



TAPPAN ZEE BRIDGE/I-287
ENVIRONMENTAL REVIEW

**New York State Thruway Authority
MTA Metro-North Railroad**

Long List of Level 1 Alternatives

**Tappan Zee Bridge/I-287
Environmental Review**

DRAFT

June 8, 2003



Long List of Alternatives

Alternative No.	Title	Description
TRAVEL DEMAND MANAGEMENT/ TRANSPORTATION SYSTEM MANAGEMENT ALTERNATIVES (TDM/TSM)		
Travel Demand Management Alternatives (TDM)		
TDM-1: Enhance Existing Metro Pool Employee Trip Reduction (ETR) Programs		
TDM-1.1	Develop an I-287/CWE Corridor Education and Promotion Program	Enhance educational efforts
TDM-1.2	Increase funding for outreach to Corridor employers	Encourage employers to adopt Metro Pool programs
TDM-1.3	Introduce a car-sharing program	Provide rental cars for commuters who only need a car occasionally, on hourly or daily basis
TDM-1.4	Employers provide showers and lockers for those walking/cycling to work	Provide facilities to encourage workers to walk/cycle to work
TDM-1.5	Toll-free programs for off-peak users from participating employers	Encourage the use of flex-time in exchange for reduced or no tolls on the TZ Bridge
TDM-1.6	TDM-1.6.1: Employee Parking Management: Charge employees for parking	Combine incentives for alternative modes with disincentives, such as parking fees
	TDM 1.6.2: Employee Parking Management: Cash in lieu of Parking	Provide cash rewards for switching from driving to alternate modes of travel
	TDM 1.6.3: Employee Parking Management: Restrain parking supply	Encourage alternate travel modes by restricting availability of free parking
TDM-1.7	Mandate Participation in Metro Pool ETR Program	Require employers to encourage alternate travel modes
TDM-2: Expand Easy Street Vanpool Program		
TDM-2.1	Increase funding for Easy Street Program	Expedite implementation and expansion of vanpool program
TDM-2.2	Reduce vanpool user costs to encourage greater participation	Provide subsidies, free parking and reduced or no tolls for vanpool users
TDM-3: Corridor-wide Parking Pricing and Management		
TDM-3.1	Establish Parking Authority	Mandate parking policies, eliminate local restrictions and develop enhancement programs

TDM-4: Carpool and Transit Priority		
TDM-4.1	TDM-4.1.1: Restrict existing TZ Bridge reversible lane to HOV: HOV2+ only	Permit only vehicles with 2 or more occupants to use the existing reversible lane
	TDM-4.1.2: Restrict existing TZ Bridge reversible lane to HOV: HOV3+ only	Permit only vehicles with 3 or more occupants to use the existing reversible lane
	TDM-4.1.3: Restrict existing TZ Bridge reversible lane to HOV: Transit/vanpools only	Permit only transit vehicles and vanpools to use the existing reversible lane
	TDM-4.1.4: Restrict existing TZ Bridge reversible lane to HOV: HOV3+ and premium toll for other vehicles	Permit only vehicles with 3 or more occupants to use the existing reversible lane at the current toll; other vehicles will have to pay a premium toll to use reversible lane
TDM-4.2	TDM-4.2.1: Create new priority lanes on widened or new crossing: HOV2+ only	Permit only vehicles with 2 or more occupants to use the new priority lanes
	TDM-4.2.2: Create new priority lanes on widened or new crossing: HOV3+ only	Permit only vehicles with 3 or more occupants to use the new priority lanes
	TDM-4.2.3: Create new priority lanes on widened or new crossing: Transit/vanpools only	Permit only transit vehicles and vanpools to use the new priority lanes
	TDM-4.2.4: Create new priority lanes on widened or new crossing: HOV3+ and premium toll for other vehicles	Permit only vehicles with 3 or more occupants to use the new priority lanes at the current toll; other vehicles will have to pay a premium toll to use priority lanes
TDM-4.3	Priority lanes for buses/vanpools/carpools at the toll plaza	Use special EZPass lanes for HOV only
TDM-4.4	TDM-4.4.1: Priority lanes on feeder arterials at approaches to I-287	Priority lanes on north-south feeder routes for HOV only
	TDM-4.4.2: Priority lanes on parallel arterials	Priority lanes on arterials parallel to I-287 for HOV only
	TDM-4.4.3: Priority lanes on entrance ramps	Priority lanes on entrance ramps for HOV only
TDM-5: Tolls and Pricing		
TDM-5.1	TDM-5.1.1: Congestion Pricing - Increase TZ Bridge car tolls during peak periods	Increase peak period tolls to encourage off-peak travel
	TDM-5.1.2: Congestion Pricing - Introduce Corridor-wide, distance-based tolls	Introduce variable tolls to influence travel choices and control congestion
	TDM-5.1.3: Congestion Pricing - Eliminate commuter discount on the TZ Bridge	Eliminate discount for individual car use except during off-peak period; maintain discount for HOV

