I-787/Hudson Waterfront Corridor Study

Albany County, New York

FINAL REPORT

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Prepared for:

Capital District Transportation Committee
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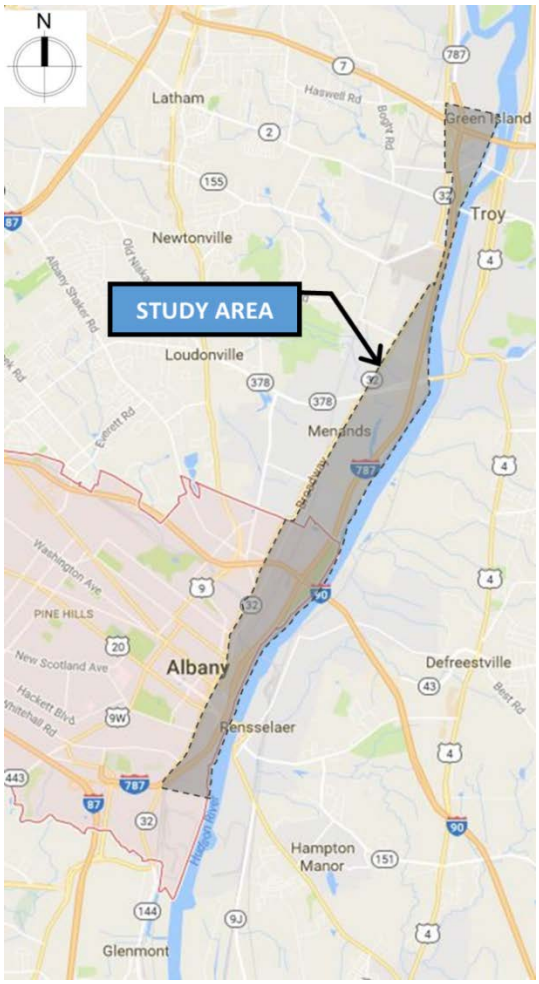


Section 1: Overview and Background

The Interstate 787 (I-787) corridor serves as a major transportation route in the Capital Region moving people and goods into and out of the City of Albany, Village of Menands, Town of Colonie, City of Watervliet and the Town/Village of Green Island. Numerous community planning studies have highlighted the need for more physical and visual connections to the waterfront, particularly in the City of Albany, to enhance quality of life and to support redevelopment initiatives. Reimagining and reinvesting in the transportation infrastructure is part of the continuous life cycle of the system.

The I-787/Hudson Waterfront Study area extends from I-787 Interchange 2 (Port of Albany) to I-787 Interchange 9 (NY Route 7) in Albany County, New York. I-787 serves many of the region's destinations and employment centers, including the State Capitol and Empire State Plaza government complex, Albany Downtown business and entertainment districts, Port of Albany, and Watervliet Arsenal.

Many communities are directly impacted by the physical presence of I-787 including the Cities of Albany and Watervliet, the Town of Colonie, and the Villages of Menands and Green Island. In addition, the surrounding communities rely on I-787 for regional access to employment, education, recreation, entertainment, and shopping. There is community sentiment for considering a transformational plan that would reduce the long term financial commitment for maintenance and management of the infrastructure within the Study area coupled with creating a facility that is better integrated with the neighborhood fabric to support local quality of life and economic vitality.

Study Background

The Capital District Transportation Committee (CDTC) is the designated Metropolitan Planning Organization (MPO) for the counties of Albany, Rensselaer, Saratoga and Schenectady (with the exception of the Village of South Glens Falls and the Town of Moreau). As an MPO, CDTC is responsible for developing a regional plan for federally funded transportation actions. The current plan approved in 2015 (and amended in March 2016) is known as *New Visions 2040: New Visions for a Quality Region*, which identifies the guiding principles for transportation planning and investment. It also articulates short-range and long-range recommendations and actions to help achieve regional goals. The *New Visions 2040* plan includes "Big Ticket" initiatives, which are characterized as potentially large-scale projects requiring bold investment and significant public support. This Study of the I-787/Hudson Waterfront is an incremental step in the process of exploring the opportunities and constraints for the Riverfront Access and Urban Development Program "Big Ticket" initiative.

This Study is a pre-National Environmental Protection Act (NEPA) exploration of strategies that future project sponsors may use as they undertake feasibility studies, NEPA documentation, and project development. This report should in no way be considered a planning study that meets federal requirements for project scoping nor is it committing to a final vision or preferred alternative for the study area.

Section 2: Study Purpose, Need and Objectives

The purpose of the Study is to identify potential future transportation strategies for the Interstate 787 (I-787) corridor that support and balance economic development and revitalization efforts, transportation network resilience, and improved walking, biking, transit, and visual access to the waterfront.

I-787 is comprised of extensive and elaborate transportation infrastructure, which is costly to maintain. Although significant investment has been made recently to extend the service life of this infrastructure, the fact remains that the maintenance cycle to continue the longer-term preservation of this network of roadways and bridges in a state of good repair will continue to be a significant financial commitment for the region leading up to a point where the entire facility has reached the end of its serviceable and useful life. The development of an implementation strategy for long-term improvements will need to consider that the I-787 infrastructure will not reach this point of need all at the same time.

The objectives of the Study are as follows:

- Identify life-cycle costs for I-787 and related transportation assets.
- Reduce the cost of maintaining I-787 over time.
- Identify transportation improvements to promote waterfront pedestrian and bicycle connections.
- Identify transportation improvements to promote community and environmental compatibility.
- Promote economic development.
- Promote redevelopment of waterfront and brownfield areas.
- Integrate transportation improvement recommendations from previous planning studies with fresh ideas through an involved stakeholder process.
- Identify steps that lead agencies will need to take toward implementation.

Section 3: Study Context

Past Studies

In addition to receiving input/guidance from the Study Advisory Committee (SAC), community stakeholders, and the public, previous and on-going studies from the study area were reviewed to inform the Study Team of past considerations and to help develop potential strategies for the I-787 corridor. The established and historic nature of each of the communities within the study area as well as its location along the Hudson River represents two significant reasons that lands within and adjoining the study area have been subject to numerous planning studies dating as far back as the *1963 Albany Plan.* Since the early 2000s, there have been more than 20 planning studies for the study area; common themes in those plans include:

- Waterfront Connectivity
- Multimodal Improvements
- Sustainability/Green Infrastructure
- Economic Development
- Livability
- Environmental Considerations
- Transportation/Land Use Compatibility

While many of these past studies centered on an individual municipality within the study area, several approached the area from a broader county or regional perspective or through the lens of transportation or multi-use facilities. These plans were summarized and presented graphically at public workshops held in 2015, and were used to develop future strategies for the study area.

Section 4: Existing Conditions

The following existing conditions were documented in the Study to get a better understanding of the study area needs, potential and to provide context for identifying improvement strategies:

Transportation Infrastructure

- Roadways
- Bridges
- Rail
- Transit
- Pedestrians and Bicyclists
- Port of Albany
- Marine

Traffic Volumes and Travel Patterns

- Existing Traffic Volumes and Traffic Flow

Land Use and Community Context

- Land Use
- Zoning

Environmental Resources

- Floodplains
- Wetlands
- Urban Heritage Areas
- Cultural Resources
- Brownfields

I-787 Infrastructure, Albany

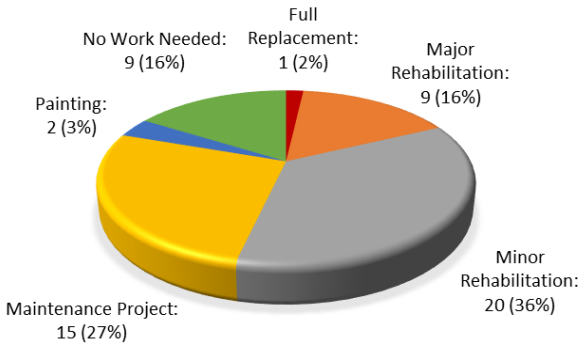
Hudson Shores Park, Watervliet

Corridor Context

I-787 is among the highest used interstate highways in Albany County, with daily traffic volumes ranging from 22,000 to 88,000 vehicles per day within the study area. It is part of the National Highway Freight Network and is a Qualifying and Access Highway, designated by the State for use by Special Dimension Vehicles. It is also part of CDTC's Freight Priority Network, which is a designation used to guide investment-related decisions to roads that have a critical role in freight and goods movement.

There are 56 bridges along the I-787 corridor included in the study area. Most of these (49) are owned and maintained by NYSDOT, five (5) are owned/maintained by railroads, and two (2) are maintained by the City of Albany. The exhibit at the right shows various recommended work strategies and the associated number of existing study area bridges to maintain a "State of Good Repair" preservation strategy. The one bridge that has been identified as needing full replacement is the CSX Rail bridge over Centre Street that serves the rail spur to the Central Warehouse building in Albany. This bridge would only need to be replaced if a future use of the Central Warehouse site involved rail access.

Bridge Work Strategies to maintain "State of Good Repair" as of 2015



Section 5: Public Outreach and Agency Coordination

Study Process

The Study process was coordinated and guided by a Study Advisory Committee (SAC). The SAC consisted of the following representatives from municipalities within the study area, the CDTC, and state and federal transportation agencies:

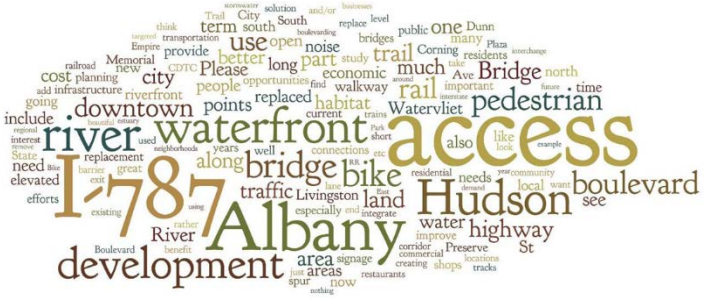
- CDTC
- City of Albany
- Town of Colonie
- Village of Menands
- City of Watervliet
- NYSDOT
- FHWA

In addition to the SAC, a stakeholder group consisting of representatives from the involved local, state and federal transportation agencies, the local and regional business communities, neighborhood groups and advocacy groups was created. Stakeholder interviews were conducted via an online survey to obtain feedback and information on transportation and land use-related issues, needs and priorities within the study area. The following stakeholders were identified and represented in the Study process:

AAA - Hudson Valley
AAA - New York State
Albany Common Council, Ward 1 – Ward 5
Albany County
Albany County Convention and Visitors Bureau
Albany Port District Commission
Albany South End Bike Way Link Task Force
Albany-Colonie Regional Chamber of Commerce
Amtrak
Capitalize Albany Corporation
Capital District Regional Planning Commission
Capital District Transportation Authority (CDTA)
Center for Economic Growth
Central Business Improvement District (BID)
City of Albany
City of Cohoes
City of Rensselaer
City of Watervliet
CP Rail
Downtown Albany BID
Environmental Advocates of New York
Hudson River Environmental Society
Hudson River Valley Greenway
Hudson River National Heritage Area
Hudson River Watershed Alliance
Lark Street BID
Mighty Waters Task Force
National Grid
New York Motor Truck Association
NYS Department of Transportation
NYS Office of General Services
NYS Thruway Authority
Parks and Trails, New York
People of Albany United for Safe Energy
Reclaim Our Waterfront (ROW) Albany
Sierra Club Hudson—Mohawk Group
South End Improvement Corporation
The Stakeholders, Inc.
Town of Colonie
US Army Corps of Engineers
US Environmental Protection Agency
Village of Green Island
Village of Menands

The Public Involvement Program created as part of the Study process provided several ways for the public to participate and provide input to the Study, as follows:

- Two (2) public workshops (located in Albany and Watervliet)
- Comment Cards
- Emails
- Surveys (online and Textizen)
- One (1) public open house
- Stakeholder meetings



A project website was also created (www.787waterfrontstudy.blogspot.com) that contains relevant project materials, meeting notices, and was updated throughout the planning process to keep the public informed.

Section 6: Progressed Initiatives

The communities involved with this Study have been proactive in advancing initiatives to enhance multimodal access to the waterfront within the corridor. Many of these project ideas originated in previous CDTC Linkage Studies and Community Plans, which were then catalyzed into projects by the work of the I-787/Hudson Waterfront Corridor Study.

The following projects have been awarded federal funding and are included on the CDTC's current 2016-2021 Transportation Improvement Program (TIP), which is the short-range program of federally-funded projects to support the vision of the long-range regional transportation plan:

- Albany/Menands/Watervliet: CDTA River Corridor Bus Rapid Transit Line, providing enhanced transit services along the NY 32 corridor through Waterford, Cohoes, Troy, Watervliet, Menands and Albany
- Green Island: Hudson Avenue Bike/Ped Safety Improvements: Tibbits Avenue to Watervliet City Line – part of a pavement restoration/preservation (Mill & Fill) project
- Watervliet: Watervliet Bike Path: On-Road Trail along NY32 (Broadway) connecting the Mohawk-Hudson Bike-Hike Trail (MHBHT) at 4th Street to 23rd Street/Hudson Shores Park
- Menands: Menands Bike/Ped Connector: Separated Multi-Use Path connecting Broadway to the MHBHT with Bike/Ped Bridge over I-787
- Albany: Church Street Rail Crossing Signal Upgrade

A feasibility study for the Clinton Avenue Ramp Skyway in the City of Albany was undertaken in 2018 and in March 2018, New York State awarded $3.1M in funding to support the Albany Skyway project. Additional funding opportunities are being pursued. The Albany South End Connector Trail is not currently fully funded for construction. Funding to complete the design work and most of the construction work in 2018-2019 is being made possible through grants from the New York State Department of Environmental Conservation; the New York State Department of State; New York State Parks, Recreation & Historic Preservation; and a New York State Municipal Facilities Program Grant provided through Assemblymember Patricia Fahy.

Section 7: Potential Strategies

The strategies that have been turned into projects are great successes toward enhanced multimodal connectivity and waterfront access. To further support the objectives of the Study, other strategies have been identified which have been grouped into the following general categories:

- Revamp Transportation Infrastructure
- Enhance Ped/Bike Access to the Waterfront
- Manage Travel Demand
- Facilitate Smart Growth / Economic Activity near the Waterfront

The strategies seek to maintain the transportation purpose and need of I-787 while assessing the feasibility of planning initiatives in the corridor and the existing freight rail line. Alternatives needing more feasibility study are those that address the Study's purpose and needs while also mitigating the impacts of the existing facility on the surrounding area.

Longer term strategies are those that replace the existing I-787 infrastructure, or portions of it, with infrastructure that not only provides vehicular mobility, but potentially reduces operations/maintenance costs, provides opportunity for land transformation for other uses, and provides connectivity for other modes.

Each of the strategies are described in detail, overall assessed to frame the strategic intent and qualitatively assessed for the following considerations:

- Traffic/Mobility
- Economic
- Social/Quality of Life
- Environmental

Revamp Transportation Infrastructure

Strategies in this category include the baseline strategy to maintain the I-787 infrastructure in a state of good repair, as well as long-term, big-ticket strategies that consider restructuring or reconfiguring existing transportation infrastructure to reduce the scale and/or complexity of the network. These strategies include considerations for corridor-level changes as well as spot location interchange changes. Big-ticket strategies would need to consider the legal and procedural requirements to potentially de-designate or remove all or part of I-787 from the Interstate System.

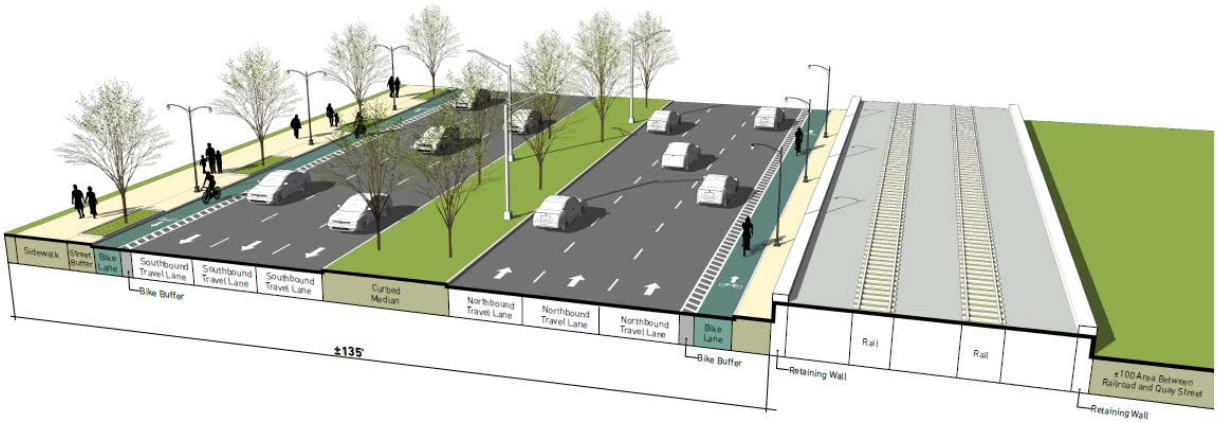
Mainline Strategies

Strategies in this category considered transformative changes to I-787 and the South Mall Expressway (SMX) including conversion from interstate/expressways to at-grade roadways. The assessment identified the segment of I-787 between Clinton Avenue and the Broadway-Quay Street Connector (BQC), the southern CP Rail line underpass in downtown Albany, as potentially able to achieve this change. Issues that would need to be further explored include addressing the freight rail line that is within the same right-of-way and addressing the transitions of the roadway to the ramps at the I-787/Dunn Memorial Bridge/South Mall Expressway interchange. An alternative that may be viable for this part of the corridor is to establish the at-grade segment of roadway completely to the west of the train tracks (away from the waterfront). This alternative (see concept on page E-4) has the potential to avoid some of the rail line integration challenges and the roadway right of way east of the tracks (close to the waterfront) would be available for other uses. Long crossing distances at potentially large signalized intersections would need to be addressed for pedestrians and bicyclists.

The Study also identified that any strategy that considers reconfiguring I-787 north of Clinton Avenue will need to recognize that high traffic volumes use this section of the corridor and there could be secondary roadway mobility/congestion impacts associated with a mainline capacity reduction.

The reconfiguration of the South Mall Expressway should be considered in the context of a future need or opportunity to replace the Dunn Memorial Bridge and the I-787/Dunn Memorial Bridge/South Mall Expressway interchange. An at-grade configuration of the South Mall Expressway would likely be feasible to accommodate traffic demand.

Concept to transform I-787 mainline from the Broadway-Quay Street Connector to Clinton Avenue to an at-grade non-interstate roadway, shifted to the West of the existing freight rail line (rail line height is not shown to scale) in the City of Albany. Concept image viewpoint is to the North. Additional study will be required.



Reconfigure Interchanges

A review of the ramp traffic volume information indicates that the volume demand at several existing interchanges are well below the capacity of the interchange and could be candidates for alternative interchange redesigns in the future. In addition, there are several ramps within the network that could also be potentially down-sized or eliminated.

Within this category, the strategies considered reconfiguration opportunities at the following four interchanges:

- I-787/Dunn Memorial Bridge/South Mall Expressway (Interchange 3)
- I-787/Clinton Avenue (Interchange 4)
- I-787/NY Route 378 (Interchange 7)
- NY Route 378/NY Route 32 (Broadway)

Of these interchanges, the I-787/Dunn Memorial Bridge (DMB)/South Mall Expressway (SMX) is strategic because of its large scale and influence on options for other related strategies. The goal identified for this interchange is to replace the high-capacity directional ramp connections with an alternative interchange concept (to be evaluated and determined) that would be a simpler, more compact urban design.

I-787/Dunn Memorial Bridge/South Mall Expressway Interchange

The vertical elevations of the DMB/SMX are a major influence on design options for this interchange, and significant changes are likely to be conditioned on a future need/opportunity to replace the DMB, at which time a lower bridge might be found to be possible. In this case, an improvement strategy that considers reconfiguring the interchange could also involve converting the SMX into an at-grade roadway intersecting with South Pearl Street and ending at the Empire State Plaza. Alternative interchange designs could be considered that also provide for in-fill development and more public access to the waterfront, while maintaining appropriate levels of vehicular capacity.

Enhance Ped/Bike Access to the Waterfront

The Study identified six focus areas where there is potential to enhance multimodal access and connectivity to support the Study objectives, as follows:

- Broadway to Schuyler Flatts Ped/Bike Connection – Menands
- North Albany Warehouse District Ped/Bike Connections – Albany
- South Albany Ped/Bike Connectivity – Albany
- Water Street Road Diet – Albany
- 23rd Street Ped/Bike Connectivity – Watervliet/Green Island
- Mohawk-Hudson Bike-Hike Trial (MHBHT) to Hudson Shores Park (East) – Watervliet

These strategies are similar in scope to the progressed initiatives that have already been programmed on the CDTC's 2016-2021 Transportation Improvement Program (TIP). These additional ped/bike enhancements could be candidates for future TIP project solicitations.

Strategies associated with enhancing waterfront activity and creating active public use of space under the elevated sections of the transportation infrastructure have also been identified. These strategies may be eligible for funding through non-transportation programs such as the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) Parks Program or the New York State Department of State Local Waterfront Revitalization Program. These are matching grant programs that are awarded annually for purposes including projects to preserve, rehabilitate or restore lands, waters or structures for recreational facilities/public space.

Manage Travel Demand

The primary focus of the Study was on infrastructure strategies to support the project objectives. Travel Demand Management initiatives and policies can support the long-term strategies for the corridor by reducing vehicle travel demand on I-787. Travel Demand Management can also broaden regional connectivity for non-auto modes to the communities served by the corridor. Example initiatives and policies include parking pricing and supply policies, expansion of the Bus Rapid Transit network, transit system enhancements, and implementation of regional pedestrian and bicycle facilities that connect to the study area.

Facilitate Smart Growth / Economic Activity near the Waterfront

Expanding facilities for recreational water use, such as docks, boat/kayak rentals, overlooks, fishing piers, etc., would strengthen physical connections to the Hudson River, promote economic development and enhance community quality of life. In addition, expanding the range of waterfront activities would increase the number and diversity of residents and visitors using waterfront areas. As the Hudson River

continues to attract waterside users, leisure boating and regatta/rowing activity can be expected to increase. Providing waterfront docking facilities along with diverse waterside dining, activities and retail shop options would stimulate the economic vitality of the I-787 corridor.

Within this category, the strategies considered for waterfront opportunities are:

- Albany Marina expansion of marina facilities near the existing public boat launch and Albany Rowing Center Boathouse at Colonie Street north of Corning Riverfront Park.
- Albany Inner Harbor redevelopment as part of the warehouse district between Colonie Street and Manor Street to create an inner harbor/historic district and marina.
- South Waterfront Living History redevelopment between the Port of Albany and Steamboat Square.
- Develop Activity Space under I-787 to promote community cohesion through improved aesthetics and functional uses of the space below elevated roadway sections.

These strategies focus on upgrading waterfront public space and will strengthen community cohesion by attracting people to gather for play and social interaction.

Section 8: Environmental Justice Considerations

Per federal requirements, the Capital District Transportation Committee (CDTC) undertakes an analysis of Environmental Justice (EJ) in its planning initiatives to evaluate if transportation concepts and recommendations impact Environmental Justice populations.

The study area is almost entirely included in the Environmental Justice area based on the study area census tracts having a higher than regional average percentage of both low income and minority residents. The Study Team utilized a variety of methods to include these populations in the planning process (see Section 8 of the report).

The impacts of the transportation strategies identified in this Study were evaluated for their EJ impact from a perspective of each strategy's focus on transit, bicycling, walking or carpooling. CDTC's overall assessment of the identified strategies in the Study and their impact on the EJ population is largely positive. In some cases, strategies may have a neutral impact, largely due to traffic diversions from repurposed or reduced automobile capacity. As any one of the identified strategies become projects and move into design, additional community outreach and additional evaluation of the impacts on the EJ population will be needed to ensure that these groups are adequately represented in the planning and design process and are not unfairly impacted.

Section 9: Corridor Considerations for Big Ticket/Long-Term Initiatives

A large transformational strategy that considers converting all or portions of I-787 from an interstate expressway to an at-grade urban arterial involves many complex issues requiring additional review before advancing. This Study identified in Section 7-1.3 (Convert I-787 to non-Interstate facility) the area between the Broadway-Quay Street Connector to Clinton Avenue as having the potential to achieve a transformational change. The following elements of the existing infrastructure were identified as

presenting physical challenges or would require major policy or regulatory considerations related to a long-term vision for the corridor.

- Traffic Accommodation
- Physical Challenges: Rail Issues and Roadway Connectivity
- Pedestrian/Bicyclist Access
- Jurisdictional Considerations related to Interstate De-designation
- Environmental
- Financial – Life-cycle and Funding

Traffic Accommodations

A review of traffic volumes in the I-787 corridor indicated that there is an opportunity to consider reconstructing I-787 as an at-grade roadway for the half-mile segment between the Broadway-Quay Street Connector (BQC) and Clinton Avenue. A planning-level assessment of the feasibility of this alternative was conducted by CDTC using the STEP regional travel demand model to identify the potential effects of this change on traffic flow patterns in the region. The STEP Model results indicated that traffic operations in an at-grade roadway scenario will continue to provide acceptable levels of mobility. The model also shows that some traffic will choose to divert away from the corridor to other routes through the City which is shown by the model to have only modest impact.

Physical Challenges

The existing CP Rail line is located generally between the northbound and southbound roadways of I-787 in this candidate area for at-grade conversion. The accommodation for continued freight service to the Port of Albany and other CP Rail clients within the study area will be a key consideration for potential long-term transformation of the roadway facility. The preliminary feasibility evaluations conducted for this study considered four potential options for rail modifications:

- Rail Option 1: Raise the railroad track structure over the proposed at-grade roadways;
- Rail Option 2: Lower the railroad track structure under the proposed at-grade roadways;
- Rail Option 3: Install new at-grade railroad crossings;
- Rail Option 4: Relocate the railroad line and abandon the existing track infrastructure.

The evaluation of these options primarily focused on the physical opportunities and constraints for vertical realignment of the rail lines within the corridor to achieve vertical separation between the tracks and the potential roadway crossings associated with the at-grade roadway concept.

Based on this assessment of options to accommodate CP Rail, changing the vertical alignment of the rail to provide grade-separated crossings (either over or under with a reconfigured I-787 roadway) will likely impact other existing transportation infrastructure. More detailed assessments of the extent of impact and design options will be needed to more accurately assess these conditions. The at-grade crossing option is physically feasible to construct, but this option requires approvals from federal and state agencies and the rail owner.

The conversion of I-787 to an at-grade roadway between the Broadway-Quay Street Connector and Clinton Avenue will also need to maintain access to the Dunn Memorial Bridge and the South Mall Expressway. The preliminary analysis shows that these connections will require detailed assessment of grades and ramp merging considerations which could affect the available options.

Pedestrian/Bicyclist Access

The at-grade scenario will create large intersections for pedestrians to cross to access the waterfront from downtown Albany (at Broadway-Quay Street Connector and at Orange Street) because of the six travel lanes for through traffic plus a potential need for separated bicycle facilities, and supplemental turning lanes at the signalized intersections or median treatments. These intersections will potentially create larger areas of conflict between vehicle traffic and pedestrian/bicyclist traffic than exists with the current grade separation of I-787. Considerations of arterial function and access management for the at-grade I-787 roadway concept needs to consider the number and quality of access opportunities for pedestrians and bicycles.

Jurisdictional Considerations

Pursuing a transformational change to I-787 would involve considerations of the legal and procedural requirements to potentially de-designate or remove all or part of I-787 from the Interstate System. The basic procedures are covered within federal law (23 CFR 470 and 23 CFR 658.11), beginning with a formal request by the State Department of Transportation followed by a comprehensive impact assessment under the National Environmental Policy Act (NEPA).

The Federal Highway Administration, after national public review, would have final approval on a de-designation, as part of the NEPA Record of Decision for an EIS. At the State level, the New York State Legislature would have to enact an amendment to Section 349 of the State Highway Law.

Environmental

Nearly the entire study area is located in the FEMA 100-year floodplain. Flooding is not generally an issue for the I-787 mainline currently as it is elevated above the surrounding terrain. However, the frontage roads and on-off ramp connections to local at-grade roadways have the potential to be impacted by flooding. The removal of the elevated interstate and development of an at-grade roadway including at-grade intersections using an alignment similar to the existing roadway would result in a mainline road section that is also within the 100-year floodplain, and consequently would be at greater risk for flooding.

The potential for flooding within the floodplain would also be impacted by sea level rise associated with climate change, particularly in areas located adjacent to the Hudson River and its floodplain.

Financial

Life-cycle cost evaluations were conducted for this Study to identify the potential timeframes and financial considerations for long-term maintenance of the existing I-787 infrastructure. These evaluations considered both the pavement and bridge components of the facility.

From an economic analysis standpoint, the strategy of preserving the existing infrastructure for 20 years is practical. The present worth costs for repeated preservation treatments are insignificant in comparison with the probable reconstruction cost. Other factors such as storm water and climate change accommodations or safety might be possible driving factors to a different strategy. Based on unit costs from equivalent projects, the current cost for pavement preservation overlays would be in the range of $30M to $40M for every 20-year preservation cycle (the entire length of the study area). The total cost for the Bridge “State of Good Repair” preservation strategy is estimated to be approximately $290M (in 2015 dollars), with an average bridge cost of $5.2M. The estimated total cost of the "State of Good Repair" strategy for the combined maintenance of pavement and bridges in the I-787 study area over the next 20 years is approximately $330M (in 2015 dollars). The estimated present value of the eventual cost for future reconstruction of the I-787 corridor in its present interstate configuration is estimated to be $890M (in 2015 dollars).

Section 10: Recommendations and Next Steps

The assessment of the strategies discussed in this Study identified the opportunities, challenges and considerations that will need to be addressed to move them on a path toward implementation. As next steps, additional effort needs to focus on detailed consideration of the local and regional impacts to mobility, safety and system resiliency, physical and environmental impacts, and costs to produce a system plan of action and inform the decision-making process.

Additional feasibility analysis is recommended to focus on the following areas within the corridor as they will have a significant role in identifying a preferred strategy for long-term transportation services in the corridor. These analysis areas are:

- **CP Rail facility modification/relocation/operations modification**
- **I-787/Dunn Memorial Bridge/South Mall Expressway Interchange and South Mall Expressway At-Grade Reconfiguration**
- **I-787 Reconfiguration**
- **Albany Inner Harbor marina/Historic District Development Concepts**
- **NY Route 378 Interchange Reconfigurations**

These feasibility studies will act as catalysts toward implementation by vetting critical design issues and having early engagement of the involved Federal, State and Local agencies, project stakeholders and the general public. The completion of these planning level feasibility studies will set the stage for identifying a preferred strategy to advance in preparation of a Design Concept Report studying feasible and reasonable alternatives and a formal NEPA environmental assessment.

Decisions made along the corridor in the next 10 to 15 years need to consider not only the Interstate Highway System but also study area features including touring routes, recreational facilities, system connectivity, and social, economic and transportation needs. The development of an implementation strategy for the long-term will also need to consider that the I-787 infrastructure will not reach the end of its serviceable and useful life all at the same time, which will add to the complexity of determining when and how to implement changes.

It is recommended that a joint agency taskforce be formed to provide proactive ongoing monitoring and strategic planning of the transportation maintenance program to coordinate investment decisions and planning activities to advance the feasibility assessments and for future implementation of the big-ticket strategies, and to develop funding strategies for implementation. The taskforce could consist of infrastructure owners, CDTC staff and other major stakeholders. Financial support for this activity could potentially be provided by CDTC through its Unified Planning Work Program planning funds. This group should meet at least twice a year to review infrastructure data, planning infrastructure investments and other information that would impact investment decisions. Activities that should be coordinated by this taskforce include:

- Monitor bridge conditions via a bridge dashboard
- Monitor traffic volumes and flow patterns
- Monitor traffic congestion and safety
- Coordinate local and state maintenance program investments within the corridor

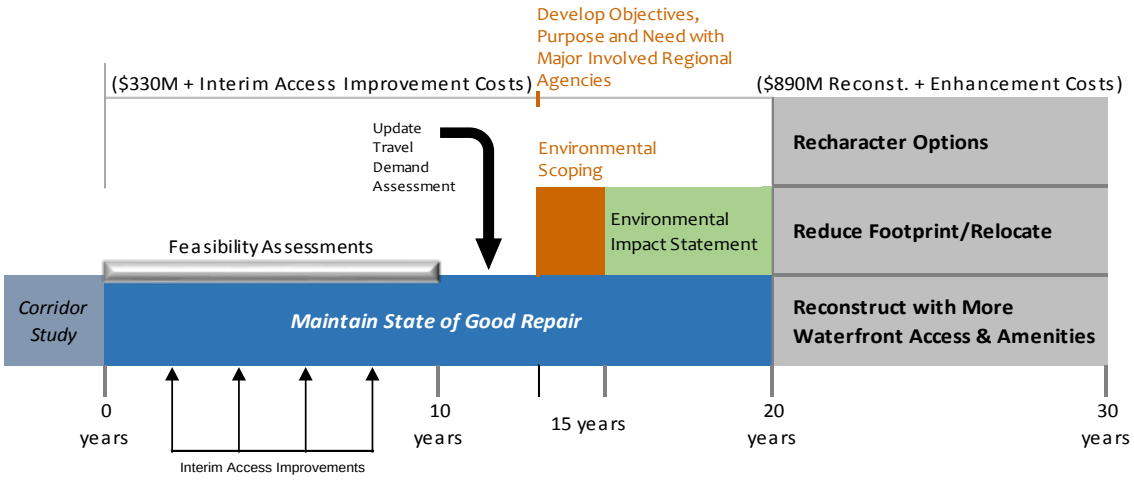
Because of the long time involved in advancing these big-ticket strategies, it is important that there be champions to assume leadership in advocating for each of the initiatives to generate community support, for finding funding strategies, and to maintain project momentum. These champions can be community or business leaders, municipal staff or agencies. There have been many champions already represented by the Study, such as the City of Albany, and the City of Watervliet who have taken leadership responsibilities to advance projects from the early study identification to TIP programming. NYSDOT has been and remains open and receptive to ideas and opportunities to enhance the multimodal nature of their infrastructure system.

Project Timeline

The key actions related to these implementation considerations are also presented in the context of the life-cycle cost considerations of the recent investments in infrastructure maintenance. The life-cycle cost evaluations identified the potential timeframes and financial considerations for long-term maintenance of the existing I-787 infrastructure, considering the substantial investment by NYSDOT over the past 5 years. From an economic analysis standpoint, the strategy of preservation for 20 years is practical. The total cost for maintaining a “State of Good Repair” facility over the next 20 years is estimated to be approximately $330M (in 2015 dollars) for the combined maintenance of pavement and bridges in the I-787 study area. The estimated present value of the eventual cost for future reconstruction of the I-787 corridor in its present interstate configuration is estimated to be $890M (in 2015 dollars).

The timeline below represents a probable course of action and duration for next steps that reflects the implementation of interim, cost-effective preservation investment strategies. The costs for implementation of improvement strategies are also represented in the timeline as an unquantified added cost to be spent during the period of maintaining the corridor in a “State of Good Repair”.

Illustrative Transformational Project Timeline



The above timeline allows for the time and effort to implement improvements, and conduct the various activities that will be necessary to accomplish the long-term strategies as the existing infrastructure nears the end of its useful service life. These activities include the detailed feasibility assessments, securing public consensus, agency and stakeholder coordination, satisfying Federal and State environmental planning processes, and developing an investment funding strategy.

Although the timeline outlined may make it appear that the path to implementation of the big-ticket strategies is far in the future, there are many activities that have happened or are happening, as described in Section 6: Progressed Initiatives, to improve the quality of access and public use of space within the corridor in the near term. Many of the strategies identified for additional analysis could also be advanced independently of each other and perhaps on shorter timelines to capitalize on funding opportunities and stakeholder support. Further, there are many activities and additional studies that need to happen in the interim period to ensure that the region is positioned to take advantage of the opportunity to transform the transportation infrastructure when it makes sense to do so.

Section 1: Overview and Background

1-1 Introduction

The Hudson River waterfront corridor within Albany County has been a transformational transportation corridor. The Interstate 787 (I-787) corridor has served as a major transportation route in the Capital Region moving people and goods into and out of the corridor communities. The New York State Department of Transportation (NYSDOT) has invested $118.5 million in 5 years to maintain infrastructure in the corridor to extend the design life of the facility. Numerous planning studies have highlighted the need for more physical and visual connections to the waterfront in the corridor communities, particularly in the City of Albany, to enhance quality of life and to support redevelopment initiatives. Reimagining and reinvesting in the transportation infrastructure is part of the continuous life cycle of the system.

Restructuring of I-787 and its associated transportation facilities is intended to improve community cohesion, multimodal connectivity, and economic development opportunity in the City of Albany and the other corridor communities as well as supporting regional mobility and access. These objectives are supported by the regional transportation plan known as *New Visions 2040*, prepared by the Capital District Transportation Committee (CDTC), the metropolitan planning organization for the counties of Albany, Rensselaer, Saratoga and Schenectady (with the exception of the Village of South Glens Falls and the Town of Moreau).

To restructure the transportation network to support these objectives, a number of factors will need to be vetted and addressed through future National Environmental Protection Act (NEPA) planning studies with significant multi-agency involvement and coordination, including Federal and State transportation and environmental agencies and permitting authorities. Changes to the I-787 corridor would be a major and profound, affecting the area economy, the natural and human environment, as well as vehicular mobility. Ultimately, the goal of such a transformative project would be to create a transportation facility that positively impacted the local communities and the region. The strategies provided herein are intended to headline the areas of consideration and provide some secondary direction as to what may be needed to address these areas. It is expected that the umbrella process for accomplishing this would be under the Federal NEPA and State Environmental Quality Review Act procedures.

Study Background

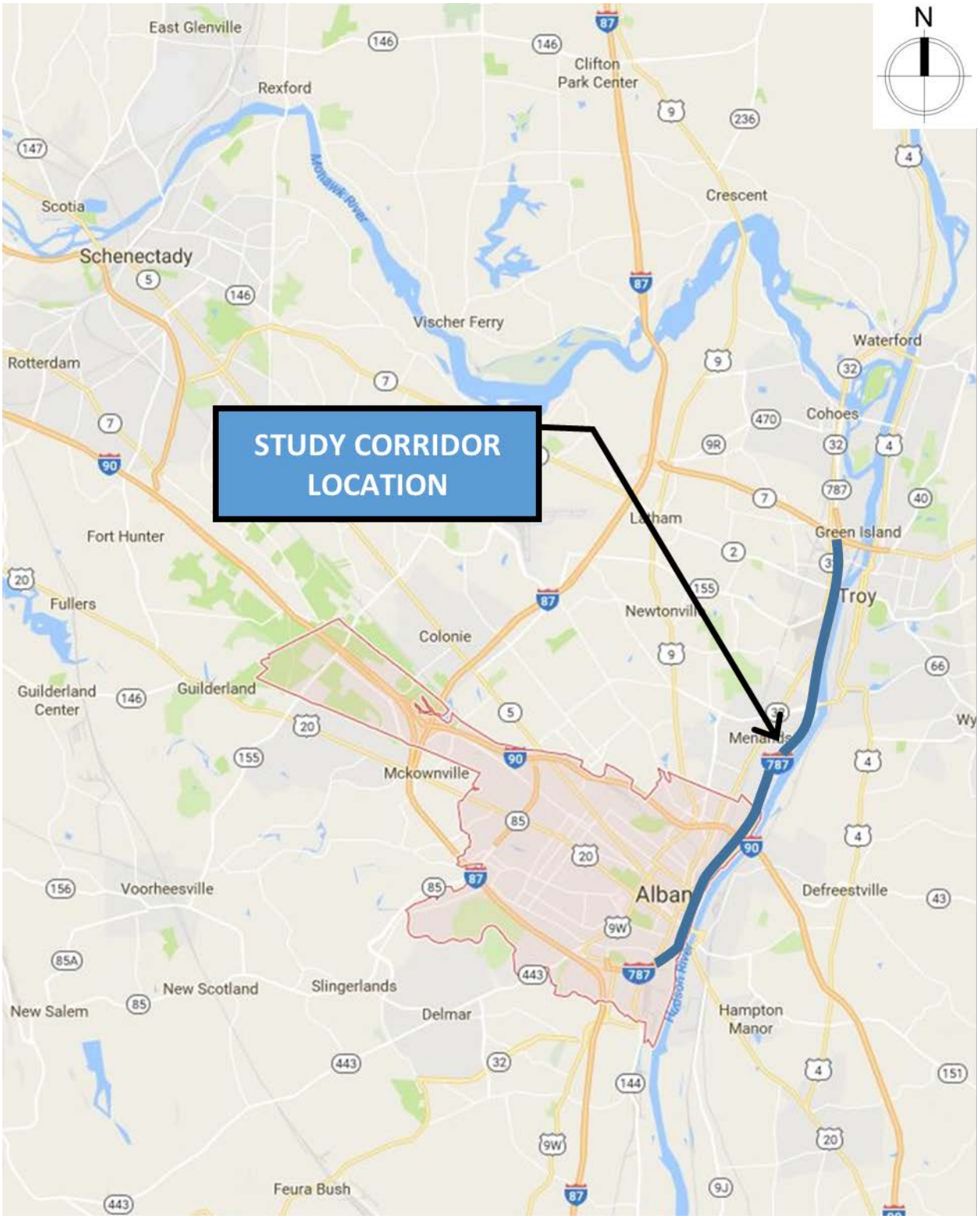
The Capital District Transportation Committee (CDTC) is responsible for developing a regional plan for federally funded transportation actions. The current plan approved in 2015 (and amended in March 2016) is known as *New Visions 2040: New Visions for a Quality Region*, which identifies the guiding principles for transportation planning and investment. It also articulates short-range and long-range recommendations and actions to help achieve regional goals. The *New Visions 2040* plan includes “Big Ticket” initiatives, which are characterized as potentially large-scale projects requiring bold investment and significant public support. This study of the I-787/Hudson Waterfront is an incremental step in the process of exploring the opportunities and constraints for the Riverfront Access and Urban Development Program “Big Ticket” initiative.

The I-787/Hudson Waterfront Corridor Study is a pre-NEPA exploration of strategies that future project sponsors may use as they begin to complete feasibility studies, NEPA documentation, and project development. This report should in no way be considered a planning study that meets federal requirements for project scoping nor is it committing to a final vision or preferred alternative for the I-787/Hudson Waterfront study area.

