PLAN 2040

NJTPA Regional Transportation Plan for Northern New Jersey

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NORTH JERSEY
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Foreword from the NJTPA Board

Welcome to Plan 2040, the regional transportation plan (RTP) for the 13-county region of the North Jersey Transportation Planning Authority's 13-county region. The RTP is the most influential document produced by metropolitan planning organizations like the NJTPA. It sets out a vision for our region's transportation network over the next 25 years and ensures that we are eligible for federal transportation funding. By law, the plan must be updated every four years.

NJTPA First Vice-Chairman and Hudson County Executive Thomas DeGise (left), and NJTPA Chairman and Hunterdon County Freeholder Matthew Holt.

Plan 2040 takes a comprehensive look at the transportation infrastructure that binds our 13-county region together and makes recommendations for the future. Keeping things the same is not an option. We must modernize our infrastructure and make strategic investments in order to remain economically competitive. We also need to meet the demands of a growing population, increasing goods movement, and changing travel patterns and housing choices. At the same time, transportation safety for all travelers must remain our highest priority.

Plan 2040 takes a conservative, realistic view of what can be done in light of current and anticipated funding limitations. Although the Great Recession is behind us, the economic hardships we've endured in recent years have made resources all the more scarce. Federal transportation funding has been essentially flat for the last decade, while funding mechanisms like the gasoline tax are proving unsustainable in the face of inflation and more fuel-efficient vehicles. While Plan 2040 points to the need for greater federal investment levels as well as new revenue sources. It is also incumbent upon us to target our investments prudently and to challenge ourselves to find new, innovative ways to make our existing system perform better, including through new technologies.

Thank you for your interest in the NJTPA and Plan 2040. We encourage you to join the discussion about how to improve transportation in northern New Jersey on our website (NJTPA.org), Facebook and Twitter, and at NJTPA meetings and special events.

Matthew Holt
NJTPA Chairman
Hunterdon County Freeholder

Thomas DeGise
NJTPA First Vice-Chairman
Hudson County Executive

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Available separately at NJTPA.org

The NJTPA and Its Region

The North Jersey Transportation Planning Authority (NJTPA) is the federally authorized Metropolitan Planning Organization (MPO) for the 13-county northern New Jersey region. The federal government requires each urbanized region of the county to establish an MPO to provide local guidance over the use of federal transportation funding and ensure it is spent cost-effectively to improve mobility, support economic progress and safeguard the environment.

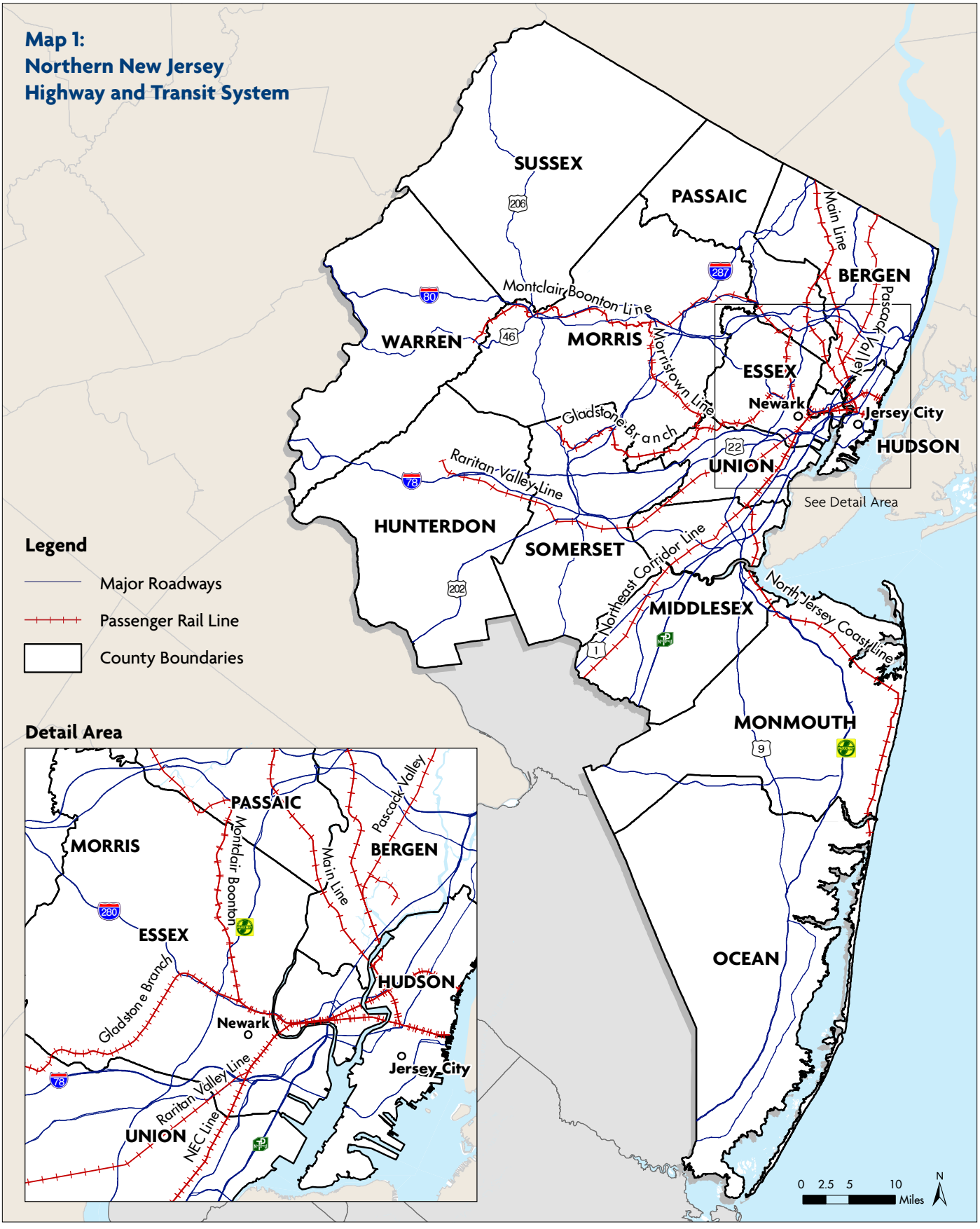
- The NJTPA oversees over $2 billion in transportation investments each year.

It analyzes transportation needs, approves proposed projects and provides a forum for interagency cooperation and public input into funding decisions. It

The NJTPA Board of Trustees holds public meetings every other month in Newark.

also sponsors and conducts studies, assists member county and city planning agencies and monitors compliance with national air quality goals. ■ The NJTPA Board consists of one elected official from each of the region's 13 counties: Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren, and its two largest cities, Newark and Jersey City. The Board also includes a Governor's representative, the Commissioner of the New Jersey Department of Transportation (NJDOT), the Executive Director of NJ TRANSIT, the Deputy Executive Director of the Port Authority of NY & NJ, and a Citizen's Representative

Map 1:
Northern New Jersey
Highway and Transit System



Source: NJOIT, 2008; NJ TRANSIT, 2011; NJDOT, 2011; Esri, 2011

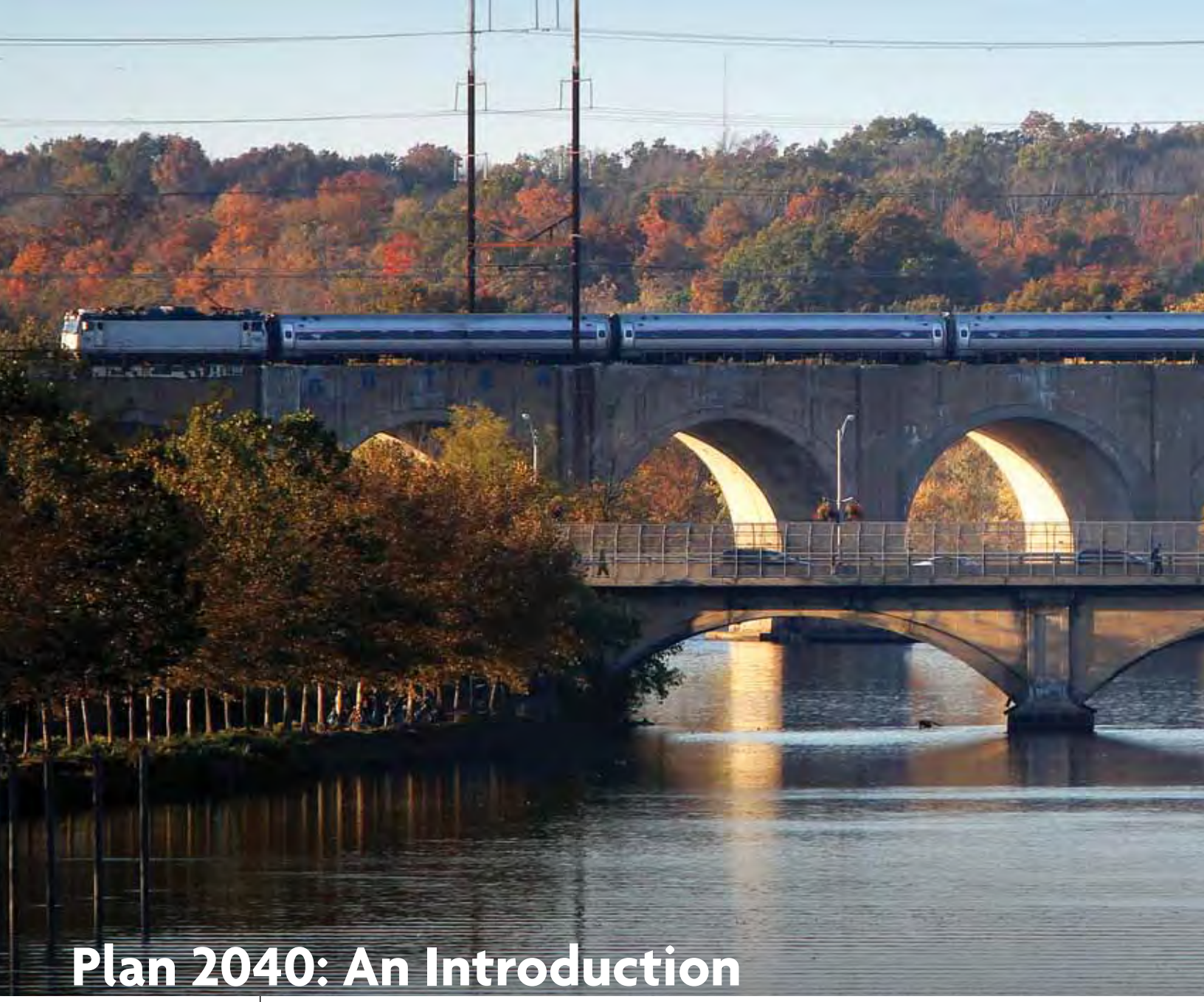
appointed by the Governor. NJTPA Board meetings are held bi-monthly, open to the public, and streamed live via the NJTPA website. The meeting schedule can be found at www.njtpa.org.

The NJTPA Region

The NJTPA serves the fourth most populous MPO region in the nation with over 6.6 million people and over 2.9 million payroll jobs and 3.7 million total jobs. The 13-county region covers 4,200 square miles, half of the state's land area, and includes 384 municipalities. Key features of the regional transportation system include the following:

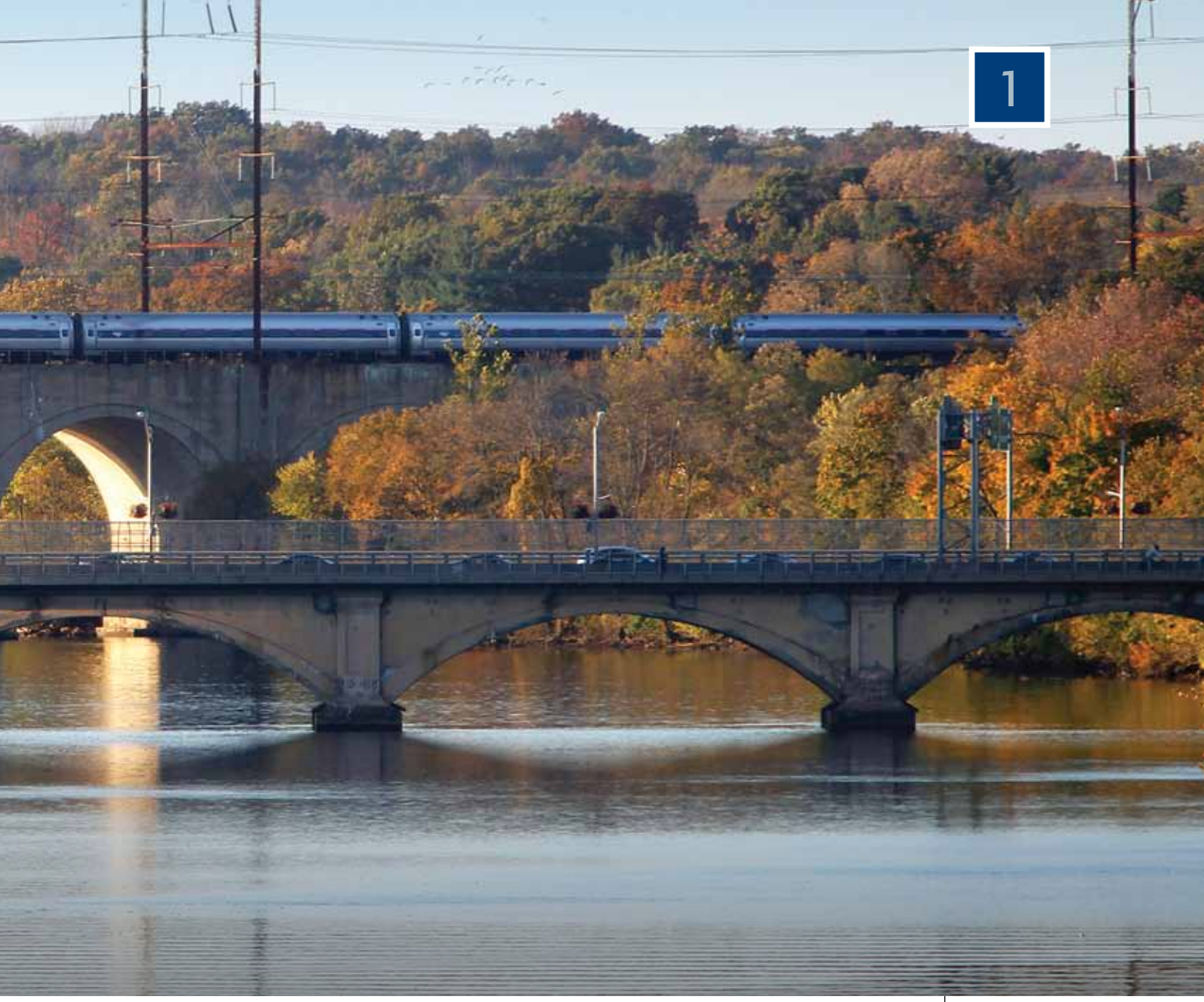
- The region is home to 26,000 miles of roads: 2,300 state, 3,700 county, and 20,000 municipal.
- NJ TRANSIT provides some 250 local and express bus routes throughout the region.
- NJ TRANSIT's rail system in the region includes: 10 commuter rail lines with 150 stations and 390 miles of track and 2 light rail lines with 39 stations and over 16 miles of track.
- Amtrak provides intercity service from Newark Penn Station, Newark International Airport, Metropark, and New Brunswick stations on the Northeast Corridor.
- The 14-mile PATH commuter rail service connects Newark, Harrison, Hoboken, and Jersey City with Lower and Midtown Manhattan.
- There are more than 4,800 bridges in the region.
- Three ferry companies operate 18 routes between New Jersey and New York City from 19 piers.
- The region is home to the largest seaport on the East Coast, which also is the third largest in the U.S. and the 25th largest in the world.
- The region is also home to Newark Liberty International Airport, which handled over 33 million passengers and over 1.5 million tons of air cargo in 2011.
- The region has an extensive trucking industry that handles nearly 400 million tons of freight annually and 13 freight railroads carrying over 32 million tons of freight annually.

Point Pleasant, Ocean County.



