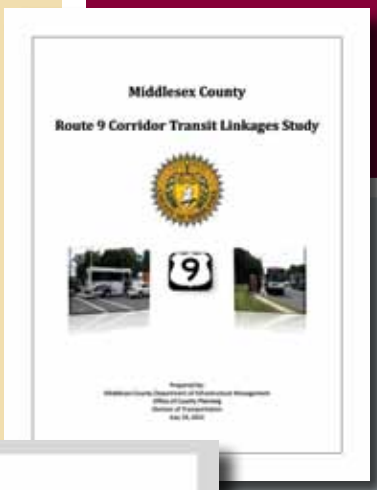
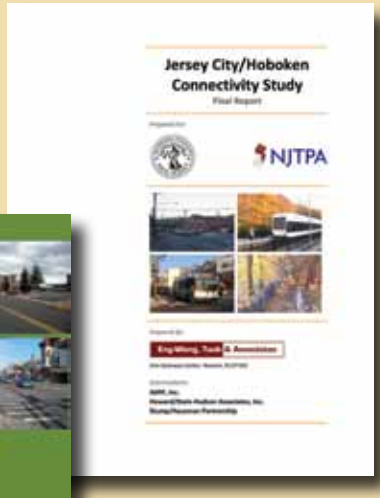
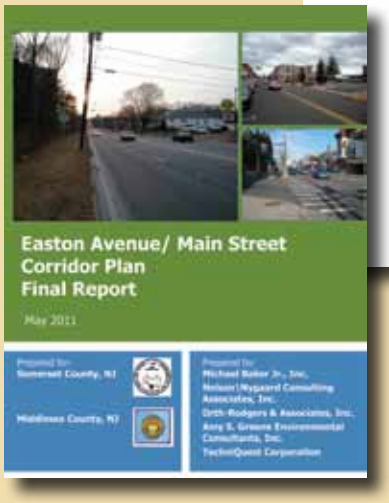
# Summary of Subregional Studies FY 2010–2011

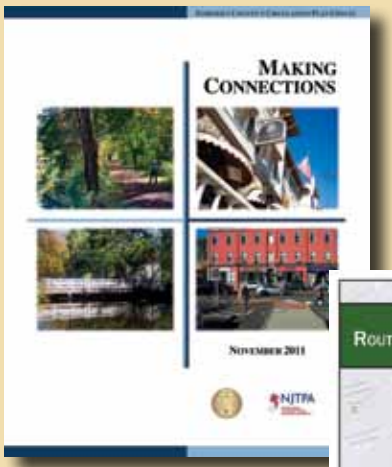


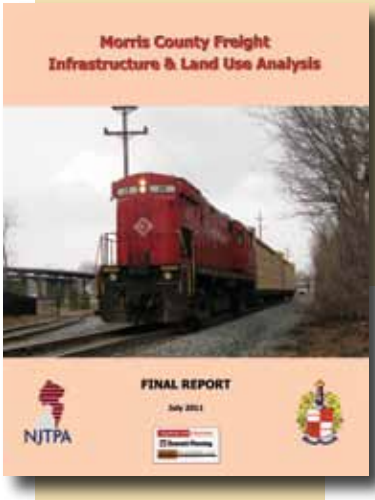



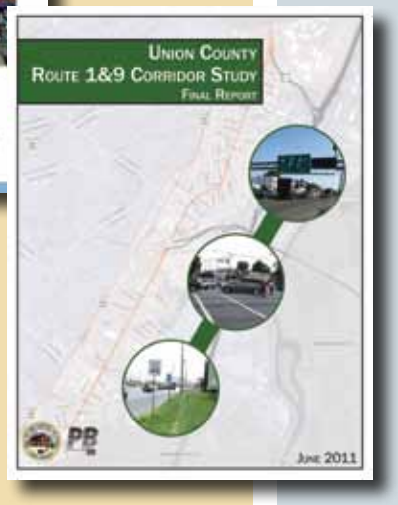


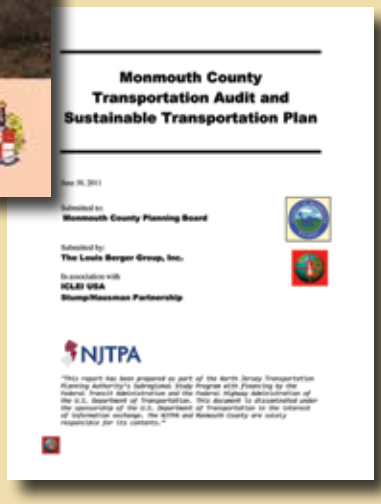







NJTPA
NORTH JERSEY
TRANSPORTATION
PLANNING AUTHORITY

## About the NJTPA

**THE NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY** (NJTPA) is the federally authorized Metropolitan Planning Organization (MPO) for the 13-county northern New Jersey region. Each urbanized region of the country is required to establish an MPO in order to qualify for the receipt of federal transportation funding. The NJTPA serves a region of 6.6 million people, one of the largest MPO regions in the country. The NJTPA evaluates and approves proposed transportation improvement projects. It also provides a forum for cooperative transportation planning efforts, sponsors transportation and planning studies, assists county and city planning agencies and monitors the region's compliance with national air quality goals.

The 20-member NJTPA Board of Trustees is composed of local elected officials from each of the region's 13 counties and from the region's two largest cities, Newark and Jersey City. It also includes representatives of state agencies and the Governor's office (see below). The NJTPA's host agency is the New Jersey Institute of Technology. More information about the NJTPA is available at *www.njtpa.org*.

*This publication has been financed by the Federal Transit Administration and the Federal Highway Administration of the U.S. Department of Transportation. The NJTPA is solely responsible for its contents.*

## NJTPA Board of Trustees

# Summary of Subregional Studies FY 2010–2011



NJTPA
NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY

Published March 2012

# Introduction

The purpose of the Subregional Studies Program is to fund studies of important regional issues that are consistent with the NJTPA's Regional Transportation Plan (RTP) for Northern New Jersey. The program funds studies in any of the NJTPA's 15 subregions: Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union and Warren counties, and the cities of Jersey City and Newark.

These studies include an analysis of existing and future conditions that lead to the identification of potential transportation solutions for a particular system or study area. Strategies are developed and refined into concepts that can advance to implementation phases involving appropriate implementing agencies (such as the New Jersey Department of Transportation (NJDOT), NJ Transit, Transportation Management Associations [TMAs], Subregions, or municipalities).

Studies may also complement other planning and strategy development work in the region being conducted by NJDOT or NJ Transit.

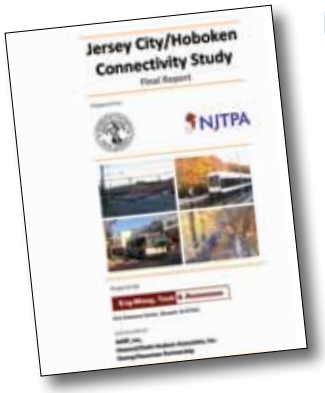
The following publication presents concise summaries of each of the NJTPA's Fiscal Year (FY) 2010-2011 Subregional Studies. Many studies focus on a combination of issues—multi-modal accessibility, safety improvement concepts, sustainability, and design, to name a few—which adds to each study's overall value for the region.

To read more about a specific issue addressed or to read the full report of any of the FY 2010-2011 Subregional Studies presented in this publication, please go to the Subregional Studies Program page on the NJTPA website: ***www.njtpa.org***.

# Jersey City/Hoboken Connectivity Study

SUBREGION

**Hudson County and City of Jersey City**




## Introduction

Although Hoboken and Jersey City are renowned as pedestrian friendly cities with vibrant public transportation systems, traveling between them can be a challenge. The study focused on two adjacent areas separated by the Palisade Cliffs: the Jersey City Heights neighborhood of Jersey City bounded by Palisade Avenue to the west, Franklin Street to the north, Paterson Plank Road to the east, and New York Avenue to the south; and an area at the foot of the Palisades in Hoboken and Jersey City, bounded by Paterson Plank Road (in Jersey City) to the west, 2nd Street (in Hoboken) to the north, Willow Avenue (in Hoboken) to the east, and 18th Street (in Jersey City) to the south. The study area is often congested due to a combination of factors, including awkward intersection angles, topography, the limited number of roadways running down from the cliffs, and the NJ Transit Hoboken Rail Yard. The study addressed the need for better pedestrian, bicycle and motorist access between these two dense urban areas.

The Jersey City/Hoboken Connectivity Study effort identified improvements that balance the needs of all travel modes while meeting the study's goals of:

- Improving the connectivity of the street network
- Improving vehicular mobility for local and regional traffic
- Enhancing non-automotive modes of travel and transit
- Ensuring fair and effective public participation in the planning process

## Methods and Public Outreach

Data collection involved conducting manual and automated traffic counts in the study area to identify the causes of bottlenecks. Counts were also conducted outside of the study area to determine the impacts of major traffic sources such as the Holland Tunnel, New Jersey Turnpike, Routes 1&9 and Interstate 78. An origin and destination survey conducted at congested intersections helped paint a picture of traffic flow through the study area by distinguishing regional traffic from local traffic. The 400 survey responses were used to estimate the percentage of trip types. The survey found that 30 percent of trips were cut-through traffic with both origin and destination outside the study area. A 56 percent majority of respondents were split between internal/external origins and destinations, which is indicative of work trips. Also, 14 percent of vehicle trips had both an internal origin and destination, representing a potential for shift to alternative modes.

To gather public input, the study team used a project website (*www.jerseycityhobokenstudy.com*) to collect and display resources such as maps, photos,

### Study Area

The Jersey City/Hoboken Connectivity Study focused on two neighborhoods divided by the Palisade Cliffs: Jersey City Heights atop the cliffs; and sections of Jersey City and Hoboken located at the foot of the cliffs.

### Purpose

To improve the connectivity of the street network between Jersey City and Hoboken for all modes of travel, working within the existing constraints of a limited transportation network.

### Board Member

Hon. Thomas DeGise, *Hudson County Executive* and *NJTPA Second Vice-Chairman*

Hon. Jerramiah T. Healy, *Mayor, Jersey City*

### Project Manager

Megan Massey, AICP, PP, *Hudson County*

### Consultant Team

Eng-Wong Taub & Associates

AKRF, Inc.

Howard/Stein-Hudson Associates, Inc.

Stump/Hausman Partnership

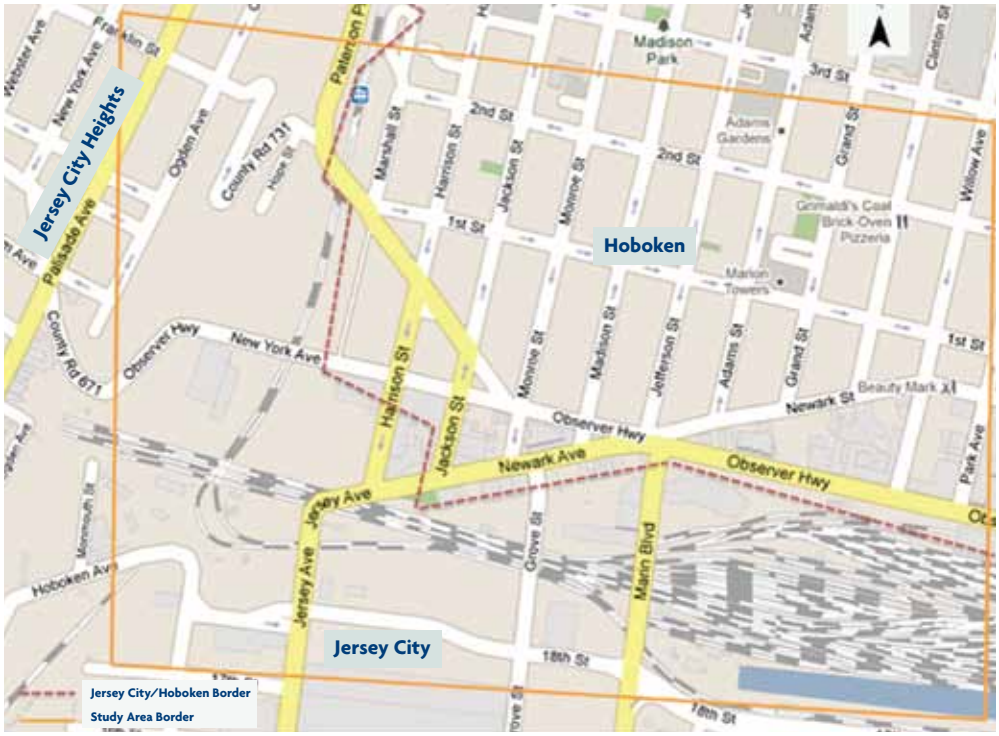



**Figure 1: Study area map showing the road network and rail lines.**

invitations to public open houses, and summaries of those public meetings. The open house meetings were held in Jersey City and Hoboken. The initial discussions focused on bicycle, pedestrian, transit, and motor vehicle issues in the study area. A second set of public meetings held toward the study's conclusion presented the study's recommendations for short-term, mid-term, and long-term improvements. A technical advisory committee made up of elected officials and representatives of several public agencies guided the project and assisted in organizing the public meetings.

