief from the continued inconvenience of the imposition of barrier tolls on the Parkway;

NOW, THEREFORE, I, DONALD T. DiFRANCESCO, Acting Governor of the State of New Jersey, by virtue of the authority vested in me by the Constitution and by the Statutes of this State, do hereby ORDER and DIRECT:

1. The Commissioner of the New Jersey Department of Transportation (the "Commissioner") is directed to prepare a Garden State Parkway Congestion Relief Plan, which will phase out toll barrier plazas on the Parkway over a stated period of time not to exceed ten (10) years. The Parkway Congestion Relief Plan shall address all issues related to the phase out of toll barrier plazas, including, but not limited to the engineering and planning, financial,

and legal implications. The Commissioner may retain such consultants as are necessary for the preparation of said plan.

2. The Commissioner shall provide the Parkway Congestion Relief Plan to the Governor no later than sixty (60) days from the effective date of this Executive Order.
3. The Commissioner, who serves as an ex officio member of the Authority, is directed to request that the Authority institute a 24-hour, one-day, toll holiday on Monday, September 3, 2001. On such date, the Authority shall permit the passage of vehicles on the Garden State Parkway without the imposition of a toll or charge.
4. The Commissioner is further directed to request that the Authority offer a discounted charge for EZ-Pass users.
5. This Order shall take effect immediately.

GIVEN, under my hand and seal
this 31st day of May
in the Year of Our Lord,
Two Thousand and One,
and of the Independence of
the United States,
the Two Hundred and Twenty-Fifth.

/s/ Donald T. DiFrancesco
President of the Senate, Acting Governor

{ seal }

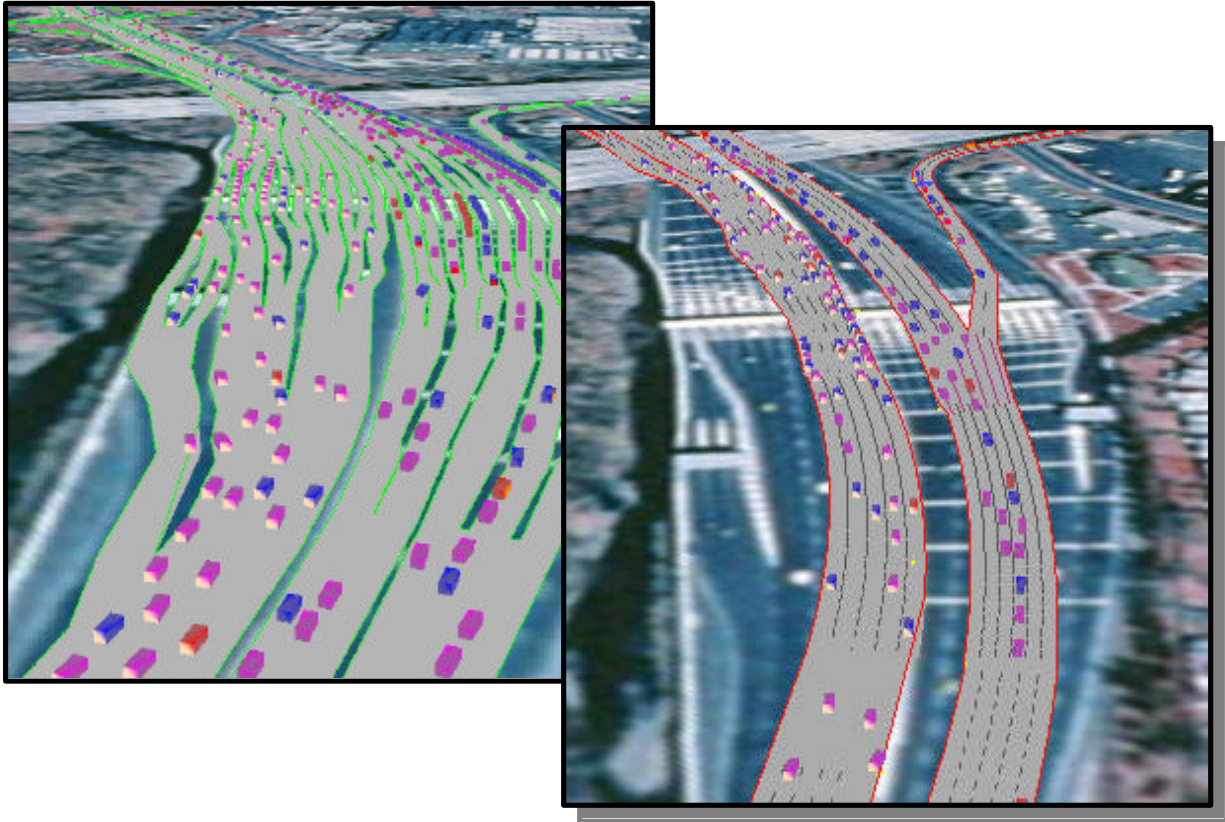
Attest:

/s/ James A. Harkness
Chief Counsel to the Governor

Appendix B

Addressing Congestion: NJIT Traffic Modeling

TEN YEAR PLAN **to Remove Toll Barriers on the** **GARDEN STATE PARKWAY**



Prepared for:

NEW JERSEY DEPARTMENT OF TRANSPORTATION

by:

NEW JERSEY INSTITUTE OF TECHNOLOGY

**National Center for Transportation and Industrial Productivity /
International Intermodal Transportation Center**



JULY 31, 2001

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Executive Summary

The National Center for Transportation and Industrial Productivity / International Intermodal Transportation Center (NCTIP/IITC) prepared an analysis of the traffic congestion impacts as part of the development of the ten-year plan to remove toll barriers on the Garden State Parkway.

NCTIP/IITC developed and calibrated a traffic simulation model of the northern fifty-mile section of the Parkway including five barrier toll plazas: Hillsdale, Bergen, Essex, Union and Raritan. The model was used to test several different future year alternatives including: maintaining the existing toll plazas (the No Action alternative); elimination of the barrier toll plazas in one or both directions, and construction of high speed EZ Pass lanes. Future year traffic growth, diversion and EZ Pass market share were provided by the Garden State Parkway and their consultants.

There are three components to the travel time savings due to the elimination of toll collection at a barrier: slowing down from highway speeds on the approach to the toll plaza; queuing delay at the toll plaza; and returning (or accelerating back) to original highway speeds after paying the toll. The congestion-related benefits of any of the alternatives are therefore a function of the capacity of the toll plaza, processing time for toll collection, as well as the capacity of the adjacent mainline roadway. The simulation model analyzes each of these three components and provides estimates of the travel time and related travel cost savings that would occur in the future. It should be noted that since the introduction of EZ Pass at all of the northern plazas in 2000 the queuing delay has been greatly reduced. The results of the simulation model are summarized by toll plaza in the report.

Raritan Toll Plaza

During the evening peak period, the combination of the widening of the Driscoll Bridge from six to seven lanes and the elimination of the toll barrier in the southbound direction would provide significant travel time reductions, in excess of two minutes per vehicle over the existing conditions. The roadway sections north of the bridge and south of the plaza operate at less than capacity conditions. These conditions would allow vehicles in the future to travel at highway speeds through the entire two-mile section. During the morning peak period, the combination of the widening of the Driscoll Bridge from six to eight lanes and the introduction of high speed EZ Pass in the northbound direction would also provide significant travel time reductions, one to two minutes per vehicle over existing conditions.

Union Toll Plaza

In the evening peak period, the elimination of the toll barrier in the southbound direction would provide minimal travel time reductions. The merge with I-78 (Interchange 142) located just north of the toll plaza forces vehicles to slow down as they approach the plaza. In addition, the roadway just south of the plaza operates at capacity with vehicles traveling at greatly reduced speeds. Hence, there is little opportunity for vehicles to travel at highway speeds if the plaza is removed. During the morning peak period, the introduction of high speed EZ Pass in the northbound direction would provide travel time reductions of less than one minute per vehicle over existing conditions. Again, the roadway north of the Union toll plazas operates at capacity with vehicles traveling at greatly reduced speeds during the morning peak period.

Essex Toll Plaza

During both the morning and evening peak periods, the elimination of the toll barrier in the northbound direction would provide travel time reductions of less than one minute per vehicle, over existing conditions. Again, the roadway operates at capacity both upstream and downstream of the toll plaza providing little opportunity for vehicles to travel at highway speeds. The introduction of high speed EZ Pass would result in similar travel time reductions in the southbound direction during both the morning and evening peak period.

Bergen Toll Plaza

In both the morning and evening peak periods the elimination of the toll barrier in the southbound direction would result in travel time reductions of approximately one minute per vehicle, over existing conditions. The roadway conditions upstream and downstream of the plaza would allow vehicles to travel at highway speeds through the toll plaza area. The introduction of high speed EZ Pass would result in similar travel time reductions in the northbound direction during the evening peak period. Travel time reductions would be less during the morning peak period due to increased roadway congestion.

Hillsdale Toll Plaza

In both the morning and evening peak periods, the elimination of the toll barrier in the northbound direction would result in travel time reductions of one minute or more per vehicle, over existing conditions. There is no roadway congestion to prevent vehicles from traveling at highway speeds through the toll plaza area. Similar travel time reductions could be achieved through the introduction of high speed EZ Pass in the southbound direction.

In summary, the results of the simulation model showed that:

Elimination of the Raritan Toll Plaza in the southbound direction, coupled with the planned widening of the Driscoll Bridge, would have the greatest impact on evening peak period congestion as travel time reductions of two minutes or more per vehicle could be achieved.

The impacts at the Union and Essex Toll Plazas would be minimal because of the adjacent roadway congestion that would not be addressed by the toll barrier removal. At the Bergen and Hillsdale Toll Plazas, travel time reductions would be approximately one minute per vehicle.

Institution of a one-way toll system (i.e., elimination of toll collection in one direction at each barrier plaza) would provide travel time reductions of three to four minutes for vehicles traveling the length of the northern section of the Parkway from the New York State line to points south of the Raritan River, a distance of approximately fifty miles. Typical travel times during the peak periods are about an hour for travel through this section. As stated earlier, most of the travel time reductions would be due to the widening of the Driscoll Bridge coupled with the elimination of the Raritan Toll Plaza.

In the future, EZ Pass market share is forecast to be approximately seventy per cent at each of the five northern toll plazas. As this high EZ Pass market share is achieved, there would be little difference in traffic operations between high speed EZ Pass and complete elimination of the toll plaza.

Introduction

This report summarizes the work done by the National Center for Transportation and Industrial Productivity / International Intermodal Transportation Center (NCTIP/IITC) as part of the development of the ten-year plan to remove toll barriers on the Garden State Parkway. The work plan divided the Parkway into two Study Areas, 1 and 2, as shown in **Figure 1**.

The first set of tasks of the study consists of the development and calibration of a traffic simulation model for Study Area 1: the five northern barrier toll plazas: Hillsdale, Bergen, Essex, Union and Raritan and approximately 50 miles of roadway.

The second set of tasks of the study consists of the development and calibration of a traffic simulation model for Study Area 2: the six southern barrier toll plazas: Asbury Park, Toms River, Barnegat, New Gretna, Great Egg, and Cape May and approximately 120 miles of roadway.

The third set of tasks consists of enhancements and refinements to the model to address the ramp toll plazas as well as the adjacent state roadway network.

This report covers only the first set of tasks and includes the following key elements:

1. Model each hour of the four-hour morning (6-10 a.m.) and evening (3-7 p.m.) weekday peak periods to account for travel throughout the peak periods. As Commissioner Weinstein has stated, the focus of this project is congestion relief. The capacity of both the plazas and the mainline roadway will affect the amount of congestion relief during the peak hours. The simulation model includes the entire roadway to forecast the travel time and travel cost savings that would occur.
2. Provide a visualization tool that can enable decision-makers, including the Governor, senior transportation officials, the public and the media to understand the impacts of different toll road alternatives on Parkway operations. The product of the simulation model includes animations that allow one to visualize future conditions at each of the toll plazas under any of the proposed scenarios.

Data Inventory

NCTIP/IITC compiled existing available toll plaza count, roadway and toll plaza geometry, origin-destination survey, and aerial queuing surveys done by the Parkway over the past several years. No new data collection was done as part of this task. Parkway staff and consultants provided this data in a timely fashion.

Toll plaza and traffic count data was obtained for the entire length of the Parkway from Cape May to Bergen County. The aerial queuing surveys were done during November and December 2000 and were typical of weekday peak period conditions. Toll plaza data was obtained for the same dates as the aerial surveys where possible. Ramp counts were generally done only once per year. These ramp counts were reviewed and typical weekday peak period data was estimated. The traffic count data is included in the Appendix.

The Parkway also provided future year traffic growth, diversion and EZ Pass market share estimates. All estimates were forecast by year and by toll plaza. The growth and diversion estimates are included in the **Alternatives Analysis** sections. EZ Pass market share was expected to grow to approximately 70 percent at each of the northern toll plazas in the future. The future year EZ Pass market share was applied to all future year analyses and is summarized in **Table 1**.

Table 1: EZ Pass Market Share

Toll Plaza	Existing Market Share			Future Market Share		
	EZ Pass	Exact Change	Cash	EZ Pass	Exact Change	Cash
Hillsdale	46%	43%	11%	72%	15%	13%
Bergen	46%	43%	11%	72%	15%	13%
Essex	47%	41%	12%	70%	16%	14%
Union	47%	41%	12%	70%	16%	14%
Raritan	50%	40%	10%	72%	18%	10%

Network and Origin-Destination Trip Table Development

For the first task of this project, NCTIP/IITC developed and calibrated a base year simulation model for the northern section of the Parkway including the five barrier toll plazas: Hillsdale, Bergen, Essex, Union and Raritan. The toll plazas were calibrated using available data for the morning and evening peak periods from the aerial queuing surveys from November and December 2000. Trip tables were synthesized from available traffic counts and other data and were developed for each hour of a typical weekday peak period. The network and trip table development process is shown schematically in **Figure 2**.

Study Area 1 was divided into three separate networks to reduce analysis times and data requirements to reasonable levels. Care was taken to ensure that the roadway sections operated independently. For example, Union and Essex were combined into a single network, since traffic operations at the Union toll plaza southbound can impact operations at the Essex plaza and vice versa. The three networks are:

- Middlesex –the section of the Parkway in Middlesex County between Interchanges 120 and 135 and including the Raritan Toll Plaza. This section is approximately 14 miles in length.
- Essex/Union –the section of the Parkway in Essex and Union counties between Interchanges 135 and 153 and including the Essex and Union Toll Plazas. This section is approximately 18 miles in length.
- Bergen/Passaic –most of the Parkway in Bergen and Passaic counties; including the portion between Interchanges 153 and 168 as well as the Bergen and Hillsdale Toll Plazas. A portion of the Parkway north of the Hillsdale Toll Plaza was not included because available traffic counts at Interchanges 168, 171, and 172 appeared to contain errors. This section operates at satisfactory or better traffic conditions during the morning and evening peak periods in both directions and was not considered critical for this analysis. This section is approximately 19 miles in length.

The traffic simulation network was created using the TransCAD Geographic Information Systems (GIS) software and the Paramics traffic simulation software. First, the NJDOT GIS base layer was imported into Transcad and the basic topology of the Parkway was extracted. Second, detailed roadway information including number of lanes was obtained from the NJDOT straight-line diagrams and added to the network. Third, aerial photography was obtained and used to ensure that the horizontal curvature of the Parkway was correct. Finally, the detailed toll plaza geometry and operation was obtained from the Parkway and added to the network. This detail included the lane configuration, EZ Pass, Exact Change/Token, or Cash, during each hour of the day. These traffic simulation network files are also included in the Appendix.

A mathematical programming model was developed using the General Algebraic Modeling System (GAMS) software to synthesize the peak hour origin-destination trip tables. The model synthesized travel patterns that closely matched the available traffic counts at each toll plaza and ramp location. The maximum permitted deviation at the toll plazas was one percent (i.e. the synthesized travel patterns must produce estimated toll plaza volumes that were within one percent of the traffic counts). The maximum permitted deviation at the ramps was five to ten percent. The Parkway provided a 1986 origin-destination survey as a “guide” in the trip table synthesis process. In creating the trip tables however, it was found that the survey was not consistent with the toll plaza and ramp counts and the survey was therefore discarded. The trip table development process files are also included in the Appendix.

Alternatives Analysis - Overview

The simulation model was used to evaluate twenty-one different toll plaza alternatives including the existing conditions. An alternative refers to a change in the simulation model for a single network. For example, eliminating tolls at the Raritan plaza southbound and the Essex plaza northbound would be considered two alternatives since they require modification to two different networks. The alternatives were provided by NJDOT and are summarized in **Table 2**.

Table 2: Summary of Alternatives

Alternative	Existing	Phase 1	Phase 2	Phase 3	No Action	Phase 4A	Phase 4B
Year -> Network	[2000]	[2002]	[2005]	[2008]	[2011]	[2011]	[2011]
Middlesex		Remove Raritan Sb	Remove Raritan Sb	Remove Raritan Sb; Widen Driscoll Bridge	Widen Driscoll Bridge	Remove Raritan Sb; Widen Driscoll Bridge; Add High Speed EZ Pass	Widen Driscoll Bridge; Remove all plazas
Union / Essex		Remove Essex Nb	Remove Essex Nb; Union Sb	Remove Essex Nb; Union Sb; Construct I-78 Ramps	Construct I-78 Ramps	Remove Essex Nb; Union Sb; Construct I-78 Ramps; Add High Speed EZ Pass	Construct I-78 Ramps; Remove all plazas
Passaic / Bergen		No Changes	No Changes	Remove Bergen Sb; Hillsdale Nb		Remove Bergen Sb; Hillsdale Nb; Add High Speed EZ Pass	Remove all plazas

The alternatives are shown graphically in **Figures 3 through 7** for Phases 1, 2, 3, 4A and 4B, respectively. The No Action alternative includes maintaining the existing toll plazas while constructing the programmed major highway improvements, the Driscoll Bridge and the completion of the I-78 interchange. Each of the alternatives was analyzed for each hour of the peak period to identify the magnitude of peak period congestion reduction.

Alternatives Analysis - Raritan Toll Plaza

Existing Conditions

The peak period of travel at the Raritan Toll Plaza is northbound in the morning and southbound in the evening. The capacity of the Driscoll Bridge limits the flow of southbound traffic reaching the plaza to approximately 13,000 vehicles per hour. The existing traffic demand was estimated using traffic counts provided by the Parkway for December 2000. The peak period volumes are shown for both directions in **Table 3**.

Table 3: Existing Travel Demand at Raritan Toll Plaza

	<u>6-7 AM</u>	<u>7-8 AM</u>	<u>8-9 AM</u>	<u>9-10 AM</u>	<u>Total</u>
Northbound	13,047	13,924	12,764	8,761	48,496
Southbound	1,906	3,874	4,803	4,264	14,847
	<u>3-4 PM</u>	<u>4-5 PM</u>	<u>5-6 PM</u>	<u>6-7 PM</u>	<u>Total</u>
Northbound	4,873	5,201	5,482	4,449	20,005
Southbound	9,564	12,370	12,923	10,686	45,543

The traffic simulation of the existing conditions confirmed the aerial observations of traffic operations at the Raritan toll plaza completed in November and December 2000. The traffic conditions are summarized below and are shown graphically in **Figure 8**:

- No congestion problems exist during the morning peak period in the southbound direction. Queue times at the toll plaza are minimal.
- No congestion problems exist during the evening peak period in the northbound direction. Queue times at the toll plaza are minimal.
- The New Jersey Turnpike interchange (Exit 129) causes congestion on the Parkway in both directions due to the large volume of traffic entering and exiting the roadway
- The Driscoll Bridge is a capacity constraint in the southbound direction during the evening peak period as well as in the northbound direction during the morning peak period. The proposed widening of the Driscoll Bridge will remove these constraints.

