Accessibility & Mobility Strategy Synthesis: **Strategy Identification and Prioritization**

Prepared for the North Jersey Transportation Planning Authority

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with support by AECOM and FHI Studio

June 2021

NJTPA
NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

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1| INTRODUCTION

The North Jersey Transportation Planning Authority's (NJTPA) *Accessibility and Mobility Strategy Synthesis* study is updating the region's Congestion Management Process (CMP) to better characterize and communicate system performance regarding accessibility and mobility and to support decision making about practical strategies. This effort has involved the development of eight CMP objectives, along with associated performance measures, which have been used in combination with stakeholder input to identify needs and to assess locations with specific issues or needs. In addition, the study involved an assessment of equity challenges and needs to support the objective of equitable access to destinations.

This document takes the next step by focusing on **strategies** – solutions to problems – that address the identified accessibility and mobility needs, including efforts to support equity and to address the unique access and mobility challenges faced by disadvantaged population groups. Strategies represent potentially beneficial actions that the region may work to advance, through inclusion in the long-range transportation plan, through follow-up studies, or by funding projects or programs in the Transportation Improvement Program (TIP), or in other ongoing programs or activities. While the NJTPA will support and promote cost-effective and beneficial strategies through its own activities, many of the actions will involve implementation by partner agencies. As such, this document provides a framework for regional coordination to support strategies that will address the region's critical accessibility and mobility needs and support the overall Congestion Management Process (CMP) objectives.

This document includes the following components:

1. A **menu of possible strategies** to consider.
2. A recommended **process for identifying and prioritizing the strategies** to meet needs.
3. A **series of "strategy sheets"** that provide useful information on the strategies, including information on assessment factors to consider in prioritizing locations for strategy application, estimated impacts, equity considerations, example locations for consideration, related projects, and agencies with roles and responsibilities (see separate document).
4. A series of **analyses of several strategies**, using performance measures and data from the needs assessment **to help prioritize promising locations for these strategies**.

2| MENU OF POSSIBLE STRATEGIES

A starting point for developing solutions to accessibility and mobility challenges is to identify a full range of possible strategies to consider. This section identifies and categorizes strategies, making connections between strategies and the Regional Capital Investment Strategy (RCIS) and PRIME System. It also provides information on location for possible strategy implementation and prioritization.

Strategy Category	RCIS Investment Principle(s)	PRIME Category	CMP Strategy	Locations for Possible Strategy Implementation / Prioritization
Transit	Expand Public Transit Fix It First Help Northern New Jersey Grow Wisely Increase Regional Resiliency Manage Incidents and Apply Transportation Technology	Transit (expand, enhance, preserve)	**Transit-priority / Transit-supportive roads (TR-1)**: Transit signal priority, dedicated lanes, express service, bus rapid transit *Note: This strategy is related to arterial operations strategies (SM-1)*	**See CMP analysis in Section 5**.
			Improve bus stop infrastructure / amenities (TR-2): Stations, shelters, benches, schedules, real-time information, lighting	Support systemwide. Prioritize high ridership locations, areas with high numbers of disadvantaged / vulnerable populations.
			Support mobility-impaired accessibility (TR-3): ADA / accessibility improvements, paratransit / targeted service	Support systemwide. Prioritize areas with high numbers of disadvantaged / vulnerable populations.
			Add / improve first-mile/last-mile access (TR-4): Feeder shuttles (e.g., AV shuttles), improved ped-bike access, etc. *Note: This strategy is related to bike/ped strategies (PB-1, PB-2, PB-3, PB-4).*	**See CMP analysis in Section 5**.
			Fare, System Interconnectivity (TR-5): Improve coordination of scheduling, fares, and transfers; unified one-payment fare system	Support systemwide.

			Park-and-ride enhancement / expansion (TR-6): New facilities, expand capacity, enhance amenities at facilities (such as real-time parking availability information), enhance multimodal connections	Park-and-ride facilities over capacity (see Needs Assessment). Areas without facilities but with identified opportunities (see Needs Assessment) **First consider improving first-mile/last mile access and transit-oriented development before expanding parking capacity.**
			Expand / enhance bus service (TR-7): Increase service frequency, extend hours of operation, extend routes, add stops, add new routes, consider new service models	**See CMP analysis in Section 5**. See NJ Transit analysis.
			Expand / enhance rail service (TR-8): Add new tunnels, increase service frequency, extend lines, add stations, add new lines	Trans-Hudson travel. Other identified areas of demand. See NJ Transit plans.
			Expand / enhance ferry service (TR-9): Increase fleet, improve terminal facilities, improve multi-modal connections	Trans-Hudson travel. See NJ Transit plans and NJTPA Hudson Ferry Study.
			Transit preservation / resilience (TR-10): Improve asset condition, replace vehicles, address risks associated with extreme weather	Support systemwide. See transit agency Transit Asset Management Plans.

Pedestrian, Bicycle, & Micromobility	Support Walking and Bicycling	Pedestrian (expand, enhance, preserve)	**Sidewalks / pedestrian improvements (PB-1)**: Add/improve sidewalks, crosswalks, trails, safer street crossings, pedestrian countdown signals *Note: This strategy is related to complete streets (PB-3)*	Support systemwide. Prioritize locations with clusters of pedestrian crashes (see Needs Assessment), considering vulnerable populations (see Equity Analysis); areas around transit stations / bus stops; areas with high walkability potential, based on land use patterns / walkability index (see Needs Assessment); and based on local priorities. **See CMP analysis for Complete streets in Section 5**.
		Bicycle (expand, enhance, preserve)	**Bicycle facilities / improvements (PB-2)**: Add/improve bicycle routes, on-street bike lanes, lane markings, cycle tracks, trails, signage *Note: This strategy is related to complete streets (PB-3)*	Support systemwide. Prioritize locations with clusters of bicycle crashes (see Needs Assessment), considering vulnerable populations (see Equity Analysis); areas with few facilities with high bicycle level of comfort or to fill gaps in network (see Needs Assessment); and based on local priorities. **See CMP analysis for Complete streets in Section 5**.
		Road (enhance)	**Complete streets / safety measures (PB-3)**: Traffic calming and road diets, intersection improvements for pedestrians, pedestrian plazas, turning restrictions, protected lanes	**See CMP analysis for Complete streets in Section 5**.

			Micromobility options (PB-4): Bike share, electronic scooters, dockless bikes, etc., with supporting infrastructure *Note: This strategy is related to transit first-mile/last-mile access (TR-4) and parking/lane/curb management (SM-4)*	Prioritize to support access to transit and activity centers in areas with higher density (higher walkability index, transit score) (see Needs Assessment), and based on local priorities.
Travel Demand Management (TDM)	Help Northern New Jersey Grow Wisely	Shared Ride	**Employer-based TDM (DM-1):** Encourage telework, encourage ridesharing, vanpool assistance, commuter benefits ordinances, employer outreach	Support systemwide. Prioritize major employment centers and commute corridors. See regional TDM plan.
			Regional / local TDM programs and incentives (DM-2): Regional ridesharing, programs to encourage biking/walking, incentives for ridesharing or transit for special events, promotions, discounts/ rewards programs, mobility on demand	Support systemwide. Prioritize major employment centers and commute corridors. See regional TDM plan.
			Pricing strategies (DM-3): Peak hour road / bridge tolls, other road pricing, discounted transit fares, other transit pricing policies, parking pricing	Consider systemwide. Prioritize major activity centers and congested roadways.
Land Use	Help Northern New Jersey Grow Wisely Increase Regional Resiliency	Land Use	**Land use / urban design / transit-supportive development (LU)**: Municipal planning and zoning that enables high-density mixed use development, municipal redevelopment planning, transit villages	Support systemwide. Prioritize locations near rail stations, consistent with community plans. See Together North Jersey plan
Transportation systems management & operations (TSMO)	Manage Incidents and Apply Transportation Technology	ITS and Incident Management	**Arterial operations (SM-1)**: Traffic signal improvements, signal coordination and optimization, active traffic management, adjustable lanes	**See CMP analysis in Section 5**. See ITS architecture plan.

			Freeway operations / regional system management (SM-2): Traffic incident management (quicker clearance), work zone management, special events management, ramp control, dynamic junction control, lane control, shoulder use, variable / dynamic speed limits, queue warning, real-time information	**See CMP analysis in Section 5**. See Connected Corridor / ITS architecture plan.
			Traveler information / trip planning (SM-3): Web-based real-time information for all modes, variable message signs, construction project information	Support systemwide. See Connected Corridor / ITS architecture plan.
			Parking / lane / curb management (SM-4): Parking management approaches, flex lanes, mobility hubs, in-street dining and markets, and other strategies that support shared rides, transit, micromobility, and freight deliveries	Prioritize to support activity centers in areas with higher density (higher walkability index, transit score) (see Needs Assessment); areas with micro-mobility options; and based on local priorities.
Road capacity / resilience	Improve Roads but Add Few Fix It First Increase Regional Resiliency	Road (expand, enhance)	**Road geometry improvements (RC-1)**: Bottleneck removal, lane reconfiguration, clearance widening, interchange changes, intersections/ turning lanes, other geometry	**See CMP analysis in Section 5**. See NJDOT-identified congested places.
			Managed lanes (RC-2): High-occupancy vehicle lanes, high occupancy toll lanes, reversible / adjustable lanes	**See CMP analysis in Section 5** related to buses. Consider feasibility in locations with roadway bottlenecks and poor travel time reliability, including congested bus and freight corridors (see Needs Assessment).

			New road capacity (RC-3): New road connections, add lanes, widen lanes	**Last resort – to consider only if travel demand management, alternate mode, operations or geometric improvement solutions are insufficient. Consider managed lane capacity before general capacity.** **CMP compliance location review required.** Must include complementary operations/demand management strategies.
		Bridge (new)	**Expand bridge, new bridge (RC-4):** New bridge connections, widen bridge / add lanes	**Last resort – to consider on bridges only if travel demand management, alternate mode, and operational solutions are insufficient. Consider managed lane capacity before general capacity.** **CMP compliance location review.** Must include complementary operations/demand management strategies.
	Fix It First	Road, Bridge (preserve)	**Road and bridge preservation / resilience (RC-5):** New bridges with higher vertical profiles and improved design, raised roadway profiles, increased pavement overlay thickness, maintenance activity	Support systemwide. See Transportation Asset Management Plan.
			Reduce or remove highway capacity / barriers (RC-6): Remove highway, convert highway to urban boulevard, tunnel the highway, cap the highway, reduce number of lanes	Consider in locations with past highway impacts to disadvantaged communities and opportunities to enhance local connectivity; consider as alternative to preservation projects

Freight	Move Freight More Efficiently	Dedicated Freight	**First-mile/last-mile truck access (FR-1):** Planning and zoning regarding locations of centers, designated truck routes, address geometric deficiencies (e.g., low clearances, tight turns)	Prioritize warehouse locations and areas not in immediate vicinity of interstate. See New Jersey Freight Plan.
			Rail freight (FR-2): Add rail capacity, improve system connections, address weight/clearance issues	Prioritize along routes that are congested and have poor reliability, and where existing rail exists. See New Jersey Freight Plan.
			Freight operations / Off-hours delivery (FR-3): Off-hours delivery programs, freight lockers, urban distribution	Prioritize in the most congested areas. See New Jersey Freight Plan.
Direct Safety	**Make Travel Safer**	Direct Safety	**Safety countermeasures (S):** Design improvements at curves and intersections, medians, enforcement, education	Support systemwide, all modes Reference SHSP priorities

3| RECOMMENDED PROCESS FOR IDENTIFYING AND PRIORITIZING STRATEGIES

This section provides a high-level concept for how to identify and prioritize strategies, which may be advanced by the NJTPA and/or partner agency implementers. The recommended strategy selection and prioritization approach draws on both analytical elements, building on the data-driven assessment of performance measures, as well as policy elements, drawing on the NJTPA's Regional Capital Investment Strategy (RCIS) and broader planning framework.

Key Steps for Prioritizing Strategies

Recommended steps in this process, which build the results of the Needs Assessment (which identified needs based on data-driven analyses of CMP performance measures and stakeholder input), include:

1) **Identify strategies that address each type of need or performance issues:** Use the matrices that match needs to strategies (in the following section) as a basis to identify the full array of strategies that could be implemented to address needs. The matrix highlights that needs often may be addressed by multiple strategies.

2) **Prioritize strategies broadly that**:

   a. Address multiple needs or issues – for instance, core trans-Hudson capacity rail improvements address various needs, including transit crowding and reliability;
   b. Support the RCIS, with a focus first on transit, bicycle/ped, and land use, as well as system management and operations prior to capacity increases; and
   c. Support equitable access and mobility, taking into account challenges facing vulnerable populations that may have few options.

3) **Prioritize locations for strategy application**, considering factors that include:
   a. Key locations with identified poor performance in relation to CMP performance measures or to fill gaps in the network (data-driven analysis);
   b. Relative number of people affected and/or criticality to freight;
   c. Locations that serve vulnerable populations and support challenges facing vulnerable populations (data-driven analysis); and
   d. Local input and stakeholder identified concerns.

4) Beyond the scope of this study: **Conduct additional analyses or studies to further assess and refine solutions within corridors and subareas** for specific accessibility and mobility needs. These may be in the form of corridor studies, local area studies, or specialized studies (e.g., transit service studies, freight studies), accounting for factors such as:
   a. Viability of strategies, particularly transit and infrastructure solutions, based on benefit-cost of individual strategies/treatments (including addressing co-benefits);
   b. Resiliency of strategies and consideration related to uncertainty (including climate change impacts, as well as other disruptions to the transportation system); and
   c. Local stakeholder and public input.

