



*New York State Thruway Authority
Metropolitan Transportation Authority
Metro-North Railroad*

*Alternatives Analysis/Environmental Impact Statement
Tappan Zee Bridge/I-287 Corridor*

Scoping Information Packet

December 2002

The contact persons for the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), New York State Thruway Authority (NYSTA), and the Metropolitan Transportation Authority/Metro-North Railroad are listed below:

Robert Arnold
Division Administrator
New York Division
Federal Highway Administration
Lee O'Brien Federal Building
Room 719
Clinton Avenue and North Pearl Street
Albany, NY 12207

Irwin B. Kessman
Director of Planning and Program Development
Federal Transit Administration
One Bowling Green
Room 429
New York, NY 10017

Christopher A. Waite, P.E.
Executive Project Manager
New York State Thruway Authority
200 Southern Boulevard
Albany, NY 12209

Janet M. Mainiero, AICP
Deputy Project Manager
MTA Metro-North Railroad
347 Madison Avenue
New York, NY 10017

NYSTA and MNR, in coordination with FHWA and FTA, will conduct three public scoping meetings, one each in Westchester, Rockland, and Orange Counties, to solicit public comments on the scope of the AA/DEIS. Each scoping meeting will run from 4:00 – 9:00 pm and consist of an informal open house and two formal presentations. Formal presentations will be made at 4:30 pm and again at 6:30 pm, after which comments will be received in the group forum. A court reporter will be available to record the formal meeting and public comments. The public scoping meetings will be held in the following locations:

Westchester County Public Scoping Meeting

Tuesday Jan. 14th, 2003, 4:00 to 9:00 pm
Sleepy Hollow High School
200 North Broadway
Sleepy Hollow, NY 10591

Rockland County Public Scoping Meeting

Wednesday Jan. 15th, 2003, 4:00 to 9:00 pm
Palisades Mall
1000 Palisades Center
West Nyack, NY
Room: Adler

Orange County Public Scoping Meeting

Thursday Jan 16th, 2003, 4:00 pm to 9:00 pm
Orange County Community College
115 South Street
Middletown, NY 10940

The public comment period will be open for a minimum of 45 days following the January 16 meeting. Additional comments after the scoping meetings may be submitted for consideration until March 4, 2003 to one of the project sponsors at the addresses previously listed.

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SECTION 1. INTRODUCTION

1.1. PROJECT DESCRIPTION

The New York State Thruway Authority (NYSTA) and Metro-North Railroad, a subsidiary of the Metropolitan Transportation Authority (collectively, MTA/MNR), formed a partnership and, in April 2001, entered into a Memorandum of Understanding (MOU) as project sponsors to undertake a comprehensive study of regional transportation needs and mobility within the Tappan Zee Bridge/I-287 Corridor (Corridor). Extending 30 miles from the I-287/87 interchange in Suffern, New York to the I-287/I-95 interchange in Port Chester, New York, the Corridor includes the Tappan Zee Bridge – its most important infrastructure element.

The Corridor currently experiences severe levels of traffic congestion throughout its length. This congestion is projected to worsen, detrimentally affecting mobility and the economic health and quality of life in the I-287 Corridor. The purpose of the study is to identify and evaluate alternative proposals to address the identified transportation needs for the Tappan Zee Bridge/I-287 Corridor (the Project). The study will also take into account the structural needs of the Tappan Zee Bridge, as well as other existing Thruway infrastructure in the Corridor.

The Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) will be the joint lead agencies under the National Environmental Policy Act (NEPA), with NYSTA and MTA/MNR as Project sponsors. The environmental review process to be completed will also satisfy the New York State Environmental Quality Review Act (SEQRA), which follows the same basic process as NEPA. FHWA and FTA will be responsible collectively for the environmental review of the proposed Project and would likely be major funding sources for an approved Project. There will be extensive involvement by the Inter-Metropolitan Planning Organization (IMPO) Committee (comprised of voting members of the Mid-Hudson South Transportation Coordinating Committee and the Newburgh-Orange County Transportation Council), and other federal, state, county and local agencies, key stakeholders, elected officials and the general public.

1.2. PURPOSE OF THE SCOPING INFORMATION PACKET

The Scoping Information Packet for the Alternatives Analysis/Environmental Impact Statement (AA/EIS) is the initial step of the scoping process, which is required under the regulations issued by the Council on Environmental Quality (CEQ) to implement NEPA. The purpose of the Scoping Information Packet is to provide information to the public and agencies on the environmental review process for the proposed Project. The key element of that process will be the preparation of an EIS that will consider reasonable alternatives that would achieve the basic goals and objectives of the Project, including the discussion of environmental impacts of these alternatives and measures to mitigate any identified significant adverse environmental impacts. The purpose of the broader scoping process is to provide opportunities for the public and agencies to comment on and provide input to the AA/EIS.

The Scoping Information Packet for the Tappan Zee Bridge/I-287 Corridor discusses the following topics:

Overview: provides a description of the Corridor, background on the history of Project planning, a description of the AA/EIS process, and the preliminary Project schedule.

Purpose and Need for the Project: describes the purpose and need for the Project and identifies the draft goals and objectives of the Project.

Alternatives: identifies the list of preliminary alternatives under consideration to satisfy the identified goals and objectives.

Transportation, Environmental and Land Use Impacts: identifies the environmental areas that will be addressed and outlines the analyses that will be conducted.

Public and Agency Involvement: defines the goals and objectives of the public and agency participation program and outlines the public participation program elements. The outreach plan will remain flexible throughout the AA/EIS Process to accommodate changing public needs.

SECTION 2. OVERVIEW

2.1. THE CORRIDOR

The Tappan Zee Bridge/I-287 Corridor extends from the I-287/I-87 interchange in Suffern to the I-287/I-95 interchange in Port Chester for approximately 30 miles through Rockland and Westchester Counties and includes the Tappan Zee Bridge (Figures 1 and 2). The Corridor includes the lifeline 3.1 mile-long Tappan Zee Bridge crossing of the Hudson River, and encompasses a critical section of the New York State Thruway, and the entire Cross Westchester Expressway (CWE). It provides a critical link in the national system of interstate and defense highways, as well as links to a number of key north-south and east-west regional and interstate routes, including I-87 north to Albany, I-287 south to New Jersey, I-87 south to New York City, I-684 north to Connecticut, and both I-95 north to New England and south to New York City and New Jersey.

The Tappan Zee Bridge opened to traffic in 1955 and carried an average of 18,000 vehicles daily. Today, approximately 135,000 vehicles cross the bridge on an average weekday, with volumes as high as 170,000 vehicles on some peak days. During the past 20 years, traffic volumes have grown significantly in the Corridor, by over 50 percent on the CWE and by more than 70 percent on the Tappan Zee Bridge.

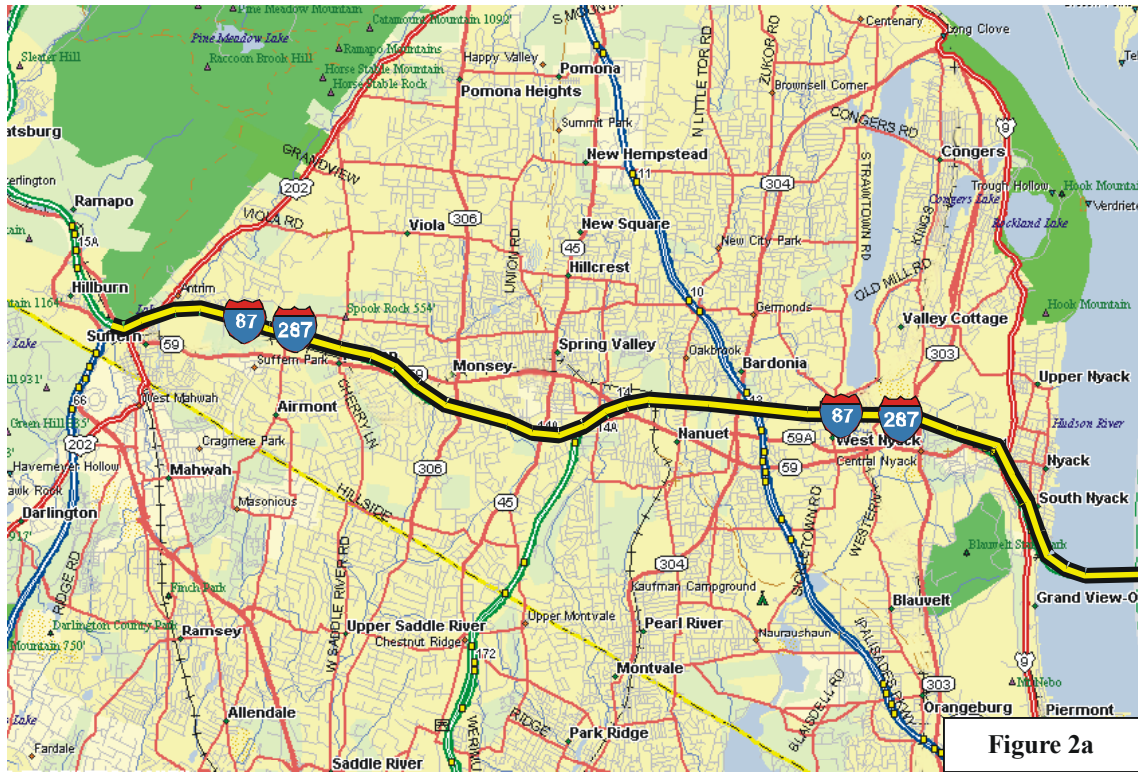
Passenger rail facilities in the Corridor are all oriented north and south and none of those facilities cross the Hudson River. Except for Amtrak, all of the commuter lines east of the river are the responsibility of the Metro-North Railroad (MNR), and carry more than 250,000