Plan 2040: An Introduction

Northern New Jersey has one of the nation's most extensive, diversified and heavily traveled regional transportation systems. It has been a vital asset in allowing the region to continue its slow but steady recovery from the recession. As discussed throughout Plan 2040, the system includes an extensive roadway network, world class port and freight facilities, an international airport, and one of the nation's largest rail and bus transit systems, among other facilities. This system has made northern New Jersey a crossroads and hub for economically vital travel throughout the northeastern U.S. ▪ Investing in the region's transportation system creates benefits beyond just moving goods and



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New Brunswick, Middlesex County.

people to where they need to be. Plan 2040 seeks to ensure that the transportation system can sustain economic recovery and growth while also advancing a host of important objectives, including protecting the environment, improving quality of life, providing a range of travel options beyond just the automobile, and connecting all residents with opportunities regardless of disability or income. The challenge is finding the right balance in the type and mix of investments while making efficient use of limited funding. ▪ The federal government has long recognized that to achieve this balance, transportation investments must be based on an assessment of long-term needs, rather than addressing

MAP-21 Planning Factors

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
2. Increase the safety of the transportation system for motorized and non-motorized users;
3. Increase the security of the transportation system for motorized and non-motorized users;
4. Increase the accessibility and mobility of people and for freight;
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns;
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
7. Promote efficient system management and operation; and
8. Emphasize the preservation of the existing transportation system.

Madison, Morris County.

problems on a piecemeal basis as they arise. To do so, Metropolitan Planning Organizations such as the NJTPA have been charged with updating Regional Transportation Plans (RTP) every four years through an inclusive "3C" planning process that is continuing, cooperative and comprehensive.

Plan 2040 Required Elements and Policy Guidance

This RTP, Plan 2040, is an update of Plan 2035, adopted in August 2009. Under federal law, the region must update the RTP in 2013 in order to continue to receive federal transportation funding. Only projects and needs identified in the RTP are eligible to make use of this funding.

Plan 2040 serves as a bridge between Plan 2035 and the next update, which will be prepared in 2017. As discussed later in the chapter, the 2017 update will incorporate elements of a Regional Plan for Sustainable Development (RPSD). Plan 2040 meets all Federal requirements for plan updates:

- The planning horizon is extended to 2040.
- Demographic data for the region is updated and incorporates the latest 2010 census information.
- The RTP updates information about transportation system condition and usage.
- The Project Index incorporates projects from the latest Transportation Improvement Program (TIP), as well as other projects of regional significance.
- The financial plan is fiscally constrained and uses reasonably anticipated revenue sources.
- The projects have been found to meet air quality standards, and an Air Quality Conformity Determination has been conducted and is found in Appendix C.
- The plan reflects NJTPA's performance-based planning approach.
- The plan describes potential environmental mitigation activities.
- The plan continues NJTPA's commitment to identifying and addressing potential Environmental Justice (EJ) concerns.
- The plan incorporates input from a broad-based public outreach process.

In addition to the required elements listed above, Plan 2040 addresses the "planning factors" included in the Moving Ahead for Progress in the 21st Century Act (MAP-21), the federal law that governs MPO planning. The factors are shown at left.

Furthermore, this plan update carries forward the Regional Capital Investment Strategy (RCIS) from Plan 2035, first adopted by the NJTPA Board of Trustees in 2005. The RCIS consists of eight Investment Principles that guide project selection and provide policy and planning direction:

Interstate 78, Bridgewater, Somerset County.

MAP-21 and Performance Measures

To meet requirements of the MAP-21 transportation law, the NJTPA (in cooperation with the NJDOT and NJ TRANSIT) will establish specific regional targets and other reporting mechanisms for national performance measures that are to be established by the USDOT. These will relate to seven goals—Safety, Infrastructure Condition, Congestion Reduction, System Reliability, Freight Movement and Economic Vitality, Environmental Sustainability, and Reduced Project Delivery Delays—and will complement state performance targets.

The NJTPA uses "performance-based planning" to help select appropriate investments that best respond to the region's most critical transportation challenges and needs. To do so, the NJTPA analyzes data to assess the performance of the transportation system and its component parts. It also performs detailed studies and computer simulations to better understand where and how people move throughout the region and to estimate future travel demand. Outreach to residents, businesses and local elected and community officials helps ensure performance assessments reflect local preferences and needs.

The NJTPA's performance assessments are part of a Congestion Management Process, systematically investigating the region's complex travel patterns, looking toward suitable approaches for improving the transportation system's convenience and reliability, and prioritizing projects that help implement each of the RCIS Investment Principles. This process takes into account that transportation needs and performance vary around the region based on land use and other characteristics. See Appendix D for a more detailed discussion of the CMP.

Hurricane Sandy damage in Scotch Plains, Union County.

- **Help Northern New Jersey Grow Wisely**—Transportation investments should encourage economic growth while protecting the environment and minimizing sprawl in accordance with the state's Smart Growth plan, Energy Master Plan, and environmental plans.
- **Make Travel Safer**—Improving safety and security should be explicitly incorporated in the planning, design, and implementation of all investments.
- **Fix It First**—The existing transportation system requires large expenditures for maintenance, preservation, and repair, and its stewardship should be the region's highest priority.
- **Expand Public Transit**—Investment to improve the region's extensive transit network should be a high priority, including strategic expansions to serve new markets.
- **Improve Roads but Add Few**—Road investments should focus on making the existing system work better and road expansion should be very limited without compromising the tremendous accessibility provided by the existing highway system.
- **Move Freight More Efficiently**—Investments should be made to improve the efficiency of goods movement because of its importance to the region's economy and quality of life.
- **Manage Incidents and Apply Transportation Technology**—Investments should be made to improve information flow, operational coordination, and other technological advances that can make the transportation system work smarter and more efficiently.
- **Support Walking and Bicycling**—All transportation projects should promote walking and bicycling wherever possible.

NJTPA investment has been guided by six overarching regional goals for almost 20 years. The current RCIS principles were built on these goals and they are part of the project prioritization criteria. They are:

- Protect and improve the quality of natural ecosystems and the human environment.

- Provide affordable, accessible and dynamic transportation systems responsive to current and future customers.
- Retain and increase economic activity and competitiveness.
- Enhance system coordination, efficiency and intermodal connectivity.
- Maintain a safe and reliable transportation system in a state of good repair.
- Select transportation investments that support the coordination of land use with transportation systems.

Background

Since the adoption of Plan 2035, the NJTPA region, New Jersey, and the country have experienced many events that have impacted and will continue to impact transportation policy and investment decisions:

- The recession that began in 2008 negatively affected all sectors of the economy and society. The resulting drop in consumer demand led to a fall-off in business across virtually every sector, including transportation companies serving the region's extensive port facilities, as well as the warehousing and distribution sector. This had ripple effects throughout the regional economy.
- The recession depressed the level of travel over the roads and rail lines. While this to some extent lessened wear and tear on infrastructure, it also led to a fall-off in revenues from gas taxes, tolls and fares used to support the system. Like the nation, the region is in the midst of a slow recovery.
- Congress repeatedly failed to reach agreement on reauthorizing the nation's surface transportation law, instead relying on a series of short term extensions of the existing law. In June 2012, Congress passed MAP-21, a two-year transportation reauthorization that does not address the need for a long-term, sustainable transportation funding program. The law establishes new transportation investment priorities to guide the work of the nation's transportation agencies and MPOs, including new emphasis on performance standards and on freight needs, which are addressed in this plan. As discussed in Chapter 5, even with a strong economy, gas tax derived revenue may be insufficient to support economically vital investments over the long term.
- Both Hurricane Irene in 2011 and Superstorm Sandy in 2012 served as a wakeup call for the region. These extreme weather events highlighted the need to plan for and to create a resilient transportation system that can better survive extreme weather and be brought back to working order quickly following catastrophic events. Shortages experienced following Superstorm Sandy further highlighted the need for redundancy in distribution systems for fuel, food and other essential goods.
- Changing demographics and lifestyles have begun to alter where and how people travel, as well as the land use context in which the transportation system functions. Among the emerging trends:
  - Many baby-boomers are moving from large suburban homes to smaller homes located in areas that provide transportation options other than driving, particularly as they age and mobility becomes more difficult.
  - Many younger residents are seeking to live in more urban, walkable, transit-accessible communities that allow a lower rate of car ownership and reliance on the automobile.
  - Businesses, like some residents, are moving closer to the urban core to be closer to their customers and suppliers and to attract and retain a high quality work force.
  - The continuing influx of foreign born and first-generation-American residents into the region—many of them in low paying jobs and residing in urbanized areas and older "inner ring" towns—is creating the need for improved transit services, shuttles and other travel options.
- Amtrak is leading early planning for a new cross-Hudson tunnel, but the project is many years from implementation.
- Building on the state's adoption of a Complete Streets policy in 2009, a "complete streets" approach to transportation, including improving transit access, expanding opportunities for biking and walking, and accommodating everyday goods deliveries is proving to be an effective spur to economic development and is gaining the attention of town officials.

Jersey City, Hudson County.

Plan 2040 and the Regional Plan for Sustainable Development

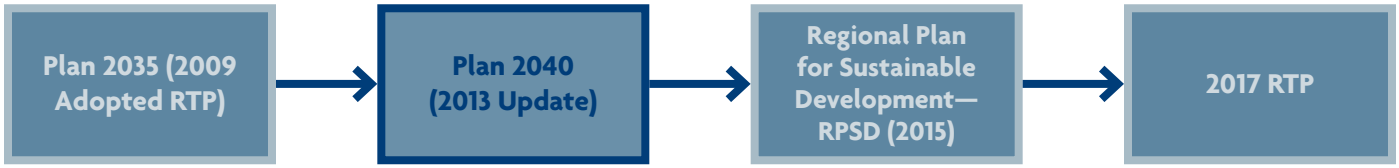
Plan 2040, in addition to being an update to Plan 2035, is one step in a series of planning efforts that will define regional transportation planning for many years to come. The flow chart on the next page illustrates how Plan 2040 fits into the larger, longer-term planning picture.

Concurrent with preparing Plan 2040, the NJTPA is participating in the development of the RPSD. The RPSD is being developed with a $5 million grant awarded in November 2011 by the U.S. Department of Housing and Urban Development (HUD) to a consortium of government, university and non-profit organizations in the 13-county northern New Jersey region. The consortium, known as Together North Jersey and led by Rutgers University, is directing this three-year planning effort, conducting extensive outreach, analyzing key issues, supporting local pilot projects involving sustainable development and preparing

to model scenarios of future regional development, among other activities.

The final sustainability plan will be multidisciplinary, with specific actions recommended to better address and link transportation, housing, social welfare, the arts, education, land use, the environment and other aspects of the region's future. The goal is to realize long-term, sustainable economic development. In terms of transportation, it will focus on crucial NJTPA planning and policy priorities such as sustainability, transit system connectivity, and transit-oriented development (TOD).

implement the RPSD. This will include information from topic reports on transportation, land use, economic development, and other aspects of life in the region, input gathered from additional public outreach meetings and workshops, and the results of scenario modeling. In addition, over two dozen local capacity building and local demonstration projects will highlight how sustainability planning and projects can be implemented at the local level. The RPSD is also expected to influence the implementation of the State Strategic Plan, which is currently in draft form and whose principles are also reflected in Plan 2040.



As a member of the Executive Committee of Together North Jersey, the NJTPA has been actively involved in developing the RPSD. During the spring of 2013, NJTPA partnered with Together North Jersey in sponsoring 14 public workshops around the region to gain public input and guidance. During the first round of workshops, known as the "Discovery" phase, the NJTPA conducted activities to gain input on investment needs and priorities to be reflected in this plan (see Chapter 2). The NJTPA has also been involved in preparing technical papers and data for the RPSD, many elements of which have been incorporated into Plan 2040.

When the RPSD is completed in 2015, the NJTPA will be able to draw upon its findings and recommendations to inform the development of a long-range transportation plan update in 2017 that will help

The Future

Plan 2040 represents an important step in the ongoing effort to improve the transportation system that is so vital to the regional economy and quality of life. With updated data and analysis, it offers insight into the current state of the system. It identifies strategies and planning approaches that will help the region address current and emerging issues. It includes an analysis of transportation financing, providing a sound basis for addressing current needs and options for the future. It includes a comprehensive list of projects and project concepts slated for the region. And it lays the initial foundation for new efforts to shape regional development and spur economic growth—notably the RPSD. As with the NJTPA's last plan update, Plan 2040 seeks to use balanced transportation investments to chart a realistic, achievable course through current economic uncertainties toward renewed growth and progress.

Public Outreach

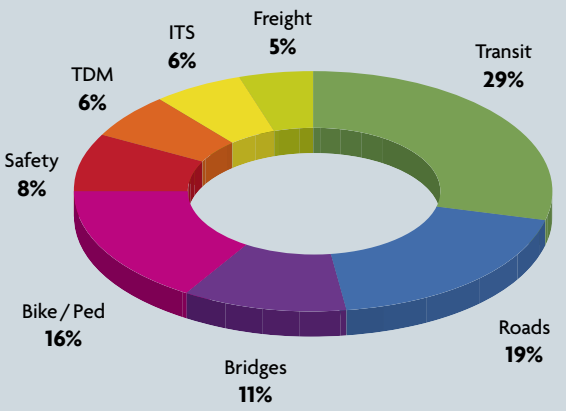
The NJTPA region is an extraordinarily diverse area, stretching from the beach towns along the shore, to rural areas and farmlands of the west to the urban areas in the northeast. Developing a long-range transportation plan that addresses the unique needs of these places can only be done with insights from the people who live and work in them each day. ▪ In creating Plan 2040, the NJTPA provided many opportunities for public input. The NJTPA engaged the region's residents where they live through a series of public workshops, and brought opportunities to participate into their homes through a combination of digital technologies. As a result, Plan 2040 is a document that takes

NJTPA symposium on intelligent transportation systems.

into account the daily mobility challenges shared by the region's residents and reflects the aspirations they hold for their communities for the coming decades.

Together North Jersey ▪ As mentioned in Chapter 1, public outreach for Plan 2040 was conducted in tandem with Together North Jersey's (TNJ) effort to produce a Regional Plan for Sustainable Development for the 13-county NJTPA region. NJTPA staff members helped to facilitate 14 Together North Jersey public workshops spread across the region. ▪ The Together North Jersey workshops centered on a series of interactive exercises that were designed

Figure 2-1:
Plan 2040 Public Outreach Results



to be fun and enlightening for all members of the public, regardless of their expertise on planning matters. The activities included transportation-specific elements designed to help elicit input that would inform Plan 2040. Attendees initially rotated through three stations, where they were asked to name something they liked and something they'd like to see changed about their communities through the perspectives of working, living and getting around. Spanish-language interpreters were on-hand at all workshops and, to accommodate attendees with children, a "Kid's Corner" was provided and included activities for children of all ages.

Attendees also took part in "dot-mocracy" exercises, which asked them to vote on a list of objectives related to working, living and getting around in their communities. Participants were given three dot stickers and asked to place them next to the goals they felt mattered most. They were also invited to write down any important goals that were not reflected and add them to the list. The number of dots placed next to transportation-related goals at each of these workshops helped illustrate the public's top priorities for the future.

Among the goals that received the most support were:

- Ensure infrastructure (transportation, utilities and communications) is in good repair and can support economic development
- Connect where people live with where they need to go
- Reduce potential impacts of climate change
- Reduce combined transportation and housing costs

The NJTPA also hosted a booth at the workshops with an activity that put attendees in charge of the region's federal transportation dollars. Participants were given three beads that represented funding and asked to "invest" them by dropping them in jars that were labeled with investment categories. The choices were bicycle/pedestrian, bridges, transportation demand management (carpool/vanpool/shuttles), freight, roads, safety, technology and transit. In order, the participants invested the most in the transit, roads, and bicycle/pedestrian categories. See Figure 2-1 for complete results.

During each outreach session, attendees participated in an interactive polling exercise that gathered and summarized the results in real time. There were two questions related specifically to the Plan 2040 effort: "How should the region invest transportation dollars?" and "What sources of funds should be used to support transportation?"

The first question, "How should the region invest transportation dollars?" was similar to the bead exercise. The polling results closely reflected the results of the bead exercise with significant support for increased transit service, improved bicycle and pedestrian facilities, and fixing existing bridges and roads.

The second question, "What sources of funds should be used to support transportation?" provided input on the types of funding mechanisms participants would support to pay for the priorities identified in the first polling question. Increasing the gas tax received the most support and 'working with banks and businesses to share costs and revenues from tolls and fares,' in other words some sort of public-private partnership (P3) arrangement, received broad support.