Future Travel Demand

Future travel demand at the Raritan Toll Plaza was estimated using annual revenue and diversion growth factors provided by the Garden State Parkway. The resulting traffic growth at the plazas is summarized in **Table 4**.

Table 4: Future Travel Demand at Raritan Toll Plaza

<u>Alternative</u>	<u>Year</u>	<u>Direction</u>	<u>Total Growth</u>	<u>Annual Growth</u>
No Action	2002	Northbound	3.0%	1.5%
No Action	2002	Southbound	3.0%	1.5%
No Action	2005	Northbound	7.7%	1.5%
No Action	2005	Southbound	7.7%	1.5%
No Action	2008	Northbound	12.6%	1.5%
No Action	2008	Southbound	12.6%	1.5%
No Action	2011	Northbound	17.6%	1.5%
No Action	2011	Southbound	17.6%	1.5%
Phase 1	2002	Northbound	3.0%	1.5%
Phase 1	2002	Southbound	7.0%	3.5%
Phase 2	2005	Northbound	7.7%	1.5%
Phase 2	2005	Southbound	12.4%	2.4%
Phase 3	2008	Northbound	12.6%	1.5%
Phase 3	2008	Southbound	17.9%	2.1%
Phase 4A	2011	Northbound	17.6%	1.5%
Phase 4A	2011	Southbound	23.3%	1.9%
Phase 4B	2011	Northbound	23.8%	2.0%
Phase 4B	2011	Southbound	24.8%	2.0%

Future Conditions

Existing and future travel times were computed for vehicles traveling southbound for length of the Parkway in Middlesex County, from the Union County line to the Monmouth County line, a distance of approximately 14 miles. Vehicles entering and exiting at intermediate points may exhibit additional delays due to future year ramp capacity constraints. These constraints were not addressed as part of this preliminary analysis.

Phase 1 (2002) and Phase 2 (2005)

Under these two alternatives, the Raritan Toll Plaza southbound would be eliminated. The elimination of the plaza would result in an average evening peak period travel time reduction of approximately two minutes per vehicle versus existing conditions. The travel time reduction would be due primarily to vehicles traveling at higher speeds across the Driscoll Bridge. Currently, vehicles travel at speeds of 30 to 40 miles per hour across the bridge due to the combination of the roadway curvature and the presence of the toll plaza and associated signage. With the elimination of the toll plaza, vehicles are expected to travel at speeds of 60 to 65 miles per hour. It should also be noted that increases in traffic volumes in the section north of the New Jersey Turnpike (Exit 129) would result in increased congestion in this area.

Under these two alternatives, there would be no physical changes in the northbound direction. The increase in EZ Pass usage would result in travel time reduction during the morning peak period of approximately one minute. The changes are shown graphically in **Figure 9**.

Phase 3 (2008)

Under this alternative, the Driscoll Bridge southbound would be widened from six to seven lanes. This widening would address a significant future year capacity problem since, with the elimination of the toll plaza, the bridge would become a capacity constraint in the southbound direction. Since no other information was provided, it was assumed that the widening would be extended from the Interchange 127 Southbound on-ramp to the Interchange 123 Southbound off-ramp. The combination of the elimination of the plaza and the widening of the bridge would result in an average evening peak period travel time reduction of approximately five minutes per vehicle versus the 2011 No Action alternative. Increases in traffic volumes in the section north of the New Jersey Turnpike (Exit 129) would result in further increased congestion in this area.

Under this alternative, it was assumed the Driscoll Bridge northbound would be widened from six to eight lanes. It was assumed that the widening would be extended between the Raritan Toll Plaza and Interchange 127. The widening of the bridge could significantly reduce travel delays in the morning peak period by an additional one to two minutes per vehicle. The forecast growth in traffic however would create additional congestion and greatly reduce this reduction. The changes are shown graphically in **Figure 10**.

No Action (2011)

Under this alternative, the Driscoll Bridge would be widened to seven lanes in the southbound direction, but the existing toll plaza would remain. The increases in traffic volumes due to background growth only would result in average evening peak period travel time increases of four minutes per vehicle over existing conditions.

The Driscoll Bridge would be widened to eight lanes in the northbound direction. The increase in traffic volumes due to background growth only would result in average morning peak period travel time increase of one minute per vehicle over existing conditions.

This alternative did not account for changes to the configuration of the Raritan Toll Plaza such as construction of High Speed EZ Pass or the installation of additional EZ Pass lanes at the Raritan Toll Plaza. These configuration changes could result in significant travel time reduction.

Phase 4A (2011) and Phase 4B (2011)

Under Phase 4A, High Speed EZ Pass would be installed in the northbound direction. Under Phase 4B, the toll plaza would be eliminated in the northbound direction.

The elimination of the toll plaza would result in: an average evening peak period southbound travel time reduction of approximately five minutes per vehicle; and an average morning peak period travel time reduction of approximately two minutes per vehicle, versus the 2011 No Action alternative.

Note that this travel time reduction does not reflect any configuration changes to the toll plaza. The changes are shown graphically in **Figure 11**.

Summary

As stated earlier, travel times and speeds were computed for the length of the Parkway in Middlesex County from a point north of Interchange 131 to south of Interchange 120, a distance of approximately 15 miles. Total travel time and average speeds are shown in **Table 5** below. The average time reduction shown is accrued over the total length, but is primarily due to the combination of the Driscoll Bridge widening and the elimination of the Raritan Toll Plaza. Shorter trips using this section, such as between I-287 and US 9, would also realize the average time reduction shown in the table. Trips entering and exiting at intermediate points however may exhibit significant ramp delays due to traffic growth on the entrance and exit ramps. Calibration of these future year ramp operations was beyond the scope of this project.

Annual travel time reductions and cost savings are computed by multiplying the savings per vehicle by an average hourly wage of \$18.48 per hour per capita. This hourly wage data is based on the average of Middlesex and Monmouth County residents for the year 2000 (Source: 1999 Income: U.S. Depart. of Commerce, Bureau of Economic Analysis, May 3 2001, Prepared By: New Jersey Department of Labor, May 2001), adjusted to 2000 using the Consumer Price Index. These values are also summarized in **Table 5** below.

Table 5: Future Travel Time Reductions and Costs Savings

Alternative	Existing	Phase 1	Phase 2	Phase 3	No Action	Phase 4A	Phase 4B
Year	[2000]	[2002]	[2005]	[2008]	[2011]	[2011]	[2011]
PM Southbound							
Total Travel Time [Min.]	19	17	17	17	22	17	17
Average Speed [mph]	47	53	53	53	41	53	53
Average Time Reduction [Min.]		2	2	2	-3	2	2
Annual Reduction Per Vehicle [Hrs.]		9	9	9	-13	9	9
Annual Savings Per Vehicle [\$]		\$170	\$170	\$170	-\$240	\$170	\$170
AM Northbound							
Total Travel Time [Min.]	17	15	17	17	18	16	16
Average Speed [mph]	41	46	41	41	38	43	43
Average Time Reduction [Min.]		2	0	0	-1	1	1
Annual Reduction Per Vehicle [Hrs.]		9	0	0	-4	4	4
Annual Savings Per Vehicle [\$]		\$170	\$0	\$0	-\$70	\$70	\$70

Note: PM southbound travel length = 14.8 miles; AM northbound travel length = 11.0 miles

Alternatives Analysis - Union and Essex Toll Plazas

Existing Conditions

The peak period of travel at the Union Toll Plaza southbound is in the evening. The Essex Toll Plaza is generally balanced in the two directions during both peak periods. The capacity of the merge with the I-78 on ramp limits the flow of traffic reaching the Union plaza to approximately 8,000 vehicles per hour. The existing traffic demand was estimated using traffic counts provided by the Parkway for December 2000 and is shown **Table 6**.

Table 6: Existing Travel Demand at Union and Essex Toll Plazas

<u>Union</u>	<u>6-7 AM</u>	<u>7-8 AM</u>	<u>8-9 AM</u>	<u>9-10 AM</u>	<u>Total</u>
Northbound	6,879	8,822	7,886	6,381	29,968
Southbound	4,939	7,750	7,871	5,819	26,379
	<u>3-4 PM</u>	<u>4-5 PM</u>	<u>5-6 PM</u>	<u>6-7 PM</u>	<u>Total</u>
Northbound	6,271	6,980	7,065	5,626	25,942
Southbound	7,607	8,163	7,697	7,564	31,031
<u>Essex</u>	<u>6-7 AM</u>	<u>7-8 AM</u>	<u>8-9 AM</u>	<u>9-10 AM</u>	<u>Total</u>
Northbound	4,998	6,752	6,235	4,791	22,776
Southbound	4,332	6,326	5,356	4,505	20,519
	<u>3-4 PM</u>	<u>4-5 PM</u>	<u>5-6 PM</u>	<u>6-7 PM</u>	<u>Total</u>
Northbound	5,748	6,134	5,946	5,425	23,253
Southbound	5,544	5,257	5,604	5,348	21,753

The traffic simulation of the existing conditions confirmed the aerial observations done in November and December 2000 at the southbound Union and northbound Essex toll plaza. The traffic conditions are shown graphically in **Figure 12** and are summarized below.

- No congestion problems exist at the Union Toll Plaza in the southbound during the morning peak period. Queue times at the toll plaza are minimal.
- The I-78 on-ramp merge with the Parkway southbound creates congestion prior to the Union Toll Plaza southbound in the evening peak period.
- The Parkway northbound is at or near capacity in the section between the Union and Essex Toll Plazas in the morning peak period. Limited exiting capacity at major off-ramps, specifically Route 3 and I-280, exacerbate the mainline problems.
- The on-ramps, specifically Route 3 and I-280, limit traffic entering the Parkway southbound during the evening peak period. Hence, mainline operations are better in the evening peak period than in the morning peak period.

Future Travel Demand

Future travel demand at the Union and Essex Toll Plazas was estimated using annual revenue and diversion growth factors provided by the Garden State Parkway. The resulting traffic growth at the plazas is summarized in **Table 7**. Future year traffic volumes are summarized in the Appendix.

Table 7: Future Travel Demand at Union and Essex Toll Plazas

<u>Alternative</u>	<u>Year</u>	<u>Direction</u>	<u>Union Toll Plaza</u>		<u>Essex Toll Plaza</u>	
			<u>Total Growth</u>	<u>Annual Growth</u>	<u>Total Growth</u>	<u>Annual Growth</u>
No Action	2002	Northbound	1.0%	0.5%	1.1%	0.5%
No Action	2002	Southbound	1.0%	0.5%	1.0%	0.5%
No Action	2005	Northbound	2.7%	0.5%	2.7%	0.5%
No Action	2005	Southbound	2.7%	0.5%	2.7%	0.5%
No Action	2008	Northbound	16.2%	1.9%	4.3%	0.5%
No Action	2008	Southbound	4.3%	0.5%	4.3%	0.5%
No Action	2011	Northbound	18.1%	1.5%	6.0%	0.5%
No Action	2011	Southbound	6.0%	0.5%	6.0%	0.5%
Phase 1	2002	Northbound	2.2%	1.1%	4.2%	2.1%
Phase 1	2002	Southbound	1.0%	0.5%	1.0%	0.5%
Phase 2	2005	Northbound	4.2%	0.8%	6.9%	1.3%
Phase 2	2005	Southbound	5.5%	1.1%	6.4%	1.2%
Phase 3	2008	Northbound	18.0%	2.1%	9.3%	1.1%
Phase 3	2008	Southbound	8.4%	1.0%	9.5%	1.1%
Phase 4A	2011	Northbound	19.9%	1.7%	11.1%	1.0%
Phase 4A	2011	Southbound	10.1%	0.9%	11.3%	1.0%
Phase 4B	2011	Northbound	30.9%	2.5%	19.7%	1.6%
Phase 4B	2011	Southbound	14.2%	1.2%	18.9%	1.6%

In performing the future year traffic analysis, it was found that the anticipated growth and diversion would result in over capacity conditions during the peak periods. It was agreed that the stated growth and diversion would not occur during the peak periods if the Parkway was already operating at capacity. As a result, the future year analysis was done a second time using existing traffic volumes. This second series of runs provides a more conservative estimate of travel time reduction that would occur in the future if the barrier toll plazas were eliminated.

Future Conditions

Existing and future travel times were computed for vehicles traveling northbound and southbound between the Passaic and Middlesex County lines, a distance of approximately 19 miles. Vehicles entering and exiting at intermediate points may exhibit additional delays due to future year ramp capacity constraints. These constraints were not addressed as part of this preliminary analysis.

Phase 1 (2002)

Under this alternative, the Essex Toll Plaza northbound would be eliminated. The elimination of the plaza would result in an average evening peak period travel time reduction of approximately one-half to one minute per vehicle versus existing conditions. The travel time reduction is limited by existing and future mainline congestion north and south of the toll plaza. The changes are shown graphically in **Figure 13**.

Phase 2 (2005)

Under this alternative, the Union Toll Plaza southbound would be eliminated. The elimination of the plaza would result in negligible evening peak period travel time reduction versus existing conditions. The travel time reduction is limited by the growth due to diverted traffic in the southbound direction coupled with the limited capacity at the merge with I-78. These changes result in unsatisfactory traffic operations just north of the toll plaza. The changes are shown graphically in **Figure 14**.

Phase 3 (2008)

Under this alternative, the I-78 interchange with the Parkway would be completed. Two new ramps would be constructed: north of the Union Toll Plaza connecting the Parkway northbound to I-78 westbound; and north of the Union Toll Plaza connecting the Parkway southbound to I-78 eastbound

The induced traffic caused by the interchange construction will result in evening peak period travel times equal to or greater than existing conditions despite the elimination of the toll plaza. The changes are shown graphically in **Figure 15**.

No Action (2011)

Under this alternative, the I-78 interchange would be completed, but the existing toll plaza would remain. The increases in traffic volumes due to background growth only would result in minimal average evening peak period travel time increases over existing conditions.

Phase 4A (2011) and Phase 4B (2011)

Under these alternatives, the I-78 interchange would be completed. Under Phase 4B, the Essex Toll Plaza southbound and Union Toll Plaza northbound would also be eliminated. The forecast diverted traffic will result in travel times through the Union Toll Plaza that are greater than existing conditions. The changes are shown graphically in **Figure 16**.

Summary

As stated earlier, travel times and speeds were computed for the length of the Parkway in Essex and Union Counties from a point south of Interchange 153 to south of Interchange 135, a distance of approximately 19 miles. Total travel time and average speeds are shown in **Table 8** below. The average time savings shown is accrued over the total length, but is due to the elimination of the Union Toll Plaza in the southbound direction and Essex Toll Plaza in the northbound direction. Shorter trips using this section, such as between Route 3 and I-78, would also realize the average time savings shown in the tables. Trips entering and exiting at intermediate points however may exhibit significant ramp delays due to traffic growth on the entrance and exit ramps. Calibration of these future year ramp operations was beyond the scope of this first phase of the project.

Annual travel time reductions and cost savings are computed by multiplying the savings per vehicle by an average hourly wage of \$18.92 per hour per capita. This hourly wage data is based on the average of Essex and Union County residents for the year 2000 (Source: 1999 Income: U.S. Depart. of Commerce, Bureau of Economic Analysis, May 3 2001, Prepared By: New Jersey Department of Labor, May 2001), adjusted to 2000 using the Consumer Price Index. These values are summarized in **Table 8** below.

Table 8: Future Travel Time Reductions and Costs Savings

Alternative	Existing	Phase 1	Phase 2	Phase 3	No Action	Phase 4A	Phase 4B
Year	[2000]	[2002]	[2005]	[2008]	[2011]	[2011]	[2011]
Northbound AM							
Total Travel Time [min]	23.0	22.0	22.0	22.0	23.0	20.5	21.0
Average Speed [mph]	47	49	49	49	47	53	51
Average Time Savings [Min.]		1.0	1.0	1.0	0.0	2.5	2.0
Annual Reductions per Vehicle [Hrs]		4.5	4.5	4.5	0.0	11.0	8.5
Annual Savings Per Vehicle [\$]		\$80	\$80	\$80	\$0	\$205	\$165
Northbound PM							
Total Travel Time [min]	19.5	18.5	18.5	18.5	19.5	18.5	18.0
Average Speed [mph]	55	58	58	58	55	58	60
Average Time Savings [Min.]		1.0	1.0	1.0	0.0	1.0	1.5
Annual Reductions per Vehicle [Hrs]		4.5	4.5	4.5	0.0	4.5	6.5
Annual Savings Per Vehicle [\$]		\$80	\$80	\$80	\$0	\$80	\$123
Southbound AM							
Total Travel Time [min]	23.0	23.0	22.5	22.5	23.0	21.5	21.0
Average Speed [mph]	47	47	48	48	47	50	51
Average Time Savings [Min.]		0.0	0.5	0.5	0.0	1.5	2.0
Annual Reductions per Vehicle [Hrs]		0.0	2.0	2.0	0.0	6.5	8.5
Annual Savings Per Vehicle [\$]		\$0	\$40	\$40	\$0	\$123	\$165
Southbound PM							
Total Travel Time [min]	21.5	21.5	21.0	21.0	21.5	20.5	19.5
Average Speed [mph]	50	50	51	51	50	53	55
Average Time Savings [Min.]		0.0	0.5	0.5	0.0	1.0	2.0
Annual Reductions per Vehicle [Hrs]		0.0	2.0	2.0	0.0	4.5	8.5
Annual Savings Per Vehicle [\$]		\$0	\$40	\$40	\$0	\$80	\$165

Alternatives Analysis - Bergen and Hillsdale Toll Plazas

Existing Conditions

The peak period of travel at the Bergen Toll Plaza southbound is in the evening. The peak period of travel at the Hillsdale Toll Plaza northbound is in the morning. Both plazas however exhibit generally balanced flows during both peak periods in both directions. The existing traffic demand was estimated using traffic counts provided by the Parkway for December 2000 and is shown in **Table 9**. Future year traffic volumes are summarized in the Appendix.

Table 9: Existing Travel Demand at Bergen and Hillsdale Toll Plazas

<u>Bergen</u>	<u>6-7 AM</u>	<u>7-8 AM</u>	<u>8-9 AM</u>	<u>9-10 AM</u>	<u>Total</u>
Northbound	2,539	6,621	7,680	4,485	21,325
Southbound	2,678	5,735	5,687	3,542	17,642
	<u>3-4 PM</u>	<u>4-5 PM</u>	<u>5-6 PM</u>	<u>6-7 PM</u>	<u>Total</u>
Northbound	4,421	5,325	6,476	5,430	21,652
Southbound	4,926	5,722	6,743	5,176	22,567
<u>Hillsdale</u>	<u>6-7 AM</u>	<u>7-8 AM</u>	<u>8-9 AM</u>	<u>9-10 AM</u>	<u>Total</u>
Northbound	1,704	3,468	4,476	2,544	12,192
Southbound	1,625	3,286	3,901	2,544	11,356
	<u>3-4 PM</u>	<u>4-5 PM</u>	<u>5-6 PM</u>	<u>6-7 PM</u>	<u>Total</u>
Northbound	2,649	3,107	3,882	3,238	12,876
Southbound	2,593	3,425	4,167	3,095	13,280

The traffic simulation of the existing conditions confirmed the analysis done in November and December 2000 regarding traffic operations problems at the southbound Bergen and northbound Hillsdale toll plaza. The traffic conditions are shown graphically in **Figure 17** and are summarized below.

