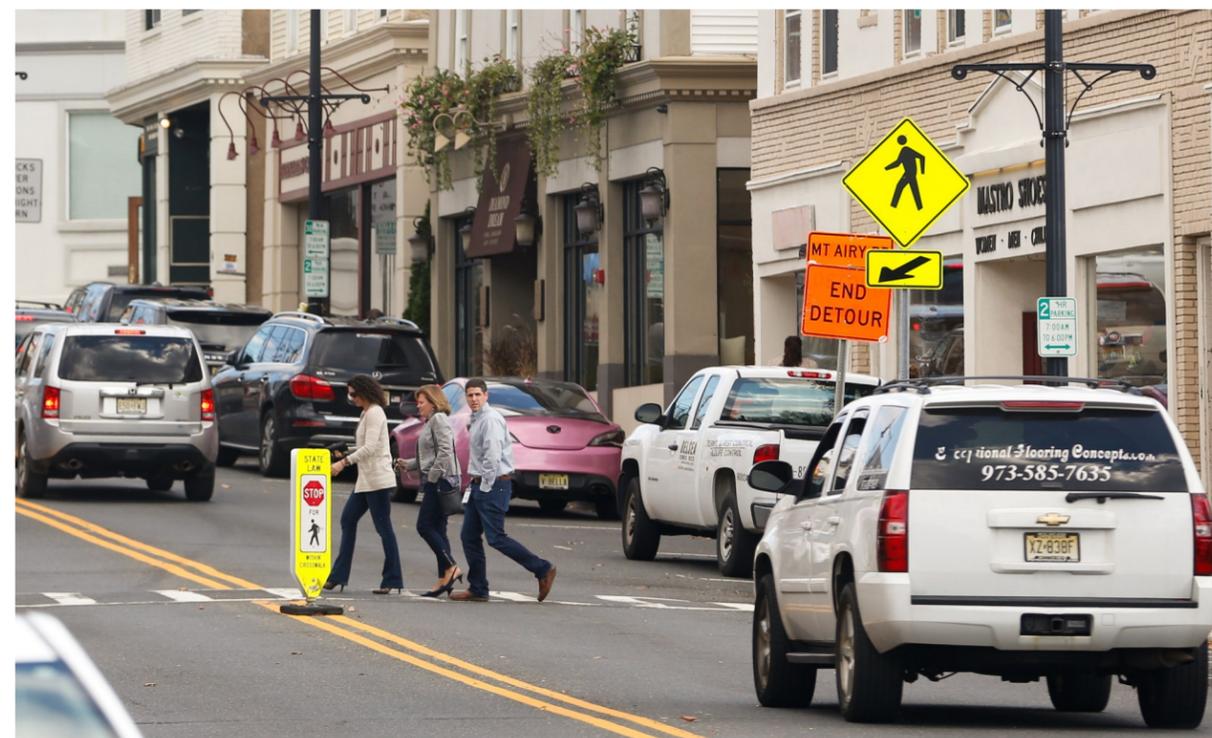
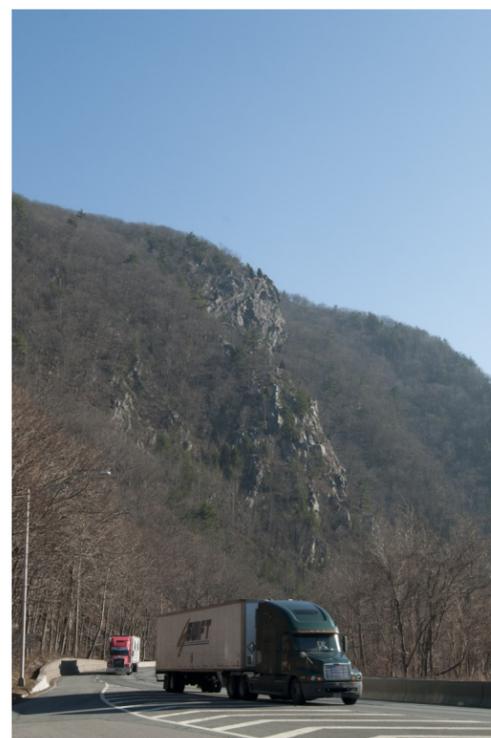




SYSTEM Connectivity



Contents	Pages
Introduction	2
Place-to-Place Summary	4
Appendix: Origin-Destination Tables and Maps	10
Section 1: Suburbs to New York City	10
Section 2: Urban to Urban	24
Section 3: Suburbs to Suburbs, north of I-78	31
Section 4: Suburbs to Suburbs, south of I-78	44
Section 5: Suburbs to Urban	57
Section 6: Rural	75
Appendix: Network Wide Maps	92
Glossary	97

Study Overview

Assessment of System Connectivity in Northern New Jersey explores how effectively the region's transportation facilities function together to serve the movement of people and goods. The study considers movements between suburbs in North Jersey and New York City; urban areas in North Jersey; suburban areas north of I-78; suburban areas south of I-78; suburban and urban areas in North Jersey; and rural areas. This year-long study was launched in September 2015 and will inform the NJTPA's Congestion Management Process (CMP).

While this study identifies gaps in the transportation system at the local and region level and offers suggested improvements, it is not all encompassing. These recommendations were made based on an analysis of 24 key regional destinations and 60 corresponding origin-destination pairs. The findings of this study could serve as a resource for further planning and analysis.

Origin-destination pairs are highlighted in this report to serve as illustrative examples of travel connectivity in the region. The recommendations do not consider feasibility or cost and additional study would be required before advancing any of these concepts.

These locations have been analyzed in the context of the demographic, socio-economic and land use characteristics of the origin and destination points and the travel paths. Many of the recommendations that arose from this study are contingent upon expanded trans-Hudson capacity, which is a priority for our region.

Needs and Observations

- **Competitive Public Transit Travel Times to New York:** New York City is generally accessible via auto and public transit from the region's suburban and urban areas. All 10 suburb-to-NYC origin-destination pairs studied have viable auto and transit travel paths. There is, however, variation in how direct or competitive transit travel is to auto, and in what modes are available. For instance, transit travel time between Denville and Midtown Manhattan is often shorter than auto in peak hours.
- **Unpredictable Roadway Travel & Bottleneck Congestion:** Travel time on many of the region's highways and arterial roadway corridors is often unpredictable in peak periods. In addition, the tunnels and bridges between North Jersey and New York City bottleneck, causing more delays. These unreliable conditions force travelers to budget for extra travel time over that which is

routinely necessary. This contributes to inefficiencies, degrades bus transit on-time performance and adds costs to moving freight.

- **Limited Transit Services in Rural Areas:** Transit services connecting rural and vacation areas are limited. These services tend to be regional or inter-regional rail or bus, commuter routes connecting densely populated and commercially developed points that pass through rural areas, local circulator routes that serve populations without autos, or niche services targeting specific markets. Favorable auto circulation and parking conditions in rural areas, coupled with limited population and employment densities tend to work against transit enhancements in these markets.
- **Access to the Transit System is a Key Factor:** Access to and from the public transit stations and stops (first and last mile travel) is a significant issue for North Jersey suburbs. Much of the region is not within walking distance of rail stations or bus stops with service to New York City. (For detail, refer to the Access to Regional Public Transit map in the Appendix: Network Maps.)

Recommendations for Future Consideration

- **Trans-Hudson public transit capacity is a serious issue facing the region.** This study supports NJ TRANSIT, AMTRAK and Port Authority actions and planning to improve rail service to Penn Station and bus service to New York City. This includes a new Portal Bridge over Hackensack River, an additional Hudson River rail tunnel, expansion of Penn Station New York, new rail storage capacity in New Jersey, the Bergen Loop, the Port Authority Bus Terminal replacement and other improvements.
- **Consider improving roadways connecting urban areas that provide transit priority, especially along corridors with frequent unpredictable travel times and bottleneck congestion.**
- **Implement intelligent transportation technology along I-78 and I-80.** This could significantly address unpredictable roadway travel in these corridors and could benefit both auto and transit travel.
- **Where direct local transit between densely populated and commercially developed suburban communities is present, explore improving connections to other local and regional routes, offering peak period express trips and making other service adjustments to encourage transit ridership.**
- **Increase shared car services to improve access to transit.**



METHODOLOGY

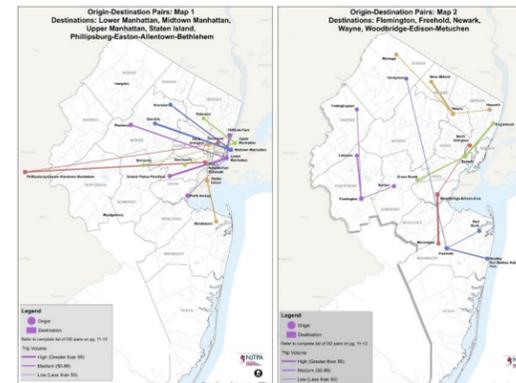
24 KEY REGIONAL DESTINATIONS



SELECTION CRITERIA:

- Socio-economic conditions
- Geographic location
- NJTPA planning studies

1-3 ORIGINS FOR EACH DESTINATION
60 ORIGIN-DESTINATION PAIRS



SELECTION CRITERIA:

- Environmental Justice
- Freight
- Climate Vulnerability
- Regional Plans
- Accessibility from the destinations
- Journey to work
- Crash

REGIONAL PERFORMANCE MEASURES FOR ANALYSIS OF 60 PAIRS

- Auto travel time reliability & consistency of conditions
- Transit travel time reliability
- Transit feasibility
- Freight
- Transit-supportive roadway
- Auto route redundancy

LOCATION SPECIFIC NEEDS & RECOMMENDATIONS FOR TRAVEL PATHS BETWEEN THE 60 PAIRS

<p>NEEDS:</p> <ul style="list-style-type: none"> • Peak to Off-peak auto travel time • Feasible transit route • Peak transit-auto travel time ratio • Unpredictable road segments • Bottlenecks 	<p>RECOMMENDATIONS FOR FUTURE CONSIDERATION:</p> <ul style="list-style-type: none"> • Interchange study/improvement • Intersection study/improvement • Bus / Shuttle improvement • EZ Pass express lanes • Alternative routes plan • ITS/ATM
---	---

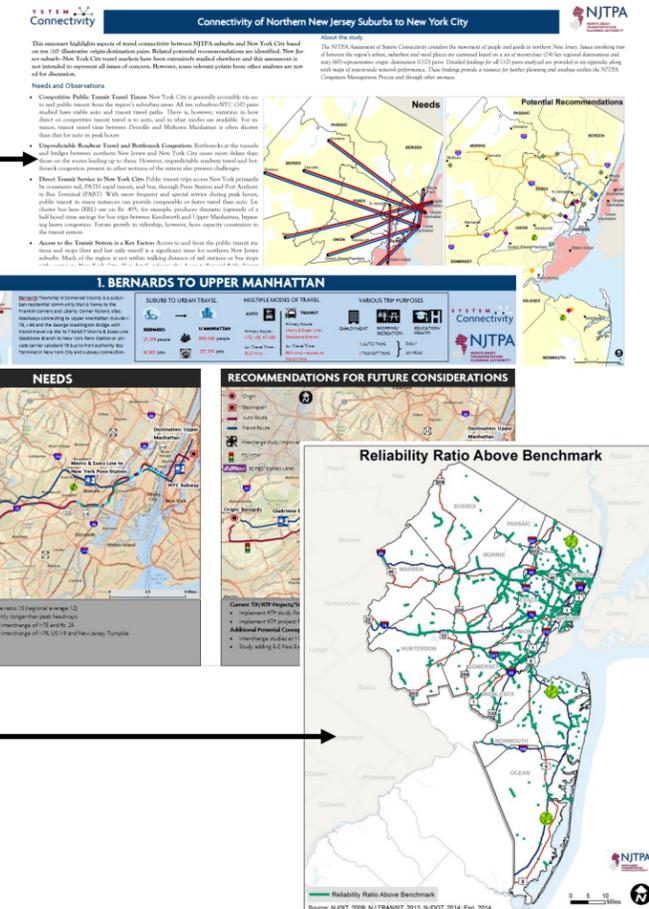
DATA SOURCES: NJTPA, NJDOT, NJ TRANSIT, VPP SUITE, TRANSCOM, PLAN4SAFETY, ESRI, NJOIT

SECTIONS OF THIS DOCUMENT

1. PLACE-TO-PLACE SUMMARY SHEETS: The place-to-place summary sheets illustrates the nature and issues of travel between two types of places such as between the suburbs of New Jersey and New York City. It also identifies potential recommendations to address the issues, for further consideration.

2. APPENDIX: ORIGIN-DESTINATION TABLES and MAPS: The origin-destination maps illustrate graphically results for each origin-destination pairs. Although they tend to generalize the origin and destination point across a large area, they seek to capture the general travel movements relating to those locations. The maps also provide key place context information and notes about travel movements served.

3. APPENDIX: NETWORK WIDE MAPS: These maps illustrate the results of network wide analysis of performance measures such as Auto travel time reliability and consistency of conditions and transit feasibility. They identify needs such as unpredictable road segments, bottleneck congestion and feasibility/access to transit routes.



This summary highlights aspects of travel connectivity between suburbs in the NJTPA region and New York City based on 10 illustrative origin-destination pairs. While this study offers recommendations for these pairs, not all of these suggestions consider feasibility or cost and additional study would be required before advancing many of these concepts. This travel market has been extensively studied elsewhere and this assessment is not intended to represent all issues of concern.

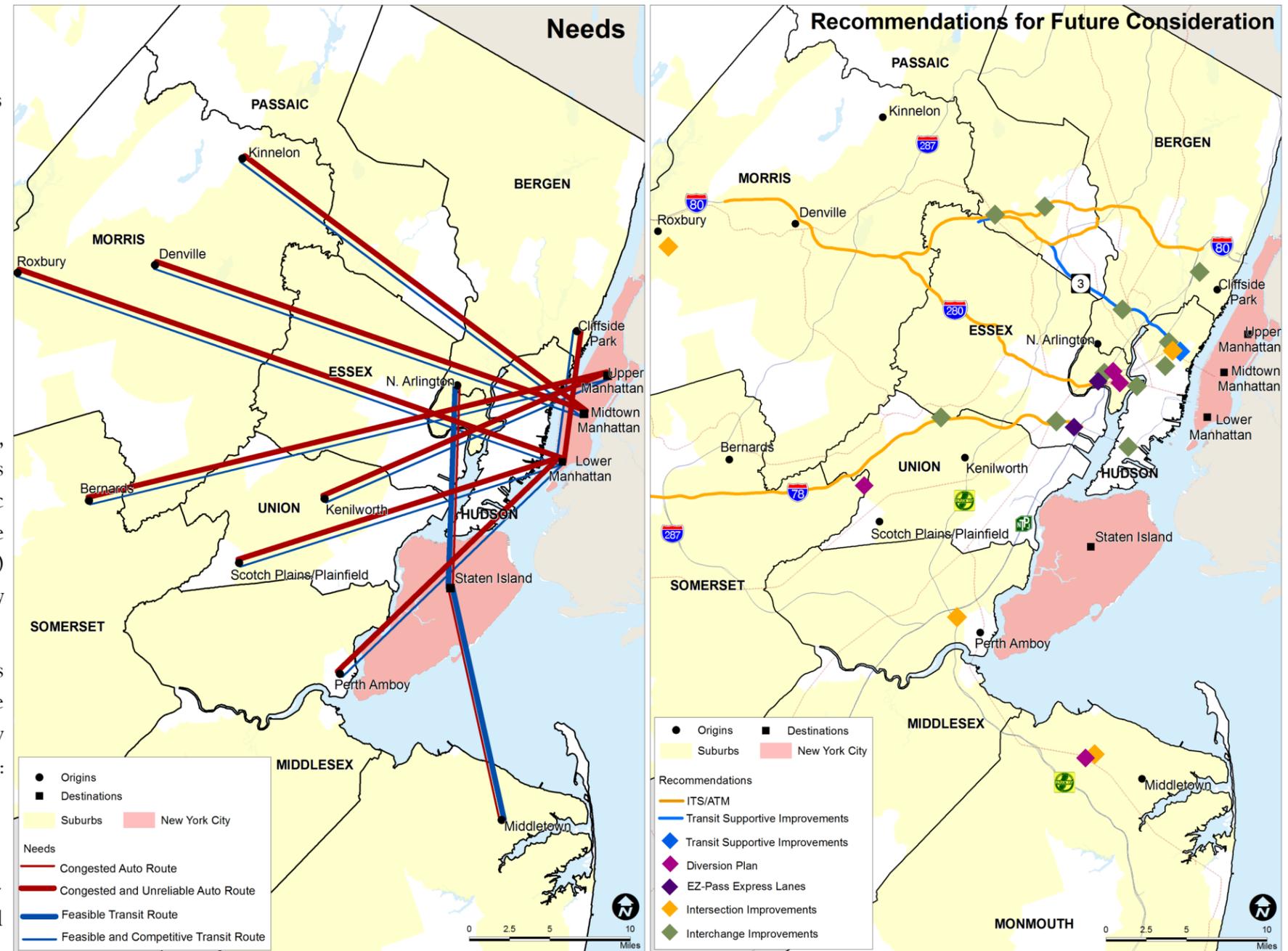
These origin-destination pairs have been analyzed in the context of the demographic, socio-economic and land use characteristics of the origin and destination points and the travel paths. For instance, most of the travel paths from New Jersey suburbs to New York City passes through Hudson County which is expected to experience high levels of residential and employment growth. Hence recommendations of this section especially emphasize Trans-Hudson capacity expansion and expansion of public transit carrying capacity in Hudson County.

Needs and Observations

- **Competitive Public Transit Travel Times:** New York City is generally accessible via auto and public transit from the region's suburban areas. All 10 origin-destination pairs studied have viable auto and transit travel paths. There is, however, variation in how direct or competitive transit travel is to auto, and in what modes are available. For instance, transit travel time between Denville and Midtown Manhattan is often shorter than that for auto in peak hours.
- **Unpredictable Travel Times** Bottlenecks at the tunnels and bridges between northern New Jersey and New York City cause more delays than those on the routes leading up to them. However, unpredictable roadway travel and bottleneck congestion present in other sections of the system also present challenges.
- **Direct Transit Service to New York City:** Public transit is available by commuter rail, PATH rapid transit, and bus, primarily through Penn Station and Port Authority Bus Terminal (PABT). With more frequent and special service during peak hours, public transit in many instances can provide comparable or faster travel than auto. Exclusive bus lane use on Route 495, for example, produces dramatic (upwards of a half hour) time savings for bus trips between Kenilworth and Upper Manhattan, bypassing heavy congestion. Due to future growth, however, public transit faces capacity constraints.
- **Access to the Transit System:** Access to and from the public transit stations and stops (first and last mile travel) is a significant issue for North Jersey suburbs. Much of the region is not within walking distance of rail stations or bus stops with service to New York City. (For detail, refer to the *Access to Regional Public Transit* map in the Appendix: Network Maps.)

Recommendations for Future Consideration

- Trans-Hudson public transit capacity is a serious issue facing the region. This study supports NJ TRANSIT, AMTRAK and Port Authority actions and planning to improve rail service to Penn Station and bus service to New York City. This includes a new Portal Bridge over Hackensack river, an additional Hudson River rail tunnel, expansion of New York Penn Station, new rail storage capacity in New Jersey, the Bergen Loop, the Port Authority Bus Terminal replacement and others.
- Support initiatives to improve the capacity and reliability of bus priority operations on Route 495 corridor, which would improve bus service between New York City and New Jersey communities.
- New intelligent transportation technology along I-78 and I-80 could significantly address unpredictable roadway travel along these corridors, benefitting both auto and transit travel.
- Increase shared car services to improve access to transit services.



This summary highlights aspects of travel connectivity between urban areas in the NJTPA region based on five illustrative origin-destination pairs. While this study offers recommendations for these pairs, not all of these suggestions consider feasibility or cost and additional study would be required before advancing many of these concepts. Travel between urban areas of New Jersey has been studied elsewhere and this assessment is not intended to represent all issues of concern.

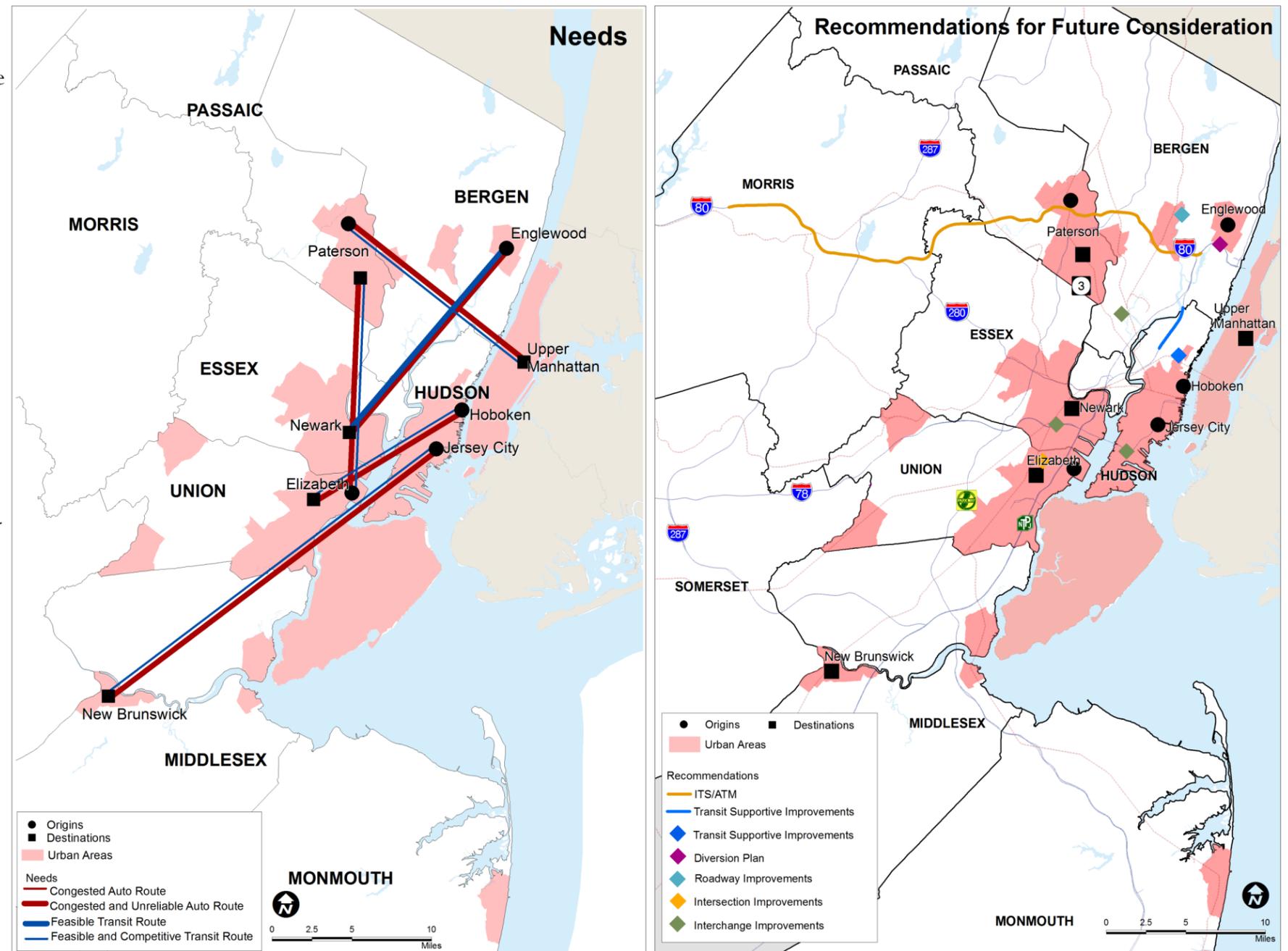
These origin-destination pairs have been analyzed in the context of the demographic, socio-economic and land use characteristics of the origin and destination points and the travel paths. For instance, unpredictable road segments and bottleneck congestion are expected in the urban areas of a densely populated region like New Jersey. Hence, despite observing congestion, road expansion has not been recommended for any of the pairs. Congestion should be addressed through minor road improvements and active traffic management.

Needs and Observations

- **Auto Travel Predominantly Through Interstate Highways and Principal Arterials:** Auto travel is available between all urban areas in North Jersey. The communities are predominantly connected through Interstate highways and principle arterials. As these urban areas are concentrated in the eastern part of the region, travel distances are relatively short when considered at the regional scale.
- **Unpredictable Travel Times:** Most roadways experience increased travel times due to unpredictable travel conditions and bottleneck congestion during peak hours. This most intensely occurs in the urban areas proximate to New York City. In addition to affecting auto travel, bus transit on time performance and freight movement are also impacted.
- **Transit Access:** Most urban areas have frequent rail or city bus connections. Major parts of the urban areas are within walkable and bikeable distances of the transit stops, further increasing the effectiveness of transit travel.
- **Competitive Public Transit Travel Times:** There are direct or single-transfer transit routes almost throughout the day with increased services during the peak hours, between many urban areas in North Jersey making it competitive to auto in terms of travel time. For instance, transit travel time between Jersey City and New Brunswick, and Hoboken and Elizabeth, are competitive to auto travel time.

Recommendations for Future Consideration

- Intersection and interchange improvements may relieve some bottleneck congestion observed along travel paths.
- New intelligent transportation technology along I-78 and I-80 should significantly address unpredictable roadway congestion in these corridors.
- Improvements to roadways connecting urban areas that provide transit priority should be considered, especially along corridors with frequent unpredictable travel times and bottleneck congestion.
- Support the Hudson Bergen light rail line extension



This summary highlights aspects of travel connectivity between NJTPA suburban areas north of I-78 based on nine illustrative origin-destination pairs. While this study offers recommendations for these pairs, not all of these suggestions consider feasibility or cost and additional study would be required before advancing many of these concepts. This assessment complements other NJTPA and partner agency work that examines travel between suburban markets.

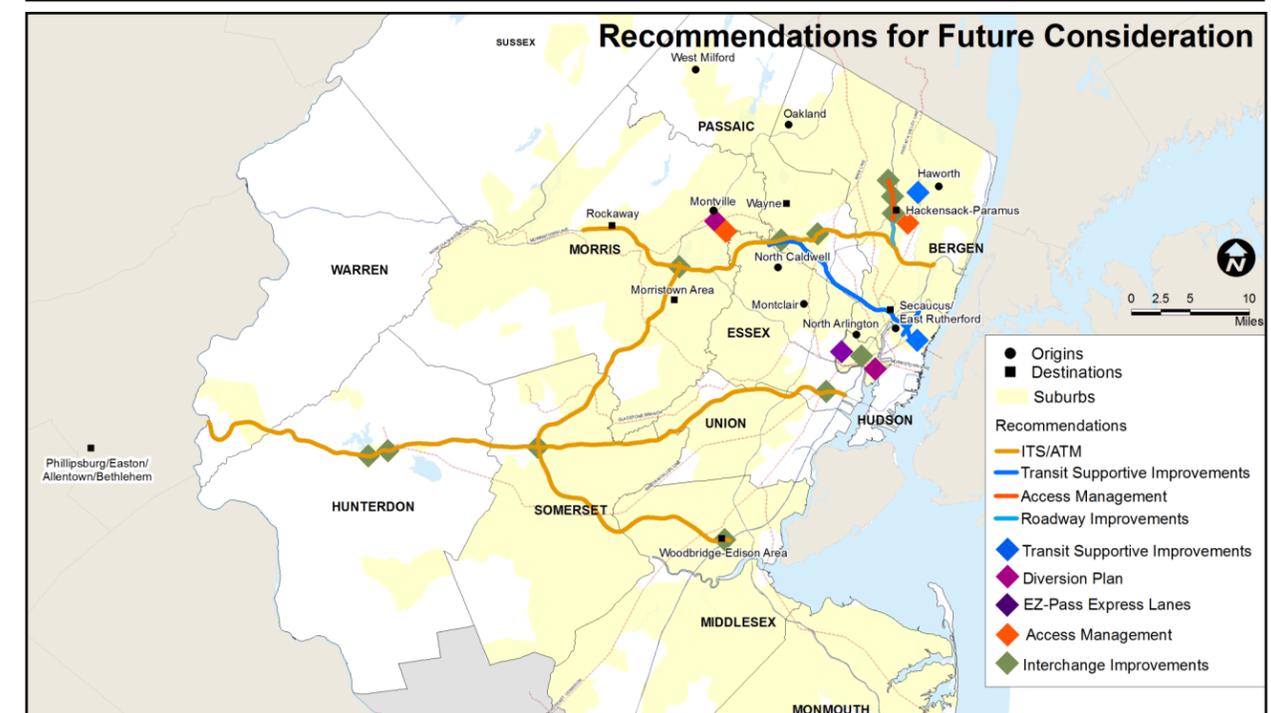
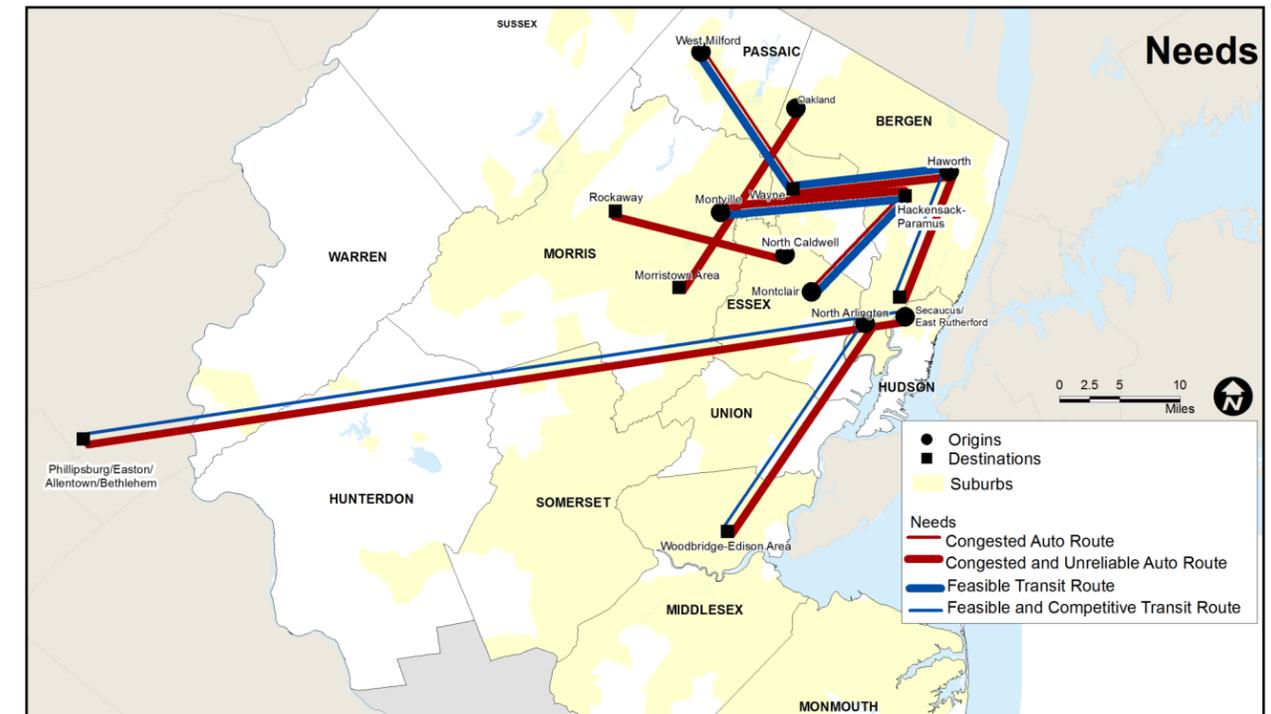
These origin-destination pairs have been analyzed in the context of the demographic, socio-economic and land use characteristics of the origin and destination points and the travel paths. For instance, the low population, employment and land use density of the suburban areas does not allow the increase of transit services within and between them. Hence, despite having limited public transit service, an expansion of public rail and bus services between and within all suburban areas have not been recommended.

Needs and Observations

- **Auto Travel Predominantly Through Local Roads:** These communities are predominantly connected through principal arterials, county and municipal roads because many suburban areas are not directly served by Interstate highways. For instance, West Milford in Sussex County is not near an Interstate highway. Hence trips from West Milford to Wayne are primarily made using Route 23.
- **Unpredictable Travel Times:** Many roadways experience increased travel time due to unpredictable roadway travel conditions and bottleneck congestion during peak hours. Congestion impacts auto travel, bus transit on time performance and heavy freight movement to and from Port Newark/Elizabeth.
- **Public Transit is Less Competitive:** While transit services are available between many suburban areas in North Jersey, auto travel can be quicker and more convenient, except during peak hours and along densely populated and commercially developed corridors. Limited availability of direct services, favorable auto circulation and sufficient parking spaces in suburban areas, are some of the conditions which make transit travel less attractive between suburban areas. For instance, travel from Oakland to the Morristown area via transit requires multiple transfers, which increases the transit travel time two fold in comparison to auto.
- **Transit Access:** Many transit riders must use both rail and bus to get to their destinations. Buses and shuttles are used to access a train station or complete the first or last mile of the trip. For instance, NJTRANSIT bus 40 connects North Arlington to the Northeast Corridor rail line, which connects riders to Woodbridge-Edison. Despite availability of buses and shuttles, access to and from the public transit stops is an issue in North Jersey suburbs.

Recommendations for Future Consideration

- Intersection and interchange improvements may relieve some bottleneck congestion along travel paths.
- New intelligent transportation technology along I-78 and I-80 could significantly address unpredictable roadway congestion along these corridors.
- Improvements to suburban arterial roadways that provide transit priority should be considered, especially along corridors with frequent unpredictable travel times and bottleneck congestion.
- Where direct local transit between densely populated and commercially developed suburban communities is present, improved connections to other local and regional routes, limited peak period express trip(s) and other service adjustments could be explored to increase transit usage.
- Increase shared car services to improve access to transit services.



This summary highlights aspects of travel connectivity between suburban areas in the NJTPA region, south of I-78 based on 10 illustrative origin-destination pairs. While this study offers recommendations for these pairs, not all of these suggestions consider feasibility or cost and additional study would be required before advancing many of these concepts. New Jersey suburban travel markets have been extensively studied elsewhere and this assessment is not intended to represent all issues of concern.

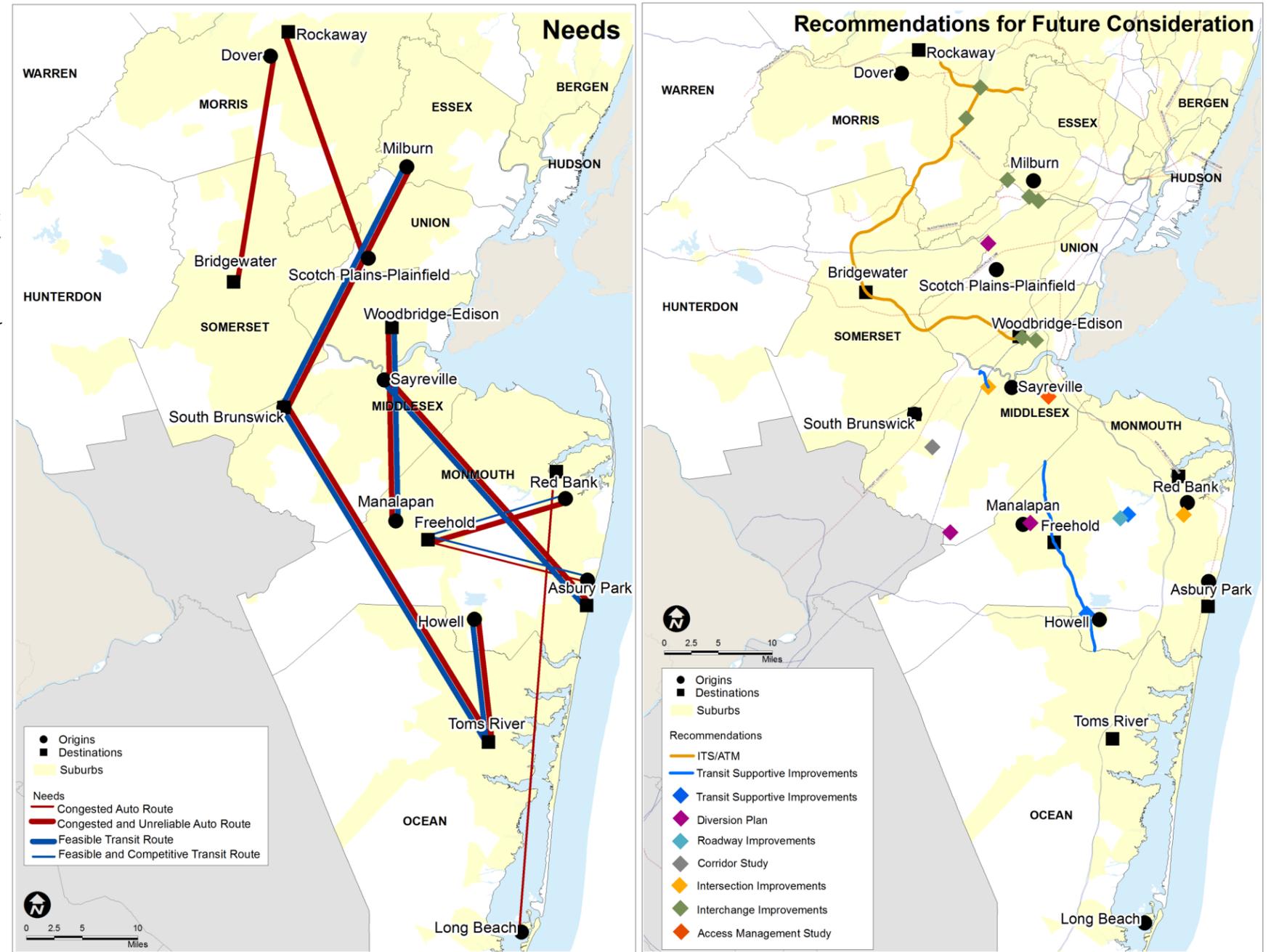
These origin-destination pairs have been analyzed in the context of the demographic, socio-economic and land use characteristics of the origin and destination points and the travel paths. For instance, the low population, employment and land use density in these suburban areas does not lend itself to increasing transit services in these areas and therefore it is not recommended.

Needs and Observations

- **Auto Travel Predominantly Through Local Roads:** Auto travel is available between all suburban areas in North Jersey. The communities are predominantly connected through principal arterials, county and municipal roads. For instance, South Brunswick in Middlesex County is not near Interstate highway, but is accessible via Route 1.
- **Unpredictable Travel Times:** Many roadways experience increased travel time due to unpredictable roadway travel conditions and bottleneck congestion during peak hours. Some of the roadways also experience congestion during off peak and weekend hours because of the presence of shopping centers and tourist destinations.
- **Public Transit is Less Competitive:** While transit services are available between many suburban areas in North Jersey, auto travel can be quicker and more convenient, except during peak hours and along densely populated and well developed commercial corridors. Limited availability of direct transit services, favorable auto circulation and sufficient parking spaces in suburban areas, are some of the conditions that make transit travel less attractive in these areas. For instance, travel from Sayreville to Asbury Park via transit includes multiple transfers and take nearly twice as long as travelling by auto.
- **Access to Transit:** Most places have limited access to rail and express bus stops. Transit stops are not within walking and biking distance in many of these communities.

Recommendations for Future Consideration

- Intersection and interchange improvements may relieve some of the bottleneck congestion observed along the travel paths.
- New intelligent transportation technology along I-78 and I-80 could significantly address unpredictable roadway travel in these corridors.
- Improvements to suburban arterial roadways that provide transit priority should be considered, especially along corridors with frequently unpredictable travel times and bottleneck congestion.
- Local connections to rail stations and long-distance bus stops should be further explored.
- Transit Signal Priority could significantly improve express bus services on Route 9.



This summary highlights aspects of travel connectivity between suburban and urban areas in the NJTPA region based on 13 illustrative origin-destination pairs. While this study offers recommendations for these pairs, not all of these suggestions consider feasibility or cost and additional study would be required before advancing many of these concepts. This assessment complements other NJTPA and partner agency work that examines suburban to urban travel markets.

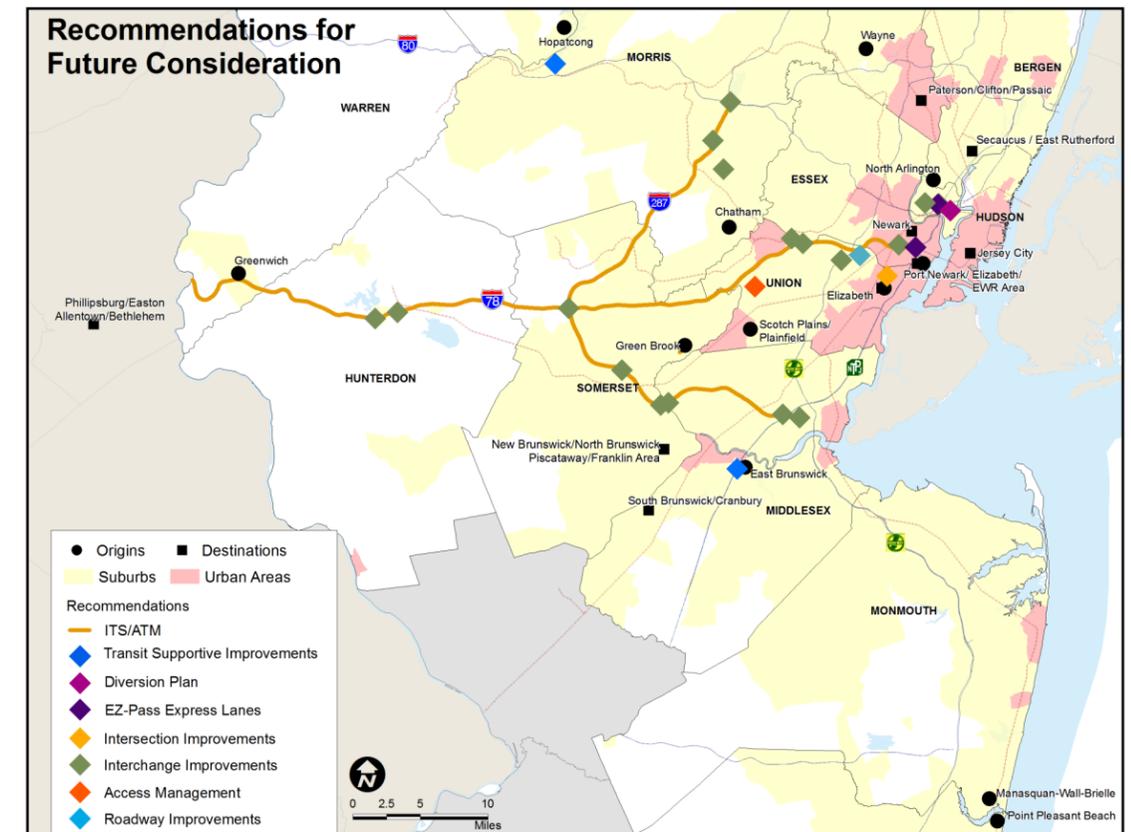
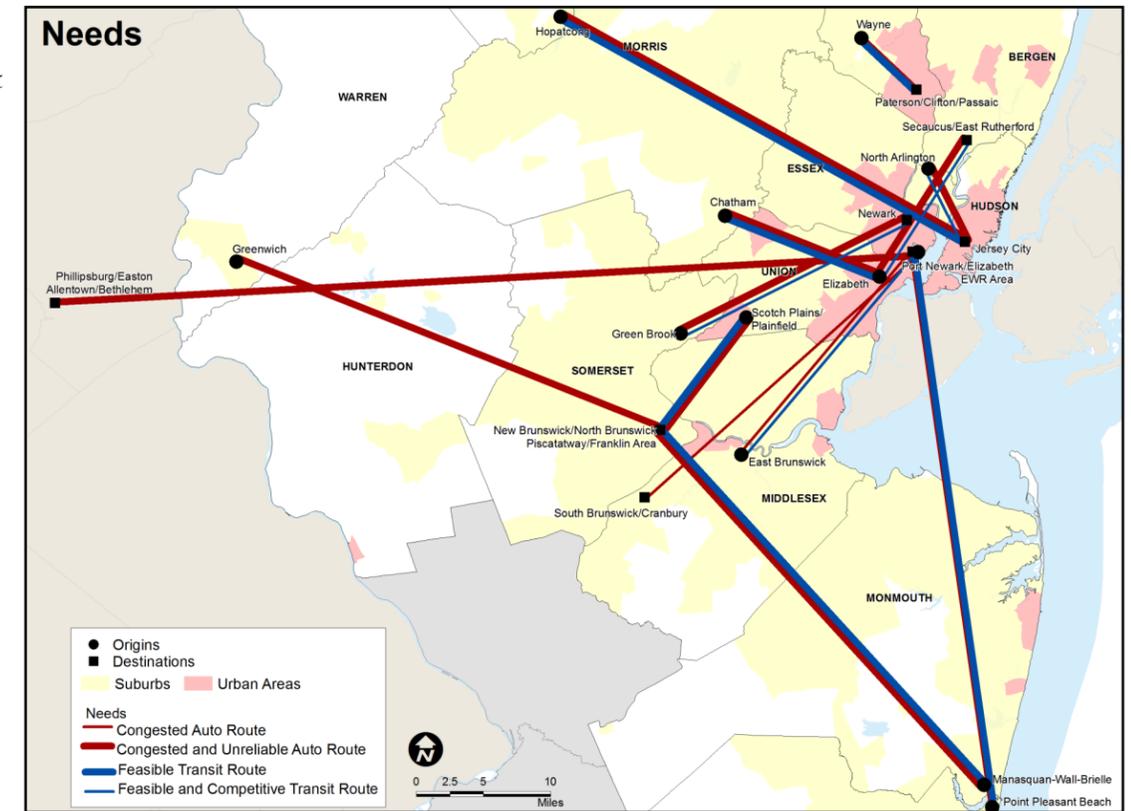
These origin-destination pairs have been analyzed in the context of the demographic, socio-economic and land use characteristics of the origin and destination points and travel paths. For instance, there are no direct transit services between some of these pairs due to low demand.

Needs and Observations

- **Auto Travel Predominantly Through Local Roads:** Urban and suburban areas in North Jersey are well connected by state highways and county and municipal roads. The roadway system is hierarchical providing capacity for traffic on major highways and access to adjacent land uses through local roads and streets.
- **Unpredictable Travel Times:** Many of the region’s highways and arterial roadway corridors have unpredictable travel times during peak periods. Along with bottleneck congestion, such unreliable conditions requires travelers to budget extra travel time over that which is routinely necessary. This contributes to inefficiencies (such as for auto travel from Green Brook to Newark), degrades bus transit on-time performance (such as from Wayne to Paterson), and adds costs to moving freight (prominently to/from the region’s ports in Newark and Elizabeth).
- **Competitive Public Transit Travel Times:** Public transit offers travel times competitive to that of auto trips in denser suburbs served by frequent and reliable rail or bus service directly to urban downtowns. Examples examined include trips from Secaucus/East Rutherford to Elizabeth and Green Brook to Newark. In such markets, transit is an attractive alternative to unpredictable auto travel times and the challenges of local circulation and parking in urban centers.
- **Direct Transit Service can be Limited:** Movements between these pairs are not as amenable for public transit users. To access Elizabeth from Chatham, for example, it requires a transfer from the Morris and Essex Line to the Northeast Corridor Line is required in New York or Secaucus. This example also highlights the importance of “first/last mile” access to the public transit system.

Recommendations for Future Consideration

- Intersection and interchange improvements may relieve some of the bottleneck congestion along travel paths.
- New intelligent transportation technology along I-78 and I-80 should significantly address unpredictable roadway congestion in these corridors.
- Better and more frequent bus and shuttle services to rail transit stations and express bus stops would improve the transit travel time and encourage more people to take transit during peak hours.
- Improvements to roadways that serve bus movement and opportunities to provide priority for that movement amid other traffic should be considered, especially along corridors with frequent unpredictable travel times and bottleneck congestion.
- Increase shared car services to improve access to transit services.



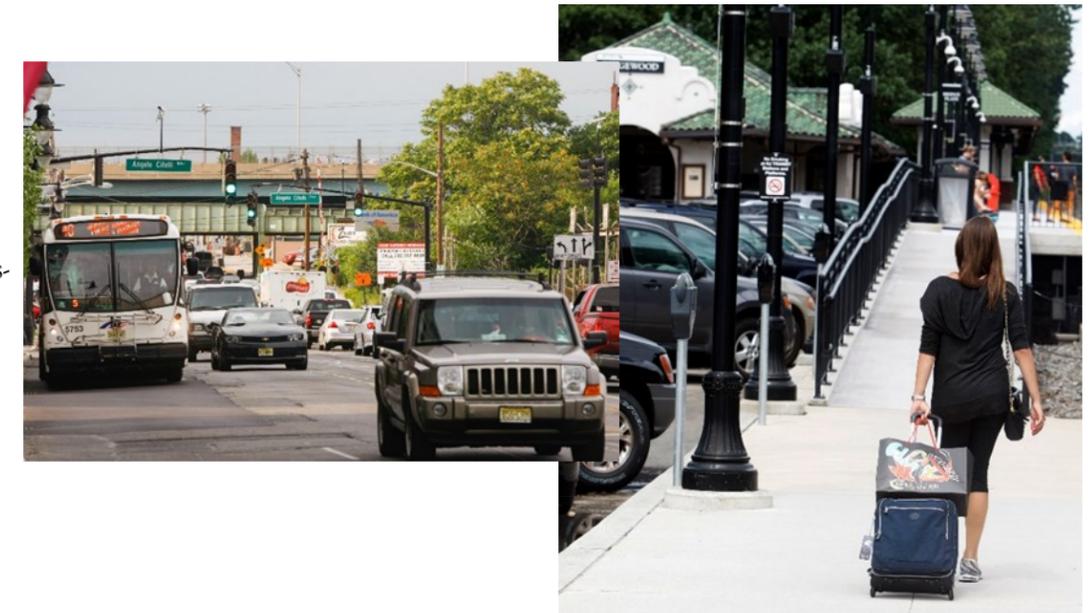
Section 1: Connectivity of North Jersey Suburbs to New York City: 10 representative origin-destination pairs

The 10 representative origin-destination pairs included in this chapter of the appendix depict the needs that may be experienced while traveling from North Jersey suburbs to New York City during the morning rush hours. The recommendations suggested to address the needs for each pair include projects in the NJTPA Transportation Improvement Program (TIP) and Regional Transportation Plan (RTP), as well as new project ideas that may be considered for future planning studies and local concept development. While this study offers recommendations for these pairs, not all of these suggestions consider feasibility or cost and additional study would be required before advancing many of these concepts.

The NJTPA considered the land use type, population density, job density, nature of economic activities, street patterns of the origin and the destination when identifying needs and recommendations. The following narrative provides context for this section of origin-destination pairs.

North Jersey Suburbs: These are predominantly residential communities with a population and employment density lower than the region’s urban areas. Some of these communities have prominent downtowns with shopping and offices. The housing stock varies from single-family residences to townhomes and apartment buildings. Workers living in the suburbs usually commute to other parts of the region, with a large number travelling to jobs in New York City.

The population density of the suburbs is higher in the northeastern portion of the region and decreases closer to the southwestern border. Residents in the southwestern part of the region predominately travel by auto. Transit is a more feasible mode of transportation for northeaster counties including Bergen, Hudson, Essex and Union.



New York City: Located east of New Jersey, the city is the economic and financial hub of the New York-New Jersey-Connecticut metropolitan region. It attracts millions of commuters every day – with hundreds of thousands of people traveling from the New Jersey suburbs. The city is also a major tourism and entertainment spot, which attracts thousands more people every day.

New Jersey is connected to New York City via tunnels and bridges under and over rivers and bays. Besides travelling by road in a bus or automobile, ferries, NJ TRANSIT and PATH trains offer access to the city. MTA subways and buses provide transit travel within the city.



O-D Pairs and Recommendations for Future Consideration along their travel paths (The recommendations not in current RTP/TIP are highlighted): The table below provides specific information about each O-D pair, travel challenges and specific strategies that could be applied to help improve travel between these locations.

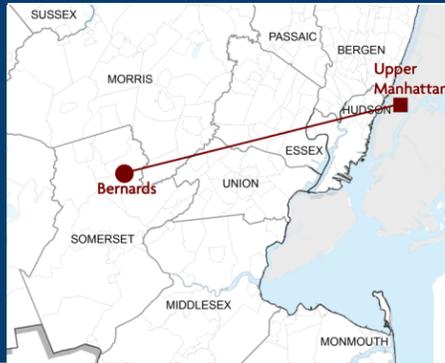
Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
1. Bernards to Upper Manhattan	Auto	Implement RTP project for long-term ITS improvements	I-78, PA State Line to I-95	Essex, Union	✓	✓			✓	
		Interchange study	I-78 and US 1-9	Essex	✓	✓	✓		✓	
		Interchange Study	I-78 and Rt. 124	Union	✓	✓			✓	
		Study adding EZ Pass Express lanes	New Jersey Turnpike Interchange 14 (I-78)	Essex	✓	✓	✓		✓	
2. Cliffside Park to Lower Manhattan	Auto	Interchange study	Secaucus Road and U.S. 1-9	Hudson	✓	✓				
		Intersection study	Rt. 3 and U.S. 1-9	Hudson	✓	✓				
		Weaving study	Rt. 46 between Rt. 93 and I-95.	Bergen	✓	✓				
3. Denville - Midtown Manhattan	Auto	Implement TIP project for long-term interchange improvements	Rt. 23 and I-80 Interchange	Passaic	✓	✓	✓		✓	
		Interchange study	I-80 (eastbound) at Squirrelwood Road.	Passaic	✓	✓			✓	
		Implement active traffic management (ATM) strategies from Connected Corridor report	I-80 between Route 15 and George Washington Bridge.	Essex, Passaic	✓	✓	✓		✓	
4. Kenilworth to Upper Manhattan	Auto	Implement RTP project for long-term ITS improvements	I-78, PA State Line to I-95	Essex	✓	✓			✓	
		Study adding EZ Pass Express lanes	New Jersey Turnpike Interchange 14 (I-78)	Essex	✓	✓	✓		✓	
		Interchange study	I-78 and US 1-9	Essex	✓	✓	✓		✓	
	Transit	Implement RTP objective for improved reliability of Rt. 495 bus priority operations	Rt. 495 Express Bus Lanes	Hudson	✓	✓				
5. Kinnelon - Midtown Manhattan	Auto	Implement TIP project for ITS	Rt. 46, Rt. 23 (Pompton Ave) to Rt. 20	Passaic	✓	✓	✓			
		Implement TIP project for operational improvements	Rt. 3 and Rt. 495	Hudson	✓	✓				

Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
		Weaving study.	Rt. 3 and Rt. 17	Bergen	✓	✓	✓			
	Transit	Implement RTP objective for improved reliability of Rt. 495 bus priority operations	Rt. 495 Express Bus Lanes	Hudson	✓	✓				
		Study transit supportive roadway improvements	Rt. 46 from I-80 to Rt.3 & Rt.3 in Passaic, Bergen and Hudson Counties	Bergen, Passaic, Hudson	✓	✓	✓			
6. Middletown to Staten Island	Auto	Intersection study	Rt. 35 and Palmer Avenue	Monmouth	✓		✓			
		Add alternative route to county diversion plan	Rt. 35 near Palmer Avenue in Holmdel	Monmouth	✓					
7. North Arlington to Staten Island	Auto	Implement TIP project for long-term interchange improvements	New Jersey Turnpike Interchange 15W	Hudson	✓				✓	
		Study adding EZ Pass Express lanes	New Jersey Turnpike Interchange 15W (I-280)	Hudson	✓				✓	
		Add alternative route to county diversion plan	New Jersey Turnpike Interchange 15W	Hudson	✓					
8. Perth Amboy to Lower Manhattan	Auto	Intersection study	King George Road and Rt. 184 in Woodbridge	Middlesex	✓	✓				
		Implement RTP project for interchange improvement	New Jersey Turnpike Interchange 14 (I-78)	Hudson						
9. Roxbury to Lower Manhattan	Auto	Implement RTP project for long-term interchange improvements	New Jersey Turnpike Interchange 15W	Hudson	✓	✓			✓	
		Weaving Study	NJ 7 between Newark-Jersey City Turnpike and Fish House Road	Hudson						
		Add alternative route to county diversion plan	Newark-Jersey City Turnpike	Hudson	✓	✓				

Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
		Implement active traffic management (ATM) strategies from Connected Corridor report.	I-280 between I-80 and I-95	Essex	✓	✓			✓	
	Transit	Implement TIP project for long-term intersection improvements.	Rt. 10, Hillside Avenue (CR 619) to Mt. Pleasant Turnpike (CR 665)	Morris	✓	✓				
10. Scotch Plains/Plainfield to Lower Manhattan	Auto	Implement RTP project for long-term ITS improvements	I-78, PA State Line to I-95	Union	✓	✓			✓	
		Interchange study.	I-78 and US 1-9	Essex	✓	✓	✓		✓	
		Interchange study.	I-78 and Rt. 124	Union	✓	✓			✓	
		Study adding E-Z Pass express lanes	New Jersey Turnpike Interchange 14 (I-78)	Essex	✓	✓	✓		✓	
		Add alternative route to county diversion plan	New Providence Road and Park Avenue in Watchung	Somerset	✓	✓				
	Transit	Implement RTP objective for improved reliability of Rt.495 bus priority operations	Rt. 495 Express Bus Lanes	Hudson	✓	✓				

1. BERNARDS TO UPPER MANHATTAN

Regional Context



Bernards Township in Somerset County is a suburban residential community that is home to the Franklin Corners and Liberty Corner historic sites. Roadways connecting to Upper Manhattan include I-78, I-95 and the George Washington Bridge with transit travel via the NJ TRANSIT Morris & Essex Line Gladstone Branch to New York Penn Station or private carrier Lakeland 78 bus to Port Authority Bus Terminal in New York City and subway connection.