Transportation System Management Alternatives (TSM)		
TSM-1: Real-Time Distribution of User Information		
TSM-1.1	Improve and expand use of electronic signs	Increase number of signs, their sophistication and their ability to divert traffic
TSM-1.2	Improve and expand the use of highway advisory radio	Provide additional signing and broadcast points to improve ability of drivers to seek alternate routes
TSM-1.3	Improve and expand the use of the Internet	Increase access to TZ website at park-and-rides and Intermodal Centers
TSM-1.4	Expand TRANSMIT speed readers	Improve speed data gathering to identify incidents and enhance emergency response
TSM-1.5	Employ TRIPS Technology	Electronically notify road users of traffic status
TSM-2: Improve the Integration of Train and Bus Service		
TSM-2.1	Notify bus drivers of train delays	Buses can be held to meet delayed trains
TSM-2.2	Post real-time arrival information at train stations	Commuters are prepared for train arrivals, facilitating boarding
TSM-2.3	Provide real-time information for bus riders	Passengers can be informed of bus arrivals times through the use of Global Positioning Systems
TSM-3: Dynamic Traffic Management System		
TSM-3.1	Ramp access controls	Ramp metering controls entering traffic based on mainline congestion
TSM-3.2	Ramp terminal real-time signal coordination	Highway traffic exiting to/entering from local streets can be controlled by adjusting signal cycles to avoid bottlenecks
TSM-4: Commercial Vehicle Programs		
TSM-4.1	Congestion pricing for commercial vehicles	Congestion pricing for trucks to encourage use of alternative routes
TSM-5: Incident Management		
TSM-5.1	Implement comprehensive Incident Management Program for the I-287/CWE corridor	Monitor, evaluate and decrease response/congestion clearance times for optimum performance and safety

Alternative No.	Title	Description
TRANSIT SERVICE IMPROVEMENT ALTERNATIVES (TS)		
Bus Transit Service (B)		
TS-B1	Expand Tappan Zee Bus Corridor Routes	Provide increased service, including connecting routes and better coordination with train schedules
TS-B2	Expand Other Bus Routes	Expand bus service locations and frequency on parallel roads and north-south arterials
TS-B3	Expand/Create Additional Shuttle Service	Expand shuttle service to land uses with higher densities of population or jobs, or higher levels of activities: office parks, hotel complexes, recreational centers
Rail Transit Service (R)		
TS-R1	Improve rail service on Hudson Line	Increase peak period express service
TS-R2	TS-R2.1: Improve rail service on Harlem Line - Increase Service without a Third Track	Increase mid-day service
	TS-R2.2: Improve rail service on Harlem Line - Increase service with a Third Track	A third track is required to provide the capacity needed to increase peak period express service
TS-R3	Improve rail service on New Haven Line	Increase peak period express service
TS-R4	TS-R4.1: Improve rail service on the Pascack Valley Line once Secaucus Transfer Opens - Improve frequencies and add midday/return service.	Improved service on single track line
	TS-R4.2: Expand rail infrastructure capacity with additional tracks – Expand capacity of the Pascack Valley Line between Spring Valley and Secaucus.	Construct passing sidings
TS-R5	TS-R5.1: Improve rail service on the Port Jervis Line once Secaucus Transfer Opens - Increase frequencies and midday/return service.	Improved service on single track line
	TS-R5.2 Expand rail infrastructure capacity with additional tracks. - Expand capacity of the Port Jervis Line between Sloatsburg and Salisbury Mills.	Double-track the line or construct passing sidings.
Ferry Service (F)		
TS-F1	Expand Ferry Service between Haverstraw and Ossining	Increase ferry service to connect with more Hudson Line trains to Grand Central Terminal
TS-F2	Implement New Ferry Route between Nyack and Tarrytown	Provide ferry service to meet Hudson Line trains in both directions
TS-F3	TS-F3.1 Implement New High Speed Ferry Route Between Orange/Rockland/Westchester Counties and Manhattan	Provide high speed ferry service directly from Nyack, Haverstraw and Newburgh to Yonkers and existing west side terminals in Manhattan