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Figure 1

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customer trips each weekday and some 72 million trips per year. These lines (the New Haven, Harlem, and Hudson) all terminate at Grand Central Terminal in Manhattan. Amtrak also runs trains that provide intercity and commuter service from Penn Station north along the east side of the river, to Albany and beyond. The Port Jervis Line and Pascack Valley Lines, which are also commuter lines, are west of the river. These lines are operated by NJ TRANSIT (NJT), under contract to MNR and terminate at Hoboken, New Jersey. Access to Manhattan from the lines west of the river is presently limited to Port Authority Trans Hudson (PATH) train service from Hoboken, but will soon be augmented by service to Penn Station in Midtown Manhattan via the Northeast Corridor once the Secaucus Transfer Station in New Jersey opens for full service in early 2004.

There are numerous east-west and north-south bus services provided throughout the Corridor. Long distance bus service is available between upstate New York and New York City, and many local and regional bus services are provided by a combination of local government and commercial providers. In addition, passenger ferry service is provided between Haverstraw and Ossining.

The Corridor includes significant portions of both Westchester and Rockland counties, including the communities of Rye, Harrison, White Plains, Greenburgh, Elmsford, Tarrytown, Nyack, Nanuet, Spring Valley, and Suffern. Development patterns in the Corridor are predominantly suburban, with intermixing commercial areas, business centers, and residential neighborhoods.

The Corridor passes through pockets of more dense urban development predominantly in the White Plains area. In addition to Westchester and Rockland Counties, the Corridor provides the primary access between those portions of the New York City metropolitan area east of the Hudson River and the northern suburbs west of the Hudson, primarily Orange County. The Corridor also serves as a major route for traffic traveling between the New England States and areas to the south and west.

2.2. HISTORY OF PROJECT PLANNING

Over the years, the Corridor has been the subject of numerous studies, and many transportation improvements have been undertaken. Improvements to the Tappan Zee Bridge include the installation of a movable barrier that allows operation of a seven-lane cross section with four lanes in the peak direction, electronic toll collection, and variable pricing for commercial vehicles. Corridor highway improvements include a number of lane additions and other roadway improvements in Rockland County east of Route 9W, the reconstruction of portions of the CWE, the current project to reconstruct the I-287/I-87 interchange east of the bridge, and modifications to the Spring Valley toll barrier. Transit improvements have also been undertaken in the Corridor, including express bus services on I-287, feeder bus service across the river to Tarrytown where passengers bound for Manhattan can transfer to MNR's Hudson Line, ferry service between Ossining and Haverstraw and the opening of park-and-ride lots in Rockland County.

Despite the many improvements that have been implemented, congestion in the Corridor has grown steadily and the aging bridge structure has reached the point that major reconstruction is needed just to maintain this vital link in the transportation system.

The most recent study of the Corridor was the April 2000, “Long Term Needs Assessment and Alternatives Analysis”, which was initiated by the Governor’s I-287 Task Force. The report of the Task Force concluded that while there is no single preferred solution for addressing the transportation needs in the Corridor, both a short-term aggressive Transportation Demand Management (TDM) program and longer-term capital improvements are needed. All of the long-term alternatives evaluated by the Task Force required replacement of the Tappan Zee Bridge because it was concluded that rehabilitation of the existing structure would be highly disruptive, cost an estimated \$1.1 billion, and not result in additional mobility enhancements or meaningful congestion relief.

In addition, the Task Force further concluded that offering transit as a viable alternative travel option to the single occupant auto would enhance greatly the Corridor’s people-handling capacity. The final report concluded that of the three transit options that could serve the Corridor, new east-west commuter rail is projected to yield slightly greater benefits than light rail or bus guideway. The Task Force conducted a limited study that did not undertake a detailed evaluation of the Corridor alternatives or conduct an environmental review of these alternatives to evaluate their potential impacts. Therefore, the Task Force found that a more detailed study of commuter rail and the other two east-west transit alternatives is required to fully evaluate alignments, service levels, benefits and costs.¹

On November 28, 2000, NYSTA and MTA/MNR announced that an EIS would be undertaken to identify and evaluate alternatives to address the mobility needs of the I-287 Corridor as well as the structural needs of the Tappan Zee Bridge. Alternatives contained in the I-287 Task Force report, as well as those suggested by elected officials, transportation and environmental groups, community groups and the public, will be considered during the current environmental process.

2.3. ALTERNATIVES ANALYSIS/ENVIRONMENTAL IMPACT STATEMENT

To be consistent with NEPA and SEQRA, the EIS will consider reasonable alternatives and conduct a thorough review of potential environmental impacts of a proposed project. For this Project, as is typically done for major transportation proposals, alternatives will be identified and then evaluated through an Alternatives Analysis (AA) to produce a reasonable number of alternatives for more detailed study in the EIS. The AA will reduce the number of alternatives through a screening process that employs factors based primarily on Project goals and objectives. This process discloses the environmental impacts of the reasonable alternatives that would achieve the basic Project goals and objectives, compared to the No Build alternative, and examines measures to avoid, reduce and/or mitigate any significant adverse environmental

¹ *Final Report for Long Term Needs Assessment and Alternatives Analysis I-287/Tappan Zee Bridge Corridor*, prepared for: Governor’s I-287 Task Force, April 2000. This report is available on the I-287/Tappan Zee Bridge website at www.tzbsite.com.

impacts. The Project also will take into account and be coordinated with other transportation improvement projects underway in the area such as NJ Transit's EIS process looking at the restoration of passenger rail service on the West Shore Line. Both a Draft and Final EIS (DEIS and FEIS, respectively) are produced prior to the issuance of a Record of Decision (ROD) by the federal decision-making agencies. (State agencies will issue a Statement of Findings under SEQRA.) Each step of the process is subject to extensive public review and comment.

The AA/EIS Process for the Tappan Zee Bridge/I-287 Corridor will be carried out in two stages, as outlined below:

Stage I: Alternatives Analysis/Initial Environmental Review Process – This stage will identify and screen a large number of potential alternatives to produce a smaller number of reasonable alternatives that can then be studied in more detail in the EIS. The specific steps to be undertaken in Stage I include:

- Conduct the Scoping Process and Scoping Meetings for the AA and DEIS,
- Formulate a Purpose and Need Statement,
- Identify Project Goals and Objectives,
- Formulate Screening Criteria,
- Develop Travel Forecasting Procedures,
- Commence Collection of Baseline Data for the DEIS,
- Conduct Alternatives Analysis and Public Workshops,
- Issue Alternatives Analysis Report,² and
- Develop Detailed Contents of the DEIS

Stage II: Environmental Impact Statement – This stage will include the following steps

- Prepare and Circulate the DEIS for Comment,
- Hold Public Hearings on the DEIS as Part of the Public Comment Period,
- Prepare a Locally Preferred Alternative Report (for a transit project, if required),
- Prepare and Issue the FEIS, and
- Prepare a NEPA ROD for Federal Agencies and SEQRA Findings Statements for State Agencies.

² The completion of the AA Report would also satisfy the need for a Major Investment Study (MIS), pursuant to current New York Metropolitan Transportation Council rules. The MIS leads to a decision to pursue a given investment strategy, which in turn is studied in more detail through an EIS.