## Findings

Both the compiled data and public feedback told a similar story about the study area. The road network is oversaturated, which causes congestion and unsafe conditions for all modes of travel, and a number of intersections could be made safer through design and signal upgrades. In addition to motorist safety, the study team found that pedestrians and cyclists lack amenities for safe and efficient travel. Pedestrians must navigate around poorly placed signs and benches on narrow sidewalks while a disconnected bike network leaves cyclists vying for space with cars and pedestrians. Five intersections within the study area received failing grades for traffic flow, which usually indicates demand has exceeded capacity. Without improvements, future growth in the area will only exacerbate these conditions.

The study team identified a number of potential approaches to address these problems from the first round of open houses, which helped gather public input on needs involving operations, maintenance and connections between Jersey City and Hoboken for all modes of travel.

## Recommendations

A wide variety of options were considered, but only those that reduced congestion and increased transit, bicycle and pedestrian accessibility were included on the final list. These measures were broken down into short-term, medium-term, and long-term investments. The medium- and long-term strategies require further study and design prior to implementation.

### *Short-Term Recommendations*

Short-term recommendations were primarily geared toward enhancing bicycle and pedestrian travel through the area, but could also positively impact vehicular travel. A few of the notable strategies included "Stop for Pedestrian" signs, widening sidewalks and repositioning benches to increase pedestrian space, street cleaning to clear bike paths, and updated zoning to delineate multi-modal street space.

### *Medium-Term Recommendations*

These strategies aimed to improve traffic flow, safety and connectivity within the study area. The key scenario in this section was a reconfiguration of Grove Street and Marin Boulevard to carry one-way traffic between 18th Street and Newark Avenue/Observer Highway (see Figure 2 below). These modifications were designed to reduce congestion, simplify turning movements and increase safety for all users. Other medium-term recommendations included the installation of additional traffic signals at key intersections as well as strategically placed bicycle lanes.

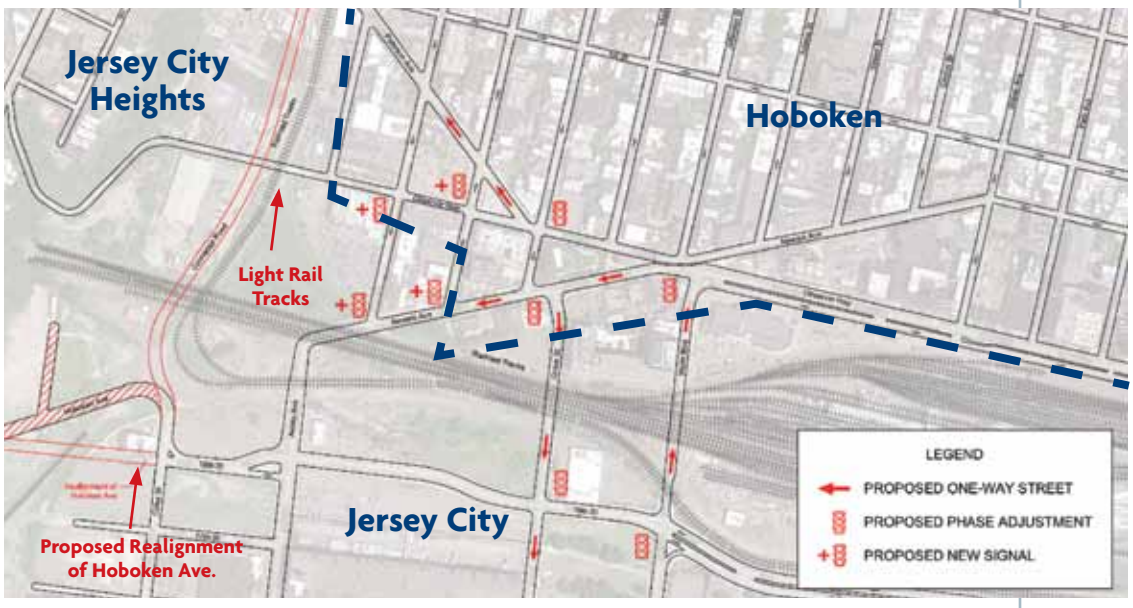
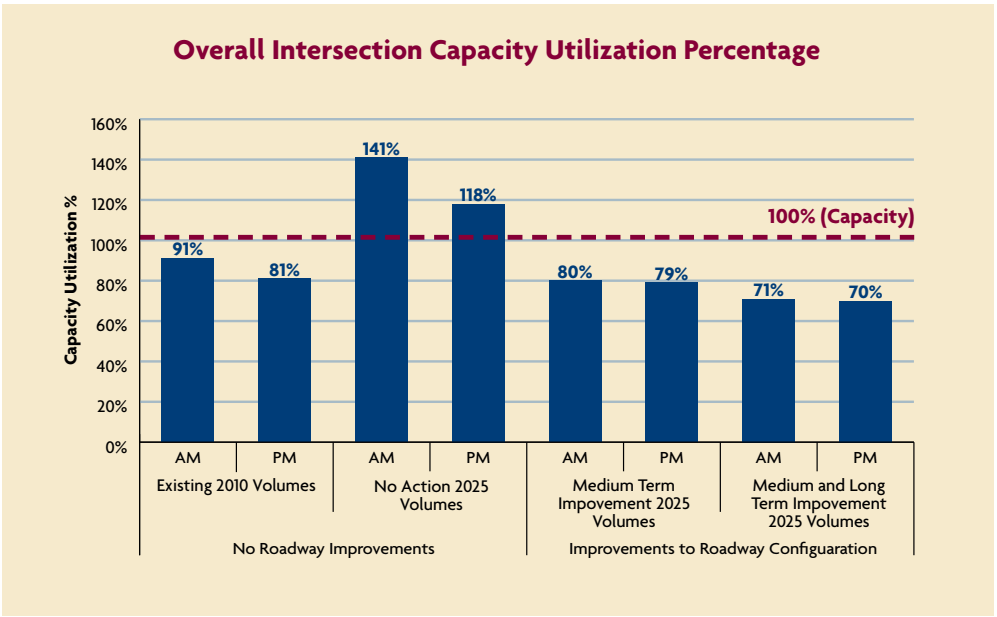



**Figure 2: Proposed safety improvements include implementing one-way traffic on key roads (blue dashed line represents municipal boundary).**

**Figure 3: Projected overall traffic levels at intersections with and without the medium- and long-term improvements. Results above the 100% line indicate demand has exceeded capacity.**




## Key Personnel

**Megan Massey**, AICP, PP, is a Principal Planner for the Hudson County Division of Planning. She has worked for the county since 2009 and served as a project manager for this study.

**Stephen D. Marks**, AICP, PP, LEED-GA is the Planning Director for the Hudson County Division of Planning. He has worked for the county since 1993.

**John Lane** is an Executive Assistant in Hudson County's Division of Engineering. He has worked for the county for 39 years and is Hudson County's voting member on the NJTPA's Regional Technical Advisory Committee.

**Douglas J. Greenfeld**, AICP, PP, is a Supervising Planner for the Jersey City Mayor's Office. He has worked for the city since 1998. He is Jersey City's voting member on the NJTPA's Regional Technical Advisory Committee.

**Naomi Hsu**, AICP, PP is a Senior Transportation Planner for the City of Jersey City. She has worked at the City of Jersey City since 2005. She is an alternate member of the NJTPA's Regional Technical Advisory Committee.

### *Long-Term Recommendations*

These focused on ways to divert traffic from the congested portions of the study area while adding new north/south pedestrian and bicycle connections. Key long-term recommendations included:

- Realigning Hoboken Avenue to intersect Coles Street at a safer right angle
- Adding a connector road from the above intersection north to Paterson Plank Road with an underground rail crossing, increased sidewalk widths, and bike lanes
- Constructing a new HBLR station along 18th Street in Jersey City to provide an additional public transit connection between Jersey City and Hoboken

Medium and long-term strategies were analyzed as a complete package and were predicted to have varying effects on capacity, as shown above in Figure 3.

## Next Steps

Hudson County, Jersey City and Hoboken should work with the potential implementation agencies identified in the study to help carry out its short-term, medium-term and long-term recommendations.

# Middlesex County Route 9 Corridor Transit Linkages Study

SUBREGION

**Middlesex County**


## Introduction

Each day, U.S. Route 9 from Lakewood to Sayreville carries the greatest volume of New Jersey Transit bus service among all suburban highway corridors. Middlesex County's Route 9 Corridor Transit Linkages Study aimed to improve the performance of the transit network along the highway by connecting local transit services to regional transit services. The corridor has peak period service of one bus every two minutes. By making it easier for riders to access those buses, Middlesex County can help increase transit use and ease traffic congestion along Route 9.

The study area consists of both Old Bridge Township and Sayreville Borough, a 54-square-mile area located in the southeast corner of Middlesex County (Figure 1, next page). With a combined population of over 108,000 people, these two municipalities have grown steadily in the past 30 years. The accessibility to New York City, Newark and other key job centers via the Route 9 transit corridor has contributed to the growth of these bedroom communities. The strong bus ridership along the corridor is an indicator of the high value placed on public transportation within the study area.

Still, the area's suburban landscape and infrastructure pose great challenges to improving local transit connectivity to the mainline Route 9 bus corridor and making pedestrian access safer for bus riders. By choice or necessity, most commuters brave the heavy peak hour traffic throughout the corridor and drive alone to work. Reducing the level of auto commuting and congestion was among the study's chief goals. Many transit commuters who live outside of walking distance to the regional bus corridor must rely on driving to overcrowded park and ride facilities in the area. This study used a variety of demographic and spatial analyses to identify residential developments that demonstrate a need for local transit or feeder services. The study also identified less than ideal accommodations at specific bus stop facilities and documented a need to improve the conditions especially for bus riders within walking distance to bus stops.

## Methods and Public Outreach

Middlesex County's study of the Route 9 bus corridor represented a comprehensive effort to identify the need for new or enhanced transit linkages. The study included area descriptions, profiles of demographics and work-travel behavior, mobility needs estimates, an inventory of existing transit services and facilities,

### Study Area

The southeast corner of Middlesex County comprised of Old Bridge Township and Sayreville Borough.

### Purpose

To increase mobility options by providing currently underserved residential developments with transit linkages to the Route 9 transit corridor.

### Board Member

Hon. Stephen Dalina,
*Freeholder, Middlesex County*

### Project Manager—Primary Author

Anthony Gambilonghi,
*Project Manager*

Ryan W. Rapp, AICP, PP,
*Primary Author*

### Planning Team

Middlesex County Department of Planning (in-house effort)


**Figure 1: Study area map of Sayerville and Old Bridge.**

an analysis of pedestrian injury and fatality crash records at and near bus stops, and a land use and local zoning analysis. The study also explored the need for improved public outreach and education.

## Findings

Much of the population in the study area is concentrated in residential developments clustered near major roadways and intersections, especially along Route 9. Clusters that are near park and rides tend to have higher shares of public transit use. However, the study also identified areas further away from park and rides whose demographic data such as population density, age, disability, automobile ownership, and income indicate the potential for expanded transit use. It is in these underserved areas that the Middlesex County Transportation Planning Division seeks to enhance transit, pedestrian and cyclist access to Route 9 commuter stops.

The existing regional transit infrastructure includes at least eight park and ride facilities along Route 9 alone, with an inventory of nearly 3,000 parking spaces. The study area also accommodates a wealth of bus operations, including local and regional NJ Transit routes, local and regional Academy routes, and local Middlesex County Area Transportation (MCAT) shuttles. The award-winning MCAT shuttle system has steadily built ridership over the last five years and represents the most viable avenue for covering local transit service gaps.

The county used two Census-based quantitative methods for identifying locations that would likely support transit linkages. The first method, "mobility needs assessment," identified areas where transit-dependent populations reside, targeting Census-based variables such as old age, low income, disabled and zero-car households. The second method, "transit viability index," rated the combined impact of density values for population, households, labor force, and housing units having zero or one car at the geographic level of Census block groups. An indexed total—scaled from 0 to 100 to compare the different variables and units into one measure—represented the total transit viability score. This method was derived and simplified from the Delaware Valley Regional Planning Commission and NJ Transit's transit score tool.

