TAPPAN ZEE BRIDGE/I-287 ENVIRONMENTAL REVIEW

Newsletter
Autumn 2008

Courtesy of the New York State Thruway Authority

2008: A Year of Progress

Message from the Project Director

It has been a very busy year for the Tappan Zee Bridge/I-287 Corridor Project—one marked by continued progress and close attention to public input. Here's what has been accomplished to date:

- The environmental process has been streamlined and will continue with the production of two Environmental Impact Statements (EIS). The initial EIS will evaluate plans for improving the I-287 corridor and bridge. The first (current) EIS will identify the transit mode or modes (commuter rail, bus rapid transit, light rail), its general route, and beginning and end points. It will also evaluate plans to accommodate that transit in an improved I-287 highway and bridge corridor. The second EIS will focus on integrating the mass transit mode into the communities it will serve, including route specifics and location and design of transit stations. A final decision on the first EIS in the spring of 2010 will kick off work on the second. Continuing the study in this way will allow the highway and bridge improvements to begin several years sooner, in the process saving hundreds of millions of dollars each year in project costs.
- We are now following new federal regulations (known as Section 6002) that mean increased opportunities for comment and involvement from agencies and the public, active engagement of participating and cooperating agencies with an interest in or jurisdiction over this study, and a formal process for agencies to resolve issues.
- Over 300 people attended our Scoping Update meetings held on February 26–28, 2008 in Westchester, Orange, and Rockland Counties. More than 250 comments were received, both at the meetings and submitted by mail, fax, and email during the scoping comment period. The comments will be factored into our recommendations.
- Our Stakeholders' Advisory Working Groups (SAWGs) continued to meet and review the study's latest analyses.
- The project team has met, and will continue to meet, with the public in various other settings. We've met with a range of cooperating and participating agencies including federal, state, and local agencies and municipalities. Additionally, we are reaching out to consulting parties as part of the National Historic Preservation Act, the law that considers a project's effects on historic properties.

Now, as a result of continuous technical analysis and public input, the project team is able to present its preliminary study results for two major components of the study:

- Rehabilitation or replacement of the Tappan Zee Bridge
- Selection of the transit mode that will best meet the transportation needs of the corridor and will be studied in the Draft Environmental Impact Statement (DEIS)

The following pages present a summary of these results. With your help, we will select a transit mode and find a solution for the bridge. More in-depth information will be available soon in the *Alternatives Analysis for Rehabilitation or Replacement of the Tappan Zee Bridge* and *Transit Mode Selection* reports, which will be posted at www.tzbsite.com.

Please review our website for more project-related information, let us know what you think, and stay in touch throughout the study.

Thank you for your continued interest and participation.

Michael P. Anderson, P.E.,
Project Director

Should We Rehabilitate or Replace the Tappan Zee Bridge?

To comprehensively assess which rehabilitation or replacement alternatives are reasonable alternatives for further evaluation in the Draft Environmental Impact Statement, the project team developed several options for study (see below).

All the rehabilitation options call for complete replacement of the bridge's causeway section to bring it up to the current standards required to withstand the effects of an earthquake. The foundations also would be replaced. All options add at least one or two bicycle/pedestrian paths. Except for Rehabilitation Option 1, all the options would provide eight lanes with full shoulders added to increase safety, as well as space to accommodate a form of transit.

The options were evaluated according to the criteria proposed last February (see page 3).

Evaluating Rehabilitation and Replacement Options

These criteria, which fall under four broad categories, were used to evaluate the bridge rehabilitation and replacement options depicted below.

Engineering
Structural Integrity
Vulnerability
Seismic
Redundancy
Emergency Response
Navigation
Construction Impacts
Life Span

Environmental
Land Use
Displacements and Acquisitions
Historic and Archaeological Resources
Parklands and Section 4(f)/6(f)
Ecosystems and Water Resources
Visual Resources and Aesthetics

Transportation
Travel Time
Roadway Congestion
Alternative Modes in Mixed Traffic
Mode Split
Transit Ridership
Non-Vehicular Travel
Reserve Capacity
Rail Freight
Transportation System Integration

Cost
Capital Cost
Operating and Maintenance Costs
Life Cycle Cost

Rehabilitation Options for the Tappan Zee Bridge

Rehabilitation Option 1

This option, which maintains the bridge's existing configuration—seven lanes, one of which is a reversible lane— adds a bicycle/pedestrian path on one side of the bridge. It does not provide an exclusive lane for transit and does not meet the project's Purpose and Need.

