

*Assessment of Capital Region North/South Corridors to
Improve Access to Emerging Employment Centers*

FINAL REPORT

January 26, 2009

Submitted To:

Capital District Transportation Authority & NYS Senate Task Force on High-Speed Rail

Submitted By:

Parsons Brinckerhoff



in cooperation with:

Creighton Manning Engineering and Arch Street Communications

Acknowledgements

PROJECT SPONSORS

New York State Senate Appropriation
New York State Department of Transportation

POLICY ADVISORY COMMITTEE

Mark Eagan, President, Albany-Colonie Regional Chamber of Commerce
John A. Graziano, Jr., President, Capital District Regional Planning Commission
Ray Melleady, Executive Director, Capital District Transportation Authority
John McDonald, Chairman, Capital District Transportation Committee
Michael Tucker, President, Center for Economic Growth
Ann Luby, Capital Region Representative, NYS Department of Labor
Karen Rae, Deputy Commissioner, NYS Department of Transportation
Brian Rowback, Regional Director, NYS Department of Transportation
Mary Clark, Principal Analyst, NYS Senate Fiscal Studies & Budget Analysis
Linda Hillman, President, Rensselaer County Regional Chamber of Commerce
Joseph W. Dalton, President, Saratoga County Chamber of Commerce
Charles Steiner, President, Schenectady County Chamber of Commerce
Peter Aust, President & CEO, Southern Saratoga County Chamber of Commerce

TECHNICAL ADVISORY COMMITTEE

Michele Gaudet, Capital District Transportation Authority
Ross Farrell, Capital District Transportation Authority
Tony Grieco, Capital District Transportation Authority
Chris O'Neill, Capital District Transportation Committee
Deb Stacey, Capital District Transportation Committee
Charles Poltenson, NYS Department of Transportation
Pete Rea, NYS Department of Transportation
Robert Hansen, NYS Department of Transportation

PROJECT MANAGERS

Kristina Younger, Capital District Transportation Authority
Jim Cartin, Senate Task Force on High Speed Rail

CONSULTANT TEAM

Parsons Brinckerhoff

in association with

Creighton Manning Engineering and Arch Street Communications

Table of Contents

EXECUTIVE SUMMARY	I
1. INTRODUCTION.....	1
2. ALTERNATIVES DEVELOPMENT	1
3. INITIAL LIST OF ALTERNATIVES.....	2
4. EVALUATION OF INITIAL LIST OF ALTERNATIVES.....	5
4.1. QUANTITATIVE EVALUATION FACTORS.....	5
4.2. QUALITATIVE EVALUATION FACTORS	5
5. REFINED LIST OF ALTERNATIVES.....	9
6. EVALUATION OF REFINED LIST OF ALTERNATIVES.....	9
6.1. QUANTITATIVE EVALUATION FACTORS.....	9
6.2. QUALITATIVE EVALUATION FACTORS	9
7. CONCLUSIONS.....	15
8. RECOMMENDATIONS.....	16
8.1. NEAR-TERM ACTION PROGRAM (2009–2014).....	16
8.2. MID-TERM ACTION PROGRAM (2015–2020)	17
8.3. LONG-TERM ACTION PROGRAM (2021–2030).....	17
8.4. OTHER INITIATIVES.....	18

List of Tables

TABLE ES-1: ALTERNATIVES CONSIDERED	ERROR! BOOKMARK NOT DEFINED.
TABLE 1: INITIAL LIST OF ALTERNATIVES	2
TABLE 2: QUANTITATIVE EVALUATION: INITIAL LIST OF ALTERNATIVES (BRT AND LRT).....	6
TABLE 3: QUANTITATIVE EVALUATION: INITIAL LIST OF ALTERNATIVES (COMMUTER RAIL)	7
TABLE 4: QUALITATIVE EVALUATION: INITIAL LIST OF ALTERNATIVES.....	8
TABLE 5: REFINED LIST OF ALTERNATIVES	9
TABLE 6: QUANTITATIVE EVALUATION: REFINED LIST OF ALTERNATIVES (BRT AND LRT).....	12
TABLE 7: QUANTITATIVE EVALUATION: REFINED LIST OF ALTERNATIVES (COMMUTER RAIL)	13
TABLE 8: QUALITATIVE EVALUATION: REFINED LIST OF ALTERNATIVES.....	14

List of Figures

FIGURE ES-1: CORRIDORS WITH RECOMMENDED IMPROVEMENTS.....	III
FIGURE 1: INITIAL NORTH/SOUTH CORRIDOR BRT AND LRT ALTERNATIVES	3
FIGURE 2: INITIAL NORTH/SOUTH CORRIDOR COMMUTER RAIL ALTERNATIVES	4
FIGURE 3: REFINED BRT/LRT ALTERNATIVES	10
FIGURE 4: REFINED COMMUTER RAIL ALTERNATIVES.....	11

Executive Summary

BACKGROUND

The Capital District Transportation Authority (CDTA) and the New York State Senate Task Force on High Speed Rail (NYS Senate HSR Task Force) initiated a study of transit opportunities as part of a regional effort to promote urban reinvestment and high quality suburban planning. The study addresses light rail, commuter rail, and bus rapid transit “Big Ticket Initiatives” in the Capital District, Saratoga, and the lower Adirondack regions.

The study team worked in collaboration with the Center for Economic Growth, five regional chambers of commerce, the New York State Senate Finance Committee, the New York State Department of Transportation (NYSDOT), the New York State Department of Labor (NYSDOL), and regional planning agencies to explore how to best provide transit services to commuters traveling to employment centers within and outside the traditional central business districts.

The effort reflects the importance of strategic transportation planning to determine where and how future growth will be concentrated in the Capital Region in order to support economic growth while preserving the region’s high quality of life. The study objectives were to:

- Identify potential short-range and long-term improvements to existing Northway Express (NX) bus service in the I-87 Northway Corridor, including service and facility enhancements.
- Review the role of existing rail corridors in the study area and identify what role they might play in maintaining the quality of transportation service in the region.
- Explore transit options, including bus rapid transit (BRT), light rail transit (LRT), and commuter rail.
- Identify other long-range, potential transportation capital investments and assess the engineering, environmental, and market challenges to their implementation.

ALTERNATIVES DEVELOPMENT

The development of alternatives for transit improvements in the North/South Corridor in Albany, Saratoga, and Rensselaer counties resulted in a long list of alternative BRT, LRT, and commuter rail services, which are summarized in Table ES-1.