Both assessments found some high scores in residential areas that are currently underserved by transit links to retail and employment centers. An example

of one of these residential areas is the Winding Wood Apartments on Bordentown Avenue in Sayreville. In the map (Figure 2), this isolated area consistently showed "Medium" to "High" transit needs.

## Recommendations

The following recommendations focused primarily on shuttle service enhancement, which can help address transit access, pedestrian safety and congestion relief. Recommendations were sorted by quick fix, short-term and long-term improvements. Quick fix improvements included modifications to routes, timetables and service frequency. Short-term strategies included new routes, traffic signal adjustments and minor capital improvements. Finally, long-term improvements were those that require significant study and design work, and may take several years to implement.

### *Quick Fix*

- MCAT M2 shuttle route modification to include Winding Wood Apartments
- MCAT M3 shuttle route and timetable modifications to include regularly timed stops at intersection of Throckmorton and Ticetown roads for transfers to Route 9 mainline services
- New MCAT M7 peak period shuttle from Winding Wood Apartments to the Old Bridge and Cheesequake Park and Ride park and rides
- New MCAT M7 off-peak shuttle from Brunswick Square Mall or downtown Spotswood to the South Amboy commuter rail station

### *Short Term*

- Two new distinct MCAT M3 peak period loops that would connect residential neighborhoods not currently served by transit to jobs
- Enhance pedestrian safety by evaluating traffic signal timing, vehicle turning prohibitions, bus stop location and bus stop design
- Identify and implement pavement markings or signage to accommodate pedestrians and cyclists wherever possible
- At identified bus stops, install amenities such as bus shelters, bike racks, recessed bus bays, and pedestrian lighting

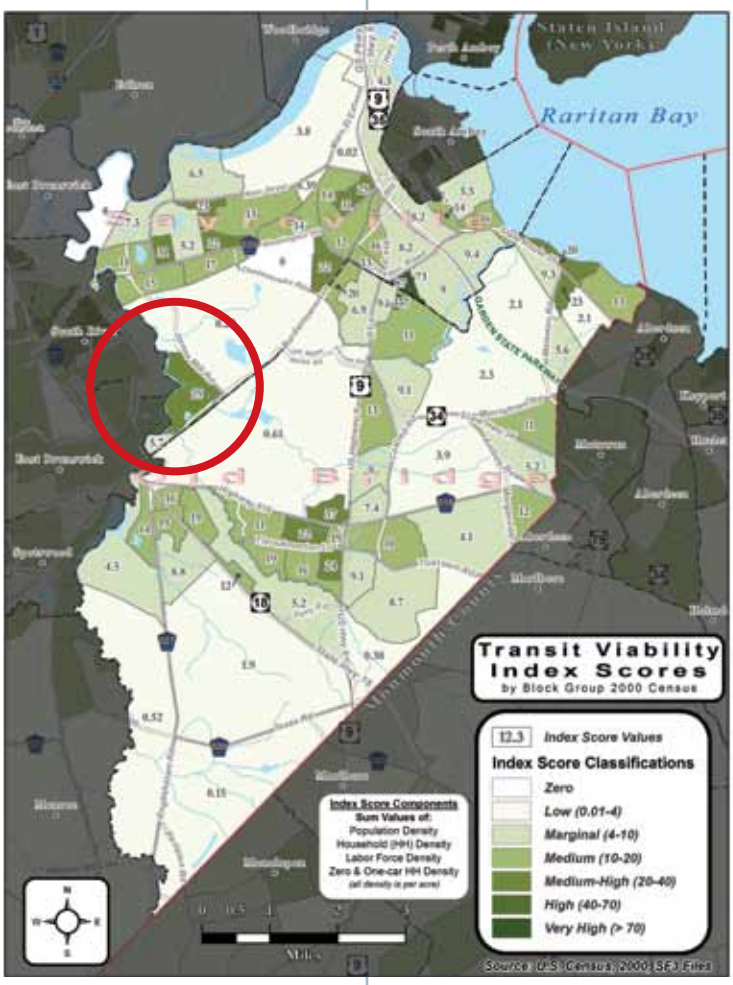



**Figure 2: Transit Viability Index map showing transit areas, with Winding Wood Apartments circled.**

*Long Term*

- New MCAT M8 peak period shuttle to offer feeder service from Lakeview Apartments in Sayreville to South Amboy train station
- New MCAT M8 off-peak shuttle loop to connect shopping centers, residential developments, park and ride facilities and the South Amboy train station
- Promote shuttle services operated by housing developments and/or major employers in the study area to provide access to and from the Route 9 commuter stops
- Construct sidewalks along certain roadways to keep pedestrians from being steered into travel lanes and unprotected shoulders while walking to a bus stop

In addition to improving shuttle services, recommendations were presented for improved public outreach and education including:

- Education about transit services via improved timetables, route diagrams, and information for connecting services
- Providing cross-agency route information in publications
- Integrating fares from local to regional transit providers
- Encouraging community feedback to better understand public needs

## Next Steps

Middlesex County, Old Bridge and Sayreville should seek federal, state and local funding sources to implement the recommendations in the study. A list of potential funding sources was identified (Chapter 10).

### Key Personnel

**George Ververides**, AICP, PP, is the Planning Director for the Middlesex County Department of Planning. Ververides has been with the planning department since 1961. He is the county's voting member on the NJTPA's Regional Technical Advisory Committee.

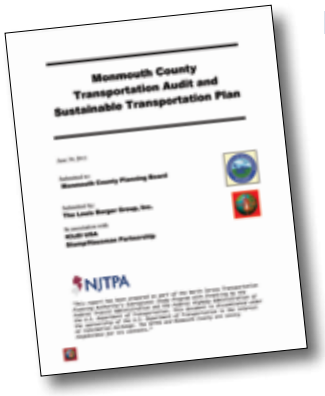
**Anthony Gambilonghi**, AICP, PP is Supervising Planner, for the Middlesex County Department of Planning, Transportation Division. Gambilonghi served as project manager for this study. He has been with the planning department since 1973. He is the county's alternate member on the NJTPA's Regional Technical Advisory Committee.

**Ryan Rapp** AICP, PP, is a Principal Planner in the Middlesex County Department of Planning, Transportation Division. Rapp was the primary author of this study.

# Transportation Audit & Sustainable Transportation Plan

SUBREGION

**Monmouth County**




## Introduction

New Jersey's Global Warming Response Act established aggressive goals for greenhouse gas (GHG) emission reductions, calling for a return to 1990 emissions levels by 2020 and an 80 percent reduction below 2006 emissions levels by 2050. The Monmouth County Transportation Audit and Sustainable Transportation Plan took an initial step towards these goals by addressing climate change policy at the county level. An inventory of the transportation-related GHG contributors and a review of the county's vehicle fleet led to the development of achievable policies as well as a "Municipal Toolbox," which outlines national best practices for selecting, funding and implementing GHG reduction strategies. Evaluating local practices alongside national best practices can serve as a model for local governments.

This "think global, act local" approach encourages communities to consider how to reduce fossil fuel consumption. Since humans rely extensively on fossil fuel sources for everyday activities—from transportation to the production of food and running water, to communication—there are many opportunities to reduce consumption on a daily basis.

The potential impacts of climate change in Monmouth County weigh heavily on the region and the state. Forecasts based on past trends show that a climate change-induced sea level rise of 16 to 31 inches for New Jersey, by the end of the century, could inundate low-lying lands along the shore (Figure 1, next page).[1] The addition of more volatile weather patterns can also increase flood damage and ocean acidity, which can have dramatic impacts on present and future development along the county's shoreline, the county's transportation infrastructure, wildlife and fishing, and on human health.

**Study Area**

Monmouth County

**Purpose**

To assess the county's transportation-related greenhouse gas (GHG) emissions contributions and examine strategies for reducing them.

**Board Member**

Hon. Thomas A. Arnone, *Freeholder, Monmouth County*

**Project Manager**

Nora Shepard, AICP, PP

**Consultant Team**

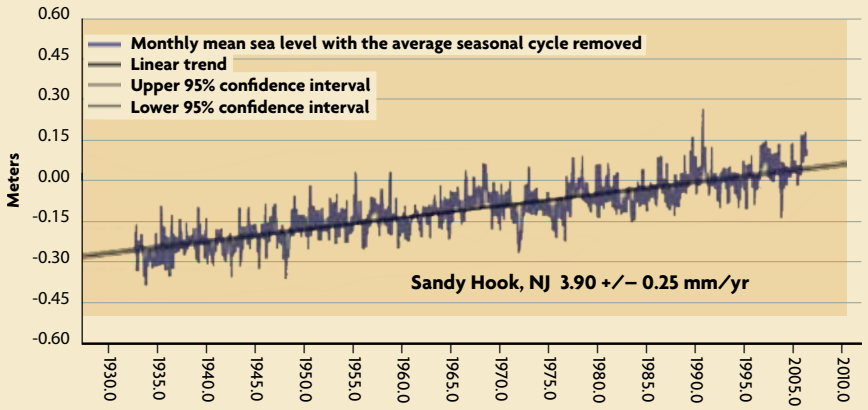
The Louis Berger Group, Inc.

ICLEI USA

Staump/Haussman Partnership

[1] Environmental New Jersey Research & Policy Center (2007, May). *An Unfamiliar State Local Impacts of Global Warming in New Jersey*, 15.

**Figure 1: Sea Level rise in Sandy Hook, N.J., since 1930.**




The mean sea level trend is 3.90 millimeters/year with a 95% confidence interval of +/– 0.25 mm/yr based on monthly mean sea level data from 1932 to 2006 which is equivalent to a change of 1.28 feet in 100 years.

Source: National Oceanic and Atmospheric Administration

## Methodology and Public Outreach

Transportation is a major source of GHG emissions, accounting for 40 percent of New Jersey's share of emissions in 2008. Transportation is also among the fastest growing sources of GHG emissions in the state, largely due to increased personal vehicle travel associated with long-term population and employment growth. This study's goal to reduce GHG emissions is based on a three-pronged strategy:

1. Reduced vehicle miles traveled (VMT) through promotion of public transit use and non-motorized travel
2. Increased vehicle fuel efficiency through both driving techniques and traffic reduction
3. Reduced reliance on fossil fuels by converting to alternative fuels

The primary method of data collection and outreach undertaken in this study was an email survey of Monmouth County's employees, which served to estimate emissions by county division and to determine county employee commuter behavior. The survey, which had a 38 percent (1,337 of 3,500) response rate, helped to identify what policies for GHG emissions reductions would be palatable among employees. Taking this internalized approach of reviewing, recommending, and initiating changes within its own organizational structure, Monmouth County can serve as a model for local climate change policy, research and implementation.

## Findings

### *County Vehicle Fleet Emissions*

The existing emissions reduction strategies being implemented in Monmouth County include tracking vehicle and equipment fleet mileage and fuel consumption; using vehicles more efficiently; using more efficient, lower polluting alternative fuels and engines, where practical; and reducing idling. These strategies are

making progress, as reflected in the finding that Monmouth County's vehicle fleet emissions per capita were less than half that of any of the three comparable counties serving a similar population size.

### *Employee Commuter Survey*

The estimated total of transportation-related emissions from Monmouth County employees' commutes was 12,400 tons per year. This is less than 0.5 percent of the NJTPA-forecasted 2.7 million annual tons emitted from transportation-related activity in Monmouth County as a whole. The study noted that county employees contributed nearly twice the GHG emissions per employee compared with counties with a similar workforce size. The 2010 survey also found that 21 percent of respondents lived within 5 miles of their work location. The majority of those surveyed (92 percent) drove alone to work, 3 percent carpooled and less than 1 percent walked, biked or used public transit (3.8 percent gave no response).

## Recommendations

### *Employee Commute*

The near-term policies to reduce employee commute GHG emissions that appear the most likely to be implemented are:

- ***Ridesharing programs***, assuming 5 to 15 percent participation, can reduce GHG emissions significantly if targeted to county employees.
- ***Infrastructure improvements*** such as bike routes or bike parking can spur non-motorized commuting and achieve a reduction of 23,000 to 115,000 vehicle miles travelled (VMT).
- ***Financial incentives*** for transit and ridesharing can include vanpool subsidies, or allowing employees to set aside pre-tax income for transit passes.

### *County Vehicle Fleet*

A combination of strategies such as the following could reduce GHG emissions and save the county $244,000 per year from reduced fuel consumption:

- ***Data collection***—improved tracking of fuel consumption and mileage by vehicle
- ***High-Efficiency Vehicle Purchase***—phase out older vehicles
- ***Efficient Driver Education***—driver behavior can reduce fuel consumption

### *Countywide GHG Emissions*

The following recommendations were identified among many options as the highest priorities for implementation based on feasibility and emissions reductions, with the understanding that Monmouth County cannot do many of these projects without cooperation from other responsible parties:

- ***Comprehensive Bicycle and Pedestrian Master Plan***—The NJTPA-funded plan for the FY 2012-13 Subregional Studies Program cycle is expected to prioritize future pedestrian and bicycle projects to create a connected bicycle and pedestrian network.