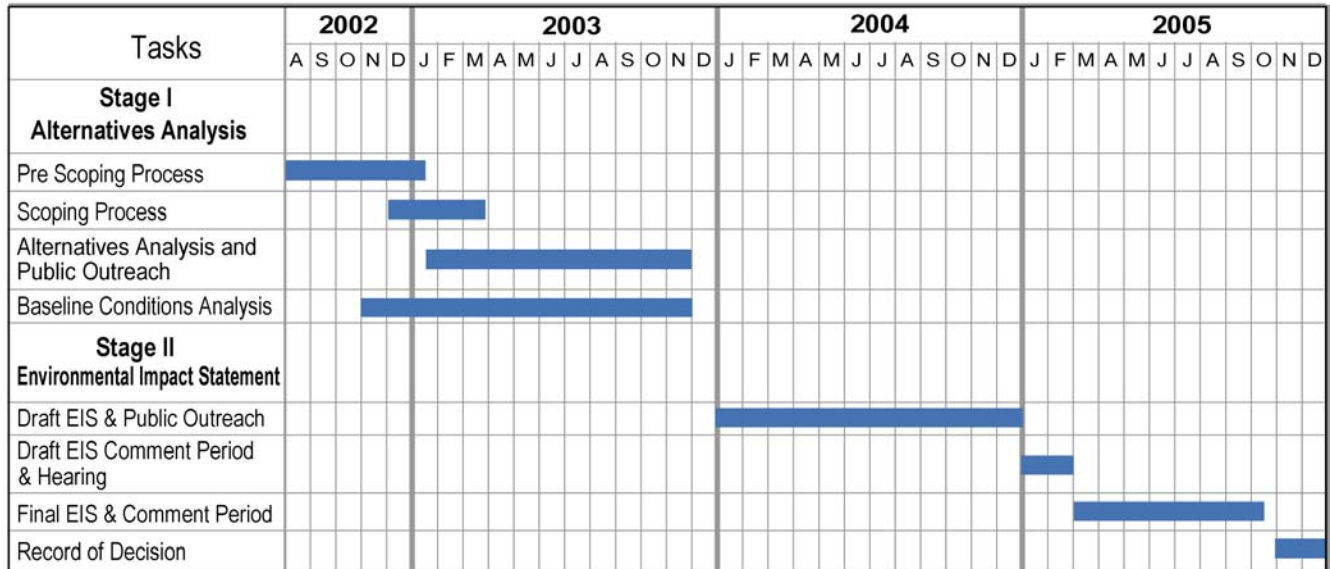
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2.4. SCHEDULE

The preliminary schedule for conducting the AA/EIS is illustrated in the timeline of Figure 3.

FIGURE 3

TAPPAN ZEE BRIDGE / I-287 AA/EIS PRELIMINARY PROJECT SCHEDULE



SECTION 3. PURPOSE AND NEED FOR PROJECT

3.1. TRANSPORTATION PURPOSE AND NEED

The purpose of the Project is to address the mobility needs in the Tappan Zee Bridge/I-287 Corridor. The Project will also address the structural needs of the Tappan Zee Bridge; the Corridor's most important infrastructure element, and other existing Thruway infrastructure in the Corridor. The specific needs to be addressed by the Project include:

Growing Traffic Congestion and Delay: The Tappan Zee Bridge/I-287 Corridor experiences varying levels of traffic congestion throughout its 30-mile length. The steady increase in traffic demand over the years, together with only limited increases in roadway capacity and paucity of east-west modal alternatives, have resulted in a continual increase in travel time and delay. These problems are most acute in the vicinity of the Tappan Zee Bridge itself during the eastbound morning and westbound evening peak periods.

Lack of Modal Alternatives: Other than bus services operated in mixed traffic, which suffer the same congestion as all other traffic, no other east to west modal alternatives exist in the Corridor.

The existing commuter rail lines provide service only north and south from Orange and Rockland Counties into New Jersey and from Westchester, Putnam and Dutchess Counties to Grand Central Terminal in Manhattan. MNR's lines east of the Hudson River are orientated to the Manhattan commuter travel market, while the lines west of the river are underutilized since they require a transfer and result in long travel times for trips in the primary travel markets. The nearest exclusive transit crossings of the Hudson River are located to the south in New York City: the Lincoln Tunnel bus lanes that serve the Port Authority Bus Terminal and the Northeast Corridor rail services that connect to New York Penn Station. As a result, a number of potential transit markets are not served by a dedicated transit system. These transit markets include: trips from origins west of the Hudson to Midtown Manhattan; travel wholly within the Corridor among Rockland and Westchester origins and destinations; and travel through the Corridor with either an origin or destination in Orange, Putnam or Fairfield counties.

Lifeline Structure: The Tappan Zee Bridge provides the principal Hudson River crossing between the George Washington Bridge (I-95) and the Newburgh Beacon Bridge (I-84), a distance of 46 miles. (The Bear Mountain Bridge, between I-287 and I-84, because of its location in a less urbanized area as well as its indirect east-west connections carries significantly less traffic.) With interstate connections at both ends (I-287/I-87 at Suffern at the west end and I-287/I-95 at Port Chester at the east end), I-287 is a vital link in the regional and national transportation network. If the bridge were to become unserviceable through an act of nature or man, it would be devastating both to the regional and local transportation network.

Safety and Vulnerability to Minor Incidents: The Tappan Zee Bridge has substandard lane widths (11 feet 8 inches) and no shoulders. Without shoulders, vehicle breakdowns and minor traffic accidents can cause severe congestion in both directions. In turn, this frequent congestion impacts emergency response times and minor incidents can become major problems.

Support for Local and Regional Economic Well-Being: The Tappan Zee Bridge and the entire I-287 Corridor are vital to the economic vitality of the Hudson River Valley. Background growth and development in the area are projected to produce increases in travel demand of 20 to 30 percent over the next 20 years, and traffic impacts are expected to be significant without mobility improvements in the Corridor. In turn, these traffic impacts could impede the region's economic health and adversely affect the quality of life in Corridor communities.

Structural Condition of the Tappan Zee Bridge: The Tappan Zee Bridge has been in service since December of 1955. In addition to the usual problems from normal wear and tear to be expected on a 47-year old bridge, parts of the structure are nearing or are at the end of their useful life. This state of deterioration is in part due to the location of the structure in a harsh environment. Also contributing to the deterioration of the bridge is the increase in vehicle and truck traffic over the years. As the result of a robust and continuous program of heavy maintenance, the condition of the bridge does not pose any danger to the traveling public. In the year 2000, the costs of complete rehabilitation and retrofitting to current seismic design standards were estimated at approximately \$1.1 billion.

Seismic Vulnerability: The Tappan Zee Bridge is located in a seismically active zone, but has not been designed to withstand possible seismic events. The seismic vulnerability of the Bridge is of vital concern.

3.2. PROJECT GOALS AND OBJECTIVES

The following primary goals and associated objectives are suggested to guide the process of alternatives development, screening and evaluation for the Tappan Zee Bridge/I-287 Corridor improvements:

Goal 1: Improve the mobility and accessibility of people, goods and services for the travel markets served by the Tappan Zee Bridge/I-287 Corridor. Long-term and short-term actions to reduce highway travel delay and congestion and improve mobility, including various modes of public transit, will be considered to address the following travel objectives:

- Minimize travel delay and congestion levels for the movement of people, goods and services in the Tappan Zee Bridge/I-287 Corridor.
- Improve local mobility.
- Improve regional mobility.
- Provide modal alternatives to travel by single occupant automobile to achieve the following sub-objectives:
 - Provide means of travel that are not subject to the delays and unpredictable nature of the congestion experienced on the roadway network.
 - Divert some existing travel demand and accommodate a portion of future travel growth by public transit, ridesharing and/or other means to reduce the growth in congestion on the Corridor's network of highways, roadways, and local streets.
 - Increase the ability to satisfy mobility needs through non-vehicular travel (e.g., measures to reduce demand, transportation system management, accommodation of travel by pedestrians and bicycles, etc).
 - Provide travel choices supportive of land development patterns that could result in less rapid growth in automobile travel demand.
 - Minimize Intermodal transfers.

In addition, improvements in regional mobility subsume the objective of sustaining the economy of the region and allowing, to the extent desired and approved by relevant governmental entities, economic growth and development. Thus, achieving the overarching objective of enhanced mobility should also achieve the objectives of supporting economic vitality and health consistent with regional planning and preserving the quality of life in the region.

Goal 2: New transportation infrastructure should be flexible and adaptable to meet changing long-term travel demand. The introduction of new and/or enhanced transportation facilities in the Corridor should recognize that the resulting infrastructure must serve needs that will continue to exist beyond the current planning horizons. As a result, investments should achieve the following objectives:

- Maximize ability to accommodate increases in travel demand.