TABLE ES-1: ALTERNATIVES CONSIDERED

Corridor	Limits for Initial Evaluation	Refined Limits for Detailed Evaluation	Mode(s) Examined
I-87 Northway Corridor	Saratoga Springs to Albany		BRT, LRT
I-87 Northway Corridor	Saratoga Springs to Albany and SUNY-Harriman Campus		BRT, LRT
US 9 Corridor	Saratoga Springs to Albany	Cohoes to Albany	BRT, LRT
US 4/NY 32 Corridor	Mechanicville to Troy and Albany	Waterford to Albany	BRT, LRT
Canadian Pacific Railway (CPR) Corridor	Mechanicville to Cohoes, Watervliet and Albany	Waterford to Albany	BRT, LRT
West Corridor: Albany-Rensselaer Amtrak Station to Saratoga Springs via Schenectady	Entire Corridor	Entire Corridor	Commuter Rail
East Corridor: Albany (downtown) to Saratoga Springs via Mechanicville	Entire Corridor	Entire Corridor	Commuter Rail
East Sub-Corridor: Albany (downtown) to Cohoes, Watervliet, and Mechanicville ¹	Entire Corridor	Entire Corridor	Commuter Rail
Rensselaer Polytechnic Institute (RPI) Corridor: Albany-Rensselaer Amtrak Station to Troy and Rensselaer Polytechnic Institute	Entire Corridor		Commuter Rail

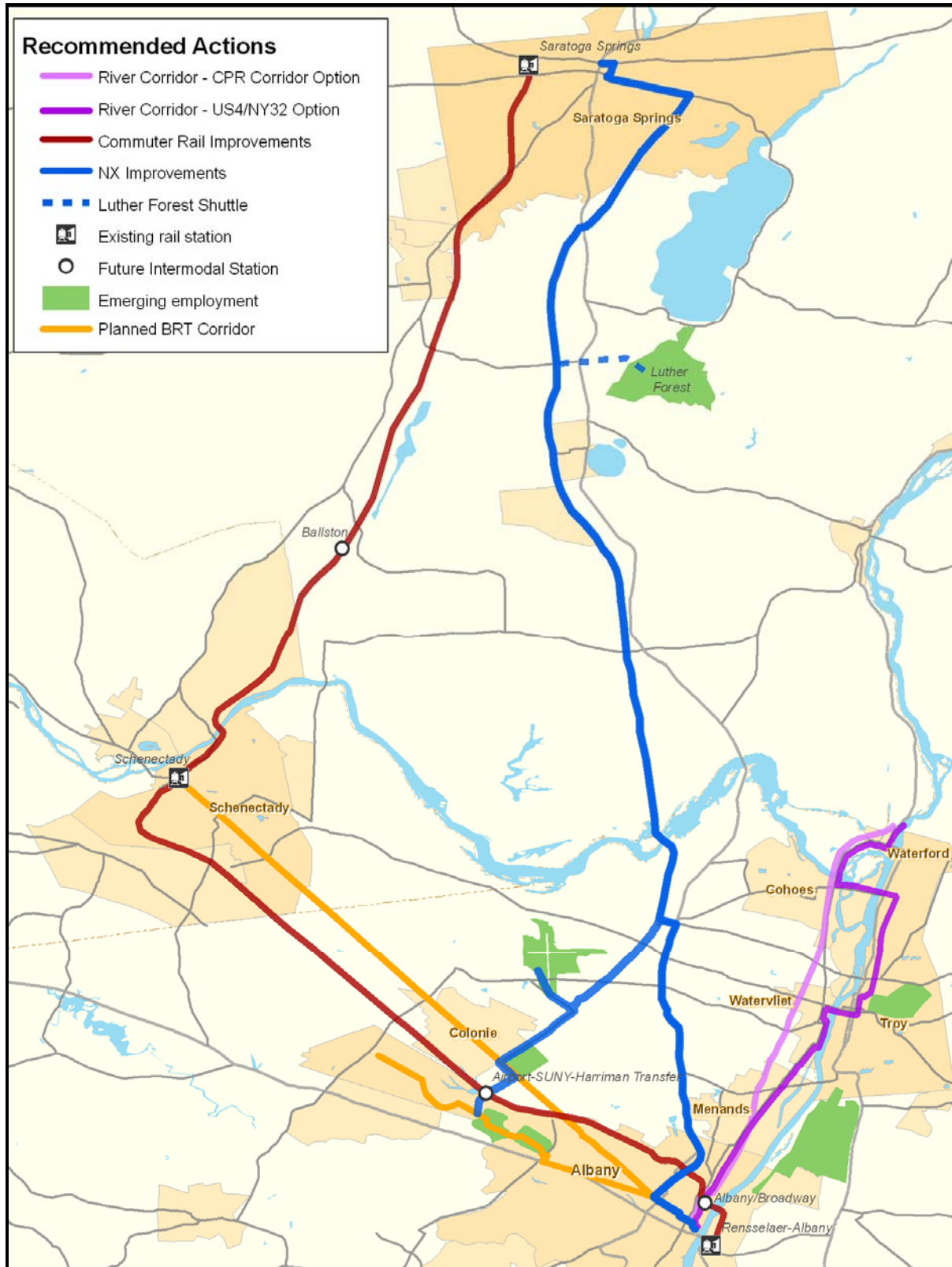
¹ The East Sub-Corridor in commuter rail alternatives is the same as the CPR Corridor in the BRT/LRT alternatives.

Evaluation of the initial list of alternatives revealed high capital costs and operating expenses on several of the BRT and LRT corridors, and high capital costs for commuter rail in the Rensselaer Polytechnic Institute (RPI) Corridor. Based on the evaluation and feedback from the Policy Advisory Committee, CDTA staff, and Technical Advisory Committee, the alternatives were pared down to a shorter list of the more feasible options for more detailed analysis, based on service to the towns along the alignment with the likeliest potential market for transit. As shown in Table ES-1, these revised options considered the “best elements” of the original set of alternatives. Five technical task reports were produced that examined costs, benefits, market potential, and environmental and land use considerations of the various alternatives and modal options and form the basis of the Action Program.

NORTH/SOUTH CORRIDORS ACTION PROGRAM

Based on the evaluation of the alternatives, a strategy for near-, mid-, and long-term transit improvements was developed. Figure ES-1 shows the corridors where improvements are recommended.

FIGURE ES-1: CORRIDORS WITH RECOMMENDED IMPROVEMENTS



Near-Term Actions (2009–2014)

- Increase and restructure NX service.
- Further analyze and refine the River Corridor options,¹ including transit-oriented development (TOD) plans, to develop consensus on the modal option (BRT vs. LRT) and corridor, complete project development, and begin construction.
- Promote advancement of the extension of Amtrak’s Albany–New York City service to Saratoga Springs and implementation of state-sponsored rail infrastructure projects to set the stage for commuter rail development

Mid-Term Actions (2015–2020)

- Upgrade NX Service with priority treatments such as queue jumps, signal priority at I-87 Northway ramps, and expanded frequencies and span.
- Develop Saratoga local shuttles to emerging employment centers such as Luther Forest.
- Complete construction of River Corridor service and begin service operations.
- Construct new intermediate commuter rail station and provide shuttle services to SUNY and the airport.