Alternative No.	Title	Description
	TS-F3.2 Implement New Hovercraft Ferry Service Between Orange/Rockland/Westchester Counties and Manhattan	Provide hovercraft ferry service directly from Nyack, Haverstraw and Newburgh to Yonkers and existing west side terminals in Manhattan

Parking Improvements to Support Existing/Expanded Transit Services (P)		
TS-P1 to P14	Implement current short-term plans for Parking Improvements	Park-and-ride improvements to be implemented in the next five years
S-P15 to P25	Additional Parking Improvements to Support New/Expanded Transit Services	Longer-term park-and-ride improvements, including new and expanded facilities
S-P26	Implement EZ Pass at Park & Ride Facilities	Provide EZ Pass as a method of paying at Park & Ride Facilities.
Pedestrian/Bicycle Pathways (PED)		
TS-PED1	Provide access to river crossing alternatives that include new pedestrian/cyclist pathway	Connections to existing pathway networks on either shore of the Hudson River

Alternative No.	Title	Description
CORRIDOR IMPROVEMENT ALTERNATIVES (CI)		
Roadway Improvements (R)		
CI-R1	CI-R1.1: Improve Mainline - Add a fourth GP lane in each direction from Interchange 15 in Suffern to Interchange 11, Route 9W in Nyack	Provide lane continuity for the entire length of I-87 in the Corridor
	CI-R1.2: Improve Mainline - Add a fourth GP lane in each direction from Interchange 14A, Garden State Parkway to Interchange 11, Route 9W in Nyack	Provide additional lane capacity to accommodate the four interchanges west of Interchange 11
	CI-R1.3: Improve Mainline - Add a fourth GP lane in each direction from Interchange 13, Palisades Parkway to Interchange 11, Route 9W in Nyack	Provide additional lane capacity to accommodate the two interchanges west of Interchange 11
	CI-R1.4: Improve Mainline - Add a westbound auxiliary climbing lane from the TZ Bridge to Interchange 14A, Garden State Parkway	Provide an auxiliary climbing lane to alleviate bottlenecks and unsafe conditions on steep westbound upgrades
	CI-R1.5: Improve Mainline - Enhance Programmed Roadway Improvements in Westchester County between the TZ Bridge Toll Plaza and Interchange 10, Route 120, CWE	Enhancements to programmed improvements by NYSDOT may be identified and developed based on Corridor-wide roadway network analysis and traffic simulation modeling
	CI-R1.6: Improve Mainline - Improvements to CWE between Interchange 10 (Route 120) and Interchange 11 (I-95)	Potential improvements to be identified/developed based on traffic simulation modeling
CI-R2	Improve Various Interchanges and Transition areas	Potential improvements to be identified/developed based on traffic simulation modeling