SUBURB TO URBAN TRAVEL



BERNARDS

27,000 people

15,000 jobs



U MANHATTAN

900,000 people

280,000 jobs

MULTIPLE MODES OF TRAVEL

AUTO



Primary Route :

I-78, I-95, RT-495

Av. Travel Time :

90.0 mins



TRANSIT

Primary Route:

Morris & Essex Line :

Gladstone Branch

Av. Travel Time:

96.5 mins + access to transit time

VARIOUS TRIP PURPOSES



EMPLOYMENT



SHOPPING/ RECREATION

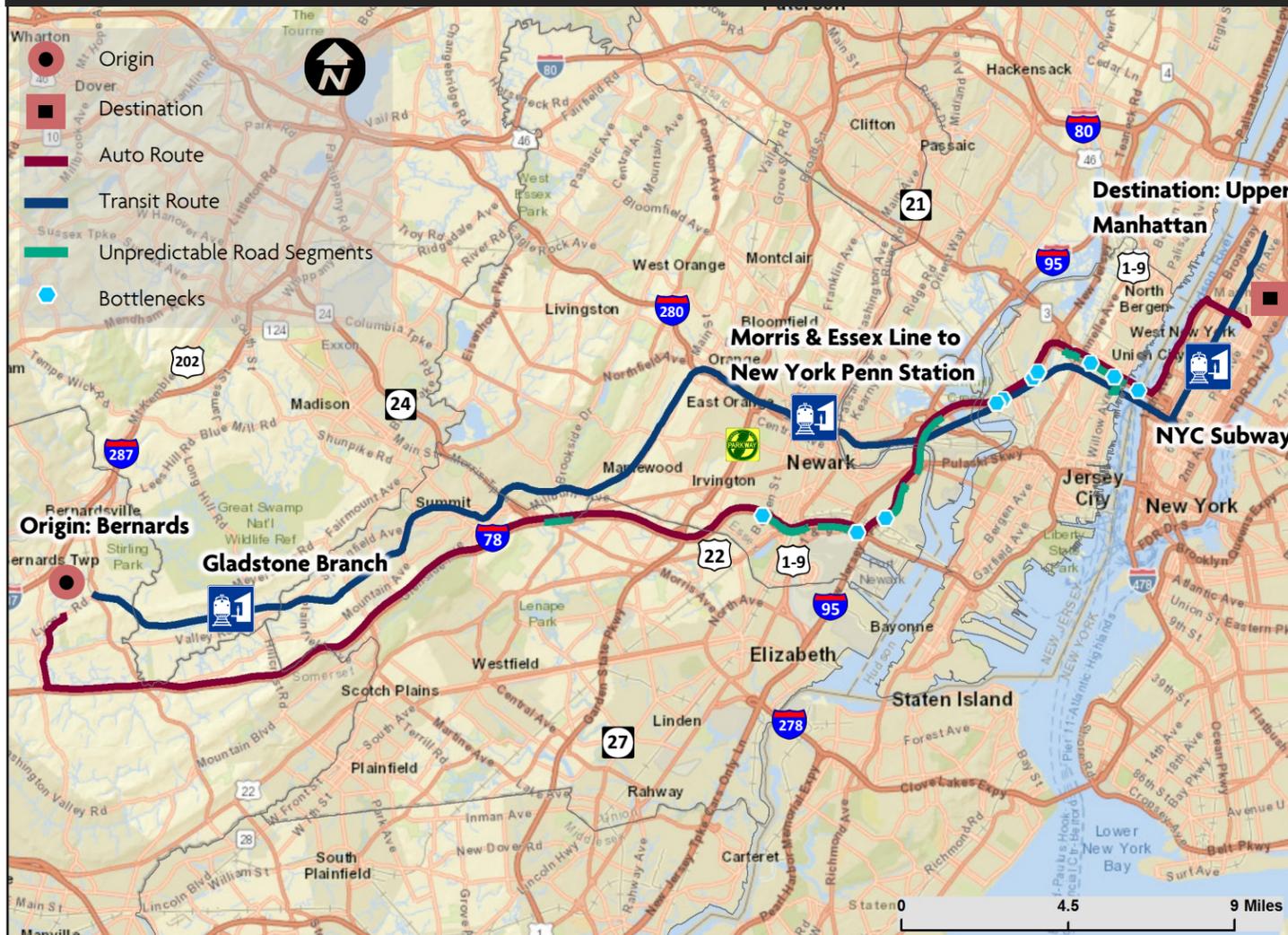


EDUCATION/ HEALTH

SYSTEM Connectivity

NJTPA NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

NEEDS



- Peak to off-peak auto travel time ratio: 1.5 (regional average: 1.2)
- Off-peak rail headways significantly longer than peak headways
- Unpredictable road segments at interchange of I-78 and Rt. 24
- Unpredictable road segments at interchange of I-78, US 1-9 and New Jersey Turnpike

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement RTP project for long-term ITS improvements along I-78, from PA state line to I-95

Additional Potential Concepts:

- Interchange studies at I-78 and Rt. 124 and at I-78, US 1-9 and New Jersey Turnpike
- Study adding E-Z Pass Express Lanes at New Jersey Turnpike Interchange 14 (I-78)

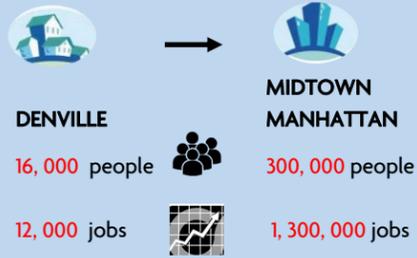
3. DENVILLE TO MIDTOWN MANHATTAN

Regional Context



Denville Township in Morris County is a suburban residential area with a local business district. Roadways connecting to Midtown Manhattan include I-80, I-280, NJ Route 3 and US Route 46 with transit travel via the NJ TRANSIT Morris & Essex Line rail direct to Penn Station New York, Montclair-Boonton rail line to Hoboken/PATH/ferry connections or private carrier Lakeland 80 buses to the Port Authority Bus Terminal in New York City.

SUBURB TO URBAN TRAVEL



MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES



NEEDS



- Peak to off-peak auto travel time ratio: 1.6 (regional average: 1.2)
- Unpredictable road segments and bottlenecks on I-80 in Essex and Passaic counties

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement TIP project for long-term interchange improvements at Rt. 23 and I-80

Additional Potential Concepts:

- Interchange study at I-80 and Squirrelwood Rd.
- Implement active traffic management (ATM) strategies from Connected Corridor report on I-80 between Route 15 and the George Washington Bridge

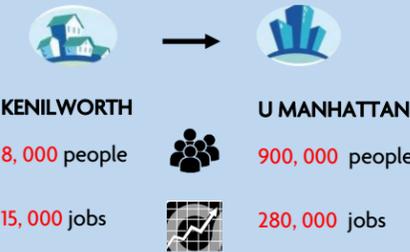
4. KENILWORTH TO UPPER MANHATTAN

Regional Context

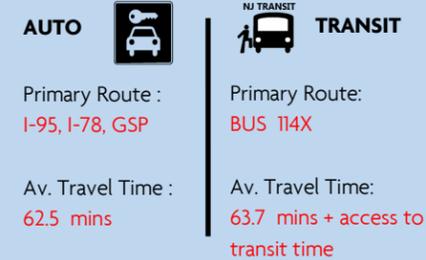


The Borough of Kenilworth in Union County features a mix of mature suburban residential, recreational, commercial and corporate offices. The Garden State Parkway traverses the community and connects to Upper Manhattan via I-78, the NJ Turnpike, I-80 and George Washington Bridge, with transit travel via NJ TRANSIT bus Route 114 to New York Port Authority Bus Terminal with a subway connection to Upper Manhattan.

SUBURB TO URBAN TRAVEL



MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES



NEEDS



- Peak to off-peak auto travel time ratio: 1.7 (regional average: 1.2)
- Unpredictable road segment and bottleneck at interchange of I-78 and Garden State Parkway
- Unpredictable road segment and bottleneck at interchange of US 1-9, New Jersey Turnpike and I-78

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement RTP project for long-term ITS improvements along I-78, from PA state line to I-95
- Implement RTP objective for improved reliability of Rt. 495 bus priority operations

Additional Potential Concepts:

- Interchange study at US 1-9, New Jersey Turnpike and I-78
- Study adding E-Z Pass Express Lanes at New Jersey Turnpike Interchange 14 (I-78)

5. KINNELON TO MIDTOWN MANHATTAN

Regional Context



Morris County's Borough of Kinnelon is a suburban residential community with watershed and natural lands. Roadways connecting this borough to midtown Manhattan include I-80, I-280, NJ 7 and the Holland Tunnel with transit travel via NJ TRANSIT's Route 194 bus to the Port Authority Bus Terminal in New York City.

SUBURB TO URBAN TRAVEL



KINNELON

10,000 people

2,000 jobs



MIDTOWN MANHATTAN

300,000 people

1,300,000 jobs

MULTIPLE MODES OF TRAVEL



AUTO

Primary Route :
U.S. 46, Rt. 3, I-495

Av. Travel Time :
85.0 mins



TRANSIT

Primary Route:
Bus 194

Av. Travel Time:
118.5 mins + access to
transit time

VARIOUS TRIP PURPOSES



EMPLOYMENT



EDUCATION/HEALTH

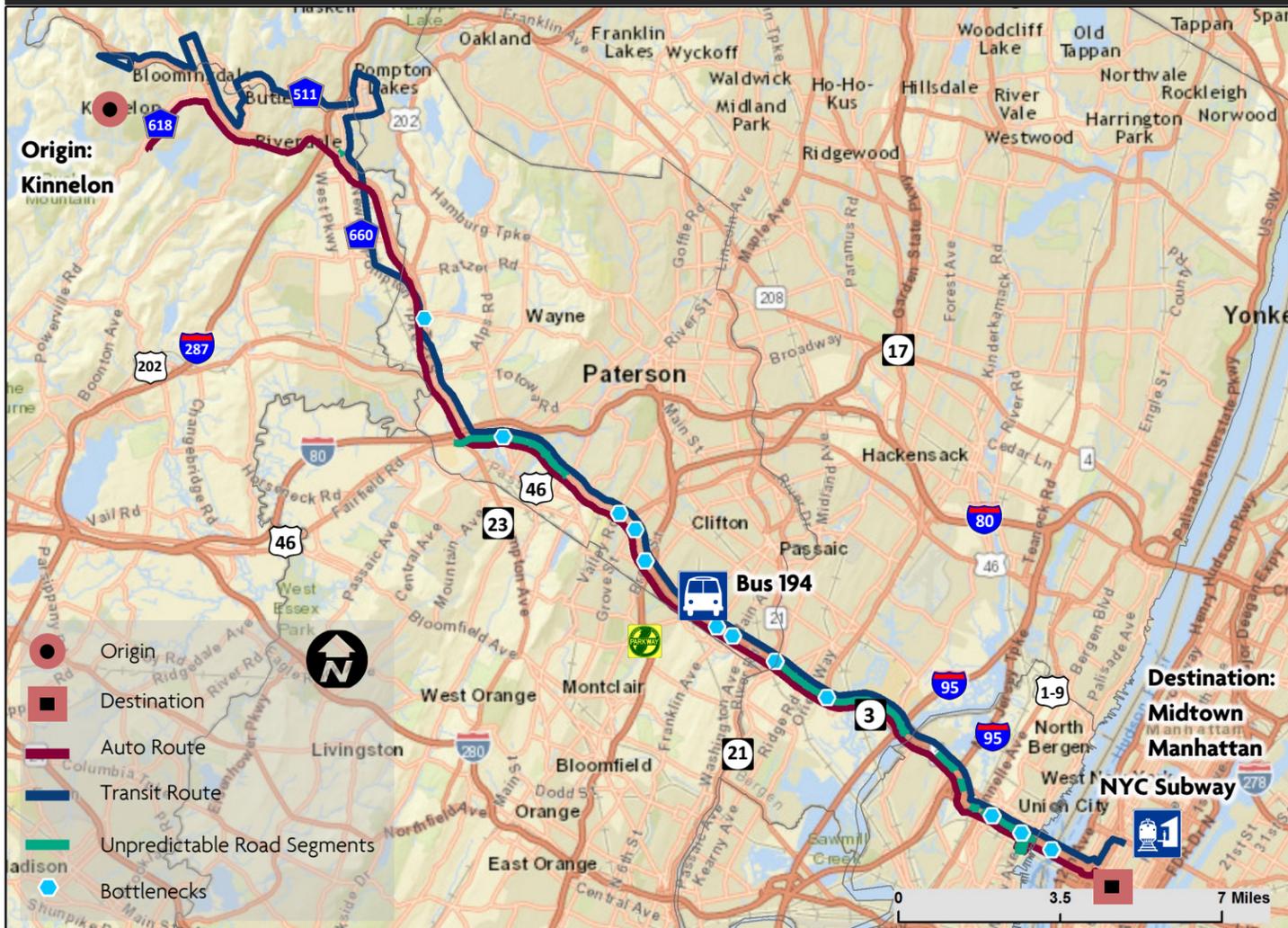


SHOPPING/RECREATION

SYSTEM
Connectivity

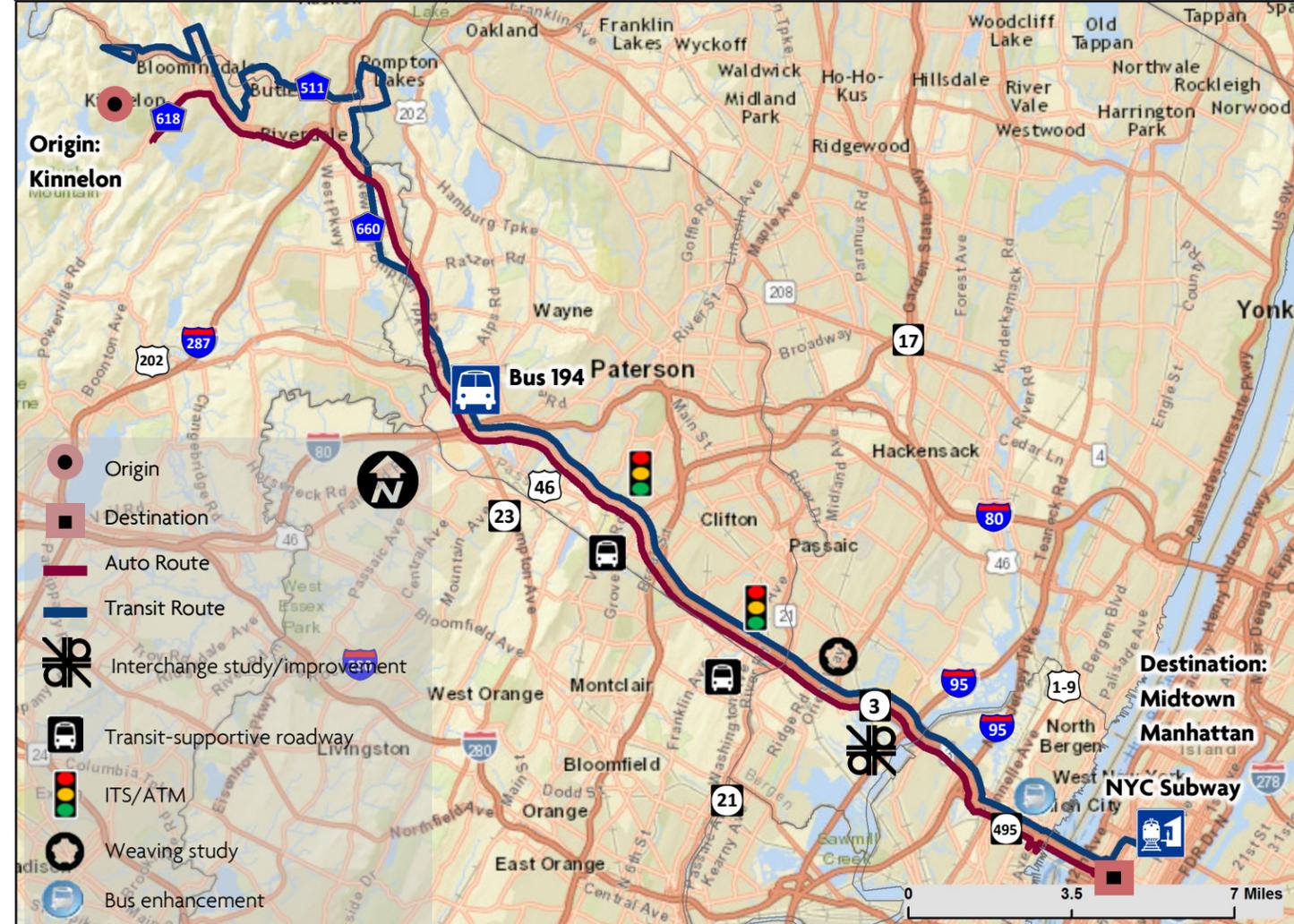
NJTPA
NORTH JERSEY
TRANSPORTATION
PLANNING AUTHORITY

NEEDS



- Peak to off-peak auto travel time ratio: 1.5 (regional average: 1.2)
- Unpredictable road segments and bottlenecks on Rt. 46 east of Rt. 23 in Passaic County
- Unpredictable road segments and bottlenecks on Rt. 3 in Bergen and Hudson counties

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement TIP project for ITS on Rt. 46, Rt. 23 (Pompton Avenue) to Rt. 20
- Implement TIP project for operational improvements on Rt. 3 and Rt. 495 interchange
- Implement RTP objective for improved reliability of Rt. 495 bus priority operations

Additional Potential Concepts:

- Weaving study at interchange of Rt. 3 and Rt. 17
- Study transit-supportive roadway improvements on Rt. 46 and Rt.3

6. MIDDLETOWN TO STATEN ISLAND

Regional Context



Middletown Township in Monmouth County is composed of several village centers, a mix of residential uses and retail and commercial strip developments located along NJ Routes 35 and 36 corridors. Roadways connecting to Staten Island include the Garden State Parkway, NJ Routes 35, 36 and 440 and the Outerbridge Crossing with transit travel requiring multiple connections via NJ TRANSIT North Jersey Coast Line rail to Newark, PATH to Manhattan and New York ferry, rapid transit or bus routes.

SUBURB TO URBAN TRAVEL		MULTIPLE MODES OF TRAVEL		TRIP PURPOSE	
MIDDLETOWN		STATEN ISLAND	AUTO	TRANSIT	EMPLOYMENT
69,000 people		470,000 people	Primary Route : RT-35, 440	Primary Route: NORTH JERSEY COAST LINE, PATH, NYCT X10	
22,000 jobs		120,000 jobs	Avg. Travel Time : 42.5 mins	Avg. Travel Time: 115.0 mins + access to transit time	



NEEDS



- Unpredictable road segments and bottlenecks at Rt. 35 and Palmer Avenue in Monmouth County

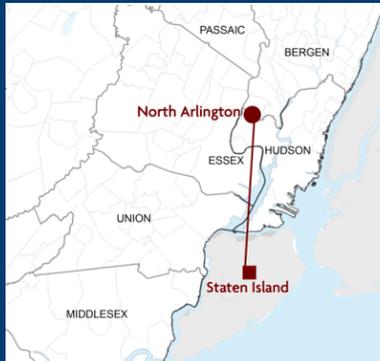
RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Intersection study at Rt. 35 and Palmer Avenue in Monmouth County
- Add location of Rt. 35 and Palmer Avenue in Holmdel to county diversion plan

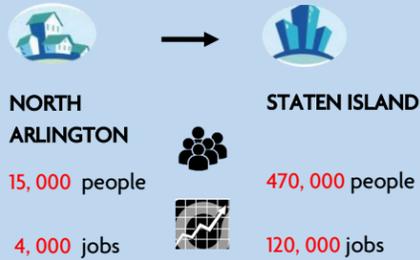
7. NORTH ARLINGTON TO STATEN ISLAND

Regional Context

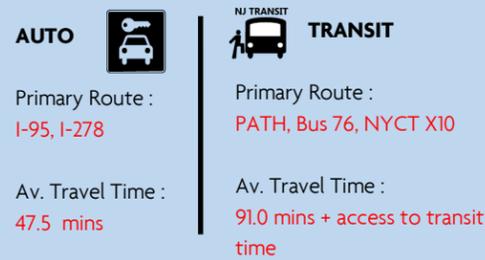


The Borough of North Arlington in Bergen County is predominantly composed of mature suburban residential and commercial areas. Roadways connecting to Staten Island include NJ Route 7, the New Jersey Turnpike and the Goethals Bridge, with transit travel requiring multiple connections via NJ TRANSIT Route 76 local bus, PATH and connections in Manhattan to New York ferry, rapid transit or bus routes.

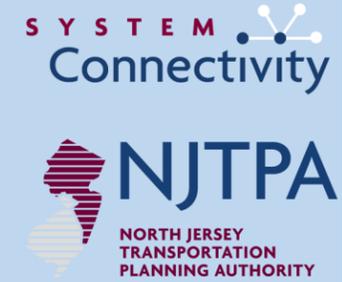
SUBURB TO URBAN TRAVEL



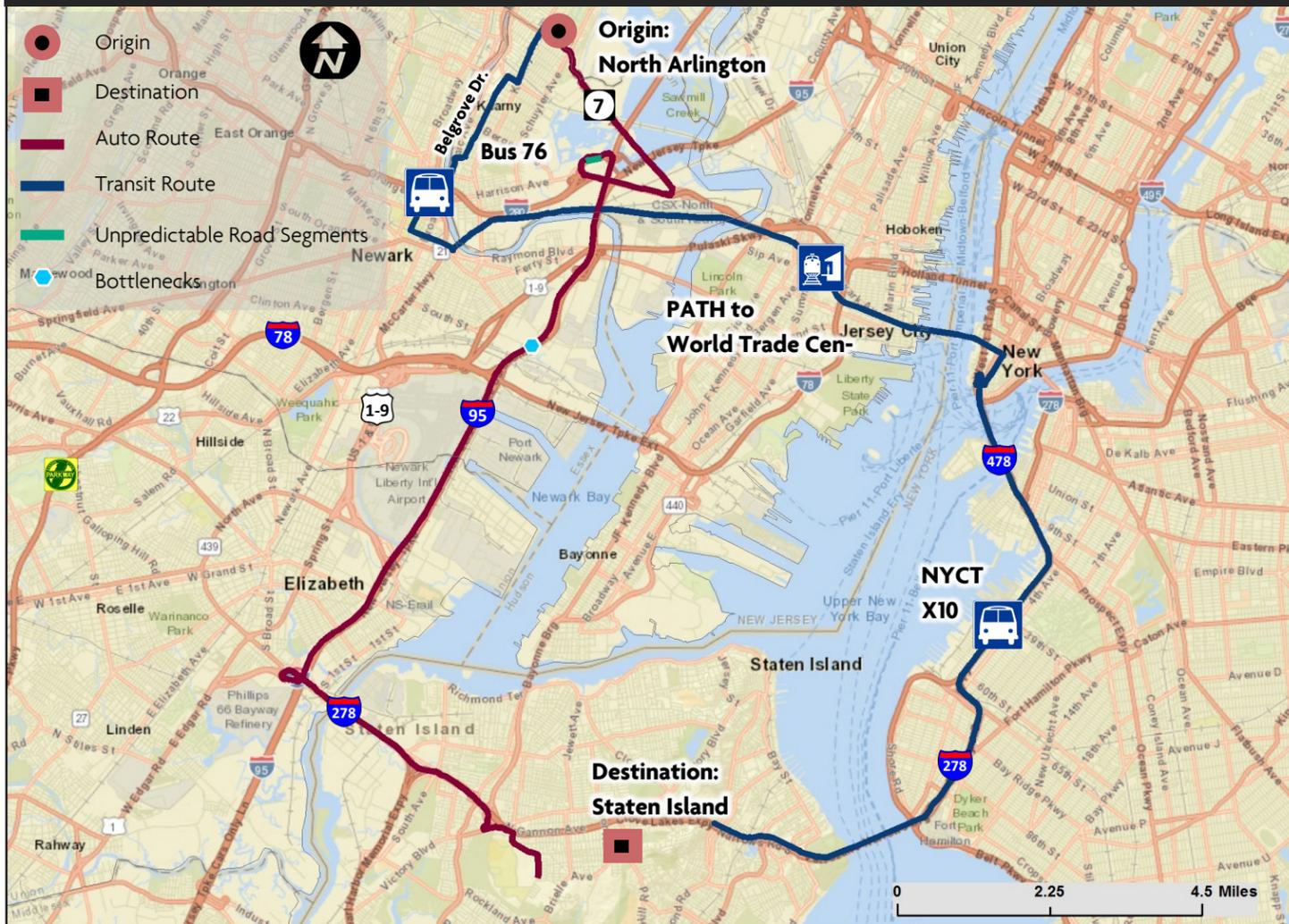
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

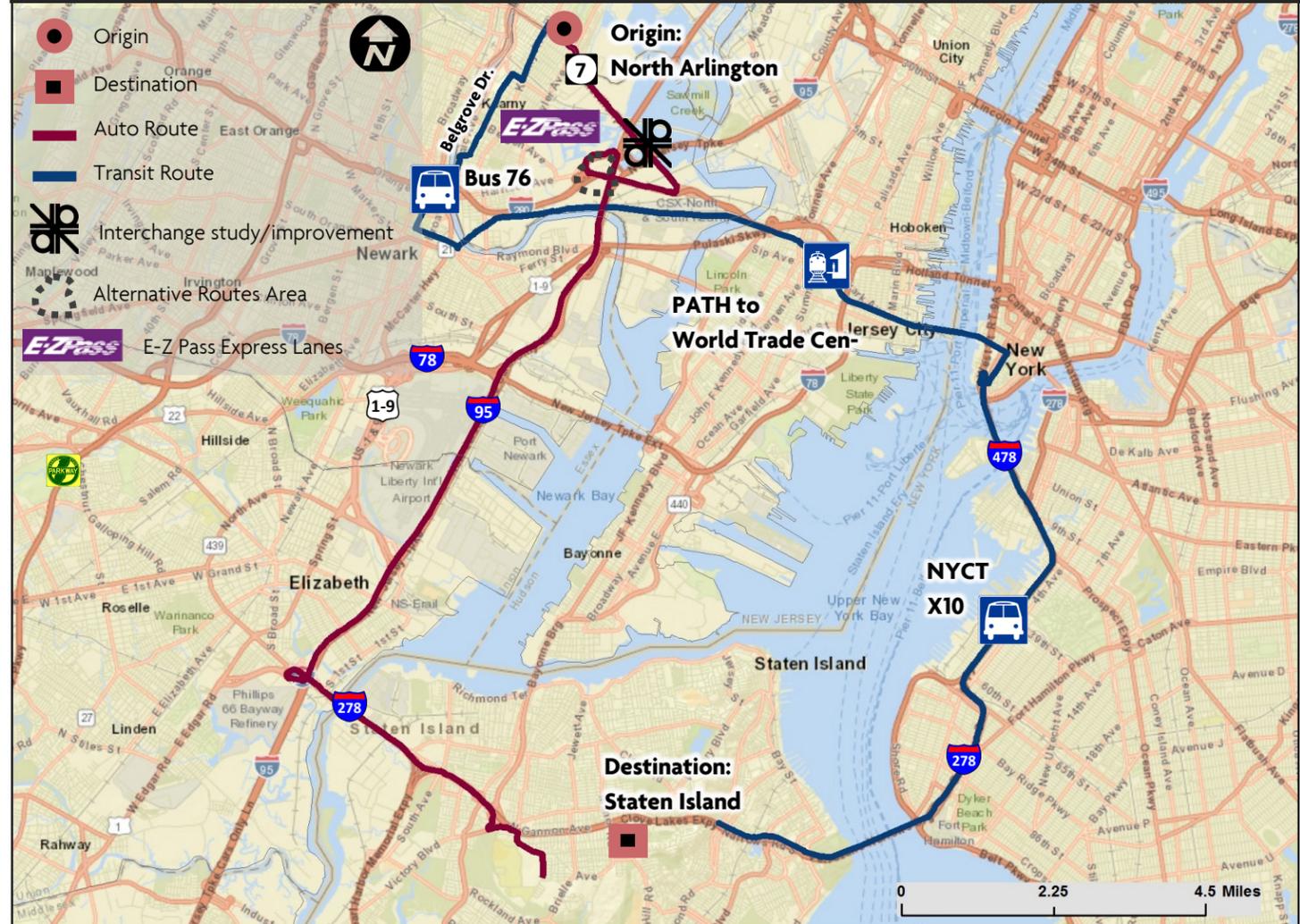


NEEDS



- Overall (peak) transit/auto travel time ratio: 2.7 (regional average: 1.8)
- Unpredictable road segments at I-280 toll plaza at New Jersey Turnpike

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement TIP project for long term interchange improvement at New Jersey Turnpike interchange 15W

Additional Potential Concepts:

- Study adding E-Z Pass Express Lanes at New Jersey Turnpike interchange 15W
- Add location of New Jersey Turnpike interchange 15W to county diversion plan

8. PERTH AMBOY TO LOWER MANHATTAN

Regional Context



The City of Perth Amboy in eastern Middlesex County has a central business district featuring retail, restaurants and services surrounded by a mix of mature suburban, residential and industrial areas. Roadways connecting to Lower Manhattan include the Garden State Parkway, I-95, I-78 and the Holland Tunnel, or via NJ Route 440, the Outerbridge Crossing and Staten Island, with transit travel requiring connections between NJ TRANSIT North Jersey Coast Line rail and PATH at Newark.

SUBURB TO URBAN TRAVEL



PERTH AMBOY

52,000 people

13,000 jobs



L MANHATTAN

390,000 people

740,000 jobs

MULTIPLE MODES OF TRAVEL

AUTO



Primary Route :
I-95, I-78

Av. Travel Time :
72.5 mins



TRANSIT

Primary Route:
North Jersey Coast Line

Av. Travel Time:
63.5 mins + access to transit time

VARIOUS TRIP PURPOSES



EMPLOYMENT



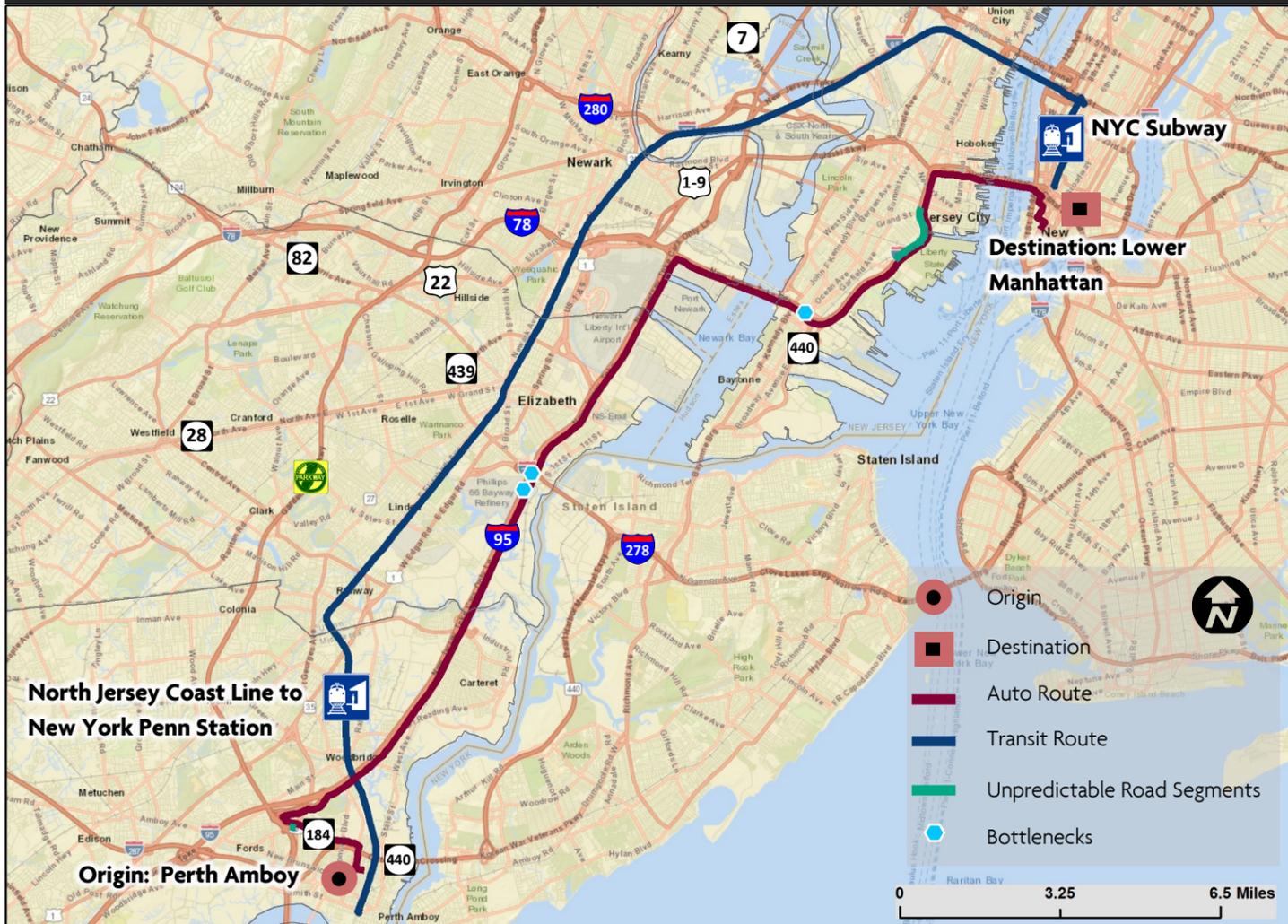
EDUCATION/HEALTH



SHOPPING/RECREATION

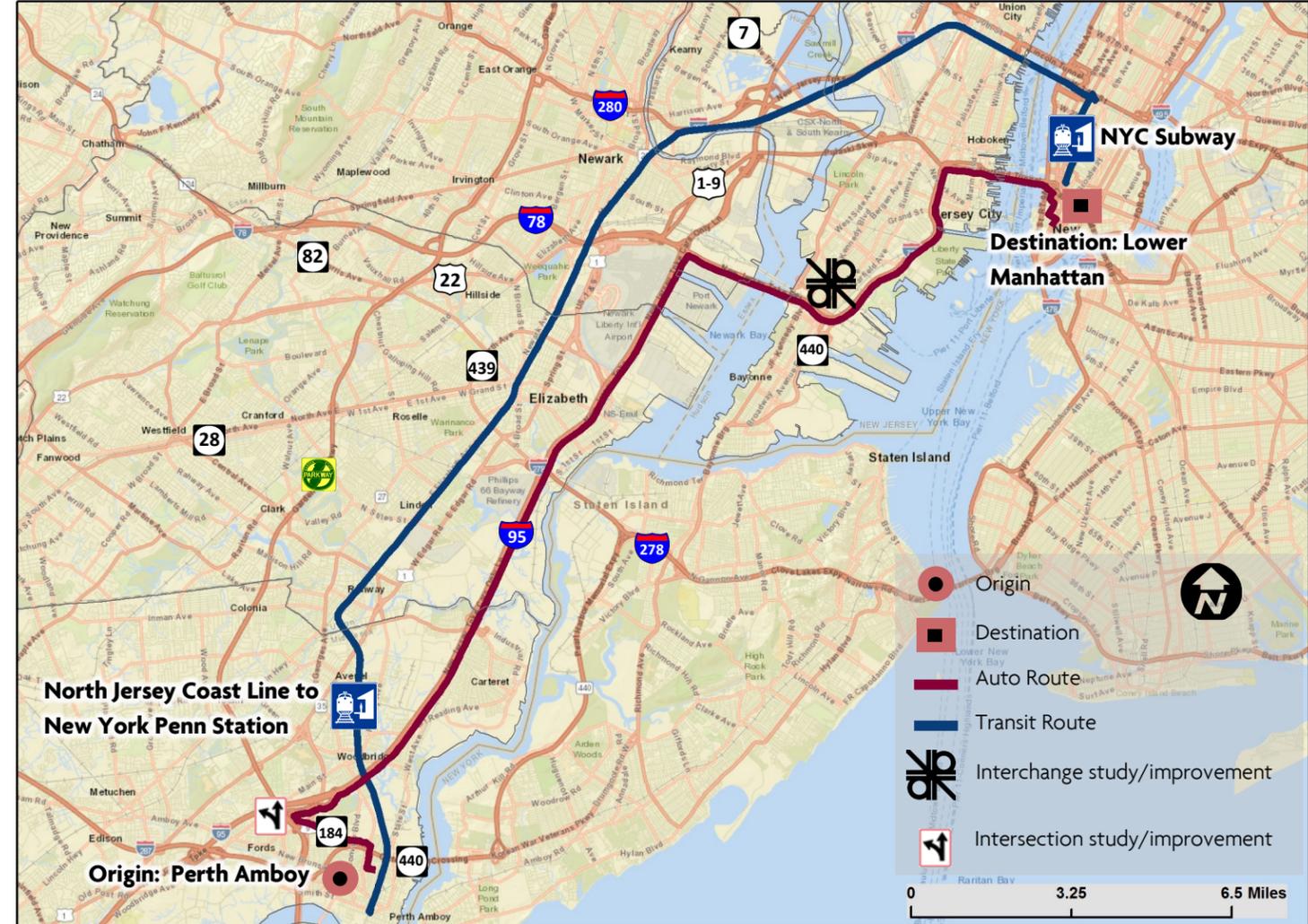


NEEDS



- Peak to off-peak auto travel time ratio: 1.5 (regional average: 1.2)
- Unpredictable road segment at intersection of King George Rd and Rt. 184 in Woodbridge
- Unpredictable road segment and bottlenecks along I-78/New Jersey Turnpike Extension

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement RTP project for long term interchange improvement at New Jersey Turnpike interchange 14 (I-78)

Additional Potential Concepts:

- Intersection study at King George Rd and Rt. 184 in Woodbridge

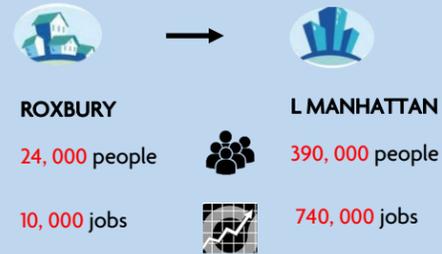
9. ROXBURY TO LOWER MANHATTAN

Regional Context



Roxbury Township in Morris County is a rural community with a mix of suburban residential, commercial and protected wildlife lands. Roadways connecting to Lower Manhattan include I-80, I-280, NJ Route 7 and the Holland Tunnel with transit travel via the NJ TRANSIT Morris & Essex rail line and PATH or ferry connections at Hoboken, or via private carrier Lakeland 80 buses to the Port Authority Bus Terminal in New York City.

SUBURB TO URBAN TRAVEL



MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

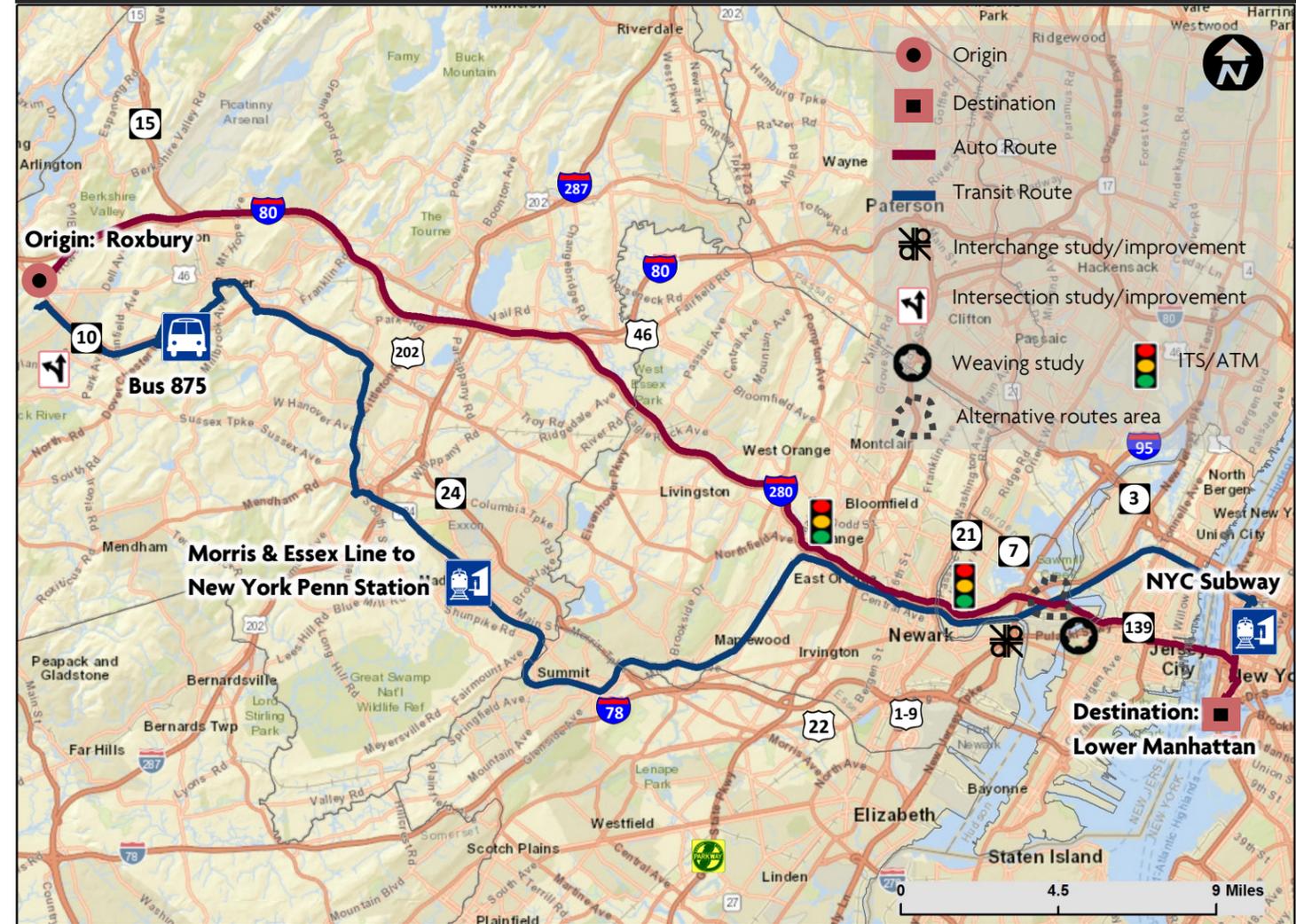


NEEDS



- Peak to off-peak auto travel time ratio: 1.6 (regional average: 1.2)
- Off-peak rail headways significantly longer than peak headways
- Unpredictable road segments along bus route of Rt. 10 in Morris County
- Unpredictable road segments on NJ 7 between Newark Jersey City Turnpike and Fish House Rd
- Unpredictable road segments and bottlenecks at I-280 and Garden State Parkway interchange

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement TIP study for intersection modifications, Rt. 10, Hillside Ave (CR 619) to Mt. Pleasant Turnpike (CR 665)
- Implement RTP project for long-term interchange improvements at New Jersey Turnpike Interchange 15W

Additional Potential Concepts:

- Weaving study on NJ 7 between Newark Jersey City Turnpike and Fish House Rd
- Implement active traffic management (ATM) strategies from Connected Corridor report on I-280 between I-80 and I-95
- Add location of Newark Jersey City Turnpike to county diversion plan

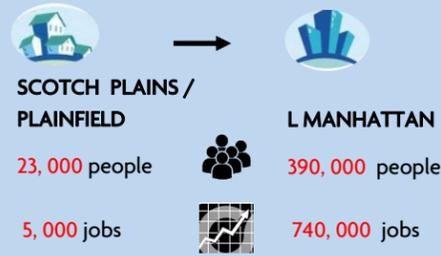
10. SCOTCH PLAINS/PLAINFIELD AREA TO LOWER MANHATTAN

Regional Context



Scotch Plains Township, a mature suburban residential community, and the City of Plainfield, a mature urban downtown and residential community, are located in Union County. Roadways connecting to Lower Manhattan include US Route 22, I-78 and the Holland Tunnel with transit travel via NJ TRANSIT Raritan Valley Line rail with Hoboken connections to PATH or ferry.

SUBURB TO SUBURB TRAVEL



MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES



NEEDS



- Peak to off-peak auto travel time ratio: 1.5 (regional average: 1.2)
- Unpredictable road segments and bottlenecks along I-78 and at interchanges with Garden State Parkway and US 1-9
- Unpredictable road segments and bottlenecks at I-78 toll plaza at the end of the NJ Turnpike Extension
- Unpredictable road segments and bottlenecks on Rt. 495 approach to Lincoln Tunnel

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement RTP project for long-term ITS improvements along I-78, from PA state line to I-95
- Implement RTP objective for improved reliability of Rt.495 bus priority operations

Additional Potential Concepts:

- Interchange study at I-78/New Jersey Turnpike/US 1-9 and I-78/Rt. 124
- Study adding E-Z Pass Express Lanes at New Jersey Turnpike Interchange 14
- Add location of New Providence Rd. and Park Ave. in Watchung to county diversion plan

The 5 representative origin-destination pairs included in this chapter of the appendix depicts the needs that may be experienced while traveling from one urban area to the other in North Jersey during the morning rush hours. The potential recommendations suggested to address the needs for each pair include projects in the NJTPA TIP and RTP, as well as new project ideas that may be considered for future planning studies and local concept development. While this study offers recommendations for these pairs, not all of these suggestions consider feasibility or cost and additional study would be required before advancing many of these concepts.

The NJTPA considered the land use type, population density, job density, nature of economic activities and street patterns of the origin and the destination when identifying needs and recommendations. The following narrative provides context for the considerations taken into account for travel between urban areas:

North Jersey urban areas: These areas have a city form of government, high population and employment densities and in many cases old infrastructure. They have a wide variety of land uses and a diverse demographic and socio-economic population living in different types of housing. The percentage of single family houses is lower than the number of townhouses and apartments. Many of these areas serve as dominant economic centers.

Due to the high population and employment density, these areas are suitable for providing transit services. All of the urban areas in North Jersey have rail and bus services. They also have pedestrian and bicycle infrastructure.



O-D Pairs and Recommendations for Future Consideration along their travel paths (The recommendations not in current RTP/TIP are highlighted): The table below provides specific information about each O-D pair, travel challenges and specific strategies that could be applied to help improve travel between these locations.

Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
11. Elizabeth to Paterson/Clifton/Passaic	Auto	Weaving study	Rt. 3 and Rt. 17	Bergen	✓		✓			
12. Englewood to Newark	Auto	Interchange study	I-78 and US 1-9	Essex	✓		✓		✓	
	Transit	Implement RTP objective for improved reliability of Rt. 495 bus priority operations	Rt. 495 Express Bus Lanes	Hudson	✓					
		Study transit supportive roadway improvements on I-95 S	I-95 S in Hudson County leading to Rt. 495 Express Bus Lane	Hudson	✓					
		Support the Hudson Bergen light rail line extension		Hudson, Bergen	✓		✓			
13. Hoboken to Elizabeth	Auto	Intersection study	U.S. 1-9 and North Street	Union	✓		✓			
14. Jersey City to New Brunswick/North Brunswick/Piscataway /Franklin	Auto	Implement RTP project for long-term interchange improvements	New Jersey Turnpike Interchange 14A	Hudson	✓		✓		✓	
15. Paterson to Upper Manhattan	Auto/Transit	Implement TIP project for long-term roadway improvement	Rt. 4 at Hackensack Bridge	Bergen	✓		✓			
		Implement active traffic management (ATM) strategies from Connected Corridor report.	I-80 between Route 15 and George Washington Bridge.	Bergen	✓	✓	✓		✓	
		Add alternative route to county diversion plan	I-95 between I-80 and George Washington Bridge	Bergen	✓	✓			✓	

11. ELIZABETH TO PATERSON/CLIFTON/PASSAIC AREA

Regional Context



The City of Elizabeth in Union County is a densely populated mature urban center with a downtown central business district, maritime port district and many surrounding residential and commercial areas. The cities of Paterson, Clifton and Passaic in Passaic County are densely populated mature suburban and urban centers served by the Garden State Parkway, NJ Routes 3, 19, 21 and 46, with Paterson home to the Great Falls National Historic District. Roadways connecting these locations include NJ Routes 19, 21 and I-95 with transit travel requiring connections at Secaucus between the NJ TRANSIT Northeast Corridor and Main/Bergen Line rail.

URBAN TO URBAN TRAVEL	MULTIPLE MODES OF TRAVEL	VARIOUS TRIP PURPOSES
<p>ELIZABETH 130,000 people 35,000 jobs</p>	<p>PATERSON/CLIFTON/PASSAIC 130,000 people 64,000 jobs</p>	EMPLOYMENT HEALTH EDUCATION
<p>Primary Route: I-95 Av. Travel Time: 47.5 mins</p>	<p>Primary Route: Northeast Corridor Main/Bergen County Line Av. Travel Time: 54.0 mins + access to transit time</p>	



NEEDS



- Unpredictable road segments and bottlenecks at NJ 3 and Rt. 17 caused by potential weaving issues

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Weaving study at NJ 3 and Rt. 17

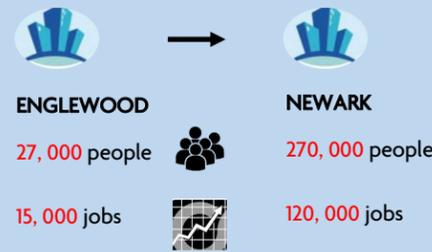
12. ENGLEWOOD TO NEWARK

Regional Context

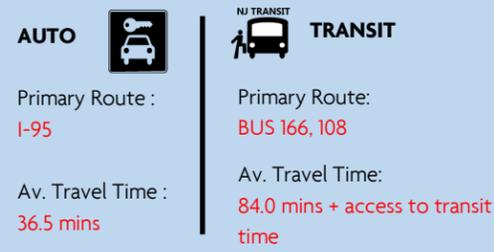


The City of Englewood in Bergen County has a mix of local commercial and retail uses serving surrounding communities, as well as residential areas and regional services including Englewood Hospital and Medical Center. The City of Newark in Essex County, the state's largest city, is home to several major universities, cultural centers including the New Jersey Performing Arts Center, hospitals, government offices and corporate headquarters. Roadways connecting these locations include I-80 and I-95 with transit travel requiring connections between NJ TRANSIT 166X and 108 buses in New York City Port Authority Bus Terminal.

URBAN TO URBAN TRAVEL



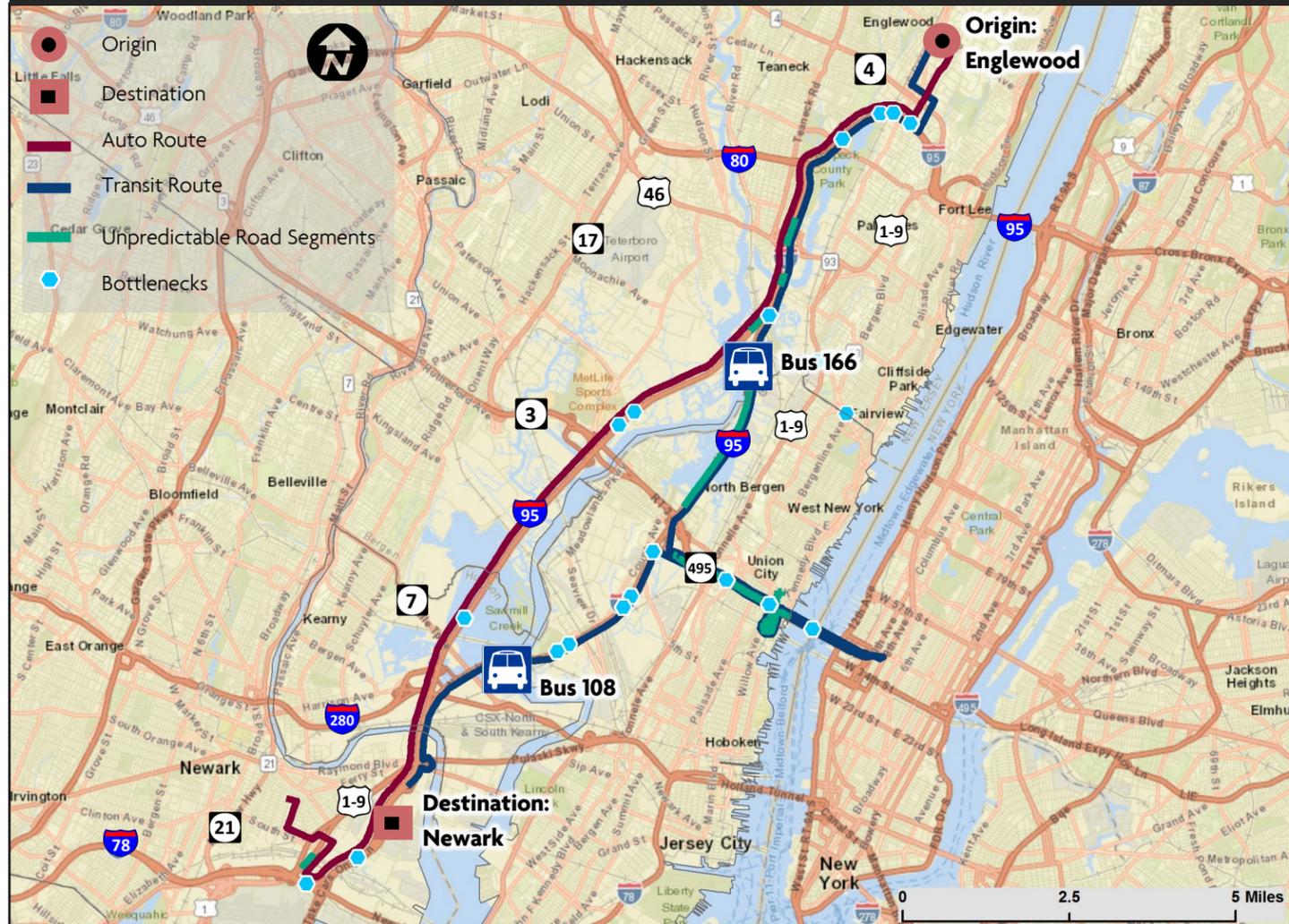
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

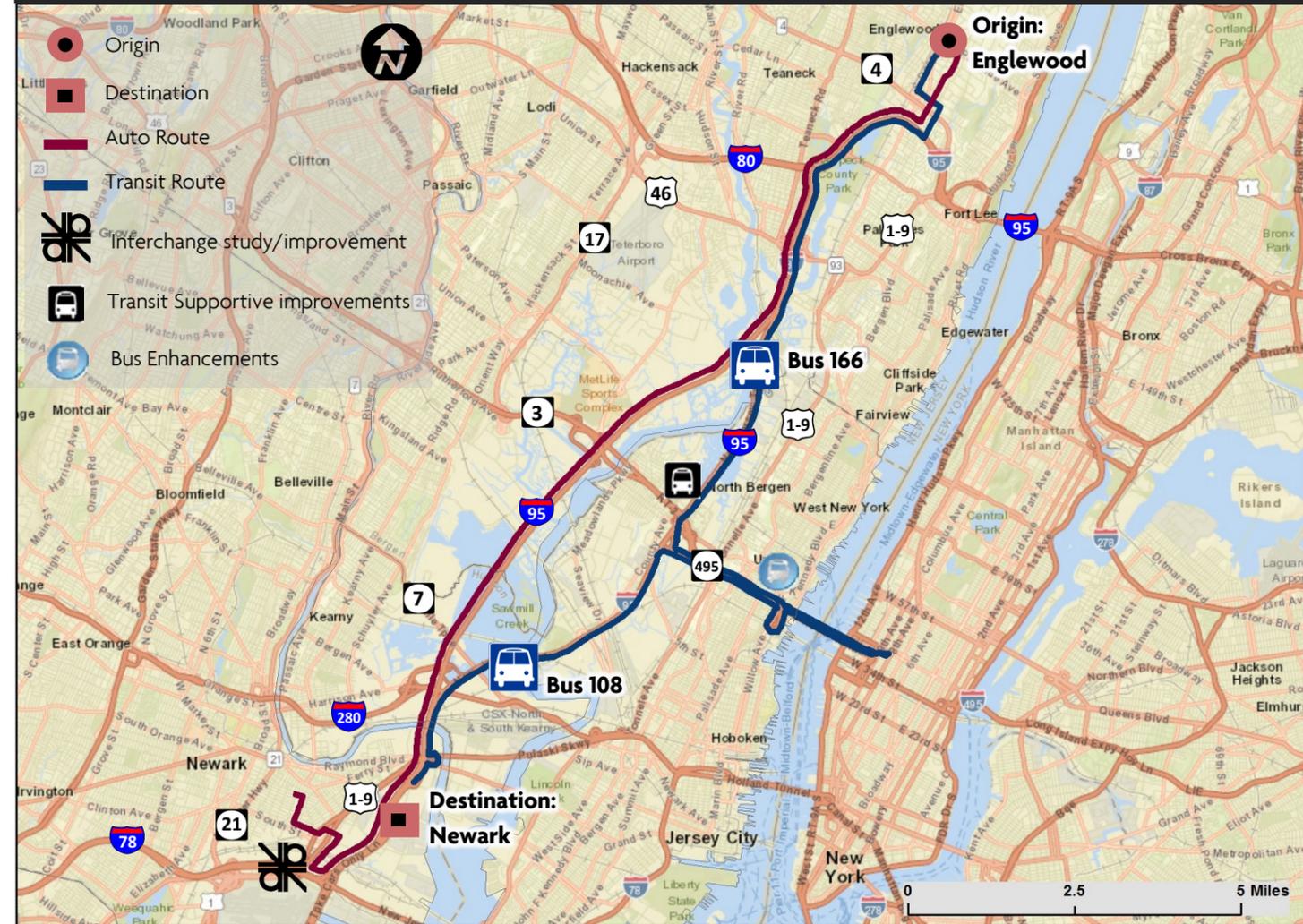


NEEDS



- Unpredictable road segments at interchange of US 1-9, New Jersey Turnpike and I-78
- Unpredictable road segments and bottlenecks on Rt. 495 approach to Lincoln Tunnel
- Unpredictable road segments and bottlenecks on I-95 at New Jersey Turnpike Eastern Spur to Rt. 495

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

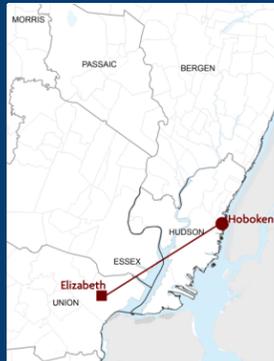
- Implement RTP objective for improved reliability of Rt. 495 bus priority operations
- Support the Hudson Bergen light rail line extension

Additional Potential Concepts:

- Interchange study at US 1-9 and I-78
- Study transit-supportive roadway improvements on I-95 S in Hudson County leading to Rt. 495 Express Bus Lane

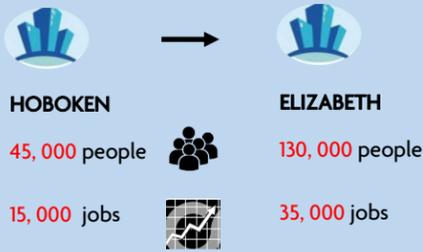
13. HOBOKEN TO ELIZABETH

Regional Context



The City of Hoboken in Hudson County is a small densely populated urban community along the Hudson River featuring local bars and restaurants, shops, apartments and condominiums, the Hoboken University Medical Center and Stevens Institute of Technology, the city is highly accessible by bus, rail, light rail, PATH and ferry transit centered at the Hoboken Rail Terminal. The City of Elizabeth in Union County is a densely populated mature urban center with a central business district, maritime port district and many surrounding residential and commercial areas. Roadways connecting these locations include U.S. Routes 1 and 9, I-78 and I-95 with transit travel requiring connections between the NJ TRANSIT Northeast Corridor rail line and PATH in Newark.