Matching Needs to Potential Strategies

Potential Strategies to Address Needs for Regional Mobility, including Mobility to/from Urban Areas and New York City

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	**Pedestrian, Bike, & Micromobility**	**Travel Demand Management**	**Land Use**	**TSMO**	**Road Capacity / Resilience & Safety**
Trans-Hudson Transit Capacity	• Hudson River rail crossings and bridges/ tunnels	• Advance Northeast Corridor (NEC) capacity improvements (TR-8) • Expand / enhance ferry service (TR-9)				• Traveler information/ trip planning (SM-3)	• Managed lanes (HOV/HOT lanes) (RC-2)
Transit Crowding	• Platforms at Journal Square and Grove Street • Raritan Valley Line • NE Corridor / Metropark • Along main commuter bus routes, including trans-Hudson routes	*Build on Trans-Hudson transit capacity strategies listed above* • Expand / enhance bus service frequency (TR--7) • Expand / enhance rail service (TR-8) • Transit priority (dedicated bus lanes, transit signal priority) (TR-1)	• Micromobility options (to substitute for short transit trips) (PB-4)	• Employer-based TDM (advance telework) (DM-1) • Regional/local TDM programs and incentives (rideshare support, seasonal promotions, efforts to shift travel times) (DM-2)	• More housing near urban employment centers / live near work (LU)	• Traveler information/ trip planning (SM-3)	

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	**Pedestrian, Bike, & Micromobility**	**Travel Demand Management**	**Land Use**	**TSMO**	**Road Capacity / Resilience & Safety**
Bottlenecks and Unreliable Highways/ Major Roadways	• Tunnels and bridges accessing NYC • Garden State Parkway • NJ-17 South toward I-80 • I-95/New Jersey Turnpike into Newark • I-287 into Edison	*Transit strategies listed above and below (to help shift travelers to transit)* • Park-and-ride enhancement / expansion (TR-6)		*TDM strategies listed above (to reduce vehicle trips)* • Pricing strategies (peak hour tolls, other road pricing, parking pricing) (DM--3)	• More housing near urban employment centers / live near work (LU) • Transit-oriented development (to move more trips to transit) (LU)	• Freeway operations/ regional system management (Dynamic shoulder use, adjustable lanes, active traffic mgmt., incident mgmt., work zone mgmt., special events mgmt., congestion pricing) (SM-2) • Traveler information/ trip planning (SM-3)	• Targeted bottleneck improvements (interchange improvements, intersection improvements) (RC-1) • Managed lanes (HOV/HOT lanes) (RC-2) • New road capacity (widen/add lanes, new road connections) (RC--3) • Expand bridge, new bridge (RC-4) • Road and bridge preservation / resilience (RC-5) • Safety counter-measures (S)

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	**Pedestrian, Bike, & Micromobility**	**Travel Demand Management**	**Land Use**	**TSMO**	**Road Capacity / Resilience & Safety**
Transit Reliability Issues	• NJ TRANSIT buses to NYC (130, 136, 128, 161, 111, 138, 193, 190, 117, 132) • NJ TRANSIT regional buses (63, 68, 64, 59)	• Transit priority (dedicated bus lanes, bus rapid transit) (TR-1) • Transit preservation / resilience (improve facility condition, rehab tracks/ bridges / rolling stock) (TR-10)				• Arterial operations (dedicated bus lanes, transit signal priority) (SM-1) • Freeway operations/ regional system management (Dynamic shoulder use, adjustable lanes, active traffic mgmt., incident mgmt., work zone mgmt., special events mgmt., congestion pricing) (SM-2) • Traveler information/ trip planning (SM-3)	• Managed lanes (HOV/HOT lanes) (RC-2)
Long and Uncompetitive Transit Travel Times from Some Areas	• Marlboro, Fort Lee, Nutley, Metuchen, Summit, Montclair • Northeastern Bergen County to NYC • Englewood to Newark • From Outer suburbs to NYC / Newark	• Transit priority (dedicated bus lanes, bus rapid transit) (TR-1) • Expand / enhance bus service (revised bus routes for more direct connections, express bus services, more frequent service) (TR-7) • Express trains (TR-8)				• Traveler information/ trip planning (SM-3)	

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	**Pedestrian, Bike, & Micromobility**	**Travel Demand Management**	**Land Use**	**TSMO**	**Road Capacity / Resilience & Safety**
Reverse Commute Challenges, as well as Off-peak Travel Challenges	• Newark to Western Essex County • Jersey City to New Brunswick	• Expand / enhance bus service (new/revised bus routes, increase frequency of service, increase hours of service, targeted reverse commute services) (TR-7) • First-mile/last-mile connections (including specialized shared ride services or subsidies to support on-demand ride services) (TR-4)	*Variety of bicycle/pedestrian improvements to transit (see location-specific sections below)*	• Employer-based TDM (shuttles, vanpool assistance) (DM-1)			
Lack of Connectivity between Transportation Service Payment Systems	Across region	• Fare, system interconnectivity (Revise fare / transfer policies, universal fares, lower fares, unified mobility platform, improve connections between systems) (TR-5)				• Traveler information / trip planning (SM-3) • Parking / lane / curb management (SM-4)	
Difficulties in Accessing Travel Information *(from Equity Assessment)*	Regionwide, particularly for LEP populations and seniors without access to smartphones (see Equity Assessment Report maps for locations)					• Trip planning support / traveler information (bilingual transit traveler information) (SM-3)	

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	**Pedestrian, Bike, & Micromobility**	**Travel Demand Management**	**Land Use**	**TSMO**	**Road Capacity / Resilience & Safety**
Affordability *(from Equity Assessment)*	Regionwide, particularly for low-income populations (see Equity Assessment Report maps for locations)	• First-mile/last-mile connections (TR-4) • Fare, system interconnectivity (TR-5) • Park-and-ride enhancement / expansion (TR-6) • Expand/enhance bus service (Increase service, add express service) (TR-7)	• Sidewalks / pedestrian improvements (crosswalks, trails) (PB-1) • Bicycle facilities / improvements (Bike routes, bike lanes, trails, completion of gaps in network, protected intersections) (PB-2) • Complete streets (road diets, traffic calming) (PB-3) • Discounted membership for bike share, scooter and other micromobility services (DM-3)	• Employer-based TDM (commuter benefits programs, vanpool support) (DM-1) • Regional / local TDM programs and incentives (DM-2) • Discounted transit fares (DM-3)	• Land use policies to encourage mixed use, density, and affordable housing near existing public transit locations (LU)		

Potential Strategies to Address Needs within Urban Areas

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	**Pedestrian, Bike & Micromobility**	**Travel Demand Management**	**Land Use**	**TSMO**	**Road Capacity / Resilience & Safety**
Pedestrian Safety/ Infrastructure Needs	• Market St. / Broad St. area of downtown Newark • Bloomfield Ave. in Newark through Bloomfield, Glen Ridge, and Montclair • JFK Blvd. and Bergenline Ave. • New Brunswick Ave. in Perth Amboy	• First-mile/last-mile connections (Enhance multi-modal station access) (TR-4)	• Sidewalks / pedestrian improvements (crosswalks, trails) (PB-1) • Complete streets (road diets, traffic calming) (PB-3)	• Regional/local TDM programs to encourage biking/walking (DM-2)	• Adopt local plans and ordinances that incorporate design features conducive to transit and bike-ped. (LU)	• Arterial operations (Leading pedestrian intervals, bus bulbs on high-frequency bus routes) (SM-1) • Reduce or remove highway capacity / barriers (RC-6)	• Reduce or remove highway capacity / barriers (RC-6) • Safety countermeasures (speed reduction, enforcement, education) (S)
Bicycle Safety/ Infrastructure Needs	• Newark • Hackensack, along Prospect Street, Essex Street, Polifly Road and Summit Avenue. • Palisades Avenue and Anderson Avenue in Cliffside Park and Fort Lee.	• First-mile/last-mile connections (Enhance multi-modal station access) (TR-4)	• Bicycle facilities / improvements (Bike routes, bike lanes, trails, completion of gaps in network, protected intersections) (PB-2) • Micromobility options (bike sharing) (PB-4) • Complete streets (road diets, traffic calming) (PB-3)	• Employer-based programs and facilities (bike parking, showers) (DM-1) • Regional/local TDM programs to encourage biking/walking (DM--2)	• Adopt local plans and ordinances that incorporate design features conducive to transit and bike-ped. (LU)	• Arterial operations (Bicycle actuated signals) (SM-1) • Reduce or remove highway capacity / barriers (RC-6)	• Reduce or remove highway capacity / barriers (RC-6) • Safety countermeasures (speed reduction, enforcement, education) (S)
Overcrowded and Unreliable Bus Transit	• Routes serving Journal Sq. Transportation Center • Routes along major Newark corridors including Broad Street, Market Street, and Raymond Boulevard.	• Transit priority (dedicated bus lanes, transit signal priority) (TR-1) • Expand/enhance bus service (Increase service, add express service) (TR-7)	• Micromobility options (bike share and other options to substitute for short transit trips) (PB-4)	• Employer-based TDM (advance telework) (DM-1) • Regional / local TDM programs and incentives (rideshare support) (DM-2)	• More housing near urban employment centers / live near work (LU)	• Arterial operations (Dedicated bus lanes, transit signal priority, bus bulbs) (SM-1)	

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	**Pedestrian, Bike & Micromobility**	**Travel Demand Management**	**Land Use**	**TSMO**	**Road Capacity / Resilience & Safety**
Congested and Unreliable Major Roadways	• Locations along NJ-21 south of downtown Newark • Broad St., Newark • NJ-139, Paterson Plank Rd, and NJ-440 in Jersey City • Along NJ-495/NJ-3 in Secaucus, North Bergen, Union City, Weehawken • Along CR-675/Willow Avenue in Hoboken	*Transit strategies listed above (to help shift travelers to transit)* • Park-and-ride enhancement / expansion (TR-6)		• Employer-based TDM (advance telework, vanpools) (DM-1) • Regional / local TDM programs and incentives (rideshare support, seasonal promotions, targeted shuttle services) (DM-2) • Pricing strategies (peak hour tolls, other road pricing, parking pricing) (DM-3)	• More housing near urban employment centers / live near work (LU) • Transit-oriented development (to move more trips to transit) (LU)	• Arterial operations (traffic signal coordination, active traffic management) (SM-1) • Freeway operations / regional system management (traffic mgmt., incident mgmt., work zone mgmt., special events mgmt.) (SM--2) • Traveler information / trip planning (SM-3)	• Roadway geometry (lane reconfiguration, interchange modifications) (RC-1) • Managed lanes (HOV / HOT lanes) (RC-2) • New road capacity (RC--3) • Expand bridge, new bridge (RC-4) • Road and bridge preservation / resilience (RC-5) • Implement safety countermeasures (S)
Need for Supportive Transit Infrastructure, such as Bus Shelters and Benches	• Need for bus shelters in South Kearny	• Transit priority (dedicated bus lanes, transit signal priority) (TR-1) • Improve bus stop infrastructure/amenities (Add / improve stops, shelters, benches, schedules, real-time info, lighting) (TR-2) • Support mobility-impaired accessibility (ADA accessibility improvements) (TR-3)				• Traveler information / trip planning (SM-3)	

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	Pedestrian, Bike & Micromobility	Travel Demand Management	Land Use	TSMO	Road Capacity / Resilience & Safety
Opportunities for Micro-mobility Options	• Newark, Jersey City, and Hoboken		• Micromobility options (bike sharing, scooters) (PB-4)			• Parking / lane / curb management (SM-4)	

Potential Strategies to Address Needs within Suburban Areas

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	Pedestrian, Bike & Micromobility	Travel Demand Management	Land Use	TSMO	Road Capacity / Resilience & Safety
Limited Alternatives to Driving, Particularly for Suburb-to-Suburb Travel and Off-peak Travel	• Ocean, Morris, Essex, Somerset, and Monmouth Counties • Pompton Lakes Borough • Freehold Borough • Montclair to Hackensack-Paramus • Sayreville to Asbury Park • Access to Middlesex County suburban destinations and employment centers	• First-mile/last-mile connections (TR-4) • Expand/enhance bus service (New/revised bus routes, add new routes, increase service frequency, targeted reverse commute services, consider new service models, specialized or dynamic reverse commute services) (TR-7)			• Adopt local plans and ordinances that support transit-oriented development and design in suburban areas (supportive policy) (LU)		

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	**Pedestrian, Bike & Micromobility**	**Travel Demand Management**	**Land Use**	**TSMO**	**Road Capacity / Resilience & Safety**
Park-and-Ride Capacity Constraints	• 20 locations (outside Hudson County) at or over capacity	• First-mile/last-mile connections (Increase or add shuttle feeder service to reduce demand for parking) (TR-4) • Park-and-ride enhancement/ expansion (Increase park-and-ride capacity of current locations, add new locations) (TR-6)	• Sidewalks/pedestrian improvements to transit (PB-1) • Bicycle facilities / improvements to connect to transit (PB-2) • Micromobility options (PB-4) *All these strategies support first-mile/last-mile connections*	• Employer-based programs and facilities (bike parking, showers) (DM-1) • Regional/local TDM programs to encourage biking/walking (DM-2) • Changes in pricing policies for park-and-ride (DM-3)	• Adopt local plans and ordinances that support transit-oriented development and incorporate design features conducive to transit access by bike-ped. (LU)		
First-mile, Last-mile Challenges in Accessing Transit	• Near Rutgers U. New Brunswick/Piscataway Campuses • Freehold area bicycle access • Downtown Morristown • Along NJ-27 and NJ-28 in Somerset County	• First-mile/last-mile connections (Enhance multi-modal access / connections to stations and stops, increase or add shuttle feeder service) (TR-4) • Support mobility-impaired accessibility (ADA accessibility improvements) (TR-3)	• Sidewalks / pedestrian improvements (crosswalks, trails connecting to transit) (PB-1) • Bicycle facilities / improvements (bike routes, bike lanes, trails connecting to transit) (PB-2) • Micromobility options (bike sharing at transit stations and activity centers / neighborhoods) (PB-4)	• Employer-based programs and facilities (bike parking, showers) (DM-1) • Regional/local TDM programs to encourage biking/walking (DM-2)	• Adopt local plans and ordinances that support transit-oriented development and incorporate design features conducive to transit access by bike-ped. (LU)		

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	**Pedestrian, Bike & Micromobility**	**Travel Demand Management**	**Land Use**	**TSMO**	**Road Capacity / Resilience & Safety**
Pedestrian & Bicycle Safety and Infrastructure	• Near Rutgers U. New Brunswick/Piscataway Campuses • Freehold area bicycle access • Downtown Morristown • Along NJ-27 and NJ-28 in Somerset County		• Sidewalks / pedestrian improvements (crosswalks, trails) (PB-1) • Bicycle facilities / improvements (bike routes, bike lanes, trails, completion of gaps in network) (PB--2) • Complete streets (traffic calming, road diets) (PB--3) • Micromobility options (bike sharing) (PB-4)	• Employer-based programs and facilities (bike parking, showers) (DM-1) • Regional/local TDM programs to encourage biking/walking (DM-2)	• Adopt local plans and ordinances that incorporate design features conducive to bike-ped. (LU)		• Reduce or remove highway capacity / barriers (RC-6) • Safety countermeasures (speed reduction, enforcement, education) (S)
Congested and Unreliable Major Roadways	• I-287, several locations • I-80 between Parsippany and Roxbury • NJ-10 in Morris Plains/Hanover/Parsippany • NJ-208 from Midland Park to Fairlawn • Near American Dream • NJ-18 in North Brunswick and East Brunswick	*Transit strategies listed above (to help shift travelers to transit)* • Park-and-ride enhancement / expansion (TR-6)		• Employer-based TDM (advance telework, vanpools, commuter benefits) (DM-1) • Regional / local TDM programs and incentives (rideshare support, seasonal promotions, targeted shuttles) (DM-2) • Pricing strategies (peak hour tolls, other road pricing, parking pricing) (DM-3)	• More housing near urban employment centers / live near work (LU)	• Arterial operations (SM-1) • Freeway operations / regional system management (SM--2) • Traveler information / trip planning (SM-3)	• Roadway geometry (lane reconfiguration, interchange modifications) (RC-1) • Managed lanes (HOV/HOT lanes) (RC-2) • New road capacity (RC-3) • Expand bridge, new bridge (RC-4) • Road and bridge preservation / resilience (RC-5) • Implement safety countermeasures (to reduce crashes causing delay) (S)

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	Pedestrian, Bike & Micromobility	Travel Demand Management	Land Use	TSMO	Road Capacity / Resilience & Safety
Opportunities to Reduce Single-Occupant Vehicle Travel through Transit-oriented Development and Other Strategies	• Roxbury Township, Wharton Borough, Denville Township, Hanover Township, Lincoln Park and North Caldwell Boroughs (Morristown and Montclair-Boonton Lines); • Raritan Borough, Bridgewater Township, and Kenilworth Borough (Raritan Valley Line); • Clark Township and South Plainfield Borough (between the Raritan Valley Line and Northeast Corridor); • Waldwick and Elmwood Park Boroughs and Saddle Brook Borough (Bergen County Line); and • Hazlet Township, Union Beach Borough, Shrewsbury Borough, West Long Branch Borough, Ocean Township, Neptune City Borough, and Brielle and Point Pleasant Boroughs (North Jersey Coast Line).			• Employer-based TDM (telework, ridesharing, vanpools, shuttles, commuter benefits, parking cash-out) (DM-1) • Regional / local TDM programs and incentives (rideshare support, seasonal promotions, targeted shuttles) (DM-2)	• Coordinated transportation and land use planning (LU) • High-density mixed use development, transit-oriented development, transit villages. (LU) • Adopt local plans and ordinances that incorporate design features conducive to transit and bike-ped. (LU)		
Need for Supportive Transit Infrastructure, such as Bus Shelters and Benches	Across bus routes broadly	• Improve bus stop infrastructure/ amenities (Add / improve stops, shelters, benches, schedules, real-time info, lighting) (TR-2) • Support mobility-impaired accessibility (ADA accessibility improvements) (TR--3)					