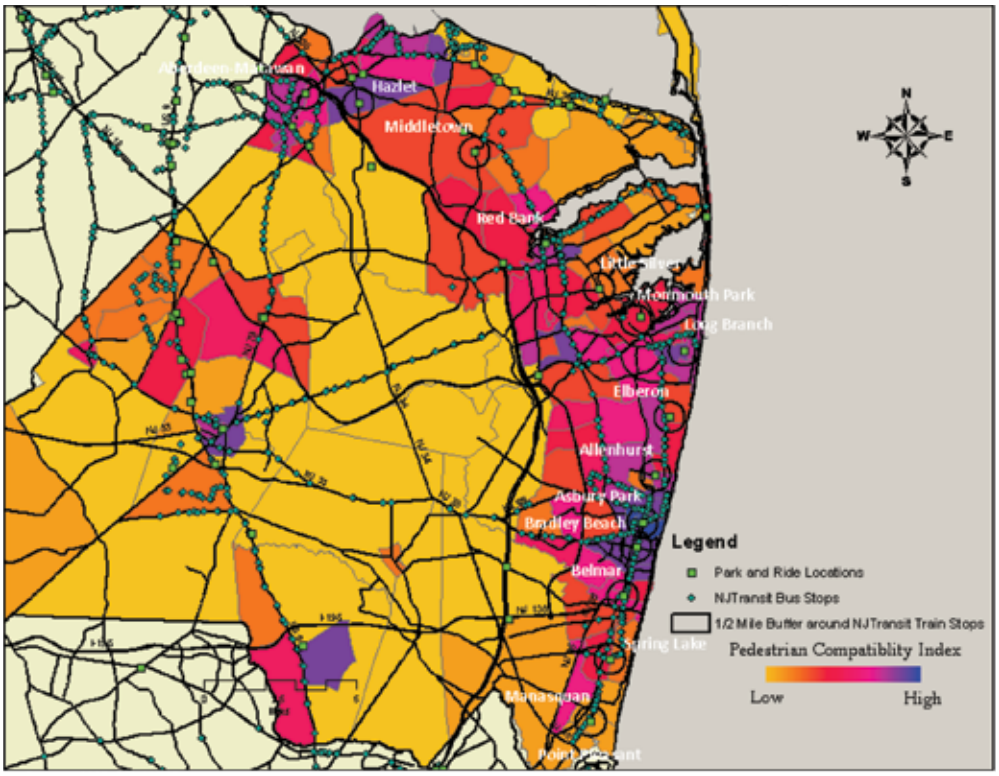



**Figure 2: Pedestrian compatibility in Monmouth County.**

- *Local Shuttles to Park and Rides and Seasonal Shuttles for the Shore Area*—Federal and state funding sources can be used to work with Meadowlink TMA and the private sector to help provide more complete transit networks that help reduce congestion. (A seasonal shuttle serving a number of shore towns was started in 2011).
- *Exit 98 Park and Ride Expansion*—Expanding the over-capacity Garden State Parkway Exit 98 park and ride would promote carpooling along a key interchange.
- *Route 9 Bus Improvements*—Creation of a partial Bus Rapid Transit (BRT) corridor for commuter time savings and congestion reduction.

## Next Steps

Monmouth County should promote use of the Municipal Toolbox that was developed as part of this study. This product provides a list and overview of GHG emissions reduction strategies as well as organization criteria by classifying each strategy by ease of implementation and return on investment (ROI). A handbook also provides a detailed list of funding sources and grants for such strategies. Using these resources can assist municipalities in prioritizing GHG reduction strategies based on well-designed guidelines.

### Key Personnel

**Nora L. Shepard**, AICP, PP, served as project manager for this study. Shepard was the Supervising Transportation Planner for the Monmouth County Planning Board during this project. She has 30 years of planning experience. Shepard no longer works for Monmouth County.

**Anthony Gamallo**, AICP, is a Senior Transportation Planner for the County of Monmouth. He has worked for the county since 2008.

**Joseph M. Ettore** is the County Engineer for Monmouth. He has worked for the county since 1983. He is the county's voting member on the NJTPA's Regional Technical Advisory Committee.

# Morris County Freight Infrastructure and Land Use Analysis

SUBREGION

**Morris County**


## Introduction

The Morris County Freight Infrastructure and Land Use Analysis is a comprehensive study examining the impact and role of the goods movement industry on the county's transportation network, land use, and economy.

The evolution of Morris County's transportation and economic systems has paralleled that of the nation. As suburban development and service-oriented businesses have replaced a former industrial base, the county's roadways have been strained by the increased truck traffic necessary to serve these consumers. Meanwhile, globalization has resulted in increased through traffic by trucks coming to and from the Port of New York and New Jersey and the warehouses and distribution centers handling import/export of goods.

Morris County's highways and freight railroads play a vital role in the region's economy. The county's major regional highways (including I-80, I-280, I-287, and NJ-24) carry high volumes of truck traffic through the region and changing local land uses have attracted traffic to intermediate highways as well. Morris County benefits from the availability of freight rail service on the NJ Transit Morristown line, the New York Susquehanna & Western line, and the Morristown & Erie Railway's Whippany line. The county is unique for owning three rail alignments, the Dover and Rockaway Railroad, the High Bridge Branch, and the Chester Branch. In 2009, freight-related industries accounted for 17 percent of the county's employment base.

Facing forecasts of continued growth in freight truck movements, the county wanted to capitalize on developing opportunities to advance its future freight economic viability within the larger New York metropolitan area without overburdening roads. This study provided a comprehensive review of the county's existing freight transportation infrastructure, related land use policies, and economic analyses of key freight-related industrial subsectors. The report concluded with a marketing plan for industrial properties and a municipal guide for freight planning, which presents information to local governing bodies, planning boards, and boards of adjustment for their consideration in land use planning and infrastructure projects for goods movement activity within their municipality.

County and regional goals for preserving and enhancing freight rail infrastructure and service, supporting future rail-oriented industrial development on brownfield sites, and expanding the county's industrial employment base were pursued in this study.

### Study Area

Morris County

### Purpose

To increase freight opportunities without adversely impacting residential communities.

### Board Member

Hon. Gene F. Feyl, *Freeholder, Morris County* and *NJTPA Chairman*

### Project Manager

Erik DeLine

### Planning Team

VHB (formerly Eng-Wong, Taub & Associates)

Gannett Fleming

4ward Planning LLC

## Methodology and Public Outreach

Given Morris County's residential growth, increases in freight-related movements, mostly by truck, are likely to continue. The Morris County Freight Infrastructure and Land Use Analysis highlighted opportunities to utilize the transportation network in ways that add value to the manufacturing and transportation sectors while minimizing traffic and noise impacts on residential communities.

To help convey the importance of freight to the quality of life in communities, the following documents were created:

- ***The Municipal Guide for Freight Planning***, an informational pamphlet for municipalities and public agencies to effectively plan freight-oriented development.
- ***Marketing Plan for Industrial Properties***, a summary of current program efforts and recommendations for marketing industrial site development in the county.
- ***Review of Easement and License Agreements for Railroads***, an examination of industry practices and recommended alternative revenue sources.

## Findings

The report noted that Morris County's transportation infrastructure, including major highways and a historic network of rail lines, positions the county to experience significant economic growth in the freight sector. The following synopsis of this study's analysis involves four issue categories:

### *Freight-Related Industry*

The goods movement industry is a critical component of northern New Jersey's economy and a vital part of residents' daily lives. The price of groceries, clothes, gas and any other products consumers purchase are directly impacted by the costs of transporting them. Maintaining a safe, efficient transportation network for these goods to move in and out of the region is therefore of paramount importance.

Relative to the state and the New York-Northern New Jersey-Long Island Metropolitan Statistical Area (MSA), Morris County has a large share of employment in manufacturing. According to the study, the top four freight-related subsectors in Morris County accounted for roughly 54,700 direct, indirect, and induced jobs and $17.9 billion in direct economic output ($16.1 billion from chemical manufacturing alone) in 2009. Comparing the local economy to the New York metro area, the study found that chemical manufacturing is the strongest subsector or specialization in Morris County's freight-related industry. Furthermore, Morris County was the only area in the comparative analysis that showed growth in this subsector from 2005 to 2009. The study's industrial trend analysis also projects the largest shares of employment growth in transportation, warehousing and storage. In a regional context, however, the county's goods movement activity is small and imbalanced—carriers generally deliver freight to the region, but do not pick up freight for return trips, which drives up transportation costs.

### *Land Use*

Industrial development in Morris County is largely stagnant and land costs are high due to the limited supply of land zoned for industrial uses. Industrial space near rail lines becomes more attractive with rising energy prices, as it is more efficient to ship by rail. The county's numerous brownfield sites near major highways and railroad alignments present opportunities for promoting industrial redevelopment. This combination of highway access and freight rail infrastructure can help capture more of the regional freight market.

### *Rail*

Morris County's acquisition of three rail lines over the last 25 years gives it a distinct advantage over other areas for economic development through the promotion of freight-related industrial land use. Since the county owns the rights-of-way without paying operations costs, there is considerable economic potential along these lines. Part of this study's economic impact analysis focused on businesses along the three county-owned lines served by the Morristown & Erie Railway. These businesses account for over $118 million in direct economic output.

One of the biggest challenges of further advancing freight-oriented development and rail service in Morris County is the limitation on the size and weight of railcars. The existing height and weight restrictions have hindered the movement of rail cars moving to and from many industrial sites in the county. The current 16'6" maximum clearance at the South Main Street bridge in the Town of Phillipsburg in Warren County preclude standard height (17 foot) freight trains from using the tracks. An increase in the permitted weight of railcars from 263,000 to 286,000 pounds would also enable the county to accommodate more cost-efficient freight cars. As taller and heavier railcars have become standard in the railroad industry, Morris County needs upgrades to key segments of the rail system to make industrial property more attractive to rail-oriented businesses.

### *Truck Traffic*

The highest truck volumes on the Morris County road network are on or near the convergence of the major interstate highways I-80 and I-287. This same area is projected to see more than 20 percent truck traffic growth from 2009 to 2035 (Figure 1).

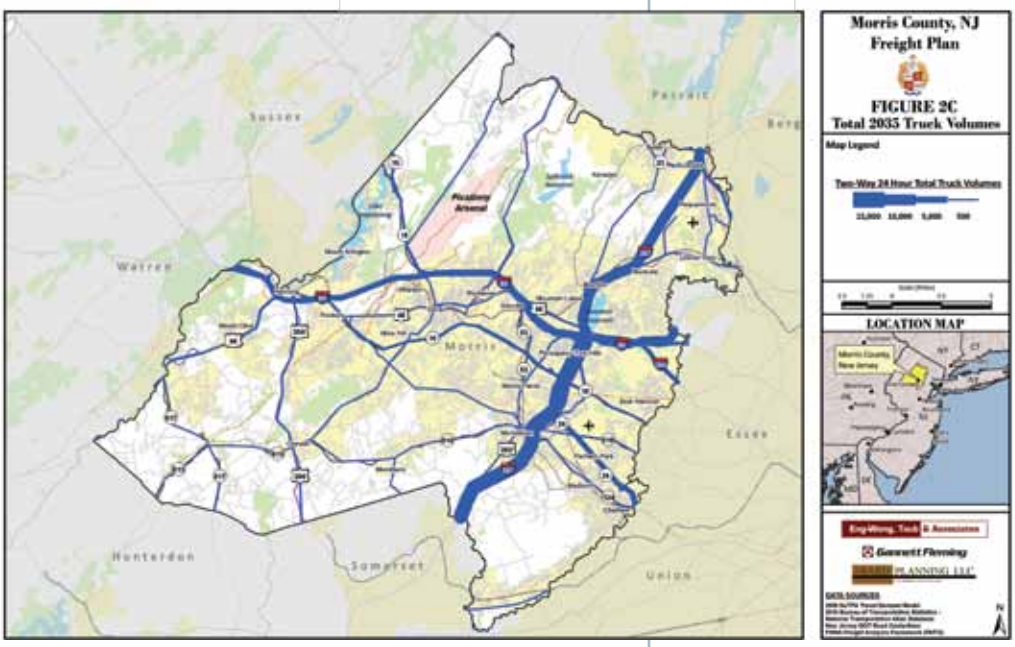



**Figure 1: Two-way truck volumes are projected to exceed 10,000 trucks per day along I-80 and I-287 in 2035.**

## Recommendations

The following recommendations coordinate with the county and regional goals of preserving and enhancing freight rail infrastructure and service, supporting future rail-oriented industrial development on brownfield sites, and expanding the county's industrial employment base. The outlined improvements coordinate particularly well with key goals of the Highlands Regional Master Plan (RMP) by shifting freight from truck to rail to increase safety and efficiency, and by identifying brownfield sites in close proximity to rail as a top priority for potential redevelopment, rather than promoting new roads or development within the region's planning areas.