URBAN TO URBAN TRAVEL



MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

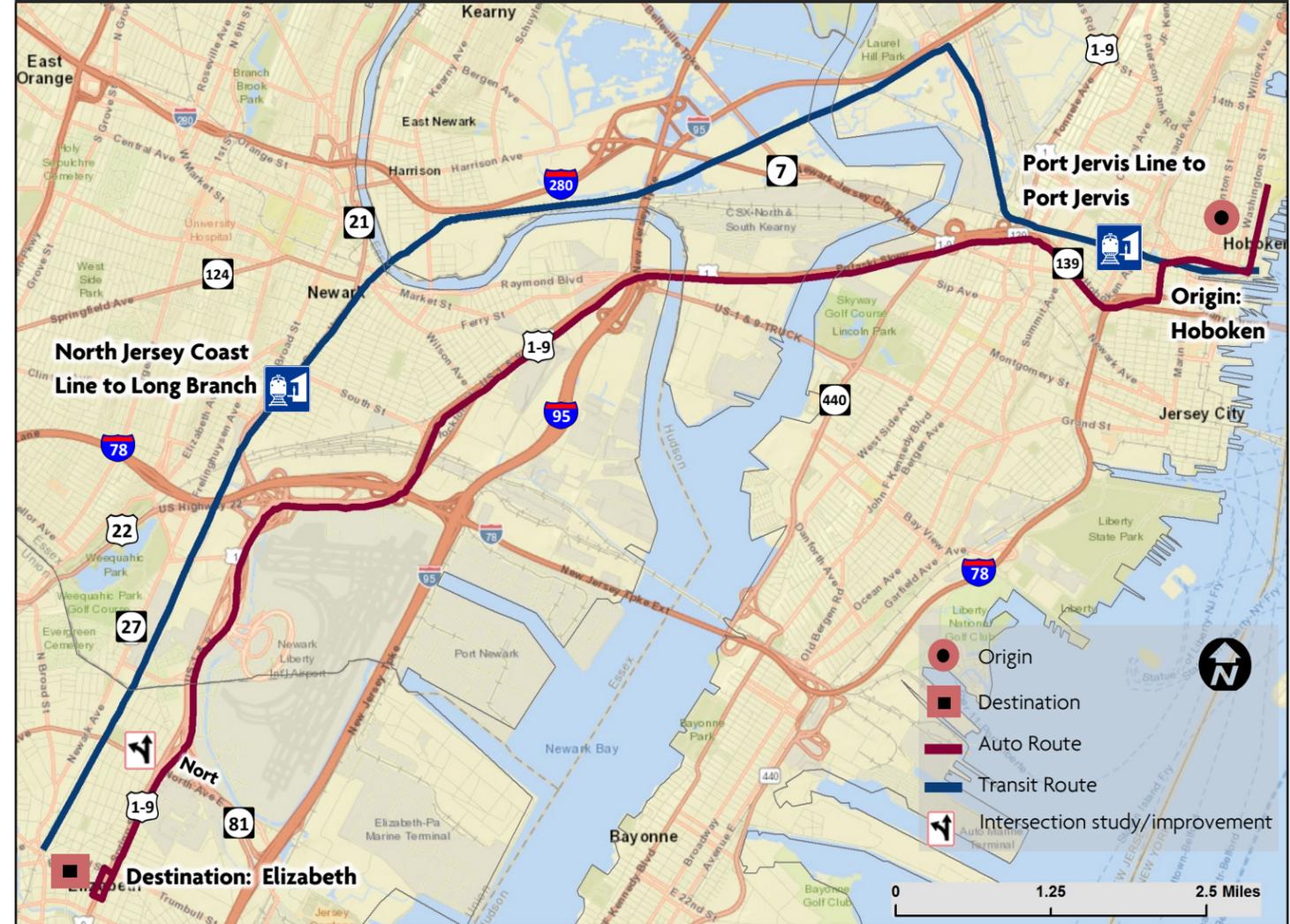


NEEDS



- Unpredictable road segment and bottleneck at US 1-9 and North Avenue

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Intersection study at US 1-9 and North Avenue

14. JERSEY CITY TO NEW BRUNNS/NORTH BRUNNS/PISCATAWAY/FRANKLIN AREA

Regional Context



The cities of Jersey City, Hoboken and Bayonne collectively are major employment and residential centers of regional significance in Hudson County. The New Brunswick-North Brunswick-Piscataway-Franklin corridor in Middlesex and Somerset counties includes Rutgers University's main campus, downtown urban, industrial, commercial, residential and corporate uses and senior communities. Roadway connections between these locations include I-78, I-95 and I-287 with transit travel to portions of this area via the NJ TRANSIT Northeast Corridor and Raritan Valley rail lines with connections to county shuttles, NJ TRANSIT local buses and private carrier Suburban Coach busses along NJ Route 27.

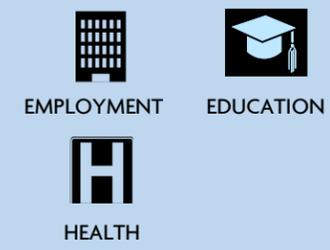
URBAN TO URBAN TRAVEL



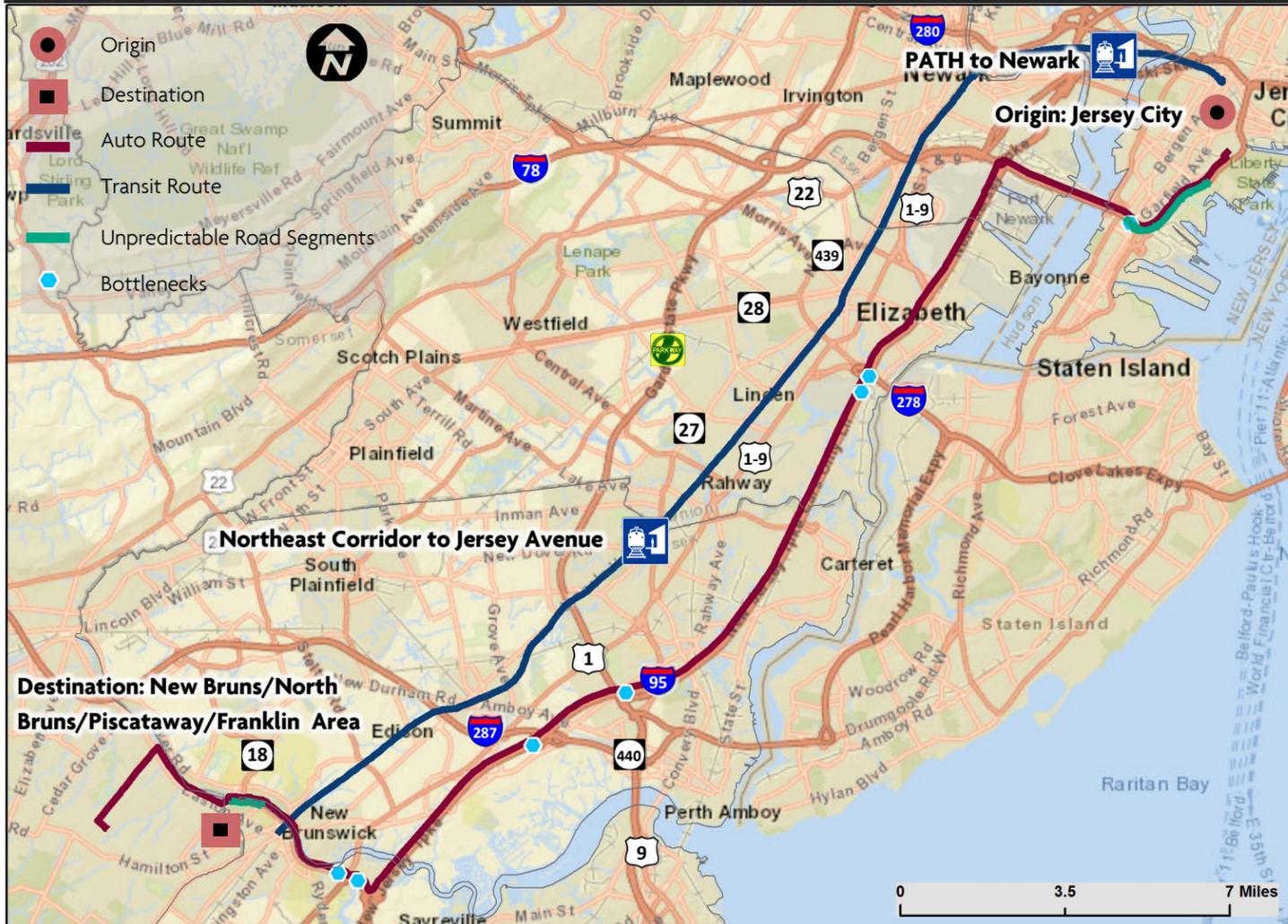
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES



NEEDS



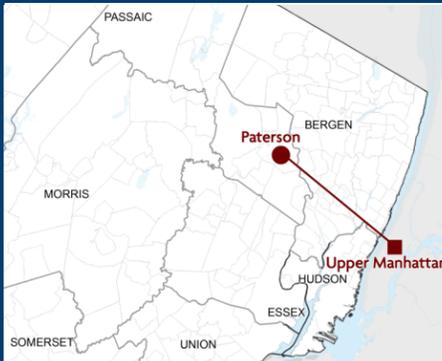
- Unpredictable road segments and bottlenecks along I-78, New Jersey Turnpike Extension
- Bottlenecks near New Jersey Turnpike Interchange 9

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement RTP project for long-term interchange improvements at New Jersey Turnpike Interchange 14A



The City of Paterson in Passaic County is one the state's largest cities with a central business district, the Paterson Great Falls National Historic Park and surrounding commercial, industrial and residential areas. Interstate 80 traverses the city and NJ Route 19 provides access to the Garden State Parkway, connecting to Upper Manhattan via the George Washington Bridge. NJ TRANSIT Route 171 bus service to the New York George Washington Bridge bus station provides transit travel to Upper Manhattan via a subway connection.

15. PATERSON TO UPPER MANHATTAN

SUBURB TO URBAN TRAVEL



PATERSON

150,000 people

44,000 jobs



UPPER MANHATTAN

900,000 people

280,000 jobs

MULTIPLE MODES OF TRAVEL

AUTO



Primary Route :

I-80, I-95, FDR

Av. Travel Time :

47.5 mins



Primary Route:

Bus 171

Av. Travel Time:

70.7 mins + access to transit time

VARIOUS TRIP PURPOSES



EMPLOYMENT



SHOPPING/ RECREATION



EDUCATION/ HEALTH

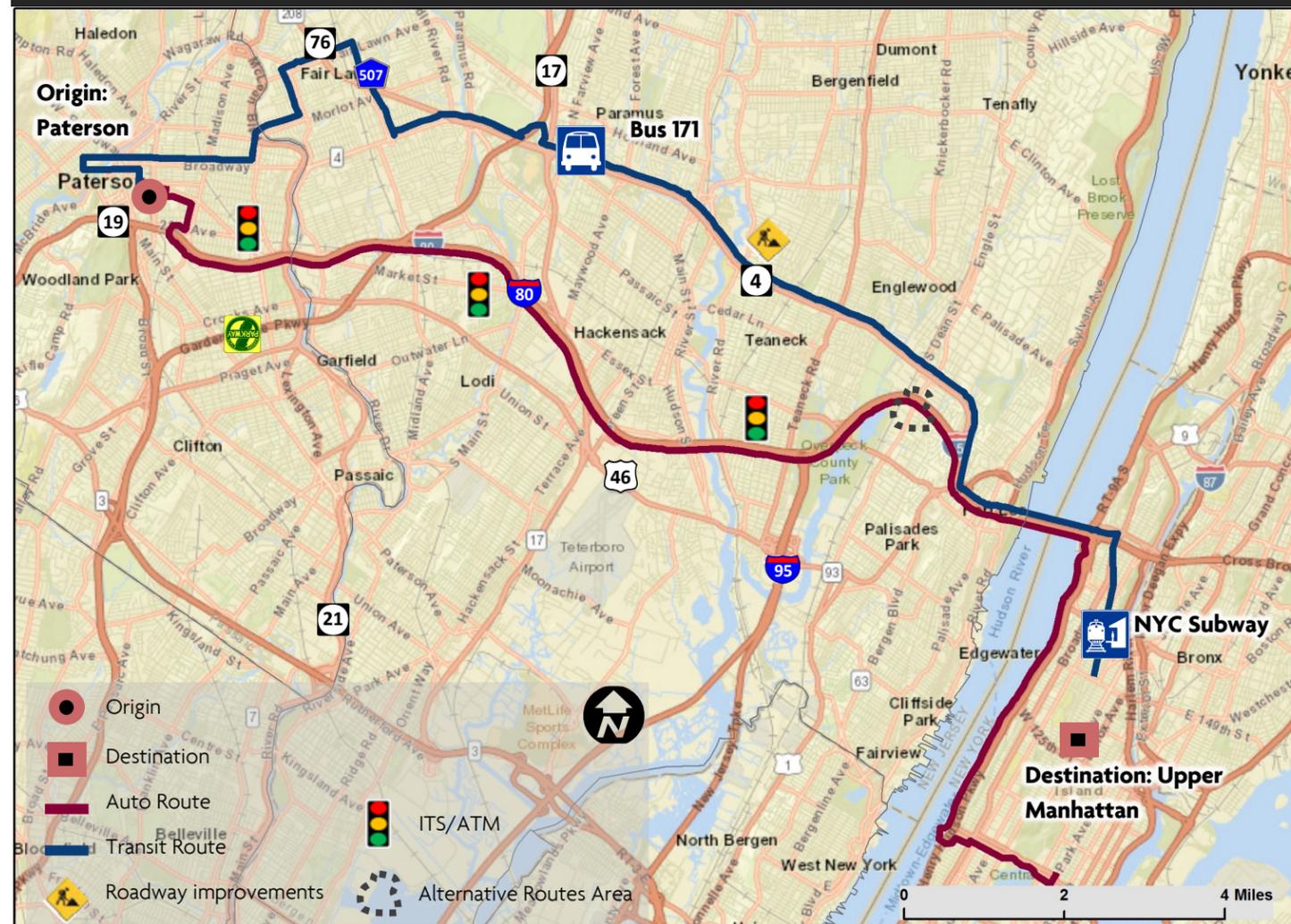


NEEDS



- Peak to off-peak auto travel time ratio: 2.0 (regional average: 1.2)
- Unpredictable road segments and bottlenecks on Rt. 4 at Fairleigh Dickinson University

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement TIP project for long-term roadway improvement at Rt. 4 and Hackensack Bridge

Additional Potential Concepts:

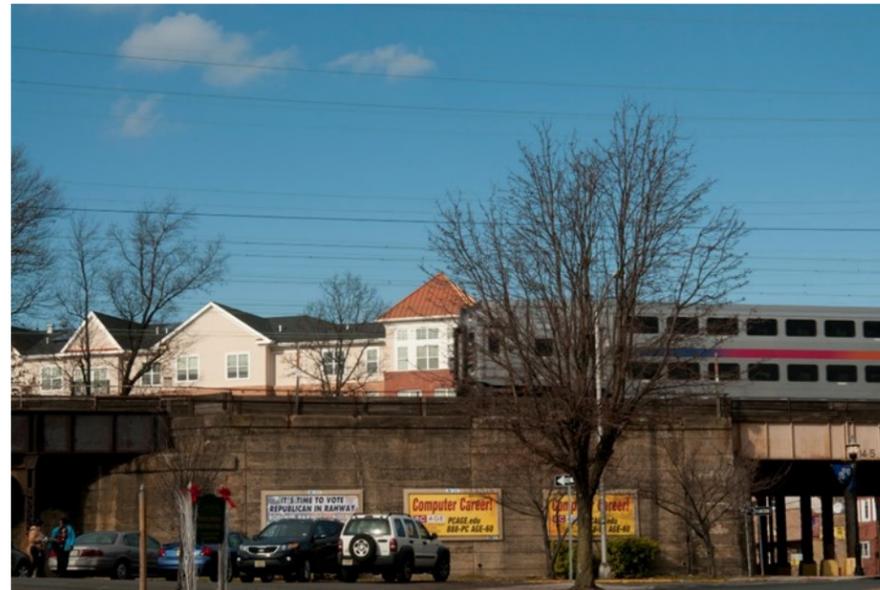
- Implement active traffic management (ATM) strategies from Connected Corridor report on I-80 between Rt.15 and the George Washington Bridge
- Add alternative route to county diversion plan of I-95 between interchange of I-80 and GWB

The nine representative origin-destination pairs included in this chapter of the appendix depict the needs that may be experienced while traveling from one suburban area north of I-78 to another during the morning rush hours. The potential recommendations suggested to address the needs of each pair include projects in the NJTPA TIP and RTP, as well as new project ideas that may be considered for future planning studies and local concept development. These potential recommendations should be considered in the context of the comprehensive planning goals and objectives of the New York-New Jersey-Connecticut metropolitan region.

The NJTPA considers the land use type, population density, job density, nature of economic activities and street patterns of the origin and the destination when identifying needs and potential recommendations. The following narrative provides context for the considerations taken into account for travel among suburban areas:

North Jersey Suburbs North of I-78: These are predominantly residential areas with population and employment densities lower than the region’s urban areas. Some of these communities have prominent downtowns with shopping and office space. The housing stock varies from single-family residences to townhomes and apartment buildings. Workers living in the suburbs usually commute to other parts of the region, including a large number people travelling to jobs in New York City.

The population density is higher in eastern suburbs, while suburbs to west have a higher percentage of single-family residences. Automobile is the more predominant mode of travel in the western part of the region. Transit is a more feasible mode of transportation for counties in the northeast including Bergen, Hudson, Essex and Union.



O-D Pairs and Recommendations for Future Consideration along their travel paths (The recommendations not in current RTP/TIP are highlighted): The table below provides specific information about each O-D pair, travel challenges and specific strategies that could be applied to help improve travel between these locations.

Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
16. Haworth to Secaucus/ East Rutherford	Auto	Implement TIP project for roadway improvement	Rt. 17 from I-80/ Essex St. to south of Rt. 4	Bergen	✓		✓			
		Interchange improvements	Rt. 17 and Ridgewood Avenue, Midland Avenue and Century Road	Bergen	✓	✓	✓			
		Access management	Rt. 17 and Ridgewood Avenue, to north of Rt. 4	Bergen	✓	✓	✓			
	Transit	Improvement in ridesharing services to and from train station	Oradell train station	Bergen	✓					✓
17. Haworth to Wayne	Auto	Implement active traffic management (ATM) strategies from Connected Corridor report	I-80 between Route 15 and George Washington Bridge	Passaic	✓		✓		✓	✓
	Transit	Implement RTP objective for improved reliability of Rt. 495 bus priority operations	Rt. 495 Express Bus Lanes	Hudson	✓					✓
		Study transit supportive roadway improvements	Rt. 46 from I-80 to Rt.3 & Rt.3 in Passaic, Bergen and Hudson Counties	Bergen, Hudson, Passaic	✓		✓			✓
		Study transit supporting roadway improvements	New Jersey Turnpike Eastern Spur to Rt. 495 Express Bus Lane	Hudson	✓					✓
		Support the Hudson Bergen light rail line extension		Hudson, Bergen	✓		✓			✓
18. Montclair to Hackensack/Paramus	Auto	Interchange Study	Rt. 17 (northbound) and Century Road	Bergen	✓				✓	
		Access management study	Rt. 17 between Rt. 4 and Garden State Parkway	Bergen	✓			✓	✓	

Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
19. Montville to Hackensack/Paramus	Auto	Implement TIP project for long-term interchange improvements	Rt. 23 and I-80 interchange	Passaic	✓		✓		✓	
		Implement active traffic management (ATM) strategies from Connected Corridor report.	I-80 between Route 15 and George Washington Bridge.	Bergen	✓		✓		✓	
		Interchange study	Rt. 17 (northbound) and Century Road	Bergen	✓				✓	
		Interchange study	I-80 (eastbound) at Squirrelwood Road.	Passaic	✓				✓	
		Access management study	Rt. 17 between Rt. 4 and Garden State Parkway	Bergen	✓			✓	✓	
		Access management study	Rt. 202 west of the Towaco Train Station	Morris	✓			✓		
		Add alternative route to county diversion plan	Rt. 202 east of I-287	Morris	✓					
20. North Arlington to Woodbridge/Edison/Metuchen	Auto	Implement TIP project for long-term interchange improvements	New Jersey Turnpike Interchange 15W	Hudson	✓				✓	
		Study adding EZ Pass Express lanes	New Jersey Turnpike Interchange 15W (I-280)	Hudson	✓				✓	
		Add alternative route to county diversion plan	Newark-Jersey City Turnpike	Hudson	✓					
		Interchange study	I-287 and Rt. 1	Middlesex	✓		✓		✓	
21. North Caldwell to Rockaway	Auto	Implement RTP project for long-term ITS improvements.	I-80 from Rt. 46 in Denville to I-280	Morris	✓				✓	
22. Oakland to Parsippany/Morristown/Morris Plains/Morris Township-Hanover/Florham Park	Auto	Implement active traffic management (ATM) strategies from Connected Corridor report.	I-287 between I-80 and I-95	Morris	✓				✓	✓
		Interchange study	I-80 and I-287	Morris	✓				✓	✓

Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
23. Secaucus to Phillipsburg/Easton/Allentown/Bethlehem	Auto / Freight	Implement TIP project for long-term interchange improvements	I-287 and I-78, I-287 and Rt. 202/206	Somerset	✓				✓	
		Implement TIP project for long-term interchange improvements	I-78 and Pittstown Road (Exit 15)	Hunterdon	✓				✓	
		Implement RTP project for long-term ITS improvements	I-78, PA State Line to I-95	Hunterdon, Somerset, Union, Essex	✓				✓	
		Implement RTP project for long-term interchange improvements	I-78 and Rt. 31 (Exit 17)	Hunterdon	✓		✓		✓	
		Interchange study	I-78 and US 1-9	Essex	✓		✓		✓	
24. West Milford - Wayne	Auto / Transit	TBD								

16. HAWORTH TO SECAUCUS/EAST RUTHERFORD AREA

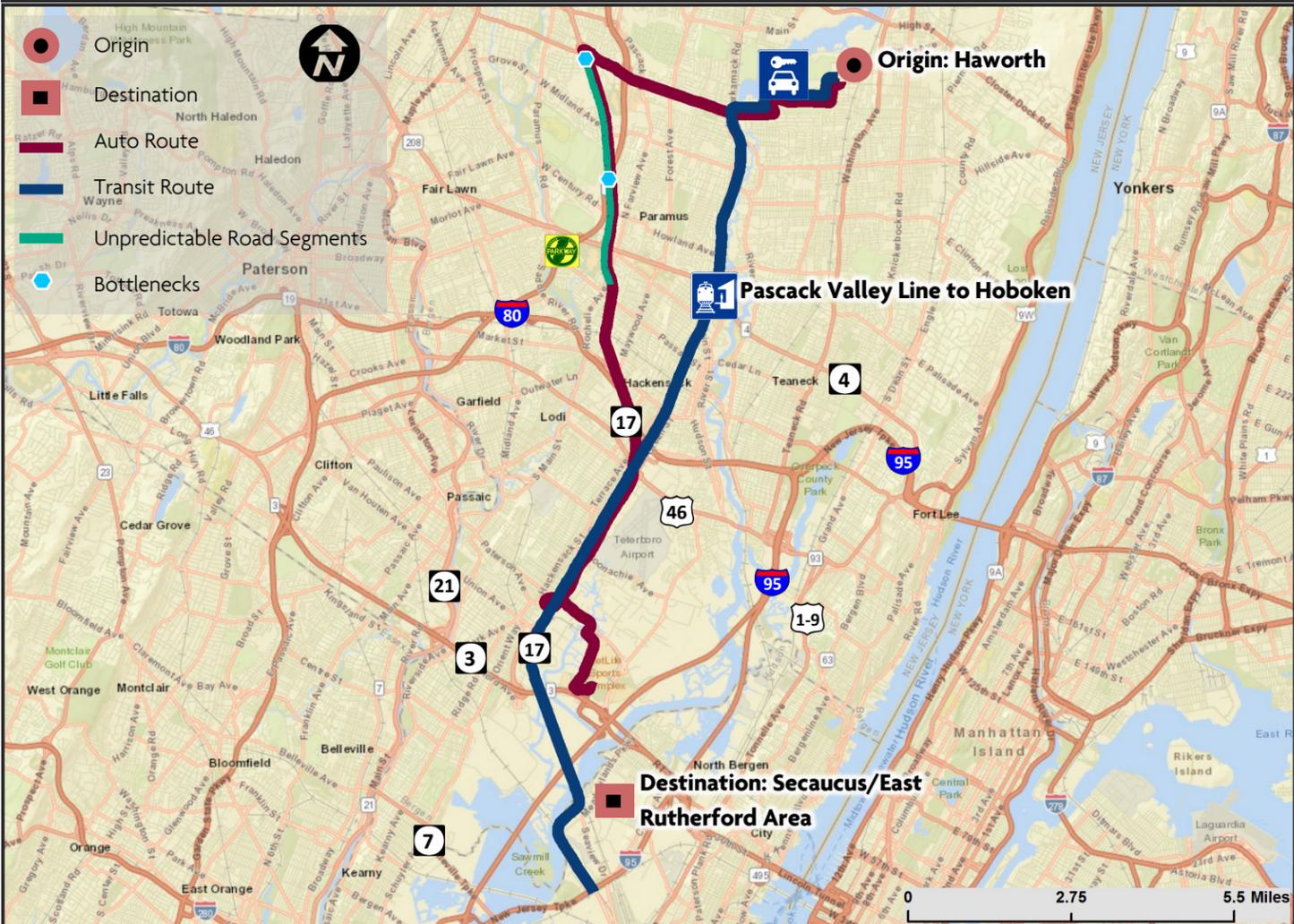


Haworth Borough in Bergen County is a mature suburban community composed of residential and recreational lands. The Town of Secaucus in Hudson County has residential neighborhoods to the north and office, commercial and industrial uses surrounded by wetland areas to the south. The neighboring Borough of East Rutherford, home to the Meadowlands Sports Complex, is a mature residential community. Roadways connecting these locations include NJ Route 17 and county roadways with transit travel via nearby NJ TRANSIT Pascack Valley rail line and local bus and shuttle connections.

SUBURB TO SUBURB TRAVEL		MULTIPLE MODES OF TRAVEL		VARIOUS TRIP PURPOSES	
HAWORTH		SECAUCUS/EAST RUTHERFORD	AUTO	TRANSIT	SHOPPING
3,000 people		12,000 people	Primary Route: Rt. 17, Rt. 120	Primary Route: Pascack Valley Line,	RECREATION
700 jobs		38,000 jobs	Av. Travel Time: 40.0 mins	Av. Travel Time: 40.0 mins + access to transit time	

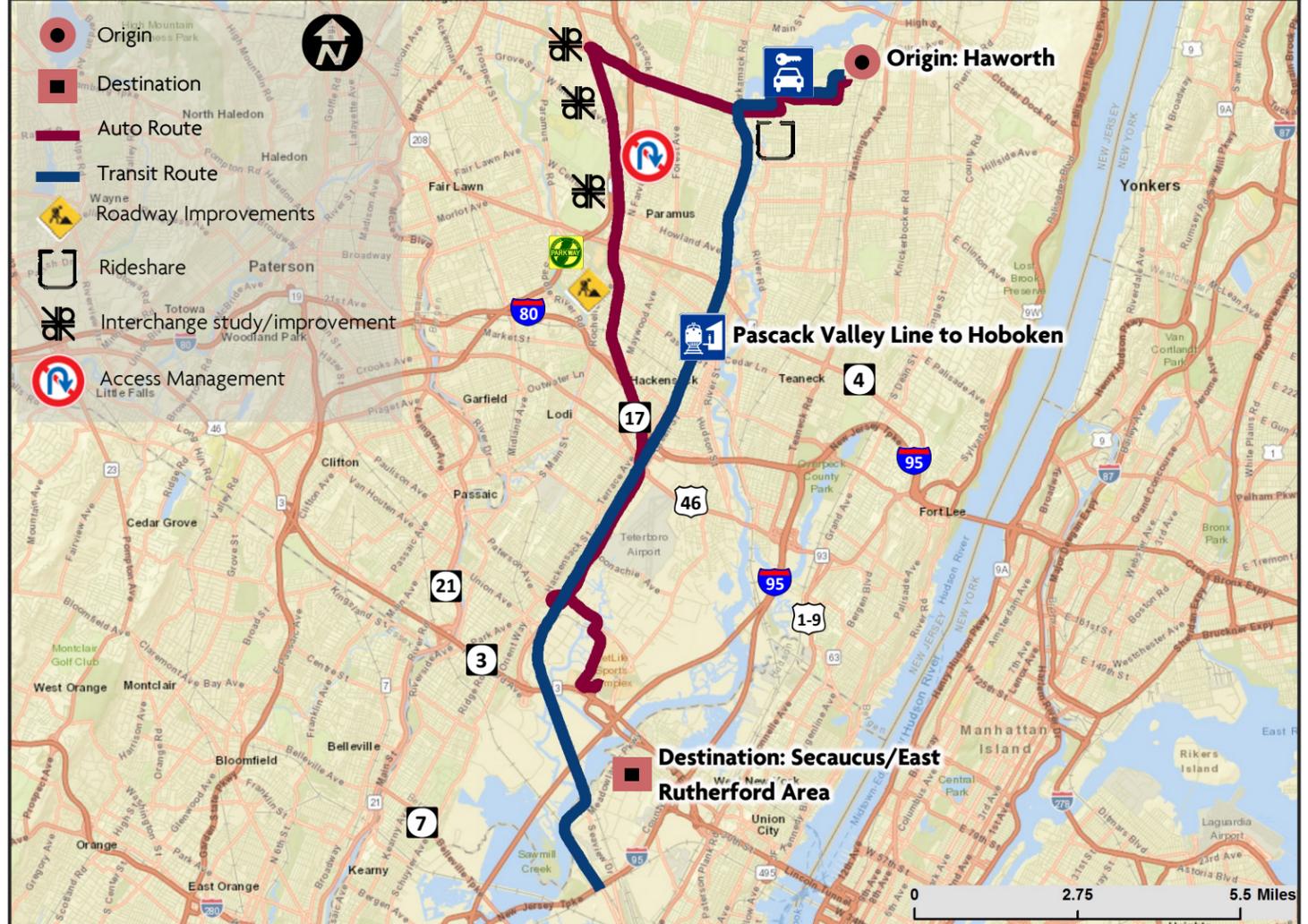


NEEDS

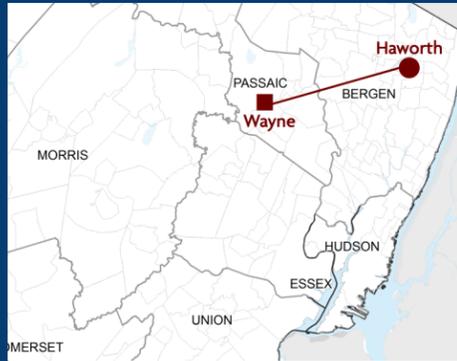


- Inconvenient access to and from Oradell train station
- Unpredictable road segments and bottleneck congestion on Rt. 17 in the Hackensack-Paramus area

RECOMMENDATIONS FOR FUTURE CONSIDERATION



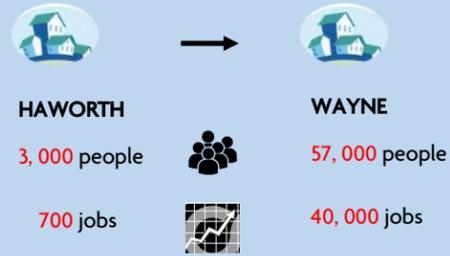
- Current TIP/RTP Projects/Studies:
- Implement TIP project for roadway improvements on Rt. 17 from I-80/Essex St to south of Rt. 4
- Additional Potential Concepts:
- Interchange improvements at Rt. 17 and Ridgewood Avenue, Midland Avenue and Century Road
 - Access management on Rt. 17 from Ridgewood Avenue to north of Rt. 4
 - Improvement in ridesharing services to/from the Oradell train station



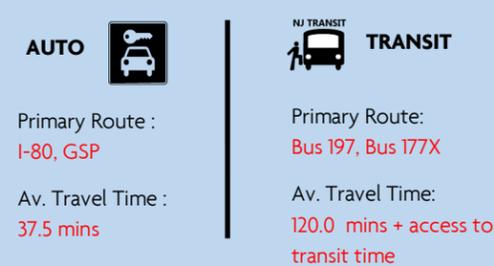
Haworth Borough in Bergen County is a mature suburban community composed of residential and recreational lands. Wayne Township in suburban Passaic County incorporates residential areas, shopping and retail uses along U.S. Route 46 and NJ Route 23, including Willowbrook Mall and Wayne Town Center. Roadways connecting these locations include NJ Route 17 and I-80 with transit travel requiring connections between NJ TRANSIT buses 177X and 197 or NJ TRANSIT Pascack Valley and Montclair-Boonton Rail Lines.

17. HAWORTH TO WAYNE

SUBURB TO SUBURB TRAVEL



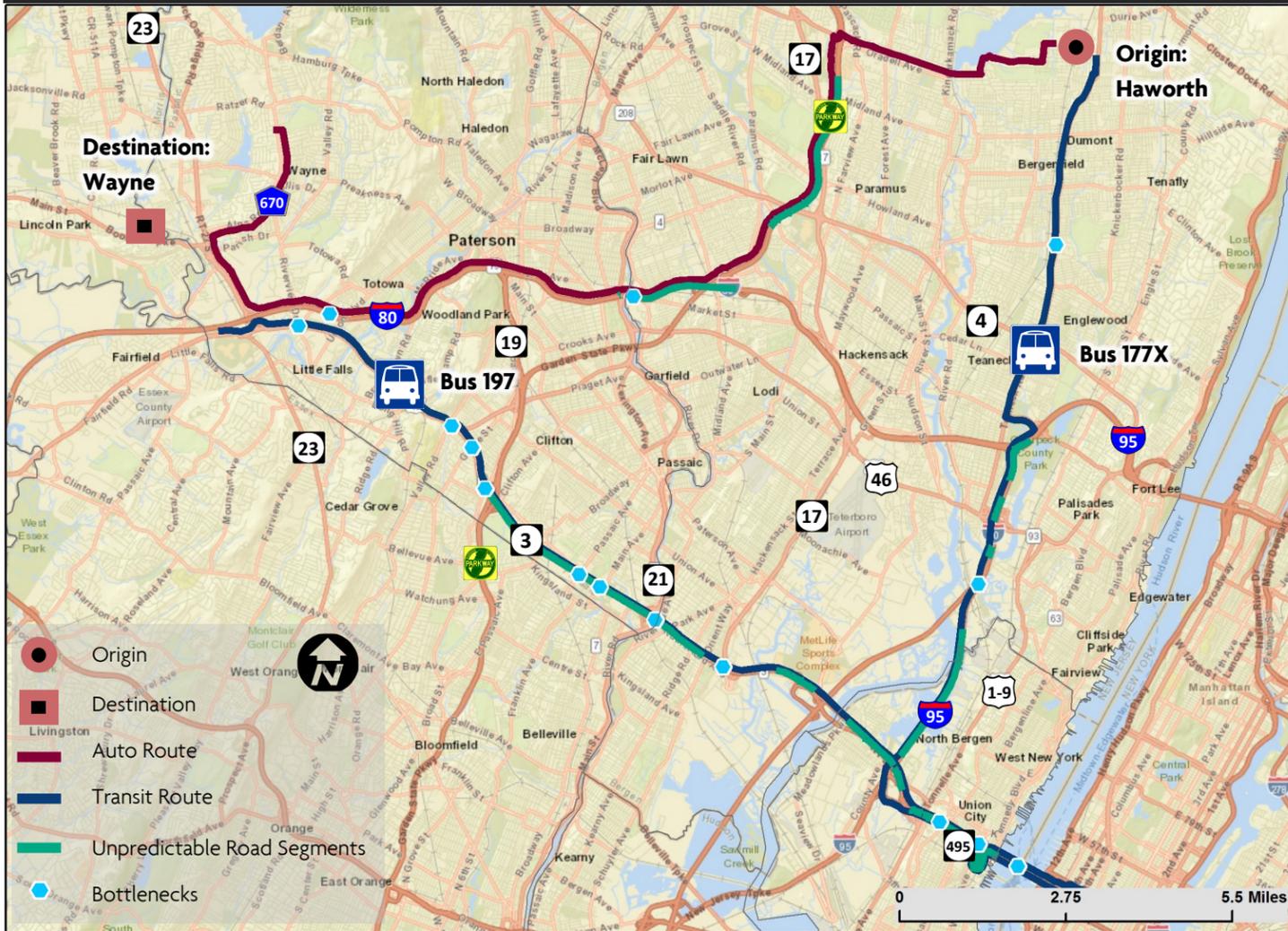
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

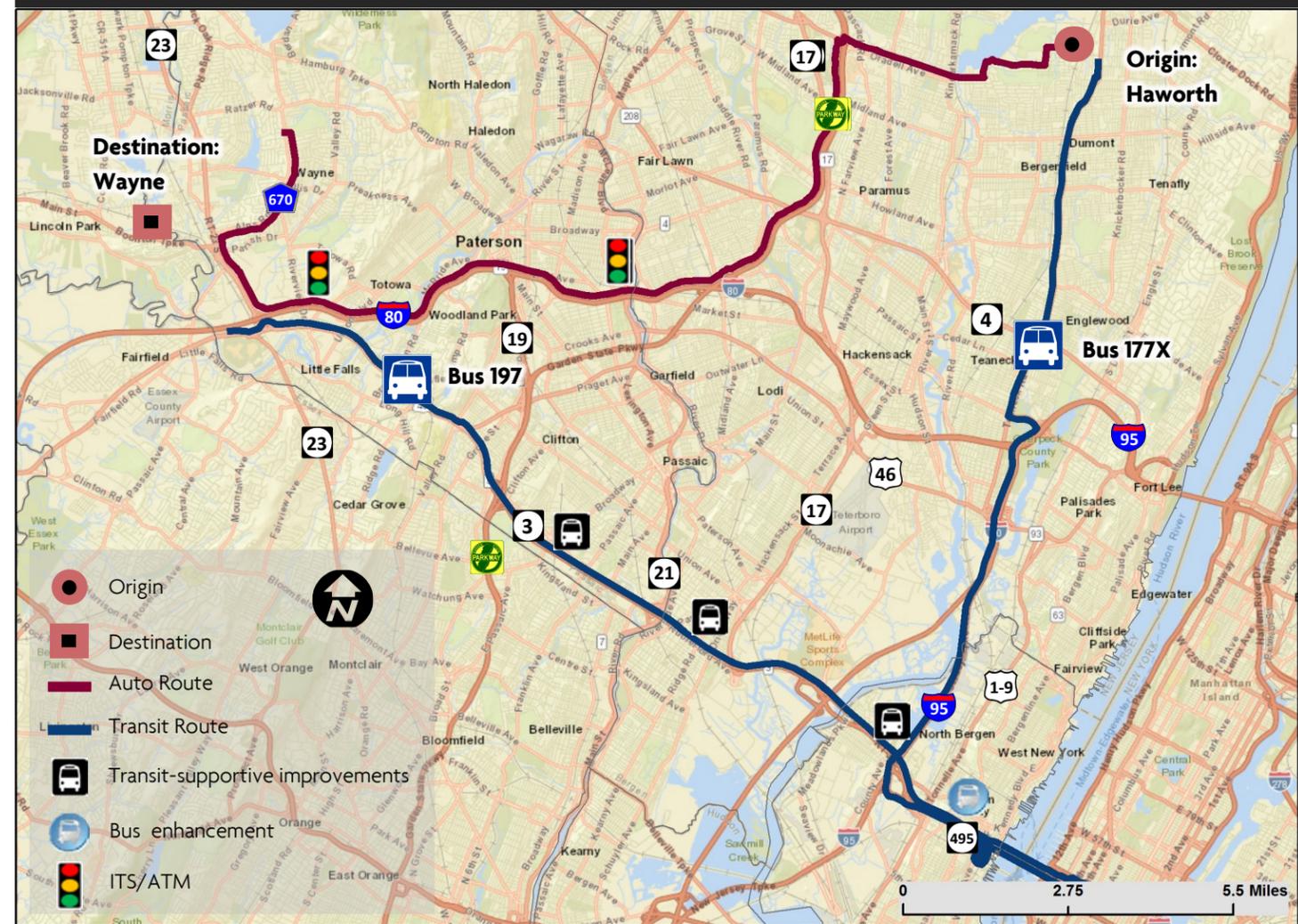


NEEDS



- Peak transit/auto travel time ratio: 2.8 (regional average: 1.8)
- Off-peak bus headways significantly longer than peak headways
- Unpredictable road segments and bottlenecks along Rt. 3 between Garden State Parkway and New Jersey Turnpike and I-80 around intersection of Garden State Parkway
- Unpredictable road segments at interchange of Rt. 17 and Garden State Parkway

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement RTP objective for improved reliability of Rt. 495 bus priority operations
- Support the Hudson Bergen light rail line extension

Additional Potential Concepts:

- Implement active traffic management (ATM) strategies from Connected Corridor report on I-80 between Rt. 15 and the George Washington Bridge
- Study transit-supportive roadway improvements on Rt. 3 and Rt. 46 in Passaic, Bergen and Hudson counties and on I-95 S in Hudson County leading to Rt. 495 Express Bus Lane

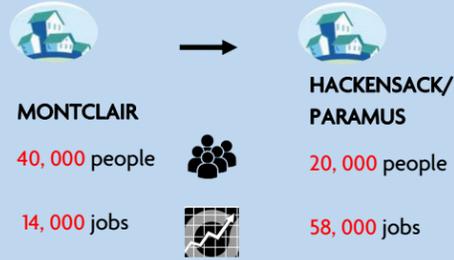
18. MONTCLAIR TO HACKENSACK/PARAMUS AREA

Regional Context

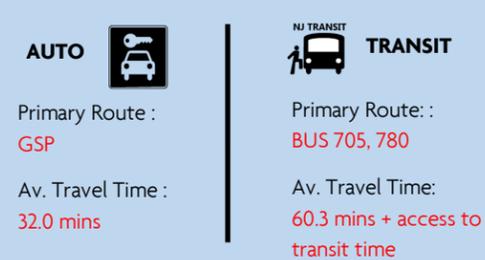


Montclair Township in Essex County is a mature residential suburb with a downtown featuring retail, restaurants and public spaces, and is home to Montclair State University. The City of Hackensack, an urban area, and the Borough of Paramus, a mature suburb, are in Bergen County and have residential and commercial land uses with major employment, Bergen Community College and the largest concentration of shopping malls in the state. Roadways connecting these locations include NJ Routes 4, 17 and the Garden State Parkway with transit travel via NJ TRANSIT buses 705, 780 and the Montclair-Boonton and Pascack Valley rail lines.

SUBURB TO SUBURB TRAVEL



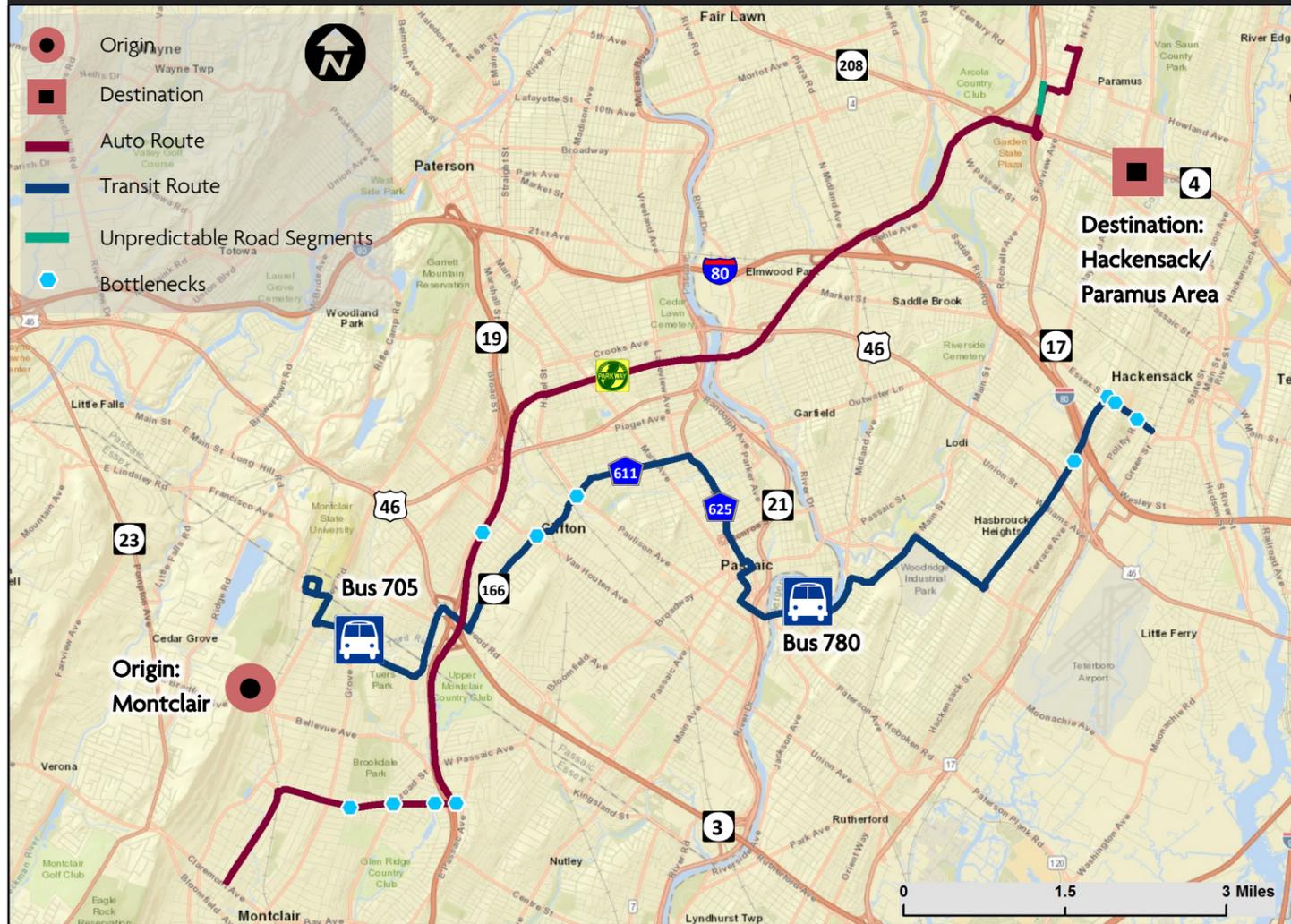
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

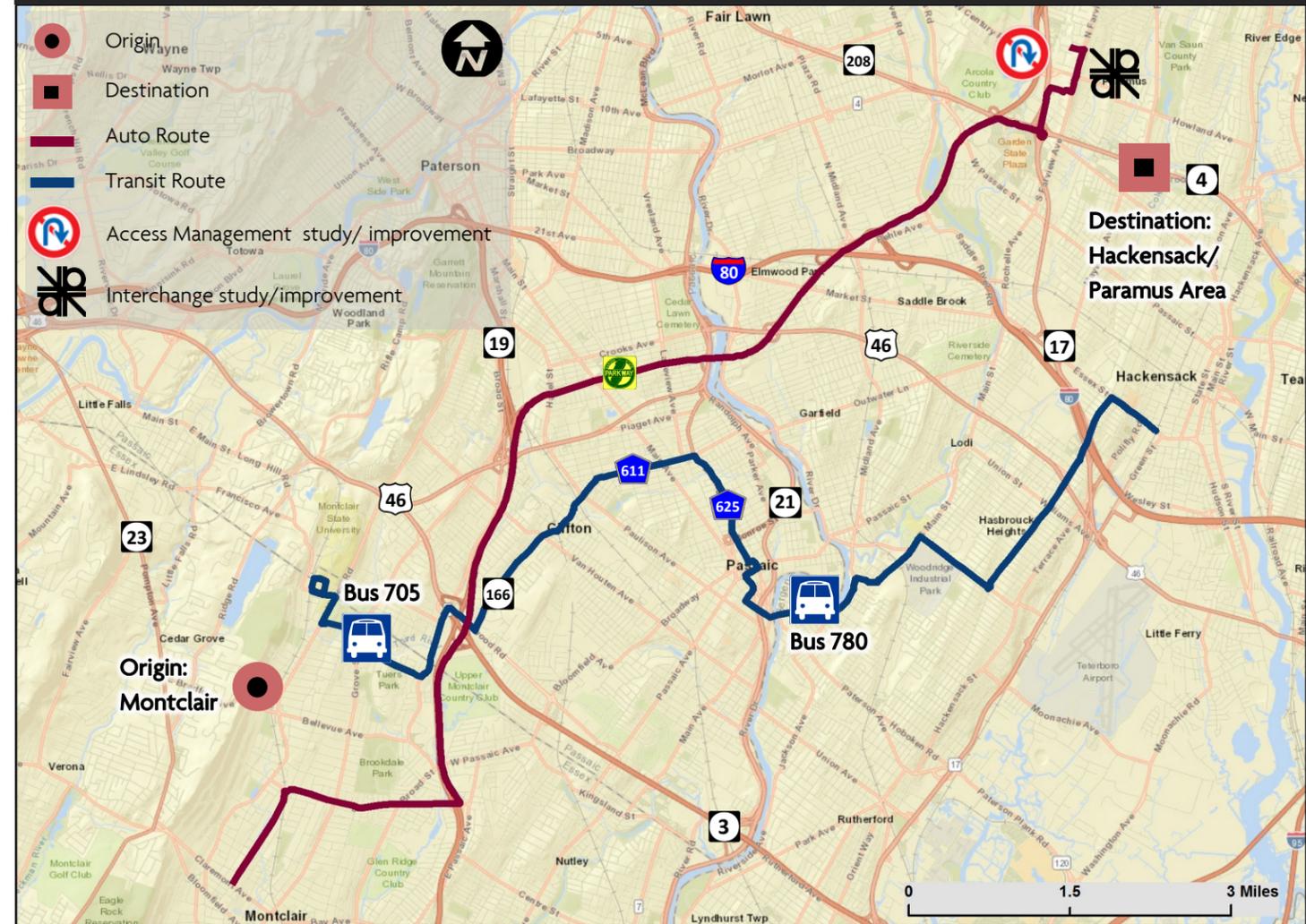


NEEDS



- Unpredictable road segments on Rt. 17 (northbound) at East Century Road
- Access management problems on Rt. 17 from Rt. 4 to East Century Road due to large retail presence and road access points

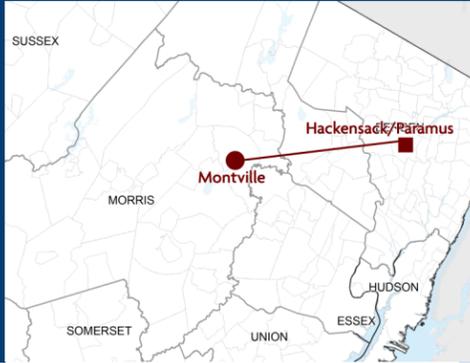
RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Interchange study northbound Rt. 17 at East Century Road
- Access management study on Rt. 17 between Rt. 4 and Garden State Parkway

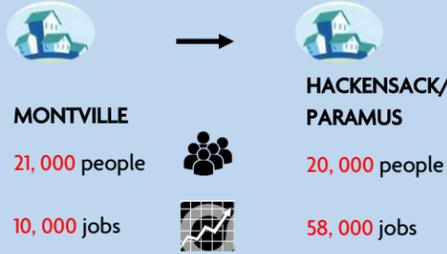
19. MONTVILLE TO HACKENSACK/PARAMUS AREA

Regional Context

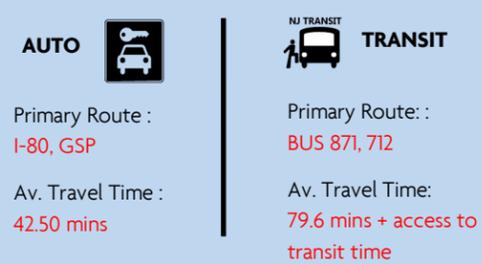


Montville Township in Morris County is a residential suburb. The City of Hackensack, an urban area, and the Borough of Paramus, a mature suburb, are in Bergen County. Both have residential and commercial land uses with major employment, Bergen Community College and the largest concentration of shopping malls in the state. Roadways connecting these locations include I-80, the Garden State Parkway and NJ Route 17 with transit travel via NJ TRANSIT buses 871, 712 and the Montclair-Boonton and Pascack Valley rail lines.