Long-Term Actions (2021–2030)

- Construct managed lanes in the I-87 Northway Corridor for use by the NX Service.
- Enhance River Corridor service to respond to demand.
- Expand commuter rail service by procuring rail equipment.

Long-term consideration concerning the development, implementation and selection of BRT or LRT will depend upon advancement and success of the initial programs and future development patterns. In addition, regional support and a governmental commitment and partnership will be needed to advance transit alternatives including conventional bus, BRT, LRT, intercity and commuter rail. Funding is not identified for many of these actions. Like the “Big Ticket Initiatives” of the Capital District Transportation Committee’s (CDTC) *New Visions 2030* plan, they have not yet been funded or programmed, but they are put on the table for visioning during times of financial constraint.

¹ The US 4/NY 32 Corridor and the CPR Corridor comprise the River Corridor options.

1. INTRODUCTION

Recent volatility in gasoline prices, growing environmental concerns, an aging population, new interest in compact transit-oriented development, and nationwide increases in transit usage suggest that future demand for transit services in the Capital District will be far greater than projected in the past. Concurrently, new Federal and State administrations are expected to adjust transportation funding priorities and mechanisms to favor transit programs, while the economic stimulus program will accelerate transportation infrastructure projects. Reauthorization of federal transportation legislation later in the year will likely reflect a greater focus on transit and provide an opportunity for forward-looking agencies to secure transit funding for new projects.

Within this transit-friendly environment, CDTA's North/South Corridor between Albany and Saratoga offers a number of promising alignments for the potential development of high-capacity transit service, including commuter rail, light rail transit (LRT), bus rapid transit (BRT), or blended elements of each. This final report describes the alternatives examined in the current study, describes their comparative advantages and disadvantages, and recommends a strategy for future transit investment.

2. ALTERNATIVES DEVELOPMENT

In developing initial alignments for LRT and BRT systems, previous transportation and land use studies were reviewed to identify existing and future travel markets and patterns including the location of existing and future employment centers. Regional transportation experts and stakeholders provided insights and voiced concerns during this phase of the study.

Existing transit services in the corridor were assessed in developing alternatives. Along the Hudson River, for example, Route 22 connects Albany with Watervliet, Green Island, and Troy (via Broadway) and is one of CDTA's busiest routes in terms of ridership. Route 35x connects Troy and Watervliet to downtown Albany, operating as an express via I-787. Route 29 operates on US 9 to Latham before turning east to serve Cohoes. In combination, the corridor provides CDTA's third highest passenger volume.

Based on this review, the following primary alignments were identified within the North/South Corridor:

- A managed lane alignment on the I-87 Northway Corridor connecting Saratoga, Clifton Park and Colonie to the NY 5 BRT line west of Albany (trips would presumably continue south to Albany via the BRT line), consistent with CDTC's *New Visions* plan;
- An alignment from Cohoes through Green Island and Watervliet to Albany;
- An alignment from Waterford through Troy to Albany; and
- Rail alignments between Albany and Saratoga and between Rensselaer and Troy.

3. INITIAL LIST OF ALTERNATIVES

The development of alternatives for transit improvements in the Northway Corridor resulted in a long list of alternative BRT, LRT, and commuter rail services, summarized in Table 1 and shown on Figures 1 and 2.

TABLE 1: INITIAL LIST OF ALTERNATIVES

Corridor	Mode
I-87 Northway Corridor: Saratoga Springs to Albany	BRT, LRT
I-87 Northway Corridor: Saratoga Springs to Albany and SUNY-Harriman Campus	BRT, LRT
US 9 Corridor: Saratoga Springs to Albany	BRT, LRT
US 4/NY 32 Corridor: Mechanicville to Troy and Albany	BRT, LRT
Canadian Pacific Railway (CPR) Corridor: Mechanicville to Cohoes, Watervliet and Albany	BRT, LRT
West Corridor: Albany-Rensselaer Amtrak Station to Saratoga Springs via Schenectady ¹	Commuter Rail
East Corridor: Albany (downtown) to Saratoga Springs via Mechanicville	Commuter Rail
East Sub-Corridor: Albany (downtown) to Cohoes, Watervliet, and Mechanicville ²	Commuter Rail
Rensselaer Polytechnic Institute (RPI) Corridor: Albany-Rensselaer Amtrak Station to Troy and Rensselaer Polytechnic Institute	Commuter Rail

1. Both "start-up" and "full-build" options were examined for the West Corridor. "Start-up" service extends existing Amtrak passenger services; "full-build" includes infrastructure improvements and frequent commuter services.
2. The East Sub-Corridor in commuter rail alternatives is the same as the CPR Corridor in the BRT/LRT alternatives.

These alternatives are illustrated on Figures 1 and 2.

Note: For the purposes of identifying right-of-way and station locations in this stage of study, there is little physical difference between LRT and BRT, and alignments that were appropriate for one mode could presumably be made to work for the other. New alignments (that is, alignments that would require assembly of right-of-way over property currently under other uses) were not considered, due to the cost, socio-environmental impacts, and other difficulties associated with right-of-way assembly and the relatively large number of existing rights of way available.