### *Infrastructure/Network Improvements*

- Address bridge clearances regionally to allow for 17-foot-high railcars to access Morris County.
- Participate in efforts to increase the state's railcar weight limits from 263,000 to 286,000 pounds to accommodate more competitive freight capacity.
- Designate a county truck route system to identify suitable routes for trucks of various sizes.

### *Local Improvement Opportunities*

The following are locations where rail-oriented industrial opportunities can be enhanced with minimal negative impacts on roadway traffic and local communities.

- *Roxbury/Kenvil Area*: Industrial sites can be developed with proximity to I-80, the NJ Transit Morristown Line and county-owned freight rail lines. Roadway and rail improvements will be needed to improve truck traffic flow and minimize community impacts.
- *Dover and Rockaway Railroad Sites*: Industrial sites along the county-owned railroad can be developed after relocating its connection to the NJ Transit Morristown Line, a project that is intended to enhance both roadway and rail access to these potential sites.
- *Hanover Township/Eden Mill Site*: Several limited-access industrial properties in and along the M&E Whippany Line can be improved with industrial roadway extensions.
- *I-80 at Green Pond Road*: Industrial tracts along the D&R alignment are developable with a proposed interchange redesign that would improve truck mobility to Green Pond Road sites.

## Next Steps

Future efforts should focus on positioning the county's railroads as an economic catalyst. New industrial development opportunities should be promoted along the county-owned railroad lines through cooperative efforts with the Morris County Economic Development Corporation, the Chamber of Commerce and other organizations. Funding can be pursued for capital projects through the State Rail Freight Assistance Program and other avenues.

### Key Personnel

**Erik DeLine** is a Senior Transportation Planner for the Morris County Division of Transportation, and he served as project manager for this study. DeLine has worked for Morris County since 2006 and is the county's voting member on the NJTPA's Regional Technical Advisory Committee.

**Gerald Rohsler** is the Director of the Morris County Division of Transportation. Rohsler has worked for Morris County since 1982. He is Morris County's alternate on the NJTPA's Board of Trustees.

# Pedestrian and Bicycle Mobility, New Egypt and Toms River

SUBREGION

**Ocean County**

## Introduction

Going "the extra mile" can make a world of difference for a travel route. Ocean County's Pedestrian and Bicycle Mobility study sought to demonstrate this by identifying strategies to bridge critical last-mile gaps in the non-motorized transportation network. The effort was divided into a study of two separate areas in Ocean County: downtown Toms River and downtown New Egypt (Figure 1, next page). The shared theme between the two areas was an expansion of bicycle and pedestrian facilities with regional significance through the reuse of abandoned railroad rights-of-way. The NJTPA's Regional Transportation Plan, Plan 2035, recognized such projects as key for making walking and biking convenient, safe and attractive transportation options for short trips and recreation.

In southern Ocean County, work on the Barnegat Branch rail-to-trail project was already underway. Construction of the 15.6-mile trail, which will run from Barnegat to Toms River along an abandoned Central Railroad of New Jersey line, is being handled in phases, with some segments now complete and open to the public. The study focused on ways to link the northernmost end of the Barnegat Branch Trail (BBT) at the Beachwood/South Toms River border with downtown Toms River and the Toms River Bus Terminal, providing residents with a valuable new connection to recreational and economic assets within the county seat. The goal was to explore recommendations for retrofitting roadways to create a pedestrian and bike connection between these amenities, through a combination of pavement markings, roadway reconfiguration, modifications to signal phasing for more comfortable pedestrian crossings and wayfinding signage.

The New Egypt portion of the study focused on the feasibility of developing a multipurpose trail along the former Pemberton & Hightstown Railroad Line to link downtown New Egypt with the northerly education/civic complex on Evergreen Road, which includes New Egypt's primary school, middle school, high school, associated recreational facilities, and the Ocean County Library. The study proposed a second phase of the project to further extend the trail northward to link with the Union Transportation Trail (UTT), an existing multi-use trail along the same abandoned rail right-of-way in Monmouth County.

### Study Area

New Egypt and Toms River, Ocean County

### Purpose

To improve bicycle and pedestrian connections into downtown New Egypt and Toms River.

### Board Member

Hon. James F. Lacey, *Freeholder, Ocean County* and *NJTPA Board Secretary*

### Project Manager

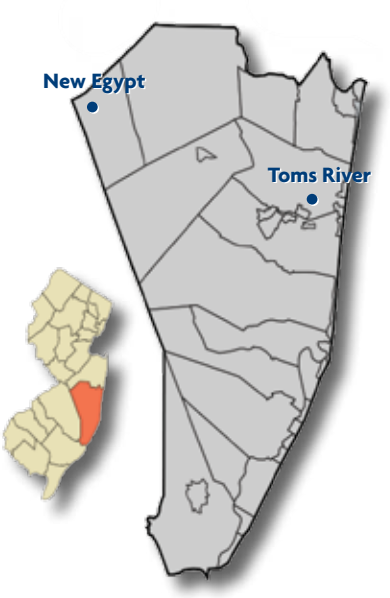
David J. McKeon, AICP, PP

### Consultant Team

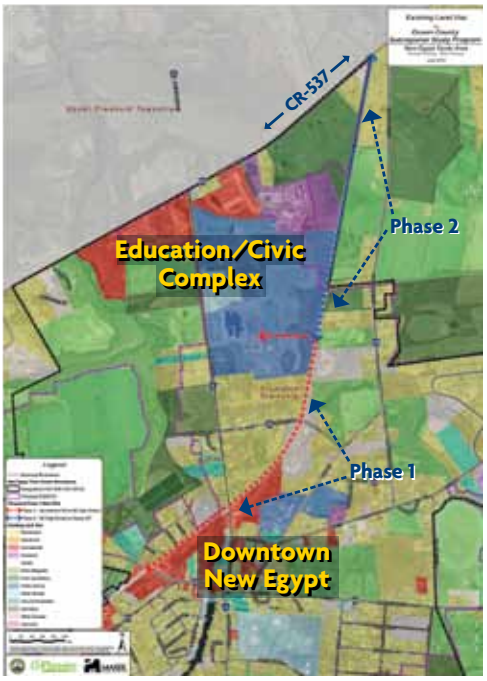
Master Consulting, PA

CH Planning, LTD

Ocean County, N.J.




New Egypt




Toms River


Figure 1: Study area maps

## Methodology and Public Outreach

For both areas, the study team reviewed existing plans and research, and conducted stakeholder outreach and field visits to determine critical needs and issues. The Toms River portion of the study relied on firsthand (pedestrian and cyclist) field work, focused on traffic volumes and vehicle speed, intersections and turning schemes, safety of pedestrian signal phasing, and potential opportunities to incorporate pedestrian and bicycle rights-of-way within the infrastructure. The New Egypt portion of the study devoted particular attention to environmental issues, land uses, scenery and natural features that were notable along the route. Open houses were held to provide the public with an opportunity to learn about and provide feedback on both projects.

## Findings

The study areas in both Toms River and New Egypt presented opportunities for enhancing the safe mobility of pedestrians and cyclists. However, in both cases, these opportunities carried significant challenges.

*Toms River* The main challenge of extending the recreational multi-use trail into Toms River is the route currently ends with a sudden transition into an area with heavy, complex traffic patterns and little, if any, existing space for pedestrians or cyclists to feel safe. Atlantic City Boulevard and Flint Road, the two principal routes connecting the BBT with downtown Toms River, currently have many pedestrian/bicycle impediments, including intermittent or damaged sidewalks,

narrow roadway shoulders, and heavy vehicle traffic and turning activity. The remainder of the connecting route to downtown Toms River relies on a pair of one-way streets, both of which intersect Water Street, a four-lane east-west arterial with high traffic volumes and no bicycle or pedestrian accommodations. Lack of a safe crossing at Water Street represents a key challenge.

*New Egypt* The development of the New Egypt bike path will require a bridge over the Crosswicks Creek and a challenging crossing at County Route 537 to connect to the UTT in Monmouth County. The study took recommendations from the 2010 Circulation Element of the Plumsted Master Plan and provided a conceptual 2-mile trail plan in two phases. The primary obstacle to Phase 1 (from Jacobstown Road to the education/civic complex) is the need to restore a bridge crossing at Crosswicks Creek. Phase 2 of the plan extended the trail from the education/civic complex to the crossing at County Route 537, where an elevated portion of the roadway poses a significant barrier between the proposed bike path and the UTT.

## Recommendations

Along with Ocean County's pursuit of alternatives for long-term bicycle and pedestrian mobility, this study provided a package of safe and cost-conscious connections to downtown destinations that can be fully implemented in less than five years. This approach meant looking at on-road alternatives to improve non-motorized movements while pursuing longer term solutions.

### *Toms River*

From the Barnegat Branch Trail to downtown Toms River, a key recommendation is for a route design that incorporates Flint Road, S. Main Street, Herflicker Boulevard, Water Street and Irons Street as the preferred alternative.

The study team recommended utilizing lined shoulders and bike route signage to guide cyclists toward the downtown area (Figure 2). Where space is constrained, a two-way bike lane was identified as a viable option to connect to downtown. A signage system was recommended to help guide trail users to the bus terminal and downtown locations. Specific accommodations were recommended for pedestrians in this study to achieve a "complete street," including traffic signal modifications and a landscaped gateway treatment to alert motorists entering a downtown pedestrian realm (Figure 3).

**Figure 2: Example of study area bike lanes.**

**Figure 3: Example of gateway treatment at Water Street, Toms River.**

*New Egypt*

Implementation of the New Egypt Bike Path with connections to the UTT and downtown New Egypt was recommended in overlapping phases. First, a bike trail connection from downtown to the rear of the educational facilities would enable vehicle parking for access to the trail. Next, an extension from the educational/civic complex to the UTT facilities north of the County Route 537 intersection would provide connectivity with Monmouth County. To provide a seamless link between the trails and avoiding hazardous crossing conditions at County Route 537, which is currently elevated above the trail, the study team recommended exploring different options, including a tunnel under the roadbed. While there are financial challenges involved, this trail would provide the only direct connection between downtown New Egypt's commercial area and the regional multi-use trail network, thus achieving the mobility goals of the study.

## Next Steps

Development of both trail networks will continue in phases. Ocean County will work with potential partners at all levels to obtain assistance for funding and implementation of the projects.

### Key Personnel

**David McKeon** PP, AICP is the Planning Director for Ocean County. McKeon has been with the Ocean County Planning Department for over 25 years and has served as Director for the past five years.

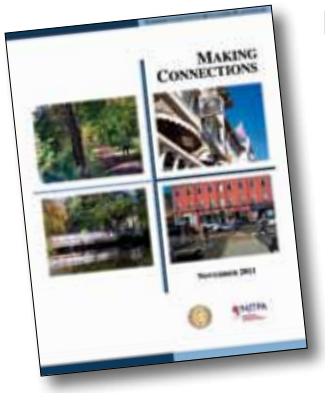
**Stacy Perrine**, AICP served as the project manager for this study. She is no longer with the County.

**Mark Jehnke**, PE is the Supervising Engineer for the Ocean County Engineering Department, overseeing the Traffic Division. Jehnke has over 24 years of experience in transportation engineering. Jehnke serves as Ocean County's voting representative on NJTPA's Regional Technical Advisory Committee.

# Somerset County Circulation Element Update

SUBREGION

**Somerset County**




## Introduction

A key tenet of planning is that policy must change periodically to reflect changing demands and conditions. Somerset County has met this need by updating its circulation plan which guides the future development of the county's transportation systems. The update addressed changing mobility needs in the county and surrounding region and set priorities among projects and policies. Entitled *Making Connections,* the updated circulation plan was the winner of a 2011 Outstanding Plan Award by the New Jersey Chapter of the American Planning Association. The plan recognizes that transportation planning involves more than finding ways to better move people and goods while addressing the inherent challenge of using limited funding wisely amid growing needs.

Nine specific goals and policies that represent the needs of the county's varied stakeholders emerged to form the framework of the plan. They include a range of smart growth, livability and sustainability issues. *Making Connections* offers a vision to better connect people with opportunities through five key strategies:

- Creation of a robust multi-modal transportation network
- Maintenance and improvement of existing highway systems
- Expansion of the regional transit system
- Enhancement of traffic safety for all travelers and modes
- Promotion of sustainability efforts

## Methods and Public Outreach

The *Making Connections* study team looked backward in order to press forward, using the 2003 Somerset County Circulation Element to guide the methodology and scope of the current study. The team evaluated and updated the 2003 plan to reflect the current values of the stakeholders and new priorities. The study used a community-based data collection process and modeled a set of alternative future improvement scenarios.