- Minimize constraints to serving future travel markets.

Goal 3: Maintain and preserve vital elements of the transportation infrastructure. The maintenance and preservation of the Hudson River crossing, the most critical element of the Corridor's basic functional infrastructure, shall be of the highest concern. The following objectives should be met regardless of the ultimate solution chosen to satisfy the mobility needs of the Corridor:

- Assure that the Corridor's transportation infrastructure meets current standards for structural design and integrity.
- Assure that the Corridor's infrastructure meets current seismic design standards.

Goal 4: Improve the safety and security of the transportation system. Corridor mobility improvements should address current safety and security concerns in the Corridor with respect to the following objectives:

- Reduce motor vehicle accident rates.
- Improve roadway geometrics to current standards to aid safety, operations and emergency response.
- Improve the likelihood that the River Crossing would survive a severe natural or manmade event.

Goal 5: Support compliance with state and national environmental standards. Corridor improvements, to the extent practicable, should avoid significant adverse environmental impacts and comply with federal and state environmental standards, including those for:

- Air quality,
- Noise,
- Energy consumption
- Hudson River and other surface water quality,
- Stormwater management,
- Wetlands,
- Public parklands, and
- Historic resources.

Goal 6: Develop feasible, cost effective solutions that can be implemented within a reasonable time horizon. The mobility improvements chosen for the Corridor must be viable and achievable based on reasonable expectations of future financial resources and within a reasonable timeframe based on the following objectives:

- Foster capital and operating cost effectiveness.
- Capable of implementation in a manner that addresses both existing and future mobility and structural needs.
- Minimize disruptions to the regional transportation system.
- Maximize use of the region's existing and committed transportation infrastructure.

SECTION 4. ALTERNATIVES

4.1. PRELIMINARY ALTERNATIVES

Given the many previous studies and high level of public attention to the issues in the Corridor, a wide variety of possible improvements have been proposed over the years. These potential actions range from demand management and other low-cost strategies designed to make the best use of existing facilities along a continuum to construction of replacement bridges and tunnels on the existing or new alignments. In addition, many concepts have been put forward for the development of new fixed transit facilities (commuter rail, light rail, and busways) in the existing Corridor, as well as passenger ferry services both across and down the river as far as Manhattan.

An initial list of 60 possible actions was developed as part of the I-287 Task Force Report. In addition, the extensive public attention to these issues has added a number of other possible options. The potential alternative elements identified to date, which are expected to be supplemented during the public scoping process, have been organized into four broad categories as follows:

- **Transportation Demand/System Management Strategies:** these are generally lower cost management strategies designed to impact travel demand, choice of travel mode, or time of travel; or actions to improve the overall efficiency of the existing transportation system.
- **New/Improved Transit Services:** these are generally strategies to improve existing transit services or add new ones that do not require the construction of major new transportation infrastructure in the Corridor.
- **River Crossing Improvements:** these include the various proposals put forward to rehabilitate or replace the existing Tappan Zee Bridge with improved roadway and transit facilities.
- **Corridor Improvements:** these are the various proposals to upgrade and/or add new transportation infrastructure elsewhere in the Corridor.

Elements from more than one category may be combined to form Corridor-wide alternatives. For example, a Corridor-wide alternative could include transportation demand management actions, combined with new transit services, a new river crossing, and infrastructure improvements elsewhere in the Corridor. In addition, Corridor-wide alternatives could ultimately include more than one transit element to serve the different travel markets. For example, a commuter rail line crossing the river and connecting with the Hudson Line might be combined with a light rail transit line crossing Westchester County. The alternatives screening and evaluation process discussed in Section 4.2 will reduce the numerous potential alternative elements and produce a more manageable number of combinations that ultimately will be evaluated in detail in the DEIS.

4.1.1 No Build Alternative

A No Build alternative will be evaluated in the DEIS, as required by NEPA and SEQRA. This alternative includes the continued maintenance of the Bridge in its current operational capacity,

including construction and/or structural activity needed to maintain such operations, but not the full rehabilitation described as a potential alternative. Elsewhere, the No Build alternative includes projects already proposed and included in the region's adopted Transportation Improvement Program (TIP).

4.1.2 Transportation Demand/System Management Strategies

These are actions designed to maximize the use and efficiency of the existing transportation systems and attempt to shape travel demand to available capacity. In general, these actions do not require the construction of major new facilities.

4.1.2.1 Demand Management

These are actions intended to reduce current and future growth in the demand for travel, especially during the peak commute periods, and include strategies such as:

- Alternative Work Schedules: Offer employees flextime and/or compressed workweeks to reduce total commuting during peak travel periods.
- Telecommuting: Elimination of work-related trips.
- Cash-Out Parking: Provide employees with the option of taking the cash equivalent of the value of employer-provided parking in lieu of a parking space to encourage employees to carpool or use transit to commute to work.
- Parking Preference: provide priority spaces for high occupancy vehicles.
- Parking Authority with Controls: Create area-wide Parking Authority to oversee parking policies and provide information.

4.1.2.2 Transportation Systems Management

These are actions associated with the management of the existing transportation infrastructure intended to encourage travel by modes other than the single occupant automobile. Primary options include the following:

- Ridesharing/Vanpooling: Expand ridesharing/vanpooling programs and enhance their desirability/acceptability through promotion, financing, and by addressing insurance and other legislative issues that will minimize costs passed on to users. In addition, expand the guaranteed ride home program to reduce concern about reliance on carpools for late-working employees.
- Establish Management Centers with "Shuttle Manager" or MetroPool Partnership: Establish organization(s) and locations with centralized authority to provide guidance, coordination, and assistance with various programs and users.
- Restrict Use of Existing Tappan Zee Bridge Reversible Lane: Limit use of Tappan Zee Bridge reversible lane to buses/vanpools in peak period (removes one general-purpose traffic lane in peak direction).
- Bypasses for Buses/Vanpools at Toll Plaza and Other Critical Locations: Provide physical means for buses/vanpools to bypass congested areas (e.g., use shoulders for short distances) and/or provide signage to allow avoidance of congested areas.

- Arterial Priority Bus Lanes: Establish priority bus lanes on feeder and/or parallel arterial highways.

4.1.2.3 Variable Tolls/Congestion Pricing

These are toll policies intended to encourage travel by modes other than the single occupant automobile. Primary options include the following:

- Congestion Pricing: Establish peak hour (period) congestion pricing for passenger cars on the Tappan Zee Bridge.
- Eliminate Discounts for Single Occupant Vehicles: Allow only High Occupancy Vehicles to receive a commuter discount rate.
- Tax Incentives/Toll Discounts for Off-Peak Users: Establish a toll reduction program for businesses that implement staggered hours; make off-peak toll expenses tax deductible.
- Subsidized Tolls for Buses/Vanpools: Further subsidize tolls for buses/vanpools on the Tappan Zee Bridge.

4.1.2.4 Intelligent Transportation Systems (ITS) Related Programs

These are actions associated with providing better real time information intended to encourage travel behavior leading to more efficient use of the existing transportation infrastructure.

Primary options include the following:

- Collect Better Real Time Information on Traffic Conditions: Expand TRANSMIT and closed circuit television.
- Improve the Distribution of Customer Information on Traffic Conditions: Improve and expand the use of electronic signs, highway advisory radio, and the Internet to inform the public of highway conditions.
- Improve Integration of Train and Bus Schedules: Improve connections between trains and buses by automatically notifying bus drivers to hold buses when trains are delayed.
- Implement a Dynamic Traffic Management System: Optimize traffic operations by using better real-time information and signage to promote more efficient use of highway capacity.
- Provide On-Demand Transit Shuttle Service: Enable travelers to use computers and telephones to reserve transit service and determine status of vehicles.
- Provide Real-Time Parking Information: Use highway electronic signs to notify drivers where space is available in park and ride lots.

4.1.2.6 Commercial Vehicle Programs

These include various ideas on ways intended to encourage the use of the I-84/Newburgh Beacon Bridge for truck travel headed to/from New England.

4.1.3 New/Improved Public Transit Service

These are generally actions to improve existing bus, rail and ferry services or add new public transit services that do not require major transportation infrastructure. Primary options include:

4.1.3.1 Bus Service

Primary options to improve existing bus services include the following:

- Expand Tappan Zee Bridge Bus Route: Provide increased service on the Tappan ZEEexpress to and from the Tarrytown and White Plains MNR stations.
- Expand Other Bus Service: Expand service coverage and frequency on express buses from west of Hudson origins to the Port Authority Terminal in Midtown Manhattan, as well as local feeder lines to west of Hudson rail services.
- Expand/Create Additional Shuttle Service: Increase employer shuttle services to locations such as rail stations and add new low fare shuttle services.
- Eliminate Transfer Cost: Eliminate all current bus transfer fees.
- Transit Discounts: Expand and streamline the use of TransitChek or establish other discount programs to increase employer participation and achieve greater use.
- Intermodal Centers: Establish intermodal centers to provide convenient transfers between modes.