Potential Strategies to Address Needs between / within Rural Areas

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	**Pedestrian, Bike & Micromobility**	**Travel Demand Management**	**Land Use**	**TSMO**	**Road Capacity / Resilience & Safety**
Targeted Transit Needs and Opportunities	• Andover • Hackettstown • Flemington • Areas with high share of vulnerable populations without access to frequent transit – for instance, Belvidere (Warren), Hamburg (Sussex), and Raritan Twp. (Hunterdon). • Rural areas with relatively high vulnerable populations with limited or no job access by transit: Franklin (Sussex), Manchester Township and Stafford Township (Ocean County)	• Expand/enhance bus service (Extend current routes / add new routes, increase service frequency, consider new service models, specialized or dynamic reverse commute services) (TR-7) • Support mobility-impaired accessibility (ADA accessibility improvements) (TR-3)			• Coordinated transportation and land use planning to support sustainable transit ridership (LU)		

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	**Pedestrian, Bike & Micromobility**	**Travel Demand Management**	**Land Use**	**TSMO**	**Road Capacity / Resilience & Safety**
Park-and-Ride Availability	Need to assess viability	• First-mile/last-mile connections (including specialized share ride services or subsidies to support on-demand ride services) (TR-4) • Park-and-ride enhancement / expansion (Increase capacity of current locations, add new locations) (TR-6) • Expand/enhance bus service (Extend current routes / add new routes, increase service frequency, consider new service models, specialized or dynamic reverse commute services) (TR-7)					
Pedestrian & Bicycle Safety and Infrastructure	• Sussex County: Newton and Sparta • Warren County: Philipsburg/Alpha area and along NJ-57 • Hunterdon County: Flemington downtown to nearby NJ-31 corridor		• Sidewalks / pedestrian improvements (crosswalks, trails) (PB--1) • Bicycle facilities / improvements (Bike routes, bike lanes, trails, bike sharing) (PB-2) • Complete streets (Striping, signage) (PB-3)	• Employer-based programs and facilities (bike parking, showers) (DM-1) • Regional/local TDM programs to encourage biking/walking (DM-2)	• Adopt local plans and ordinances that incorporate design features conducive to transit and bike-ped. (LU)		• Road diets / traffic calming / speed reduction (S) • Enforcement, education (S)

Needs	Sample Locations with Identified Needs	Strategies					
		Public Transit	**Pedestrian, Bike & Micromobility**	**Travel Demand Management**	**Land Use**	**TSMO**	**Road Capacity / Resilience & Safety**
Roadway Reliability and Safety Issues	• Sussex County: NJ-15 in Sparta and Lafayette Townships • Warren County: NJ-57, US-22 • Hunterdon County: NJ-31, NJ-173, and CR-626 intersection; NJ-31 north of the Flemington Circle	• Park-and-ride enhancement / expansion (Increase capacity of current locations, add new locations) (TR-6)		• Employer-based TDM (advance telework, vanpools) (DM-1) • Regional/local TDM programs and incentives (rideshare support, seasonal promotions, targeted shuttles) (DM-2)	More housing near employment centers / live near work (LU)	• Arterial operations (SM-1) • Freeway operations and regional system management (incident mgmt., work zone mgmt., special events mgmt., etc.) (SM-2) • Real-time traveler information (SM--3)	• Roadway geometry (lane reconfiguration, interchange modifications) (RC-1) • New road capacity (RC--3) • Expand bridge, new bridge (RC-4) • Road and bridge preservation / resilience (RC-5) • Implement safety countermeasures (to reduce crashes causing delay) (S)

Potential Strategies to Address Freight Transport Needs

Needs	Sample Locations with Identified Needs	Strategies				
		TDM	Land Use	TSMO	Freight	Road Capacity / Resilience & Safety
Interstate Truck Reliability Issues	• New Jersey Turnpike (I-95) and I-78/New Jersey Turnpike Extension • I-287 across region • I-80 in Morris, Passaic, and Bergen Counties • I-78 in Hunterdon County west of I-287	• Pricing strategies (peak hour tolls) (DM-3)		• Arterial operations (traffic signal coordination, active traffic management) (SM-1) • Freeway operations and regional system management (incident mgmt., work zone mgmt., special events mgmt.) (SM-2) • Real-time traveler information (SM-3)	• First-mile/last-mile truck access improvements (FR-1) • Rail freight (FR-2) • Freight operations / off-hours delivery (FR-3)	• Roadway geometry (lane reconfiguration, interchange modifications) (RC-1) • Managed lanes (RC-2) • New road capacity (RC-3) • Expand bridge, new bridge (RC-4) • Road and bridge preservation / resilience (RC-5) • Implement safety countermeasures (to reduce crashes causing delay) (S)
Congested Freight Corridors	• Primary and Non-Primary Freight System: Sections of I-80 (Bergen, Passaic, Essex, Morris), I-287 in Morris and Somerset counties, I-95 in Hudson, Union and Middlesex counties, I-78 in Hudson and Essex counties. • Critical Urban Freight Connectors: RT-495 in Hudson county, River Ave in Ocean county, NJ 35 in Monmouth county, US-130 and US-1 in Middlesex county, US-206 in Somerset county. • Critical Rural Freight Connectors: US-206 in Sussex county, RT-122 in Warren Co.			*Same as above*	*Same as above*	*Same as above*
Truck Access to Warehouses and Distribution Centers	• Close to I-95 in rural Middlesex county • North of I-195 in Monmouth Co. • Sussex county • Between I-80 and I-78 in Warren county • South of I-78 in Hunterdon Co.		Seek to locate centers near major highways (LU)	• Arterial operations (traffic signal coordination, active traffic management) (SM-1)	• First-mile/last-mile truck access improvements (FR-1)	• Roadway geometry (improve local roadway access) (RC-1) • Managed lanes (RC-2) • New road capacity (RC-3)

Needs	Sample Locations with Identified Needs	Strategies				
		TDM	Land Use	TSMO	Freight	Road Capacity / Resilience & Safety
Rail Capacity Needs	• HX Corridor • Raritan Valley Corridor • Amboy Corridor • Coast Line Corridor • Morris/Warren Corridor • Black River & Western Corridor • Northeast Corridor				• Rail freight (Address weight / clearance issues, Improve track and bridge conditions, Upgrade / add sidings, Provide grade crossing / safety improvements) (FR-2)	

4| ANALYSES OF STRATEGIES: PRIORITIZING LOCATIONS TO CONSIDER

Using the system performance data collected as part of the Needs Assessment, analysis was conducted to identify and prioritize potential locations for implementation of the following types of strategies:

- Transit priority / transit-supportive roads (TR-1) and managed lanes (RC-2)
- First-mile / last-mile connections (TR-4)
- Expand / enhance bus service (TR-7)
- Complete streets (PB-3); also areas to consider for sidewalks / pedestrian improvements (PB-1) and bicycle facilities / improvements (PB-2)
- Land use / transit-oriented development (LU)
- Arterial operations, freeway operations, and geometric improvements (SM-1, SM-2, RC-1)

It should be noted that this analysis attempts to identify potentially promising locations to consider for strategy implementation based on the data available within the CMP. However, a wide variety of other factors, including existing conditions in the corridors, public and stakeholder input, and local interests should play an important role in making decisions about strategies. This analysis should therefore be considered a *preliminary analysis* identifying areas for *possible consideration*.

More specific studies – whether region-wide, corridor, or sub-area based – will need to be conducted to assess issues such as transit service needs, development potential, roadway geometrics and operations, travel demands, and qualitative factors. Many studies have already been undertaken or are ongoing to help identify and assess strategies. This analysis could be a starting point to consider and compare areas where the CMP analysis suggests potential areas of promise for strategies.

Transit Priority / Transit-Supportive Roads / Managed Lanes

Approach

Bus priority treatments (bus lanes, bus rapid transit, transit signal priority) may be considered in a wide variety of locations but would likely be most useful and effective along roadways that have a high number of buses traveling on the roadway, and on roadways that have significant traffic congestion and low travel time reliability. For an initial screening of roadways to consider for transit priority, the analysis focused specifically on those routes that have:

- Relatively high frequency service: peak period frequency of every 15 minutes or better (represented by purple shading in the maps below);
- Relatively poor on-time performance: on-time performance less than 60% (based on data from September 2019) (represented by red and dark pink lines on maps below);
- Run on highly congested roadway corridors: AM Peak travel time index above 2

Routes meeting both of these criteria would be prime candidates for bus priority treatments. It should be noted, however, that poor on-time performance for a bus route may be due to delays at specific points (e.g., interstate buses experiencing delays at Hudson River crossings). Other factors that could be considered include roadways experiencing significant traffic congestion (e.g., based on travel time index), roadways experiencing high levels of unreliability generally, or bus routes with low average bus speeds. Factors such as overall number of roadway lanes also should be considered.

There may be corridors with high levels of travel demand during off peak periods which do not get filtered out as part of this screening process, which focuses on peak period travel. Additional analyses that consider service frequency during non-peak periods may help identify additional corridors applicable for this strategy. Another screening criteria for future analyses could be demand indicators such as ridership, bus boardings per revenue vehicle hour, etc.

Areas to Consider

The analysis reveals both freeway and arterial roadways that may be possible candidates for transit priority or managed lanes.

Figure 1. Urban Core: Candidate Areas for Priority Bus Treatment or Managed Lanes

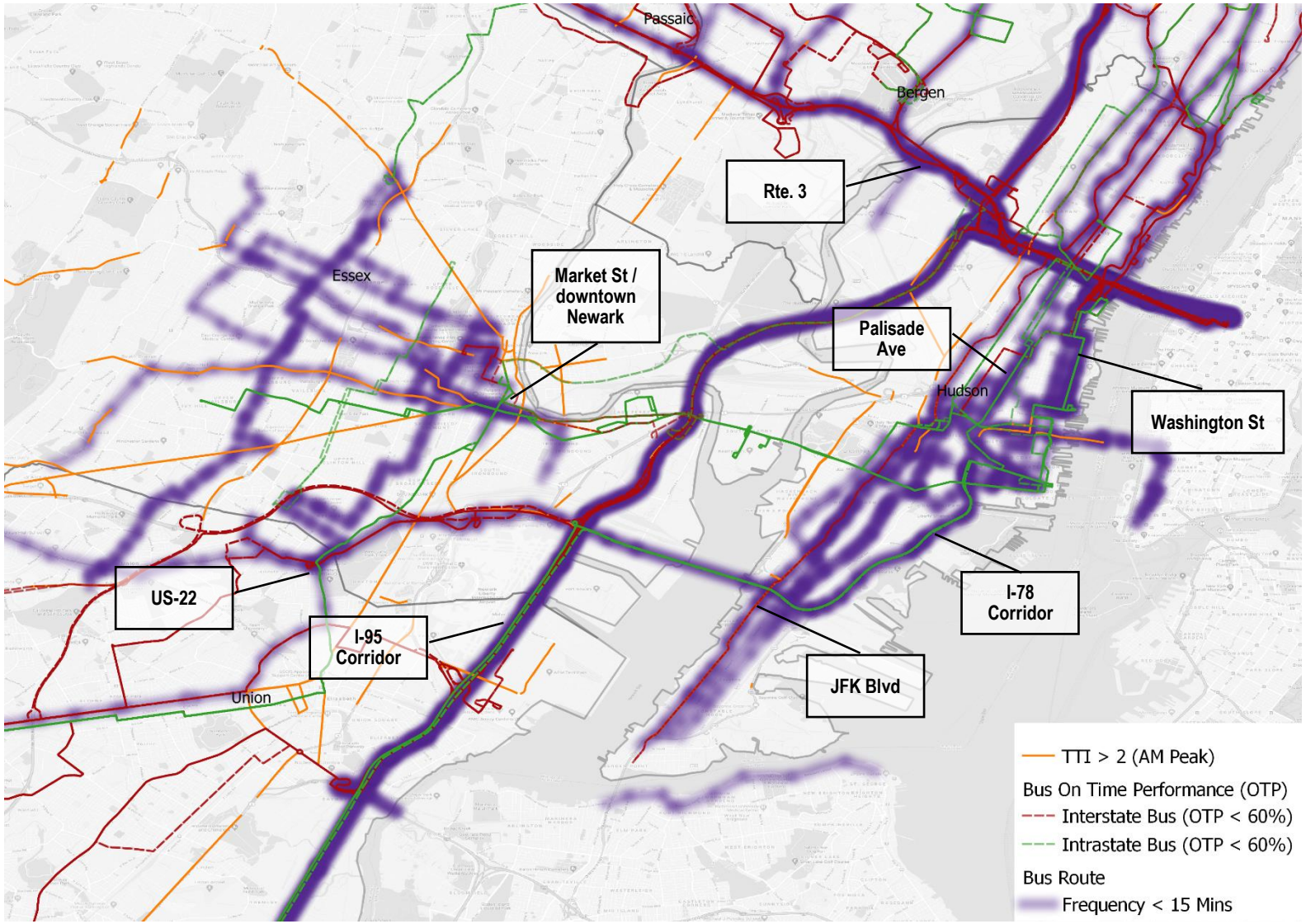


Figure 2. Southern Areas: Candidate Areas for Priority Bus Treatment or Managed Lanes