SUBURB TO SUBURB TRAVEL



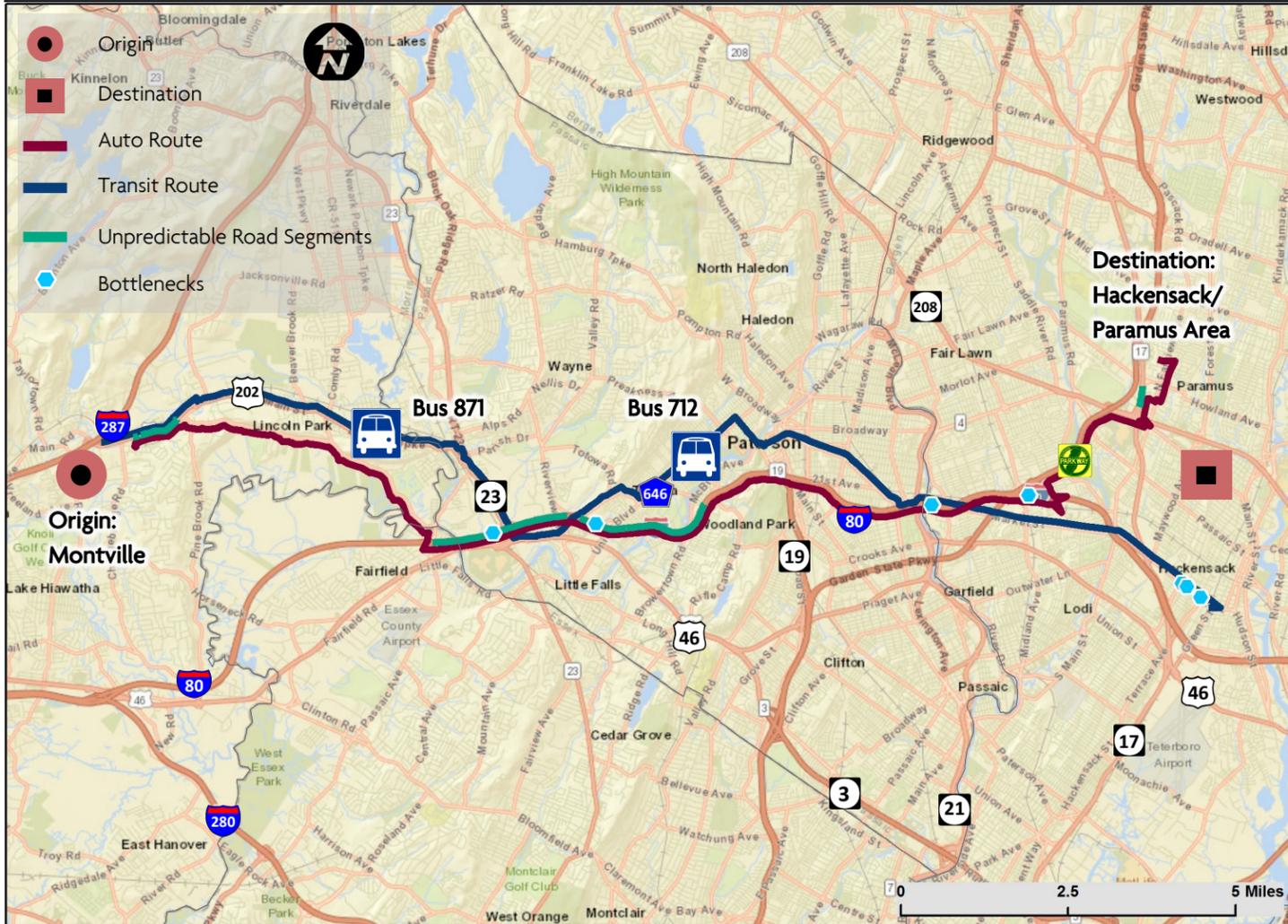
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

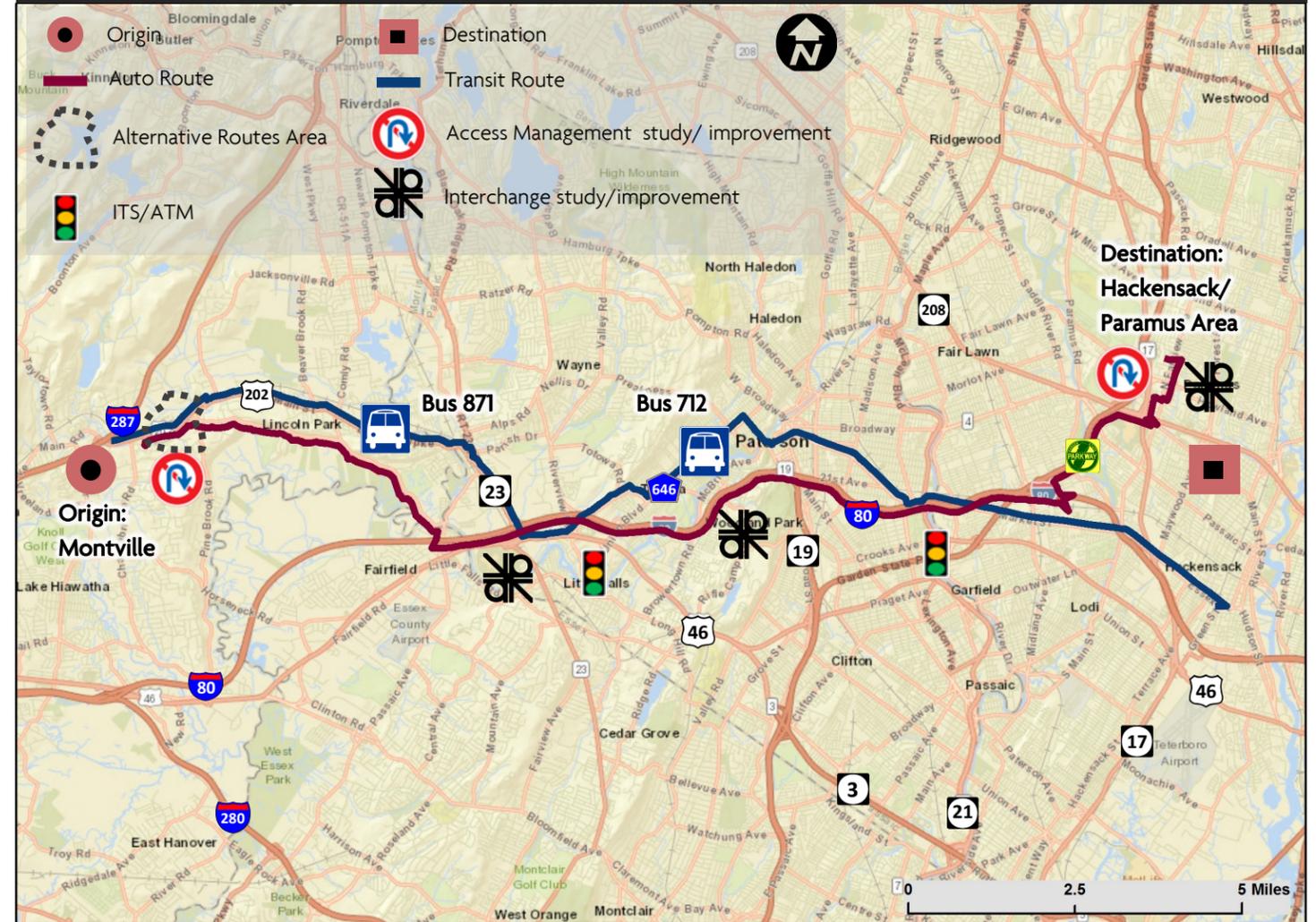


NEEDS



- Unpredictable road segments northbound Rt. 17 at East Century Road
- Unpredictable road segments and bottlenecks I-80 E
- Access management problems on Rt. 17 from Rt. 4 to East Century Road due to large retail presence and road access points

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement TIP project for long-term interchange improvements at Rt. 23 and I-80 interchange

Additional Potential Concepts:

- Access management study for Northbound Rt. 17 from Rt. 4 to Garden State Parkway and Rt. 202 west of Towaco Train station
- Add Route 202 east of I-287 to county diversion plan
- Interchange studies for I-80 Eastbound at Squirrelwood Road and Northbound Rt. 17 at East Century Road
- Implement active traffic management (ATM) strategies from Connected Corridor report on I-80 between Route 15 and the George Washington Bridge

20. NORTH ARLINGTON TO WOODBRIDGE/EDISON/METUCHEN AREA

Regional Context



The Borough of North Arlington in Bergen County is predominantly composed of mature suburban residential and commercial areas. The townships of Woodbridge and Edison and the Borough of Metuchen in Middlesex County feature a range of commercial, industrial, retail, medical and residential uses, including Woodbridge Center and Menlo Park Mall. Roadways connecting these locations include NJ Route 7, I-95 and I-287 with transit travel via NJ TRANSIT bus routes 76, 801, 802, 803, 804, 805 and Northeast Corridor and North Jersey Coast rail lines.

SUBURB TO SUBURB TRAVEL



N. ARLINGTON

150,000 people

4,000 jobs



WOODBRIDGE/ EDISON/METUCHEN

77,000 people

88,000 jobs

MULTIPLE MODES OF TRAVEL



Primary Route : RT 7, I-95

Av. Travel Time : 50.0 mins



Primary Route: Northeast Corridor

Av. Travel Time: 68.0 mins + access to transit time

VARIOUS TRIP PURPOSES



EMPLOYMENT



SHOPPING/ RECREATION



FREIGHT

SYSTEM Connectivity

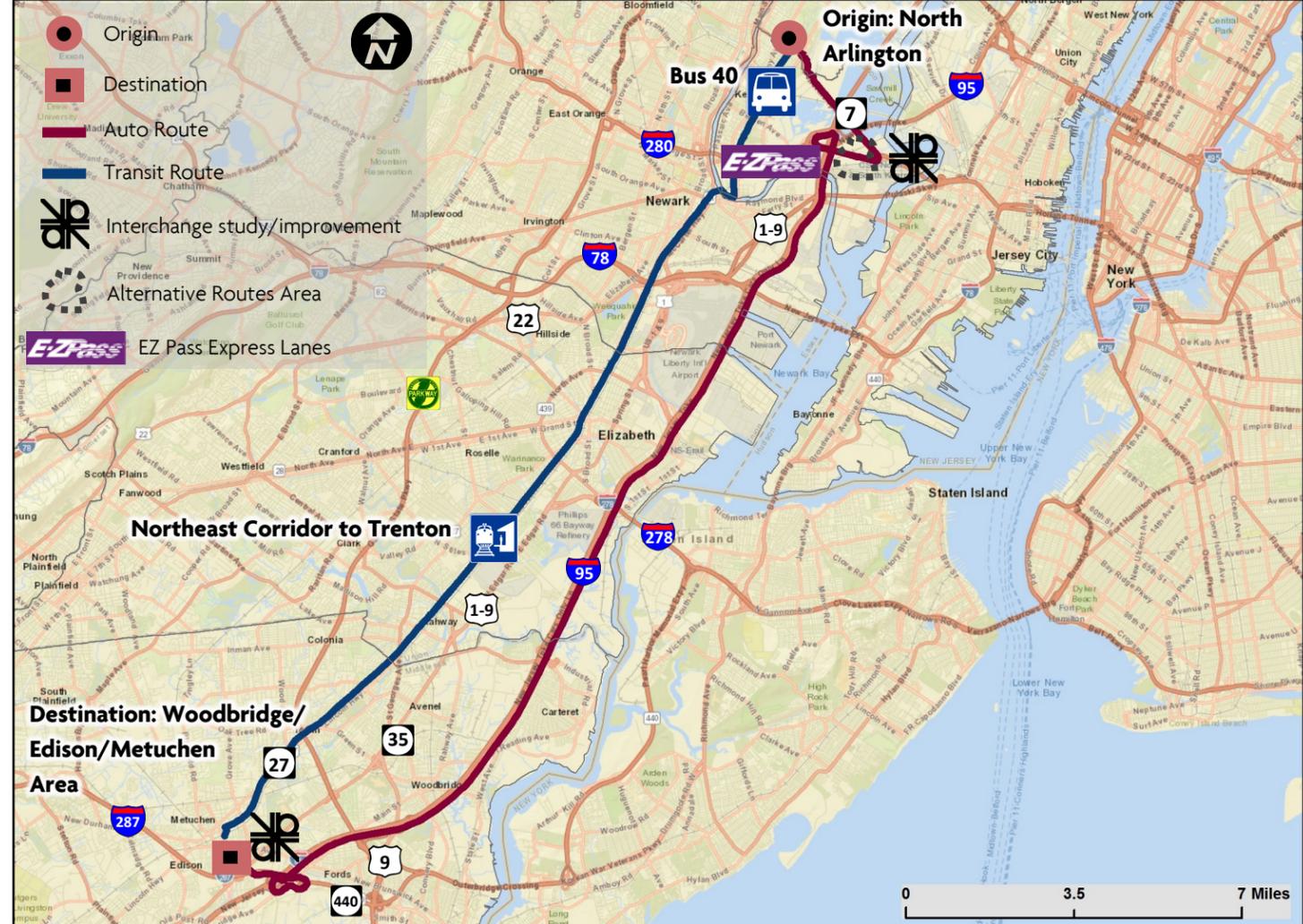


NEEDS



- Unpredictable road segments and bottlenecks on I-287 between New Jersey Turnpike and Rt. 1

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

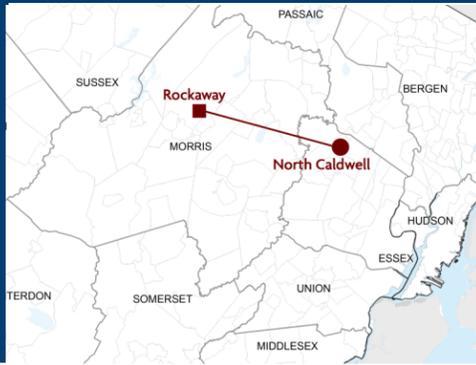
- Implement TIP project for long term interchange improvement at New Jersey Turnpike interchange 15W

Additional Potential Concepts:

- Interchange study at I-287 and Rt. 1
- Study adding E-Z Pass Express Lanes New Jersey Turnpike interchange 15W
- Add location of Newark Jersey City Turnpike to county diversion plan

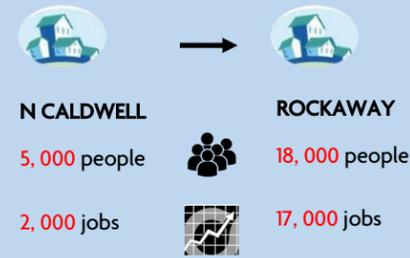
21. NORTH CALDWELL TO ROCKAWAY

Regional Context



North Caldwell Borough in Essex County is a mature suburban residential community. Rockaway Township in Morris County is a suburban community with watershed and natural lands, office parks and the regional Rockaway Townsquare mall. Roadways connecting these locations include NJ Routes 23, 46 and I-80.

SUBURB TO SUBURB TRAVEL



MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

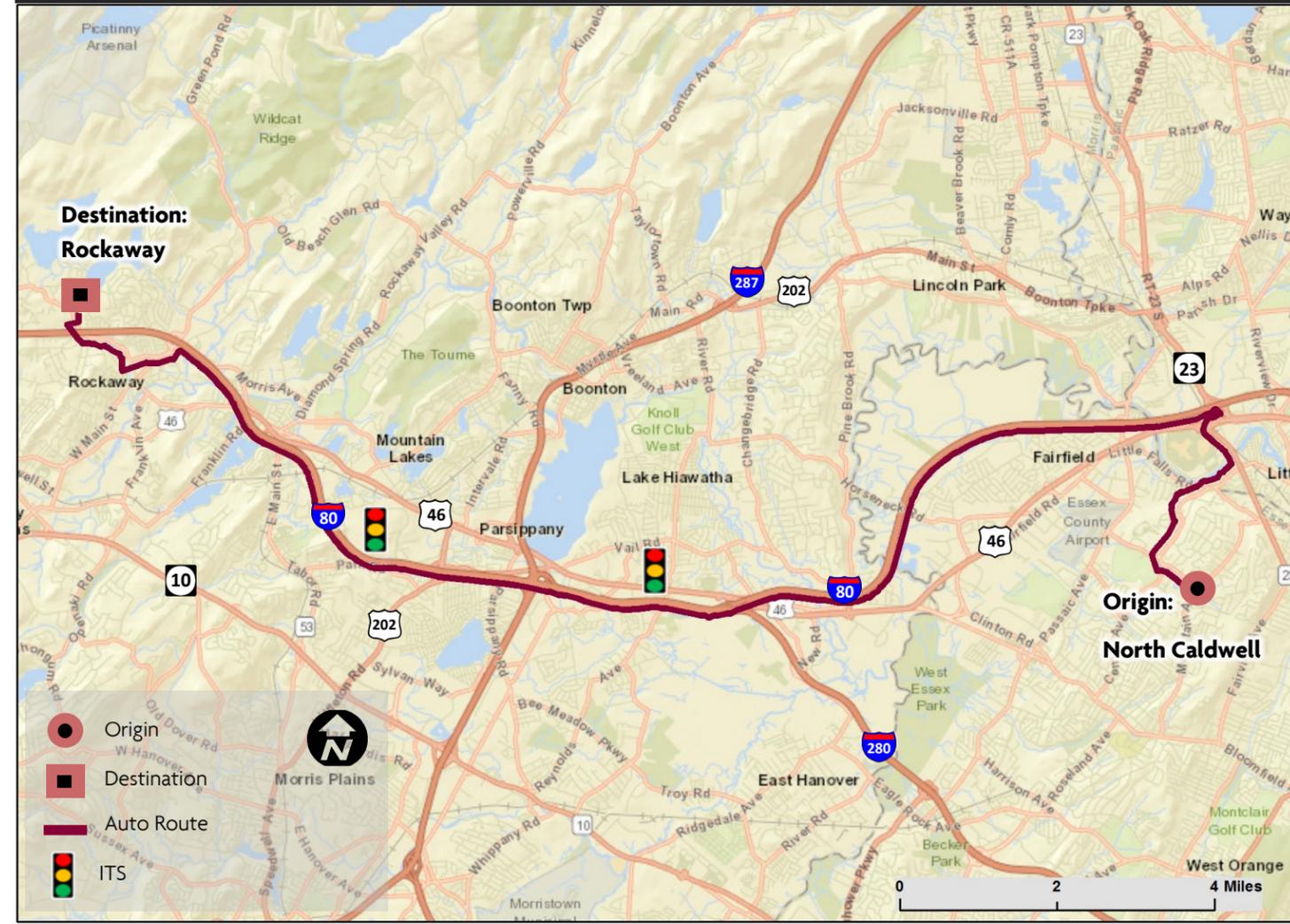


NEEDS



- No feasible transit route
- Unpredictable road segments and bottlenecks along I-80 in Morris County

RECOMMENDATIONS FOR FUTURE CONSIDERATION

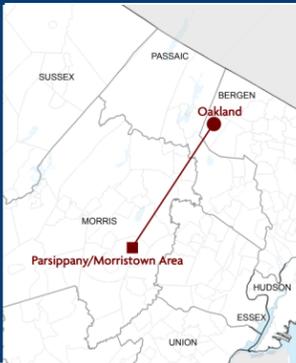


Current TIP/RTP Projects/Studies:

- Implement RTP project for ITS improvements on I-80 from Rt. 46 in Denville to I-280

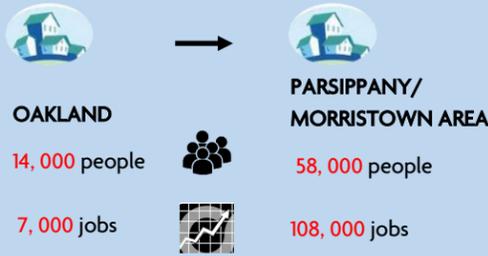
22. OAKLAND TO PARSIPPANY/MORRISTOWN AREA

Regional Context

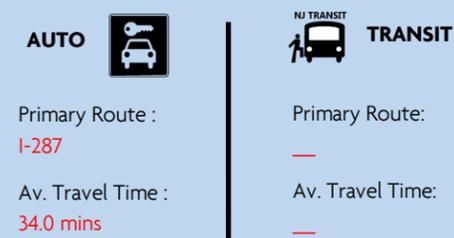


Oakland Borough in Bergen County is a suburban residential community that is home to part of Ramapo Mountain State Forest. Parsippany-Troy Hills Township, the Town of Morristown, the Borough of Morris Plains, Morris Township and the Borough of Florham Park encompass a broad area of Morris County. The communities have major corporate offices, retail, commercial and residential uses and Morristown is home to Morristown Medical Center. Roadways connecting these locations include I-287, U.S. Route 202 and NJ Routes 10 and 53.

SUBURB TO SUBURB TRAVEL



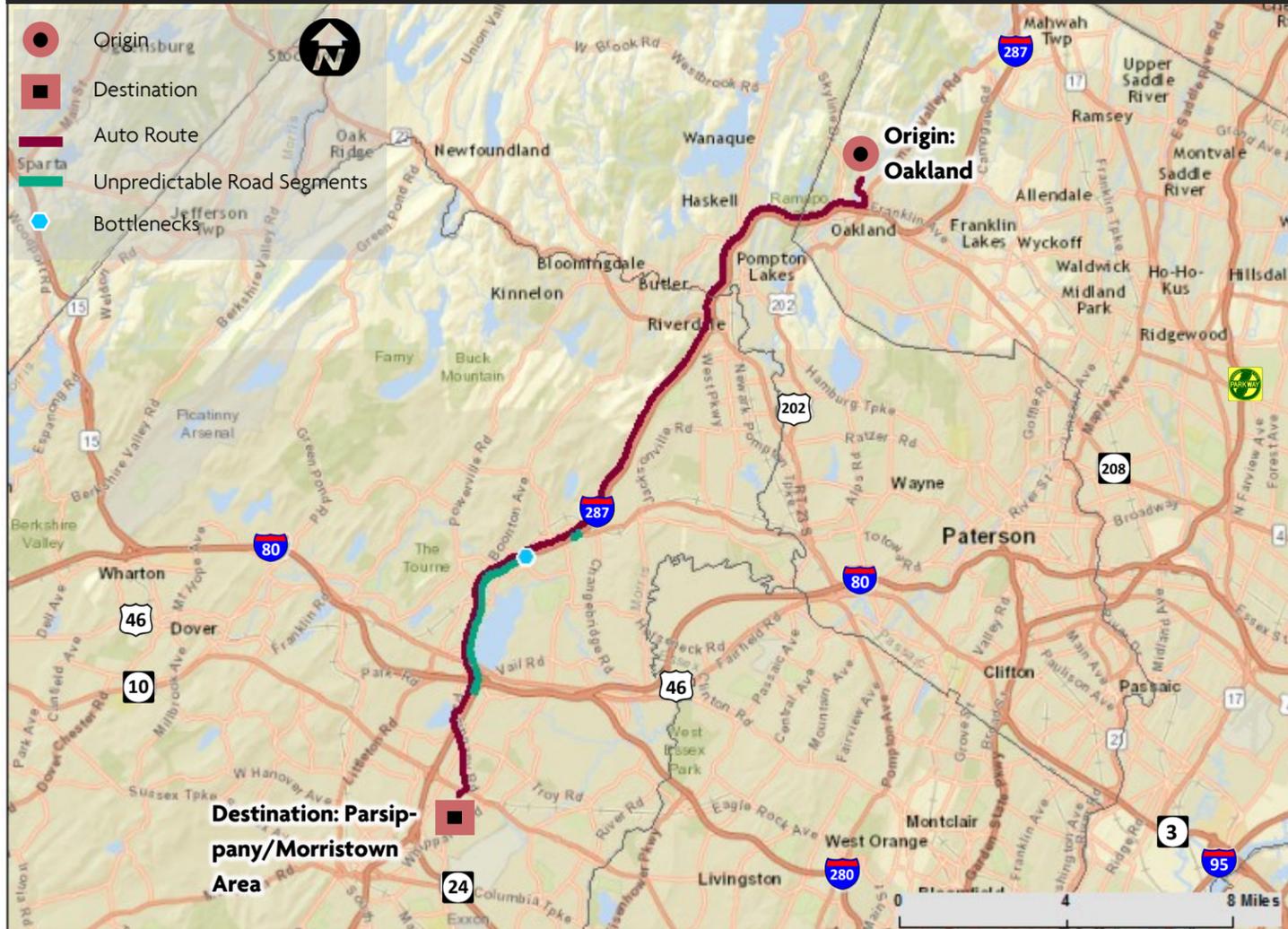
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES



NEEDS



- No feasible transit route
- Unpredictable road segments on I-287 at I-80 interchange

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Interchange study at I-287 and I-80
- Implement active traffic management (ATM) strategies from Connected Corridor report on I-287 between I-95 and I-80

23. SECAUCUS TO PHILLIPSBURG/EASTON/ALLENTOWN/BETHLEHEM AREA

Regional Context



The Town of Secaucus in Hudson County has residential neighborhoods to the north and office, commercial and industrial uses surrounded by wetland areas to the south. The large Phillipsburg/Easton/Allentown/Bethlehem region crossing from Warren County, New Jersey into Lehigh and Northampton Counties in Pennsylvania is a large urbanized industrial region that is home to warehouse distribution centers, regional outlet malls, casino gambling, Lehigh University and Muhlenberg College. Roadways connecting these locations include I-78 and I-95 with transit travel requiring connections in New York City between private bus carrier Trans-Bridge Lines and NJ TRANSIT Northeast Corridor Rail.

<p>SUBURB TO SUBURB TRAVEL</p> <p>SECAUCUS</p> <p>17,000 people</p> <p>37,000 jobs</p>	<p>PHILLIPSBURG/EASTON/ALLENTOWN/BETHLEHEM</p> <p>150,000 people</p> <p>99,000 jobs</p>	<p>MULTIPLE MODES OF TRAVEL</p> <p>AUTO</p> <p>Primary Route : I-78</p> <p>Av. Travel Time : 90.0 mins</p>	<p>VARIOUS TRIP PURPOSES</p> <p>TRANSIT</p> <p>Primary Route : Trans-Bridge Bus</p> <p>Av. Travel Time : 120.0 mins + access to transit time</p>	<p>EMPLOYMENT</p> <p>FREIGHT</p>	<p>SYSTEM Connectivity</p> <p>NJTPA</p> <p>NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY</p>
--	--	--	--	--	---

NEEDS



- Unpredictable road segments and high proportion of trucks on I-78 at interchange of Rt. 173 in Perryville, interchange of Rt. 31 in Clinton; east of CR 523 in Readington Township and east and west of Rt. 24 in Union and Essex counties
- Unpredictable road segments and bottlenecks at interchange of I-78 and US 1-9

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement TIP project for interchange improvements at I-78 and Pittstown Road (CR 5, Exit 15)
- Implement TIP project for interchange improvements at I-287/I-78 and I-287/202/206
- Implement RTP project for I-78 and Rt. 31 interchange study
- Implement RTP project for long-term ITS improvements along I-78, from PA state line to I-95

Additional Potential Concepts:

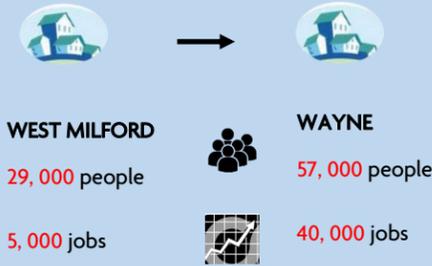
- Interchange study at US 1-9 and I-78

24. WEST MILFORD TO WAYNE

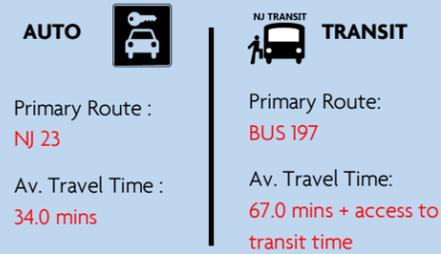


West Milford Township in Passaic County is a rural community of residential, watershed, park and protected lands. Wayne Township in suburban Passaic County incorporates residential areas, shopping and retail uses along U.S. Route 46 and NJ Route 23, including Willowbrook Mall and Wayne Town Center. Roadways connecting these locations include NJ Route 23 with transit travel via Lakeland buses 80, 46 and NJ TRANSIT buses 197 and 198.

SUBURB TO SUBURB TRAVEL



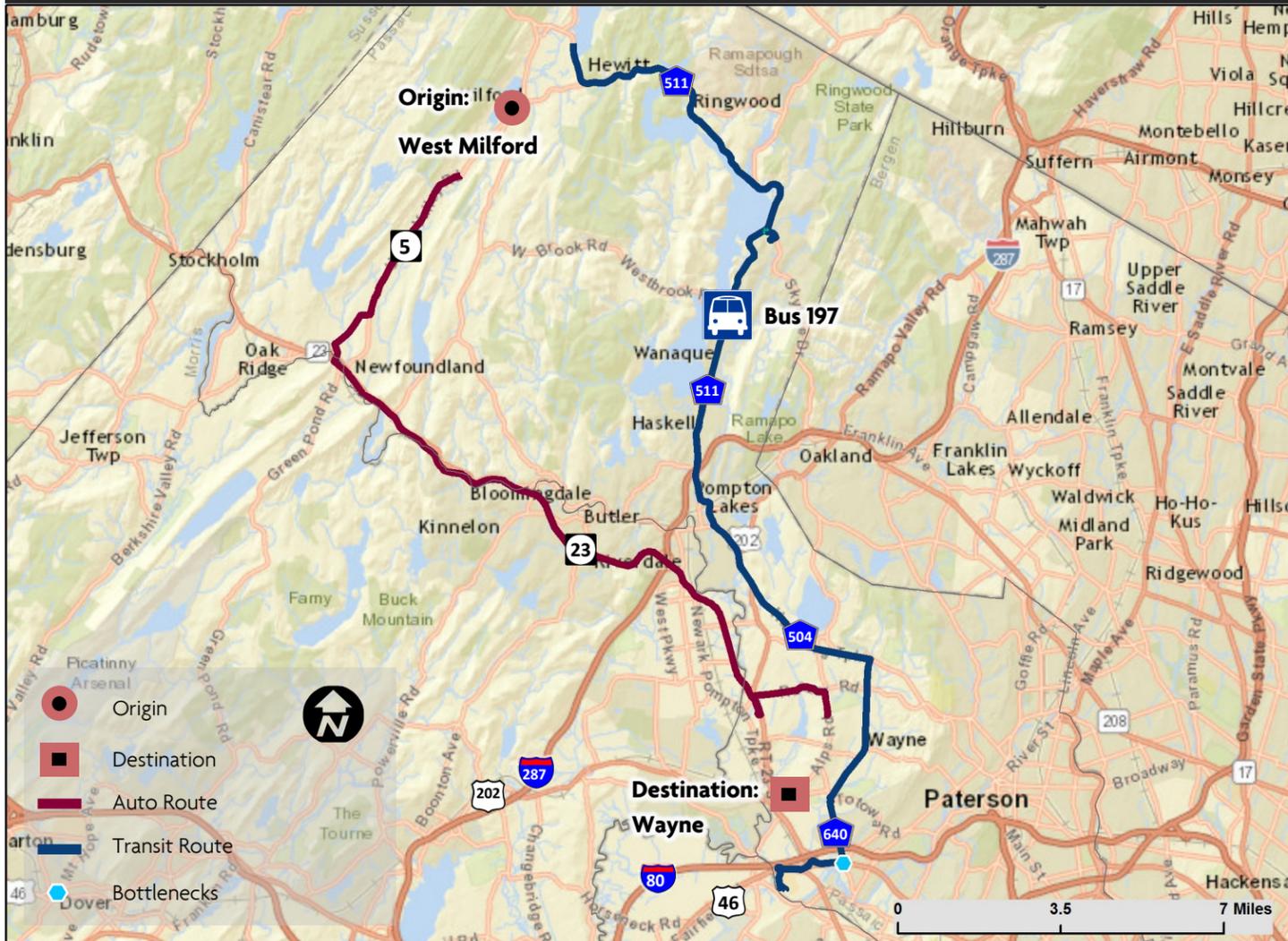
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

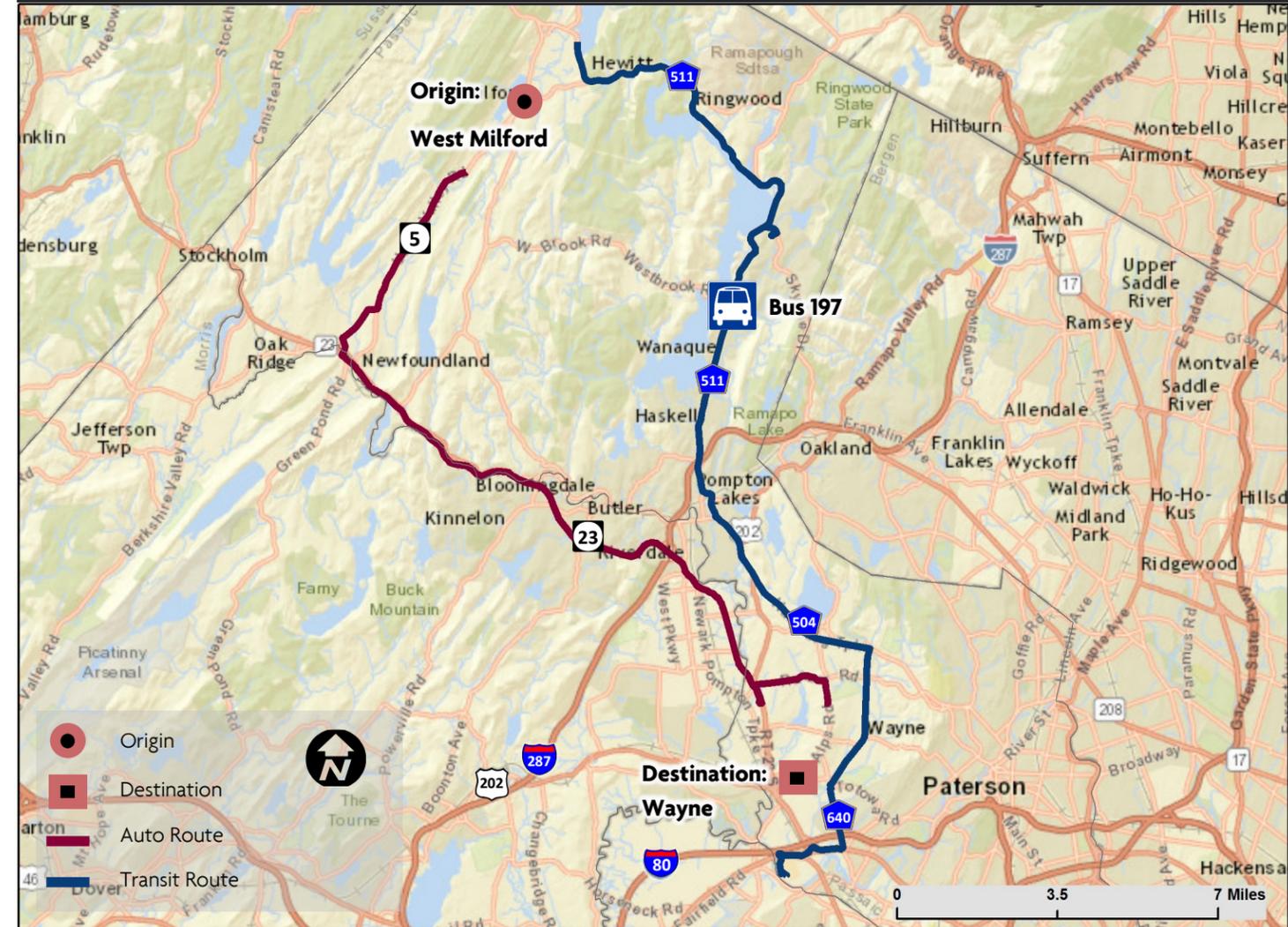


NEEDS



- One bottleneck on Rt. 640 to immediate south of I-80.

RECOMMENDATIONS FOR FUTURE CONSIDERATION

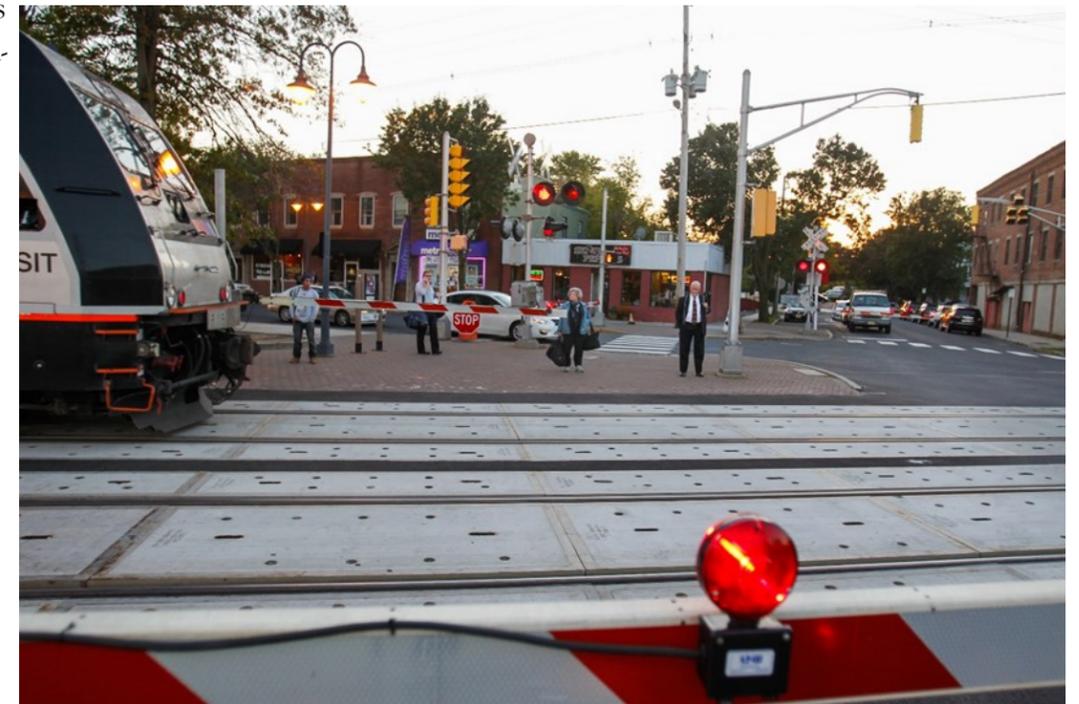


- To provide recommendation for this travel path, additional input and/or verification of the local condition is required.

The 10 representative origin-destination pairs included in this chapter of the appendix depict the needs that may be experienced while traveling from one suburb south of I-78 to another during the morning rush hours. The potential recommendations suggested to address the needs of each pair include projects in the NJTPA TIP and RTP, as well as new project ideas that may be considered for future planning studies and local concept development. While this study offers recommendations for these pairs, not all of these suggestions consider feasibility or cost and additional study would be required before advancing many of these concepts.

The NJTPA considered the land use type, population density, job density, nature of economic activities and street patterns and of the origin and the destination when identifying needs and recommendations. The following narrative provides context for the considerations taken into account for travel among suburban areas:

North Jersey Suburbs South of I-78: These are predominantly residential areas with a population and employment densities lower than urban areas and suburban areas North of I-78. Some of these communities are along the Jersey Shore and have seasonal tourist activities. Also included are communities with distinct downtowns with shopping and office space. The housing stock is predominately single-family residences and townhomes. Hotels, motels and vacation rentals are also part of the development stock. Workers living in these suburbs commute to other parts of New Jersey and New York City.



O-D Pairs and Recommendations for Future Consideration along their travel paths (The recommendations not in current RTP/TIP are highlighted): The table below provides specific information about each O-D pair, travel challenges and specific strategies that could be applied to help improve travel between these locations.

Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
25. Bradley Beach/Belmar/Asbury Park to Freehold	Auto / Transit	TBD								
26. Dover to Bridgewater	Auto	Interchange study	I-287 and Rt. 10, I-287 and Rt. 24	Morris	✓		✓		✓	✓
27. Howell to Toms River/Seaside Heights/Seaside Park/Lavallette	Transit	Implement NJTPA suggested signal priority project for long-term bus improvements	Rt. 9 and I-195 (Aldrich Road and Hulses Corner)	Monmouth	✓					
28. Long Beach to Eatontown/Shrewsbury/Red Bank	Auto	Intersection study	Rt. 36 between Grant Avenue and Rt. 35	Monmouth	✓		✓			
29. Manalapan to Woodbridge/Edison /Metuchen	Auto	Interchange study	Rt. 440 and Rt. 9	Middlesex	✓		✓			
		Interchange study	I-287 and Rt. 1	Middlesex	✓		✓		✓	
		Access Management Study	Rt. 9 between Perrine Road and Bordentown Avenue	Middlesex	✓			✓		
		Add alternative route to county diversion plan	Rt. 3 and Freehold Road in Manalapan	Monmouth	✓					
	Transit	Continue studies to advance transit signal priority on Rt. 9	Rt. 9 in Monmouth and Ocean Counties	Monmouth	✓					
		Implement RTP project for long-term intersection improvements	Rt. 18 at Edgeboro Road and Tices Lane	Middlesex	✓					
		Consider transit-support improvements on Rt. 18	Between Edgeboro Road/Tices Lane and Rt. 1	Middlesex	✓		✓			
30. Milburn to South Brunswick/Cranbury/ NJTP Exit 8A Corridor	Auto	Implement RTP project for long-term ITS improvements	I-78, PA State Line to I-95	Union	✓	✓			✓	
		Interchange Study.	I-78 and Rt. 124	Union	✓				✓	✓

Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
		Interchange Study.	Rt. 24 and Morris Avenue	Union	✓		✓			✓
		Corridor study	Rt. 130 Cranbury to South Brunswick	Middlesex	✓		✓			✓
31. Red Bank to Freehold	Transit	Transit-supportive improvement	Rt. 537 from Freehold to Tinton Falls	Monmouth	✓					
	Auto	Implement TIP project for long-term intersection improvements (underway)	Rt. 537 and Rt. 34	Monmouth	✓					
32. Sayreville to Asbury Park/Neptune/Wall Township	Auto / Transit	TBD								
33. Scotch Plains/Plainfield to Rockaway	Auto	Implement RTP project for long-term ITS improvements.	I-80 from Rt. 46 in Denville to Changebridge Road in Pinebrook	Morris	✓	✓			✓	✓
		Interchange study	I-287 and Rt. 10, I-287 and Rt. 24	Morris	✓	✓	✓		✓	✓
		Interchange study.	I-80 and I-287	Morris	✓	✓			✓	✓
		Interchange study	Rt. 24 and John F Kennedy Parkway	Essex	✓	✓				✓
		Add alternative route to county diversion plan	CR 611 and CR 655 in Scotch Plains	Somerset	✓	✓				✓
		Implement active traffic management (ATM) strategies from Connected Corridor report.	I-287 between I-80 and I-95	Morris	✓	✓			✓	✓
34. South Brunswick to Toms River/Seaside Heights/Seaside Park/Lavallette	Auto	Add alternative route to county diversion plan	Applegarth Road north of Rt. 33	Middlesex	✓					✓
		Corridor study	Rt. 130 Cranbury to South Brunswick	Middlesex	✓		✓			✓

25. BRADLEY BEACH/BELMAR/ASBURY PARK AREA TO FREEHOLD

Regional Context

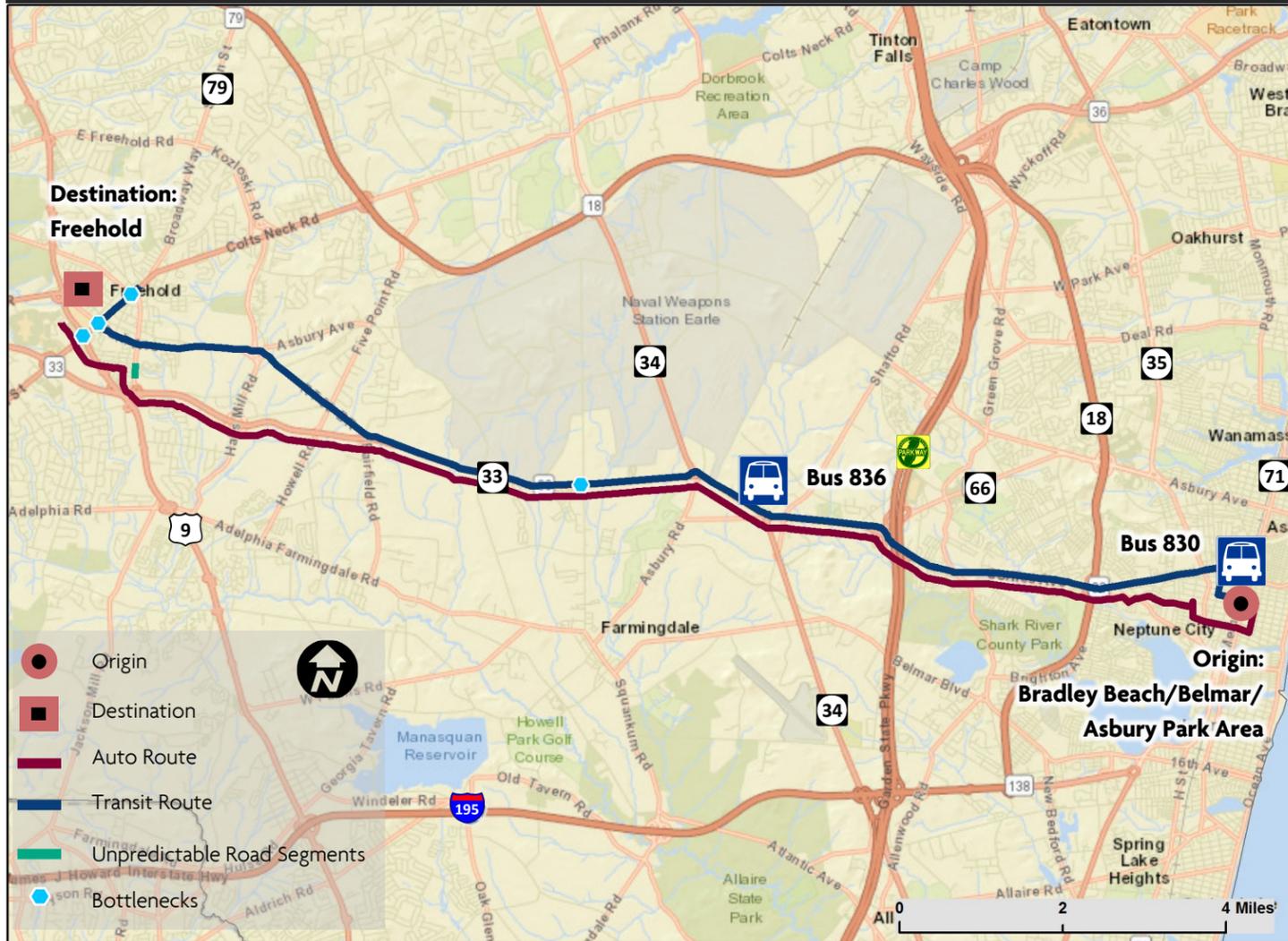


Bradley Beach and Belmar boroughs and the City of Asbury Park in Monmouth County are oceanfront residential communities that feature restaurants, local retail and tourism destinations centered on beaches and boardwalks. Freehold Borough is a gateway for western Monmouth County that features restaurants, retail and government services. Roadways connecting these locations include NJ Routes 18 and 33 with transit travel via NJ TRANSIT buses 830, 836 and North Jersey Coast Line rail.

RURAL TO SUBURB TRAVEL	MULTIPLE MODES OF TRAVEL	VARIOUS TRIP PURPOSES
<p>BRADLEY BEACH/BELMAR/ASBURY PARK</p> <p>22,000 people</p> <p>5,000 jobs</p>	<p>FREEHOLD</p> <p>35,000 people</p> <p>21,000 jobs</p>	<p>AUTO </p> <p>Primary Route : Rt. 33</p> <p>Av. Travel Time : 30.5 mins</p>
		<p>TRANSIT </p> <p>Primary Route : BUS 836</p> <p>Av. Travel Time : 34.2 mins + access to transit time</p>
		<p>EMPLOYMENT </p> <p>SHOPPING </p> <p>RECREATION </p>

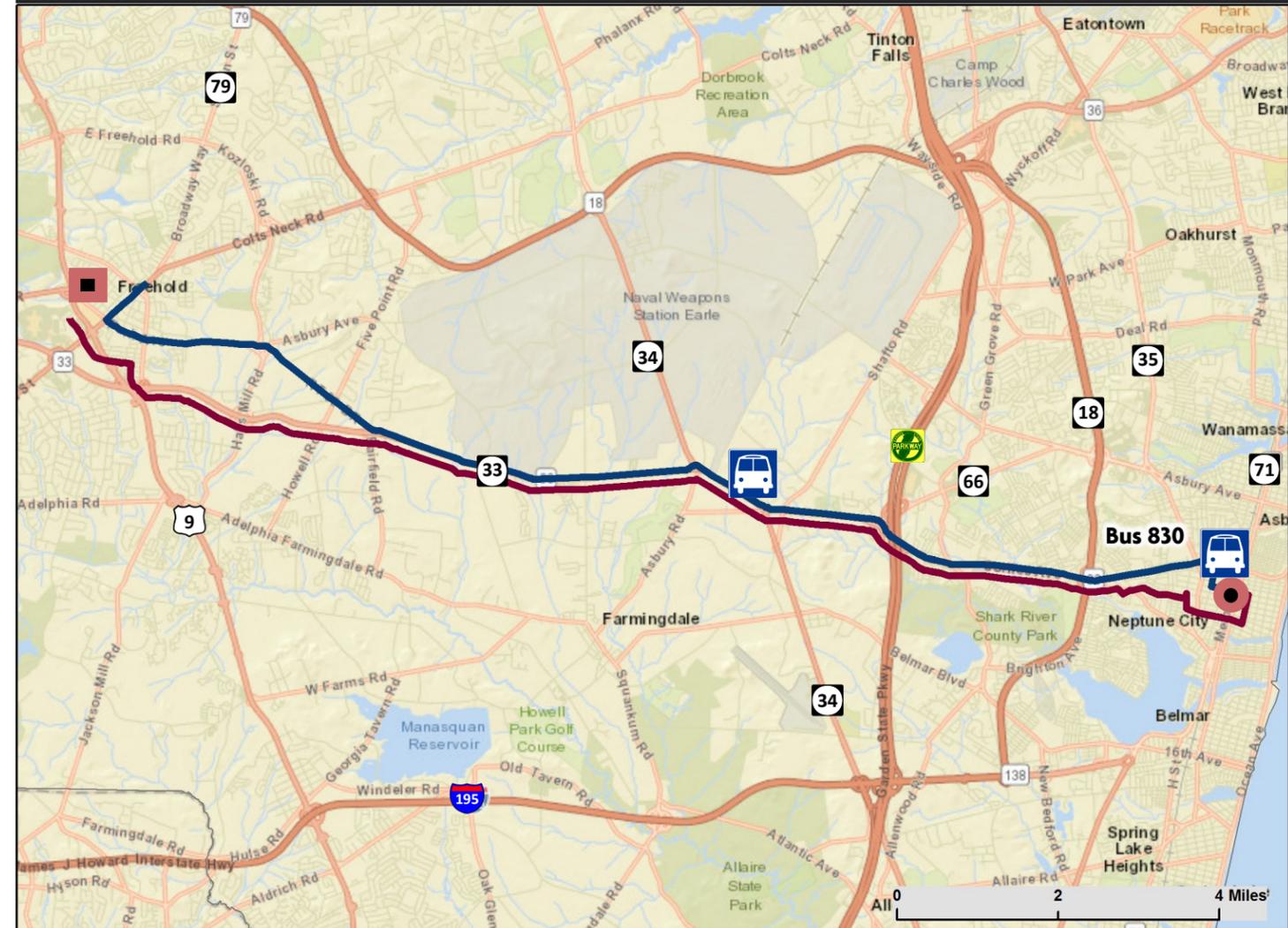


NEEDS



- Bottlenecks on the roadways approaching Freehold.

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- This travel path is indicative of the strong connection between Jersey shore and rest of the region.
- To recommend strategies for the few bottlenecks on the roadways approaching Freehold, additional local condition input and/or verification is required.

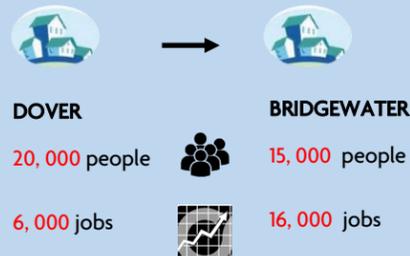
26. DOVER TO BRIDGEWATER

Regional Context



The Town of Dover in Morris County is a small community with a business district surrounded by commercial and residential land uses. Bridgewater Township in Somerset County is a suburban community with residential areas, major corporate offices, the regional Bridgewater Commons Mall and the Somerset Patriots minor league baseball stadium. Roadways connecting these locations include NJ Route 10, US Routes 202 and 206, I-287 and I-80.

SUBURB TO SUBURB TRAVEL



MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES



NEEDS



- No feasible transit route
- Unpredictable road segments and bottleneck at interchanges of I-287/Rt. 10 and I-287/Rt.24

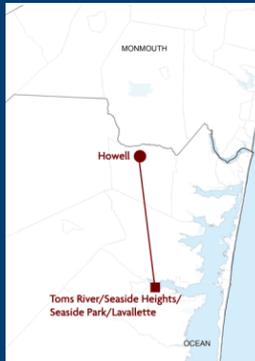
RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Interchange study at I-287/Rt. 10 and I-287/ Rt. 24

27. HOWELL TO TOMS RIVER/SEASIDE HEIGHTS/SEASIDE PARK/LAVALLETTE AREA

Regional Context

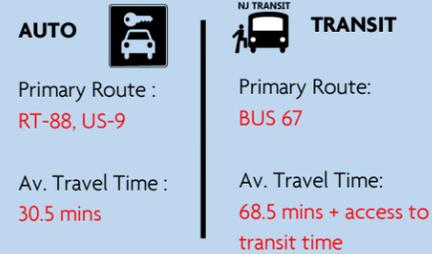


Howell Township in Monmouth County is a suburban residential area with corridor retail and commercial uses along U.S. Route 9. The Toms River/Seaside Heights/Seaside Park/Lavallette corridor encompasses the county seat and central business district in Toms River, the retail and commercial corridor along NJ Route 37, and oceanfront summer tourism attractions in Seaside Heights, Seaside Park and Lavallette. Roadways connecting these locations include I-195, U.S. Route 9, NJ Routes 35, 37 and several county roadways with transit travel via connections between NJ TRANSIT Bus Routes 137, 139 and 67.

SUBURB TO SUBURB TRAVEL



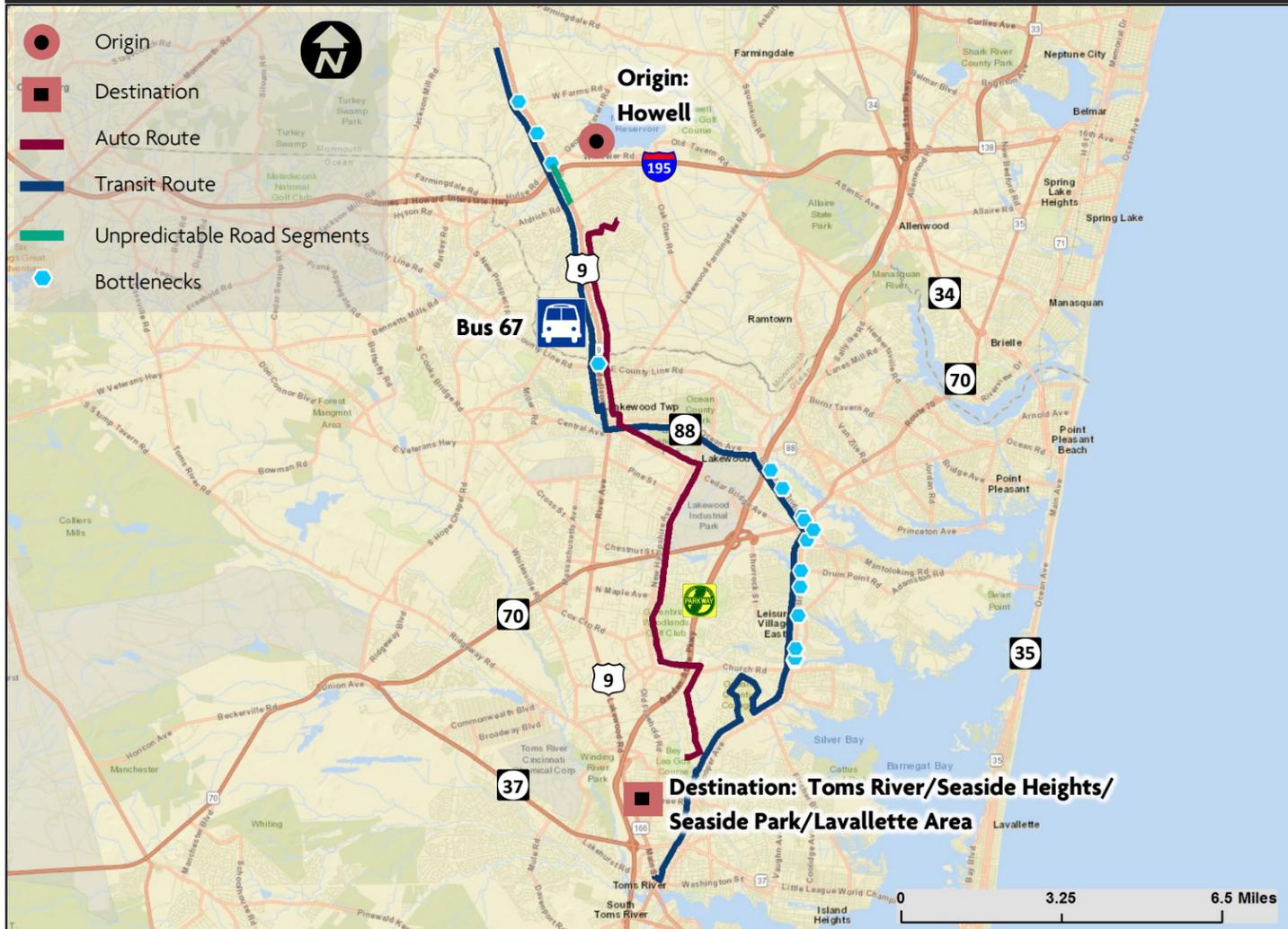
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

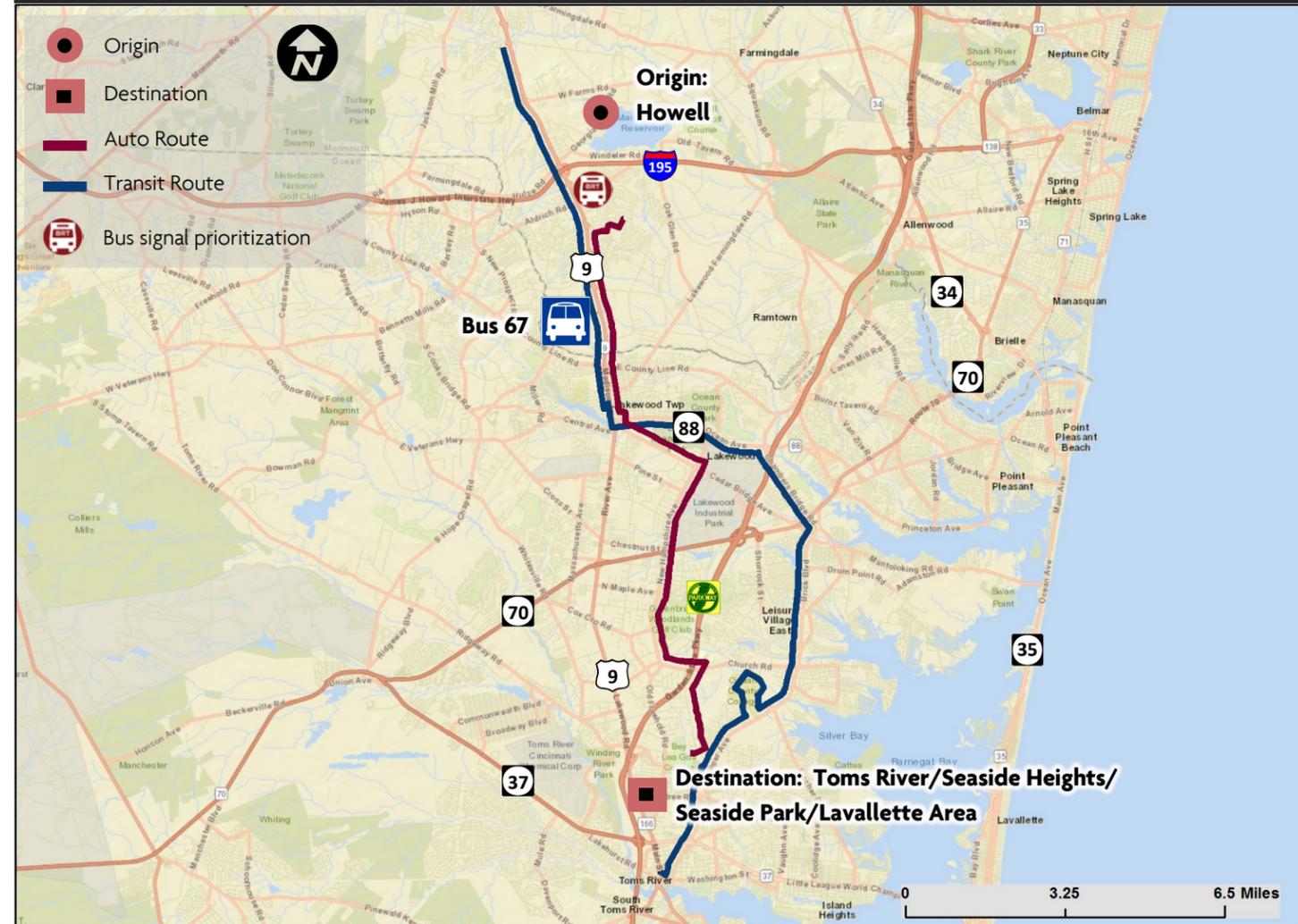


NEEDS



- Unpredictable road segments along Rt. 9 at I-195

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Implement NJTPA suggested signal priority project for long-term bus improvements (Aldrich Rd and Hulses Corner Rd)

28. LONG BEACH TO EATONTOWN/SHREWSBURY/RED BANK AREA

Regional Context

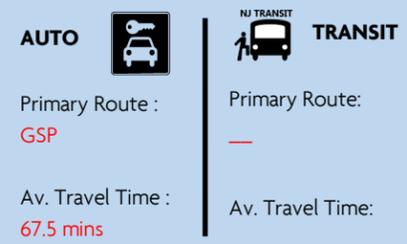


Long Beach Township in Ocean County is a coastal vacation point. The boroughs of Eatontown, Shrewsbury and Red Bank in Monmouth County are home to theaters, cafes, retail, restaurants, offices and nearby Brookdale Community College. Roadways connecting these locations include the Garden State Parkway and NJ Route 72. There are no transit travel options.

