Tappan-Zee Bridge / I – 287 Corridor Project
Portland State University Presentation
May 7, 2010
Agenda

- Project Definition, Background and History
- Unique Environmental Process
- Bridge Requirements
- Transit Analyses and Decisions
Regional Characteristics

• Bridge 25 miles north of NYC
• Bridge traffic not NYC - bound
• NYC choke-point to North East
• Strategic Interstate Routes
• Five CRT Lines / 3 to NYC
• West of Hudson underserved
Project’s Strategic Significance

- Bridge is Vital Link
- Bridge is Opportunity for Transit
- 30 mile Infrastructure Project
- Uses existing corridors
- Ties all major roadways
- Ties all existing rail lines
- Transit services extend beyond
Major Transit Markets

Cross Corridor

To/From NYC
How Did We Get Here?

• Existing Bridge Requires Major Investment

• Future Traffic Demands can not be accommodated
  – 140,000 (2010) to 205,000 (2035)

• Can not expand Bridge / Interstates

• Transit is only reasonable solution to congestion relief and mobility needs
Where We Are Today

• Decided:

  – Bridge Must be Replaced

  – Bus Rapid Transit Service for inter and intra County service in 30 mile corridor and beyond

  – Commuter Rail service extension from West of Hudson to NYC Grand Central Terminal
Project History

- Notice of Intent published in Dec. 2002
  - NYS Thruway and Metro-North lead agencies
  - FHWA and FTA co-lead Federal Agencies
  - Initial Scoping activity (2003-2004)
  - Alternatives Analysis Study (2004-2005)
  - Engineering & Environmental (2006-2007)
  - NYSDOT joined team 2005; Leads Study 2007
Significant Timing Consequences

- Bridge requires significant attention in the near term

- Affiliating the transit planning process with highway and bridge design negatively impacts the overall schedule

- Every year of additional effort costs $100s Millions in escalation through inflation

- Federal transit funding applications require an iterative review process that negatively impacts the overall project schedule
Revised NEPA Approach Tiered Analysis

Current DEIS / FEIS document resulting in:

- **Transit Tier 1 ROD**
  - ROD (Tier 1) identifying the preferred transit mode, termini and alignment
  - Planning level scenario
  - Sets groundwork for future Tier 2 ROD for Transit

- **Highway/Bridge Tier 2 ROD**
  - ROD (Tier 2) will advance Bridge and Highway work
  - Accommodate reasonable improvements identified within the Tier 1 Transit Analysis
  - Address detailed transit needs and impacts in the Highway/Bridge Corridor

Assured Advancement of Comprehensive Multi-Modal Project
Preserves potential New Starts funding opportunity
Five Different Bridge Segments

Bridge Length over 3 Miles

1. Causeway (8,800 feet)
2. West Deck Truss (1,750 feet)
3. Main Spans (2,413 feet)
4. East Deck Truss (2,250 feet)
5. East Trestle (300 feet)
Bridge Cross Section

Original TZB (Opened 1955)

Current TZB (Since 1993)

6 lanes

7 lanes / one daily reversible
Existing Bridge vs. Required Bridge

Existing Bridge:
- 7 Lanes
- Movable Barrier

Required Bridge:
- 8 Lanes
- 2 BRT Lanes
- Safety Shoulders
- Pedestrian / Bike Lanes
Seven TZB Options

Rehabilitation Options

Option 1
Option 2
Option 3
Option 4

Replacement Options

Option 1
Option 2
Option 3
Bridge Cost Criteria (2012 dollars)

<table>
<thead>
<tr>
<th>Capital Cost (Billions)</th>
<th>Maintenance Cost (Billions)</th>
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</thead>
<tbody>
<tr>
<td>Rehabilitation Options</td>
<td>Replacement Options</td>
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<tr>
<td>$3.4</td>
<td>$0.7</td>
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<tr>
<td>$1.1</td>
<td>$0.7</td>
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<tr>
<td>$1.5</td>
<td>$0.9</td>
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<td>$1.2</td>
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<td>$6.4</td>
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<td>$0.7</td>
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<td>$0.9</td>
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</tbody>
</table>

[Image: Tappan Zee Bridge Environmental Review]

David A. Paterson, Governor

New York State Department of Transportation

MTA Metro-North Railroad

New York State Thruway Authority

MTA Metropolitan Transportation Authority

New York State Department of Transportation

MTA Metro-North Railroad

New York State Thruway Authority
1. Rehabilitation of existing bridge in-kind is not viable
   - Does not accommodate Transit
   - Does not address operational and safety concerns

2. Rehabilitation options require very extensive new work
   - Costs are comparable to replacement options
   - River impacts comparable in all options

3. Rehabilitation options retain serviceability problems
   - Remaining spans will continue to deteriorate

4. Replacement options have high life cycle (150 yrs)
Replacement Bridge Options to be Studied in the DEIS

Single Level / 3 Spans

Dual Level / 2 Spans
Transit Mode Selection Report

March 2009

Tappan Zee Bridge/I-287 Environmental Review
Transit Mode Evaluation Criteria

• Transportation
  – Transit Ridership
  – Roadway Congestion
  – Capacity
  – Travel Time

• Environmental
  – Land Use, Transit Oriented Development
  – Wetlands, Parkland, Historic/Archaeological
  – Displacements
  – Air Quality
  – Energy

• Cost
  – Capital Costs
  – Operating Costs
  – Costs per passengers/passenger mile
  – Benefit savings
Federally Approved Local MPO Forecasting Methodology.