The plan represents a combination of both local and regional priorities. A variety of stakeholders who were involved in the 2003 plan or had developed an interest in its topics since that time participated. These included citizens, the business community, transportation and freight agency representatives, government officials and advocacy groups. Outreach efforts included a steering committee, focus groups, public meetings, online surveys and planning board presentations.

**Study Area**

Somerset County

**Purpose**

To improve mobility and safety across Somerset County and to identify county priorities for transportation-related projects.

**Board Member**

Hon. Peter S. Palmer,
*Freeholder, Somerset County*

**Project Manager**

Walter Lane, AICP, PP

**Consultant Team**

Parsons Brinckerhoff
A. Strauss-Wieder, Inc.
M.A. Culbertson, LLC
Michael Baker Corp
T&M Associates

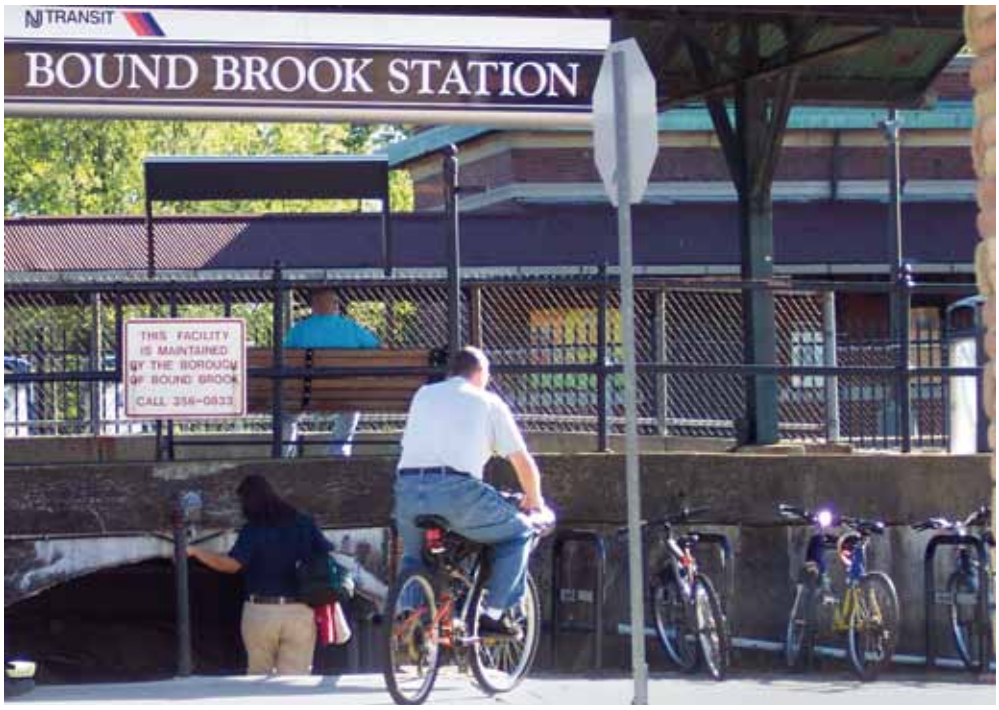



**Figure 1: A key theme of the Somerset County Circulation Plan is to provide multimodal connections, such as bicycling and rail, as pictured here.**

Modeling different transportation improvement scenarios allowed the project team to evaluate potential outcomes of four distinct investment alternatives: a baseline scenario (no changes beyond current planned capital improvement projects); a highway rich scenario focused on highway improvements; a transit rich scenario focused on transit improvements; and finally, a blended scenario which combined the most promising highway and transit improvements. Providing scenario outcomes helped educate stakeholders about growth trends and the tradeoffs of various transportation investment decisions.

Rising congestion on highways contributes to increased traffic on local streets, which has a great impact on local mobility and safety. Analysis showed that the blended scenario which combines land use solutions with highway and transit solutions, offered the greatest potential to attain the goals and vision outlined by *Making Connections*. However, even this best-case scenario would result in degradations in performance as judged by measures such as vehicle miles traveled (VMT), vehicle hours traveled (VHT), and average speed; as with all the scenarios, land use decisions could alter the results.

## Findings

The modeling found mobility will degrade over the next 20 years, with an increase in congestion levels projected across all modeled scenarios. The study concluded that the tested alternatives can only help mitigate the decline in travel performance, and land use planning will be critical for significantly supporting those efforts. For example, planning for growth through potential projects such as a Hillsborough Towne Center or redevelopment near Somerville's train station can boost transit ridership and help reduce overall congestion. However, all of the

future scenarios have their costs and none were projected to restore conditions to current levels.

In addition to findings from the scenario planning method, feedback from a variety of stakeholders during outreach sessions helped to inform this plan. Some of the input received focused on issues such as highway congestion, hampered freight operations, transit needs, parking, transit-supportive development, jobs-housing balance and complete streets design.

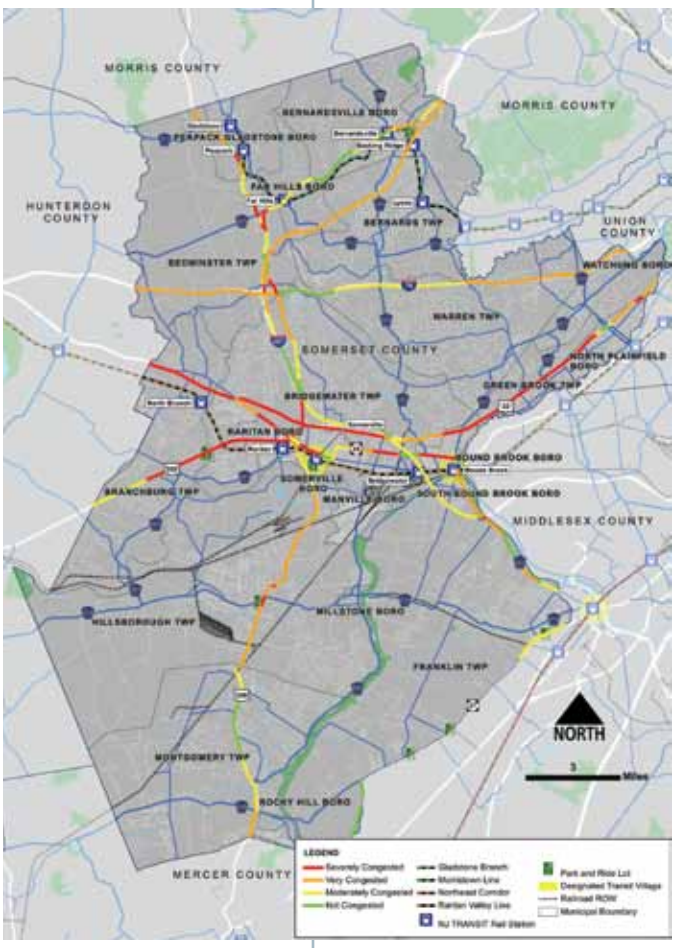
## Recommendations

The *Making Connections* plan recognizes that an array of policy revisions will be needed to alleviate increased pressure on the county transportation network in the years to come. To safely and efficiently connect people with opportunities through transportation, the plan recommends a comprehensive set of policy initiatives and infrastructure coordination efforts. These include transportation and land use integration policies, multi-modal infrastructure improvements, and climate change adaptation and mitigation efforts.

Integrating land use and transportation policy will help make transit service expansion more feasible and cost-effective. Encouraging municipalities to enact land use changes such as allowing higher development densities, encouraging mixed-use development and supporting residential development near transit hubs will support mass transit options. Also, the *Making Connections* plan identifies freight village initiatives which can attract businesses to cluster near existing freight rail access, thus enhancing the county's economic competitiveness.

Multi-modal infrastructure improvements should cover a range of highway, transit, freight, bicycle and pedestrian projects that balance safety and capacity enhancement. Suggested beneficial roadway investments included I-287 interchange improvements, a new Raritan River crossing, a Brown Avenue extension to increase freight access to industrial properties, and real-time information for travelers on variable roadway signage. To enhance transit capacity, the West Trenton Line Passenger Service Restoration project was recommended to provide an alternative to congested highway travel in the southern portion of the county and to create opportunities for transit supportive development. Finally, complete streets concepts such as sidewalk connectivity, shoulder improvements and improved transit access can combine to enhance both pedestrian and bicycle opportunities.

**Figure 2: Current congestion levels are projected to continue to increase.**



Strategies to mitigate greenhouse gas emissions included purchasing fuel-efficient vehicles for the county-owned vehicle fleet, converting to low carbon fuels and offering electric vehicle charging stations. Climate change adaptation strategies to increase resilience to changing environmental conditions included increased frequency of rail and pavement maintenance, enhanced emergency management and evacuation policies, and bridge and infrastructure improvements to withstand extreme conditions.

## Next Steps

Somerset County should work with the potential implementation partners to carry out the capital improvements and policy initiatives recommended in the plan.

### Key Personnel

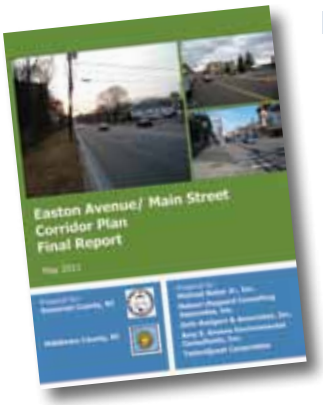
**Walter Lane**, AICP, PP, served as project manager for this study. He is a Supervising Transportation Planner for the County of Somerset, where he manages the transportation planning section. He is the county's voting member on the NJTPA's Regional Technical Advisory Committee.

**Joseph Fishinger**, PE, PTOE served as the deputy project manager for this study. He is a Principal Engineer for the Somerset County Engineering Department and manages the Engineering Traffic section.

# Somerset/Middlesex: Easton Avenue/Main Street Corridor Study

SUBREGION

**Somerset and Middlesex Counties**




## Introduction

The Easton Avenue /Main Street corridor between Somerset and Middlesex counties is a very busy thoroughfare providing access to major destinations for a large and growing volume of travellers along its 6.5-mile length. Every day, it serves commuters bound for employment centers in New Brunswick and office parks near I-287 as well as a dense residential population. It also provides access to Rutgers University and several regional medical centers and funnels traffic to crossings over the Raritan River. The strategies outlined in this study aim to better manage the corridor's substantial vehicle traffic and promote alternative transportation modes through a variety of methods.

The study corridor stretches from the New Brunswick train station in Middlesex County to the Bound Brook train station in Somerset County. Both the roadway character and traffic volumes vary across the corridor. The heaviest traveled section near I-287 in Franklin Township has two lanes in each direction, with speed limits of 40-45 mph, carrying 40,000 to 65,000 vehicles daily. Meanwhile, the section in urbanized New Brunswick has single lanes in each direction, carrying 11,000 vehicles each day. The Easton Avenue/Main Street Corridor Plan addressed the challenges of managing traffic congestion in the corridor through low-cost improvements, enhancement of alternative transportation modes, and exploration of zoning and design initiatives.

## Methods and Public Outreach

Middlesex and Somerset counties solicited input through a variety of channels, including a Steering Advisory Committee (SAC), focus groups, public meetings and an online public survey. The SAC included representatives from counties, the municipalities, transportation agencies, and regional employment centers. Early in the study, four focus group meetings made up primarily of SAC members developed strategy ideas for critical elements of the plan, including roadway improvements and the use of technologies; accommodating pedestrian and bicycle travel; transit-friendly design and smart growth initiatives; public transportation enhancements; and initiatives that encourage alternatives to driving alone.

Public meetings held in Franklin and New Brunswick offered presentations as well as a chance for community members and stakeholders to ask questions and express concerns about the project. Residents of the four study area municipalities also had the opportunity to participate through a survey posted on the Ridewise Transportation Management Association website which asked how people pre-

### Study Area

Easton Avenue/Main Street Corridor, Somerset and Middlesex Counties

### Purpose

To improve safety for all modes of travel within existing rights of way and to alleviate vehicle congestion.

### Board Member

Hon. Stephen Dalina, *Freeholder, Middlesex County*

Hon. Peter S. Palmer, *Freeholder, Somerset County*

### Project Manager

Kenneth Wedeen, AICP, PP, *Somerset County*

### Consultant Team

Michael Baker Jr., Inc.

Nelson/Nygaard Consulting Associates, Inc.

Orth Rodgers & Associates, Inc.