*Cost: $3.4 billion

Rehabilitation Option 2

This option would widen and strengthen the bridge structure to fit eight general purpose lanes, two BRT/HOV lanes, and two bicycle/pedestrian paths.

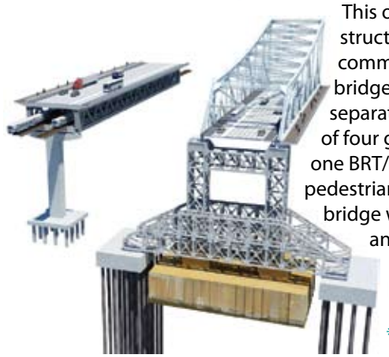
*Cost: $6.4 billion

Rehabilitation Option 3

This option constructs a parallel bridge. Each bridge would carry traffic in a separate direction and consist of four general purpose lanes, one BRT/HOV lane, and a bicycle/pedestrian path. The existing bridge would be rehabilitated and a support added to carry the bicycle/pedestrian path.

*Cost: $5.1 billion

Rehabilitation Option 4



This option adds a parallel structure to carry two commuter rail tracks. Each bridge would carry traffic in a separate direction and consist of four general purpose lanes, one BRT/HOV lane, and a bicycle/pedestrian path. The existing bridge would be rehabilitated and a support would be added to carry the bicycle/pedestrian path.

*Cost: $6.3 billion

Replacement Options for the Tappan Zee Bridge

Replacement Option 1

In this option, two new parallel structures would each carry four general purpose lanes, one BRT/HOV lane, and one bicycle/pedestrian path.

*Cost: $5.2 billion

Replacement Option 2

Three new parallel structures would carry eight general purpose lanes, two BRT/HOV lanes, two commuter rail tracks, and two bicycle/pedestrian paths.

*Cost: $6.4 billion

Replacement Option 3

Two new parallel, dual-level structures would each carry four general purpose lanes, one BRT/HOV lane, and one bicycle/pedestrian path. The northern structure also would carry two commuter rail tracks on its lower level. The double deck configuration results in an overall narrower structure width than that in Replacement Option 2.

*Cost: $6.6 billion

**All costs are in 2012 dollars and include capital costs for the bridge only. They do not include the associated highway and transit work that also would be completed as part of the complete project.*

Preliminary Results of the Bridge Evaluation

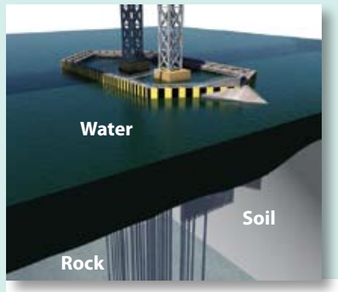
Above, the five segments of the Tappan Zee Bridge

All rehabilitation options involve substantial and complex modifications to strengthen the structure. These are similar in scale to the effort required to construct a new bridge. For example, all eight of the bridge's floating foundations would need to be replaced, and the piers and steelwork would need to be modified and strengthened. A substantial percentage of the bridge would need to be replaced and a new partner structure added for the rehabilitation to be successful. Overall, with the new partner structure, the causeway replacement, and the foundation replacement, over 80 percent of the bridge would be new in the rehabilitation options that meet the Purpose and Need.

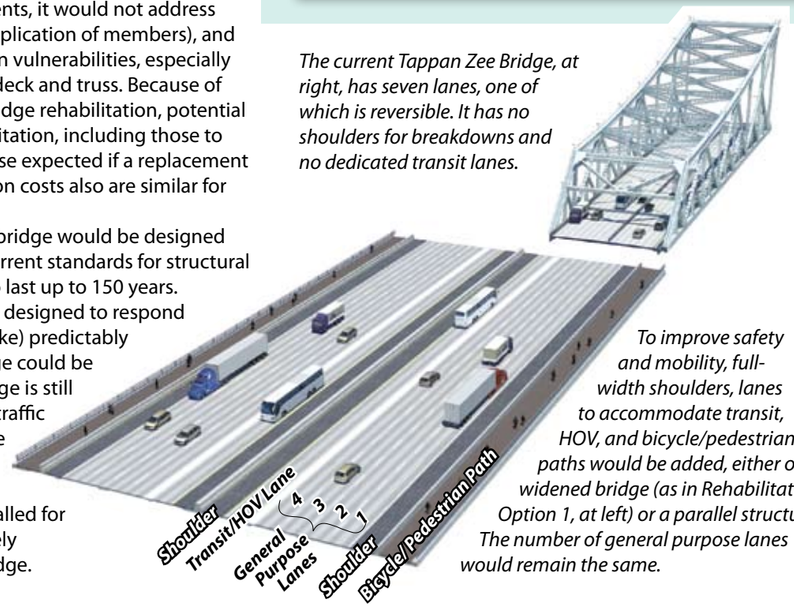
Although an extensive and complex rehabilitation would improve the Tappan Zee's structural condition and reduce short-term maintenance requirements, it would not address the bridge's lack of redundancy (duplication of members), and the residual 20 percent would retain vulnerabilities, especially among critical components in the deck and truss. Because of the extensive work needed for a bridge rehabilitation, potential environmental impacts of a rehabilitation, including those to the Hudson River, are similar to those expected if a replacement bridge were to be built. Construction costs also are similar for rehabilitation and replacement.

