MAKING CONNECTIONS

NOVEMBER 2011

SEAL OF THE COUNTY OF SOMERSET

NJTPA
NORTH JERSEY
TRANSPORTATION
PLANNING AUTHORITY

MAKING CONNECTIONS:

SOMERSET COUNTY'S CIRCULATION PLAN UPDATE

This report has been prepared as part of the North Jersey Transportation Planning Authority's Subregional Studies Program with financing by the Federal Transit Administration and the Federal Highway Administration of the U.S. Department of Transportation. This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The NJTPA and the County of Somerset are solely responsible for its contents.

RESOLUTION OF ADOPTION FOR MAKING CONNECTIONS: SOMERSET COUNTY'S CIRCULATION PLAN UPDATE

WHEREAS, pursuant to N.J.S.A 40:27-2 et seq. the New Jersey County Planning Enabling Act, the Somerset County Planning Board has updated the Circulation Element of its County Master Plan; and

WHEREAS, a public hearing was held on September 20, 2011 with reference to the aforesaid document; and

WHEREAS, the Somerset County Planning Board conducted an extensive public outreach process throughout 2010 and 2011 in the form of surveys, focus group meetings and numerous public meetings in order to obtain public input to shape the development of the plan and its findings and recommendations; and

WHEREAS, the Somerset County Planning Board has taken into due consideration the public comments and communications presented to the Board and Steering Committee during this process; and

WHEREAS, the Transportation Committee of the Planning Board has reviewed and provided its comments at various stages throughout the development of the Circulation Element Update, and approved the document on that basis;

NOW THEREFORE BE IT RESOLVED THAT the Somerset County Planning Board hereby adopts Making Connections: Somerset County's Circulation Plan Update including specific standards and guidelines for Somerset County roads as established in the Somerset Highway Functional Classification System and the Somerset County Scenic Corridor and Roadway Program, and proposed new alignments of the Somerset County roads, as depicted on the attached revised maps, which are to be contained in the document; and

BE IT FURTHER RESOLVED THAT the Somerset County Planning Board declares its intent to periodically review the Making connections Plan and will adopt amendments consistent with the New Jersey County Planning Enabling Act as appropriate; and

BE IF FURTHER RESOLVED THAT copies of Making Connections: Somerset County's Circulation Plan Update shall be transmitted to the Somerset County Board of Chosen Freeholders, the municipalities of Somerset County, adjacent counties, the North Jersey Transportation Planning Authority, the New Jersey Department of Transportation, NJ Transit, Ridewise of Raritan Valley and the Somerset County Business Partnership.

I, Matthew D. Loper, Secretary of the Somerset County Planning Board, County of Somerset, in the State of New Jersey do hereby certify that the foregoing is a true copy of the resolution adopted by said Planning Board of Somerset at its regularly convened meeting on November 15, 2011.

Matthew D. Loper, Secretary
Somerset County Planning Board

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Executive Summary

The Making Connections Plan is designed to improve mobility and safety across Somerset County, New Jersey. The Plan guides the transportation planning process, identifies and promotes policies that help support and reinforce the Plan's recommended improvements, and provides a framework for selecting and prioritizing among proposed programs, plans, and projects.

Background

First settled during the latter part of the seventeenth century, Somerset is one of America's oldest counties. Throughout much of its history, Somerset County was predominantly rural, and farming was at the center of its economy.

Proximity to State and Interstate highways and access to regional passenger and freight transportation systems have shaped much of the region's more recent history. These improvements in access have resulted in significant population growth and have changed the breadth and nature of commercial activity. The region has transitioned from its early farm-based origins, to a focal point first for industry and goods movement, and more recently as the home to leading telecommunications and pharmaceutical firms. And although it has become more suburban than rural in character, it is still largely a collection of bedroom communities and small urban centers.

These changes, gradual over Somerset's first 300 years, and then more rapidly over the last half century, are reflected in Somerset's demographics. The County's population, which first topped 100,000 in the early 1950s after nearly 300 years of settlement, currently stands at 323,444.

Regional Significance

The Making Connections Plan builds upon and reinforces many of the goals and objectives of the North Jersey Transportation Planning Authority's Plan 2035 by proposing strategies that maximize mobility options in all districts and by improving accessibility, reliability, sustainability, inter-modality, highway, transit, pedestrian and freight mobility across the County transportation network and the region as well. By promoting enhanced interconnections between the various modes of travel and increasing the opportunities for public transit, residents and employees who live and work within the County or the surrounding region will benefit from improved mobility and less congestion on the region's highway network.

Community-Based Planning Process

Making Connections utilized a community-based planning process to prepare a circulation plan that is reflective of Somerset County's diverse community of stakeholders. An inclusive process was essential to identifying the many varied issues, interests, needs, and concerns of those who live, work, govern, and do business in Somerset County.

Outreach

The community-based planning process created a plan that truly represents local and regional priorities. To accomplish this, an extensive outreach program was developed and implemented to solicit input and feedback from a wide variety of Somerset County stakeholders – the general public, business community, agency representatives, decision makers, and advocacy groups. The effort included a series of steering committee meetings, focus groups, public meetings, a meeting with municipal planning board chairs, and an on-line survey to solicit feedback and priorities for the Plan's goals and policies.

The project team also researched and coordinated the Making Connections Plan with various local, Somerset County, NJTPA, and statewide policies, plans, and studies, representing a broad range of actions and issues, including:

- NJTPA Regional Transportation Plan 2035
- I-287 Mobility Plan
- Advancing Intermodal Freight Opportunities
- NJDOT Truck Origin/Destination Survey
- Millstone Valley Scenic Byway Corridor Plan
- TOD Opportunities in Somerset County
- Somerset County Hazard Mitigation Plan
- Somerset County Circulation Plan Update 2003
- Regional Center Pedestrian, Bike & Greenways Plan

Goals and Policies

The Making Connections Plan makes the case for a series of policies, programs, and projects that address Somerset County's transportation, mobility, and safety needs. Evaluation, selection, and prioritization of these improvements are guided by a series of Goals and Polices, adopted as part of this Plan.

The nine Goals and Policies that create the framework of the Making Connections Plan were developed as part of the comprehensive outreach program and therefore represent the values and priorities of the County's many stakeholders, advocates, and decision makers. These goals, shown on page five, also reflect the current state of the practice in planning, including smart growth, livability, and sustainability.

Vision Statement

Five principal themes emerged from the planning, analysis, and outreach process and reflect the Goals and Policies; these combine to form the Vision Statement:

The Making Connections Plan

- Creates a robust multi-modal transportation network
- Maintains and improves the existing highway system
- Expands the regional transit system
- Enhances traffic safety for all travelers and modes, and
- Promotes sustainability

Scenario Planning

Scenario planning enabled the project team to evaluate a range of potential outcomes, visions, and investment scenarios by testing a mix of infrastructure, demographic, and land use and policy changes. The Making Connections scenarios were tested using the North Jersey Regional Transportation Model-Enhanced (NJRTM-E), the travel demand model for northern New Jersey. The NJRTM-E includes an enhanced transit component and allows for the testing of various projects, land use decisions, and economic variables. Population and employment totals are the same for each scenario.

Four alternative scenarios were tested:

1. Somerset County Baseline
2. Highway Rich
3. Transit Rich
4. Blend Scenario

The scenario planning exercise indicates that mobility will degrade over the next 20 years with an increasing level of traffic congestion; travel under congested conditions is projected to increase by 25%. In the future, congestion can be mitigated but not resolved; each alternative "buys back" about one-half of the degraded travel performance, but none restores conditions to current levels.

Demographic shifts, such as the planned Hillsborough Towne Center and Somerville redevelopment, boost transit ridership by creating supportive densities, and help to mitigate overall congestion along traffic-choked U.S. Route 206. Scenarios tested without these shifts result in comparatively worse levels of congestion and degraded travel speeds.

This congestion impacts County and local streets disproportionately. Congestion on the State and Interstate highways spreads to the County and local streets which will carry a greater proportion of overall travel than experienced today, impacting local mobility and safety.

Performance measures and the scenario planning exercise indicate that a Blend Scenario - mixing land use solutions with highway and transit improvements, demand management, and supporting policies - offers the greatest potential to meet the study Goals and Policies and achieve the Vision for Somerset County.

Conclusions - Making Connections

Making Connections recommends a comprehensive and coordinated series of multi-modal infrastructure and policy initiatives for Somerset County, including highway and transit improvements, supportive policy measures, integrating land use and transportation planning, bicycle and pedestrian circulation, freight and goods movement, scenic corridors and greenways, traffic safety, mitigation of greenhouse gases and adaptation to climate change impacts.

Making Connections safely connects people with opportunity through transportation.

Community-Based Planning Process

Making Connections utilized a community-based planning process to prepare a circulation plan that is truly reflective of Somerset County's diverse community of stakeholders. The project team met with, and sought input from, a broad range of residents, the business community, trucking and freight transportation providers, the real estate community, advocates and special interest groups, and numerous local, county, regional and state agencies and representatives.

This sort of comprehensive outreach process is necessary to identify the many varied and often competing issues, interests, needs, and concerns of those who live, work, govern, and do business in Somerset County.

The outreach process included the following efforts:

- A steering committee was formed and convened to guide the study and review and provide comment on study findings and work products.
- Seven focus groups sessions were held to discuss issues that included freight and goods movement, public transit, mobility and safety, economic issues, and critical infrastructure and climate change. Participants were drawn from a broad spectrum of interests.
- A meeting was held with Planning Board Chairs from each of Somerset's municipalities. A survey was distributed to gather input on issues of particular concern to the individual municipalities.
- An on-line survey was distributed using an extensive email list and posting on the RideWise website to gather feedback, and help prioritize among the nine goals and policies of the Making Connections Plan.
- Two public meetings were conducted to publicize the Plan, inform the public on the study purpose, present the findings, and gather comments and feedback
- Finally, the Plan was presented to the Somerset County Planning Board, first for final review and comment, and then for adoption as the Circulation Element for Somerset County.

What We Heard

Comments were as diverse and varied as those who call Somerset County home. A sample of comments and observations from the outreach process includes the following:

Congestion on I-287, U.S. 22, U.S. 202, and U.S. 206 requires trucking to operate off-peak, as customer needs allow.

Expand truck parking and enhance security.

Freight industry is concerned with plans that would hamper trucking operations.

Expand bus service to include north/south routes.

Transit needs are underserved in the central and southern parts of the County.

Add bus routes where they enhance employment and quality of life, and add stops to key locations such as retail, services, and municipal sites.

Expand transit service to weekend and off peak times, particularly Raritan Valley Line and buses from New Brunswick to Somerville.

Educate the traveling public about transit services and connections. Increase signage and awareness for optional modes of transport.

Explore reactivation of West Trenton Line to enhance rail service in the County and provide access to employment.

Connect existing modes and provide missing links.

Commission a study on parking at rail stations. Ownership of lots is not uniform; access, policies and fees vary.

Provide "last mile" connections from Somerville rail station to employment centers via bus or commuter shuttles.

Take advantage of redevelopment to support transit through higher densities.

Explore incentives for public/private partnerships with large businesses in the County. Bring the business community into the process, utilizing business chambers.

Prioritize funding to projects where investment provides greater opportunity for multimodal use and economic enhancements, supports smart growth land use goals, and has multiple long term benefits.

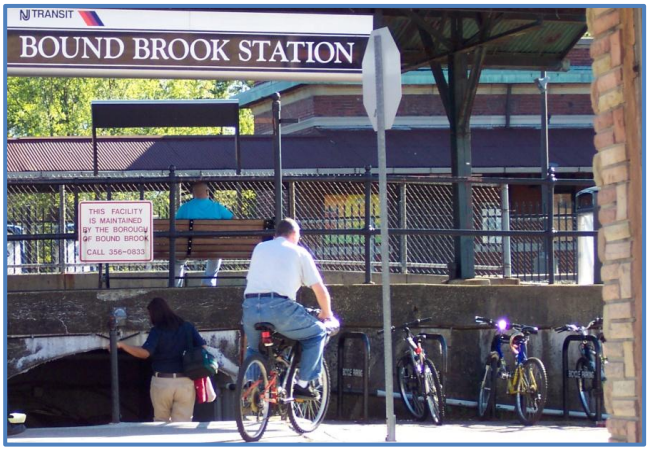
Provide transit shelters and sidewalk connections at stations and bus stops.

Evaluate job-housing balance. Currently many jobs and housing are not located in the same area. Integrate land use and transportation to create a livable community.

Explore better connections to Somerville, which is home to the County's social services.

Implement traffic calming as appropriate with existing density and use, being careful not to push traffic to local streets. Accomplish through new, better designs, using 'complete street' concept where possible.

Explore improvements that can make the D&R Canal towpath a viable non-motorized alternative for both commuters and recreational travelers.



Consider bicycle and pedestrian connectivity and viability of bike/pedestrian improvements where appropriate to increase multimodal options, particularly near schools and retail areas, or roads with demonstrated bike/ped use.

Support the Route 206 bypass project, which currently serves both local and regional traffic. Encourage transit village and appropriate densities as part of bypass development.

Increase network connectivity in key areas along arterials, specifically the industrial area adjacent to Duke Parkway and extension of Brown Ave.

Consolidate driveways and parking on major arterials to reduce conflict points and improve traffic flow.

Conduct safety audits at high accident locations.

Expand and connect Greenway corridors.

Provide access to employment for economically disadvantaged and disabled individuals.

Consider transportation needs (particularly employment and retail) of youth, seniors, and other users with no access to cars.

Encourage municipal ordinances to accommodate smarter development consistent with local, County, and State plans.

Use economic incentives to change development types and enhance access.

Flooding, particularly in Manville and Bound Brook, is a major concern.

Based on the experience from Hurricane Floyd, officials need to provide adequate notice to prepare for the onset, intensity, and duration of a storm.

Bridges are a significant issue when discussing flooding.

Goals and Policies

Developing and implementing transportation improvements and policies is a principal purpose of the Making Connections Plan. Somerset County will use the Plan's Goals and Policies to help evaluate, prioritize, and select an appropriate program of transportation improvements as it prepares the Capital Program and Planning Work Plan. Using the 2003 Somerset County Circulation Element as a foundation, this study team evaluated and updated the previous Plan's Goals and Policies to reflect the values and priorities of the County's many stakeholders, advocates, and decision makers, and the current state of the practice in planning, including such concerns as smart growth, livability, and sustainability.

GOALS AND POLICIES

- Maintain and Modernize the County Transportation System
- Reduce Traffic Congestion
- Reduce Greenhouse Gas Emissions Contributing to Climate Change
- Protect and Enhance the Natural and Built Environment
- Support Economic Activity in Town Centers and Business Corridors
- Improve Mobility and Connections between Travel Modes
- Integrate Transportation, Land Use, and Site Design
- Maintain a High Level of Safety and Security
- Monitor the Performance of the Transportation System

Stakeholder input was an essential component in guiding the direction of the Making Connections Plan. A steering committee including transportation professionals from the County, NJDOT, NJTPA, and local municipalities was engaged to provide feedback throughout the process. Focus groups representing the public sector, local businesses, advocacy groups, and other stakeholders met to discuss five central issues – freight and goods movement, public transit, mobility and safety, economic issues, and critical infrastructure and climate change. The focus groups supplied critical input in defining the diverse needs of the traveling public and the salient issues facing Somerset County's transportation system.

With a broad framework in place to outline the key issues, a list of nine goals and policies was drafted to address the various issues. A survey was then developed to engage the general public and gather feedback on the goals and policies that drive the Making Connections Plan. The nine goals are shown at left. These goals and policies are described as follows:

Maintain and Modernize the County Transportation System – Making Connections seeks to improve the efficiency and safety of the existing transportation system. Where feasible, new technologies should be used to modernize the network and improve maintenance.

Reduce Traffic Congestion – The Plan seeks to maximize the efficiency of the existing transportation system to gain capacity. Operational improvements, combined with promoting alternate modes, such as walking, biking, public transit, and car/vanpooling, should be explored, and efforts should be made to reduce the impact of through traffic to neighborhoods and municipalities.

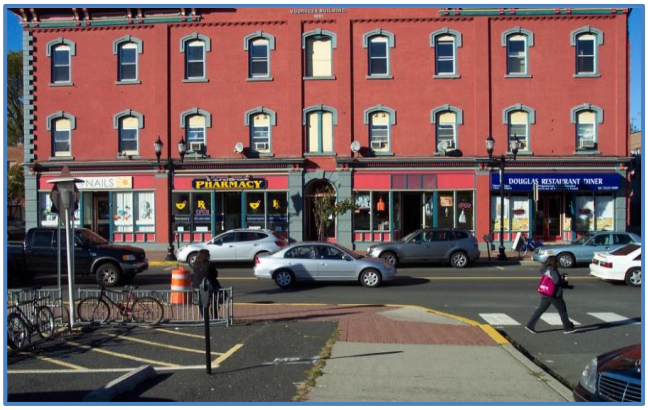
Reduce Greenhouse Gas Emissions Contributing to Climate Change – In addition to reducing automobile dependence by enhancing public transit and improving alternate modes, automobile emissions may be further reduced by improving the efficiency of the network to minimize the amount of time vehicles are stuck in traffic or idling. Land use planning may be refined to discourage sprawl and encourage mixed-use development.

Protect and Enhance the Natural and Built Environment – The Plan should seek to preserve Somerset's cultural, natural, and historical assets, reduce impacts to environmentally sensitive areas, and redevelop brownfield sites. Air quality may be improved by promoting alternative travel modes.

Support Economic Activity in Town Centers and Business Corridors – The Plan should support growth in existing and proposed town centers and business districts, and downtown business districts. Integrated transportation and land use planning should encourage revitalizing older town centers and business districts and retail corridors such as U.S. 22 and U.S.

206, promote mixed-use development, and encourage development around public transit facilities. Bicycle, pedestrian, and transit connections should also be improved between employment, residential, and shopping centers.

Improve Mobility and Connections between Travel Modes – The Plan should seek to improve travel options for all transportation users, and particularly for senior citizens, people with disabilities, and low-income groups. Public transit service should be expanded and bicycle, pedestrian, and public transit connections between employment, residential, and shopping centers should be improved. Rail and road connections for freight should also be improved to increase the efficiency of goods movement; and mitigate the impact of trucks on local neighborhoods.



Integrate Transportation, Land Use, and Site Design – The Plan should seek to target transportation enhancements and develop land use policies that improve existing town centers, promote mixed-use development, permit increased density at public transit facilities, and limit sprawl development. The site design and review process should be improved to better link transportation and land use planning.

Maintain a High Level of Safety and Security – The Plan should seek to identify and prioritize the most critical safety and operational needs in the transportation network. Where possible, new technologies and Intelligent Transportation Systems (ITS) should be implemented to improve safety and security throughout the network. Additional improvements should be made to emergency management and planning preparedness in the event of a disaster.

Monitor the Performance of the Transportation System – The Plan should set regional performance goals, develop metrics to measure performance and track progress, and measure the effectiveness of proposed improvements. System needs should be evaluated and resources allocated efficiently to maintain a safe and reliable transportation system.

Key Themes of the Making Connections Plan

While each of these goals describes and addresses unique needs, there is considerable overlap and interplay among them. Five key themes were identified:

- The plan must be focused on creating a robust ***multi-modal*** transportation network, one that provides mobility for vehicular traffic, transit riders, goods movement, bicyclists, and pedestrians, and the intermodal connections between them.
- The existing highway system should be ***maintained and improved*** to increase the efficiency of the system in ways that support economic development without impacting livability.
- Expand the regional ***transit*** system, including new bus and rail service, and supporting access, infrastructure and land use and pricing policies.
- Enhanced ***safety*** should be a major consideration and goal for all transportation enhancements.
- Finally, the transportation plan should promote ***sustainability*** through integrated land use planning, reduced greenhouse gas emissions, and mitigation of environmental impacts.

Together these form the vision for the Making Connections Plan. The following sections examine relevant subtopics within each of these themes, including mobility and community form, bicycle and pedestrian modes, transit, goods movement, traffic congestion, bridge conditions, scenic corridors and greenways, traffic safety, and greenhouse gas inventory/climate change.