- No congestion problems exist at the Hillsdale Toll Plaza during the morning and evening peak periods in either direction. Queue times at the toll plaza are minimal.
- The Route 17 and Route 3 interchanges located north and south of the Bergen Toll Plaza create congestion that impacts traffic operations at the plaza. The Parkway operates at close to capacity conditions in this section particularly in the northbound direction during the morning peak period.

Future Travel Demand

Future travel demand at the Bergen and Hillsdale Toll Plazas was estimated using annual revenue and diversion growth factors provided by the Garden State Parkway. The resulting traffic growth at the plazas is summarized in **Table 10**. Future year traffic volumes are shown in the Appendix.

Table 10: Future Travel Demand at Bergen and Hillsdale Toll Plazas

<u>Alternative</u>	<u>Year</u>	<u>Direction</u>	<u>Bergen Toll Plaza</u>		<u>Hillsdale Toll Plaza</u>	
			<u>Total Growth</u>	<u>Annual Growth</u>	<u>Total Growth</u>	<u>Annual Growth</u>
No Action	2002	Northbound	1.2%	0.6%	1.2%	0.6%
No Action	2002	Southbound	1.2%	0.6%	1.2%	0.6%
No Action	2005	Northbound	3.0%	0.6%	2.9%	0.6%
No Action	2005	Southbound	2.9%	0.6%	3.0%	0.6%
No Action	2008	Northbound	4.8%	0.6%	4.8%	0.6%
No Action	2008	Southbound	4.8%	0.6%	4.7%	0.6%
No Action	2011	Northbound	6.6%	0.6%	6.6%	0.6%
No Action	2011	Southbound	6.6%	0.6%	6.6%	0.6%
Phase 1	2002	Northbound	1.2%	0.6%	1.2%	0.6%
Phase 1	2002	Southbound	1.2%	0.6%	1.2%	0.6%
Phase 2	2005	Northbound	3.0%	0.6%	2.9%	0.6%
Phase 2	2005	Southbound	2.9%	0.6%	3.0%	0.6%
Phase 3	2008	Northbound	8.1%	1.0%	13.8%	1.6%
Phase 3	2008	Southbound	12.1%	1.4%	9.0%	1.1%
Phase 4A	2011	Northbound	9.9%	0.9%	15.8%	1.3%
Phase 4A	2011	Southbound	14.1%	1.2%	10.9%	0.9%
Phase 4B	2011	Northbound	1.2%	0.6%	22.4%	1.9%
Phase 4B	2011	Southbound	1.2%	0.6%	20.7%	1.7%

Future Conditions

Existing and future travel times were computed for vehicles traveling northbound and southbound through both plazas from a point approximately one mile north of the Hillsdale Toll Plaza to the Essex County line for the morning and evening peak periods, a distance of approximately 13.5 miles. Vehicles entering and exiting at intermediate points may exhibit additional delays due to future year ramp capacity constraints. These constraints were not addressed as part of this analysis.

Phase 1 (2002) and Phase 2 (2005)

Under these alternatives, the Bergen and Hillsdale Toll Plazas would continue to operate under their existing configurations. There would be some additional delay at the Bergen Toll Plaza northbound during the morning peak period due to the growth in traffic. The remaining plaza operations would be similar to existing conditions. Some of the increase in delays at the Bergen Toll Plaza could probably be reduced through a reconfiguration of the operation to reflect the increase in EZ Pass usage.

Phase 3 (2008)

Under this alternative, the Bergen Toll Plaza southbound and the Hillsdale Toll Plaza northbound would be eliminated.

Travel time reduction at the Bergen Toll Plaza would be about one-half to one minute in the morning and evening peak hours over the No Action alternative.

Travel time reduction at the Hillsdale Toll Plaza would be about one minute in the morning and evening peak hours over the No Action alternative. The Parkway would be at less than capacity conditions both north and south of the plaza that would allow for the greater travel time reduction. The changes are shown graphically in **Figure 18**.

No Action (2011)

Under this alternative, the existing toll plazas would remain. The increases in traffic volumes due to background growth only would have the largest impact at the Bergen Toll Plaza northbound in the morning peak period. Average morning peak period travel time increases would be approximately three minutes over existing conditions. Again, some of the largest increase in delays at the Bergen Toll Plaza could probably be reduced through a reconfiguration of the operation to reflect the increase in EZ Pass usage. Travel time increases at the Hillsdale Toll Plaza would be minor.

Phase 4A (2011) and Phase 4B (2011)

Under Phase 4A, high speed EZ Pass would be provided at Bergen northbound and Hillsdale southbound. Under Phase 4B, both toll plazas would be eliminated in both directions. The installation of high speed EZ Pass at Bergen would significantly reduce travel delays at the plaza during the morning peak period. Travel time reduction of one and one-half minutes could be expected.

The installation of high speed EZ-Pass at Hillsdale would have a smaller impact, a Travel time reduction of about one minute. Because of the high projected EZ Pass usage, in excess of 70 percent, complete elimination of the toll plazas under Phase 4B would provide little additional travel time benefit. The changes are shown graphically in **Figure 19**.

Summary

As stated earlier, travel times and speeds were computed for the Parkway from north of the Hillsdale Toll Plaza to the Essex County line, a distance of approximately 13.5 miles. Total travel time and average speeds are shown in **Table 11**. The average time reduction shown is accrued over the total length, but is due to the operational changes at the toll plazas. Shorter trips using this section would also realize the average time reduction shown in the tables. Trips entering and exiting at intermediate points however may exhibit significant ramp delays due to traffic growth on the entrance and exit ramps. Calibration of these future year ramp operations was beyond the scope of this first phase of the project.

Annual travel time reductions and cost savings are computed by multiplying the savings per vehicle by an average hourly wage of \$19.50 per hour per capita. This hourly wage data is based on the average of Bergen and Passaic County residents for the year 2000 (Source: 1999 Income: U.S. Dept. of Commerce, Bureau of Economic Analysis, May 3 2001, Prepared By: New Jersey Department of Labor, May 2001), adjusted to 2000 using the Consumer Price Index. These values are also summarized in **Table 11**.

Table 11: Future Travel Time Reductions and Costs Savings

Alternative	Existing	Phase 1	Phase 2	Phase 3	No Action	Phase 4A	Phase 4B
Year	[2000]	[2002]	[2005]	[2008]	[2011]	[2011]	[2011]
Northbound AM							
Total Travel Time [Min.]	16	16	18	17	19	16	16
Average Speed [mph]	51	51	45	48	43	51	51
Average Time Savings [Min.]		0	-2	-1	-3	0	0
Annual Savings Per Vehicle [Hrs.]		0	-10	-5	-15	0	0
Annual Savings Per Vehicle [\$]		\$0	-\$200	-\$100	-\$300	\$0	\$0
Southbound PM							
Total Travel Time [Min.]	13	14	14	13	14	13	13
Average Speed [mph]	62	58	58	62	58	62	62
Average Time Savings [Min.]		-1	-1	0	-1	0	0
Annual Savings Per Vehicle [Hrs.]		-3	-3	0	-3	0	0
Annual Savings Per Vehicle [\$]		-\$60	-\$60	\$0	-\$60	\$0	\$0

Typical Trip Analysis

The results for the traffic simulation model for each of the three networks were merged to create the typical trip analysis. This analysis looked at travel across the entire Parkway for each of the Phases in the peak direction of flow: northbound in the morning, southbound in the evening. Future year ramp capacity constraints may significantly affect travel times to and from a specific interchange. Modeling of these constraints was beyond the scope of this effort. The times and speeds reported below reflect mainline travel only.

Six typical trips were considered and are summarized below. These trips include travel on the entire northern section of the Parkway and are as follows:

Trip 1 - is from south of the New York State line to south of the Raritan Toll Plaza. The total travel length is 43.2 miles in the northbound direction and 47.0 miles in the southbound direction.

Trip 2 - is from south of Interchange 153 (Route 3) to south of the Raritan Toll Plaza. The total travel length is 29.9 miles in the northbound direction and 33.7 miles in the southbound direction.

Trip 3 - is from north of Interchange 130 (Route 1) to south of the Raritan Toll Plaza. The total travel length is 14.8 miles in the northbound direction and 11.0 miles in the southbound direction.

Trip 4 - is from south of the New York State line to south of Interchange 153 (Route 3). The total travel length is 13.3 miles.

Trip 5 - is from south of the New York State line to north of Interchange 130 (Route 1). The total travel length is 32.2 miles.

Trip 6 - is from south of Interchange 153 (Route 3) to north of Interchange 130 (Route 1). The total travel length is 18.9 miles.

Travel times and speeds were computed for each typical trip for each phase: existing, 1, 2, 3, 4NA, 4A and 4B. Some highlights of the analysis are discussed briefly below. The complete results of the analysis are shown in **Tables 12 and 13** for the peak direction of travel: northbound in the morning, southbound in the evening.

Vehicles traveling the length of the northern section could expect travel time reductions of three to four minutes over existing conditions during both the morning and evening peak periods. The northern section of the Parkway, Trip 1, extends from the New York State line to points south of the Raritan River, a distance of approximately fifty miles. Typical travel times during the peak periods are about an hour for travel through this section.

As stated earlier, most of the travel time reductions would be due to the widening of the Driscoll Bridge coupled with the elimination of the Raritan Toll Plaza. Consequently, vehicles traveling on the lower part of the northern section could expect travel time reductions of two minutes over existing conditions for southbound travel during the evening peak period and one minute over existing conditions for northbound travel during the morning peak period. This section of the Parkway, Trip 3, extends from US 1 to south of the Raritan River, a distance of less than fifteen miles. Typical travel times during the peak periods are about twenty minutes through this section.

Table 12: Typical Trip Travel Times [minutes]

Alternative	Existing	Phase 1	Phase 2	Phase 3	No Action	Phase 4A	Phase 4B
Year	[2000]	[2002]	[2005]	[2008]	[2011]	[2011]	[2011]
Northbound AM							
Trip 1	56.0	53.0	57.0	56.0	60.0	52.5	53.0
Trip 2	40.0	37.0	39.0	39.0	41.0	36.5	37.0
Trip 3	17.0	15.0	17.0	17.0	18.0	16.0	16.0
Trip 4	16.0	16.0	18.0	17.0	19.0	16.0	16.0
Trip 5	39.0	38.0	40.0	39.0	42.0	36.5	37.0
Trip 6	23.0	22.0	22.0	22.0	23.0	20.5	21.0
Southbound PM							
Trip 1	53.5	52.5	52.0	51.0	57.5	50.5	49.5
Trip 2	40.5	38.5	38.0	38.0	43.5	37.5	36.5
Trip 3	19.0	17.0	17.0	17.0	22.0	17.0	17.0
Trip 4	13.0	14.0	14.0	14.0	14.0	13.0	13.0
Trip 5	34.5	35.5	35.0	34.0	35.5	33.5	32.5
Trip 6	21.5	21.5	21.0	21.0	21.5	20.5	19.5

Table 13: Typical Trip Travel Speeds [miles per hour]

Alternative	Existing	Phase 1	Phase 2	Phase 3	No Action	Phase 4A	Phase 4B
Year	[2000]	[2002]	[2005]	[2008]	[2011]	[2011]	[2011]
Northbound AM							
Trip 1	48	49	50	51	45	51	52
Trip 2	45	48	46	46	44	49	48
Trip 3	47	53	53	53	41	53	53
Trip 4	51	51	45	48	43	51	51
Trip 5	49	51	48	49	46	53	52
Trip 6	47	49	49	49	47	53	51
Southbound PM							
Trip 1	53	54	54	55	49	56	57
Trip 2	50	53	53	53	47	54	56
Trip 3	41	46	41	41	38	43	43
Trip 4	62	58	58	58	58	62	62
Trip 5	56	54	55	54	54	57	59
Trip 6	50	50	51	50	50	53	55

Conclusions

This report summarizes the evaluation of the peak period traffic impacts of the removal of barrier toll plazas at the five northern plazas on the Garden State Parkway: Hillsdale, Bergen, Essex, Union and Raritan. This study relied on forecasts of traffic growth, diversion and induced traffic, and EZ Pass usage provided by the Parkway and their consultants.

With the recent installation of EZ Pass at each of the five northern toll plazas, the capacity of the plazas have increased significantly and toll plaza delays are now much less than they were in 1999. Much of the mainline northern section of the Parkway however operates at or near capacity conditions during the morning and evening peak periods. The high traffic volumes using the Parkway cause traffic congestion and delay in the mainline sections as vehicles travel at less than highway speeds.

There are three components to the travel time savings due to the elimination of toll collection at a barrier: slowing down from highway speeds on the approach to the toll plaza; queuing delay at the toll plaza; and returning (or accelerating back) to original highway speeds after paying the toll. The congestion-related benefits of any of the alternatives are therefore a function of the capacity of the toll plaza, processing time for toll collection, as well as the capacity of the adjacent mainline roadway. The simulation model analyzes each of these three components and provides estimates of the travel time and related travel cost savings that would occur in the future. The results of the simulation model are summarized by toll plaza below.

Raritan Toll Plaza

During the evening peak period, the combination of the widening of the Driscoll Bridge from six to seven lanes and the elimination of the toll barrier in the southbound direction would provide significant travel time reductions, in excess of two minutes per vehicle over the existing conditions. The roadway sections north of the bridge and south of the plaza operate at less than capacity conditions. These conditions would allow vehicles in the future to travel at highway speeds through the entire two-mile section. During the morning peak period, the combination of the widening of the Driscoll Bridge from six to eight lanes and the introduction of high speed EZ Pass in the northbound direction would also provide significant travel time reductions, one to two minutes per vehicle over existing conditions.

Union Toll Plaza

In the evening peak period, the elimination of the toll barrier in the southbound direction would provide minimal travel time reductions. The merge with I-78 (Interchange 142) located just north of the toll plaza forces vehicles to slow down as they approach the plaza. In addition, the roadway just south of the plaza operates at capacity with vehicles traveling at greatly reduced speeds. Hence, there is little opportunity for vehicles to travel at highway speeds if the plaza is removed. During the morning peak period, the introduction of high speed EZ Pass in the northbound direction would provide travel time reductions of less than one minute per vehicle over existing conditions. Again, the roadway north of the Union toll plazas operates at capacity with vehicles traveling at greatly reduced speeds during the morning peak period.

Essex Toll Plaza

During both the morning and evening peak periods, the elimination of the toll barrier in the northbound direction would provide travel time reductions of less than one minute per vehicle, over existing conditions. Again, the roadway operates at capacity both upstream and downstream of the toll plaza providing little opportunity for vehicles to travel at highway speeds. The introduction of high speed EZ Pass would result in similar travel time reductions in the southbound direction during both the morning and evening peak period.

Bergen Toll Plaza

In both the morning and evening peak periods the elimination of the toll barrier in the southbound direction would result in travel time reductions of approximately one minute per vehicle, over existing conditions. The roadway conditions upstream and downstream of the plaza would allow vehicles to travel at highway speeds through the toll plaza area. The introduction of high speed EZ Pass would result in similar travel time reductions in the northbound direction during the evening peak period. Travel time reductions would be less during the morning peak period due to increased roadway congestion.

Hillsdale Toll Plaza

In both the morning and evening peak periods, the elimination of the toll barrier in the northbound direction would result in travel time reductions of one minute or more per vehicle, over existing conditions. There is no roadway congestion to prevent vehicles from traveling at highway speeds through the toll plaza area. Similar travel time reductions could be achieved through the introduction of high speed EZ Pass in the southbound direction.

In total, institution of a one-way toll collection system (i.e., elimination of toll collection in one direction at each barrier plaza) would provide travel time reductions of three to four minutes for vehicles traveling the length of the northern section of the Parkway from the New York State line to points south of the Raritan River, a distance of approximately fifty miles. Typical travel times during the peak periods are about an hour for travel through this section. As stated earlier, most of the travel time reductions would be due to the widening of the Driscoll Bridge coupled with the elimination of the Raritan Toll Plaza.