Both the rehabilitated and new bridge would be designed and constructed according to all current standards for structural integrity and would be expected to last up to 150 years. However, the new bridge would be designed to respond to a seismic event (i.e., an earthquake) predictably and reliably. The replacement bridge could be constructed while the existing bridge is still in place, with fewer disruptions to traffic than would occur if the bridge were to be rehabilitated. The duration of construction in the river to replace the bridge foundations—called for by all rehabilitation options—is likely to be longer than replacing the bridge.

When the Tappan Zee Bridge opened in 1955, its foundations, which float in the Hudson River, were a major innovation. The buoyancy reduced the number of deep piles that needed to be driven down to rock. The floating foundations are not suitable to withstand the effects of a major seismic event. The rehabilitation options would therefore replace the foundations so they are up to today's standards. Below, in orange, are the foundations and main span members that would need to be replaced if the bridge were to be rehabilitated.

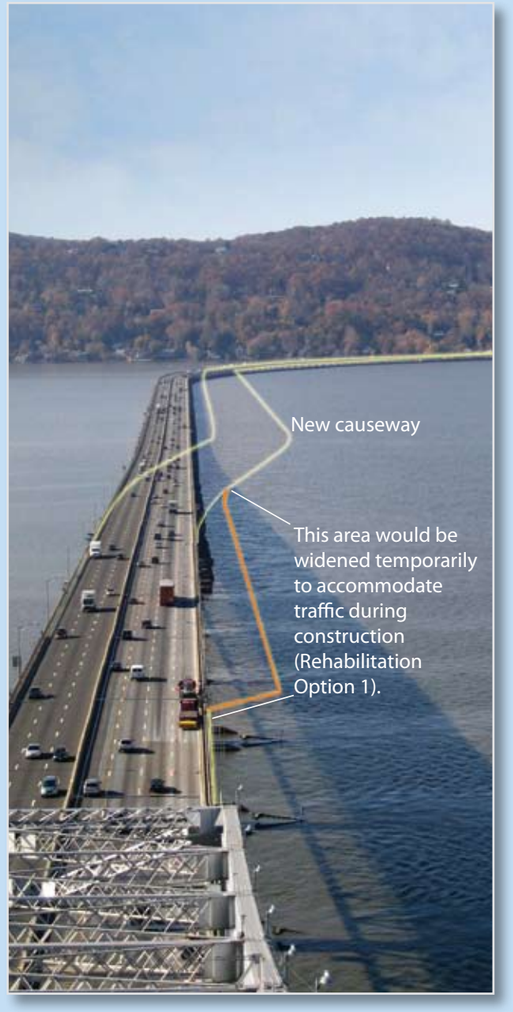


The current Tappan Zee Bridge, at right, has seven lanes, one of which is reversible. It has no shoulders for breakdowns and no dedicated transit lanes.



To improve safety and mobility, full-width shoulders, lanes to accommodate transit, HOV, and bicycle/pedestrian paths would be added, either on a widened bridge (as in Rehabilitation Option 1, at left) or a parallel structure. The number of general purpose lanes would remain the same.

Because the extent of work needed on the Tappan Zee's 1.6-mile causeway section is substantial, all rehabilitation options would remove and replace this part of the bridge. Supported by a foundation of timber piles, the causeway is 8,360 feet long—about half the length of the 16,100-foot bridge. The new causeway would be constructed north of the existing one and meet all current bridge standards. All lanes on the existing causeway would be kept operational while the new one is being built, but tie-in of the new causeway will introduce curves and significantly complicate traffic during construction.