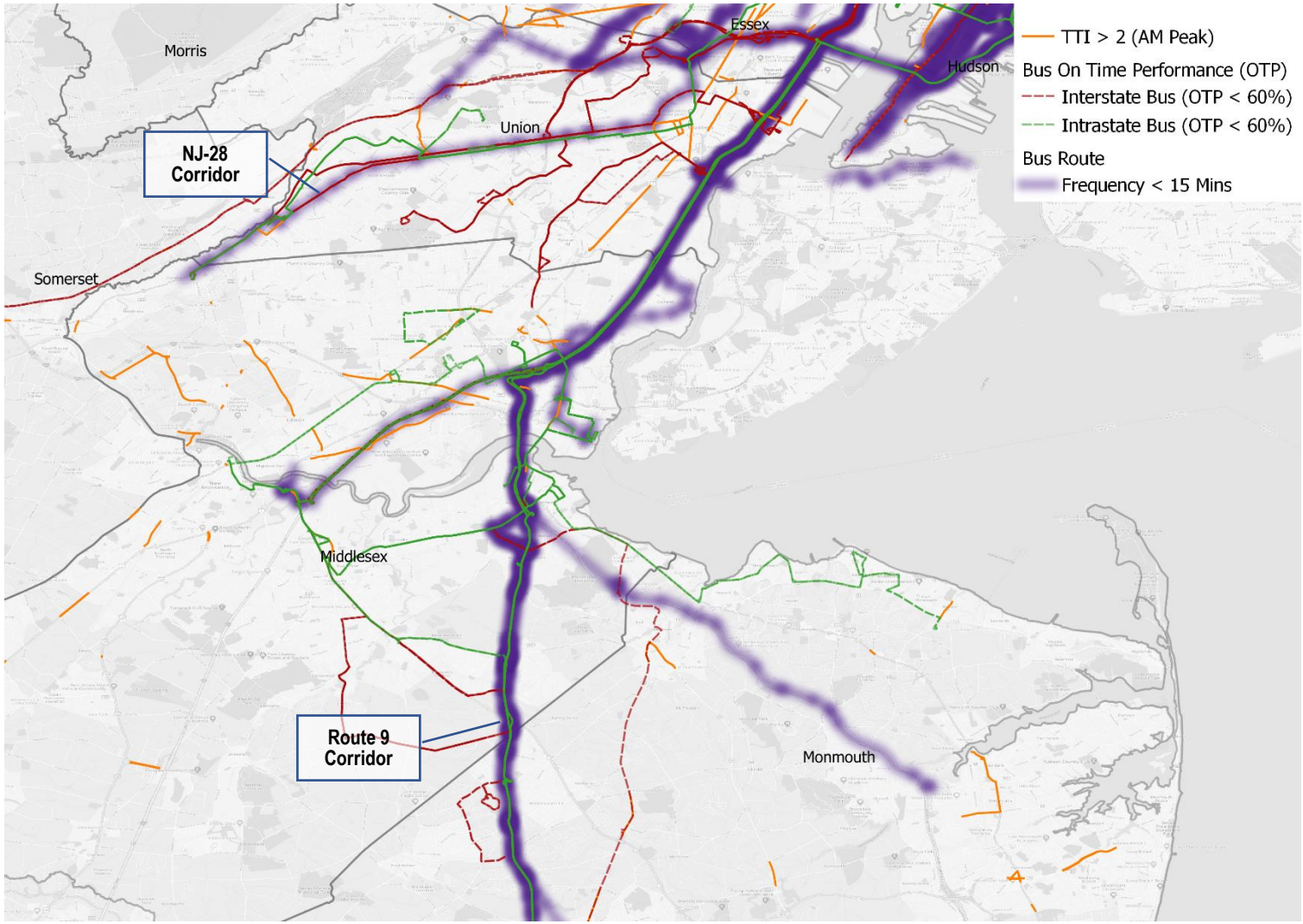
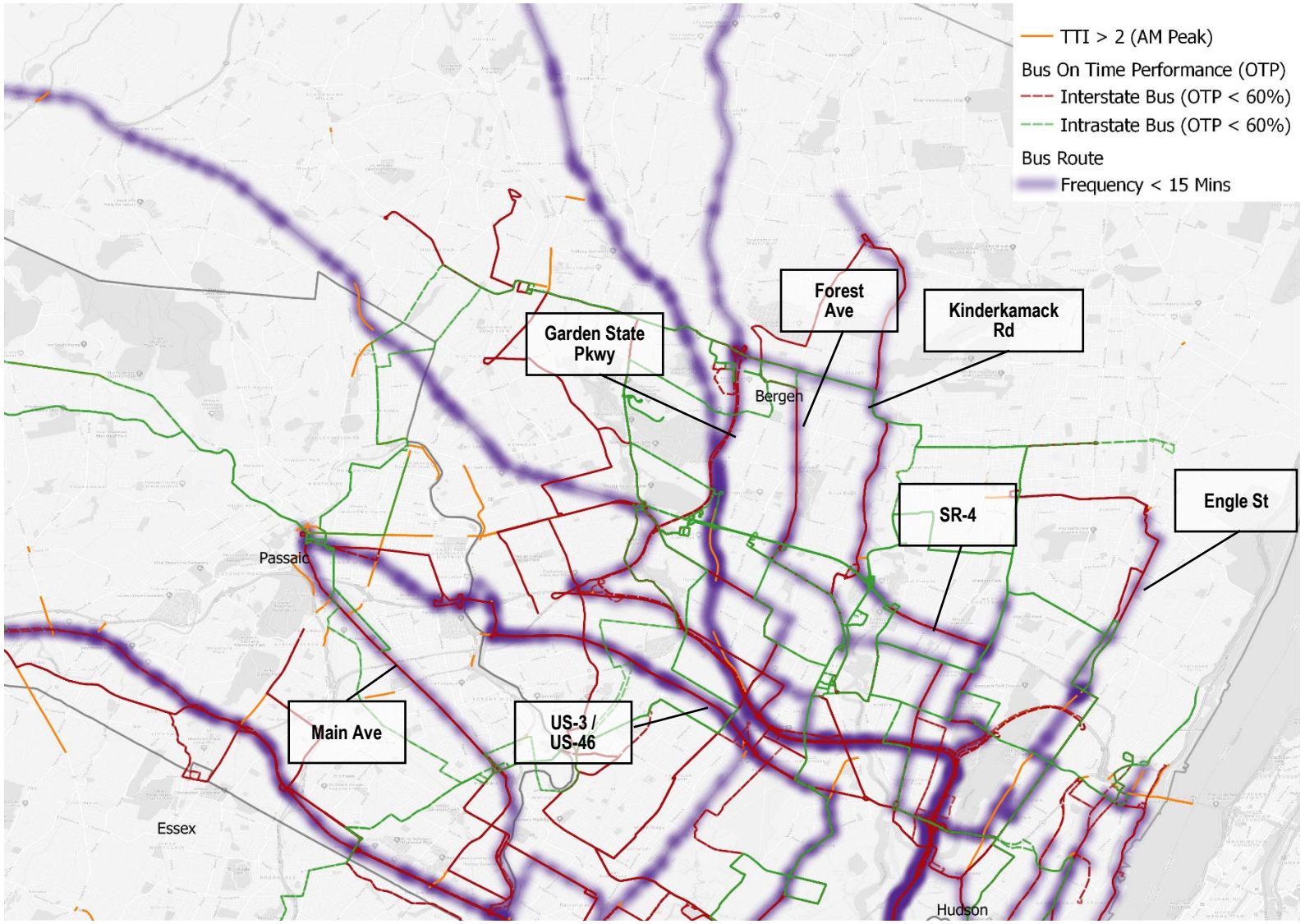


Figure 3. Northern Areas: Candidate Areas for Priority Bus Treatment or Managed Lanes



First-Mile / Last-Mile Connections

Approach

First-mile / last-mile connections to transit are important for transit hubs, such as rail stations, as well as major transit stops at activity centers outside of rail stations. This analysis focuses on rail stations, identifying those rail stations that have a sufficient density of residential or job locations within a reasonable distance where connections via bicycling, scooters, or other micromobility options, as well as localized shuttles or coordination with private providers, could help to enhance access to transit. For purposes of this analysis a geographic area of between 0.5 mile and 2 miles of each station was selected as a reasonable distance. In addition, the analysis includes park-and-ride lots where parking demand is very high compared to the number of available spaces, and which may benefit from shuttles or other access connections, or possibly additional parking capacity.

This analysis included the following steps:

1. First, identify stations that have a sufficient density of jobs or households (workers) within 0.5 mile and 2 miles of each station. Specifically:
   - Identify the number of residential locations between 0.5 and 2 miles of each rail station, and select those in the highest half of stations.
   - Identify the number of jobs between 0.5 and 2 miles of each rail station, and select those in the highest half of stations.
   - Identify the number of residential locations for low-income workers between 0.5 and 2 miles of each rail station, and select those in the highest half of stations.
   - Identify the number of low-income jobs between 0.5 and 2 miles of each rail station, and select those in the highest half of stations.

   Any station that met any of the four criteria above was considered a potential priority for first-mile/last-mile connections based on the density of potential users.

2. Next, stations were eliminated that have a large number of connecting bus services (identified as three or more unique buses within a half-mile of the station). Stations with a large number of bus services in the area were considered as generally having a high level of connectivity, and thus one may wish to prioritize other stations for new or additional services, particularly in areas that may not have the density of transit ridership to provide additional bus services. The resulting stations were identified as potentially promising to consider for first-mile/last-mile connection improvements.

3. Third, in addition to the stations identified above, park-and-ride facilities that are oversubscribed (over 100% utilization, based on data pre-COVID) were also identified for possible access improvements (which could be in the form or micromobility, shuttles, or other services) or for stations in more rural and suburban areas might be considered for parking expansion.

Areas to Consider

Areas to consider are highlighted on the maps below, showing the approach used in each step. Note that first-mile/last-mile connections to bus services may also be considered (beyond the stations analyzed here), recognizing that many buses serve areas not served by rail stations and there are some areas, including warehousing jobs, that are principally accessible by auto or bus.

Figure 4. Step 1 - Stations that have a sufficient density of jobs or households (workers) within 0.5 mile and 2 miles of each station

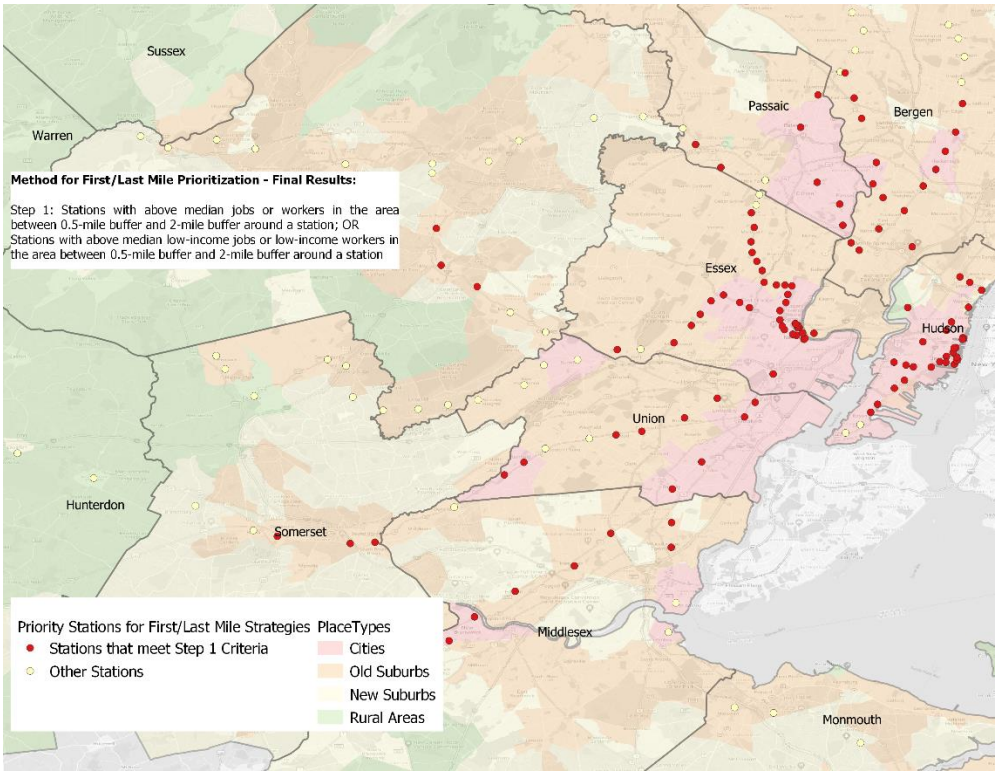


Figure 5. Step 2 - Eliminate stations from Step 1 with a large number of connecting bus services