Emerging Concepts

A variety of emerging technical innovations and planning paradigms can support achieving the goals, policies, and vision of the Making Connections Plan. These include new technologies such as electric vehicle charging stations, the FHWA's livability initiative, and simple, but effective low technology stormwater alternatives such as bioswales.

Electric Vehicle Charging Stations

With a growing number of electric vehicle and plug-in hybrid vehicle models entering the marketplace, there is a need to create a publicly available network of charging stations to provide for on-demand vehicle charging needs. Development of a charging station network will alleviate anxiety over vehicle range limitations and spur consumer adoption of electric vehicles, which may reduce greenhouse gas emissions and improve air quality. Charging stations can be installed anywhere there is access to the electric grid and are particularly suitable for retailers, conventional gas stations, parking lots/garages, or curbside locations through smart parking meters. Technology is developing to provide high-speed charges in less than 30 minutes. In New Jersey, the State legislature is currently considering a requirement for electric vehicle charging stations along the State's toll roads.[1]

Photo courtesy of Portland General Electric

Compressed Natural Gas Fleets

Natural gas is a domestically produced, clean-burning alternative to petroleum based fuels such as gasoline and diesel products. A CNG-powered vehicle gets about the same fuel economy as a conventional gasoline vehicle on a gasoline gallon equivalent (GGE) basis. Compared with vehicles fueled with conventional diesel and gasoline, natural gas vehicles can produce significantly lower amounts of harmful emissions such as nitrogen oxides, particulate matter, and toxic and carcinogenic pollutants as well as the greenhouse gas carbon dioxide. [2]

Similar to providing electric vehicle charging stations, delivery and availability of natural gas-based fuels is critical to gaining widespread acceptance and market penetration.

Because of this, fleet applications can provide the opportunity to justify the necessary investment in fueling stations. Large fleets of public transportation vehicles, school buses, taxis, delivery vehicles, and refuse haulers are all examples of potential customers for alternative fuels.

Intelligent Transportation Systems (ITS)

A variety of ITS tools are available to help improve the efficiency of the transportation network through real-time data collection; dissemination of information to users, operations staff, and emergency personnel; and adaptive control systems. Providing users with real-time traffic information, such as travel time or incident reports, allows drivers to plan ahead and adjust to current road conditions. This may encourage some travelers to divert from congested roadways, thus better managing available capacity to the roadway and relieving congestion without capital intensive roadway construction.[3] Variable message signs (VMS) are one tool to communicate travel information to users, as are websites (i.e. http://511nj.org/), telephone hotlines, and smart phone applications. Several agencies in the U.S. offer a service that allows commuters to receive real time updates regarding travel conditions and incidents via one-stop service that provides updates from various agencies (State/regional and local) into a single source.

Adaptive signal systems are an effective tool for arterial management, particularly where there is highly variable or unpredictable traffic demand. On-site sensors continuously collect traffic information to optimize and update the signal timing, which can improve average metrics, such as travel time and fuel consumption, by 10 % or more.[4]

Widespread implementation of ITS systems and technologies can help mitigate the need for some roadway improvements and extend the useful service life of existing roadway, intersection, and bridge capacity.

[1] http://www.nj.com/news/index.ssf/2011/02/nj_bill_permitting_charging_st.html

[2] http://www.afdc.energy.gov/afdc/fuels/various, accessed May 23,2011

[3] http://ops.fhwa.dot.gov/travelinfo/dms/signs.htm

[4] http://www.fhwa.dot.gov/everydaycounts/pdfs/asct_brochure.pdf

FHWA Livability Initiative

Livability is major policy initiative currently being promoted by the U.S. Department of Transportation that focuses on enhancing communities and creating a balance among land uses and transport modes.

The six key principles of livability developed by the HUD-DOT-EPA Partnership for Sustainable Communities are:

- Provide transportation choices
- Expand location and energy efficient housing choices
- Improve economic competiveness of neighborhoods
- Support existing communities
- Coordinate policies and leverage investment
- Enhance the unique characteristics of all communities

Advancing transportation and integrated land use strategies along with livability principles creates safe, healthy, and walkable neighborhoods to benefit all users, whether in a rural, suburban, or urban setting.

Several NJDOT policies and programs overlap with the USDOT's livability program, such as the Complete Streets Policy, the Transit Village Initiative, and Smart Growth Planning. Livability supports sustainability goals by encouraging alternative modes of travel and enhancing existing communities and neighborhoods.[5]

Stormwater Alternatives

Impervious cover, whether from roadways, parking lots, or building roofs, prevents rainwater from naturally percolating into the ground and causes stormwater run-off. As stormwater flows over impervious surfaces, it accumulates debris, chemicals, and other pollutants that can adversely impact the water body into which the untreated stormwater flows. However, several innovative best management practices (BMPs) are gaining traction as alternative methods for reducing stormwater and treating it on-site.

New Jersey's stormwater management regulations have become more stringent in recent years, creating significant constraints for both private development and the planning and implementation of transportation improvements. Stormwater alternatives can prove beneficial to improving environmental quality and provide cost effective solutions for buildings and transportation infrastructure.

[5] http://www.dot.gov/livability/index.html

Bioswales

One alternative BMP is the use of bioswales adjacent to roadways, parking lots, or other impervious surfaces. The stormwater flow is guided into a gently sloped swale, where vegetation, rip-rap, and/or soil slow the flow of water and act as a natural filter to remove sediments and pollutants from the run-off. The reduced flow rate allows the water to percolate into the ground, recharging the groundwater and reducing the amount of untreated stormwater discharged from the site into the local watershed.

Photo courtesy of EcoSRQ.com

Green Roofs

Another alternative BMP, green roofs, similarly takes advantage of the natural filtering abilities of vegetation and soil microbes to treat stormwater on-site. Traditional roofing materials, such as asphalt, are replaced with a waterproof membrane covered by a drainage system, soil media, and vegetation. A 3.5 – 4 inch deep green roof is capable of retaining over 50% of annual precipitation, which is circulated back into the atmosphere through evapotranspiration. The remaining 50% of annual precipitation percolates through the vegetation and drainage system and is slowly discharged off the roof, where it can recharge the groundwater on-site.[6]

These alternative stormwater management practices reduce total stormwater run-off and create a host of environmental benefits. These practices can help to improve water quality by filtering and reducing non-point source pollution, increase groundwater recharge, expand green space for wildlife habitat, improve air quality and human health, reduce heat island effect, and promote carbon sequestration.

[6] "Green Roofs for Stormwater Runoff Control." US EPA. February 2009

The reduction in both total stormwater run-off and peak flow also makes them effective in mitigating flood events and reducing the strain on existing sewer systems.[7]

Photo courtesy of greenroofs.com

Green Building & LEED Certification

With buildings accounting for nearly 40% of the nation's carbon footprint and 68% of electricity use[8], green building practices are becoming more widespread and even mandated by a variety of institutions and government entities, such as the General Services Administration and throughout California through the 2010 California Green Building Standards. LEED certification is an industry standard for green building that rates a building's adherence to green practices based on criteria for building siting, water efficiency, energy usage and atmosphere, materials and resources, and indoor environmental quality.[9]

When integrated into the design process early on, there is no significant difference in average construction cost for LEED certified buildings compared to non-LEED buildings.[10] Green building practices do have several benefits for the triple bottom line of sustainability goals – people, profit, and planet. Green buildings improve occupant comfort and overall quality of life. Workplaces report greater productivity and lower absenteeism. Due to water and energy efficiency measures, operating costs are notably lower, yet owners can also command higher rents due to high demand and the appeal of green buildings to occupants.

Furthermore, there are numerous environmental benefits, including reduced emissions, water usage, and waste streams; improved air and water quality; and conservation of natural resources, local ecosystems, and biodiversity.[11]

LEED 2009 for Neighborhood Development Rating System Guide (http://www.usgbc.org)

The full benefits of green building are more fully realized and enhanced when the buildings are integrated into regional planning strategies such as livability, smart growth, new urbanism, or complete streets that improve connectivity and efficient, alternative transport modes between the buildings. The U.S. Green Buildings Council's recent implementation of the LEED 2009 for Neighborhood Development rating system recognizes the importance of these strategies and emphasizes site selection, land use, and connectivity with the local community. This rating tool is used for new developments to verify they are designed in a sustainable, environmentally responsible manner.[12]

[7] http://cfpub.epa.gov/npdes/home.cfm?program_id=298
[8] http://www.epa.gov/greenbuilding/pubs/whybuild.htm
[9] http://www.usgbc.org
[10] "Cost of Green Revisited." Davis Langdon. July 2007.
[11] http://www.epa.gov/greenbuilding/pubs/whybuild.htm
[12] "LEED 2009 for Neighborhood Development Rating System." http://www.usgbc.org

Integrating Land Use with Transportation Policy

Land use policy and decision making have a significant impact on travel demand, travel patterns, and traffic. Integrating land use and transportation planning can help decision makers understand the impact of land use decisions and bring considerable benefits to a community:

- Mitigate traffic congestion
- Reduce automobile dependency
- Create walkable communities
- Support alternative travel modes including transit and biking
- Promote healthy lifestyles and create more livable, sustainable communities

Community form and how well it is integrated with the circulation system is especially influential in shaping trip making patterns – and often determines whether trips can be made by foot, by bike, by transit, or if they can only be made by automobile.

Circulation Planning

Circulation plans have long been an orphaned element of the overall master planning process, developed in isolation from, and with little relation to, the overall vision and how to implement it. Many circulation plans amount to little more than a traffic engineering exercise - following a standard template of inventory, capacity analysis, and capital improvements drawn from a limited palette of intersection improvements and roadway widenings. When mobility is seen only through the lens of vehicular throughput, then the range of improvements is equally limited. Entire groupings of potential improvements – complete streets, street connectivity, shared parking, cross access easements, bike and pedestrian accommodations, and transit supportive densities – are overlooked and opportunities to move communities toward smart solutions are seldom considered.

Making Connections Plan

The Making Connections Plan integrates the Mobility and Community Form Element principles into its analysis methods, goals and policies, and recommendations. Making Connections is multi-modal and emphasizes projects and policies that improve mobility and circulation by balancing efficiency with safety and livability and protecting neighborhoods from the detriments of through traffic. The Plan favors a robust multimodal transportation network, maintaining and improving the existing highway system, and expanding the regional transit system, while respecting the many constraints to highway expansion and the need to preserve the region's rich natural environment. Safety is paramount and many improvements currently being developed by Somerset County are designed to address existing intersection and roadway deficiencies. Finally, Making Connections promotes sustainability by seeking to redevelop urbanized areas and suburban areas adjacent to rail with transit oriented development that creates transit supportive densities and leverages access to regional rail and parking at existing rail stations.

NJDOT Mobility and Community Form Element

To address these needs, the New Jersey Department of Transportation (NJDOT) developed the Mobility and Community Form Element (MCF). The MCF materials depict a series of patterns of mobility and community life in places across New Jersey. These patterns include circulation, shopping streets, parking, transit stops, neighborhoods, public places, and the natural environment. They function both individually and together in communities large and small. Each pattern includes organizing principles that define and support that pattern and the activities it promotes. While not exhaustive, each represents one way to help nurture and support a healthy, successful, and desirable community. New Jersey's communities and counties are encouraged to apply the patterns as they cultivate great places throughout the Garden State.

Patterns of Mobility and Community Form

The following seven patterns of Mobility and Community Form are depicted and described in the MCF material.

Circulation

Circulation is the cornerstone of mobility-friendly community planning. Street systems very directly influence how communities function. To a large degree, the circulation system also determines the quality of people's daily experience – whether driving, walking, cycling, or taking the bus.

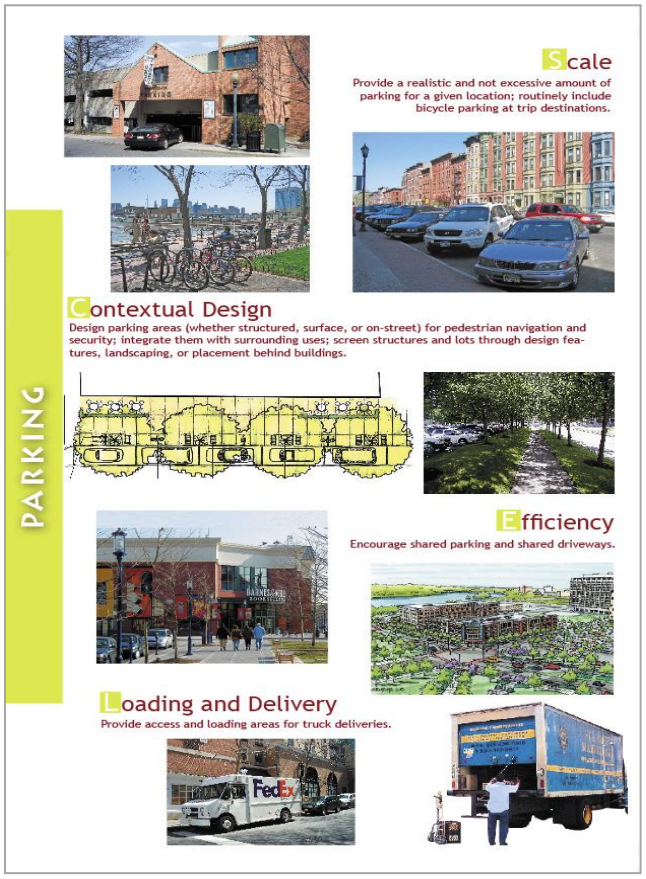
Shopping Streets

Whether a lone rural Main Street or part of an extensive central business district, the shopping street is often the liveliest public space in a community. More than just a collection of store fronts – it is the place where people are drawn to walk, shop, dine, linger, conduct business, and meet friends and neighbors – the shopping street is often the very heart

of the community.

Parking

An integral part of the circulation system, parking is often as important as the streets themselves in shaping local activity patterns. The location, capacity, and design of parking facilities have enormous consequences for communities. By providing designated places to park and prohibiting parking elsewhere, a municipality can shape much of the allowable use of public space within its borders.



Transit Stops

Transit carries a significant portion of New Jersey's travel demand each day. Although most local governments are not direct providers of transit service, they do play a crucial role in ensuring that it works effectively by creating transit supportive density and influencing the quality of access to rail stations, bus stations, and bus stops, including adequate parking. A community-based vision for transit should be articulated through local land use planning and redevelopment opportunities.

Neighborhoods

As the place that links the community's private spaces with the world outside, neighborhoods shape personal experiences, relationships, and community life in profound ways. Seemingly small details, from sidewalks to parks to porches, can make the difference between neighbors who know each other well and those who are neighbors in name only.

Public Places

Public places are the outdoor living rooms of New Jersey's towns and cities, the places where civic and private life come together. Circulation, whether by car, truck, rail, bus, bike or foot, links these elements into a cohesive community.

Natural Environment

Somerset County is home to many forested areas, rivers and streams, farms, and scenic terrain. Achieving a sense of connection with nature is important to many residents. The circulation element plays a crucial role in both protecting and providing access to these destinations though its integration with local planning for natural resources, open space, recreation, and conservation. Plans and policies that promote context sensitive design can help to mitigate the environmental impacts of circulation systems and transportation infrastructure.

Bicycle Circulation

Somerset County's transportation system includes a network of bicycle compatible routes that provide varying levels of access and mobility. The County roadway network currently includes over ten miles of dedicated bicycle lanes, including portions of Cedar Grove Lane and Amwell Road, and many 500 and 600 level routes are considered bicycle compatible based on NJDOT's matrix of bicycle compatible roadway design found in NJDOT's Bicycle Compatible Roadways and Bikeways Planning and Design Guidelines. Bicycle compatibility is determined using several roadway criteria, including the volume of traffic, speed limit, character (urban or rural), lane width, shoulder width, and presence of on street parking. An analysis of the County's 500 and 600 level roadway network, using available data from NJDOT's Straight Line Diagrams, is illustrated in Figure 1, with bicycle compatible sections of roadway noted in green and non-compatible sections noted in red.

Somerset County's 500 and 600 level route network is made up of nearly 250 miles of roadway. Of this, nearly one-third (78.5 miles) is bicycle compatible based on the NJDOT guidelines. This does not take into account the significant number of bicycle compatible local roads, primarily found in the County's centers and residential developments.

However, as indicated in Figure 1, the County's bicycle compatible roadways are scattered across the region and currently provide limited connectivity. More a series of stub links than network, the system is disjointed and does not provide adequate circulation and mobility throughout the County, largely because many County roads lack sufficient shoulder width. East-west access through the central portion of the County, linking Somerville, Raritan, Bridgewater, and Branchburg is generally consistent along routes paralleling U.S. Route 22. However, access east of Somerville is limited by the profile of U.S. Route 22 – a controlled access, divided highway with a speed limit of 55 mph – and the topographical limitations of the varied terrain to the north.

North-south bicycle compatible routes are generally nonexistent, with some shorter disconnected sections of the County roadway network providing varying levels of bicycle compatibility. Again, the topographical limitations of many county routes in the northern portion of the County severely constrain bicycle circulation north of the major centers in Somerville, Raritan Borough, Bound Brook, and North Plainfield. In addition to the terrain issues, the region's major highways also create barriers to bicycle circulation. The few crossings of major limited access routes such as Interstate 287 and U.S. Routes 22 and 202 are generally heavily congested, higher speed roadways that are not conducive to bicycle travel.

Greenway and Byway Bicycle Mobility

Greenways can be used to supplement bicycle mobility by providing safe off-street connections for bicycle travel. For example, analysis and findings from the Somerset County Regional Center Greenway Plan examined existing conditions, generators and attractors of demand for bicycling, and barriers to accessibility, and established a strategic framework to guide policies, programs, and actions for pedestrian and bicycle mobility within the Regional Center.

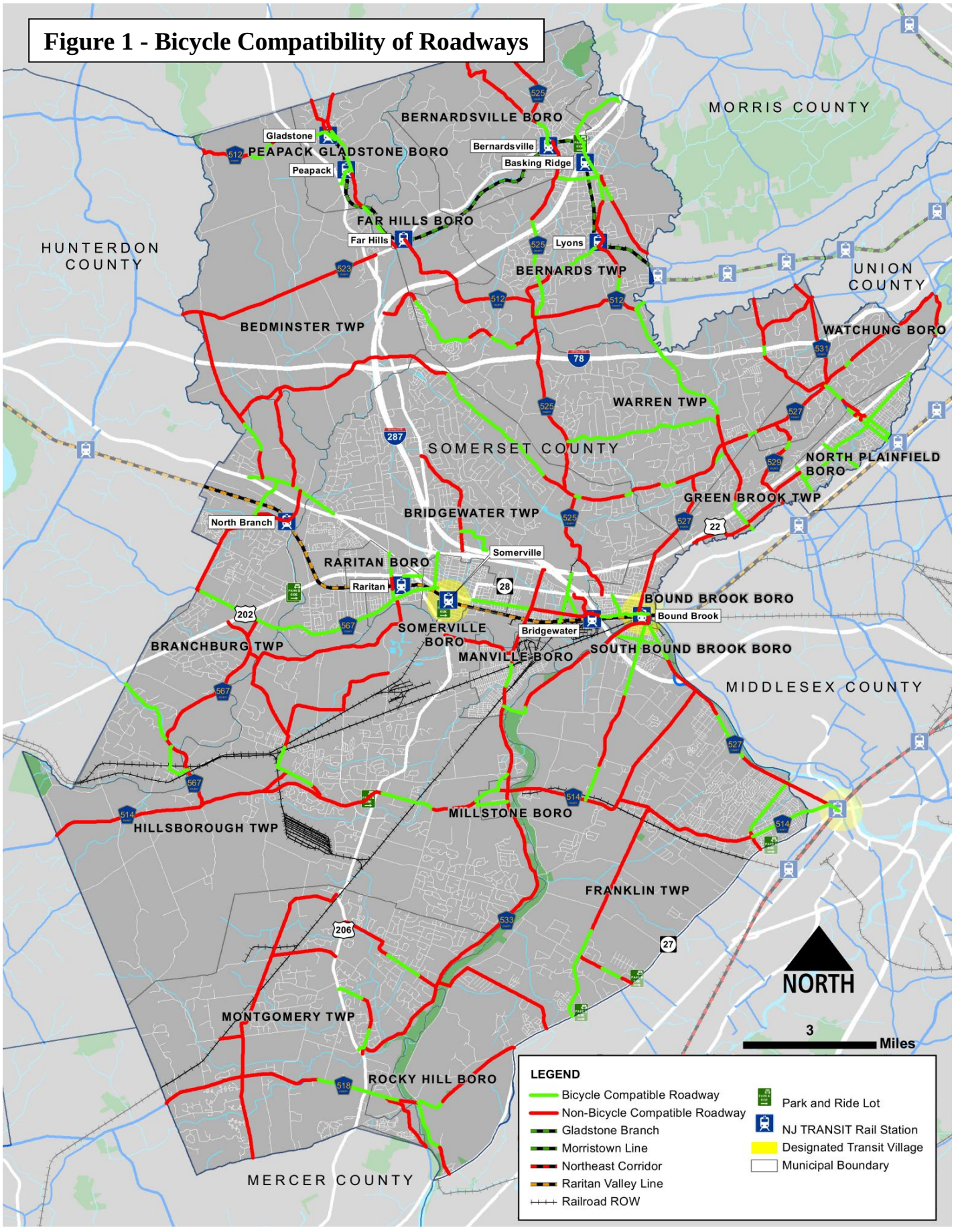
The cornerstone of the Greenway Plan is the proposed "Conceptual Greenway System" that leverages accessible roadways, off-road trail systems, and public lands to improve mobility where sidewalks and shoulder facilities are limited. In addition to mobility and safety benefits, the Greenway system also "strengthens the environmental quality of both the natural and built environments" within the region.