Figures

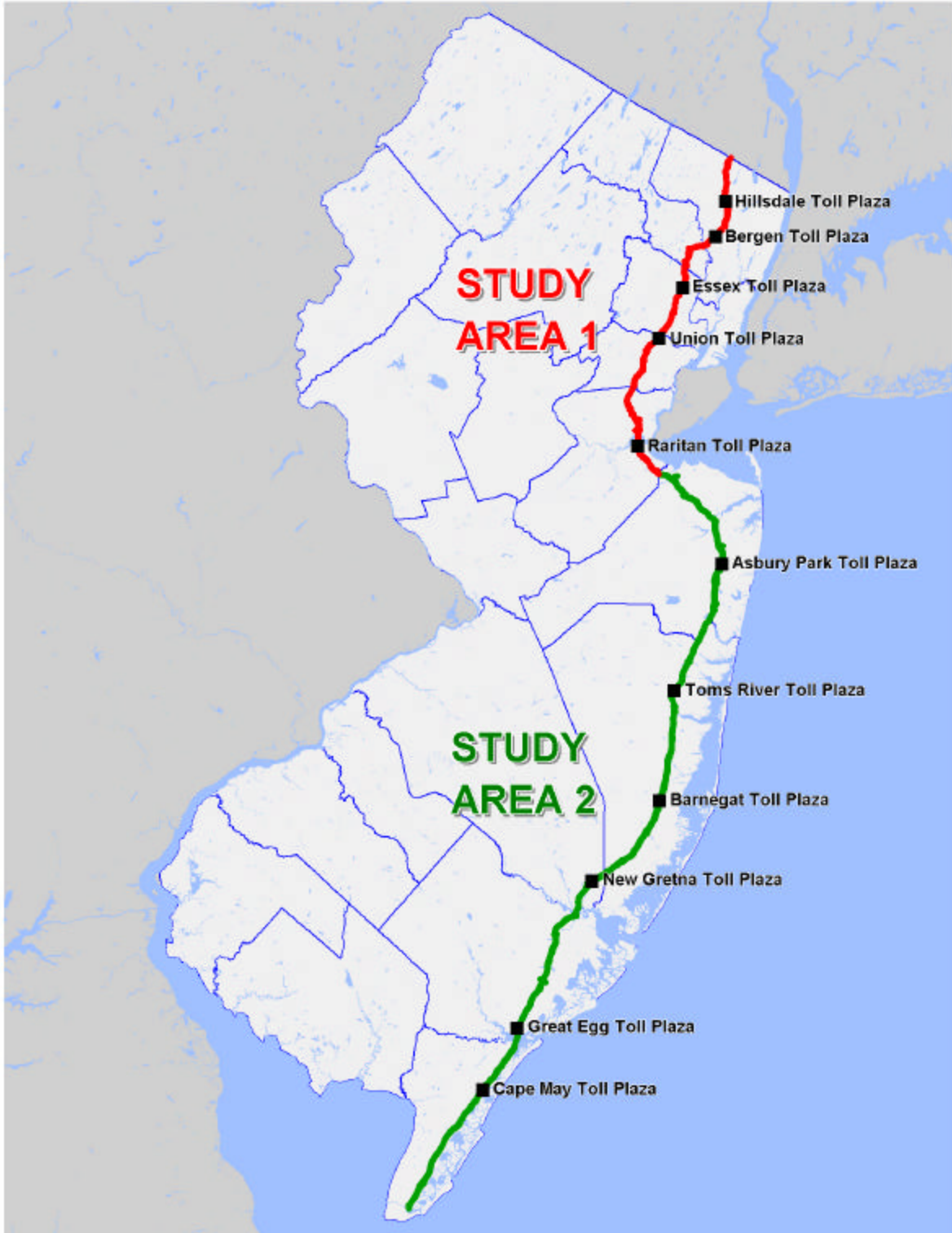


Figure 1: Garden State Parkway Toll Plazas Locations in Study Areas 1 and 2

TEN YEAR PLAN TO REMOVE THE TOLL BARRIERS ON THE GARDEN STATE PARKWAY

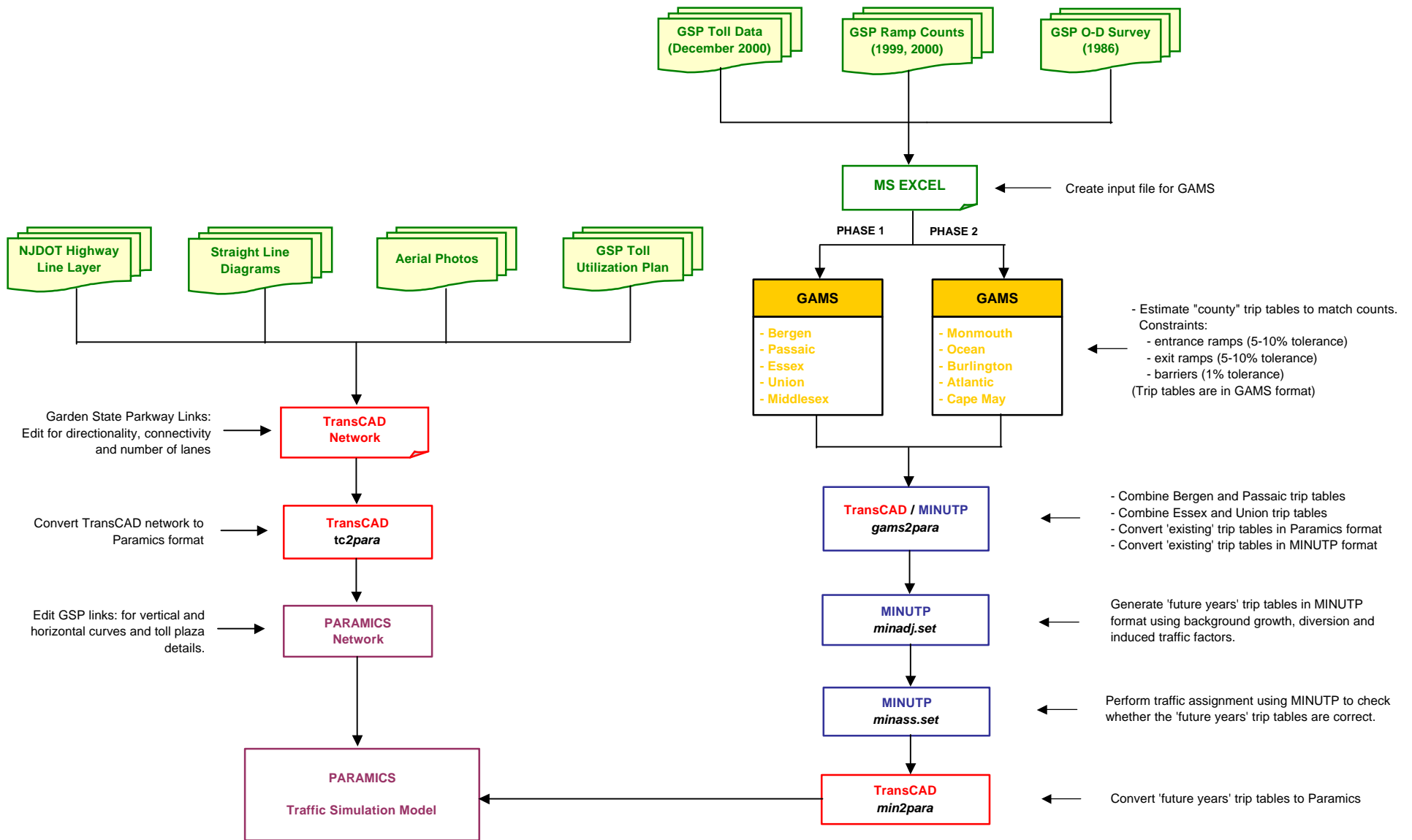


Figure 2: Traffic Model Development Process

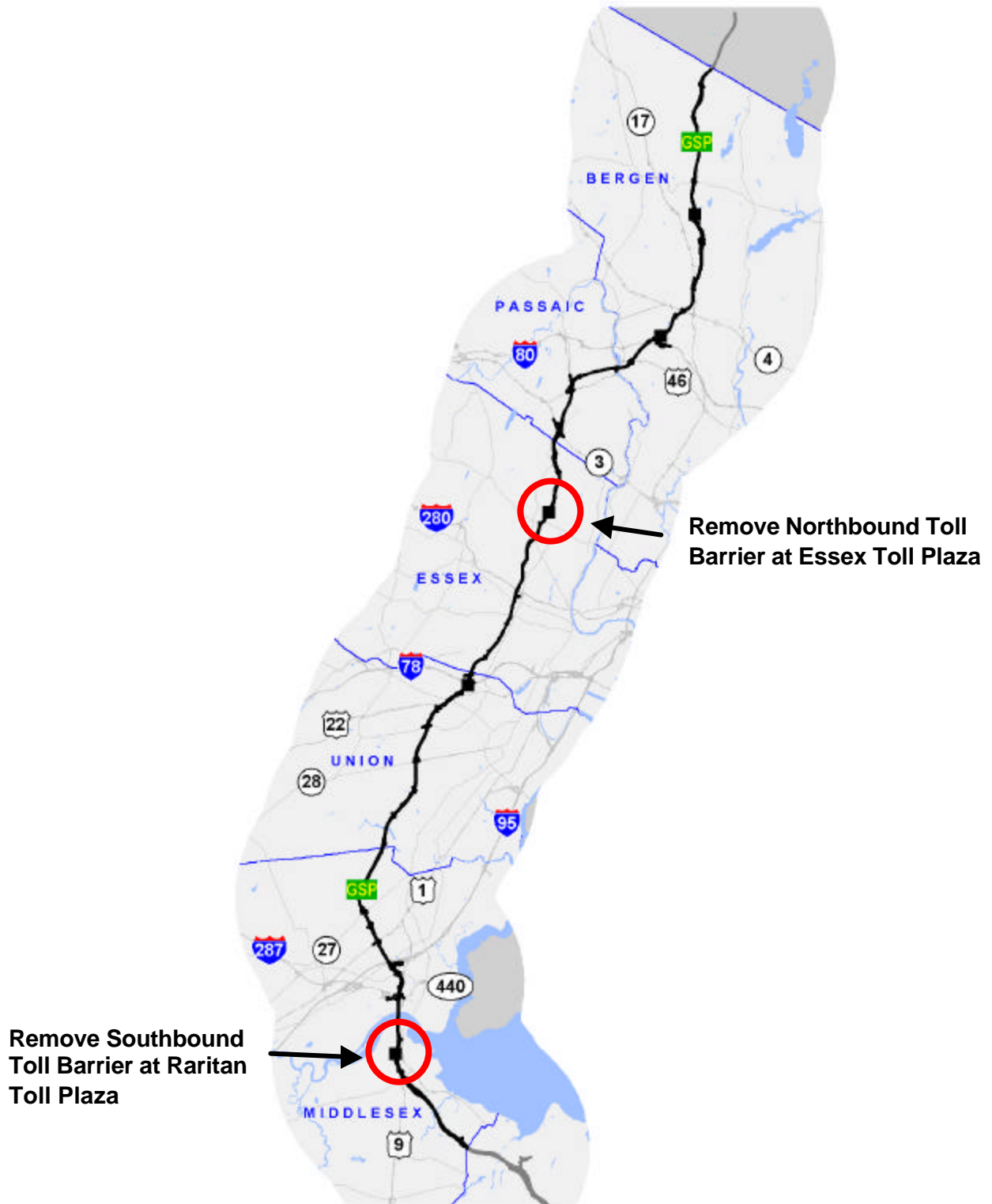


Figure 3: Study Area 1
Phase 1 (2002)

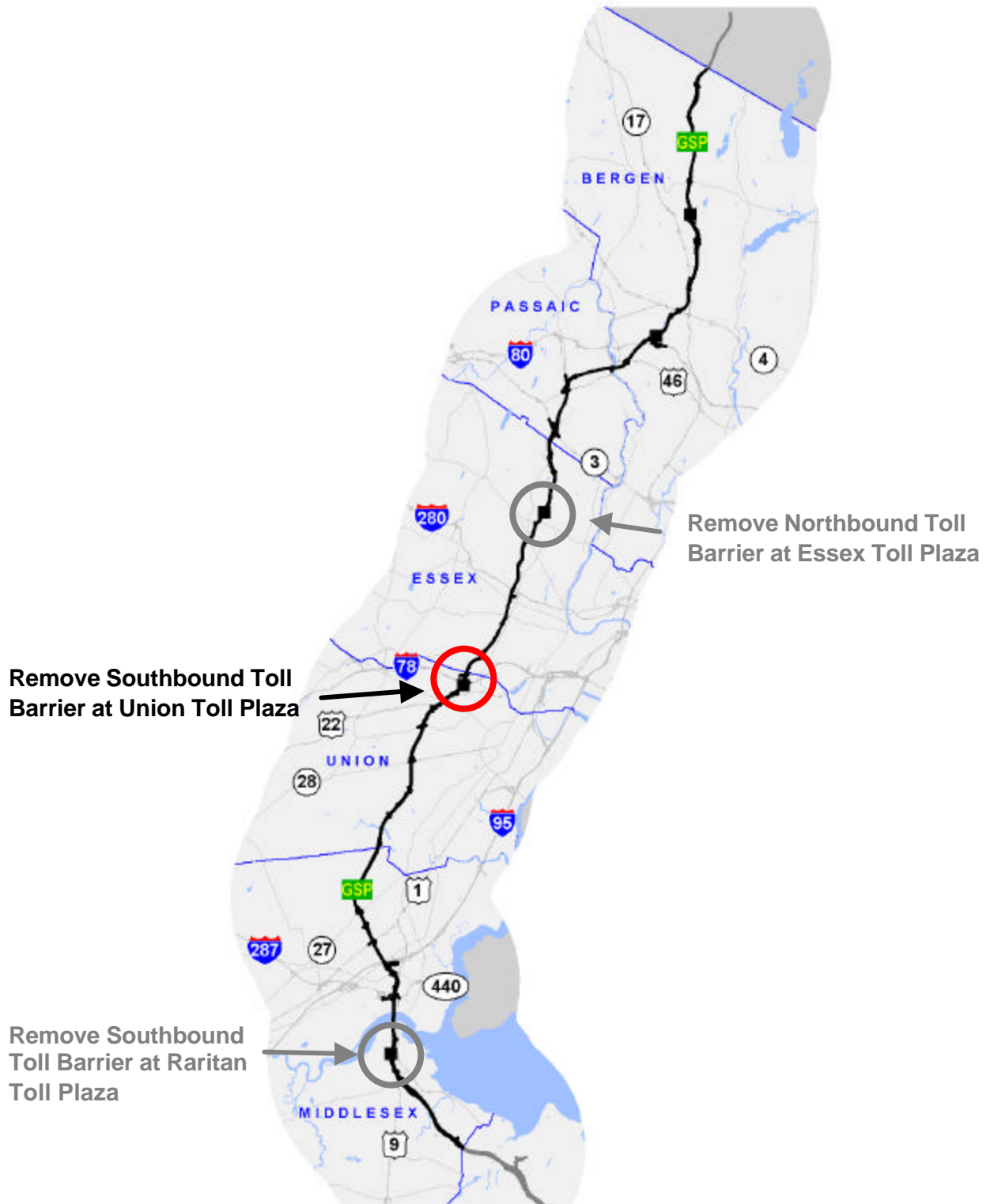


Figure 4: Study Area 1
Phase 2 (2005)

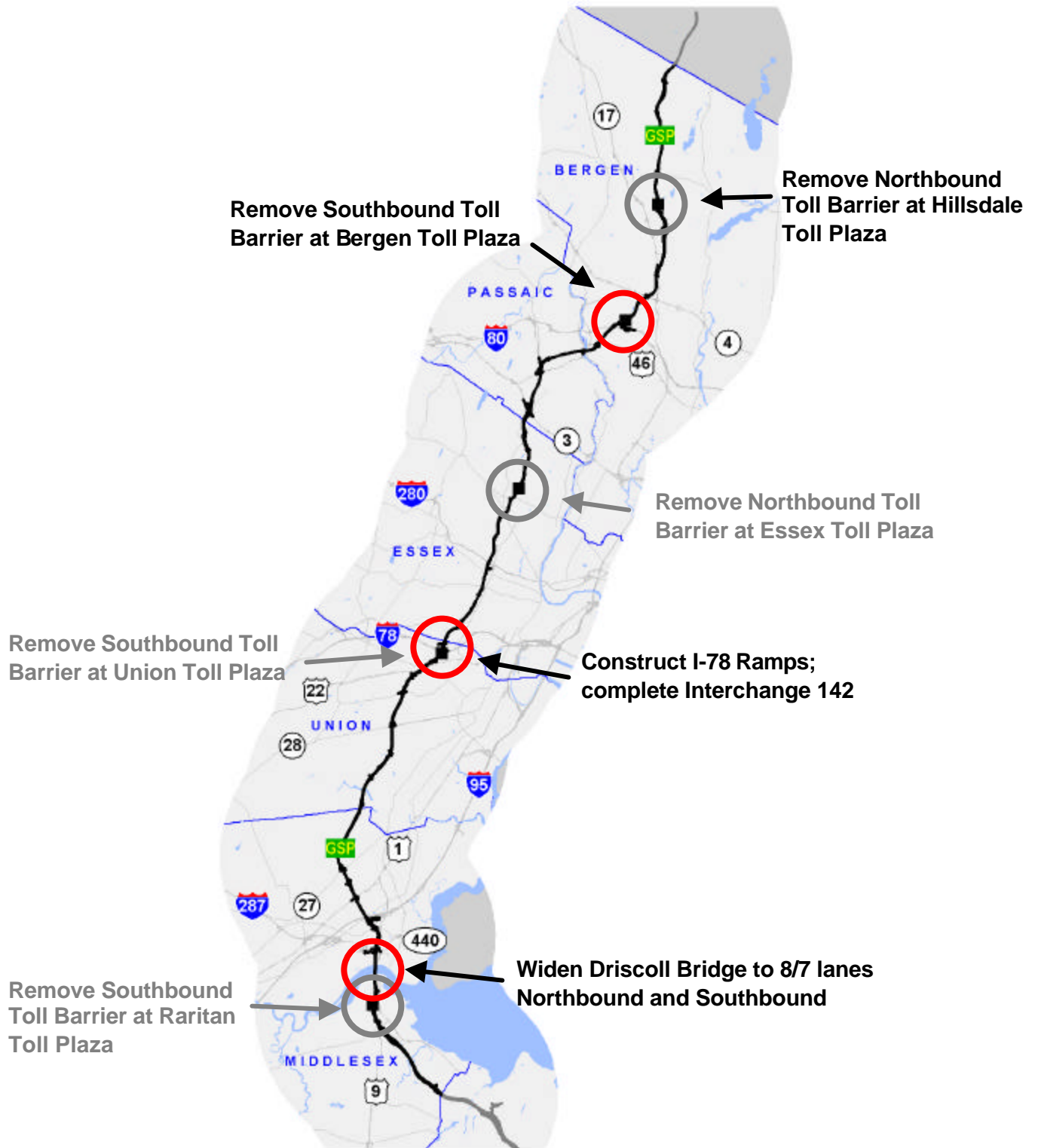


Figure 5: Study Area 1 Phase 3 (2008)

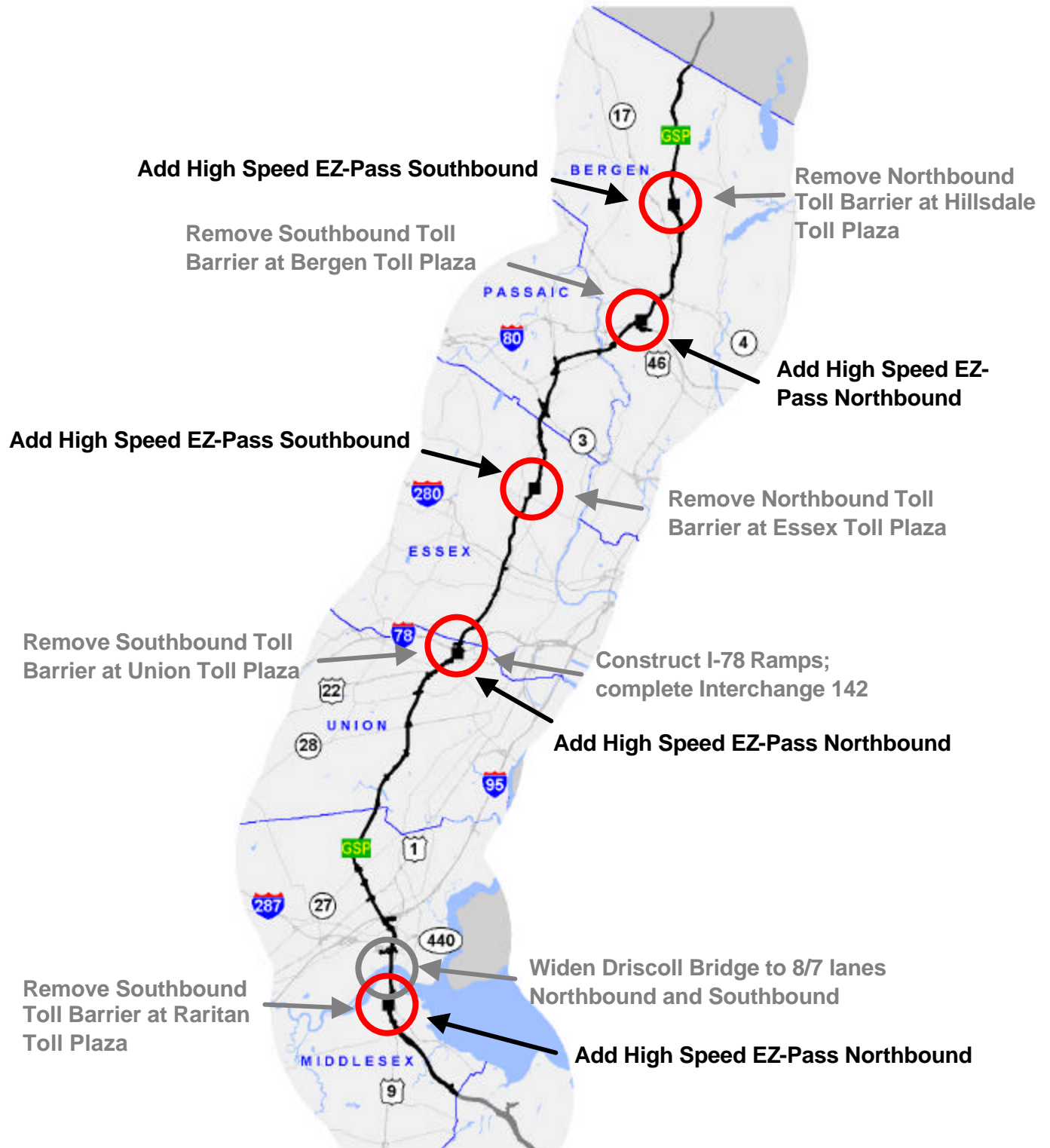


Figure 6: Study Area 1
Phase 4A (2011)