The Need for Transit

From its very beginning, the project has focused on the critical need to develop dependable transit solutions that accommodate future growth in the Tappan Zee Bridge/I-287 Corridor while reducing dependence on the automobile as the sole means of travel. A new transit system would relieve the significant growth in congestion expected in the future and provide direct connections or transfers to five rail lines, transfers to north-south bus lines, and direct service to and from employment centers. By taking a long-term view in our planning and decision making, we are able to better address our current energy situation, rising fuel costs, dependency on foreign oil, and global warming.

We also are in a better position to support and sustain the economic vitality of the region and facilitate smart growth and sustainable development, with a comprehensive, dependable mass transit system in the corridor.

In the past few years, the project team has studied the merits of the three transit modes for the Suffern-to-Port Chester corridor—commuter rail transit (CRT), bus rapid transit (BRT), and light rail transit (LRT)—and how they would best serve two sets of commuters: those traveling across the Hudson River between Rockland and Westchester Counties and points beyond, and those from Orange, Rockland, and western Westchester heading to and from Manhattan. Evaluation criteria were developed last February to identify which of these modes should be carried forward in the Environmental Impact Statement. Several alternatives and options were developed to test and identify the transit mode(s) that best serves the corridor.

Once the mode(s) is identified and selected, the project team will develop alternatives that best integrate the mode(s) into the corridor. These will be studied in detail in the Draft Environmental Impact Statement. The final transit alternatives will be presented for public review later this year.

The three transit modes we are considering:

Bus Rapid Transit (BRT)

Light Rail Transit (LRT)

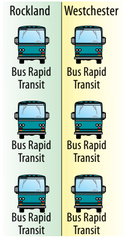
Commuter Rail Transit (CRT)

Alternatives and Options for Evaluation

The following alternatives and options were developed to evaluate which transit mode—bus rapid transit, light rail, or commuter rail—would work best for the Suffern-to-Port Chester corridor. All the bridge rehabilitation and replacement options on pages 2 and 3 (except Rehabilitation Option 1) are compatible with the alternatives and options below. Rehabilitation Option 1 does not meet the project's Purpose and Need since it does not include a transit system.

In addition to the alternatives and options shown below, a full-corridor LRT option that had been considered and eliminated in an earlier phase of the study was re-evaluated this time around. The study team's new evaluation validated its initial assessment and found that this option performed poorly.

All the alternatives and options have eight general-purpose and two high occupancy vehicle (HOV)/ high occupancy toll (HOT) lanes in Rockland and across the bridge.

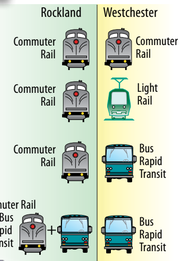


Alternative 3 would provide a full-corridor bus rapid transit (BRT) system between Suffern and Port Chester. The BRT would use HOV/HOT lanes in Rockland and exclusive bus lanes in Westchester. This would allow buses to travel at higher speeds and have more reliable travel times.

Option 3A, an enhanced version of Alternative 3, includes a more robust BRT service plan and extends the exclusive bus lanes to the Port Chester train station.

Option 3B assumes the improvements of Option 3A and places the BRT in a dedicated, high-speed busway along I-287 between the Tappan Zee Bridge and Port Chester.

Alternatives 4A, 4B, 4C and Option 4D feature a commuter rail transit (CRT) system in Rockland County. The commuter rail would branch off Metro-North's Port Jervis Line and travel across the bridge to a new Tappan Zee station in Tarrytown (4A, 4B, 4C), or to the existing Tarrytown station (4D), with a one-seat ride down the Hudson Line to Grand Central Terminal. The alternatives vary as they cross Westchester County.



Alternative 4A would extend the **commuter rail** across Westchester and onto the New Haven Line to Connecticut.

Alternative 4B would construct a new **light rail** system between the proposed Tappan Zee commuter rail station in Tarrytown and Port Chester.

Alternative 4C would offer an exclusive **bus rapid transit** system between the proposed Tappan Zee commuter rail station in Tarrytown and Port Chester. Both 4B and 4C would offer a transfer to the New Haven Line.

Option 4D would provide **commuter rail** service between Suffern and Grand Central Terminal as well as **bus rapid transit** between Suffern and Port Chester, serving both New York City-bound and cross-corridor passengers.