4.1.3.2 Rail Service

Primary options to improve the existing network of rail service include the following:

- Improve rail service on Hudson and Harlem Lines: Increase frequency of service on rail lines.
- Improve rail service on Port Jervis and Pascack Valley Lines: Increase frequency of service on the Port Jervis and Pascack Valley Lines and expand service from these lines to the new Secaucus Transfer Station.

4.1.3.3 Ferry Service

Primary options to improve the existing network of ferry services include the following

- Haverstraw – Ossining: Provide enhanced ferry service across the Hudson River with parking and bus connections.
- Rockland – Tarrytown: Provide ferry service across the Hudson River with parking and bus connections.
- Rockland – NYC: Provide ferry service down the Hudson River to existing Midtown terminals with parking and bus connections in Rockland.

4.1.3.4 Park and Ride

Primary options to improve the existing network of park and ride facilities include the following

- New park and ride lots: Identify sites and funding for new park and ride lots.
- Expand existing rail station parking: Expand Metro-North station parking.

4.1.4 River Crossing Improvements

These concepts focus on a Hudson River crossing and its immediate approaches, and can be combined with many of the Corridor improvements discussed in the later sections of this chapter.

4.1.4.1 Tappan Zee Bridge Rehabilitation

A variety of options have been suggested for rehabilitating and possibly expanding the existing bridge, as follows:

- Rehabilitation Only: This option would rehabilitate the bridge to address only structural and seismic needs and maintain the current roadway geometry and function.
- Rehabilitation and Widen: This option includes a variety of alternatives that go beyond the basic rehabilitation of the structure. Additional elements could include widening to provide 12-foot wide traffic lanes and full design standard shoulders, addition of a traffic lane to eliminate the reversible lane operation, and/or addition of space for an exclusive rail or bus transit facility and/or pedestrian and bicycle facility.

4.1.4.2 Tappan Zee Bridge Replacement

This involves a wide range of strategies for the construction of a replacement bridge parallel to the current structure and then demolition of the existing bridge. While a replacement bridge would likely consist of a minimum of eight general-purpose traffic lanes with sub-options for adding space (e.g., for alternative exclusive operation of transit and/or pedestrians and bicycles), a number of possible functional combinations are possible, as follows:

- Basic Highway: A basic configuration of four general-purpose traffic lanes in each direction with sub-options adding or deleting lanes.
- Basic Highway Plus Busway: The basic new highway bridge and its sub-options plus one or two lanes dedicated for exclusive use by buses. Sub-options for the transit element include buffer or barrier separation of the bus lanes, incorporation of mechanical or electronic guidance control and addition of other high occupancy vehicles during restricted periods.
- Basic Highway Plus Rail Transit: The basic new highway bridge and its sub-options with the addition of a two-way rail transit facility. Sub-options for the rail facility include alternative transit technologies such as commuter rail, light rail, automated guideway transit, and monorail.

4.1.4.3 Tappan Zee Tunnel Replacement

This involves a wide range of strategies for the construction of a replacement tunnel parallel to the current structure and then demolition of the existing bridge. A number of basic tunnel types are possible including tunnels bored deep below the riverbed, emersed tubes buried in the river bottom and combination or serial bridge and tunnels. While a replacement tunnel would likely consist of a minimum of eight general-purpose traffic lanes with sub-options for adding space (e.g., for alternative exclusive operation of transit and/or pedestrians and bicycles), a number of possible functional combinations are possible, as follows:

- Basic Highway: A basic configuration of four general-purpose traffic lanes in each direction with sub-options adding or deleting lanes.
- Basic Highway Plus Busway: The basic new highway tunnel and its sub-options plus one or two lanes dedicated for exclusive use by buses. Sub-options for the transit element include a separate tunnel or tunnel section, incorporation of mechanical or electronic guidance control and addition of other high occupancy vehicles during restricted periods.
- Basic Highway Plus Rail Transit: The basic new highway tunnel and its sub-options with the addition of a two-way rail transit facility. Sub-options for the rail facility include a separate tunnel or tunnel section, and alternative transit technologies such as commuter rail, light rail, automated guideway transit, and monorail.

4.1.4.4 Tappan Zee Bridge/Tunnel Combination Replacement

This involves a wide range of strategies for the construction of both a new bridge and a new tunnel parallel to the current structure and then demolition of the existing bridge. The most likely combination is a new bridge to carry the roadway and a tunnel to carry electrically propelled rail or rubber tire transit.

4.1.4.5 Supplemental Public Transit Bridge or Tunnel in the Corridor

Numerous ideas have been put forward about constructing new bridges and/or tunnels for transit in the Corridor. Depending on the transit mode, the bridge or tunnel might not need to be near and/or parallel to the existing bridge. In the case of tunnels, a number of basic types are possible including tunnels bored deep below the riverbed, emersed tubes buried in the river bottom and combination or serial bridge and tunnels. The existing bridge could then be rehabilitated to handle both directions of the highway.

4.1.4.6 Supplemental Bridge and/or Tunnel in a New Corridor

Numerous ideas have been put forward about building a new bridge and/or tunnel in an entirely new corridor, generally to the south of the existing Tappan Zee Bridge but north of the George Washington Bridge. In the case of tunnels, a number of basic types are possible including tunnels bored deep below the riverbed, emersed tubes buried in the river bottom and combination or serial bridge and tunnels. The concept here would not be to improve mobility in the Corridor directly, but rather to divert some traffic from the Corridor to a new crossing. The net result might be a mobility improvement for those trips that remain in the Tappan Zee Bridge /I-287 Corridor. The traffic most often thought of as potentially diverted by this approach would be through trips from the west (both New York and New Jersey) destined for New York City, southern Westchester County and Long Island. In addition, a new rail transit-only bridge or tunnel constructed south of the Corridor has been suggested as a way to allow development of other connections to Metro-North's existing lines. In all cases, a new crossing to the south would not replace the existing (as maintained or rehabilitated) Tappan Zee Bridge.

4.1.5 Corridor Improvements

Corridor alternatives include a wide range of possible highway and transit improvements on both sides of the river. These must be developed to be compatible with each of the river crossing alternatives from a modal and functional standpoint, but can still be combined with many of the elements from the other improvement categories. The basic Corridor improvement options include:

4.1.5.1 Roadway Improvements

A new bridge and/or tunnel crossing of the Hudson River may require roadway changes on one or both sides of the river. In addition, mobility restrictions in the Corridor extend beyond the Tappan Zee Bridge itself. As a result, numerous suggestions have been made regarding roadway improvements throughout the Corridor. The revised Record of Decision for I-287/Cross Westchester Expressway, NYS Thruway from Route 303 to Route 120, Westchester and Rockland Counties, FHWA-NY-EIS-95-01F (July 1998), approved additional lanes on I-287 east of the Tappan Zee Bridge, but only auxiliary lanes east of Thruway Interchange 8. Accordingly, unless there is a showing during the scoping process that would warrant reconsideration of this determination, this option will not be included as an alternative element to be considered in the AA screening process. Alternative elements that have been identified for consideration to date include the following:

- Roadway Transitions to New Bridge and/or Tunnel: Modify I-287 approaches to transition between new river crossing(s) and existing I-287 lanes.
- Additional Lanes in Selected Sections: Add lanes on selected sections of I-287 where bottlenecks currently exist or are forecast.
- Improve Various Interchanges and Transition Areas: Various proposals have been put forward and others are likely to develop as detailed study progresses.
- Close Some Interchanges: Close selected entrance and/or exit ramps.

4.1.5.2 New Commuter Rail Lines

These alternatives involve various combinations of new east-west commuter rail lines in the Corridor linking to a new river crossing capable of accommodating Metro-North commuter trains. New commuter rail lines could be combined with other rail and/or bus improvements in the Corridor to provide a more comprehensive system of improvements to serve multiple travel markets. The primary alternatives include the following:

- Port Jervis Line to New Haven Line: This proposal would involve building a new commuter rail line the length of the Corridor that would intersect or connect with all of the rail lines on both sides of the river. Rail service could be inter-connected with existing services in a variety of ways (e.g., a rail connection from the Port Jervis and Pascack Valley Lines across the Hudson River to the Hudson line with connecting service provided to Stamford via the New Haven Line). This option assumes a new rail crossing of the Hudson River, either as a stand-alone rail tunnel or bridge or incorporated into a larger roadway tunnel or bridge. In addition, the crossing could be in the I-287 Corridor or located further south.