1-2 Study Area

I-787 is an approximately 9.4-mile-long highway in the Capital Region of New York State, which begins in the City of Albany near its southern boundary with the Town of Bethlehem, connects to the New York State Thruway at Exit 1, and extends north to the interchange with NY Route 7 (Exit 9) in the Town of Colonie. A non-interstate, state route extension of 787 continues north as an arterial highway to the City of Cohoes. I-787 provides connections to other interstates in the region, including the New York State Thruway, I-90, and I-87/Adirondack Northway (via NY Route 7). I-787 serves many of the region's destinations and employment centers, including the State Capitol and Empire State Plaza government complex, Albany Downtown business and entertainment districts, Port of Albany, and Watervliet Arsenal. The study area extends from I-787 Interchange 2 (Port of Albany) to I-787 Interchange 9 (NY Route 7) in Albany County, New York. The study location map is shown on Exhibit 1-1.

Exhibit 1-1: Study Location Map



Section 2: Study Purpose, Need and Objectives

2-1 Purpose and Need

The purpose of the I-787/Hudson Waterfront Corridor Study is to identify potential future transportation strategies for the I-787 corridor that support and balance community economic development and revitalization efforts, transportation network resilience, and improved walking, biking, transit, and visual access to the waterfront.

I-787 is comprised of extensive and elaborate transportation infrastructure, which is costly to maintain. Although significant investment has been made recently to extend the service life of this infrastructure, the fact remains that the maintenance cycle to continue the longer-term preservation of this network of roadways and bridges in a state of good repair will continue to be a significant financial commitment for the region leading up to a point where the entire facility has reached the end of its serviceable and useful life. The development of an implementation strategy for long-term improvements will also need to consider that the I-787 infrastructure will not reach this point of need all at the same time. There is community sentiment for considering a transformational plan that would reduce the long-term financial commitment for maintenance and management of the infrastructure within the study area coupled with creating a facility that is better integrated with the neighborhood fabric to support local quality of life and economic vitality. This sentiment leads to the opportunity to start planning activities and thus discussions about the best and most valuable way for the future transportation system to move goods and services through the area in the context of these other goals.

2-2 Objectives

The project objectives for the study are as follows:

- Identify life-cycle costs for I-787 and related transportation assets.
- Reduce the cost of maintaining I-787 over time.
- Identify transportation improvements to promote waterfront pedestrian and bicycle connections.
- Identify transportation improvements to promote community and environmental compatibility.
- Promote economic development.
- Promote redevelopment of waterfront and brownfield areas.
- Integrate transportation improvement recommendations from previous planning studies with fresh ideas through an involved stakeholder process.
- Identify steps that lead agencies will need to take toward implementation.

In order to meet the objectives of the Study, strategies have been developed and assessed that will support:

- Development or redevelopment opportunities,
- Connections between localities and the waterfront,
- Opportunities for commuter and visitor access,
- A transportation system that is environmentally sound and resilient to the impacts of climate change and sea level rise.

Section 3: Study Context

3-1 Study Location and Limits

The limits of the I-787/Hudson Waterfront Corridor study area are as follows, and as shown on Exhibit 3-1:

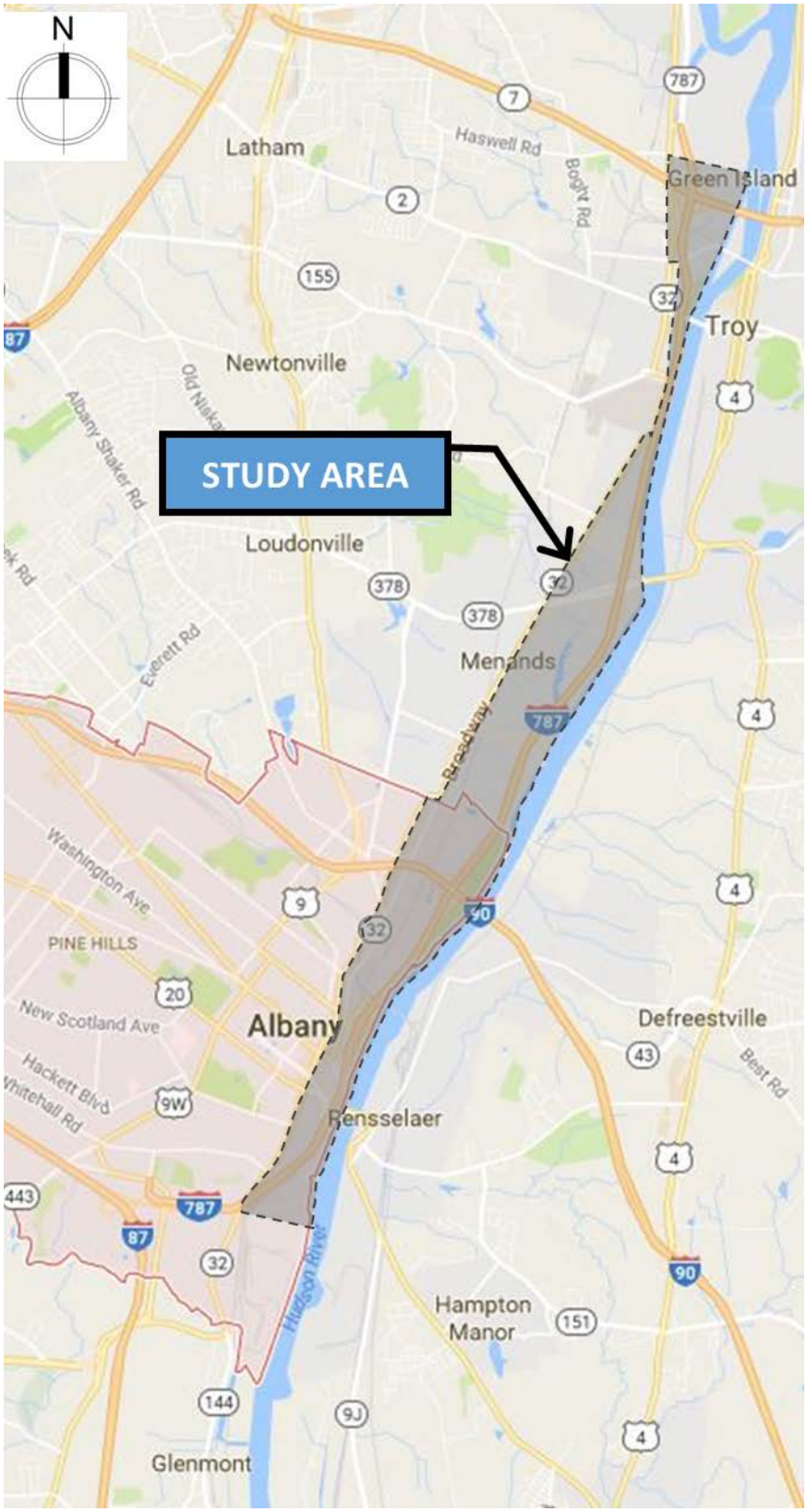
- Southern limit: Interchange 2: South Pearl Street (NY Route 32) at the Port of Albany
- Northern limit: Interchange 9: NY Route 7
- Eastern limit: Hudson River
- Western limit: NY Route 32

I-787 follows an alignment that is generally adjacent to the west bank of the Hudson River through the limits of the study area. There are ten interchanges along I-787 in the study area: six in the City of Albany, two in Menands/Colonie and two in Watervliet. Two of the interchanges in Albany, as shown below, are complex, multi-level configurations: Dunn Memorial Bridge/South Mall Expressway (Exit 3) and I-90 (Exit 5). The other interchanges in the study area vary from partial cloverleafs to ramp entrances/exits with local streets.

I-787 Exit 3: Dunn Memorial Bridge/South Mall Expressway (DMB/SMX)

I-787 Exit 5: I-90

Exhibit 3-1: Study Area Map



3-1.1 Involved Communities

The communities that are directly impacted by the physical presence of I-787 are the Cities of Albany and Watervliet, the Town of Colonie, and the Villages of Menands and Green Island. In addition, the surrounding communities of the Albany-Schenectady-Troy and Saratoga Springs metropolitan areas also rely on I-787 for regional access to employment, education, recreation, entertainment, and shopping.

3-2 Historical Context of the Corridor

The Hudson River waterfront has been part of an important commercial corridor in the study area since the beginning of colonial settlement in the early 1600s. Waterborne transportation as an engine of that commerce reached its apex after the Erie Canal opened in 1825, with the Albany basin completed shortly thereafter to take advantage of the booming economy. The City of Watervliet also became a strong commercial center during this period. However, the area's shipping industry was in decline by 1873. Albany's north basin was abandoned by the 1890s, and subsequently filled in due to the effects of silting and sewage. This land was transitioned to use by the railroads for freight yards and passenger rail service. In Watervliet, the railroads had also originally proposed to construct their rail line between Broadway and the Hudson River, but the route was changed because of public opposition to the impacts of a rail line on the waterfront.

Exhibit 3-2: State Street Waterfront - 1880s

The south basin in Albany became home to the Albany Yacht Club after a waterfront improvement project associated with the construction of the D&H Headquarters building (now the offices of the State University of New York System Administration) sometime after 1910. The Yacht Club remained there until after World War II, when the property was sold for use as a Naval Reserve Training Center; the Yacht Club eventually moved across the river to Rensselaer, where it remains today.

Exhibit 3-3, page 9 shows the Albany waterfront circa 1940's, with the active railyard, passenger train station and Yacht Club.

I-787 was originally envisioned as a waterfront arterial boulevard in the early 1950s. This was part of a much more ambitious regional arterial plan. The Hudson River waterfront was chosen as a location for an arterial based on a desire to clean up and reuse this long-established transportation corridor that dated back to the opening of the Erie Canal and extended through the end of rail passenger service to downtown Albany in 1968.

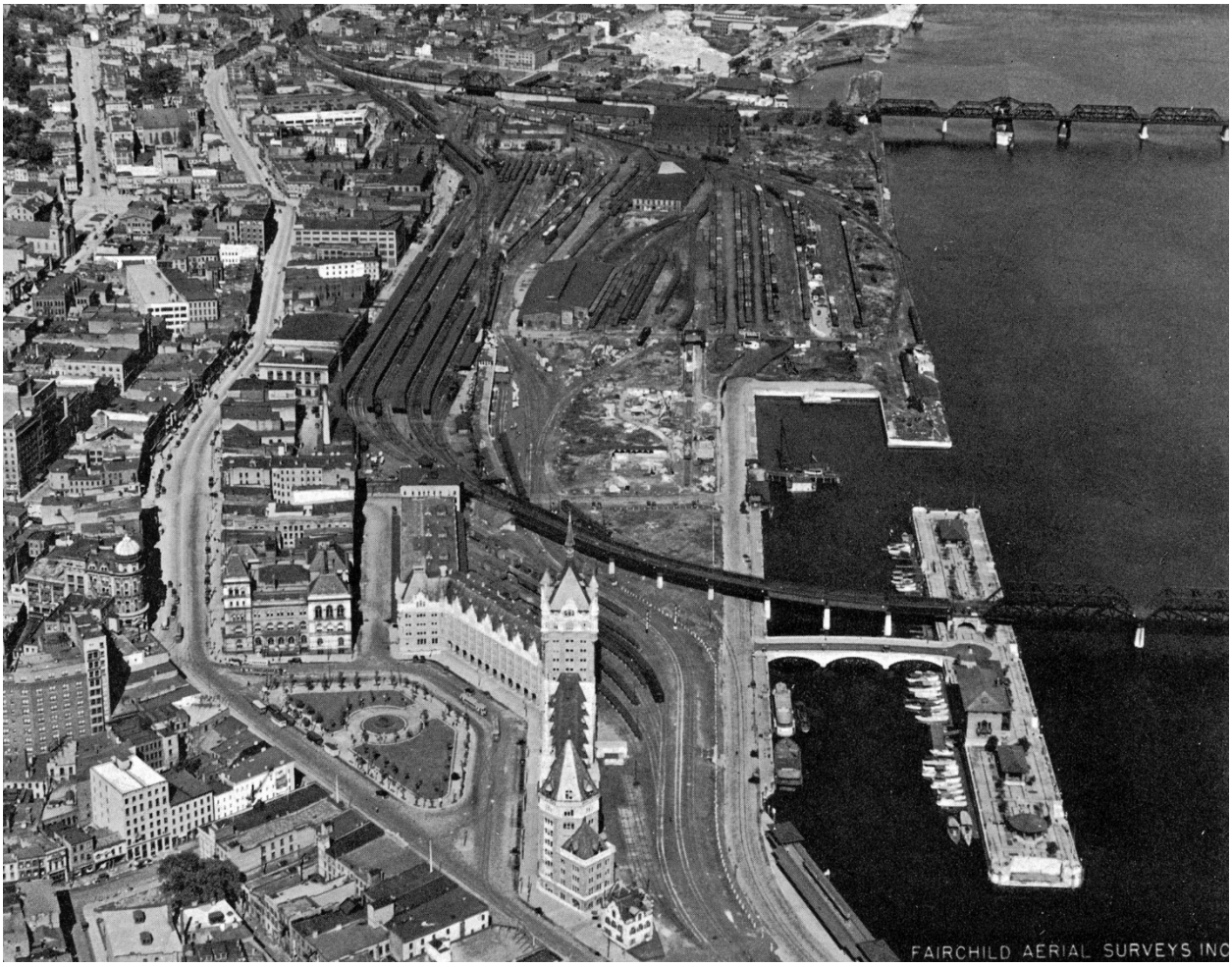
The passage of the Federal-Aid Highway Act of 1956 allowed the State to access federal funding (90 percent) for the project. This required the facility to be designed for Interstate standards, which meant designing for higher speeds and associated flow and safety parameters. Use of the standards did not vary with regard to community scale, right-of-way footprint or social separation and impact. It was anticipated at the time that the cities hosting those new highways would benefit economically and at a level that was greater than the lost property value and perceived temporary social costs. Up until I-787 was completed in the early 1970's, public policy and general public support were in line with the Interstate "way of thinking." However, the impact of the Interstate on communities like Albany, along with housing and other mid-20th Century government policies, led to disinvestment in urban areas, creation of physical barriers in urban neighborhoods and the concentration of urban poverty, significantly altering public support.

In Watervliet, I-787 has effectively cut off the City from its waterfront. All that remains accessible of the City's waterfront is the 9-acre Hudson Shores Park and the 4th Street trailhead for the MHBHT network. A good portion of the land along the shoreline south of the Hudson Shores Park is steep, graded terrain created by the construction of I-787 that is unbuildable and inaccessible. Although the MHBHT is located along the west bank of the river in the Village of Menands, the Village is similarly disconnected from the waterfront because of I-787.

As I-787 was being planned, there was interest in creating public parks and marinas along the Albany waterfront to complement the transportation investment. A concept model for a waterfront park was developed with bridges to cross the originally planned at-grade arterial roadway and the railroad tracks. While the original concept was not implemented, interest in the development of public amenities along the waterfront never waned and projects including the Corning Riverfront Park, Jennings Landing, the Hudson River Way Pedestrian Bridge, Hudson Shores Park and the Mohawk-Hudson Bike-Hike Trail (MHBHT) were all implemented through the early 2010's. Today, there is continued interest to explore options to further reclaim land along the waterfront for non-transportation and/or alternative transportation uses.

Exhibit 3-3 provides an aerial view of the Albany waterfront circa 1940, showing the prominence of railroad-based activities, and the Albany Yacht Club at the south basin (right foreground). Exhibit 3-4 shows a current aerial view from the same general perspective, showing the I-787 highway corridor and the park amenities along the waterfront.

Exhibit 3-3: Albany Waterfront - Circa 1940



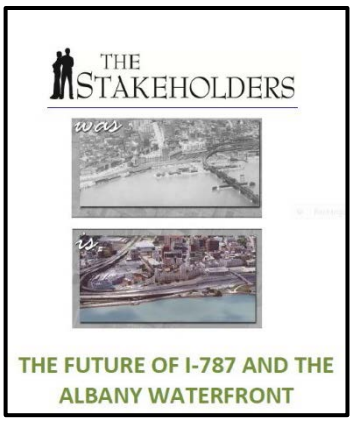
Source: Fairchild Aerial Surveys; Albany Public Library Pruyn Collection, shown at the Albany Group Archive Flickr site and hoxsie.org site.

Exhibit 3-4: Albany Waterfront - 2015

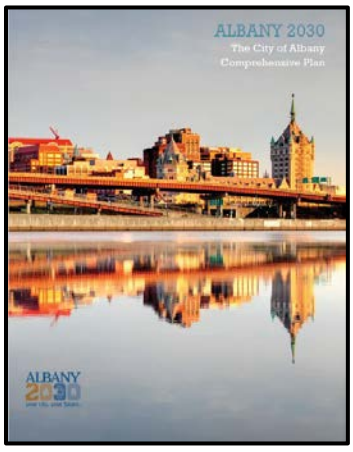
Source: Google Map

3-3 Past Studies

Waterfront access has been an integral component of urban planning for the study corridor over the past 50+ years. The "*Albany / Plan for the Capital City*" prepared in 1963 included plans for waterfront development on both the Albany and Rensselaer sides of the river. At that time, the waterfront planning was conducted in the context of the concurrent design/construction of I-787 and the Empire State Plaza. The plan envisioned reclaiming the Albany waterfront from its former industrial uses for high-density residential, a marina, a cultural center, and supporting amenities/ services. Access to the waterfront was envisioned to be provided by four bridges over I-787 and the CP Rail line, connecting the waterfront development to Broadway. Projects such as the Hudson River Way pedestrian bridge, Quay Street pedestrian/bicycle facility enhancements, and the Jennings Landing amphitheater are examples of ongoing initiatives to realize these objectives to improve connectivity and public use of the waterfront.



The Stakeholders Inc.'s Sustainable Cities Project prepared a paper in 2011 entitled "*The Future of I-787 and the Albany Waterfront*" that was a visioning exercise intended to catalyze discussion and create momentum to lead to a transformative project for Albany's waterfront. This project conceptualized several ideas for redesigning the transportation infrastructure to replace the interstate corridor in the Albany downtown area with an urban arterial roadway network and increased pedestrian/ bicyclist accessibility. These ideas included concepts for either undergrounding or elevating the freight rail lines that parallel the river. This paper did not consider the feasibility, cost/benefit or implementation strategies related to these concepts. In this study, Section 8 identifies the physical and logistical considerations that will need to be addressed if these ideas are to be advanced.



The City of Albany's Comprehensive Plan (Albany 2030) outlines policies and strategies to promote safe and efficient access and mobility for people and goods movement entering, leaving and within the City through a multi-modal transportation system that reduces vehicle miles of travel and encourages walking, biking and transit ridership. The City's Comprehensive Plan also identifies the Hudson River waterfront as an important asset to the City and notes the limitations created by I-787 and rail infrastructure to achieving the full potential of this resource. The City has also been engaged in several study initiatives and projects to advance the Albany 2030 vision, such as the South End Multi-Use Path Connection Feasibility Study, the recently completed pedestrian/bicyclist access improvements along Quay Street, and the ReZone Albany initiative that lead to the newly adopted Unified Sustainable Development Ordinance and Zoning District Map. Zoning districts are shown on a table in Section 4-3.2. Section 7 identifies transformational transportation infrastructure and ped/bike waterfront access strategies to support the Albany 2030 plan.

The other communities within the study area have also been actively pursuing strategies to improve the multi-modal transportation system within the study corridor, and to improve waterfront access. These include a variety of 'Complete Streets' planning studies, bicycle master plans, and connectivity studies. Examples of this work include the Watervliet Bicycle Master Plan completed in 2013, which led to the funded Short Term MHBHT Alternative, and the Menands/Colonie/Watervliet Route 32 Linkage Study, which led to the funded CDTA BRT system, NY Route 32 (3rd Avenue) Mill and Fill between 1st Street (south city line and Broadway), including ADA ramp updates, pavement markings, and signage, and NY Route 32 (Broadway) trail connection across an I-787 ramp to MHBHT. These activities all are working toward achieving common regional goals to provide an efficient and sustainable transportation system that addresses local and regional mobility needs, and supports the economic and social vitality of these spaces. These previous and on-going studies were reviewed to inform the I-787/Hudson Waterfront Study Team of the various considerations and the development of potential strategies. A listing of the studies reviewed is provided in Appendix A.

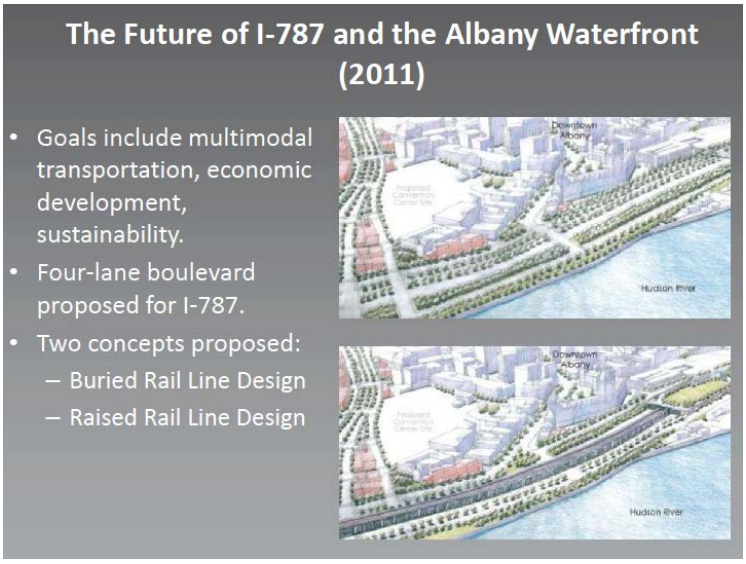
3-4 Community Plans

The established and historic nature of each of the communities within the study area as well as its location along the Hudson River represents two significant reasons that lands within and adjoining the study area have been subject to numerous planning studies dating as far back as the *1963 Albany Plan.* Since the early 2000s, there have been more than 20 planning studies; common themes revealed throughout include:

- Waterfront Connectivity
- Multimodal Improvements
- Sustainability/Green Infrastructure
- Economic Development
- Livability
- Environmental Considerations
- Transportation/Land Use Compatibility

While many of these studies center on an individual municipality within the study area, several approached the area from a broader county or regional perspective or through the lens of transportation or multi-use facilities. These plans were summarized and presented graphically at public workshops held in 2015; the graphic summaries are included in Appendix A.

"Future of I-787 and the Albany Waterfront" was a study sponsored by The Stakeholders, Inc., a group founded to provide a forum for community-based collaboration on a wide range of issues in the Capital Region.



Section 4: Existing Conditions

4-1 Transportation Infrastructure

4-1.1 Roadways

The study area is served through a network of local, county, and state-maintained roadways. Regional north/south access to the study area is provided via I-787. I-787 is part of the national Interstate Highway System and provides connection to the NYS Thruway, I-90, and I-87 (Adirondack Northway, via NY Route 7) for regional, intrastate, interstate, and international transportation needs. NY Route 32 parallels I-787 to the west, creating access to the study area from local origins. There are several primary east/west roadways in the study area traversing I-787: NY Route 7 at Exit 9, NY Route 378 at Exit 7, Interstate 90 (I-90) at Exit 5, and US Route 9/20 at the Dunn Memorial Bridge (Exit 3). Secondary east/west roadway connections in the study area include NY Route 2 south of Exit 8 at 23rd Street and Clinton Avenue (US Route 9) at Exit 4B.

I-787 is classified as an "Urban Principal Arterial Interstate" (Functional Class 11) by the New York State Department of Transportation (NYSDOT). It extends in a north-south direction from the intersection of NY Route 9W/McCarty Avenue in the City of Albany to the junction of NY Route 7 (Exit 9) in the Town of Colonie, a total of approximately 9.4 miles. I-787 changes from an interstate with controlled access to NY Route 787 which is an "Urban Principal Arterial – Freeway or Expressway" (Functional Class 12) north of Exit 9 with at-grade, signalized intersections that include pedestrian crossings.

I-787 at Exit 8 (23rd Street) in Watervliet - view looking north
Source: Google Map

NY Route 787 continues north another 2.3 miles terminating at NY Route 32 in the City of Cohoes. I-787 provides six 12-foot travel lanes (three in each direction) with shoulders varying from 10 to 13 feet wide. Guiderail or concrete barrier is provided along most of the length of I-787 with a median barrier separating the directional flows. There are ten interchanges to I-787. The interchanges between Exit 4A and Exit 2 located in downtown Albany are served by frontage roads (Quay Street and Water Street) that parallel I-787. The various local roads, frontage roads, and interchange ramps that serve I-787 are shown on Exhibit B-1 through B-3 in Appendix B.

Touring Route Continuity

The touring routes in the study area are part of the Interstate Highway System, U.S. Numbered Highway System and the state highway system, providing intrastate and interstate connectivity and facilitating navigation. Table 4-1 lists the Touring Routes. Within New York, this touring route network is primarily owned and maintained by the State. However, in larger metropolitan areas, such as in the I-787 study area, city- owned/maintained streets are also part of the touring route network. As an example, the segment of Clinton Avenue in Albany, from Broadway to Henry Johnson Boulevard, is part of US Route 9.

Table 4-1: Touring Routes

Facility Type	Route
Interstate	I-787
Interstate	I-90
Federal	US Route 9
Federal	US Route 20
State	NY Route 2
State	NY Route 7
State	NY Route 32
State	NY Route 155
State	NY Route 378

Modifications of the transportation network will need to consider the impacts to the continuity of these numbered touring routes, which could involve new designation of a city street(s) to be part of a US or State touring route. For example, a consideration to close the northbound ramp from Quay Street to Clinton Avenue, which is part of US Route 9, would lead to the need to choose an alternative route to be designated as US 9 for connectivity between the Dunn Memorial Bridge (DMB) and Clinton Avenue.

Exhibits B-4 through B-6 in Appendix B show the various touring routes within the study area.

Freight Network

Goods movement is an important function of the transportation system in the study area, including intermodal linkages between roadway (truck), rail, and maritime freight networks. Trucking represents the largest mode share of goods movement in the Capital Region, both by weight and value[1]. The interstate roadways in the study area (I-90 and I-787) are part of the National Highway Freight Network (NHFN) established by the Federal Highway Administration to strategically focus federal resources to improve the highway portions of the U.S. freight transportation system.

These interstate highways and several other roadways within the study area are also designated as Qualifying and Access Highways, which are roads that are designated by the State for use by Special Dimension Vehicles in New York (see Appendix B, page B-33 for more information). The Qualifying and Access Highways in the study area are as follows:

Qualifying Highways: I-90, I-787

Access Highways: US 9/20 (from I-787 to US 9/US 20 Junction in Schodack), NY 2, NY 7, NY 32 (Saratoga County Line to NY 2; 1st Ave Watervliet to NY 378; I-787 Pearl St Ramp to NY 23/32 intersection in Greene Co), NY 378 (I-787 to US 4), Broadway (see NY 32), Church Street (Port of Albany to southern access to I-787)

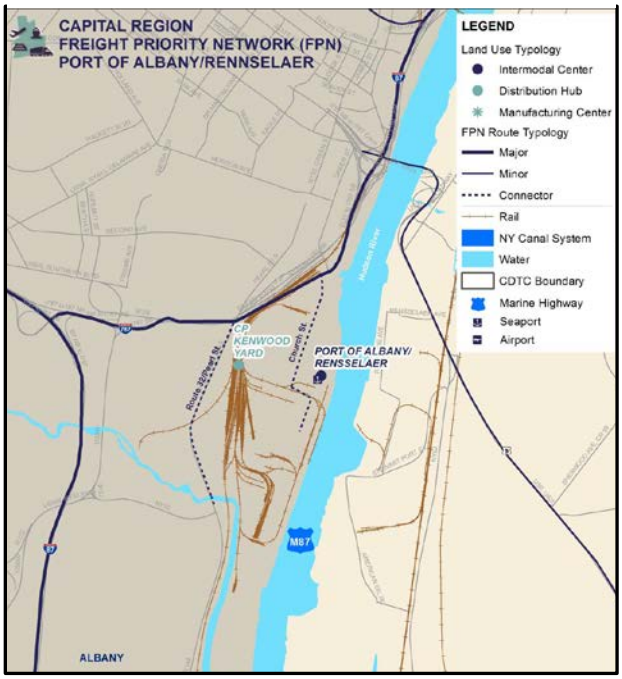
These designated Qualifying and Access highway truck routes in the study area are shown on Exhibits B-7 through B-9 in Appendix B.

[1] *Regional Freight and Goods Movement Plan*, CDTC, March 2016

There are several significant generators of heavy vehicle traffic located in the southeast portion of the City of Albany, including the Port of Albany, a County Waste & Recycling facility, and the Global Terminal, among others. These facilities contribute to a higher volume of heavy vehicle traffic on roadways in the southern end of the study area, especially along NY Route 32 (South Pearl Street) south of I-787. Review of available data shows that heavy vehicle traffic accounts for approximately 10 percent of the daily traffic on I-787, and 14 percent of daily traffic on NY Route 32 between the City of Albany line adjacent to the Town of Bethlehem and I-787.

CDTC established the Freight Advisory Committee (FAC) to guide its freight planning efforts to help decision makers better understand freight movement complexities and to more effectively guide public investment in the transportation infrastructure. The Regional Freight & Goods Movement Plan guided by the FAC provides analysis and recommendations that were used to inform the freight section of CDTC's *2040 New Visions Plan* update.

Exhibit 4-1: Capital Region Freight Priority Network



The CDTC also established a Freight Priority Network (FPN) to provide a logical system of routes that facilitate efficient and safe truck mobility within, to, and from the CDTC region. The primary function of FPN designation is to bring roads that carry critical freight and goods movements to the forefront in freight-related investment decisions, consistent with the policies of the NHFN. CDTC designated the FPN based on professional knowledge of regional freight movement patterns and routes and created specific designation criteria for major, minor, and connector routes as shown on Exhibit 4-1. I-787 is part of the FPN and any future plans for this roadway need to account for freight movements since it has been identified as a "major route" on the FPN.

A review of information provided by the NYSDOT indicates that all the bridges that span I-787 have a vertical clearance of at least 14 feet or greater and none of the bridges carried on I-787 have a posted weight limit, which would impair freight transportation in the corridor.

The rail elements of the freight network are described in Section 4-1.3 – Rail.

Roadway Ownership and Operations/Maintenance Jurisdiction

It is generally the responsibility of the roadway owner to preserve, repair, and safely operate their roadways and transportation infrastructure in a manner that optimizes traveler mobility and travel time reliability, enhances environmental conditions, and enables efficient economic activity. The NYSDOT Office of Transportation Maintenance works closely with other public agencies, local governments, and the private sector to maintain public roadways consistent with statewide and regional program goals. In some cases, such as parts of the I-787 frontage road system in Albany, local governments maintain the state-owned roadways. The ownership jurisdictions of the roadways located within the study area are

shown on Exhibits B-10 through B-12 in Appendix B. The parts of the frontage road system maintained by the City of Albany are identified in Exhibits B-13 through B-16 Appendix B.

4-1.2 Bridges

a. I-787 Bridges

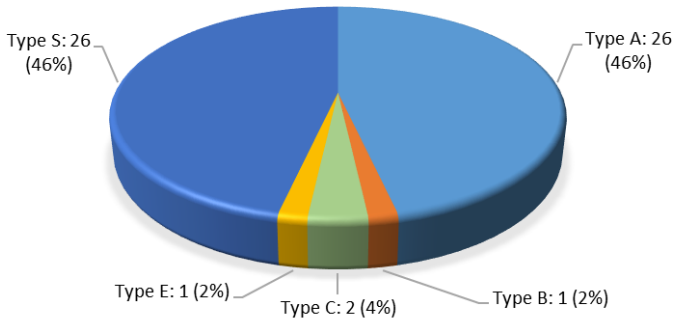
There are a total of 56 bridges along the I-787 corridor included in the study area. The location of each bridge is shown on Exhibits B-17 through B-20 in Appendix B. Identifying information for these bridges was obtained from the New York State Department of Transportation's (NYSDOT) database circa 2013, and can be found in Appendix B, Table B-1. The information contained in this table includes the Bridge Identification Number (BIN), the "Feature Carried" or "Feature Crossed" (i.e., roadway, rail or waterway that is carried by the bridge or traversed by the bridge, respectively), bridge length, condition, and ownership/maintenance jurisdiction.

The vast majority of the bridges are under NYSDOT jurisdiction. NYSDOT inspects their bridges at a minimum of once every 2 years. At the time that this study's bridge conditions review was conducted, the most recent inspection reports from the 2012-2013 inspection cycle were obtained from NYSDOT for all its bridges within the study area. These reports were used to determine the existing condition of the bridges, which is known as the "condition rating". This is a weighted average of the ratings the inspector gives each bridge element during the inspection and is on a scale of 1-7, 1 indicating imminent failure and 7 indicating brand new. A few of the bridges are owned by the railroads that operate in the area, and no inspection information was available for review in this study. Inspection information from an ongoing project was available for some of these sites. The other sites were visited by CHA bridge engineers to provide cursory evaluations of the bridges' conditions.

As part of the analysis, the bridges were broken down into various categories. Each archetype category was assigned a cost based on the type of bridge and level of work required to address its deficiency. The various bridge types are listed on the following page.

- Bridge Type A is the most common, and is defined as a "Slab and Multi-Beam" bridge.
- Bridge Type S has the same characteristics as Bridge Type A; however, its costs were increased due to its proximity to another bridge, which would add extensive staging operations to the work.
- Bridge Type B is defined as a "Prestressed Concrete Box Beam" bridge.
- Bridge Type C is defined as a "Rigid Frame under 48 feet long" bridge.
- Bridge Type E is defined as a "Truss" bridge.

Exhibit 4-2: Bridge Types



The number of each bridge type in the study area is shown in Exhibit 4-2.

Other Vicinity Bridges

The focus of the bridge analysis for this study was on bridges along I-787 mainline and ramp bridges carrying or crossing I-787. However, there are several other noteworthy bridges in the immediate vicinity of the study area that could potentially be affected by any substantial transformational changes to the I-787 corridor. These other vicinity bridges are as follows, and are shown on Exhibit B-21 in Appendix B:

- Collar City Bridge
- Green Island Bridge
- Congress Street Bridge
- Troy-Menands Bridge
- Patroon Island Bridge
- Livingston Avenue Bridge (rail)
- Dunn Memorial Bridge
- South Mall Expressway (elevated sections)

Table B-2 in Appendix B also provides additional identifying information about these bridges.

b. Ownership and Operations/Maintenance Jurisdiction

Of the 56 bridges in the study, 49 are listed as being owned and maintained by NYSDOT, 5 are owned/maintained by the railroads, and two are maintained by the City of Albany. Generally, NYSDOT will have ownership of all overpasses and underpasses on all state jurisdictional roads, as well as bridges that are on-ramps and off-ramps. All NYSDOT bridges are inspected at a minimum of once every 2 years. If an inspection reveals a condition where an element is no longer functioning as designed, it can be "flagged". Once flagged, the bridge is inspected annually until the condition is addressed. The condition rating determined by the inspector is entered into a database at NYSDOT and is used as input in developing their capital program.

4-1.3 Rail

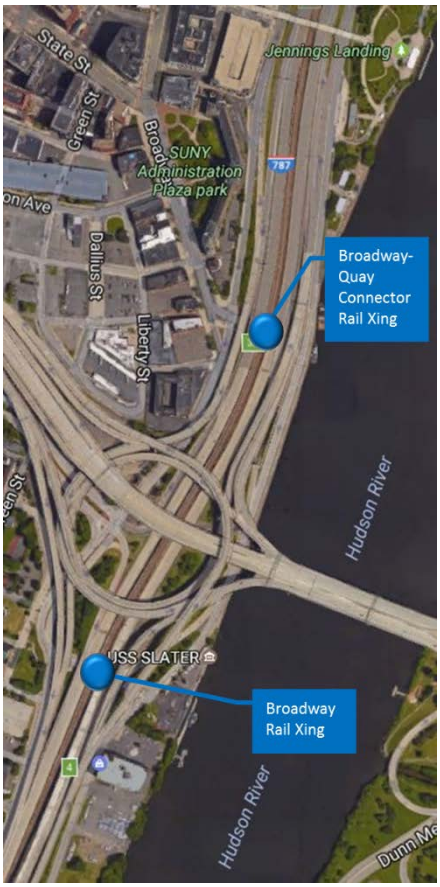
Canadian Pacific Railway (CP Rail) provides freight rail service within the study area as part of its Canada-US Northeast network. Within the Albany section of the study area, the rail line is located between the I-787 northbound and southbound roadway (from 2,000' south of the South Mall Expressway to the Clinton Avenue interchange), and consists of two parallel tracks. These railroad facilities connect the Kenwood Yard at the Port of Albany and extend north to Orange Street where the two lines separate; with one line continuing north, and the other line (known as the Bull Run junction) connecting with the east/west CSX tracks. The CP Rail line then extends north through the study area along an alignment between I-787 and Broadway (NY Route 32), crossing under Broadway in Menands, and continuing north outside the western study limits of the corridor. The rail freight handled on this rail corridor varies based on market conditions, but generally consists of oil, propane, chemicals, industrial supplies, heavy equipment, scrap and mixed freight.

The CSX rail line crosses the study area in Albany near Colonie Street (within Albany's North Albany Warehouse District), providing east-west freight rail service crossing the Hudson River at the Livingston Avenue Bridge. This line also provides Amtrak passenger rail service at the Albany-Rensselaer Station, which is the ninth busiest station within Amtrak's national network[2].

Construction of the I-787 corridor in the Albany section of the study area included the taking of D&H RR (now CP Rail) property along the waterfront. Terms included building Kenwood Yard and providing a perpetual easement for the rail rights to operate within the I-787 right-of-way owned by the State. This portion of the rail corridor is an important link to CP Rail providing a direct connection to local industry, Port of Albany facilities and connecting south to CSX RR on the Albany Secondary track to Selkirk Yard.

[2] https://nec.amtrak.com/content/stations-and-ridership, 2015 FY ridership data.

The section of the CP Rail line between the Port of Albany and the Bull Run junction features two grade-separated crossings with rail over roadway; one over Broadway where Broadway crosses from the west side of I-787 to the east side at Quay Street (Steamboat Square - now home to the Dutch Apple River Cruises and the USS Slater tourist site) and the other over the Broadway/Quay Connector (BQC) located between the Broadway intersection with Water Street and Jennings Landing. The rail line remains above-grade between these two bridges, with retaining walls separating the rail line from the adjacent I-787 roadway.



There are five at-grade roadway/rail crossings along the CP Rail line within the study area, as follows:

City of Albany:	Church Street
	North Lawrence Street
	North Ferry Street
	Erie Street
Menands:	Simmons Lane

Additional at-grade roadway/rail intersections are located north of Simmons Lane as the rail continues north out of the study area (i.e. west of NY Route 32).

CP Rail operates freight trains moving through the study area that can reach 10,000 feet long. Currently, this rail corridor has 8 trains per day with a 20-mph maximum speed. The logistics for maneuvering these trains at the Kenwood Yard involves the use of the double track nested between the northbound and southbound roadways of I-787 to stage train cars for assembling/ disassembling trains for loading/unloading in the Yard, and for 'building' new northbound freight trains. CP Rail has made recent significant capital investments to extend the double track north to North Lawrence Street and to modify their Colonie Yard near Watervliet to improve rail operations serving the Port of Albany.

4-1.4 Transit

The Capital District Transportation Authority (CDTA) provides transit service in the Capital Region, including within the study area in Albany County. The Capital Region is served by an extensive network of fixed route transit organized around a system of regional trunk lines (including Bus Rapid Transit Route 905 that connects the Cities of Albany and Schenectady) and neighborhood routes. The transit services within the study area includes Bus Route 522 (Hudson River Express) which is an express route that travels between the Cities of Albany and Cohoes primarily along I-787, with stops in the study area in the Cities of Albany and Watervliet and the Village of Green Island. Bus Route 540 (Northway Express Route) partially travels along I-787 between the Empire State Plaza and NY Route 7 with stops in the City of Albany. Bus Route 22 (Albany-Troy-Watervliet) is a trunk route that travels between the Cities of Albany and Troy serving Menands, Colonie, and Watervliet primarily on NY Route 32 immediately

adjacent to I-787. This route is one of CDTA's top performing routes, with more than 1.2 million riders per year[3].

Service in and around the study area will change in the near future as CDTA is planning a new Bus Rapid Transit route along the Hudson River Corridor connecting Hudson River communities. This is CDTA's third busiest ridership corridor in the Capital Region. The new BRT route will provide faster, and more direct, frequent, and reliable north-south transit service connecting the major activity centers along the River Corridor and will complement the north/south mobility provided by I-787 and NY Route 32. The planned route alignment of the BRT service, as shown in Exhibits B-22 through B-24 in Appendix B, will primarily follow the NY Route 32 corridor from the Port of Albany to the City of Watervliet (with paired service on Broadway in North Albany) and then cross into the City of Troy at the Congress Street Bridge (NY Route 2). From downtown Troy, the planned route follows River Street (US Route 4) to Waterford.

The on-street arterial BRT service will operate predominantly in mixed traffic using articulated buses. The major activity centers to be connected within or adjacent to the study area include the Port of Albany, City of Albany neighborhoods of Kenwood, Krank Park, South End, Mansion, the Pastures, Downtown, Arbor Hill, the Warehouse District, and North Albany; the Village of Menands, the Town of Colonie, and the City of Watervliet, including the Downtown and Port Schuyler neighborhood. New stations will be built at these activity centers and will typically include shelters and passenger amenities and intersection crossing improvements.

4-1.5 Pedestrians and Bicyclists

Several bike routes and multi-use trails are located within the study area as described below and shown on Exhibits B-25 through B-27 in Appendix B. Pedestrians and bicyclists are not permitted on I-787.

Mohawk Hudson Bike-Hike Trail (MHBHT) – This facility is an 86-mile trail in New York's Mohawk Valley/Capital District regions. The trail begins within the study area just south of the Dunn Memorial Bridge as an off-road multi-use trail and continues north on the east side of I-787 through the Corning Riverfront Park to a Park-and-Ride lot located at the terminus of 4th Street in the City of Watervliet. The *Mohawk Hudson Bikeway* crosses underneath I-787 and continues north along Broadway through the study area on the west side of I-787 as an on-road facility. The trail crosses back underneath I-787 via Albany Avenue and parallels I-787 on the east side using Hudson Avenue and Tibbits Avenue where it intersects with NY Route 32 and continues north toward Cohoes out of the study area.