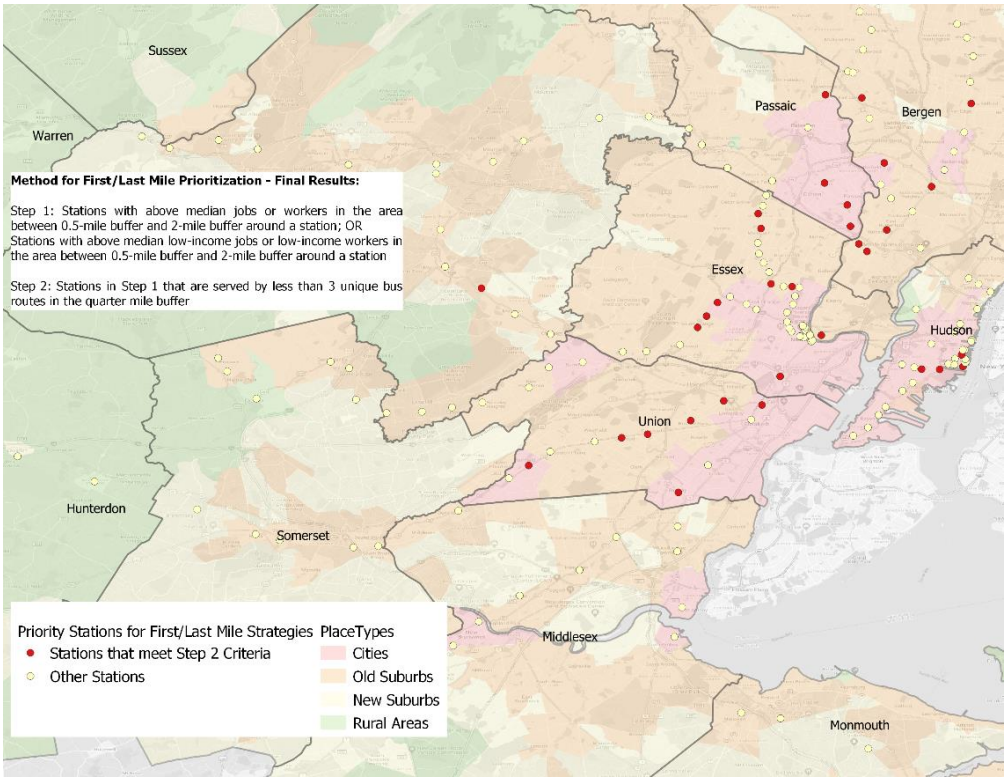


Figure 6. Step 3 – Oversubscribed park-and-ride facilities

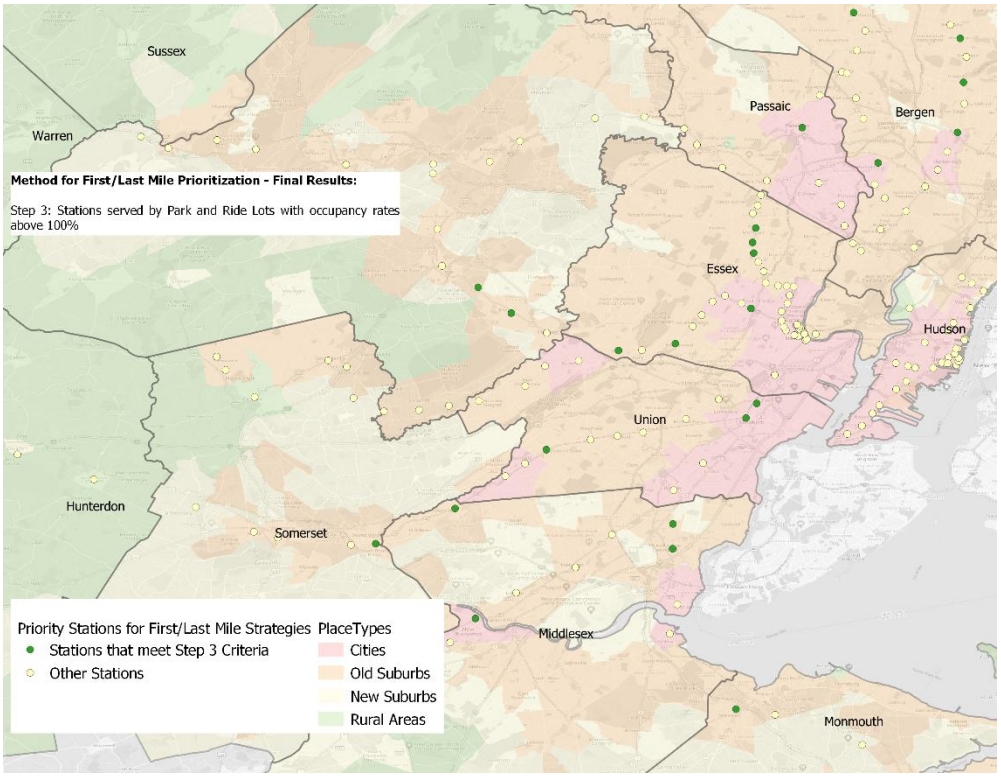
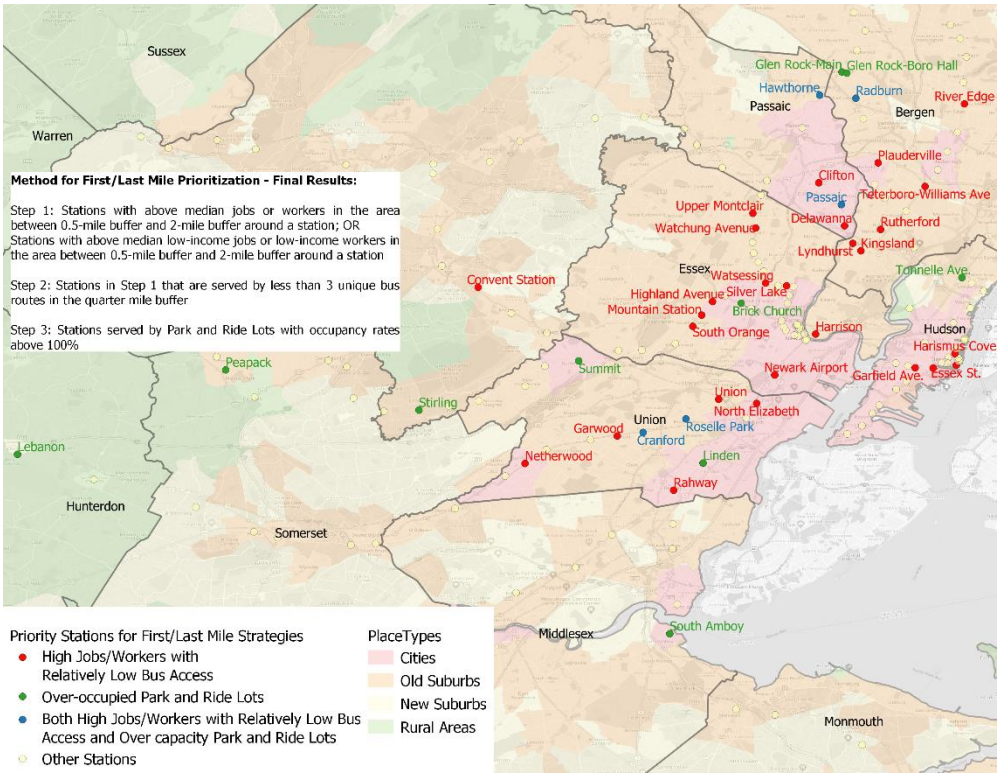


Figure 7. Priority stations for First-Mile/Last-Mile Strategies as a result of the three-step process



Expand / Enhance Bus Service

Approach

Bus service expansion or enhancements encompass a wide variety of potential solutions, including increases in the frequency of services, adjustments to service routes, expansion to service coverage areas, and/or implementation of express bus routes. **Any service expansion or enhancement would require specific analyses to assess ridership and cost implications,** recognizing that areas where stakeholders have an interest in transit may not all be feasible for new or expanded services without significant subsidies.

For purposes of this analysis, areas for potential bus service expansion/enhancement were identified by considering those areas where there is potential for transit ridership, and in locations with long transit commutes that might benefit from more direct services or express services. Specifically, the analysis involved the following steps:

1. Identify locations with medium-high and high transit score that have limited frequency bus services or no transit services (no access to transit at less than 30 minute headways and no rail transit within a half-mile buffer).
2. Identify areas with relatively high transit mode share (greater than 15% transit mode share) that also have long average transit trip times (average transit commuter trip of over 60 minutes); note that these longer trips may be due to longer trips to NYC, but might also signify indirect connections or lack of express services.
3. Identify locations that have a large difference in the number of low-income workplaces and number of residences with low-income workers (over 500 difference) with no access to transit at less than 30-minute headways and no rail within a half-mile buffer.
4. Identify locations with medium-high and high transit score that have a high level of disadvantaged populations (Social Vulnerability Index above 0.6) and relatively poor jobs accessibility by transit (lowest quartile of jobs accessibility for each place type – cities, old suburbs, new suburbs, and rural areas).

Areas that fit within any of the criteria above were identified as potentially promising to consider for bus service expansion or enhancement.

Areas to Consider

The areas resulting from the analysis are shown on the following map, followed by individual maps showing the steps involved in the analysis.

Figure 9. Results from Steps 1 and 2 of the analysis for bus expansion/enhancements

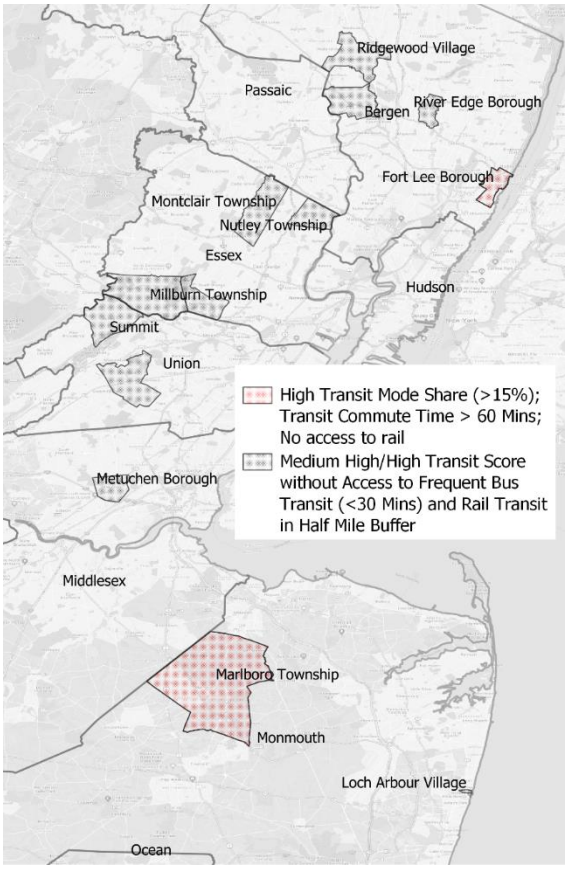


Figure 8. Areas with high disparity between number of low-income workers and low income jobs

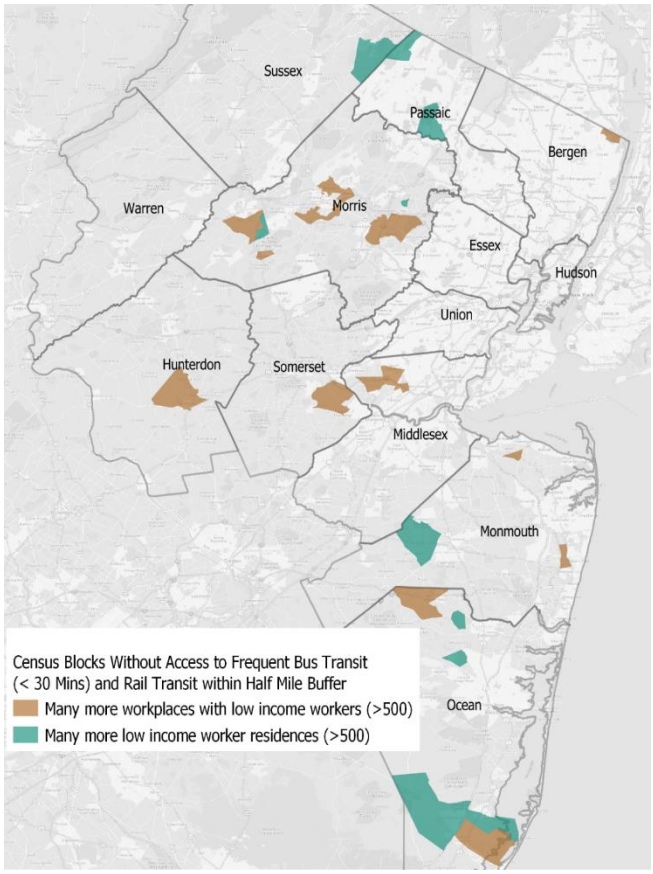


Figure 10. Areas with Relatively High Transit-Propensity, High Vulnerable Populations and Relatively Low Transit Jobs Accessibility

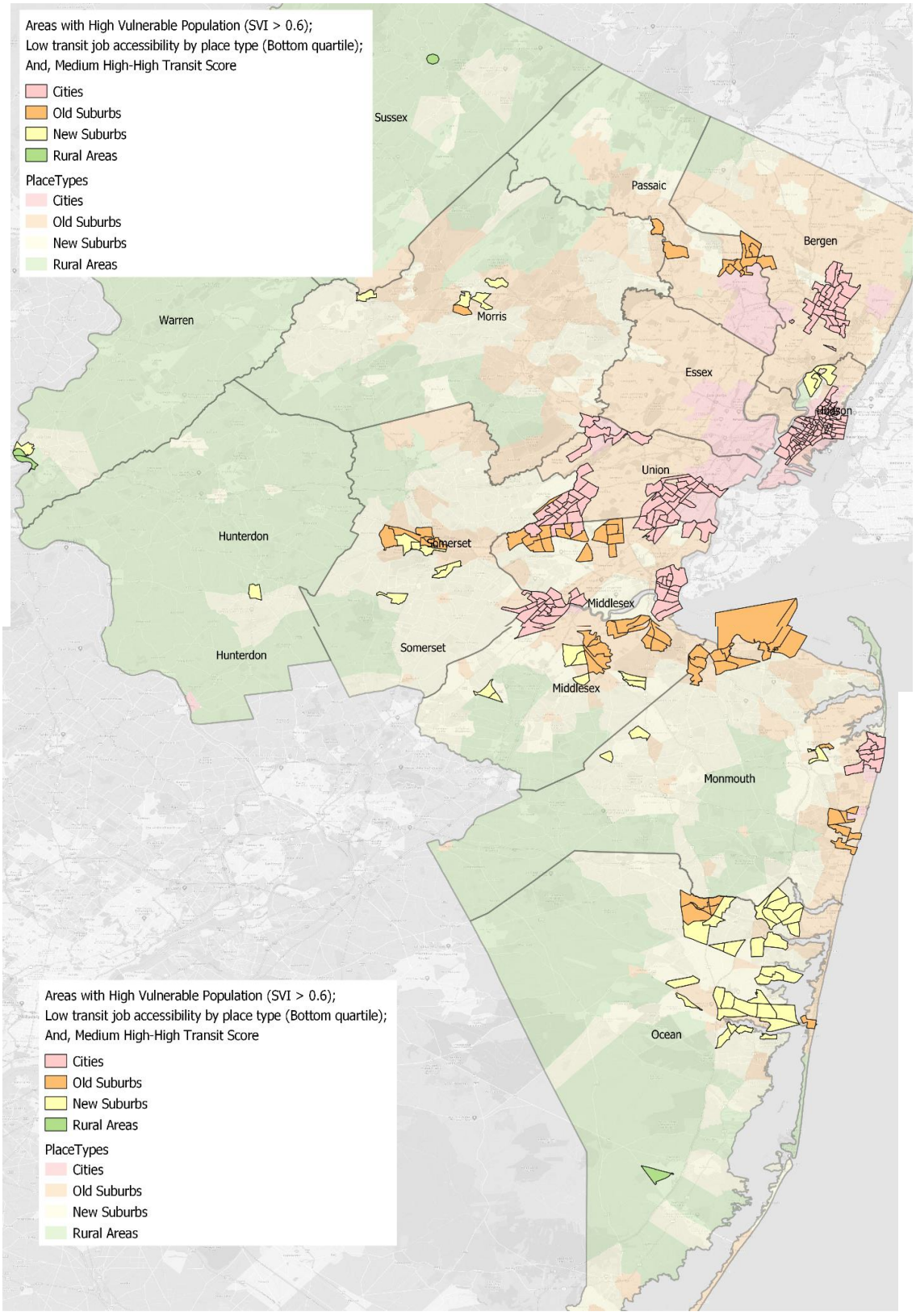
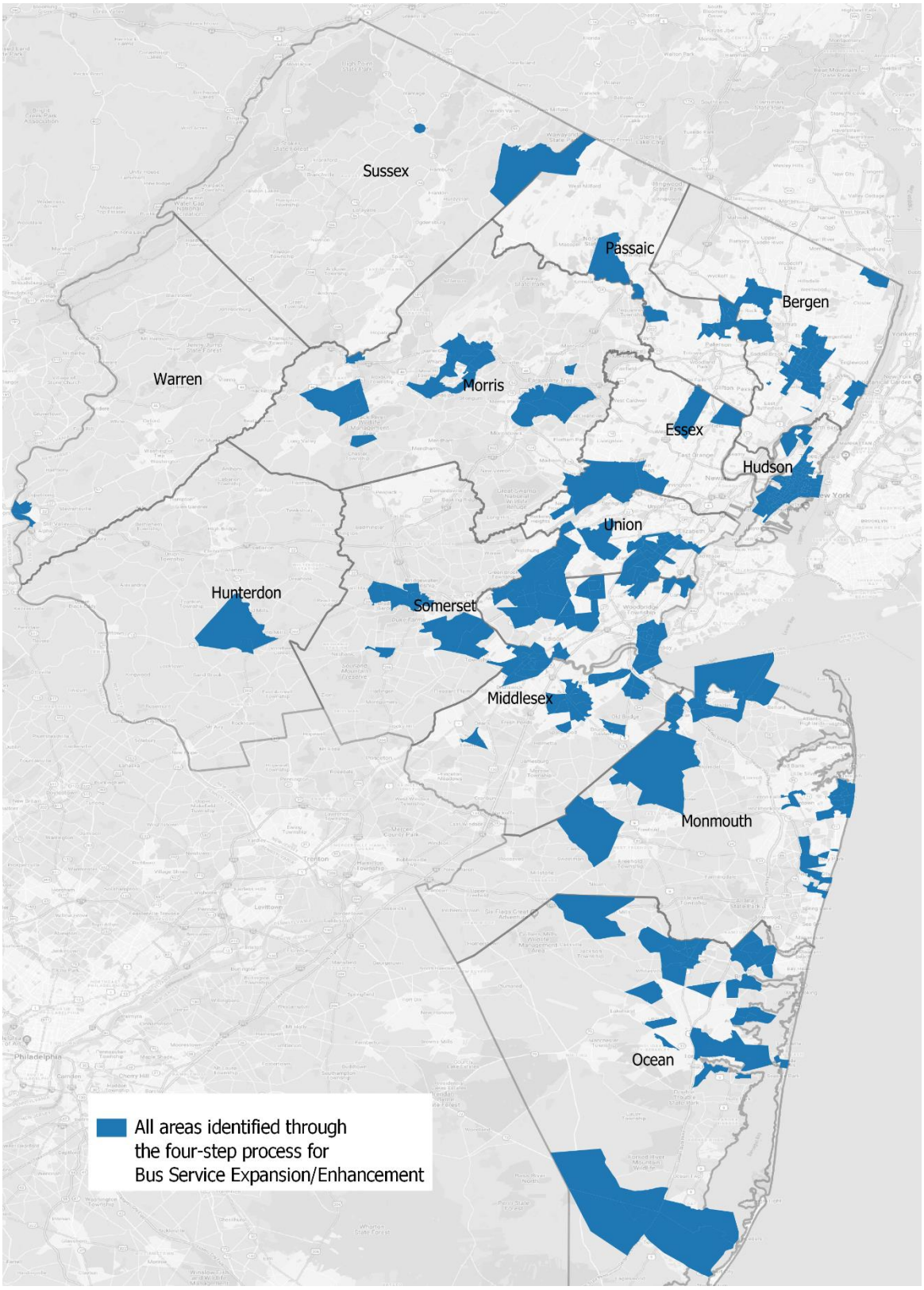


Figure 11. Candidate areas for Bus Expansion/Enhancement Strategies



Complete Streets / Pedestrian and Bicycle Improvements

Approach

Complete streets are a promising approach to make roadways safer, more comfortable, and accessible for all users, accounting not only for drivers, but for people walking, biking, using micromobility options, and using transit. Complete streets make it easy to cross the street, walk and bike to destinations, move with assistive devices, and make it safe for people to access transit stops.