FIGURE 1: INITIAL NORTH/SOUTH CORRIDOR BRT AND LRT ALTERNATIVES

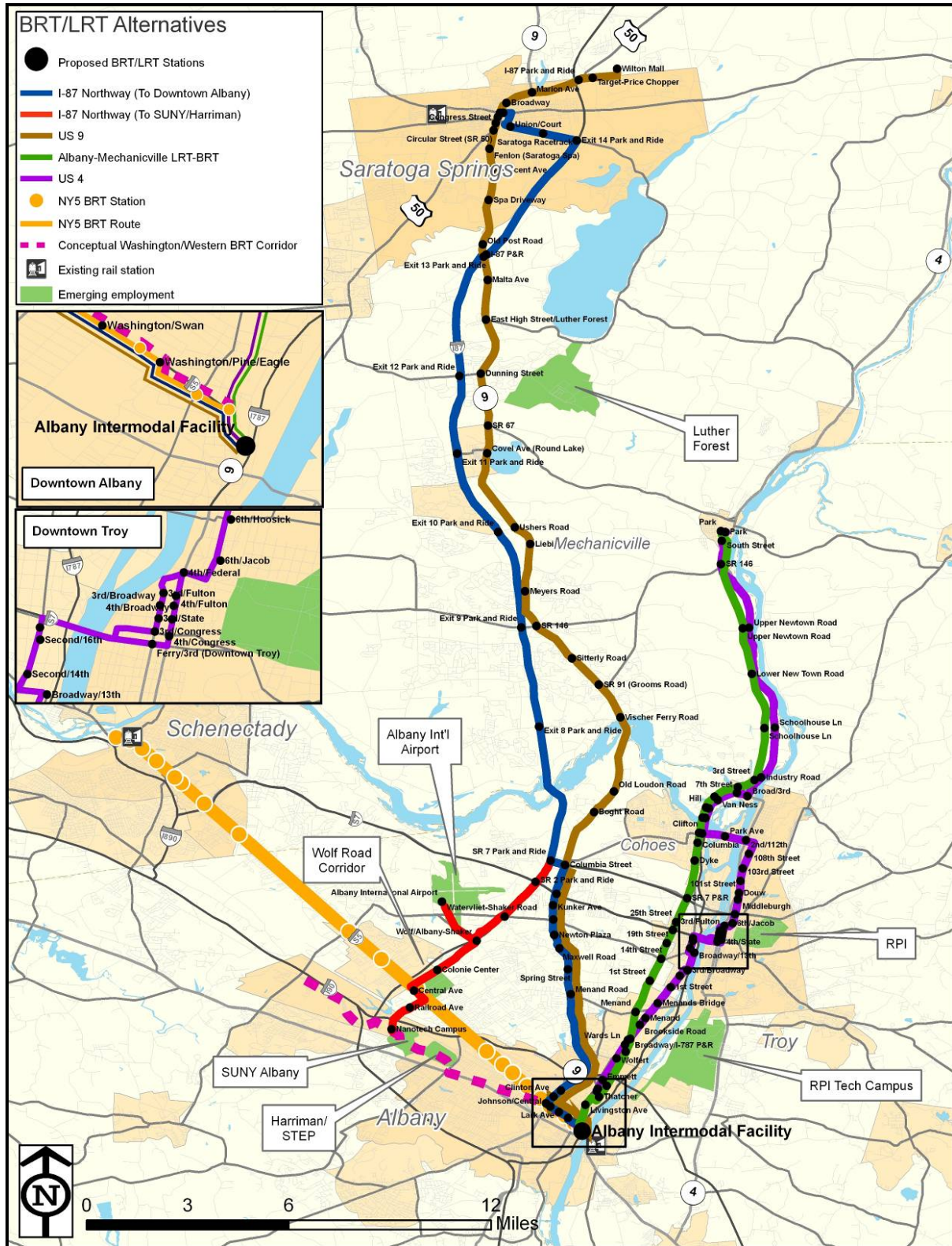
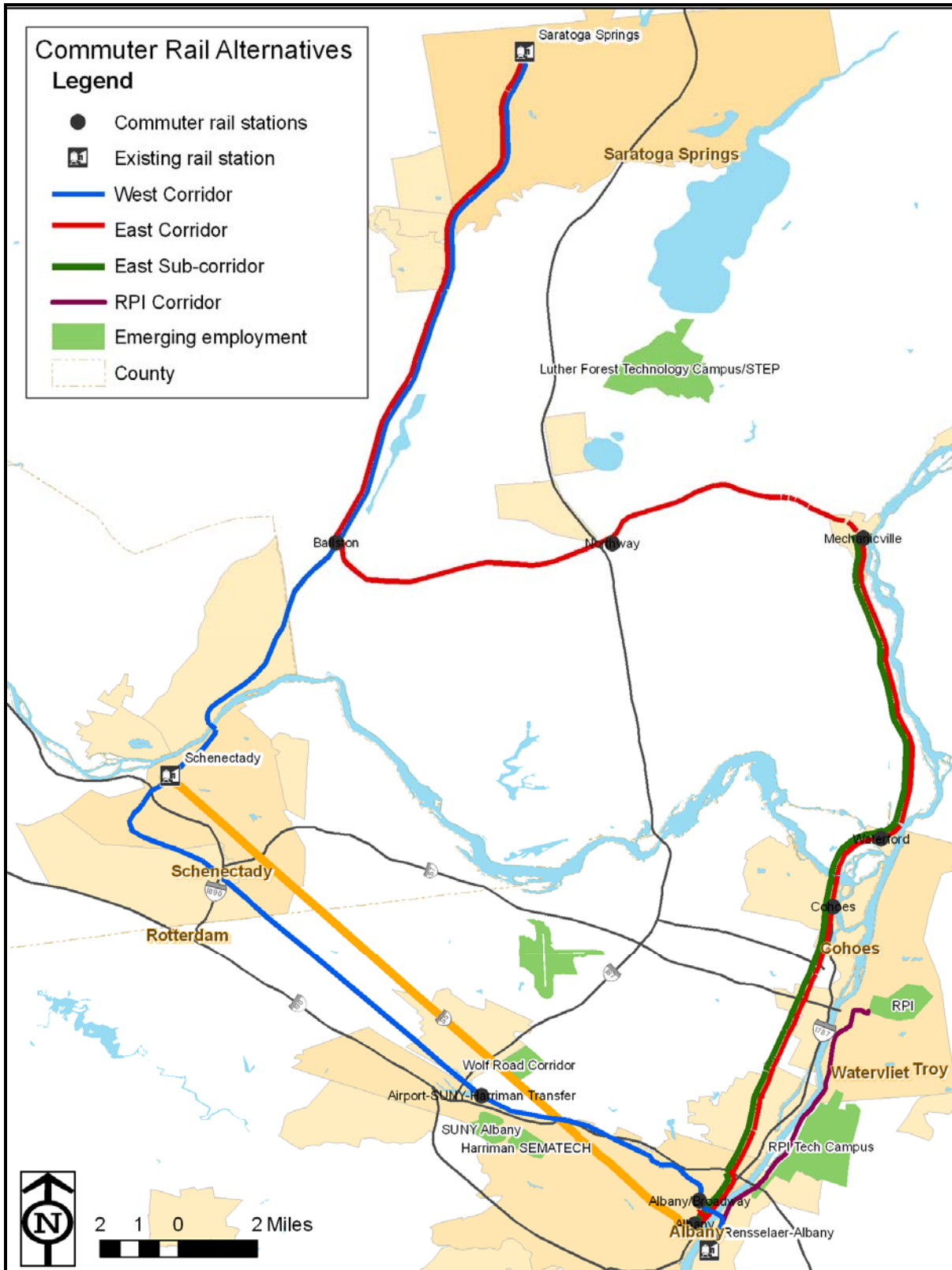


FIGURE 2: INITIAL NORTH/SOUTH CORRIDOR COMMUTER RAIL ALTERNATIVES



4. EVALUATION OF INITIAL LIST OF ALTERNATIVES

4.1. Quantitative Evaluation Factors

Each alternative was examined according to several quantitative factors, which are summarized in Tables 2 and 3. As the estimates indicate, the *capital cost* of LRT in each of the corridors is at least twice as much as the comparable BRT options. Costly light rail improvements, including overhead catenary and power distribution systems, push the cost of the longer-distance LRT options between Saratoga Springs and Albany in the area of \$2.5–\$3.0 billion. The cost of *operating* light rail is considerably higher than the cost of operating BRT, regardless of the alignment.

Costs for commuter rail options are lower than BRT and LRT options because some major capital improvements, such as the double track between Albany and Schenectady, are assumed to be performed by the State of New York for state-wide purposes. In other words, commuter rail can benefit from some improvements whose costs will be borne by other projects.