Amy S. Greene Environmental Consultants, Inc.

TechniQuest Corportation

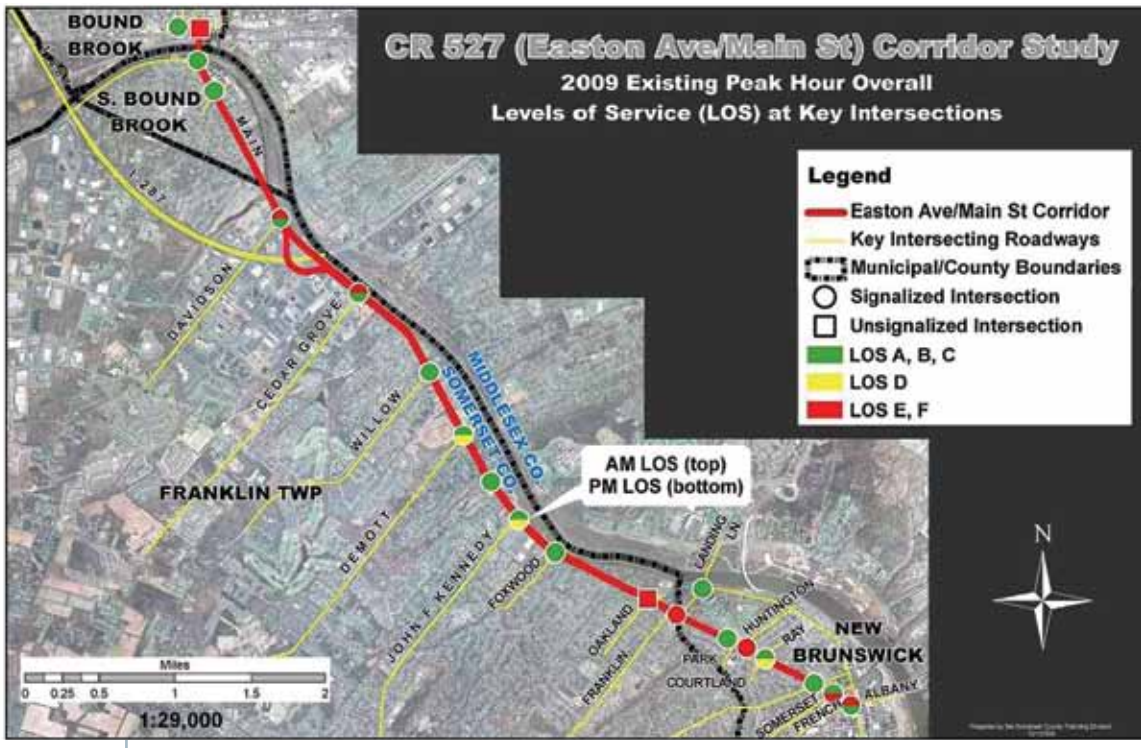



**Figure 1: Peak Hour Level of Service.**

ferred to travel and what conditions were present for each transportation mode (driving, walking and public transportation).

The input was supplemented by technical analysis of travel conditions along the corridor. This included evaluation of crash "hot spots" performed using the Rutgers University Plan4Safety data tool. Other technical analysis focused on land use patterns and transit usage and accessibility in the corridor.

## Findings

The Ridewise online survey resulted in 862 responses from study area residents. Overall, 89 percent of respondents drove alone to work, despite 20 percent of those respondents reporting severe traffic at least three times a week.

The heavy traffic levels are anticipated to continue growing. The locations with the highest vehicular congestion were reported to be the Easton Avenue and Landing Lane intersection followed by the Easton Avenue and Albany Street intersection in New Brunswick. Transit riders accounted for only a very small share (2 to 4 percent) of travellers taking the survey. Respondents indicated that this was mostly due to inadequate service coverage and frequency.

Among pedestrians and bicyclists, the safety of intersections was a common concern. Most respondents reported having never walked along the corridor. Sidewalk and lighting conditions were rated poorly. Only 13 percent of respondents rode a bike along the corridor for work or non-work trips. Those respondents indicated that adding separated bike paths, dedicated bike lanes, or safety improvements at intersections would encourage more bike trips.

Of the 19 intersections reviewed for traffic delays, six key intersections experienced a "poor" level of service (LOS). Level of service is a measurement that is used to grade a roadway's performance in terms of typical traffic delay. The data revealed of those six intersections which received an E or F, these delays affected the entire corridor due to the long vehicle cues extending between intersections (Figure 1).

## Recommendations

Recommended actions to better manage heavy vehicle congestion and encourage travel alternatives—including transit, walking and biking—target the following five elements:

- ***Smart Growth/ Transit-Friendly Design***

  One of the key principles of smart growth is encouraging development near transit hubs so residents have easy access to public transportation (Figure 2). The application of transit-supportive design and zoning standards can help encourage mixed land uses, walking, bicycling and/or transit. One of the plan's key smart growth recommendations is for the designation of Transportation Management Districts (TMDs) in the corridor's five major business districts. TMDs would allow higher residential and employment densities to support greater transit use and create more livable communities. They can help employers adopt benefits programs that encourage employees to use alternative commuting options. The structure of a TMD, similar to a business improvement district (BID), allows voluntary local members to govern and share the costs of localized services such as discounted monthly transit passes or shuttle services.

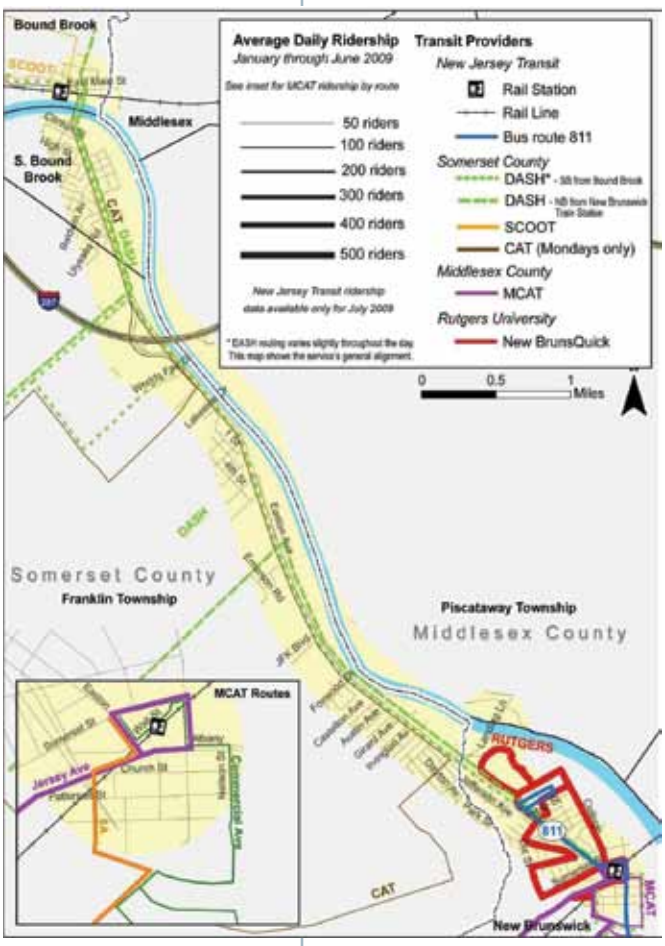
- ***Transit Service Enhancements***

  Recommendations for transit service upgrades begin with improving the Somerset County Davidson Avenue Shuttle (DASH) operation, which serves both the Bound Brook and New Brunswick train stations. The study proposed extended weekday hours, adding Saturday service, and providing passenger amenities at bus stops such as signage, maps, and improved web access to transit information.

- ***Pedestrian and Bicycle Amenities***

  Improving safety for bicyclist and pedestrian travel along the Easton Avenue corridor is a primary concern. Low-cost, quick fixes include

**Figure 2: Study area transit providers with ridership levels shown.**



pedestrian-scale street lighting, routine maintenance and improved crosswalks. To facilitate more bike travel, some strategies identified evaluating bike path extensions, installing bike parking, and starting a bike-sharing program.

- *Roadway Improvements*
  Opportunities for roadway improvements span the length of the corridor. Notable strategies include installing a median barrier on sections of Easton Avenue to improve safe traffic flow and studying signal coordination along the corridor. Other roadway improvements include striping and lane marking adjustments.

- *Transportation Demand Management (TDM)*
  Transportation Demand Management encompasses a general set of strategies that influence travel behaviors that are more sustainable—in terms of energy usage, environmental impacts, and cost-effectiveness—than driving alone. In the case of the Easton Avenue corridor, participating municipalities can adopt TDM ordinances that promote quality of life and economic vitality through a balanced transportation system, increased transportation capacity without increasing roadway capacity, and incentives for using public transportation. For example, discounting monthly transit passes is a recommended strategy for large employers or organizations purchasing in bulk. Other recommended strategies for encouraging alternatives to driving include parking price increases and implementing a car-sharing program in New Brunswick.

## Next Steps

Due to funding constraints, bundling improvements into other scheduled maintenance projects would help save costs. Some other best practices for funding should be investigated, such as dedicating a portion of local sales taxes to transit operations (by referendum) or expanding TMDs to include expanded DASH service through self-taxing districts.

County and municipal officials should assess each recommendation and work to secure funding from any combination of federal, state and local sources. A full list of potential funding sources and recommendations can be found in the report's implementation matrix.

### Key Personnel

**Kenneth Wedeen**, AICP, PP, is a Principal Planner for the Somerset County Planning Board with 26 years of service for the county. Wedeen was the project manager overseeing this joint planning study with Middlesex County.

**Walter Lane**, AICP, PP, is a Supervising Transportation Planner for the County of Somerset, where he manages the transportation planning section. He is the county's voting member on the NJTPA's Regional Technical Advisory Committee.

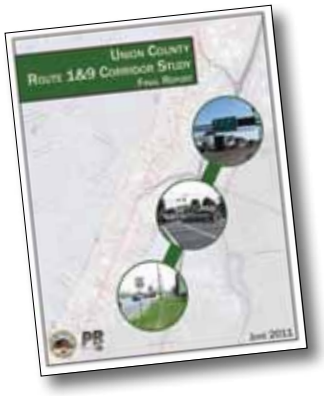
**George Ververides**, AICP, PP, is the Planning Director for the Middlesex County Department of Planning. Ververides has been with the planning department since 1961. He is the county's voting member on the NJTPA's Regional Technical Advisory Committee.

**Anthony Gambilonghi**, AICP, PP is Supervising Planner, Transportation for the Middlesex County Department of Planning. He has been with the planning department since 1973. He is the county's alternate member on the NJTPA's Regional Technical Advisory Committee.

# Union County: Route 1&9 Corridor Study

SUBREGION

**Union County**




## Introduction

Before the construction of the New Jersey Turnpike in the 1950s, U.S. Route 1&9 was the principal north-south travel route through northern New Jersey. Today it remains a heavily traveled regional artery providing connection to the port area in Elizabeth and Newark and to Newark Liberty International Airport. Union County's portion of the highway navigates a variety of settings—from industrial to commercial to residential—through Elizabeth, Linden and Rahway.

This study focused on a 7-mile corridor, encompassing a 2-mile swath of land along the highway. It is one of the densest areas in the state in terms of population, transportation use, and development. This section of Route 1&9 includes 29 signalized intersections and abundant residential and commercial driveways. On a daily basis, Route 1&9 carries a heavy volume of traffic (Figure 1, next page). Within the larger study area, there are numerous bus routes, and the downtown districts of the three cities each have rail stations along the Northeast Corridor. The study corridor transitions from an urban freeway type roadway to a busy, signalized local highway.

The goal of the Route 1&9 Corridor Study was to identify opportunities for improvements that match changing regional mobility needs with local goals of improved safety, quality of life and redevelopment opportunities. For example, filling in gaps in the sidewalk network improves local safety and walkability, thereby making the land more valuable and attractive to businesses, which enhances regional economic competitiveness.

The New Jersey Department of Transportation has completed several projects in recent years to improve conditions along Route 1&9, including the reconstruction of the Elizabeth River Viaduct, the Rahway River Bridge replacement and the Bayway Circle improvements. Also, this section of the highway was designated a Safe Corridor. Despite these efforts, over four miles of the seven mile corridor has a crash rate higher than the state average for similar roadways.

**Study Area**

Union County

**Purpose**

To improve safety and to identify improvements to meet regional needs and local goals.