[3] 2016-2017 Annual Route Performance Report, CDTA

Schuyler Flatts Trail – This is a multi-use trail that connects the MHBHT to the Schuyler Flatts Cultural Park located in the Town of Colonie between the Village of Menands and the City of Watervliet. The Schuyler Flatts Cultural Park is an open space recreational park that was recently donated to the Town of Colonie by the Open Space Institute. The Schuyler Flatts Trail runs along the west side of I-787 and connects to 4th Street, which is an on-road portion of the MHBHT that runs underneath I-787.

State Bicycle Route 9 – This is a signed on-road bicycle route that extends 345 miles from New York City to Rouses Point on the New York - Quebec border. This route connects with the Velo Quebec cycling routes in Quebec and eastern Canada. It also intersects with the New York City bicycle route network and State Bicycle Routes 5, 11 and 17, and the NYS Canalway Trail. The route runs parallel to I-787 on the west side mainly along Broadway after it crosses the Hudson River on the Dunn Memorial Bridge. The bicycle route continues north via Broadway/NY Route 32 until it intersects Lower Hudson Avenue where it then uses the Green Island Bridge to cross back over the Hudson River to continue north on US Route 4 out of the study area.

State Bicycle Route 5 – This is a signed on-road bicycle route that extends 365 miles from Niagara Falls across New York to the Massachusetts state line. The route parallels the Erie Canal and the New York State Canalway Trail. It intersects with State Bicycle Routes 9, 11, 14, 19 and 517, as well as, the New York State Seaway Trail. The bicycle route runs through the southern portion of the study area where it uses US Route 20 (Madison Avenue) to travel from the west. It then uses the Dunn Memorial Bridge to cross the Hudson River before it continues to the east along NY Route 151 (3rd Avenue).

Hudson River Way Bridge – This is a pedestrian bridge that links Broadway in downtown Albany at Maiden Lane with the Corning Riverfront Park on the west bank of the Hudson River at Jennings Landing. The bridge spans I-787 and the CP rail lines. The bridge features a decorative concrete staircase, an elevator building, and an access ramp for pedestrians.

There are also several locations where pedestrians and bicyclists can access the Hudson waterfront under and over I-787 in the Village of Menands and in the Cities of Albany and Watervliet. These are summarized on Table 4-2 and are also shown on Exhibits B-25 through B-27 in Appendix B. It is noted that the Corning Preserve was recently renamed the Corning Riverfront Park and that it received approximately $5 million in pedestrian and bicyclist facility upgrades. The work included a widening and extension of the existing trail south to the intersection of Quay Street and Broadway at Steamboat Square (near the USS Slater) and north to Colonie Street. It also involved the construction of a new two-way bicycle path behind the park's tidal

ponds to enable riders to bypass the Jennings Landing amphitheater during large events, and new crossing signals along Quay Street to improve pedestrian access.

Table 4-2: Hudson River Multi-Modal Access (Watervliet to Albany)

Municipality	Location	General Information	Distance to Next Access
City of Watervliet	1 - Hudson Shores Park	Pedestrian, Bike, Car, Boat Access. Adjacent to State Bike Route 9 (23rd St to Lower Hudson Ave).	1.5 miles
	2 - 4th Street	Pedestrian, Bike, Car Access. Flooding potential. Adjacent trail connects to Schuyler Flatts Park	0.6 miles
Village of Menands	3 – NY Route 378 (High Street)	Pedestrian, Bike Access from Troy-Menands Bridge only.	1.4 miles
	4 - Exit 6 I-787 NB Ramp	Maintenance Vehicles Only	2.1 miles
City of Albany	5 - North Ferry/ Water Street Lot	Pedestrian, Bike, Car, Boat Access. Located under 787	0.3 miles
	6 – Corning Riverfront Park (Quay Street)	Pedestrian, Bike, Car Access	0.3 miles
	7 – Riverfront Park (Maiden Lane)	Pedestrian, Bike, Car, Boat Access (by water only, no launch)	0.3 miles
	8 – NY Route 5	Pedestrian, Bike Access. Entrance to Dunn Memorial Bridge. Adjacent to State Bike Routes 5/9	0.3 miles
	9 – Steamboat Square (Quay Street)	Pedestrian, Bike, Car Access. Boat access may be commercial (private) only	0.5 miles
	10 - Island Creek Park (Church Street)	Pedestrian, Bike, Car, Small Craft Boat Access	--

4-1.6 Port of Albany

As noted in the *Regional Freight and Goods Movement Plan* (2016) published by CDTC, the Port of Albany is the second most active cargo seaport in New York State and supports over 1,400 local jobs. The Port is located 124 nautical miles north of New York Harbor on the Hudson River. Channel depths reach 32 feet, and deep-water facilities exist on both sides of the river. The Albany side wharf is 4,200 feet long, while the Rensselaer side is about 1,200 feet. U.S. Customs and Border Protection has an on-site office for cargo clearance.

The Port completed the development of a new Security/Emergency Operations Center in 2013. In addition, to expand and improve its carrying capacity, the Port recently invested in a new crane, timber pile replacement and over $200,000 in terminal rail improvements to the 20 miles of rail on the facility. Most recently, the Port received funding in 2016 under the federal Transportation Investment Generating Economic Recovery (TIGER) program as part of a larger 'ExPort Upstate NY' expansion and upgrade project. The TIGER funding will be used to provide a new dock and warehouse with a roll-on/roll-off ramp, maritime terminal and port roadway improvements.

Current Port tenants lease space for both short and long-term periods. Major tenants include manufacturers, metal recycling businesses, asphalt producers, and others. The Port also has about 20 open acres of storage space available for tenant use. The location of the Port of Albany is shown in the aerial view below, and on Exhibit B-25 in Appendix B.

Port of Albany – view looking north
Source: Google Maps

4-1.7 Marine

The Hudson River is home to marinas, boat launches, cruise ship destinations, docks associated with seasonal restaurants, and the USS Slater, which is a regional tourist attraction. The marine facilities located within the study area are described in Appendix B (see page B-41) and shown in Appendix B Exhibits B-28 and B-29.

4-2 Traffic Volumes and Travel Patterns

4-2.1 Existing Traffic Volumes and Traffic Flow

In general, I-787 carries an annual average daily traffic volume (AADT) of approximately 87,000 vehicles per day (vpd) and is amongst the highest used interstate highways in Albany County (Table 4-3). Daily traffic volumes on I-787 range from 22,000 vpd to 88,000 vpd. The segment level AADT is summarized in Table 4-4.

Table 4-3: Ranking of Area Interstate Routes

Rank	Highway (Segment)	Average AADT
1	I-90 (I-87 to Hudson River)	116,000 vpd
2	I-87 (I-90 to Mohawk River)	115,000 vpd
3	I-787 (Dunn/Plaza to NY Route 7)	87,000 vpd
4	I-90 (Thruway, Exit 24 to Exit 25)	74,000 vpd
5	I-787 (Exit 23 to Dunn Bridge/Plaza)	50,000 vpd
6	I-87 (Thruway, Exit 24 to Exit 21A)	45,000 vpd

vpd = vehicles per day

Source: Traffic Count Hourly Reports, New York State Department of Transportation (2015)

Table 4-4: I-787 Segment Traffic Volume Summary

Facility	Segment	AADT (vpd)	Lanes (total)
NY-787	Tibbits Avenue (End of NY 787) to Junction NY Route 7 (Exit 9)	32,000	4
I-787	Junction NY Route 7 (Exit 9) to 23rd Street (Exit 8)	79,000	6
I-787	23rd Street (Exit 8) to Junction NY Route 378 (Exit 7)	74,000	6
I-787	Junction NY Route 378 (Exit 7) to NY Route 32 (Exit 6)	88,000	6
I-787	NY Route 32 (Exit 6) to Junction I-90 (Exit 5)	53,000	6
I-787	Junction I-90 WB Ramps to Junction I-90 EB Ramps (under I-90)	44,000	6
I-787	Junction I-90 (Exit 5) to Clinton Avenue (Exit 4B)	84,000	6
I-787	Junction Dunn/Plaza (Exit 3A/3B) to Junction NY Route 32 (Exit 2)	55,000	6
I-787	Junction NY Route 32 (Exit 2) to Junction US Route 9W/Thruway (Exit 1)	45,000	6
I-787	Junction US Route 9W/Thruway (Exit 1) to US Route 9W/McCarty Avenue (End of I-787)	22,000	4

vpd = vehicles per day

Source: Traffic Count Hourly Reports, New York State Department of Transportation (2015)

Traffic flows along I-787 are highly directional. As shown on Exhibits B-30 and B-31 in Appendix B, the predominant flow is southbound towards I-90 and Albany during the weekday AM peak period and northbound during the weekday PM peak period. These periods represent the times of day when traffic volumes are highest, which typically fall within the period between 7-9 am and 4-6 pm. The single highest hourly flow rate is on I-787 northbound between Albany and I-90 with 6,000 vehicles per hour (vph) during the PM peak hour.

I-787 includes ten interchanges with interstate, state, and local roadway networks within the study area. The interchange types vary from low speed diamond-style ramps terminating at signalized intersections to higher speed directional interchanges. The volumes through these interchanges were estimated based on available mainline and ramp AADT's and are summarized in Table 4-5. These volumes do not include throughput volumes on I-787, but do include throughput volumes on the facility carried

over/under the interchange. As such, the I-90 interchange (Exit 5) ranks highest with 140,000 vpd while Colonie Street is an exit ramp only and carries the lowest volume of 5,000 vpd. Individual ramp volumes are included in Appendix B, Table B-3 for each of the interchanges located within the study area on I-787.

*Table 4-5: Interchange Traffic Volume Summary**

Exit	Segment	AADT (vpd) [1]	Lanes (per ramp)
9	Junction NY Route 7 (to Northway and Troy)	99,000	1 to 2
8	Junction 23rd St (Watervliet)	31,000	1
7	Junction NY Route 378 (Menands, to Colonie and Troy)	47,000	1
6	Junction NY Route 32 (Menands)	12,000	1
5	Junction I-90	140,000	2
4A	Water Street/Colonie Street (Albany)	5,000	1
4B	Clinton Avenue (Albany)	32,000	1
3A	US Route 9/20 and Empire Plaza (Albany, to Rensselaer)	19,000	1
3B	US Route 20/Port of Albany (Albany)	39,000	1
2	NY Route 32 (Albany)	14,000	1

* includes volume throughput of the Under/Over Roadway
vpd = vehicles per day
[1] Source: From Traffic Count Hourly Reports provided by the New York State Department of Transportation and data provided by CDTC from the STEP model.

A review of the ramp volume information in Appendix B, Table B-3 indicates that the volume demand at several existing interchanges (such as Exits 6, 7, and 8) are well below the capacity of the interchange and could be candidates for alternative interchange redesigns in the future, based on a general service volume representing a level of service (LOS) D/E threshold of 1,400 vph per lane, which is the lower boundary of traffic operations typically used for design in urban areas. In addition, there are several ramps within the network that could also be potentially down-sized or eliminated. These ramps include the following:

- From Northbound Quay Street to Clinton Avenue
- From Pearl Street to I-787 Southbound
- From I-787 Southbound to Dunn Memorial Bridge Eastbound
- From I-787 Southbound to Water Street/Colonie Street

The Hudson River Crossing Study prepared in 2008 identified that the eight-lane Dunn Memorial Bridge has extra capacity, so it may also be a candidate for lane reductions when it is time for this bridge to be reconstructed in the future.

4-2.2 Travel Demand Management

Travel Demand Management (TDM) is a set of strategies that are intended to reduce single occupant vehicle (SOV) travel, fuel consumption, air pollution, and parking demand, by changing travel behavior. Relevant strategies encourage more efficient travel patterns, such as shifts from peak to off-peak

periods, from automobile to other modes, and from dispersed to closer destinations. Making travel options like buses, carpooling, bicycling, and walking more attractive and affordable is critical.

CDTA and CDTC have partnered for many years to develop TDM programs in the Capital Region. These programs are funded primarily through CDTC's TIP's regional Travel Demand Management Implementation set-aside. In federal fiscal year 2017-18, over $1 million in federal Surface Transportation Block Grant Program funds were available for TDM projects. In addition, New York State offers state employees, the largest employer in the I-787 corridor, a package of Green Commuting Options www.ogs.ny.gov/greenny/green-energy-commute. Other employers may do the same but at a much smaller scale.

4-2.2.1 CDTA and CDTC TDM Programs

CDTA is expanding its role towards a regional mobility provider that can offer a menu of transportation options. This includes excellent regional transit services, high-quality management of intermodal centers, a regional bike share program, and oversight of local taxi services to lessen the need for automobile ownership and use, and to encourage more use of CDTA's transit system.

TDM is not an exact science; therefore, CDTA and CDTC use TDM funds to test the feasibility of new and innovative programs. CDTA and CDTC's TDM partnership has resulted in the successful implementation of pilot TDM programs, and maintains an aggressive strategy to increase the program's breadth and effectiveness. As of 2017, CDTA and CDTC support the following TDM programs:

Pass Subsidies

CDTA subsidizes the cost of monthly unlimited-ride passes to eligible participants of several non-profit organizations around the region, including affordable housing organizations, the U.S. Committee for Refugees and Immigrants, and a resource center for victims of domestic violence. This program reduces SOV trips, introduces participants to transit services and their benefits, and establishes long-term sustainable transportation habits.

Transportation behaviors are most likely to shift with substantial changes in a person's life, during which they must re-establish their commuting habits. By providing a period of free public transportation to these individuals, pass subsidies allow participants to learn and become accustomed to the various routines associated with taking transit, and make them more likely to continue taking transit at the conclusion of their programs.

Universal Access Program

CDTA offers universal access to numerous partners in the region, particularly employers and universities, allowing employee and student access to the entire CDTA route network, free of charge, using CDTA's Navigator smart card, organization IDs or student IDs. Participating partners provide CDTA a fee for this program to support transit operations. These partnerships increase mobility options and encourage riders to take advantage of unlimited transit service as part of their everyday life beyond the commute to school or work. Providing employees and students with free access to transit supports local efforts to attract and retain a dynamic workforce. As of 2016, Universal Access agreements generate more than four million annual boardings, or close to 25% of CDTA's total ridership. CDTA ridership has increased nearly 25% from 13.8 million in FY2009 to the record-breaking total of 17.1 million posted in FY2016.

Vanpooling

Vanpooling is a commuting arrangement in which five or more people share their ride to work like carpooling, but on a larger scale that allows for greater savings in fuel and auto ownership costs. Under this model, a group of vanpoolers collectively pay a monthly fee that covers the leasing of a 7-to-15-passenger van, as well as fuel costs, insurance, and other administrative costs.

In the Capital Region, CDTA employs Enterprise Rideshare, a vanpooling contractor that provides the vans themselves and coordinates all relevant administration and marketing. CDTA applies a subsidy of up to $600 per van, per month to all vanpools, significantly reducing the cost to the customer. At present, 15 vanpools are operational within the Capital Region.

Park & Ride Lots

CDTA maintains a network of Park & Ride lots throughout the region. These facilities are usually located near limited-access highways in the more suburban areas within the service area, and tend to be served by express bus routes that connect directly to employment centers. Commuters park their cars for the day for free and continue via transit to their destinations. This effectively extends the “catchment area” of transit by allowing commuters in areas of lower transit propensity to ride for a component of their trips. Locations and information about all lots is maintained and publicly available at www.capitalmoves.org.

iPool2

The website www.iPool2.org allows users to post rideshare information and find others who match their schedules based on the times and locations when they need to travel. The website includes the region’s vanpools so that members of the public can match with already existing vanpools. The database within iPool2 is integrated with other regions in New York State.

Guaranteed Ride Home

Guaranteed Ride Home (GRH) provides taxi transportation free of charge to participants who must unexpectedly work late, or have a mid-day emergency at work or school and cannot get home by bus. GRH is a benefit to monthly CDTA Swiper or Frequent Rider Navigator smart card holders, or to members of iPool2 who register for the GRH program. This program alleviates commuter concerns about leaving a car at home, due to the rare occasion that requires immediate and quick transportation. New York State employees are eligible for a similar program operated by the Office of General Services.

Eligible participants arrange a Guaranteed Ride Home simply by calling CDTA’s customer service hotline. These rides are limited to two uses per month, six uses per year, and/or $300 worth of yearly rides, whichever occurs first.

Capital CarShare

Carsharing provides access to personal vehicles when necessary, without the stress and expenses of car ownership. Cars parked in designated spaces in densely developed, transit-oriented neighborhoods and/or business districts are open to members, who reserve them for a pre-determined period online or by phone. Carsharing has been proven to not only save members money but also decreases the number

of cars on the road overall, reduces the need for car parking, eliminates up to 1,000 tons of CO2 emissions and can increase the use of transit as well as walking and biking.

Carsharing in the Capital Region is operated by Capital CarShare, Inc., a local nonprofit group formed in 2012 to start, manage, and grow the program. Capital CarShare is responsible for costs associated with insurance, maintenance, refueling and cleaning the vehicles, in addition to maintaining a membership and reservation database. At present, members can choose from any of five vehicles parked in strategic locations in the City of Albany, or two vehicles in the City of Troy. The website www.capitalcarshare.org provides information on how to join and how to reserve a car.

CDPHP Cycle!

Bicycle sharing (or bikeshare) is a rapidly emerging mobility option similar to carsharing, in which bicycles are made available to the public and reserved by riders. In June 2017, CDTA and the Capital District Physicians' Health Plan (CDPHP) announced the rollout of CDPHP Cycle!, the region's first bikeshare program.

This program presently consists of 160 bicycles located at 41 "stations" in the Capital Region's four largest cities. These bicycles are "smart bikes," which allow riders to securely return the bicycle to either a designated CDPHP Cycle! station, or to any public bicycle rack in the service area for an additional fee. CDPHP Cycle! operated during the latter portion of the 2017 summer until the end of November, and has an anticipated 2018 start date of April 1st. CDTA intends to significantly increase the number of bicycles and stations in future seasons.

Regional Taxi Services

In its oversight role of local taxi services, CDTA has provided taxi customers with a list of taxicab companies that have medallions in the region, the National Limousine Association's passenger bill of rights and a public comment form on their website at https://www.cdta.org/regional-taxi-service. Public feedback on customer experiences with regional taxi services is critical to ensuring a high quality system for residents and visitors.

4-2.2.2 New York State TDM Programs

New York State is the major employer in Downtown Albany and has locations scattered throughout the I-787 corridor. As a major component of commuter travel on I-787, the state encourages Green Commuting options as a way to reduce automobile travel and reduce the demand for employee parking. Information on travel options is provided via the 511ny.org website. Current programs include:

NYS-Ride

NYS-Ride is a negotiated benefit program sponsored by the Governor's Office of Employee Relations (GOER) and administered by WageWorks, Inc., which provides New York State employees with the opportunity to pay for certain work-related transportation expenses on a pre-tax basis. NYS-Ride allows employees to save money on eligible transportation costs including transit passes. Employees pay for these expenses through pre-tax payroll deductions and save money each month. The Human Resources Department for each state agency has information on the current Pre-Tax Transit Limit.

Carpooling

Carpooling is encouraged through two web based resources managed by New York State. The 511 Rideshare website can help employees to find a ride in their community: https://511nyrideshare.org/ and for employees who work in downtown Albany, the Office of General Services Parking Management offers carpooling options: https://parking.ogs.ny.gov.

Transit, Biking and Walking Encouragement

New York State provides information to state employees regarding non-automobile travel modes to work sites. Statewide, the New York State Office of General Services provides links to every public transit agency's website, provides information on why transit benefits the environment and the benefits of biking or walking to work. Making the workplace conducive for walkers and bikers can reduce emissions, decrease traffic and help employees with their fitness goals. Using public transit lowers vehicle emissions, decreases traffic, and allows employees to be more productive during their commute. Park and ride is a component of the State employee commute program as shuttle services are offered regularly from a number of satellite parking lots designated for state employee parking to downtown Albany work sites. State employees must obtain parking permits to utilize these parking lots.

4-3 Land Use and Community Context

As noted in Section 1-2, the corridor encompasses portions of the Cities of Albany and Watervliet, the Town of Colonie, and the Villages of Menands and Green Island, covering 2,263 acres. Approximately 1,061 acres of that land (45% +/-) is public right of way (ROW) consisting of primarily roadways and other utilities. Land use descriptions have been developed using a combination of information and mapping from previous studies, field observation, aerial photography, and New York State "Property Type Classification Codes"[4]. The City of Albany represents the largest land area, while the Town of Colonie represents the smallest land area within the study area. The Village of Menands includes significant land area in the vicinity of I-787 that is owned by the State of New York; therefore, this land is not classified under the state land use classification code.

4-3.1 Land Use

a. Albany

Typical of urban settings, land use in the City and adjacent to the I-787 corridor is varied ranging from the industrial and shipping activities at the Port of Albany to public open space associated with the Corning Riverfront Park. Nearly every type of land use is represented; however, the study area is dominated by numerous commercial uses and underdeveloped parcels, many proximate to I-787. Vacant land within the City of Albany generally lies east of I-787 and is not classified under the State Land Use Classification Code. Institutional uses such as schools and government buildings and residential uses are interspersed throughout the study area. Nearly all of the study area in the City of Albany lies to the west of I-787 with the exception of the lands associated with the following uses which have Hudson River frontage (Exhibits C-1 and C-2 in Appendix C):

- Port of Albany
- South Waterfront District
- Corning Riverfront Park and boat launch
- Island Creek Park
- Springer Welding Works & Marina
- Steamboat Square

The waterfront property along the Hudson River south of the Livingston Avenue rail bridge used for the Corning Riverfront Park was conveyed from the State to the City of Albany with deed covenants restricting commercial activity. The waterfront property from the Livingston Avenue Bridge north through Watervliet is owned by the State, and Occupancy/Use permits are required to use the property.

b. Menands

According to the State Land Use Classification codes, land use in the Village of Menands consists generally of undeveloped/vacant property, community service uses such as the Mohawk Humane Society and Northeast Career Planning (assists individuals with disabilities). The former Midland Dairy facility and the shopping plaza adjacent to the Village One Apartments are both vacant. Both a Railroad

[4] https://www.tax.ny.gov/research/property/assess/manuals/prclas.htm

ROW and a Niagara Mohawk easement run through the Village within the study area. There is a large wooded, undeveloped area south of the I-787/NY Route 378 interchange that is not classified by the State Land Use Classification Code (Exhibit C-2 in Appendix C).

c. Colonie

Two areas within the study area are located within the municipal boundaries of the Town of Colonie; the southerly area shares boundaries with the Village of Menands to the south and City of Watervliet to the north and the northerly area lies north of the City of Watervliet and west of the Village of Green Island (Exhibits C-2 and C-3 in Appendix C). Lands north of Menands include portions of the Village One Apartments, the Federal Express Plaza facility and the Schuyler Flatts Cultural Park. Residential uses are located in the area west of Broadway outside of the study area.

To the north of Watervliet, the land area bounded by Cohoes Road, 25th Street, the Railroad and I-787 is identified as vacant in the State Land Use Classification Code and appears to include overhead transmission lines; however, aerial photographs indicate the presence of a business operating out of a several small prefabricated structures. Residential structures are located on the east side of Canal Street; the west side of Canal Street is vacant.

d. Watervliet

Land use in the City of Watervliet is dominated by residential uses on city lots within the study area. The Watervliet Arsenal, which encompasses approximately 143 acres between 8th Street and 18th Street fronting Broadway is the notable exception. This facility built in 1813 is operated by the U.S Army and continues to produce artillery items for the Army. A mix of residential and commercial uses is located between 19th Street, 23rd Street, Broadway and the I-787 Interchange. Hudson Shores Park fronts the Hudson River running from Green Island to roughly 16th Street if it extended into the park (Exhibit C-3 in Appendix C).

e. Green Island

The Village of Green Island is situated between I-787 and the Hudson River (Exhibit C-3 in Appendix C). Undeveloped lands are limited in this well-established Village. To the south, development is dominated by commercial uses including a self-storage business with Hudson River frontage, the Village Plaza shopping plaza and Grimm Building Materials. North of the Green Island Bridge land uses are almost exclusively residential.

4-3.2 Zoning

Of the 1,263 acres within the study area, approximately 579 acres (45% +/-) are not covered by zoning. Generally, these areas include municipalities' roadway ROW, state jurisdictional roadway ROW or other public ROW such as utilities.

a. Albany

Consistent with land use, zoning within the study area varies significantly ranging from Land Conservation zoning to Multi-family residential and industrial zoning. Zoning districts are listed below and depicted in Exhibit C-4 in Appendix C. Lands located between I-787 and the Hudson River are dominated by Land Conservation and Waterfront Recreational designations, including smaller areas of Waterfront Residential/Commercial and Light Industrial. West of I-787 the predominant zoning category

is Light Industrial and Central Business. A review of zoning categories and actual land uses indicates that they are generally aligned.

Zoning -City of Albany	
Land Conservation	LC
Light Industrial	C-M
General Industrial	M-1
Neighborhood Commercial	C-1
Central Business	C-3
Waterfront Residential/Commercial	WF-1
Waterfront Recreational	WF-2
1 & 2 Family Residential	R-2A
1 & 2 Family Medium Density Residential	R-2B
1 & 2 Family Row House Residential	R-2C
Multi-family Low Density Residential	R-3A
Multi-family Medium Density Residential	R-3B
Multi-Family High Rise Residential	R-4

Note that the City of Albany adopted a new Unified Sustainable Development Ordinance effective June 1, 2017, not reflected on the maps. The new zones provide more flexibility to the City to allow and properly regulate desired land uses. Zoning districts within the study area as of June 1, 2017 are shown in the table below:

Zoning -City of Albany	
Land Conservation	LC
Light Industrial	I-1
General Industrial	I-2
Mixed-Use, Community Urban	MU-CU
Mixed-Use, Neighborhood Center	MU-NC
Mixed-Use, Form Based Warehouse District	MU-FW
Mixed-Use Downtown	MU-DT
Mixed-Use Form Based South End	MU-FS
Mixed-Use, Neighborhood Edge	MU-NE
Residential, 2 Family	R-2
Residential Townhouse	R-T

b. Menands

Heavy Industrial zoning is the dominant zoning category in the study area, particularly adjacent to I-787 (Exhibit C-5 in Appendix C), which is in line with the historical use of this land. Along Broadway, zoning varies from Light Industrial to Residential. Unique to the Village are large land areas associated with the state jurisdictional roadway ROW that are not included in zoning. Zoning districts that fall within the study area are listed below.

Zoning – Menands	
Residential	R-1
Residential	R-2
Light Industrial	LI
Heavy Industrial	HI
Infill Neighborhood	T4
Infill Mixed Use	T5
Broadway Business	BBD

c. Colonie

As identified above, lands in the Town of Colonie fall in two locations within the study area (Exhibits C-5 and C-6 in Appendix C). South of the City of Watervliet, zoning is dominated by Land Conservation. North of Watervliet and west of Green Island, the zoning categories include Industrial, Commercial and Single Family Residential.

Zoning- Colonie	
Land Conservation	LC
Industrial	I
Commercial Office	CO
Multi-Family Residential	MFR
Single Family Residential	SFR

d. Watervliet

Lands within the City of Watervliet located in the study area are generally located west of I-787 with the exception of Waterfront Conservation (WC) lands abutting the Village of Green Island. The remaining lands east of I-787 are part of the state jurisdictional roadway ROW. Light Industrial and Mixed Use zones dominate this area (Exhibit C-6 in Appendix C).

Zoning- Watervliet	
Residential 2	R-2
Residential 3	R-3
Light Industrial	LI
Business	B
Waterfront Conservation	WC
Mixed Use 1	MU 1
Mixed Use 2	MU 2

e. Green Island

Although residential zoning is the predominant zoning category within the study area, there are a number of industrially zoned parcels located south of the Green Island Bridge as well as an additional area in the vicinity of Clinton Street and Center Street (Exhibit C-6 in Appendix C).

Zoning-Green Island	
Residential 2	R2
Commercial	C
Planned Development	PD
Industrial	I

4-4 Environmental Resources

CDTC's New Visions 2040 regional transportation plan encourages smart growth as well as investment and development in urban areas as a method to protect natural resources. Smart growth policies also help to protect rural character and open space, and protect quality of life in the Capital Region. CDTC has undertaken review of natural and cultural resource mapping, and for the development of the Regional Transportation Plan consulted with federal, state and local agencies on environmental issues as an important part of the environmental mitigation process. Along with evaluating the impacts to environmental systems of candidate transportation projects for federal funds, CDTC documents the environmental systems present in the study areas for planning initiatives like the I-787/Hudson Waterfront Corridor Study.

Exhibit C-7 in Appendix C provides an overview of the environmental systems present in the I-787/Hudson Waterfront Corridor Study area that are related to CDTC's environment features scan. CDTC uses Geographic Information Systems mapping of the environmental systems noted below to screen for potential project impacts. Features within 0.25 miles of the study area are included in Exhibit C-7.

Environment features scanned include:

- sole source aquifers
- aquifers
- reservoirs
- water features (streams, lakes, rivers)
- wetlands
- watersheds
- 100 year flood plains
- rare animal populations
- rare plant populations
- significant ecological sites
- significant ecological communities
- state historic sites
- national historic sites
- national historic register districts
- federal parks and lands
- state parks and forests
- state unique areas
- state wildlife management areas
- county forests and preserves
- municipal parks and lands
- land trust sites
- NYS DEC lands
- Adirondack Park
- agricultural districts
- agriculture parcels taxed as farmland
- agriculture parcels in farm use
- Class I & II soils

Numerous environmental resources are located within the 9.4-mile corridor ranging from wetlands, floodplains, cultural resources to municipal recreational areas. These resources are discussed in the following subsections below. The potential impacts of I-787/Hudson Waterfront Corridor Study recommendations on these resources are described in Sections 7 and 9.

4-4.1 Floodplains

As shown on Exhibits C-8 through C-10 in Appendix C, the majority of the study area is included in the 100-year floodplain as designated and mapped by the Federal Emergency Management Agency (FEMA). Some exceptions in Albany include areas north of the Patroon Island Bridge and west of the Railroad ROW. In addition, areas south of the Patroon Island Bridge and west of Broadway are outside of the 100-year floodplain. In Watervliet, the 100-year floodplain generally does not extend west of the frontage

lots on Broadway. The portions of Colonie within the study area are not included in the 100-year floodplain. Large areas of both Green Island and Menands are within the 100-year floodplain. The entirety of I-787 is mapped in the 100-year floodplain except for a section of roadway north of the Green Island Bridge.

4-4.2 Wetlands

Both New York State Department of Environmental Conservation (DEC) and US Fish and Wildlife Service National Wetlands Inventory (NWI) wetlands are mapped on Exhibits C-8 through C-10 in Appendix C. NYSDEC wetlands that overlap with NWI wetlands in the City of Albany are generally located east of I-787 and north of the I-787/I-90 interchange. NWI mapped wetlands are also concentrated in several areas in Menands north and south of the NY Route 32/I-787 Interchange and an area north of the NY Route 378 /I-787 interchange at Exit 7 (west of I-787). These locations in both Albany and Menands overlap to a large extent with NYSDEC mapped wetlands. Several smaller areas of NWI wetlands are scattered through the corridor.

4-4.3 Urban Heritage Areas

A large area of the City of Albany has been identified as an Urban Heritage Area by New York State. The Heritage Area System (formerly known as the Urban Cultural Park System) is a state-local partnership established to preserve and develop areas that have special significance to New York State, including natural, historic, and cultural resources. This area generally extends from Morton Avenue north to Livingston Avenue, exceeding the width of the study area. There are no other Urban Heritage Areas are identified in the study area.

4-4.4 Cultural Resources

The study area's position (adjacent to the Hudson River) and the age and historic nature of settlement patterns in the study area as well as the entire Capital District has resulted in an area rich in cultural resources, including both historic structures and districts and archeological sensitivity. A review of the New York State Cultural Resource Information System mapping reveals that nearly the entire study area is mapped as archeologically sensitive except for two small areas: an area between Colonie Street and Tivoli Street extended in the City of Albany and an area between Erie Boulevard and Broadway from Tivoli Street to the I-787/I-90 interchange (Exit 5).

Historic structures and districts within or immediately adjacent to the study area have been identified as follows (see also Exhibits C-11 through C-13 in Appendix C):

City of Albany

- Cherry Hill Historic Structure
- South End Groesbeckville Historic District
- The Pastures Historic District
- Downtown Albany Historic District
- Clinton Avenue Historic District
- Arbor Hill Historic District
- Broadway-Livingston Historic District

Village of Menands

- Albany Felt Company Complex (straddles the City/Village boundary)
- Menands Manor
- Menands Park Historic District

Town of Colonie

- Hedge Lawn

City of Watervliet

- Watervliet Arsenal
- St. Nicholas Ukrainian Catholic Church
- Watervliet Side Cut Locks

Village of Green Island

- St Mark's Episcopal Church

4-4.5 Brownfields

Two Brownfield Opportunity Areas (BOA) have been identified in the City of Albany within the study area: The South Waterfront District and the North Albany Warehouse District. Both areas have been identified as priority BOA sites in the City of Albany's Comprehensive Plan (Albany 2030 Appendix A: Brownfield Opportunity Areas), and are delineated on Exhibit C-11 in Appendix C.

South Waterfront District

The South Waterfront District is north of the Port of Albany and southeast of Downtown Albany. It includes industrially zoned, commercial and vacant land bounded by the CP Rail tracks to the west and the Hudson River to the east. This 18.7-acre area is highly visible from the Hudson River and I-787. Prior uses in this area are primarily 20th-century industrial development.

North Albany Warehouse District

The North Albany Warehouse District is generally bounded by I-787 to the east, Pearl Street (NY Route 32) to the west, Colonie Street to the south, and Tivoli Street to the north. This district is approximately 102 acres and is between the downtown business district and the North Albany Neighborhood. Its southern border of Colonie Street provides a connection under I-787 to the Corning Riverfront Park and boat launch. It is the former lumber district, flanking the former Erie Canal (now filled in and the alignment of Erie Boulevard), and includes primarily 20th-century industrial development.

These two BOAs include valuable land that has the potential to connect Albany neighborhoods to the waterfront, inviting high-end residential living and commercial investment. Under the BOA Program, the New York Department of State (NYSDOS) provides financial and technical assistance to municipalities and community-based organizations to complete revitalization plans and implementation strategies for areas affected by brownfield sites, as well as site assessments for strategic sites. The NYSDEC provides

relevant technical assistance and advice to the NYSDOS and BOA grantees, particularly regarding site assessments on strategic brownfield sites in BOA study areas.

Section 5: Public Outreach and Agency Coordination

5-1 Study Advisory Committee

The study process was coordinated and guided by a Study Advisory Committee (SAC). The SAC consisted of representatives from municipalities within the study corridor, the CDTC, and state and federal transportation agencies:

CDTC:	Michael Franchini, Executive Director
	Sandra Misiewicz, Consultant Project Manager
City of Albany:	Randall Milano, City Engineer
	Christopher Spencer, City Planning Director
	William Trudeau, City Traffic Engineering Coordinator
Town of Colonie:	Jack Cunningham, Commissioner of Public Works
Village of Menands:	Paul Reuss, Mayor's Executive Assistant
City of Watervliet:	Jeremy Smith, General Manager
NYSDOT:	Robert Cherry, Region 1 Director of Transportation Planning
FHWA:	Ian Weibel, Area Engineer - Regions 1 & 9
	Anna Price, Director-Office of Program Management
	Maria Chau, Senior Community Planner – Office of Program Management

5-2 Stakeholders

A key step in shaping a comprehensive study and developing strategies is gathering feedback from stakeholders. To that end, stakeholder interviews were conducted via an online survey to obtain feedback and information on transportation and land use-related issues, needs and priorities within the study area. The stakeholder group consisted of representatives of the involved local, state and federal transportation agencies; the local and regional business communities, neighborhood groups and advocacy groups.

The following stakeholders were identified and represented in the study process:

AAA - Hudson Valley
AAA - New York State
Albany Common Council, Ward 1 – Ward 5
Albany County
Albany County Convention and Visitors Bureau
Albany Port District Commission
Albany South End Bike Way Link Task Force
Albany-Colonie Regional Chamber of Commerce
Amtrak
Capitalize Albany Corporation
Capital District Regional Planning Commission (CDRPC)
Capital District Transportation Authority (CDTA)
Center for Economic Growth
Central Business Improvement District (BID)
City of Albany
City of Cohoes
City of Rensselaer
City of Watervliet
CP Rail
Downtown Albany BID
Environmental Advocates of New York
Hudson River Environmental Society
Hudson River Valley Greenway
Hudson River National Heritage Area
Hudson River Watershed Alliance
Lark Street BID
Mighty Waters Task Force
National Grid
New York Motor Truck Association
NYS Department of Transportation

NYS Office of General Services
NYS Thruway Authority
Parks and Trails, New York
People of Albany United for Safe Energy
Reclaim Our Waterfront (ROW) Albany
Sierra Club Hudson—Mohawk Group
South End Improvement Corporation
The Stakeholders, Inc.
Town of Colonie
US Army Corps of Engineers
US Environmental Protection Agency
Village of Green Island
Village of Menands

5-2.1 Stakeholder Survey

The stakeholder survey followed two public workshops (see Section 5-3.1 for discussion of the public workshops). A survey questionnaire was developed based on the comments and discussions at the workshops, to further elicit insight and ideas from stakeholders. The survey gave each stakeholder the opportunity to 1) tell the Project Team about existing transportation and land use systems and services, 2) provide feedback on preliminary concepts and strategies heard from the workshops, and 3) provide feedback on what may be needed to create or enhance a more livable waterfront with a multi-modal and sustainable transportation system in the future.

The online survey was conducted through SurveyMonkey and consisted of ten (10) open-ended and multiple-choice questions. Over 30 individuals representing approximately 20 different organizations/agencies in the greater Capital Region were invited to participate. The survey link was emailed to the stakeholders on August 14th, 2015 and remained open through August 28th, 2015. All stakeholders received the same survey. The stakeholder survey is included in Appendix D. Results of the stakeholder survey are discussed in Section 5-4.5.

5-3 Public Involvement Activities

The Public Involvement Program provided several ways for the public to participate and provide input to the study, as follows:

- Two (2) public workshops (located in Albany and Watervliet)
- Comment Cards
- Emails
- Surveys (online and Textizen)
- One (1) public open house
- Stakeholder meetings

A project website, www.787waterfrontstudy.blogspot.com, was created containing project materials and meeting notices, and was updated throughout the planning process to keep people informed. All advertisement materials were made available to the public approximately three (3) weeks in advance of the workshops and remained active for approximately two (2) weeks after the workshops concluded. Between the workshops, emails, Textizen, and surveys, the Project Team heard from over 200 people. The results and feedback from these various public involvement activities are discussed in Section 5-4.

5-3.1 Public Workshops

Two (2) public workshops were held, which provided participants the opportunity to learn more about the study and provide thoughts early in the planning process. The workshops exhibited study area maps and facts, invited input, and provided short presentations about the study from the Project Team. The content of each workshop was the same. Overall, 128 people attended the workshops; the majority of workshop participants lived and worked in Albany. The workshops were held on:

- Workshop 1: Wednesday, June 24, 2015 at the Albany Public Library from 4:00 PM - 7:30 PM
- Workshop 2: Tuesday, June 30, 2015 at the Watervliet Senior Center from 5:00 PM - 7:30 PM

The announcement and presentation materials for these public workshops are included in Appendix D.

5-3.2 Comment Cards

Comment cards were made available for all participants at each workshop. Comment cards could be filled out at the workshops, or participants were given the option to email or mail their comment cards to CDTC after the workshops were complete. A total of 31 comment cards were completed and submitted to the Project Team. All comments were compiled and can be found in Appendix D.

5-3.3 Comments Received via Email

A project email address, 787waterfrontstudy@cdtcmpo.org, was created for participants to provide comments to the Project Team. A total of nine (9) emails were submitted.

5-3.4 On-line Survey

An online survey was made available to the public through the project website. In addition to the online survey, the Project Team developed a text based survey (Textizen) designed to increase public accessibility. The questions for both were the same, and are provided in Appendix D. The workshop advertisement materials included a reference to the project website where the survey could be found and Textizen phone number. A total of 79 survey responses were submitted through these media.

5-3.5 Public Open House

One (1) public open house was held, which provided participants the opportunity to learn more about the study findings, progressed and potential strategies, and to provide input on the study's report. This public open house exhibited informational boards, invited input on the report, and provided a presentation about the study findings from the Project Team. The open house was held on Tuesday,

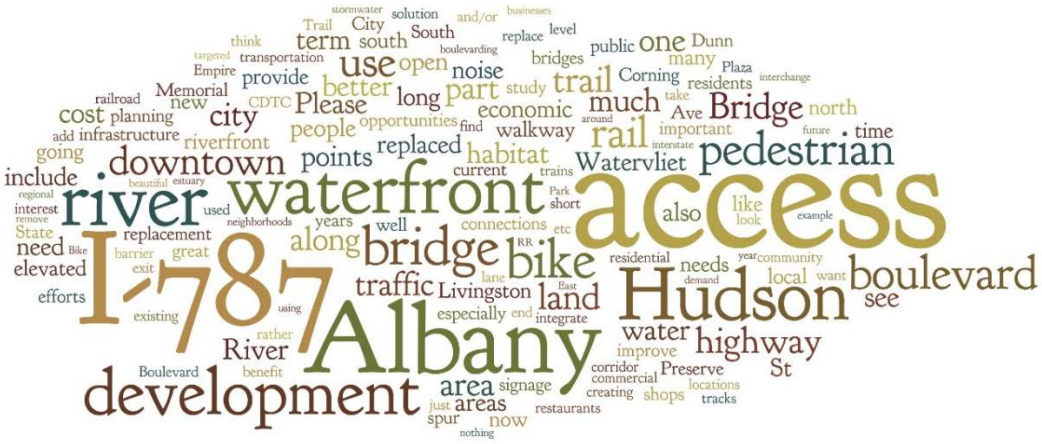
March 13, 2018 at the Albany Public Library from 4:00 PM - 7:30 PM. The announcement, presentation materials, and comments from this open house are included in Appendix D.

5-3.6 Stakeholder Meetings

Three stakeholder meetings were held in 2018 with the Albany County Mass Transit Committee, and two meetings with concerned citizens, at their request. Similar to the public open house, a presentation about the study findings was provided as well as informational boards.