Bicycle Circulation Issues and Findings

STRENGTHS	• Rural landscapes offer scenic recreational cycling uses • Circulation within centers • East-West Circulation within Central Somerset County • Generators of bicycle demand include downtown centers, schools, municipal facilities, parks/open space, and transit facilities	• Improve access to major transit hubs, including adequate bicycle parking • Investigate Shared Lane Markings where appropriate • CR 533 as a scenic parallel route to U.S. Route 206 • Shoulder improvements and speed limit reductions • Off-road connectivity • Use of public lands, open spaces, and greenway corridors (i.e. Delaware and Raritan Canal)	**OPPORTUNITIES**

WEAKNESSES	• Numerous high speed roadways act as barrier to bicycle circulation
	• Aggressive drivers
	• Insufficent bicycle parking
	• Lack of bicycle compatible shoulders on many rural routes
	• Overall county route bicycle network lacks connectivity
	• Documented barriers to bicyclist accessibility and mobility
	• Limited study and focus on rural areas outside of the Regional Center
		• Highways are major barriers:
		  ○ Interstates 78 and 287
		  ○ U.S. Routes 22, 202, 206
		  ○ N.J. Route 28
		  ○ Somerville Circle
		• Topographical limitations
		• Environmental concerns
		• Raritan River crossings
		• Limited capital funding
			CONSTRAINTS

Figure 1 - Bicycle Compatibility of Roadways



Pedestrian Circulation

Somerset County's highway network includes numerous routes that have sidewalks in one or both directions of travel. The presence of sidewalks is largely dependent on surrounding land uses, the presence of pedestrian generators, and the general density of adjacent development, as well as local zoning and development review practices.

Sidewalks along County roads fall under municipal jurisdiction, so the presence of sidewalks along these routes is dependent on the level of importance a given municipality places on pedestrian mobility.

Table 1 - Sidewalk Coverage along County Routes	
Somerville	100%
Bound Brook	98%
North Plainfield	87%
South Bound Brook	85%
Rocky Hill	81%
Raritan	71%
Manville	60%
Bernards	46%
Bernardsville	34%
Peapack-Gladstone	27%
Bridgewater	25%
Millstone	24%
Franklin	21%
Watchung	17%
Far Hills	12%
Hillsborough	9%
Green Brook	9%
Montgomery	7%
Warren	6%
Bedminster	5%
Branchburg	4%
Somerset County	23%

Table 1 illustrates the approximate percentage of County roadways that have sidewalk, by municipality, based on a review of the number of linear feet of existing sidewalk compared to the total potential linear distance of applicable roadways. This approximate percentage indicates the general walkability of County routes within each municipality. Not surprisingly, the municipalities with the highest densities – Somerville, Bound Brook, North Plainfield, and South Bound Brook - have the best sidewalk coverage along County roadways, while the County's more rural and suburban areas currently provide significantly less sidewalk coverage. In many cases, this is consistent with the nature of development directly adjacent to the roadway – where land uses encourage and generate pedestrian trips, it is more likely that they have been provided.

Figure 2 indicates the presence (green) or absence (red) of sidewalks along County routes. While pedestrian circulation along County routes in major centers like Somerville, Bound Brook, South Bound Brook, and North Plainfield is optimal, many pedestrian generators (schools, shopping areas, etc.) outside of those centers lack basic sidewalk connections. Complicating this issue is the fact that many rural County routes also lack shoulders, further limiting the safe passage of pedestrian traffic within these areas. Improvements to the County sidewalk network will also have to address the barriers created by numerous Interstate, U.S., and State Routes that traverse the County.

Greenway and Byway Pedestrian Mobility

Greenways can be used to supplement pedestrian mobility by providing facilities that accommodate walking where the street system and infrastructure may be lacking. The Somerset County Regional Center Greenway Plan examined existing conditions, pedestrian demand, and barriers to accessibility, and established a strategic framework to guide actions for pedestrian mobility in the area known as the Regional Center, which is comprised of Somerset, Raritan, and portions of Bridgewater.

The Plan proposes a "Conceptual Greenway System" that leverages accessible roadways, off-road trails, and public lands to improve pedestrian mobility where sidewalks and shoulder facilities are limited.

Pedestrian Circulation Issues and Findings

STRENGTHS

- Major centers have robust sidewalk network
- Pedestrian signals conform to Federal standards
- Conditions near major generators (transit hubs, schools) are generally appropriate given their surrounding context

OPPORTUNITIES

- Prioritize improvements on gaps near major generators
- Improve pedestrian access to transit hubs
- Review locations where unmet demand is clear, and identify funding sources to allow county to fund sidewalk projects
- Encourage annual maintenance at municipal level to address gaps link-by-link

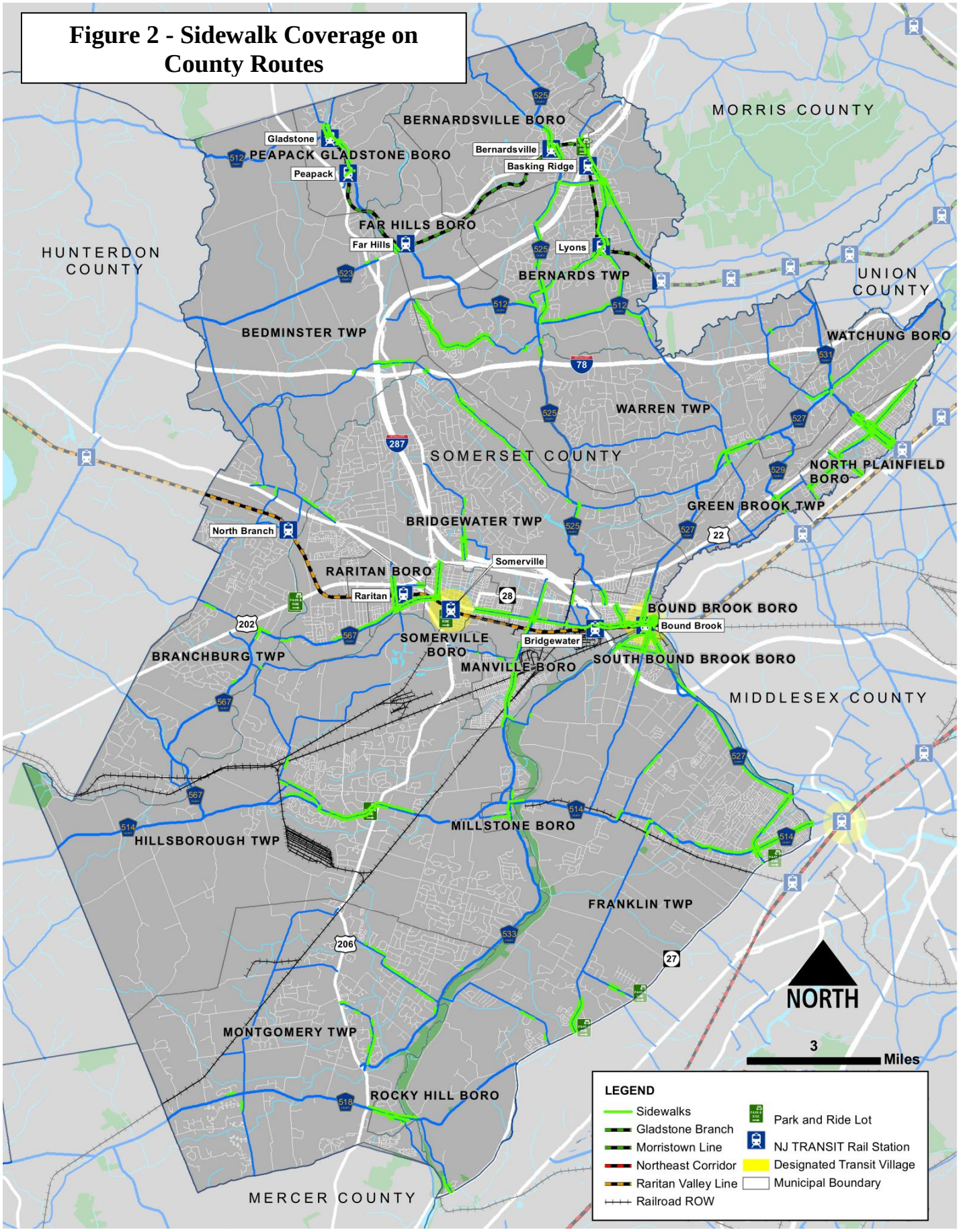
WEAKNESSES

- Many sidewalk gaps exist along county roadway network
- Many rural routes lack sidewalks or adequate shoulders
- Aggressive drivers make crossing the most heavily traveled routes difficult

CONSTRAINTS

- Major highways are barriers:
  - Interstates 78 and 287
  - U.S. Routes 22, 202, 206
  - N.J. Route 28
  - Somerville Circle
- Sidewalks along County roads are not within County jurisdiction
- Limited capital budget, many safety and mobility needs

Figure 2 - Sidewalk Coverage on County Routes



Transit Mobility

Transit is crucial to the vision of creating a robust multi-modal transportation system. Somerset County benefits from an extensive transit network that provides an alternative means of mobility, reduces the number of trips made by automobiles, eases congestion, and reduces air pollution and greenhouse gas emissions. As shown in Figure 3, Somerset is served by two NJ Transit rail lines (Raritan Valley Line and Gladstone Branch), numerous bus lines operated by NJ Transit and private carriers, and shuttle services provided by Somerset County. Additionally, there are 13 park-and-ride lots within the County, 11 of these at NJ Transit rail stations.

The broad array of services generally provides good transit mobility; however, gaps in services areas and service times limit its effectiveness. The system is oriented to the higher density population centers, with limited coverage in the outlying suburbs, where many of the newer private employment hubs have located, and rural areas. Service on all modes is also geared toward traditional commuter schedules, with less off-peak service, which reduces transit convenience for non-traditional commuters and other riders.

The Raritan Valley and Gladstone Branch Lines are critical transit resources for the County. They primarily service east-west commuters bound to Newark and New York, with traditional commuter schedules, and less frequent off-peak service. Options to increase frequency are constrained by limitations in Newark and into Manhattan and beyond. The Raritan Valley Line is diesel powered, preventing its trains from accessing New York Penn Station and requiring New York-bound passengers to transfer at Newark.

The existing rail system also provides few options for suburb-to-suburb commuters. Most large employers in the County have relocated out of the dense town centers where the rail stations are located to office space along main arterial highways in outlying areas. Bus or shuttle services could be enhanced to provide better "last mile" connections between rail stations and these employment centers.

Redevelopment opportunities to create higher densities around rail stations that better support transit should be pursued. Bound Brook and Somerville are both designated as NJDOT Transit Villages, which encourages smart growth and transit oriented development (TOD). Somerville is pursuing redevelopment of a landfill site as a TOD adjacent to its rail station, though the poor financial markets have slowed private developer participation in the project.

Opportunities also exist to expand the rail system within the County. The proposed reactivation of passenger rail service on the West Trenton Line, which was deactivated in 1982, would add north-south rail service through the County and provide better connections to Newark, New York, Trenton, and Philadelphia. Proposed stations in Somerset County are in Hillsborough and Montgomery Townships; both municipalities are investigating Transit Ready Development (TRD) planning guidelines in preparation for the new rail line. However, the reactivation of this line is tied to the need for expanded capacity further down the rail line and no dedicated funding source has been identified.

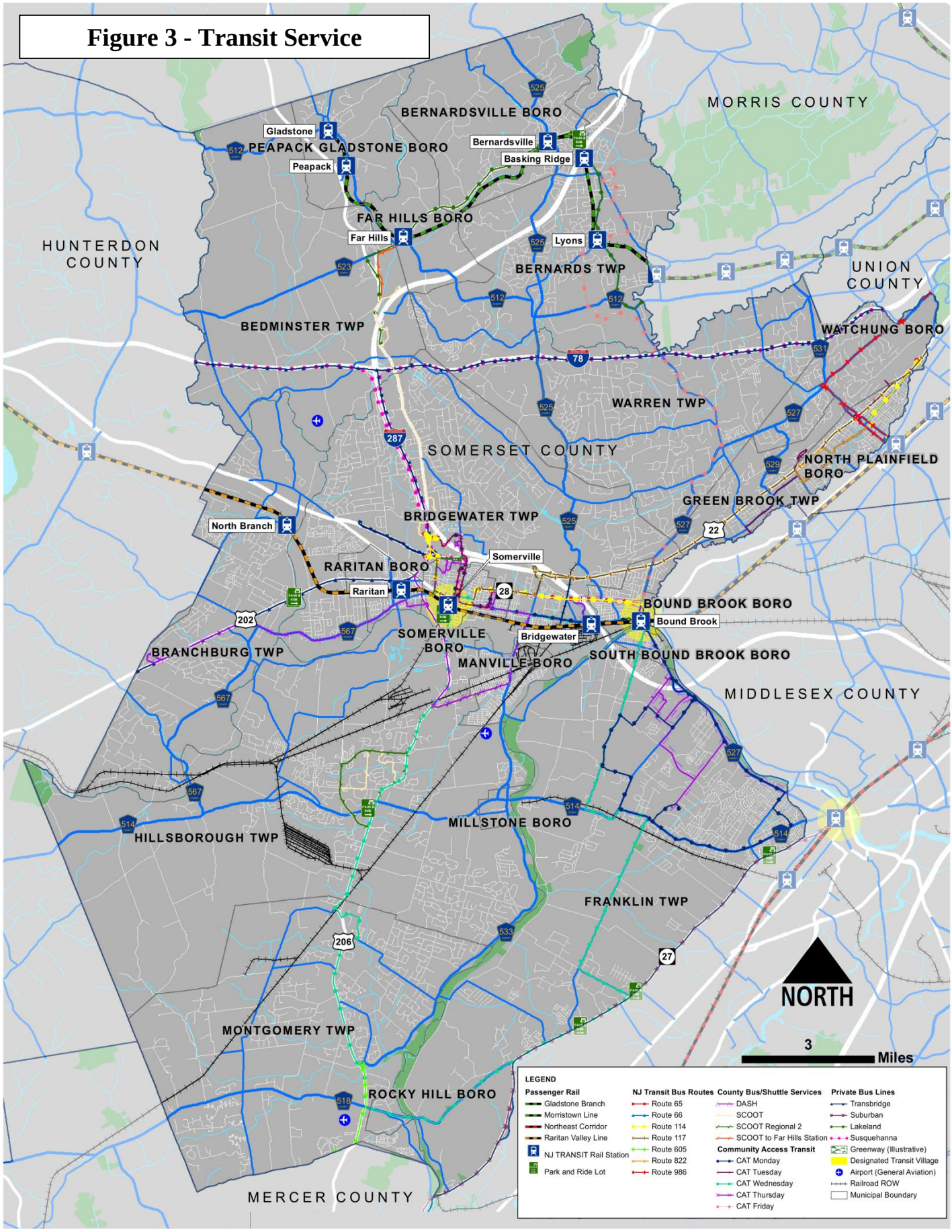
Additional rail mobility improvements could be made with extensions of the Raritan Valley Line. One proposal is for an extension to Phillipsburg and the Lehigh Valley of Pennsylvania with stations in Easton, Bethlehem, and Allentown; however, it has a high capital cost and a study of projected ridership estimated farebox recovery below the NJ Transit system average. Another option is a spur from Bound Brook to Flemington. Both of these proposed projects would improve westerly connections for Somerset County and reduce congestion on major routes such as U.S. 202, U.S. 206, and I-78.

Although Somerset County is served by numerous bus routes, several deficiencies exist. NJ Transit does not cover the northern portion of the County and County shuttles, though covering a large area, have limited frequency, preventing them from serving as a significant mobility option. Opportunities may exist to improve bus service by enhancing off-peak service; improving connections to Middlesex County destinations and employment centers, such as New Brunswick; re-establishing NJ Transit service to the community college; adding NJ Transit service on the U.S. 206 corridor; and providing adequate shelters and sidewalk connections to encourage ridership.

Transit Issues and Findings

STRENGTHS	• Raritan Valley and Gladstone Branch NJ Transit lines link Somerset's largest population centers to tradtional employment centers • Seven NJ Transit bus lines • County shuttle services • Bound Brook and Somerville designated as Transit Villages • Thirteen Park-and-Ride lots • Parking capacity at existing stations is a significant asset • Private carrier bus services (Trans- Bridge, Suburban, Lakeland)	• Reactivate West Trenton Line • Raritan Valley Line extensions to the Lehigh Valley and Flemington • Somerville Landfill TOD Redevelopment project • Transit Ready Development (TRD) in Hillsborough and Montgomery • Smart growth initiatives • Bound Brook, Somerville, & North Branch station areas identified as pilot TOD sites • Implement Transit-Supportive Land Uses	**OPPORTUNITIES**
WEAKNESSES	• Rail service limited for suburb-to-suburb and non-traditional peak hour commuters • Lack of north-south service • Limited transit services to large private employment hubs located on County's major arterials • Limited services to outlying suburbs and rural areas • Limited off-peak service • Deficient bus shelters and sidewalk connections • Transit dependent and mobility limited populations underserved • Limited connections to employment destinations in New Brunswick & Middlesex County	• Limited rail capacity at points east and north constrains the ability to add significant capacity and new service • Raritan Valley Line powered by diesel, not electrified, limiting access to New York • High capital cost of adding new rail lines • Limited public funds to expand services on existing bus and rail lines • Economic recession and poor financial markets have deterred private developers from pursuing Somerville and other TOD projects • Rail extension projects require varying amounts of cooperation from private freight railroads who own some of the needed ROW	**CONSTRAINTS**

Figure 3 - Transit Service



Goods Movement

Somerset County has a diverse array of industries and freight-related businesses, including quarries, medical and pharmaceutical companies, regional distributors, steel fabricators, building materials, and transload operations. In 2007, nearly 10.4 million tons of freight valued at $34.5 billion moved into, out of, and within Somerset County (Table 2), approximately 95% of which was moved via truck. In addition, there is a vast amount of goods moved through the County without stopping in Somerset, primarily on the Interstate roadways and rail lines.