- Intermediate Line Alternatives: While all commuter rail alternatives would include a new Hudson River bridge or tunnel, there are many possible intermediate line segments. For example, a line might connect from the Port Jervis Line only as far east as White Plains with through trains to Manhattan routed either via the Hudson or Harlem Lines.
- Add Tappan Zee Bridge Stop to Hudson Line: Add a rail station under the Tappan Zee Bridge on the Hudson Line to provide a transfer to/from either a bus rapid transit or possible light rail line crossing the river.

4.1.5.3 Light Rail Transit (LRT)

Light rail lines are being built throughout the country as lower cost alternatives to traditional urban rail rapid transit such as the New York City Subway or the Metro in Washington, D.C. Although LRT systems are slower and have lower capacity than commuter rail lines like those operated by Metro-North, they are very adaptable as feeder systems to high capacity lines and serving non-radial travel markets, such as commuter trips not destined to Manhattan. As a feeder system to MNR's radial lines to Grand Central Terminal, LRT would introduce an added transfer. The Hudson-Bergen LRT System recently opened in New Jersey is typical of this technology. In addition, a number of closely related technologies, including Automated Guideway Transit (AGT) systems, have been suggested. AGT systems are generally similar to LRT systems in capacity and performance characteristics but can be either rail or rubber-tire and have the added feature of driverless operation, requiring full grade separation from other traffic. The AirTrain system under construction at JFK Airport and the monorail at Newark Airport are examples of AGT technology. New light rail lines could be combined with other rail and/or bus improvements in the Corridor to provide a more comprehensive system of improvements to serve multiple travel markets. The primary alternatives include the following:

- Port Chester – Suffern LRT: This involves a line across the entire Corridor and assumes an LRT Hudson River crossing either as a stand-alone rail tunnel or bridge or incorporated into a larger roadway tunnel or bridge.
- Intermediate East-West Lines: This involves more modest LRT systems serving only a portion of the Corridor such as from White Plains to the Palisades Center, or Tarrytown to Port Chester. This smaller system could include a Hudson River LRT crossing or might be limited just to Westchester County.
- Automated Guideway or Monorail System Sub-options: This includes a range of fully grade-separated transit system options that could employ a number of possible steel wheeled or rubber tired transit technologies. Options for the extent of the system and the Hudson River crossing are similar to those for traditional LRT.

4.1.5.4 Bus Rapid Transit (BRT)

This mode has gained much attention in recent years as a potentially lower cost means of providing service comparable to rapid transit but with buses. To achieve high capacity, high speed and highly reliable service requires exclusive protected lanes and/or busways along the key trunk segment of the Corridor. As with the LRT alternatives, BRT would act as a feeder to MNR's train service to Manhattan and require a transfer. In addition, BRT improvements could be combined with other rail and/or bus improvements in the Corridor to provide a more

comprehensive system of improvements to serve multiple travel markets. Primary options include:

- Corridor Bus Rapid Transit: This option includes separated or barrier protected bus lanes the length of the river crossing and similar supporting facilities along all or portions of the balance of the Corridor on either side of the river. These facilities would support the development of a BRT system serving the Corridor and connecting to the existing rail infrastructure via a transfer.
- Guided Busway: This option is a variant on the BRT alternatives and would add a mechanism to allow mechanical or electronic control over the guidance of buses. This has the potential to allow a reduction in the width of structure required for a dedicated busway. The guided bus concept could be used continuously or intermittently in the Corridor as deemed appropriate.
- Construct New Bus Lanes, Ramps and Park and Ride Facilities: This option includes a variety of improvements throughout the Corridor to enhance bus service. One example is the construction of a direct bus connection from the east end of the Tappan Zee Bridge to the Metro-North Tarrytown Station to facilitate transfers to the Hudson Line.

4.2. ALTERNATIVES SCREENING AND EVALUATION PROCESS

Following the scoping meetings and receipt of public comment, the preliminary list of alternative elements will be added to and modified based on the public and agency input. The resulting long list of different alternative elements will be further developed and described. This initial long list will then be evaluated according to a set of “screening” criteria for the selection of alternatives for detailed evaluation in the DEIS. There will be two levels of screening. The criteria for the Level 1 screening evaluation will identify “fatal flaws” that would preclude an alternative from satisfying Project goals and objectives and thus the purpose and need of the Project. The Level 1 Screening Analysis is expected to reduce substantially the number of potential options.

The surviving elements will then be assembled to form a shorter list of Corridor-wide alternatives that will be further developed and described. A Level 2 Screening Analysis will then be undertaken, using more detailed selection criteria than the Level 1 “fatal flaw” criteria. The Level 2 criteria will also be based on Project goals and objectives, but will use more detailed measures. Based on the Level 2 Screening results the most promising alternatives will form the basis for the options to be carried forward into the more detailed assessments in the DEIS.

The screening/selection process, including the formulation of criteria, will be performed in consultation with the FHWA, FTA, IMPO, NYSTA, MTA/MNR, NYSDOT, and other involved and interested transportation and environmental agencies (e.g., local/county/state agencies and elected officials and key community/business interest groups) and through workshops involving the general public.

The selected Build alternatives, along with a No Build alternative, will undergo detailed evaluation in the DEIS with respect to the transportation, environmental, and socioeconomic and land use impacts discussed in the following chapter, as well as cumulative impacts. Potential

mitigation measures and unavoidable significant adverse impacts will also be evaluated. The DEIS, together with the results of the agency and public review process to follow, will form the basis for decision-making and selection of a preferred alternative for the FEIS.

SECTION 5. ENVIRONMENTAL, SOCIOECONOMIC AND LAND USE IMPACTS

5.1. SUMMARY

The DEIS will assess the impacts of the Tappan Zee Bridge/I-287 Corridor-wide alternatives that are selected as a result of the AA in accordance with NEPA, SEQRA and CEQ regulations. This evaluation will summarize the results of coordination with federal, state, and local agencies; present the appropriate federal, state, and local regulations and policies; inventory and compile previous studies; describe the methodology used to assess impacts; identify the affected environment; predict and analyze the construction-related (short-term) and operational (long-term) impacts (direct, indirect, and cumulative) of reasonable alternatives; and identify opportunities and measures for mitigating significant impacts. Required reviews and determinations under Section 106 of the National Historic Preservation Act will be conducted within the NEPA process. All reasonable alternatives will be evaluated at a comparable level of detail.

The specific scopes for the environmental studies to be conducted for the DEIS will be determined at the completion of the AA. These studies will be based on the findings of the preliminary environmental analyses and baseline conditions information gathered during Stage I and consultations with local, state, and federal agencies and review and comments from the public.

The analysis will cover relevant aspects of the natural and human environment expected to be affected by each alternative, and will include the following categories:

- ***Transportation***
 - Traffic
 - Public Transportation
 - Non-Motorized (Bicycles and Pedestrians)
 - Navigation
 - Aviation
 - Goods Movement
 - Safety
- ***Natural Environmental***
 - Air Quality
 - Noise and Vibration
 - Hudson River Ecosystems and Water Resources
 - Hudson River Drainage Basin Ecosystems
 - Visual Resources and Aesthetics
 - Energy

- Geology and Soils
- Hazardous Materials
- ***Socioeconomic and Land Use***
 - Land Use and Zoning
 - Environmental Justice
 - Acquisitions, Displacements, and Relocations
 - Public Services and Utilities
 - Historic and Archeological Resources
 - Parks and Recreation
- ***Construction Impacts*** – Either as a separate section of the DEIS or within each relevant subject area.
- ***Cumulative Impacts*** – Either as a separate section of the DEIS or within each relevant subject area.

The following sections describe the general types of work anticipated for each of these environmental categories.

5.2. TRANSPORTATION

5.2.1 Roadway and Traffic

A detailed inventory and analysis will be undertaken of relevant major roadways to develop baseline conditions, and identify and quantify key problem areas and probable causes. This inventory will generally involve the interchange areas and approach roads within 1/2 mile of the I-287 interchange ramp termini in the Corridor. Existing traffic conditions will be documented using several methods and data sources. Existing daily, AM peak and PM peak period traffic volume counts on affected roadways will be obtained from a number of sources, including the NYSTA, New York State Department of Transportation (NYSDOT), Rockland and Westchester Counties, and the cities along the Corridor. If necessary, an additional count program may be developed for the DEIS.