5-4 Results/Feedback

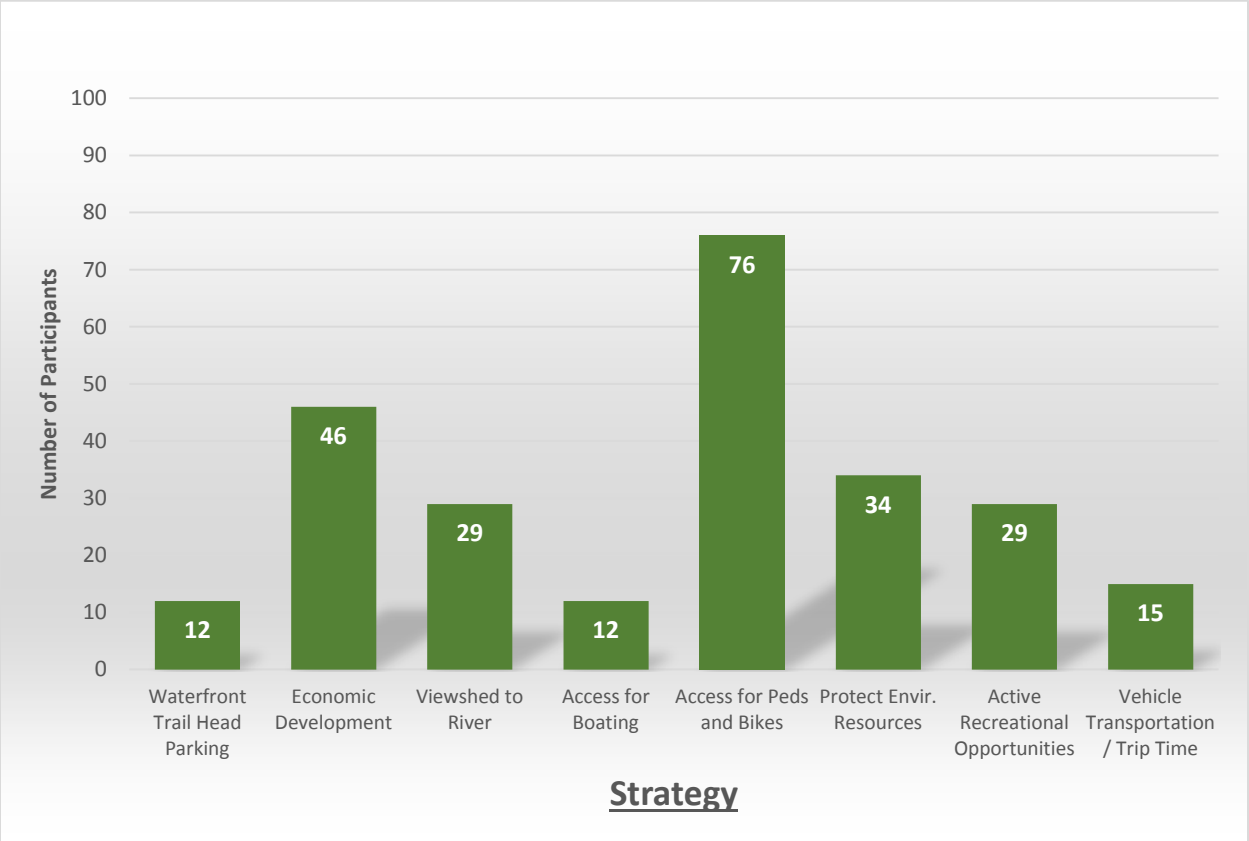
The word cloud below represents those words that appeared frequently throughout the public outreach process, including the public workshops, and written responses from comment cards, emails, and surveys. The size of the words is proportional to the frequency of its use in the public feedback (i.e. the larger the word, the more frequent its use). From this cloud, key themes and/or areas of concern become apparent to help guide the priorities for identifying strategies for corridor improvements.



5-4.1 Public Workshops

The input received from the public workshops was summarized and categorized to identify the primary emphasis areas to be considered for strategies to improve the corridor. These core strategy areas identified by the participants, and their distribution of importance are shown in Exhibit 5-1. As shown, the area of greatest importance focused on improved corridor accessibility for pedestrians and bicyclists.

Exhibit 5-1: Public Input - Workshop Participant Strategy Emphasis

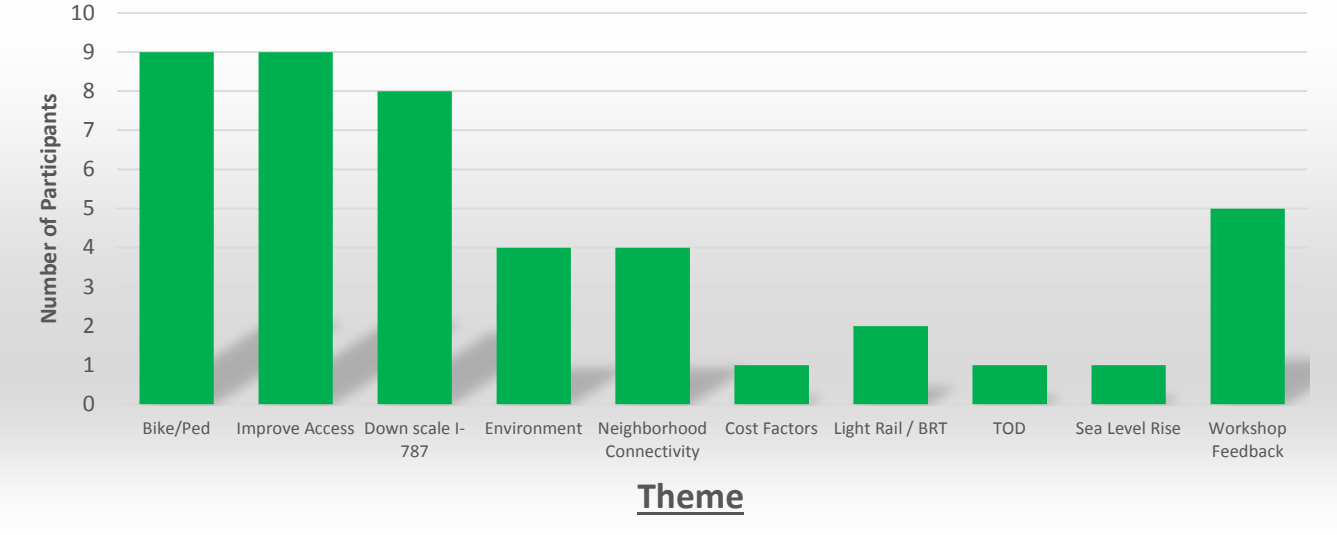


5-4.2 Comment Cards

Although the response using the Comment Cards was not substantial in terms of the amount of input received, many of the themes and recommendations were consistent with what was indicated at the workshops. The general recommendations and common themes are summarized below:

- Enhance ped/bike infrastructure improvements in the downtown area as well as improve ped/bike connections to the waterfront.
- Improve connectivity between existing bike paths and various trails throughout the study area.
- "Down scale" I-787 and repurpose as a local road or Boulevard. I-787 divides the City and access to the waterfront would be improved and the area highlighted for redevelopment.
- Include a transit options such as light rail, trolley, BRT.
- Provide (and expand upon) transit oriented development.

Exhibit 5-2: Public Input - Comment Card Themes



Note: Participants provided more than one comment; therefore, total number of comments exceeds 31.

5-4.3 E-mail Comments

General comments and/or recommendations received are summarized, in no order of priority, in the list below:

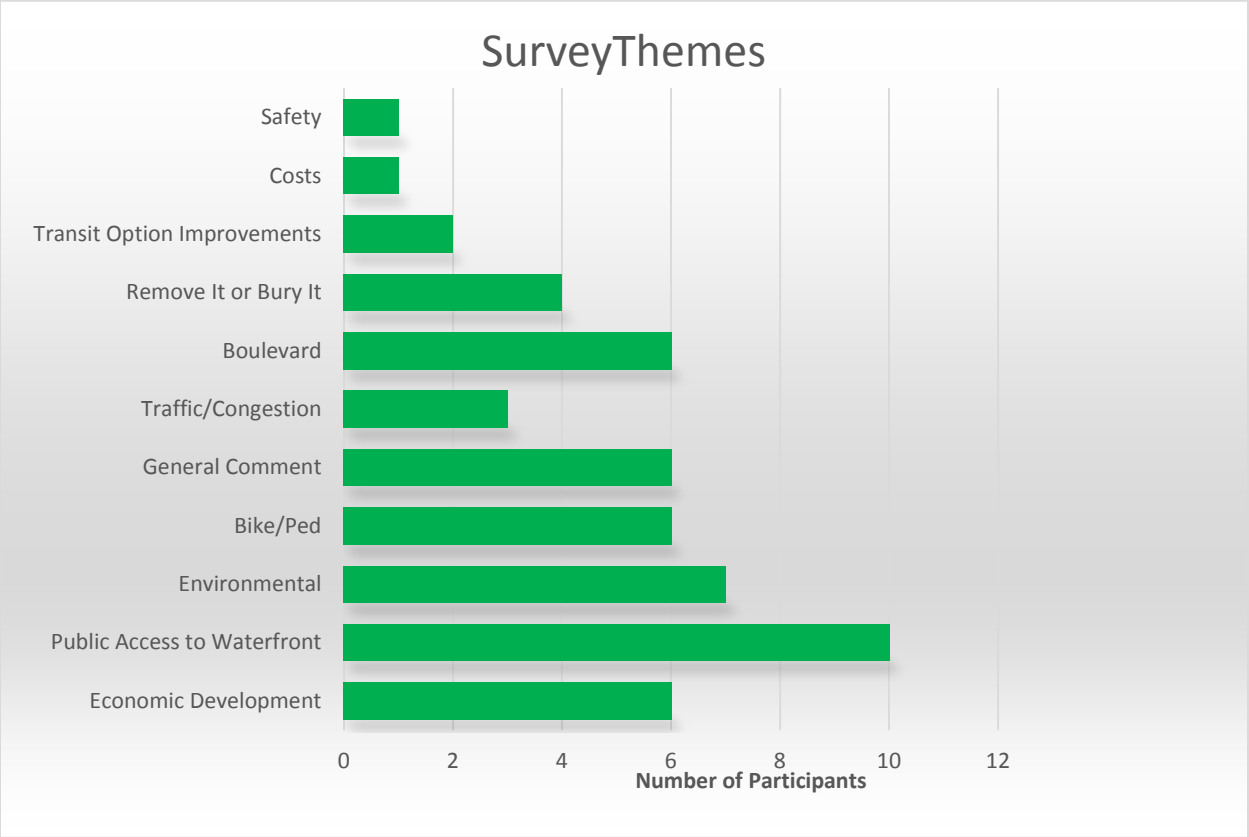
- Enhance ped/bike routes along the waterfront.
- Connect Huck Finn's and Corning Riverfront Park for ped/bike access.
- Construct an elevated "High line" structure for peds/bikes that will access Arbor Hill and Rensselaer.
- All commercial and public development or re-development should integrate best management practices for storm water control and green infrastructure for purposes of both flood control resiliency and water quality.
- Redevelopment should incorporate habitat features native to the upper Hudson River estuary to recreate significant sections of nearly "original" habitat.

5-4.4 On-line Survey

General recommendations and common themes from the on-line survey are summarized in the list below:

- Improve pedestrian and bicycle access in the study area.
- Create economic development opportunities along the riverfront with markets, shops, and restaurants.
- Repurpose I-787 as a boulevard or implement a road diet.
- Improve signage to the Mohawk-Hudson Bikeway and other destination points in the Albany downtown area.
- Provide a bike-hike path on the east side of I-787 from Fourth Street in Watervliet extending North to 23rd St.

Exhibit 5-3: Online Survey Themes



5-4.5 Stakeholder Survey Responses

The stakeholder interview survey was open for approximately two (2) weeks. During that time, 32 survey responses were recorded.[5] The following key points reflect the general themes heard from respondents:

- Enhance bicycle and pedestrian infrastructure improvements in the study area as well as improve connections to the waterfront.
- Improve connectivity between existing bicycle paths and various trails throughout the study area.
- Consider repurposing all or portions of I-787 as a local road or boulevard. Participants indicated I-787 divides the City and access to the waterfront would be primed for redevelopment opportunities.
- Create economic development opportunities along the riverfront with markets, marinas, shops, and restaurants.

[5] Participants were encouraged to share the survey link with others in their agency/organization. It's unknown how many additional people received the survey; therefore, a specific response rate cannot be determined.

Stakeholders were also given the opportunity to provide feedback on preliminary concepts and strategies heard from the participants at the two public workshops. The following top five concepts/strategies from the workshops were considered the highest priority from respondents:

1. Provide opportunities for new businesses along the waterfront such as dining, bars, and shopping.
2. Provide more access points to the Mohawk-Hudson Bike Hike Trail and the waterfront.
3. Explore the potential for repurposing an existing ramp or roadway for pedestrian/bicycle access to the Mohawk-Hudson Bike Hike Trail and/or the river.
4. Eliminate ramp connections to provide space for development.
5. Protect the environment by ensuring floodplains are accommodated and enhancing natural habitats.

The final questions of the survey elicited open-ended feedback on short and long-term projects/strategies each stakeholder would like to see implemented in the study area. The projects/strategies identified by the stakeholders generally aligned with the common themes, concepts, and level of detail provided at the two public workshops.

Development and economic revitalization along the waterfront are top priorities in the study area. However, to help achieve this, several key actions have been proposed by stakeholders including, but not limited to:

- Improve the existing walking and biking network in the study area.
- Provide additional connections to the waterfront and various trails throughout the study area.
- Explore the potential for repurposing an existing ramp or roadway for pedestrian/bicycle use.
- Consider repurposing I-787 as a local road or boulevard at key locations along the corridor.
- Eliminate ramp connections to provide space for development.
- Protect the environment and enhance natural habitats.

The comprehensive theme was to help create a more accessible waterfront with a multi-modal and sustainable transportation system in the future that will help foster the type of development desired by local communities. With an understanding of the study area's existing conditions and context, and the public's input, the study team was tasked with identifying considerations that need to be considered and documented to inform future planning efforts.

5-4.6 Study Comments and Responses

The Draft Study Report was made available for public review and a 30-day comment period followed the March 13, 2018 public open house. Responses were prepared to the comments received. These comments and responses are provided in Appendix F.

Section 6: Progressed Initiatives

Communities within the project study area have been proactive in advancing initiatives to implement improvements that are consistent with the public outreach input for enhanced multimodal access to the waterfront within the corridor. Many of these projects had been the efforts of previous CDTC Linkage Studies and Community Plans and were further catalyzed by the work of the I-787/Hudson Waterfront Corridor Study.

The following projects have been awarded federal funding and are included on the CDTC's current 2016-2021 Transportation Improvement Program (TIP), which is the short-range program of federally-funded projects to support the vision of the long-range regional transportation plan:

- Albany/Menands/Watervliet: CDTA River Corridor Bus Rapid Transit (BRT) System
- Green Island: Hudson Avenue Bike/Ped Safety Improvements: Tibbits Avenue to Watervliet City Line – part of a pavement restoration/preservation (Mill & Fill) project
- Watervliet: Watervliet Bike Path: On-Road Trail along NY32 (Broadway) connecting the Mohawk-Hudson Bike-Hike Trail (MHBHT) at 4th Street to 23rd Street/Hudson Shores Park
- Menands: Menands Bike/Ped Connector: Separated Multi-Use Path connecting Broadway to the MHBHT with Bike/Ped Bridge over I-787
- Albany: Church Street Rail Crossing Signal Upgrade

A feasibility study for the Clinton Avenue Ramp Skyway in the City of Albany will be undertaken in 2018 and in March 2018, New York State awarded $3.1M in funding to support the Albany Skyway project. Additional funding opportunities are being pursued. The Albany South End Connector Trail is not currently fully funded for construction. Funding to complete the design work and most of the construction work in 2018-2019 is being made possible through grants from the New York Department of Environmental Conservation; the New York State Department of State; New York State Parks, Recreation & Historic Preservation; and a New York State Municipal Facilities Program Grant provided through Assembly member Patricia Fahy. These projects' description and status are presented below.

6-1 Albany/Menands/Watervliet: CDTA River Corridor BRT System

This strategy is to extend Bus Rapid Transit (BRT) along the Hudson River Corridor connecting Albany, Troy and other Hudson River communities. The proposal also includes pedestrian improvements at and near BRT station locations. The planned BRT route and stations is shown on Exhibits B-22 through B-24 in Appendix B. This is CDTA's third busiest ridership corridor in the Capital Region. At the July 27, 2016 monthly Board Meeting, the CDTA Board of Directors approved the financial commitment needed to progress the project through FTA's Small Starts Program, and the project is fully funded for design and is in the design process. The FTA has rated the project and it passes the minimum thresholds for Small Starts construction funding. CDTA plans to apply for FY 2019 funding for construction. Due to the effort being led by the CDTA, this will not be pursued as a strategy in this study.

6-2 Green Island: Hudson Avenue Bike/Ped Safety Improvements

This project includes pedestrian and bicycle safety improvements as part of a pavement restoration/preservation (Mill & Fill) project aligning with the Village's Comprehensive Plan. The project extends from Tibbits Avenue south to the Watervliet City Line and is in close proximity to the school and the Senior Center. This project is funded with federal Surface Transportation Program funds, and construction is planned for state fiscal year 2018-2019. Some of the Complete Streets elements and plans to address safety concerns to be included in the project are:

- High visibility crosswalks and ramps
- ADA compliant sidewalks, crosswalks and ramps
- Bike route signage for the MHBHT (NYS Bike Route 9)
- Pavement recycling and reuse
- Roadside parking improvements
- Sidewalk and roadway offset preservation
- Cyclists, pedestrians and motorists conflict resolution

6-3 Watervliet: Watervliet Bike Path

This strategy is proposed as the "Short Term MHBHT Alternative" in the "Watervliet Bicycle Master Plan." This strategy will provide improved bicycle/pedestrian accommodations along the Mohawk Hudson Bike/Hike Trail via a cycle track along NY 32 connecting 4th Street to 23rd Street/Hudson Shores Park. North of the Congress Street Bridge, the MHBHT would continue along a shared-use path along I-787 to 23rd Street. This alignment will avoid traversing the 23rd Street and Broadway intersection and provide a greater degree of separation. The MHBHT will then extend along the south side of 23rd Street on a shared-use path to Hudson Shores Park. This project is on the TIP funded with STP funds, and construction is planned for SFY 2018-2019.

6-4 Menands: Menands Bike/Ped Connector

This connection to the MHBHT, from the highly developed area west of I-787 in the Village of Menands, will fill a long gap in public access to the waterfront in the segment of the corridor between the City of Watervliet and the City of Albany. This project involves making a separated multi-use path for bicyclists and pedestrians by converting a vehicle lane on the south side of the I-787 Interchange 6 on-ramp bridge over the CP Rail tracks to accommodate trail users and introduces a new structure over the I-787 mainline to provide connectivity to the MHBHT. While this strategy was being furthered as a part of this study, NYSDOT prepared a project justification package for consideration as a new project in the 2016-2021 CDTC TIP. This project was funded with Flex-NY funds through the State "supplemental projects" program. Construction is planned for SFY 2018-2019.

6-5 Albany: Clinton Avenue Ramp Skyway

This connection improves public space and quality of life by converting the reported underutilized I-787 NB/US Route 9 (Clinton Avenue) off ramp into a multi-use path and linear park. It links two community areas that are otherwise divided by I-787 and the CP rail lines. It would provide a direct connection between the Hudson waterfront, Corning Riverfront Park, and MHBHT from the intersection of Broadway and Clinton Avenue (Clinton Square) in Albany.

With this ramp being an Interstate facility, any change would require a withdrawal of the highway from the U.S. Interstate System, MPO and NYSDOT concurrence, and FHWA evaluations and procedures (23 CFR 658.11(d)) as described in Section 6-3.1. This strategy supports economic activity by improving multi-modal accessibility and connectivity. The ramp structures would still need to be maintained so there is no reduction in long term maintenance. Additionally, the designation of US Route 9 and truck access into the city would need to be addressed with consideration given to rerouting US Route 9 away from Clinton Avenue and Henry Johnson Boulevard to more industrialized areas such as Erie Boulevard.

This strategy required further study to determine potential traffic and operational impacts with closure of the ramp to vehicular traffic. CDTC's planning level assessment is that diverted traffic would not have a substantive effect on mobility and access because of the low volume of vehicle traffic that uses this ramp and the generally high performance of the surrounding roadway network. NYSDOT had contemplated this ramp proposal for the 2016 Congestion Mitigation Air Quality (CMAQ) solicitation. However, CDTC ran the analyses to assist in determining if there was an emissions benefit associated with the ramp proposal and the assessment concluded that the concept did not yield a positive reduction in trip generation.

Consequently, the ramp proposal did not yield an improvement in air quality, leading to the conclusion that the project would not be CMAQ eligible. In March 2018, this project was awarded $3.1M in federal demonstration funds that were originally allocated to the I-90 Exit 8 Connector project and never spent. These funds will be used by NYSDOT to complete the design and initial construction of the Skyway to repurpose the ramp to allow for bicycle and pedestrian access but will omit many of the planned linear park features. Additional funding may be sought by the City through the Transportation Alternatives (TAP) program. This strategy was vetted and deemed reasonable and feasible to advance the design eliminating the need to further evaluate in this study.

6-6 Albany: Church Street Rail Crossing Signal Upgrade

This is a NYSDOT safety improvement project to improve the signals at the CP Rail Crossing of Church Street. This project is proposed to include sidewalk improvements with rail crossing signal improvements to enhance the pedestrian connection between Island Creek Park along the waterfront and South End neighborhoods. This project is on the TIP for construction in SFY 2016-17.

6-7 Albany: Albany South End Connector Trail

The South End Connector Trail is located in the South Waterfront District. It will link the Albany County Helderberg Hudson Rail Trail to the MHBHT, filling a gap in a more than 360-mile multi-use trail network. The preferred option from the rail trail termini to Mt. Hope Drive/I-787 is a two-way, Separated Bike Lane, also known as a cycle track, extending along the east side of South Pearl Street where sidewalks exist. From I-787 to Vine Street, the barrier separated trail will run along the east side I-787 frontage road immediately west of the Kenwood Rail Yard at the Port of Albany. From north of Vine Street, the trail will run under I-787 adjacent to Church Street. In 2016, the City received $325,000 from the New York State Regional Economic Development Council toward design and construction of the South End Connector Trail. The City of Albany hosted a public information session on May 23, 2017. At that meeting, it was stated that the estimated cost of the waterfront connector path is $1.2 million-$1.5 million. The City has various state funding lined up that totals about $840,000.

Section 7: Potential Strategies

The strategies that have been turned into projects are great successes toward enhanced multimodal connectivity and waterfront access. To support the objectives of the Study, other strategies have been identified using the study team's understanding of existing conditions and context, public and stakeholder input, numerous studies and plans previously developed by others, and corridor considerations. The strategies have been characterized into four categories:

- Revamp Transportation Infrastructure
- Enhance ped/bike access to the waterfront
- Manage Travel Demand
- Facilitate Smart Growth / Economic Activity near the waterfront

The strategies seek to maintain the transportation purpose and need of I-787 while assessing the feasibility of planning initiatives in the corridor and existing freight rail line. Alternatives needing more feasibility study are those that replace the existing I-787 infrastructure, or portions of it, with infrastructure that not only provides vehicular mobility, but also the potential for reduced operations/maintenance costs, opportunity for land transformation for other uses, and connectivity for other modes.

Shorter term strategies are those that address the study's purpose and needs while also mitigating the impacts of the existing facility on the surrounding area. The concept of Complete Streets is an overarching theme, particularly for the segment of the corridor between Madison Avenue and Clinton Avenue.

With each potential strategy, significant public outreach and community engagement will be necessary to ensure the proposals best meet the needs of the region's existing and potential future travelers, residents and business owners. Any one of the identified strategies can be a tremendous asset to the community, if the planning process is undertaken thoroughly and includes all members of the Capital Region, particularly those living within and adjacent to the study area.

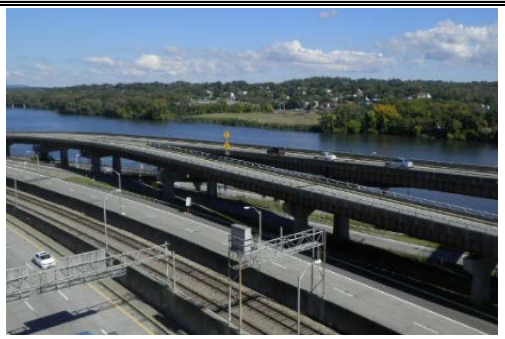
Each of the strategies are described in detail, overall assessed to frame the strategic intent and assessed for the following considerations:

- Traffic/Mobility
- Economic
- Social/Quality of Life
- Environmental

7-1 Revamp Transportation Infrastructure

Strategies included in this category include the baseline strategy to maintain the I-787 infrastructure in a state of good repair and restructuring or reconfiguring existing transportation infrastructure to reduce the scale and/or complexity of the network. These strategies include considerations for corridor-level changes as well as spot location interchange changes. A maintenance strategy is also included as a status-quo baseline strategy.

7-1.1 Maintain I-787 in a State of Good Repair



Description: Maintain I-787 roadway, bridges and interchanges in their current configuration in a state of good repair.

Objective: Maintain existing interstate facility in good condition and achieve appropriate return on existing investment.

Assessment: Recent and on-going reconstruction on I-787, particularly between NYS Thruway Exit 23 and the DMB/SMX interchange, has restored the roadway such that no further major roadway reconstructive work is expected to be necessary on this section for some time, except for relatively minor pavement resurfacing projects. The recent $120M investment in bridge and pavement preservation contracts is expected to extend their service life beyond 2035.

Traffic/Mobility: This strategy will maintain the status quo vehicle capacity of the facility to support local, regional and interstate travel demand. There would be no changes to pedestrian/bicyclist facilities or waterfront access specifically associated with this strategy.

Economic: The maintenance strategy would allow the infrastructure to reach the useful life of these recent investments. The cost for ongoing pavement and bridge preservation investments over the next 20 years, to continue to maintain the current I-787 infrastructure in a State of Good Repair, is estimated to be approximately $330M (in 2015 dollars). The full replacement cost of the overall I-787 infrastructure as an in-kind interstate facility is estimated to cost approximately $890M (in 2015 dollars). This life-cycle cost evaluation is described in Section 9-6 of this report.

Social/Quality of Life: This strategy does not change the character of the corridor, does not reduce the footprint of the highway and would not make property available for alternative land use. It does not preclude improved ped/bike linkages or urban space improvements identified in other strategies in the waterfront.

Environmental: Rehabilitation projects may include some environmental benefits such as improved storm water treatment practices. Moderate changes to flood plain intrusion expected. This strategy is routine to implement.

7-1.2 Reconfigure Interchanges

A review of the ramp volume information presented in Section 4-2.1 indicates that the volume demand at several existing interchanges (such as Exits 6, 7, and 8) are well below the capacity of the interchange and could be candidates for alternative interchange redesigns in the future. In addition, there are several ramps within the network that could also be potentially down-sized or eliminated. These ramps include the following:

- From Northbound Quay Street to Clinton Avenue
- From Pearl Street to I-787 Southbound
- From I-787 Southbound to Dunn Memorial Bridge Eastbound
- From I-787 Southbound to Water Street/Colonie Street

The Hudson River Crossing Study prepared in 2008 identified that the eight-lane Dunn Memorial Bridge has extra capacity, so it may also be a candidate for lane reductions when it is time for this bridge to be reconstructed in the future.

The idea behind this strategy is that interchanges with large footprint and high-speed ramps are out of context with the urban setting of the study area, and that more space-efficient interchanges might provide equivalent traffic operations, while freeing up land for other public uses such as public space, improved waterfront access, and/or economic development. The following four interchanges were identified as potential candidates for future reconfiguration:

- I-787/Dunn Memorial Bridge/South Mall Expressway (Interchange 3)
- I-787/Clinton Avenue (Interchange 4)
- I-787/NY Route 378 (Interchange 7)
- NY Route 378/NY Route 32 (Broadway)

I-787/Dunn Memorial Bridge (DMB)/South Mall Expressway (SMX

Description: Replace the high-capacity directional ramp connections with an alternative interchange concept (to be evaluated and determined) that would be a simpler and more compact urban design. A major challenge associated with changes to this interchange is the vertical elevation difference between the I-787 mainline and the DMB/SMX mainline driven by the elevation of the DMB across the Hudson River. However, if this challenge can be addressed, there would be an opportunity to consider alternative interchange designs that also provide for in-fill development and more public access to the waterfront, while maintaining appropriate levels of vehicular capacity.

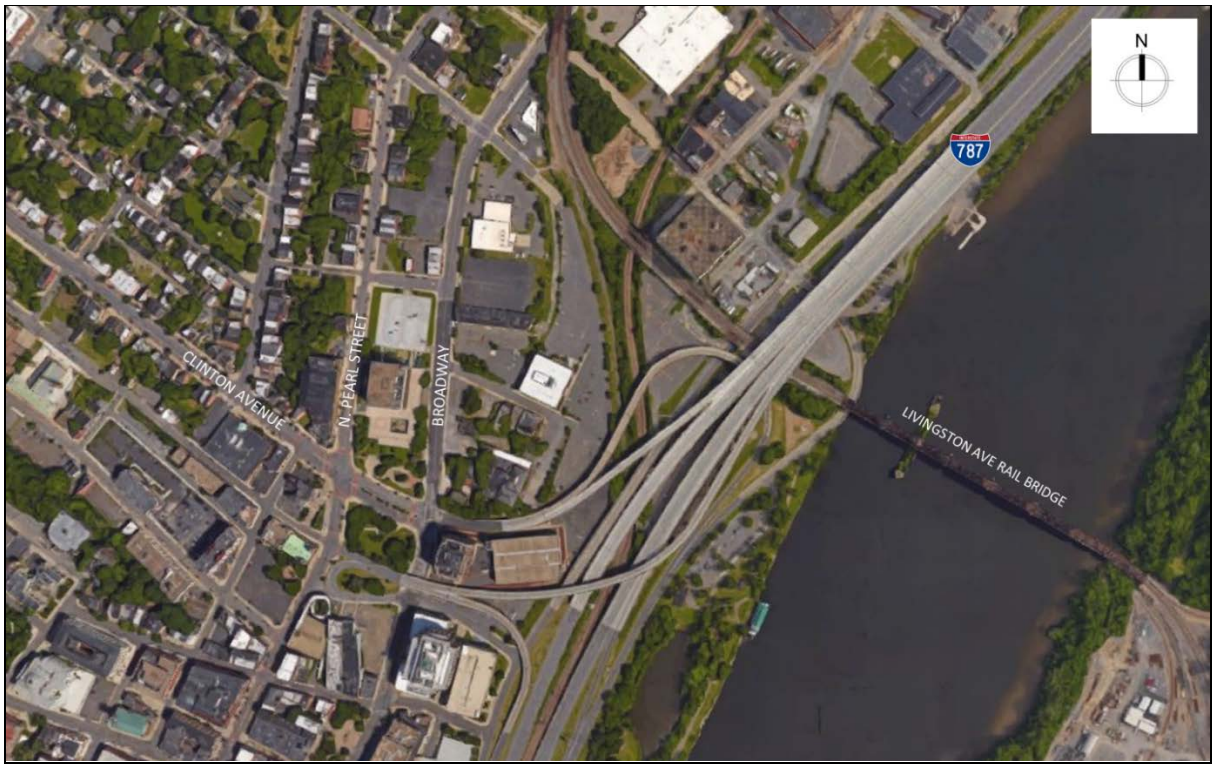
Objective: Reduce interchange configuration to reduce visual impacts, support land use development opportunity, and enhance community cohesion and waterfront access.

Assessment: This existing interchange is a complex configuration of ramps designed to achieve high-capacity directional ramp connections in a compact urban configuration. This design was also developed in the context of planning for a more extensive regional network of high-speed arterial roadways that were ultimately never built. The vertical height of the DMB/SMX mainline was also affected by consideration for accommodating maritime traffic, as the current bridge was built to replace the previous 1930s era moveable bridge. The vertical elevations of the DMB/SMX are a major influence on design options for this interchange, and significant changes are likely to be conditioned on a future need/opportunity to replace the DMB, at which time a lower bridge might be found to be possible. In this case, an improvement strategy that considers reconfiguring the interchange could also involve converting the SMX and I-787 into at-grade roadways with SMX intersecting with South Pearl Street and to the Empire State Plaza. The freight rail access into the Port of Albany will also impact design options related to reconfiguring this interchange. Design and implementation would be complex and would need to account for vertical clearances between the roadway and active railroad.

Traffic/Mobility: The impact of this strategy to local traffic circulation mobility and operations will need to be assessed as part of the scoping and design activities for this scale of project at the time when an opportunity is presented to consider reconfiguration of this infrastructure. The goal for any design

changes would be to create an interchange that would appropriately support local and regional multimodal transportation objectives without inducing detrimental regional traffic diversions.
Economic: This strategy may support economic development by making land available for potential development, but this will depend on the details of project needs and goals, design requirements and feasible options, which will all need to be determined. A less-complex interchange with fewer ramps and bridges could also reduce long-term maintenance.
Social/Quality of Life: Future opportunities to reconfigure this interchange would present the possibility to reduce the visual impact of the interchange and provide new public space and access options adjacent to the waterfront.
Environmental: Potential changes would take place in an existing transportation corridor, and within areas previously disturbed. However, full alternatives analysis and environmental scoping would be needed.

I-787/Clinton Avenue



Description: This strategy is intended to reduce the overall footprint and maintenance requirements of the Clinton Avenue interchange. Specific concepts would be dependent on the direction taken for larger transformational strategies such as considerations for converting this area of I-787 to an at-grade, non-interstate roadway (see Section 7-1.3). Consequently, conceptual planning level design will be dependent on consideration of the corridor plan in this area. However, a related strategy that emerged from the assessment of opportunities at this interchange is the progressed initiative described in Section 6 to repurpose some of the existing underutilized ramp infrastructure for pedestrian/bicyclist use.

Objective: Reduce interchange configuration to reduce visual impacts, support land use development opportunity, and enhance community cohesion. Similar to other strategies that would reduce the Interstate footprint, this strategy would look for ways to scale down the interchange while maintaining reasonable vehicular access between the City and the roadway system and opening new land for redevelopment. The design could also incorporate improved local access to the waterfront.

Assessment: Much of this interchange's elevation is controlled by the mainline I-787 alignment to cross over the CSX rail line at the Livingston Avenue Bridge and then secondarily to cross over CP Rail. The ramp from Pearl Street at Orange Street to I-787 southbound provides a redundant connection that directs traffic to Water Street rather than providing a direct connection to I-787. Water Street can also be accessed directly from Broadway via Orange Street and Columbia Street, and both connections provide the same access to I-787 and the DMB/SMX. This ramp could possibly be closed and removed.

The ramp from Pearl Street/Orange Street to I-787 northbound could be considered for removal as part of the initiative to convert this segment of I-787 to an at-grade roadway, if this strategy is advanced. Design and implementation would be complex and would need to account for vertical clearances between the highway and active railroad, and the dense commercial development in the area where the interchange connects to local streets.
Traffic/Mobility: The intent is that no significant regional traffic diversions would result, so that a project could advance without need for detailed study to determine and mitigate potential regional impacts. There would need to be more detailed analysis of the impact of this closure on traffic circulation and operations on the local city street network to identify if there would be any localized impacts.
Economic: This strategy would reduce long-term infrastructure maintenance costs by removing ramp connections. This strategy may support economic development by making land available for potential development, but this will depend on the details of project needs and goals, design requirements and feasible options, which will all need to be determined.
Social/Quality of Life: The reconfiguration of this interchange has the potential to improve quality of life by providing new public space options and/or improved access to the waterfront.
Environmental: Potential changes would take place in an existing transportation corridor, and within areas previously disturbed. However, full alternatives analysis and environmental scoping would be needed.

I-787/NY Route 378

Description: A potential reconfiguration of the NY Route 378 interchange in Menands could replace the free-flow ramps to/from NY Route 378 with a more consolidated design to reduce the footprint of the interchange and create better multi-modal accommodations. There are many possibilities that could be considered, such as a diamond interchange with roundabouts or a Single-Point Urban Interchange (SPUI). The reduced interchange footprint of this strategy could make land available for site development or public space options adjacent to the waterfront.

Objective: A reduced interchange footprint could encourage economic development and improved access to the waterfront with the redevelopment of the unused land.

Assessment: A reduced configuration of the interchange should be compatible with the Potential Strategy (described in Section 7-2.1) to provide improved ped/bike connections from Broadway to Schuyler Flatts. This connection should be extended through the revamped interchange to connect the Village of Menands, the MHBHT, and the trail connection over the Hudson River (on the Troy-Menands Bridge). The reduced interchange footprint of this strategy could make land available for site development or public space options adjacent to the waterfront.

Traffic/Mobility: This strategy would be designed to provide traffic operations that are consistent with local and regional congestion management objectives but would "right-size" the interchange to remove any excess capacity. Moderate regional traffic diversions may occur because of a reduced interchange configuration, but the interchange would be designed to accommodate existing and future traffic needs. There are also other alternative interchange types and design variations that could be considered in addition to the diamond-with roundabouts or the SPUI mentioned above to maintain safe and efficient traffic operations with the added benefits of traffic calming and ped/bike accommodations at the interchange. Specific design options would need to consider the high traffic volumes on the ramps

between I-787 and the Troy-Menands Bridge. This strategy is a companion to a similar strategy for reconfiguration of the adjacent interchange of NY 378 and Broadway.
Economic: This strategy supports potential economic development by making available new land for public use and potential development. However, floodplain regulations and wetland impacts in this area will be a factor for development. The reduced footprint of the interchange could also reduce the long-term maintenance costs of the transportation infrastructure.
Social/Quality of Life: A smaller interchange could improve the quality of life by reducing transportation barriers within the community, providing increased availability of space for public use and access to the waterfront from the Village of Menands.
Environmental: Potential changes would take place in an existing transportation corridor, and within areas previously disturbed. The strategy should positively affect the floodplain by reducing the interchange footprint encroachment and the associated impervious surface. However, full alternatives analysis and environmental scoping would be needed.

NY Route 378/Broadway

Description: Similar to the I-787/NY 378 interchange, this adjacent interchange of NY 378/Broadway could be reconfigured to remove the cloverleaf ramps and provide a more compact, urban interchange design. A Single Point Urban Interchange (SPUI) is one of several possibilities for this location.

Objective: Reduce interchange footprint to support economic development while maintaining an adequate level of service for vehicular traffic.

Assessment: A Single Point Urban Interchange (SPUI) was one of several options presented in a previous CDTC-sponsored Linkage Planning Study of the interchange area to free up land for development and support growth at the Regional Market. Other options include roundabouts at ramp termini and improved connection to the Regional Market directly from Route 378. More information about strategies for this location can be found in the *Broadway Transportation Access and Land Use Improvement Study*[6].

Traffic/Mobility: This strategy would modify local traffic flow through the interchange area, but no significant regional traffic diversions would be expected as a result of such a change. The smaller interchange footprint would be designed to accommodate existing and future traffic levels. There would be no change in ped/bike connections, but the conflict areas of ped/bike interactions with vehicular traffic could be better managed than with the current layout.

Economic: This strategy follows through on past recommendations from the CDTC Linkage Planning Study, and strongly supports economic development by improving access to the Regional Market and opening new land for potential development. It also reduces maintenance costs related to roadway infrastructure and the footprint size.

Social/Quality of Life: The improved quality of pedestrian and bicyclist access through a reduced interchange at this location, along with the higher density of development adjacent to the Capital

[6] http://www.cdtcmpo.org/images/linkage_program/AlbCoFinal/menandsny32.pdf

District Cooperative Inc. Farmer's Market area enabled by this reconfiguration contributes to a more walkable Village of Menands. This strategy does not provide access to the waterfront.
Environmental: Potential changes would take place in an existing transportation corridor, and within areas previously disturbed. There would be negligible change in floodplain/sea level risk because this location is near the floodplain boundary. A reduced interchange footprint could reduce the amount of impervious surface. However, full alternatives analysis and environmental scoping would be needed.

7-1.3 Convert I-787 to non-interstate facility

Various previous planning studies and public comment have proposed that transformative changes to I-787 be considered to minimize the barrier that this major facility presents to the waterfront communities. Common ideas that have emerged from outreach include (1) replacing I-787 with an at-grade, non-interstate roadway that can still carry most or all the high traffic volumes demanded by the corridor and (2) improving waterfront connectivity.

I-787 is designated as an Interstate facility, so a fundamental change to the character of the roadway would require a withdrawal of the facility from the U.S. Interstate System, involving MPO and NYSDOT concurrence, and FHWA evaluations and procedures (23 CFR 658.11(d)). This process is further discussed in Section 9-4.1 Interstate De-designation.

The characteristics of I-787 are not consistent throughout the corridor study area. The segment within the City of Albany (south of the I-90 interchange) is characterized by a more rolling profile due to the mainline bridges over the CP Rail line and other roadways and has a greater density of interchanges and frontage roads. The segment of I-787 north of the I-90 interchange is only slightly elevated in a fill section with level/consistent grades and greater distances between interchanges. Because of these differing characteristics, the considerations for transformative changes to I-787 are discussed separately for the North of I-90 segment and the South of I-90 segment.

I-787: North of I-90

Description: Convert I-90 to an at-grade non-interstate roadway along its existing alignment with modified interchanges and/or conversions to at-grade intersections, and with increased local access opportunities.

Objective: The objective of this strategy is to change the character of the corridor to encourage slower travel speeds, provide greater local access and improved integration of the transportation infrastructure with the surrounding communities, reduce transportation maintenance costs and support economic development.

Assessment: The segment of I-787 north of Interchange 7 (NY 378) is within a constrained right-of way adjacent to the Hudson River on one side, and dense urban development on the other side. This area of the corridor has limited area for new waterfront access or development without the complete removal of I-787 or significant reduction in capacity, which would have regional impacts. Previous studies for enhanced ped/bike access along the waterfront in this area have dismissed options for new access due to cost and physical constraints. A transformation of the corridor to a non-interstate facility will only result in a significantly reduced roadway cross-section if other regional improvements are simultaneously studied and considered. The segment between Interchanges 5 and 7 (between I-90 and NY 378) has potential for increased waterfront access and development.