4.2. Qualitative Evaluation Factors

The following qualitative factors were used to evaluate each alternative:

- **Accessibility & connectivity** evaluates how well the corridors serve existing origins and destinations in the area, particularly emerging employment centers. In addition, the corridor may be characterized as “walk-to-transit” versus “drive-to-transit” and connectivity to other travel networks is reviewed as well.
- **Operational issues** discusses the impacts of characteristics of the corridor on overall or daily transit operations.
- **Right-of-way issues** concerns the condition of the existing right-of-way for passenger operations and potential upgrades.
- **Constructability** evaluates the difficulty of developing needed improvements.
- **Institutional acceptability** relates to the attitudes of regional leaders, the public, and existing rail operators to the alternative, based on the transit mode, the alignment, the cost and potential for funding, and other factors.
- **Environmental issues** summarizes potential conflicts with the natural and built environments.

The primary issues with each of these qualitative factors are summarized in Table 4.

TABLE 2: QUANTITATIVE EVALUATION: INITIAL LIST OF ALTERNATIVES (BRT AND LRT)

Alternatives (mode, alignment)	Facility Length (miles)	Average Travel Speed (mph)	Estimated Travel Time - One way (minutes)	Number of Stations	Capital Cost (billions of 2008 \$)	Operating Cost (millions of 2008 \$)
BUS RAPID TRANSIT						
I-87 Northway Corridor: Saratoga Springs to Albany	34.7	19.3	54	26	\$0.947	\$11.3
I-87 Northway Corridor: Saratoga Springs to Albany and SUNY-Harriman Campus	34.3	21.3	48.5	19	\$1.066	\$7.8
US 9 Corridor: Saratoga Springs to Albany	36.3	21.6	50.5	45	\$0.792	\$11.4
US 4/NY 32 Corridor: Mechanicville to Troy and Albany	24.2	13.9	52.5	56	\$0.453	\$9.7
D&H Corridor: Mechanicville to Cohoes, Watervliet and Albany	21.6	17.6	37	31	\$0.618	\$7.6
LIGHT RAIL TRANSIT						
I-87 Northway Corridor: Saratoga Springs to Albany	34.7	19.3	54	26	\$2.546	\$19.0
I-87 Northway Corridor: Saratoga Springs to Albany and SUNY-Harriman Campus	34.3	21.3	48.5	19	\$3.013	\$8.4
US 9 Corridor: Saratoga Springs to Albany	36.3	21.6	50.5	45	\$2.571	\$18.5
US 4/NY 32 Corridor: Mechanicville to Troy and Albany	24.2	13.9	52.5	56	\$1.975	\$19.0
CPR Corridor: Mechanicville to Cohoes, Watervliet and Albany	21.6	17.6	37	31	\$1.665	\$13.8

Note on costs: LRT/BRT capital costs do not include right-of-way acquisition.

TABLE 3: QUANTITATIVE EVALUATION: INITIAL LIST OF ALTERNATIVES (COMMUTER RAIL)

Alternatives (mode, alignment)	Facility Length (miles)	Average Travel Speed (mph)	Estimated Travel Time - One way (minutes)	Number of Stations	Capital Cost (billions of 2008 \$)	Operating Cost (millions of 2008 \$)
COMMUTER RAIL						
West Corridor: Albany-Rensselaer Amtrak Station to Saratoga Springs via Schenectady (start-up service)	35.2	42	56	3	\$0.006	\$3.7
West Corridor: Albany-Rensselaer Amtrak Station to Saratoga Springs via Schenectady (full build-out scenario)	35.2	42	56	6	\$0.21	\$8.0
East Corridor: Albany (downtown) to Saratoga Springs via Mechanicville	44.4	42	62	6	\$0.39	\$10.0
East Sub-Corridor: Mechanicville to Cohoes, Watervliet and Albany	18.9	44	29	4	\$0.25	\$9.0
RPI Corridor: Albany-Rensselaer Amtrak Station to Troy and Rensselaer Polytechnic Institute	12	20	25	4	\$0.34	\$14.0

Notes on costs:

- For the initial development of the West Corridor commuter rail option, equipment is treated as an operating cost because use of Amtrak equipment is assumed.
- For the full development of the West Corridor and other commuter rail options, equipment is treated as a capital cost.
- Capital costs for the West Corridor do not include rehabilitation/replacement of Livingston Avenue Bridge and double-tracking the CSX line to Schenectady, as these are assumed to be a State responsibility.
- Commuter-rail station costs include building, canopies, platforms, etc. Cost for parking lots not included; assumed to be furnished by others.

TABLE 4: QUALITATIVE EVALUATION: INITIAL LIST OF ALTERNATIVES

Alternatives (mode, alignment)	Accessibility & Connectivity	Operational Issues	Right-of-way (ROW) Issues	Constructability	Institutional Acceptability	Environmental Issues
BUS RAPID TRANSIT & LIGHT RAIL TRANSIT						
I-87 Northway Corridor: Saratoga Springs to Albany	●	●	●	●	○	●
I-87 Northway Corridor: Saratoga Springs to Albany and SUNY-Harriman Campus	●	●	●	●	○	●
US 9 Corridor: Saratoga Springs to Albany	⊙	●	●	●	●	●
US 4/NY 32 Corridor: Mechanicville to Troy and Albany	●	●	●	○	●	●
CPR Corridor: Mechanicville to Cohoes, Watervliet and Albany	●	●	●	⊙	⊙	●
COMMUTER RAIL						
West Corridor: Albany-Rensselaer Amtrak Station to Saratoga Springs via Schenectady (start-up service)	●	⊙	●	●	●	●
West Corridor: Albany-Rensselaer Amtrak Station to Saratoga Springs via Schenectady (full build-out scenario)	●	●	⊙	●	●	●
East Corridor: Albany (downtown) to Saratoga Springs via Mechanicville	●	○	○	●	○	●
East Sub-Corridor: Mechanicville to Cohoes, Watervliet and Albany	●	○	○	●	○	●
RPI Corridor: Albany-Rensselaer Amtrak Station to Troy and Rensselaer Polytechnic Institute	⊙	○	○	○	○	●

Key: ● = Good ⊙ = Good/Fair ● = Fair ⊙ = Fair/Poor ○ = Poor

5. REFINED LIST OF ALTERNATIVES

The preliminary review of alternatives revealed the high costs of capital and operating expenses on several of the BRT and LRT corridors, and the high cost of physical improvements for commuter rail in the RPI Corridor. Based on the evaluation and feedback from the Policy Advisory Committee, CDTA staff, and the Technical Advisory Committee, the alternatives were pared down to a shorter list of the more feasible options for further analysis. In addition, the US 9 and US 4/NY 32 corridors were refined in order to serve the towns along the alignment that have the likeliest potential market for transit. These revised options were considered the “best elements” of the original set of alternatives.

Table 5 shows the short list of alternatives and Figures 3 and 4 show maps of the revised alternatives.