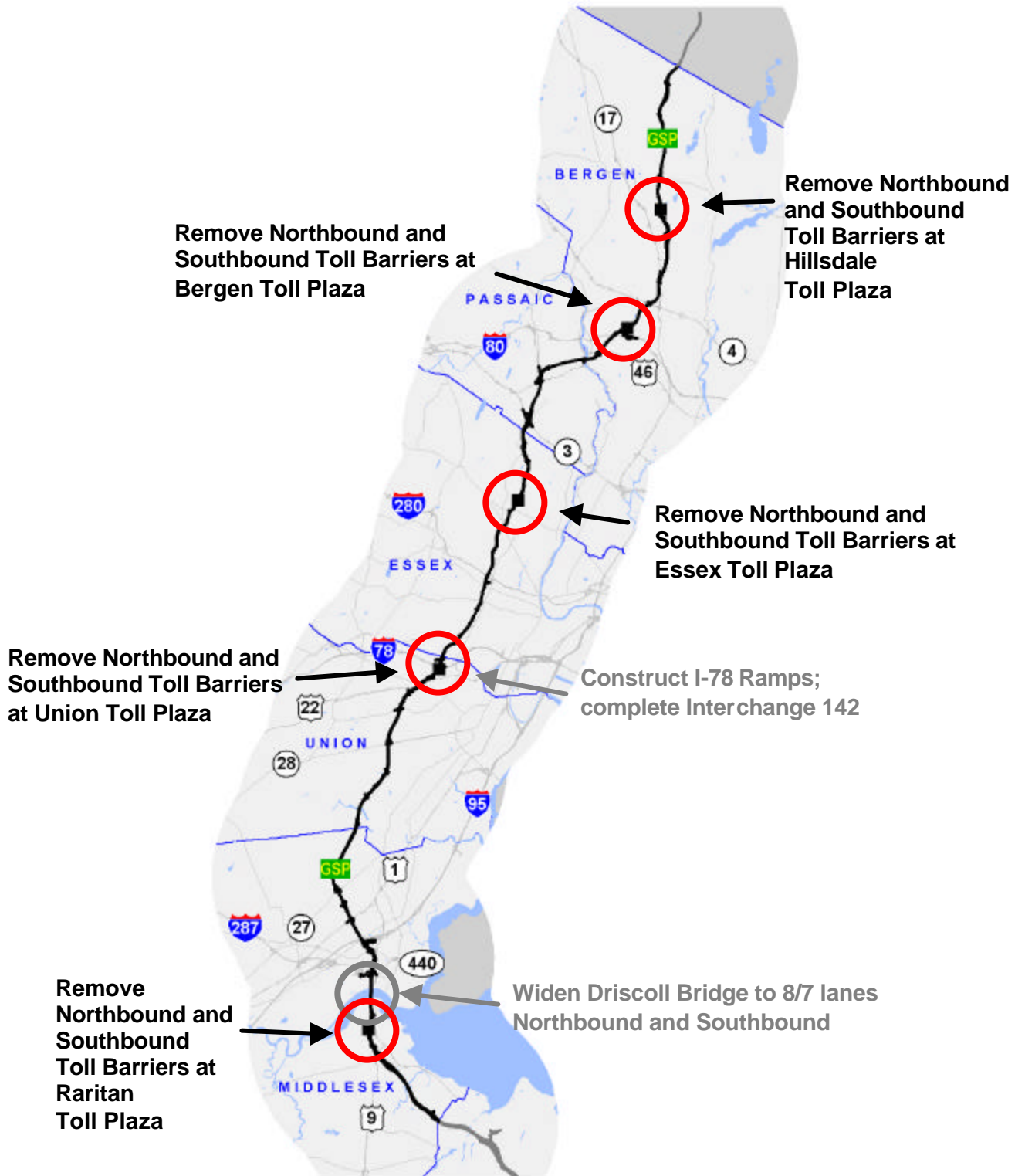


Figure 7: Study Area 1
Phase 4B (2011)

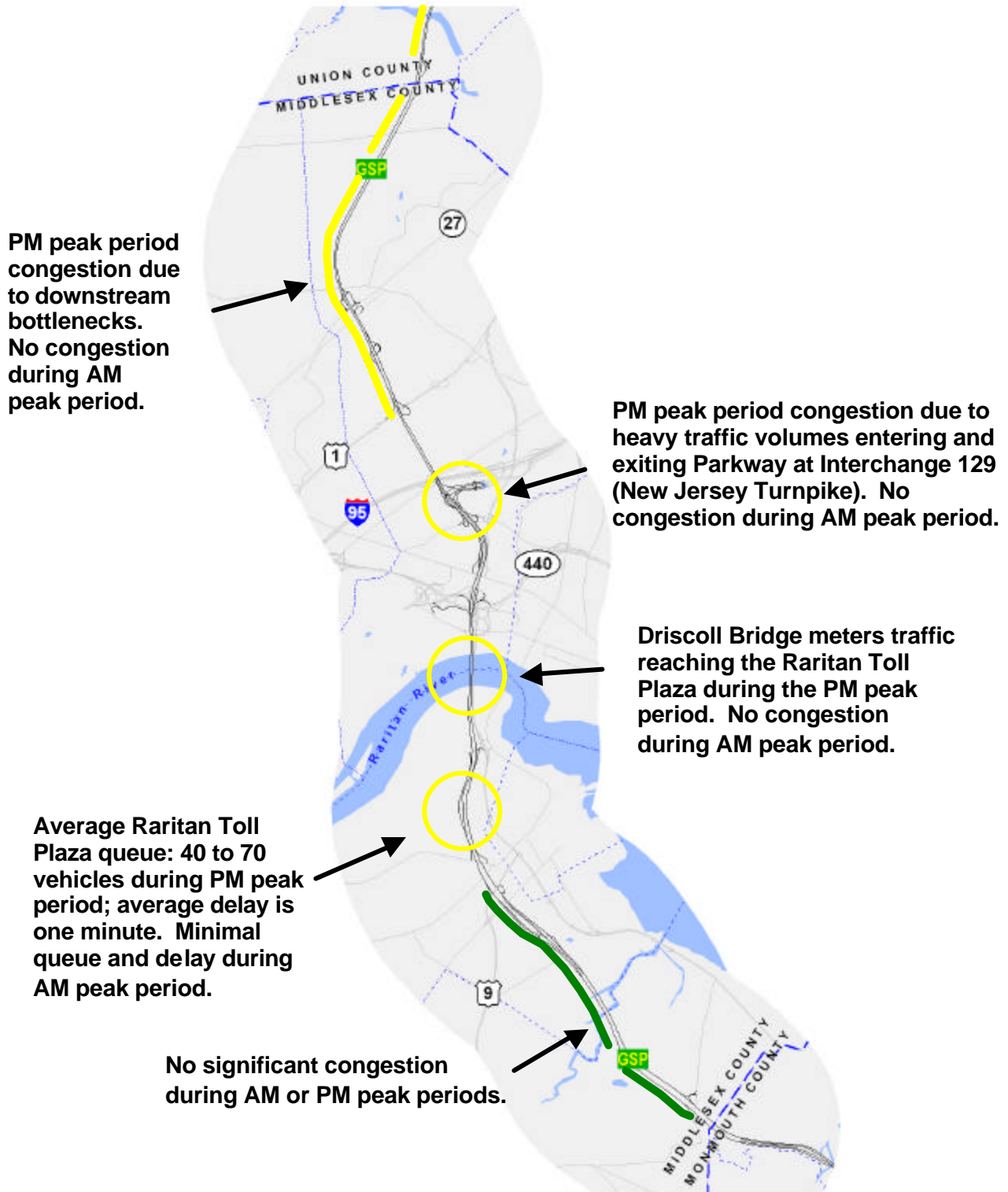


Figure 8: Raritan Toll Plaza - Southbound Existing Conditions

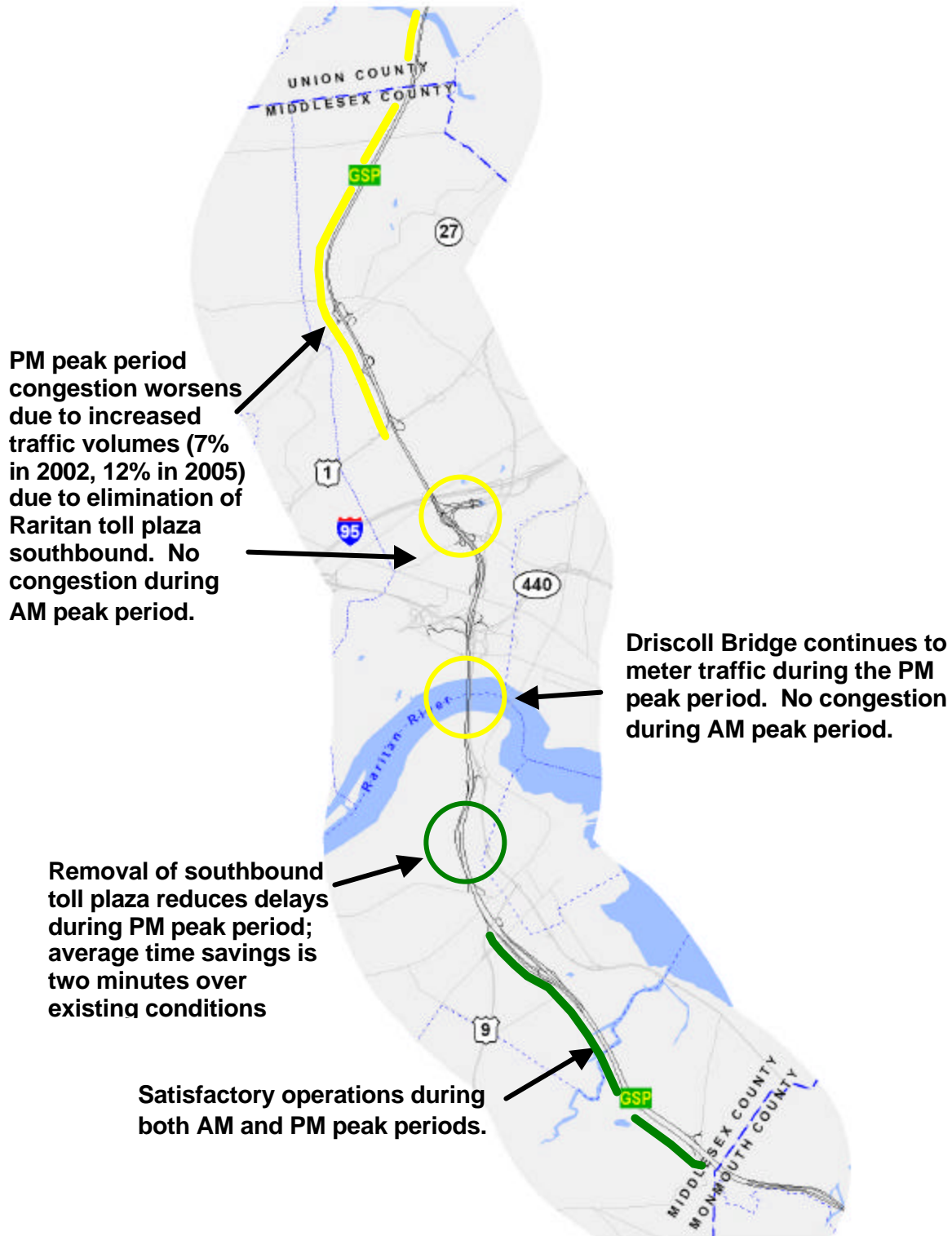


Figure 9: Raritan Toll Plaza -- Southbound Phase 1 (2002) and Phase 2 (2005)

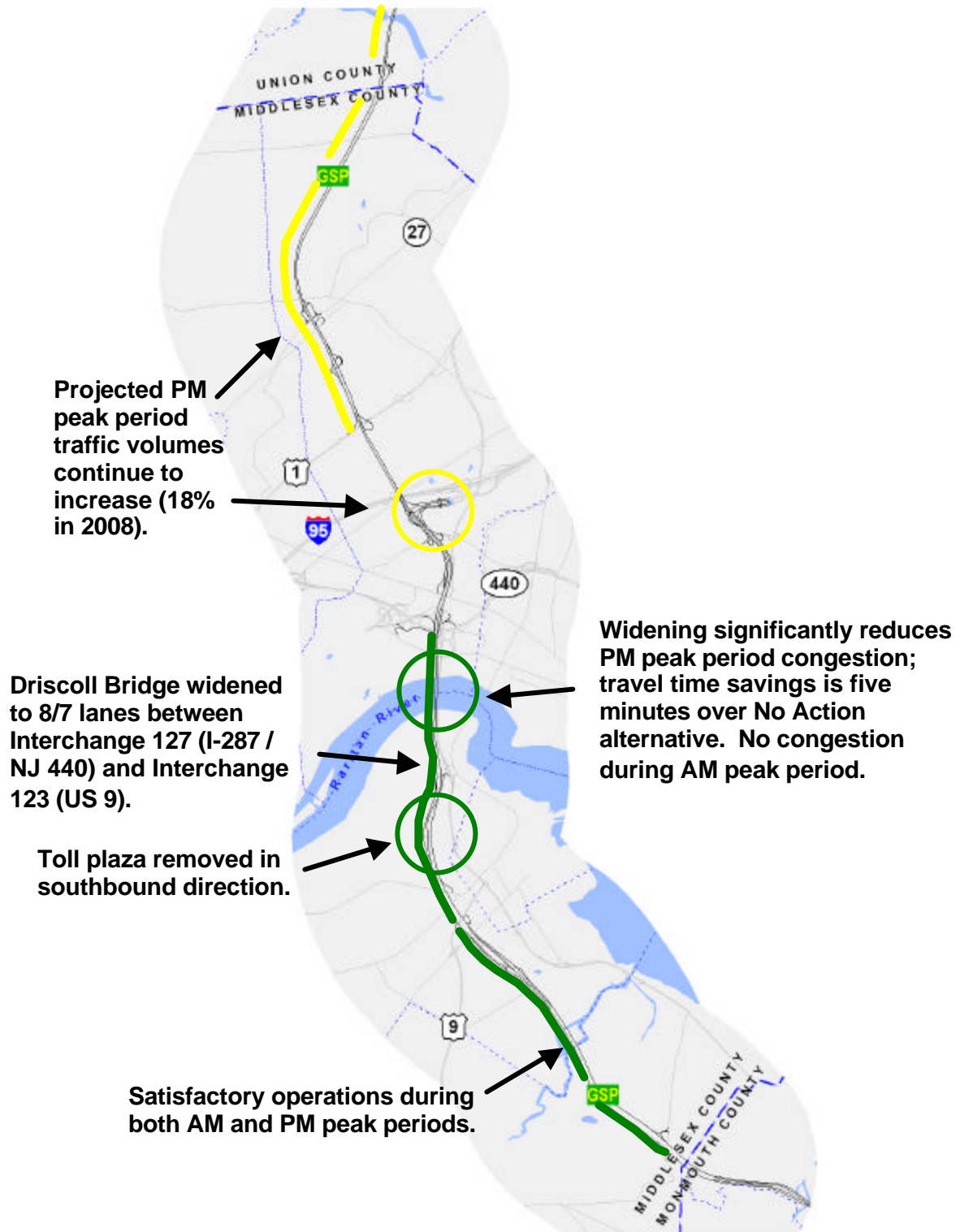


Figure 10: Raritan Toll Plaza -- Southbound Phase 3 (2008)

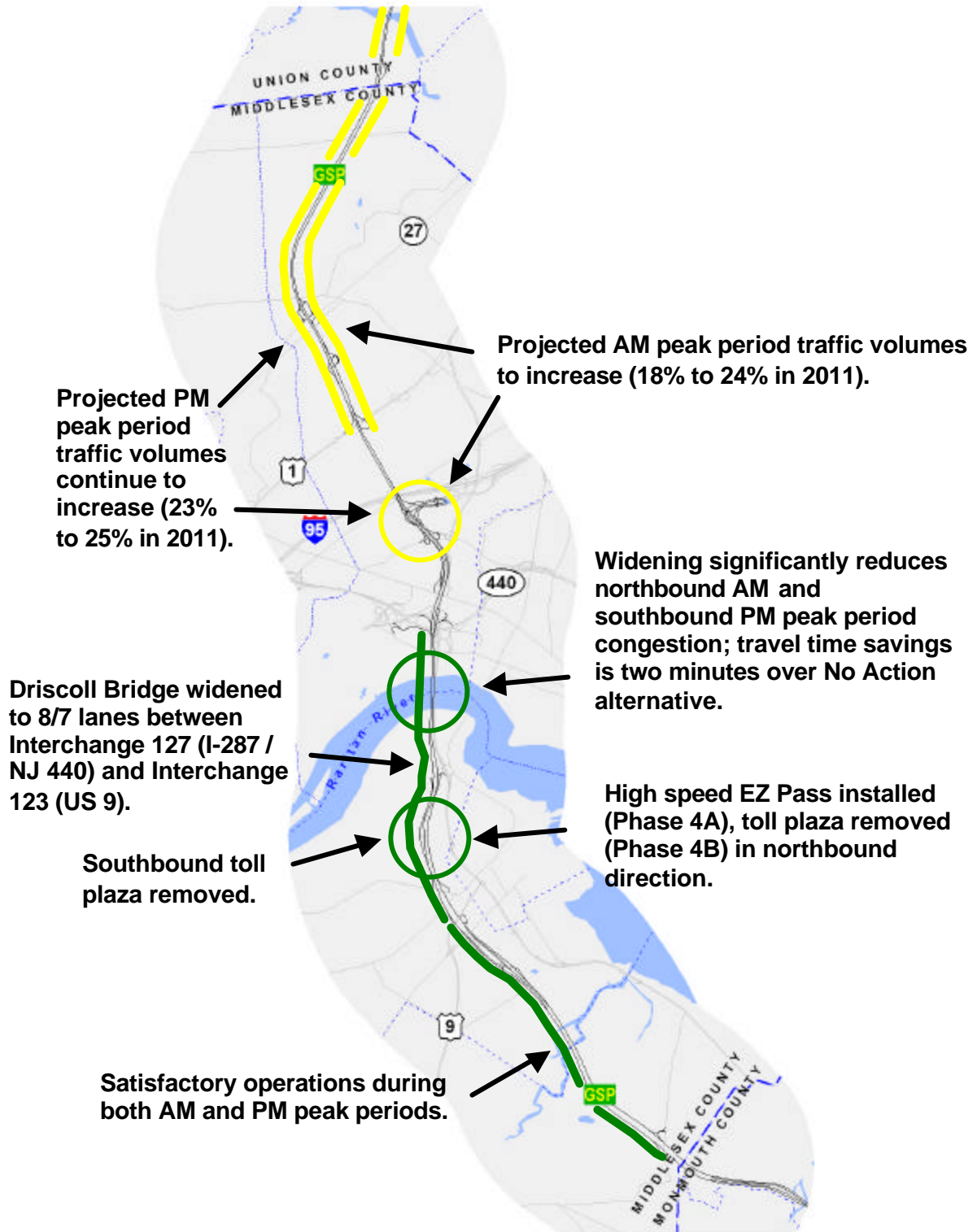


Figure 11: Raritan Toll Plaza Phases 4A and 4B (2011)