Digital Outreach

Those who could not attend a Together North Jersey public workshop were invited to share their ideas via EngageNorthJersey.com. The website simulated the workshop activities and allowed residents from throughout the region to discuss the issues with each other at any time of day in the comfort of their own homes.

EngageNorthJersey.com allowed residents to suggest their ideas for improving the region; support, or "second," good ideas suggested by others; leave

feedback; or even post photos of places in northern and central New Jersey that they liked. The site was powered by MindMixer, a social media-like program that was developed for generating public input for community planning projects.

The NJTPA also actively supported the Together North Jersey effort with its own social media platforms. Throughout the spring of 2013, the NJTPA frequently promoted upcoming workshops and EngageNorthJersey.com via its Twitter, Facebook and YouTube pages. Staff shared real-time tweets and photos with the NJTPA's followers at each workshop, which helped boost interest in future events and generate additional feedback from attendees. The conversations that have taken place on the NJTPA's social media platforms since their inception have served as a valuable source of input for Plan 2040.

Finally, a Plan 2040 page was created and prominently featured on the NJTPA's website, NJTPA.org. The page served as a gateway for information related to both Plan 2040 and the Together North Jersey effort. The page was updated regularly with links, flyers and promotional materials related to upcoming public workshops. Periodic updates on Plan 2040 and Together North Jersey were also shared via the NJTPA's E-List email system.

NJTPA Symposia and Forums

In developing Plan 2040, the NJTPA also recognized the need to engage professionals whose work is closely intertwined with the region's transportation network. Several symposiums and special events held since the adoption of Plan 2035 in 2009 were instrumental in keeping the NJTPA current on societal and industry trends that will impact transportation for the next 25 years and beyond.

The events provided a forum for experts from New Jersey, around the nation, and abroad to exchange ideas with transportation professionals, elected officials and interested residents. The following are overviews of those events:

- *Next Generation Bus Technology: Bus Rapid Transit, March 2013*. This symposium discussed how technological innovations in the field of bus services could help ease traffic, attract ridership, spur economic development and reshape transportation services in our region.
- *Beyond MAP-21: Uncertain Future, Unmet Needs, August 2012*. A panel of national experts discussed the importance of developing stable, long-term federal transportation funding sources and the implications of the newly adopted MAP-21 transportation law. The panelists offered a wide range of perspectives on the bill's shortcomings and some positive features such as strengthening MPO performance-based planning. Broad agreement was expressed that the legislation was not a solution to the mounting challenges facing our nation's aging infrastructure.
- *Integrated Corridor Management: Using Technology and Partnership to Maximize Transportation System Capacity, July 2012*. This event explored how by taking a "big picture" approach to managing transportation corridors and treating individual roads, bridges and transit facilities as part of an integrated system, state and local agencies can improve travel capacity and better

NJTPA symposiums on integrated corridor management (top) and MAP-21 (left).


EXIT
NOTICE


#6

NJTPA–Together North Jersey Workshops

Clockwise from top: Workshop in Bridgewater, Somerset County; Toms River, Ocean County; Paterson, Passaic County; Flemington, Hunterdon County; NJTPA First Vice-Chairman Tom DeGise in Union City, Hudson County; Elizabeth, Union County; Manalapan, Monmouth County; Jersey City, Hudson County; and center, NJTPA Chairman Matthew Holt in Flemington.

handle congestion and incidents.

- *Adapting to Climate Change: An International Discussion, March 2012*. While touring the U.S., a group of European and Australian experts joined academic and transportation professionals from New Jersey and New Yotrk to discuss infrastructure resiliency issues, European climate adaptation work, and climate change adaptation activities in this region.
- *Improving Real-Time Operations, October 2011*. The event highlighted technologies that are being used in real-time in New Jersey and beyond to improve traffic flow, security, safety and the environmental impacts of transportation.
- *Toward a More Resilient Region, June 2011*. Participants at this symposium explored strategies for improving the resilience of existing infrastructure to natural and man-caused disasters.

- *Planning for Operations: Advancing New Jersey's ITS Initiatives, March 2011*. This symposium highlighted current and future initiatives to support improved regional transportation management and operations through technological improvements.
- *Coordinating Transportation and Emergency Management Planning, October 2010*. Representatives of federal, state and county governments, as well as law enforcement, consulting firms and universities discussed the critical role effective communication between agencies plays in improving safety, security and emergency management.
- *Social Media in the Transportation Industry: Implications for Change, July 2010*. The symposium focused on how social media platforms can be used in the transportation sector as public outreach and research tools.
- *The Future of New Jersey's Transportation Infrastructure, December 2009*. This summit, organized in partnership with the New Jersey Alliance

NJTPA symposium on improving infrastructure resilience.

for Action, explored the vital role transportation infrastructure plays in New Jersey's economy and the steps that will be necessary to safeguard and improve that asset.

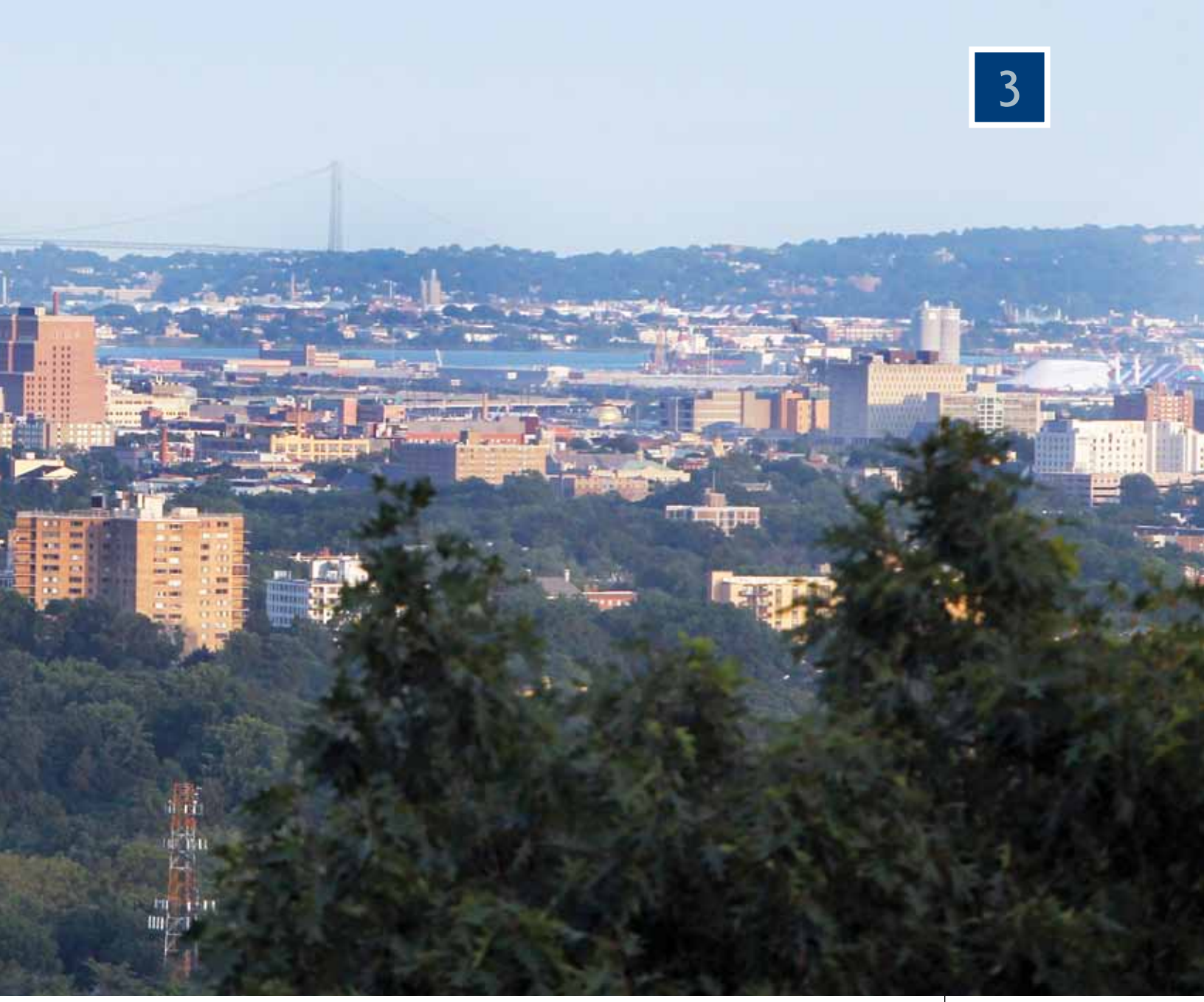
Using Public Input

The NJTPA found that the priorities expressed by the public lined up well with the broad principles set forth in Plan 2040's Regional Capital Investment Strategy (RCIS), outlined in Chapter 1. The fragile economy was a particularly strong influence on people's views. Residents consistently stressed the importance of keeping costs as low as possible and improving our existing infrastructure's performance—both core aims of the "Fix it First" principle. Many wanted to see the transportation network leveraged to spur economic growth and better connect communities to job centers, as the "Help the Region Grow Wisely" and "Expand Public Transit" principles advocate. Residents also hoped to see downtown business districts made more attractive by improving access and infrastructure for non-motorists—goals which correspond closely with the "Support Walking and Bicycling" and "Make Travel Safer" principles.

The input gleaned from all of these interactions has been instrumental in the development of Plan 2040, and will be central to the completion of Together North Jersey's Regional Plan for Sustainable Development in 2015. The NJTPA will make further use of the insights gained during the outreach activities, as well as the additional outreach to be conducted by Together North Jersey in 2013-2014, in developing the next regional transportation plan in 2017.

Context and Trends

The transportation system serving northern New Jersey both affects and is affected by larger trends in the economy and society. There is a complex relationship between transportation and other factors including demographics, land use development patterns, housing, commerce, the natural environment and more. ■ In the case of development, for instance, the construction of new homes and businesses can overwhelm local road systems. And, at the same time, strategic investments in improved roads or transit can help spur development in long neglected areas. Over the long term, transportation is also affected by demographics: increases in population and a growing share of



View of Newark area from Eagle Rock Reservation in West Orange, Essex County.

older citizens may shift development towards homes for smaller households in locations accessible to transit. These and other complex interactions must be taken into account in making cost effective use of the very limited funds that Plan 2040 projects to be available over the long term (see Chapter 5) and planning the long term future of the transportation system. This chapter highlights several key trends and issues that will continue to influence transportation through 2040. ▪ More insight into these trends and issues and their implications will be forthcoming with the completion of Together North Jersey's Regional Plan for Sustainable Development (RPSD) in 2015. One of the

central goals of the RSPD is to examine how transportation, housing, social welfare, environmental and other needs can be addressed in a coordinated and sustainable fashion. A Transportation Topic Report for the RPSD was prepared by the NJTPA to support this analysis. As noted in Chapter 1, the RPSD will provide a solid baseline for the next RTP update in 2017. Also, detailed employment and population projections, by county and municipality, can be found in "Appendix A– 2040 Demographic Projections."

Demographics

The 13-county NJTPA region's transportation system serves a growing population. From 2000 to 2010, the region's population grew from 6.3 million to 6.6 million people, an increase of over 4%, and population is projected to grow to approximately 7.9 million (+20%) by 2040. Many demographic trends will affect the transportation system.

Some of the region's largest cities, including Newark, Jersey City and Elizabeth, as well as its largest suburban municipalities, including Woodbridge, Edison, Lakewood, and Toms River, gained population in the last decade, reversing previous losses. Hudson County is also expected to grow rapidly as redevelopment in places such as Jersey City and Harrison helps attract residents interested in easy access to New York and the major cities in New Jersey. Cities and older, closer-in suburbs in and around the northeast urban core remained relatively stable during the first decade of the twenty-first century. The urban areas seeing population growth and stabilization provide the region with an opportunity to realize transportation efficiencies, including improving multi-modal transportation options for concentrated populations and a higher urban quality of life. Supporting the growth and redevelopment of cities and higher density inner suburbs is a priority of Plan 2040. The plan also encourages creative land use approaches in less dense suburbs to improve sustainability, such as establishing town centers, expanding park-and-ride lots and clustering stores and homes.

From 2000 to 2010 population growth occurred mostly in suburban, more auto-oriented counties further from the urban core, notably Ocean (+13%), Somerset (+9%), Middlesex (+8%), and Warren (+6%) counties. In the long term, the NJTPA will continue to support land use planning and development mindful of transportation impacts and support the development and application of new vehicle and system technologies to address suburban mobility needs.

Following national trends, the region's population is increasingly composed of racial and ethnic minorities: 43% of the population in 2010 as compared to 36% in 2000. Minorities comprise more than half of the populations of five counties: Hudson (69%), Essex (67%), Passaic (55%), Union (55%), and Middlesex (51%). Historically, minority populations, due to lower incomes and concentration in urban centers, have relied more on public transportation for day-to-day mobility and have had limited access to privately owned vehicles, reinforcing the ongoing need to provide high quality, reliable transportation alternatives. In the past, low-income and minority populations have borne the burden of noise, pollution and

Union City, Hudson County.

other negative impacts of infrastructure investments, without necessarily benefiting from them. To meet Title VI of the 1964 Civil Rights Act, the NJTPA continues to weigh environmental justice issues when prioritizing infrastructure investment in order to prevent increased burdens on low-income communities. The NJTPA also identifies and assesses the transportation needs of low-income and minority populations, and acts to improve public involvement processes to eliminate participation barriers for low-income and minority persons. In addition, the RPSD, now under development, is examining environmental justice issues relating to a broad range of policies beyond transportation, including housing, economic development and education. Environmental justice strategies from the RPSD will be incorporated into future NJTPA Regional Transportation Plan updates.

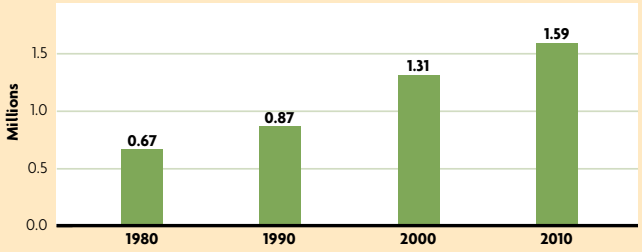
The NJTPA region continues to attract immigrants from foreign countries. The foreign-born population has more than doubled within the last 30 years (between 1980 and 2010) as seen in Figure 3-1 to the right. This pattern of immigration is expected to continue and, based on existing settlement trends, to sustain population growth in existing urbanized areas.

Historically, many foreign-born newcomers to the region arrive from places where walking, biking, and using transit is the norm and traditionally settle in areas where these forms of travel are readily available. Many recent arrivals have fewer resources and may not own or have access to a car. This can limit their access to employment, education, and medical services, which have increasingly located in auto-dependent areas in the last few decades.

While the region is gaining foreign born immigrants, it is losing existing population to other states each year. A prime cause is deindustrialization as manufacturing industries relocate to the other parts of the country. The region's high housing and living costs may also be a contributing factor. The overall migration trend shown in Figure 3-2 is that the very small increase in population realized through foreign in-migration has offset only a tiny portion of the large population losses due to outmigration to other states (leaving, for instance, a net population loss of 16,046 people in 2008-09).

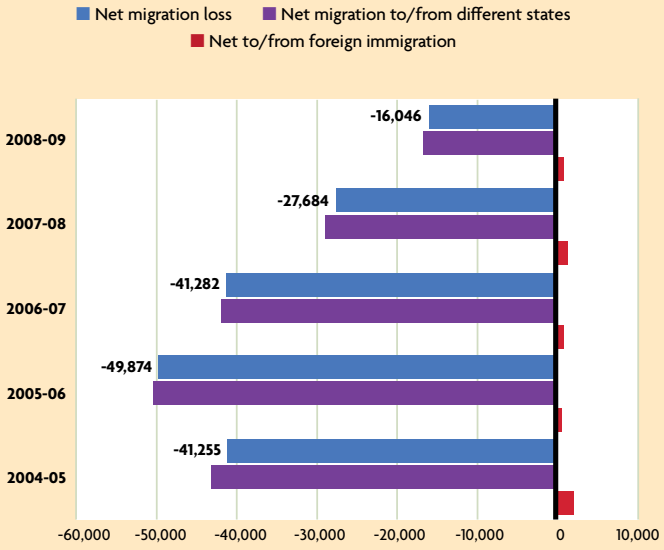
Another important trend is the aging of the population. The region is home to an increasing number of households with people age 65 and older, as seen in Table 3-1 at left. In 2010, the highest concentrations of people over age 65 were found in Ocean (21%), Bergen (15%), and Warren (14%) counties, each exceeding the New Jersey statewide average of 13.5%. The population over age 65 is projected to increase

Figure 3-1:
Regional Foreign-Born Population



Source: US Census

Figure 3-2:
Factors Contributing to Population Change, New Jersey



Source: Internal Revenue Service Area-to-Area Migration Data

Table 3-1:
Regional Population 65 and Older

	1980	1990	2000	2010
Number of Households	479,471	560,201	598,303	646,122
Change in Number of Households		80,730	38,102	47,819
Change in Percentage of Households		17%	7%	8%
Percentage of total households in NJTPA region	25%	27%	26%	27%

Source: US Census

Ridgewood, Bergen County.

over the next 20 years as baby boomers age and as average life expectancy increases.