Traffic/Mobility: I-787 north of I-90 carries up to 88,000 vehicles per day (2011). Functionally, an at-grade roadway would be expected to need to carry about the same amount of traffic. Slower travel speeds, and additional cross street connections or ped/bike accommodations will reduce the effective capacity of the corridor. CDTC's regional travel model suggests that current and future traffic volumes could exceed the capacity of a six lane at-grade roadway. For this strategy to be successful, it is anticipated that some traffic diversion to other local and regional roadways would occur. Context-sensitive grade-separated interchanges will continue to be needed to provide reasonable regional mobility and access. Pedestrian and bicycle safety along the corridor could also become a concern,

similar to other high-volume arterials in the Capital Region, requiring innovative ped/bike facility and crossing designs. This strategy would need to be evaluated in the context of CDTC's Congestion Management Policy for the region, which is to prioritize investments for better management of existing capacity rather than by network expansion/added lanes.
Economic: This strategy is anticipated to provide moderate economic benefit as the roadway footprint and the physical constraints along the corridor north of NY 378 would remain similar to the current configuration, which would limit opportunities for new development spaces. However, increased local connections south of NY 378 and smaller interchange reconfigurations, such as those described previously in Section 7.1-2, could present opportunities for recreational space and development. However, the extent of development would be governed by the floodplain considerations.
Social/Quality of Life: Slower traffic speeds and better integration of the roadway with the surrounding built environment could have a positive impact on the vibrancy of the urban streetscape. However, this roadway would continue to carry high traffic volumes and be part of the regional freight network. However, it is expected that the waterfront could be more accessible with ped/bike accommodations integrated with the grade-separated interchanges.
Environmental: Potential changes would take place in an existing transportation corridor, and within areas previously disturbed. However, full alternatives analysis and environmental scoping would be needed. This would involve considerable environmental impact study (NEPA/SEQR) to investigate and document the various local and regional traffic, environmental, social/cultural, economic impacts, mitigations and cost-benefit. Project scoping and design would involve a considerable effort and should be started at least 10 years prior to the planned implementation in order to leave time for the planning and designing process and obtaining construction funding.

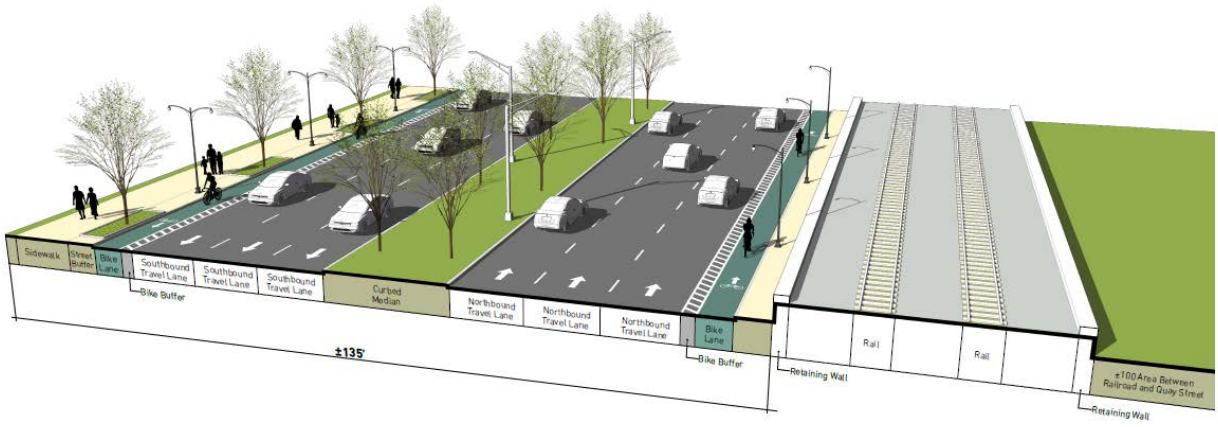
I-787: South of I-90

Description: Convert I-787 south of I-90 to an at-grade non-interstate roadway, with modified/removed frontage roads and new at-grade intersections. Incorporate enhanced streetscape features and pedestrian/bicyclist accommodations, along with potential expansion of the local street network to increase access opportunities and create additional space for economic development along the waterfront.

Objective: The objective of this strategy is to develop an urban corridor with enhanced streetscape features and pedestrian/bicyclist accommodations, improved integration of the transportation corridor with the surrounding urban uses, increased access opportunities between downtown and the waterfront, added space for economic development, and reduced transportation maintenance costs.

Assessment: A transformative plan such as this would take tremendous resources and time to develop and although I-787 itself is a barrier, the rail corridor also contributes to the challenge of accessing the waterfront in the City of Albany and will be a factor in the potential options. The general concept for this alternative has generally been viewed through past planning studies as a reconstructed roadway along the same general horizontal alignment as existing, with northbound and southbound traffic separated by the rail line. Another potential option would be to consider moving both directions of traffic to the west side of the railroad tracks, where there is reasonable width to accommodate a complete street concept. This strategy would absorb Water Street and southbound I-787 ramps into the new at-grade roadway. A potential cross-section of this west-side strategy is illustrated below. An improvement strategy that considers reconfiguring the interchange of I-787/Dunn Memorial Bridge/South Mall Expressway could also involve converting the South Mall Expressway and I-787 into at-grade roadways.

Concept to transform I-787 mainline from the Broadway-Quay Street Connector to Clinton Avenue to an at-grade non-interstate roadway, shifted to the West of the existing freight rail line (rail line height is not shown to scale) in the City of Albany. Concept image viewpoint is to the North. Additional study will be required.



The rail line will continue to be a factor for improving vehicular access to the waterfront as is the case with the concept to follow the existing mainline horizontal alignment. However, Quay Street could

potentially be converted to a two-way road between the BQC and the Corning Riverfront Park parking lot access, with the northbound lane continuing to Colonie Street as it does today. There may also be potential to connect southbound Water Street with Quay Street south of the CSX Rail Bridge as part of this strategy, which would improve vehicular access to the waterfront from the North Albany Warehouse District. This concept has the potential to avoid some of the integration issues of the rail line and would make the roadway east of the tracks (close to the waterfront) available for other uses, although it would still present challenges for establishing vehicular and/or ped/bike access across the tracks.

Traffic/Mobility: In downtown Albany, daily volumes on I-787 range from about 55,000 vpd south of the DMB/SMX interchange to approximately 84,000 vpd between Clinton Avenue and I-90. For context, the daily volume on Central Avenue (NY 5) in Colonie is 42,500 vpd and the daily volume on NY-787 in Cohoes is 25,000 vpd. These high traffic volumes along I-787 make at-grade intersections problematic without some traffic diversions and/or local street circulation improvements, which require substantial off-site mitigation. For this strategy to be successful there may still be a need for grade-separated interchanges to provide reasonable regional access into and out of the City and enable bicycle and pedestrian friendly connections. Some traffic diversion from the corridor may also result with this strategy. Incorporating the cross connections would require innovative treatments where the active rail line is crossed. One option is to change railroad operations so no activity or rail cars are parked in the at-grade roadway corridor from morning to evening weekday peak periods and during special events. A pedestrian bridge from the west side of the roadway directly into a new residential development or mixed-use development or carried over Quay Street and then brought down to grade similar to the Hudson River Way Bridge is another option.

Economic: The reduced transportation infrastructure could have potentially significant economic benefits by creating space for new activity centers and development along the waterfront, although floodplain regulations and use of Corning Riverfront Park, which is restricted from commercial activities, will be a consideration. These changes to the corridor could also catalyze redevelopment at the various parking garage sites that front on Water Street (or development above the parking levels).

Social/Quality of Life: This would be a transformative project, which has the potential for significant positive impacts on the vitality of the City and downtown center. This type of project is consistent with similar successful projects in cities around the U.S. where transportation infrastructure has been modified to mend the negative effects of the Interstate System highway building era and re-energize their cities and waterfronts.

Environmental: Potential changes would take place in an existing transportation corridor, and within areas previously disturbed. However, full alternatives analysis and environmental scoping would be needed. This would involve considerable environmental impact study (NEPA/SEQR) to investigate and document the various local and regional traffic, environmental, social/cultural, and economic impacts, mitigations and cost-benefit. Project scoping and design would involve a considerable effort and should be started at least 10 years prior to the planned implementation in order to leave time for the planning and designing process and aligning construction funding.

South Mall Expressway

Description: Although the South Mall Expressway (SMX) is not within the immediate waterfront focus area of the study, this elevated roadway influences the character of the waterfront because of its connection to I-787 and the Dunn Memorial Bridge. This strategy would replace the South Mall Expressway with an at-grade roadway, more integrated with the City street network. At-grade intersections would replace the current diamond interchange at South Pearl Street, the overpass at Grand Street, and potentially at Eagle Street (by raising Eagle Street back to original grade) and creating other intersections with the local street network where possible/feasible.

Objective: The objective of this strategy is to provide access between I-787 and the Empire State Plaza with a complete street that is integrated with the City and contributes to the vitality and cohesion of the City's downtown. As it relates to the objectives for waterfront access, this strategy would support an eventual reconfiguration of the I-787/DMB/SMX interchange to reduce the visual impact of the transportation infrastructure, reduce transportation maintenance costs, improve waterfront access and create additional space for economic development and/or public use, and enhance community cohesion.

Assessment: The elevated SMX physically divides portions of the City and disrupts the local street network. The reconfiguration of the SMX would likely not be feasible as a stand-alone project, because of its connection to the DMB and I-787. However, this opportunity should be considered in the context of a future need or opportunity to replace the DMB and the I-787/DMB/SMX interchange. Alignment considerations would also need to maintain the connections at the elevation of the Empire State Plaza roadway portals. The conversion of the SMX could potentially restore grid connectivity of local streets in the downtown to support urban redevelopment of vacant and underutilized properties.

Traffic/Mobility: The South Mall Expressway carries approximately 20,000 vehicles per day, and South Pearl Street carries about 10,000 vehicles per day. The daily traffic volume on the SMX is equivalent to the volume on Western Avenue (US 20) between Allen Street and Fuller Road (City of Albany and Town of Guilderland), which is a four-lane undivided roadway in this segment. Traffic volumes on Pearl Street are about the same as on Fuller Road, which intersects Western Avenue at a signalized intersection. This comparison indicates that an at-grade intersection of a reconfigured SMX with Pearl Street would likely be feasible to accommodate the traffic demand and manage congestion.

The footprint of this at-grade intersection would also be expected to be smaller than the space occupied by the diamond interchange and frontage roads of the elevated SMX, even with provision for supplemental turn lanes, if needed. The enhanced integration of this corridor with the surrounding City street network created by this strategy could also have a positive impact on traffic operations along Swan Street (west of the Empire State Plaza) by reducing traffic volumes because of more route choices for traffic circulation. Pedestrian and bicycle circulation and access would also be enhanced by creating the opportunity for more active/vibrant streetscapes and walking/biking routes.
Economic: The conversion of the SMX to an at-grade roadway integrated with the local street network provides the potential for positive economic benefits by stimulating commercial and residential development in the downtown core because of the improved cohesion of the street network and more vibrant and active street-level spaces. The reduced footprint of the SMX infrastructure would be expected to result in lower long-term transportation maintenance costs and may also create opportunities for increased areas for redevelopment.
Social/Quality of Life: The removal of the visual and physical barriers of the elevated SMX, and restoration of the urban street network will strengthen community cohesion. More active streetscapes and the potential for these changes to catalyze development around the corridor, which would contribute to a more vibrant downtown. Although the SMX is not within the waterfront area, changes to the profile and character of this corridor can also support waterfront development and access by contributing to changes in the configuration of the I-787/DMB/SMX interchange area.
Environmental: Potential changes would take place in an existing transportation corridor, and within areas previously disturbed. However, full alternatives analysis and environmental scoping would be needed. The environmental studies and implementation strategy for transforming the SMX should be undertaken in conjunction with a comprehensive assessment of the DMB and the I-787/DMB/SMX interchange since all these component parts are interrelated. A lowering of the SMX to be at-grade has minimal risk of flood impacts since it is outside the 100-year floodplain.

7-2 Enhance ped/bike access to the waterfront

The study identified six focus areas where there is potential to enhance multimodal access and connectivity to support the study objectives, as follows:

- Broadway to Schuyler Flatts Ped/Bike Connection – Menands
- North Albany Warehouse District Ped/Bike Connections - Albany
- South Albany Ped/Bike Connectivity- Albany
- Water Street Road Diet – Albany
- 23rd Street Ped/Bike Connectivity – Watervliet/Green Island
- Mohawk-Hudson Bike-Hike Trail (MHBHT) to Hudson Shores Park (East) - Watervliet

These strategies are similar in scope to the Progressed Initiatives that have already been advanced to be programmed on the CDTC's current 2016-2021 Transportation Improvement Program. These additional ped/bike enhancements could be candidates for future TIP project solicitations.

Strategies associated with enhancing waterfront activity and creating active public use of space under the elevated sections of the transportation infrastructure have also been identified. These strategies may be eligible for funding through non-transportation programs such as the NYS Office of Parks, Recreation and Historic Preservation (NYSOPRHP) Parks Program or the NYS Department of State Local Waterfront Revitalization Program. These are matching grant programs that are awarded annually for purposes including projects to preserve, rehabilitate or restore lands, waters or structures for recreational facilities/public space.

7-2.1 Broadway to Schuyler Flatts

Source: Broadway Transportation Study, CDTC Linkage Program, 2008

Description: Establish trail connection from Broadway corridor to Schuyler Flatts Park and its trail.

Objective: The goal of this connection is to create a trail link between Broadway in the Village of Menands, near NY 378, to the Schuyler Flatts Park's trail, and ultimately to the MHBHT and the Hudson River waterfront. The southerly 0.6-mile segment from Broadway to the Park's trail is the primary focus of this strategy, as the northerly link from the Park to the MHBHT via the 4th street access currently exists.

Assessment: This improvement was originally planned as part of "The Mohawk Hudson Bike Hike Trail Crossroads Connection Study" (2003) and carried forward in subsequent linkage studies.

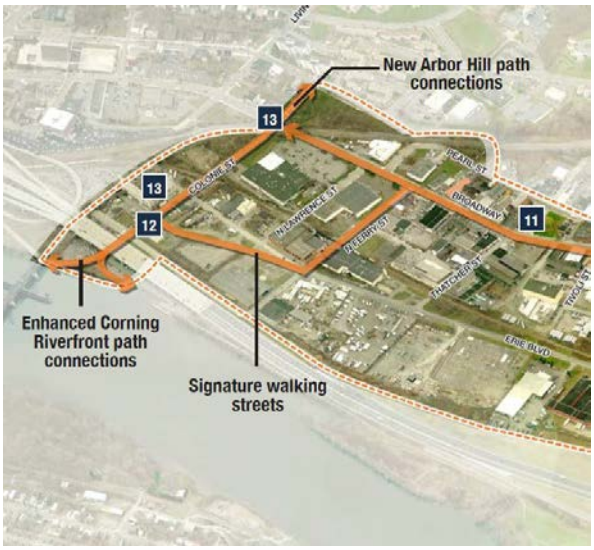
Traffic/ Mobility: The conceptual alignment utilizes a portion of the existing NYSDOT right-of-way for Exit 7 I-787 southbound off-ramp. This strategy could be combined with the Reconfigure Interchange (Section 7.1-2) strategies for this area. There is no traffic impact expected. This alternative improves ped/bike access to the Schuyler Flatts Park trail from the Village of Menands, and access to nearby residential areas.

Economic: Some economic benefits with the connection of the Plaza to nearby residential area. There will be increased maintenance costs of path and path structure over the Kromma Kill.

Social/Quality of Life: This concept improves community cohesion by providing places for public engagement and activity. The recent occupancy of the old Two Guys shopping center with about 400 Xerox employees are good indications of potential for the trail to be used recreationally and for access to the Plaza across Broadway.

Environmental: There is some land disturbance for the trail connection, but there is no parkland or significant wetland or new floodplain encroachment.

7-2.2 Warehouse District Connections



Source: Impact Downtown Playbook - The Business Plan for Downtown Albany, Capitalize Albany Corporation, 2015

Existing Corning Riverfront trail connection to Warehouse District at Colonie Street

Description: This concept focuses on improving the ped/bike linkages between the waterfront and the North Albany Warehouse District based on Complete Streets design principles. The roadway typical sections would be designed to fit within the available right-of-way to the extent practicable. These enhancements would focus on signature connecting corridors, such as Erie Boulevard, North Ferry Street and Broadway. Another element of this strategy is to improve the ped/bike connectivity between Arbor Hill and the waterfront, through the North Albany Warehouse District, generally following the Colonie Street corridor.

Objective: The objective of this strategy is to reestablish sidewalk connections along the urban street grid, and provide the most fitting bicycle accommodations such as bike lanes, shared-use lanes or separated trails based on the specific circumstances and opportunities along each priority roadway within the network.

Assessment: Recent investments have provided a new ped/bike trail along Colonie Street that connects the MHBHT and Corning Riverfront Park with the southeast edge of the North Albany Warehouse District (at Erie Boulevard). But this trail does not connect to any ped/bike facilities within the District. While many streets within the Warehouse District already have sidewalks, in most cases they are in poor condition, have gaps in continuity and/or have access management conflicts with driveways/loading docks/parking. However, new sidewalks have been constructed in some areas as part of site redevelopment within the District (such as at North Ferry Street and Learned Street). A priority corridor identified for investment in ped/bike infrastructure is North Ferry Street (Broadway to Erie Boulevard) and the short section of Erie Boulevard from North Ferry Street to Colonie Street (see Exhibit 7-2: Water Street Road Diet Concept for complete street extension into the Warehouse District along Erie Boulevard). Curb extensions at key intersections, such as at North Ferry Street and Broadway, could also be employed to enhance pedestrian accommodation and safety.

Ped/bike improvements along Erie Boulevard and along other streets in the local street network can be made to extend this connectivity to destination activity centers such as the Huck Finn's Playland amusement park located on Erie Boulevard. The objective presents several challenges pertaining to CP Rail and CSX/Amtrak rail facilities. Detailed future engineering studies will be needed to identify feasible alignments and alternatives, since this corridor involves at-grade and grade-separated rail crossings.
Traffic/Mobility: Facility improvements for pedestrians and bicyclists will have a positive impact on traffic mobility and safety by reducing conflict between these different users and encouraging local trips to be made under human power. The minor changes to roadway typical sections would not impact traffic operations. These roadways are typically lower volume local access and/or collector roads where congestion management is not an issue. This strategy supports the project objectives for enhanced multi-modal connectivity between the waterfront and surrounding neighborhoods.
Economic: This strategy supports economic redevelopment of the North Albany Warehouse District by providing better connectivity between existing/emerging activity nodes within the district and adjacent neighborhoods. Active street environments encouraged by these facilities can also improve vitality of the area that also supports development. These improvements are anticipated to have only minor or modest impact on maintenance costs as they are associated with sidewalk maintenance in corridors that have existing sidewalks, and bicycle facilities in areas that are already paved. Maintenance costs could be higher if separate off-road trails are constructed. A capital project for an Arbor Hill trail connection could have more substantial maintenance costs, especially if a structure(s) is needed to address the various rail crossings that are involved with this route.
Social/Quality of Life: This concept strengthens the cohesion of the Waterfront District by providing multimodal transportation options within the District, and a framework for streetscape enhancements to support vibrant public spaces. The improved east-west bicycle/pedestrian mobility and accessibility to the Corning Riverfront Park and the MHBHT is also a positive amenity to attract and support new residential development in the North Albany Warehouse District.
Environmental: There are no significant environmental impacts expected to be associated with this strategy, as the improvements will take place in an existing transportation corridor over already disturbed area.

7-2.3 South Albany Ped/Bike Connectivity

Description: This strategy proposes to close Cherry Street between Church Street and Dongan Avenue to form a larger space for either public use or development and create active public spaces below the elevated portions of I-787 between Church Street and Bassett Street. During the formative stages of this study, this strategy also included a proposal to complete the ped/bike connectivity along Church Street between the Island Creek Park sidewalk network and Green Street. This latter portion of this initiative has subsequently been advanced by NYSDOT as the Church Street Rail Crossing Signal Upgrade project described in Section 6.

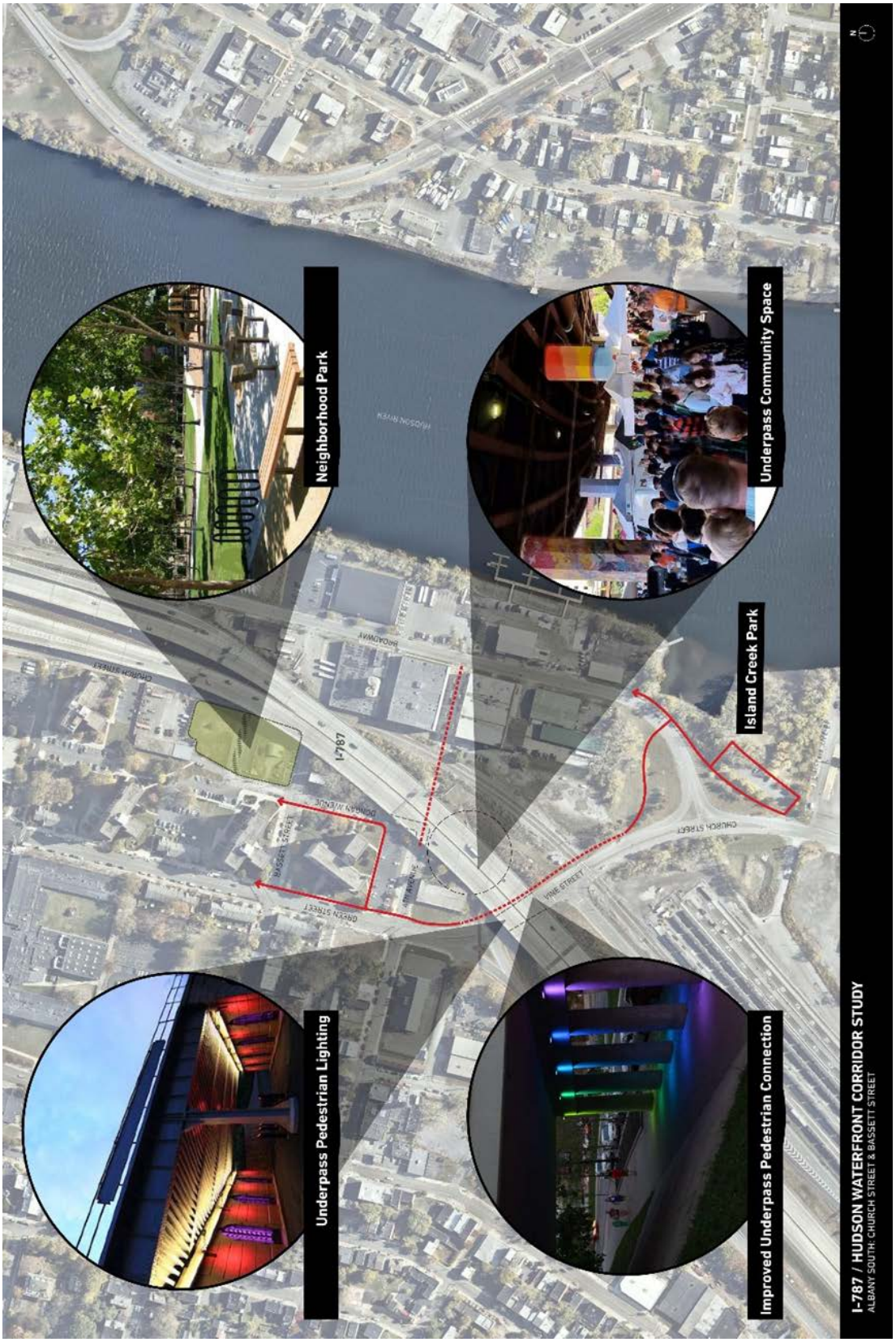
Objective: This strategy proposes to promote community cohesion in Albany's South End neighborhood through actions to enhance the function of space achieved by the closure of Cherry Street, to create active public spaces below the elevated portions of I-787, and to improve ped/bike access and connectivity between these spaces and waterfront amenities such as the Island Creek Park, Springer Marina and other Broadway businesses/employment.

Assessment: Cherry Street is a short (175-ft) local street that is a vestige of the pre-I-787 street grid. This street has no apparent transportation function other than to provide redundant access to parking for adjoining housing and community uses that is also provided from Dongan Avenue. The closure of Cherry Street would have the potential to repurpose and enhance the size and utility of this space for public use.

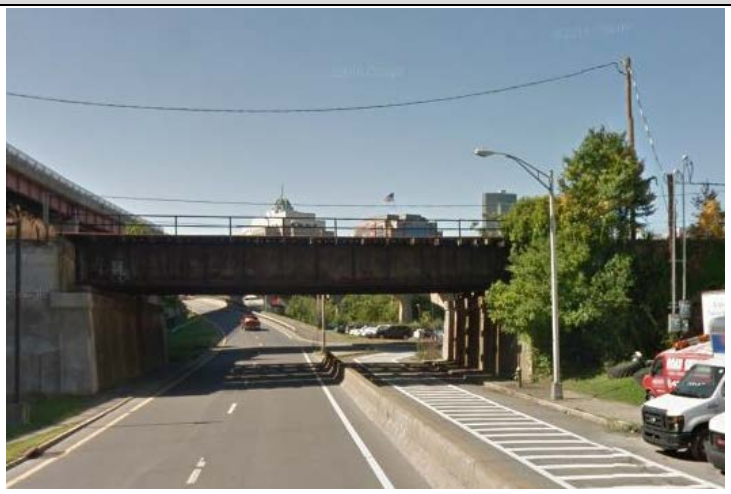
The elevated section of I-787 between Church Street and Madison Avenue along with the retaining wall for the CP Rail line, are visual and physical barriers between the waterfront and South End neighborhoods. The space under I-787 is occupied by the bridge infrastructure for the elevated interstate, and is largely fenced off, preventing public access. This space could be improved to create spaces for public access and activity under the roadway, like the ideas proposed for segments under the elevated portion of NY Route 7 in the Green Island Recreation and Open Space Plan. Pedestrian-scale lighting, public art, streetscape amenities and possibly recreational facilities could transform this area into an active public zone that would be a neighborhood asset and reduce the negative aspects of the elevated roadway (see Exhibit 7-1 on page 75 for example ideas of enhancements). Consideration for these enhancements should also be coordinated with the Albany South End Connector Trail to integrate regional ped/bike access with this public space.

Physical roadway connections for vehicular and ped/bike access between the South End neighborhoods and the waterfront area are only available at Church Street and at Broadway (Steamboat Square), where these roads cross under I-787. Church Street crosses the CP Rail tracks at an at-grade crossing, whereas the train tracks cross over Broadway at Steamboat Square. The Church Street crossing under I-787 and the adjacent at-grade roadway/rail crossing do not currently provide ped/bike accommodations, which creates a gap in the ped/bike network between the Island Creek Park and the Green Street/4th Avenue intersection. As previously mentioned, there is now a project on the TIP to construct a Church Street Rail Crossing Signal Upgrade to improve ped/bike accessibility in this area. The distance between the Church Street and Broadway (Steamboat Square) crossing opportunities is approximately 2,000 feet. Although the Church Street Rail Crossing project will provide a significant improvement to the quality of the existing access, the two available crossing opportunities may not meet community need for access, particularly as the community vision for waterfront redevelopment evolves. Field observation and physical evidence of unauthorized pedestrian crossings of the train tracks at 4th Avenue is evidence that additional pedestrian rail crossing opportunities should be considered. However, such a connection would require the introduction of a new gate-controlled at-grade rail crossing, which would involve additional site studies and coordination with the City, NYSDOT, Federal Rail Administration (FRA) and CP Rail to investigate the feasibility and safety considerations to advance this element of the strategy.
Traffic/Mobility: The improvements associated with this strategy would not have an impact on vehicular traffic other than the minor local impact on traffic circulation to access parking associated with closing Cherry Street. The Church Street Rail Crossing Signal Upgrade project will enhance the pedestrian linkage at the south end of the corridor. Considerations for additional ped/bike connectivity would involve new at-grade rail crossings, requiring additional study to evaluate feasibility and safety, and for regulatory concurrence.
Economic: The creation of active public spaces under I-787 and expansion of the public green space by closing Cherry Street will support economic development of the South Waterfront District by creating a more vibrant and active street environment and reducing the negative aspects of the elevated roadway infrastructure. This strategy will increase maintenance costs for the public space and pedestrian connections.
Social/Quality of Life: This concept improves community cohesion by providing places for public engagement and activity, reduces the negative aspects of the elevated roadway, and improves east-west connectivity to the Island Creek Park, MHBHT, and the South Albany Waterfront District.
Environmental: There are no significant environmental impacts expected as this improvement will take place in an existing transportation corridor over already disturbed area. However, floodplain and sea level risk will be significantly affected and require further study.

Exhibit 7-1: South Albany Ped/Bike Enhancement



7-2.4 Water Street Road Diet



Description: This strategy involves a road diet treatment on Water Street between Colonie Street and the BQC to improve the bicycle linkages between downtown Albany, Corning Riverfront Park, and the MHBHT. This strategy would repurpose one lane of this segment of Water Street for use as a two-way cycle track. A concept of this strategy is shown on Exhibit 7-2.

Objective: The objective of this strategy would be an expanded ped/bike network and the provision of enhanced options for local and regional access to downtown Albany and the Albany waterfront.

Assessment: The Water Street cycle track would tie-in to the recently completed pedestrian/bicycle facility enhancements along the north side of Colonie Street that connect the MHBHT to the North Albany Warehouse District. The proposed cycle track will reconfigure existing pavement to the extent practical, but minor reconstruction of the curb line may be required to accommodate the two-way cycle track and buffer median. This strategy should consider carrying the theme of green-colored pavement to provide contrast for the separated bike facility.

Traffic/Mobility: This road diet treatment is not anticipated to have a significant impact on vehicular traffic. The existing exit ramp from I-787 (southbound) is a single lane and is the origin of most traffic on Water Street. There may be increases in traffic delay at the signalized intersection of Colonie Street and Water Street due to changes in lane utilization. Additional design study should be conducted to confirm peak hour volumes and operations prior to implementation and related to the Clinton Avenue Ramp Skyway implementation. This cycle track strategy, in conjunction with other identified ped/bike strategies (described previously in this report) would expand the options for commuter and recreational biking to/from downtown Albany. This would also improve the quality of existing sidewalk accommodations for pedestrians by creating a buffer between pedestrians and vehicular traffic.

Economic: This strategy supports economic redevelopment by expanding the network available for commuter and recreational bicyclists and providing additional connectivity to/from the North Albany Warehouse District as this is a positive amenity to new residential development. It also provides better access between activity centers, such as Huck Finn's Playland, to help support economic activity. Increased maintenance costs are anticipated to be minor and are associated with pavement markings, buffer treatments and signing.

Social/Quality of Life: This concept improves community cohesion by providing places for public engagement and activity. This concept improves north-south and east-west ped/bike mobility and accessibility to the Corning Riverfront Park, the North Albany Warehouse District and downtown Albany.
Environmental: There are no significant environmental impacts expected as this improvement will take place within an existing transportation corridor's footprint over already disturbed area.

Exhibit 7-2: Water Street Road Diet Concept

7-2.5 23rd Street Ped/Bike Connectivity

Description: This strategy applies complete street concepts at the I-787/23rd Street Interchange area to improve multi-modal accessibility through additional ped/bike connections, intersection geometry improvements at the I-787 southbound off-ramp/23rd Street intersection and at the 23rd Street/ Broadway intersection, and pedestrian crossings reconfigurations. These connections should tie-in to the pedestrian connections along 23rd Street to Hudson Shores Park and MHBHT.

Objective: The objective of this strategy is to support community interaction and connectivity for neighborhoods and businesses in Watervliet and Green Island that are separated by I-787 through a more compact urban interchange design and enhanced multimodal accommodations.

Assessment: The configuration of the I-787/23rd Street interchange area is vehicle-oriented and provides limited pedestrian/bicycle accessibility. The urban residential and neighborhood commercial uses on the west side of I-787 are supported by a conventional street grid. This network features sidewalks on both sides of the streets and generally compact intersections, which is walkable and bikeable. The interchange area features large corner radii at intersections, limited pedestrian crossing opportunities, and sidewalk on only the south side of 23rd Street. These characteristics and a lack of sidewalks east of the interchange do not support pedestrian and bicycle mobility through the interchange. Several specific recommendations for this strategy are as follows:

- Provide a sidewalk along the north side of 23rd Street, from Broadway on the west side of I-787 to the Village Plaza on the east side, to connect residential and commercial uses.
- Reconfigure pedestrian crossings at the intersection of 23rd Street and Broadway, creating a more traditional and direct pedestrian crossing, for improved connectivity.
- Provide a pedestrian crossing opportunity across Lower Hudson Avenue on the east side of the interchange.
- Provide a sidewalk on the south side of Lower Hudson Avenue between the I-787 northbound off ramp and the Hudson Shores Park access drive (or some other logical termination that does not strand a pedestrian at the interchange when the gate to the Park trail is closed).

- Provide enhanced pedestrian-scale lighting under the I-787 bridges that will improve aesthetics and the feeling of safety.
- Realign the I-787 southbound off-ramp approach to 23rd Street to be a conventional perpendicular intersection.
- Reduce corner radii at the interchange ramps and at the northeast corner of 23rd Street and Broadway, where possible, to reduce the pedestrian/bicyclist crossing distances and to lower vehicle turn speeds.
- Widen the existing pedestrian path on the south side of 23rd Street under I-787 to be converted to a shared-use path.

These recommendations are illustrated on Exhibit 7-3 and Exhibit 7-4. The implementation of this strategy also needs to consider and be coordinated with the Hudson Avenue Bike/Ped Safety Improvements and the Watervliet Bike Path projects to ensure a compatible multi-modal design. These projects and their status are described further in Section 6.

Traffic/Mobility: This strategy implements local intersection and traffic flow changes, reduces crossing distance, and lowers speeds at the ramp termini. There are no regional traffic diversions expected as the interchange footprint would be designed to accommodate existing and future traffic volumes. Traffic operations would continue to operate at acceptable levels of service with the added benefits of traffic calming and potentially improved Village of Green Island and Hudson Shores Park access. The realignment of the I-787 southbound off-ramp approach at the 23rd Street intersection would remove the current right-turn orientation of the approach. This will promote slower speed of vehicles turning at the intersection and increase driver awareness of pedestrian activity along 23rd Street. In addition, reduced corner radii at the interchange and at the 23rd Street/Broadway intersection will also promote slower vehicle speeds and provide a shorter crossing distance for pedestrians and bicyclists.

Economic: This strategy strengthens community engagement between the residential and commercial zones on each side of the interchange.

Social/Quality of Life: This concept improves community cohesion by providing places for public engagement and activity. It would also improve quality of life by potentially providing community identity and improving general aesthetics.

Environmental: This smaller interchange footprint will reduce pavement widths, but the increased sidewalks will provide a close to net zero impact for imperviousness. There are no significant environmental impacts expected as this improvement would take place in an existing transportation corridor, and within areas previously disturbed.

Exhibit 7-3: 23rd Street Ped/Bike Connectivity Improvement Concept

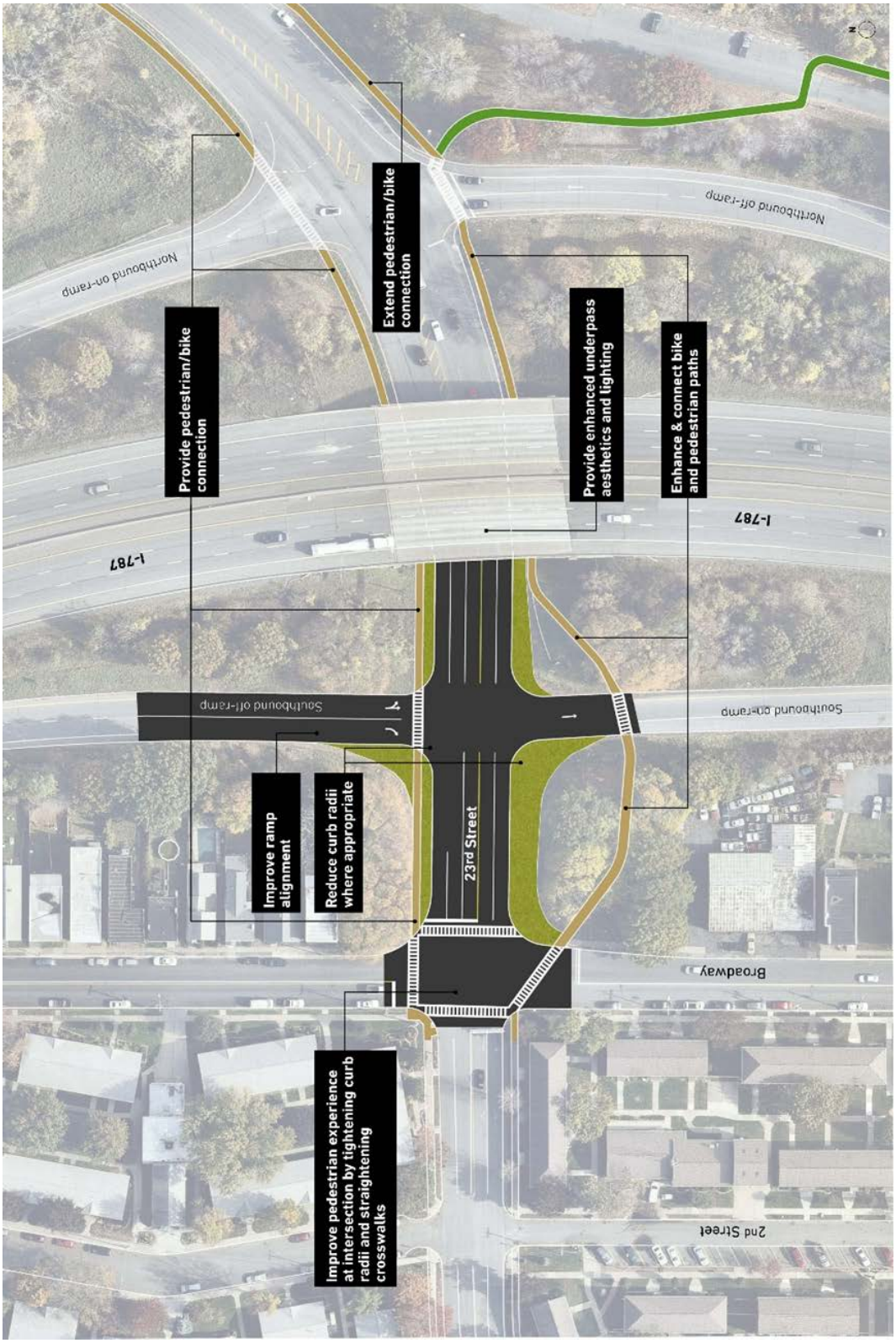
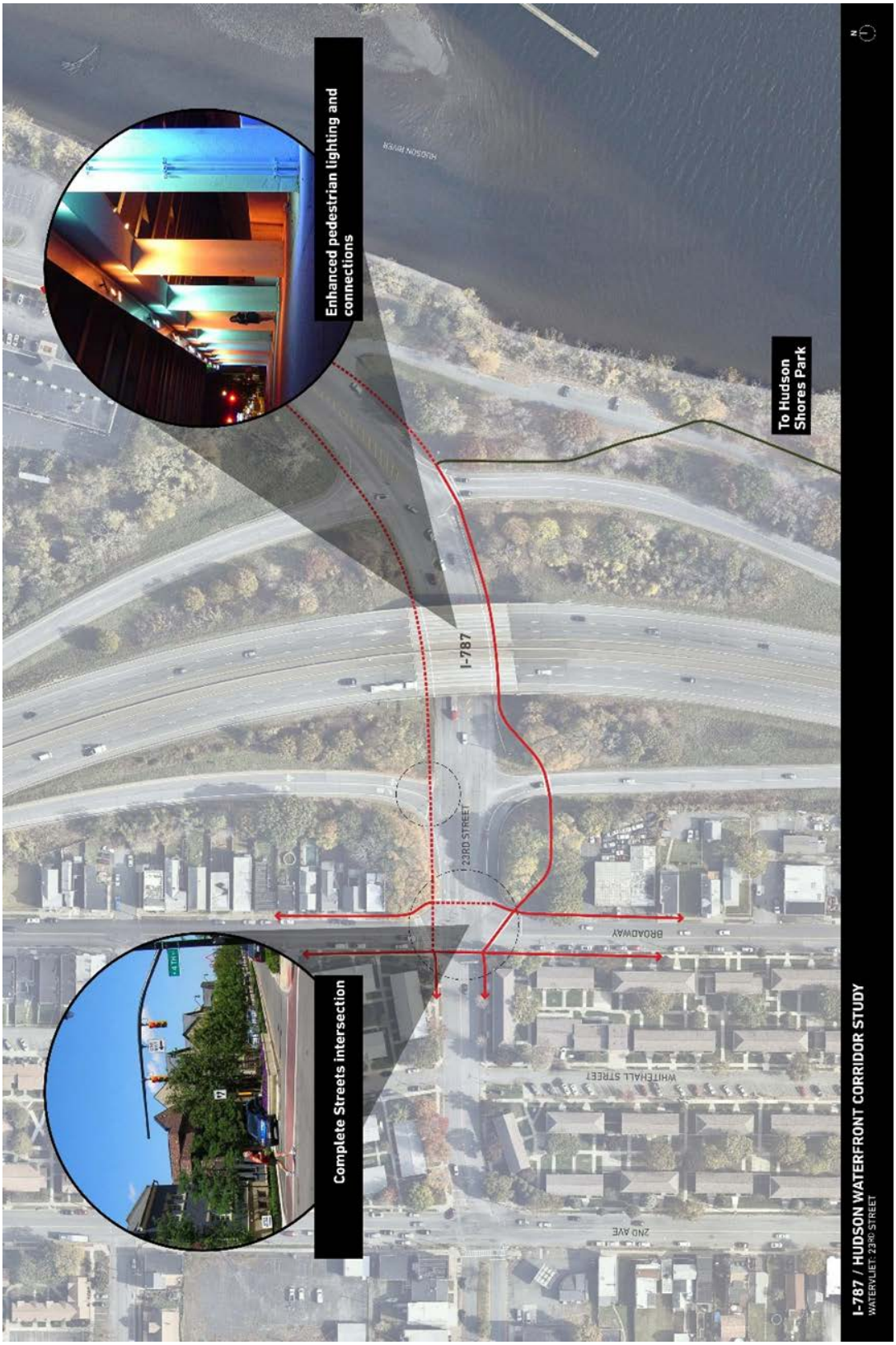


Exhibit 7-4: 23rd Street Ped/Bike Enhancements



7-2.6 Mohawk-Hudson Bike-Hike Trail (MHBHT) to Hudson Shores Park (East)

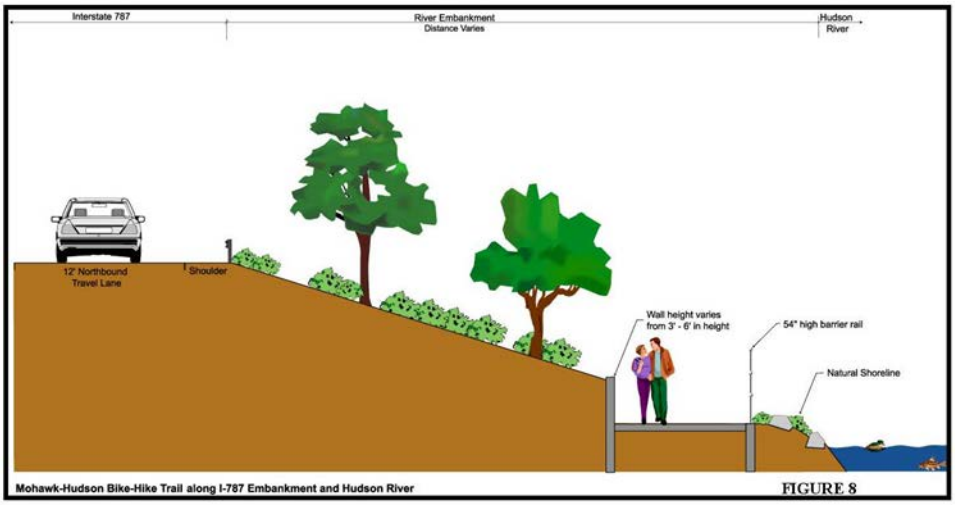


Image from the Mohawk-Hudson Bike-Hike Trail Crossroads Connections Study (2003)

Description: The City of Watervliet has explored several options to fill a gap in the off-road portion of the MHBHT from 4th Street to Hudson Shores Park since 2003. The City is currently pursuing implementation of a cycle track on Broadway as a short-term project. In the long term, there is interest in pursuing a shared use path on the east side of I-787 along the Hudson River.