Detailed traffic forecasts will be generated using existing MPO models. This data will then be used as input to a number of Corridor and facility specific traffic simulation models to assess the performance of the roadway network, toll plazas and other facilities as appropriate. Baseline and single design year traffic operational analyses of impacted roadways will be undertaken for each of the Corridor-wide alternatives, as well as the No Build alternative.

5.2.2 Public Transportation

Existing public transit facilities (e.g., bus and rail), services and ridership information will be compiled. Transit services in the I-287 Corridor that could be affected by the alternatives will be inventoried. These include existing commuter rail services, the numerous local and regional bus services as well as ferry operations. The impacts of the alternatives on the bus and commuter rail systems will be assessed. Ridership forecasts by mode and line will be developed for the design

year for all Corridor-wide alternatives, as well as the No Build alternative. The DEIS will consider ridership diversions and impacts of additional/decreased buses on the regional highway network.

5.2.3 Non-Motorized (Bicycles and Pedestrians)

Existing bicycle and trail facilities will be inventoried together with any available information on their current use. The inventory of information will be used as input in developing the alternatives and assessing the potential use of any new bicycle and pedestrian facilities.

5.2.4 Navigation

Previous reports on navigational usage of the Hudson River will be reviewed. Maritime traffic log summaries will be obtained from the U.S. Coast Guard and the Army Corps of Engineers to determine the past and present usage of the channel under the existing bridge. Summaries of vessel accident reports for this reach of the river will be obtained and reviewed to evaluate navigational limitations of the existing conditions. The projected future navigation needs of this reach of the river will be assessed in the evaluation of the alternatives.

5.2.5 Aviation

Because the Corridor serves as one of the primary access routes to both Stewart and Westchester Airports, some of the alternatives may affect airport access. To assess these impacts, projections of current and future commercial aviation services at these airports will be inventoried, along with available data on the patterns of ground transportation access. An assessment of the implications of the alternatives on air passenger and freight activity will be undertaken, based on the likely changes in travel patterns that could alter the market for air service at Stewart and Westchester Airports.

5.2.6 Goods Movement

Existing rail freight lines will be inventoried and information will be gathered on the level of use and function of the lines in the region's overall freight network. Truck freight data will be developed from information contained in the regional transportation model, and augmented by surveys if determined necessary. The implications of the alternatives on goods movement by truck and rail will be assessed based on the likely changes in traffic capacity and travel times in the Corridor, as well as an assessment of the potential for rail freight.

5.2.7 Safety

Existing accident data from I-287 and the other primary roadways in the Corridor will be compiled. The impacts of the alternatives on transportation safety will be assessed based on a number of factors, including facility type (bridge, tunnel, etc.) roadway geometry, traffic control devices, traffic volumes and vehicle miles of travel. All impacts will be identified based on a

comparison to the No Build alternative. Additional safety considerations will be assessed related to the alternative transit modes.

5.3. ENVIRONMENTAL

5.3.1 Air Quality

Currently, both Rockland and Westchester counties are in a severe ozone (O₃) nonattainment area as defined by the 1990 Clean Air Act Amendments. Westchester County is also in a moderate Carbon Monoxide (CO) nonattainment area. Motor vehicles are a predominant source of CO emissions and a significant source of ozone generating compounds such as nitrogen oxides (NO_x) and volatile organic compounds (VOC). Therefore, regional and localized analyses will be conducted to determine the degree to which Project alternatives impact air quality compared to the No Build alternative. Air quality impacts during construction will also be assessed, and will lead to development of a Project construction plan for the preferred alternative that accounts for staging, number and type of construction equipment, and mitigation strategies, among other matters.

5.3.2 Noise and Vibration

Noise studies will be undertaken to estimate the noise implications of Project construction as well as of projected future traffic conditions and/or rail operations. The applicable standards include those developed by FHWA, FTA, NYSDOT (Environmental Procedures Manual), the U.S. Environmental Protection Agency (USEPA), and the U.S. Department of Housing and Urban Development (USDHUD).

The noise analysis will recommend mitigation concepts for any significant adverse impacts for both the construction and operating phases of the Project. During construction, mitigation may involve the selection of traffic detour routes, noise suppression of construction equipment, and installation of temporary noise barriers. Long-term noise impacts will address incorporating features into the Project design that effectively reduce noise levels.

5.3.3 Hudson River Ecosystems and Water Resources

Alternatives that include construction work in the Hudson River may impact various habitats found within and alongside the river, including wetlands and submerged aquatic vegetation that serve as fish feeding and spawning areas. In addition, the river's channel may act as migratory passageway for fish that spawn and feed further upstream, including the striped bass and the short nose sturgeon (a threatened species). A detailed search and analysis of available data relating to fish, shellfish, benthic macroinvertebrates, plankton, subaqueous vegetation, water chemistry, sediment chemistry, sediment toxicity, avian fauna, wildlife, bathymetry, tidal fluctuations, currents, wave conditions, turbidity, and wetlands will be performed. Alternatives will be compared with respect to their potential effects on loss of habitat.

Construction may temporarily or permanently impact local groundwater resources or surface watercourses. These impacts will be assessed and mitigation strategies identified. Mitigation measures may include sediment erosion and control plans, a stormwater management plan, and a spill prevention and control strategy.

Also, potential impacts may occur within the Hudson River itself, depending on the alternatives. These impacts will be evaluated using mathematical models that estimate the dispersion of river sediments disturbed by construction work, the results of which can be compared to applicable water quality standards to assess the significance of construction activity.

Long-term, continuing impacts to water resources may occur as a result of stormwater entrained with roadway related contaminants entering local streams and tributaries or the River. This impact will be of particular concern where local tributaries discharge to surface water bodies that act as potable water sources. In such circumstances, runoff control features that remove highway contaminants before they enter the tributaries, such as grassy swales, detention basins, and other features that can improve water quality, will be assessed.

Within the Hudson River itself, potentially significant impacts from additional shading generated by any new or enlarged structures will be studied. The scale of this issue will depend on the extent of incremental coverage in comparison to existing conditions, the effect on any wetlands or submerged aquatic vegetation, and the degree to which some shading will be attractive to certain fish species and the presence of bridge understructure will result in further fish habitat benefits.

5.3.4 Hudson River Drainage Basin Ecosystems

The Corridor contains many undeveloped wetland areas that serve as important terrestrial and aquatic habitats, including potential habitat for threatened, endangered, and protected species. A detailed review of available data will be conducted related to the identification and values of wildlife management areas; deer management areas; nature preserves; critical habitats of protected species; vegetation coverage; wetlands; streams and waterbodies; and developed areas. A preliminary habitat survey will be conducted to characterize the vegetation and other habitat features that potentially could be impacted. Alternatives will be compared with respect to their potential effects on loss of habitat.

5.3.5 Visual Resources and Aesthetics

The Hudson River Valley includes the largest National Historic Landmark District in the country. The Valley has also been designated as a National Heritage Area and the Hudson River has been named as an American Heritage River. Alternatives involving new or expanded crossing will be evaluated in terms of compatibility with aesthetic and historic values associated with the Hudson River. Existing viewsheds will be evaluated for visual quality and the potential impacts of alternatives will be assessed. Changes that could result from Project features will be evaluated qualitatively using three criteria of visual relationship: vividness, intactness, and unity.

5.3.6 Energy

Factors that will be considered in assessing the potential impacts of the alternatives include change in vehicle miles of travel (VMT), type of vehicles using the roadways, fuel consumption of vehicle fleets and change in vehicle operating speeds. Depending on the alternatives, energy consumption associated with the alternative transit modes will be estimated.

5.3.7 Geology and Soils

Existing information on topography, soils, and geology will be collected and reviewed. Alternatives will be compared qualitatively with respect to such factors as potential for erosion, changes in topography from existing conditions (including cut and embankment slopes), and use or disposal of debris or excavated soils.

5.3.8 Hazardous Materials

An assessment of the environmental condition of Corridor properties will be performed taking into consideration the relative significance of each hazardous material site as identified in the available federal and state data bases; suspected contaminants at each of the identified sites; and the relationships of land use and the physical environment to hazardous materials and wastes. Alternatives will be compared with respect to such parameters as presence of known or suspected contaminated soils and difficulty/feasibility of remediation.

5.4. SOCIOECONOMIC AND LAND USE

5.4.1 Land Use and Zoning

The land use analysis will consider areas approximately one-half mile on either side of the Corridor. A review and summary of pertinent land use and socioeconomic policies contained in local, county, and state land use and infrastructure plans and zoning will be conducted.