TABLE 5: REFINED LIST OF ALTERNATIVES

Corridor	Mode
US 9 Corridor: Cohoes to Albany	BRT, LRT
US 4/NY 32 Corridor: Waterford to Albany	BRT, LRT
CPR Corridor: Waterford to Albany	BRT, LRT
West Corridor: Albany-Rensselaer Amtrak Station to Saratoga Springs via Schenectady	Commuter rail
East Corridor: Albany (downtown) to Saratoga Springs via Mechanicville	Commuter rail
East Sub-Corridor: Mechanicville to Cohoes, Watervliet and Albany (downtown)	Commuter rail

As in the preliminary round of evaluation, each alternative was described in quantitative and qualitative terms.

6. EVALUATION OF REFINED LIST OF ALTERNATIVES

6.1. Quantitative Evaluation Factors

Tables 6 and 7 summarize the quantitative evaluation factors for the refined list of alternatives. More detailed discussion is available in the technical papers prepared for the study.

6.2. Qualitative Evaluation Factors

A summary of the qualitative evaluation factors for the refined list of alternatives is shown in Table 8. More detailed discussion is available in the technical papers prepared for the study.

FIGURE 3: REFINED BRT/LRT ALTERNATIVES

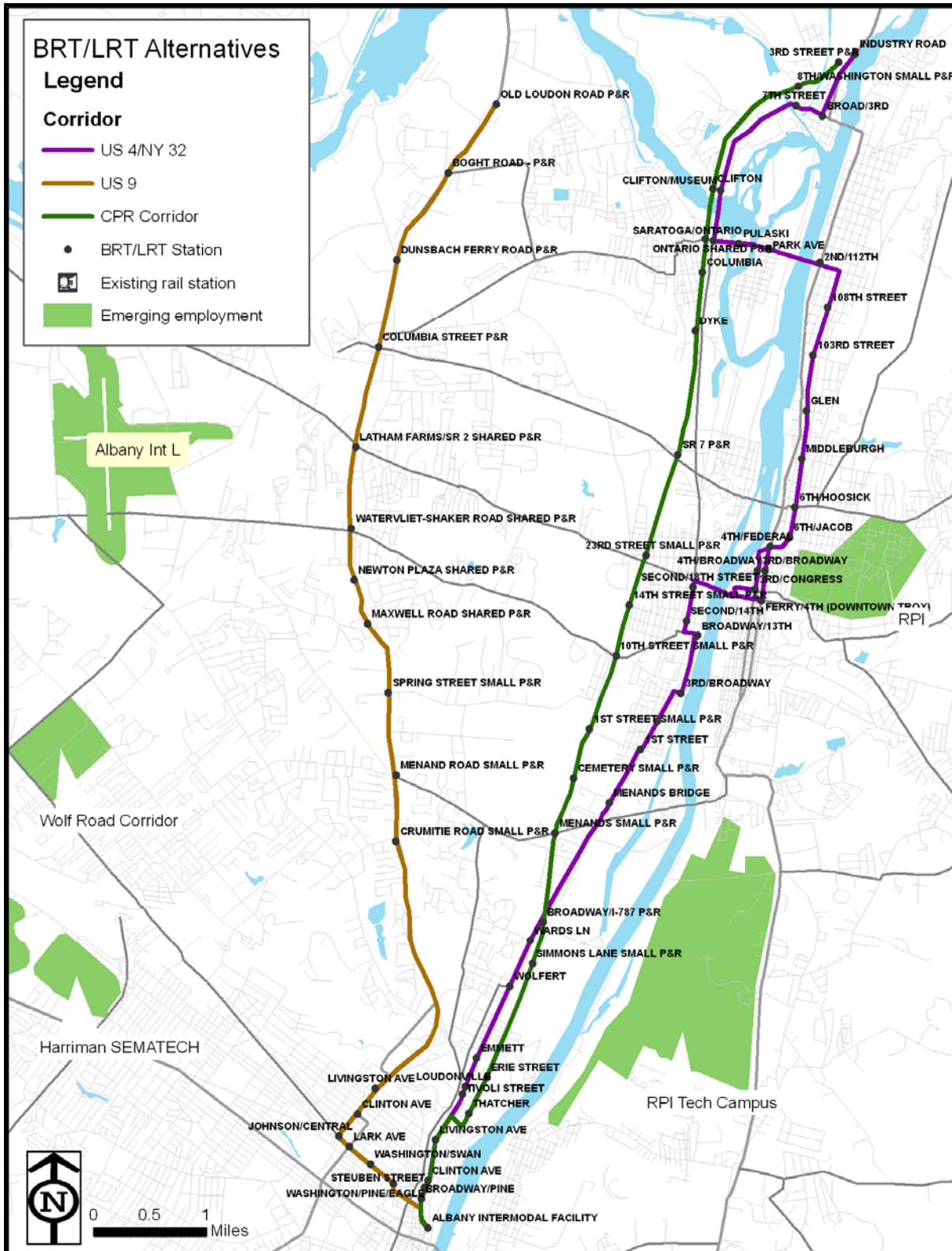


FIGURE 4: REFINED COMMUTER RAIL ALTERNATIVES

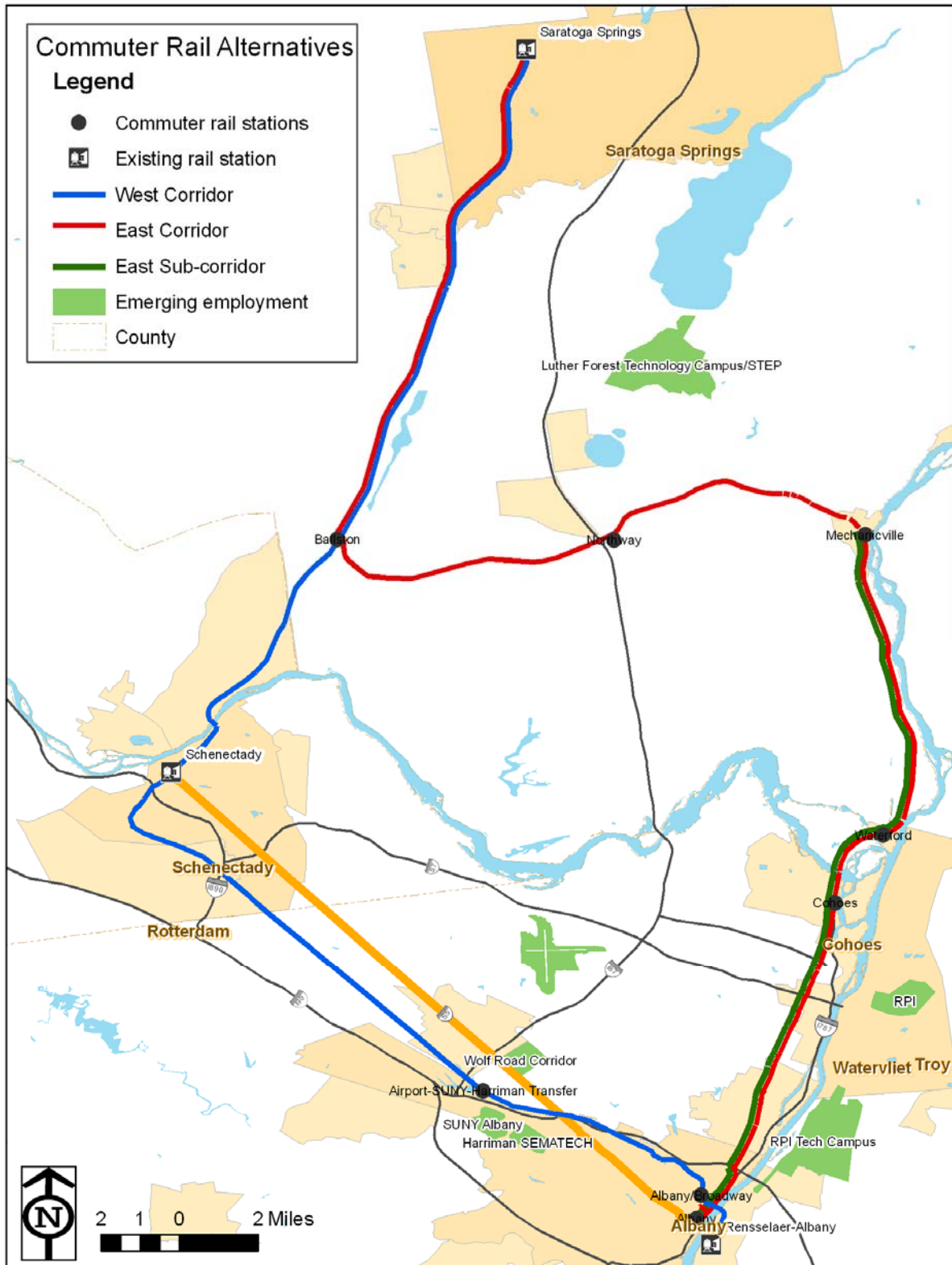


TABLE 6: QUANTITATIVE EVALUATION: REFINED LIST OF ALTERNATIVES (BRT AND LRT)

Alternatives (mode, alignment)	Facility Length (miles)	Average Travel Speed (mph)	Estimated Travel Time–One way (minutes)	Number of Stations	Capital Cost (billions of 2008 \$)	Operating Cost (millions of 2008 \$)	Estimate of Market Potential	
							Trend Scenario	Hyper Growth Scenario
BUS RAPID TRANSIT								
US 9 Corridor: Cohoes to Albany	11.3	21.9	34	13	\$0.289	\$3.9	260,000	300,000
US 4/NY 32 Corridor: Waterford to Albany	14.7	16.6	59	36	\$0.387	\$5.2	1,600,000	1,900,000
CPR Corridor: Waterford to Albany	11.7	23.7	33	22	\$0.380	\$4.0	1,200,000	2,100,000
LIGHT RAIL								
US 9 Corridor: Cohoes to Albany	11.3	21.9	34	13	\$1.021	\$6.8	270,000	320,000
US 4/NY 32 Corridor: Waterford to Albany	14.7	16.6	59	36	\$1.608	\$9.5	1,700,000	2,000,000
CPR Corridor: Waterford to Albany	11.7	23.7	33	22	\$0.972	\$6.8	1,300,000	2,200,000

Notes on estimates of market potential:

- Figures should be considered an estimate of the relative attractiveness of a transit option, rather than an estimate of expected ridership.
- Estimates were developed based on a comparison of existing and projected populations in the corridors and existing transit ridership in corridors, where known. Attractiveness coefficients were then applied for the different transit technologies. In addition, commuter rail was considered to have a broader catchment area than BRT or LRT.

TABLE 7: QUANTITATIVE EVALUATION: REFINED LIST OF ALTERNATIVES (COMMUTER RAIL)

Alternatives (mode, alignment)	Facility Length (miles)	Average Travel Speed (mph)	Estimated Travel Time– One way (minutes)	Number of Stations	Capital Cost (billions of 2008 \$)	Operating Cost (millions of 2008 \$)	Estimate of Market Potential	