An older population means more elderly drivers and more people who do not drive. Making roads easier to navigate through modified design and signage and providing attractive transportation alternatives such as transit and walkable streets supports senior mobility and helps maintain quality of life. The type of housing and where seniors decide to live is increasingly important. Seniors, and even "empty-nesters," are tending to downsize and relocate to smaller homes, some of which are in more urban, walkable areas. This trend has resulted in a population decline for older adults in the rural and farther-out suburbs.

The lifestyle trends and priorities of the "millennial" generation, referring to those born between 1983 and 2000, are fundamentally different than those of previous generations. According to a 2013 report by US Public Interest Research Group (PIRG), "A New Direction," millennials are more likely to want to live in urban and walkable neighborhoods, and are more open to non-driving forms of transportation. Young people aged 16 to 34 drove 23 percent fewer miles than they did in 2009, the largest decline in any age group. The millennial generation's impact on land-use and transportation will likely be felt for many years to come, not only in northern New Jersey, but across the metropolitan area and the United States.

Changing household characteristics and composition as well as the absolute number of households also affects travel behavior. The number of single person and single parent households has increased over the past several years and this trend is anticipated to continue. Of the 2.4 million households in the region in 2010, 25% consisted of just one person, 31% consisted of two or more unmarried adults, and 8% consisted of single parent units—the result is more households are generating more trips from more locations and subsequently place an increasing demand on the existing system.

The type of housing being built also impacts the transportation system. In order to accommodate projected population growth, the need for multi-family homes (some of which are included in mixed-use developments) is increasing, especially in the more urban counties where seniors, millennials, and foreign-born residents are tending to live. Multi-family housing creates more density, resulting in more trips and more demand being placed on the transportation system, and provides a greater opportunity for transit and non-motorized travel options. Balancing this type of land use change with the appropriate transportation investments is the intent of the RCIS principle of Helping Northern New Jersey Grow Wisely.

Employment and the Economy

Employment and the economy are closely tied to the transportation system. Nearly every economic activity in the region is dependent, directly or indirectly, on the efficient movement of goods and people over the transportation network. Investments in the network therefore can be vital to supporting future economic growth. According to a 2008 Rutgers University study, "Economic Impact of Transportation Investments," every $1 invested in the New Jersey transportation

network yields a $36 return based on reduced congestion, operating costs, accidents, air pollution, noise and maintenance. But economic growth can also compound congestion and other mobility problems based on the number of vehicle miles traveled, the amount of freight and goods being moved, and the demand placed on the public transit and public road networks.

As the economy has strengthened following the recent downturn, travel by all modes for work, recreation, education, and services has begun to rebound, though in general it has not reached pre-recession levels. The lower levels of driving during the recession led to a falloff in revenues for transportation at the state and federal levels, principally raised by gas taxes. As discussed in Chapter 5, even with a stronger economy, gas-tax derived revenues over the long term may be insufficient to support economically vital transportation investments, due to increasing vehicle fuel efficiency and other factors. This represents a difficult long-term challenge.

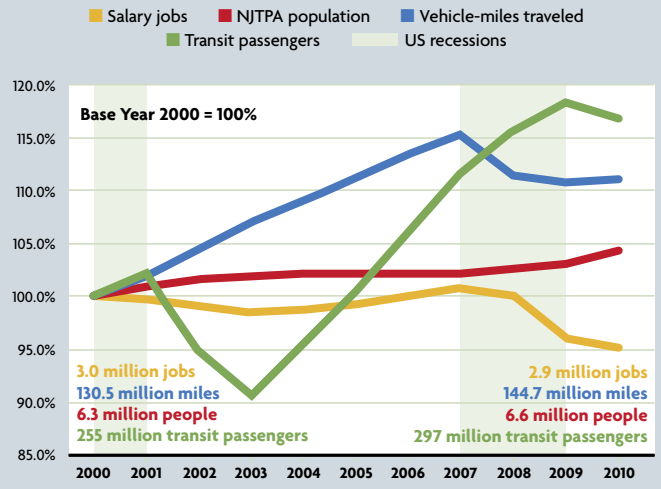
Payroll employment in the region increased from 2.6 million jobs in 1990 to 2.9 million in 2000. Employment grew to 3 million by 2007, but significant job losses due to the recession between 2007 and 2009 brought employment levels in 2009 back to the 2000 level of 2.9 million. Since 2009 the region has seen a modest employment increase as the national, state, and regional economy begins to recover. Payroll employment is projected to increase to 3.7 million in 2040.

The growth in private sector employment was mainly due to self-employed workers whose numbers grew about 63% (+300,000 jobs) in the NJTPA region between 2000 and 2010. The number of self-employed and contract-employed workers (categorized and counted differently than payroll employment) has been increasing and is expected to continue growing in the future. Including the self-employed in addition to wage and salary jobs, total employment (payroll and self-employed) was approximately 3.7 million in 2010.

Throughout the region, the economic recession led to significant employment losses and a decrease in household income for 12 of the region's 13 counties—all except Hudson County. The unemployment rate in New Jersey rose to its highest level of 9.8% in July 2012, compared with 3.6% in 2000, 4.2% in 2007, and 9.6% in 2009. (As of August 2013, New Jersey's unemployment rate stood at 8.5%, eighth highest in the nation). Along with the number of jobs, vehicle miles traveled (VMT) in the region declined with the recession in 2007–2009.

Figure 3-3 below shows the change in population, jobs, and VMT between 2000 and 2010; it also illustrates the relationship between economic activity and transportation system usage.

Figure 3-3:
Change in Population, Jobs, and VMT from 2000 to 2010



Source: U.S. Census, U.S. Bureau of Economic Analysis, NJDOT, NJ TRANSIT, PANYNJ

Household income is related to how residents travel. In general, those with higher incomes are more likely to drive alone while lower income residents are more likely to take transit, walk, or ride a bicycle. A similar pattern is reflected in transit ridership as well: bus ridership (lower fare) is triple that of rail ridership (higher fare). NJ TRANSIT's extensive bus network serves communities across income levels, connecting lower income areas with critical employment and educational opportunities, services, and recreation. However, for many residents in northern New Jersey, having access to and using the many transportation alternatives available is a desired amenity and a daily reality, regardless of economic background.

New Jersey had the second highest median household income of $70,000 in 2010, higher than the national median income of $52,000. This, however, was somewhat offset by a higher cost of living, estimated in 2006 to be 25 percent greater than

the national average. The overall median household income in the NJTPA region is higher than the statewide median, yet still dropped from $79,000 in 1999 to $74,000 in 2010. Even with a higher than average median income, about one-tenth of the residents in the region live in poverty and the high cost of living in the region was a concern expressed during the outreach process for Plan 2040. In 2010, the counties whose poverty rate exceeded the statewide average of 10.3% were Essex (16.7%), Hudson (16.5%), Passaic (15.7%), Ocean (11.2%), and Union (11.1%).

Housing and transportation are two of the most costly aspects of daily life. Transportation costs tend to be higher for people who live in places that are "location inefficient," meaning areas that require extensive, if not exclusive, automobile use for a significant majority of trips. Transportation costs tend to be lower for people who live in places that are "location efficient," meaning they are compact, feature a mix of uses, and have a range of amenities and services accessible by walking, bicycling, or transit.

In 2006, the Center for Neighborhood Technology (CNT) created the Housing and Transportation Affordability Index (H+T), which measures the affordability of neighborhoods based upon analysis of housing costs and the costs of different travel options. H+T has become an industry standard for identifying community affordability and for identifying strategic locations where investment in infrastructure or an increased mix of housing can lower housing and transportation costs for new or relocated residents. Note that CNT considers a combined housing and transportation cost of 45% to be "affordable."

For a household making the typical household income for the New York-Northern New Jersey-Long Island MSA region (about $63,600 per year), CNT data shows that the average estimated combined housing and transportation costs was highest in Hunterdon, Morris, Somerset, and Sussex Counties, and lowest in Hudson and Essex.

In the long term, the region will likely resume its economic growth. Together with the larger New York-New Jersey-Connecticut metropolitan region, northern New Jersey is fortunate to have a diversified economy, a highly educated workforce, world class research institutions, a substantial multi-modal transportation network, and one of the nation's largest ports and distribution networks, among many other economically critical assets. These assets should provide the region with the advantages needed to compete regionally, nationally, and globally to realize future economic and employment growth. Still, as noted, the level of growth will depend on the region's ability to continue to make needed investments in maintaining and improving the transportation network.

Climate Change

The NJTPA has been active in addressing greenhouse gas emissions and climate change impacts in the region. Twenty-eight percent of greenhouse gas emissions are produced by the transportation industry.

The changes in global climate that are projected to occur in coming decades will have a significant impact on transportation assets in the NJTPA region. The crippling effects of Hurricane Irene and Superstorm Sandy have highlighted the need for improved resiliency for the entire multi-modal transportation system. Resiliency includes the ability of infrastructure to withstand environmental and other disruptions and bounce back to normal operations shortly following a disruption. Chapter 4 discusses the challenges of climate change and the strategies being pursued by the NJTPA and its partners, including a major assessment of needs and vulnerabilities of the New York-New Jersey-Connecticut region.

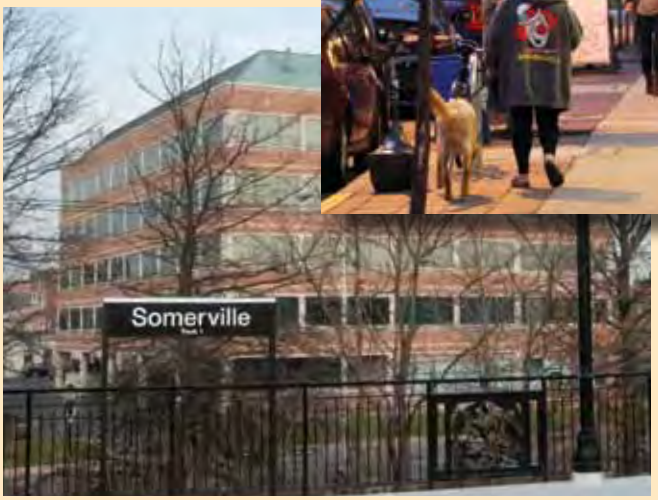
Providing context for these efforts are the findings of a 2010 Climate Change Vulnerability and Risk Assessment of Transportation Infrastructure conducted through a partnership between the New Jersey Department of Transportation (NJDOT), the three New Jersey MPOs (NJTPA, DVRPC, and SJTPO), NJ TRANSIT, and the New Jersey Department of Environmental Protection. The study prepared an inventory of important transportation assets utilizing available climate change models, and performed a vulnerability and risk assessment of select New Jersey transportation infrastructure.

Looking out to the year 2100, the expected climate impacts examined were sea level rise, storm surge, extreme temperatures and temperature ranges, extreme precipitation, drought, and inland flooding. Looking at two areas of the state, a Coastal Study Area and Central New Jersey Study Area, the study found the following:

Coordinating Land Use and Transportation

Coordinating land use and transportation decisions that lead to investments is vital to enhancing the region's ability to compete in the national and global economies. This includes improving transit access, providing safe travel and making roadways more accessible for all users while also encouraging sustainable land uses.

The NJTPA's past efforts to better coordinate land use and transportation have included studies of improved goods movement infrastructure needed to spur brownfield redevelopment and opportunities for transit oriented development in several locations, among other initiatives. Currently, the NJTPA, as a leading partner of Together North Jersey, is spearheading the development of a regional Comprehensive Economic Development Strategy (CEDS). The CEDS will provide a framework for infrastructure investment across the region, particularly when it comes to transportation investments needed to connect people and businesses to jobs and economic opportunities.



Above, Asbury Park, Monmouth County; left, Somerville Train Station, Somerset County.

Across the region, there are several efforts that touch on these three interconnected elements, including:

- **Davenport Street Extension in Somerville**—By extending Davenport Street, Somerville will be able to provide a key connection between downtown and the former Somerville Landfill, a redevelopment site with significant (TOD) potential and economic investment. Somerset County identifies this as a priority.
- **Together North Jersey Local Demonstration Projects (LDP)**—Three recently completed pilot LDPs focus on providing transportation access to potential redevelopment sites and opportunities while laying the groundwork for long term economic growth. The three LDP study areas are: Together 202 (Flemington to Somerville via Route 202), Urban Essex Coalition for Smart Growth (Newark, Orange, and East Orange along the Morris & Essex Rail Line), and Connecting Community Corridors (in Asbury Park, Bradley Beach, and Neptune in Monmouth County).
- **Newark Housing Authority Choice Neighborhood Planning Grant**—The grant will be used to develop a transformation plan for the Dayton Street Neighborhood and will include transportation connections to local and regional transit, updated traffic patterns along Frelinghuysen Avenue, adaptive re-use of commercial/light industrial buildings, improved access to parks, and new mixed income workforce housing.

- Overall sea level rise of up to 1.5 meters by 2100, resulting in increased vulnerability of the region's roads and rail systems to inundation and bridges to scour and overtopping.
- More intense precipitation leading to the expansion of flood prone areas and increased risk of inundation to critical roadway, NJ TRANSIT rail assets, and important freight corridors.

Other climate variables, such as extremely hot temperatures and intense rainfall events, currently cause damage or deterioration to transportation infrastructure, and could be expected to do so to a greater extent in the future as these types of events are expected to increase in frequency and/or severity by 2100.

Air Quality in the NJTPA Region

Based on the federal Clean Air Act, the U.S. Environmental Protection Agency (EPA) sets health standards to protect the public from the negative consequences of breathing polluted air. Portions of the NJTPA region are in "nonattainment" (fail to meet the standards) for fine particulate matter and ozone. Also, parts of northern New Jersey are considered a maintenance area for carbon monoxide (CO) as standards have only recently been achieved.

Due to portions of the region failing to meet the National Ambient Air Quality Standards, the NJTPA is required to demonstrate that projects funded through the Transportation Improvement Program (TIP) and Regional Transportation Plan will have a net positive impact on air quality and contribute to the achievement of the air quality goals contained in the New Jersey State Implementation Plan (SIP).

To demonstrate conformity, the NJTPA uses computer modeling to estimate the emissions impacts of approved projects. A crucial element in this process is the use of the enhanced North Jersey Regional Transportation Model—essentially a desktop simulation of the entire transportation network—which was developed by NJDOT and the NJTPA.

To comply with federal regulations, the NJTPA has established procedures for public involvement and interagency consultation in this process. This includes detailed documentation for non-technical readers and a public workshop on conformity. The EPA has praised the NJTPA conformity process as a model for others around the country.

Land Use

The NJTPA region encompasses over 4,200 square miles of land (approximately half of the state of New Jersey). The region's urban and built-up area increased from 27% in 1986 to 34% in 2007, approximately one-third of the region.

Approximately two-thirds of the land in the region is non-urban, of which 40% is agricultural land and 27% is parkland, preserved land, or special planning districts. These special planning districts—the Highlands, the Pinelands, and the Meadowlands—are protected environmental areas that are managed outside the usual municipal land use process.