Somerset County is centrally located within New Jersey, positioning the County as a prime regional distribution location. As such, the County attracts smaller regional distribution and serves niche markets and regional activity. The County has over 40 million square feet of industrial property. However, no sites are greater than 500,000 square feet, reflective of their use for regional operations rather than the larger facilities favored by the "big box" national distribution centers found in Middlesex County. Somerset County's distribution and manufacturing facilities are shown in Figure 4.

As a favorable location due to its proximity to regional markets and critical infrastructure, Somerset County also has a mix of road and rail operations to move goods into, out of, within, and through the area. The major truck routes include Interstates 287 and 78 and U.S. Routes 22, 202 and 206. Interstate 287 provides north-south movement and connectivity to the New Jersey Turnpike, prompting a substantial amount of industrial space to locate along this corridor. However, excessive congestion and the cost of delays during peak hours have caused some firms to reconsider this location. Where possible, trucks have shifted to off-peak travel.

Interstate 78 provides east-west access through the County. The route is heavily used for industrial properties in eastern PA that are receiving product from New Jersey locations (including the Port of New York and New Jersey) and delivering shipments to customers in the State.

Truck traffic accounts for approximately 2% of total traffic volume on U.S. 206 and has been of concern to communities along this roadway. However, a 2009 survey of truck drivers on U.S. 206 in Somerset County found that of those surveyed, 75% of the truck shipments either originated or terminated at a business located in Somerset or Mercer Counties, indicating that the route is vital to, and often used by, local businesses and industries. Through trips accounted for the remaining 25%, of which only 4% were external to the metropolitan region and 21% originated from or were destined to other locations within New Jersey or the greater-Philadelphia metro region.[13]

Somerset is also unique in New Jersey in terms of its location within the national rail freight system. The County is situated at the edge of the Conrail Shared Assets Area, meaning that some sites are located within the Shared Assets Area and other sites are located along rights of way owned by one Class I railroads, representing both cost savings and access advantages to shippers.

Somerset also has two critical national rail lines running through the County: Norfolk Southern's Lehigh Line (23 trains/day) and CSX's West Trenton (Trenton Subdivision) Line (20 trains/day).[14] Both lines are vital rail routes for New Jersey. These lines carry containerized cargo to and from the Port of New York and New Jersey, domestic containers of products, and carload shipments (such as plastic pellets, paper, food, and ethanol).

Additionally, rail freight operates on Conrail's Port Reading Secondary (3 trains/day) and on New Jersey Transit's Raritan Valley Line. The use of NJ Transit tracks for rail freight is generally limited to local pick up/delivery service and is subject to railcar weight restrictions.

Manville Yard is an important rail facility within the County. Located at the junction of the Lehigh and West Trenton Lines, it is owned by CSX and also used by Norfolk Southern and Conrail as a carload facility. However, the yard is essentially at capacity and cannot be expanded.

Table 2 - Somerset County Freight Flows

	2007 Tons	2007 Dollars
County Internal	520,391	$ 1,242,535,177
Inbound	4,511,413	$ 12,474,383,153
Outbound	5,335,094	$ 20,811,772,617
Grand Total	10,366,898	$ 34,528,690,946

Source: Global Insight Transsearch data as analyzed by Cambridge Systematics for the New Jersey Department of Transportation

[13] New Jersey Department of Transportation, Truck Origin/Destination Survey, 2009, p. 19.
[14] North Jersey Transportation Planning Authority, Rail Crossing Assessment, 2007.

Goods Movement Issues and Findings

STRENGTHS

- Access to major east-west and north-south roadways via I-78, I-287, and U.S. Routes 22, 202, & 206
- Access to 2 national railroads – CSX and Norfolk Southern – with industrial sites located within or near Conrail Shared Asset Area
- Diverse industrial and distribution business base
- County-level recognition that industrial and distribution businesses are a valued element of the economy

OPPORTUNITIES

- Centrally located within NJ, making the County suitable for distribution activities
- Rail-served sites immediately outside the Conrail Shared Assets Area, a cost savings
- Available industrial properties can serve small and medium sized firms cost effectively
- Has existing industrial concentrations, including steel, bulk and building supply transloading, and pharmaceutical and medical product manufacturing

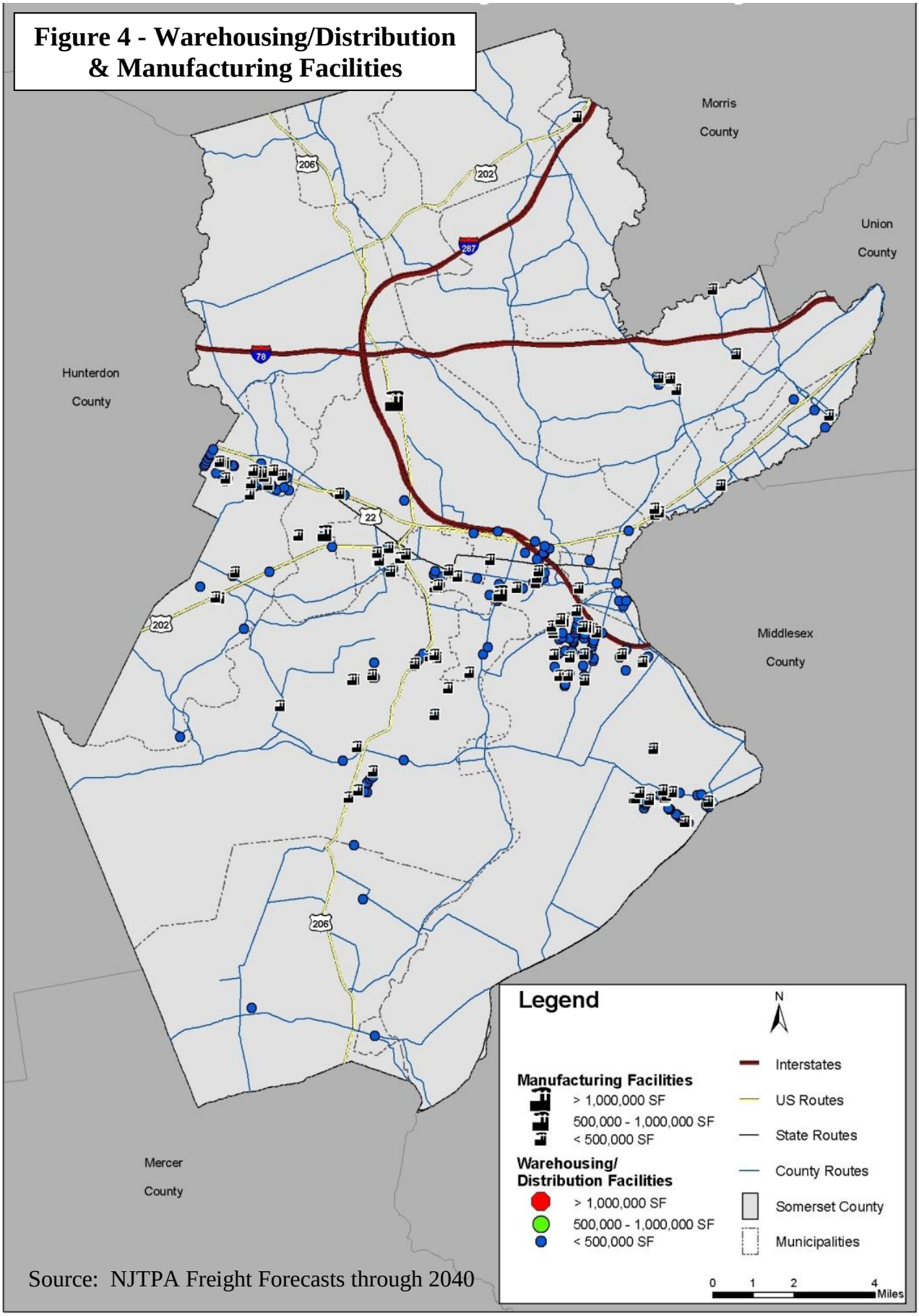
WEAKNESSES

- Lacks proximity to NJ Turnpike, the supply chain spine of the State
- Several key routes are congested, particularly I-287
- Most industrial buildings are older and smaller. No warehouses larger than 500,000 sf exist in the County
- Industrial sites compete with locations in Middlesex, Union, and Mercer Counties in NJ and locations along I-78 in Eastern PA

CONSTRAINTS

- Limited large green field parcels for new development; must focus on reuse of existing and/or brownfield sites
- Existing railyard in the County, in Manville, is at capacity
- Must balance industrial and freight related development with other land uses
- Limited public sector funds are available
- Roadway congestion

Figure 4 - Warehousing/Distribution & Manufacturing Facilities



Source: NJTPA Freight Forecasts through 2040

Regional Highway System

Somerset County's highway network provides the primary means of mobility through the County for the vast majority of trips. As shown in the functional classification system in Figure 5, the County is served by two Interstate highways, several U.S. and State routes, and a broad county route network that covers the entire County. However, the region lacks a limited access north/south highway and east-west mobility is also a constraint. As a result, U.S. Route 206 is forced to serve the competing needs of regional mobility and local access – catering to long and short trips alike – leading to significant peak period traffic congestion and frequent turning movement conflicts as travelers seek access to local residential and business uses.

Additionally, the lack of freeway capacity south of Somerville places a significant burden on the County roadway network. Though this network provides good coverage throughout the County, many of these roadways are a legacy of the region's rural and agricultural origins, following old property lines rather than more direct routing, and have numerous geometric deficiencies that do not conform to modern design standards. With population growth, higher traffic volumes, and increased freight needs, such shortcomings can pose safety and capacity issues that were not a concern when these roads were first built.

Unfortunately, land development along the roadways and environmental constraints now pose right-of-way limitations and costs that limit improvement options. Community concerns also constrain road expansion options to safely accommodate growing traffic volumes. Topographic features, such as the Raritan River, further constrain roadway and intersection expansion and improvements.

Capital Improvements

The following improvement projects have been identified as having County significance and are in various stages of the project pipeline; they were included in the scenario planning exercise, but not included in the initial NJTPA regional travel model.

- **West County Drive Extension** – connect U.S. Route 202 to Old York Road (CR 637) in Branchburg Township. Help alleviate congestion at the U.S. Route 202 and Old York Road intersection by providing an alternative crossing of U.S. Route 202
- **Orchard Road-Connection to River Road** – extend Orchard Road to connect Georgetown-Franklin Turnpike (CR 518) via Research Road to U.S. Route 206 via Orchard Road in Montgomery Township; involves the construction of a bridge over the Bedens Brook
- **Brown Avenue Extension -** would connect U.S. Route 206 to Roycefield Road in Hillsborough Township and serve as an alternative to Dukes Parkway West
- **Georgetown-Franklin Turnpike (CR 518) / U.S. Route 206 Intersection** – eliminate left turns from U.S. 206 to CR 518 by redirecting these moves to a series of 'loop' roads around the intersection
- **U.S. Route 22 Long Term Improvements** – safety and capacity improvements to Route 22 between U.S. Route 202/206 and Interstate 287 in Bridgewater Township
- **Chimney Rock Road (CR 675) Interchange** – construct a grade separated interchange between U.S. Route 22 and Chimney Rock Road in Bridgewater Township; provide a connection across Route 22 via Chimney Rock Road
- **I-287 at Easton Ave (CR 527) Interchange** – improve connections between the two roadways; enhancements to the interchange itself and surrounding roadways
- **U.S. Route 206 Bypass & 15N Widening –** bypass will connect Route 206 at Old Somerville Road to Mountain View Road in Hillsborough; provides alternate route to the existing roadway with intersections at Amwell Road (CR 514) and Hillsborough Road. Section 15N project widens and adds a median barrier on U.S. Route 206 from Brown Avenue to Old Somerville Road in Hillsborough to connect to the Bypass
- **Amwell Road Signal Improvements –** upgrade the intersections of Amwell Road with Cedar Grove Lane, South Middlebush Road, and Demott Lane, which were recently completed by Somerset County but not included in the NJTRM-E
- **I-287 & Weston Canal Road Signal** – signalize the I-287 southbound ramp where it intersects with Weston Canal Road (CR 623) in Franklin Township
- **U.S. 202 at 1st Ave (CR 567) –** widen the intersection to provide three travel lanes in each direction on U.S. Route 202 with associated signal and striping changes
- **Diamond Hill Road Interchange –** complete the I-78 and Diamond Hill Road interchange in Berkley Heights to provide full movements, including the missing westbound I-78 to southbound Diamond Hill Road movement

Functional Classification

Functional classification is the process by which roadways are grouped according to the character of the traffic they serve. The Somerset County Planning Board has adopted a functional classification system for all County roadways, including both arterial highways and collector roadways. This system includes the four categories described in Table 3. Figure 5 depicts the functional classification of Somerset's County Roadways.

For each of these four functional classifications, Somerset County has specified a desired right-of-way and cartway width. These dimensions for each are listed in Table 4. In addition to these dimensions, full-width shoulders of eight feet in width are typically provided on all reconstructed or new Somerset County roadways. Depending on the classification of the roadway and other factors, shoulder widths of less than eight-feet may be provided, where appropriate.

Somerset County also designates scenic roads, as set forth in the Somerset County Scenic Corridor and Roadway Study. Regardless of functional class, the standard roadway width for scenic roadways is 34 feet, except in historic districts of less than one mile in length, in which case the standard width is 30 feet. Somerset's scenic corridors and greenways are discussed in further detail in a subsequent section of this report.

Table 3 - Roadway Functions

Class	Functions
Major Arterial	• Facilitate regional through movements • Accommodate high traffic volumes • Maximize mobility, minimize interference
Minor Arterial	• Facilitate through movements within Somerset County • Connect major arterial roadways with the collector system • Link centers
Major Collector	• Bi-directional connection between local streets to the arterial system • Connect residential developments with adjacent land uses
Minor Collector	• Bi-directional connection between local streets to the arterial system, albeit at lower volumes than major collectors • Connect residential developments with adjacent land uses • May include County roadways without collector function that provide access to adjacent land uses

Source: Somerset County

Table 4 - Roadway Characteristics

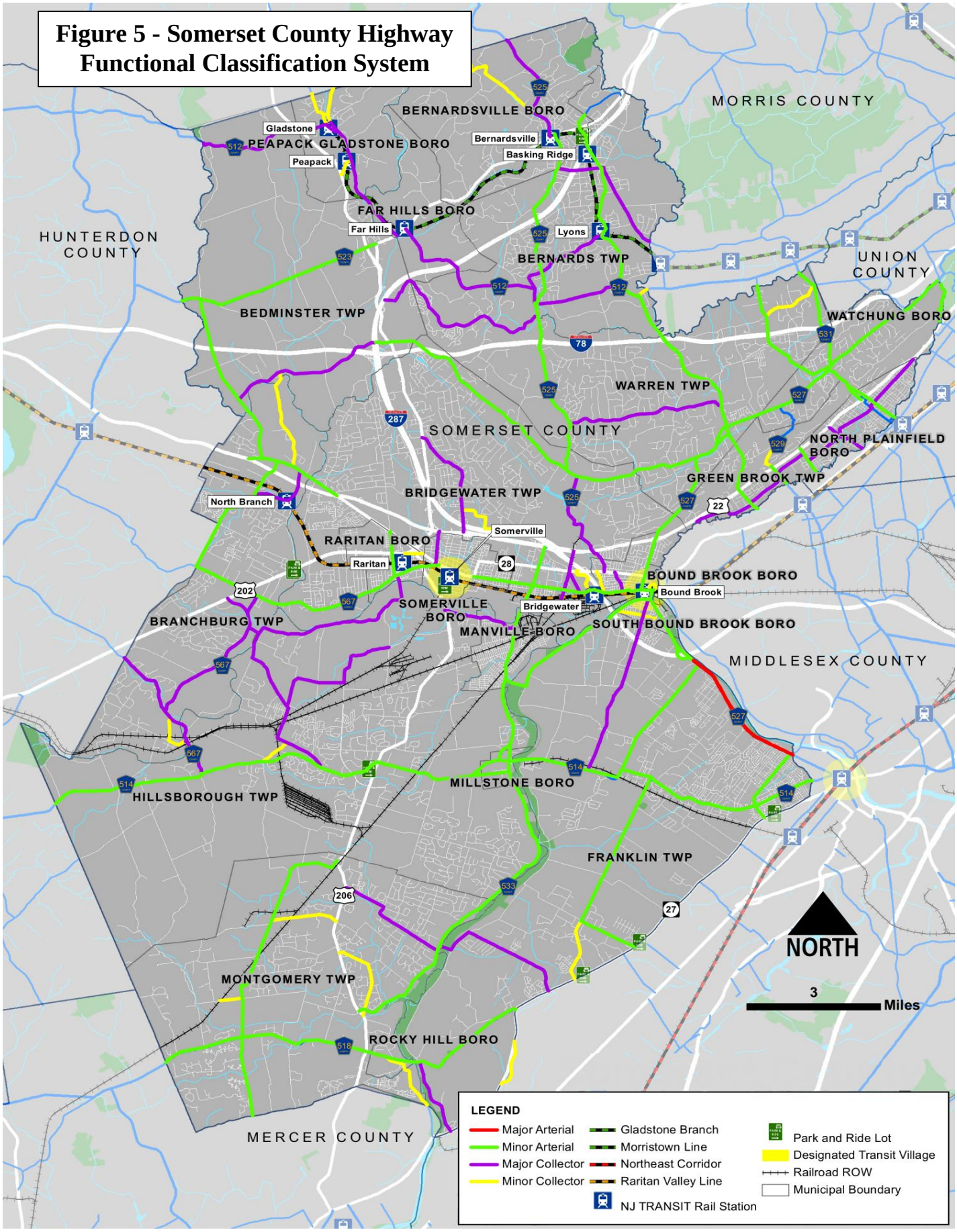
Class	Right-of-Way	Cartway	Lanes
Major Arterial	80 Ft.	58 Ft.	4
Minor Arterial	66 Ft.	46 Ft.	2 to 4
Major Collector	60 Ft.	40 Ft.	2
Minor Collector	50 Ft.	30 to 36 Ft.	2

Source: Somerset County

Regional Highway System Issues and Findings

STRENGTHS	• Large County roadway network • Interstate access via I-78 and I-287 in northern portion of the County • Several U.S. and State routes traverse the County • Improvements to U.S. Routes 206 and 22 in project pipeline • Studies underway for Easton Avenue, U.S. 22 and 202	• Rural character of many County routes is well suited for scenic byways • Planned projects to improve roadway capacity, mobility, opertations, and safety • Operational and safety improvements may increase system capacity and mitigate traffic congestion	**OPPORTUNITIES**
WEAKNESSES	• No limited access north/south highways are provided in Somerset County, forcing U.S. Route 206 to serve both mobility and access needs • No limited access highway mobility south of Somerville • County roadway network is a legacy of the County's rural heritage and some roads have geometric deficiencies	• Right-of-way costs, development, environmental constraints, and community concerns limit options for roadway expansion to correct geometric issues on county roads • Limited Capital Budget – must balance highway dollars among safety, congestion, and maintenance needs • Topographic features such as the Raritan River and rolling terrain are barriers to mobility • Environmental costs , both locally and to the region	**CONSTRAINTS**

Figure 5 - Somerset County Highway Functional Classification System



New Roadway Alignments

Somerset County has completed most of the new alignments that were discussed in the 2003 Transportation Choices: Somerset County Circulation Element Update. The Bound Brook roundabout and East Street realignment project, improvements to South Middlebush Road, and the completion of Amsterdam Drive have all been constructed.

Figure 6 depicts the new alignments. Alignments displayed in green are currently listed in the Somerset County Six Year Capital Improvement Plan. Alignments displayed in yellow are those for which local municipalities have expressed interest to Somerset County.

New Alignments

New and/or realigned roadways which are identified in the County's six year capital plan include:

River Road Realignment (Hillsborough Township) – This improvement will eliminate several severe curves by improving the road's horizontal alignment. This section of River Road will be aligned with the Lyman Street Bridge.

West County Drive between Old York Road (CR 637) and State Highway Route 202 (Branchburg Township) – The West County Drive extension would connect U.S. Route 202 at Chubb Way and extend to Old York Road (CR 637). The project will help to alleviate congestion at the U.S. Route 202 and Old York Road intersection by providing an additional north/south crossing of U.S. Route 202.