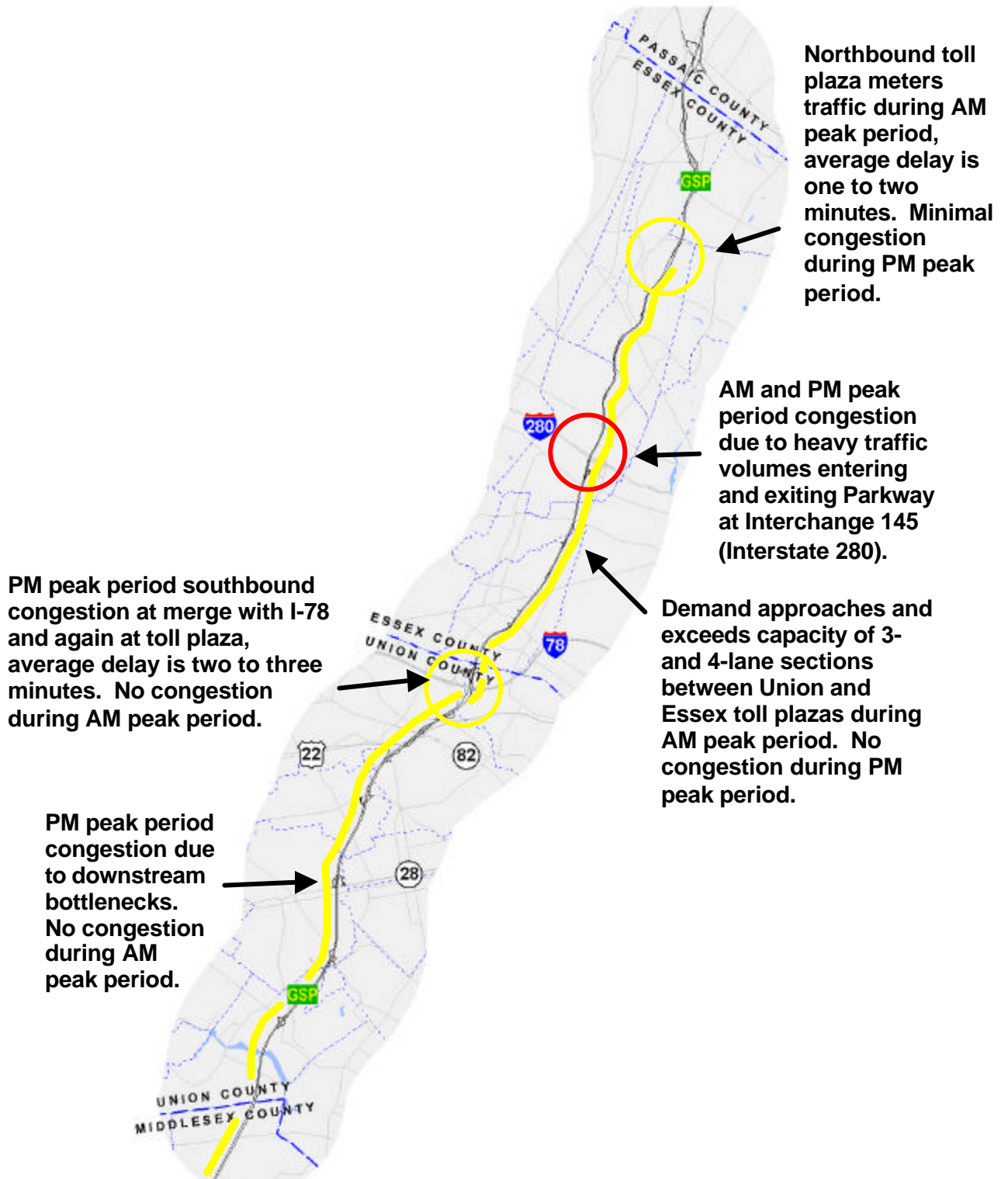


Figure 12: Essex and Union Toll Plazas Existing Conditions

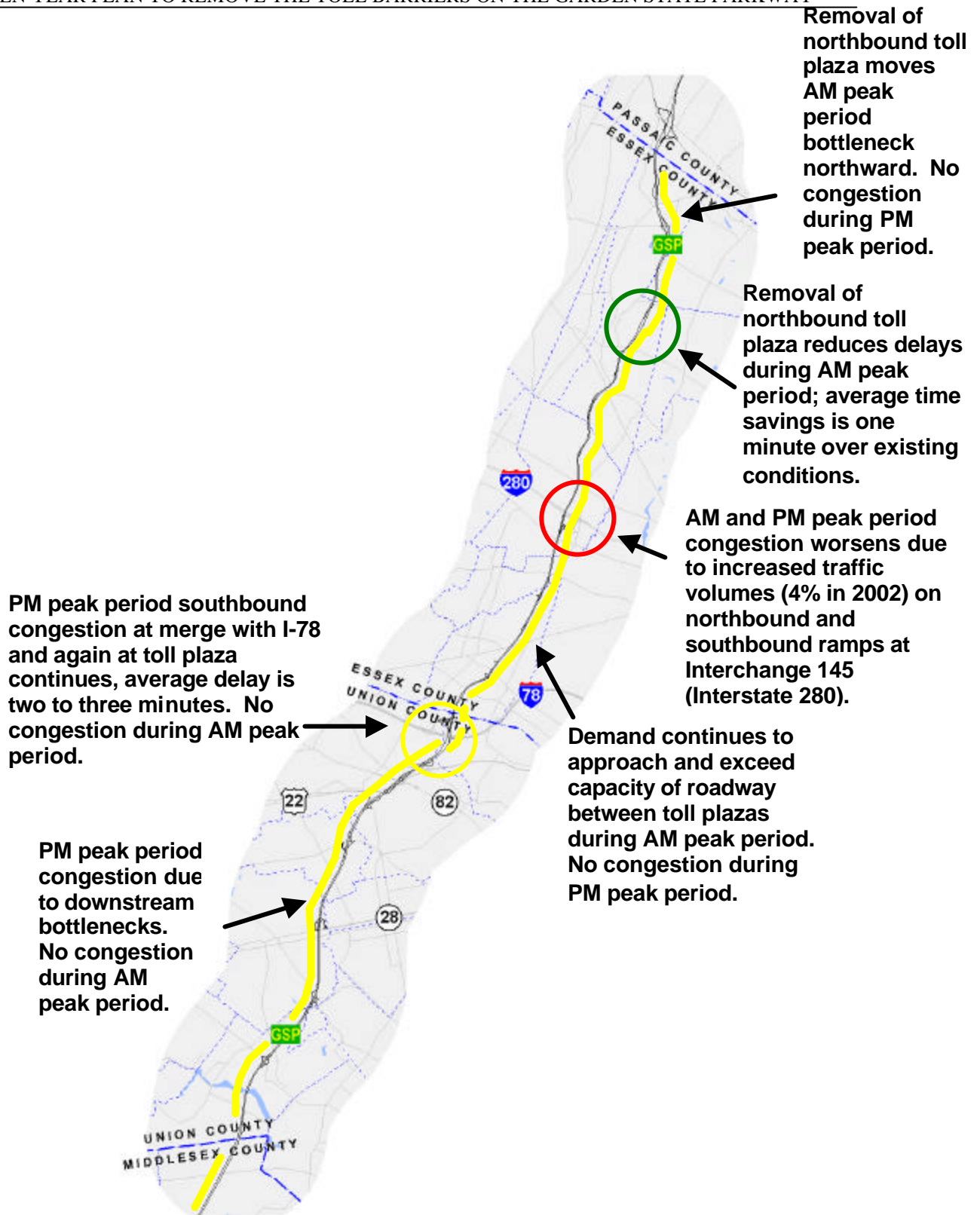


Figure 13: Essex and Union Toll Plazas Phase 1 (2002)

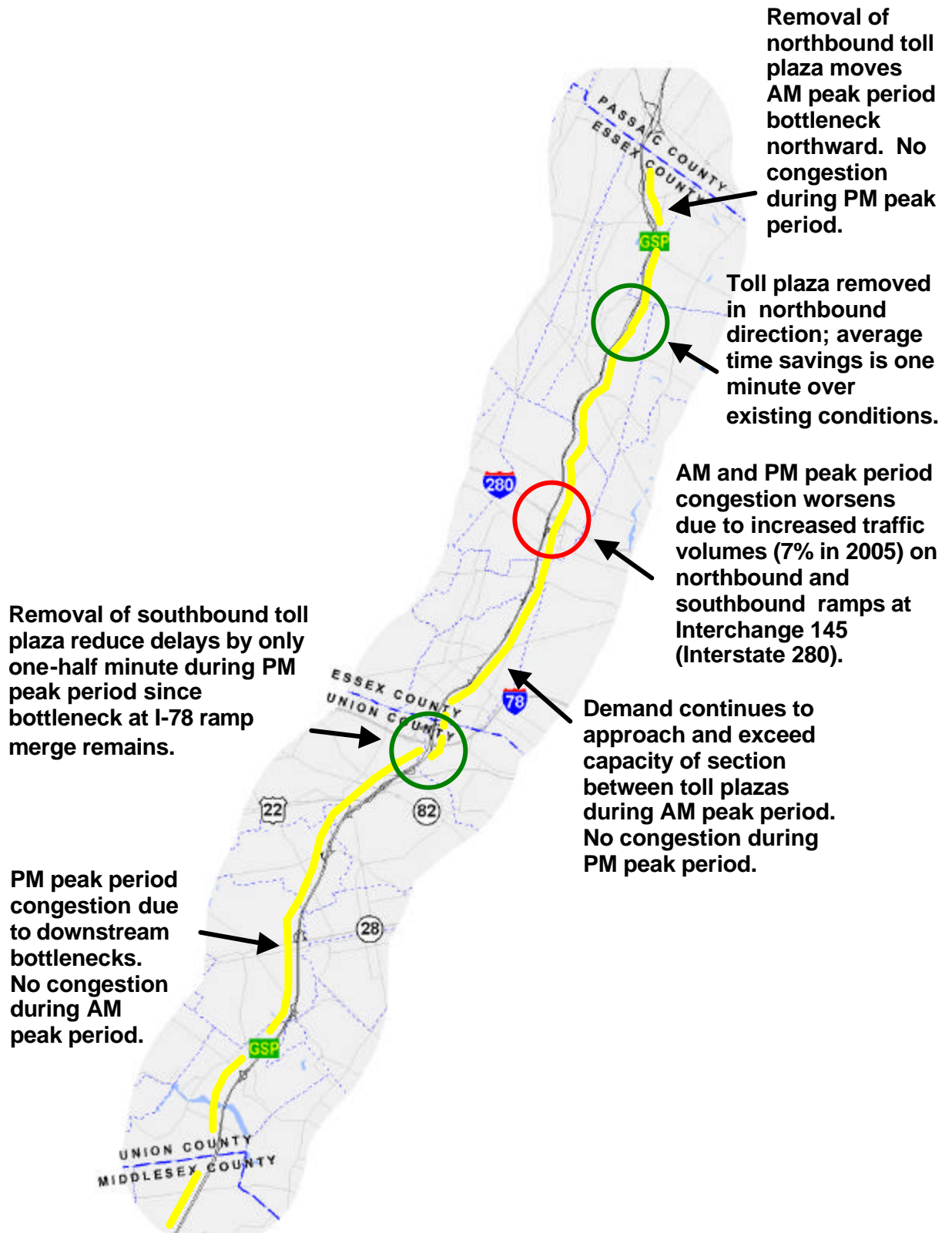


Figure 14: Essex and Union Toll Plazas Phase 2 (2005)

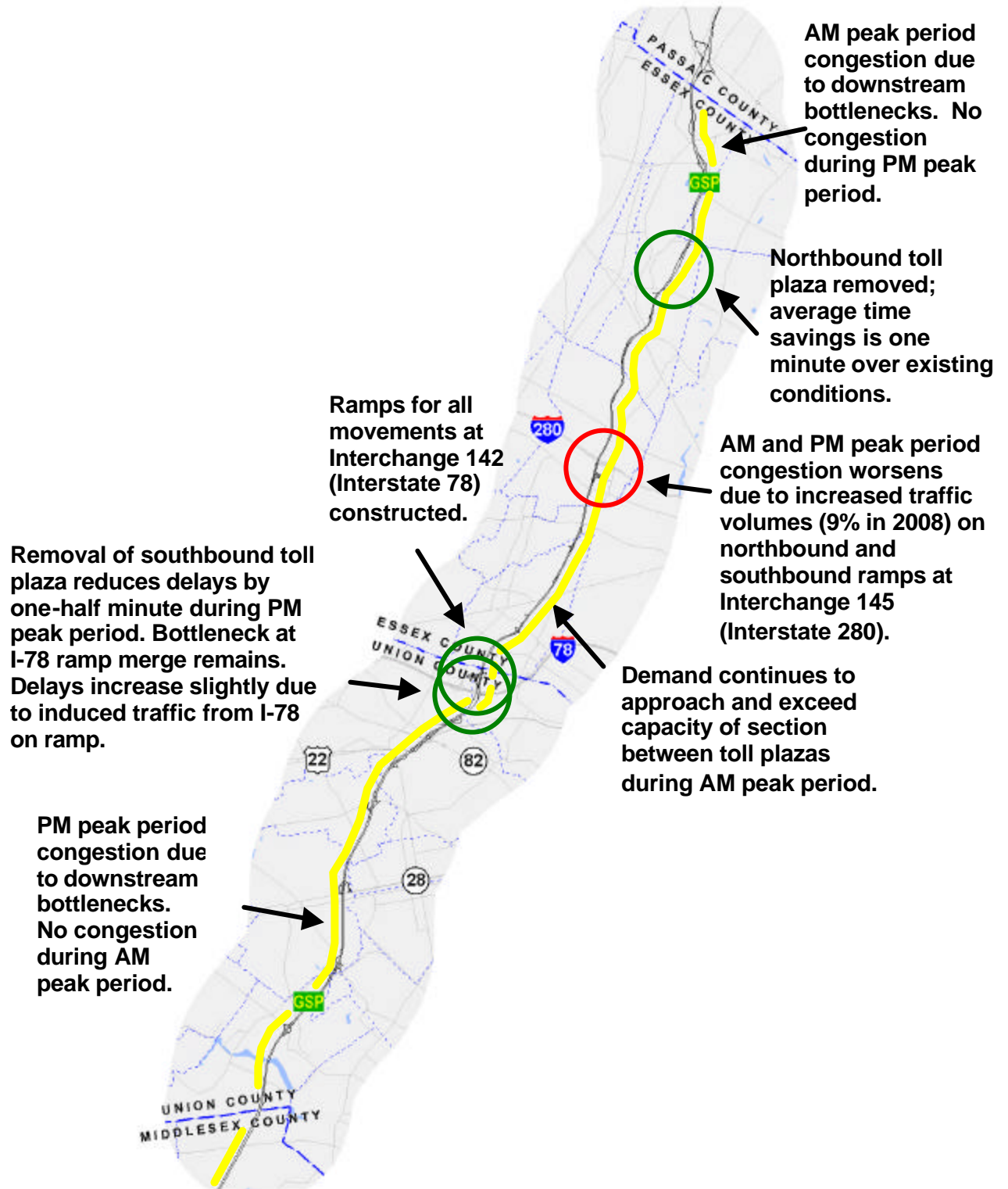


Figure 15: Essex and Union Toll Plazas Phase 3 (2008)

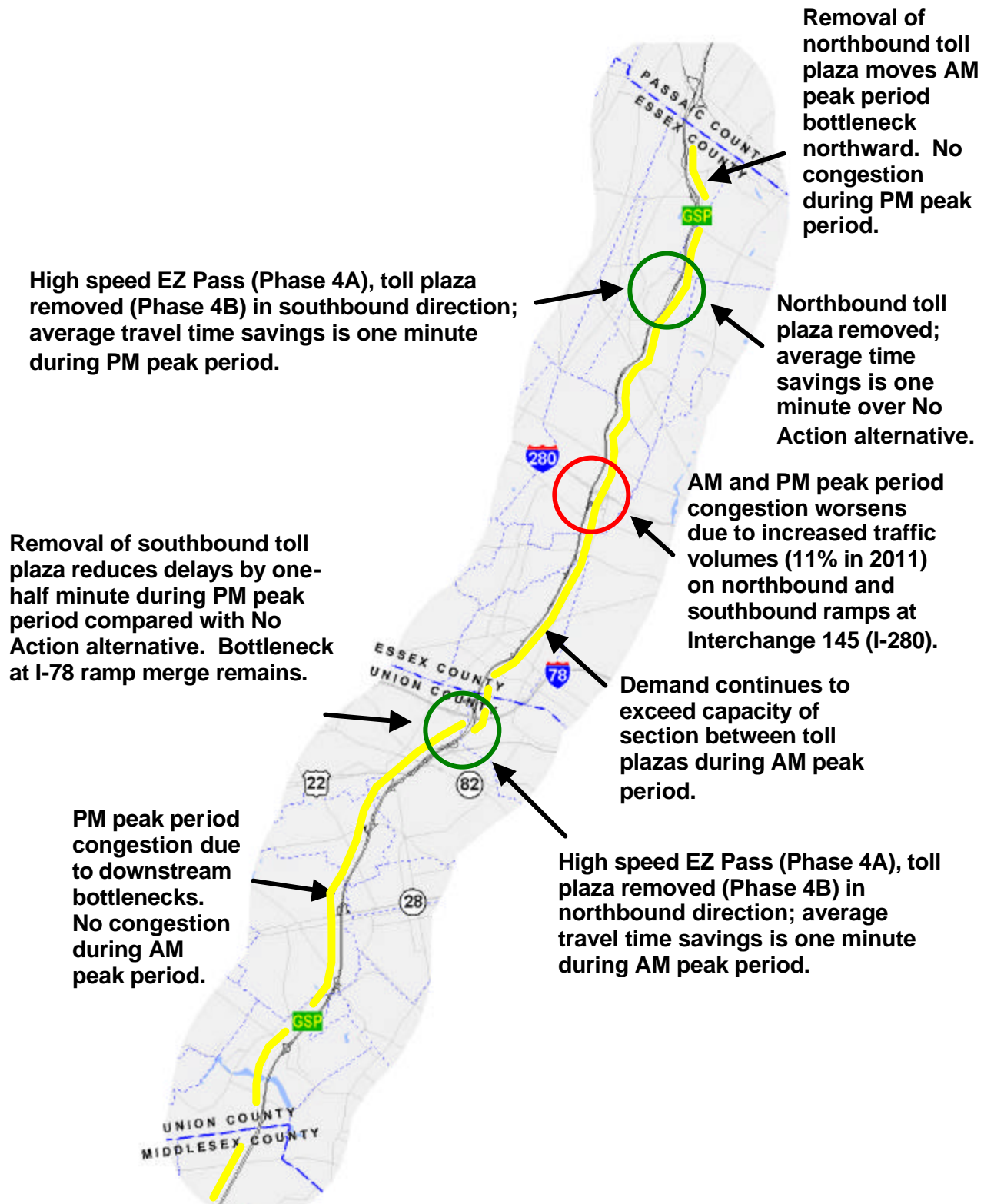


Figure 16: Essex and Union Toll Plazas Phase 4A (2011) and 4B (2011)