Bus Rapid Transit (BR)		
CI-BR1	CI-BR1.1: New BRT transitway on I-287 with service between Suffern and Port Chester – Access controlled and barrier-separated busway	Dedicated busway for most of the length of the I-287 Corridor
	CI-BR1.2: New BRT transitway on I-287 with service between Suffern and Port Chester - Buffer-separated transit only lanes in Rockland County	Left-lane bus lanes constructed for BRT operation, entering/exiting the roadway in mixed traffic in Rockland. Buses run in mixed traffic in Westchester
CI-BR2	Bus Rapid Transit on Parallel Arterials through conversion of existing traffic or parking lanes	Existing traffic or parking lanes converted to "basically exclusive" bus lanes coupled with priority at traffic signals and other ITS measures

New Commuter Rail Lines (CR)		
CI-CR1	New Commuter Rail Line from Port Jervis Line to Hudson Line within I-287 corridor	New rail line mostly within I-287 right-of-way, including new stations and intermodal facilities. Design speed varies from 50 to 100 mph
CI-CR2	New Commuter Rail Line from Port Jervis Line to Hudson Line within I-287 Corridor between Suffern and West Nyack in Rockland County then via Remote Southern River Crossing. (Includes double-tracking of West Shore Line)	Departs from I-287 Corridor at Interchange 12 to West Shore Line, then along Palisades Interstate Parkway to a remote tunnel river crossing and connection to Hudson Line.
CI-CR3	New Commuter Rail line from Port Jervis Line to Harlem Line, within I-287 corridor, including 3 rd tracking of Harlem Line	New rail line mostly within I-287 right-of-way, including new stations and Intermodal facilities. Design speed varies from 50 to 100 mph. Harlem Line would require third track south of White Plains to provide additional capacity
CI-CR4	New Commuter Rail line from Port Jervis Line to New Haven Line, within I-287 corridor	New rail line mostly within I-287 right-of-way, including new stations and intermodal facilities. Design speed varies from 50 to 100 mph. Underground Transfer station in White Plains to the Harlem Line along a new tunnel alignment below the existing White Plains station
CI-CR5	Institute commuter service on West Shore Line between Newburgh in Orange County and Hoboken in New Jersey	Expand West Shore Line to provide commuter rail service along entire line
CI-CR6	CI-CR6.1: Commuter and Freight Rail Service from the Port Jervis Line to the Hudson Line	Add shared freight service with new commuter rail line (C-CR1).
	CI-CR6.2: Rail Freight Connections from the West Shore Line to the Hudson Line within I-287 Corridor	Provide freight access from the West Shore Line across the Hudson River on a new River Crossing facility connecting to the Hudson Line.
CI-CR7	Reinstate the Putnam Commuter Rail Line	Acquire rail right-of-way and provide commuter service to points south. Connect proposed corridor commuter rail lines to the reinstated Putnam Line.
CI-CR8	Rockland-Westchester Commuter Rail Subway	Construct subway tunnel in Rockland under Route 59 and in Westchester under Route 119. Provide underground stations within local business districts.
CI-CR9	New Tarrytown Transfer Facility	New Intermodal Center at the River Crossing in Tarrytown to enable transfers between transit modes in the I-287 corridor and the Hudson Line.

New LRT/AGT or Monorail Lines (LR)		
CI-LR1	New LRT/AGT or Monorail line connecting Tarrytown to White Plains	LRT alignment within I-287 corridor or along Route 119 and Hamilton Ave., with grade separations at major road crossings. (AGT/Monorail would be fully grade separated.) Intermodal facilities would be developed at major stations.
CI-LR2	New LRT/AGT or Monorail line connecting West Nyack to White Plains	Extends C-LR1 alignment across the Hudson river, along the I-287 Corridor to Interchange 11 where it could shift to Route 59 or continue along I-287 to the Palisades Mall.
CI-LR3	New LRT/AGT or Monorail line connecting Nanuet to White Plains	Extends C-LR2 alignment west along I-287 Corridor or along Route 59 to the Pascack Valley Line.