To identify locations that may be promising for complete streets strategies, the analysis identified areas that generally have a variety of destinations within a walkable area, along roadways that have 3 or more lanes and a speed limit of 30+ miles per hour, which include a bus route and that had at least one bicycle or pedestrian crash with a fatality or serious injury (reflecting locations in need of safety enhancements). The analysis involved the following steps:

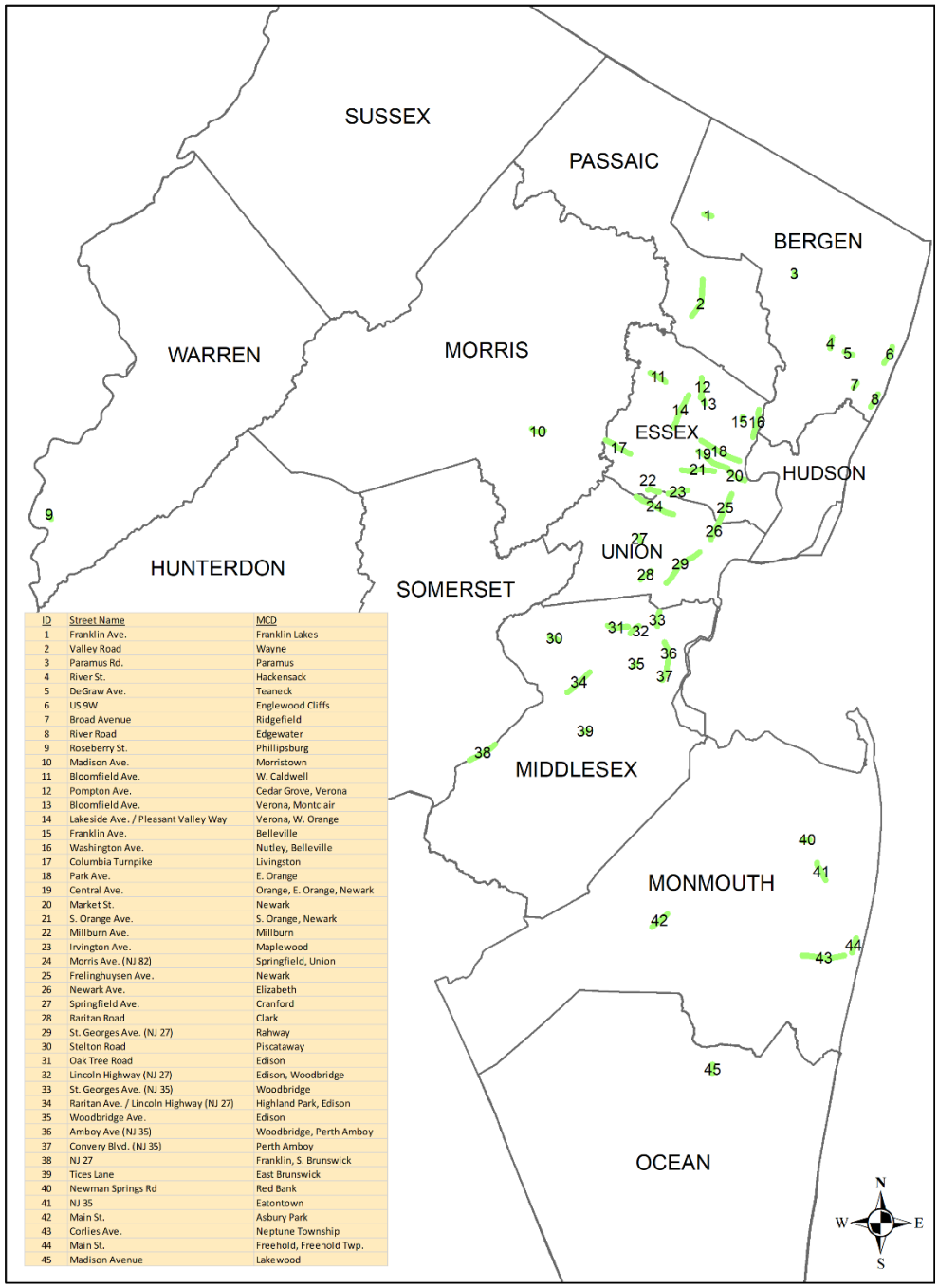
1. Identify locations that are in an area considered potentially walkable (reflecting a Walkability index score of 10 or above, which generally reflects density of development, mix of employment types and housing, and street intersection density), along a bus route, and having a bicycle or pedestrian crash with a fatality or serious injury over the period 2014-2018 (used for the Needs Assessment).
2. Next, identify those roads meeting the first criteria that having 3 more lanes and a speed limit of 30+ miles per hour.

The results of these two steps were used to identify a set of roadways or corridors that might be promising for complete street treatments.

Areas to Consider

The analysis revealed 45 roadways that might be considered possible candidates for complete streets treatments, as shown in the figure below. It is important to note that a wide array of local street factors and development context would influence feasibility for complete streets. For instance, based on the analysis, no locations were identified in Hudson County, given limited streets that met all criteria. However, there were a number of roadways with high levels of potential walkability, with high levels of pedestrian/bicycle crashes and bus service operations.

Figure 12. Candidate Corridors for Complete Streets, based on CMP Analysis



ID	Street Name	MCD
1	Franklin Ave.	Franklin Lakes
2	Valley Road	Wayne
3	Paramus Rd.	Paramus
4	River St.	Hackensack
5	DeGraw Ave.	Teaneck
6	US 9W	Englewood Cliffs
7	Broad Avenue	Ridgefield
8	River Road	Edgewater
9	Roseberry St.	Phillipsburg
10	Madison Ave.	Morristown
11	Bloomfield Ave.	W. Caldwell
12	Pompton Ave.	Cedar Grove, Verona
13	Bloomfield Ave.	Verona, Montclair
14	Lakeside Ave. / Pleasant Valley Way	Verona, W. Orange
15	Franklin Ave.	Belleville
16	Washington Ave.	Nutley, Belleville
17	Columbia Turnpike	Livingston
18	Park Ave.	E. Orange
19	Central Ave.	Orange, E. Orange, Newark
20	Market St.	Newark
21	S. Orange Ave.	S. Orange, Newark
22	Millburn Ave.	Millburn
23	Irvington Ave.	Maplewood
24	Morris Ave. (NJ 82)	Springfield, Union
25	Frelinghuysen Ave.	Newark
26	Newark Ave.	Elizabeth
27	Springfield Ave.	Cranford
28	Raritan Road	Clark
29	St. Georges Ave. (NJ 27)	Rahway
30	Stelton Road	Piscataway
31	Oak Tree Road	Edison
32	Lincoln Highway (NJ 27)	Edison, Woodbridge
33	St. Georges Ave. (NJ 35)	Woodbridge
34	Raritan Ave. / Lincoln Highway (NJ 27)	Highland Park, Edison
35	Woodbridge Ave.	Edison
36	Amboy Ave (NJ 35)	Woodbridge, Perth Amboy
37	Convery Blvd. (NJ 35)	Perth Amboy
38	NJ 27	Franklin, S. Brunswick
39	Tices Lane	East Brunswick
40	Newman Springs Rd	Red Bank
41	NJ 35	Eatontown
42	Main St.	Asbury Park
43	Corlies Ave.	Neptune Township
44	Main St.	Freehold, Freehold Twp.
45	Madison Avenue	Lakewood