SUBURB TO SUBURB TRAVEL



MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

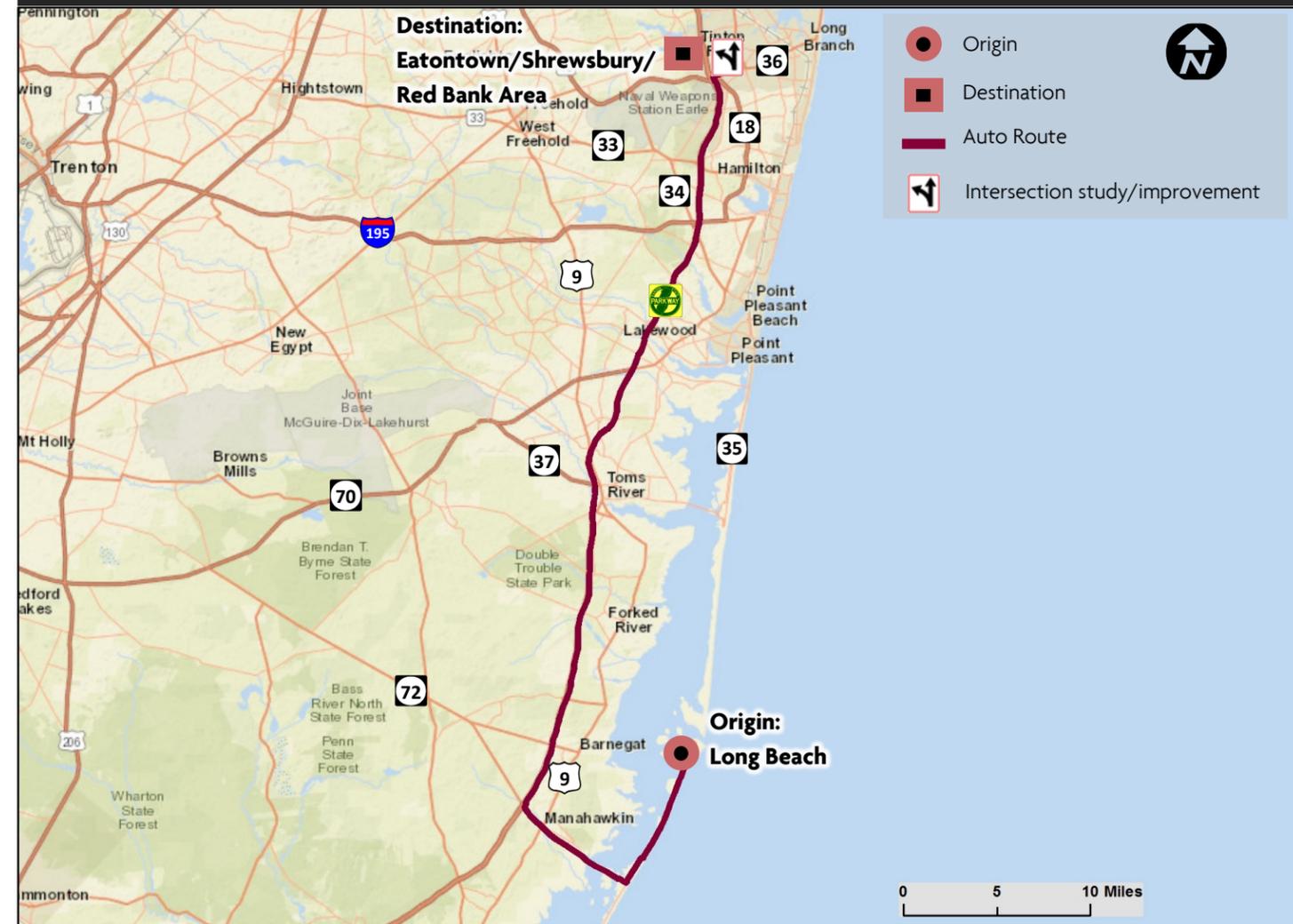


NEEDS



- No feasible transit route
- Bottlenecks along Rt. 36 from Grant Avenue to Rt. 35 in Eatontown

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Intersection studies on Rt. 36 between Grant Avenue and Rt. 35 in Eatontown

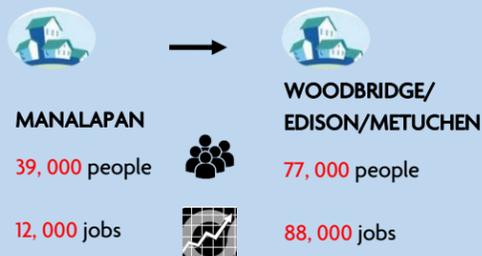
29. MANALAPAN TO WOODBRIDGE/EDISON/METUCHEN AREA

Regional Context

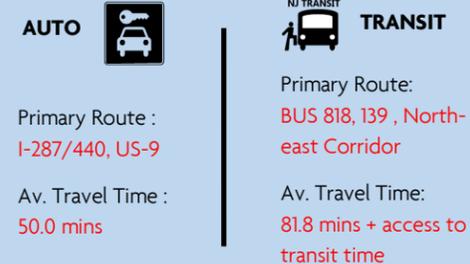


Manalapan Township is a suburban residential community in Monmouth County with a significant retail base located along the U.S. Route 9 corridor. The townships of Woodbridge and Edison and the Borough of Metuchen in Middlesex County that feature a range of commercial, industrial, retail, medical and residential uses, including Woodbridge Center and Menlo Park Mall. Roadways connecting these locations include U.S. Route 9, NJ Route 18, I-287 and the Garden State Parkway with transit travel requiring connections between NJ TRANSIT buses 139 and 818, the Northeast Corridor and North Jersey Coast rail lines and county shuttle routes.

SUBURB TO SUBURB TRAVEL



MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

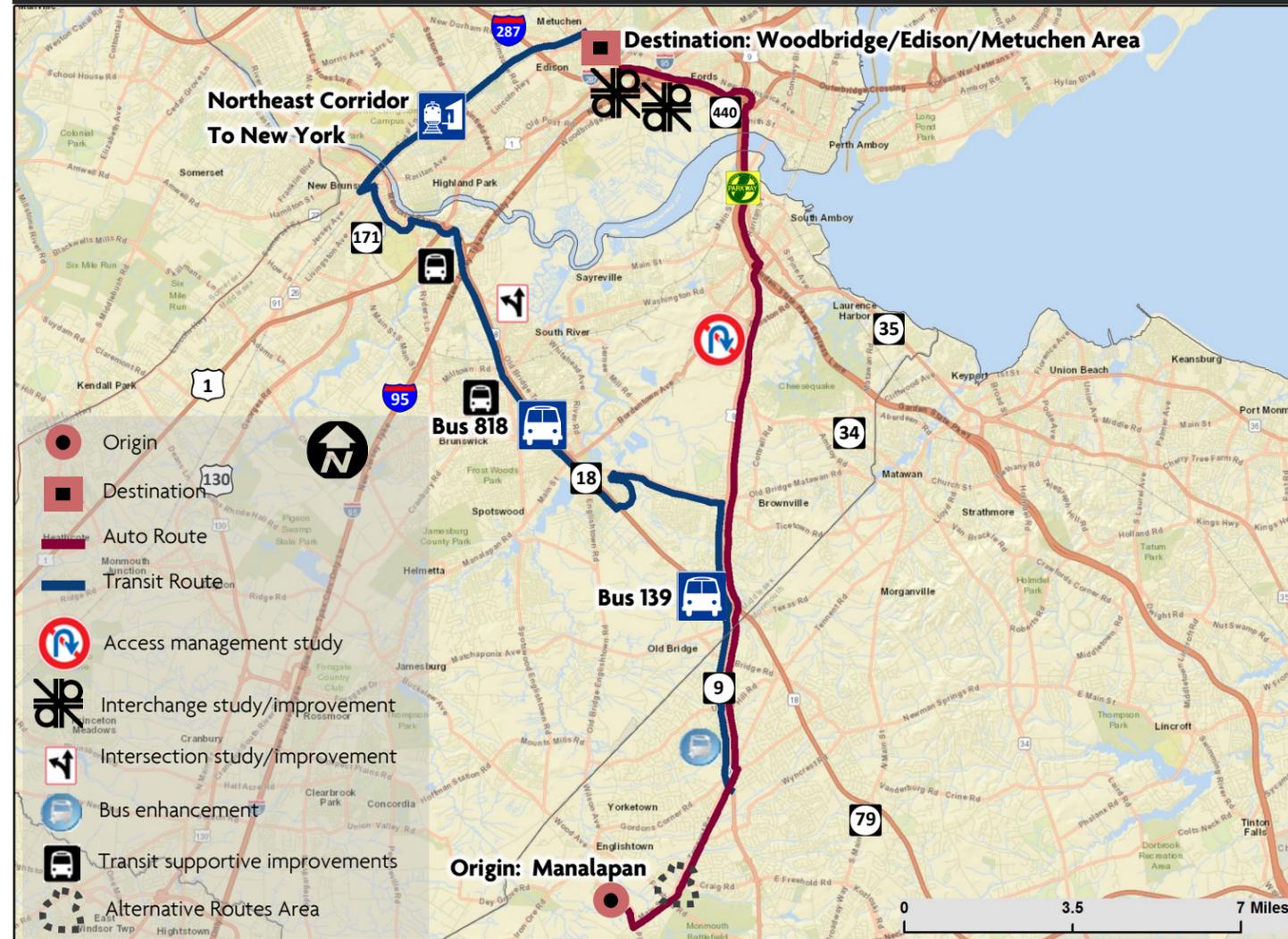


NEEDS



- Peak to off-peak auto travel time ratio: 1.3 (regional average: 1.2).
- Peak transit/auto travel time ratio: 3.6 (regional average: 1.8).
- Off-peak bus headways significantly longer than peak headways.
- Unpredictable road segments and bottlenecks along Rt. 18 south of New Jersey Turnpike and Rt. 440 from Rt. 9 to NJ Turnpike.
- Access management issues on Rt. 9 from Perrine Rd to Bordentown Ave due to high frequency of road access points.

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

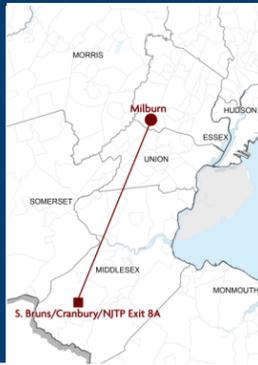
- Implement RTP intersection improvement project for Route 18 at Edgeboro Rd and Tices Lane

Additional Potential Concepts:

- Access Management Study for Rt. 9 from Perrine Rd to Bordentown Rd
- Add alternative route to county diversion plan for Rt. 3 and Freehold Road in Manalapan
- Interchange studies at Rt. 440/Rt. 9 and I-287/ Rt.1
- Consider transit supportive improvements on Rt. 18 between Edgeboro Rd/Tices Lane and Rt. 1
- Continue studies to advance transit signal priority on Rt. 9

30. MILBURN TO S.BRUNS/CRANBURY/NJTP EXIT 8A AREA

Regional Context



Milburn Township in Essex County is a suburban residential community and is home to the regional Short Hills Mall. The townships of South Brunswick and Cranbury in Middlesex County have diversified uses that include one of the largest warehouse distribution and commercial areas in the state at New Jersey Turnpike Interchange 8A. Roadway connections between these locations include NJ Route 124, I-78, the Garden State Parkway and I-95 with transit travel via connections between the NJ TRANSIT Morris and Essex and Northeast Corridor rail lines, and a county shuttle route.

SUBURB TO SUBURB TRAVEL



MILBURN

20,000 people

18,000 jobs



S. BRUNS/ CRAN-
BURY/NJTP EXIT 8A

13,000 people

23,000 jobs

MULTIPLE MODES OF TRAVEL



Primary Route :
I-95, GSP

Av. Travel Time :
57.5 mins



Primary Route:
Morris & Essex Line,
Northeast Corridor

Av. Travel Time:
146.0 mins + access to
transit time

VARIOUS TRIP PURPOSES



EMPLOYMENT



SHOPPING



RECREATION

SYSTEM
Connectivity

NJTPA
NORTH JERSEY
TRANSPORTATION
PLANNING AUTHORITY

NEEDS



- Peak transit/auto travel time ratio: 2.8 (regional average: 1.8)
- Unpredictable road segment along Rt. 24 on the border of Essex and Union counties
- Unpredictable road segments along I-78

RECOMMENDATIONS FOR FUTURE CONSIDERATION

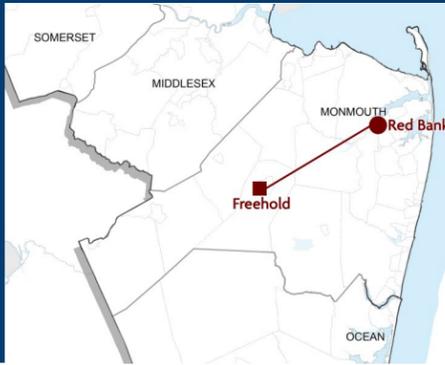


Current TIP/RTP Projects/Studies:

- Implement RTP project for long-term ITS improvements along I-78, from PA state line to I-95

Additional Potential Concepts:

- Interchange studies at Rt. 24/Morris Avenue and at I-78/Rt. 124
- Corridor study along Rt. 130 from Cranbury to South Brunswick



Freehold Borough is a gateway for western Monmouth County that features restaurants, retail and government services. The coastal entertainment and cultural center of Red Bank Borough in Monmouth County is home to theaters, cafes, retail, restaurants, and a nearby Brookdale Community College. Roadways connecting these locations include County Route 537 and NJ Route 79 with transit travel via NJ TRANSIT bus 838.

31. RED BANK TO FREEHOLD

SUBURB TO SUBURB TRAVEL

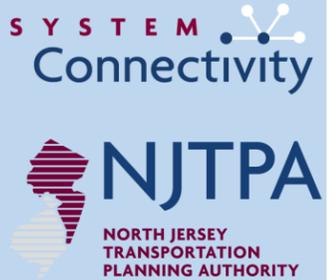
	→	
RED BANK		FREEHOLD
12,000 people		11,000 people
18,000 jobs		11,000 jobs

MULTIPLE MODES OF TRAVEL

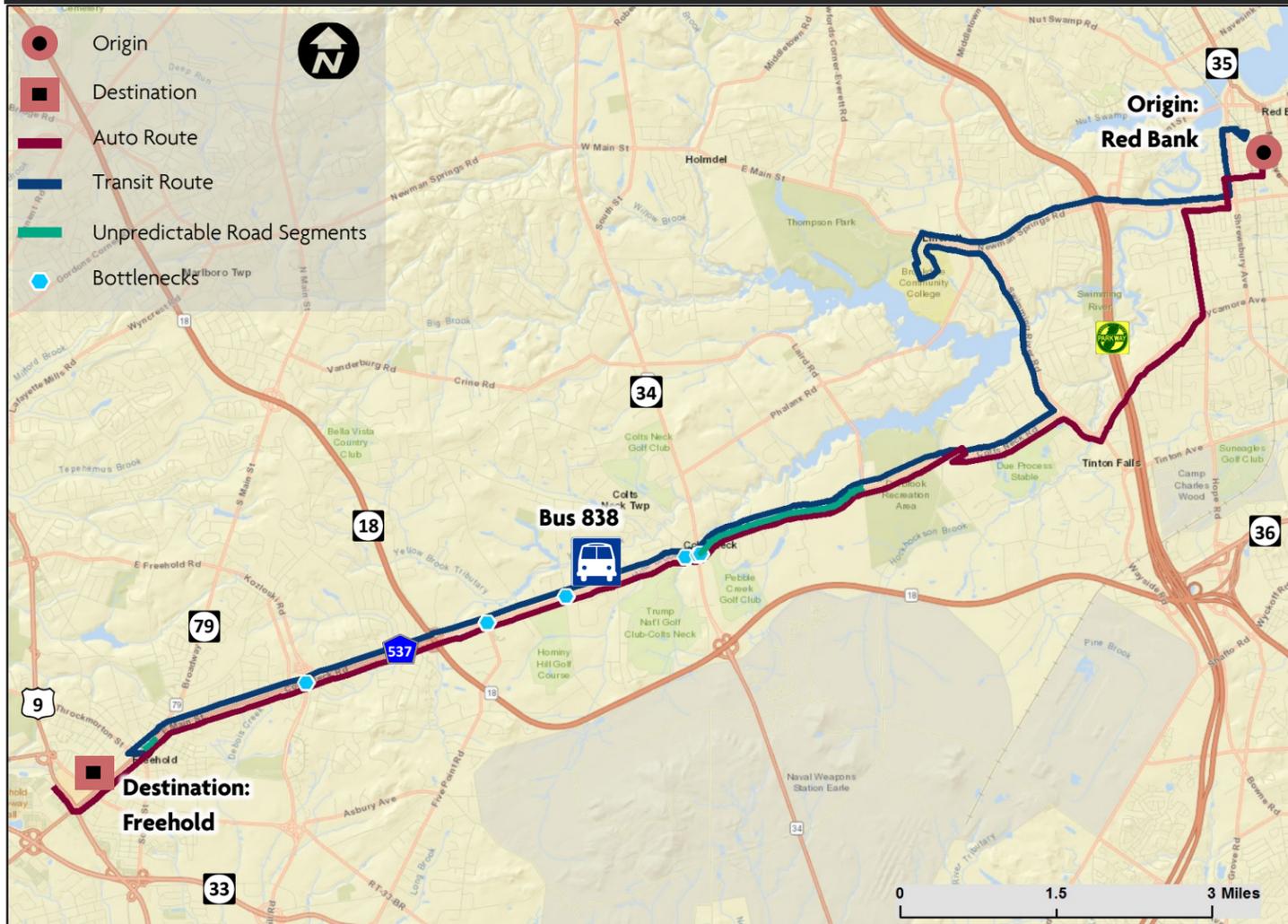
AUTO	TRANSIT
Primary Route : CR-537	Primary Route : BUS 838
Av. Travel Time : 40.0 mins	Av. Travel Time : 47.0 mins + access to transit time

VARIOUS TRIP PURPOSES

EMPLOYMENT	RECREATION
SHOPPING	

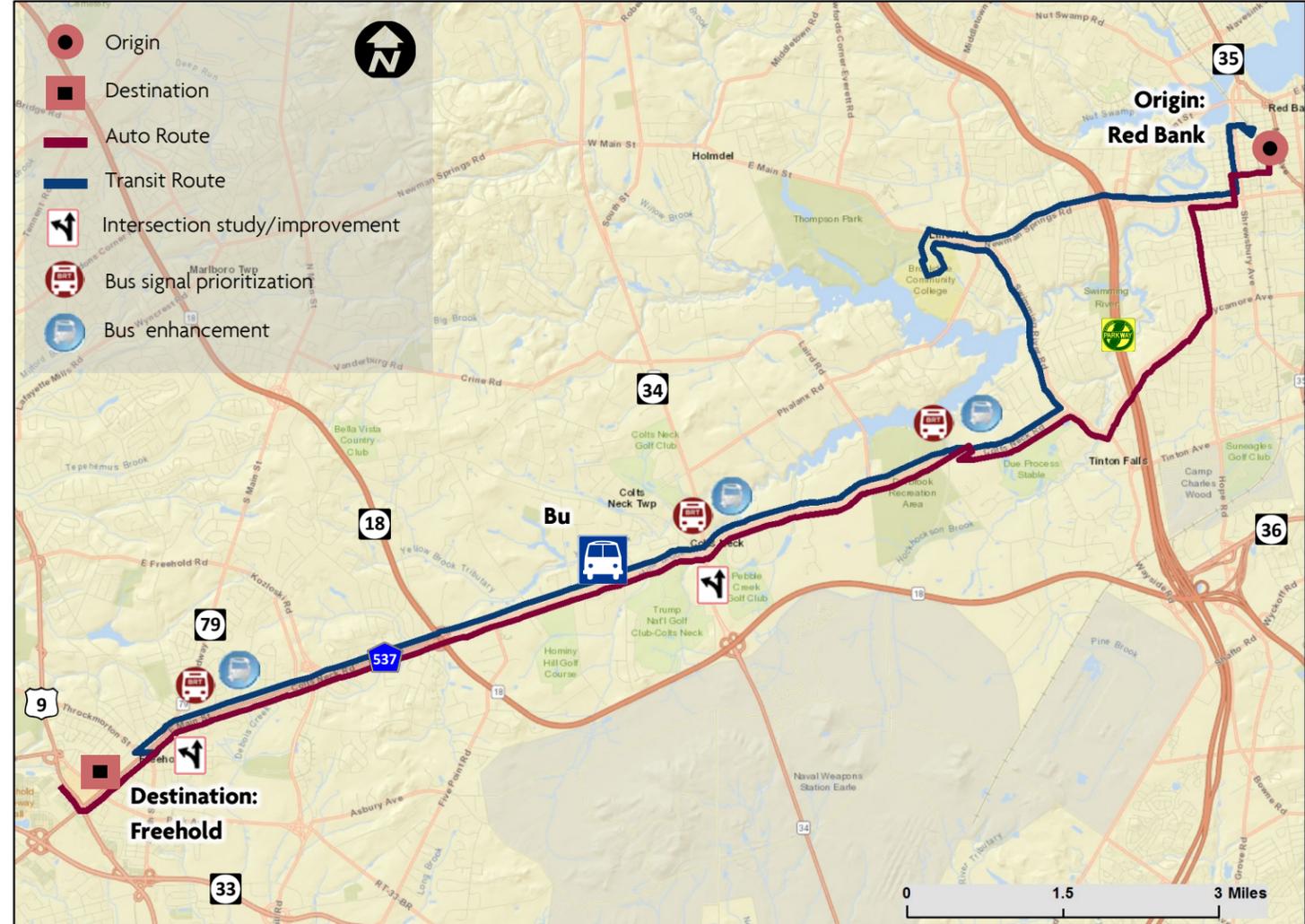


NEEDS



- Unpredictable road segments on CR 537 (Colt's Neck Road) approaching Freehold
- Unpredictable road segments at intersection of NJ 34/Rt. 537
- Bottlenecks at NJ34/Rt. 537
- Significantly longer weekend transit travel time

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

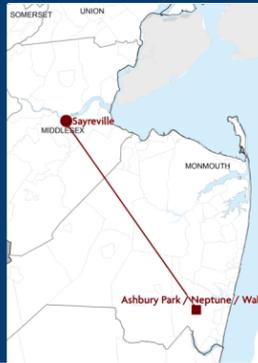
- Implement TIP project for long-term intersection improvements at Rt. 537 and Rt. 34 (underway)
- Implement Together North Jersey initiative's 'Monmouth County Bus Rapid Transit Opportunities Study' recommendations regarding enhancement of bus rapid transit system/features along this route.

Additional Potential Concepts:

- Bus signal priority along Rt. 537 from Freehold to Tinton Falls (Colt's Neck Road)

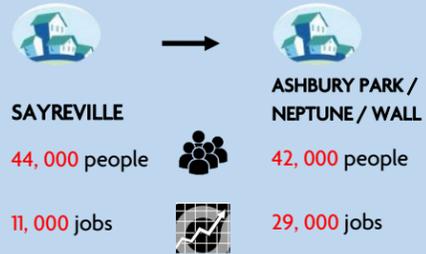
32. SAYREVILLE TO ASBURY PARK/NEPTUNE/WALL AREA

Regional Context



Sayreville Borough in eastern Middlesex County is a mature suburban community with a diverse mix of residential, industrial and commercial uses with corridor retail located along U.S. Route 9 and NJ Route 35. Neptune and Wall Townships in eastern Monmouth County are suburban residential communities and the City of Asbury Park is an ocean-front residential and tourist community. The Garden State Parkway provides the most direct roadway connection between these locations with transit travel via NJ TRANSIT bus 815 and North Jersey Coast Line Rail.

SUBURB TO SUBURB TRAVEL



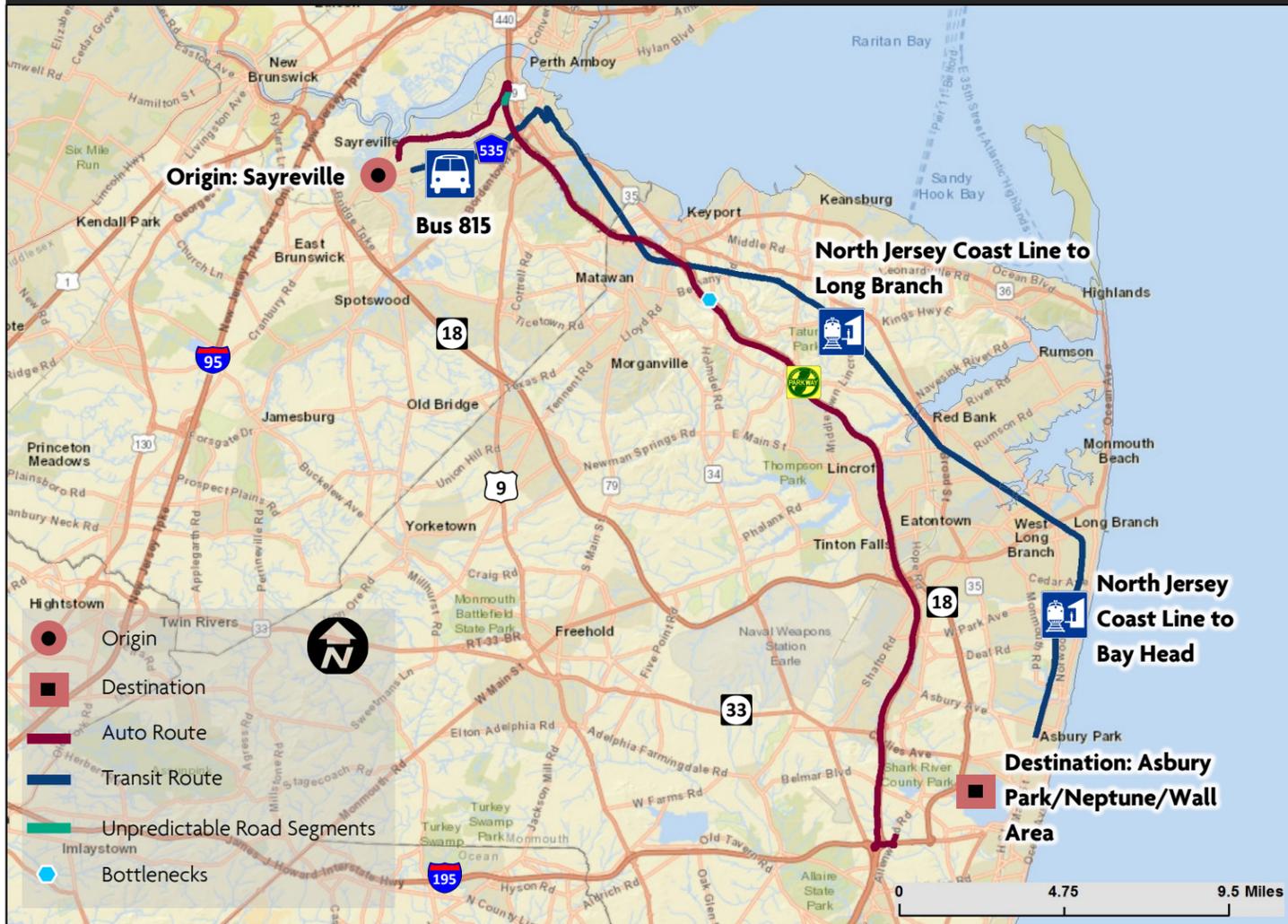
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES



NEEDS



- Peak transit/auto travel time ratio: 2.7 (regional average: 1.8)
- Unpredictable road segments on Garden State Parkway in South Amboy
- Bottlenecks on Garden State Parkway in Matawan

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- To provide recommendation for this travel path, additional input and/or verification of the local condition is required.

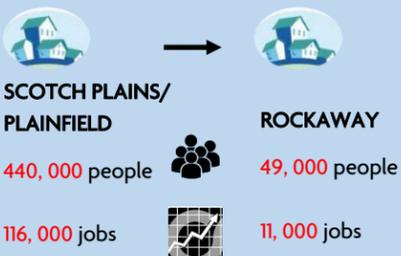
33. SCOTCH PLAINS/PLAINFIELD AREA TO ROCKAWAY

Regional Context



Scotch Plains Township, a mature suburban residential community, and the City of Plainfield, a mature urban downtown and residential community, are in Union County. Rockaway Township in Morris County is a suburban community with watershed and natural lands, office parks and the Rockaway Townsquare regional mall. Roadways connecting these locations include I-80, NJ Route 24 and I-78.

SUBURB TO SUBURB TRAVEL



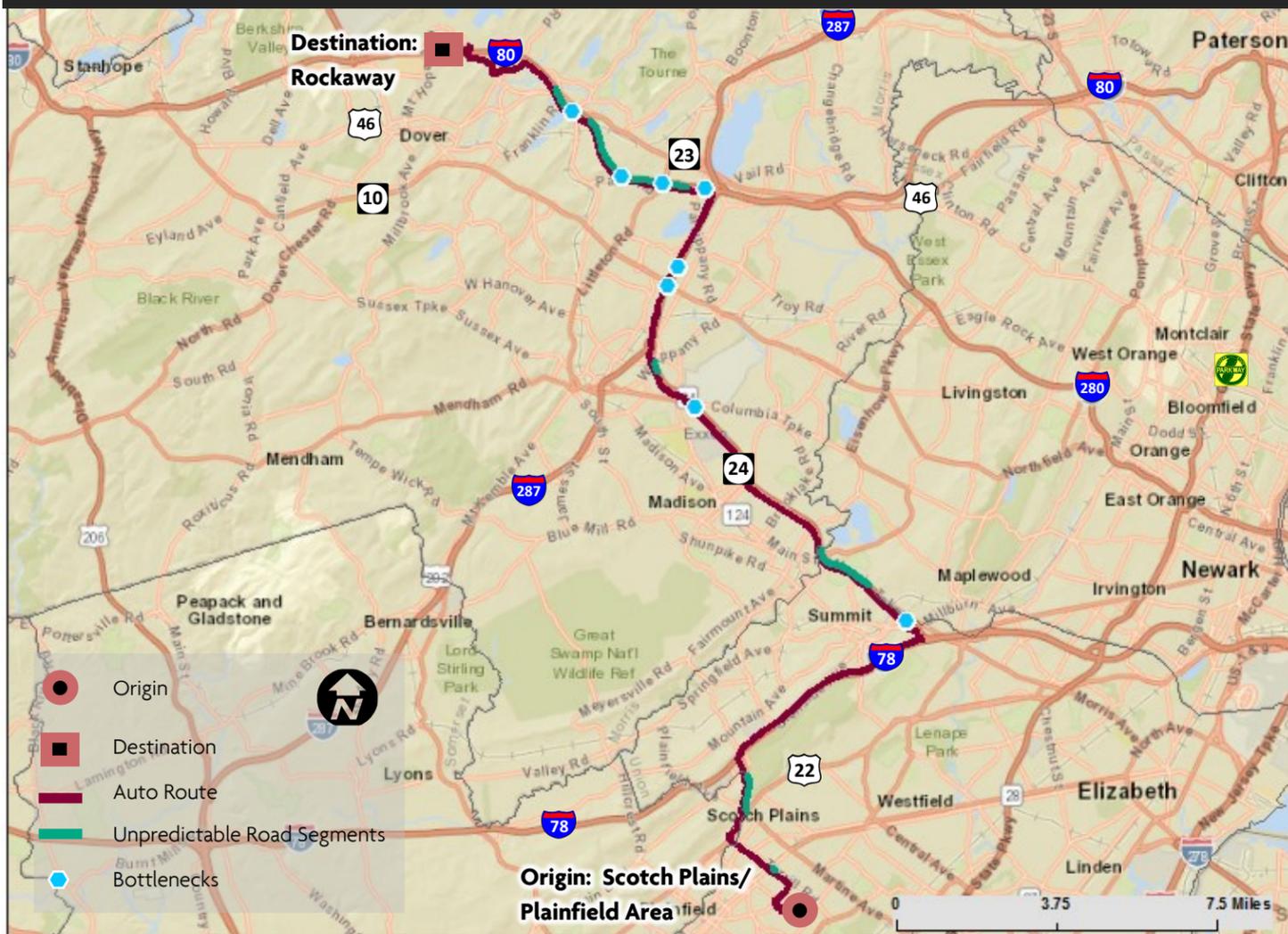
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

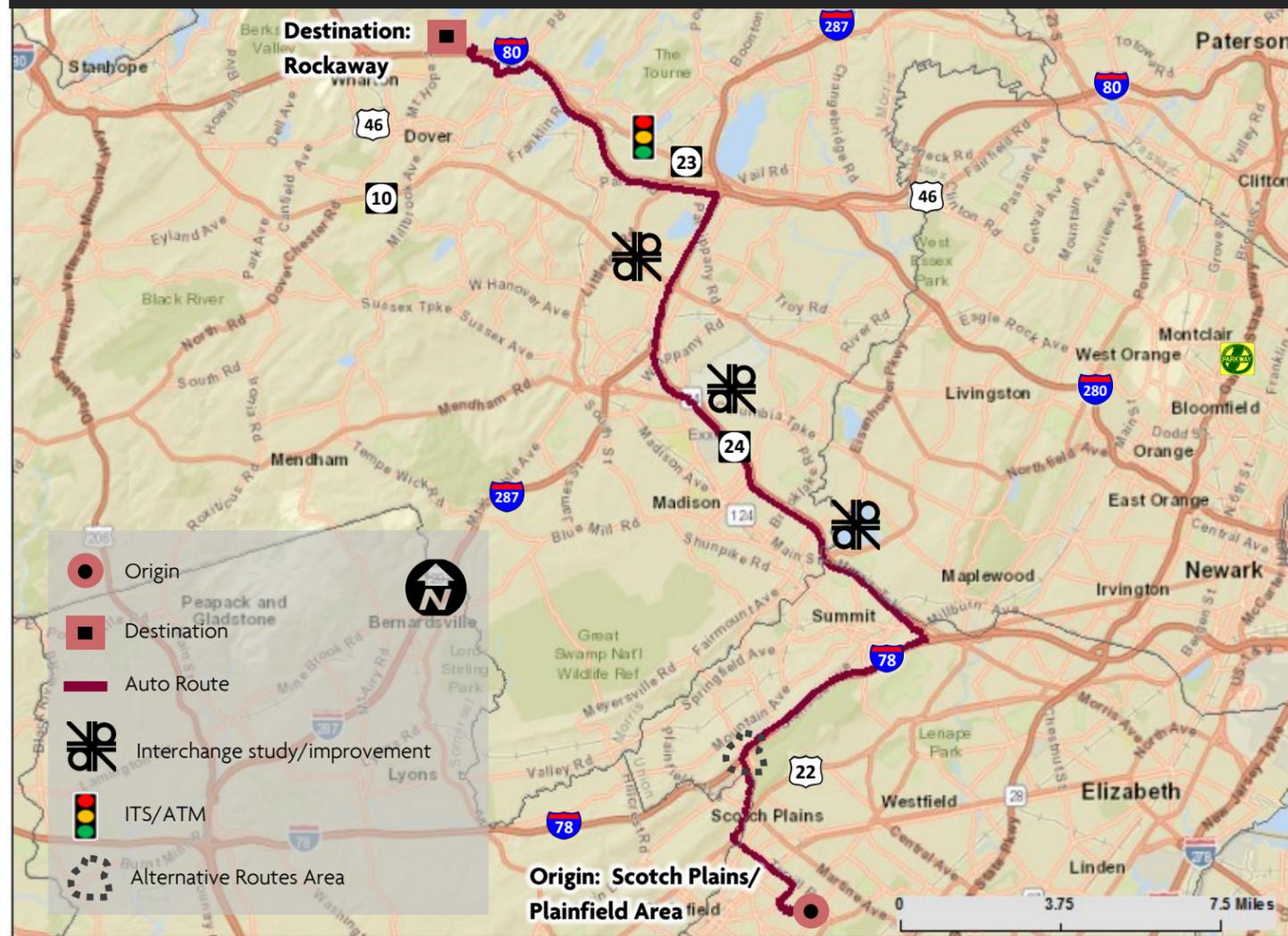


NEEDS



- No feasible transit route
- Peak to off-peak auto travel time ratio: 1.4 (regional average 1.2)
- Unpredictable road segments and bottlenecks along I-80 in Morris County
- Unpredictable road segments and bottlenecks at interchange of Rt.24, Rt.124 and JFK Parkway at Short Hills Mall
- Unpredictable road segments and bottlenecks at interchanges of I-287 and Rt. 10 and I-287 and Rt.24

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement RTP project for ITS improvements on I-80 from Rt. 46 in Denville to Changebridge Road in Pinebrook

Additional Potential Concepts:

- Interchange studies at Rt. 24, Rt. 124 and JFK Parkway at Short Hills Mall, at I-287 and Rt. 10 and I-287 and Rt. 24, and at I-287 and I-80
- Add location of CR 611 and CR 655 to county diversion route plan
- Implement active traffic management (ATM) strategies from Connected Corridor report at I-287 and I-80 interchange

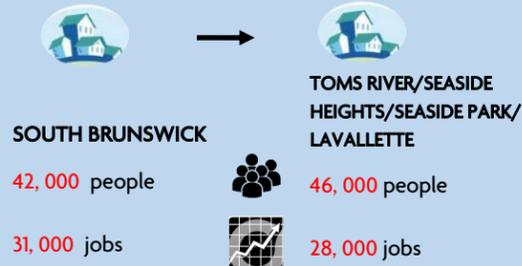
34. SOUTH BRUNSWICK TO TOMS RIVER/SEASIDE HEIGHTS/SEASIDE PARK/LAVALLETTE AREA

Regional Context

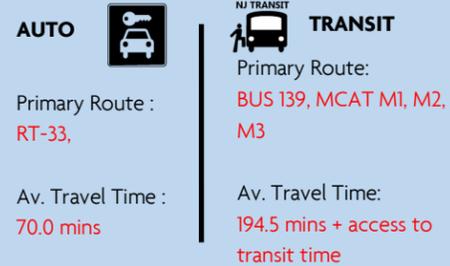


Centrally located along I-95, U.S. Routes 1, 130 and NJ Route 32, South Brunswick Township in Middlesex County is home to an array of office parks, commercial uses, residential communities and one of the state's largest warehousing and commercial concentrations at NJTPK Interchange 8A. The Toms River/Seaside Heights/Seaside Park/Lavallette corridor encompasses the county seat and central business district in Toms River, the retail and commercial corridor along NJ Route 37, and oceanfront summer tourism attractions in Seaside Heights, Seaside Park and Lavallette. Roadways connecting these locations include NJ Routes 33, 34, 35, 37 and the Garden State Parkway. Transit travel requires several connections between county shuttles and NJ TRANSIT regional buses.

SUBURB TO SUBURB TRAVEL



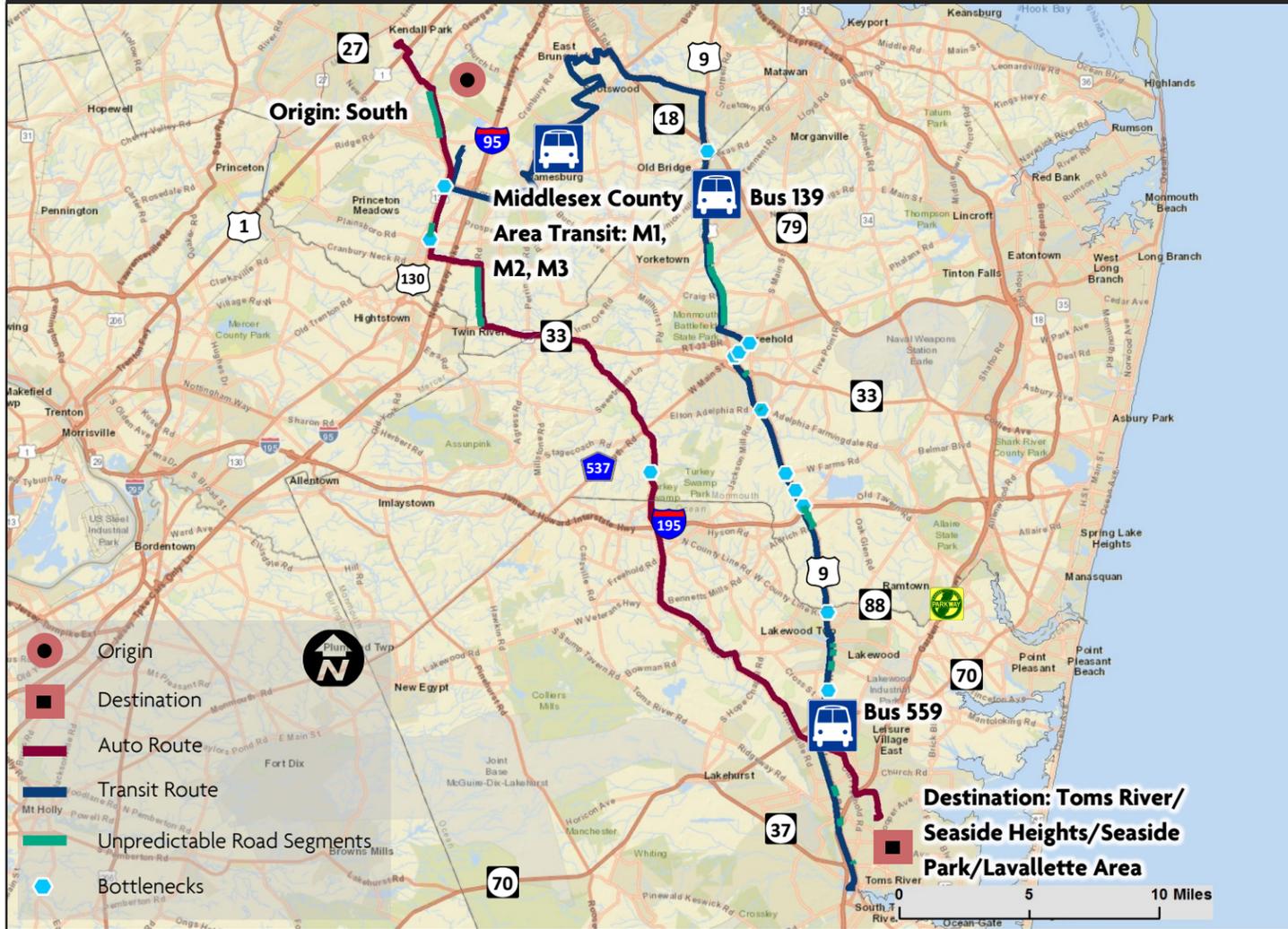
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

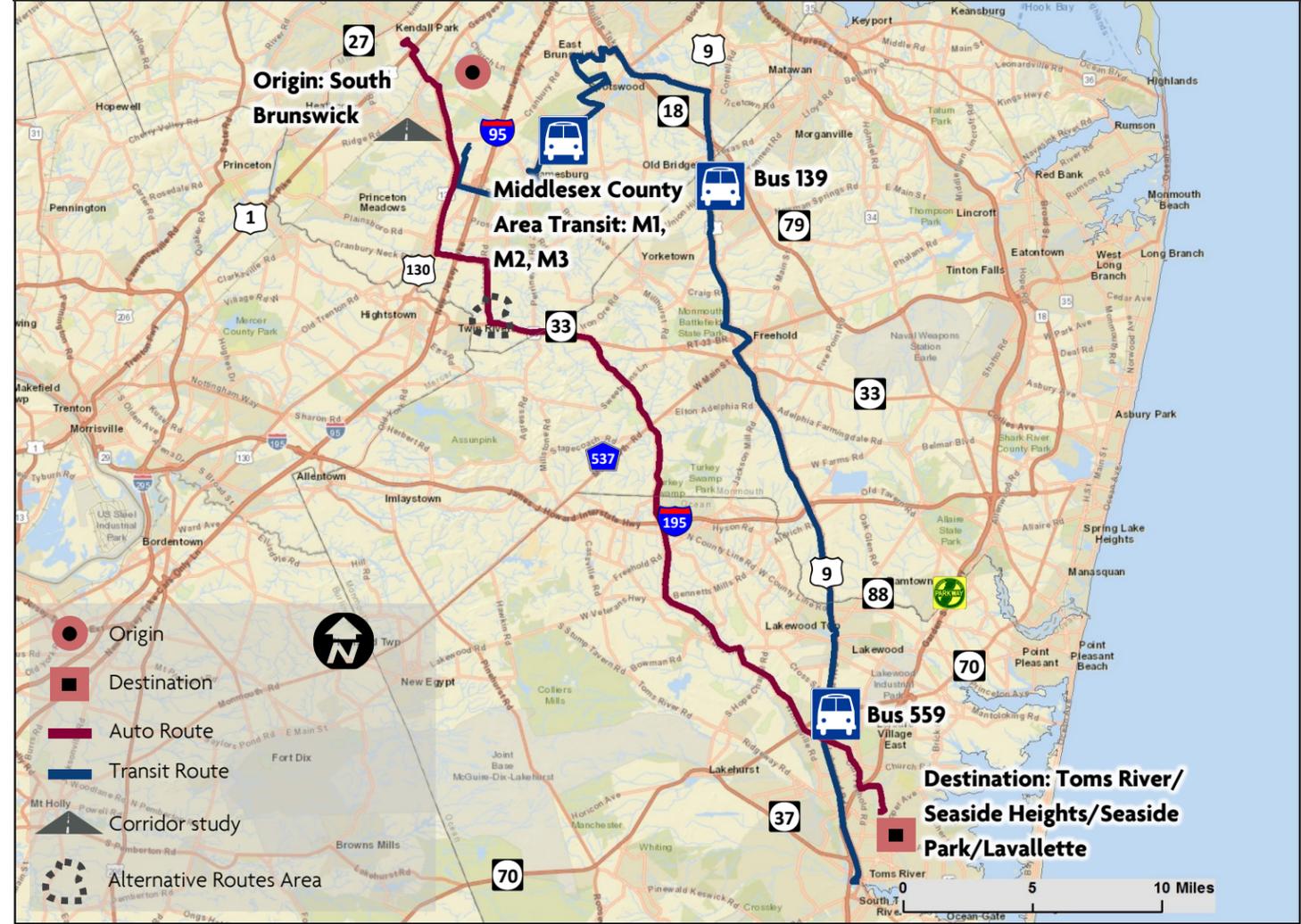


NEEDS



- Peak transit/auto travel time ratio: 2.5 (regional average: 1.8)
- Unpredictable road segment and bottlenecks along Rt. 130 from Cranbury to South Brunswick

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Corridor study along Rt. 130 from Cranbury to South Brunswick
- Add location of Applegarth Rd. north of Rt. 33 to Middlesex county diversion plan

The 13 representative origin-destination pairs included in this chapter of the appendix depict the needs that may be experienced while traveling from suburban to urban areas in North Jersey during the morning rush hours. The recommendations suggested to address the needs of each pair include projects in the NJTPA TIP and RTP, as well as new project ideas that may be considered for future planning studies and local concept development. While this study offers recommendations for these pairs, not all of these suggestions consider feasibility or cost and additional study would be required before advancing many of these concepts.

The NJTPA considered the land use type, population density, job density, nature of economic activities and street patterns of the origin and the destination when identifying needs and recommendations. The following narrative provides context for the considerations taken into account for travel between suburban and urban areas:

North Jersey Suburbs: These are predominantly residential areas with population and employment densities lower than the region's urban areas. Some communities have a prominent downtown area with shopping and office space. The housing stock varies from single-family residences to townhomes and apartment buildings. Workers living in the suburbs usually commute to other parts of the region, including many who travel to jobs in New York City.

The population is higher in the northeast and lower in the southwestern part of the region, where there is a higher percentage of single-family residences. Automobile is the more predominant mode of travel in the southwest. Transit is a more feasible mode of transportation for counties in the northeast including Bergen, Hudson, Essex and Union.



North Jersey Urban Areas: These areas have a city form of government, high population and employment densities and in many cases old infrastructure. They have a wide variety of land uses and a diverse demographic and socio-economic population living in different types of housing. The percentage of single family houses is lower than the number of townhouses and apartments. Many of these communities serve as dominant economic centers.

Due to the high population and employment densities, these areas are suitable for providing transit services. All of the urban areas in North Jersey have rail and bus services. They also have pedestrian and bicycle infrastructure.



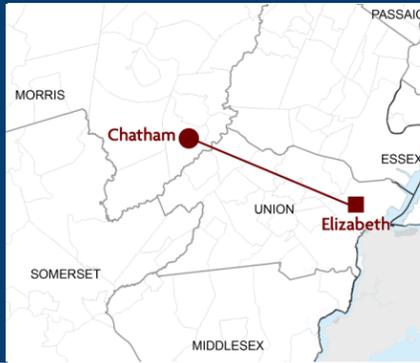
O-D Pairs and Recommendations for Future Consideration along their travel paths (The recommendations not in current RTP/TIP are highlighted): The table below provides specific information about each O-D pair, travel challenges and specific strategies that could be applied to help improve travel between these locations.

Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
35. Chatham to Elizabeth	Auto	Implement RTP project for long-term ITS improvements	I-78, PA State Line to I-95	Essex, Union	✓		✓		✓	
		Interchange Study	I-78 and Rt. 124	Union	✓				✓	
		Interchange Study	Rt. 24 and Morris Avenue	Union	✓		✓			
		Intersection Study	U.S. 1-9 and North Street	Union	✓		✓			
36. East Brunswick to Port Newark/Port Elizabeth/Newark Liberty Airport	Transit	Study transit-support roadway improvements	Along Rt. 18 near New Jersey Turnpike Access Road	Middlesex	✓		✓			
37. Elizabeth to Secaucus/East Rutherford	Auto / Transit	TBD								
38. Green Brook to Newark	Auto	Implement TIP project for Interchange improvements	Rt. 22/ Rt. 82 and Garden State Parkway	Union			✓			
		Implement TIP project for roadway improvements	Rt. 22 at the vicinity of Vauxhall Road and Bloy Street	Union			✓			
		ITS improvements	Rt. 22 from Warrenton Rd to Washington Ave	Somerset	✓		✓			
		Access management improvements	Rt.22 from Westfield Rd to Lawrenceville Ave	Union	✓					
39. Greenwich to New Brunswick/North Brunswick/Piscataway /Franklin	Auto	Implement TIP project for long-term interchange improvements	I-78 and Pittstown Road (CR 5, Exit 15)	Hunterdon	✓				✓	
		Implement TIP project for long-term interchange improvements	I-287 and I-78, I-287 and Rt. 202/206	Somerset	✓				✓	
		Implement TIP project for long-term interchange improvements	I-287 and Easton Avenue (Exit 10)	Somerset	✓				✓	

Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
		Implement RTP project for long-term interchange improvements	I-78 and Rt. 31 (Exit 17)	Hunterdon	✓		✓		✓	
		Implement RTP project for long-term ITS improvements	I-78, PA State Line to I-95	Hunterdon	✓					
		Interchange study	I-287 and Rt. 22	Somerset	✓		✓		✓	
		Implement active traffic management (ATM) strategies from Connected Corridor report.	I-287 between I-80 and I-95	Somerset	✓				✓	
40. Hopatcong to Jersey City/Hoboken-Bayonne	Auto	Implement RTP project for long-term ITS improvements	I-78, PA State Line to I-95	Union	✓	✓				
		Interchange Study.	I-78 and Rt. 124	Union	✓	✓			✓	
		Interchange Study.	Rt. 24 and Morris Avenue	Union	✓	✓	✓			
		Interchange study.	I-80 and I-287	Morris	✓	✓			✓	
		Interchange study.	Rt. 24 and Columbia Turnpike	Morris	✓	✓	✓			
		Interchange study.	I-287 and Rt. 10, I-287 and Rt. 24	Morris	✓	✓	✓		✓	
		Interchange study.	I-78 and US 1-9	Essex	✓	✓	✓		✓	
		Study adding EZ Pass Express lanes	New Jersey Turnpike Interchange 14 (I-78)	Essex	✓	✓	✓		✓	
	Implement active traffic management (ATM) strategies from Connected Corridor report.	I-287 between I-80 and I-95	Morris	✓	✓			✓		
Transit	Improvement in rideshare services to/ from the station	Lake Hopatcong train station	Morris						✓	
41. Manasquan/Wall/Brielle to New Brunswick/North Brunswick/Piscataway /Franklin	Auto	Implement TIP project for long-term interchange improvements	I-287 and Easton Avenue (Exit 10)	Somerset	✓	✓			✓	
		Implement TIP project for long-term interchange improvements.	I-287 and River Road (CR 622)	Middlesex	✓	✓			✓	

Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
		Implement active traffic management (ATM) strategies from Connected Corridor report.	I-287 between I-80 and I-95	Middlesex	✓	✓			✓	
		Interchange study	I-287 and Rt. 1	Middlesex	✓	✓	✓		✓	
		Interchange study	Rt. 440 and Rt. 9	Middlesex	✓	✓	✓			
42. North Arlington to Jersey City/Hoboken/Bayonne	Auto	Implement TIP project for long-term interchange improvements	New Jersey Turnpike Interchange 15W	Hudson	✓				✓	
		Study adding EZ Pass Express lanes	New Jersey Turnpike Interchange 15W (I-280)	Hudson	✓				✓	
		Study adding EZ Pass Express lanes	I-78 toll plaza at the end of the New Jersey Turnpike Extension	Essex	✓					
		Add alternative route to county diversion plan	New Jersey Turnpike Interchange 15W	Hudson	✓					
43. Point Pleasant Beach to Port Newark/Port Elizabeth/Newark Liberty Airport	Auto / Transit	TBD								
44. Port Newark/Port Elizabeth to Phillipsburg/Easton/Allentown/Bethlehem	Freight	Implement TIP project for long-term interchange improvements	I-287 and I-78, I-287 and Rt. 202/206	Somerset	✓				✓	
		Implement TIP project for long-term interchange improvements	I-78 and Pittstown Road (Exit 15)	Hunterdon	✓				✓	
		Implement RTP project for long-term ITS improvements	I-78, PA State Line to I-95	Hunterdon, Somerset, Union, Essex	✓				✓	
		Implement RTP project for long-term interchange improvements	I-78 and Rt. 31 (Exit 17)	Hunterdon	✓		✓		✓	

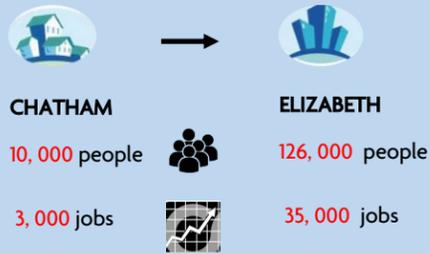
Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
		Interchange study	I-78 and US 1-9	Essex	✓		✓		✓	
45. Port Newark/Port Elizabeth to South Brunswick/ Cranbury/NJTP Exit 8A	Auto	Corridor study	Rt. 130 Cranbury to South Brunswick	Middlesex	✓		✓			
	Freight	Study adding E-Z Pass express lanes	New Jersey Turnpike Interchange 14 (I-78)	Essex	✓		✓		✓	
46. Scotch Plains/Plainfield to New Brunswick/North Brunswick/Piscataway/ Franklin	Auto	Implement TIP project for long-term interchange improvements	I-287, Interchange 10	Somerset	✓				✓	
		Implement TIP project for long-term interchange improvements.	I-287 and River Road (CR 622)	Middlesex	✓				✓	
		Implement active traffic management (ATM) strategies from Connected Corridor report.	I-287 between I-80 and I-95	Middlesex	✓				✓	
47. Wayne - Paterson/Clifton/Passaic	Auto / Transit	TBD								



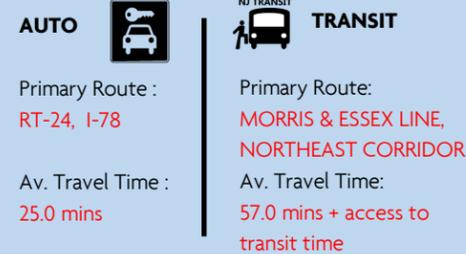
Chatham Borough in Morris County is a suburban community composed of a downtown district surrounded by residential areas. The City of Elizabeth in Union County is a densely populated mature urban center with a central business district, maritime port district and many surrounding residential and commercial areas. Roadways connecting these locations include NJ Routes 22, 24, I-78 and US 1 and 9 with transit travel requiring connections between the NJ TRANSIT Morris & Essex and Northeast Corridor rail lines.