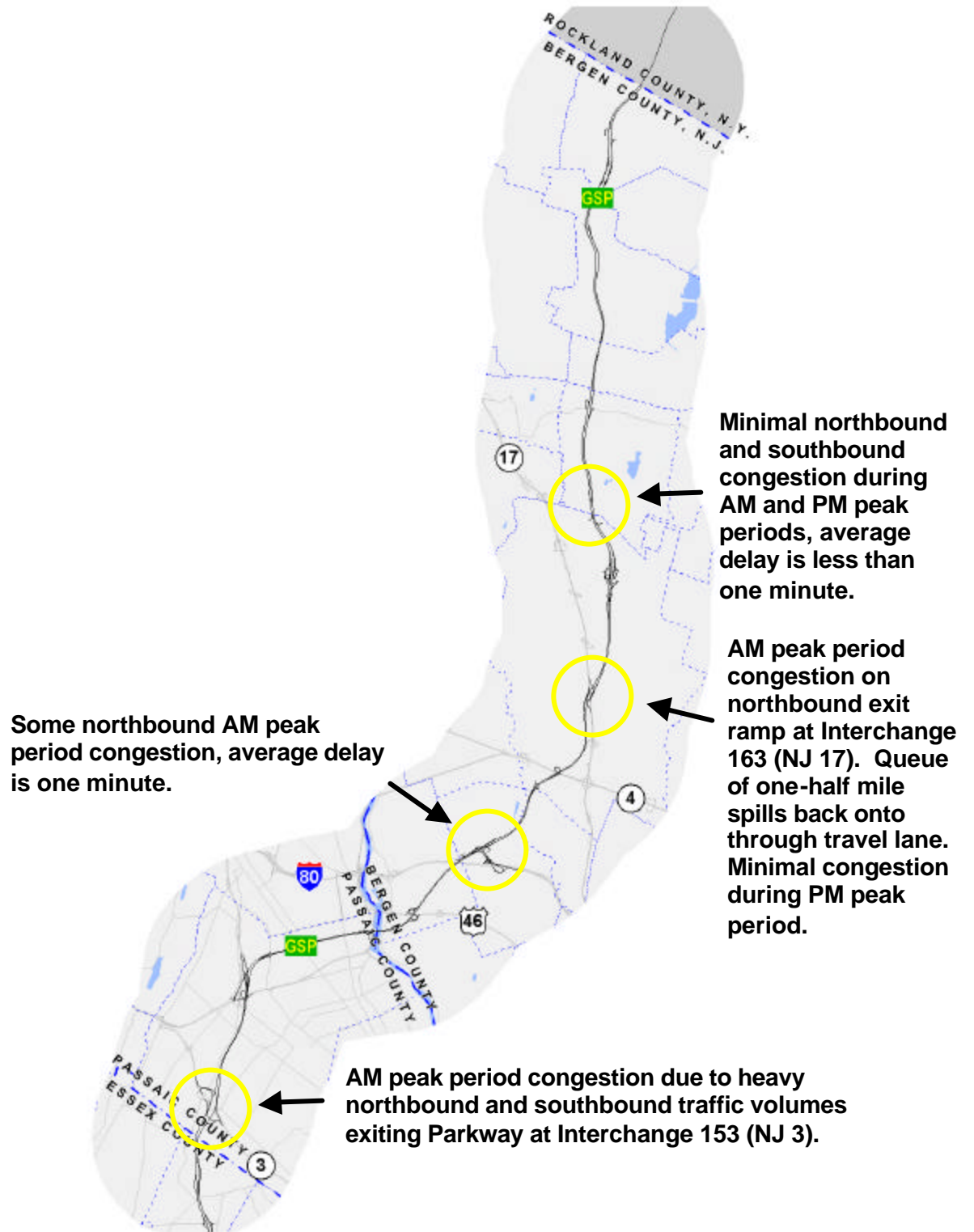


Figure 17: Bergen and Hillsdale Toll Plazas Existing Conditions

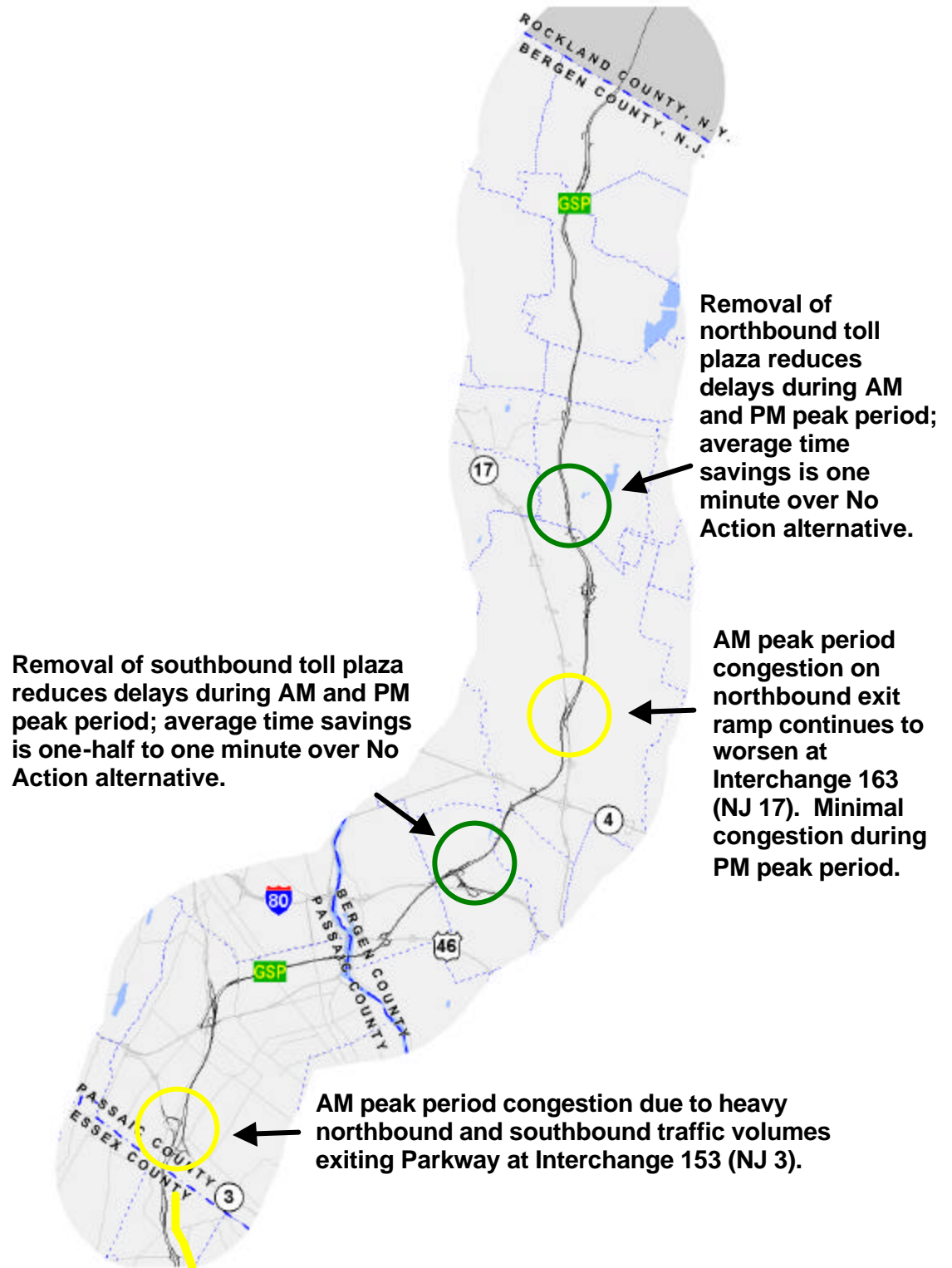


Figure 18: Bergen and Hillsdale Toll Plazas Phase 3 (2008)

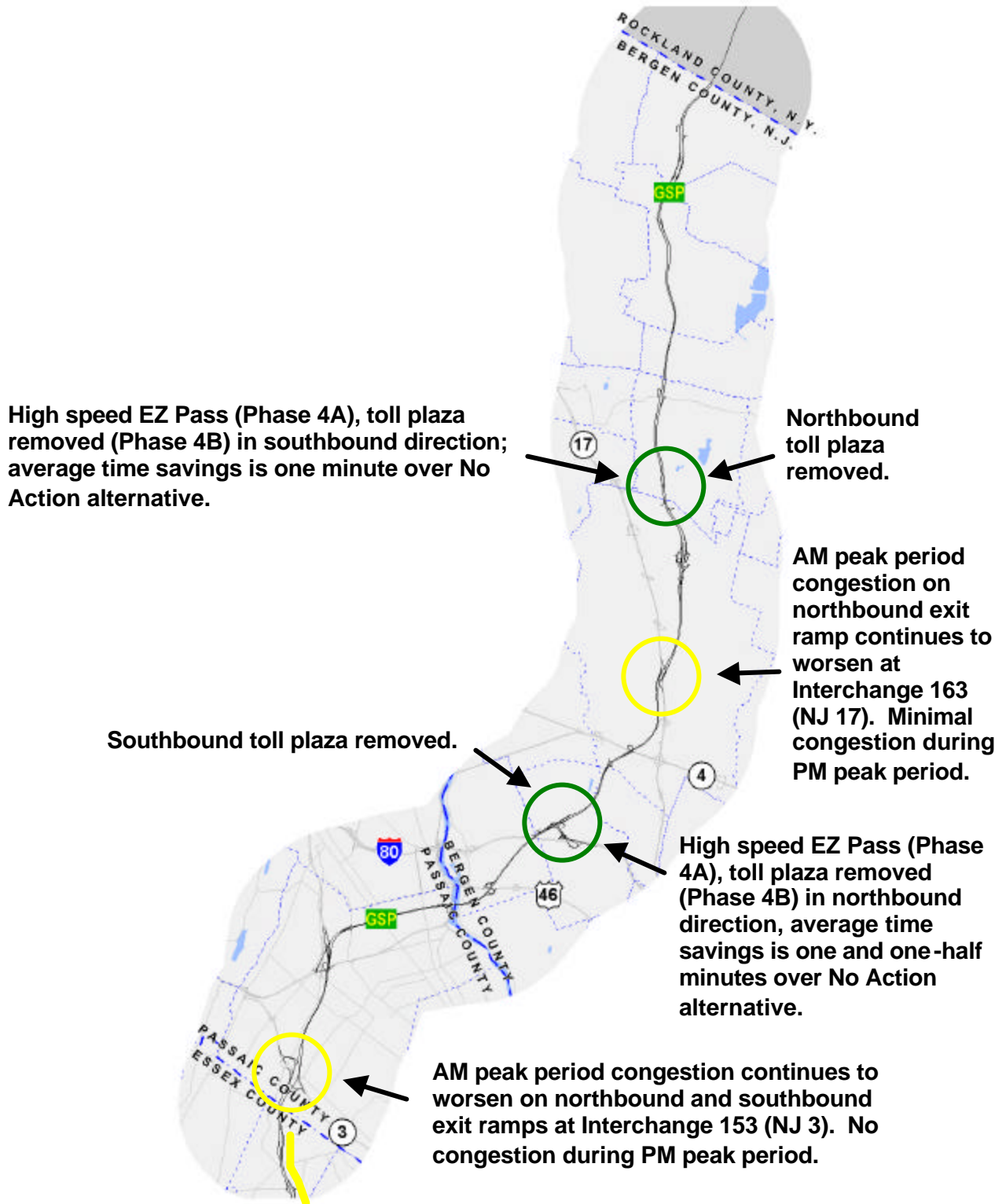


Figure 19: Bergen and Hillsdale Toll Plazas Phase 4A (2011) and Phase 4B (2011)

Appendix

RARITAN TOLL PLAZA

Alternative	Year	Dir	6-7 AM	7-8 AM	8-9 AM	9-10 AM	3-4 PM	4-5 PM	5-6 PM	6-7 PM	Total 6-10 AM	Total 3-7 PM	Total Peaks	Growth	Annual Growth
Counts	2000	NB	13,047	13,924	12,764	8,761	4,873	5,201	5,482	4,449	48,496	20,005	68,501		
Counts	2000	SB	1,906	3,874	4,803	4,264	9,564	12,370	12,923	10,686	14,847	45,543	60,390		
Existing	2000	NB	12911	13821	12574	8624	4859	5162	5397	4363	47,930	19,781	67,711		
Existing	2000	SB	1902	3861	4800	4288	9659	12484	13050	10792	14,851	45,985	60,836		
No action	2002	NB	13301	14240	12954	8885	5006	5318	5560	4494	49,380	20,378	69,758	3.0%	1.5%
No action	2002	SB	1959	3978	4945	4417	9951	12861	13445	11117	15,299	47,374	62,673	3.0%	1.5%
No action	2005	NB	13909	14889	13546	9292	5234	5560	5814	4700	51,636	21,308	72,944	7.7%	1.5%
No action	2005	SB	2049	4160	5171	4619	10406	13450	14059	11626	15,999	49,541	65,540	7.7%	1.5%
No action	2008	NB	14536	15560	14155	9708	5469	5811	6075	4913	53,959	22,268	76,227	12.6%	1.5%
No action	2008	SB	2141	4347	5403	4827	10874	14055	14692	12149	16,718	51,770	68,488	12.6%	1.5%
No action	2011	NB	15189	16258	14792	10146	5717	6073	6350	5134	56,385	23,274	79,659	17.6%	1.5%
No action	2011	SB	2238	4542	5646	5045	11362	14687	15353	12697	17,471	54,099	71,570	17.6%	1.5%
Phase 1	2002	NB	13301	14240	12954	8885	5006	5318	5560	4494	49,380	20,378	69,758	3.0%	1.5%
Phase 1	2002	SB	2034	4134	5137	4589	10339	13362	13970	11549	15,894	49,220	65,114	7.0%	3.5%
Phase 2	2005	NB	13909	14889	13546	9292	5234	5560	5814	4700	51,636	21,308	72,944	7.7%	1.5%
Phase 2	2005	SB	2138	4339	5396	4819	10857	14034	14670	12130	16,692	51,691	68,383	12.4%	2.4%
Phase 3	2008	NB	14536	15560	14155	9708	5469	5811	6075	4913	53,959	22,268	76,227	12.6%	1.5%
Phase 3	2008	SB	2243	4554	5660	5058	11394	14725	15393	12728	17,515	54,240	71,755	17.9%	2.1%
Phase 4A	2011	NB	15189	16258	14792	10146	5717	6073	6350	5134	56,385	23,274	79,659	17.6%	1.5%
Phase 4A	2011	SB	2346	4759	5915	5285	11903	15387	16084	13302	18,305	56,676	74,981	23.3%	1.9%
Phase 4B	2011	NB	15982	17129	15562	10664	6007	6382	6682	5398	59,337	24,469	83,806	23.8%	2.0%
Phase 4B	2011	SB	2375	4818	5990	5351	12052	15579	16286	13469	18,534	57,386	75,920	24.8%	2.0%
Phase 4A	2000	NB	12911	13821	12574	8624	4859	5162	5397	4363	47,930	19,781	67,711	0.0%	
Phase 4A	2000	SB	1993	4045	5028	4493	10120	13079	13672	11307	15,559	48,178	63,737	4.8%	

UNION TOLL PLAZA

Alternative	Year	Dir	6-7 AM	7-8 AM	8-9 AM	9-10 AM	3-4 PM	4-5 PM	5-6 PM	6-7 PM	Total 6-10 AM	Total 3-7 PM	Total Peaks	Growth	Annual Growth
Counts	2000	NB	6,946	8,910	7,811	6,319	6,277	7,047	7,067	5,573	29,986	25,964	55,950		
Counts	2000	SB	4,937	7,752	7,873	5,819	7,608	8,163	7,697	7,565	26,381	31,033	57,414		
Existing	2000	NB	6879	8822	7886	6381	6271	6980	7065	5626	29,968	25,942	55,910		
Existing	2000	SB	4939	7750	7871	5819	7607	8163	7697	7564	26,379	31,031	57,410		
No action	2002	NB	6951	8913	7968	6446	6334	7052	7138	5683	30,278	26,207	56,485	1.0%	0.5%
No action	2002	SB	4989	7830	7952	5879	7688	8248	7779	7642	26,650	31,357	58,007	1.0%	0.5%
No action	2005	NB	7064	9061	8097	6554	6437	7165	7255	5777	30,776	26,634	57,410	2.7%	0.5%
No action	2005	SB	5072	7959	8085	5975	7811	8384	7904	7768	27,091	31,867	58,958	2.7%	0.5%
No action	2008	NB	7508	10308	9175	7394	7277	8206	8433	6661	34,385	30,577	64,962	16.2%	1.9%
No action	2008	SB	5155	8086	8212	6072	7937	8518	8031	7893	27,525	32,379	59,904	4.3%	0.5%
No action	2011	NB	7637	10461	9326	7507	7400	8334	8566	6771	34,931	31,071	66,002	18.1%	1.5%
No action	2011	SB	5238	8218	8347	6169	8065	8654	8161	8020	27,972	32,900	60,872	6.0%	0.5%
Phase 1	2002	NB	7018	8998	8045	6514	6422	7144	7233	5757	30,575	26,556	57,131	2.2%	1.1%
Phase 1	2002	SB	4989	7830	7952	5879	7688	8248	7779	7642	26,650	31,357	58,007	1.0%	0.5%
Phase 2	2005	NB	7154	9171	8200	6643	6554	7288	7382	5875	31,168	27,099	58,267	4.2%	0.8%
Phase 2	2005	SB	5235	8193	8304	6130	8040	8604	8109	7971	27,862	32,724	60,586	5.5%	1.1%
Phase 3	2008	NB	7614	10443	9299	7499	7416	8351	8585	6780	34,855	31,132	65,987	18.0%	2.1%
Phase 3	2008	SB	5388	8417	8524	6294	8262	8831	8322	8182	28,623	33,597	62,220	8.4%	1.0%
Phase 4A	2011	NB	7743	10597	9452	7613	7542	8483	8721	6890	35,405	31,636	67,041	19.9%	1.7%
Phase 4A	2011	SB	5474	8555	8663	6394	8396	8973	8456	8314	29,086	34,139	63,225	10.1%	0.9%
Phase 4B	2011	NB	8458	11574	10319	8310	8228	9259	9508	7524	38,661	34,519	73,180	30.9%	2.5%
Phase 4B	2011	SB	5709	8920	8990	6689	8691	9258	8725	8590	30,308	35,264	65,572	14.2%	1.2%
Phase 4A	2000	NB	6981	8949	8004	6483	6405	7120	7211	5741	30,417	26,477	56,894	1.8%	
Phase 4A	2000	SB	5162	8067	8169	6032	7919	8463	7976	7841	27,430	32,199	59,629	3.9%	