Objective: The objectives of an off-road, waterfront MHBHT connection would be to provide approximately 7,500 feet of new waterfront access to residents and visitors in the City of Watervliet.

Assessment: This strategy is identified in the "Watervliet Bicycle Master Plan" as the "River Alternative" and is also acknowledged in the "City of Watervliet Comprehensive Plan." The trail would require cutting into the I-787 embankment due to the small portion of land available between the highway and the river, ranging from approximately 15 feet to 85 feet. It would also require sensitive trail design to protect against disturbance of the shoreline and any local aquatic habitats. Approximately 1,600 feet of this section is severely limited in area and slope. The installation of a bulkhead or pier system may be required. The total cost to complete the trail, bulkhead, and Hudson Shores Park trailhead, as estimated in 2003, would be $1.4 million. While this option has a high degree of local support, it is challenging from a financial and ease of construction perspective as numerous engineering challenges will need to be overcome.

Traffic/Mobility: Creating a continuous waterfront trail along the Hudson River would improve mobility for bicyclists and walkers by separating them from motor vehicle traffic and may encourage a shift in travel to non-automobile modes. It will also greatly improve waterfront access and improve the safety and comfort of trail users by eliminating most conflicts with motor vehicles.

Economic: A direct waterfront trail connection for the MHBHT would benefit the local economy by bringing more visitors to the City of Watervliet. The economic benefits of shared use recreational trails are well documented and are expected to increase in this area as the Empire State Trail system is implemented.

Social/Quality of Life: The impact of a waterfront trail connection on quality of life is positive as it would offer the community scenic and recreational benefits. Such a trail would also offer positive social benefits.
Environmental: The impacts of walking and biking on the environment are generally positive however construction of this segment of trail is challenging due to the limited land available between I-787 and the shoreline. Permits and numerous approvals would be necessary to provide the needed space for a shared use trail. Flooding and sea level rise are serious concerns.

7-3 Manage Travel Demand

While the primary focus of the I-787/Hudson Waterfront Corridor Study was on infrastructure strategies to support the project objectives, travel demand management and transit strategies also play a role. The demand for travel by motor vehicle in the Capital Region is high for trips to work. According to the U.S. Census Bureau, 2011-2015 American Community Survey 5-Year Estimates, 85% of Albany County Residents commute to work in their own motor vehicle or in a carpool and that figure reaches nearly 88% when you look at the Capital Region as a whole.

This high level of motor vehicle travel strains the transportation system, including I-787, at peak times. In order to reduce some of the demand for travel within the I-787 study area, an enhanced travel demand management and transit program should be pursued. Marketing of the various regional travel options should be targeted to both residents and employers including the State of New York, which has numerous state employee parking facilities and workspaces throughout the study area. Future consideration will need to be given to automated vehicles and the impact they may have on traffic, changes in travel behavior and the infrastructure of the regional transportation system.

7-3.1 Market Existing and Pilot New Travel Demand Management (TDM) Initiatives

Description: Marketing and expanding regional TDM programs (see Section 4-2.2 for descriptions of current programs) can encourage travelers to decrease personal automobile use. CDTA and CDTC have coordinated on a regional TDM program for many years. These programs are cataloged on the Capital Moves website (www.capitalmoves.org). Employer based programs such as alternative work schedules, telecommute and web based meetings are additional methods for reducing travel demand. Aggressive employer support of TDM programs is critical and the State of New York, with its large workforce, should be targeted for more direct participation in TDM programs. Financial incentives and disincentives to manage demand typically have the greatest impact on travel change once in place. A 2018 pilot program being pursued by CDTC is the "Smart Trips" behavior change campaign to encourage active transportation and transit use, tracked by before and after customer surveys in a section of the City of Albany.

Objective: TDM initiatives can reduce automobile travel, particularly when multiple options exist within the same landscape, complemented by supportive community policies. Decreasing the number of corridor users traveling alone in automobiles can decrease demand on I-787 and perhaps on adjacent local roadways.

Assessment: TDM programs can be a highly effective, low cost approach to changing the travel market. However, TDM, in and of itself, is not adequate to solve congestion, air quality, energy, and other urban issues. Changing travel behavior in an area with little congestion and low or no cost parking that is readily available is a tremendous challenge. TDM is most effective, or at least most measurable, at the local level as it is very hard to evaluate the impact of TDM at a corridor or regional level.

Traffic/Mobility: National evidence on the impacts of TDM on trip reduction from baseline conditions have shown reductions can range anywhere from 1% to 30%, with higher levels of change seen where there are financial incentives such as tax breaks or disincentives such as peak parking pricing.

Economic: Increased use of TDM programs as well as program expansions can mitigate some of the negative impacts associated with development such as congestion and air pollution. TDM programs that reduce parking demand and enable additional developable land can improve the attractiveness of a region or city to prosper economically.

Social/Quality of Life: While difficult to measure, the impact of TDM on quality of life is positive. Alternative transportation options can reduce congestion, increase safety, improve the environment, and support healthy economic conditions. Having more choices is a key principle of TDM.

Environmental: TDM has a role in emission reduction and air quality improvement programs. The evaluation of TDM tends to assess TDM in terms of VMT reduction and convert these findings into emissions reductions via per-mile emission factors. VMT reductions can also be converted to energy impacts by applying energy consumption (miles per gallon) factors to travel reductions. Impacts on the physical environment would be limited with this strategy.

7-3.2 Support and Promote Transit Services

Description: This strategy involves promoting CDTA's transit services, including the future CDTA River Corridor Bus Rapid Transit (BRT) system (Section 6). BRT and other transit services in the study area can be supported through initiatives that include implementing mixed commercial and residential high density development adjacent to the transit corridor (known as Transit Oriented Development), creating or expanding opportunities for park and ride, expanding CDTA's Universal Access Program and constructing sidewalks that provide safe walking options for transit customers. Exposing CDTA and its BRT services to new riders through "try transit" programs, promoting transit at local events, marketing of transit services through employers to employees and maintaining a road network that allows the bus to maneuver in a straight, predictable pattern can also be considered.

Objective: Programs and policies that support transit combined with promotion of CDTA's services can increase transit use in the study area, potentially shifting travel away from single occupant automobile use on the I-787 corridor.

Assessment: Marketing and promoting transit to the "non-rider" is a challenge recognized nationally. Consideration must be given to focusing promotional efforts on the right market which might include major employers in the study area, those without access to a motor vehicle, the elderly and young people. The on-street infrastructure that complements BRT, such as improved sidewalks, station waiting areas, lighting and street crossings, benefit the I-787 study area by implementing complete street features at station locations to improve the image of transit. Additional complementary initiatives, such as park and ride facilities outside of downtown areas in the corridor communities, may further spur economic development opportunities and reduce automobile use on I-787. Shifting travelers to transit is not likely to be significant in the I-787 corridor without other significant policy or societal changes.

Traffic/Mobility: Reducing single occupant motor vehicle use and increasing transit ridership reduces traffic and improves mobility for the remaining drivers. Impacts to roadways would be positive and would improve automobile accessibility throughout the study area. Increasing transit ridership allows improved service, improving mobility for transit riders.

Economic: A reliable, well used transit system supports non-automobile travel in the study area which is currently experiencing redevelopment. The cost of marketing the BRT system would be minor but CDTA will face increased maintenance costs for its stations and on-street infrastructure. Costs to developers could be reduced by having lower parking requirements and increased development densities in the study area to support transit. Employers participating in CDTA's Universal Access program incur a cost to support transit operations but save by reducing costs related to the creation, maintenance and/or payment for employee parking as well as reduced need for employee shuttles. Social/Quality of Life: Implementing transit supportive development and policies throughout the study area provides transit users with incentives to reduce their automobile travel. Transit supportive development includes higher density mixed use residential and commercial buildings that could bring more people to the study area to live and work, creating more vibrant waterfront communities.

Environmental: There are no significant negative environmental impacts associated with the promotion of BRT and transit supportive initiatives. Air quality could actually improve by reducing automobile travel in the corridor and through the use of fuel-efficient transit vehicles. The proximity of higher density

development to floodplain areas would require consideration of flood mitigation strategies including green infrastructure and flood resistant building design.

7-3.3 Explore Innovative Parking Policies

Description: Parking policies have a large influence on travel choices. Innovative parking strategies including parking pricing and parking management techniques can be effective at shifting travelers to non-auto modes of transportation. Commuters are more likely to shift their mode of travel when parking is tight or expensive. Examples of effective parking strategies that could be further explored include variable on street parking prices based on demand, parking cash out (employees pay for employer provided parking but are given a bonus or pay increase to offset the cost, allowing the employee to choose an alternative mode and keeping the difference in cost), shared parking arrangements between adjacent businesses, electronic parking guidance systems, parking maximums in community zoning codes, and incentivize use of non-auto travel options.

Objective: The objective of this strategy is to increase the use of non-auto transportation by making it more difficult or more expensive to park a personal vehicle. Strong parking management policies can have a large influence on travel behavior.

Assessment: With a wide range of parking options available to communities, one or more would be feasible to explore so long as the context of the community is considered.

Traffic/Mobility: Changing parking policies is the most effective tool to changing travel behavior. Traffic congestion can be reduced when parking opportunities are limited or expensive and affordable and reliable alternatives to travel exist.

Economic: Parking facilities have major costs and effective parking management policies can help reduce the amount of needed parking, reducing development costs. Parking pricing projects can raise community revenues for use in further supporting non-auto travel modes. The synergy between parking policies, compact development with a mix of residential and commercial uses, and alternative travel modes makes communities more attractive and economically vibrant.

Social/Quality of Life: Reducing rows of parking from sitting empty by opening those lands up for other types of development has tremendous community benefits. Compact development that is built to the scale of a typical walking trip creates desirable places to live and supports transit use. Transit services are more likely to be of high quality where the built environment supports its use.

Environmental: The potential to reduce the amount of impervious paved areas in waterfront communities such as those in the I-787 study area would provide large benefits to the communities in meeting stormwater requirements through runoff reduction and would open up currently underutilized land for development.

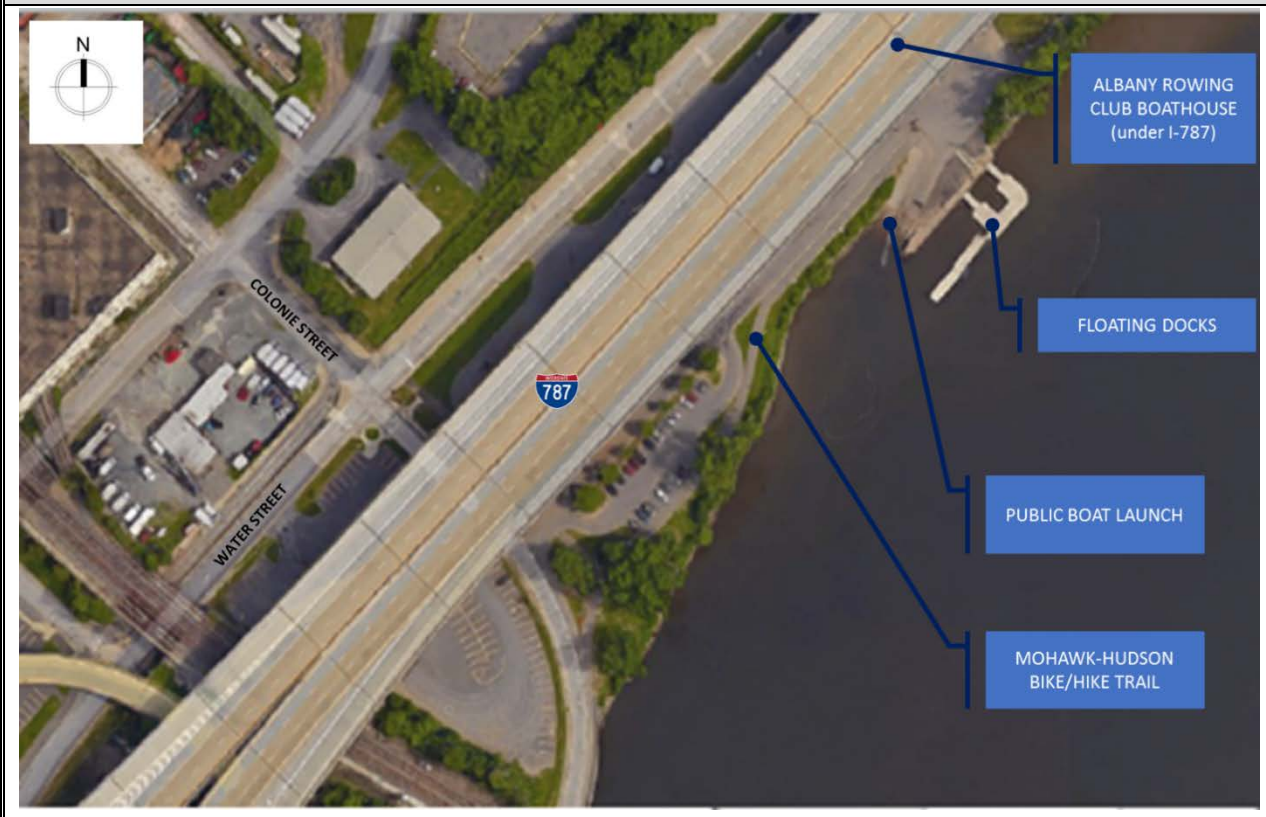
7-4 Facilitate Smart Growth / Economic Activity near the Waterfront

Many of the preceding strategies described in Sections 7-1 and 7-2 identified ways to strengthen multimodal access to the waterfront from the land side, and how this improved connectivity would benefit economic development and community vitality. This set of strategies continues that theme but builds upon it by encouraging big thinking for waterside uses and activating currently underutilized lands.

The expansion of facilities and amenities for recreational water use would bring additional activity to the Hudson River, increasing use of the waterfront by residents and visitors and creating waterfront economic development opportunities. Such public and private land uses could range from fishing/picnic areas to higher end boating facilities to tourist attractions. Springer's Marina is a 50-slip facility that opened in 2016 south of Steamboat Square in Albany and is an example of recent private marine investment in the corridor. As the Hudson River continues to attract waterside users, leisure boating and regatta/rowing activity can also be expected to increase. Providing waterfront docking facilities and amenities in association with waterside dining and retail shops would stimulate the economic vitality of the corridor.

It is important to note that the strategies presented in this section are illustrative and are based on past planning studies reviewed in Section 3 of this report. Economic development strategies will need further thought and should be vetted with neighborhood residents in order to balance the needs of current residents/business owners, future residents/business owners and visitors. Alternative visions that could include high end recreational facilities, affordable housing options and jobs for city/corridor residents should all be considered.

7-4.1 Albany Marina



Description: This strategy involves the expansion of marina facilities near the existing public boat launch and Albany Rowing Center Boathouse at Colonie Street north of Corning Riverfront Park

Objective: Promote access and recreational use of the waterfront by developing docking facilities and amenities (such as showers, restrooms, marine supply store, etc.). Complement and encourage waterfront development by attracting boaters to the area.

Assessment: The Albany Rowing Center (ARC) Boathouse (managed by Albany Department of General Services) is located under the elevated portion of I-787, adjacent to the public boat launch. The ARC also maintains floating docks at the waterfront that are free and open to the public. These facilities support several local and regional Rowing Clubs. Their presence provide a basis for additional infrastructure and amenities to improve the quality of these facilities and to create momentum for a market to support restaurants and shops.

Traffic/Mobility: Major improvements would be made to boating access. Impacts to roadways would be minor and generally limited to improvements along local roads to facilitate access to boating facilities, as well as the creation of parking lots. This concept will also improve ped/bike accessibility and connection.

Economic: Boating will attract residents and visitors to the waterfront. Commercial and waterfront development will be enhanced by boating access. This strategy would have minimal impact on the maintenance costs of transportation infrastructure.

Social/Quality of Life: Boating access provides a way to connect residents and visitors with the Hudson River. The waterfront is a unique community asset that promotes recreation and high-quality residential and commercial experiences.
Environmental: Floodplain, hydraulics, vertical clearances and wetland impacts must be considered when planning for the creation of boating facilities.

7-4.2 Albany Inner Harbor

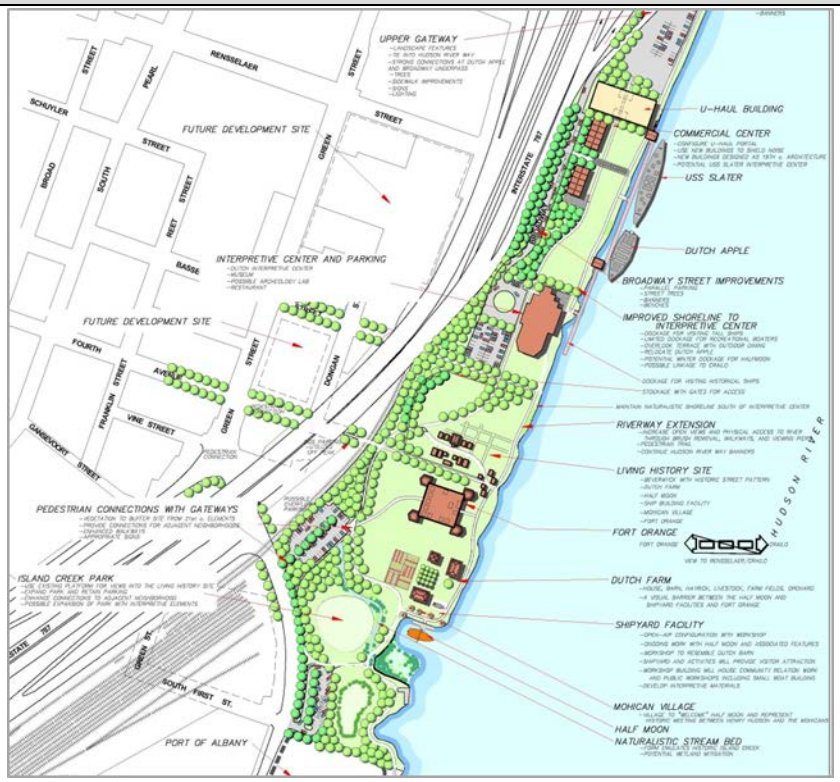
Description: This strategy is to redevelop part of the warehouse district between Colonie Street and Manor Street to create an inner harbor/historic district with a 300 boat marina. The concept would mimic the historic Erie Canal boat basin and feature the locks to the extent practical, construction of a pedestrian promenade around the harbor/marina and redevelopment of key properties in the area.

Objective: The objective of this strategy is to create a lively, pedestrian-friendly, mixed-use district centered on water.

Assessment: This strategy was identified in the "*City of Albany North Waterfront Redevelopment Strategy*" (2002). It is located generally in the same areas as for the 'Albany Marina' strategy discussed above, but greatly expands the concept to be larger scale and more transformational. This concept would require interchange modifications for I-787 to connect to the envisioned street network to serve this redevelopment area. The strategy would essentially establish a segment of I-787 as a causeway between the river and the harbor/marina. The elevated portion of I-787 in this area would remain as a bridge at the entry to the harbor/marina, but over water rather than land. This would involve modifications to protect the I-787 bridge piers at this location and to create the appropriate boat navigation channels connecting the river and harbor/marina.

Traffic/Mobility: Major improvements would be made to boating access. This concept includes changes to local traffic access and circulation, as well as affecting the access from I-787, and requires future detailed study. Additionally, the concept creates a ped/bike friendly area in the Warehouse District and supports the need for a bicycle/pedestrian pathway on the Livingston Avenue Rail Bridge. This strategy also involves I-787 modification to consider issues related to the causeway, ramp modifications, and bridge pier protection.
Economic: This strategy would have potentially significant economic benefits by transforming the North Albany Waterfront area and further catalyzing the redevelopment of the North Albany Warehouse District. As this area is redeveloped, agreements for the ownership and maintenance of the harbor will need to be established.
Social/Quality of Life: This alternative could have dramatic quality of life benefits and position Albany as a 21st century City respecting its historic heritage, while promoting an innovative new urbanism development approach.
Environmental: The project would require significant permitting and environmental studies. The 2002 Study outlines an implementation plan.

7-4.3 South Waterfront Living History Redevelopment (port of Albany to Steamboat Square)



Conceptual Image from the Waterfront Living History Site Initiative (2002)

Description: This strategy would consider the redevelopment of a 16 acre area in the South Waterfront District into a Living History Museum. The site is bounded by the Dunn Memorial Bridge to the north, Church Street to the south, the rail line to the west and the Hudson River to the east. The site could include a re-creation of the original Fort Orange, a shipyard, typical trades and structures (blacksmith shop, brewery, bakery, residences) and related museum structures.

Objective: The creation of a new attraction in the South Waterfront area has the potential to bring a significant number of visitors to the City and could be a catalyst for additional redevelopment initiatives that would transform a more industrial area into a lively and vibrant part of the City's waterfront.

Assessment: This concept was originally explored in 2002 through the South Broadway District redevelopment initiative and attempted to capitalize on the presence of the Half Moon tall ship which had been docked in Albany as a waterfront attraction. The ship has since left Albany but aspects of this concept remain feasible and could stimulate additional commercial or other development. The City of Albany recently rezoned this area as MU-FS which is a mixed-use, form based zone specific to the South End of Albany. The purpose of the MU-FS district is to encourage redevelopment in the South End area by re-creating a more fine-grained street system that encourages internal pedestrian and bicycle circulation, encouraging a vibrant mix of residential and nonresidential uses, and creating new investment opportunities along the waterfront.

Traffic/Mobility: Creating a new waterfront attraction could have both positive and negative impacts on traffic and mobility. Increased street connections, particularly using complete street designs, would be

positive but additional motor vehicle traffic through the South End neighborhood could have unintended consequences and would need careful study.
Economic: Increasing opportunities for visitation to the Albany waterfront through new attractions would have positive economic benefits. A Living History Museum or other commercial development could create job opportunities for residents in the South End neighborhood.
Social/Quality of Life: The impact of a Living History museum on social and quality of life issues would be positive as long as it is designed to benefit the broader community and traffic/parking concerns are carefully addressed.
Environmental: This site is a priority Brownfield Opportunity Area (BOA) site identified in the *Albany 2030 Comprehensive Plan*. Site redevelopment may need to consider mitigation related to existing Combined Sewer Overflows that discharge to the Hudson River and chemical contaminations including polychlorinated biphenyls (PCBs). The potential positive and negative impacts on the physical environment as the frequency of flooding increases and rising sea levels would need careful consideration during the design process.

7-4.4 Develop Activity Space under I-787

Description: Activating vacant spaces underneath I-787 is a strategy that can be used throughout the study area (see also discussion in Section 7-2.3). The types of uses should be identified through an open public process that considers the needs of local residents. For example, Vietnam Veteran's Memorial Park in Green Island is located beneath the Collar City Bridge (NY Route 7) at Paine Street, George Street and Hudson Avenue (east of the I-787/NY7 interchange). This park is underutilized and is mostly enclosed by fencing. Except for where strategically needed for safety and secured recreational activities, all fencing should be upgraded or removed from the area to improve aesthetics and connectivity to the surrounding neighborhood. Other methods of improving perceived accessibility and activating the space include enhancing underpass lighting in all areas and refreshing the paint or public art on walls and bridge supports. This should be coordinated with the 2013 Village of Green Island's Recreation and Open Space Plan where a Vietnam Veteran's Memorial Park Concept Plan is detailed to include a community gathering space, toddler play area and recreation block, and the waterfront performance space.

Objective: Create welcoming space beneath I-787 to encourage ped/bike movement and recreational activities with the removal of unnecessary and uninviting fencing and the design of specific purposes for the existing hardscape within the context of an urban neighborhood.

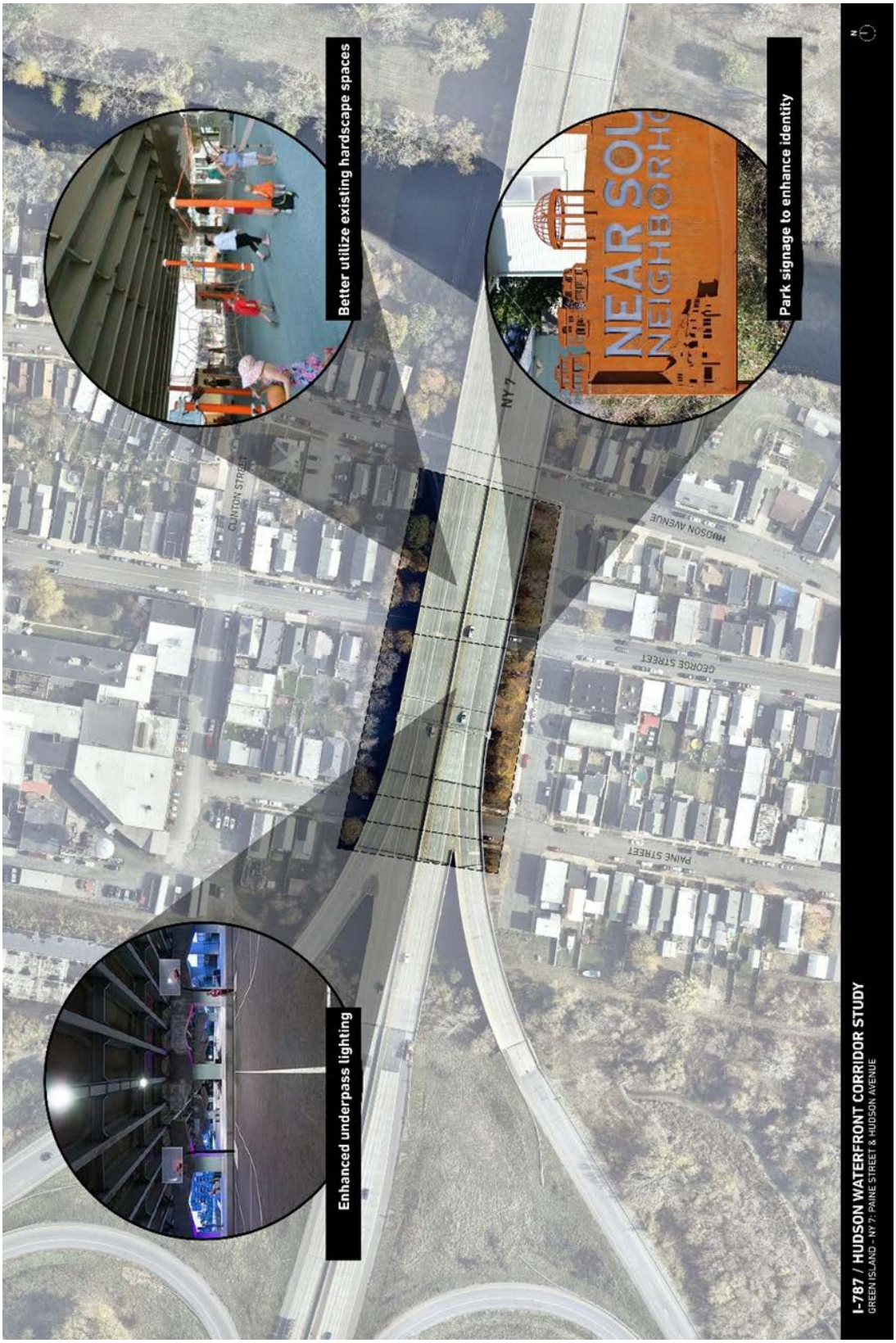
Assessment: Improvements to the Vietnam Veterans Memorial Park were identified through the Village of Green Island's Community Development Plan process, which included stakeholder and public involvement. The concept plan that emerged from these planning activities included elements to improve the use and aesthetic quality of the park. Examples of other similar concepts to improve the activity space under the highway infrastructure is shown on Exhibit 7-5. This example can serve as a model for other underutilized spaces beneath I-787.

Traffic/Mobility: I-787 and local traffic networks are expected to be unaffected. Ped/bike benefits include improved connections among points east and west of the highway promoting access to waterfront trails.

Economic: Economic benefits are modest and potentially include improved access between residential neighborhoods, small business opportunities that capitalize on park or trail users as well as benefits resulting from expanded recreational opportunities. There would be negligible change in maintenance but could result in some municipality or park & recreation agency maintenance costs.

Social/Quality of Life: The strategy to upgrade public space will strengthen community cohesion by attracting people to gather for play and social interaction. Noise attenuation, such as sail roofs, fountains or other devices, to mitigate the roadway noise, and improved lighting should be considered as part of the concepts. Providing more green space and green edges specifically around the Vietnam Veterans Memorial Park, plus accentuating existing green spaces where mature trees are located would provide a variation in public space and would provide a sense of community and gathering space for Village residents.
Environmental: Potential changes would take place in an existing transportation corridor, and within areas previously disturbed. There are no negative impacts expected to the floodplain. The strategy could reduce impervious surface area and incorporate "green" design features to allow ground infiltration and reduce runoff to benefit surface water quality.

Exhibit 7-5: Activity Space Enhancement Concepts



7-5 Strategies considered but not advanced

During the early stages of the study, a broad range of potential strategies for the corridor were considered, from which the strategies previously discussed emerged. These other ideas ranged from considerations for dramatic transportation system changes outside the study area to travel demand management and congestion management strategies. However, during the preliminary assessments of the study, it was determined that these other strategies do not strongly support the purpose and objectives of this I-787/Hudson Waterfront Corridor Study and were consequently not advanced for further consideration. The strategies considered, but not advanced, are described briefly below.

7-5.1 Revamp Transportation Infrastructure

a. Realign / Reroute I-787

This strategy is proposed in the "City of Watervliet Comprehensive Plan." I-787 would be rerouted west of the City of Watervliet, thereby opening access to the Hudson River waterfront from the City. A conceptual alignment provided in the Comprehensive Plan re-routes I-787 in the vicinity of Route 378 to Alternative Route 7. Although this would improve access to the waterfront, there are substantive funding and environmental hurdles to overcome. Considerable environmental studies would need to show social, economic, and environmental viability. Substantial traffic diversions coupled with cost and the environmental challenges to implement outweigh the ability to have direct access to public space and economic development opportunities along the waterfront to pursue this strategy as part of the study.

b. Remove I-787 Altogether (with local street improvements)

This strategy has been discussed as an option to transform the I-787 corridor and the communities surrounding it. Removal of an interstate that carries up to 89,000 vehicles per day would have tremendous impacts to the state and local street system, which may not be able to be mitigated. De-designation of an Interstate segment requires coordination and an approval process with FHWA, with detailed justification documentation. While the strategy will connect communities to the waterfront and improve ped/bike mobility, there are major cost and feasibility implications that make this strategy unfeasible to pursue such as the rail infrastructure in the City of Albany, and connectivity to the DMB and other adjacent river crossings that will continue to be factors affecting waterfront connectivity.

c. Reduce Number of I-787 Mainline Travel Lanes

This strategy would reduce the number of travel lanes on I-787 between Albany and Watervliet to reduce the transportation footprint in the corridor and associated maintenance costs resulting from less roadway and bridge infrastructure, and to increase the land available for alternative public uses or economic development. Traffic volumes range from 55,000 vpd to 88,000 vpd through this segment.

Preliminary traffic modeling assessments of this strategy by CDTC suggests that this reduction in capacity would have significant impacts to other parts of the regional and local networks requiring system capacity investments in these other areas to maintain regional mobility. The reduced capacity of I-787 would also be a factor in considering system resiliency for conditions such as incident management and disaster evacuation. A sub-alternative of this strategy that was also considered involved converting the corridor to a slower speed arterial configuration. CDTC traffic modeling suggests that travel lanes would need to be added rather than removed to offset some of the lost capacity for this sub-alternative strategy. Because of the broad area of potential impact to local and regional road networks, and the

associated potential mitigation improvements that would be needed, the reduction of capacity on I-787 was not considered to be feasible for the context of this study.

d. Mitigate Noise Along I-787

Noise mitigation along I-787 was identified as an action item in the "City of Watervliet Comprehensive Plan." It proposed noise reduction that could be achieved by construction of noise barriers and/or by reducing speeds on I-787. This introduction of noise barriers would have a visual impact to the abutting communities that would further limit visual access to the waterfront. This strategy would also be a challenging project to implement as NYSDOT cannot assign priority to a Type II noise abatement project (i.e., a retrofit project on an existing highway where the initial design of the facility did not identify a need for noise abatement). It would require separate funding for that specific purpose provided by the Legislature or done in conjunction with a Type I reconstruction project along the corridor. A Type I project is a new roadway on new alignment or reconstruction where the highway alignment is substantially altered and/or new travel lanes are added. For these reasons, it is not feasible to pursue noise mitigation as a stand-alone strategy as part of this study.

e. Depress I-787

This strategy would lower I-787 to be below the surrounding grade level. The concept of this strategy is to reduce the visual impact of the roadway infrastructure and to potentially create space for redevelopment for housing, commercial and/or other uses. Two potential scenarios of this strategy would be to lower the road without cover or to tunnel the road. In the scenario where I-787 is depressed but uncovered, there would not be any substantial change in the footprint of the roadway because of the requirements for ramp connections to grade-level streets and to the ramps to the DMB/SMX. Consequently, there would also not be much if any change in the amount of land that could be transferred to an alternative non-transportation use. A tunneled roadway might provide more opportunity for land to be transferred for economic development or public space over the roadway, but there would be much higher costs involved to construct and maintain this infrastructure. Previous industrial uses in the corridor may mean that hazardous materials/contaminants are present in the soil beneath the roadway which would add to the cost and complexity of deep excavation. Drainage/dewatering, flood protection, retaining walls, ventilation systems and tunneling considerations would be required because the roadway would be lower than the sea level elevation of the Hudson River. This strategy would be a significant financial investment for construction and ongoing maintenance, which is not consistent with one of the project objectives to reduce transportation infrastructure/expense. This strategy also would not address the rail infrastructure considerations. This strategy was not pursued further as part of this study because of these issues.

7-5.2 Enhance Ped/Bike Access to the Waterfront

a. Culvert under I-787 (near I-90)

This strategy was considered as an alternative for providing ped/bike access to the waterfront in the area of the Village of Menands to address a gap in the access in this part of the corridor (i.e., between just north of the Corning Riverfront Park at the Colonie Street / Water Street intersection in Albany and 4th Street in Watervliet). This strategy involves providing a ped/bike connection between Erie Boulevard and the waterfront just north of the I-90/I-787 interchange to connect the North Albany residential and industrial districts to the Hudson River. This strategy would require a culvert structure to be constructed under I-787 that would likely involve reconstruction of a portion of I-787 to raise the elevation of the I-

787 mainline. In consideration of the probable construction costs, environmental issues, potential benefits, and the availability of other alternative strategies at Exit 6, it was concluded that this strategy would not be pursued further.

7-5.3 Manage Demand

a. I-787 HOV

This strategy would introduce high-occupancy vehicle (HOV) travel lanes on some portion of I-787. The HOV lanes would offer exclusive access to vehicles carrying two or more passengers, allowing these vehicles to avoid congestion along the interstate. This strategy provides an incentive for travelers to carpool or shift to transit during times of congestion and reduce the number of vehicles on the road in an effort to change the road user's behavior, while still serving the corridor's mobility needs. The evaluation of this strategy for this study neither considered the efficacy of the strategy for reducing travel demand in the corridor nor the design considerations that would affect feasibility of implementing an HOV strategy in the corridor. However, this strategy would not reduce the number of lanes on I-787 and will have no effect on ped/bike accessibility & connectivity, land use transformation, waterfront access, and/or floodplain risk reduction. Since this strategy does not align well with the study purpose and objectives, it was not pursued further.

b. Incorporate Potential for Future Light Rail

The concept of providing a modern fixed guideway (light rail, monorail, street trolley) transit system within the Capital District has been evaluated in a number of studies dating back to the early 1990s. The general Capital District public is mostly supportive of a possible light rail travel option which has led NYSDOT, the NYS Senate, CDTA and CDTC, at various times, to initiate diligent evaluations of various high travel corridors in terms of technical and market feasibility. Although the Capital District does not have the conventional population and employment densities to make such systems feasible, there have been serious looks at the Hudson River corridor from Mechanicville to Albany as a possible route for light rail.

In terms of the future of the I-787 corridor, it has to be concluded that while enhanced transit solutions are economically possible and desirable, the investment for a large-scale type fixed guideway is not economically or logistically feasible at this time. Although, improving and enhancing existing public transit should be considered as highway reconstruction alternatives are being evaluated and implemented.

7-5.4 Facilitate Smart Growth / Economic Activity near the Waterfront

a. Menands Small Craft Boat Launch

A small craft boat launch would be created near the Menands Market, with a modified culvert under I-787 north of Exit 6. This strategy is highlighted in the document entitled "Accessing the Hudson River Shorelines and Waters, Concepts Developed for the Village of Menands Development Task Force" dated 2001 and updated in 2014. This strategy would provide boat access to the Hudson River, and possible ped/bike access depending on the feasibility of an adjacent trail. There will be some increased maintenance costs for the trailhead area. There is currently about five feet of clearance inside the culvert during high water. The concept would likely involve raising the elevation of I-787 to increase

clearance for the small craft boats and the ped/bike connection, if included. This strategy was not pursued further as part of this study because of these issues.

b. Develop Above I-787

Platforms would be created above a re-imagined I-787 and elevated rail line in the vicinity of Downtown Albany. These platforms would extend space for economic development or public space across the highway corridor. "The Future of I-787 and the Albany Waterfront" study proposes this strategy in the vicinity of Corning Riverfront Park. In order to build space for development or public use above I-787, the highway would need to be reconstructed at a lower elevation, which would have adverse effects on the potential impacts related to sea level rise and flooding. Air rights over I-787 would also need to be obtained. The concept would also add considerable long-term maintenance, in addition to the substantial cost to construct. This concept would also limit river views from properties west of I-787. Given the multiple adverse effects on the study objectives, this strategy will not be pursued further.

c. Corning Preserve

The Corning Preserve Master Plan includes many elements to heighten the recreational experience at the Corning Preserve as well as adding parking and infrastructure/access improvements. Some of the elements include on-street parking on Quay Street, improved boating access, ped/bike access to the Livingston Avenue bridge, boat house and additional ped/bike connections throughout. It should be noted that the Corning Preserve property was conveyed to the City from the State for public use. The City cannot develop the property for commercial use without first paying the State the appraised value of the property since it was originally purchased by the State with Federal transportation funds. The City of Albany constructed a portion of this master plan in 2016 that created parking on Quay Street, enhanced pedestrian crossings from the OGS parking lot to the Corning Preserve and improved traffic signals. Since the strategy was being advanced by the City, it was not progressed under this study.

Section 8: Environmental Justice

Per federal requirements, the Capital District Transportation Committee (CDTC) undertakes an analysis of Environmental Justice (EJ) in its planning initiatives to evaluate if transportation concepts and recommendations impact Environmental Justice populations. Impacts may be defined as those that are positive, negative and neutral as described in CDTC's Environmental Justice Analysis document[7], published March 2014. The goal of this analysis is to ensure that both the positive and negative impacts of transportation planning conducted by CDTC and its member agencies are fairly distributed and that defined Environmental Justice populations do not bear disproportionately high and adverse effects.

This goal has been set to:

- Ensure CDTC's compliance with Title VI of the Civil Rights Act of 1964, which states that "no person in the United States shall, on the basis of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance,"

- Assist the United State Department of Transportation's agencies in complying with Executive Order 12898 stating, "Each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

- Address FTA C 4702.1B TITLE VI REQUIREMENTS AND GUIDELINES FOR FEDERAL TRANSIT ADMINISTRATION RECIPIENTS, which includes requirements for MPOs that are some form of a recipient of FTA, which CDTC is not.

8-1 EJ Data and Analysis

In developing a methodology for analysis, CDTC staff created demographic parameters using Summary File 1 data from the 2010 United States Census as well as data from the 2007-2011 American Community Survey (ACS). Threshold values were assigned at the census tract level to identify geographic areas with significant populations of minority or low-income persons. Tracts with higher than the regional average percentage of low-income or minority residents are included on Exhibit C-14 (in Appendix C) as Environmental Justice populations. Minority residents are defined as those who identify themselves as anything but white only, not Hispanic or Latino. Low-income residents are defined as those whose household income falls below the poverty line.

For the purpose of this assessment, low-income and minority populations are combined into one "Environmental Justice" population, because it is assumed that changes to the transportation system

[7] http://www.cdtcmpo.org/ej/ej14.pdf

affect low-income and minority populations the same. This assumption is based on the transportation analysis in the Demographics section of CDTC's March 2014 Environmental Justice Analysis document.

The transportation patterns of low-income and minority populations in CDTC's planning area are depicted in Table 8-1, using the commute to work as a proxy for all travel. The greatest absolute difference between the defined minority and non-minority population is in the Drive Alone and Transit categories: The non-minority population is 17.5% more likely to drive alone, slightly more likely to work at home, 10.1% less likely to take transit, and is also less likely to carpool, walk, or use some other method to commute. The greatest absolute difference between the defined low-income population and the non-low-income population follows the same trend, with the non-low-income population 20.9% more likely to drive alone and 11.7% less likely to commute via transit.