35. CHATHAM TO ELIZABETH

SUBURB TO URBAN TRAVEL



MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES



NEEDS



- Unpredictable road segments and bottlenecks on Rt. 24 between JFK Expressway and I-78 in Union County
- Unpredictable road segments on I-78 in Union and Essex counties
- Unpredictable road segments and bottlenecks on US 1-9 south of Rt. 81

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement RTP project for long-term ITS improvements along I-78, from PA state line to I-95

Additional Potential Concepts:

- Interchange study at Rt. 24 / Morris Avenue and Rt. 124 / I-78
- Intersection study along U.S. 1-9 at North Street

36. EAST BRUNSWICK TO PORT NEWARK/ELIZABETH/EWR AREA

Regional Context



East Brunswick Township in Middlesex County is a large suburban community with residential uses, concentrations of medical offices along County Route 535 and retail and commercial uses along NJ Route 18. The heavily commercial and industrial Port Newark/Port Elizabeth/Newark Liberty Airport cluster are critical cargo freight and passenger facilities that serve the New York-New Jersey area and beyond. Roadways connecting these locations include I-95 with transit travel via NJ TRANSIT Northeast Corridor, North Jersey Coast Line rail and buses 34, 37 and 40.

SUBURB TO URBAN TRAVEL 		MULTIPLE MODES OF TRAVEL		VARIOUS TRIP PURPOSES	
EAST BRUNSWICK 49,000 people 24,000 jobs	PORT NEWARK/ PORT ELIZABETH/ EWR 3,000 people 28,000 jobs	AUTO Primary Route : RT-18, I-95 Av. Travel Time : 50 mins	TRANSIT Primary Route: NJ TRANSIT, BUS 815 Av. Travel Time: 69.5 mins + access to transit time	EMPLOYMENT	FREIGHT



NEEDS



- Unpredictable road segments and bottlenecks at Rt. 18 and New Jersey Turnpike Access Road.

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Study transit-supportive roadway improvements along NJ 18 at New Jersey Turnpike Access Road

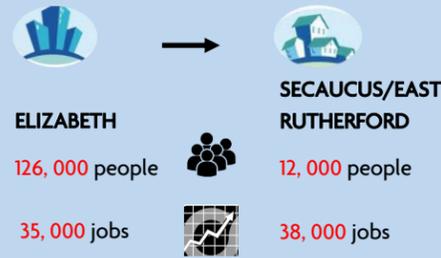
37. ELIZABETH TO SECAUCUS/EAST RUTHERFORD AREA

Regional Context

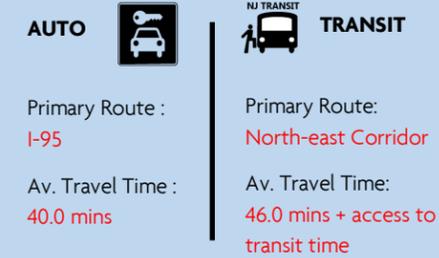


The City of Elizabeth in Union County is a densely populated mature urban center with a central business district, maritime port district and many surrounding residential and commercial areas. The Town of Secaucus in Hudson County has residential neighborhoods to the north and office, commercial and industrial uses surrounded by wetland areas to the south. The neighboring Borough of East Rutherford, home to the Meadowlands Sports Complex, is a mature residential community. Roadways connecting these locations include I-95 with transit travel via connection between the NJ TRANSIT Northeast Corridor and Main/Bergen rail lines.

URBAN TO SUBURB TRAVEL



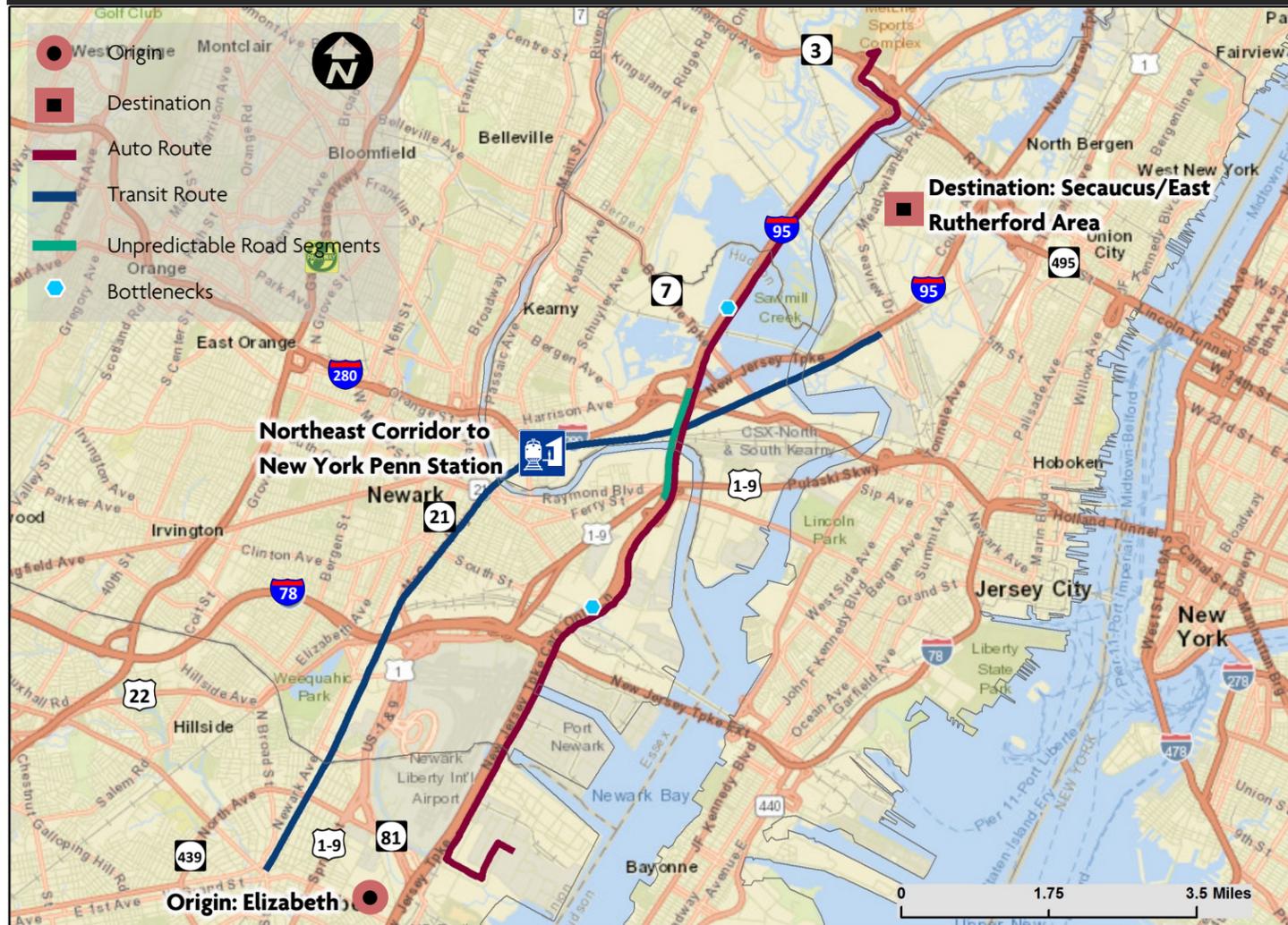
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES



NEEDS



- Unpredictable road segments on the New Jersey Turnpike between interchange 14 and 15W
- Off-peak rail headways significantly longer than peak headways

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- To provide recommendations for this travel path additional input and/or verification of the local condition is required.

38. GREEN BROOK TO NEWARK

Regional Context

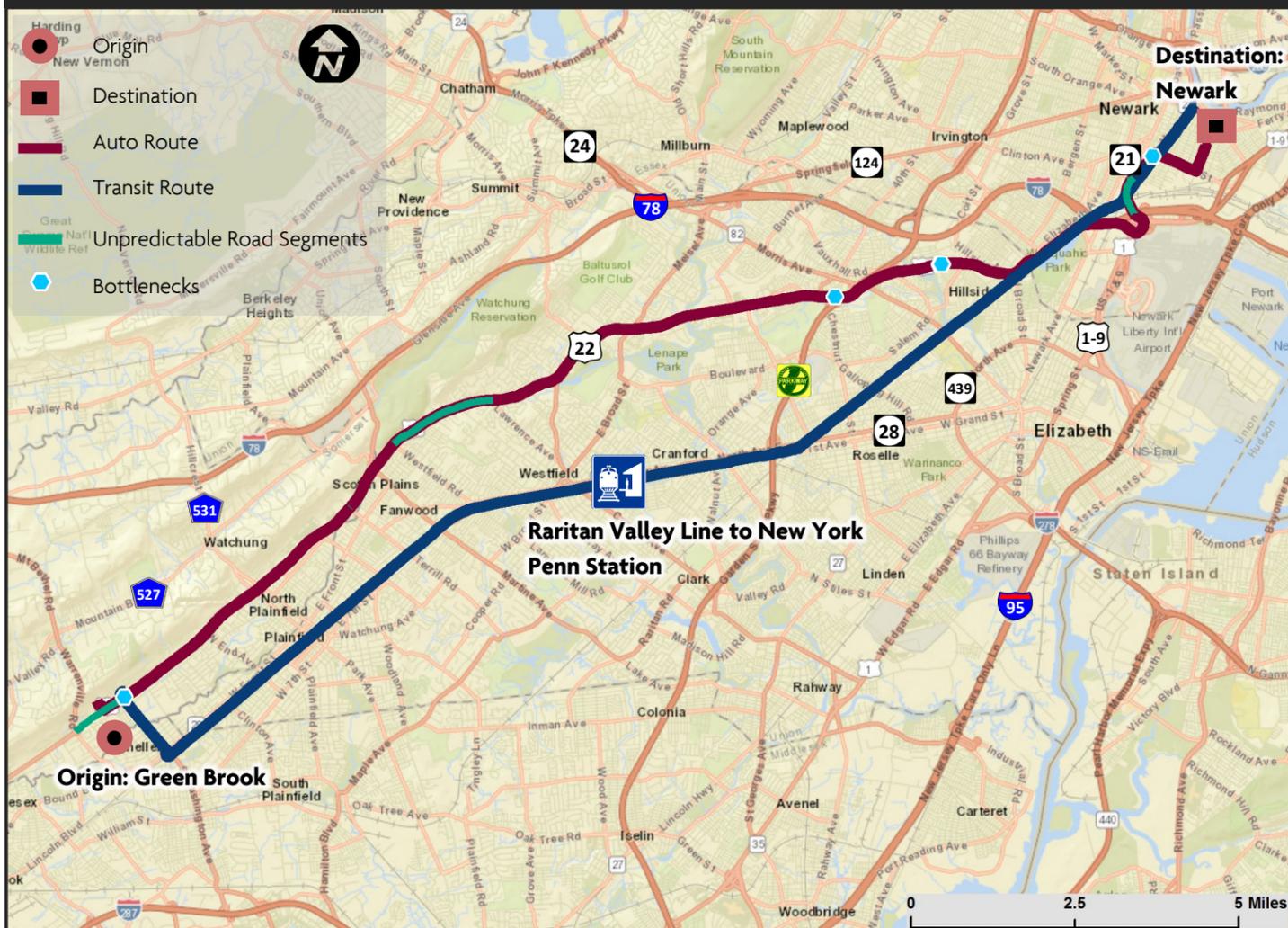


Green Brook Township in Somerset County is a small suburban residential community with corridor retail located along U.S Route 22. The City of Newark in Essex County, the state's largest city, is home to several major universities, cultural centers including the New Jersey Performing Arts Center, hospitals, government offices and corporate headquarters. Roadways connecting these locations include U.S. Route 22 with transit travel via nearby NJ TRANSIT Raritan Valley rail line.

SUBURB TO URBAN TRAVEL → GREEN BROOK 7,000 people 4,000 jobs NEWARK 268,000 people 118,000 jobs		MULTIPLE MODES OF TRAVEL AUTO Primary Route: Rt. 22 Av. Travel Time: 40.0 mins TRANSIT Primary Route: Raritan Valley Line Av. Travel Time: 46.0 mins + access time to transit		VARIOUS TRIP PURPOSES EMPLOYMENT SHOPPING/ RECREATION EDUCATION/ HEALTH	
---	--	--	--	--	--

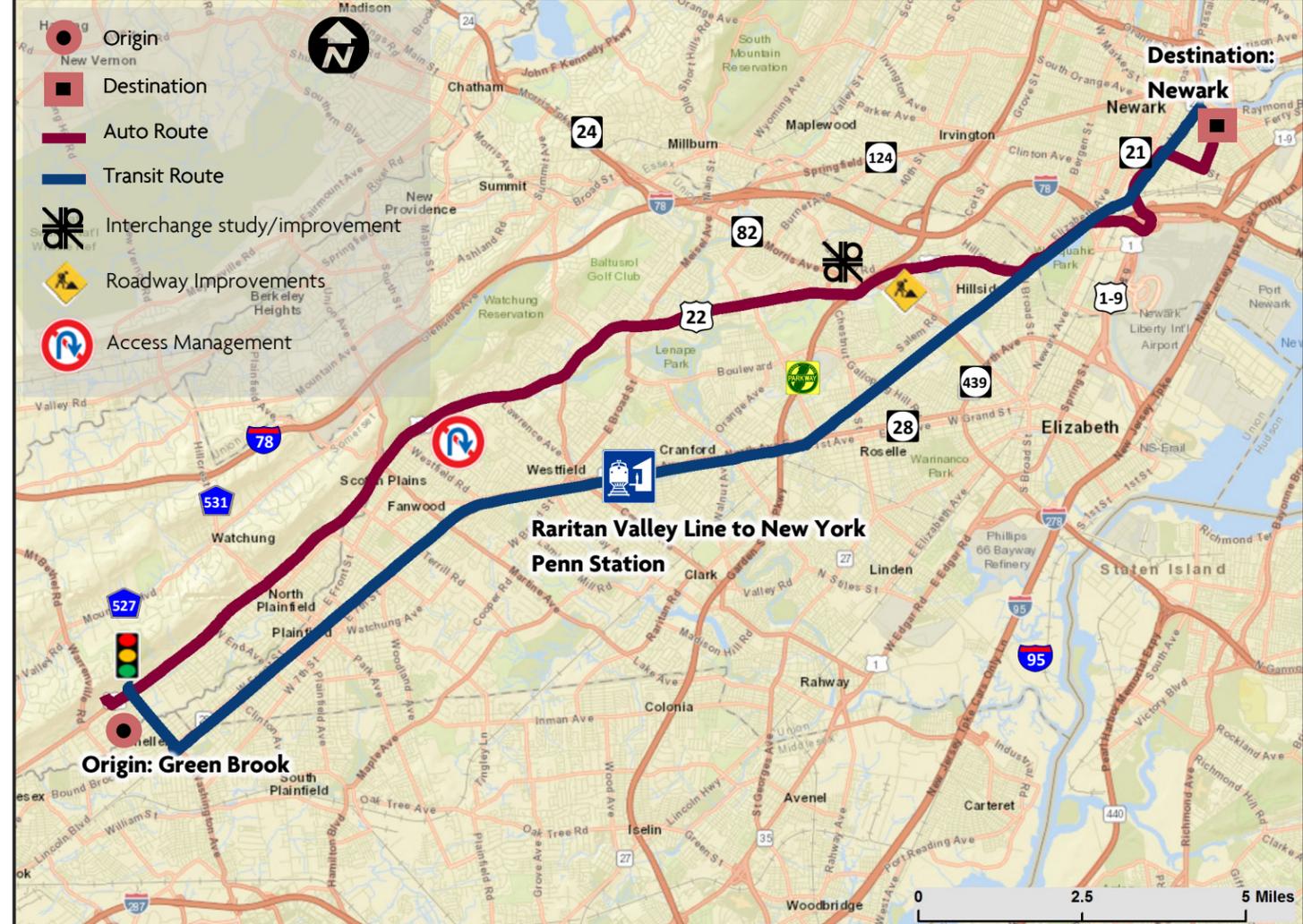


NEEDS



- Off-peak rail headways significantly longer than peak headways
- Unpredictable road segments and bottlenecks along Rt. 22
- Unpredictable road segments and bottlenecks along Rt. 21 just off Rt. 22 and I-78

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement TIP project at the interchange of Rt. 22/ Rt. 82 and Garden State Parkway
- Implement TIP project along Rt. 22 at the vicinity of Vauxhall road and Bloy street

Additional Potential Concepts:

- ITS improvement along Rt. 22 from Warrentville road to Washington Avenue
- Access management along Rt. 22 from Westfield road to Lawrenceville Avenue

39. GREENWICH TO NEW BRUNSWICK/N. BRUNSWICK/PISCATAWAY/FRANKLIN AREA

Regional Context



Greenwich Township in Warren County is a rural agricultural area near the Pennsylvania border. The New Brunswick-North Brunswick-Piscataway-Franklin corridor in Middlesex and Somerset counties, includes Rutgers University's main campus, downtown urban, industrial, commercial, residential and corporate uses and senior communities. Roadway connections between these locations include NJ Route 27, U.S. Route 22, I-78 and I-287 with transit travel options not available.

SUBURB TO URBAN TRAVEL



GREENWICH

6,000 people

2,000 jobs



NEW BRUNSWICK/N. BRUNSWICK/PISCATAWAY/FRANKLIN

70,000 people

98,000 jobs

MULTIPLE MODES OF TRAVEL

AUTO



Primary Route :
I-78, I-287, US-22

Av. Travel Time :
87.5 mins



TRANSIT

Primary Route:

Av. Travel Time:

VARIOUS TRIP PURPOSES



EMPLOYMENT



EDUCATION

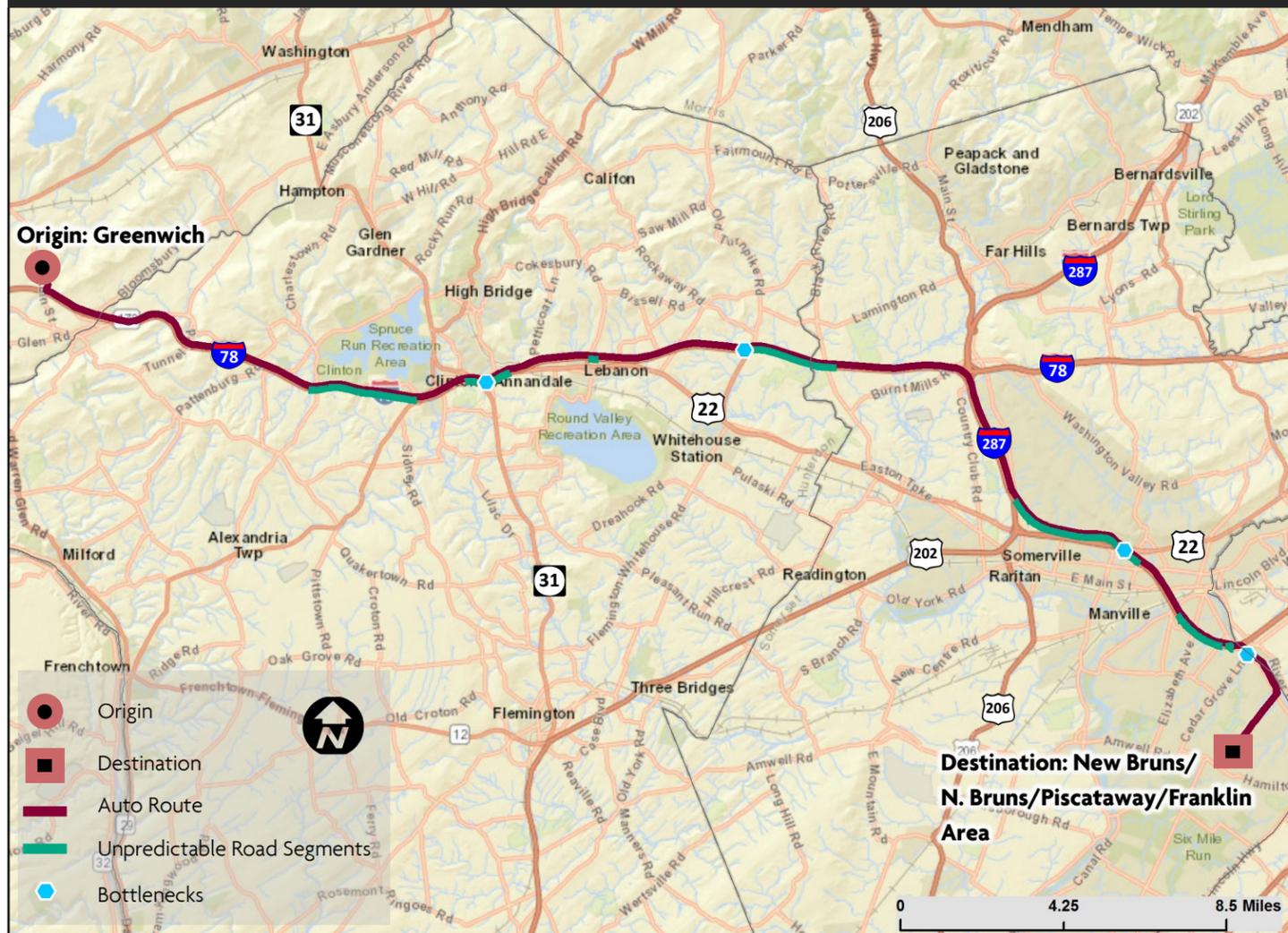


HEALTHCARE

SYSTEM
Connectivity

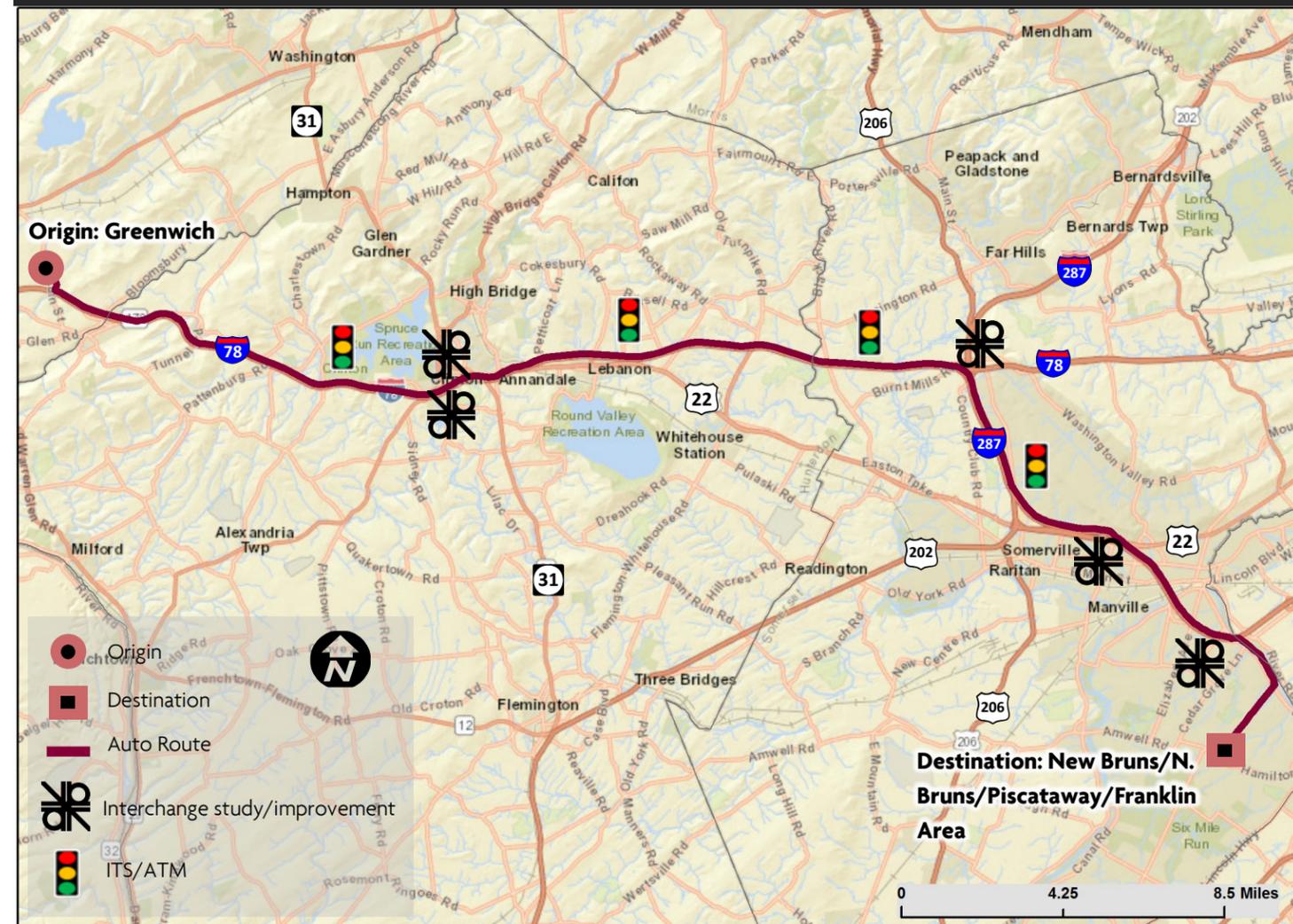
NJTPA
NORTH JERSEY
TRANSPORTATION
PLANNING AUTHORITY

NEEDS



- No feasible transit route.
- Unpredictable road segments and bottlenecks along I-78 in Union Township and at the interchange with Rt. 31.
- Unpredictable road segments and bottlenecks on I-287 at interchange with Rt. 22 and Easton Avenue (Interchange 10).

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement TIP project for interchange improvements at I-78 and Pittstown Road (CR 5, Exit 15) and I-78/I-287
- Implement TIP project for long-term interchange improvements at I-287 and Interchange 10 and I-287/202/206
- Implement RTP study of interchange of I-78 and Rt. 31 (Exit 17)
- Implement RTP project for long-term ITS improvements along I-78, from PA state line to I-95

Additional Potential Concepts:

- Interchange study at I-287 and Rt. 22
- Implement active traffic management (ATM) strategies from Connected Corridor Report on I-287

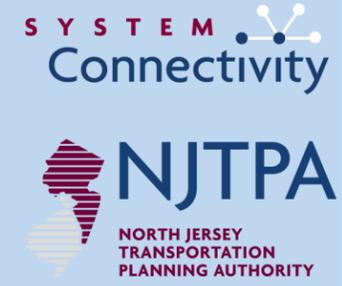
40. HOPATCONG TO JERSEY CITY/HOBOKEN/BAYONNE AREA

Regional Context

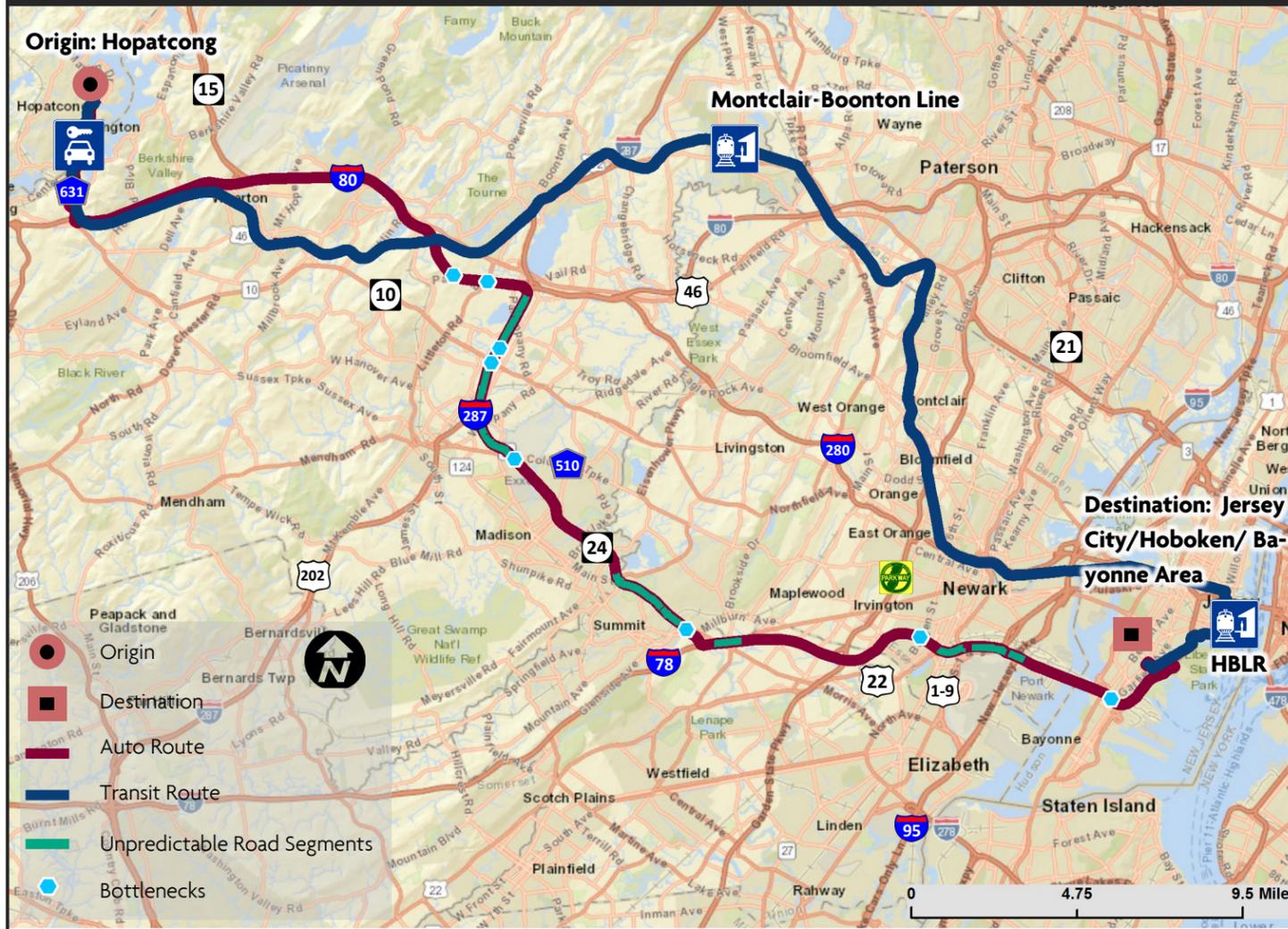


Hopatcong Borough in Sussex County is a suburban residential community served by local roadways that borders the historic summer vacation destination of Lake Hopatcong to the east and preserved natural lands to the west. The cities of Jersey City, Hoboken and Bayonne collectively are major employment and residential centers of regional significance in Hudson County. Roadways connecting these locations include I-80, I-280 and NJ Route 3 with transit travel requiring connections between the nearby NJ TRANSIT Montclair-Boonton rail line and Hudson Bergen Light Rail line at Hoboken.

SUBURB TO URBAN TRAVEL		MULTIPLE MODES OF TRAVEL		VARIOUS TRIP PURPOSES	
HOPATCONG	JERSEY CITY/ HOBOKEN/BAYONNE	AUTO	TRANSIT	EMPLOYMENT	FREIGHT
17,000 people	255,000 people	Primary Route : I-80, I-78, I-287	Primary Route: Montclair-Boonton Line	SHOPPING/ RECREATION	EDUCATION/ HEALTH
2,000 jobs	104,000 jobs	Av. Travel Time : 80.0 mins	Av. Travel Time: 125.5 mins + access to transit time		



NEEDS



- Inadequate parking at Lake Hopatcong station
- Peak to off-peak auto travel time ratio: 1.4 (regional average: 1.2)
- Unpredictable road segments and bottlenecks on I-287 between I-80 and Rt. 24 in Morris County
- Unpredictable road segments and bottlenecks on Rt. 24 between I-287 and I-78 in Morris and Union counties
- Unpredictable road segments and bottleneck along I-78 at Rt. 24 interchange, Rt. 1-9 interchange and toll plaza at New Jersey Turnpike

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement RTP project for long-term ITS improvements along I-78, from PA state line to I-95

Additional Potential Concepts:

- Interchange studies at I-287/Rt. 10 and I-287/Rt.24, at Columbia Turnpike (CR 510) /Rt. 24, Morris Avenue/Rt. 24, at I-78/Rt. 124, US 1-9 and I-78 and I-80/I-287
- Implement active traffic management (ATM) strategies from Connected Corridor Report on I-287
- Study adding E-Z Pass Express Lanes at New Jersey Turnpike Interchange 14 (I-78)
- Improvement in ridesharing services to/from the Lake Hopatcong train station

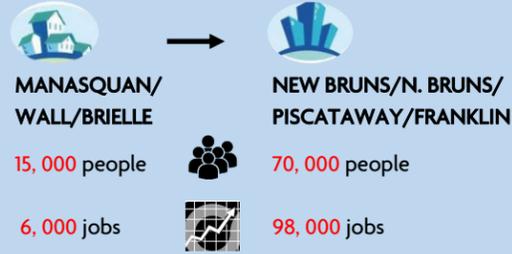
41. MANASQUAN/WALL/BRIELLE AREA TO NEW BRUNSWICK/N. BRUNSWICK/PISCATAWAY/FRANKLIN AREA

Regional Context



The boroughs of Manasquan and Brielle in southern Monmouth County are small year-round residential beach communities. The New Brunswick-North Brunswick-Piscataway-Franklin corridor in Middlesex and Somerset counties includes Rutgers University's main campus, downtown urban, industrial, commercial, residential and corporate uses and senior communities. Roadways connecting these locations include I-287, the Garden State Parkway, and NJ Routes 18 and 34 with transit travel via connections between NJ TRANSIT's North Jersey Coast, Northeast Corridor and Raritan Valley rail lines.

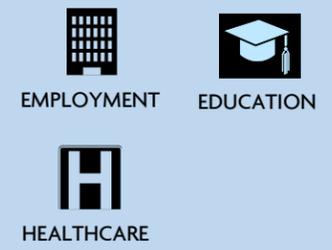
SUBURB TO URBAN TRAVEL



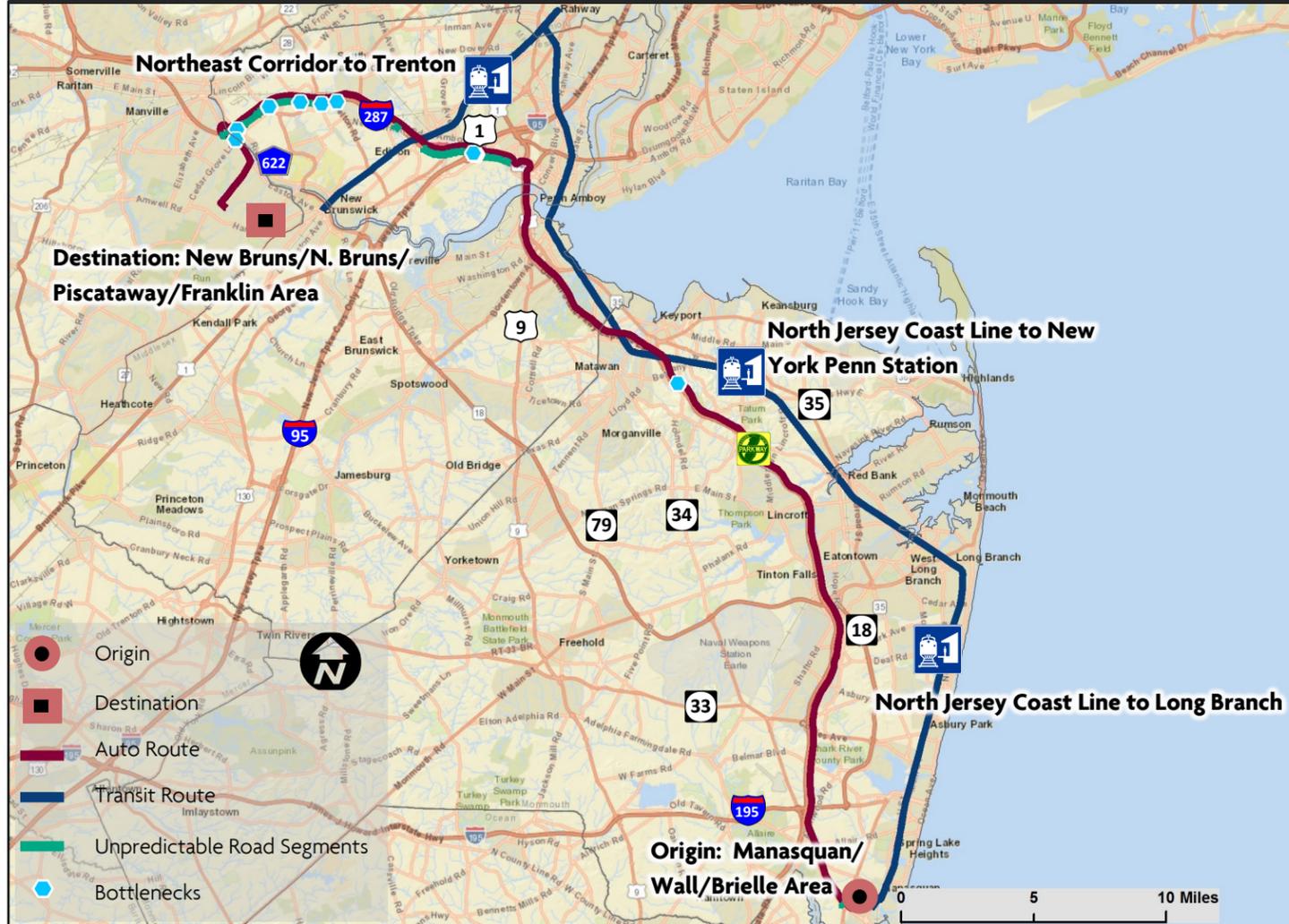
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES



NEEDS



- Unpredictable road segments and bottlenecks along I-287 between River Rd. and Stelton Rd. in Middlesex County.
- Unpredictable road segments and bottlenecks along I-287 between New Jersey Turnpike and Rt. 1.

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement TIP project for I-287, Interchange 10 ramp improvements (Easton Ave)
- Implement TIP project for interchange improvements at I-287 and River Road (CR 622)

Additional Potential Concepts:

- Interchange study at I-287 and Rt. 1
- Interchange study at Rt. 440 and Rt. 9
- Implement active traffic management (ATM) strategies along I-287 from Connected Corridor report.

42. NORTH ARLINGTON TO JERSEY CITY/HOBOKEN/BAYONNE AREA

Regional Context



North Arlington Borough in Bergen County is predominantly composed of mature suburban residential and commercial areas. The cities of Jersey City, Hoboken and Bayonne collectively are major employment and residential centers of regional significance in Hudson County. Roadways connecting these locations include NJ Route 7 and US Routes 1 and 9 with transit travel via connections between the NJ TRANSIT Route 76 local bus and PATH at Newark Penn Station.

SUBURB TO URBAN TRAVEL	MULTIPLE MODES OF TRAVEL	VARIOUS TRIP PURPOSES					
 N. ARLINGTON 15,000 people 4,000 jobs	 JERSEY CITY/HOBOKEN/BAYONNE 260,000 people 104,000 jobs	 AUTO Primary Route : I-95, 78, RT-7 Av. Travel Time : 30.0 mins	 TRANSIT Primary Route: MAIN/BERGEN LINE, BUS 76 Av. Travel Time: 44.0 mins + access to transit time	 EMPLOYMENT	 FREIGHT	 SHOPPING/RECREATION	 EDUCATION/HEALTH



NEEDS



- Unpredictable road segments on New Jersey Turnpike interchange 15W
- Unpredictable road segments at interchange of I-78 and New Jersey Turnpike around the toll plaza

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Current TIP/RTP Projects/Studies:**
- Implement TIP project for interchange improvements at New Jersey Turnpike interchange 15W
- Additional Potential Concepts:**
- Study adding E-Z Pass Express Lanes New Jersey Turnpike interchange 15W
 - Study adding E-Z Pass Express Lanes at I-78 toll plaza at the end of the New Jersey Turnpike Extension
 - Add location of New Jersey Turnpike Exit 15W to county diversion plan

43. POINT PLEASANT TO PORT NEWARK/ELIZABETH/EWR AREA

Regional Context



Point Pleasant Borough in Ocean County is a small residential shore community with a business district that attracts regional tourism during the summer. The heavily commercial and industrial Port Newark/Port Elizabeth/Newark Liberty Airport cluster are critical cargo freight and passenger facilities that serve the New York-New Jersey area and beyond. Roadways connecting these locations include the Garden State Parkway and I-95 with transit travel via NJ Transit's North Jersey Coast Line.

SUBURB TO URBAN TRAVEL



POINT PLEASANT

20,000 people

4,000 jobs



PORT NEWARK/ PORT ELIZABETH/ EWR

3,000 people

28,000 jobs

MULTIPLE MODES OF TRAVEL

AUTO



Primary Route :
I-95, GSP

Av. Travel Time :
57.5 mins



TRANSIT

Primary Route:
North Jersey Coast Line

Av. Travel Time:
109.0 mins + access to
transit time

VARIOUS TRIP PURPOSES



EMPLOYMENT



FREIGHT

SYSTEM Connectivity

NJTPA
NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

NEEDS



- This pair is indicative of strong rail connection that is competitive with auto travel.
- Bottlenecks on Garden State Parkway in Matawan
- Bottlenecks on I-95 in Carteret

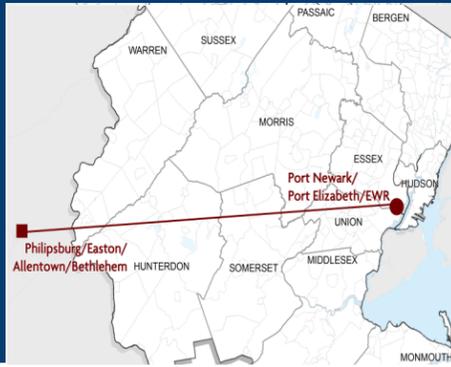
RECOMMENDATIONS FOR FUTURE CONSIDERATION



- This pair indicates the strong connection between Jersey shore and rest of the region.
- To provide additional recommendations to address the bottlenecks along the travel path, additional input and/or verification of the local condition is required.

44. PORT NEWARK/ELIZABETH TO PHILLIPSBURG/EASTON/ALLENTOWN/BETHLEHEM

Regional Context



The heavily commercial and industrial Port Newark/Port Elizabeth/Newark Liberty Airport cluster in Essex and Union Counties are critical cargo freight and passenger facilities that serve the New York-New Jersey area and beyond. The large Phillipsburg/Easton/Allentown/Bethlehem region crossing from Warren County, New Jersey into Lehigh and Northampton Counties in Pennsylvania is a large urbanized industrial region that is home to warehouse distribution centers, regional outlet malls, casino gambling, Lehigh University and Muhlenberg College. The I-78 corridor and Norfolk Southern main line rail freight routes are key freight connections between these locations.

URBAN TO SUBURB TRAVEL

PORT NEWARK
13,595 people
39,986 jobs

PHILLIPSBURG/EASTON/ALLENTOWN/BETHLEHEM
150,029 people
99,135 jobs

MULTIPLE MODES OF TRAVEL

TRUCK

Primary Route : I-78
Av. Travel Time : 87.5 mins

NO Exclusive Truck Lane

VARIOUS TRIP PURPOSES

EMPLOYMENT

FREIGHT

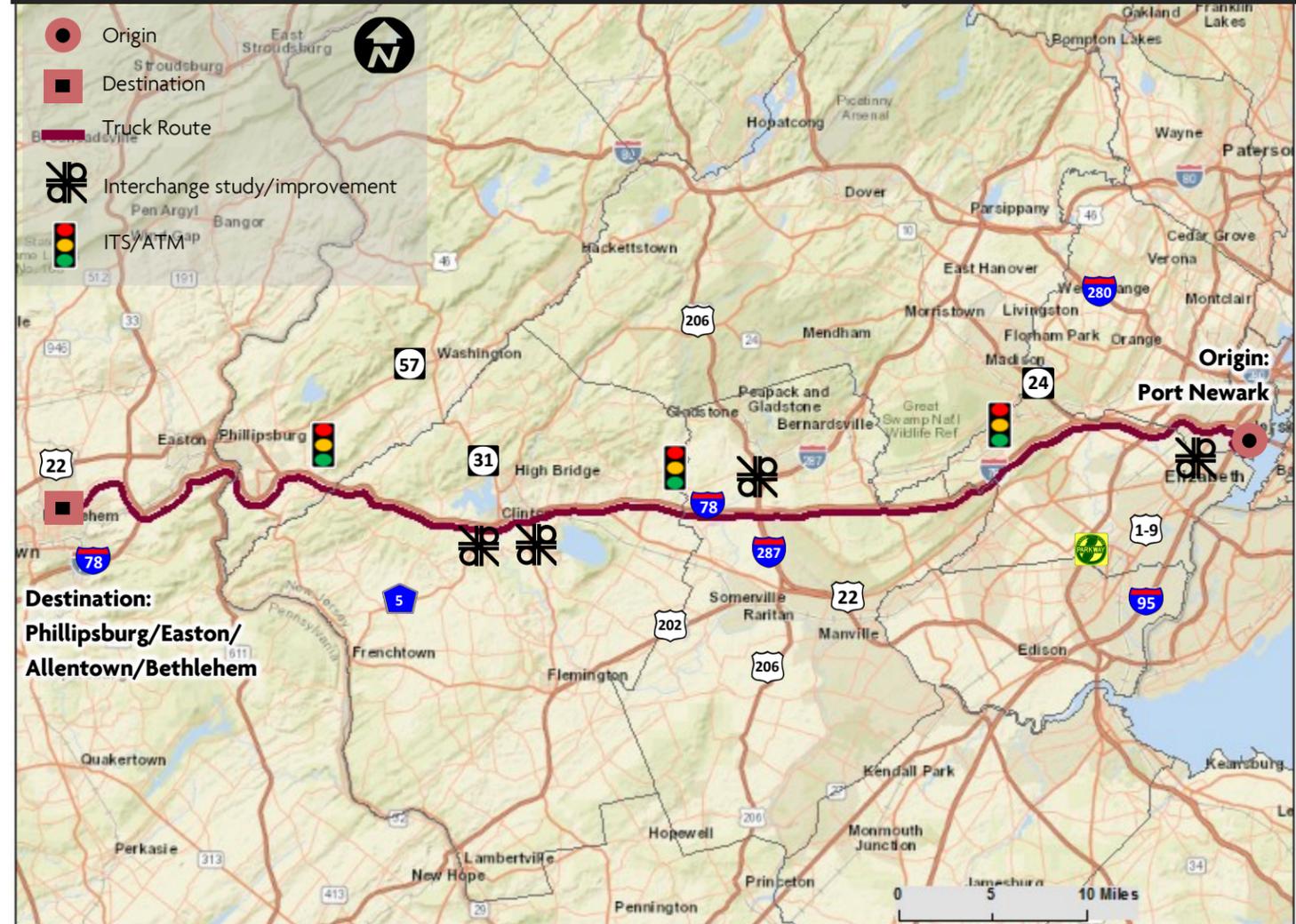


NEEDS



- Unpredictable road segments and high proportion of trucks on I-78 at interchange of Rt. 173 in Perryville, interchange of Rt. 31 in Clinton; east of CR 523 in Readington Township and east and west of Rt. 24 in Union and Essex counties
- Unpredictable road segments and bottlenecks at interchange of I-78 and US 1-9

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement TIP project for interchange improvements at I-78 and Pittstown Road (CR 5, Exit 15)
- Implement TIP project for interchange improvements at I-287/I-78 and I-287/202/206
- Implement RTP study to examine interchange of I-78 and Rt. 31 (Exit 17)
- Implement RTP project for long-term ITS improvements along I-78, from PA state line to I-95

Additional Potential Concepts:

- Interchange study at US 1-9 and I-78

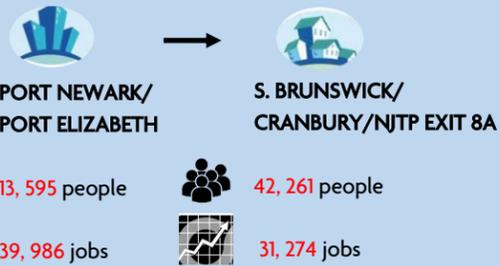
45. PORT NEWARK/ELIZABETH TO S. BRUNSWICK/CRANBURY/NJTP EXIT 8A

Regional Context



The heavily commercial and industrial Port Newark/Port Elizabeth/Newark Liberty Airport cluster in Essex and Union counties are critical cargo freight and passenger facilities that serve the New York-New Jersey area and beyond. The townships of South Brunswick and Cranbury in Middlesex County have diversified uses that include one of the largest warehouse distribution and commercial areas in the state at New Jersey Turnpike Interchange 8A. The I-95 corridor provides direct freight connections between these locations.

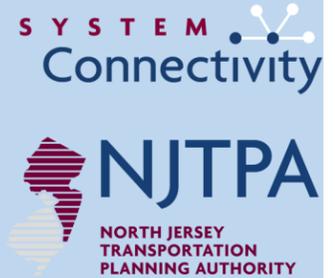
URBAN TO SUBURB TRAVEL



MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

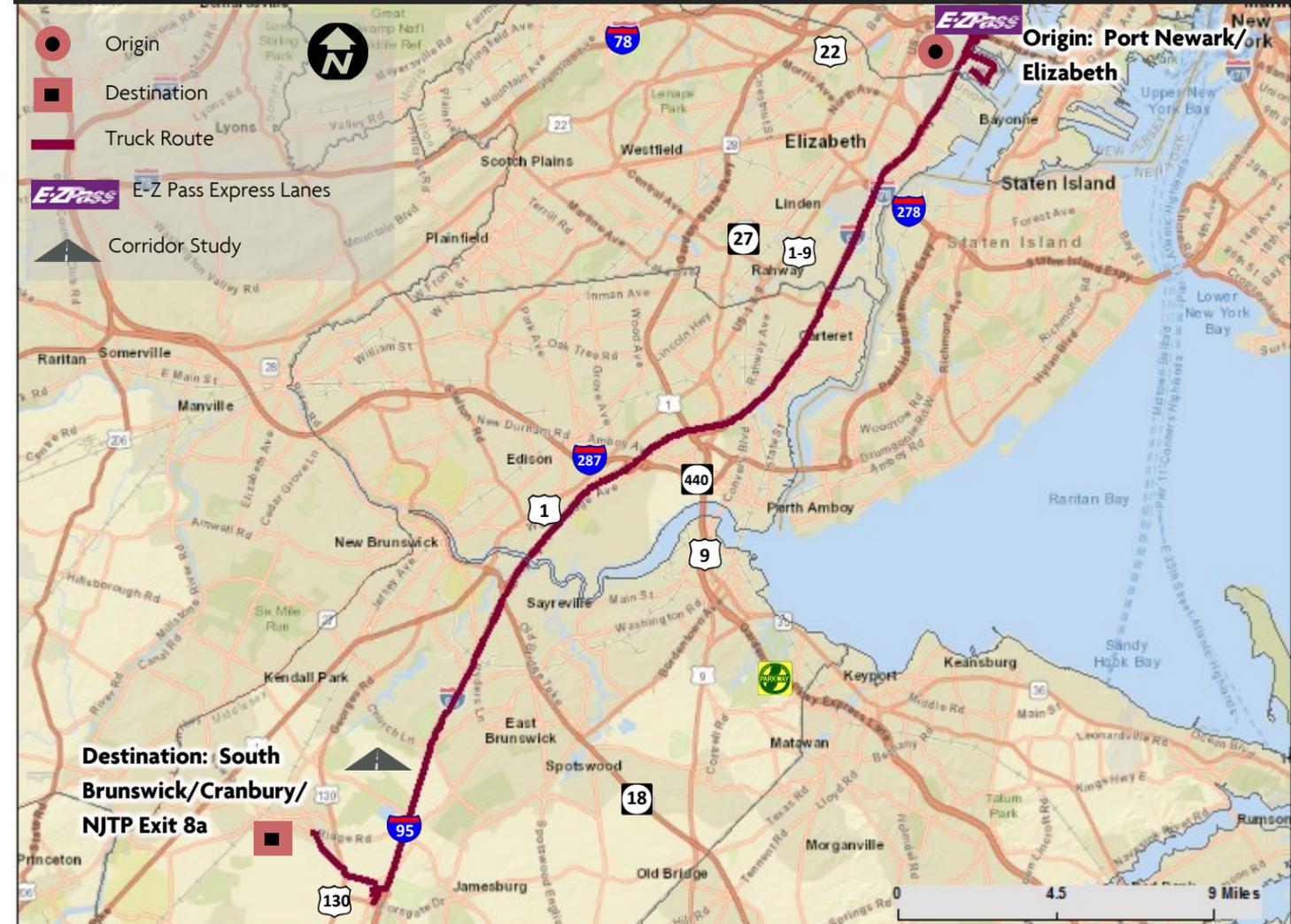


NEEDS



- Bottlenecks at I-78 toll plaza at the end of the NJ Turnpike Extension
- Unpredictable road segments and bottlenecks along Route 130

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Study adding E-Z Pass Express Lanes at New Jersey Turnpike Interchange 14 (I-78)
- Corridor study along Rt. 130 from Cranbury to South Brunswick

46. SCOTCH PLAINS/PLAINFIELD AREA TO NEW BRUNSWICK/N. BRUNSWICK/PISCATAWAY/FRANKLIN AREA

Regional Context



Scotch Plains Township, a mature suburban residential community, and the City of Plainfield, a mature urban downtown and residential community, are located in Union County. The New Brunswick-North Brunswick-Piscataway-Franklin corridor in Middlesex and Somerset counties includes Rutgers University's main campus, downtown urban, industrial, commercial, residential and corporate uses and senior communities. Roadways connecting these locations include I-287, the Garden State Parkway, and NJ Routes 18 and 34 with transit travel via connections between NJ TRANSIT's North Jersey Coast, Northeast Corridor and Raritan Valley rail lines.

SUBURB TO URBAN TRAVEL	MULTIPLE MODES OF TRAVEL	VARIOUS TRIP PURPOSES
<p>SCOTCH PLAINS/PLAINFIELD 440,000 people 116,000 jobs</p>	<p>NEW BRUNSWICK/N. BRUNSWICK/PISCATAWAY/FRANKLIN 70,000 people 98,000 jobs</p>	<p>AUTO Primary Route : I-287, CR 527, Maple Avenue Av. Travel Time : 40.0 mins</p> <p>TRANSIT Primary Route: Northeast Corridor, Raritan Valley Line Av. Travel Time: 64.0 mins + access to transit time</p>
		<p>EMPLOYMENT EDUCATION</p> <p>HEALTHCARE</p>



NEEDS



- Unpredictable road segments and bottlenecks along I-287 between River Rd. and Stelton Rd. in Middlesex County

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

- Implement TIP project for I-287, Interchange 10 ramp improvements
- Implement TIP project for interchange improvements at I-287 and River Road (CR 622)

Additional Potential Concepts:

- Implement active traffic management (ATM) strategies from Connected Corridor report on I-287 between I-95 and I-80

47. WAYNE TO PATERSON/CLIFTON/PASSAIC AREA

Regional Context



Wayne Township is a suburban Passaic County community composed of residential areas, shopping and retail uses along U.S. Route 46 and NJ Route 23, including Willowbrook Mall and Wayne Town Center. The cities of Paterson, Clifton and Passaic in Passaic County are densely populated mature suburban and urban centers. Paterson is home to the Great Falls National Historic District. Roadways connecting these locations include I-80 with NJ TRANSIT local buses 704, 705, 712 and 748 providing connections between these areas.