Figure 13. Urban Core and Northern Areas: Candidate Areas for Complete Streets

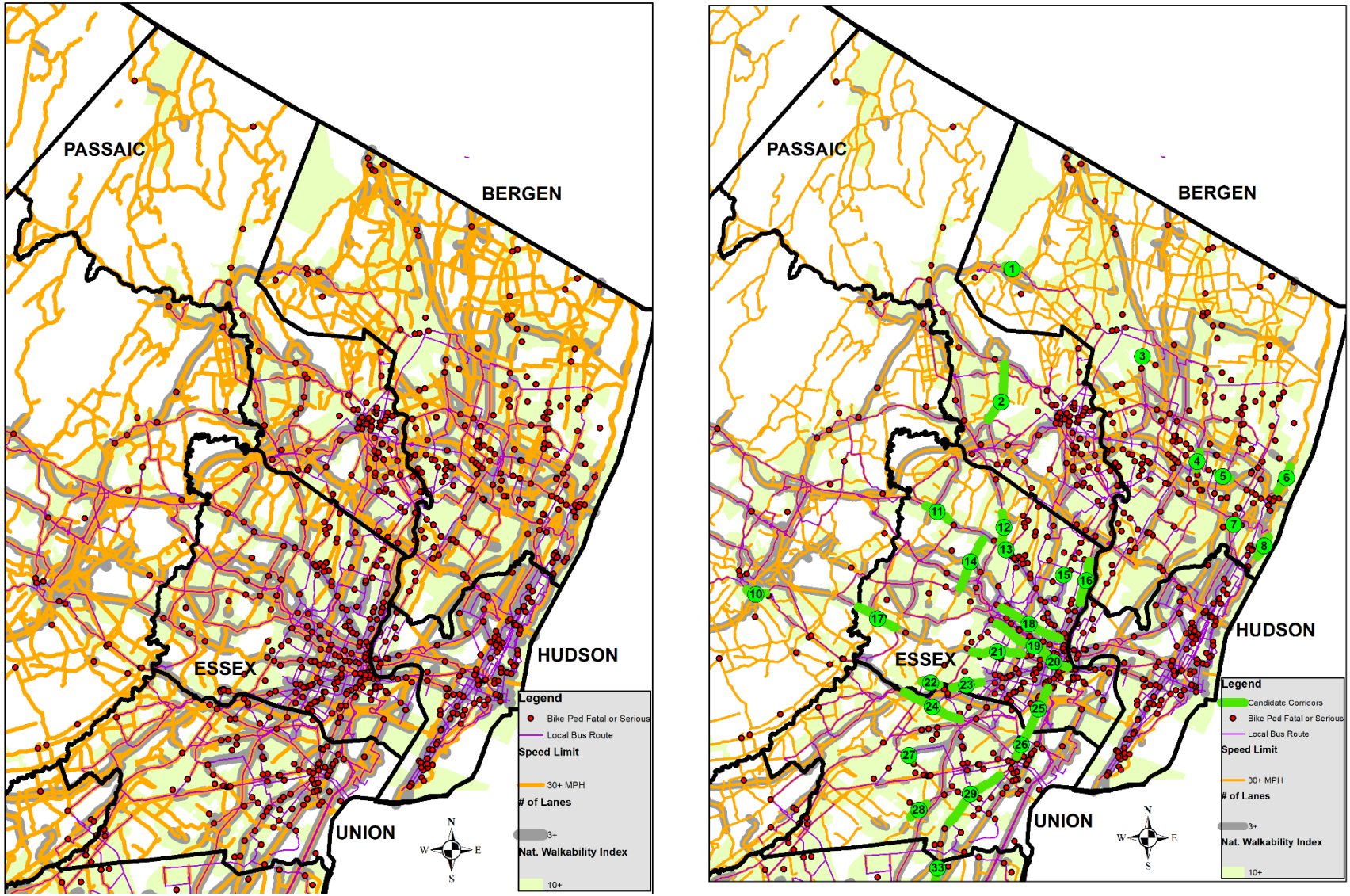


Figure 14. Western Areas: Candidate Areas for Complete Streets

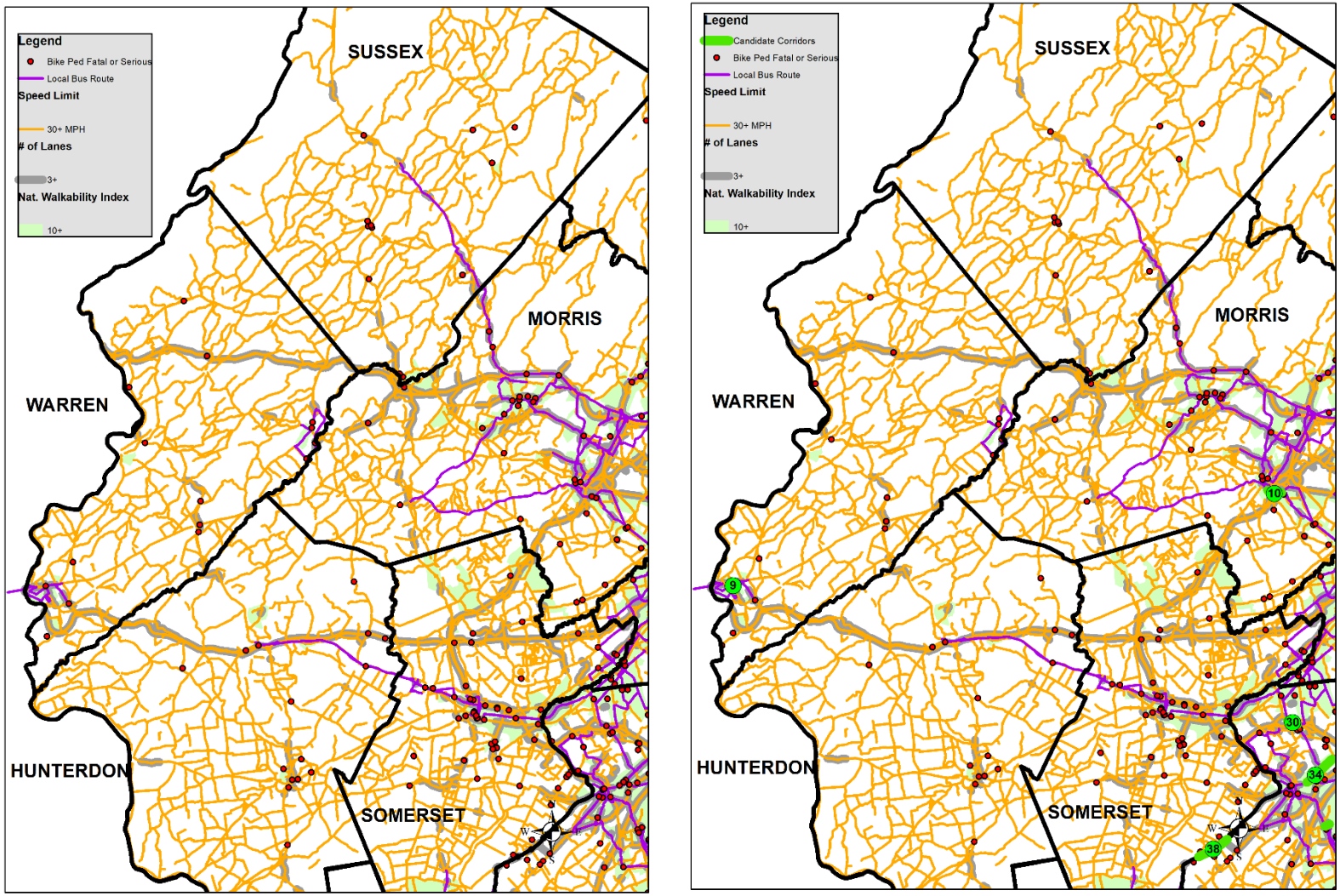
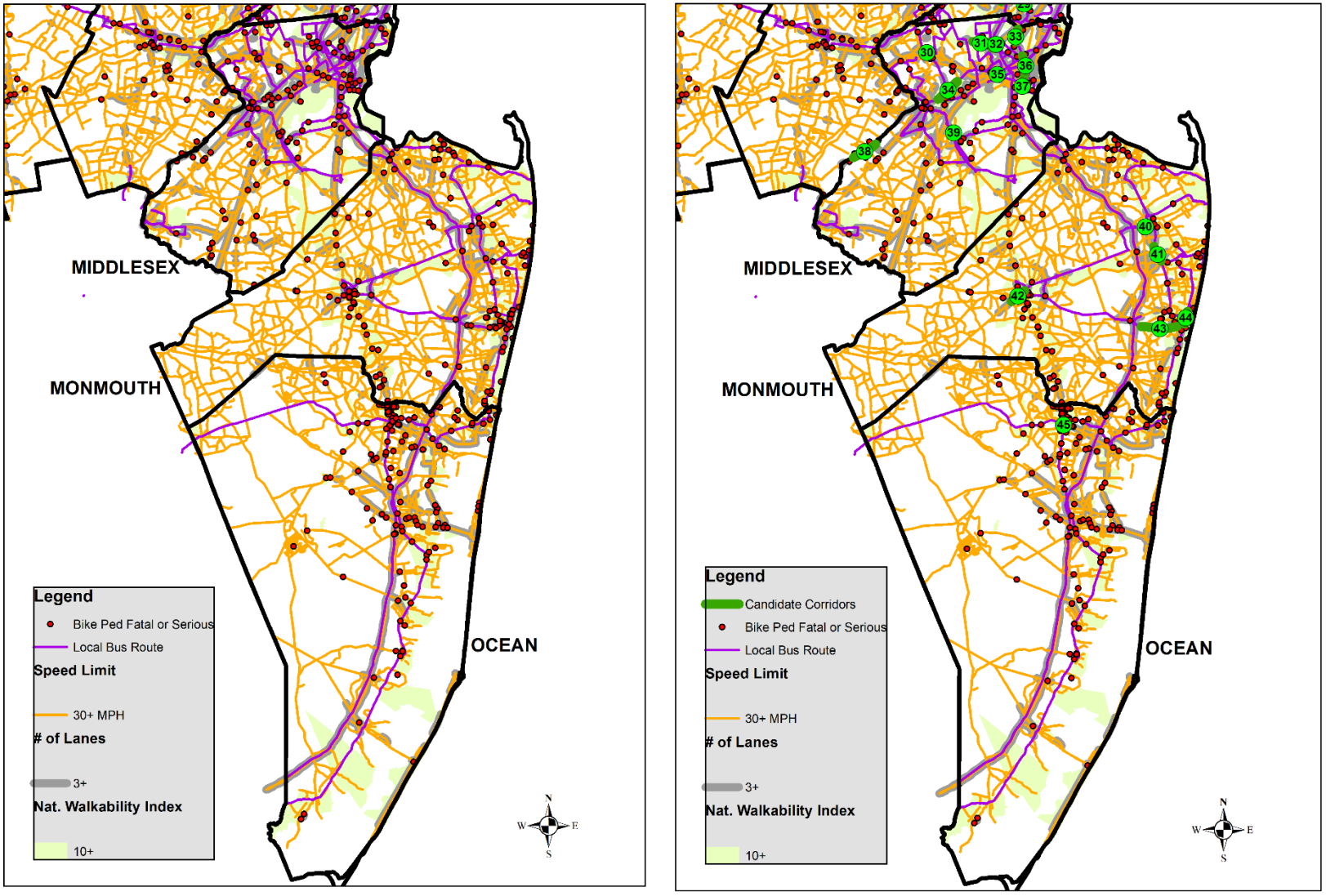
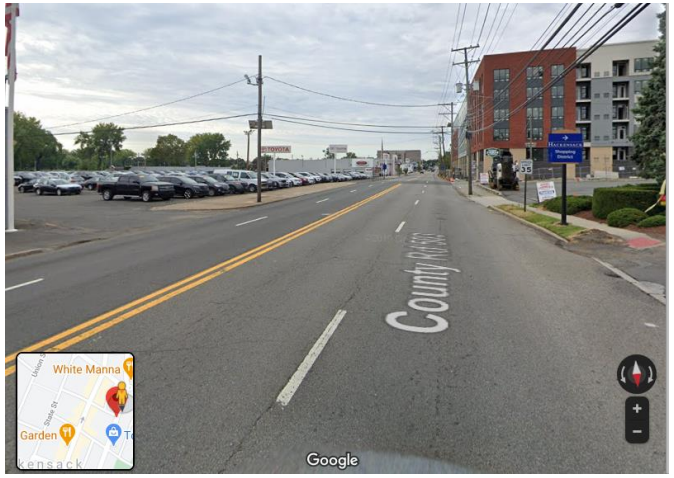


Figure 15. Southern Areas: Candidate Areas for Complete Streets



Images of a sample of the streets identified are shown below. While many have sidewalks, they may be difficult for pedestrians to cross streets to access bus services or destinations on different sides of the road.

Paramus Road, Paramus (#3)



River Street, Hackensack (#4)

Degraw Ave, Teaneck

US 9W, Englewood Cliffs

The Social Vulnerability Index (SVI) is used as a metric to add an equity lens to the findings. The 45 complete street locations are filtered by the Social Vulnerability Index. Of the 45 complete streets, 18 of the 45 complete streets are located in areas with high SVI (above 80 percentile) or medium-high SVI (between 60 and 80 percentile), as listed in Table 1.

Table 1. Complete Street locations in areas with high and medium-high Social Vulnerability Index

#	Street	Town	SVI (Above 0.6)
4	River St.	Hackensack	High
9	Park Ave.	East Orange	High
16	Central Ave.	Orange, East Orange, Newark	High
18	Market St.	Newark	High
19	South Orange Ave.	South Orange, Newark	High
20	Frelinghuysen Ave.	Newark	High
21	Newark Ave.	Elizabeth	High
25	Newman Springs Rd.	Red Bank	High
26	Corlies Ave.	Neptune Township	High
29	Main St.	Asbury Park	High
36	Roseberry St.	Phillipsburg	Medium - High
37	Washington Ave.	Nutley, Belleville	Medium - High
39	St. Georges Ave.	Rahway	Medium - High
40	Amboy Ave.	Woodbridge, Perth Amboy	Medium - High
41	Convery Blvd.	Perth Amboy	Medium - High
43	Tices Lane	East Brunswick	Medium - High
44	NJ 35	Eatontown	Medium - High
45	Madison Ave.	Lakewood	Medium - High

Roadway Operations / Geometric Improvements

Approach

Roadways with heavy traffic congestion, bottlenecks, and poor reliability are prime candidates for operational and/or geometric improvements. To identify locations that might benefit from these types of improvements, data addressing traffic congestion and roadway reliability were used to identify all segments that met any one of the following criteria:

- Poor level of travel time reliability: Level of travel time reliability (LOTTR) over 2.0
- Poor levels of truck travel time reliability: Truck travel time reliability index (TTRI) over 2.0
- High levels of traffic congestion: Travel time index (TTI) over 2.0

If any one of the thresholds was reached, then the roadway segment was classified as potentially promising for a roadway operations or geometric improvement. Note that some segments appear across long corridors while others are very short segments that may reflect intersection delay.

Areas to Consider

The following maps show identified roadways, which include both freeways and arterials/collector roads. The region is broken into four different maps, reflecting the central core part of the region, as well as southern, northern, and western parts of the region. The specific treatments to consider will depend on existing operational conditions and geometrics, as well as consideration for other modes, such as transit, bicycling, and walking. It will be important to consider for any roadway improvement how the potential strategy affects not only vehicle travel but access and mobility across modes, given the Regional Capital Investment Strategy priority placed on transit, bicycling, walking and other alternatives to driving.

Figure 16. Urban Core: Candidate Areas for TSMO and Roadway Improvement Strategies

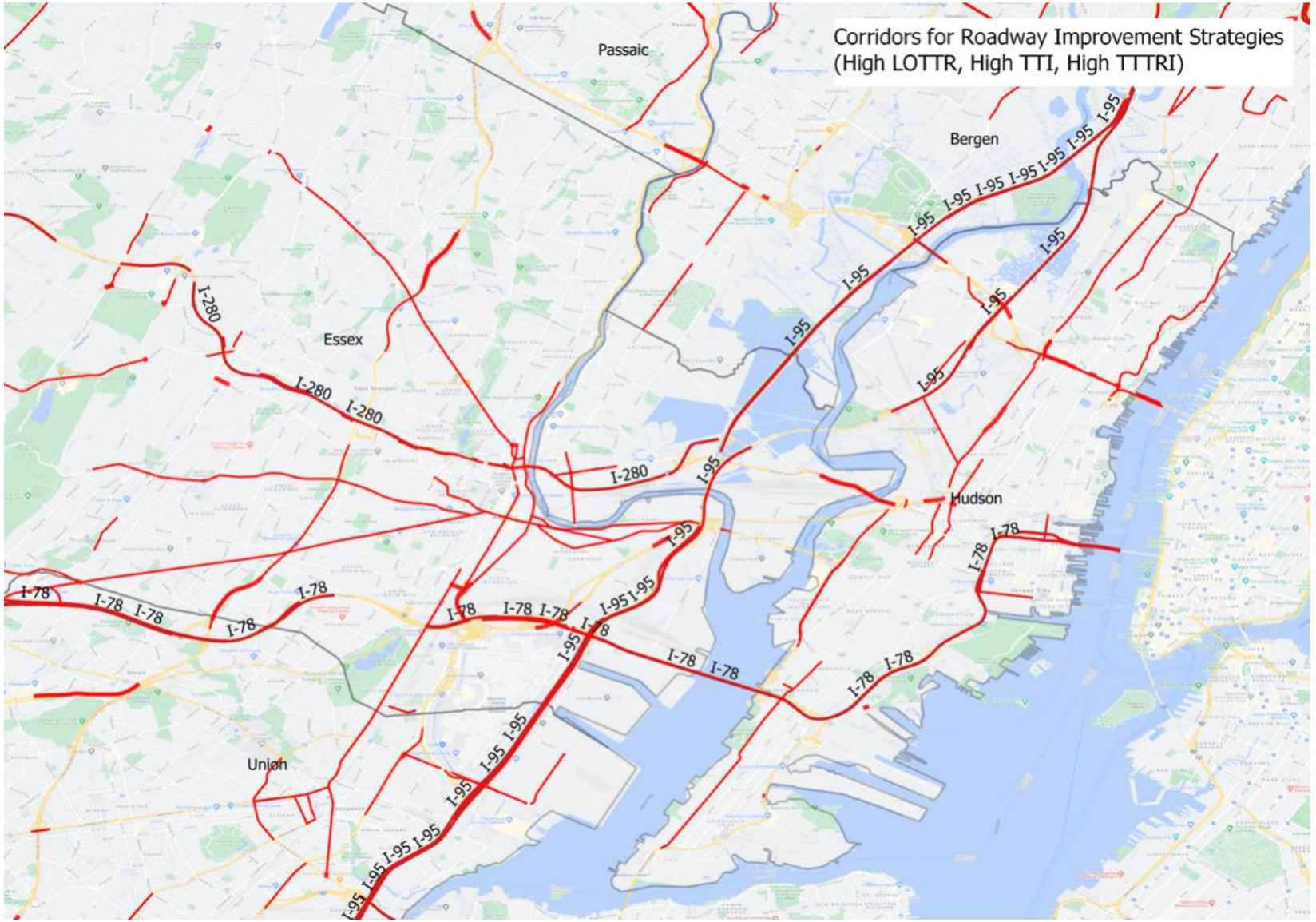


Figure 17. Southern Areas: Candidate Areas for TSMO and Roadway Improvement Strategies

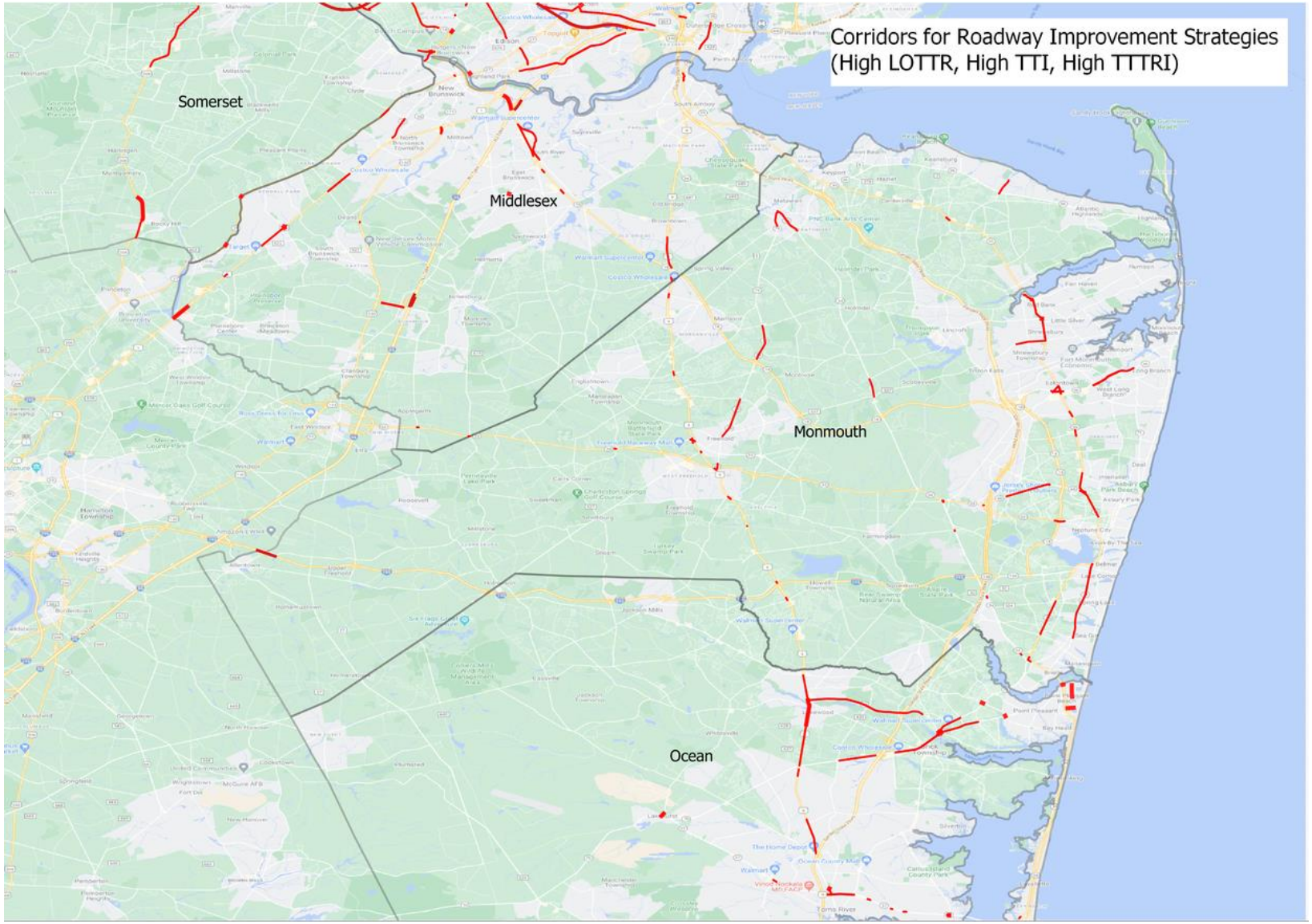


Figure 18. Northern Areas: Candidate Areas for TSMO and Roadway Improvement Strategies