							Trend Scenario	Hyper Growth Scenario
COMMUTER RAIL								
West Corridor: Albany-Rensselaer Amtrak Station to Saratoga Springs via Schenectady (start up service)	35.2	42	56	3	\$0.006	\$3.7	25,000	30,000
West Corridor: Albany-Rensselaer Amtrak Station to Saratoga Springs via Schenectady (full build)	35.2	42	56	6	\$0.21	\$8.0	396,000	470,000
East Corridor: Albany (downtown) to Saratoga Springs via Mechanicville	44.4	42	62	6	\$0.39	\$10.0	174,000	204,000
East Sub-Corridor: Mechanicville to Cohoes, Watervliet and Albany (downtown)	18.9	44	29	4	\$0.25	\$9.0	90,000	136,000

Notes on costs:

- For the initial development of the West Corridor commuter rail option, equipment is treated as an operating cost because use of Amtrak equipment is assumed.
- For the full development of the West Corridor and other commuter rail options, equipment is treated as a capital cost.
- Capital costs for the West Corridor do not include rehabilitation/replacement of Livingston Avenue Bridge and double-tracking the CSX line to Schenectady, as these are assumed to be a State responsibility
- Commuter rail station costs include building, canopies, platforms, etc. Cost for parking lots is not included; parking is assumed to be furnished by others.

Notes on estimates of market potential:

- Figures should be considered an estimate of the relative attractiveness of a transit option, rather than an estimate of expected ridership.
- Estimates were developed based on a comparison of existing and projected populations in the corridors and existing transit ridership in corridors, where known. Attractiveness coefficients were then applied for the different transit technologies. In addition, commuter rail was considered to have a broader catchment area than BRT or LRT.

TABLE 8: QUALITATIVE EVALUATION: REFINED LIST OF ALTERNATIVES

Alternatives (mode, alignment)	Accessibility & Connectivity	Operational Issues	Right-of-way (ROW) Issues	Constructability	Institutional Acceptability	Environmental Issues
BUS RAPID TRANSIT AND LIGHT RAIL TRANSIT						
US 9 Corridor: Cohoes to Albany	●	●	●	●	●	●
US 4/NY 32 Corridor: Waterford to Albany	●	●	●	○	●	●
CPR Corridor: Waterford to Albany	●	●	●	●	●	●
COMMUTER RAIL						
CPR Corridor (East Sub-Corridor): Mechanicville to Cohoes, Watervliet and Albany (downtown)	●	○	○	●	○	●
CPR Corridor (East Corridor): Albany (downtown) to Saratoga Springs via Mechanicville	●	○	○	●	○	●
West Corridor: Albany-Rensselaer Amtrak Station to Saratoga Springs via Schenectady (start-up service)	●	●	●	●	●	●
West Corridor: Albany-Rensselaer Amtrak Station to Saratoga Springs via Schenectady (full build)	●	●	●	●	●	●

Key: ● = Good ● = Good/Fair ● = Fair ○ = Poor

7. CONCLUSIONS

The evaluation of the initial and refined set of alternatives leads to several conclusions about transit alternatives in the North/South Corridors.