Table 8-1: Commute Mode 4-County Capital Region

By Race	Drive Alone	Carpool	Transit	Other	Walk	Work at Home
All Workers (16+)	80.0%	8.3%	3.2%	1.2%	3.6%	3.7%
White Alone Not Hispanic or Latino	82.5%	7.8%	1.8%	1.0%	2.9%	3.9%
Minority	**65.0%**	**11.0%**	**11.9%**	**2.1%**	**7.4%**	**2.6%**
By Income	Drive Alone	Carpool	Transit	Other	Walk	Work at Home
All Workers (16+) for whom poverty status is determined	80.7%	8.3%	3.2%	1.2%	3.0%	3.6%
At/Above 100% Poverty Level	81.7%	8.2%	2.6%	1.1%	2.8%	3.6%
Below 100% Poverty Level	**60.8%**	**10.2%**	**14.3%**	**3.1%**	**7.7%**	**3.9%**

Data: American Community Survey 2014 5-year estimates. Other includes taxi, motorcycle, and bicycle.

The I-787/Hudson Waterfront Corridor study area is almost entirely included in the Environmental Justice area based on the study area Census Tracts having a higher than regional average percentage of both low income and minority residents. Methods utilized to include these populations in the planning process included:

- A project website was created to share information about the study including study products throughout the process.
- Social media was used to provide information and input opportunities.
- Three public workshops were held during the study, two in the City of Albany and one in the City of Watervliet. The meetings were held in the evening in transit accessible locations.
- Meeting flyers were posted at public venues throughout the study area to promote the study.
- Public comment was accepted throughout the study process via an email address on the project website and meeting flyers, by calling CDTC or by mailing written comments to CDTC.
- A 30-day public comment period was held on the draft report.
- The Times Union, the Business Review and All Over Albany ran news stories on the study with contact information to learn more.
- Final products will be posted to CDTC's website and on social media.

8-2 Strategy Assessment on EJ Populations

The following provides a preliminary assessment of the impact of recommended strategies in the I-787/Hudson Waterfront Corridor Study, in the same four broad categories as presented in Section 7, on study area Environmental Justice populations. Each strategy was viewed from the "*what if this strategy was implemented*" perspective. The strategy identification number is provided for reference to the strategy descriptions provided in Section 7 of the report. Only strategies within EJ population areas were assessed.

Projects with a primary or significant focus on transit, bicycling, walking, or carpool are considered "positive", have a greater benefit to an EJ population. Those that expand motor vehicle capacity are considered "negative" or have possible negative impacts and greater benefits to the non-EJ population, such as new construction, capacity improvements, and reconstruction projects that notably add motor vehicle capacity. All other project types, which mostly maintain the existing infrastructure with a primary focus on automobiles, are considered "neutral", greater benefit to non-EJ population, including highway resurfacing, traffic operations improvement, bridge deck repair, preservation and rehabilitation. It should be noted that the assigned value is general since these strategies are still in their preliminary planning stages and will require additional design.

Revamp Transportation Infrastructure (*Ref. Section 7-1*)

- **Maintain I-787 in a State of Good Repair (*Ref. Section 7-1.1*)**
  Assessment: Neutral.
  Explanation: Maintaining existing infrastructure provides a greater benefit to the non-EJ population as this strategy is primarily focused on maintaining automobile travel at the same capacity level.

- **Reconfigure Interchanges (*Ref. Section 7-1.2*)**
  - I-787/Dunn Memorial Bridge/South Mall Expressway
  - I-787/Clinton Avenue
  - I-787/NY Route 378
  - NY Route 378/Broadway

  Assessment: Neutral.
  Explanation: The four interchanges identified for potential reconfiguration are within the EJ area. Reducing the scale of the existing infrastructure has positive impacts on the EJ population as, especially in the case of the I-787/Clinton Avenue strategy, walking and biking opportunities would increase. Visual and physical access to the waterfront areas could be improved. Negative impacts may also occur as infrastructure capacity is reduced and automobile and other motor vehicle traffic may divert into EJ neighborhoods. The net effect of both the positive and negative impacts of these strategies on the EJ population may be neutral.

- **Convert I-787 to Non-Interstate Facility (*Ref. Section 7-1.3*)**
  - I-787: North of I-90
  - I-787: South of I-90
  - South Mall Expressway

  Assessment: Neutral
  Explanation: All three segments explored for conversion within this strategy are in EJ areas. Downsizing infrastructure in terms of elevation and overall scale with the I-787: South of I-90 and South Mall Expressway strategies, in particular, could have positive impacts on the EJ population as pedestrian and bicycle access opportunities to the waterfront area could be improved as well as visual access from adjacent EJ neighborhoods. Negative impacts could result from changes in these segments as traffic is slowed down to arterial speeds from Interstate speeds, decreasing capacity which could result in diversions through EJ neighborhoods. The introduction of signalized intersections as described with the I-787: South of I-90 strategy could also result in reduced air quality from idling and increased conflicts between automobiles, bicyclists and pedestrians. The net effect of both the positive and negative impacts of these strategies on the EJ population may be neutral.

Enhance Ped/Bike Access to the Waterfront (*Ref. Section 7-2*)

- **Broadway to Schuyler Flatts (*Ref. Section 7-2.1*)**
  Assessment: Outside of EJ area

- **Warehouse District Connections (*Ref. Section 7-2.2*)**
  Assessment: Positive
  Explanation: The connections related to this strategy benefit bicyclists and pedestrians as it intends to implement complete street principles and would positively impact the EJ population.

- **South Albany Ped/Bike Connectivity (*Ref. Section 7-2.3*)**
  Assessment: Positive
  Explanation: Closing a street to traffic to introduce opportunities for bicycle and pedestrian facilities or new development would positively impact the EJ population. Because automobile traffic is extremely low (less than 1000 vehicles per day), the risk of any negative impacts from traffic diversions is limited.

- **Water Street Road Diet (*Ref. Section 7-2.4*)**
  Assessment: Positive
  Explanation: Implementing a road diet on Water Street to improve bicycle linkages with the implementation of cycle track would be seen as a positive impact on the EJ population. At a planning level, the repurposing of one travel lane for a bicycle facility would not appear to impact traffic operations or needed capacity.

- **23rd Street Ped/Bike Connectivity (*Ref. Section 7-2.5*)**
  Assessment: Positive
  Explanation: Implementing a new striping plan for the 23rd Street corridor at I-787 to improve multi-modal accessibility by including an improved tie-in to the Mohawk-Hudson Bike-Hike Trail would be seen as a positive impact on EJ populations, particularly as motor vehicle capacity would not be altered.

- **Watervliet MHBHT East Side (*Ref. Section 7-2.6*)**
  Assessment: Positive
  Explanation: The trail connection along the waterfront is designed to benefit bicyclists and pedestrians and would positively impact the EJ population.

Manage Travel Demand (*Ref. Section 7-3*)

- **Market Existing and Pilot New Travel Demand Management Initiatives (Ref. Section 7-3.1)**
  Assessment: Positive
  Explanation: As Travel Demand Management initiatives are designed to reduce automobile travel and benefit transit, bicycling and walking, this strategy is viewed as being positive for the EJ population.

- **Support and Promote Transit Services (*Ref. Section 7-3.2*)**
  Assessment: Positive
  Explanation: Transit that is high frequency and of high quality is viewed as positively impacting the EJ population.

- **Explore Innovative Parking Policies (*Ref. Section 7-3-3*)**
  Assessment: Positive
  Explanation: Exploring options to reduce parking lot fields and automobile use in the study area is viewed as positively impacting the EJ population.

Facilitate Smart Growth/Economic Activity Near the Waterfront (*Ref. Section 7-4*)

- **Albany Marina (*Ref. Section 7-4.1*)**
  Assessment: Neutral
  Explanation: Adding new boating and other facilities directly related to water access would positively impact the EJ population. Negative impacts could come as a result of high prices for boats and other waterfront activities potentially excluding EJ populations from accessing the waterfront.

- **Albany Inner Harbor (*Ref. Section 7-4.2*)**
  Assessment: Neutral
  Explanation: Bringing the Hudson River close to the Warehouse District, as it was historically, and creating new opportunities for development would be seen to largely positively impact the EJ population. Methods to not exclude lower income groups from accessing new development in this area would need to be considered in development plans. Negative impacts could come as a result of increased land values and home prices for EJ populations.

- **Develop Activity Space under I-787 (*Ref. Section 7-4.3*)**
  Assessment: Positive
  Explanation: Creating active use of the land area under I-787 would be seen as positively impacting the EJ population, particularly through improved walking and bicycling connections.

CDTC's overall assessment of the identified strategies in the I-787/Hudson Waterfront Corridor Study and their impact on the EJ population is largely positive. In some cases, strategies may have a neutral impact, largely due to traffic diversions from repurposed or reduced automobile capacity or due to the potential for gentrification in the neighborhoods of the EJ population. As any one of the identified strategies become projects and move into design, additional evaluation of the impacts on the EJ population will be needed to ensure that these groups are not unfairly impacted.

Section 9: Corridor Considerations for Big Ticket/Long Term Initiatives

A large transformational strategy that considers converting all or portions of I-787 from an interstate expressway to an at-grade urban arterial involves many complex issues requiring additional review before advancing.

This section describes the elements of the existing infrastructure that present physical challenges or involve major policy or regulatory considerations related to a potential transformational long-term vision for the corridor.

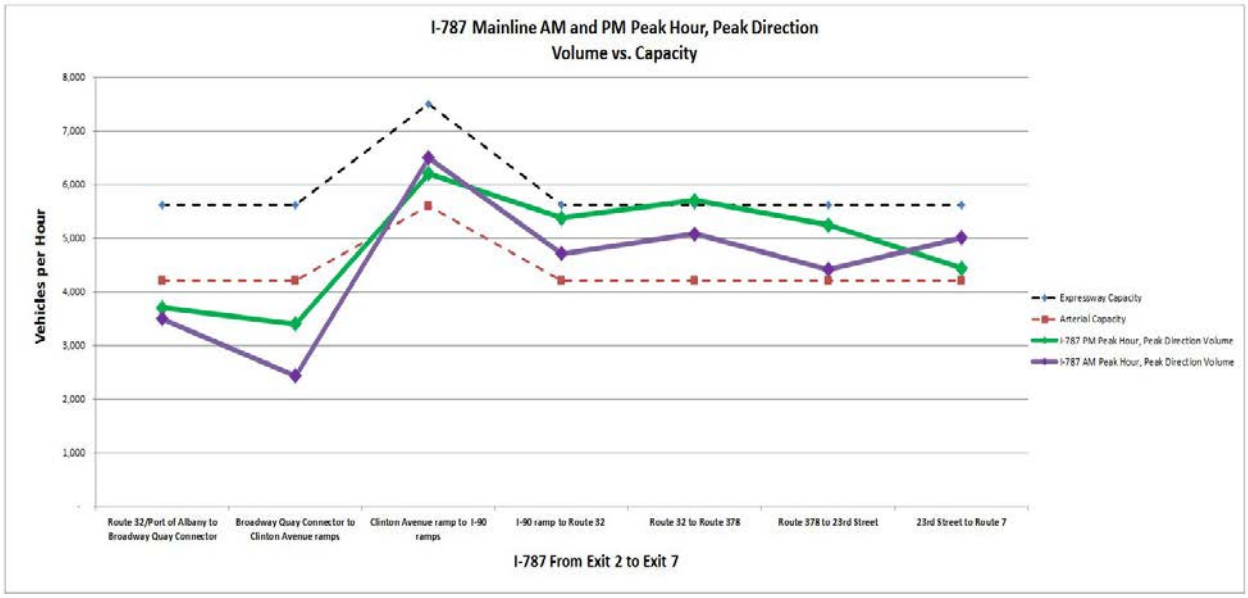
The I-787: South of I-90 strategy identified in Section 7-1.3 (Convert I-787 to non-interstate facility) presents a cross-sectional image of a potential at-grade urban arterial option at a select location between the Broadway-Quay Street Connector (BQC) and Clinton Avenue. This option would move both directions of traffic to the west side of the railroad tracks, where there is reasonable width to physically accommodate a complete street concept and, with additional planning, tie-in to the north at the Clinton Avenue interchange and elevated portions over the CP Rail and to the south parallel with CP Rail entering the Port of Albany. These considerations presented herein look at the corridor feasibility beyond the specific possible cross-section presented in the strategy to prepare and inform future efforts.

9-1 Traffic Accommodations

A review of traffic volumes in the I-787 corridor indicated that there is an opportunity to consider reconstructing I-787 as an at-grade roadway for the ½-mile segment between the BQC and Clinton Avenue. This segment of the corridor is shown on Exhibit E-1 in Appendix E. Volumes on this section are much lower than other sections of I-787. As an example, the year 2016 peak directional volume (i.e. northbound or southbound) for this segment of I-787 is estimated by CDTC to be approximately 2,430 vehicles per hour in the AM peak hour and 3,400 vehicles per hour in the afternoon peak hour. For comparison, the peak directional volumes on the adjacent segment of I-787 between the Clinton Avenue interchange and the I-90 interchange exceeds 6,000 vehicles per hour in both peak hours. These peak direction volumes for year 2016 are shown on Exhibit 9-1.

Traffic volumes were also reviewed in relation to the effective service capacity of I-787 with the current interstate expressway configuration (three lanes in each direction and 55 mph operating speed), and for an alternative arterial roadway configuration (three lanes in each direction with a 45 mph operating speed). As shown on Exhibit 9-1, the peak hour volumes in the BQC-to-Clinton Avenue section is within the capacity of a six- lane arterial (three lanes in each direction). Outside of the BQC-to-Clinton Avenue segment, more than six lanes of arterial would be needed to provide comparable capacity to the six-lane interstate expressway current configuration to support these higher volumes.

Exhibit 9-1: I-787 Peak Directional Volumes & Service Capacity (2016)



9-1.1 At-Grade Roadway Feasibility Assessment

A planning-level assessment of the feasibility of an at-grade roadway alternative for the segment of I-787 between BQC and Clinton Avenue was conducted by CDTC to identify the potential effects of this change on traffic flow patterns in the region. A potential configuration of an at-grade roadway alternative for the BQC-to-Clinton Avenue section was developed for this analysis.

For the purposes of the modeling assessment, the potential at-grade roadway configuration for the segment of I-787 from the BQC to Clinton Avenue was defined as follows:

- Lower I-787 mainline to an at grade level between the Broadway/Quay Connector (BQC) and Clinton Avenue, maintaining three lanes in each direction on I-787 with signalized intersections at BQC and Orange Street, with supplemental turning lanes at the signalized intersections.
- Allow pedestrian crossings of I-787 at BQC and Orange Street.
- Remove Water Street from Columbia Street to BQC.
- Remove the southbound ramps between Clinton Avenue and BQC.
- Remove the northbound ramps between BQC and Clinton Avenue.
- Maintain Quay Street.
- Close the ramp from Quay Street to Clinton Avenue for vehicular use (could still be used for ped/bike traffic) as described in Section 6.5 Clinton Avenue Ramp Skyway.
- Reconstruct the northbound ramps from the DMB/SMX interchange to tie into I-787 south of the BQC.
- Reconstruct the southbound ramp from I-787 to the DMB/SMX interchange to start from I-787 south of the BQC.

This configuration is shown on Exhibit E-2 and Exhibit E-3 in Appendix E. This configuration was examined from a traffic analysis perspective as well as from a physical constructability perspective, including an assessment of compatibility with the CP Rail facility in the corridor.

Traffic Analysis

The CDTC STEP Model was used to simulate traffic for the at-grade roadway alternative for year 2016 existing conditions. The STEP Model is a travel demand model that simulates traffic patterns for the four counties of Albany, Rensselaer, Schenectady and Saratoga. It represents origin-destination patterns for the entire CDTC study area. Therefore, it models local traffic within the City of Albany, as well as regional trips, such as a person driving from the South Mall to Clifton Park, or to other regional destinations. All interstates, arterials and collector roads in the four-county area are represented. Vehicle trips are estimated based on US Census population, households and employment data compiled by the Capital District Regional Planning Commission (CDRPC). The model representation of ramps in the I-787 corridor was refined for this study and was calibrated against mainline and ramp traffic counts. A very good level of agreement between simulated volumes and traffic counts was found at the ramp level as well as for mainline sections of I-787.

The at-grade roadway alternative was represented in the CDTC STEP Model and a traffic assignment was run to represent the traffic patterns that would result from this strategy. The STEP Model results indicated that while traffic capacity would decrease, and travel speeds would decrease, traffic would flow at acceptable levels. Findings of the STEP Model analysis include:

- At-grade intersections at BQC/I-787 and Orange Street/I-787 were analyzed assuming three through lanes and at least one turn lane northbound and southbound. Both at-grade intersections would be able to accommodate all the traffic that is assigned at level of service D in the weekday AM and PM peak hours. Level of service (LOS) is a qualitative expression of traffic operations based on various quantitative performance metrics (depending on the type of transportation facility). For signalized intersections, the LOS is correlated to the amount of control delay per vehicle moving through the intersection. In urban areas, LOS D is typically a desired design objective.
- I-787 mainline volumes between BQC and Clinton Avenue would be 2,800 vehicles on I-787 northbound and 2,330 vehicles on I-787 southbound in the PM peak hour, within the capacity of three lanes in each direction, based on CDTC's modeled value of 1,400 vehicles per hour per lane at a LOS D/E threshold.
- Some traffic would choose to divert away from the I-787 corridor due to additional delay: in the PM peak hour, 1,150 vehicles on I-787 northbound would divert (out of 6,370 vehicles north of Clinton Avenue); and 739 vehicles on I-787 southbound would divert (out of 3,860 vehicles north of Clinton Avenue).
- No parallel route would experience traffic increases of more than 100 vehicles per hour due to the network of local streets spreading traffic out. This outcome was confirmed through a similar analysis undertaken for a mid-2010 NYSDOT I-787 construction project. The one exception to this is I-90 which would increase by 180 vehicles per hour westbound in the off-peak direction in the PM peak hour.
- In the typical PM peak hour, total vehicle miles traveled (VMT) would decrease (by 3,270 VMT) because of less circuitous ramp movements. Total travel time for all vehicles would increase in

the typical PM peak hour (by 100 hours daily for all vehicles) due to stopping at two additional intersections and lower speed limits.

- Annual travel time benefits would be negative: ($2,976,000), but annual operating benefits would be positive: $4,841,000, for a net total annual benefit of $1,866,000 (in 2017 dollars). These travel time and operating cost benefits were derived by CDTC using the same procedures used to evaluate projects for the 2016-2021 Transportation Improvement program (TIP). Appendix H (pages H6 and H7) of the CDTC TIP provides a detailed explanation of the cost-benefit methodology (http://www.cdtcmpo.org/documents/transportation-improvement-program/2-page/uncategorised/174-2016-2021-tip-document).

CDTC also modeled vehicular traffic volumes for year 2030 conditions and found that although volumes will be higher, the conclusions drawn from Exhibit 8-1 will remain true: the peak hour volumes in the BQC-to-Clinton Avenue section will be within the capacity of a six- lane arterial (three lanes in each direction) in 2030.

9-2 Physical Challenges

9-2.1 Rail Line

As described in Section 4-1.3, the existing CP Rail line is nestled between the northbound and southbound roadways of I-787 in Albany and is a key part of the freight transportation network for local, regional and international goods movement. The rail operations along the waterfront in this area predates the construction of I-787 and were integrated into the design of the interstate to preserve this important freight corridor. The accommodation for continued freight service to the Port of Albany and other CP Rail clients within the study area corridor is a critical consideration to be addressed to support a potential long-term transformation of the roadway facility.

A first step in understanding these possibilities is to identify the general feasibility of options to modify the railroad facilities within the critical segment between the I-787 DMB/SMX interchange and the CSX Rail crossing of the CP Rail line north of Clinton Avenue (see exhibit at right). In this context, the rail line feasibility assessment considered constraints and design considerations for the potential modification of the railroad track alignment. This evaluation considered the following options:

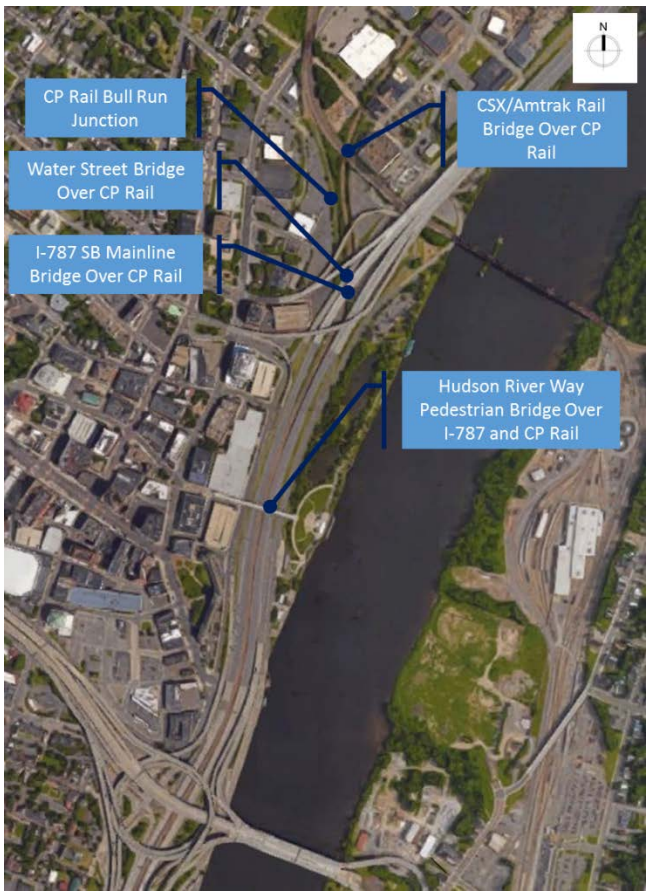
1. Raise the railroad track structure over the proposed at-grade roadways;
2. Lower the railroad track structure under the proposed at-grade roadways;
3. Install new at-grade railroad crossings;
4. Relocate the railroad line and abandon the existing track infrastructure.

The evaluation of these options primarily focused on the physical opportunities and constraints for vertical realignment of the rail lines within the corridor to achieve vertical separation between the tracks and the potential roadway crossings associated with the at-grade roadway concept. Rail facilities require long distances to change elevation, which is a particular challenge between existing facilities.

It is noted that a variety of other considerations will ultimately factor in the determination of feasibility and identification of a preferred alternative for the corridor. Among them is consideration of construction staging and sequencing to maintain rail freight service.

Rail Option 1: Raise the railroad track structure over the proposed at-grade roadways.

The existing railroad tracks cross over the grade-level street network at two locations: over the BQC connector and over Broadway near Steamboat Square (see Section 4-1.3). Rail Option 1 would take advantage of these existing conditions; maintains these two existing Railroad-over-Roadway grade-separated crossings with the converted I-787 roadway lowered to match existing grade-level streets. North of the BQC connector, the rail line would need to be raised to provide the necessary separation at Orange Street for the rail to be carried over a new at-grade connection of Orange Street with a reconfigured at-grade I-787 roadway.



The primary challenge for this rail option is to raise the rail line high enough at Orange Street to achieve the necessary clearance and then make the transition to connect to the existing track on either side while also maintaining the necessary clearances with other bridges. In particular, the following bridge structures and track elements affect the alignment opportunities of this option:

- I-787 southbound mainline bridge over CP Rail
- Water Street bridge over CP Rail
- Hudson River Way Pedestrian Bridge over I-787 and CP Rail
- CP Rail Bull Run Junction (with CSX)
- CSX Rail Bridge over CP Rail

A planning-level evaluation of these conditions indicate that the alignment option to raise the CP Rail line would likely involve modification/reconstruction of some or all of these structures. As a result, additional considerations would need to be made to alter additional roadway, bridge and rail infrastructure, and to extend the limits of work along the CP Rail line and potentially along the CSX/Amtrak line. See Exhibit E-4 in Appendix E. An elevated rail line could also have more of a visual impact in this area of the corridor than the current roadway/rail infrastructure.

Rail Option 2: Lower the railroad track structure under the proposed at-grade roadways.

Rail Option 2 would involve lowering the existing railroad facilities to be below the roadway grade from BQC to Orange Street, with new rail line underpasses at the BQC and Orange Street crossings. Drainage/dewatering, flood protection, retaining walls, and tunneling considerations for a depressed rail line would be a significant cost consideration for this option because the rail line elevation would be lower than the sea level elevation of the Hudson River.

The rail alignment design challenges for this option again relate to transitioning between the below-grade segment and the adjacent track on either side. While this option does not have the same clearance conflicts with existing bridge structures as in Rail Option 1, there are other design considerations to be addressed as follows:

- The transition from below grade at Orange Street will involve reconstruction/reconfiguration of the Bull Run Junction to the north, potentially including modifications to the CSX/Amtrak line, because of the long distances required for rail facilities to achieve elevation changes.
- The transition from below grade at BQC south to the Port of Albany would involve removing the existing grade-separated rail crossing (rail over roadway) at Broadway near Steamboat Square, and either closing the connection of Broadway to Quay Street at Steamboat Square or creating a new at-grade highway/rail crossing (See also Rail Option 3 discussion of the challenges related to at-grade highway/rail crossings).

See Exhibit E-5 in Appendix E for an illustration of this concept.

This option will not have the same adverse visual impact as the elevated rail option because the rail infrastructure would be primarily below grade, although considerations for features to address issues such as flood protection, and public access restriction could have visual impact.

Rail Option 3: At-grade railroad crossings

This option involves modifying the rail line alignment to be at-grade and creating at-grade rail/roadway crossings at Orange Street and at the BQC. Creating an at-grade crossing at the BQC would require lowering the rail line as it leaves the Port of Albany, which would involve converting the grade-separated crossing at Broadway near Steamboat Square to an at-grade intersection. Therefore, in this option, there would be three new at-grade rail-roadway crossings created. Another possible option would be a hybrid solution, maintaining the existing grade-separated crossings at BQC and at Steamboat Square, and designing the crossing at Orange Street as an at-grade crossing. The impact on traffic operations due to trains blocking traffic at the at-grade intersections for train car storage/staging and switching operations along this segment of the rail line (in addition to trains moving in/out of the Port) would also need to be considered as part of this option.

Current Federal Railroad Administration (FRA), NYSDOT and railroad industry policy encourages the removal of at-grade rail crossings throughout the rail network. Converting existing grade-separated crossings to at-grade crossings, or the creation of a new at-grade crossing is a challenge. It would be difficult to gain the support of the regulatory agencies and railroad owner for new at-grade crossings, especially considering the urban context of the corridor.

Changes in railroad operations that would limit railroad access to the at-grade roadway area during periods of peak vehicle and pedestrian traffic should be considered. Examples include prohibiting storage of rail cars or movement of trains during the morning and evening peak periods.

The visual impact of physical barriers along the rail line that may be needed in this option to prevent public access onto the rail right-of-way would also need to be considered.

Rail Option 4: Relocate the railroad

This option involves removing the existing rail line in the corridor and relocating CP rail service to the Port either via a new route or potentially through shared use of facilities with CSX. A new freight rail line route location would need to be identified and studied considering possible property acquisitions to allow the existing railroad operations to be relocated while maintaining unimpeded rail service and current rail connections to Port of Albany, Bull Run junction, Kenwood Yard and Colonie Yard. This option would also need to consider the impact to other rail customers along the CP Rail corridor.

Conclusion

Based on this assessment of options to accommodate CP Rail, it is concluded that the options to change the vertical alignment of the rail to provide grade-separated crossings (either over or under with a reconfigured I-787 roadway) will likely impact other existing transportation infrastructure. The at-grade crossing option is physically feasible to construct. The challenge lies in the process to obtain the necessary approvals for new at-grade crossings addressing their operational and safety considerations. Visual access to the waterfront may also not be significantly improved because of the elevated trains in Rail Option 1 or because of barrier devices that may be needed for public safety and/or flood management in Rail Options 2 or 3.

9-2.2 Connectivity to Other Facilities

a. Interchanges

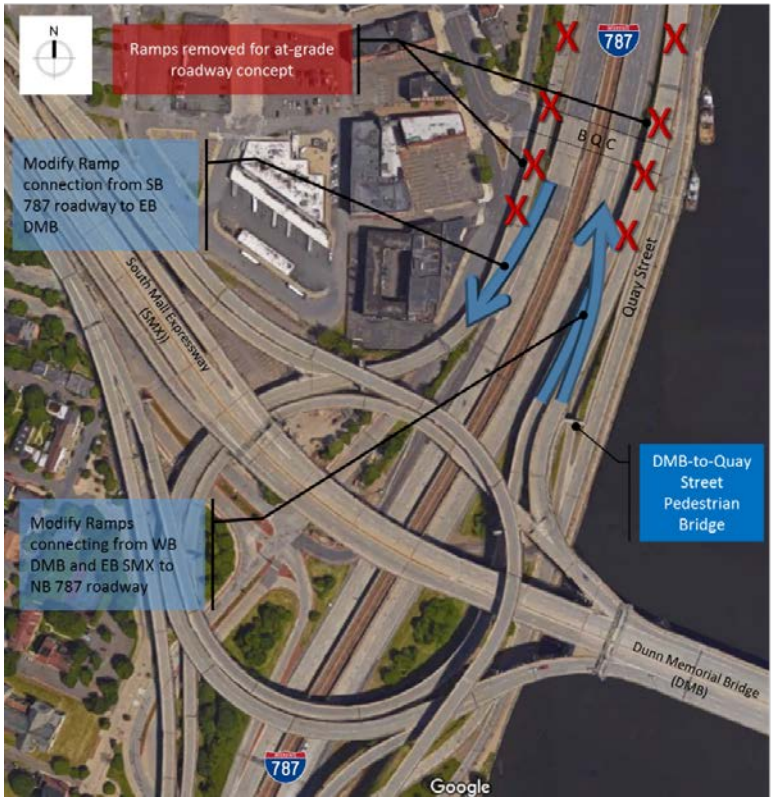
I-787 has interchanges with four other major roads within the study area, all of which also feature a Hudson River crossing directly to the east. If long-term initiatives are pursued to transform all or parts of the I-787 corridor beyond the ½ -mile segment in downtown Albany, these interchanges would require significant planning and consideration of staging to ensure traffic on both roads at each interchange is minimally affected during construction. The strategies for interchange conversions discussed in Section 7-1 would also need to consider options/impacts for integration with such a long-term initiative. A list of these major interchanges along I-787 within the study area are presented in Table 9-1.

A key element for considering the feasibility of transforming I-787 to an at-grade roadway between BQC and Clinton Avenue is maintaining access to the Dunn Memorial Bridge (DMB) and the South Mall Expressway (SMX). If these accesses are maintained, the connecting ramps would need to be

reconstructed to tie in to the new configuration of I-787. This reconfiguration would involve the following ramps:

- DMB westbound ramp to I-787 northbound
- SMX eastbound ramp to I-787 northbound
- I-787 southbound ramp to DMB/SMX (eastbound & westbound)

A primary feasibility consideration for maintaining these connections is the elevation differences and distance between the interchange and an at-grade intersection at the BQC, which together affect the grades of the ramps, and possible tie-in locations.



Planning level investigations of these conditions show that the ramp grades would exceed the maximum acceptable criteria for design if the ramps are tied in to I-787 south of a BQC/I-787 at-grade intersection, even considering lower design speed conditions. Another factor to be considered is the effect on traffic operations and safety of shorter merging and weaving distances where the ramps converge or diverge. These considerations of grade and merging and weaving may require that the ramps continue to be extended north beyond the BQC, which would mean that structures would need to be added to provide ramp overpasses at the BQC/I-787 intersection. These analyses are described in more detail in Appendix E.

Table 9-1: Major I-787 Interchanges

Major Road Crossed	Lanes of Traffic	Associated Hudson River Crossing	Notable Destinations in Vicinity
Route 7	I-787: 6 NY Route 7: 7	Collar City Bridge	RPI, downtown Troy
Route 378	I-787: 7 NY Route 378: 6	Troy-Menands Bridge	HVCC
I-90	I-787: 4 I-90: 4	Patroon Island Bridge	Albany Memorial Hospital
Route 20/Route 9	I-787: 6 Route 20/9: 6	Dunn Memorial Bridge	Empire State Plaza, Times Union Center, Albany Convention Center, downtown Rensselaer, Rensselaer Train Station

b. Bridges over Water

The bridges listed in Table 9-1 associated with Hudson River Crossings have the potential to be impacted by major conversions of adjacent interchanges along the I-787 corridor, such as those described in Section 7-1, or with a transformation of the character and function of I-787. Considerations such as ramp connections and vertical clearances may affect the primary structure, such as the Troy-Menands Bridge, which is immediately adjacent to and interconnected with the I-787/NY 378 interchange. Construction over a major waterway like the Hudson River presents an additional set of environmental considerations that would need to be addressed. The primary state agencies regulating Hudson River water crossing projects are the NYSDEC, and the NYSDOS. The U.S. Army Corps of Engineers, the U.S Coast Guard and NYSDEC would be responsible for issuing various permits for the impact on the waterway. The NYSDOS is responsible for ensuring that projects within the "coastal zone," which starts on the Hudson River south of the Federal dam in Troy, are consistent with the State's Coastal Zone Management Plan and the U.S. Coast Guard (USCG) Bridge Guide Clearances.

The USCG Bridge Guide Clearances are defined as the navigational clearances established by the Coast Guard for a particular navigable water of the United States that will need to be given consideration for providing the reasonable needs of navigation for a particular location during the permitting process. Depending on the proposed location, departure from the clearances may be justified as the guides are not intended to be regulatory in nature or to form a legal basis for approving or denying a bridge permit application. The Guide Clearances document states that for the Hudson River from Albany north to the Federal dam in Troy, the vertical clearance guidance is 135 feet for a Fixed bridge type, and a Vertical Lift, Bascule, and Swing Span bridge type in the open position, while the vertical clearance is 40 feet in the closed position. The reference plane is Mean High Water at the 8-foot Stage located at the Albany gage. The horizontal clearance guidance varies based on the bridge type.[8] The NYSDOT Bridge Inventory and Inspection System database states the Dunn Memorial Bridge's maximum navigation vertical clearance is 60 feet and the horizontal clearance is 300 feet.

9-3 Pedestrian/Bicyclist Access

The at-grade scenario will create large intersections for pedestrians to cross to access the waterfront from downtown (at BQC and at Orange Street) because of the six travel lanes for through traffic plus a potential need for separated bicycle facilities, and supplemental turning lanes at the signalized intersections or median treatments. These intersections will create larger areas of conflict potential between vehicle traffic and pedestrian/bicyclist traffic than exists with the current grade separation of I-787. These pedestrian conflict and safety issues should be discussed in the context of similarly sized facilities with comparable traffic volumes within the region such as along NY 787 in Cohoes and along Central Avenue (NY 5) in Colonie.

Depending on the details determined during a future feasibility/scoping effort of the roadway and ramp network modifications, the pedestrian connection and bridge between the DMB and Quay Street may also need to be modified/replaced.

[8] http://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Marine-Transportation-Systems-CG-5PW/Office-of-Bridge-Programs/Bridge-Guide-Clearances/

Considerations of arterial function and access management for the at-grade I-787 roadway concept needs to consider the number and quality of access opportunities for pedestrians and bicycles, particularly when considering the other strategies that have been identified to improve these connections as described in Sections 6 and 7.

9-4 Jurisdictional

9-4.1 Interstate De-designation

Pursuing a transformational change to I-787 would involve considerations of the legal and procedural requirements to potentially de-designate or remove all or part of I-787 from the Interstate System. The basic procedures are covered within federal law (23 CFR 470 and 23 CFR 658.11), beginning with a formal request by the State Department of Transportation followed by a comprehensive impact assessment under the National Environmental Policy Act (NEPA). The FHWA, after national public review, would have final approval on a de-designation, as part of the NEPA Record of Decision for an EIS. At the State level, the New York State Legislature would have to enact an amendment to Section 349 of the State Highway Law. Under current federal highway funding programs, the revised highway could remain a part of the National Highway System and remain eligible for National Highway Performance Program (NHPP) funds. The funding ratio for improvements would change from a 10 percent to 20 percent State share. The value of any real property originally purchased with Interstate funds and disposed (sold, transferred, abandoned) would have to be reimbursed to the federal government at the appraised market value.

9-4.2 Operations/Maintenance

As noted in Section 4-1, NYSDOT is currently responsible for the operations and maintenance of the mainline roadways, ramps and bridges of the I-787 interstate system. NYSDOT is also responsible for maintenance of NY 32 in Menands and the Town of Colonie. The City of Albany is responsible for operations and maintenance of the local street network within the City of Albany and parts of the I-787 frontage road network, including Water Street, Quay Street, and the BQC.

The potential for transformational changes to the I-787 corridor will likely impact the responsibilities for operations and maintenance, depending on the specific details of any design that would emerge as a candidate to be a preferred alternative.

9-5 Environmental

9-5.1 Floodplains/Climate Change and Wetlands

As noted in Section 4.4.2 nearly the entire study area is located in the FEMA 100-year floodplain (Exhibits 4-7, 4-8 and 4-9). Flooding is not generally an issue for the I-787 mainline because it is elevated above the surrounding terrain. However, the frontage roads and on-off ramp connections to local at-grade roadways have the potential to be impacted by flooding. The removal of the elevated interstate and development of an at-grade roadway including at-grade intersections using an alignment similar to the existing would result in a mainline road section that is also within the 100-year floodplain, and consequently would be at greater risk for flooding. Potential development/redevelopment of lands that may become available by reducing the transportation infrastructure would also be subject to these

same flooding considerations, and would be subject to the regulations and requirements set forth by FEMA, the NYSDEC and New York State Building Code for all structures.

Exhibit 9-2 provides a visual illustration of the relationship of the transportation infrastructure to the existing 100-year FEMA floodplain levels at five representative locations within the study area, and also shows the flood impacts that occurred as a result of Hurricane Irene (2011).

The potential for flooding within the floodplain would also be impacted by sea level rise associated with climate change, particularly in areas located adjacent to the Hudson River and its floodplain. Projections for future sea level rise along the Hudson River and elsewhere in New York State are provided in recent reports from the New York State Task Force on Sea Level Rise and the NYS2100 Commission. Projected sea level rise predictions for the Hudson River are shown below:

Table 9-2: Projected Sea Level Rise in New York[9]

Lower Hudson Valley & Long Island	2020s	2050s	2080s
Sea level rise	2-5 inches	7-12 inches	12-23 inches
Sea level rise – rapid ice-melt scenario	5-10 inches	19-29 inches	41-55 inches
Mid-Hudson Valley & Capital Region	2020s	2050s	2080s
Sea level rise	1-4 inches	5-9 inches	8-18 inches
Sea level rise – rapid ice-melt scenario	4-9 inches	17-26 inches	37-50 inches

Consideration of existing and future floodplain issues could impact the feasibility of specific transportation infrastructure concepts and/or design features for a long-term transformation of the corridor, impacting construction costs, operations/maintenance costs, and transportation resiliency.

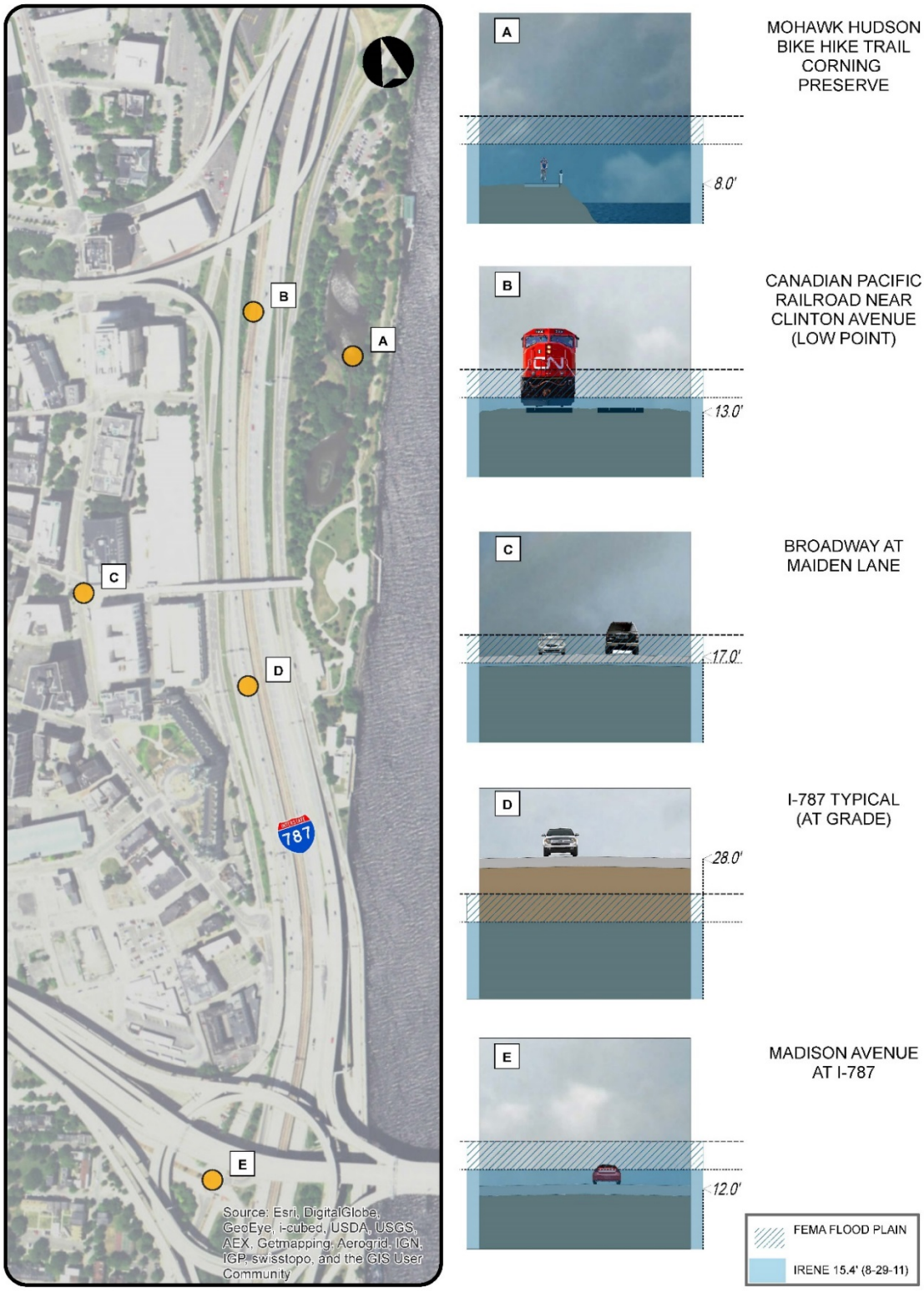
Wetlands represent another key resource related to managing the potential impacts of flooding. Wetlands act as a type of natural infrastructure that stores and absorbs water. The existing I-787 corridor traverses or is adjacent to a number of NYSDEC and USFWS NWI mapped wetlands. If an at-grade roadway is implemented within the FEMA 100-year floodplain, it will be necessary to consider potential impacts to wetlands during design and permitting. Potential permits from the US Army Corp of Engineers (USACE) and the New York State Department of Environmental Conservation (NYSDEC) include:

- USACE Section 404 Nationwide Permit or Individual Permit
- NYSDEC Article 15 Protection of Waters
- NYSDEC Article 24 Freshwater Wetlands Permit
- NYSDEC Article 25 Tidal Wetlands Permit
- NYSDEC Section 401 Water Quality Certification

Any redesign of infrastructure in this area should consider green infrastructure options and any land use proposals must consider the significant challenge and expense of development in a flood plain.