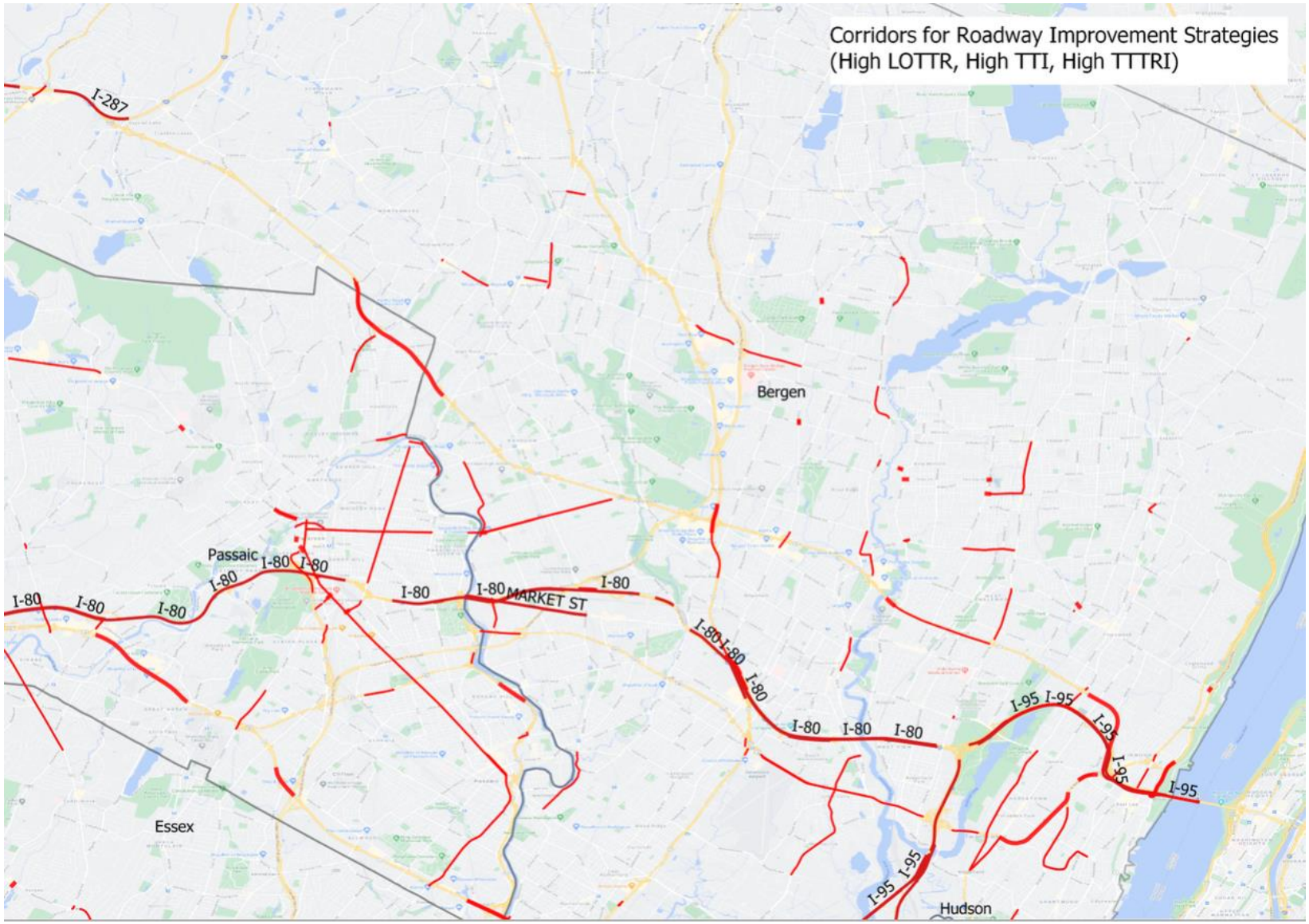
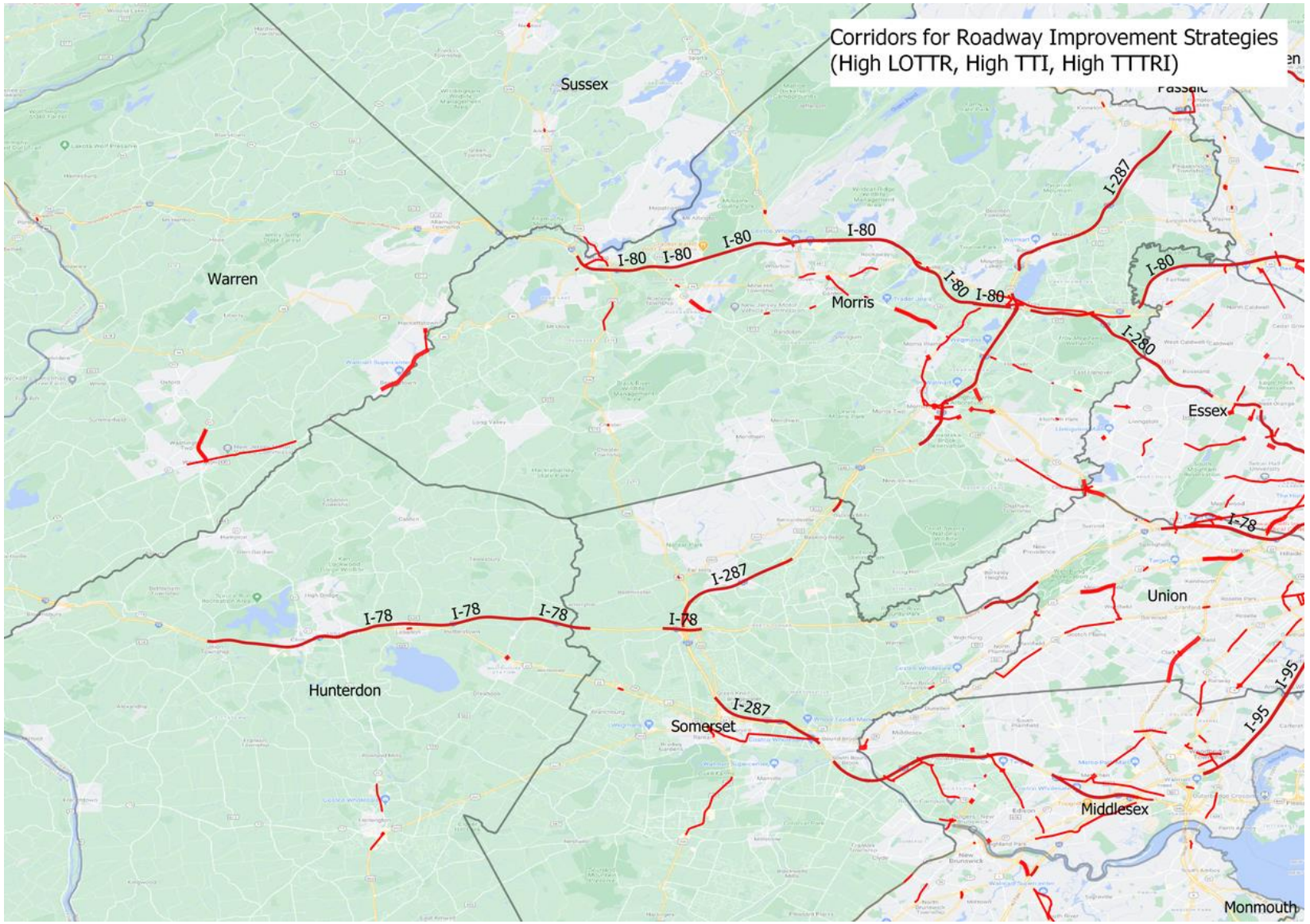


Figure 19. Western Areas: Candidate Areas for TSMO and Roadway Improvement Strategies



5| CMP STRATEGY PROFILES

A series of one-page profiles of individual strategies is provided (see attached file) as a starting basis for transportation agencies within the region to consider. Each profile reflects a strategy identified in the Menu of Possible Strategies (presented in Section 2), and includes information on:

- Issues or needs addressed by the strategy
- Specific strategies or applications of strategies that fall under the broader type of strategy
- Assessment factors, or key questions to consider in relation to what approaches are most applicable
- Benefits, in relation to regional objectives and other positive effects
- Costs, qualitatively assessed
- Equity considerations
- Responsible agencies

The sheets also contain information on locations to consider, based on the CMP analysis, and related existing or planned projects.

6| STRATEGY IMPLEMENTATION CONSIDERATIONS

The NJTPA's Congestion Management Process (CMP) characterizes system performance needs regarding accessibility and mobility, and supports decision making about practical strategies to implement. This document supports that decision making by providing a menu of transportation strategies to address needs, a recommended process and framework for selecting strategies, information on assessment factors to consider in prioritizing locations for strategy application, and preliminary analysis identifying areas for possible consideration for key strategies.

Moving forward, the results of this process are potentially beneficial actions in appropriate locations that the NJTPA may advance through the long-range transportation plan, through follow-up studies, by funding projects or programs in the Transportation Improvement Program (TIP), in other ongoing programs, or by encouraging and coordinating with partner agency implementers. The following considerations will help to advance these actions and support implementation:

- **Prioritizing strategies and actions that meet multiple needs** – The needs identified as part of the CMP are being reflected in the update to the region's long-range transportation plan, Plan 2050, and should help to drive investments in the TIP and those being implemented by partner agencies. An important message from the analysis of strategies is that some strategies and actions help to address multiple objectives and address several key needs simultaneously. For instance, core trans-Hudson capacity rail improvements would help to address many challenges, including transit crowding, transit reliability, and bottlenecks and unreliable highways. Similarly, land use strategies that encourage transit-oriented development can help to enhance the viability of transit, improve access to jobs by transit, enhance pedestrian and bicycling safety, and alleviate highway congestion by reducing the need to use of a personal vehicle. These strategies that address multiple needs should be highly considered across partners to maximize

accessibility and mobility benefits. Moreover, implementing complementary strategies, such as land use planning and transit investments, often have synergistic effects and can help maximize benefits.

On the flip side, transportation agencies that are developing projects with a single or primary focus should ensure that these projects do not inadvertently exacerbate other challenges. For instance, it is important to ensure that a roadway safety improvement project does not enhance safety by limiting crossing points thereby indirectly creating barriers to pedestrian or bicycle access. Taking a broader view of investments and strategies and their impacts across modes and users helps to ensure that all aspects of mobility and accessibility are considered.

- **Using the Regional Capital Investment Strategy (RCIS) as a guide for strategy prioritization** – Consistent with the RCIS, the strategies identified in the CMP should be explored with a focus first on transit, bicycle/pedestrian improvements, land use, demand management, and transportation systems management and operations prior to implementing roadway capacity increases. The RCIS investment principles and guidelines focus on encouraging shorter and fewer motor vehicle trips, especially involving single-occupancy vehicles (SOVs), through demand management; making investments to help Northern New Jersey grow wisely; making travel across all modes safer; placing high priority on improving the region's extensive transit network, including improving the speed and reliability of trips and facilitating access to the transit system; managing incidents and applying transportation technology; supporting walking and bicycling; and focusing road investments on making the existing system work better, with only limited roadway expansion. The CMP supports this investment strategy and specifies that before any highway capacity expansion that significantly increases SOV capacity is proposed to be advanced, there must be an appropriate analysis of reasonable TDM and TSMO strategies to address the needs.

- **Systematic incorporation of equity-focus in decision making** – As equitable access is a primary objective in the NJTPA's CMP, the information contained in the equity assessment conducted as part of the *Accessibility and Mobility Strategy Synthesis* should be integrated into the processes and frameworks used for making project requests and decisions. Understanding the locations of vulnerable populations and the specific needs and challenges faced by vulnerable populations can bring to light additional strategies or priorities to be placed upon solutions that address these issues. As such, the equity assessment findings should be considered in planning, investments, and strategy decision making across all transportation agency partners in the region, including local governments.

Resources, tools, and approaches to support integration of strategies in regional and local decision making include:

- **Using the NJTPA's PRIME interactive online database** – The findings on needs and areas to consider for strategies from this study have been uploaded to the NJTPA's PRIME system. PRIME is an interactive online database that allows users to identify needs and recommendations from various studies and supports identifying relationships among study findings. A benefit of the PRIME system is that it helps put emphasis on projects that meet multiple purposes and allows a more informed consideration of various needs and project plans or proposals recommendations

across the geography of the region. As an inventory of all the needs and strategies applicable for any given location, the PRIME tool can be used as a resource to provide the context behind project-related decisions.

- **Identifying funding sources** – While this study does not directly identify funds that can be used to implement projects, it is important to recognize the variety of potential funding sources that are available to support strategy implementation. Federal funds are available through several programs, including the Surface Transportation Block Grant (STBG) Program, the National Highway Performance Program (NHPP), the National Highway Freight Program (NHFP), the Highway Safety Improvement Program (HSIP), and the Congestion Mitigation and Air Quality Improvement (CMAQ) Program, as well as a variety of Federal transit programs. State funds dedicated to transportation are collected through taxes on motor fuels, petroleum products gross receipts, and the sale of new motor vehicles, vehicle registration fees, and bonds, as well as toll road contributions. These funds are used by the New Jersey Department of Transportation (NJDOT) and NJ TRANSIT, and State funds are also provided to municipalities and counties for local transportation improvements. It is important to recognize that some strategies, such as parking pricing and land use policies, typically do not require funding and may generate revenue.

- **Partnering across agencies** – Finally, it is important to recognize that successful strategy implementation often involves a wide array of partners – such as the NJTPA, state agencies, local governments, transportation management associations, private sector transportation service providers, property owners, or others – working together. For instance, a transit priority strategy typically requires many partners to work together to address roadway operations – including decisions about dedicated lanes, signal timing/priority, and use of curb space – coordinated together with NJ TRANSIT or other local service providers. The usability of transit can be further enhanced with investments in supportive transit infrastructure, bicycle/pedestrian connections, and supportive land uses. Some of these decisions involve tradeoffs (such as potentially reducing on-street parking), which are complex and require considering multiple perspectives. Having a common framework as presented in this *Accessibility and Mobility Strategy Synthesis* will support partners working together with a common vision and focus on the outcomes of enhanced accessibility and mobility.