ESSEX TOLL PLAZA

Alternative	Year	Dir	6-7 AM	7-8 AM	8-9 AM	9-10 AM	3-4 PM	4-5 PM	5-6 PM	6-7 PM	Total 6-10 AM	Total 3-7 PM	Total Peaks	Growth	Annual Growth
Counts	2000	NB	4,998	6,753	6,297	4,792	5,712	6,110	5,889	5,482	22,840	23,193	46,033		
Counts	2000	SB	4,370	6,427	5,361	4,438	5,596	5,337	5,703	5,307	20,596	21,943	42,539		
Existing	2000	NB	4998	6752	6235	4791	5748	6134	5946	5425	22,776	23,253	46,029		
Existing	2000	SB	4332	6326	5356	4505	5544	5257	5604	5348	20,519	21,753	42,272		
No action	2002	NB	5050	6823	6303	4841	5808	6198	6008	5482	23,017	23,496	46,513	1.1%	0.5%
No action	2002	SB	4376	6392	5411	4551	5603	5312	5663	5406	20,730	21,984	42,714	1.0%	0.5%
No action	2005	NB	5133	6935	6404	4921	5901	6296	6106	5573	23,393	23,876	47,269	2.7%	0.5%
No action	2005	SB	4450	6497	5499	4627	5694	5399	5755	5494	21,073	22,342	43,415	2.7%	0.5%
No action	2008	NB	5215	7045	6506	4999	5999	6401	6204	5661	23,765	24,265	48,030	4.3%	0.5%
No action	2008	SB	4519	6601	5587	4701	5784	5487	5849	5580	21,408	22,700	44,108	4.3%	0.5%
No action	2011	NB	5299	7157	6613	5081	6095	6505	6306	5752	24,150	24,658	48,808	6.0%	0.5%
No action	2011	SB	4594	6707	5681	4775	5878	5574	5941	5671	21,757	23,064	44,821	6.0%	0.5%
Phase 1	2002	NB	5185	7037	6486	4970	5997	6401	6202	5674	23,678	24,274	47,952	4.2%	2.1%
Phase 1	2002	SB	4376	6392	5411	4551	5603	5312	5663	5406	20,730	21,984	42,714	1.0%	0.5%
Phase 2	2005	NB	5311	7216	6649	5092	6154	6567	6365	5828	24,268	24,914	49,182	6.9%	1.3%
Phase 2	2005	SB	4613	6731	5699	4776	5906	5598	5954	5684	21,819	23,142	44,961	6.4%	1.2%
Phase 3	2008	NB	5428	7384	6799	5203	6299	6723	6513	5969	24,814	25,504	50,318	9.3%	1.1%
Phase 3	2008	SB	4752	6932	5872	4914	6085	5770	6132	5850	22,470	23,837	46,307	9.5%	1.1%
Phase 4A	2011	NB	5513	7500	6911	5289	6401	6835	6621	6062	25,213	25,919	51,132	11.1%	1.0%
Phase 4A	2011	SB	4830	7044	5970	4991	6184	5862	6228	5946	22,835	24,220	47,055	11.3%	1.0%
Phase 4B	2011	NB	5959	8077	7454	5712	6887	7353	7125	6515	27,202	27,880	55,082	19.7%	1.6%
Phase 4B	2011	SB	5145	7520	6365	5380	6579	6243	6674	6370	24,410	25,866	50,276	18.9%	1.6%
Phase 4A	2000	NB	5202	7076	6516	4988	6037	6443	6242	5719	23,782	24,441	48,223	4.8%	
Phase 4A	2000	SB	4555	6643	5629	4710	5833	5528	5875	5607	21,537	22,843	44,380	5.0%	

BERGEN TOLL PLAZA

Alternative	Year	Dir	6-7 AM	7-8 AM	8-9 AM	9-10 AM	3-4 PM	4-5 PM	5-6 PM	6-7 PM	Total 6-10 AM	Total 3-7 PM	Total Peaks	Growth	Annual Growth
Counts	2000	NB	2,514	6,624	7,602	4,486	4,464	5,329	6,411	5,473	21,226	21,677	42,903		
Counts	2000	SB	2,651	5,678	5,633	3,507	4,877	5,667	6,744	5,126	17,469	22,414	39,883		
Existing	2000	NB	2539	6621	7680	4485	4421	5325	6476	5430	21,325	21,652	42,977		
Existing	2000	SB	2678	5735	5687	3542	4926	5722	6743	5176	17,642	22,567	40,209		
No action	2002	NB	2570	6698	7767	4539	4475	5390	6554	5497	21,574	21,916	43,490	1.2%	0.6%
No action	2002	SB	2709	5800	5753	3585	4984	5788	6822	5237	17,847	22,831	40,678	1.2%	0.6%
No action	2005	NB	2616	6818	7907	4616	4554	5481	6668	5590	21,957	22,293	44,250	3.0%	0.6%
No action	2005	SB	2756	5904	5856	3645	5071	5890	6943	5328	18,161	23,232	41,393	2.9%	0.6%
No action	2008	NB	2657	6935	8046	4701	4633	5577	6784	5689	22,339	22,683	45,022	4.8%	0.6%
No action	2008	SB	2806	6008	5957	3710	5160	5994	7063	5422	18,481	23,639	42,120	4.8%	0.6%
No action	2011	NB	2706	7058	8185	4780	4712	5677	6904	5789	22,729	23,082	45,811	6.6%	0.6%
No action	2011	SB	2855	6114	6062	3776	5252	6101	7187	5519	18,807	24,059	42,866	6.6%	0.6%
Phase 1	2002	NB	2570	6698	7767	4539	4475	5390	6554	5497	21,574	21,916	43,490	1.2%	0.6%
Phase 1	2002	SB	2709	5800	5753	3585	4984	5788	6822	5237	17,847	22,831	40,678	1.2%	0.6%
Phase 2	2005	NB	2616	6818	7907	4616	4554	5481	6668	5590	21,957	22,293	44,250	3.0%	0.6%
Phase 2	2005	SB	2756	5904	5856	3645	5071	5890	6943	5328	18,161	23,232	41,393	2.9%	0.6%
Phase 3	2008	NB	2737	7162	8329	4841	4765	5745	7000	5859	23,069	23,369	46,438	8.1%	1.0%
Phase 3	2008	SB	3004	6433	6378	3972	5523	6419	7560	5803	19,787	25,305	45,092	12.1%	1.4%
Phase 4A	2011	NB	2787	7290	8474	4921	4844	5847	7123	5963	23,472	23,777	47,249	9.9%	0.9%
Phase 4A	2011	SB	3057	6545	6489	4041	5624	6532	7693	5909	20,132	25,758	45,890	14.1%	1.2%
Phase 4B	2011	NB	3054	7972	9250	5392	5313	6406	7794	6532	25,668	26,045	51,713	20.3%	1.7%
Phase 4B	2011	SB	3223	6901	6850	4262	5920	6880	8108	6220	21,236	27,128	48,364	20.3%	1.7%
Phase 4A	2000	NB	2614	6838	7950	4618	4546	5486	6682	5594	22,020	22,308	44,328	3.1%	
Phase 4A	2000	SB	2868	6140	6087	3791	5275	6125	7218	5541	18,886	24,159	43,045	7.1%	

HILLSDALE TOLL PLAZA

Alternative	Year	Dir	6-7 AM	7-8 AM	8-9 AM	9-10 AM	3-4 PM	4-5 PM	5-6 PM	6-7 PM	Total 6-10 AM	Total 3-7 PM	Total Peaks	Growth	Annual Growth
Counts	2000	NB	1,722	3,436	4,432	2,545	2,623	3,109	3,844	3,207	12,135	12,783	24,918		
Counts	2000	SB	1,609	3,265	3,842	2,532	2,593	3,407	4,127	3,081	11,248	13,208	24,456		
Existing	2000	NB	1704	3468	4476	2544	2649	3107	3882	3238	12,192	12,876	25,068		
Existing	2000	SB	1625	3286	3901	2544	2593	3425	4167	3095	11,356	13,280	24,636		
No action	2002	NB	1723	3508	4527	2573	2681	3143	3928	3276	12,331	13,028	25,359	1.2%	0.6%
No action	2002	SB	1644	3324	3946	2574	2623	3464	4214	3131	11,488	13,432	24,920	1.2%	0.6%
No action	2005	NB	1755	3570	4608	2618	2727	3197	3995	3333	12,551	13,252	25,803	2.9%	0.6%
No action	2005	SB	1672	3383	4017	2619	2670	3527	4290	3187	11,691	13,674	25,365	3.0%	0.6%
No action	2008	NB	1785	3634	4689	2664	2776	3255	4067	3393	12,772	13,491	26,263	4.8%	0.6%
No action	2008	SB	1702	3442	4086	2664	2717	3588	4365	3242	11,894	13,912	25,806	4.7%	0.6%
No action	2011	NB	1817	3696	4772	2712	2824	3312	4140	3452	12,997	13,728	26,725	6.6%	0.6%
No action	2011	SB	1732	3503	4159	2712	2764	3651	4441	3299	12,106	14,155	26,261	6.6%	0.6%
Phase 1	2002	NB	1723	3508	4527	2573	2681	3143	3928	3276	12,331	13,028	25,359	1.2%	0.6%
Phase 1	2002	SB	1644	3324	3946	2574	2623	3464	4214	3131	11,488	13,432	24,920	1.2%	0.6%
Phase 2	2005	NB	1755	3570	4608	2618	2727	3197	3995	3333	12,551	13,252	25,803	2.9%	0.6%
Phase 2	2005	SB	1672	3383	4017	2619	2670	3527	4290	3187	11,691	13,674	25,365	3.0%	0.6%
Phase 3	2008	NB	1940	3949	5094	2895	3017	3537	4420	3686	13,878	14,660	28,538	13.8%	1.6%
Phase 3	2008	SB	1772	3594	4257	2762	2831	3731	4538	3361	12,385	14,461	26,846	9.0%	1.1%
Phase 4A	2011	NB	1974	4017	5185	2945	3067	3597	4498	3751	14,121	14,913	29,034	15.8%	1.3%
Phase 4A	2011	SB	1803	3658	4332	2811	2879	3795	4616	3420	12,604	14,710	27,314	10.9%	0.9%
Phase 4B	2011	NB	2088	4245	5480	3114	3244	3802	4754	3965	14,927	15,765	30,692	22.4%	1.9%
Phase 4B	2011	SB	1978	3981	4692	3076	3138	4141	5012	3728	13,727	16,019	29,746	20.7%	1.7%
Phase 4A	2000	NB	1849	3768	4862	2764	2878	3378	4217	3520	13,243	13,993	27,236	8.6%	
Phase 4A	2000	SB	1692	3431	4064	2637	2701	3560	4332	3209	11,824	13,802	25,626	4.0%	

Animation Video Image (AVI) Files

<u>Toll Plaza</u>	<u>Year</u>	<u>Time Period</u>	<u>Alternative</u>
Raritan	Existing (2000)	Morning	With Toll Plaza
Raritan	Existing (2000)	Morning	Toll Plaza Sb Removed
Raritan	2011	Morning	With Toll Plaza
Raritan	2011	Morning	Toll Plaza Nb and Sb Removed
Raritan	Existing (2000)	Evening	With Toll Plaza
Raritan	Existing (2000)	Evening	Toll Plaza Sb Removed
Raritan	2011	Evening	With Toll Plaza
Raritan	2011	Evening	Toll Plaza Nb and Sb Removed
Union	Existing (2000)	Evening	With Toll Plaza
Union	Existing (2000)	Evening	Toll Plaza Sb Removed
Union	2011	Evening	With Toll Plaza
Union	2011	Evening	Toll Plaza Nb and Sb Removed
Essex	Existing (2000)	Evening	With Toll Plaza
Essex	Existing (2000)	Evening	Toll Plaza Nb Removed
Essex	2011	Evening	With Toll Plaza
Essex	2011	Evening	Toll Plaza Nb and Sb Removed

Appendix C

Congestion Relief Projects And Free-Flow E-ZPass Funding Schedule

Congestion Relief Projects And Free-Flow E-ZPass Funding Schedule

Project Description	County	2002	2003	2004	2005	2006	2007	Total
1.) Congestion Relief Projects								
Driscoll Bridge	Middlesex	\$175.00						\$175.00
Widening 30 -48	Ocean		\$3.00		\$90.00			\$93.00
Widening 48-63	Ocean			\$3.00		\$35.00	\$35.00	\$73.00
Widening 63-80	Ocean	\$3.00	\$80.00					\$83.00
Interchange 142 at I-78	Union	\$1.00	\$8.00					\$9.00
Cape May Grade Separations	Cape May	\$2.00		\$23.00			\$40.00	\$65.00
ITS Deployment	Various	\$0.80	\$2.00	\$1.00	\$1.00	\$0.80		\$5.60
Park and Ride Improvements	Various	\$1.00	\$2.00	\$2.00	\$2.47			\$7.47
TRANSMIT System Expansion	Various	\$0.20	\$3.30					\$3.50
Interchange 80-83 Widening	Ocean	\$4.20						\$4.20
Interchange 6 Improvements (Rt. 147)	Cape May	\$0.30			\$2.80			\$3.10
Interchange 13 Improvements	Cape May		\$0.27		\$3.00			\$3.27
Interchange 20 Improvements	Cape May			\$0.60	\$9.40			\$10.00
Interchange 17 Improvements Sea Isle Blvd	Cape May		\$0.60		\$5.20			\$5.80
Interchange 67 Improvements (Bay Ave.)	Ocean				\$1.00		\$12.00	\$13.00
Interchange 69 Improvements (Waretown Rd.)	Ocean				\$13.40			\$13.40
Interchange 83/84 Improvements	Ocean		\$0.70	\$4.00		\$7.50		\$12.20
Interchange 88 Improvements (Rt. 70)	Ocean					\$7.60		\$7.60
Interchange 89 Improvements (Cedar Bridge Rd.)	Ocean	\$6.00						\$6.00
Interchange 91 Improvements (Public Trans)	Ocean		\$0.40	\$3.70				\$4.10
Interchange 109 (NB Exit Ramp)	Monmouth	\$0.40	\$0.70					\$1.10
Interchange 114 Ramp Improvements	Monmouth	\$0.45	\$3.00					\$3.45
Interchange 123 Improvements (Rt. 9)	Middlesex		\$4.00	\$1.60				\$5.60
Interchange 124 Improvements	Middlesex		\$1.50	\$13.50				\$15.00
Interchange 125 Improvements	Middlesex				\$2.00		\$33.00	\$35.00
Interchange 145 Improvements (I-280)	Middlesex		\$0.36					\$0.36
Subtotal Congestion Relief Projects		\$194.35	\$109.83	\$52.40	\$130.27	\$50.90	\$120.00	\$657.75
2.) Barrier Removal / Install Free-Flow EZ Pass	Various	\$32.76	\$25.39	\$29.89	\$35.70			\$123.74

Congestion Relief Projects Location Map



Appendix D

Barrier Removal Schedule

Barrier Removal Schedule

Barrier Location	Planned Barrier To Be Removed	Associated Ramp To Be Removed	Planned Phase
Hillsdale	North		3
Bergen	South	Saddle Brook South	3
Essex	North	Watchung North	1
Union	South	Union South	2
Raritan	South		1
Asbury Park	North	Eatontown North	3
Toms River	South		2
Barneget	North		3
New Gretna	South		3
Great Egg Harbor	North	Somers Point North	3
Cape May	South		3

Associated ramps act as part of the mainline barrier plaza. As such, they will be removed and free-flow E-ZPass installed in the same direction as the mainline barrier.

Appendix E

Ramp Toll Removal

Ramp Toll Plaza Removal

Milepost	Ramp Location
165	PARAMUS
154	CLIFTON
153	PASSAIC
148	BLOOMFIELD
145	EAST ORANGE
144	IRVINGTON
117	MATAWAN, KEYPORT, HAZLET
114	HOLMDEL
109	RED BANK
98	BELMAR-WALL
91	LAKESWOOD-BRICK
88	LAKEHURST
74	LACEY ROAD
4	WILDWOOD

Appendix F

Comparative North American Toll Rates

Comparative North American Toll Rates

Toll Facility	Initial Opening Year	Length (miles)	Toll(1) (\$)	Passenger Cars Rate-per-mile (cents)
I-15 Express Lanes (Calif.)	1988	8	4.00 (3)	50
SR 91 (Calif.)	2000	10	4.25 (3)	42.5
Foothill/Eastern Transp. Corridor (Calif.)	1994	15	3.25	21.7
Proposed SR 125 (Calif.)	2004	10	2	20
Delaware Turnpike	1963	11	2.00/ 1.25 (2)	18.2/ 11.4
E-470 (Colo.)	1991	34	5.75	17
Proposed Northwest Parkway	2004	11	1.75	15.9
San Joaquin Hills Corridor (Calif.)	1996	15	2.25	15
Toronto 407 (Canada)	1997	43	6.12(3)/ 4.83 (2) (3)	14.2/ 11.2
Dulles Greenway (Va.)	1995	14	1.65/ 1.40 (2)	11.8/ 10.0
Sam Houston Tollway (Tex.)	1988	28	3.00/ 2.25 (2)	10.7/ 8.0
Dallas North Tollway (Tex.)	1968	21	2.25/ 1.80 (2)	10.7/ 8.6
OOCEA Holland East-West Expwy (Fla.)	1973	25	2.5	10
OOCEA Southern Connector/Greene Way (Fla.)	1990	21	2	9.5
Southern Connector (S.C.)	2001	16	1.5	9.4
Western Beltway - Part A (Fla.)	2000	11	1	9.1
Tampa Crosstown Expwy (Fla.)	1976	14	1.25	8.9
Hardy Toll Road (Tex.)	1987	23	2.00/ 1.50 (2)	8.7/ 6.5
Massachusetts Tpke. Boston Extension	1964	12	1	8.3
OOCEA Eastern Beltway/GreeneWay (Fla.)	1960	12	1	8.3
Georgia 400	1993	6	0.5	8.3
OOCEA Bee Line and Airport (Fla.)	1965	22	1.75	8
Dulles Toll Road (VA.)	1984	13	0.85	6.5
Sawgrass Expwy (Fla.)	1990	23	1.5	6.5
Bee Line West, Florida's Turnpike	1974	8	0.5	6.3
North-South Tollway (IL.)	1989	17	1	5.9
Florida's Turnpike	1957	320	17.15	5.4
JFK Memorial Highway (Md.)	1963	42	2	4.8
New Jersey Turnpike	1951	122	5.50/ 4.95 (2)	4.5/ 4.1
Massachusetts Turnpike	1957	71	3.1	4.4
West Virginia Turnpike	1954	88	3.75	4.3
Pennsylvania Turnpike	1940	358	14.7	4.1
Ohio Turnpike	1954	238	8.95	3.8
Kansas Turnpike	1956	231	7.75	3.4
Maine Turnpike	1947	100	3.25	3.3
Spaulding Turnpike (N. H.)	1957	33	1	3
NY State Thruway	1954	376	11.15	3
Indiana Toll Road	1956	157	4.65	3
Garden State Parkway (NJ.)	1954	173	3.85	2.2

Notes:

(1) Toll rates shown are for the year 2001, in US \$

(2) Electronic toll discounted fare.

(3) Peak toll.

SOURCE: Public Works Financing, June 2001, Volume 152



Garden State Parkway Congestion Relief Plan