Alternatives will be compared with respect to potential impacts on land use and zoning, housing, neighborhood and community cohesion, access to community facilities and services, and effects on local economies and commercial districts resulting from changes in travel patterns, travel time, and congestion. The analyses will address the consistency of the alternatives with any approved Local Waterfront Revitalization Plans and the State's Coastal Zone Management Policies.

5.4.2 Environmental Justice

Executive Order 12898, issued in February 1994, requires all federal agencies to consider the issues of environmental justice in their decision-making and to develop environmental justice strategies. The Order focuses attention on the environmental and human health conditions of minority and low-income communities. Key components to an environmental justice strategy

are to enhance public participation in the planning and development process, and to ensure that transportation projects do not disproportionately affect minority and low-income populations.

Data on minority populations will be collected from the 2000 Census for the affected communities, identifying both total numbers and percentages of the total population, and comparing these to a larger community context. Similarly, 2000 census block data on low-income populations (below poverty levels) will be compiled for the affected communities. Alternatives will be assessed to determine if there are any concentrations of these sensitive populations that would suffer disproportionately high and adverse effects from any of the alternatives being considered. Factors such as exposure to emissions, loss of economic resources, and community access will be considered.

5.4.3 Displacements and Relocations

The number and characteristics of any displaced households, businesses and other institutions will be identified and described. Any potential disproportionate adverse effects on any special social groups (poor, elderly, transit dependent, and handicapped) will be identified and evaluated with respect to identification of takings and access changes or limitations for each affected parcel based upon preliminary design plans. Displacements of properties, including residences, businesses, parklands, historic/cultural/archaeological resources, prime and unique farmlands (if any), and any other significant uses will be identified.

5.4.4 Public Services and Utilities

Major existing utilities along the Corridor will be identified and described, including cable and fiber optic lines, electric transmission lines, substation, and water and gas transmission lines. Alternatives will be evaluated with respect to disruptions, relocations, or need for utility construction.

5.4.5 Historical and Archaeological Resources

Cultural resource assessments and identification efforts pursuant to Section 1439 of the New York State Historic Preservation Act and Section 106 of the National Historic Preservation Act will be undertaken. Background research and a survey will be conducted to determine the location and type of National Register-listed and eligible resources, archaeological resources, and locally significant architectural and archaeological resources.

The area's topography, natural resources, and built environment will be examined to assess the impact of the alternatives on known and potential archaeological resources. Alternatives will be evaluated with respect to potential impacts on known National Register-listed and eligible sites, and potential archaeological sites.

5.4.6 Parklands and Section 4(f)/6(f) Evaluation

The nature and location of parks, recreation areas, wildlife or waterfowl areas, wild and scenic rivers, and national trails and natural landmarks will be identified and described. Resources that may be impacted by the alternatives will be identified as potentially requiring a Section 4(f) Evaluation. A Section 4(f) analysis will be required if the Project will entail taking of public parkland for transportation related purposes. In addition, a Section 4(f) analysis may be needed should there be adverse impacts to cultural resources that either are listed or eligible to be listed on the National Register of Historic Places. The need for a 4(f) analysis will be determined during the initial stages of project planning.

5.5. CUMULATIVE IMPACTS

Cumulative impacts are those that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. Guidelines established in “Considering Cumulative Effects Under the National Environmental Policy Act” (CEQ, January 1997) will be used. The analysis will identify the qualitative direct and indirect effects of the alternatives related to the other identified future actions on those elements of the environment where cumulative impacts may be significant. The discussion will include, as appropriate, such topics as regional geography, broad demographic data, major land use patterns and trends, centers of economic activity, and the regional transportation network.

5.6. CONSTRUCTION IMPACTS

Temporary impacts of construction will be identified, including assessments of expected detour routes and traffic and passenger diversions as a result of temporary disruptions to the existing network. Temporary acquisitions and easements required for construction will be identified and the impacts will be assessed. Measures to mitigate short-term impacts will be identified and qualitatively discussed. Conceptual construction schedules, phasing and types of activities will be described, as appropriate.

SECTION 6. PUBLIC AND AGENCY PARTICIPATION PROGRAM

6.1. PROGRAM GOALS AND OBJECTIVES

The Public Involvement Plan for the Project has been developed to provide numerous and timely opportunities for meaningful and active public participation throughout the AA/EIS Process. FHWA and FTA, as well as NYSTA and MNR are committed to a meaningful process of public outreach, involvement, and engagement. The program is designed to achieve a comprehensive public involvement process, beginning with public input in defining the goals and objectives for the Project. The public involvement will be conducted under the guidance and with the participation of FHWA and FTA.

The following goals have been identified as the basis for the public involvement effort for the Project:

- Establish effective communication with the stakeholders and the public;
- Educate the public about the environmental review process and the role of government, stakeholders and citizens;
- Engage the public in the environmental review process;
- Ensure that the public has the opportunity for input to the development of the alternatives and technical analysis;
- Create opportunities to communicate with local communities; and
- Inform the public of the progress of the study and of additional opportunities to participate in the Process.

6.2. PROGRAM ELEMENTS

The Public Involvement Plan for the Tappan Zee Bridge/I-287 Corridor is comprised of the following principal elements:

6.2.1 Interagency Coordination

To facilitate a coordinated and collaborative process, and to assist information sharing among affected agencies and stakeholders, the organizational structure will include a Project Management Team, Cooperating Agency Task Force, Stakeholders Committee, Inter-Metropolitan Planning Organization (IMPO)³, Technical Resource Subcommittees, and Outreach to New Jersey and Connecticut.

6.2.2 Meetings

Stakeholder, elected official and general public meetings will be held at key intervals in the process. These meetings include the following:

6.2.2.1 Stakeholder Committee Meetings

The Stakeholder Committee will provide an open forum for discussion and encourage interaction among stakeholders, who represent interest groups and organizations. Through active participation of its members, the Stakeholder Committee will provide an opportunity for a wide range of opinions to be considered throughout the Project.

The Stakeholder Committee will be comprised of representatives of organizations that reflect the diverse nature of the region. Stakeholder Committee members will include representatives from the following categories: environmental organizations, educational institutions, development and planning organizations, emergency services organizations, engineering and transportation

³ The IMPO Committee was created and is comprised of the voting members of the New York Metropolitan Transportation Council (NYMTC) and the Newburgh-Orange County Transportation Council (NOTC).

organizations, hospitals and health organizations, businesses and industries, and recreation and tourism.

Regular meetings will be held throughout the Project, at key milestones and as required to update and inform the stakeholders. Stakeholder Committee members will also be apprised of the progress of the study via regular progress reports, newsletters, and meeting minutes distributed by the agencies.

6.2.2.2 Elected Official Briefings

NYSTA and MNR will conduct briefings at Project milestones with elected officials representing the study area.

6.2.2.3 Public Scoping Meetings

NYSTA and MNR will conduct three public scoping meetings, one each in Westchester, Rockland, and Orange Counties, to solicit public comments on the scope of the AA/DEIS. The public scoping meetings will be held at times that will ensure that a broad spectrum of opinion is obtained and that as many people as possible are able to attend. The Scoping Information Packet will be made available both online and in written format concurrently with issuance of the Notice of Intent by the joint lead agencies. The public comment period will be open for a minimum of 30 days.

6.2.2.4 Agency Scoping Meetings

The Project Sponsors will conduct two agency scoping meetings, one each in New York City and Albany, to solicit input and comments from local, state and federal agencies. The meetings will be held during normal business hours to ensure broad participation.

6.2.2.5 Public Workshops and Meetings

At key points in the Project, the NYSTA and MNR will sponsor public workshops to present information and obtain feedback from the community. Public workshops will be used as an educational tool to provide information on the process and as a venue for soliciting input on topics (such as the screening of alternatives). Public meetings and workshops will be held to exchange information with the public. The meetings and workshops will be broadly promoted via such means as direct mail, Web site and media outlets.

6.2.3 Communication Tools

A variety of communication tools will be employed to obtain information from the public, as follows:

- **Community Outreach Centers:** will be established in Westchester and Rockland Counties and will serve as local opportunities for the public to obtain information and provide feedback on the Project.

- **Project Web Site:** will be designed to create a focal point for the public and the media. The site will thoroughly explain the environmental process, provide up-to-date information and include an interactive component that will encourage two-way communication between the agencies and site visitors.
- **Newsletters:** will be produced that include information on the Project, visuals (maps and charts), contact persons, and upcoming meeting dates.
- **Media Outreach:** an extensive media outreach effort will be undertaken to engage all interested parties. Low-income and minority communities will be engaged through outreach via ethnic media and other techniques to assure that environmental justice goals are achieved.