- **Highlands**—The Highlands Water Protection and Planning Act was enacted in 2004 for the purposes of protecting a vital source of drinking water and preserving an area of diverse natural and historic resources. The Highlands Master Plan calls for future growth to take place in designated centers or, in certain areas, as clustered development. Complementary transportation investments in the Highlands can support development in designated areas, including efforts to expand transit, ride-sharing, and non-motorized travel options. This smart growth approach accommodates growth in the Highlands while protecting the environment, reducing infrastructure costs, and maximizing transportation system efficiency. The Highlands lies within portions of seven counties and 88 municipalities in the NJTPA region.
- **Pinelands**—In 1978, the Pinelands region was designated a National Reserve since it rests on top of one of the largest and cleanest sources of drinking water in the United States, the Kirkwood-Cohansey Aquifer. Development limitations in the Pinelands are intended to protect the aquifer's recharge capacity as well as rare plants and animals. Much of the Pinelands area falls outside the NJTPA region, but it does include portions of Ocean County. Any transportation projects designated for that portion of Ocean County must be in accordance with the Comprehensive Management Plan for the area, as overseen by the New Jersey Pinelands Commission.
- **Meadowlands**—The Hackensack Meadowlands Reclamation and Development Act, passed in 1969, works to simultaneously protect the natural and

unique resources of the area while promoting large scale economic development. The Meadowlands region also has its own planning agency, the New Jersey Meadowlands Commission. However, unlike the largely untouched ecosystems in the Highlands and Pinelands, many of the ecosystems in the Meadowlands have been heavily exploited and have sustained significant environmental damage over time. The Meadowlands is unique among the special regions because of its location in the center of a major metropolitan area. The Meadowlands consists of parts of 14 municipalities in Bergen and Hudson Counties.

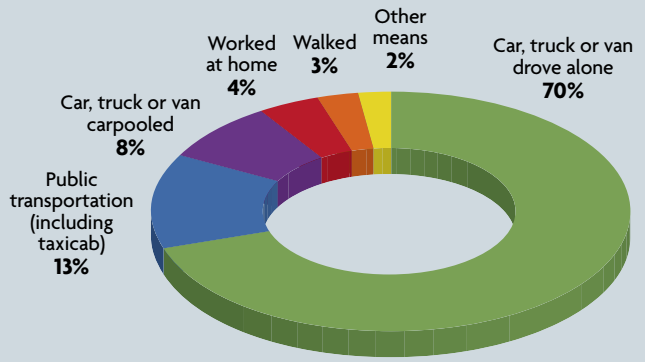
How land is developed has a lasting impact on the transportation network and determines the type and quality of transportation options available to those who live in a given area. Over the past several decades, a significant portion of the total land area in the NJTPA region has taken the form of low-density residential and commercial development in suburban areas. "Sprawling" land use patterns create significant negative impacts on the transportation system, including:

- The promotion of an auto-dependent lifestyle and the resulting increase of GHG emissions;
- Subjecting roads and bridges to far more traffic than they were designed to handle (i.e., congestion);
- Limiting the ability to provide public transit services and transportation alternatives; and
- Requiring increased initial capital and ongoing maintenance costs of extensive public infrastructure (roads, water, sewer, power, and other utilities).

Improving land use planning is one of the focuses of the State Strategic Plan, released in draft form in November 2012, and is a central theme of the Regional Plan for Sustainable Development now under development. Plan 2040, as a regional planning document, reflects these priorities.

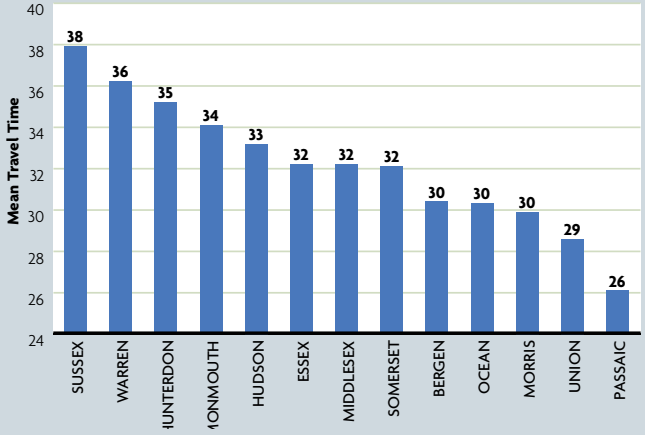
Brendan T. Byrne State Forest in the Pinelands region, Ocean County.

Figure 3-4:
Commuter Mode Share in the NJTPA Region, 2010



Source: US Census

Figure 3-5:
Travel Time to Work in the NJTPA Region, 2010



Source: Census 2010 ACS 1-Year Estimates

Reining in the worst aspects of sprawl has long been a challenge in New Jersey. Transportation investment decisions are largely made at the state, regional, and county levels and land use decisions occur at the local level, per the Municipal Land Use Law. New Jersey's municipal "home rule" governance can make it difficult to coordinate planning among levels of government to effectively address sprawl and to fully realize new economic development prospects in a sustainable manner. Public and private officials throughout the state increasingly recognize that improved land use planning should include greater efforts to redevelop land that is already connected to existing infrastructure, such as redevelopment around a train station for commercial and residential uses or reusing previously industrial sites for modern, cleaner freight and goods warehousing.

These approaches promise to help reduce the need for future transportation investments—for instance, homes and retail activities clustered closer together whether in suburban areas or rural villages help minimize driving, wear and tear on roads and allow efficient use of transit.

Transportation Trends

The factors discussed above—demographics, the economy, climate impacts and land use—influence the performance of the transportation system in meeting regional travel needs. This performance is also affected by the condition and the capacity of transportation infrastructure and is manifest in ongoing trends relating to how and where people travel and the obstacles they face. These trends are discussed below.

Commuting Trends

The region has an extensive multi-modal transportation system that provides many commuters with a variety of options for getting to work. However, access to multimodal options is limited to a relatively small geographic area of the NJTPA region and is directly influenced by the land use development decisions discussed earlier.

Figure 3-4 above left provides a breakdown of how commuters in the region travelled to work in 2010 and Figure 3-5 shows the travel time to work for the 13 counties of the NJTPA region in 2010.

Data from the American Community Survey (ACS) provides additional insight into the commuting trends across the NJTPA region.

- The percentage of commuters using public transportation increased from 11.3% in 2000 to 13% in 2010. Hudson County had the highest rate, 40% (second only to Manhattan), followed by Essex County, 21%.
- Over 287,000 of the region's residents (or over 9%) commute to Manhattan.
- Over 75% of commuters to Lower Manhattan and over 50% of commuters to Midtown and Upper Manhattan travel to work by transit, highlighting an ongoing need to improve trans-Hudson capacity.
- 70% of commuters drove alone, a rate lower than most major metropolitan areas across the country.

- 34% of residents work outside their county of residence and 14% work outside the state.
- The mean travel time to work remained constant at 31 minutes between 2000 and 2010, 6 minutes higher than the national average.
- Passaic County has the shortest average commute time of 26.0 minutes and Sussex County has the longest average commute time of 37.9 minutes.
- 3% of work trips were made by foot.
- The northeastern corner of the region contains the highest concentration of households without vehicles, primarily due to better transit options and more compact, pedestrian friendly land uses.
- From 2010 to 2040, VMT is projected to increase by as much as 20%, though these projections are highly contingent on assumptions about the future such as employment growth, population growth, and trip characteristics.

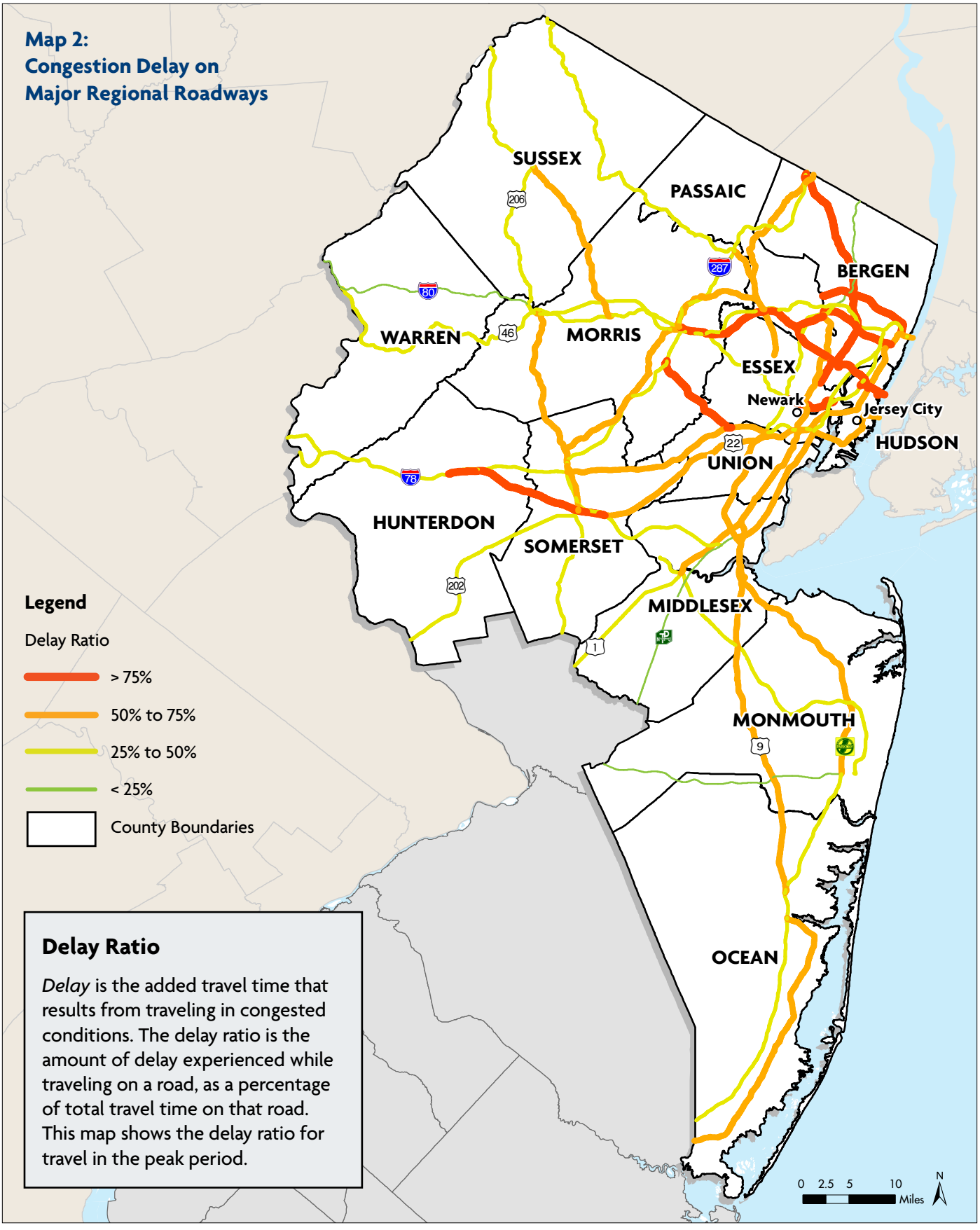
Commuting trends have a direct and lasting impact on how the transportation network operates and provides context for prioritizing the allocation of funds to maintain and improve it. As economic conditions improve and the region continues to grow, investments must be made to ensure the network can accommodate a significant increase in both local and regional trips being made by residents and businesses.

Further insights into the nature of travel and commuting in the region have been provided by a Household Travel Survey conducted in partnership with the New York Metropolitan Transportation Council (NYMTC) from 2010 to 2011. Among its findings:

- 54% of all trips are between home and destinations other than work (e.g., social/recreation, shopping, school, etc.); on weekdays, 23% of trips involve the workplace.
- Household composition plays a large role in determining how much people travel. The presence of children in the household produces higher trip rates (over 1.5 more trips per day) among women from two-parent families while trip rates for men remain relatively stable.
- Part-time employed persons tend to travel more than either full-time employed or unemployed persons while unemployed persons tend to travel more than full-time employed persons especially if a child is present in the household.
- Public transit serves 8% of all weekday trips in the region.
- Over 80% of commute trips into Manhattan use some form of public transit.
- For shorter trips (less than 1 mile), residents often walk; walking is also popular as part of longer trips (e.g., to/from public transit stops or parking spots). Walking is more prevalent for social/recreational, school and shopping trips than for work trips.
- In the region's densest urban neighborhoods, such as Hoboken, upwards of 30% of trips are walking trips. In large-lot suburban, exurban and rural areas, like portions of Monmouth, Hunterdon, and Warren counties, auto shares are over 90%.
- Lower income populations (making less than $30,000 annually) are more likely to use bus services (10% by low income population), or walk/bike (24%) as the main mode for their trips than those of higher income.

Lambertville, Hunterdon County.

Map 2:
Congestion Delay on Major Regional Roadways



Delay Ratio

Delay is the added travel time that results from traveling in congested conditions. The delay ratio is the amount of delay experienced while traveling on a road, as a percentage of total travel time on that road. This map shows the delay ratio for travel in the peak period.

Source: NJDOT, 2009; NJOIT, 2008; Esri, 2011

Congestion

The northern New Jersey transportation system provides enormous accessibility to the region, but congestion in many locations regularly hampers the movement of people and goods.

The NJTPA uses a federally mandated Congestion Management Process (CMP—see Appendix D) designed to systematically investigate the region's complex travel patterns and search for suitable approaches for improving the transportation system's convenience and reliability. The CMP examines not only the roadway system, but also the needs involving rail and bus transit, ridesharing, walking and bicycling, and freight transportation. The CMP points to mobility strategies to complement roadway investments to minimize the need for capacity expansions, realize greater system efficiency and protect the environment.

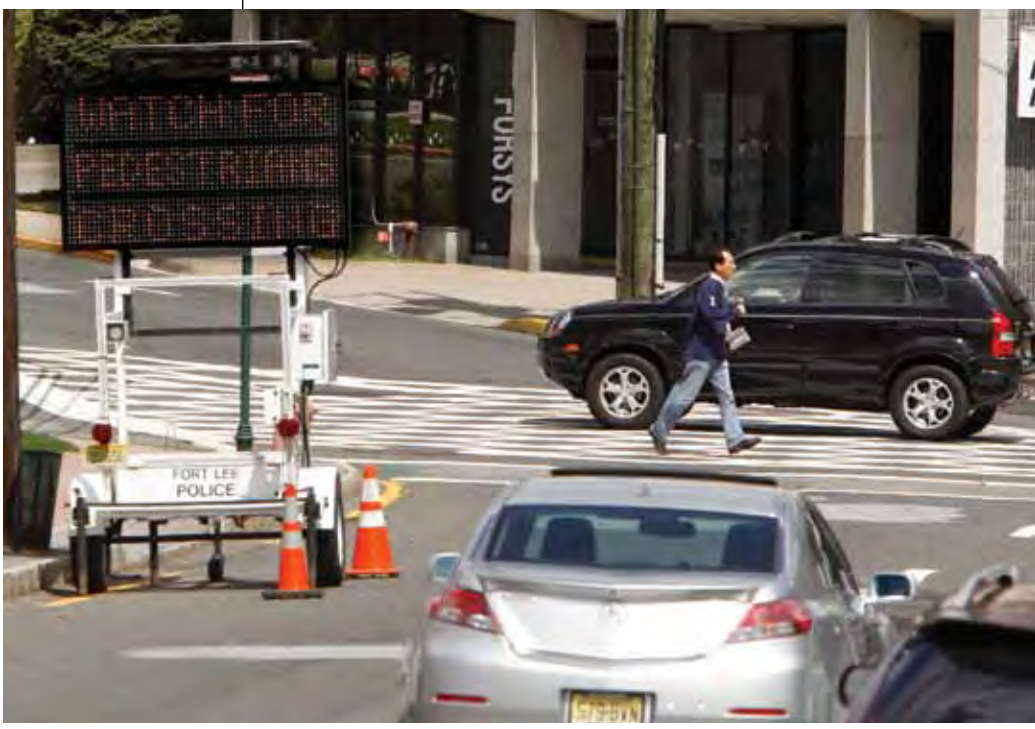
"Accessibility" is a key concept assessed by the CMP. When transportation works well, it puts travelers' desired destinations within reasonable reach —making them accessible. Accessibility is also fundamentally tied to where people live, work, shop, and play in the region; specifically, how far destinations are from one another and whether households and businesses are located where the transportation system can serve them best.

However, congestion, crowding, and unexpected incidents can hinder the region's accessibility, as can inefficient roads or transit connections, missing links such as sidewalks, or unavailable information on travel options. The cost of congestion can be measured in dollars, time, and its impact on quality of life.