Best Practices Model

- Encompasses 28 counties in the tri-state metropolitan area in three states.
- All major and minor routes, toll facilities, and TIP-listed improvements.
- All transit modes, routes, stations, transfers and links.
- Provides traffic & transit ridership forecasts for any/all links in the system.
- Dependent upon MPO generated Economic, Employment, Population forecasts which are periodically updated.

Complexities

- Calculates 25 million paired journeys in the peak periods.
- Focused on 10 Counties along 30 mile corridor.
- Calibrated and verified based on 2005 traffic counts.
- First application to forecast transit ridership.
## Alternatives under Consideration 2007

<table>
<thead>
<tr>
<th>Alternative/Options</th>
<th>Rockland</th>
<th>Hudson Line Connection</th>
<th>Westchester</th>
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<tbody>
<tr>
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<td>![Transfer Icon]</td>
<td>![Exclusive Lanes/Busway Icon]</td>
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<tr>
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<td>![Transfer Icon]</td>
<td>![Exclusive Busway Icon]</td>
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<td>![Direct Icon]</td>
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<tr>
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<td>![Direct Icon]</td>
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## Ridership Projections

### Transit Mode

<table>
<thead>
<tr>
<th>Rockland</th>
<th>Westchester</th>
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<tbody>
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<tr>
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<td>800</td>
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<td>1,400</td>
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<td>53,600</td>
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<tr>
<td><strong>4A</strong></td>
<td>21,800</td>
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<td>48,700</td>
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<tr>
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<td>79,900</td>
</tr>
</tbody>
</table>

- **Cross-Corridor**
- **To/From NYC**
- **New**
- **Diverted**

**Trips**

0 | 10,000 | 20,000 | 30,000 | 40,000 | 50,000 | 60,000 | 70,000 | 80,000 | 90,000
Total Transit Capital Cost
(2012 Dollars)

Transit Mode

<table>
<thead>
<tr>
<th>Rockland</th>
<th>Westchester</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Bus" /></td>
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<tr>
<td><img src="image3.png" alt="Train" /></td>
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<tr>
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<td><img src="image13.png" alt="Train" /> + <img src="image14.png" alt="Bus" /></td>
</tr>
</tbody>
</table>

- $1.0 B for BRT (Rockland/Westchester)
- $6.7 B for CRT (Suffern to Hudson Line)
### Alternative Cost Estimates
#### 2012 Dollars

<table>
<thead>
<tr>
<th>ALTERNATIVES / OPTIONS</th>
<th>ROCKLAND</th>
<th>WESTCHESTER</th>
<th>2012 COST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>3A</strong> Full Corridor Bus Rapid Transit Westchester Local</td>
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<td>[Bus Icon]</td>
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<td><strong>4D</strong> Rockland Commuter Rail Transit Full Corridor Bus Rapid Transit</td>
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<td>[Train Icon] [Bus Icon] [Busway Icon]</td>
<td>$15,999</td>
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Transit Decision and Process

• Analyze Full Corridor Bus Rapid Transit And Commuter Rail from Orange / Rockland to GCT in the DEIS
  • Tier 1 Transit ROD; Tier 2 Hwy / Bridge ROD in 2011
  • Begin design of transit-ready highway / bridge in 2012
  • Begin construction of transit-ready highway / bridge in 2013
• Begin Tier 2 Transit DEIS in 2011
  • Decide advancement of BRT / CRT in single or sequenced DEIS
• Implement Full Corridor BRT after Tier 2 Transit process
  • Timeline possibly upon completion of Bridge
• CRT Advances as Circumstances and Finances Dictate
Bus Rapid Transit System Description

• A new BRT system will operate along a high speed “trunk” line in the 30 mile corridor and feeder routes will run up to 30 miles beyond the trunk from outlying markets

• BRT system will be integrated with the local bus system

• Intermodal connectivity with CRT at six BRT stations along the I-287 corridor

• BRT can be integrated into surrounding areas and generate significant development benefits, including Transit Oriented Development opportunities
Bus Rapid Transit Service Plan
Bus Rapid Transit Running Ways

• **Busway**
  – Dedicated barrier-separated lanes
  – No mixed traffic

• **BRT/HOV Lanes**
  – BRT lanes shared with HOV vehicles

• **Bus Lanes**
  – Dedicated in-street lanes
  – No mixed traffic
  – Signal prioritization
Commuter Rail Transit
Commuter Rail Transit Service Plan

No. of Trains | Headways (minutes) | Route
--- | --- | ---
1 | 60 | A Port Jervis - Hoboken
1 | 60 | B Port Jervis - New York Penn Station
1 | 60 | C Port Jervis - Hoboken
1 | 60 | D Port Jervis - New York Penn Station
2 | 30 | E Port Jervis - Grand Central Terminal
4 | 15 | F Harriman - Grand Central Terminal
4 | 15 | G Hillburn - Grand Central Terminal

1 Additional trains in 2030 and 2035 using the Trans Hudson Express Tunnel
Commuter Rail Transit
Rockland Options

CRT in the Median
Commuter Rail Transit
Rockland Options

CRT on South Side of I-287
No Build

Suffern

Rockland

Existing Tarrytown Station

Tarrytown

Hudson River

Hudson Line

Existing

Westchester

Port Chester
Busway in Rockland
Busway in Westchester
CRT in Rockland
Busway in Rockland
Bus Lanes in Westchester
CRT in Rockland
HOV Lanes in Rockland
Busway in Westchester
CRT in Rockland
Status and Schedule

- DEIS underway, completed later this year
- Subsequent Federal Review
- Public Hearings in 2011
- Preferred Alternative Selected in 2011
- Finance Plan Decisions in 2012
- FEIS / Records of Decision 2012
www.tzbsite.com

Thank You