Evaluating Transit Modes

The transit mode analysis took into account transportation, environmental, and cost factors. Detailed criteria, developed and presented last February, were used to evaluate the transit alternatives and options.

Some of the key findings of the evaluation are summarized below. More in-depth information will be presented in the *Transit Mode Selection Report*, which will be posted on www. tzbsite.com.

Transportation
Transit ridership
Transit travel time
Capacity
Roadway congestion

Environmental
Consistency with land use plans
Residential and commercial acquisitions or displacements
Transit-oriented development potential
Wetlands
Parklands
Historic and archaeological resources
Disturbance to the Hudson River habitat
Air quality
Energy/greenhouse gases

Cost
Capital cost
Annual operating costs
Fare revenue
Costs/net costs per passenger and per passenger mile
Transit travel time benefits

Preliminary Transit Results

Transportation

Ridership Our ridership numbers indicate that BRT would attract more commuters traveling across the corridor, from Rockland to Westchester and vice versa, than would a commuter rail system. Riders heading to and from New York City, however, are better served by the commuter rail alternatives. Option 4D—which would provide a one-seat ride from Rockland to Grand Central Terminal, as well as a cross-corridor BRT system—attracted the highest number of daily trips.

New Transit Trips are trips made by people who did not previously use transit. New trips are expected to grow by between 21,000 and 31,200 per day in the year 2035, depending on the alternative or option. This represents between a 13 percent and 19 percent growth.

On a given day, between 182,400 and 192,600 total transit trips would occur in the Tappan Zee Bridge/I-287 area. How many passengers would be traveling on new TZB transit services? See below:

Transit Mode (Rockland / Westchester)		% Traveling on New Transit Services
Bus / Bus	3A	29.2%
Bus / Bus	3B	28.9%
Bus / Bus	4A	33.7%
Bus / Light Rail	4B	29.0%
Bus / Bus	4C	36.2%
Bus + Bus / Bus	4D	41.2%

Travel Time Savings The commuter rail alternatives would save passengers traveling from Suffern to White Plains in the year 2035 from 30 to 55 minutes in travel time. A passenger on a rail trip from Spring Valley to Grand Central Terminal would save an average of 33 minutes.

BRT Options 3A and 3B do not produce savings in travel time for riders between western Rockland and Manhattan. That's because these riders would need to transfer to the Hudson Line at the commuter rail station in Tarrytown.

Environmental

In general, environmental criteria did not prove to be differentiators in either the transit mode or bridge rehabilitation/replacement evaluations. Below are the results of the environmental evaluation of the transit modes.

Consistency with Land Use Plans Since transit policies are generally absent from local land use plans, consistency with land use plans is not a differentiator among transit modes.

Property Displacements A minimal number of properties (considering the project's size)—from five to twelve residential structures and ten to twenty commercial properties—could be affected, depending on the alternative.

Potential for Transit-Oriented Development The potential for transit-oriented development—the creation of pedestrian-friendly communities in the vicinity of transit stations—would be greatest at locations where commuter rail stations would be developed.

Wetlands Most of the eight to fourteen acres of wetlands that may be directly impacted are drainage courses that parallel I-287 and collect water running off the interstate. There also is some impact, to a limited degree, on wetlands adjacent to tributaries of several rivers.

Parklands Elizabeth Place Park, Yosemite Park, and Tibbets Park may be directly impacted. The north side of Elizabeth Place Park would be acquired; however, the potential exists to expand and enhance the park when Interchange 10 is rebuilt. Tibbets could lose substantial land under the light rail alternative, and Yosemite would be subject to sliver takings under the commuter rail and light rail alternatives. The Old Croton Aqueduct Trail could be temporarily impacted during construction of commuter rail alternatives that connect to the Hudson Line. Each of the parkways that I-287 crosses may be impacted by transit modes that are placed on alignments adjacent to the interstate.

Historic and Archaeological Resources Alternatives that include a transit connection to the Hudson Line potentially impact up to three National Historic Landmarks: the Old Croton Aqueduct, Lyndhurst, and Sunnyside. Impacts range from temporary acquisition of water lots during construction (Lyndhurst and Sunnyside); potential direct impacts to a footbridge and pier associated with Lyndhurst; and construction of a tunnel in the vicinity of the Old Croton Aqueduct alignment. Three properties listed in the National Register—Palisades Interstate Parkway, Bronx River Parkway, Port Chester Station—and two properties eligible for listing—the Tappan Zee Bridge and the Piermont Line right-of-way—could also be affected by the three transit modes. Potential impacts include acquisition of property slivers; use of a right-of-way (Piermont Line); or removal of resources in the case of the Port Chester Station (under the light rail alternative) and the Tappan Zee Bridge (replacement options). The rehabilitation options would partially remove the Tappan Zee Bridge.