**Board Member**

Hon. Angel G. Estrada,
*Freeholder, Union County*

**Project Manager**

Liza Betz, AICP, PP

**Consultant Team**

Parsons Brinckerhoff
A. Strauss-Wieder, Inc.
T&M Associates
4Ward Planning LLC


**Figure 1: The Route 1 & 9 corridor sees heavy congestion—and many heavy vehicles.**

## Methodology and Public Outreach

A picture of existing conditions was assembled and analyzed using a combination of available data, field investigations, and input from local stakeholders. The data collection included traffic and safety analyses; investigations into pedestrian and bicycle conditions, preliminary lighting assessments, freight and truck operations; and a review of existing transit, land use, demographic and environmental data as well as review of the New Jersey Department of Transportation (NJDOT) Management Systems data throughout the corridor.

### *Public Input*

The study team sought public input in a variety of ways, calling upon government agencies, municipal representatives, private businesses and area residents to identify problems and help develop potential solutions. The public input sessions included meetings with municipalities in the study area, meetings with businesses represented by the Linden Industrial Association, the creation of a Technical Advisory Committee (TAC), and presentations to the Union County Transportation Advisory Board (TAB).

## Findings

Overall, the study team concluded that Route 1&9 would benefit from both corridor-wide improvements as well as intersection-specific modifications to address roadway problems which include congestion and unsafe conditions affecting all modes of travel. The recommended improvements aim to improve circulation, safety, roadway aesthetics, and maintenance and aim to ultimately make Route 1&9 a more appealing roadway for all users. Deficiencies are categorized in four subject areas:

### *Vehicle Volume*

Along Route 1&9, the Annual Average Daily Traffic (AADT) volumes range from 47,000 vehicles in the vicinity of Interstate 278 in the City of Linden to 119,000

vehicles near Newark Liberty International Airport in the City of Elizabeth. The typical commuter patterns places the heaviest volumes northbound in the morning peak hour and heaviest volumes southbound during the evening peak. Route 1&9 carries significant truck traffic. In the morning peak hour, the heavy vehicle percentages are between 12 and 13 percent in the southbound direction but are still high northbound at about 9 percent. During the midday peak period, heavy vehicles make up a significant percentage of travel between 14 and 17 percent of the traffic in both directions. The study team also found that while the corridor generally operates at a level of service (LOS) of A to E, which is a measurement that is used to grade a roadway's performance in terms of traffic flow and travel safety, several locations showed a failing level of service during peak periods.

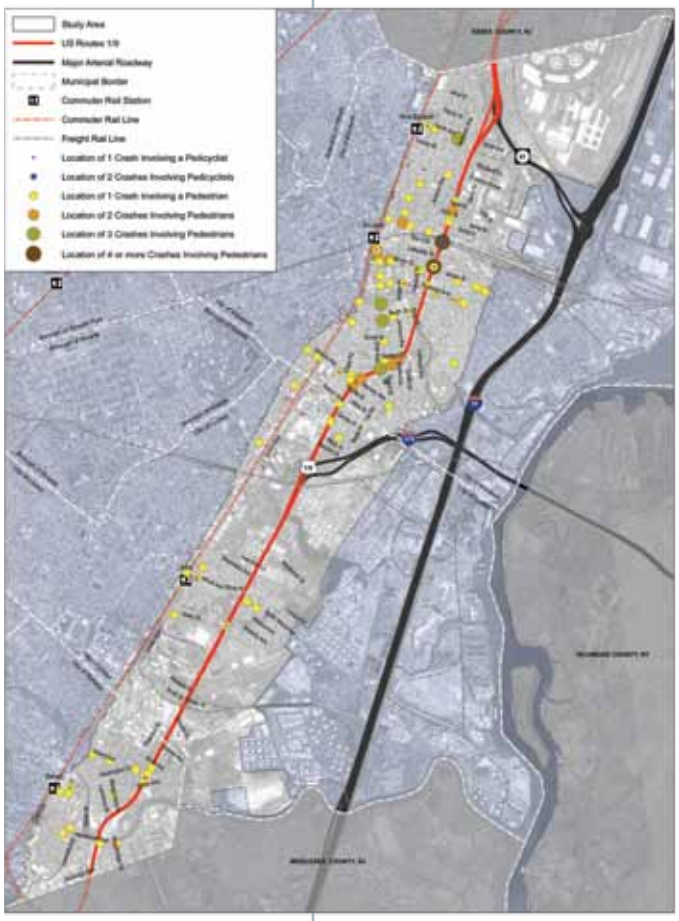
### *Crash Analyses*

A total of 1,963 crashes were reported along Route 1&9 between 2007 and 2009. Of these, 751 occurred in 2007, 670 in 2008, and the remaining 542 in 2009. Nearly 40 percent of all crashes between 2007 and 2009 occurred at dawn or dusk, which is higher than the state average of 29 percent for a similar state highway. This indicates that lighting issues represent a key area for improvement. Also, a high rate of same-direction crashes, including sideswipes or rear-end collisions indicates congestion is an issue. Crash statistics at several intersections indicated the need for signal upgrades or redesign work.

### *Pedestrian/Bicycle*

Several locations were cited as having high pedestrian crash rates, indicating a need for pedestrian safety improvements (Figure 2). Thirty-eight percent of crashes involving pedestrians occurred at signalized intersections from 2007 to 2009. Of those crashes involving pedestrians over the three year period, six resulted in fatalities and were mostly concentrated in one section of the highway which illustrates the strong need for pedestrian improvements there. Most of the corridor was observed to be non-compatible for bicycles, due to traffic, the presence of many heavy vehicles and little right-of-way space for bicyclists. However, parallel routes adjacent to the corridor are shown in the existing Union County Comprehensive Bicycle Master Plan.

**Figure 2: Pedestrian Crash map.**




### *Transit Infrastructure*

Bus stop infrastructure is minimal in the area. Stops are designated by pole-mounted signs while route maps and schedule information are not provided. A lack of bus shelters and associated lighting was also noted.

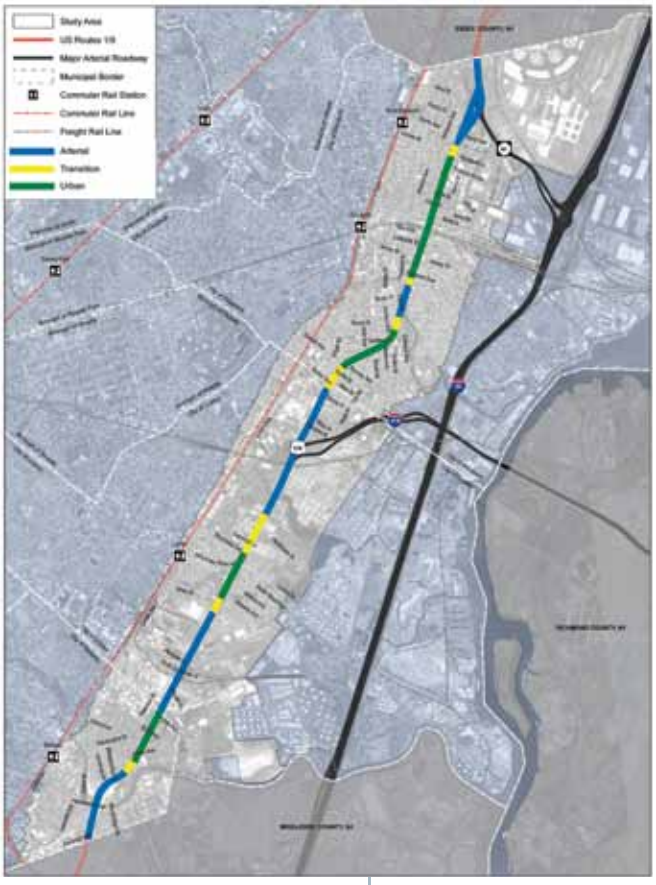


**Figure 3: Study area map showing roadway types.**

## Recommendations

The study's recommendations focused on accomplishing regional goals of improving safety, quality of life and redevelopment. One aspect of the safety improvement package was to distinguish freeway, transitional and urban commercial zones throughout the corridor using distinct design standards with improvements planned appropriately (Figure 3).

For example, the transitional and urban commercial sections of the corridor would benefit from more visible crosswalk designs, upgraded pavement markings and a review of the spacing of stop bars and crosswalks where high speed sections of the corridor meet the more suburban setting with higher pedestrian activity. More efficient traffic signal phasing can direct both vehicular and pedestrian movements.

An example of a corridor-wide improvement is a thorough assessment of lighting conditions, and to repair, upgrade or replace lighting as needed based on the conditions assessment. Another improvement would be to install consistent signs to help guide travel through the corridor. Overall redevelopment opportunities in the area can be boosted by improving traffic flow. Upgrades that accommodate truck travel also can support the commercial enterprise along the corridor. Infrastructure improvements geared towards non-auto transportation can also make the corridor more attractive to pedestrians and transit users and help to balance transportation activity as the corridor continues to evolve.

## Next Steps

The recommendations from the study seek to address both immediate concerns and to develop a context to evolve the roadway to meet the changing needs of both the corridor and its users. In addition, the final report provides detailed concepts for each of the key intersections along the corridor. An implementation matrix details proposed responsibilities and time-frames for each improvement. Because Route 1&9 is a state highway most of the improvements would be pursued through the NJDOT.

### Key Personnel

**Liza Betz**, AICP, PP, was the project manager for this study. She is Special Assistant to the Director, Department of Parks & Community Renewal, Division of Planning and Community Development with a specialization in transportation planning. She is the county's alternate member on the NJTPA's Regional Technical Advisory Committee.

# Appendix

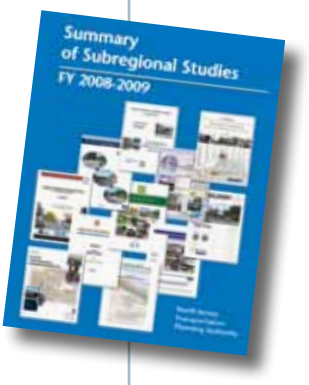
## FY 2012-2013 Subregional Studies: Now Underway

The following studies are funded through the NJTPA Subregional Study Program and are underway:

- **Bergen County: River Road/Hudson Waterfront Corridor Strategy, A Phase 2 Study**, $460,000. Will develop concepts for improvements to mobility, accessibility, safety and quality-of-life along the River Road Corridor in Edgewater and Fort Lee, Bergen County, building upon a previous study.
- **Essex County: Comprehensive Transportation Plan**, $350,000. The first update to the county's transportation plan since 1984.
- **Hudson County and City of Jersey City: Jersey City/Journal Square/Bayonne BRT Study**, $250,000. Will study the feasibility of bus rapid transit (BRT) service in Bayonne and Jersey City using existing rights-of-way.
- **City of Jersey City: Liberty State Park Circulator Cost-Benefit Analysis**, $220,000. Will analyze a range of options for mass transit service to serve destinations in Liberty State Park and nearby residential developments and businesses in Jersey City.
- **City of Jersey City: Morris Canal Greenway Plan**, $220,000. Will prepare a plan for a bicycle and pedestrian path in Jersey City along the former Morris Canal route.
- **Middlesex County: Update of the Transportation Plan Element of the Middlesex County Comprehensive Master Plan**, $100,000. The first plan update since 1999.
- **Monmouth County: Comprehensive Bicycle and Pedestrian Master Plan**, $250,000. Development of the county's first master plan for non-motorized travel.
- **Morris County: Route 124 Corridor Transit Access Improvement Study**, $375,000. Will study options for improving transit access to the Convent, Madison and Chatham rail stations in Morris County.
- **Somerset County: Using Access and Mobility Improvements to Support Redevelopment Opportunities in Somerset County**, $300,000. Analysis of transportation services needed to accommodate and spur redevelopment.

## FY 2008-2009 Subregional Studies: Completed

The following completed studies, funded during FY 2008-2009, were summarized in a previous NJTPA publication that is available at www.njtpa.org or on request.




- **Bergen and Hudson Counties: The River Road–Hudson Waterfront Circulation Study/The Hudson River–Palisades Corridor Circulation Study**, $355,180.
- **City of Jersey City: Master Plan Circulation Element Update**, $220,000.
- **Middlesex County: Southern Middlesex County Transit Needs**, $90,000.
- **Monmouth County Coastal Evacuation Routes Improvement Study**, $220,000.
- **Morris County: Transportation Model Development Completion**, $216,000.

- **City of Newark: Right of Way Management, Assessment and Priority System**, $225,000.
- **Passaic County: NYS&W/Madison Ave Corridor Study: Linking Urban Redevelopment and Transportation Investment in Passaic County**, $220,000
- **Somerset County: Regional Center Pedestrian, Bicycle, & Greenway Systems Connection Plan**, $220,000.
- **Somerset and Hunterdon Counties: Route 202 Corridor Assessment & Multi-Modal Mobility Plan**, $220,000.
- **Union County: Route 27 Corridor Safety Study**, $220,000.
- **Warren County: Route 22 Corridor Study**, $220,000.

NJTPA

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