Other Potential Alignments

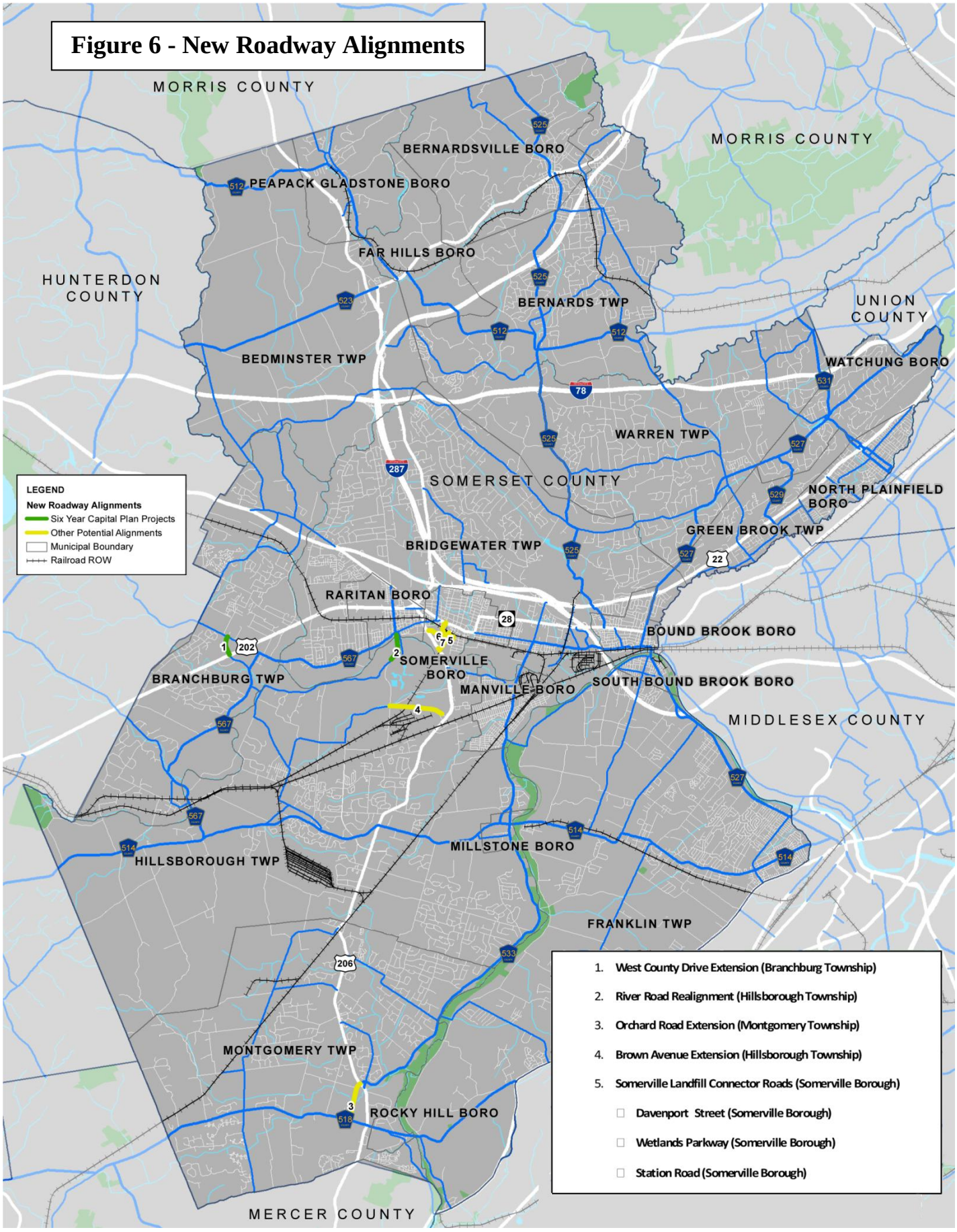
The local municipalities have expressed interest to Somerset County for the following new roadway alignments:

Orchard Road Extension (Montgomery Township) – The Orchard Road extension would connect Georgetown-Franklin Turnpike (CR 518) via Research Road to U.S. Route 206 via Orchard Road in Montgomery Township. The crossing involves the construction of a bridge over the Bedens Brook.

Brown Avenue Extension (Hillsborough Township) – The Brown Avenue extension would connect U.S. Route 206 to Roycefield Road in Hillsborough Township and serve as an alternative to Dukes Parkway West.

Somerville Landfill Connector Roads (Somerville Borough) – A series of roadways to provide access to the proposed Landfill Redevelopment project and Somerville Train station from U.S. Route 206 and New Jersey Route 28.

Figure 6 - New Roadway Alignments



Roadway Congestion

Congestion is a major concern for many portions of Somerset County's roadway network, leading to longer travel times, a spillover of traffic from major arterials onto minor secondary roads, increased fuel consumption, and air pollution.

The NJDOT provided Congestion Management System (CMS) data, which are based on 2006 traffic volume data and for each link includes maximum volume to capacity (v/c) ratios, congestion description, county and MPO ranking, and ultimately a priority score and rating (low, medium, or high). CMS scores indicate areas of recurring congestion along New Jersey's highway network, which can have significant negative impacts on traffic throughput. NJDOT's CMS database also provides information related to the state's "79 most congested commuter corridors," and "problem area interchanges" which are priority locations in terms of recurring congestion along New Jersey's highway network. The NJDOT CMS indicates that segments with a volume to capacity ratio greater than 0.9 but less than 1.1 are "very congested," while segments with a volume to capacity ratio greater than 1.1 are "severely congested."

An analysis of NJDOT CMS data shows that countywide, a total of 36% (39.69 miles) of these major roadways are classified as very congested, while 25% (27.40 miles) are categorized as severely congested.

The worst congestion in Somerset County is concentrated on U.S. Routes 22 and 202. Segments of these two roadways dominate the top 10% of congested roadway segments not only within the County, but statewide as well. Further illustrating the high levels of congestion is the fact that nearly the entire length (95%) of U.S. 22 through the County is classified as very or severely congested.

While the interstate highways within the County have few areas of severe congestion, high levels of congestion are prevalent, with 62% of Interstate 78 and 46% of Interstate 287 within the County classified as very congested.

Of State and County routes through Somerset County, N.J. Route 28 experiences the most congestion, with 49% of the route described as severely congested. N.J. Route 28 through Bound Brook Borough is in the top 8% of congested roadway segments in the County. CMS data for one County road, CR 527 was available, and indicated that over 60% of this roadway is either severely or very congested.

Congestion levels from the available CMS data for Somerset County are depicted in Figure 7.

Table 5 - Somerset County CMS Data Summary

Congestion level	I-78 miles (%)	I-287 miles (%)	U.S. 22 miles (%)	U.S. 202 miles (%)	U.S. 206 miles (%)
Not Congested	1.90 (12%)	3.15 (16%)	0.30 (2%)	3.52 (16%)	2.55 (14%)
Moderately Congested	4.25 (26%)	7.18 (36%)	0.67 (4%)	7.60 (35%)	5.02 (27%)
Very Congested	9.89 (62%)	9.20 (46%)	3.23 (18%)	3.36 (15%)	9.69 (52%)
Severely Congested	0.00 (0%)	0.40 (2%)	14.20 (77%)	7.21 (33%)	1.44 (8%)
Total	16.04 (100%)	19.9 (100%)	18.40 (100%)	21.69 (100%)	18.7 (100%)

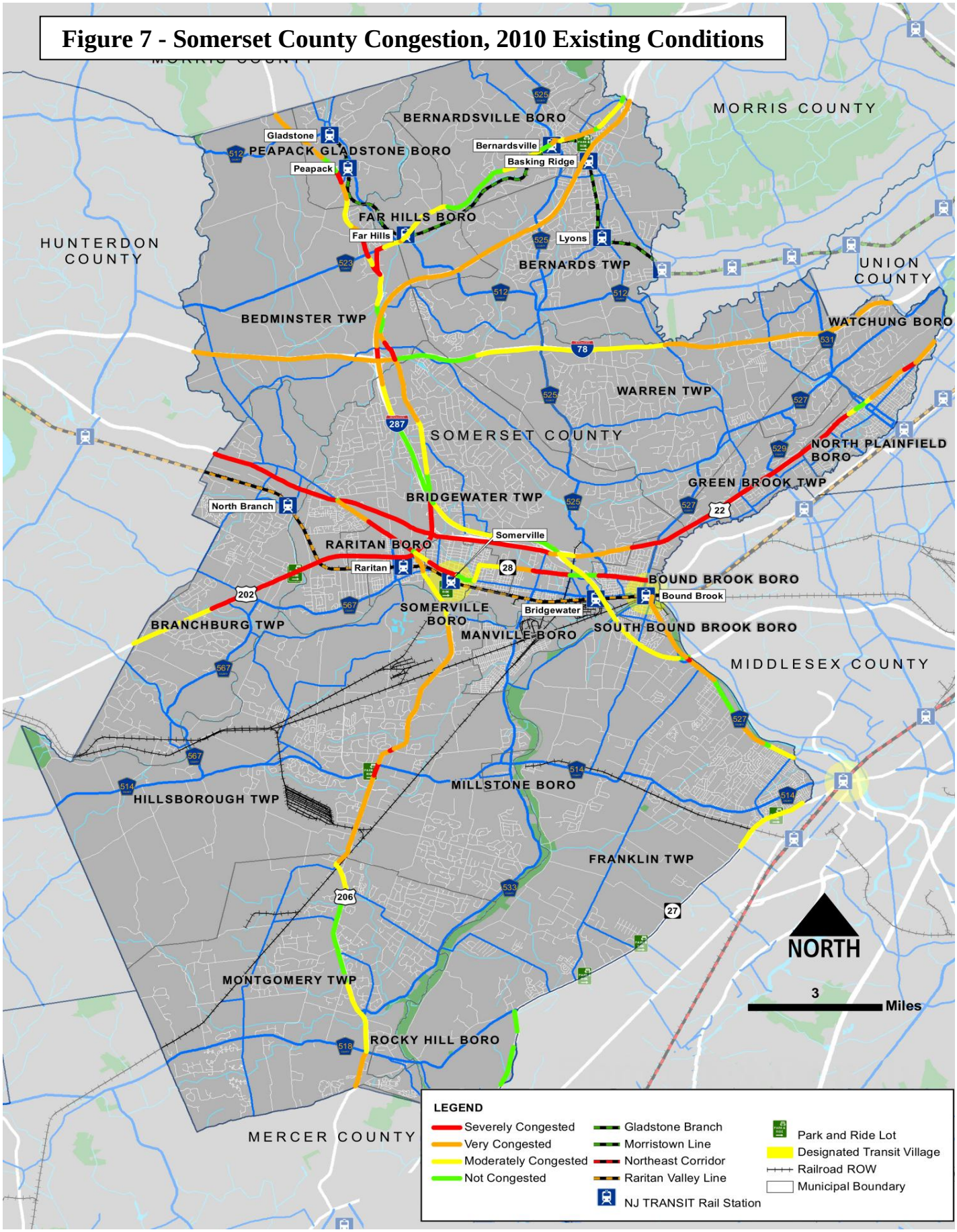
Congestion level	NJ 27 miles (%)	NJ 28 miles (%)	CR 527 miles (%)	County Total miles (%)
Not Congested	1.42 (44%)	1.35 (16%)	1.38 (27%)	15.57 (14%)
Moderately Congested	1.79 (56%)	1.59 (19%)	0.63 (12%)	28.73 (26%)
Very Congested	0.00 (0%)	1.25 (15%)	3.07 (59%)	39.69 (36%)
Severely Congested	0.00 (0%)	4.07 (49%)	0.08 (2%)	27.40 (25%)
Total	3.21 (100%)	8.26 (100%)	5.16 (100%)	111.39 (100%)

Source: NJDOT 2010 CMS data

Roadway Congestion Issues and Findings

STRENGTHS	• Good regional connectivity provided by two Interstates and three U.S. Routes • Somerset's State highways offer proximity to New York City and Philadelphia, drawing numerous employers, residents, and industry to the region	• Improve efficiency of the transportation network • Improve conditions for freight traffic to increase economic productivity • U.S. Route 206 Bypass improvements offer both local and regional mobility and safety benefits • Identify and encourage multi-modal improvements to reduce auto-dependency	**OPPORTUNITIES**
WEAKNESSES	• Many major routes are classified as either very or severely congested for more than half of their length within the county • Severe congestion on U.S. Route 22, U.S. Routes 202/206, and N.J. Route 28 corridors • Congestion on U.S. Routes 22 and 202 among the worst in the State • High levels of congestion on I-78, I-287, and C.R. 527	• Limited Capital Budget – must balance highway dollars among safety, congestion, and maintenance needs • Construction can negatively impact existing traffic flows • Right-of-way costs and community concerns limit options for roadway expansion • Environmental costs, both locally and to the region	**CONSTRAINTS**

Figure 7 - Somerset County Congestion, 2010 Existing Conditions



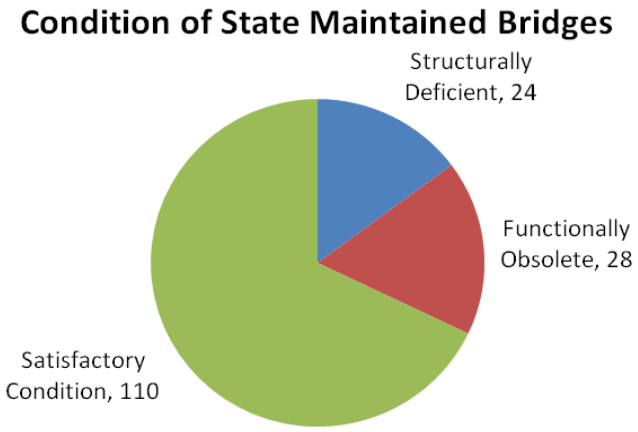
Bridge Conditions

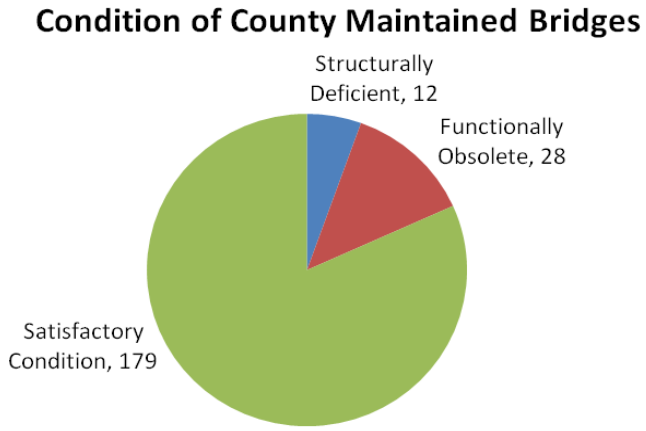
The assessment of bridge conditions is based on NJDOT Bridge Management System (BMS) data. The BMS is an inventory of all bridges with a span over 20 feet in New Jersey. It includes information on their physical characteristics, condition, and ownership. Bridges are inspected biennially and the condition of various bridge elements is rated on a numerical scale.

Somerset County's transportation network includes 385 bridges that are covered within the National Bridge Inspection Standards (NBIS), representing critical nodes that allow traffic to efficiently navigate the region's diverse topography. The bulk of these bridges are maintained either by the County (57%) or NJDOT (42%), with a remaining few structures operated by NJ Transit or a private owner.

As with the roadway network itself, the County's bridge population is aging. The median construction year for all structures within the County is 1965, meaning the average bridge is approaching 50 years of age and the end of its typical service life. As can be expected from an older bridge inventory, a number of bridges in Somerset County are either functionally obsolete, structurally deficient, or both. Based on NJDOT's 2010 Bridge Management System (BMS) data, 56 (15%) of the County's bridges are functionally obsolete and 36 (9%) are structurally deficient. Furthermore, 34 (9%) bridges are load posted, capacity restricted, closed, or temporarily retrofitted to maintain unrestricted traffic flow. Of these 34 structures, more than 70 percent (24) are under County jurisdiction.

Bridges that are structurally deficient and/or load posted or restricted may adversely impact traffic throughout the region, particularly if a load posted bridge is on routes typically used by freight traffic. While several major Interstate, U.S., and State routes within the County have structures classified as structurally deficient, as shown in red on the map on the following page, they are generally not load posted or restricted. However, the maintenance, rehabilitation, or replacement work required to return a structurally deficient bridge to a satisfactory level of service would likely cause major traffic disruptions in the form of lane closures, reduced lane widths, slower speeds, or lengthy detours.





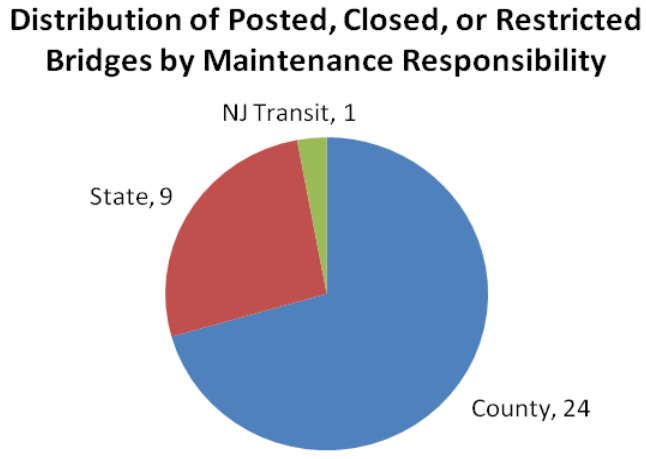


Figure 8 - Somerset County BMS Data

Source: NJDOT Bridge Management System, 2010

Bridge Conditions Issues and Findings

STRENGTHS

- Most structures on major Interstate, U.S., and State routes are generally not load posted or restricted
- Nearly 82% of County owned bridges are in satisfactory condition
- Among State-owned bridges, 68% are in satisfactory condition

OPPORTUNITIES

- Based on sufficiency ratings and structurally deficient and functionally obsolete classifications:
  - 81 bridges may be eligible for federal rehabilitation funding
  - 25 bridges may be eligible for federal replacement funding

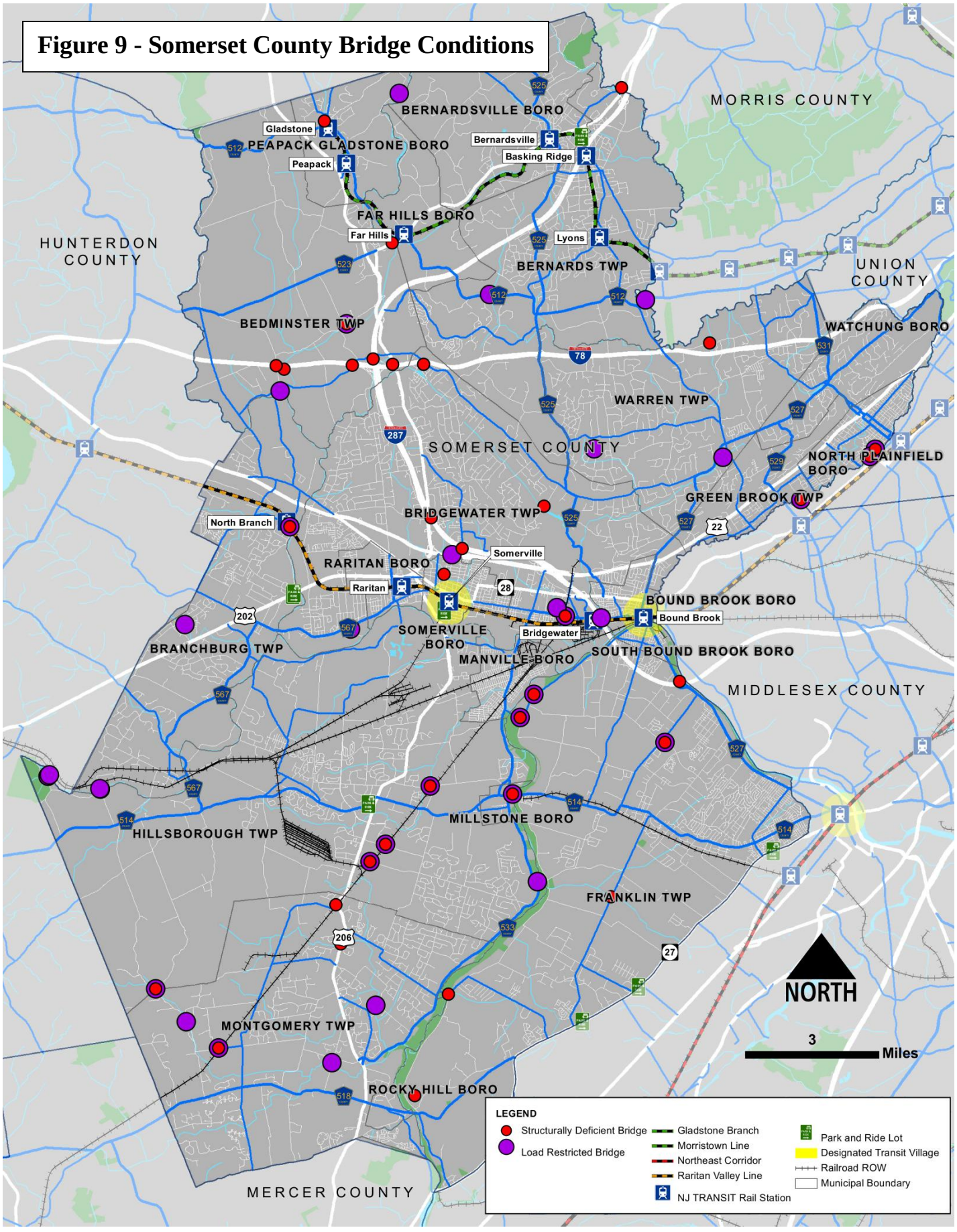
WEAKNESSES

- 34 (9%) bridges are load posted, capacity restricted, closed, or temporarily retrofitted
- 36 (9%) bridges are structurally deficicient
- 56 (15%) bridges are functionally obsolete

CONSTRAINTS

- The median construction year for all structures within the county is 1965, meaning the average bridge is approaching 50 years of age and the end of its typical service life
- Limited capital budget
- Impacts on maintaining traffic flow

Figure 9 - Somerset County Bridge Conditions



Scenic Corridors and Greenways

Scenic Byways are roadway corridors that have outstanding scenic, natural, recreational, cultural, historic, or archeological characteristics. Scenic Byways help balance preservation and mobility needs. They are designated by New Jersey's Transportation Commissioner with the assistance of the Scenic Byways Advisory Committee, and are intended to showcase the State's uniqueness and diversity.