CI-LR4	New LRT/AGT or Monorail line connecting Suffern to White Plains	Extends C-LR3 alignment west to Suffern along the Piermont Branch right-of-way or along I-287 Corridor
CI-LR5	New LRT/AGT or Monorail line connecting Suffern to Port Chester/Rye	Extends C-LR4 alignment east along Route 119, I-287 right-of-way to Port Chester or Rye.
New Cross Westchester Tunnel (Multi-modal) (CWT)		
CI-CWT1	Intermittent Shallow Tunnel Sections between the Hudson River and I-95 with above ground interchanges and Commuter Rail	Highway alignment along I-287 with intermittent tunnel sections that eliminate interchanges. Above ground alignment provided to maintain major interchanges. Commuter rail in tunnel throughout.
CI-CWT2	Shallow Tunnel from Hudson River to I-95 with below ground interchanges and Commuter Rail	Highway alignment and Commuter rail along I-287 in shallow tunnel throughout.
CI-CWT3	Deep Tunnel from Hudson River to I-95 with below ground interchanges and Commuter Rail	Highway alignment and Commuter rail along I-287, in bored tunnel throughout.

Alternative No.	Title	Description
RIVER CROSSING ALTERNATIVES (RX)		
Retain the Existing Tappan Zee Bridge		
Preservation Alternatives (P) Continue maintenance program to extend service life 50 years. Seismic deficiencies, traffic capacity limitations, operational deficiencies not addressed. No Build Alternative.		
RX-P1	Preserve TZB with 4/3 Operation	Retains current reversible lane operation
RX-P2	Preserve TZB with 6 GP lanes and a reversible priority lane	Reversible lane is restricted to bus only, or bus and HOV use
Rehabilitation Alternatives without Widening (R) Upgrades TZB to meet current structural and safety codes, including seismic criteria, extending service life for 50 years.		
RX-R1	Rehabilitate with 4/3 operation	Similar to RX-P1. Pedestrian/bicycle use not accommodated, highway geometrics limited by existing structure
RX-R2	Rehabilitate with 6 GP lanes and a Reversible Priority Lane	Similar to RX-P2. Pedestrian/bicycle use not accommodated, highway geometrics limited by existing structure
Rehabilitation Alternatives with Widening (RW) Upgrades TZB to meet current structural and safety codes, including seismic criteria, extending service life for 50 years.		
RX-RW1	Widen to 8 GP lanes	Widening at truss results in split roadway
RX-RW2	RX-RW2.1: Widen to 6 GP lanes plus 2 priority lanes	Pedestrian/bicycle path accommodated
	RX-RW2.2: Widen to 8 GP lanes plus 2 priority lanes	Widening at truss results in split roadway
RX-RW3	RX-RW3.1: Widen to 6 GP lanes plus Commuter Rail	Pedestrian/bicycle path accommodated
	RX-RW3.2: Widen to 8 GP lanes plus Commuter Rail	Widening at truss results in split roadway
RX-RW4	RX-RW4.1: Widen to 6 GP lanes plus LRT/AGT or Monorail	Pedestrian/bicycle path accommodated
	RX-RW4.2: Widen to 8 GP lanes plus LRT/AGT or Monorail	Widening at truss results in split roadway
Replace the Existing Tappan Zee Bridge Replaces the bridge with a new bridge, or tunnel, or combinations of bridge and tunnel.		
Replacement Bridge (B) Replacement Bridges have potential alignments parallel to and immediately south of the existing Tappan Zee Bridge. Bridges could include a pedestrian/bicycle pathway; tunnels and serial bridge/tunnels would not.		
RX-B1	Replacement Bridge with 8 GP lanes	New 8 lane bridge
RX-B2	Replacement Bridge with 8 GP lanes and 2 lane Busway	New 8 lane bridge with 2 lane Busway (equivalent to 10 lanes)
RX-B3	RX-B3.1: Replacement Bridge with 8 GP lanes and Commuter Rail	Can include rail freight with additional grade restrictions
	RX-B3.2: Replacement Bridge with 6 GP lanes, 2 Busway lanes and Commuter Rail	Can include rail freight with additional grade restrictions