SUBURB TO URBAN TRAVEL



WAYNE

57,000 people

40,000 jobs



PATERSON/
CLIFTON/PASSAIC

130,000 people

64,000 jobs

MULTIPLE MODES OF TRAVEL

AUTO



Primary Route :
NJ 19

Av. Travel Time :
18.0 mins



TRANSIT

Primary Route :
BUS 712

Av. Travel Time :
30.3 mins + access to
transit time

VARIOUS TRIP PURPOSES



EMPLOYMENT



EDUCATION

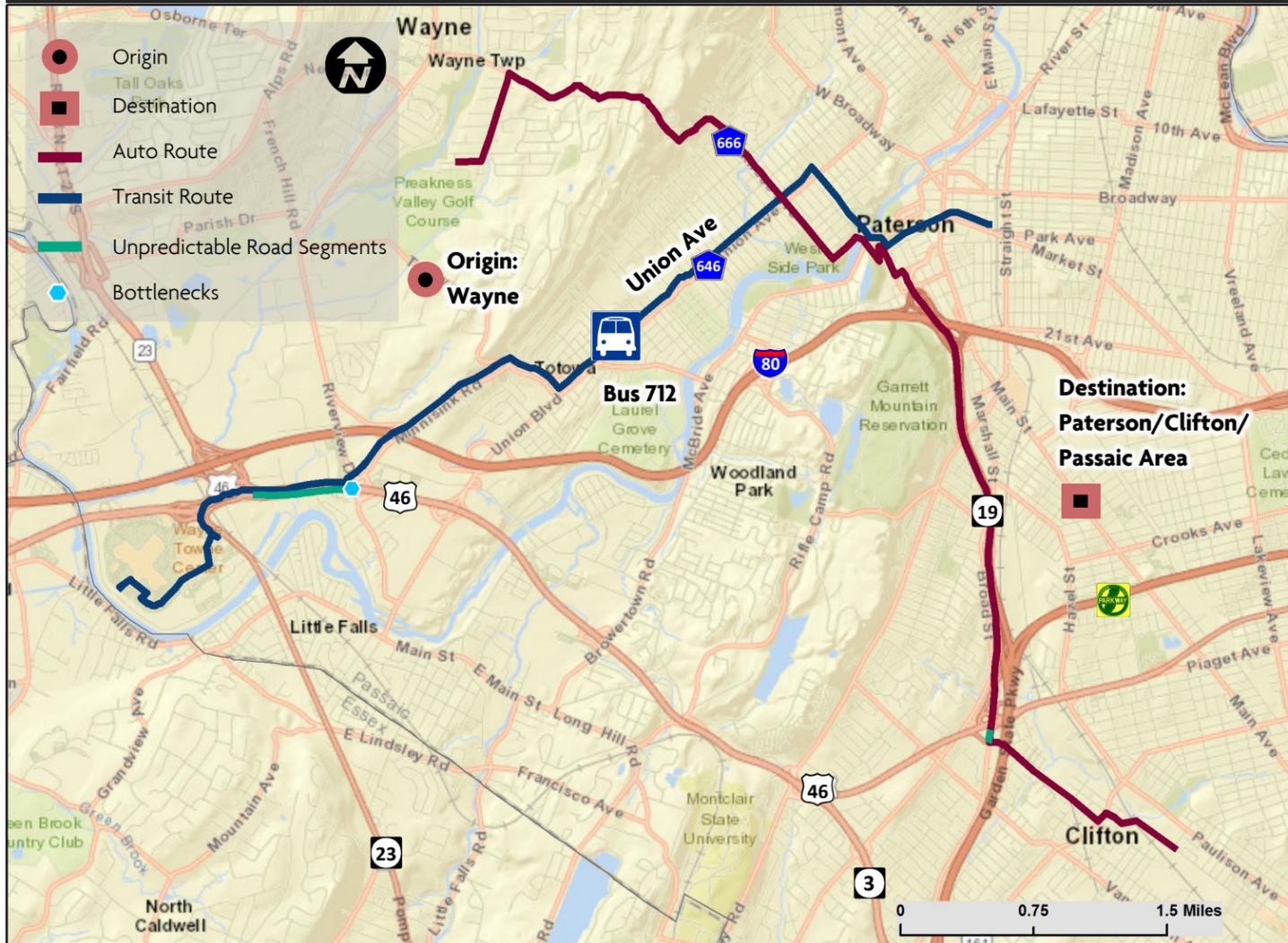


HEALTH

SYSTEM
Connectivity

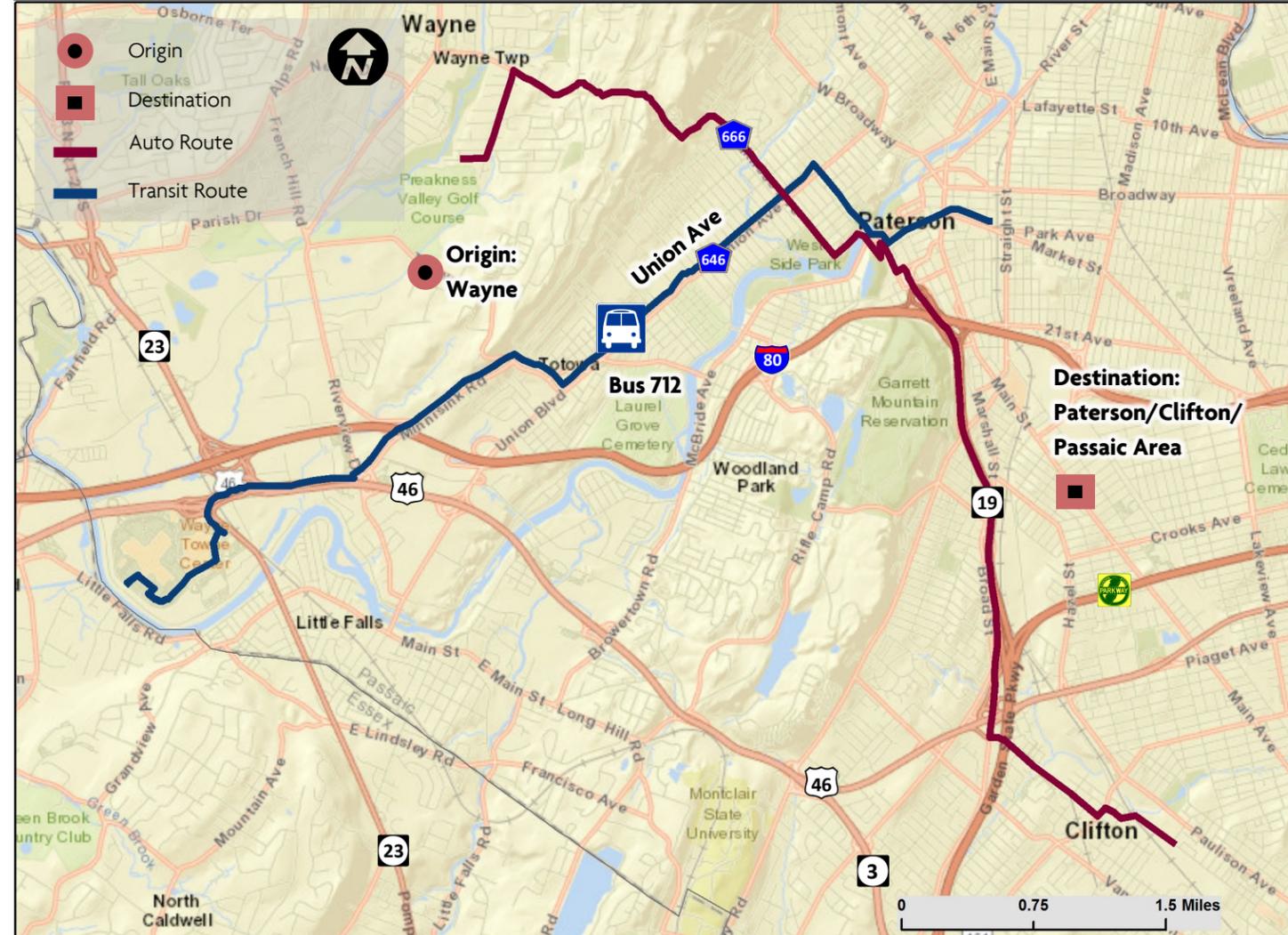
NJTPA
NORTH JERSEY
TRANSPORTATION
PLANNING AUTHORITY

NEEDS



- Unpredictable road segments along Rt. 46 at the interchange with Rt. 23

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- The travel path by auto from Wayne to Paterson/Clifton/Passaic encounters no congestion problem. Hence no strategy has been recommended.
- The travel path by bus transit from Wayne to Paterson/Clifton/Passaic encounters some congestion on Rt. 46 at the interchange with Rt. 23. However, this does not affect transit travel time significantly and hence, no strategy recommended.

The 13 representative origin-destination pairs included in this chapter of the appendix depict the needs that may be experienced while traveling to and from the rural areas in North Jersey during the morning rush hours. The potential recommendations suggested to address the needs of each pair include projects in the NJTPA TIP and RTP, as well as new project ideas that may be considered for future planning studies and local concept development. While this study offers recommendations for these pairs, not all of these suggestions consider feasibility or cost and additional study would be required before advancing many of these concepts.

The NJTPA considered the land use type, population density, job density, nature of economic activities and street patterns of the origin and the destination when identifying the needs and recommendations. The following narrative provides context for the considerations taken into account for travel between rural areas:

North Jersey Rural Areas: These places have the lowest population density in the region. Farming is the predominant economic activity. Some of these communities have a small local activity center with local shops and service centers. Automobile is the predominant form of transportation. Transit services are infrequent because of the low population, employment level and land-use density.



O-D Pairs and Recommendations for Future Consideration along their travel paths (The recommendations not in current RTP/TIP are highlighted): The table below provides specific information about each O-D pair, travel challenges and specific strategies that could be applied to help improve travel between these locations.

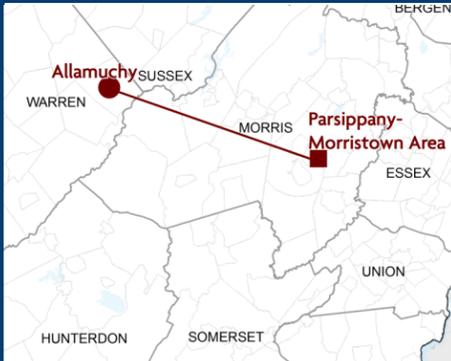
Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
48. Allamuchy to Parsippany/Morristown Area	Auto	Interchange Study	I-80 and Rt. 46 in Netcong	Morris	✓	✓	✓		✓	✓
		Interchange Study	I-80 and I-287	Morris	✓	✓			✓	✓
	Transit	Improve ridesharing services to/from the train stations	Hackettstown and Morris Plains train stations	Warren and Morris						✓
49. Bedminster to Eatontown/Shrewsbury/Red Bank	Auto	Implement TIP project for long-term interchange improvements.	I-287 and River Road	Middlesex	✓				✓	✓
		Implement TIP project for long-term interchange improvements	I-287 and Easton Avenue	Somerset	✓				✓	✓
		Interchange study	I-287 and Rt. 22	Somerset	✓		✓		✓	✓
		Intersection study	Rt. 36 between Grant Avenue and Rt. 35	Monmouth	✓		✓			✓
		Implement active traffic management (ATM) strategies from Connected Corridor report.	I-287 between I-80 and I-95	Middlesex, Somerset	✓				✓	✓
50. Blairstown to Rockaway	Auto	Interchange study	I-80 and Rt. 46 in Netcong	Morris	✓		✓	✓		
51. Frelinghuysen to Flemington	Auto	TBD								
52. Hardyston to Freehold	Auto	Study ITS improvements	Garden State Parkway, I-280 to I-95	Essex/Union	✓					
		Access management study	Rt. 15 south from Morris/Sussex border to I-80 interchange	Morris	✓		✓	✓		
		Implement active traffic management (ATM) strategies from Connected Corridor report.	I-280 between I-80 and I-95	Essex	✓				✓	

Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
53. Jackson to Asbury Park/Neptune/Wall Township	Auto / Transit	TBD								
54. Lebanon to Flemington	Auto	TBD								
55. Monroe to Elizabeth	Transit	Consider a study to explore the demand for some form of shuttle service	Monroe	Middlesex	✓					✓
	Auto	Intersection study	Rt. 33 and Twin Rivers Drive	Middlesex	✓					✓
56. Raritan to Flemington	Auto	Implement TIP project to improve intersection	Rt. 202 and First Avenue in Raritan	Somerset	✓					
		Implement ITS improvements	Rt. 202 from Raritan to Flemington	Somerset	✓		✓			
	Transit	Implement the study findings on rail extension to Flemington contingent upon Trans Hudson capacity increase		Hunterdon and Somerset	✓					✓
57. Sparta to Hackensack/Paramus	Auto	Implement TIP project for long-term interchange improvements	Rt. 23 and I-80 interchange	Passaic	✓	✓	✓		✓	✓
		Implement active traffic management (ATM) strategies from Connected Corridor report.	I-80 between Route 15 and George Washington Bridge.	Bergen, Essex, Passaic	✓	✓	✓		✓	✓
		Interchange study.	I-80 E at Squirrelwood Road.	Passaic	✓	✓			✓	✓
		Access management study	Rt. 15 south from Morris/Sussex border to I-80	Morris	✓	✓	✓	✓		✓
58. Stillwater to Bridgewater	Auto	Interchange study.	I-80 and Rt. 46 in Netcong	Morris	✓		✓		✓	
59. Union to Parsippany/Morristown/Morris Plains/Morris Township/Hanover/Florham Park	Auto	Implement TIP project for long-term interchange improvements	I-287 and I-78, I-287 and Rt. 202/206	Somerset	✓	✓			✓	
		Implement RTP project for long-term ITS improvements	I-78,PA State Line to I-95	Somerset, Hunterdon	✓	✓				
		Implement active traffic management (ATM) strategies from Connected Corridor report.	I-287 between I-80 and I-95	Somerset, Morris	✓	✓			✓	

Origin to Destination	Targeted Mode	Recommendations for Future Consideration	Location	County	Needs: Reasons for Recommendation(s) Selection					
					Unpredictable road segment (auto and bus route)	Peak minus off peak travel time above regional average	Bottleneck congestion	Access management Issues	Truck route of regional significance	Transit to auto travel time ratio above regional average
		Interchange study.	I-287 and Rt. 10, I-287 and Rt. 24	Morris	✓	✓	✓		✓	
60. Wantage to Wayne	Auto/Transit	TBD.								

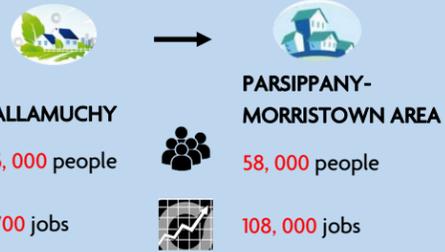
48. ALLAMUCHY TO PARSIPPANY/MORRISTOWN AREA

Regional Context



Allamuchy Township in Warren County is a rural area with preserved natural lands. ParsIPPany-Troy Hills Township, the Town of MorrIstown, the Borough of MorrI Plains, MorrI Township and the Borough of Florham Park encompass a broad area of Morris County. The communities have major corporate offices, retail, commercial and residential uses and MorrIstown is home to MorrIstown Medical Center. Roadways connecting these locations include I-80 and I-287 with transit travel requiring connections between Martz Trailways bus and NJ TRANSIT MidTown Direct MorrI & Essex Lines rail.

RURAL TO SUBURB TRAVEL



MULTIPLE MODES OF TRAVEL



AUTO
Primary Route :
I-80
Av. Travel Time :
47.5 mins



TRANSIT
Primary Route :
MorrIstown Line
Av. Travel Time:
85.0 mins + access to
transit time

VARIOUS TRIP PURPOSES

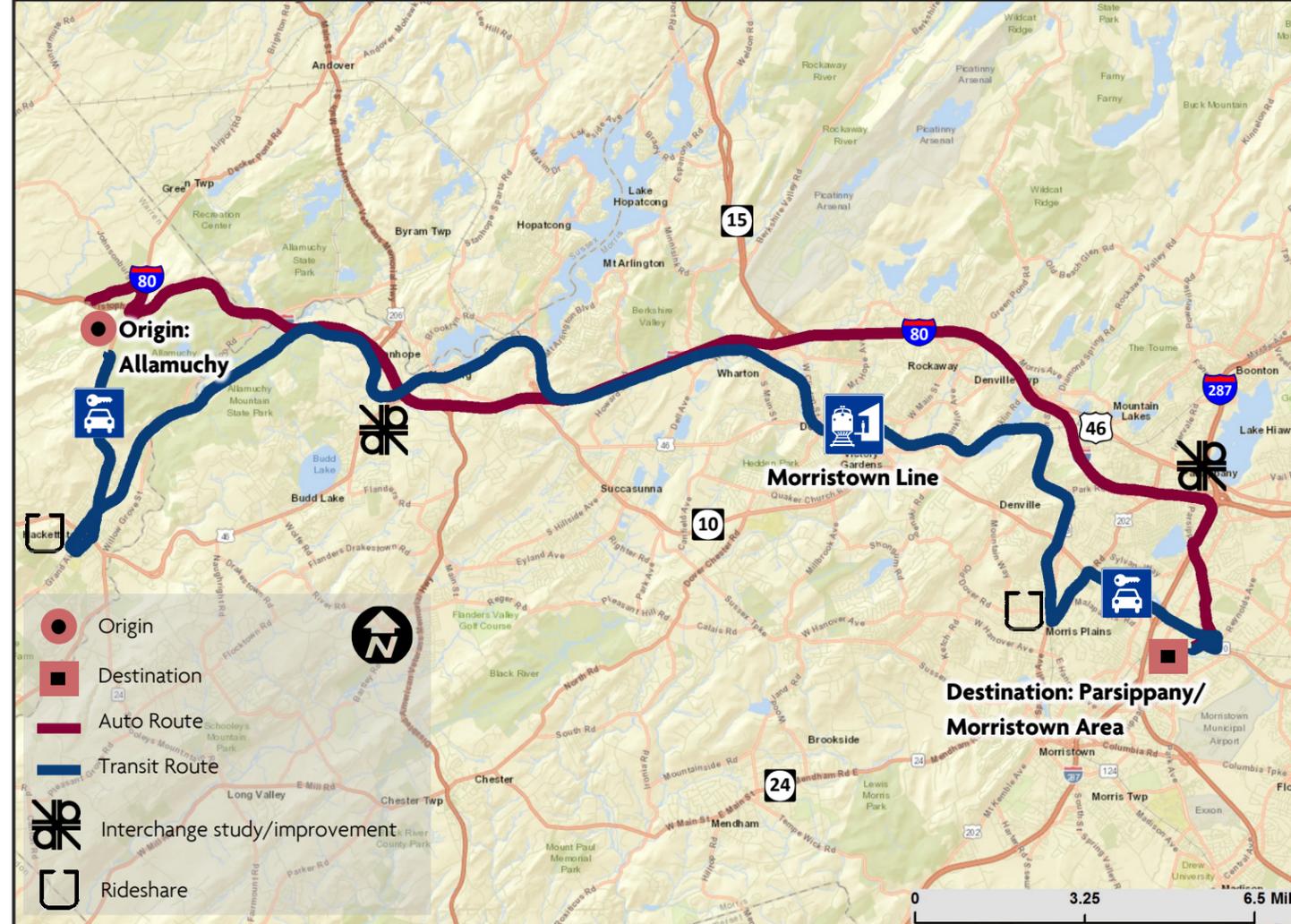


NEEDS



- Peak to off-peak auto travel time ratio: 1.3 (regional average: 1.2)
- Inconvenient access to/from the train stations
- Unpredictable road segments at I-80 and Rt. 46 interchange in Netcong
- Unpredictable road segments and bottlenecks on I-80 in Morris county

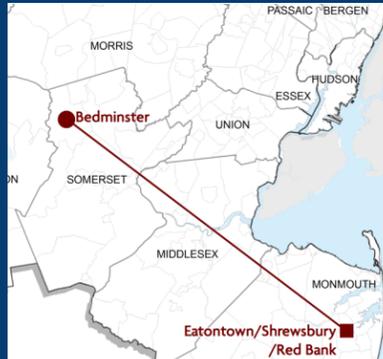
RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Improve ridesharing services to/from the Hackettstown and MorrI Plains train stations
- Interchange study at I-80 and Rt. 46 interchange in Netcong
- Interchange study at I-287 and I-80

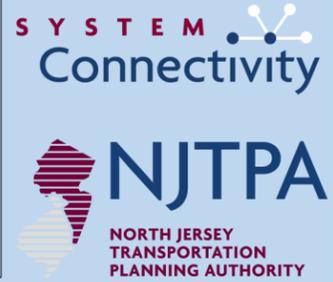
49. BEDMINSTER TO EATONTOWN/SHREWSBURY/RED BANK AREA

Regional Context



Bedminster Township in Somerset County is a rural residential area with retail and office uses located near the crossroads of I-78, I-287 and US 206. The boroughs of Eatontown, Shrewsbury and Red Bank in Monmouth County are home to theaters, cafes, retail, restaurants, offices and Brookdale Community College. Roadways connecting these locations include I-287 and the Garden State Parkway.

RURAL TO SUBURB TRAVEL → BEDMINSTER → EATONTOWN/SHREWSBURY/RED BANK		MULTIPLE MODES OF TRAVEL AUTO TRANSIT		VARIOUS TRIP PURPOSES SHOPPING RECREATION HEALTH	
8,000 people		16,000 people		Primary Route: GSP, I-287	Primary Route: —
5,000 jobs		24,000 jobs		Av. Travel Time: 67.5 mins	Av. Travel Time: —

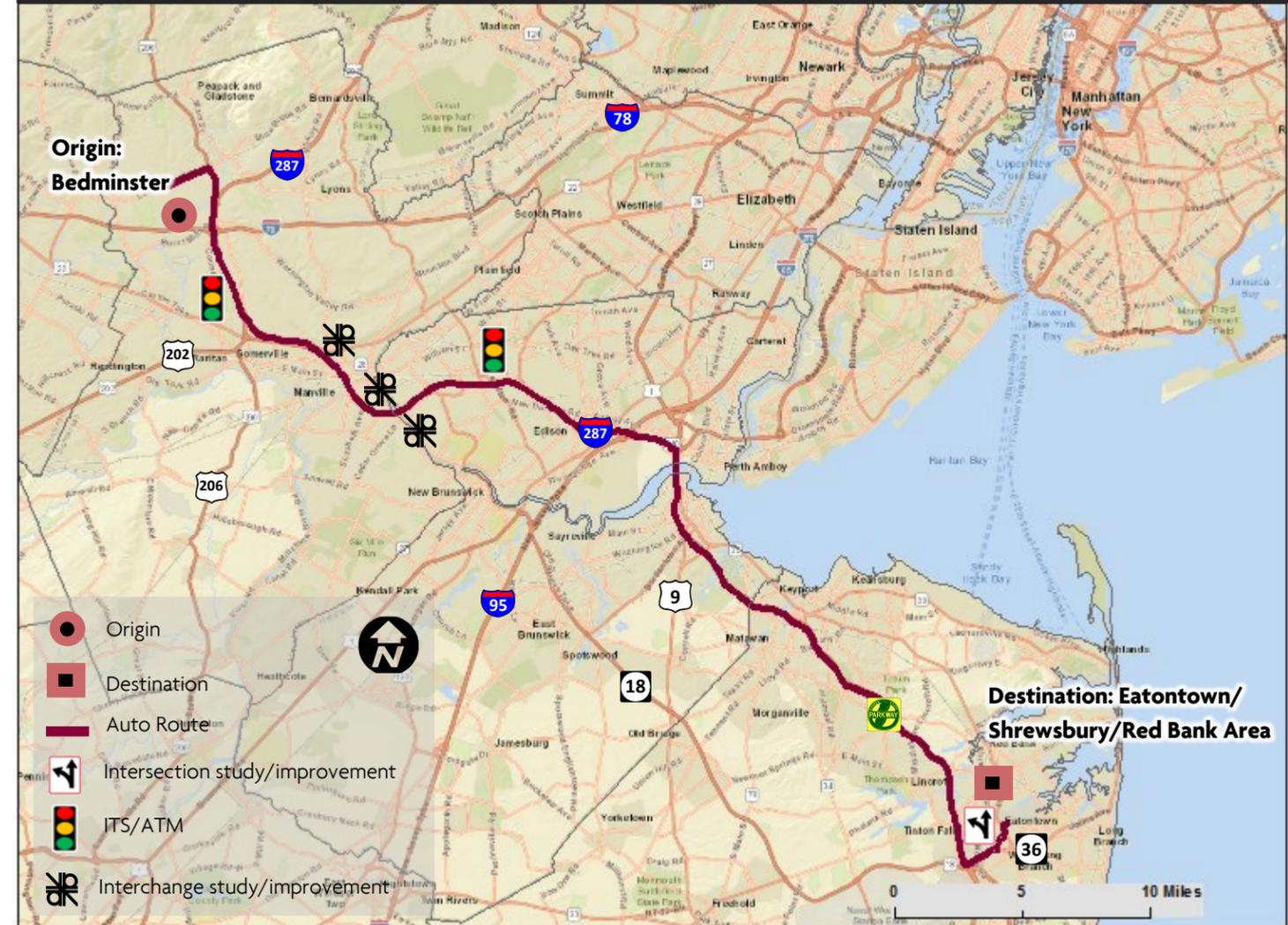


NEEDS



- No feasible transit route
- Unpredictable road segments and bottlenecks along I-287 from Rt. 202 to New Jersey Turnpike
- Unpredictable road segments and bottlenecks along Rt. 36 from Grant Avenue to Rt. 35 in Eatontown

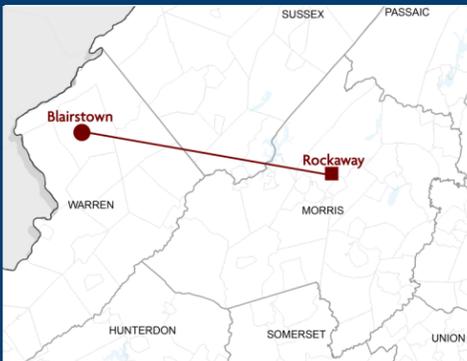
RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Current TIP/RTP Projects/Studies:**
- Implement TIP project for long-term interchange improvements at I-287 and River Road
 - Implement TIP project for long-term interchange improvements at I-287 and Easton Avenue
- Additional Potential Concepts:**
- Interchange study at I-287 and Rt. 22
 - Intersection study on Rt. 36 between Grant Avenue and Rt. 35 in Eatontown
 - Implement active traffic management (ATM) strategies from Connected Corridor report on I-287 between I-95 and I-80

50. BLAIRSTOWN TO ROCKAWAY

Regional Context

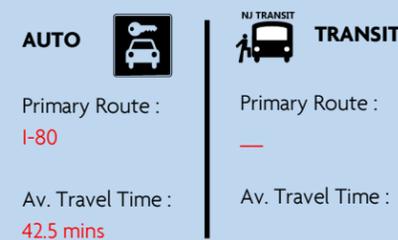


Blairstown Township in Warren County is a rural community near the Delaware Water Gap National Recreational area. Rockaway Township in Morris County is a suburban community with watershed and natural lands, office parks and the Rockaway Townsquare regional mall. While I-80 provides direct roadway connections between these locations, no transit travel options are available.

RURAL TO SUBURB TRAVEL



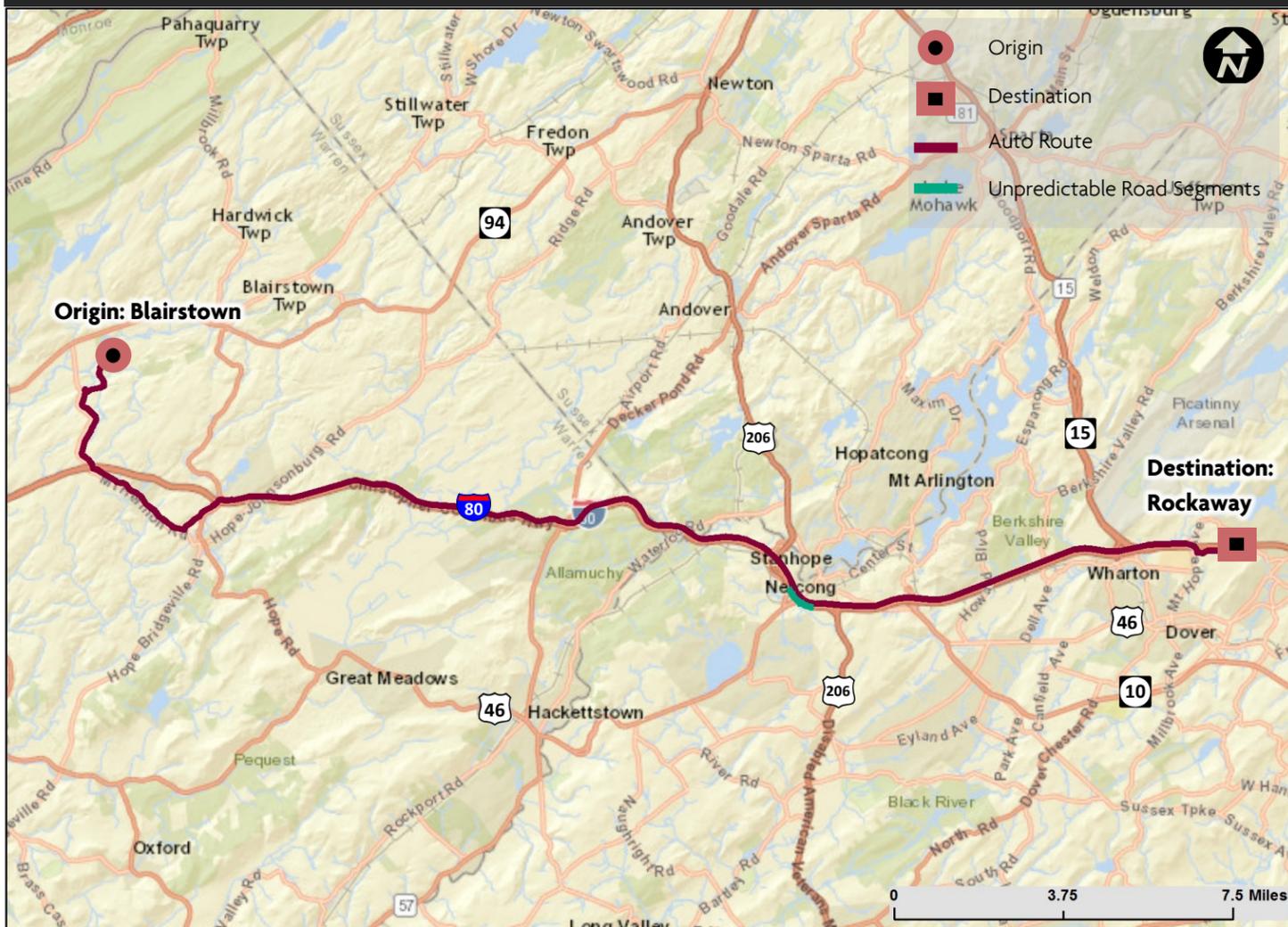
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

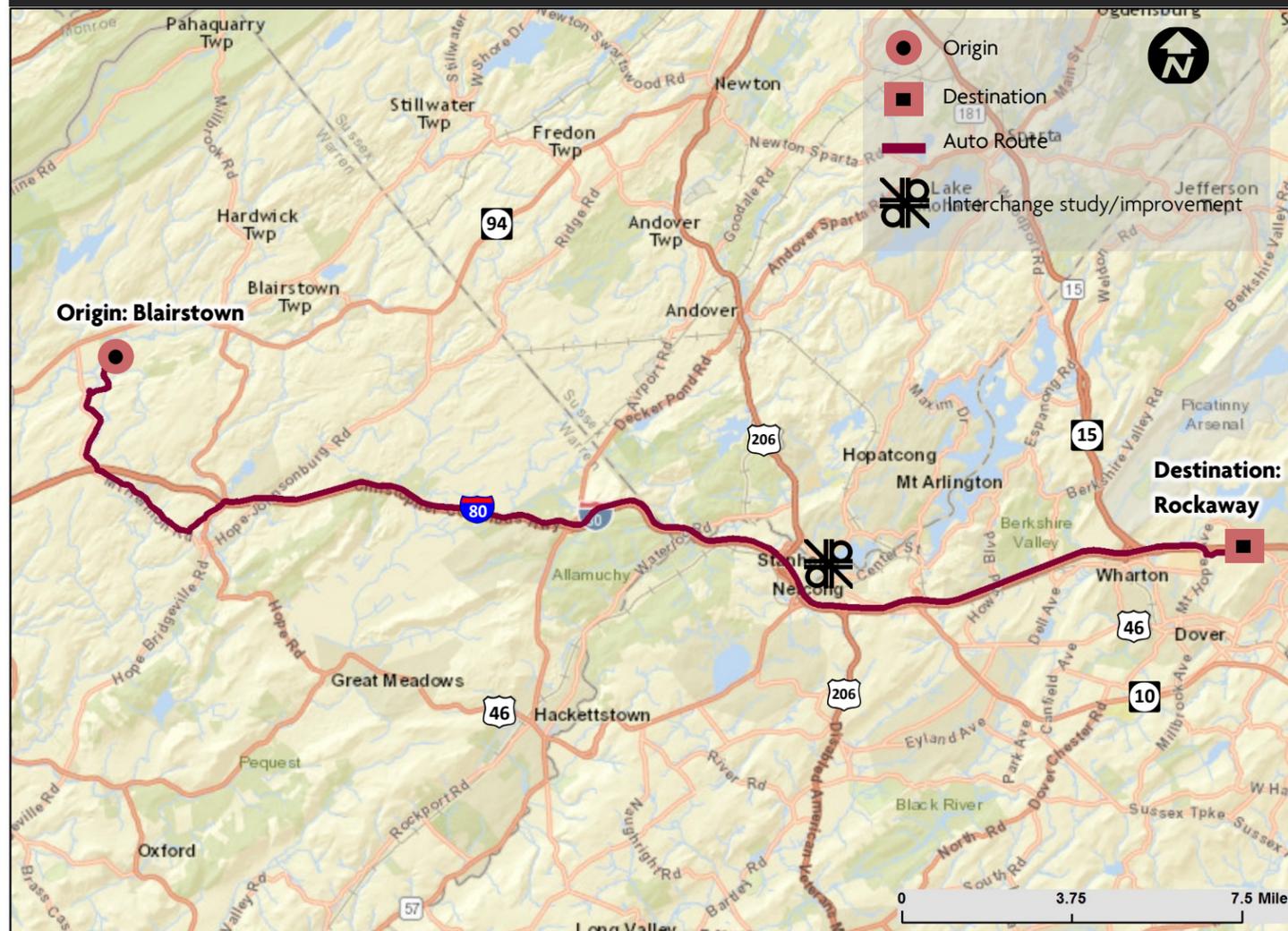


NEEDS



- No feasible transit route
- Unpredictable road segments at I-80 and Rt. 46 interchange in Netcong

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Interchange study at I-80 and Rt. 46 in Netcong

51. FRELINGHUYSEN TO FLEMINGTON

Regional Context



Frelinghuysen Township in Warren County is a rural agricultural area with preserved natural lands. Flemington Borough in Hunterdon County has a mix of local commercial and retail uses, the Liberty Village Factory Outlet Center and a grid of mature residential streets that connect with NJ 12, NJ 31 and U.S. 202. Roadways connecting these locations include NJ 31 with no transit travel option.

RURAL TO RURAL TRAVEL



FRELINGHUYSEN

2,000 people

500 jobs



FLEMINGTON

4,000 people

4,000 jobs

MULTIPLE MODES OF TRAVEL

AUTO



Primary Route:
RT-31

Av. Travel Time:
65.0 mins



TRANSIT

Primary Route:
—

Av. Travel Time:
—

VARIOUS TRIP PURPOSES



SHOPPING



RECREATION

SYSTEM Connectivity



NEEDS



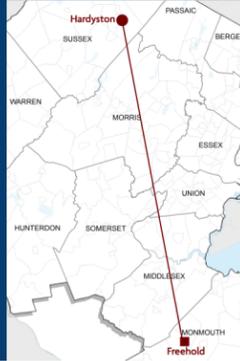
- No feasible transit route
- Bottlenecks on Rt. 31 in Hampton and near interchange with I-78

RECOMMENDATIONS FOR FUTURE CONSIDERATION



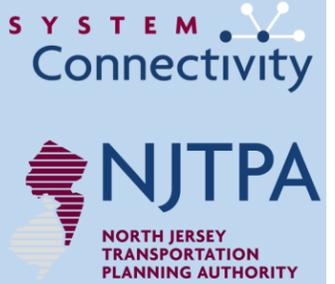
- To provide recommendations for this travel path, additional input and/or verification of the local condition is required.

52. HARDYSTON TO FREEHOLD



Hardyston Township in Sussex County is a rural residential and agricultural community. NJ Routes 23 and 94 are important arterials that provide access to local roadways, with limited transit access via Lakeland private carrier regional bus. Freehold Borough is a gateway for western Monmouth County that features restaurants, retail and government services. Roadways connecting these locations include NJ Route 15, I-80, I-280, the Garden State Parkway and U.S. Route 9.

RURAL TO SUBURB TRAVEL → HARDYSTON 8,000 people 800 jobs FREEHOLD 35,000 people 21,000 jobs		MULTIPLE MODES OF TRAVEL AUTO Primary Route : I-80, I-280, GSP Av. Travel Time : 102.5 mins	VARIOUS TRIP PURPOSES TRANSIT Primary Route : — Av. Travel Time : — EMPLOYMENT SHOPPING RECREATION
---	--	--	--

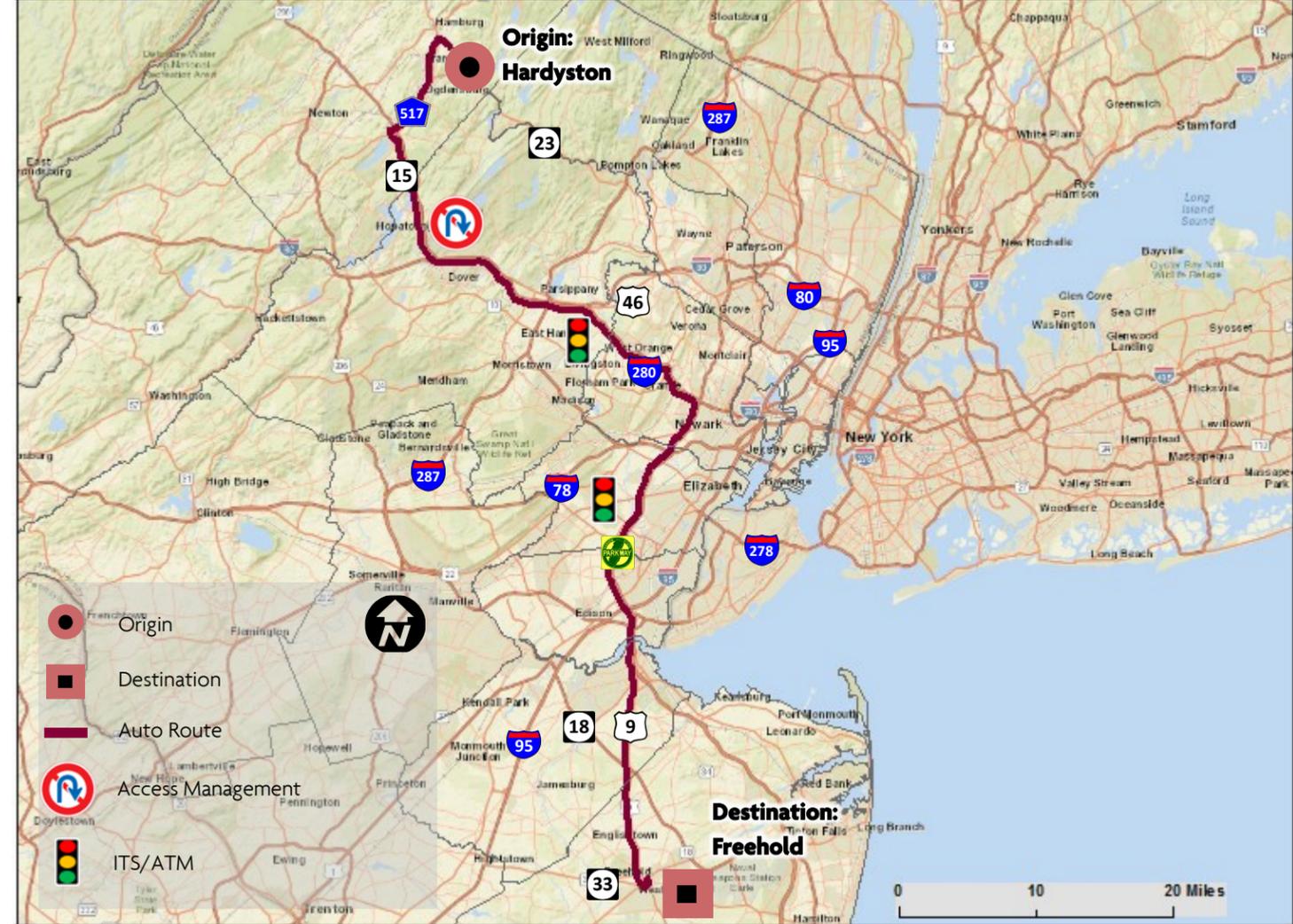


NEEDS



- No feasible transit route
- Unpredictable road segment and bottleneck on Rt. 15 south from Morris/Sussex border to I-80 interchange
- Unpredictable road segments and bottlenecks along I-80 and I-280 from Rt. 15 to Garden State Parkway
- Unpredictable road segments along Garden State Parkway and Rt. 9

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Study ITS improvements for Garden State Parkway from I-280 to I-95
- Access management study for Rt. 15 south from Morris/Sussex border to I-80 interchange
- Implement active traffic management (ATM) strategies from Connected Corridor Report on I-280 from I-80 to I-95

53. JACKSON TO ASBURY PARK/NEPTUNE/WALL TOWNSHIP AREA

Regional Context

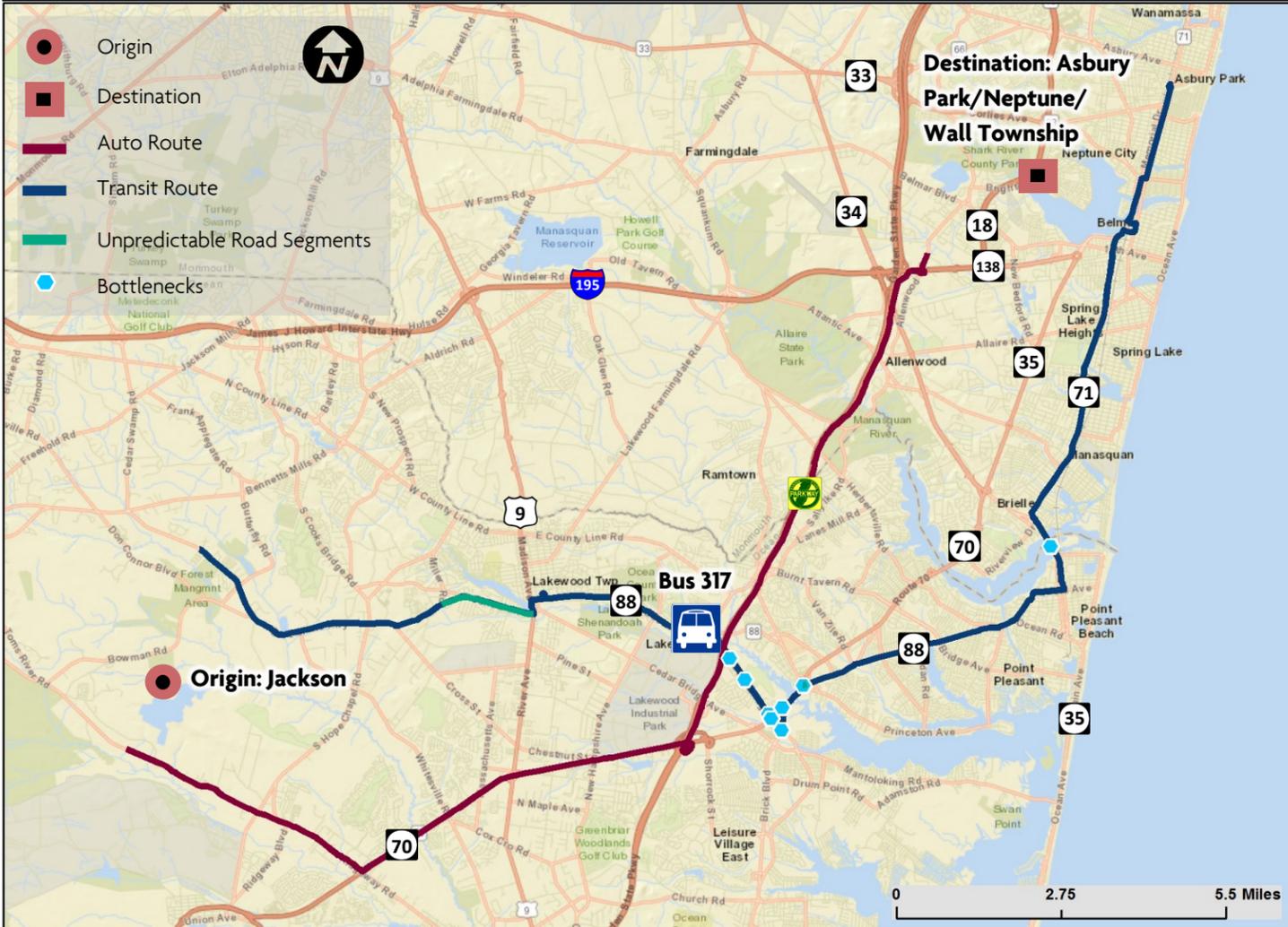


Jackson Township in western Ocean County is a suburban residential community that is home to the large Six Flags Great Adventure theme park. Neptune and Wall townships in eastern Monmouth County are suburban residential communities and City of Asbury Park is a oceanfront residential community that features restaurants, local retail and tourism destinations centered on beaches and boardwalks. Roadways connecting these locations include NJ Route 138 and I-195 with no transit travel options available.

RURAL TO SUBURB TRAVEL	MULTIPLE MODES OF TRAVEL	VARIOUS TRIP PURPOSES
<p>JACKSON</p> <p>50,000 people</p> <p>11,000 jobs</p>	<p>ASHBURY PARK/NEPTUNE/WALL</p> <p>41,000 people</p> <p>29,000 jobs</p>	<p>AUTO</p> <p>Primary Route : GSP, Rt. 70</p> <p>Av. Travel Time : 37.5 mins</p> <p>TRANSIT</p> <p>Primary Route : BUS 317</p> <p>Av. Travel Time : 80.5 mins + access to transit time</p> <p>SHOPPING</p> <p>RECREATION</p>

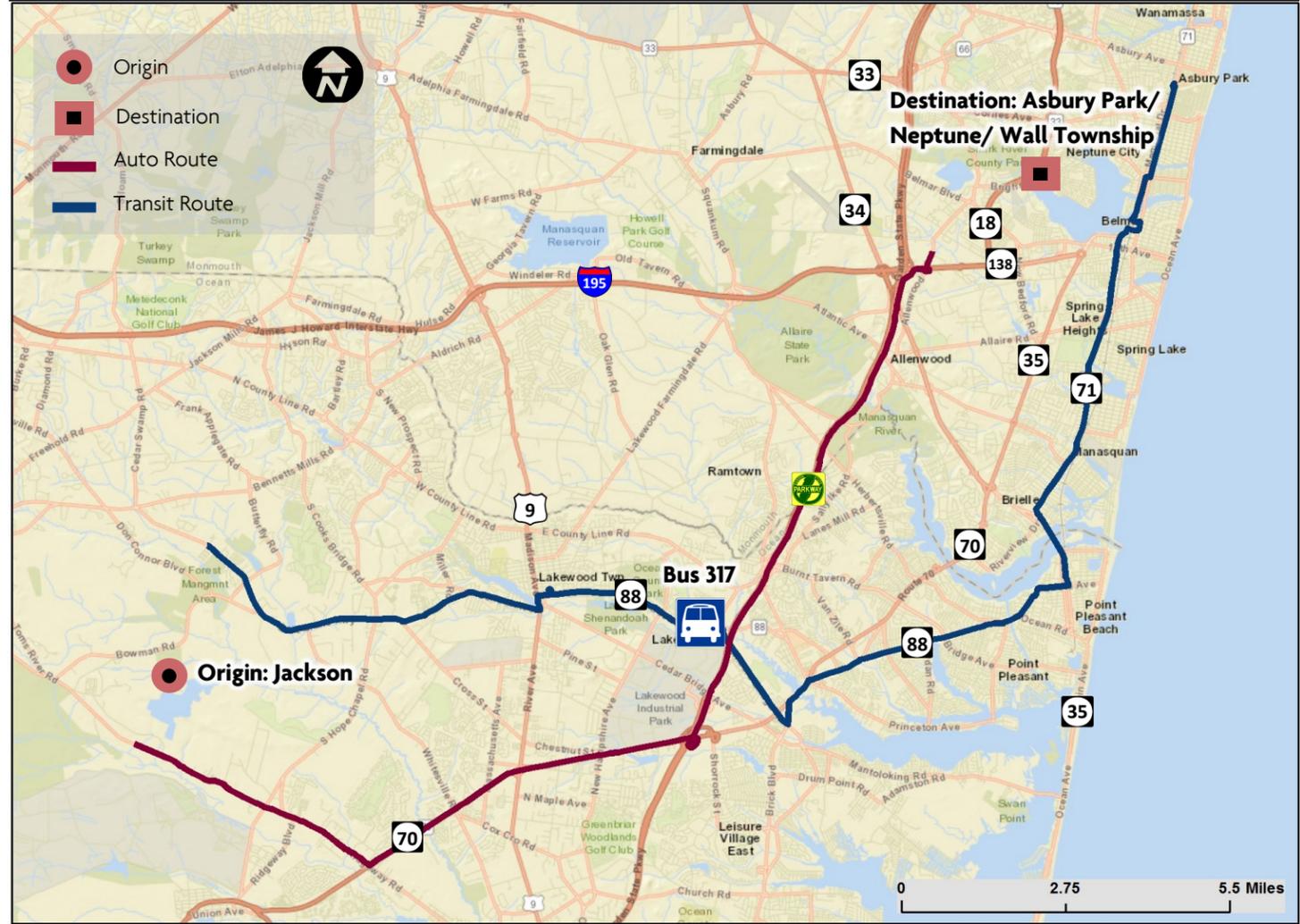


NEEDS



- Unpredictable road segments along CR 528
- Bottlenecks on Rt. 88 in Brick.

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- To provide recommendations for this travel path, additional input and/or verification of the local condition is required.

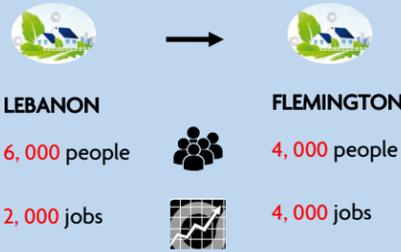
54. LEBANON TO FLEMINGTON

Regional Context



Lebanon Borough, a small rural residential and business community and Flemington Borough, which has a mix of local commercial and retail uses serving surrounding communities, including the Liberty Village Factory Outlet Center, are located in Hunterdon County. Roadways connecting these locations include I-78, U.S. Route 22 and NJ Route 31 with limited transit travel available through New York City via the NJ TRANSIT Raritan Valley rail line and private carrier bus via Trans-Bridge Lines.

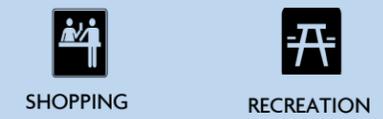
RURAL TO RURAL TRAVEL



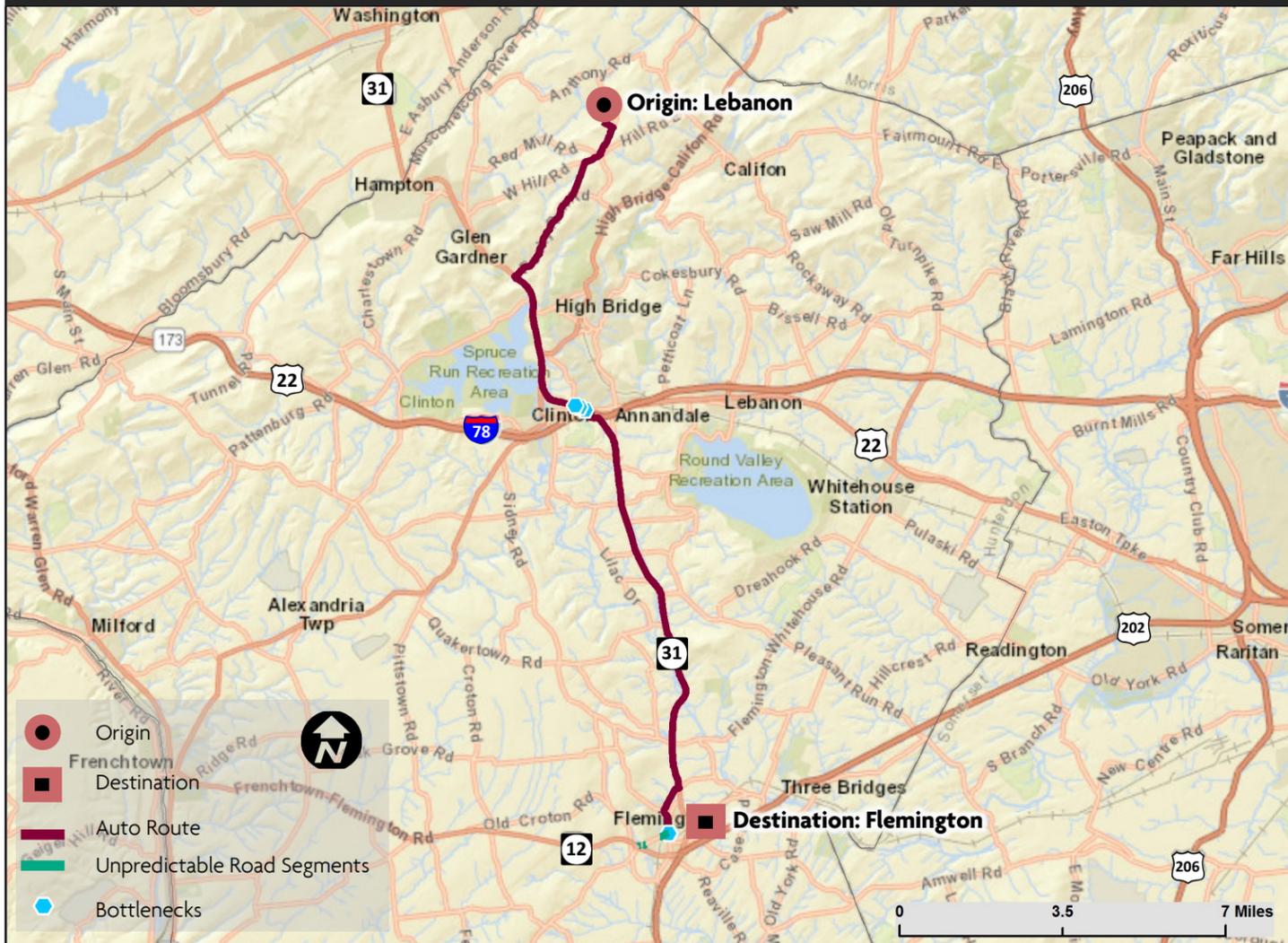
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

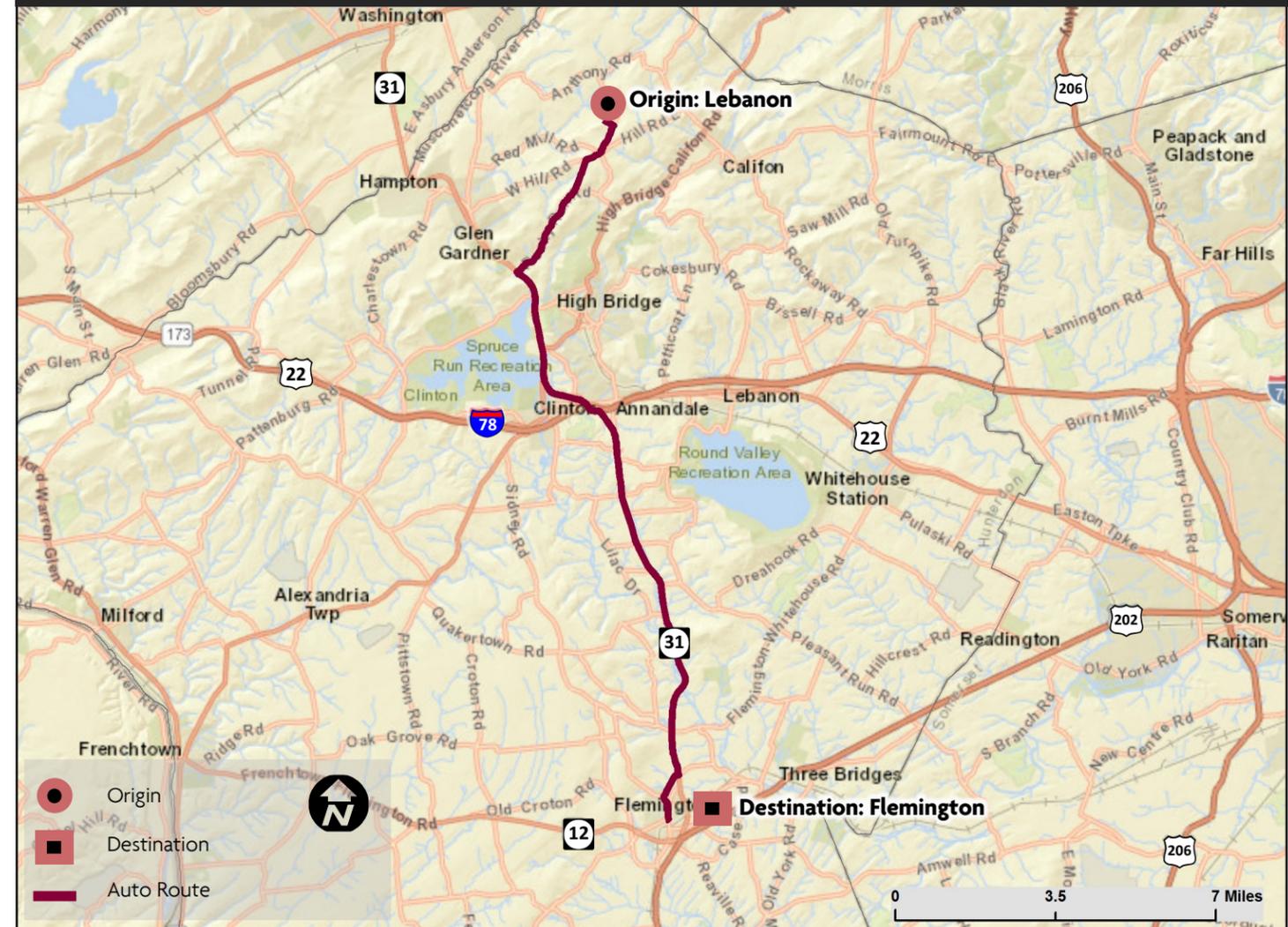


NEEDS



- No feasible transit route
- Bottlenecks on Rt. 31 at interchange with I-78

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- To provide recommendations for this travel path, additional input and/or verification of the local condition is required.



Monroe Township in Middlesex County is a suburban residential community with a large concentration of seniors and over 55 communities located along the New Jersey Turnpike at Interchanges 8 and 8A, where there is a concentration of warehouses. The City of Elizabeth in Union County is a densely populated mature urban center with a central business district, maritime port district and many surrounding residential and commercial areas. Roadways connecting these locations include I-95 with transit travel available via county shuttle connection to the NJ TRANSIT Northeast Corridor rail line.