[9] NYSERDA ClimAID Team. 2010. Integrated Assessment for Effective Climate-change Adaptation Strategies in New York State. C. Rosenzweig, W. Solecki, A. DeGaetano, M. O'Grady, S. Hassol, P. Grabhorn, Eds. New York State Energy Research and Development Authority, 17 Columbia Circle, Albany, NY 12203.

Exhibit 9-2: Illustrated Sea Level Impact Potential Based on Irene



9-6 Financial

9-6.1 Life-Cycle Cost Evaluation

Life-cycle cost evaluations were conducted for this study to identify the potential timeframes and financial considerations for long-term maintenance of the existing I-787 infrastructure. These evaluations considered both the pavement and bridge components of the facility.

A. Pavement

Methodology

The evaluation of the pavement elements of the I-787 infrastructure included compilation and review of available condition assessment data dating back to the original construction of the facility. There was no additional field testing performed for this study. The ratings mean and methods for pavement condition originally involved windshield surveys using a scale of one-to-ten (very poor condition to excellent condition) for pavement surface. Later, distress indicators were also included in the condition review, and most recently, International Roughness Index (IRI) data has been incorporated into the evaluation methodology to assess pavements uniformly across national boundaries. The IRI scale range is from 0 to over 300 inches per mile; the higher the number, the rougher the pavement. Generally, IRI scores above 170 are considered a trigger for remedial action. Still other data is either being collected, evaluated or tested including numbers of bumps, rutting, more detailed crack information and pavement strengths.

All of these data methods are primarily intended to be evaluated on a network, snapshot basis, not necessarily for a long-term extrapolation or prescriptive view of what will happen to a pavement section over decades. Complicating the predictive effort for this study are major advances in pavement materials and design strategies initiated over the past two decades.

Maintenance History

The inventory and conditions of pavement on I-787 within the study area are summarized in Table 9-3. This information is summarized from the 2015 New York State Department of Transportation Pavement Management inventory. The major restorative pavement projects that have taken place over the last 20 years are also summarized in Table 9-4.

I-787: New York State Thruway Exit 23 to the South Mall Expressway (Table 9-3; Sections 1-3)

The initial restorative treatments for deteriorated concrete pavements were to provide some level of joint and spall repair and apply overlays of asphalt. In the early 1990's, NYSDOT evaluated the I-787 pavement south of the DMB/SMX interchange and determined that a concrete repair methodology (CPR) might be effective as an alternative to an asphalt overlay and would avoid the need for costly profile changes to the median. This was then accomplished by doing joint repairs, full depth spall repairs and some full slab replacements. This project extended the acceptable riding surface of the original pavement more than 10 years. However, more deterioration on this section of I-787 followed to the extent that a CPR strategy was no

No major maintenance work is anticipated over the next 20 years for the section of I-787 between the Thruway Exit 23 and the SMX as a result of recent pavement and bridge work.

longer cost effective. The number of full slab replacements needed, among some other non-pavement factors led to a decision to essentially reconstruct some of this pavement in conjunction with an adjacent major bridge rehabilitation, which began in 2012 and was ongoing in the 2015/2016 period of review conducted for this study.

This recent work used the latest design and construction technologies for long-lived rigid pavement, including modified concrete mixes, doweled joints, shorter slabs, better joint sealing material and diamond grinding for smoothness. Based on sampling at the slab removals, it has been found that the 1960s subbase is in generally as-built (good) condition and was reusable. The remainder of the pavement not reconstructed in this section, mostly to the south of the study area boundaries, will receive an asphalt overlay. Given all this, it is assumed that no major maintenance work would be necessary on this section of I-787 over the next 20 years.

I-787: South Mall Expressway to Route 7 (Table 9-3; Sections 4-8)

The I-787 pavement in the study area north of the DMB/SMX interchange is categorized as "overlay"; that is, the rigid pavement lies beneath an asphalt overlay, essentially acting as part of the base course. The result is potentially significant added longevity to the pavement ride-ability without full reconstruction. Pavement between the South Mall Expressway and NY Route 378 (Table 9-3; Sections 4-6) has received two overlays, first in the early 1990s and then in 2006. The original overlay south of Route NY 378 was preceded by cutting out concrete on each side of the deteriorated joints and filling the gaps with asphalt. Some spalls were repaired with partial or full depth reconstruction. However, often this particular method of repair at the joints led to the asphalt overlay to "bump up" from the adjacent concrete slabs, which was moving under temperature changes. This requires regular "spot" milling to maintain ride-ability at these problem locations. Selective work south of NY Route 378, including areas of concrete repairs followed by selective mill and fill of the pavement surface, was also completed as part of the 2006 NYSDOT remedial contract no. D260218 to rehabilitate pavement on Sections 7 and 8 (Table 9-3). The pavement from the SMX to NY Route 378 may need additional work beyond repeated overlays and crack sealing within the 20-year period.

Maintenance beyond overlays and crack sealing may be needed on the section from SMX to NY 378, but maintenance north of NY 378 is anticipated to only be remedial over the next 20 years.

Pavement north of NY Route 378 (Table 9-3; Sections 7 and 8) was overlaid in 2006 and 2007 with varied repairs made to the concrete and its base prior to the overlay. More recently, and as included in this contract, the NYSDOT decided to use a more robust technique to make these joint repairs and to address intermediate slab cracking with full depth concrete before the overlay. It is believed that these repairs were more effective long term and that any weak areas on the existing pavement were addressed such that the pavement is in a preservation eligible state for a 20-year period. This would mean that remedial work over the next 20 years is anticipated to be limited to mill and overlays of the asphalt without requiring any significant work underneath, especially if followed by interim crack and joint sealing.

Current Conditions and Life Cycle Assessment

As described previously, the section of I-787 from New York State Thruway Interchange 23 to the South Mall Expressway was partly reconstructed (new concrete pavement using latest PCC design parameters). The pavement section of I-787 under the SMX received rehabilitation using overlays in 2016. This recent work should negate the need for any major expenditure along this section of I-787 over the next 20 years (Table 9-3: Sections 1-3), with the exception that the short overlay section may have to be addressed again by overlay of repair of underlying joints.

The pavement surfaces on the sections of I-787 north of the DMB/SMX interchange were generally rated 'Fair' (7 out of 10) in 2014, with evidence of increased alligator cracking of the asphalt overlays (Table 9-3; Sections 4-8). The IRI data varies, but generally indicates a need for remedial action to restore the riding surface in the section between the DMB/SMX interchange and NY Route 378 (Table 9-3; Sections 4-6). The anticipated 5-year maintenance strategy for this section of the corridor is to provide a mill and fill of at least the wearing surface and allowance for isolated underlying joint or crack repairs. The sections north of NY Route 378 are expected to need a similar mill and fill probably to the depth of the existing top course. The longer term (20+ years) outlook for the sections between the SMX and NY Route 378 overlay is expected to require some slab replacements and at least one more mill and fill overlay operation. The roadway section north of NY Route 378 is expected to be addressed with two more mill and fills of the top course at 10-year intervals, with minimal repairs to underlying concrete pavement.

The total cost of reconstruction, when it comes due, is highly dependent on a number of factors. Assuming no major alignment shifts or design changes that may be associated with environmental factors such as climate change, the significant factors in the evaluation equation include the following:

1. Materials: Asphalt vs. New Concrete
2. Subbase Preservation: Based on the reconstruction south of the SMX, it is conceivable that much of the existing granular subbase could be retained.
3. Storm water Management: One approach is to accommodate existing water flows while maintaining current outflows (primarily to the Hudson River via corrugated metal cross culverts). Possible upgrades include redirecting storm flows to treatment practices and revising the highway profile and drainage to accommodate predicted climate change effects. Pump stations may need replacement.
4. Traffic Operations and ITS: Could include more sensory hardware (e.g.: weather sensors, Bluetooth, etc.), ramp metering and upgraded signing (e.g.: VMS for variable speed limits).
5. Median Barrier Design: Potential to replace steel median guide rail sections with concrete median barrier.
6. Noise Barriers: Current NYS policy is to provide noise mitigation only when adding new through traffic lanes or with significant change to the roadway profile.
7. Preferential-use lanes: HOV lanes, transit lanes or other future transit options.

After the review of template cost data, the present-day cost for full reconstruction on the existing alignment with no capacity improvements would be in the range of $150M-$200M (in 2015 dollars). This does not include replacing existing or adding new structures or interchange work, or any relocation of the existing roadway footprint. The cost is variable depending on the pavement treatment(s) chosen, which would be subject to more detailed analysis beyond the scope of this study.

A potential lower-cost approach for long-term maintenance, to defer the eventual reconstruction for the sections north of the SMX, centers on processes to either crack and (re)seat or rubblize the existing concrete pavement and follow with a heavy asphalt overlay. This requires the subbase to be salvageable or retainable with minimal repairs. This is a means for a longer-term rehabilitation to extend the service life and further defer the need for full reconstruction, if performed successfully. Based on a unit per lane mile equivalent cost, the cost estimate range for this strategy would be $75M to $90M (2015 dollars) for the length (mainline), but not including costs for additional interchange work and the possible operational and environmental enhancements as described above.

From an economic analysis standpoint, the strategy of preserving the existing infrastructure for 20 years is practical. The present worth costs for repeated preservation treatments outlined above are insignificant in comparison with the probable reconstruction cost. Other factors such as storm water and climate change accommodations or safety might be possible driving factors to a different strategy; but, as of now, cannot be considered overriding causes for a more aggressive approach. Based on unit costs from equivalent projects, the current cost for these preservation overlays would be in the range of $30M to $40M for every 20-year preservation cycle (the entire length of the study area).

Table 9-3: Pavement Inventory and Condition

Section	Begins	Ends	Begin Route Marker	End Route Marker	Section Length (mi)	Lane-Miles	State Highway Nos.	Pavement Type	Number of Travel Lanes	Lane Width (feet)	Shoulder Width (ft)	2014 Weighted Surface Score	2013 Weighted IRI	2014 Highest (worst) Primary Distress
1	NYS Thruway Interchange 23	Route 32 Viaduct	787I11011002	787I11011011	1.01	5.03	62-3	Concrete	varies 4-7	12	10	6.4	UC	Spalling/Faulting-Under Constr.
2	Route 32 Viaduct	South Mall Expressway	787I11011011	787I11011018	0.58	3.6	70-4	Concrete	6	12	10	5.5	UC	Spalling/Faulting-Under Constr.
3	South Mall Expressway	South Mall Expressway	787I11011018	787I11011026	0.04	2.35	69-4	Concrete	6	12	10	5.0	228	Spalling/Faulting-Under Constr.
4	South Mall Expressway	I-90 Patroon Interchange	787I11011026	787I11011035	1.29	8.41	69-4	Overlay	varies 6-8	12	10	7.0	121	General alligatoring
5	I-90 Patroon Interchange	I-90 Patroon Interchange	787I11011035	787I11012000	0.98	5.08	65-11, 65-12, 66-11	Overlay	varies 4-6	12	10	7.0	87	General alligatoring
6	I90 Patroon Interchange to Route 378	Route 378	78711012000	787I11012022	2.12	13.48	65-18	Overlay	6	12	10	7.0	83	General alligatoring
7	Route 378	Watervliet/ Colonie Line	787I11012022	787I11013000	0.35	2.1	65-18	Overlay	6	12	10	7.0	83	General alligatoring
8	Watervliet/ Colonie Line	NY Route 7	787I11013000	787I11014014	2.56	12.82	65-13, 68-3p, 69-26, 69-6	Overlay	6	12	10	7.0	79	General alligatoring

Notes: IRI values greater than 170 are generally indicative of unacceptable riding conditions.

Lane miles do not include ramps.

2014 I787 IRI data were found unreliable, so 2013 data is used here.

UC= under construction

Table 9-4: I-787 Restorative Contracts Summary

Contract Number	Limits	General Work Description	Overlay Composition	Work Completed
D253896	South Mall Expressway (SMX) t NY Route 378	Reseal Portland Cement Concrete (PCC) joints, spall repairs, Asphalt Concrete multicourse overlay	1" TL,1.5" Base, 1.5" Top	12/18/1992
D260218	South Mall Expressway (SMX) to Route NY 378	Spall and Joint Repairs, Mill and Overlay	50 mm new top surface	12/12/2006
D258988	NY Route 378 to NY Route 7	Spall and Joint Repairs, Asphalt Concrete multicourse Overlay	25mmTL, 50MM base, 40MM top	3/16/2004
D258988	US Route 9W to South Mall Expressway (SMX)	Concrete Pavement Repair for selected slabs	N/A	3/16/2004
D258988	South Mall Expressway (SMX) t NY Route 378	Selective milling repair	N/A	3/16/2004
D262266	NYSTA Exit 23 & US Route 9W to NY Route 5 Overpass	Concrete Pavement repair	19 mm F9 binder, 9.5 F2 top course	On Going

B. Bridges

a. Methodology and Analysis

An in-depth analysis was performed with the goal of determining the work strategies and costs required to bring the bridges in the study area into a state of good repair. In developing the overall worksheet summarizing the bridge data, work strategies, and replacement timeframe for the study, it was assumed that the minimum practical time for accomplishing the necessary work would be within five years of the analysis, which occurred in 2015.

The methodology used to establish structure work strategies, timeframes for maintenance, and replacement and consequently the associated costs for the I-787 corridor study began with a review of the documentation supplied by NYSDOT. This consisted of the latest available biennial bridge inspection reports from the 2012-2013 inspection cycle and the record plans of the bridges. Inspection reports were available for most of the structures in the study corridor. Four of the remaining structures carried railroads for which no inspection reports were available. One structure is classified as a large culvert and no bridge inspection report was available. Field visits were completed to these five structures to ascertain condition and recommend probable work needed.

NYSDOT provided outputs for 56 bridges identified within the study area using their Bridge Needs Tool software which performed the following functions:

- Identify several possible work strategies for individual bridges and quantify work on a program level.
- Predict future bridge condition ratings based on element deterioration rates and planned work strategies.

The NYSDOT Bridge Needs Tool identifies several possible work strategies depending on the condition of the bridge (see inset).

NYSDOT Bridge Work Strategies

- Replacement
- Major rehabilitation
- Deck replacement
- Minor rehabilitation
- Maintenance project
- Vertical down
- Painting
- Do nothing

Costs for each of the strategies depend on the bridge type, and historical data for similar work performed under previous NYSDOT construction contracts. The costs are based on a square foot of bridge deck area.

The inspection reports and field visits were reviewed by a senior bridge engineer to identify key issues and work needed. For the purposes of this study, these key issues and work needed were identified on span by span basis for each bridge to bring it to a "state of good repair" which is defined as functioning as designed and given a condition rating of 5 or higher on NYSDOT's bridge inspection scale of 1 to 7. This information has been documented in spreadsheets made for each bridge and can be found in Appendix B. Currently, approximately 35% of the bridges for which condition ratings are available are identified as being in a "state of good repair". This assumes that all the railroad bridges for which detailed inspection information was not available will require some sort of repair beyond general maintenance.

Using the identified key issues and work needed for each span, the most appropriate work strategy for each bridge was selected and included in the spreadsheet. The Bridge Needs Tool was also run to produce a recommended work strategy for each bridge and was compared to the work strategy recommended by the senior bridge engineer. For many bridges there was agreement, for others there was variance. For those bridges where a variance occurred, the bridge engineer reviewed the recommended work strategy. In most cases the bridge engineer's work strategy was retained and used for this study because of their reliance on the direct evaluation of the bridge inspection reports.

The unit costs for the work strategies in the Bridge Needs Tool were reviewed for appropriateness in the study. Consideration was given to the particular characteristics of the bridges, and potential construction accessibility and work zone traffic control needed in the corridor. From this review, adjustments were made to the square-foot unit costs to make them more consistent and applicable to the bridges contained in the study.

Table 9-5: Interchange Bridge Summary

Exit	Segment	Number of Bridges	Total Deck Area (square feet)	Average 5-year Work Strategy
9	Junction NY Route 7 (to Northway and Troy)	4	44,000	Minor Rehabilitation
7	Junction NY Route 378 (Menands, to Colonie and Troy)	3	25,000	Minor Rehabilitation
5	Junction I-90	6	74,000	Nothing
4A/4B	Water Street/Colonie Street and Clinton Avenue (Albany)	12	446,000	Minor Rehabilitation
3A/3B	US Route 9/20, Empire Plaza, and Port of Albany (Albany and Rensselaer)	20	980,000	Minor Rehabilitation

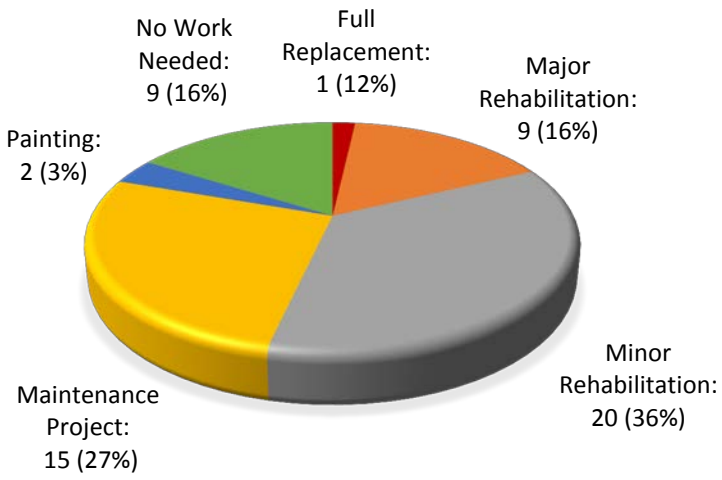
Further evaluation of the bridges should be done with consideration to the interchange they are associated with. Five primary interchanges have been identified in which work conducted on one bridge could have a significant effect on the functionality of the other bridges within that interchange. An evaluation of the entire interchange should be conducted in the event of any future work or reconfiguration to one of the bridges located within it.

The US Route 9/20, Empire Plaza, and Port or Albany (Exits 3A & 3B) interchange has the greatest impact to the redevelopment of the I-787/Hudson Waterfront Corridor. The bridges associated with this interchange start with the two bridges carrying I-787 over multiple streets just north of the ramps for Exit 2 and extend to the north just south of the Corning Preserve. This is the largest interchange in the study area with the most bridges and greatest square footage of deck area, more than double the square footage of the next largest interchange. Twenty bridges are associated with this interchange including two railroad bridges that run parallel to I-787 between the northbound and southbound travel lanes.

An evaluation for each bridge in this interchange should be conducted to assess how future work, closure, or reconfiguration of that bridge would affect the entire interchange. From this evaluation, various scenarios can be developed to assist in the decision-making process on whether future funds should be expended to conduct rehabilitations for the various bridges or to close the bridge (or system of bridges).

Appendix E, Table E-1 reports the key issues that were identified by the senior bridge engineer, the recommended work strategy category, the corresponding unit cost per square foot of deck area based on bridge type, and the 5-year cost to perform the recommended work for the "State of Good Repair" scenario. Exhibit 9-3: Bridge Preservation Strategy shows the various recommended preservation work strategies and the associated number of bridges. The one bridge that has been identified as needing full replacement is the CSX Rail bridge over the CP Rail line near Livingston Avenue in Albany. Most of the bridges requiring major rehabilitation over the 20-year planning horizon are associated with ramps at the I-787/DMB/SMX interchange. The remaining bridges in this maintenance category are: I-787 Exit 6 Connector Road over CP Rail (Menands), CSX Rail bridge over CP Rail (North Albany), and Church Street over the Beaver Relief Sewer (South Albany).

Exhibit 9-3: Bridge Preservation Strategy



The total cost for this "State of Good Repair" preservation strategy is estimated to be approximately $290M (in 2015 dollars), with an average bridge cost of $5.2M. Table 9-6 provides a summary of the cost analysis for this preservation strategy.

Table 9-6: "State of Good Repair" Cost Analysis Summary

Total Deck Area	1.89M square feet (43.4 acres)
Weighted Average Unit Cost	$152.79 per square foot
Average Per Bridge Cost	$5.2M (in 2015 dollars)
Total Cost	**$290M (in 2015 dollars)**

During the development of this study, it was determined that providing an additional analysis to estimate the cost to completely replace all bridges within the study area would be valuable. NYSDOT provided their Preliminary Bridge Cost Worksheet for estimating bridge replacement costs based on bridge type. The costs for bridge replacements were based on the shoulder break area of the bridge as opposed to the deck area. The shoulder break area is a better estimator of bridge replacement cost as it considers the height of the bridge which affects substructure costs.

The cost analysis for complete replacement of all 56 bridges in the study area is shown in Appendix E, Table E-2. This table includes the shoulder break area, the full replacement unit cost assigned to each bridge, and the final cost to fully replace each bridge (in 2015 dollars). The total cost for this "Full Replacement" strategy is estimated to be approximately $690M, with an average bridge cost of $12.3M. Table 9-7 provides a summary of the cost analysis for this full-replacement strategy.

Table 9-7: Full Replacement Cost Analysis Summary

Total Shoulder Break Area	2.11M square feet (48.4 acres)
Weighted Average Unit Cost	$326.76 per square foot
Average Per Bridge Cost	$12.3M (in 2015 dollars)
Total Cost	**$690M (in 2015 dollars)**

Decisions about the options for continued investment in the existing bridge infrastructure or diverting these funds to other types of infrastructure will need to be made in the context of this study and what is determined to be feasible and cost-beneficial in terms of long-term transformative projects for the corridor. Such changes will also require consensus on an alternative concept and confidence in the path to implementation of the concept. Because the bridges at any given interchange are interconnected and affect transportation route continuity and access, it is recommended that current maintenance programs be maintained at least for the short-term (5-year) horizon while additional monitoring,

feasibility analyses, and environmental planning occur. No replacement or major rehabilitation projects should be considered in this short-term horizon without an analysis of a removal option.

9-6.2 Funding Program Eligibility

One of the goals of a transformative project to convert all or portions of I-787 from an interstate highway to a lower-speed at-grade arterial is to reduce the long-term maintenance costs of the transportation infrastructure in the corridor. An assessment of this cost-benefit will require more detailed investigations of the feasibility and cost of alternatives under future initiatives. This assessment will also need to consider the impact of the interstate de-designation on funding eligibility for construction and maintenance. Further, it is expected that consideration will need to be given for funding for design and construction even if the project costs are comparable to savings in long term maintenance because of limited funding streams and because money will continue to be needed for ongoing maintenance of the existing infrastructure during this time.

Financing of work efforts would typically be accommodated within the current and expected finances available to the Capital District, primarily through the current federal surface transportation acts and Highway Trust Fund. Due to its inclusion on the National Highway System and National Highway Freight Network, work in the corridor benefits from access to federal funding. Based on the latest CDTC Transportation Improvement Program (TIP) and *New Visions 2040 Plan*, emphasis for directing federal funding is in concert with the short-term approaches consistent with this study's recommendation (i.e. preservation).

As illustrative of the current funding situation within the CDTC Capital Region TIP, the following table compares current (FY2017) national, State and CDTC levels of funding.

Table 9-8: Regional Funding Levels (FY2017)

Federal Program	FY 2017 Federal Authority	NYS 2017 Apportionment	CDTC TIP Budget Target/Year
National Highway Performance Program (NHPP)	$408M (unmatched)	$911M (unmatched)	$32M (matched)
Surface Transportation Block Program (STP)	$11.48M (unmatched)	$459M (unmatched)	$22M (matched)
Transportation Alternatives Program (TAP)	$835M (unmatched)	$62M (unmatched)	Competitive Statewide

Source = FHWA Authorization Tables and CDTC TIP Tables

In addition to the funding levels in the table, New York opts to reserve some of the State's federal apportionments for selected high priority projects across the State. The Capital District has or will receive some project funding under these reserves, most notably for the construction of a new interchange on I-87 near Albany International Airport.

Financing options for a long-term vision involving the potential transformation of all or portions of the roadways in the corridor is a vastly more complicated and speculative matter. The investment should be compared and evaluated against maintaining I-787 roadway, bridges and interchanges in their current configuration in a “state of good repair” as discussed in Section 9-6.1. Unless selected as a New York

State high priority project, the lowest first cost has been the primary driving policy for several decades in the highway transportation mode, and is a practical reality based on the current and expected availability of financial resources for New York State.

The need for making these major investments and their scale is generally well known on a macro level, but the source of financing those remains elusive. As seen in the above chart, the conventional financing approach through the MPO is very short of addressing an investment of this magnitude. National discussions about recapture or tax amnesty for off shore corporate profits to be channeled into infrastructure programs, as loans and/or grants could lead to significantly increased investment levels, have yet to play out. More recently, consideration is in play to use, as yet unlegislated, private tax credits as potential leverage to fund federal public infrastructure improvements. Those discussions are married with varying proposals for required and increased State and local government participation. The potential long-term investments to transform the corridor are of a magnitude that dwarfs any of the usual approaches (e.g., SEQRA GEIS "development mitigation funds" to directly gain and incorporate private investment). Other approaches such as special use taxes, tolls, etc. have not been favorably received in the past, but remain possibilities. There are also a number of legal hurdles that have to be addressed if private monies are incorporated at the large scale being considered for expanding and rebuilding public infrastructure. Suffice to say it may take a few years before a clear path to a new infrastructure funding approach is realized.

CDTC's *New Visions 2040 Plan* update continues the recommendation for "Big Idea/Big Ticket Initiatives" (a potential list of which includes this corridor), but admits the potential financing of them is unidentified. However, referring to the latest national surface transportation act called the Fix America's Surface Transportation Act (FAST Act), some federal programs exist which could be tapped to assist in the investment. The most likely would be the TIFIA program (23 USC 601-609), the National Highway Performance Program and the Transportation Alternatives Program. These programs are authorized through FFY 2020 and are continuations of similar programs in previous federal acts. Whether they continue after FFY 2020, or not, is uncertain.

The most conventional funding program available under federal auspices is the National Highway Performance Program which is, essentially, a merging of the old Interstate Resurfacing, Restoration, Rehabilitation ("RRR") and National Highway System Programs in previous federal acts. It is a continuation of the national policy to focus federal resources on the most important highways of large regional or national significance and, at the same time, improve flexibility for the States to choose their project priorities. New York would have the right to focus this funding on specific corridors, but has to do so in balance with pressing infrastructure preservation and renewal priorities across the State. For most projects involving an Interstate designated highway, the match ratio for improvement projects of any scale is a 90 percent federal share and 10 percent State share.

Enhancements in the corridor for non-motorized modes and to support public transit access would be eligible for financing within the Transportation Alternatives Program (TAP). This program, created under FAST, merged the old Transportation Enhancements Program and Safe Routes to School Programs.

National funding levels are about $850M per year and are basically a block grant to the States. In 2016, New York opted to combine a competitive solicitation for CMAQ (congestion management) and TAP projects for a total of $98M ($62M TAP) in funding being made available statewide. The projects require

a 20% match of local or State funding for the federal share. In the past, interest in this program is high and wide geographic distribution- urban, rural, suburban- has been desired by the MPOs and NYSDOT. Very large projects become difficult to accomplish under this program unless other funding for the 20% match can be identified.

The TIFIA Program is, in essence, a long term, subsidized (federal) loan program for major transportation investments. Most recently New York accessed the program to assist in financing the Tappan Zee Bridge replacement. There are a number of conditions and restrictions within the Program. Nationwide, funding levels, range from $275M to $300M per year and the largest loan generally available would be $100M per year.

Leverage in terms of grants, use of other federal highway programs or local/private funding is generally a condition of the TIFIA Program, in addition to commitment to pay the loan off. This program, or some facsimile, would appear to encompass the long-term approach that the aforementioned increased infrastructure programs might take as envisioned in Washington.

On the State side of financing, the State Dedicated Fund (SDF) was enacted in the early 90s by channeling existing highway and vehicle taxes and fees into a restricted fund outside the State's General Fund. This was intended to provide a budgetary vehicle for sufficient and stable funding to meet, at a minimum, basic highway and bridge infrastructure needs. Most recently, this fund has been essentially reserved for federal fund match and debt retirement. Increase in fuel taxes and some iteration of use taxes or fees have been considered over the years, but no action taken.

New York State’s Regional Economic Development Councils support regional economic development initiatives outlined in regional economic development plans with a competition to fund packages of projects each year through the Consolidated Funding Application (CFA) process. The CFA combines several state grant programs into one funding pot to support a wide variety of high priority economic development projects in the public and nonprofit sectors as well as the private sector. The key to getting state support for transformative projects such as those in this study is gaining the support of the Capital Region Economic Development Council. The concept of private investment in the public infrastructure was touched on above. The State has created at least one legally sustainable means for this through its State Environmental Quality Review Act (SEQRA). Nothing of the scale that would be required for this corridor has ever been accomplished. Further even large developments in New York are usually receiving State assistance through loans and grants. Also, the longer-term improvements in the corridor which may well generate new private development opportunities might not be realized for years. However, this approach should not be ruled out for some private sharing in the effort.

Additional funding sources may become viable or more practical over time as the dialog on national and state funding for infrastructure evolves. User fees, automated tolling or even taxes based on vehicle miles traveled are being explored around the country and could in the future become feasible for use in New York.

Section 10: Recommendations and Next Steps

The I-787/Hudson Waterfront Study identifies a range of short-term and long-term strategies to improve multimodal connectivity to the waterfront and to support economic development. The study created a renewed awareness and attention to turn initiatives into projects from decades of various planning studies. This resulted in several of these strategies being advanced as projects, which are programmed on CDTC's current Transportation Improvement Program (TIP) for design and/or construction (see Section 6). Other strategies that could be candidates for future TIP project solicitations are described in Section 7 and include the following:

- Broadway to Schuyler Flatts Ped/Bike Connection – Menands (see Section 7-2.1)
- North Albany Warehouse District Ped/Bike Connections – Albany (see Section 7-2.2)
- South Albany Ped/Bike Connectivity – Albany (see Section 7-2.3)
- Water Street Road Diet – Albany (see Section 7-2.4)
- 23rd Street Ped/Bike Connectivity – Watervliet/Green Island (see Section 7-2.5)
- MHBHT to Hudson Shores Park (East) – Watervliet (see Section 7-2.6)

Strategies associated with enhancing waterfront activity and creating active public use of space under the elevated sections of the transportation infrastructure may be eligible for funding via the Regional Economic Development Council Consolidated Funding Application Process. Non-transportation programs such as the NYS Office of Parks, Recreation and Historic Preservation (NYSOPRHP) Parks Program or the NYS Department of State Local Waterfront Revitalization Program are possibilities. These are matching grant programs that are awarded annually for purposes including projects to preserve, rehabilitate or restore lands, waters or structures for recreational facilities/public space.

10-1 Long-Term Strategy Recommendations

The I-787/Hudson Waterfront Study explored various considerations at a general planning level that will contribute to the feasibility for long-term, big-ticket transformative strategies related to changes to the I-787 interstate configuration. These larger, long-term strategies are described in Section 7, and include:

- Reconfiguration of interchanges (see Section 7-1.2)
- I-787 reconfiguration to a non-interstate at-grade roadway (see Section 7-1.3)
- Conversion of the South Mall Expressway from an elevated arterial to an at-grade roadway (see Section 7-1.3
- Re-establishing an Inner Harbor in the North Albany Warehouse District (see Section 7-4.2)

10-1.1 Feasibility Studies

The assessment of these long-term, big-ticket strategies identified the opportunities, challenges and considerations that would need to be addressed to move them on a path toward implementation (see Section 9). As Next Steps, additional effort needs to focus on detailed consideration of the local and regional impacts to mobility, safety and system resiliency, physical impacts, and costs to produce a system plan of action and inform the decision-making process. The process to be used in feasibility studies must be inclusive of current residents, business owners, travelers and visitors that utilize I-787 for transportation or have a direct interest in the future land use opportunities alternative designs might generate.

I-787 Reconfiguration: This study identified that there is potential to consider the reconfiguration of the segment of I-787 between Clinton Avenue and Madison Avenue from an interstate highway to an at-grade roadway. Concepts that may be feasible include conversion within the same general footprint as existing (with the train tracks separating the northbound and southbound travel lanes) or to place the at-grade roadway entirely to the west of the train tracks. This assessment represents the first of many steps needed to explore the many complex issues surrounding these concepts. The extent to which these options achieve multimodal connectivity, development or redevelopment opportunities, and waterfront access, will be affected by the results of the assessments of the CP Rail options and the DMB/SMX Interchange options, as they will impact the options for network connectivity. Detailed traffic modeling and simulation analysis is recommended to confirm the geometric requirements and operational impacts associated with this reconfiguration strategy. The feasibility of this strategy should also assess the safety considerations associated with these at-grade roadway scenarios.

CP Rail changes in operations and facility modification/relocation: The options considered to address the integration of CP Rail's facilities with a reconfiguration of I-787 or relocation presents several challenges that will require additional investigations to assess the feasibility of options, including:

- Impact/considerations for CP's alternative joint use of rail infrastructure to access the Port of Albany
- Impacts to other existing rail customers/facilities along the existing CP Rail network, including Port of Albany operations.
- Detailed assessment of physical alignment, transition limits, and conflicts with other infrastructure
- Constructability and cost
- Environmental impacts
- Coordination with CP Rail, NYSDOT, FRA and FHWA

I-787/Dunn Memorial Bridge/South Mall Expressway Interchange and South Mall Expressway At-Grade Reconfiguration: The long-term strategy for maintaining the Dunn Memorial Bridge and/or for its eventual replacement will be a major factor in identifying the opportunities, constraints and timeline for reconfiguration of the I-787/Dunn Memorial Bridge/South Mall Expressway interchange. The Dunn Memorial Bridge's current elevation limits the opportunities available for alternative designs that would continue to provide full connectivity between these three facilities. If there are future opportunities to lower the Dunn Memorial Bridge, consideration could be given to reconfigure the South Mall Expressway as an at-grade roadway, and could create an opportunity to reconfigure the interchange to a more compact urban form with less of a visual and land impact than the current design. A feasibility study to explore these options would need to more fully consider traffic operations and safety, multimodal accessibility, environmental and community impacts, constructability, and cost.

NY Route 378 Interchange Reconfigurations: The opportunities to reconfigure the interchange of NY Route 378/I-787 and NY Route 378/Broadway would typically be associated with either the need to provide capacity and/or safety enhancements or as a result of a need to reconstruct major structural elements of the interchange. These reconfigurations are anticipated to occur as part of NYSDOT's capital program. Detailed studies and design considerations would be investigated within NYSDOT's conventional process for these replacement projects.

Inner Harbor Marina: The primary investigations that would need to be accomplished from a transportation perspective is to assess the design issues associated with creating a navigational channel under the existing I-787 mainline bridges that will overpass the harbor access, and to evaluate the design feasibility related to modifying the I-787 ramps to access this development area. This strategy would also determine the needed property acquisition, environmental studies and permitting.

These feasibility studies will act as a catalyst toward implementation of the big-ticket initiatives by vetting critical design issues and having early engagement of the involved Federal, State and Local agencies and project stakeholders. With completion of these planning level feasibility studies, the second phase of the future effort would include the preparation of a Design Concept Report studying feasible and reasonable alternatives and a NEPA environmental assessment. The NEPA document will describe the project's purpose and need, evaluate the alternatives that are being considered, and analyze the environmental impacts of the alternatives. The future efforts should continue communication and coordination established with agency partners and advisors, stakeholders, and the public in this study.

10-2 Joint Agency Taskforce

Decisions made along the corridor in the next 10 to 15 years need to not only consider the Interstate Highway System but also study area features including touring routes, recreational facilities, system connectivity, and social, economic and transportation needs. The development of an implementation strategy for the long-term will also need to consider that the I-787 infrastructure will not reach the end of its serviceable and useful life all at the same time, which will add to the complexity of determining when and how to implement changes.

In order to coordinate investment decisions and to plan for future implementation of the big-ticket strategies, it is recommended that a joint agency taskforce be formed to provide proactive ongoing monitoring and strategic planning of the transportation program and to develop funding strategies for implementation. The taskforce could consist of infrastructure owners, CDTC staff and other major stakeholders. Financial support for this activity could potentially be provided by CDTC through its Unified Planning Work Program planning funds. This group should meet at least twice a year to review infrastructure data, planning infrastructure investments and other information that would impact investment decisions. Activities that should be coordinated by this taskforce include:

- Monitor bridge conditions via a bridge dashboard
- Monitor traffic volumes and flow patterns
- Monitor traffic congestion and safety
- Coordinate local and state maintenance program investments within the corridor

A guiding principle of this Joint Agency Task Force should be to consider infrastructure removal options as an alternative to bridge or ramp replacement and/or major rehabilitation. Incorporating this principle will involve longer planning lead times to assess the options prior to reaching a critical decision point within a maintenance cycle.

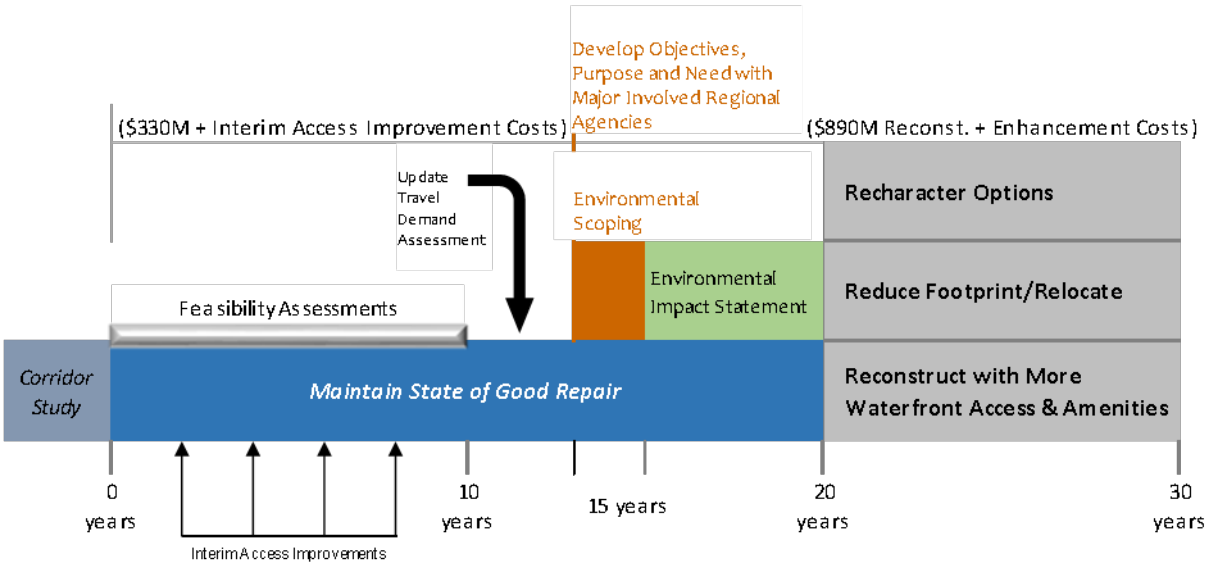
Because of the long time involved in advancing these big-ticket strategies, it is important that there be champions to assume leadership in advocating for each of the initiatives to generate community support, for finding funding strategies, and to maintain project momentum. These champions can be community or business leaders, municipal staff or agencies. There have been many champions already

represented by the Study, such as the City of Albany and the City of Watervliet who have taken leadership responsibilities to advance projects from the early study identification to TIP programming. NYSDOT has been and remains open and receptive to ideas and opportunities to enhance the multimodal nature of their infrastructure system.

10-3 Project Timeline

The key actions related to these implementation considerations are also presented in the context of the life-cycle cost considerations of the recent investments in infrastructure maintenance. As discussed in Section 9-6.1, the life-cycle cost evaluations identified the potential timeframes and financial considerations for long-term maintenance of the existing I-787 infrastructure, considering the substantial investment by NYSDOT over the past 5 years. From an economic analysis standpoint, the strategy of preservation for 20 years is practical. The total cost for maintaining "State of Good Repair" of the corridor over the next 20 years is estimated to be approximately $330M (in 2015 dollars), representing the combined maintenance of pavement and bridges in the I-787 study area. The estimated present value of the eventual cost for future reconstruction of the I-787 corridor in its present interstate configuration is estimated to be $890M (in 2015 dollars).

The timeline below represents a possible course of action and duration for Next Steps that reflects the implementation of cost-effective preservation investment strategies described in Section 9-6.1. The costs for implementation of improvement strategies are also represented in the timeline as an unquantified added cost to be spent during the period of maintaining the corridor in a "State of Good Repair".



This timeline allows for the time and effort to implement improvements, and conduct the various activities that will be necessary to accomplish the long-term strategies as the existing infrastructure nears the end of its useful service life. These activities include the detailed feasibility assessments, securing public consensus, agency and stakeholder coordination, satisfying Federal and State environmental planning processes, and developing an investment funding strategy.

Although the timeline outlined above seems that the path to implementation of the big-ticket strategies is far in the future, there are many activities that can and have happened as shown in the Progressed Strategies Section in the near term to improve the quality of access and public use of space within the corridor. Many of the strategies identified for additional analysis could also be advanced independently of each other and perhaps on shorter timelines to capitalize on funding opportunities and stakeholder support. Further, there are many activities and additional study that needs to happen in the interim period to ensure that the region is positioned to take advantage of the opportunity to transform the transportation infrastructure when it makes financial sense to do so. It is not uncommon for major transportation investments like the long-term strategies envisioned here to take this duration of effort to successfully develop and implement.