Roadways that have regionally significant scenic, natural, recreational, cultural, historic, or archeological features may be designated as State Scenic Byways by NJDOT. After State designation, particularly noteworthy corridors that portray important aspects of the Country's heritage may be designated as a National Scenic Byway by the Federal Highway Administration.

Scenic Byway designation has several important benefits for the corridor and its surroundings. The route is signed as a Scenic Byway, which provides official recognition and helps promote the corridor, spurring tourism, recreation, and economic benefits for the area. Scenic Byways also receive technical assistance, planning for managed growth and protection of the Byway's assets and resources, and eligibility for federal grant funding.

Scenic corridors and greenways can be used to help achieve Somerset County's sustainability goals by protecting environmentally sensitive areas and important cultural and historic resources. Scenic Byway designation strikes a balance among conflicts in preservation and mobility, while providing important opportunities for improved mobility and safety, particularly for bicyclists and pedestrians.

Scenic Corridor and Roadway Study

The Somerset County Scenic Corridor and Roadway Study (1992) examined scenic roadway programs across the nation to design a program that fit the unique needs and conditions of Somerset County. The study was initiated in response to two separate efforts that recognized the need to identify and preserve the region's unique visual resource and heritage.

The study developed a set of designation criteria that enabled the County to evaluate and identify potential scenic roadways and corridors. The Millstone Valley Scenic Byway and an additional 15 County roads and 14 corridors were recommended for scenic designation and preservation, as depicted in Figure 10.

The Millstone Valley Scenic Byway, which has earned National Scenic Byway recognition, is a vital resource for Somerset County, incorporating many of the County's important natural, historic, and cultural assets along its 25 mile length. The Millstone Valley Scenic Byway generally follows River Road and Canal Road along the west and east banks of the Millstone River and the Delaware and Raritan (D&R) Canal, extending from the intersection with County Road 514 in Millstone in the north to Kingston and the border of Middlesex County to the south. The majority of the route is in Somerset County, though the southern tip extends slightly into Mercer and Middlesex Counties.

The Millstone Valley Scenic Byway includes historic structures and landscapes representing three periods – the Revolutionary War Era, Early Dutch and American Heritage, and the Canal Era. The Byway also supports recreational activities such as walking, bicycling, boating, and birding, which are popular along the river and the D&R Canal Towpath.

To preserve the rustic and scenic character of the County's Scenic Byways, all road construction and maintenance operations along scenic corridors should follow context sensitive design guidelines. This includes a reduced roadway width, as stipulated in the County's design standard for scenic roadways, and signage, striping, landscaping, etc. that do not detract from the historic, scenic, and natural character or aesthetics.

As in much of New Jersey, development pressure and population growth is a threat to Somerset County's open spaces and natural and historic assets. Land use planning integrated with transportation policy is an excellent tool to preserve scenic corridors. Local zoning and development guidelines can be used to ensure opportunities for new development are

compatible with a scenic corridor's character and to preserve existing open space and a byway's "ribbon of green".

Greenways & Open Space

Somerset County maintains a large open space network consisting of 24 parks totaling over 11,600 acres. These facilities are important resources for recreational opportunities, ecological functions, enhanced quality of life, and economic benefits. Greenways are an integral part of the open space network and a part of Somerset County's Open Space Master Plan, providing linear corridors that link natural private and public lands in a regional conservation network. The existing and planned primary greenway network consists of 12 major stream corridors and ridgelines throughout the County. Secondary greenways should be identified to provide additional connectivity between the primary corridors and County parks and other community features.

As with the scenic corridors, development pressure is a threat to the County's open space network and greenways. In recognition of this, Somerset County has set a goal to expand its open space inventory to 20,500 acres. Greenways are a major component of this parkland acquisition plan, with a proposed expansion of 3,620 acres over six greenways (see Table 6). High land values in the County and competition with developers are obstacles for expanding the greenway network. In addition to its own funding through the Somerset County Open Space, Recreation, Farmland and Historic Preservation Trust Fund, the County should continue to explore opportunities to partner with municipalities and non-profit or private organizations to share cost on new land acquisitions, pursue funding through the State's Green Acres Program, and work with landowners on conservation easements.

In addition to land preservation and protection of environmentally sensitive areas, greenways also provide opportunities to expand bicycle and pedestrian mobility. The Somerset County Regional Center Greenway Plan utilizes the Raritan and Peters Brook Greenways as the spine of the proposed "Conceptual Greenway System" for improving pedestrian mobility in the municipalities of Somerset, Raritan, and Bridgewater. If implemented, these two greenways will provide key east-west and north-south pedestrian corridors, respectively, between open space resources, residential areas, and major destinations.

Somerset County also contains regionally-significant greenways, such as the D&R Canal State Park. The D&R Canal Towpath includes a bicycle and pedestrian path through Somerset County connecting New Brunswick and Trenton and is part of the national East Coast Greenway trail system. Exploring improvements to the path itself and connections to major destinations and residential areas could enhance its usage for both commuter and recreational purposes.

Table 6 - Proposed Greenway Acquisitions

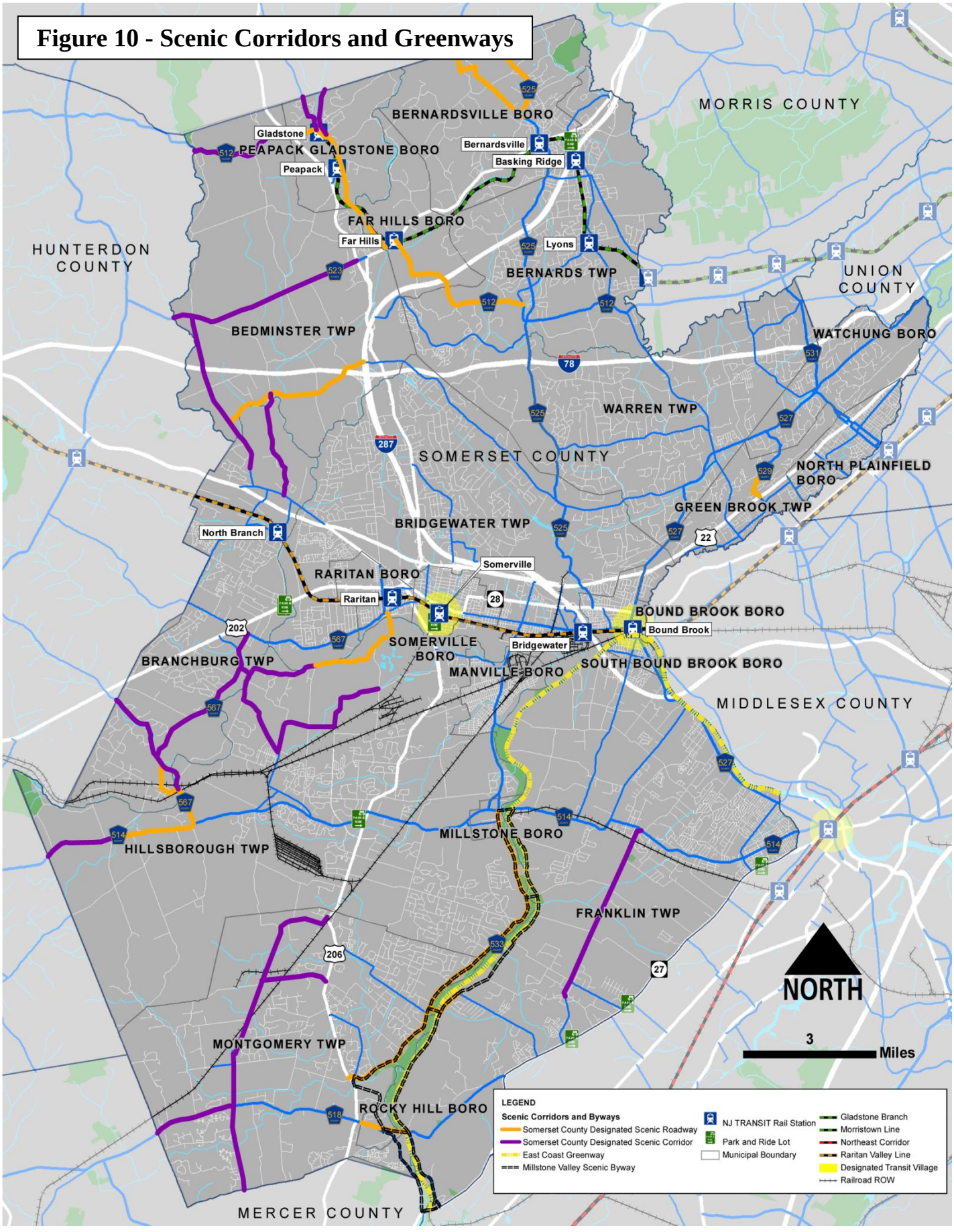
Greenway	Current Holding (acres)	Proposed Acquisitions (acres)
South Branch Greenway/Reserve	957	888
North Branch Greenway	146	504
Raritan River Greenway	460	940
Passaic/Dead River Greenway	0	600
Second Watchung Mountain Greenway	412	288
Lamington River Greenway	0	400
Grand Total	1,975	3,620

Source: 2000 Parks, Recreation, and Open Space Master Plan Update

Scenic Corridors and Greenways Issues and Findings

STRENGTHS	• Millstone Valley Scenic Byway has national designation • Somerset County Scenic Corridor and Roadway Study • Greenway Plan incorporated into the County Parks, Recreation, and Open Space Master Plan • D&R Canal Towpath / East Coast Greenway runs through the County • History of open space preservation support within Somerset County at both the county and local levels	• Ambitious County open space goals • Preserve historic resources and open space • Enhance and maintain recreational facilities • Scenic byway eligible for federal funding grants • Use of context sensitive design and integrated land use planning • Expand greenway and open space network • Conceptual Greenway System • Delaware and Raritan Canal and towpath	**OPPORTUNITIES**
WEAKNESSES	• Development threatens existing scenic corridors, greenways, and open space • Traffic engineering considerations and modern design standards may severely impact Somerset's natural, secnic, and historic corridors	• High value of land in Somerset County constrains preservation efforts • Limited funding for purchasing open space and activities to preserve historic and natural assets • Competion with developers for land acquisition	**CONSTRAINTS**

Figure 10 - Scenic Corridors and Greenways



Crash Analysis and Safety Projects

Improved safety is a major goal of Somerset County's transportation planning and project programming. To evaluate existing safety conditions on the County maintained roadways (500/600 series), the most recent three years of available crash incidence records were reviewed and compared with the statewide averages to identify hotspots and crash type over-representations. Locations with accident clusters are shown on Figure 11 and Table 7 lists the County road locations with the highest crash concentrations. Crash incidents are highest in the more dense central and eastern portions of the County, particularly in the vicinity of major arterials such as I-287, U.S. 22, and U.S. 206. Easton Avenue (CR 527), in particular, has two hotspot intersections between I-287 and the New Brunswick area.

Relative to the statewide average for County roadways, Somerset County's roads have a higher percentage of fixed object, left turn, and animal crashes. The county roadways also have a slight over-representation of low light (dawn, dusk, or night) and wet pavement condition crashes relative to the entire Somerset County average, which may indicate lighting or drainage issues, respectively.

Safety impact teams may be established to evaluate the high priority crash clusters revealed in the hotspot analysis, both in terms of crash frequency and type over-representation, and to help identify possible short-term and long-term improvements.

Many of Somerset County's roads remain a legacy of the region's rural and agricultural origins. Consequently, many of the County roads tend to follow old property lines rather than more direct routing and have a number of geometric deficiencies, such as narrow lane widths, inadequate turning lanes, lack of shoulders, and substandard curvature that do not conform to modern design standards. With population growth and higher traffic volumes, such shortcomings can pose safety issues that were not a concern when the roads were first built.

Unfortunately, land development along the roadways and environmental constraints now pose right-of-way limitations and costs that limit improvement options. Community concerns also constrain road expansion options to safely accommodate growing traffic volumes.

Where feasible, Complete Streets design principles may be integrated into road improvement projects in order to safely accommodate pedestrians, bicyclists, and transit as well as motorists, and calm traffic flow based on posted speed limits, road usage, and adjacent land use. Such an approach will help mitigate some of the negative impact of vehicular traffic and alleviate community concerns by more fully involving the local community into the project development process and accounting for the needs of all road users.

Table 7 - Somerset County Key Crash Locations

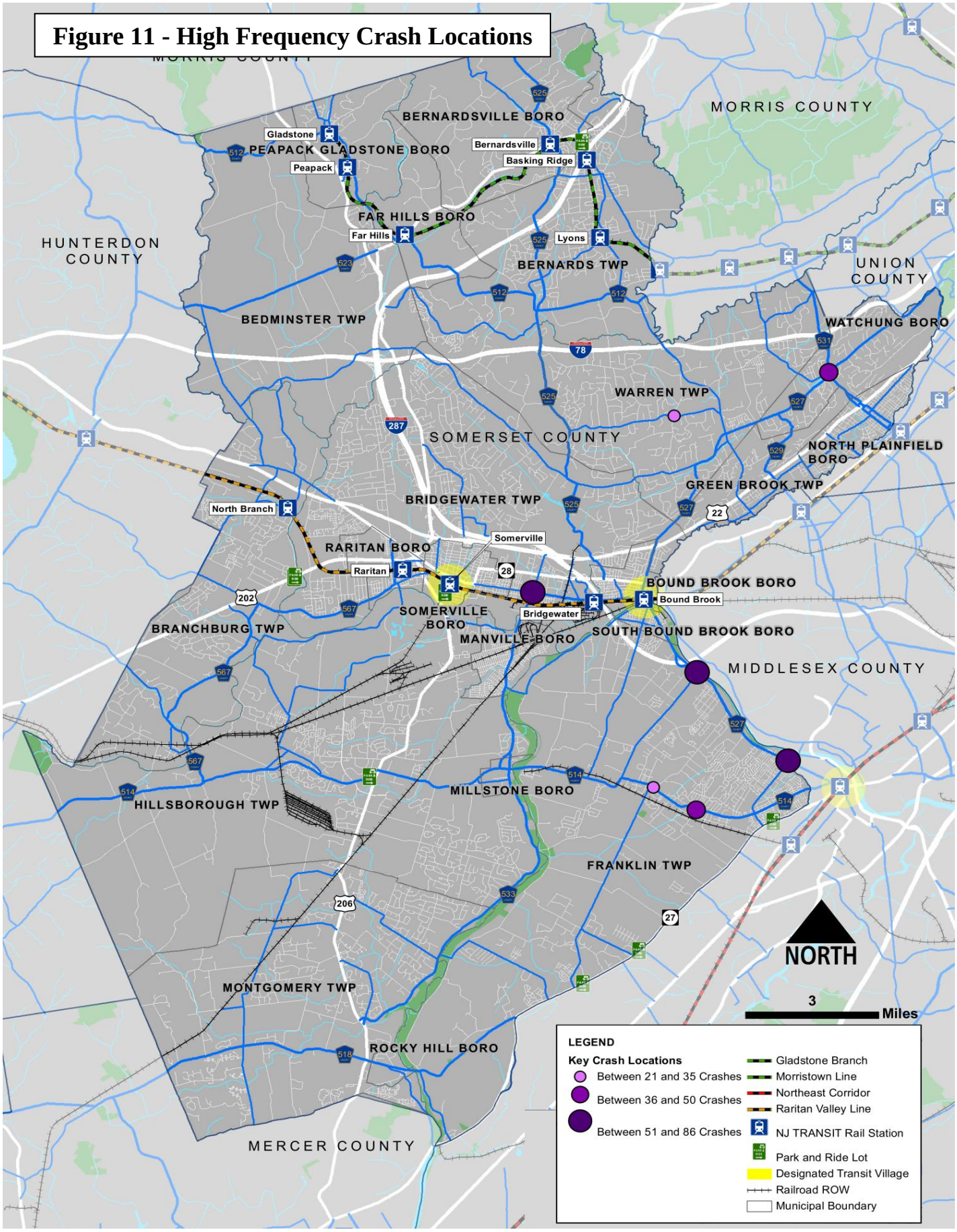
Number of Crashes	Location	Municipality	Crash Rate+
86	Easton Avenue (CR 527) and Landing Lane (CR 617)	Franklin Township	2.16
83	Easton Avenue (CR 527) and Cedar Grove Lane (CR 619)	Franklin Township	1.61
74	East Main Street (CR 612) and Finderne Avenue (CR 533)	Bridgewater Township	3.03
46	Valley Road (CR 527) and Hillcrest Road (CR 531)*	Watchung Borough	0.79
37	Hamilton Street (CR 514) and JFK Boulevard*	Franklin Township	1.23
33	Amwell Road (CR 514) and Thompson Parkway (CR 615)*	Franklin Township	1.50
21	Mount Horeb Road (CR 618) and King George Road*	Warren Township	1.91

Source: July 2006 – June 2009 NJDOT Crash Records for Somerset County 500/600 series county route network
** improvements recently completed or under design*
+ crash rates per million vehicle miles based on NJRTME and Somerset County traffic data and NJDOT crash data

Crash Analysis and Safety Projects Issues and Findings

STRENGTHS	• Somerset County Planning and Engineering Departments emphasize roadway safety in project development and prioritization • Most County roadway projects focus on safety improvements • Majority of crash types are below the statewide average
OPPORTUNITIES	• Safety impact teams to evaluate hotspot crash locations • Where feasible, Complete Streets principles may be integrated into roadway projects • Implement traffic calming measures • U.S. 206 Bypass in Hillsborough can improve crash conditions in this area
WEAKNESSES	• Crash clusters in central and eastern portions of the County • Fixed object, left turn, and animal crash types exceed statewide average • Low light and wet pavement crash types exceed County average • Geometric deficiencies on County routes, related to their rural and agricultural legacy
CONSTRAINTS	• Right-of-way costs, environmental restrictions, and community concerns limit options for roadway expansion to correct geometric issues such as width or inadequate turning lanes • Limited Capital Budget – must balance highway dollars among safety, congestion, and maintenance needs

Figure 11 - High Frequency Crash Locations



Greenhouse Gases and Climate Change

Climate change considerations are increasingly being incorporated into long term transportation planning efforts of local, state, and federal agencies. While the state of the practice continues to evolve, the Somerset County Circulation Element offers a unique opportunity to begin preliminary efforts to address this evolving concern.