Hudson River Habitat Disturbance Ten to fifteen acres of river bottom habitat would be impacted as a result of the new bridge foundations, which would be constructed whether the bridge were rehabilitated or replaced. From four to six acres of river bottom habitat would be impacted temporarily during the construction of work platforms in the river to facilitate work on the bridge.

Air Quality All alternatives would reduce emissions of pollutants including carbon monoxide, organic gases (such as methane and other greenhouse gases), nitrogen oxides, and fine particles. In general, the commuter rail alternatives reduced more of these emissions than did the BRT alternatives, though the BRT still reduced pollutants substantially.

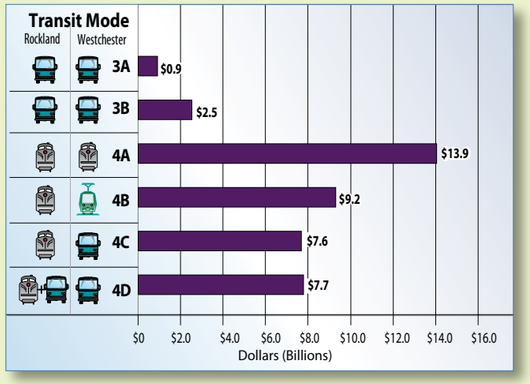
Energy/Greenhouse Gases During a typical morning travel period in 2035, the transit modes would reduce fuel use by approximately 20,000 to 24,000 gallons, depending on mode. As a result of the reduced fuel consumption, the transit modes would also reduce greenhouse gas emissions by approximately 54 to 65 tons, depending on mode. These reductions represent decreases in fuel consumption and greenhouse gas emissions of approximately 2 to 2.4 percent.

Cost

Capital Costs The capital costs of building and providing a transit system in the corridor are shown in the graph below.

The least expensive of these systems is BRT, and the most expensive are two rail alternatives, Alternatives 4A and 4B. In between are the two commuter rail/BRT systems, Alternative 4C and Option 4D.

Total Transit Capital Cost (2012 Dollars)



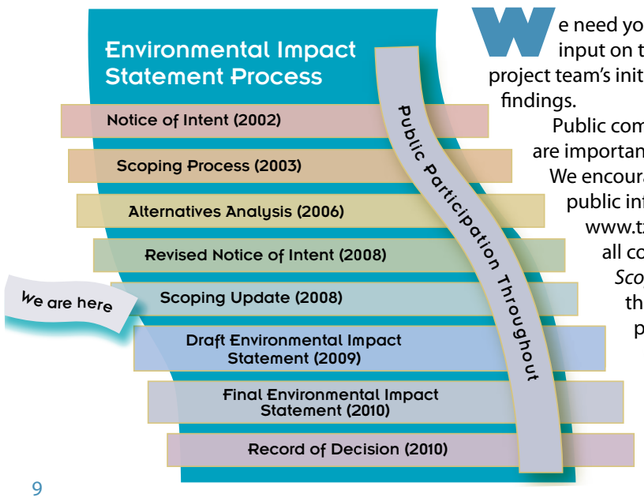
Total Costs The graph below shows the updated costs, in 2012 dollars, for each alternative and option considered. These costs include bridge, highway, and transit elements.

Total Costs of the Alternatives and Options (2012 Dollars)

Alternatives/Options Rockland	Alternatives/Options Westchester		Dollars (Billions)
		3A	$8.0
		3B	$9.7
		4A	$22.0
		4B	$17.4
		4C	$15.8
+		4D	$16.0

What's Next?

Now we need to hear from you



We need your input on the project team's initial findings.

Public comments are important to us. We encourage you to use the comment cards available at public information meetings or to contact us via our website, www.tzbsite.com. The team plans to review and consider all comments and will incorporate your comments in the *Scoping Summary Report,* expected to be published later this year. This report, which will close the scoping update phase, also will include the final list of alternatives that will be studied in the Draft Environmental Impact Statement (DEIS).

We expect the DEIS work to take about one year and anticipate public hearings in the fall of 2009.

Visit www.tzbsite.com

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Saturday, 11:00 AM–4:00 PM

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