55. MONROE TO ELIZABETH

RURAL TO URBAN TRAVEL



MONROE

38,000 people

10,000 jobs



ELIZABETH

130,000 people

35,000 jobs

MULTIPLE MODES OF TRAVEL

AUTO



Primary Route : I-95

Av. Travel Time : 47.5 mins



NJ TRANSIT TRANSIT

Primary Route: NORTH EAST CORRIDOR MCAT M6 BUS

Av. Travel Time: 129.0 mins + access to transit time

VARIOUS TRIP PURPOSES



EMPLOYMENT



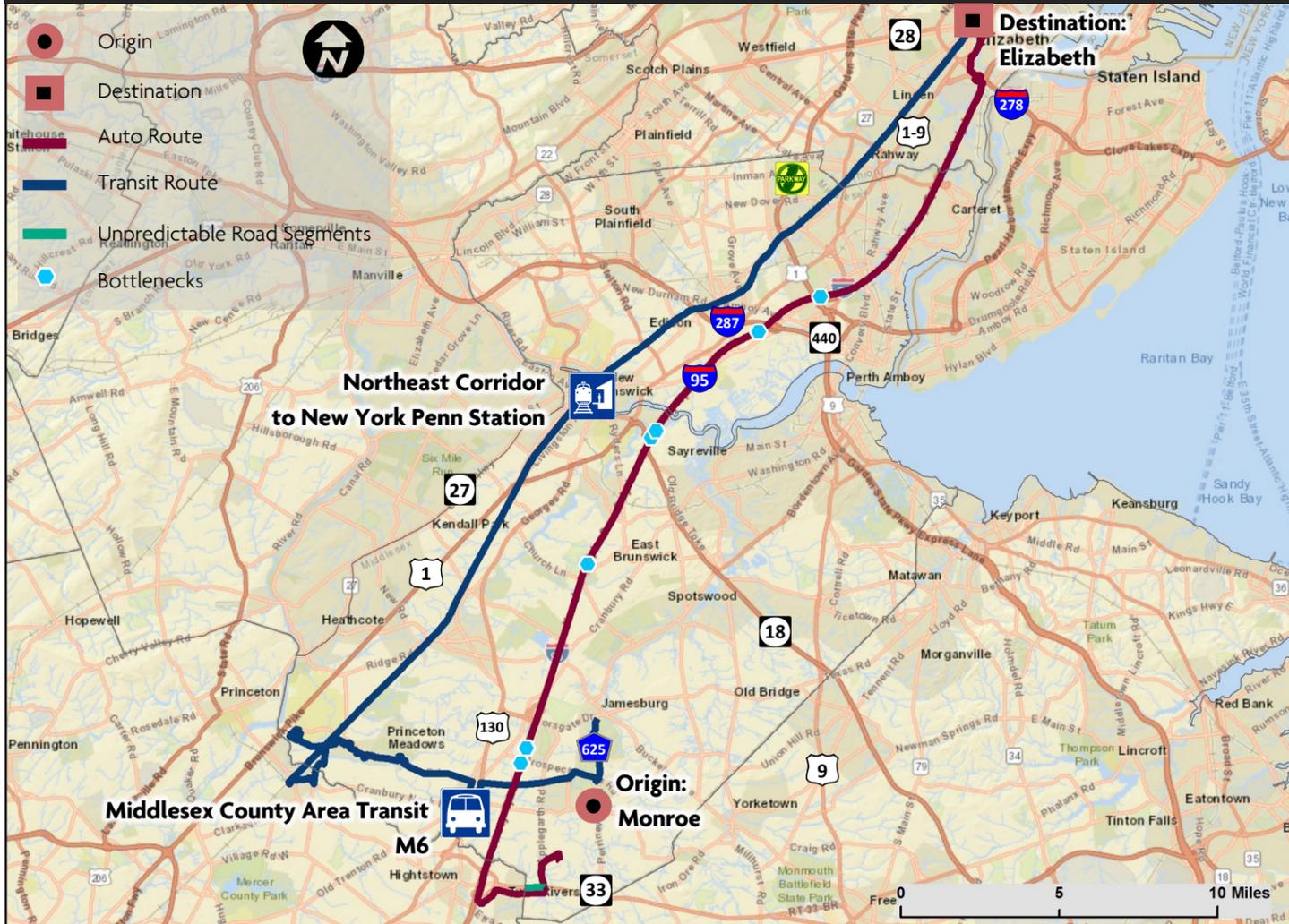
SHOPPING/ RECREATION



EDUCATION/ HEALTH

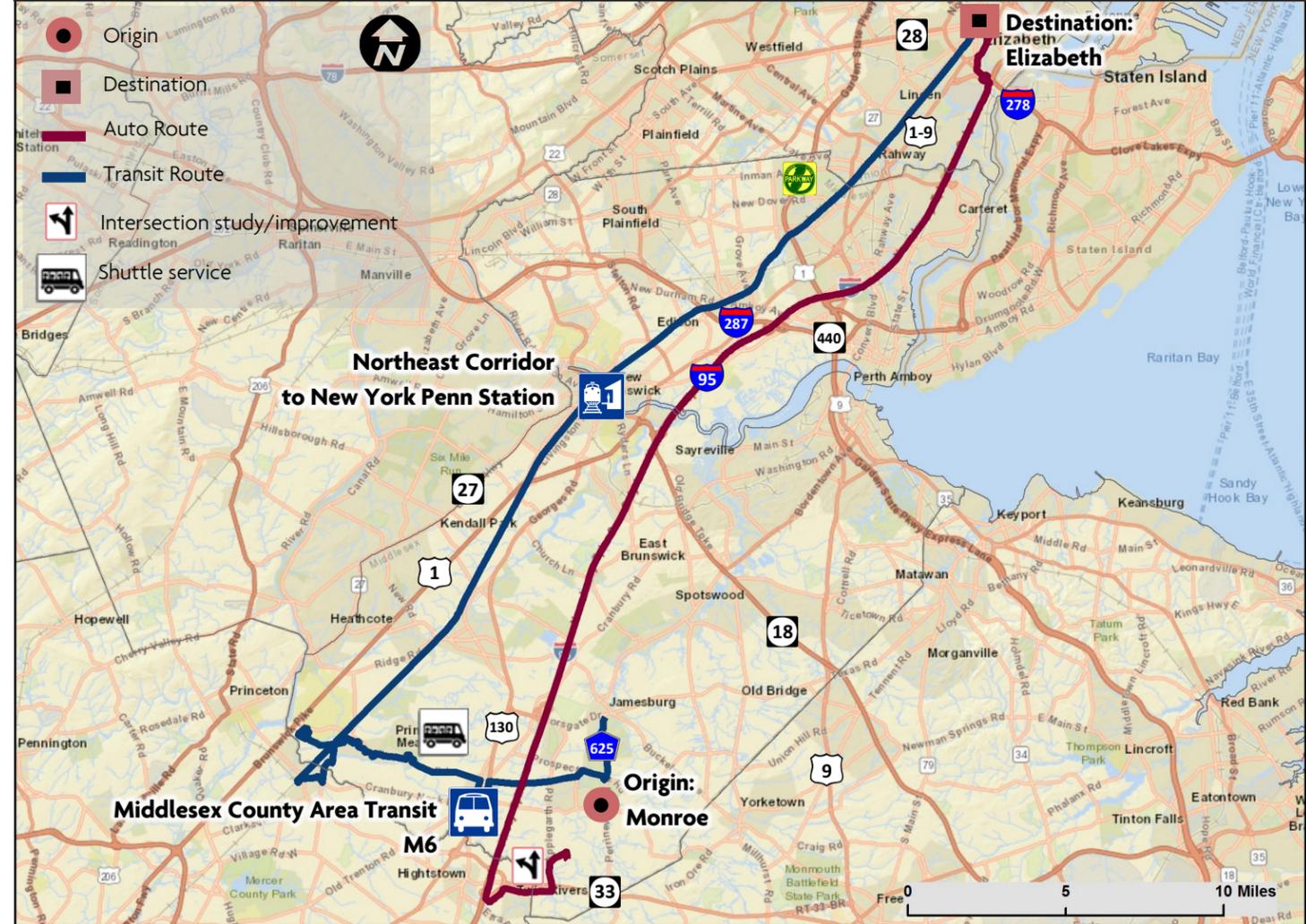


NEEDS



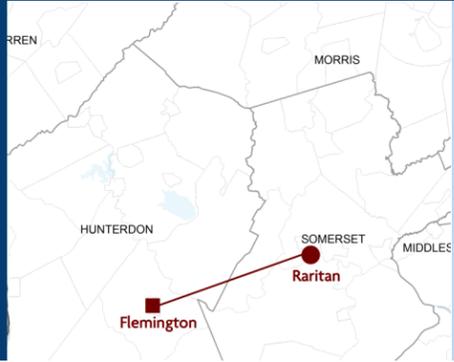
- Peak transit/auto travel time ratio: 2.7 (regional average: 1.8)
- Unpredictable road segments at Rt. 33 and Twin Rivers Drive

RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Intersection study at Rt. 33 and Twin Rivers Drive
- Consider a study to explore the demand for some form of shuttle service in Monroe.

56. RARITAN TO FLEMINGTON



Raritan Borough is a small suburban residential community in Somerset County that forms a hub between NJ Route 28, U.S. Routes 202 and 206 and nearby I-287. Flemington Borough in Hunterdon County has a mix of local commercial and retail uses serving surrounding communities, including the Liberty Village Factory Outlet Center. Roadways connecting these locations include U.S. Route 202 with limited transit travel available via county shuttle bus 23 or via New York City connections between NJ TRANSIT Raritan Valley Line rail and private carrier bus via Transbridge Lines.

SUBURB TO RURAL TRAVEL



MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

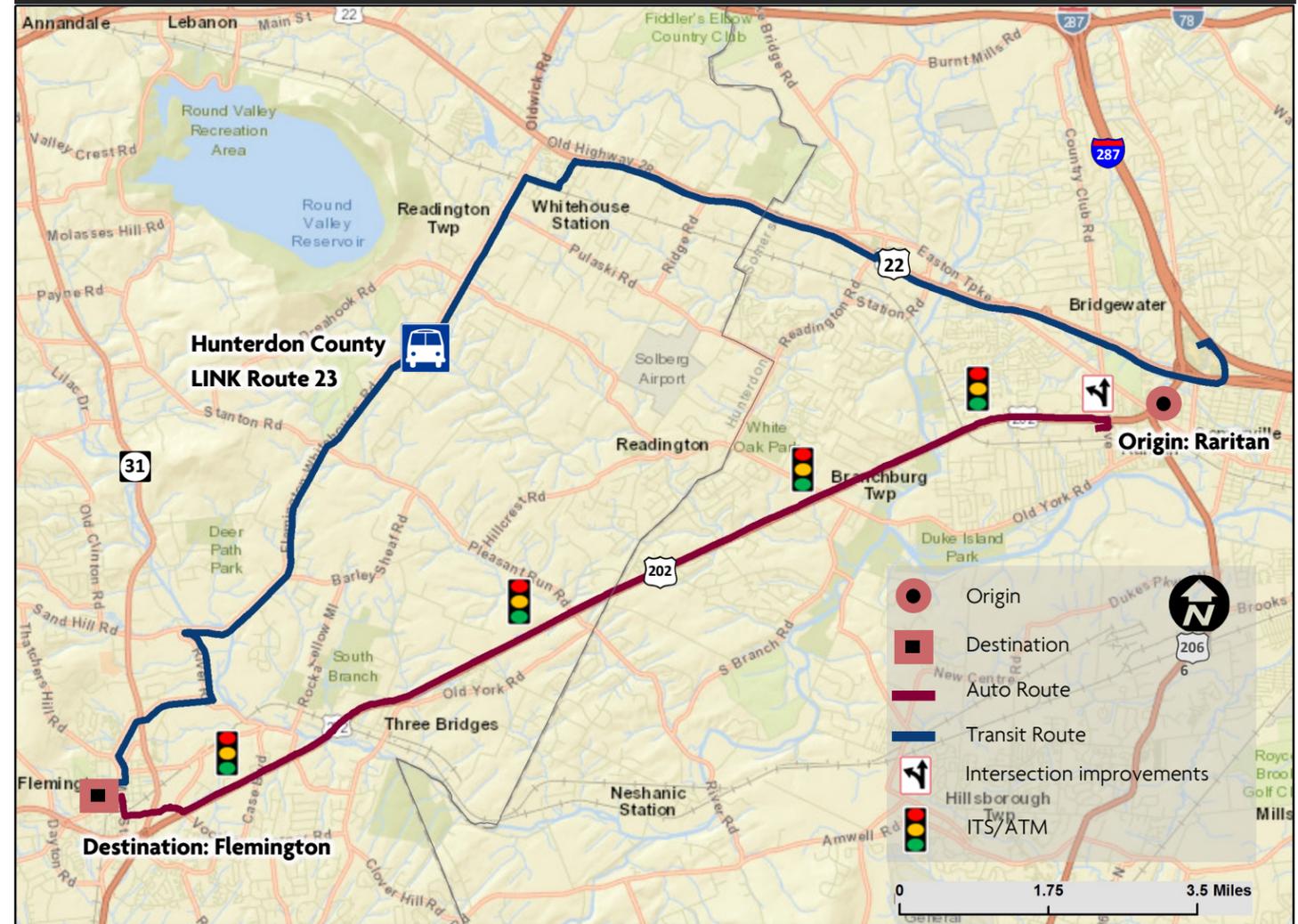


NEEDS



- Unpredictable road segments on Rt. 22 between Readington Rd. and Station Rd in Branchburg
- Unpredictable road segments on Rt. 202

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies:

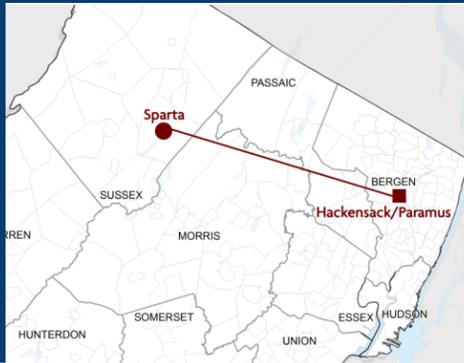
- Implement TIP project to improve intersection of Route 202 and First Avenue in Raritan
- Implement the study findings on rail extension to Flemington contingent upon Trans Hudson capacity increase

Additional Potential Concepts:

- Implement ITS improvements along Rt. 202 from Raritan to Flemington

57. SPARTA TO HACKENSACK/PARAMUS AREA

Regional Context



Sparta Township in Sussex County is a rural residential, agricultural and commercial community. The City of Hackensack, an urban area, and the Borough of Paramus, a mature suburb, are in Bergen County and have residential and commercial land uses with major employment, Bergen Community College and the largest concentration of shopping malls in the state. Roadways connecting these locations include NJ Routes 15, 17, I-80 and the Garden State Parkway.

RURAL TO SUBURB TRAVEL



SPARTA

20,000 people

6,000 jobs



**HACKENSACK/
PARAMUS**

20,000 people

58,000 jobs

MULTIPLE MODES OF TRAVEL



Primary Route :
NJ 15, I-80

Av. Travel Time :
67.5 mins



Primary Route: :
—

Av. Travel Time:
—

VARIOUS TRIP PURPOSES



EMPLOYMENT



SHOPPING



RECREATION

SYSTEM
Connectivity

NJTPA
NORTH JERSEY
TRANSPORTATION
PLANNING AUTHORITY

NEEDS



- No feasible transit route
- Peak minus off-peak auto travel time: 12.5 mins (regional average: 9.7 mins)
- Access management problems, unpredictable road segment and bottleneck on Rt. 15 south from Morris/Sussex border to I-80 interchange
- Unpredictable road segments and bottlenecks I-80

RECOMMENDATIONS FOR FUTURE CONSIDERATION



Current TIP/RTP Projects/Studies

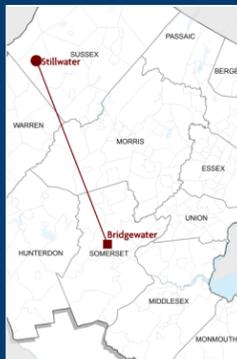
- Implement TIP Project for long-term interchange improvements at Rt.23 and I-80 interchange

Potential Concepts:

- Access management study on Rt. 15 south from Morris/Sussex border to I-80 interchange
- Implement active traffic management (ATM) strategies from Connected Corridor report on I-80 between Route 15 and the George Washington Bridge
- Interchange study on I-80 E at Squirrelwood Road

58. STILLWATER TO BRIDGEWATER

Regional Context



Stillwater Township in Sussex County is a rural agricultural area and a former vacation cottage community that is also home to Swartswood State Park. Bridgewater Township in Somerset County is a suburban community with residential areas, major corporate offices, the regional Bridgewater Commons Mall and the Somerset Patriots minor league baseball stadium. Roadways connecting these locations include U.S. Route 206.

RURAL TO SUBURB TRAVEL



STILLWATER

4,000 people

600 jobs



BRIDGEWATER

30,000 people

14,000 jobs

MULTIPLE MODES OF TRAVEL

AUTO



Primary Route :
RT-206

Av. Travel Time :
67.5 mins



TRANSIT

Primary Route :
—

Av. Travel Time :
—

VARIOUS TRIP PURPOSES



EMPLOYMENT



SHOPPING

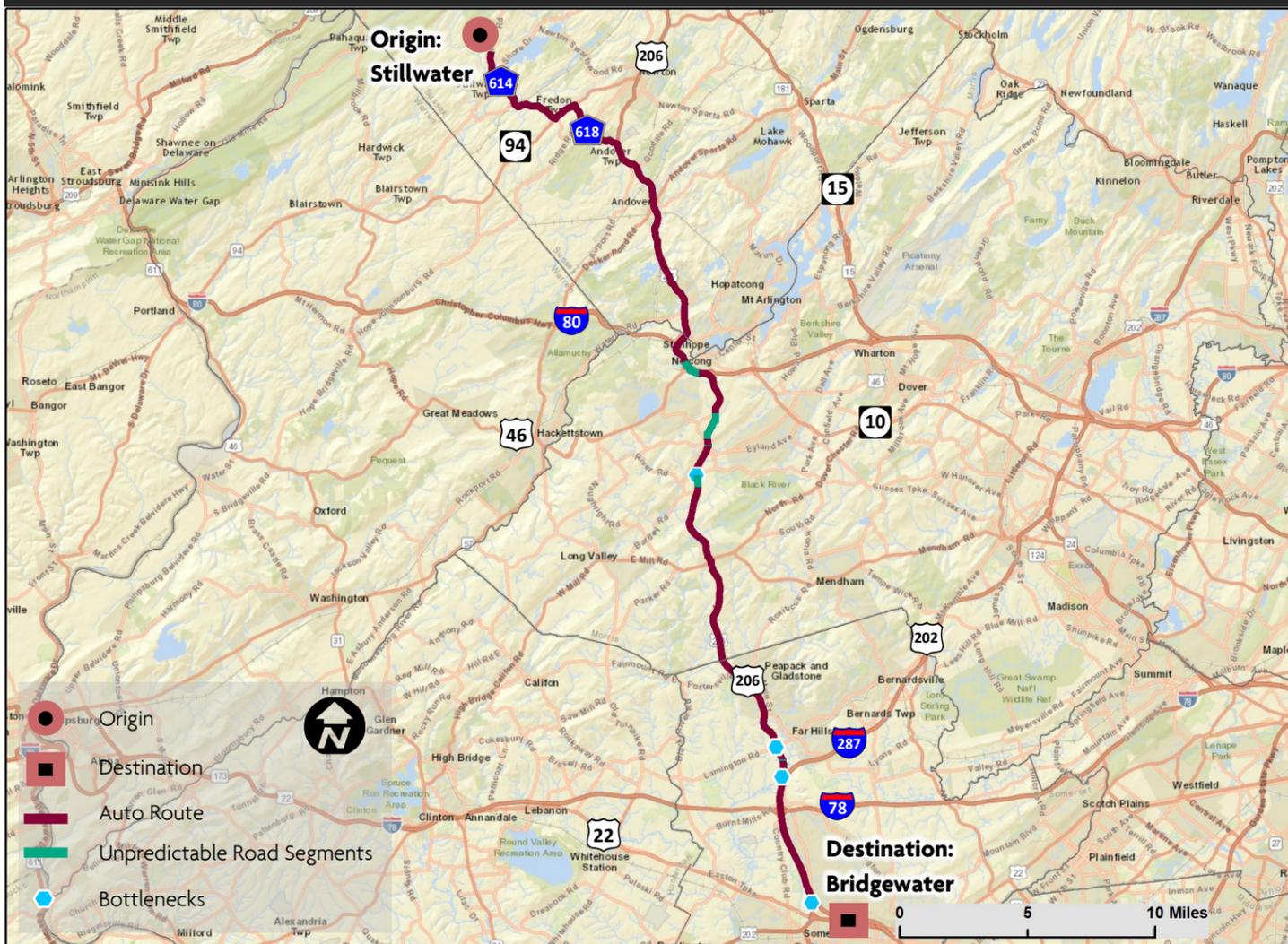


RECREATION

SYSTEM
Connectivity

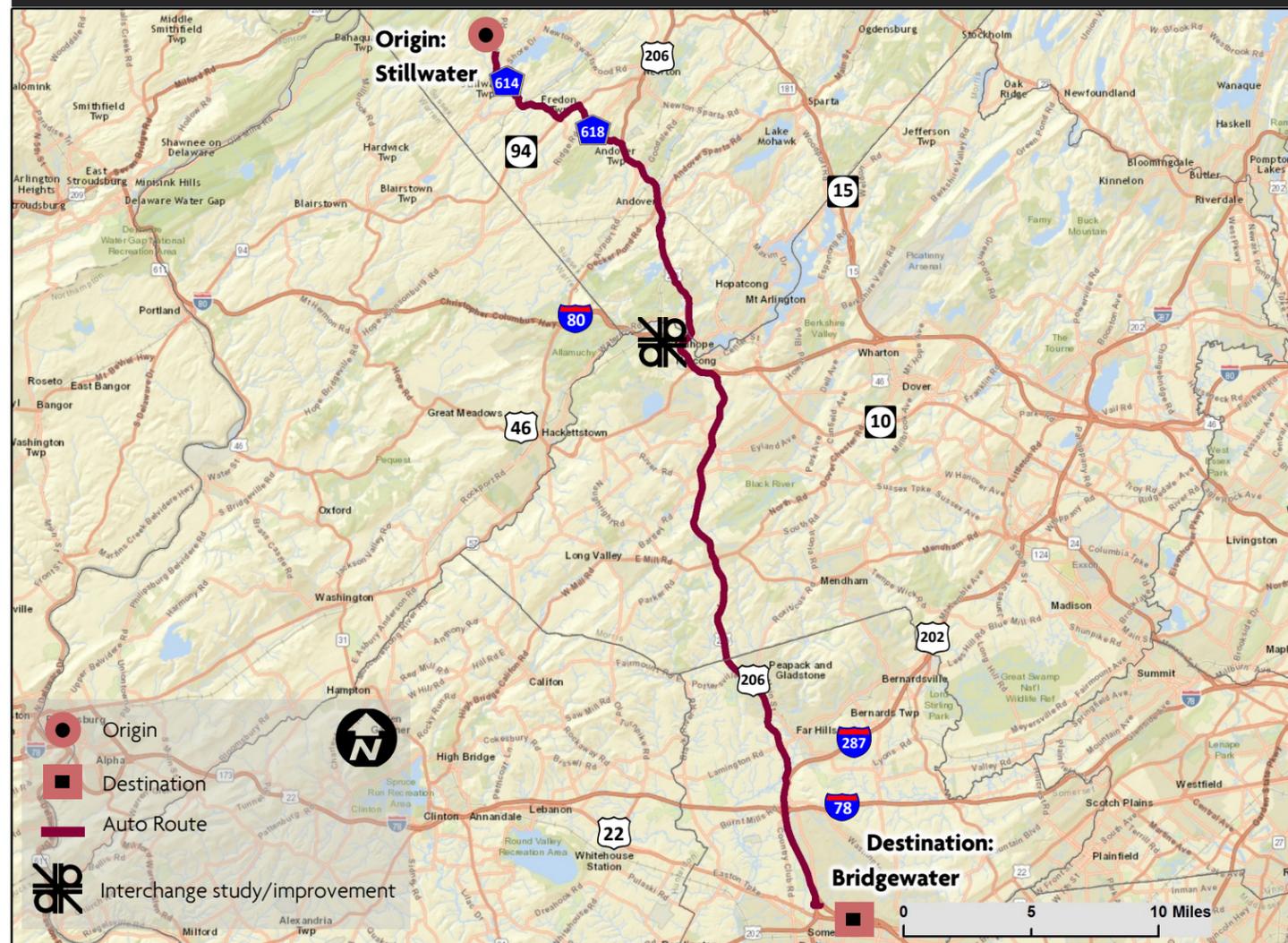
NJTPA
NORTH JERSEY
TRANSPORTATION
PLANNING AUTHORITY

NEEDS



- No feasible transit route
- Unpredictable road segments and bottlenecks along Rt. 206 at the vicinity of Rt. 46 and I-80

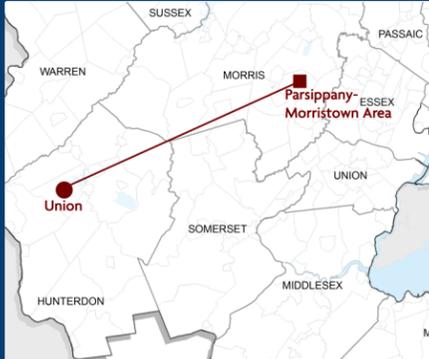
RECOMMENDATIONS FOR FUTURE CONSIDERATION



- Interchange study at I-80 and Rt. 46 in Netcong

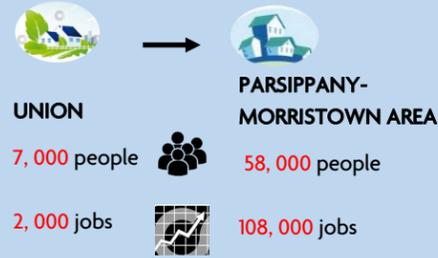
59. UNION TO PARSIPPANY/MORRISTOWN AREA

Regional Context



Union Township in Hunterdon County is a mature residential suburb located along the Garden State Parkway (GSP) and NJ Routes 22, 82 and 439. The town is home to Kean College and commercial and retail uses along arterial highway corridors. Parsippany-Troy Hills Township and the Town of Morristown, both in Morris County, have major corporate offices, retail, commercial and residential uses. Morristown is also home to Morristown Medical Center. Roadways connecting these locations include I-78, NJ Routes 24 and, 124 with transit travel via NJ TRANSIT buses 52, 70 and the Morris & Essex rail line.

RURAL TO SUBURB TRAVEL



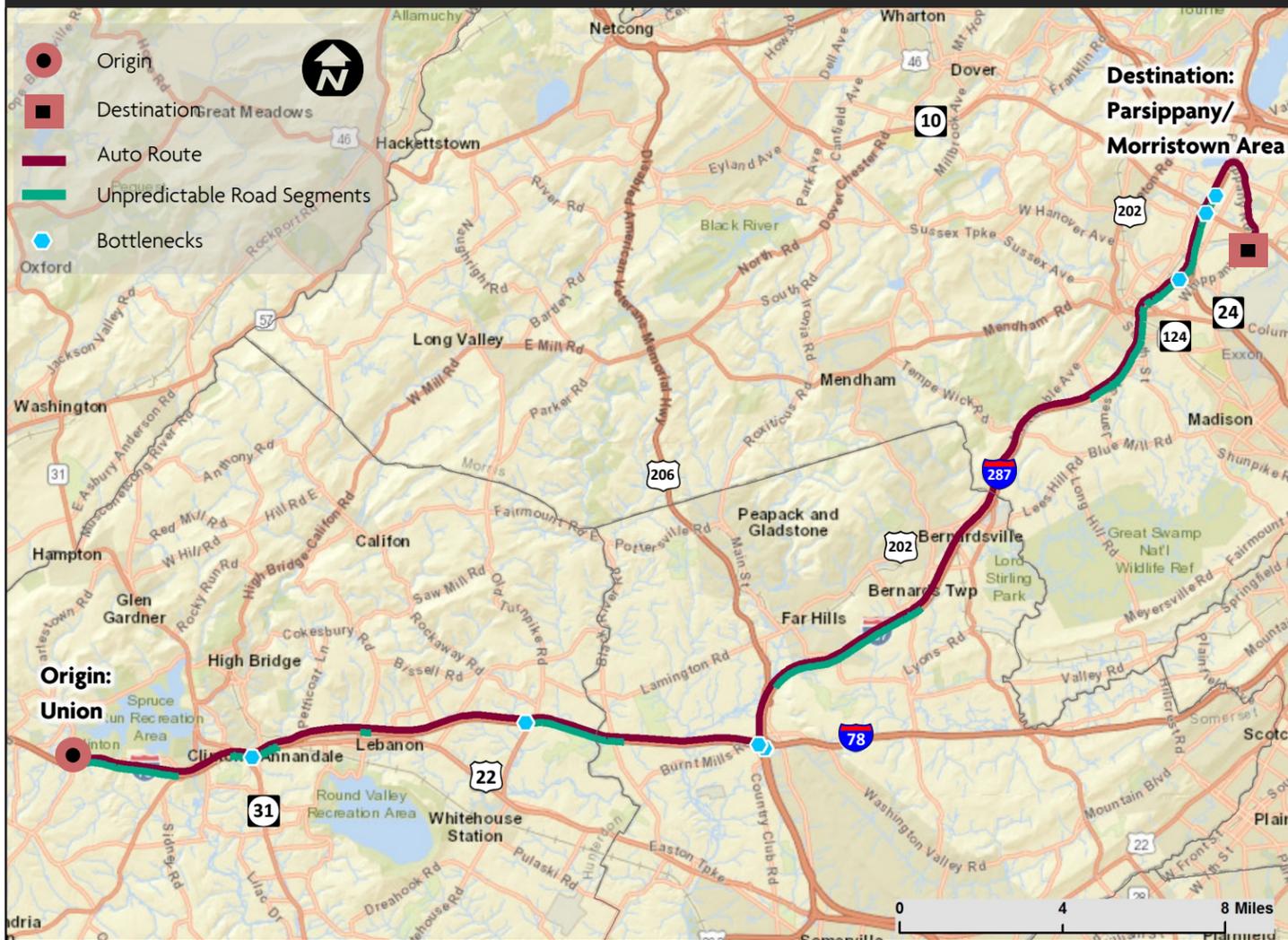
MULTIPLE MODES OF TRAVEL



VARIOUS TRIP PURPOSES

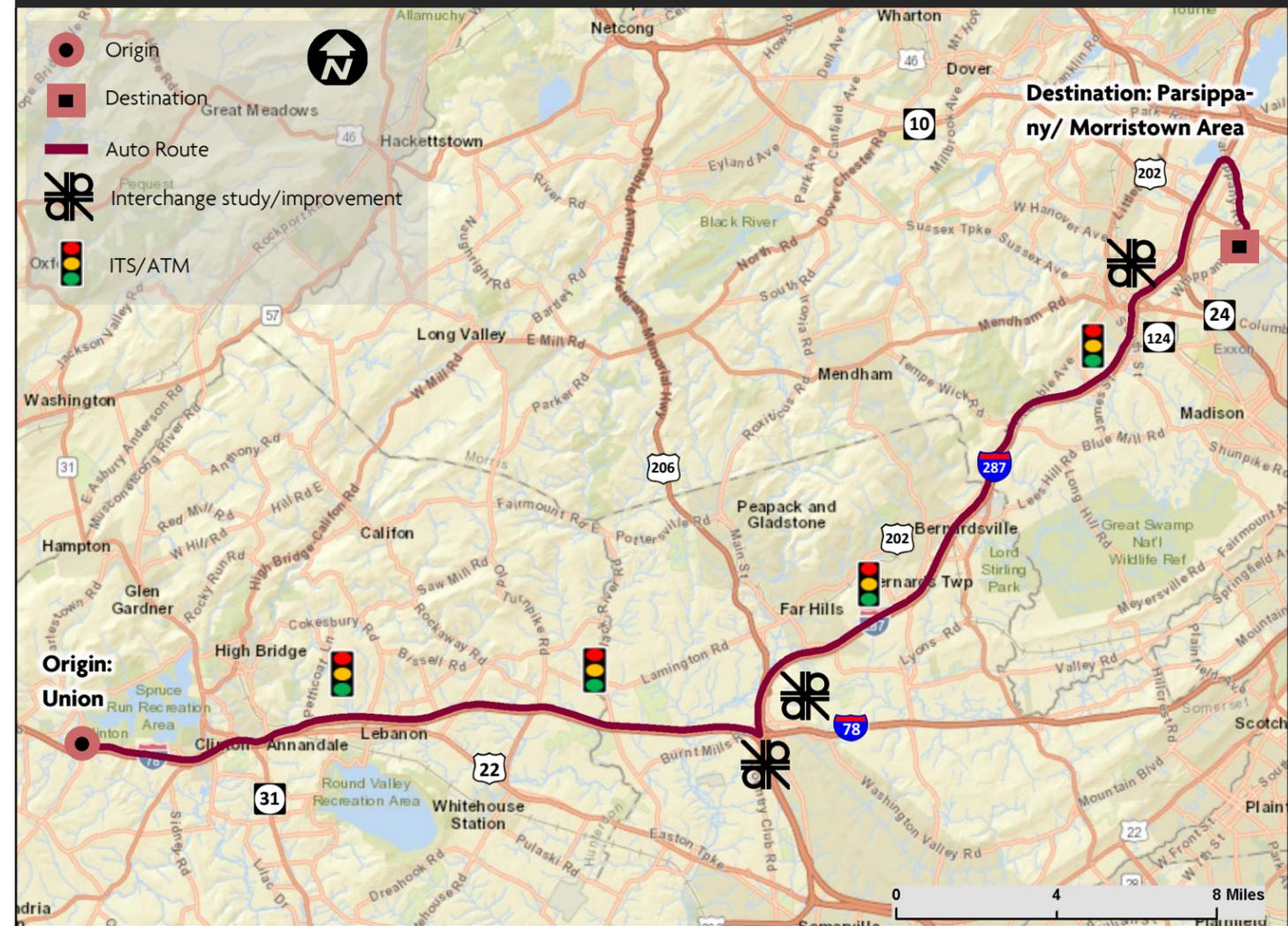


NEEDS



- No feasible transit route
- Peak to off-peak auto travel time ratio: 1.4 (regional average: 1.2)
- Unpredictable road segment and bottleneck at interchanges of I-287 and Rt. 10 and I-287 and Rt.24
- Unpredictable road segment along I-78 in Hunterdon County
- Unpredictable road segment at interchanges of I-287/I-78, I-287/202/206

RECOMMENDATIONS FOR FUTURE CONSIDERATION

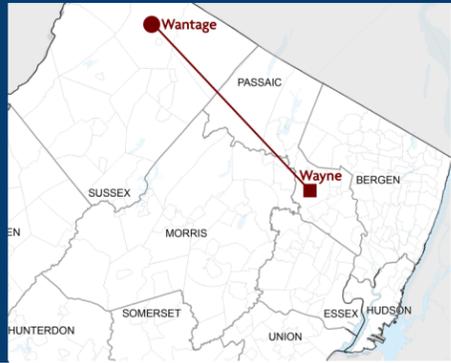


Current TIP/RTP Projects/Studies:

- Implement TIP project for interchange improvements at I-287/I-78 and I-287/202/206
- Implement RTP project for I-78 ITS from Pennsylvania state line to New Jersey Turnpike

Additional Potential Concepts:

- Interchange study at I-287 and Rt. 10 and I-287 and Rt. 24
- Implement active traffic management (ATM) strategies from Connected Corridor report on I-287 between I-95 and I-80.



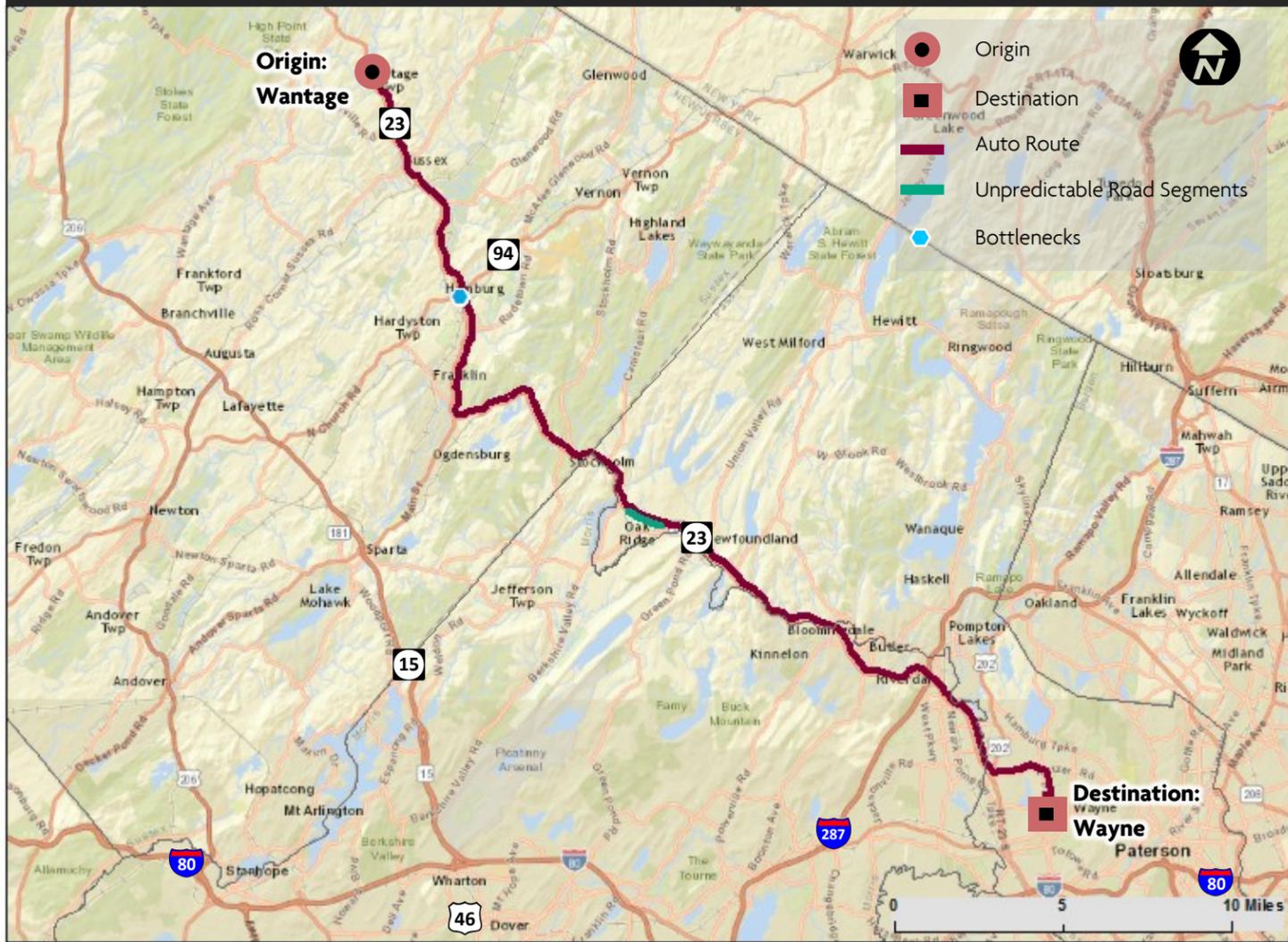
Wantage Township in Sussex County is a rural agricultural community. Wayne Township in suburban Passaic County incorporates residential, shopping and retail uses along U.S. Route 46 and NJ Route 23, including Willowbrook Mall and Wayne Town Center. NJ Route 23 connects these locations.

60. WANTAGE TO WAYNE

RURAL TO SUBURB TRAVEL → WANTAGE 12,000 people 2,000 jobs		WAYNE 57,000 people 40,000 jobs	
MULTIPLE MODES OF TRAVEL AUTO Primary Route : NJ 23 Av. Travel Time : 62.5 mins		VARIOUS TRIP PURPOSES TRANSIT Primary Route: Av. Travel Time:	
SHOPPING		RECREATION	



NEEDS



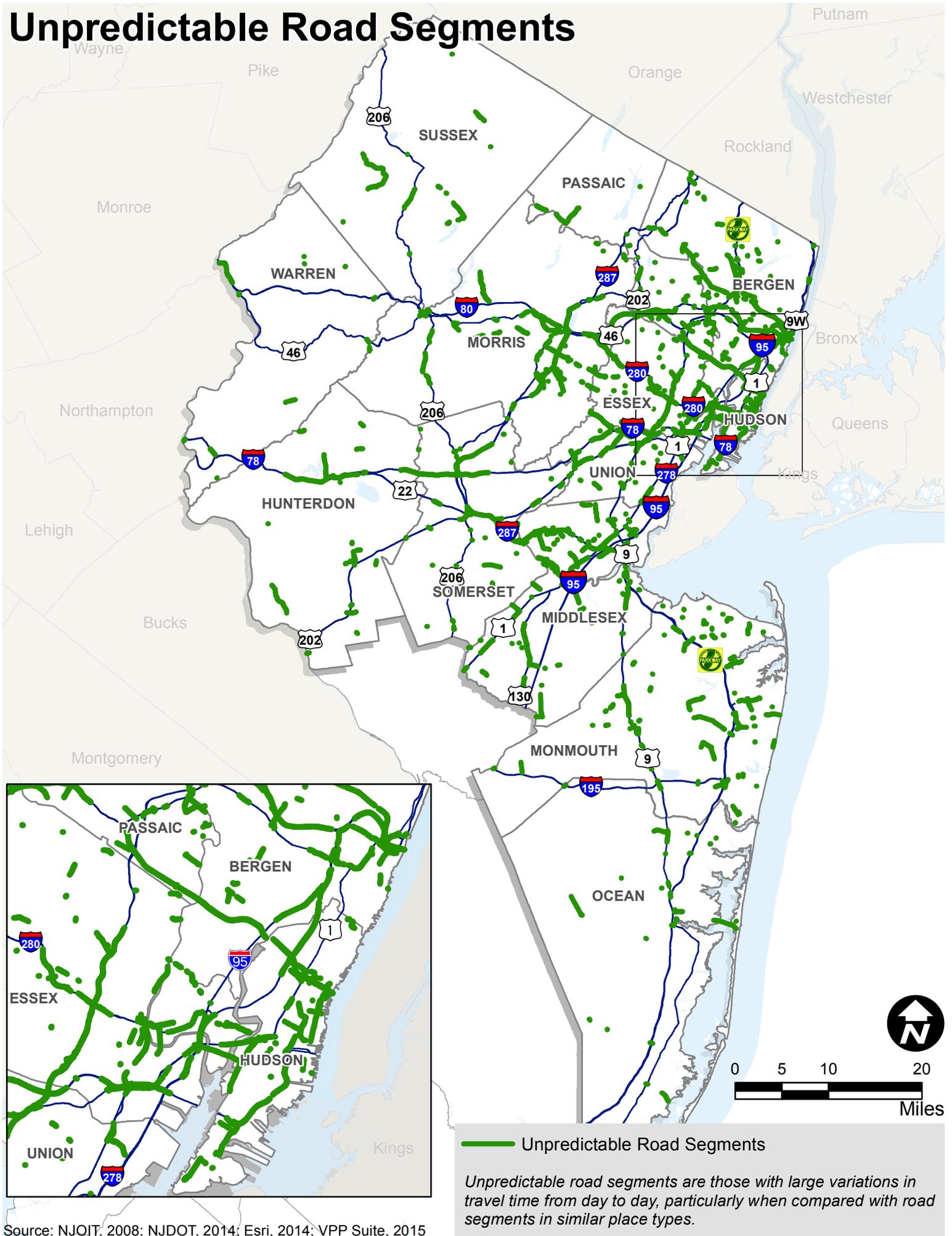
- No feasible transit route
- Unpredictable road segments and bottlenecks on Rt. 23

RECOMMENDATIONS FOR FUTURE CONSIDERATION

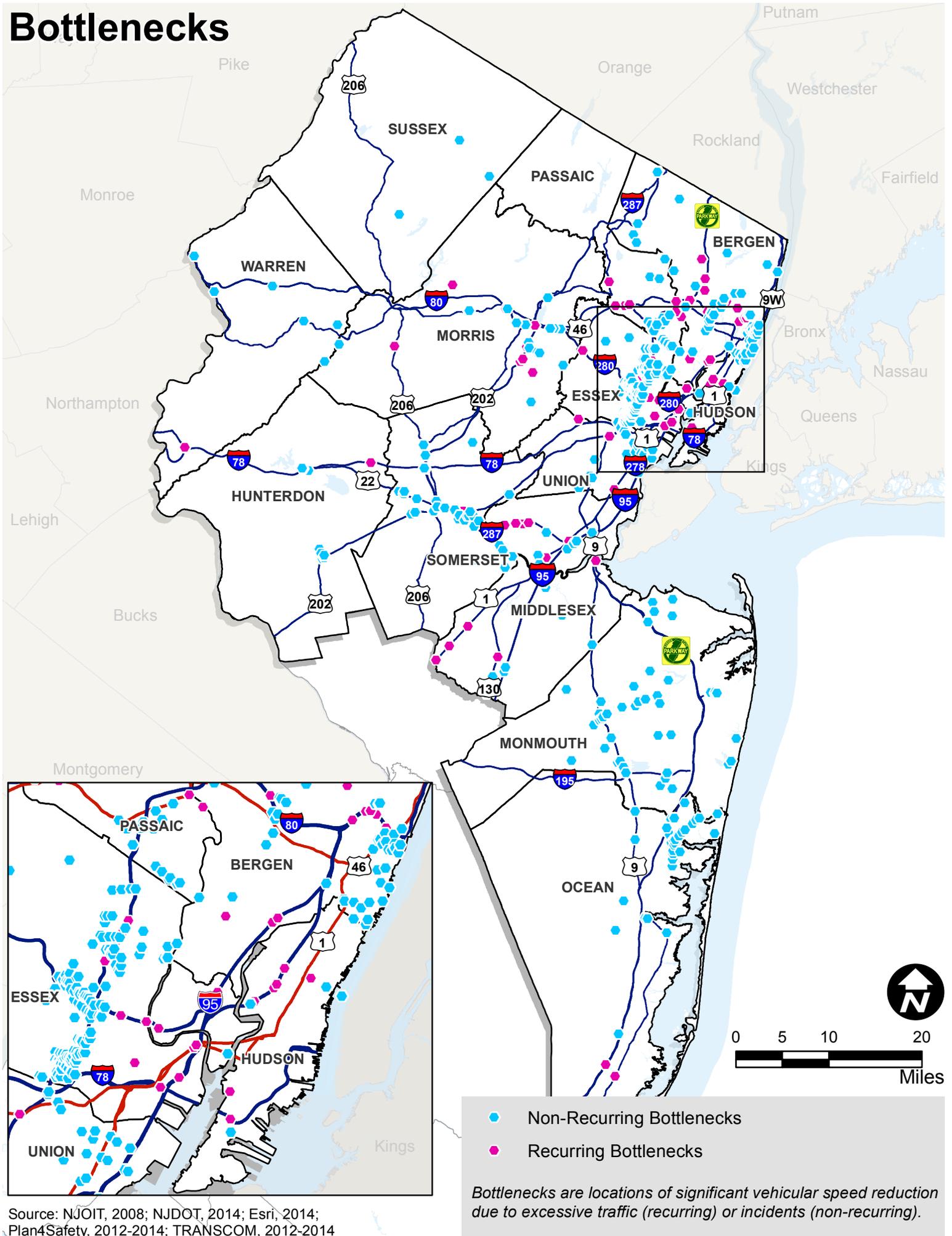


- To provide recommendations to address the unpredictable road segments and bottlenecks, additional input and/or verification of the local condition is required.

Unpredictable Road Segments

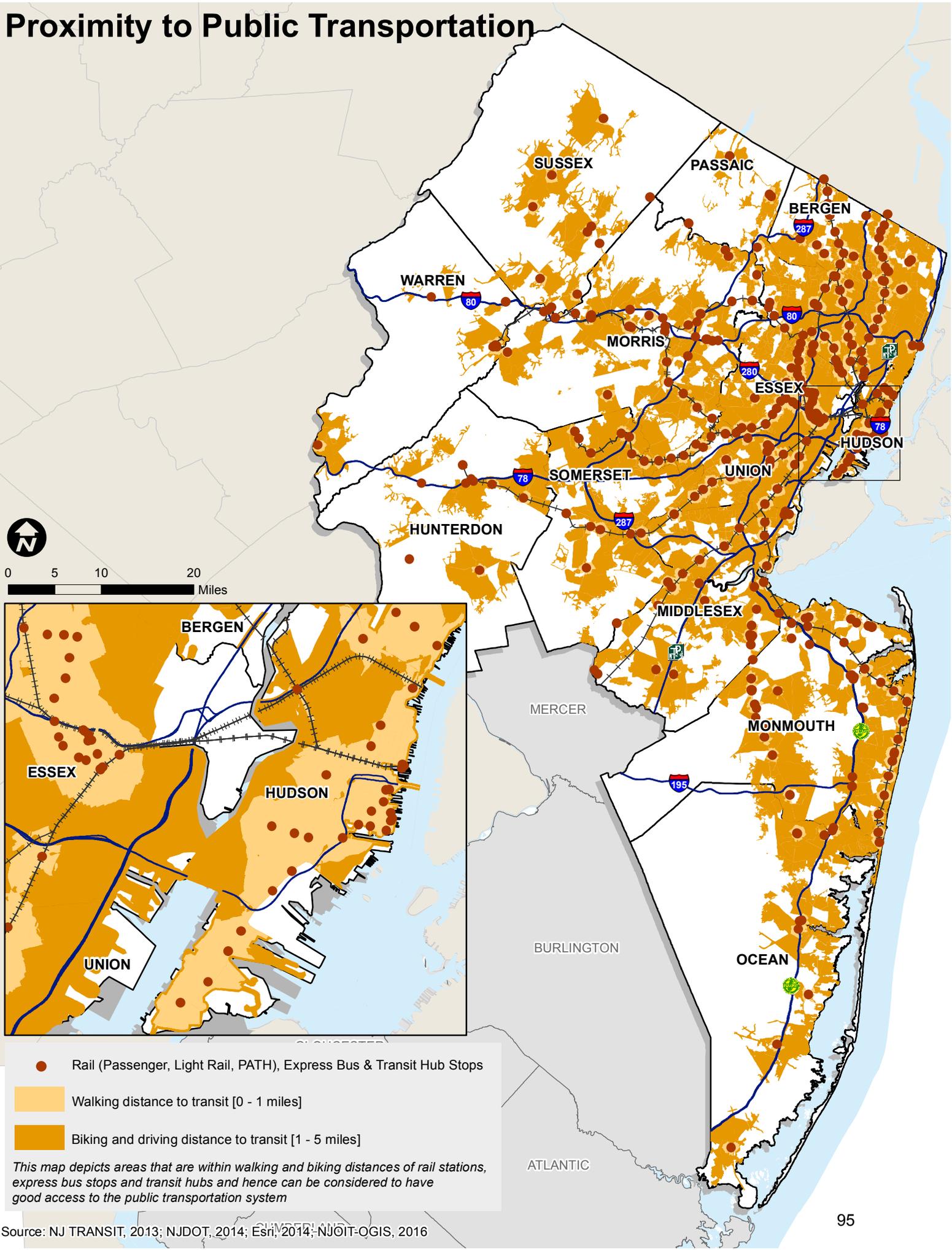


Bottlenecks

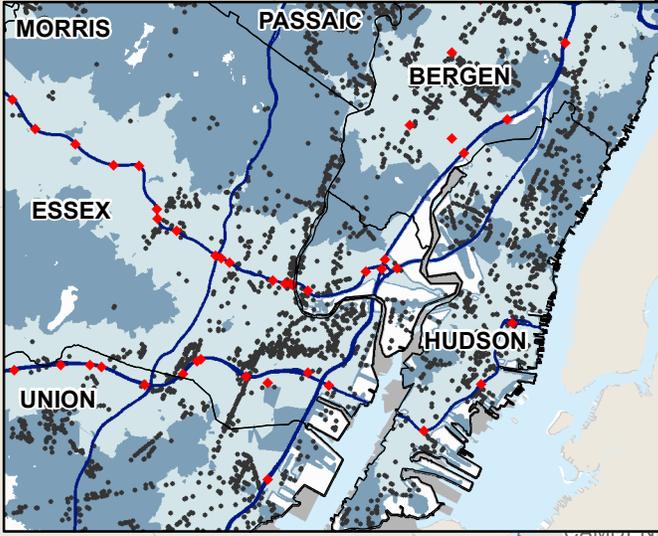
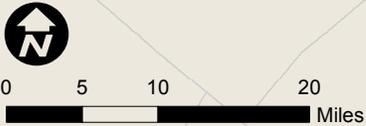
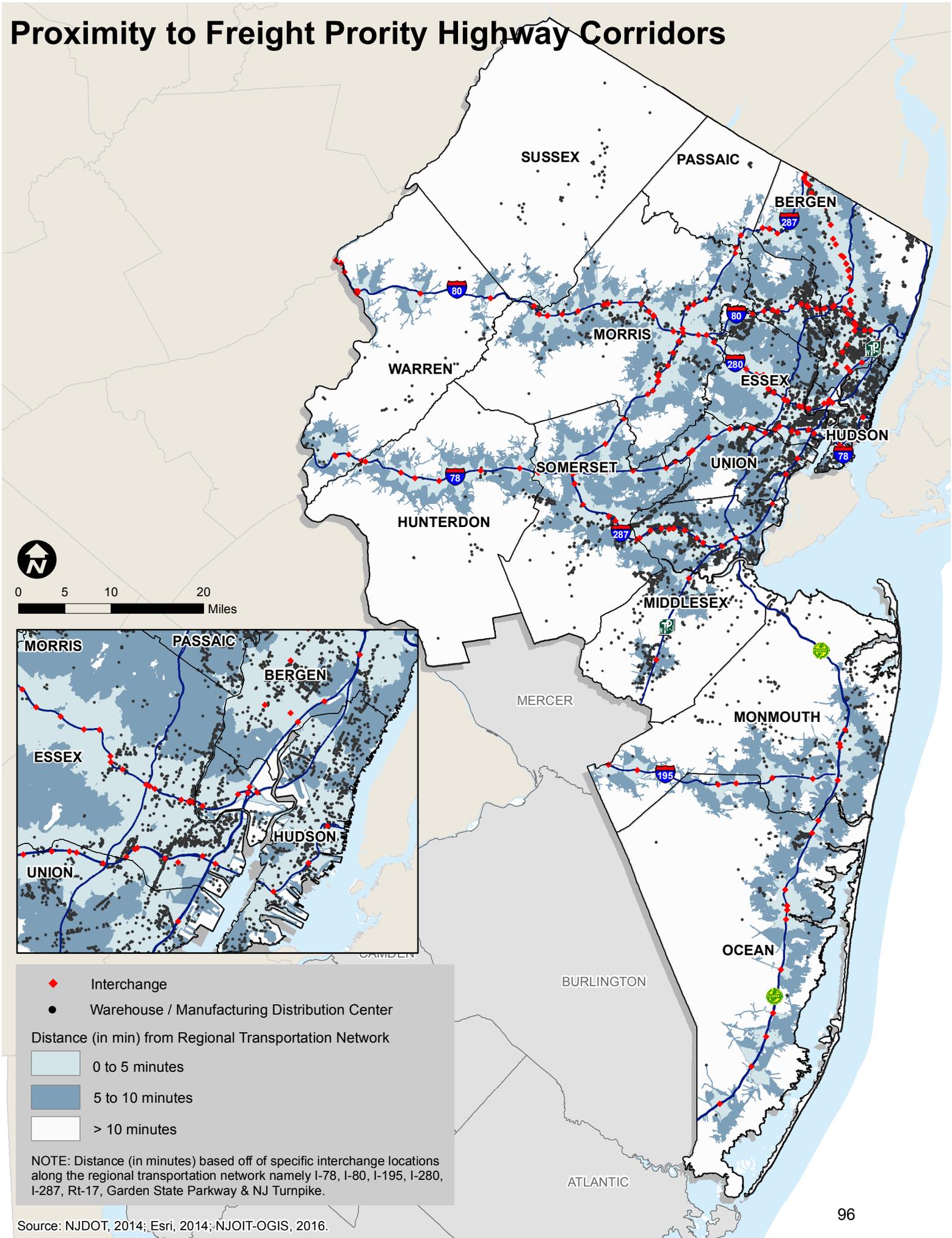


Source: NJOIT, 2008; NJDOT, 2014; Esri, 2014; Plan4Safety, 2012-2014; TRANSCOM, 2012-2014

Proximity to Public Transportation



Proximity to Freight Priority Highway Corridors



- ◆ Interchange
- Warehouse / Manufacturing Distribution Center

Distance (in min) from Regional Transportation Network

- 0 to 5 minutes
- 5 to 10 minutes
- > 10 minutes

NOTE: Distance (in minutes) based off of specific interchange locations along the regional transportation network namely I-78, I-80, I-195, I-280, I-287, Rt-17, Garden State Parkway & NJ Turnpike.

Source: NJDOT, 2014; Esri, 2014; NJOIT-OGIS, 2016.

ACCESS MANAGEMENT: Improve the location, spacing and design/operation of driveways, median openings and street connections and plan adjacent land uses.

CONGESTED AUTO ROUTE: Travel routes that include roadways with daily traffic congestion and delays primarily due to peak demand volumes.

CONGESTED AND UNRELIABLE AUTO ROUTE: Travel routes that include roadways that experience daily traffic congestion due to peak demand volume and frequent disruptions due to unexpected incidents such as crashes. Together, these result in unpredictable or variable travel times that severely inconvenience customers.

DIVERSION PLAN: Plans to re-route traffic during incident and construction events that impact roadway travel.

E-Z PASS EXPRESS LANES: Installation of more E-Z Pass Express Lanes to reduce the weaving of traffic at the toll both locations and improve the flow of traffic.

FEASIBLE TRANSIT ROUTE: Existing transit routes between origin and destination locations that offer travel times that are no more than three times that of auto travel times.

FEASIBLE AND COMPETITIVE TRANSIT ROUTE: Existing transit route(s) with travel times between origin and destination locations that are comparable to or faster than those of auto travel times.

INTERCHANGE/INTERSECTION IMPROVEMENTS: Improve design or flow of traffic at interchanges/intersections. These improvements may include ramp configurations, grade separation, signage applications etc.

ITS/ATM: Traffic operations improvements to improve traffic flow along a segment of the road. Examples of this kind of improvements are implementation of adaptive signalization and installation of variable electronic signs.

NEEDS: Challenges and/or opportunities that relate to the performance of the regional transportation system, a place, or an organizational process.

RECOMMENDATION: Study findings identifying preferred strategies and/or actions that can be applied to improve performance of the regional transportation system.

ROADWAY IMPROVEMENTS: Directly enhance and /or expand roadway operations facilities and/or capacities to improve roadway mobility.

TRANSIT SUPPORTIVE IMPROVEMENTS: Strategies that support increased efficiency of transit operations and/or improve the access to and movement of customers. These may include priority signals, queue jumps, lanes, etc. along congested roadways that reduce cycle times for transit vehicles and improve scheduled reliability and reduced travel times for customers; roadway, sidewalk, station and parking improvements that expand access to bus, rail and ferry stops, facilities and services; and programs that support ride-matching and shared vehicle use.