Alternative No.	Title	Description
RX-B4	Replacement Bridge with 8 GP lanes and LRT/AGT or Monorail	New 8 lane bridge with 2 light rail tracks, following highway profile
RX-B5	Replacement Bridge with 8 GP lanes, Commuter Rail and LRT/AGT or Monorail	Can include rail freight with additional grade restrictions
Replacement Bored Tunnel (BT)		
Each Bored Tunnel replacement alternative has potential alignments in three generalized locations: parallel to, immediately north of, and immediately south of the existing Tappan Zee Bridge		
RX-BT1	Replacement Bored Tunnel with 8 GP lanes	New 8 lane tunnel
RX-BT2	Replacement Bored Tunnel with 8 GP lanes and 2 lane Busway	New 8 lane tunnel with 2 lane Busway (equivalent to 10 lanes)
RX-BT3	Replacement Bored Tunnel with 8 GP lanes and Commuter Rail	Can include rail freight with additional grade restrictions
RX-BT4	Replacement Bored Tunnel with 8 GP lanes and LRT/AGT or Monorail	New 8 lane tunnel with 2 light rail tracks
RX-BT8	Replacement Bored Tunnel with 8 GP lanes, Commuter Rail and 2 lane Busway	New 8-lane tunnel with 2-lane Busway, (equivalent to 10 lanes) and Commuter Rail.
Replacement Immersed Tunnel (IT)		
Each Immersed Tunnel replacement alternative has potential alignments in three generalized locations: parallel to, immediately north of, and immediately south of the existing Tappan Zee Bridge		
RX-IT1	Replacement Immersed Tunnel with 8 GP lanes	New 8 lane tunnel
RX-IT2	Replacement Immersed Tunnel with 8 GP lanes and 2 lane Busway	New 8 lane tunnel with 2 lane Busway (equivalent to 10 lanes)
RX-IT3	Replacement Immersed Tunnel with 8 GP lanes and Commuter Rail	Can include rail freight with additional grade restrictions
RX-IT4	Replacement Immersed Tunnel with 8 GP lanes and LRT/AGT or Monorail	New 8 lane tunnel with 2 light rail tracks
RX-IT8	Replacement Immersed Tunnel with 8 GP lanes, Commuter Rail and 2 lane Busway	New 8-lane tunnel with 2-lane Busway, and Commuter Rail.
Replacement Serial Bridge and Tunnel (B/T)		
Each Serial replacement alternative has potential alignments in two generalized locations: immediately north of, and immediately south of the existing Tappan Zee Bridge		
RX-B/T1	Replacement Serial Bridge / Tunnel with 8 GP lanes	New 8 lane bridge/tunnel
RX-B/T2	Replacement Serial Bridge / Tunnel with 8 GP lanes and Busway	New 8 lane bridge/tunnel with 2 lane Busway (equivalent to 10 lanes)
RX-B/T3	Replacement Serial Bridge / Tunnel with 8 GP lanes and Commuter Rail	Can include rail freight with additional grade restrictions.
RX-B/T4	Replacement Serial Bridge / Tunnel with 8 GP lanes and LRT/AGT or Monorail	New 8 lane bridge/tunnel with 2 light rail tracks
RX-B/T8	Replacement Serial Bridge / Tunnel with 8 GP lanes, Commuter Rail and Busway	New 8 lane bridge/tunnel with Commuter and 2 lane Busway