Many of the region's interstate highways and state and county arterial roadways are subject to recurring high congestion levels. Most recognized are capacity issues relating to recurring morning and afternoon/evening peak congestion on major corridors leading to bridge and tunnel crossings into New York City. These include the New Jersey Turnpike, the Garden State Parkway, I-78, I-80, I-95, I-495, NJ 3, NJ 4, NJ 17, NJ 35, NJ 36, NJ 208, US 1, US 9, US 22 and US 46, as identified through the statewide Congestion Management System data. Along these routes, personal autos, commercial vehicles, transit and tour buses, and trucks serving regional and interstate travel converge and compete for limited available space to access the region's most densely populated and commercially intensive urban areas.

Additional routes including NJ 21, US 1&9, I-280 and others also serve important business districts including in Newark and Jersey City. Most of these high capacity routes traverse the region's most densely populated areas, where the feasibility to incrementally increase capacity may be neither locally desirable nor cost-effective. Although routine congestion on these routes presents challenges to the reliability of travel, it is largely an expected occurrence that businesses and individuals attempt to factor into their travel and location decisions. Map 2 provides a snapshot of congestion delays experienced across the region and the level of congestion along each corridor.

One of the most cost-effective ways to address congestion, whether at the corridor level or at a specific intersection, is through the use of ITS (intelligent transportation systems) technology. For example,



Fort Lee, Bergen County.

Map 3: NJ TRANSIT Regional Rail Systems

Courtesy of NJ TRANSIT, 2013

instead of adding another travel lane to a roadway to increase capacity, coordinated signals and smart intersections could achieve similar improvements to system performance at a fraction of the cost of construction. The benefits of ITS are not limited to reducing construction costs. Other benefits include lower emissions by reducing idling time, increased productivity by saving people and businesses time, and a reduction in crashes (particularly rear-end crashes that are more likely to occur in stop and go congestion).

Transit Trends

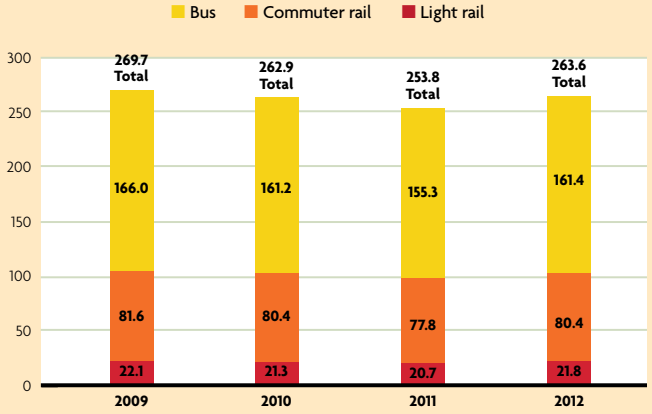
Transit ridership is once again increasing. During the recession, ridership decreased as a direct result of the job losses suffered in the region. The economic recovery process is slowly starting to bring ridership numbers back to pre-recession levels. This is particularly evident from the 2012 ridership numbers which show a growth in ridership even with the significant disruptions caused by Superstorm Sandy. As the economy recovers, ridership is projected to increase and return to pre-recession levels.

Ongoing efforts by the NJTPA, NJ TRANSIT, and partner agencies to improve access to transit facilities and facilitate transit-supportive land use around transit facilities are having a positive impact on ridership. For example, since Rahway was designated a Transit Village in 2002, several apartment buildings have been constructed within walking distance of the train station and several more are under construction or in the development review process. In addition, access to the station was improved with a new streetscape, improved street operations (conversion of streets from one-way to two-way), and the installation of traffic-calming measures. This type of development is the wave of the future and in high demand by the "millennial" generation.

In addition to NJ TRANSIT and franchise bus service, private bus operations are an important aspect of the regional bus system, serving customers largely in northern New Jersey urban areas such as Newark and Jersey City along with selected suburban and rural areas. They mostly serve major employment and commercial centers within the state and in New York City. Transportation Management Associations provide additional shuttle services in the region.

Other private bus operators, using smaller bus vehicles commonly known as jitneys, have been offering their services in portions of the region. They are independent non-franchise companies that operate primarily interstate service to New York City and some intrastate service in the northern part of the state. Dozens of operators and hundreds of buses provide direct service to the Port Authority Bus Terminal (PABT) and environs, the George Washington Bridge Bus Station (GWBBS), and the Journal Square bus terminal in Jersey City. Service is primarily in Hudson, Bergen, Essex and Passaic counties. The NJTPA has studied and characterized their operations and their impact to the overall transportation system. There are ongoing efforts to work with the region's stakeholders to rationalize and improve these transportation services in the region.

Figure 3-6:
NJ TRANSIT Ridership, 2009 to 2012
(Total annual in milllions)



Source: NJ TRANSIT's Annual Reports

Freight Movement Trends

Freight movement is a critical element of the regional economy, and an often under-appreciated necessity in our day-to-day lives. Without the freight industry, our packages would not show up at our doorstep, grocers would not be able to provide fresh food, shops would not have goods to sell and our modern economy would quickly grind to a halt. In all, 473 million tons of domestic freight is shipped or received in the region annually and 32 percent (or 900,000) of the region's 2.9 million jobs are in businesses that are highly dependent on freight. Commodities handled (in order

Bayonne, Hudson County.

by tonnage) include consumer goods, nonmetallic minerals, petroleum or coal products, chemicals, clay/concrete/glass/stone, food, and municipal solid waste.

The NJTPA region hosts the largest seaport on the East Coast (and third largest in the United States) and provides access to goods from around the globe. The region serves as both a gateway to the northeastern U.S. for imports, and a departure facility for an increasing volume of American exports. Port cargo tonnage more than doubled between 1991 and 2011 and the number of containers handled nearly tripled during the same period. Several freight rail yards in the region serve as the end points for rail lines, carrying large volumes of consumer and other goods, stretching to west coast ports (the so-called North American "landbridge"). Moving goods via truck is the industry-preferred method for short-haul trips, time sensitive deliveries, and is usually necessary for door-to-door service.

Newark Liberty International Airport (EWR) is a major domestic and international hub for express carriers, and, in 2011, the airport handled 1.5 million tons of air cargo, ranking it 10th nationally in air freight activity. Over the next two decades, air cargo around the world is expected to nearly triple, and the PANYNJ will continue to invest in EWR facilities and freight capacity to ensure that this region remains a major player and beneficiary in global cargo movement.

The strength of the region's freight sector is based on a number of key factors, including: the region's location in the center of a major consumer market; its extensive marine, rail, and highway infrastructure; and the extensive warehouse and distribution infrastructure—upwards of 1 billion square feet in the region. However, significant challenges are ahead. The 2015 completion of the Panama Canal Expansion will permit much larger vessels to reach the East Coast from the Pacific, coupled with already growing cargoes via

the Suez Canal, boosting containerized goods entering the Port of New York and New Jersey. To fully accommodate these larger vessels, the PANYNJ will be raising the Bayonne Bridge to 215 feet above the water, providing the same clearance as the Verrazano-Narrows Bridge in New York.

The NJTPA recently completed the "North Jersey Regional Freight Profile" and identified several trends through 2040 that will impact the regional economy and transportation network in northern New Jersey.

- Employment in freight-intensive industries is expected to grow by 28%.
- Overall commodity flows into, out of, and within New Jersey are expected to increase by about 43%.
- Compared to 2007, the modal share of freight movement by rail is expected to increase slightly, by water is expected to decrease slightly, and by truck to remain the same.
- The number of trucks travelling on portions of I-95 / New Jersey Turnpike is expected to increase by 30%, or as many as 6,000 trucks per day. The number of trucks travelling on segments of I-78 and I-287 is expected to increase by as many as 2,500 to 3,000 trucks per day.
- As touched upon in Chapter 4, other improvements are needed to the roadway system to accommodate increased truck traffic and on the freight rail network whose key lines are projected to be at or above capacity by 2040. Table 3-2 below shows projected rail traffic and projected years when each rail line is expected to reach capacity.

Safety Trends

Safety is a priority at the NJTPA and is factored into all aspects of transportation planning. Working in partnership with NJDOT, engineers, planners, local elected officials, and stakeholders, the NJTPA is committed to helping design, maintain, and improve a safe and reliable multi-modal transportation system that puts safety at the forefront today and through 2040.

Investment in safety improvements and policy guidance for roadway safety in the region is guided by the statewide Comprehensive Strategic Highway Safety Plan (SHSP), adopted in 2007 and currently being updated to meet MAP-21 requirements. The current SHSP identifies eight Emphasis Areas for New Jersey, including:

- Minimizing roadway departure crashes;
- Improving the design and operation of intersections;
- Curbing aggressive driving;
- Reducing impaired driving;
- Reducing young driver crashes;
- Sustaining safe senior mobility;
- Increasing driver safety awareness; and
- Reducing bicycle, pedestrian, rail, and vehicular conflicts.

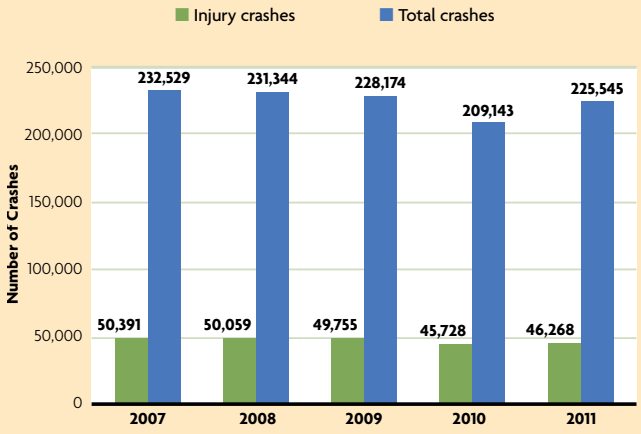
Figures 3-7 through 3-9 illustrate safety trends that have been identified in the NJTPA region. Despite continued growth in population and vehicle miles traveled, the regions crash rate has declined steadily from 2007 to 2011, mirroring what is happening at both the state and national level. Injury-related crashes in the region have also decreased between 2007 and

Table 3-2:
Current and Projected Freight Rail Traffic

Corridor	Maxiumum Freight Trains on Line	Projected Trains				Year Demand Exceeds Capacity
		2012.	2020	2030	2040	
CSX Trenton Line	38	20	27	11	34	Not at capacity
NS Lehigh Line	37	24	36	42	49	2030
Conrail Lehigh Line	60	44	64	72	83	2020
CR P&H	34	29	41	47	53	2020
CR National Docks	36	18	24	29	33	Not at capacity
CR Northern Branch	48	16	52	60	70	2020
CSX River Line	40	30	42	48	56	2030

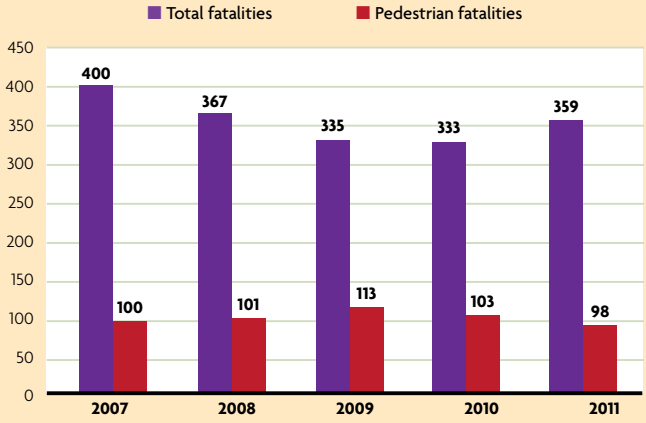
Source: Association of American Railroads; NJTPA Rail Freight Capacity and Needs Assessment to the Year 2040

Figure 3-7:
NJTPA Crashes 2007–2011



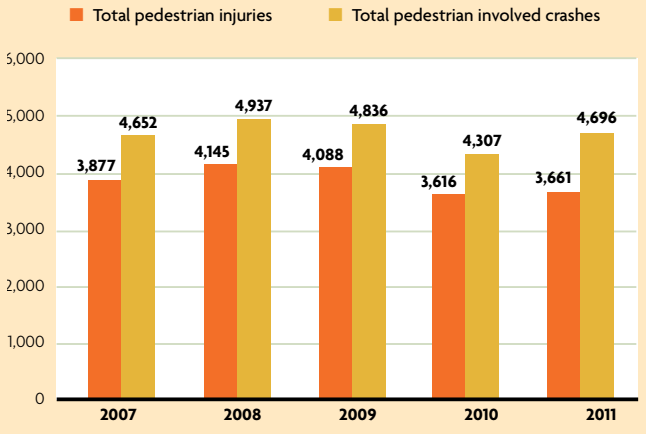
Source: Plan4Safety Crash Data

Figure 3-8:
2007–2011 NJTPA Regional Fatal Crashes



Source: Plan4Safety Crash Data

Figure 3-9:
2007–2011 NJTPA Region
Pedestrian Involved Crashes and Injuries



Source: Plan4Safety Crash Data

2011. Fatal crashes have also been on the decline since 2007, but increased in 2012. Current fatality rates for 2013, however, show the numbers once again moving in the right direction.

Pedestrian safety is a top priority across the region. While motorists are the majority of roadway users injured or killed in crashes, pedestrians are at particular risk. Targeted safety investments have improved pedestrian safety, but there is much still to be done. In 2011, there were 4,848 crashes involving pedestrians, claiming the lives of 100 pedestrians. This represents 28% of all fatalities, a troubling statistic since pedestrians account for less than 10% of all trips. Newark, the state and region's largest city, has experienced a significant number of pedestrian crashes over the past five years. The Federal Highway Administration (FHWA) has designated Newark a "focus city" in need of additional pedestrian safety improvements and education. The NJTPA is piloting a "Street Smart"pedestrian safety education campaign in cooperation with the NJDOT and the New Jersey Division of Highway Traffic Safety on five locations around the region: the City of Newark in Essex County, the City of Jersey City in Hudson County, Woodbridge in Middlesex County, Hackettstown in Warren County, and Long Beach Island in Ocean County. The program, following evaluation, will be rolled out statewide in subsequent years.

During the 10-year period from 2002 to 2011, there were 741 motorcycle fatalities in New Jersey. The greatest number of fatalities (99) occurred in 2006 while the lowest number (61) occurred in 2005. Motorcycle rider fatalities increased by 28 percent from 72 in 2010 to 92 in 2011. Historically, motorcycle deaths have accounted for approximately 10 percent of all traffic-related fatalities in the state. In 2011, motorcycle fatalities represented 15 percent of all traffic fatalities.

During the 10-year period from 2002 to 2011, there were 143 bicycle fatalities in New Jersey. Over the past five years, data shows that there continues to be a substantial number of bicycle-auto crashes in the region. According to the State of New Jersey Highway Safety Plan (FFY 2013), from 2007 to 2011 Jersey City and the cities of Newark and Paterson had the highest numbers of bicycle crashes. In Jersey City, 440 crashes resulted in 367 injuries and 1 fatality, followed by the

cities of Newark (276 crashes and 247 injuries with 1 fatality) and Paterson (240 crashes and 191 injuries). The municipalities with the highest numbers of fatalities during this period were Union City in Hudson County and Toms River in Ocean County, each with three bicycle fatalities during that time frame.

An analysis of bicycle crashes finds that bicyclists between 11 and 20 years of age have the highest crash risk. As the age of the bicyclist increases, the data shows there is a decrease in crashes. During the past five years, more severe crashes have occurred during the daylight hours than at night. The contributing behavior by both drivers and bicyclists most prevalent in bicycle-auto crashes are inattention, failure to obey a traffic control device and failure to yield the right-of-way. Bicyclists also increase risks by traveling the wrong way down a road.

Many factors contribute to crashes in the region, including age, alcohol/drugs, distracted driving, lighting, vehicle speed, and roadway design. The NJTPA partners with the New Jersey Division of Highway Traffic Safety, subregions, other government agencies and traffic safety related organizations to develop and implement education and enforcement initiatives focused on the attitudes and behavior of all roadway users as well as planning and programming capital investments to improve the overall safety of the transportation system.