Thirty-five percent (35%) of Greenhouse Gas (GHG) emissions at the State level are attributed to transportation activities[15], so this sector has a significant role to play in mitigating the impact of climate change.

Limiting the production of climate altering emissions is a major goal at the statewide level. As enacted in 2007, New Jersey's Global Warming Response Act calls for a reduction in GHG emissions to 1990 levels by 2020, and the New Jersey Climate Change Action Plan has set a tentative target of capping vehicle miles traveled (VMT) growth at 1% per year.

Transportation infrastructure is uniquely vulnerable to the climatic change and severe weather events that are likely to accompany the projected rise in ambient temperatures. While the precise impacts continue to be debated, an increase in the number of extreme heat events, severe wind and precipitation, snow melt, and paradoxically, drought conditions, are all potential outcomes.

Climate change is generally integrated into the planning process from two different perspectives: Mitigation and Adaptation.

Mitigation of Greenhouse Gas Emissions

Mitigation of transportation-related GHG emissions is often conceptualized using a "Four Leg Stool," illustrating the major factors that can influence and help control and reduce GHG emissions:

- Renewable and low carbon fuels
- Vehicle technology and fuel efficiency
- Transportation and land use policies that support alternative modes and reduce VMT and person trips
- Vehicle and systems operations that lower emissions and maximize the operational efficiency of the roadway network

Addressing the broader vehicle population is the purview of state and federal governments, and as such the ability of Somerset County to influence this is limited. Somerset does, however, have a number of opportunities to address these issues, including the purchase of fuel efficient vehicles, utilizing low carbon fuels (Biodiesel, Ethanol), and requiring consideration of GHG emissions by contractors for County projects.

Reducing VMT growth is a powerful GHG mitigation tool and is consistent with the County's wider efforts to better integrate land use and transportation planning, reduce congestion and optimize infrastructure investment. Other complementary efforts include Travel Demand Management (TDM) and Transportation System Management (TSM), transit services, and support for non-motorized travel modes.

Programs such as the Leadership in Energy and Environmental Design (LEED) building certification system provide solid advice on limiting the GHG emissions from facilities. Finally, GHG emissions must be thought of on a complete project life-cycle basis. Construction emissions can constitute a surprisingly large portion of the overall GHG emissions. Locally sourcing materials, minimizing grading, disposal of debris on site or nearby, recycling materials on site, and specifying and sourcing low emission paving materials are options for the County to consider and adopt.

Yet even with these many opportunities, the transportation sector is unlikely to achieve reductions proportional to the sector's current share of all GHG emissions.

[15] New Jersey's Global Warming Response Act Recommendations Report.

Adaptation to Climate Change

Planning for climate change is primarily an exercise in dealing with uncertainty and risk. While often thought of in terms of sea-level rise predicted to impact coastal areas, extreme weather including precipitation and heat events may occur with greater frequency within Somerset County and are likely to be some of the earliest indicators of climate change. Anticipating the increased likelihood of extreme weather events, addressing the need for increased routine maintenance of infrastructure and retaining and expanding quick response capabilities for emergencies and catastrophic events are all factors that should be given greater consideration.

New Jersey, and Somerset County in particular, have experienced a number of record weather events in recent years. Hurricane Floyd in September 1999 left an indelible impact on the County's planning process and helped to spearhead a number of mitigation projects. In the intervening years, historic floods throughout the State have forced the delineation of new flood boundaries. It should be noted that should storms and the associated damage occur more frequently, the cost to insure at-risk infrastructure will increase significantly. In this scenario, there is potentially a significant financial benefit to the County to reflect this possibility in future investment decisions. Climate change provides additional rationale for incorporating risk assessment into the project selection and design process.

Somerset County Multi-Hazard Mitigation Plan

The lifespan of roads and bridges is such that many facilities are likely to experience at least some impact from climate change during their service life. Existing infrastructure identified as "at risk" can help determine those assets most vulnerable to climate change. The 2008 Somerset County Multi-Jurisdictional Multi-Hazard Mitigation Plan provides mapping and a list of suggested infrastructure improvements. Somerset has also developed inundation mapping to aid emergency managers during large storm events. Use of this mapping could prove helpful in future planning efforts to identify vulnerable infrastructure and limit development in at-risk areas.

With the increased occurrence of severe weather and weather events, buckling of pavement and railway tracks, emergency management and evacuation, impacts to bridge support and structures, and increased roadway maintenance costs all take on increasing importance. All can be anticipated to result in a need for increased annual operating budgets to accommodate the associated costs. As identified in the County's Hazard Mitigation Plan, a number of police stations, schools, fire departments and other facilities required in an emergency are located in hazard-prone areas. Consideration should be given to relocating such facilities on the assumption that the events for which they are most needed may also render them unusable.

The current evacuation plan for the County identifies the following as key escape routes:

- Interstate 287 and State Route 27, and U.S. Route 206 (major North/South routes)
- Interstate 78, U.S. Routes 22 and 202, and State Route 28 (major East/West routes)
- County Routes 523, 525, 527, 531 and 533 (alternate North/South routes)
- County Routes 512, 514, 518, 523, 525, 531, 533, 567 and 601 (alternate East/West routes)

These routes should be given heightened importance for redesign and ongoing maintenance.

NJTPA Greenhouse Gas Inventory Study

In 2011, the North Jersey Transportation Planning Authority, Inc. (NJTPA) undertook a study to prepare a GHG Inventory and Forecast (I&F) for the entire region. Sector by sector estimates of emissions were calculated using a variety of techniques and accounting methods. The intent was to provide a baseline to help direct mitigation efforts across and within sectors of the economy. As is common in GHG I&F studies, assigning emissions across various sectors can be a challenge and the methods and tools used are still evolving.

Overall, Somerset County's highway GHG emissions are projected to peak in 2035, after which increased fuel economy standards begin to significantly impact the vehicle fleet. Combined with an assumed increase in the use of alternative fuels, the result is a decline by 2050. This however should not be taken as an overly positive sign. It must be noted that VMT estimates continue to increase over the entire timeframe and longer term GHG emissions from the sector are likely to again start to increase. As the overall goal is to reduce GHG emissions across the entire economy to 80% of 2006 levels by 2050, it is evident that any and all measures to reduce VMT in the County take on an added importance. Future iterations of the Somerset Circulation Plan should consider adding GHG emissions as criteria in selecting preferred future development and infrastructure scenarios.

Greenhouse Gases and Climate Change Issues and Findings

STRENGTHS	• Limiting climate altering emissions and greenhouse gases is a major goal at the state and MPO level • The Somerset County Hazard Mitigation Plan provides a template for addressing climate change impacts • Climate change considerations highlight the need to incorporate risk assessment into transportation planning	• Addressing climate change in the near term will help reduce future insurance costs • Potential actions include the purchase of fuel efficient vehicles; low carbon fuels; requiring consideration of GHG emissions by contractors for county projects; TDM and TSM; integration of land use and transportation planning; LEED building practices; and consideration of project life-cycle emissions	**OPPORTUNITIES**
WEAKNESSES	• Transportation infrastructure is uniquely vulnerable to climatic change and severe weather events • A number of historic and economic centers in Somerset County are located in flood plains limiting mitigation options • Current planning does not fully monetize the impacts of climate change risk	• Political considerations and short term planning timelines limit the consideration of risk issues, climate change induced or otherwise	**CONSTRAINTS**

Scenario Planning

Scenario planning is an analytical tool that can help transportation professionals prepare for what lies ahead. Scenario planning provides a framework for developing a shared vision for the future by analyzing the various factors (e.g., transportation, economic, environmental, land use, etc.) that affect growth. Scenario planning, which can be done at the statewide level or for metropolitan regions, tests various future alternatives that meet community needs. A defining characteristic of successful public sector scenario planning is that it actively involves the public, the business community, and elected officials on a broad scale, educating them about growth trends and trade-offs, and incorporating their values and feedback into future plans.[16]

For the Making Connections Plan, the scenario planning method enabled the project team to evaluate a range of potential outcomes, visions, and investment scenarios by testing a mix of infrastructure, demographic, land use, and policy changes. As noted, the community-based planning process was designed to incorporate input from the wide variety of Somerset County's diverse community of stakeholders. An inclusive process is essential to identifying the many varied issues, interests, needs, and concerns of those who live, work, govern, and do business here.

The Making Connections scenarios were tested using the North Jersey Regional Transportation Model-Enhanced (NJRTM-E), the approved travel demand model for northern New Jersey, which includes an enhanced transit component and allows for testing of projects, land use, economic variables, and population and employment data. Forecasts of population and employment changes are a critical input to the NJRTM-E. Using the NJPTA's official demographic projections helps ensure the Plan is consistent with the region's transportation planning and investment decision making processes and plans, including Plan 2035, the Regional Transportation Plan for northern New Jersey.

Scenarios were evaluated using a series of performance measures, similar to those used for NJPTA's Plan 2035. Detailed model statistics and data, and plots of traffic volumes, speeds, and volume-to-capacity ratios were also examined. These data were reviewed with Somerset County planners, the Steering Committee, and presented to the public for comment and discussion.

[16] http://www.fhwa.dot.gov/planning/scenplan/, accessed March 14, 2011

Four alternative scenarios were tested:

1. Somerset County Baseline
2. Highway Rich
3. Transit Rich
4. Blend Scenario

Somerset County Baseline – this scenario represents the baseline for comparison with all future alternatives; it represents what would happen to travel conditions in the region if no new plans, policies, or programs were introduced beyond what has already been approved.

The baseline scenario follows the current trend line of growth and development patterns for both Somerset County and the overall NJTPA region; it is based on the official NJTPA demographic projections, and includes only the approved TIP and Plan projects. It assumes, based on current trends, a funding shortfall in highway investment will result in a deterioration of the highway infrastructure leading to a five percent reduction in roadway capacity and throughput.

Baseline transit improvements are also consistent with the NJTPA TIP and Plan programs.

Highway Rich – focuses the bulk of future investments in highway expansion. Projects include additional capacity, intersections, interchanges, traffic operations, and new Raritan River crossings. Highway Rich adds a total of six new projects compared to the Baseline scenario.

The five percent highway capacity reduction due to a funding shortfall is not included in this scenario.

The West Trenton Rail Restoration is included to expand rail capacity in the region.

Highway Rich assumes the implementation of voluntary and moderate Travel Demand Management (TDM) and Transportation Systems Management (TSM) strategies and policies. TDM includes methods to reduce or manage demand such as telecommuting, HOV parking savings, carpool, vanpool, transit support, etc. TSM strategies include ITS, traffic signal coordination systems, and advanced traffic control systems.

Transit Rich – favors investment in transit, and includes the same highway improvements as the Baseline; similar to Highway Rich, the reduction in highway capacity due to funding shortfall is not included.

Transit service and capacity are greatly improved, including West Trenton and the Flemington Line projects. It proposes a comprehensive program of

supportive policies and services including rail parking, pedestrian and bicycle access, bus service, and increased driving costs, all designed to make transit more attractive, convenient, and accessible.

Transit Rich assumes the same program of TDM and TSM improvements applied to the Highway Rich scenario.

Blend – assumes a mix of highway and transit investments to achieve a better integration of transportation access and mobility within the County.

Highway investments include the same mix of highway infrastructure projects as the Baseline along with several additional projects that address mobility, congestion, and safety needs including: Brown Avenue relocation, Orchard Road extension, installation of Jersey barrier at Easton Avenue, and a new Raritan River Crossing.

Transit improvements include the West Trenton Line and the same comprehensive program of transit supportive policies and services, but exclude the Flemington Rail Line.

Blend provides similar mobility and safety improvements at a more moderate cost than either Highway or Transit Rich.

Analysis – observations from the scenario process include:

- All scenarios result in degraded mobility from current conditions: travel under congested conditions is projected to increase by 25% and average network travel speeds decrease by about 4 mph overall
- Demographic shifts, such as the planned Hillsborough Towne Center and Somerville redevelopment, benefit transit ridership by creating supportive densities, and help to mitigate overall congestion in the region
- Scenarios tested without these shifts result in comparatively worse levels of congestion and degraded travel speeds
- This congestion impacts County and local streets disproportionately. Congestion at higher functional classification roadways (state and interstate highways) spreads to the County and local streets which will carry a greater proportion of overall travel than experienced today, impacting local mobility and safety
- All future scenario alternatives demonstrate congestion can be mitigated but not resolved; each "buys back" about one-half of the degraded travel performance, but none restores conditions to current performance levels
- Highway Rich – mitigates congestion compared to Baseline
- Transit Rich – further mitigates congestion and attracts auto trips to transit
- Blend scenario yields the best overall travel performance and benefits the urban core towns by shifting travel to State and Interstate highways, which are better able to accommodate additional trips
- Blend scenario mitigates congestion impacts to County and local street systems, benefiting mobility and safety

Table 8 - Comparison of Performance Measures between Existing Conditions and Future Scenarios

	2009 Existing	2030 Somerset Plan Baseline	2030 Highway Rich	2030 Transit Rich	2030 Blend Scenario
Total Person Trips (all modes, thousands)	1,087.4	1,283.0	1,252.4	1,252.4	1,252.4
Transit Person Trips (thousands)	17.8	27.0	27.3	28.5	28.2
Vehicle Miles of Travel (VMT, millions)	10.338	11.698	11.630	11.601	11.620
Vehicle Hours of Travel (VHT, millions)	0.317	0.408	0.386	0.385	0.385
Average Speed (mph)	32.59	28.67	30.11	30.13	30.17
% VMT at Congested Conditions	18.1%	22.5%	20.6%	20.5%	20.6%

Scenario Planning Issues and Findings

STRENGTHS	• Facilitates evaluation of a range of potential outcomes, visions, and investment scenarios • NJRTM-E is ideally suited to test projects, policies, and land use alternatives • Method uses same model, data sets, and performance measures as NJTPA Plan 2035 RTP	• Future scenarios demonstrate congestion can be mitigated but not resolved • Each "buys back" about one-half of the degraded travel performance; none restores conditions to current performance levels • Blend scenario yields best overall performance; benefits urban core towns; mitigates impact to County and local streets	**OPPORTUNITIES**
WEAKNESSES	• All scenarios result in degraded mobility from current conditions • This congestion disproportionately impacts County and local street systems • Plan 2035 anticipates a funding shortfall in highway investment will result in a deterioration of highway capacity	• The region must accept degraded highway mobility in the future as traffic congestion is projected to spread and intensify • Scenarios tested without Hillsborough Towne Center and Somerville redevelopment result in comparatively worse levels of congestion and degraded travel speeds	**CONSTRAINTS**

Making Connections Plan

The Making Connections Plan is designed to improve mobility and safety across Somerset County by guiding the transportation planning process; providing a framework for selecting and prioritizing among proposed programs, plans, and projects; and identifying and promoting policies that help support and reinforce the Plan's recommendations.

GOALS AND POLICIES

- Maintain and Modernize the County Transportation System
- Reduce Traffic Congestion
- Reduce Greenhouse Gas Emissions Contributing to Climate Change
- Protect and Enhance the Natural and Built Environment
- Support Economic Activity in Town Centers and Business Corridors
- Improve Mobility and Connections between Travel Modes
- Integrate Transportation, Land Use, and Site Design
- Maintain a High Level of Safety and Security
- Monitor the Performance of the Transportation System

Making Connections utilized a community-based process to prepare a plan that is reflective of the County's diverse community of stakeholders. The community-based planning process is essential to identifying the many varied and often competing issues, interests, needs, and concerns of those who live, work, govern, and do business in Somerset County.

To accomplish this, an extensive outreach program was developed and implemented to solicit input and feedback from a wide variety of Somerset County stakeholders – the general public, the business community, agency representatives, decision makers, and advocacy groups.

The nine Goals and Policies that create the framework of the Making Connections Plan were developed as part of the Plan's outreach program and represent the values and priorities of the County's many stakeholders, advocates, and decision makers.

Vision Statement: Five principal themes emerged from the planning, analysis, and outreach process and reflect the Goals and Policies; together they combine to form the Vision Statement:

The Making Connections Plan:

- Creates a robust multi-modal transportation network
- Maintains and improves the existing highway system
- Expands the regional transit system
- Enhances traffic safety for all travelers and modes, and
- Promotes sustainability

The planning process should explore and answer a series of "big picture" questions: *Where do we stand now? What are the values that guide the decision making process? What kind of community do we want to be in the future? How do we get there and what are the pros and cons of the decisions we make?*

Each is part of the Making Connections Plan:
Where do we stand now? – is explored in the existing conditions assessment, including analysis of various travel modes, and evaluation of infrastructure conditions and performance.

What are the values that guide the decision making process? – these come out of the comprehensive outreach process, focus groups and steering committee, and Plan Goals and Policies.

What kind of community do we want to be in the future? – in collaboration with the steering committee a series of alternative scenarios was developed to examine various issues and needs that were identified.

How do we get there and what are the pros and cons of the decisions we make? – this is the role of the scenario planning process.

Making Connections recommends a comprehensive and coordinated series of multi-modal infrastructure and policy initiatives for Somerset County:

Emerging Concepts: A variety of emerging technical innovations and planning paradigms can support achieving the goals, policies, and vision of the Making Connections Plan. These include new technologies such as electric vehicle charging stations, the FHWA's livability initiative, and simple, but effective

low technology stormwater alternatives such as bioswales.

Development of a charging station network will alleviate anxiety over vehicle range limitations and spur consumer adoption of electric vehicles. Charging stations can be installed anywhere there is access to the electric grid.

The FHWA Livability Initiative, being promoted by the U.S. Department of Transportation, focuses on enhancing communities and creating a balance among land uses and transport modes.

Innovative best management practices (BMPs) are gaining traction as alternative methods for reducing stormwater and treating it on site. Bioswales are a low-technology BMP designed to slow the flow of runoff waters, naturally filter sediments and pollutants, reduce the amount of untreated stormwater, and recharge groundwater.

Highways: A series of potential projects have been identified to address the diverse needs of Somerset's highway network:

Brown Avenue Extension – provides local benefits to Roycefield Road by providing a more direct connection to industrial properties west of U.S. 206.

U.S. Route 22 Long Term Improvements – implements safety and capacity improvements to Route 22 between U.S. Route 202/206 and Interstate 287 in Bridgewater Township.

I-287 at Easton Ave (CR 527) Interchange – improves connections between the two roadways including enhancements to the interchange and surrounding roadways.

U.S. Route 206 Section 15N – widens and adds a median barrier on U.S. Route 206 from Brown Avenue to Old Somerville Road in Hillsborough to connect to the Bypass.

Installation of Median Barrier along Easton Avenue – improves safety and has localized congestion benefits along this heavily congested and constrained corridor which affords limited opportunity for expanding roadway or intersection capacity.

Raritan River Crossing Concept – addresses limited bridge capacity, particularly for local traffic, at the Raritan River. The primary crossing is at I-287, which carries heavy traffic volumes throughout the day. This concept should advance to scoping to examine feasibility and potential constraints.

Real-Time Travel Information – provides real-time information on travel conditions in collaboration with NJ511 and RideWise.