Replacement Bridge and Transit Tunnel (B+BT or B+IT)		
Each Replacement Bridge and Transit Tunnel alternative has potential alignments in three generalized locations: parallel to, immediately north of, and immediately south of the existing Tappan Zee Bridge		
RX-B+BT2	Replacement Bridge with 8 GP Lanes and Bored Tunnel with 2 lane Busway	New bridge with total of 8 lanes and bored tunnel with 2 lane Busway
RX-B+BT3	Replacement Bridge with 8 GP Lanes and Bored Tunnel with Commuter Rail line	Can include rail freight with additional grade restrictions.
RX-B+BT4	Replacement Bridge with 8 GP Lanes and Bored Tunnel with LRT/AGT or Monorail	New bridge with total of 8 lanes and bored tunnel with 2 light rail tracks
RX-B+BT5	Replacement Bridge with 8 GP Lanes and LRT/AGT or Monorail and Bored Tunnel with Commuter Rail and LRT/AGT or Monorail	Can include rail freight with additional grade restrictions
RX-B+IT2	Replacement Bridge with 8 GP Lanes and Immersed Tunnel with 2 lane Busway	New bridge with total of 8 lanes and immersed tunnel with 2 lane Busway
RX-B+IT3	Replacement Bridge with 8 GP Lanes and Immersed Tunnel with Commuter Rail line	Can include rail freight with additional grade restrictions.
RX-B+IT4	Replacement Bridge with 8 GP Lanes and Immersed Tunnel LRT /AGT or Monorail	New bridge with total of 8 lanes and immersed tunnel with 2 light rail tracks
RX-B+IT5	Replacement Bridge with 8 GP Lanes and LRT/AGT or Monorail and Immersed Tunnel with Commuter Rail	Build a new bridge with total of 8 lanes and 2 light rail tracks and tunnel with commuter rail
Supplement the Tappan Zee Crossing with Additional Crossing (SB, ST or SB/T)		
Any supplemental crossing can be combined with any of the alternatives that retain the existing Tappan Zee Bridge. New bridges could accommodate a pedestrian/cyclist pathway; new tunnels and serial bridge/tunnels would not.		
RX-SB1	RX-SB1.1: Supplemental Bridge with 4 or 6 GP lanes - Remote North Location	New highway bridge at remote location north of Nyack
	RX-SB1.2: Supplemental Bridge with 4 or 6 lanes - Remote South 1 Location	New highway bridge at remote location south of Piermont
	RX-SB1.3: Supplemental Bridge with 4 or 6 lanes - Remote South 2 Location	New highway bridge at remote location near New Jersey border
RX-ST1	Supplemental Bored Tunnel with 4 or 6 GP lanes – Remote South Location	New bored highway tunnel at a remote location south of Piermont
RX-SB6	Supplemental Bridge with Commuter Rail only – Remote South Location	New Commuter Rail bridge at a remote location south of Piermont
RX-ST6	RX-ST6.1: Supplemental Bored Tunnel with Commuter Rail only - in existing Tappan Zee Corridor	New bored tunnel with Commuter Rail located immediately north of, parallel to, or immediately south of the existing Tappan Zee Bridge
	RX-ST6.2: Supplemental Bored Tunnel with Commuter Rail only – Remote South Location	New bored tunnel with Commuter Rail at a remote location south of Piermont
RX-SB/T6	Supplemental Serial Bridge and Immersed Tunnel with Commuter Rail only – in existing Tappan Zee Corridor	New Commuter Rail bridge/tunnel located immediately north of, parallel to, or immediately south of the existing Tappan Zee Bridge
RX-ST7	Supplemental Immersed Tunnel with LRT/AGT or Monorail only - in existing Tappan Zee Corridor	New LRT/AGT or Monorail immersed tunnel located immediately north of, parallel to, or immediately south of the existing Tappan Zee Bridge

Hybrid River Crossings (HB) A combination of a new replacement bridge with the partial use of the existing Tappan Zee Bridge		
RX-HB1	Hybrid Replacement Bridge with Commuter Rail connecting to the Putnam Line	New highway bridge that crosses the existing alignment, and a new rail crossing that passes under Blauvelt Park in a tunnel, over the western part of the river on a separate bridge, to join the new highway bridge to pass over the channel. (Consideration will be given to incorporating segments of the existing trestle). Commuter rail tunnel would continue in Westchester and connect to the Putnam Line.