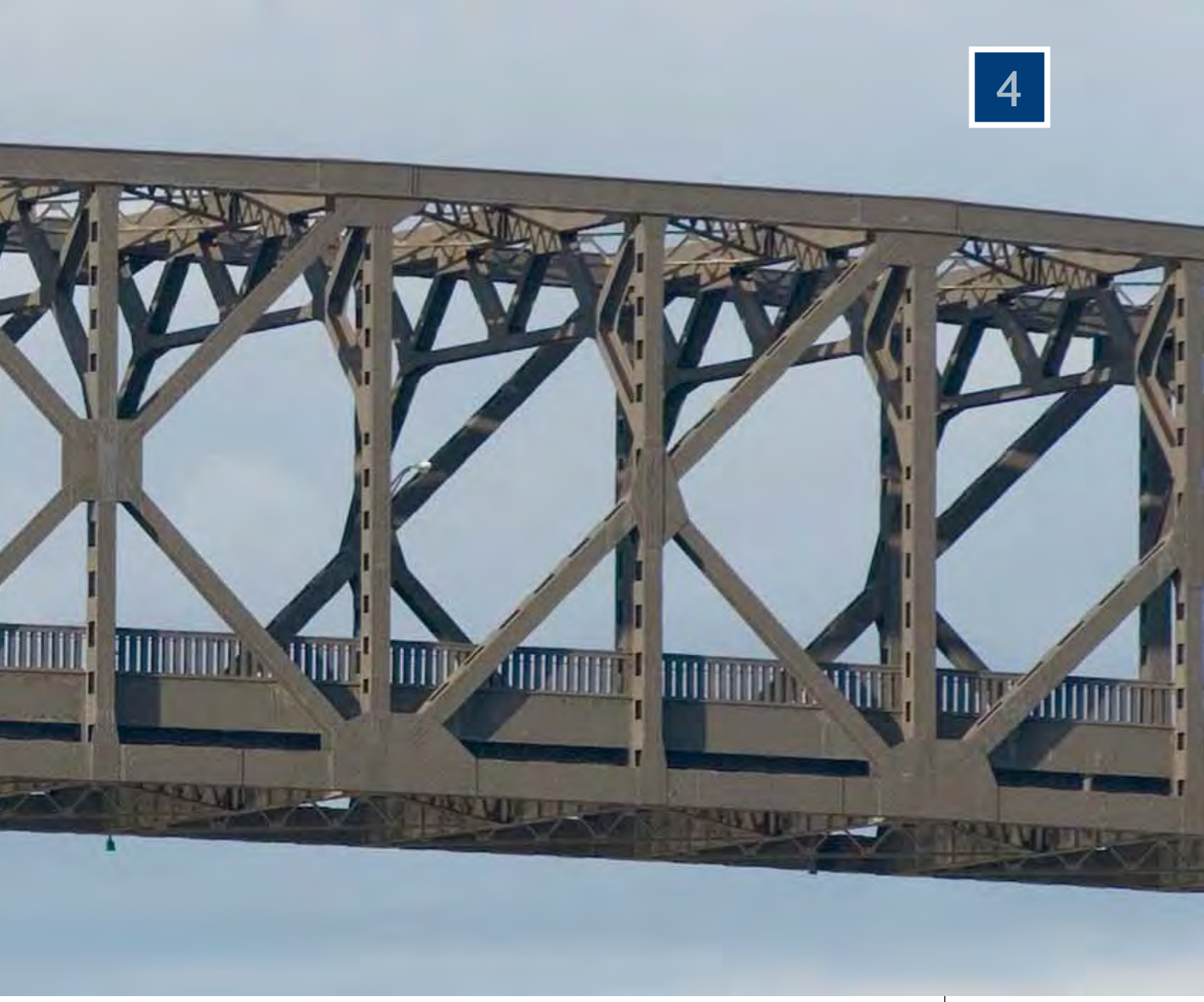
Summary

Plan 2040 recognizes that the NJTPA region is constantly changing in terms of the diversity and aging of the population, the types and location of land use development, the impact of commerce on transportation and land use, and the growing need to address environmental concerns. Each of these factors plays a role in how the transportation system is planned, designed, constructed, maintained, and used on a daily basis. These factors also provide the context for determining how and where limited financial resources are invested, as discussed further in Chapter 5. The contextual factors and transportation trends discussed in this chapter are being further explored during the course of the RPSD planning effort. They provide the foundation for the consideration of regional needs and project implementation discussed in Chapter 4.

Transportation Needs, Strategies, & Implementation

The region's multi-modal transportation system connects rural, suburban and urban areas. Local streets, county and state arterials, interstate highways, bus and rail transit routes, bike paths, sidewalks, ports and waterways, rail yards and other facilities—all of these assets make it possible for people to get to work, goods to get to market, services to be provided, and the economy to function effectively. However, much of the transportation system is aging and faces challenges in meeting the growing demands placed upon it every year.

- Approximately two-thirds of the federal transportation dollars spent annually in the NJTPA region go toward maintaining the existing system. As dis-



The Pulaski Skyway, Essex and Hudson counties.

cussed in Chapter 5 (Financing Plan 2040), limited funds are available for major expansion and enhancements to the system—such as widened roads, new rail lines and grade-separated interchanges. As a result, while the region is making incremental improvements, only rarely can it undertake transformative major projects that provide lasting solutions to congestion and other problems and that provide new mobility options. Costing hundreds of millions of dollars or more, such major projects are subject to years of fiscal, environmental, engineering, community, and other reviews before they can be considered for funding and they also must be carefully staged to avoid jeop-

Flooding from Hurricane Sandy in Belmar, Monmouth County.

ardizing other vital work.

Over the long term, the prospect of new transportation technologies will provide opportunities for progress. Yet, also in the long term, the region faces growing travel demands from an expanding population and economy. There is also the need to prepare for and address climate change impacts. As discussed in Chapter 5, added revenues must be considered after 2024 to address these needs, including undertaking strategic expansions of the transit system and key roadway and bridge improvements.

In the face of a future with great needs and limited funding, an effort to carefully target investments and make the most of available resources to improve mobility is vitally important. Ongoing coordination between transportation agencies at the federal, state, and regional level, as well as with transportation authorities, ensures that the collective transportation investments made throughout the state provide the most benefit to as many users as possible in a fiscally responsible manner. The MPO planning process, of which Plan 2040 is a key part, is dedicated to making balanced and cost-effective investment choices for the region. The NJTPA is guided by a Regional Capital Investment Strategy which provides investment principles (see Chapter 1) and target investment levels (see Chapter 5).

As touched upon in previous chapters, transportation investment decisions are most effective when coordinated with other regional needs including housing, land use, business development and a host of others. The RPSD is exploring measures to improve coordination and is developing recommendations that will help guide more comprehensive regional development. These recommendations will be addressed in the next RTP in 2017. As an interim analysis, this chapter outlines key transportation needs in the NJTPA region, considers a range of strategies that might address them, and outlines steps toward their implementation.

Climate Change and Air Quality Needs

The northern New Jersey region confronted the devastating impacts of extreme weather during Hurricane Irene in 2011 and Superstorm Sandy in 2012. The NJTPA and other transportation agencies have had to seriously consider that similar events will occur in the future based on the scientific consensus about continuing climate change. Extreme weather and sea level rise will continue to impact New Jersey and other coastal states.

Record rainfalls from Hurricane Irene resulted in widespread inland flooding, crippling portions of North Jersey's dense transportation infrastructure. In late October 2012, just over a year after Hurricane Irene, Superstorm Sandy barreled through the region resulting in large scale damage to the New Jersey Shore and low-lying areas. Nearly 2.7 million commercial and residential customers (approximately 30 percent of businesses and homes) across the state lost their power at the peak of the storm. Within the two weeks following Superstorm Sandy, more than 650 weather-related roadway incidents were reported in the NJTPA region such as flooding, sinkholes, road-collapses, downed

trees, downed electric poles or wires, crashes, emergency repairs and other incidents.

As a result, major roads experienced full lane closures for more than two days after the storm, including the Palisades Parkway, Holland Tunnel, George Washington Bridge Ramp, I-280, US-9, US-46, US-130, NJ-4, NJ-7, NJ-20, NJ-202, NJ-23, NJ-28, NJ-27, NJ-31, NJ-33, NJ-35, NJ-36, NJ-37 and NJ-72. In addition, bridges connecting the mainland and barrier islands in Ocean County suffered structural damage and portions of the New Jersey Turnpike and Garden State Parkway were flooded.

Transit systems across the metropolitan area were also disrupted. NJ TRANSIT saw unprecedented flooding at the Hoboken Terminal and in rail yards and suffered significant damage to rolling stock, bridges, and electrical systems that resulted in millions of dollars of damage and a loss of service for extended periods. Intercity rail service by Amtrak was halted due to flooded tunnels and damaged track. PATH stations and infrastructure in New York and New Jersey were flooded and resulted in limited service for several months after the storm. As a result, the state was required to provide supplemental bus and ferry service to enable people to get to work and to go about their daily lives immediately following the storm. Figure 4-1 to the right shows the impact of extreme weather events on the region's transportation network.

Every county, municipality, and transportation provider in the northern New Jersey region suffered some level of damage and needs ongoing financial investment to realize a full recovery. Since Superstorm Sandy, elected officials have led the effort to not only repair and rebuild what was damaged and destroyed, but to "harden" the transportation network to prevent and minimize future damage and limit system interruptions during future extreme weather events.

The impacts of these destructive storms, frequent flooding in the Passaic and Raritan River Basins, and three consecutive years of above average temperatures highlight the vulnerability of the transportation system. Since extreme weather events are expected to occur with greater frequency and intensity in the region, it is important to identify the climate change-related threats to the transportation system and to educate the public and elected officials about the need for transportation infrastructure resiliency investments.

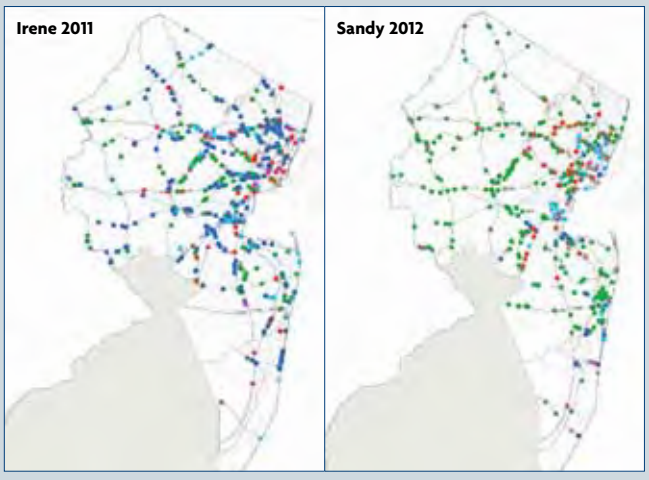
Climate change is also related to air quality in the region. As indicated in Chapter 3, the region has made progress towards meeting goals for reducing various pollutants. However, increased atmospheric temperatures caused by climate change can accelerate the interaction of NO_x and other pollutants with sunlight, increasing harmful ozone and smog. As a result, climate change threatens more unhealthful "ozone alert" days experienced in the region each year, which can be particularly dangerous for people with respiratory diseases like asthma. Addressing air quality and climate change impacts must go hand-in-hand.

Implementation

As discussed in Chapter 3, improving resiliency includes both preparing infrastructure to withstand environmental and other disruptions and returning the entire, multi-modal transportation system to normal operations as quickly as possible. The NJTPA has undertaken several important planning efforts to document and plan for a more resilient transportation system, including:

- Participating in a USDOT-funded study assessing the impacts of recent weather on transportation

Figure 4-1:
Impact of Hurricanes on Regional Transportation Network



Genset locomotive at Port Newark.

Transportation Clean Air Measures

The NJTPA has funded innovative approaches to reducing transportation-related emissions called Transportation Clean Air Measures (TCAMs) with federal Congestion Mitigation and Air Quality (CMAQ) funds. With guidance from the NJTPA Board and a Technical Advisory Committee, the program has advanced several priority TCAMs involving cleaner vehicle technology, reducing driving, minimizing idling vehicles and increasing awareness of such measures through education and public outreach programs. They have included:

Transit Locomotive Idle Reduction Program: Retrofit of automatic electric start-stop (AESS) units to reduce cold weather idling on 33 NJ TRANSIT passenger locomotives.

Private Diesel Freight Locomotive Retrofit/Replacement Program: Replace two switching locomotives in the Port Newark/Elizabeth yard with Ultra Low Emitting Genset Technology in cooperation with the Port Authority.

Trip/VMT Reduction Program: New shuttle services and a pilot bike-sharing program in partnership with the local Transportation Management Associations (TMAs).

Auto Idle Reduction Education/Awareness Program: Anti-idling educational materials developed by the New Jersey Department of Environmental Protection and used by TMAs in ongoing educational efforts.

Diesel Passenger Locomotive Retrofit/Replacement Program: Efficient and less polluting diesel engines as work train and service locomotives at NJ TRANSIT.

Off-Road Construction Contract Stipulations: Install pollution-control devices on off-road construction equipment used on selected NJDOT projects in urban areas. 175 retrofits were installed between from 2011 to 2012.

In 2011, the USDOT recognized the TCAM program as a model of national best practice. In 2012, the Northeast Diesel Collaborative awarded the NJTPA with a Breathe Easy award for its strong and consistent leadership in diesel reduction through its TCAM program.

assets within the greater New York–New Jersey–Connecticut metropolitan region. The study will identify critical areas and adaptation strategies to increase the resilience of those transportation assets in anticipation of future extreme weather events and the possible impacts of climate change.

- Completion of the NJTPA Regional Greenhouse Gas Inventory and Mitigation Plan. Since transportation accounts for 28% of direct greenhouse gas (GHG) emissions in the NJTPA region, this study produced a GHG reduction strategy tailored specifically for the NJTPA region; evaluated strategies that can be applied at the regional, county, and municipal level; and provided a user-friendly Toolkit of GHG reduction strategies that the NJTPA, its partner agencies, and member jurisdictions can include in all phases of transportation project development.
- Developing a Climate Resilience and Adaptation Plan for the Passaic River Basin. This plan will develop recommendations and strategies to mitigate the effects of climate change and identify projects that will create a more resilient transportation network throughout the Basin. This effort will require collaboration between the NJTPA subregions of Passaic, Morris, Union, Essex, Bergen and Hudson Counties, NJDOT, NJ TRANSIT, NJDEP, the New Jersey Office of Homeland Security, and the NJTPA.

Addressing the short-term impacts of extreme weather and long-term impacts of climate change is a top priority of the NJTPA. This is best accomplished

by ensuring that the planning, design, construction, and maintenance of all transportation facilities incorporates measures to protect assets from damage and facilitate returning the entire multimodal transportation network to full operation as quickly as possible. These standards are being implemented in cooperation with the NJDOT and the NJTPA subregions. The NJTPA is also working with communities impacted by storms to develop land use and emergency plans to meet this challenge effectively in the future, including developing evacuation plans and employing new technologies while responding to emergencies. As part of the of the RPSD effort, for example, the NJTPA is supporting the City of Hoboken's development of a storm water management strategy.

The NJTPA's partner agencies have many storm-related initiatives underway. Notably, NJ TRANSIT has begun preparing transit assets for future weather events including acquiring equipment storage sites in Linden and Garwood less vulnerable to flooding. It is also studying strategies for enhancing the agency's storm preparation efforts.

Regarding air quality, the NJTPA continues to carry out its federally mandated air quality monitoring and conformity activities. It also allocates Congestion Mitigation Air Quality (CMAQ) funding to projects and programs that contribute to improved air quality (see TCAM sidebar on previous page).

Bridges

Needs

Within the planning horizon of Plan 2040 many bridges will be nearing the end of their average design life expectancy of 50-75 years, requiring major rehabilitation or replacement. In addition, existing bridges must be continually maintained. The financial investment allocated to addressing these needs requires up to 30 percent of available funds and must be met through carefully selected and staged investments. The Bridge Management System, administered by the NJDOT in coordination with the NJTPA, systematically assesses bridge conditions, life cycle costs and other factors to select and prioritize bridge investments each year.

There are nearly 4,800 bridges in the NJTPA region that are vital links among elements of the transportation network. Bridges are owned by NJDOT, New Jersey Turnpike Authority, NJ TRANSIT, counties, and municipalities.

Overall bridge conditions must be considered when allocating limited resources to bridges. Based on the NJDOT's 2012 Bridge Management System, Table 4-2 on the next page shows that approximately 26% of the region's bridges under the jurisdiction of the NJDOT are functionally obsolete (do not meet current design standards for clearance, lane and shoulder width, and/or road geometry) and 9% are structurally deficient (the deck or bridge structure is deteriorated). It is important to note that a bridge classified as structurally deficient or functionally obsolete means it is a candidate for repairs or replacement, not necessarily that it is unsafe to use. The table also shows that while bridge investments made since 2009 have improved the overall condition of the region's bridges, there is a continuing need for bridge investments.