Transit: Unlike its neighbors to the north, Somerset County is more a collection of towns and small urban areas, than the blanket of dense urbanized development found across of much of northern New Jersey. Because much of Somerset County lacks transit supportive density, Making Connections expands transit ridership by focusing on the West Trenton Line Restoration, providing a travel alternative to the currently highway-dominated central and southern portion of the County and creating an incentive to make meaningful land use changes that create supportive densities centered on new and existing rail corridors.

Similar to Plan 2035 – The Regional Transportation Plan for Northern New Jersey, the Making Connections Plan recommends a comprehensive program of transit supporting policies and services: a 25% increase in NJ Transit bus service frequency; improved transit network coverage to promote walking and bicycling as access modes to transit; increased transit service frequency during the off-peak on passenger rail lines; and increased driving costs and parking fees during peak periods, all designed to make transit service more attractive and cost competitive.

Integrating Land Use and Transportation Policy: Increasing the density of housing and/or employment can help achieve the critical mass of ridership that would make transit services successful and cost effective by increasing the available pool of transit patrons. Local governments can facilitate transit-supporting development by revising development regulations to allow higher densities, encourage mixed uses, support development around stations and bus stops, or by creating Station Area Plans for transit stations.

The proposed Hillsborough Town Center and redevelopment in Somerville can help create transit supportive density in targeted locations to grow ridership and promote sustainable development patterns that achieve long term benefits for the region. Scenario testing confirms that these changes are critical to achieving the full potential of the West Trenton rail investment.

Bicycle Circulation: Expansion of many County-owned roadways is constrained by encroaching development, topography, and environmental features; the Making Connections Plan recommends that

improved bicycle compatibility can best be achieved through a variety of methods including the use of shared lane markings, targeted shoulder improvements to provide adequate roadway width, speed limit reductions, and off-road connectivity (including the Delaware and Raritan Canal).

Improve access to major transit hubs and provide adequate bicycle parking.

Adopt the "Conceptual Greenway System" as proposed in the Somerset County Regional Center Greenway Plan to leverage accessible roadways, off-road trail systems, and public lands to improve mobility where sidewalks and shoulder facilities are limited.

Pedestrian Circulation: Gaps in sidewalk coverage should be addressed on a link-by-link basis, along with municipal maintenance projects and as a condition for zoning and planning board approvals.

Improve pedestrian access and crosswalks to support transit accessibility.

Goods Movement: Improvements that optimize truck and rail freight movement should be designed to expand options for freight movement, improve traffic flow, reduce the impacts of freight movement on communities, and address safety considerations. Recommended actions are organized into two categories:

- Improvements that optimize truck and rail freight movement into, out of, and through the County.
- Improvements that maintain and enhance Somerset's County competitive position to attract businesses that use these freight resources.

Goods Movement by Rail

- Work with NJDOT and Conrail to eliminate the grade crossing on Main Street in Bound Brook (Queens Bridge).
- Work with NJ Transit to bring the rail bridge on the line serving the Dameo transload yard up to the national 286,000 lb weight standard.
- Support the implementation of quiet zones on the West Trenton and Lehigh Lines to address noise concerns and community impacts.

Goods Movement by Truck

- Investigate improved signage to encourage truck drivers to use preferred routings (which addresses concerns voiced by some communities and Duke Farms).
- Work with NJDOT to investigate additional means for improving traffic flow on Interstate 287.

Economic Development and Goods Movement

- Identify opportunities to maintain and enhance Somerset County's competitive position by attracting businesses that use or provide freight resources to encourage economic development.
- Inventory available property within the County that is available for manufacturing and distribution activity.
- Explore designating targeted locations within the County for freight village opportunities to concentrate these activities in areas that already have suitable rail and truck access in place and would be contextually appropriate with surrounding land uses. Two locations in Hillsborough and Manville were identified in a previous Somerset County study. Bridgewater, with its existing core of structural metal businesses, a UPS facility, warehousing structures, and rail access could also pursue such a designation.
- Explore with NJEDA a means for incorporating designated sites with rail access into programs that provide incentives for businesses that use rail freight service. Currently, the NJEDA program as legislated does not include Somerset County.
- Develop a marketing program in collaboration with the NJEDA to attract targeted businesses to the County. The County's strengths, existing industry clusters, and available properties would be highlighted in combination with NJEDA's incentive program and outreach to the businesses.

Traffic Safety: Analysis of crash data confirms that traffic safety is already a high priority for Somerset County's planners and engineers; Somerset and NJDOT efforts include the following:

- U.S. Route 206 at CR 601 – Pending NJDOT project to replace adjacent bridge and realign intersection (under construction).
- Roycefield/New Center/Dukes Parkway West (CR 627) – New signal in operation (Mar 2010).
- Amwell Road (CR 514) at Cedar Grove (CR 619) – Upgraded intersection (Summer 2009).
- U.S. Route 22 at Warrenville (CR 651)– Intersection improvements (Fall 2009).
- Mountain Blvd (CR 527) at Mt. Bethel (CR 651)– Roadway improvements ongoing.

- Main Street (CR 533) at Dukes Parkway East (CR 608) (Manville) – Intersection improvements (2009).
- Amwell Road (CR 514) at Auten Road/Raider Blvd (Hillsborough) – Intersection improvements (2009).
- Amwell Road (CR 514) at S. Middlebrush Rd – Intersection improvements (2009).
- Hamilton St. (CR 514) at Franklin (CR 617) – Intersection improvements pending (under construction).

Safety impact teams may be established to evaluate additional high priority crash clusters revealed in the crash analysis to help identify potential short- and long-term improvements.

Where feasible, Complete Streets design principles may be integrated into road improvement projects in order to control and calm traffic flow and safely accommodate pedestrians and bicyclists as well as motorists. Such an approach can help alleviate community concerns by fully involving the local community in the process and incorporating the needs of all users.

GHG and Climate Change: Recommendations to mitigate greenhouse gas emissions include the purchase of fuel efficient vehicles, utilizing low carbon fuels (Biodiesel, Ethanol), and consideration of GHG emissions by contractors for County projects.

Adaptation to climate change includes more frequent repairs for buckling of pavement and railway tracks, more frequent impacts to bridge supports and structures, increased roadway maintenance costs, and enhanced emergency management and evacuation policies. As identified in the County's Hazard Mitigation Plan, a number of police stations, schools, fire departments, and other facilities required in an emergency are located in hazard-prone areas. Consideration should be given to relocating such facilities on the assumption that the events for which they are most needed may also render them unusable.

The Somerset County Hazard Mitigation Plan lists the following improvements to address at-risk roadways and infrastructure:

- Bernardsville – Reconstruct and replace culvert and bridge over Mine Brook at Municipal Complex. The bridge is currently closed as it is unsafe. The culvert constantly jams with debris during periods of heavy rain and causes flooding and soil erosion.
- Reconstruct footbridge over Mine Brook at Nervine Memorial Park.
- Far Hills – Work with the County to evaluate flooding problems along Peapack Road.
- Franklin – Work with neighboring municipalities to establish an emergency access entrance to Interstate 287 from Elizabeth Avenue for flood evacuation route from Bound Brook.
- Manville – Construct pump station at railroad underpass on North Main Street.
- Watchung – Rehabilitation and reconstruction of Phillips Field Bridge and Embankment.

Emergency Evacuation: Increased roadway maintenance is recommended for the region's evacuation routes:

- Interstate 287 and State Route 27, and U.S. Route 206 (major North/South routes).
- Interstate 78, U.S. Routes 22 and 202, and State Route 28 (major East/West routes).
- County Routes 523, 525, 527, 531 and 533 (alternate North/South routes).
- County Routes 512, 514, 518, 523, 525, 531, 533, 567 and 601 (alternate East/West routes).

Implementation Matrix

The implementation matrix presents the various projects, programs, and policy recommendations that comprise the Making Connections Plan and indicates the applicable Goals and Policies met by each. This final step ties the recommendations to the guidance represented by the Goals and Policies and Vision Statement, and demonstrates that stakeholder input was an essential component in guiding the direction of Somerset County's Circulation Plan Update.

Each recommendation in the implementation matrix includes the following:

- Priority for implementation: High, Medium, Low, or Ongoing.
- Estimated range for order of magnitude cost
    - Low (up to $5 million)
    - Medium ($5-$25 million)
    - High (greater than $25 million)
- Somerset County is the lead for all of these recommendations. Other agencies and/or entities listed in the matrix are partners assisting the County.
- Applicable Goals and Policies:
    1. Maintain and Modernize the County Transportation System
    2. Reduce Traffic Congestion
    3. Reduce Greenhouse Gas Emissions Contributing to Climate Change
    4. Protect and Enhance the Natural and Built Environment
    5. Support Economic Activity in Town Centers and Business Corridors
    6. Improve Mobility and Connections between Travel Modes
    7. Integrate Transportation, Land Use, and Site Design
    8. Maintain a High Level of Safety and Security
    9. Monitor the Performance of the Transportation System

Capital Improvements and Policy Initiatives	Priority	Order of Magnitude Cost (Est.)	Potential Partner Agencies	Goals and Policies
Highway Capacity				
Brown Avenue extension Provides an alternate connection to Roycefield Road	MEDIUM	MEDIUM	Hillsborough, Duke Farms	2,5
Easton Avenue Corridor Improvements Various safety and operational improvements, including the installation of a median barrier to improve safety and reduce congestion as identified in the Easton Avenue/Main Street Corridor Plan	MEDIUM	MEDIUM	Franklin	2,8
Additional Raritan River crossing Advance river crossing concept to project scoping	MEDIUM	HIGH	Middlesex Co., NJDOT, Local Municipalities	2
Explore ITS improvements Intelligent traffic signals, VMS and other technologies	ONGOING	LOW	NJDOT, NJTPA, Neighboring Counties	1,2,3,4,7,8
Advocate for High Priority NJDOT Highway Projects U.S. Route 206 15N, Route 22 Sustainable Corridor, I-287 Easton Avenue Interchange	HIGH	HIGH	NJDOT	1,2
Pursue Operational Improvements Improve the efficiency of the County Roadway System	ONGOING	VARIES	NJTPA	1,2
County Network Roads and Bridges Continue investment in State of Good Repair and Maintenance	ONGOING	VARIES	Neighboring Counties	1,2
Real Time Travel Information Work with NJ511 and RideWise to explore ways to provide real time information on travel conditions	MEDIUM	LOW	NJDOT, RideWise	1,2,3,5,6,9
Port Reading Secondary Eliminate the grade crossing Main Street in Bound Brook	MEDIUM	HIGH	NJDOT, N-S Railroad	1,2,3,5,8
Route 27 Corridor Improvements Series of operational and safety improvements along the corridor to improve safety and reduce congestion including the Renaissance 2000 project improvements	MEDIUM	MEDIUM	NJDOT, Local Municipalities	2,8

Capital Improvements and Policy Initiatives	Priority	Order of Magnitude Cost (Est.)	Potential Partner Agencies	Goals and Policies
Transit Capacity				
West Trenton passenger rail restoration Advocate for project implementation	HIGH	HIGH	NJ Transit, Mercer County and Local Municipalities	1,2,3,5,6
NJ Transit supportive policies and services Include pricing, parking, and access strategies and initiatives to improve viability and cost competitiveness of transit service	MEDIUM	LOW	NJ Transit	1,2,3,5,6
Increased Service on Existing Rail and Bus Lines Advocate for improved service to meet local and regional needs	MEDIUM	MEDIUM	NJ Transit	1,2,3,6
Continue to support for the Raritan Valley Rail Coalition Provide administrative and technical support as necessary	MEDIUM	LOW	Member Agencies	2,3
Advocate and participate in improved rail capacity into NY Penn Station Initiative seeks to address long term need for regional and national rail access and capacity to Newark and Manhattan	HIGH	HIGH	NJ Transit, NJTPA, PANYNJ	1,2,3,5,6
Advocate for a one-seat-ride to NY Penn on the Raritan Valley Line One-seat-ride initiative greatly improves viability and attractiveness of commuter rail	MEDIUM	LOW	NJ Transit, NJTPA, PANYNJ	1,2,3,5,6
U.S. Route 202/Flemington Transit Study Participate in planning work in support of introducing passenger service in the corridor	MEDIUM	HIGH	Hunterdon Co., NJ Transit, NJTPA	2,3
Promote Transportation Management/Supply Strategies Work with RideWise to promote ridesharing and other strategies	ONGOING	LOW	RideWise	1,2,3
Central New Jersey Raritan Valley Transit Study Work with NJT to advance the findings and recommendations for expanding transit service on the Raritan Valley Line	ONGOING	LOW	NJDOT, NJ Transit, Municipalities	2.3.6

Capital Improvements and Policy Initiatives	Priority	Order of Magnitude Cost (Est.)	Potential Partner Agencies	Goals and Policies
Integrate Land Use and Transportation Planning				
Support Smart growth and land use redevelopment initiatives to support transit				
Hillsborough Town Center	ONGOING	LOW	Hillsborough, NJ Transit	2,3,4,5,6,7
Somerville Redevelopment	ONGOING	LOW	Somerville, NJ Transit	2,3,4,5,6,7
Redevelopment Planning Initiatives	ONGOING	LOW	Municipalities	4,5
Implement Transit Supportive Land Uses	MEDIUM	LOW	NJDOT, NJTPA, NJ Transit, Municipalities	2,3,6
Municipal land use planning				
Promote the integration of land use and transportation planning decisions.	ONGOING	LOW	Municipalities	1,2,3,4,6,7
Encourage municipalities to implement Mobility and Community Form Element recommendations	ONGOING	LOW	Municipalities	1,2,3,4,5,6,7
Continue to participate in regional planning efforts such as the Central Jersey Transportation Forum and the Six County Coalition	ONGOING	LOW	Adjacent Counties, NJDOT, NJTPA, DVRPC, NJ Transit, Municipalities	1,2,3,4,5,6,7
Scenic Corridor Planning				
Support current scenic corridor planning efforts	ONGOING	LOW	Municipalities, NJDOT	1,4,7

Capital Improvements and Policy Initiatives	Priority	Order of Magnitude Cost (Est.)	Potential Partner Agencies	Goals and Policies
Emerging Concepts				
Electric vehicle charging stations Support use and ownership of electric vehicles for private citizens and fleet vehicles	MEDIUM	MEDIUM	SC Energy Council	1,2,3,4,5,7
FHWA Livability Initiative U.S. DOT policy initiative to enhance communities through transportation improvements	ONGOING	LOW	NJTPA, Municipalities	2,3,4,5,6,7
Stormwater Alternatives Best management practices (BMPs) provide alternative methods for reducing stormwater flows and treating on site	MEDIUM	LOW	Municipalities, NJDEP	4,5
Green Building & LEED Certification Provide environmental benefits, including reduced emissions, water usage, and waste streams; improved air and water quality; and conservation of natural resources	ONGOING	VARIES	SC Energy Council, Municipalities	3,4,5,7
Bicycle and pedestrian mobility and safety				
Coordinate bicycle and pedestrian improvements with capital improvements				
Expand network of bicycle compatible roadways as roads are repaved	HIGH	VARIES	Municipalities	1,2,3,6,7,8,9
Fill in gaps in sidewalk coverage in areas of highest pedestrian demand	HIGH	LOW	Municipalities	1,5,6,7,8,9
Improve bicycle and pedestrian access and upgrade crosswalks at transit stops and stations	HIGH	LOW	Municipalities	1,6,8,9

Capital Improvements and Policy Initiatives	Priority	Order of Magnitude Cost (Est.)	Potential Partner Agencies	Goals and Policies
Freight and Goods Movement				
Support rail improvements to make rail more attractive to shippers and consumers	MEDIUM	LOW	NJDOT	1,2,3,7
Signage to encourage truck drivers to use preferred routings	MEDIUM	LOW	NJDOT	1,2,7,8
Investigate additional means for improving traffic flow on designated truck routes	MEDIUM	LOW	NJDOT, Municipalities	1,2,7,8
Inventory suitable properties for manufacturing and distribution activity	MEDIUM	LOW	Municipalities	5,7
Explore suitable locations for freight village development	MEDIUM	LOW	Municipalities	5,7
NJEDA Coordination				
Incorporate designated sites with rail access into programs that provide incentives for businesses that use rail freight service	MEDIUM	LOW	NJEDA, Municipalities	1,2,3,4,5, 7
Develop a marketing program to attract targeted businesses	MEDIUM	LOW	NJEDA, Municipalities	5,7
Traffic Safety (Defer traffic safety improvements to County 6 year capital plan)				
Continue to Address High Crash Locations on the County Network	ONGOING	VARIES	COUNTY	1,2,8,9
Advocate for improvements to address high crash locations on the State and Interstate Roadway Network	HIGH	VARIES	COUNTY/ NJDOT	1,2,8,9
Support Quiet zones on the West Trenton and Lehigh Lines to address noise concerns	MEDIUM	LOW	Municipalities	1,4,7,8,9

Capital Improvements and Policy Initiatives	Priority	Order of Magnitude Cost (Est.)	Potential Partner Agencies	Goals and Policies
GHG Mitigation				
Purchase of fuel efficient fleet vehicles	MEDIUM	LOW		1,3,4
Utilize low carbon fuels (Biodiesel, Ethanol)	MEDIUM	LOW		3,4
Explore use of Alternative Fuel Vehicles	MEDIUM	LOW	SC Energy Council	3,4
Consideration of GHG emissions by contractors for County projects	MEDIUM	LOW	SC Energy Council	3,4
Hazard Mitigation				
Establish hazard mitigation as a priority				
Bernardsville – Reconstruct and replace culvert and bridge over Mine Brook at Municipal Complex	MEDIUM	LOW	Bernardsville	1,8
Far Hills – evaluate flooding problems along Peapack Road	MEDIUM	LOW	Far Hills	1,4,8,9
Franklin – establish an emergency access entrance to Interstate 287 from Elizabeth Ave	MEDIUM	MEDIUM	Franklin, NJDOT	8
Manville – Construct pump station at railroad underpass on North Main Street	MEDIUM	LOW	Manville	8
Watchung – Rehabilitation and reconstruction of Phillips Field Bridge and Embankment	MEDIUM	LOW	Watchung	1,8

Capital Improvements and Policy Initiatives	Priority	Order of Magnitude Cost (Est.)	Potential Partner Agencies	Goals and Policies
Public Outreach and Education				
Continue and expand public outreach efforts in all transportation planning efforts	ONGOING	LOW	NJDOT, NJTPA, NJ Transit	9
Promote public transit options	MEDIUM	LOW	NJDOT, NJ Transit, RideWise	2,3,5,6
Aviation				
Monitor Local and Regional Aviation Projects	HIGH	LOW	FAA, NJTPA NJDOT	1,8
Monitor Implementation of the FAA's New York/New Jersey/Philadelphia Airspace Redesign Project	HIGH	LOW	FAA, NJTPA NJDOT	1,8
Emergency Evacuation Route Maintenance				
Establish emergency evacuation route as a priority				
Interstate 287 and State Route 27, and U.S. Route 206 (major North/South routes)	MEDIUM	LOW	NJDOT	1,4,8
Interstate 78, U.S. Routes 22 and 202, and State Route 28 (major East/West routes)	MEDIUM	LOW	NJDOT	1,4,8
County Routes 523, 525, 527, 531 and 533 (alternate North/South routes)	MEDIUM	LOW	Municipalities	1,4,8
County Routes 512, 514, 518, 523, 525, 531, 533, 567 and 601 (alternate East/West routes)	MEDIUM	LOW	Municipalities	1,4,8

The Making Connections Plan is designed to improve mobility and safety across Somerset County. The Plan guides Somerset County's transportation planning process, identifies and promotes policies that help support and reinforce the recommended improvements, and provides a framework for selecting and prioritizing among proposed the programs, plans, and projects.

The Implementation Plan includes a series of recommendations that implement the Plan goals and policies and vision statement. Through these recommendations, the Making Connections Plan:

- Creates a robust multimodal transportation network
- Maintains and improves the existing highway system
- Expands the regional transit system
- Enhances traffic safety for all travelers and modes, and
- Promotes sustainability

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