In all corridors, light rail is very expensive, especially relative to the potential market of transit riders. With the possible exception of the CPR Corridor, due to the relatively low return on ridership for a high transit investment, light rail should be deferred from consideration at this time for transit technologies in the North–South corridors.

For the US 9 and I-87 corridors, improvements to the existing NX Service and local bus services appear to be sufficient to meet future demand. Managed lanes would be an option to prioritize transit. The addition of a shuttle service to Luther Forest/SEMATECH, supported by the business park, is another viable improvement along the I-87 or US 9 corridors.

The River Corridor, on the other hand, appears to have high potential benefits. Existing transit in this corridor enjoys high ridership, and transit improvements could reach new markets. As a result, there is much higher market demand in the River Corridor than in the US 9/I-87 corridors. Investing in transit options in the River Corridor would also focus regional transit investment on targeted redevelopment areas.

Despite the high market potential, however, the River Corridor alignments both require further analysis because each has a serious issue requiring resolution. The CPR Corridor is now a minimally active rail line owned by a private railroad operator. Implementing BRT or possibly LRT in this corridor will require vacating the rail line and converting it to a dedicated transit way. This will require negotiation and compensation with the private railroad. This option also requires much more construction and is thus much more expensive than the US 4 option, which runs on street. While the US 4 option is less costly, has better access and some other advantages, its on-street operation causes it to run very slowly and thus be less attractive to potential customers. Further exploration in this corridor must determine the receptivity of the railroad to discuss use of the CPR Corridor for passenger operations, while investigating options to reduce travel time on a roadway-based option.

Unlike other transit alternatives, commuter rail options can build on investments made for other purposes. For example, double-tracking of the West Corridor is planned to be implemented by the State of New York to improve rail performance for the entire system. Upgrading local passenger operations on this route therefore becomes a relatively inexpensive proposition. A phased approach to adding local commuter service allows the service to be tailored to demand.

8. RECOMMENDATIONS

Based on the evaluation of the initial and refined lists of alternatives, the following near-term, mid-term and long-term action programs were developed. The action program for the River Corridor is consistent with project development and implementation timeframes under the Federal Transit Administration (FTA) Small Starts process. Under this process, development of a River Corridor project could take seven to eight years or more, depending on FTA approvals and availability of funds. The CDTA's capacity to develop the River Corridor project at the same time as the Washington-Western BRT project would also be a consideration. The River Corridor project options would require additional refinement to scope to bring them in line with Small Starts requirements. If local funds were available, the CDTA could complete planning, design and construction within seven to eight years with greater certainty than under the federal program.

It is important to note that transit improvements are subject to the CDTA and CDTC system-wide performance standards. These performance standards clearly express the ridership thresholds, productivity, and cost efficiencies that guide regional transit service expansions.

8.1. Near-Term Action Program (2009–2014)

The strategy for the near term is to enhance service on the Northway Express (NX) commuter bus routes, further analyze the River Corridor options and begin construction, and set the stage for commuter-oriented rail service in the Albany-Schenectady-Saratoga Springs corridor. Specific steps to be taken for each of the services are listed below:

- NX Service
 - Restructure NX into routes
 - Provide NX reverse commute service
 - Increase service on the commute hour shoulders
 - Increase service frequency
 - Simplify NX zone structure
 - Rationalize NX fares/equity in discounts
 - Study potential for priority treatments such as queue jumps and signal priority
 - Identify potential location and implement second park-and-ride lot at Exit 9
- River Corridor
 - Refine project scope to meet federal Small Starts requirements
 - Develop consensus on BRT or LRT and transit oriented development (TOD) policies
 - Identify preferred alignment
 - CPR Corridor:
 - Initiate discussions with CPR regarding use of alignment
 - US 4/NY 32 On Street Alignment
 - Identify improvements to increase speed

- Complete project development, including engineering and environmental studies
- Begin construction
- Commuter Rail (West Corridor)
 - Extend selected existing Amtrak trains to Saratoga
 - Double track the existing rail line to Schenectady (by others)
 - Construct station in Albany at Broadway
 - Construct SUNY-Airport-Harriman station

8.2. Mid-Term Action Program (2015–2020)

In the mid-term period, the CDTA would build on the near-term initiatives to further improve NX Services. Improvements would focus on priority treatments such as queue jumps and a signal priority system at Northway Corridor ramps and traffic signals along the NX alignment. A shuttle service to the Luther Forest development would be established, with the financial support of the Luther Forest businesses, to extend services to this expanding destination. The River Corridor service would be fully constructed and begin operations. Commuter rail service in the West Corridor would be enhanced with new stations providing access to additional destinations. Specific improvements include the following:

- NX Service
 - Construct queue jumps at ramps and major intersections and implement signal priority treatment
 - Increase NX Service frequency
 - Develop Saratoga local shuttles to emerging employment centers including a Luther Forest shuttle connection with financial support from Luther Forest
- River Corridor
 - Complete construction of River Corridor facilities
 - Begin service operations
- Commuter Rail (West Corridor)
 - Add shuttle services to SUNY and Albany International Airport
 - Construct intermediate station at Ballston

8.3. Long-Term Action Program (2021–2030)

Long-term actions would further enhance the NX Service and the West Corridor commuter rail, with managed lanes on the Northway Corridor and a shuttle service to SUNY and the airport. The River Corridor service would be monitored for necessary service enhancements in the long term. Specific steps to be taken for each of the services are listed below:

- NX Service
 - Implement directional managed-use lanes in the Northway Corridor
 - Increase NX Service frequency

- River Corridor
 - Enhance River Corridor service consistent with demand
- Commuter Rail (West Corridor)
 - Procure rail equipment to permit an expansion of commuter service

8.4. Other Initiatives

Although not included in the above strategy, the existing Rensselaer-Troy rail corridor may provide another long-term option for transit services. It is not included in the above strategy because a fairly drastic change in conditions would be required for it to be a viable option. In addition, all rail corridors should be monitored for change in ownership or operating conditions to both preserve these corridors for future use and capitalize on new or emerging opportunities.

Long-term consideration concerning the development, implementation and selection of BRT or LRT will depend upon advancement and success of the initial programs and future development patterns. In addition, regional support and a governmental commitment and partnership will be needed to advance transit alternatives including conventional bus, BRT, LRT, intercity and commuter rail. Funding is not identified for many of these actions. Like the “Big Ticket Initiatives” of CDTC’s *New Visions* plan, they have not yet been funded or programmed, but they are put on the table for visioning during times of financial constraint.