Current progress being made in addressing bridges will free up funds in future years to address other bridge needs as they arise. Over the near- to mid-term, the NJDOT foresees a steady reduction in the growth rate of the structurally deficient bridge backlog. In FY 2014, the NJDOT anticipates investing $787 million statewide, an increase of $97 million over the previous year. Over the long term, it is

Clifton, Passaic County.

Local Capital Delivery Program

The Local Capital Project Delivery (LCPD) Program is a competitive program which provides funding to NJTPA subregions to prepare proposed transportation projects for eventual construction with federal funding.

The initial phase of work in the LCPD program is the Concept Development Phase, in which sponsors identify and compare reasonable alternatives and strategies that address the purpose and need statement and select a preliminary preferred alternative (PPA). This program started in 2013 with four projects:

- **Monmouth County Bridge S-32**—Bridge replacement project over the Shrewsbury River in Rumson and Sea Bright.
- **Monmouth County**—Corridor improvements along CR 537 in the Borough of Freehold and Freehold Township.
- **Sussex County**—Corridor improvements along CR 653 in Montague Township.
- **Morris County Bridge 779**—Replacement of the Openaki Road Bridge and Dam over Den Brook.

The next phase is typically the Preliminary Engineering Phase, in which projects will be further developed and refined to a level of detail necessary to receive federal environmental approval through the NEPA (National Environmental Policy Act).

This work enables a project to be considered for inclusion in the NJTPA's annual Transportation Improvement Program (TIP). Projects must be included in the TIP to receive federal funding for final design, right-of-way acquisition, and construction.

likely that another wave of bridges throughout the region (mostly built during the 1950s and 1960s) will come due for repair or replacement.

Counties and municipalities also own bridges and are responsible for their maintenance, an ongoing expense with a significant impact on municipal and county budgets. State funding through the Municipal Aid program is available to support local bridge projects and the County Aid program to support county bridge projects, but funding is limited, resulting in a continuing backlog of repairs.

Table 4-3 shows the number of bridges by county in the NJTPA region that are in need of repair or replacement. To meet existing county bridge needs for the NJTPA region would cost over $3.6 billion in current dollars. To put this in perspective, the annual transportation program for the NJTPA region is approximately $2 billion for all transportation modes; and in FY 2013, the County Aid program for NJTPA counties (which can be used for both road and bridge projects) was $190 million.

Municipal bridge needs are far less than those of the counties. Municipalities own less than 0.1% of all bridges in the region, but there is still a need for

Table 4-1:
Bridges in NJTPA Region by Ownership

Bridge Owner	Quantity
Major County Bridges	1960
NJDOT	1720
NJ TRANSIT	153
City / Town	9
Turnpike	855
All Other	96
Total for NJTPA Region	**4793**

Source: NJDOT 2012 Bridge Management System

Table 4-2:
NJDOT-owned Bridges in the NJTPA Region

NJDOT Bridge Conditions	2009	2012
Not Deficient or Obsolete	56%	65%
Structurally Deficient	11%	9%
Functionally Obsolete	33%	26%

Source: NJTPA Rail Freight Capacity and Needs Assessment to the Year 2040

ongoing state funding of approximately $8.7 million annually.

The NJTPA assists its subregions in addressing priority local bridge and roadway needs through its Local Capital Delivery Program (see sidebar) which supports projects eligible for federal funding.

Implementation

In the near- to mid-term, analysis conducted through the NJDOT Bridge Management System shows improvement in addressing the backlog of needed bridge investments. Given the many waterways in the region and the age of the region's transportation network, bridge maintenance and repair will always be a large share of needed expenditures. The systematic assessments and preventive maintenance now being undertaken, along with current large scale bridge projects, will help moderate the extent of future needed investments. This may allow for additional funding for the Municipal and County Aid Programs, expansion of the Local Capital Delivery program, or similar programs. Among the large scale bridges being addressed:

- Route 1 & 9, Pulaski Skyway—Essex / Hudson Counties, $1.5 billion, construction in Spring 2014
- Route 139 Viaduct—Hudson County, $200 million, underway
- Route 72, Manahawkin Bay Bridges—Ocean County, $350 million, underway
- Route 3, Route 46, Valley Road and Notch/Rifle Camp Road Interchange—Passaic County, $175 million, final design underway
- Route 37, Mathis Bridge EB over Barnegat Bay—Ocean County, $85 million, final design pending
- Route 7, Wittpenn Bridge—Hudson County, $700 million, underway

In the long term, new funding will be required to continue the progress already made, attend to the next wave of bridges needing replacement or reconstruction, and accommodate the demands of an ever growing population and economy. The impacts of climate change are a critical concern as bridges are particularly vulnerable to storms and flooding even as they are needed for evacuation routes and movement of critical supplies and people in an emergency. Priority funding should be devoted to improving the resiliency of the region's bridges.

Table 4-3:
County-Owned Bridge Needs

County	Number of Major County-Owned Bridges	Structurally Deficient	Functionally Obsolete	Number of Minor County-Owned Bridges	Number of Minor Bridges to Repair or Replace	Total Costs (millions)
Bergen	166	29	44	503	290	478.0
Essex	133	18	20	193	120	234.3
Hudson	24	2	8	3	3	390.6
Hunterdon	230	36	65	600	411	277.1
Middlesex	155	8	20	84	71	162.5
Monmouth	206	56	48	315	246	548.5
Morris	205	21	57	228	157	258.3
Ocean	112	5	11	112	65	141.5
Passaic	127	26	25	171	131	357.8
Somerset	218	24	29	485	358	306.5
Sussex	113	14	26	330	322	175.1
Union	128	7	16	274	230	169.2
Warren	138	11	27	364	249	155.3
TOTAL	**1955**	**257**	**396**	**3662**	**2653**	**$3,654.6**

Source: NJDOT–Major Bridges (2011) and NJAC–Minor Bridges (2009). Major bridges have a span greater than 20 feet and minor bridges have a span between 5 feet and 20 feet.

Roads

Needs

Plan 2040 recognizes the need to keep the regional roadway system in a state of good repair through continued investments focused on preservation and maintenance—the "Fix It First" RCIS Principle. It also recognizes the need for well-targeted investments to address bottlenecks, safety hazards, congestion, and other problems while improving the efficiency of the network.

As VMT increases, so does the wear and tear on the roadway network. Many of the key roadways in the region were built over 50 years ago and are due for major overhauls. As a result there is a growing backlog of repair work on state, county, and local roads due to limited funding. This work includes a range of activities such as minor signage, large and small safety improvements, resurfacing, and full reconstruction. Roads that show the most deterioration generally get the highest priority for funding. Where possible, efforts are made to perform cost-effective preventive maintenance to extend the life of a roadway and to limit the financial impact over the long term.

Maintaining and improving the roadway network is complicated by the vast amount of travel in the region and the need to perform maintenance in a manner that avoids excessive interruption in the flow of people and commerce along key corridors.

Regarding resurfacing needs, the NJDOT employs a technically sophisticated pavement management system to balance engineering, economic, and life-cycle considerations. The NJDOT is targeting at least 80% acceptable condition by 2020.

According to the Pavement Management System, more than half (56.8%) of the NJDOT-maintained system is currently deficient and almost 60% of the system is beyond its planned service life. As VMT increases by 20 percent and with freight traffic in the region projected to increase by over 40 percent by 2040, the wear and tear on the roadway system will continue to increase and add to maintenance needs.

Table 4-4 below left shows the change in pavement conditions from 2009 to 2011. While some categories saw improvements, the table also illustrates the continually growing need for additional investment in the maintenance and upkeep of the regional roadway system.

Beyond resurfacing and maintenance, investments must continue to enhance and expand the roadway system. Expanding or adding new roads is a limited option for most locations due to high costs, environmental impacts, and the likelihood that capacity expansion may provide only temporary congestion relief, inducing additional traffic and contributing to sprawl. However, capacity expansions will be appropriate for some locations, often matched by transit, travel demand management and land use measures to limit their negative impacts and sustain their benefits. Other targeted roadway strategies seek to improve the efficiency or "throughput" of roadways including:

- *Improve Operation of Roadways, Intersections, and Interchanges*: This can include signalization, signage upgrades, intersection geometry modifications, lane and shoulder widening, channelization, restriping, and new turning or acceleration/deceleration lanes, full grade separation, or roundabouts.
- *Address critical "missing links"* in the transportation system that benefit travelers and freight and reduce congestion and air pollution. One example of this connection is the planning effort that the Port Authority and New Jersey Department of Transportation will embark on regarding the completion of access between Interstate 278 and Route 1/9, which will remove potentially several hundred

Table 4-4:
Change in Pavement Conditions from 2009 to 2011

Pavement Rating	2009	2011
Good	11.0%	18.7%
Fair or Mediocre	42.4%	24.5%
Deficient - Roughness	13.1%	10.3%
Deficient - Distress	21.1%	30.3%
Deficient - Both	12.4%	16.2%
Total	**100.0%**	**100.0%**

Source: NJDOT 2011 Pavement Management System

Table 4--5:
Annual Need for County Roads

Annual Need	County (millions)
Resurfacing	47.9
Construction & Reconstruction	47.1
Design & Contract Administration	37.6
Total	**$132.6**

Source: New Jersey Association of Counties

cars per day from local streets in eastern Union County.

- *Manage Roadway Access*: Improving the location, spacing and design/operation of driveways, median openings and street connections, and coordinated planning of adjacent land uses as called for in the state Highway Access Code.
- *Implement Intelligent Transportation Systems and Incident Management*: Technological improvements (discussed later in this chapter) can be used to improve traffic flow, lessen the impacts of incidents such as vehicle breakdowns or crashes, and provide real-time information to help drivers speed their trips by changing routes or modes in response to congestion or incidents.

Delaware Water Gap area, Warren County.

In addition to NJDOT-owned roads, each county and municipality owns and maintains the local street network. Because many of these roads are not on the Federal-aid system, work on them is generally not eligible for federal funding and must rely on state and/or local transportation funds. These local roads are experiencing the same need for investment and the need to address the growing backlog of maintenance. In the NJTPA region, counties own 3,795 centerline miles (56% of all county roads in the state). Table 4-5 provides an overview of the annual need for county roads. This is in additional to the approximately $3.6 billion in county bridge needs discussed earlier. Given that local aid for roads and bridges currently totals $190 million each year, counties and municipalities will continue to confront a growing backlog without increased support.

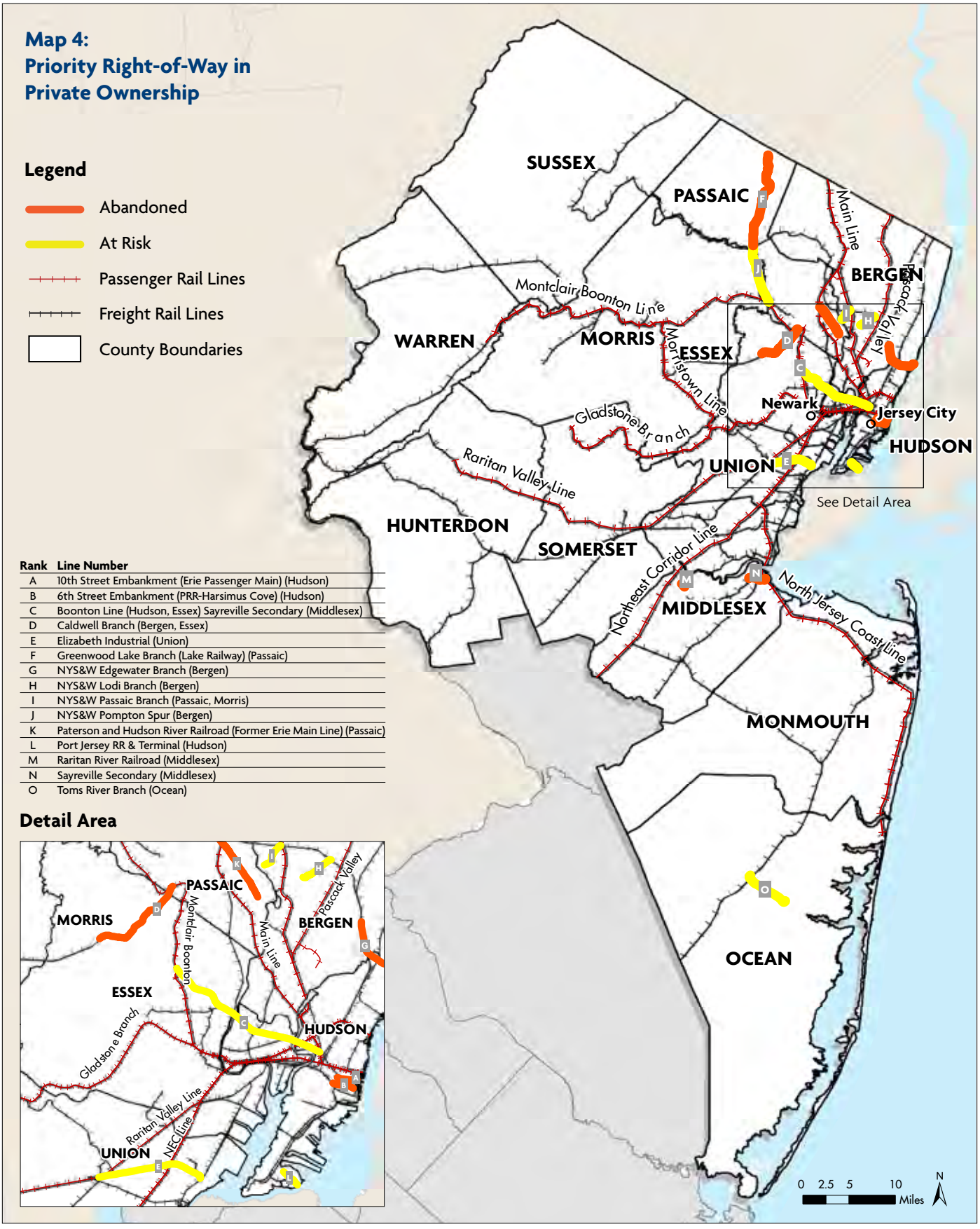
Implementation

The implementation issues for roadway needs mirror those for bridges. In the near- to mid-term, significant progress can be expected in attending to maintenance needs and reducing project backlogs. This will be possible through use of the NJDOT management systems to help guide maintenance for the roadway system. Adoption of performance measures (see Chapter 1), will improve the region's ability to identify cost-effective projects to enhance or expand roadways (and other infrastructure elements). Roadway expansion is considered as a last resort, recommended only after extensive analysis and in conjunction with suitable travel demand management, operational and public transit service measures.

Also, as in the case of bridges, new long-term funding commitments will be required to continue the progress, meet accruing needs, and accommodate the demands of a growing population and economy. Understanding and planning for the impacts of climate change on roadways is increasingly important and is incorporated into current roadway planning efforts. However, meeting the additional costs that resilience and adaptation measures will incur remains a challenge that must be addressed.

The roadway network will particularly benefit from technological advances. These include connected vehicle technologies, allowing cars to communicate with each other (or even self-driving cars) as well as operations management relying on real-time data. Such technologies promise to change the way roads are used, free up capacity, improve safety, and reduce roadway operating costs. They could potentially

Map 4:
Priority Right-of-Way in Private Ownership



Rank	Line Number
A	10th Street Embankment (Erie Passenger Main) (Hudson)
B	6th Street Embankment (PRR-Harsimus Cove) (Hudson)
C	Boonton Line (Hudson, Essex) Sayreville Secondary (Middlesex)
D	Caldwell Branch (Bergen, Essex)
E	Elizabeth Industrial (Union)
F	Greenwood Lake Branch (Lake Railway) (Passaic)
G	NYS&W Edgewater Branch (Bergen)
H	NYS&W Lodi Branch (Bergen)
I	NYS&W Passaic Branch (Passaic, Morris)
J	NYS&W Pompton Spur (Bergen)
K	Paterson and Hudson River Railroad (Former Erie Main Line) (Passaic)
L	Port Jersey RR & Terminal (Hudson)
M	Raritan River Railroad (Middlesex)
N	Sayreville Secondary (Middlesex)
O	Toms River Branch (Ocean)

Source: NJOIT, 2008; NJ TRANSIT, 2011; NJDOT, 2011; NJTPA, 2013; Esri, 2011

provide a significant financial savings to the region over the long term. At the same time, improved land use promises to reduce the number and length of trips, leading to a more efficient road system. The completion of the RPSD in 2015 will offer recommendations for accomplishing improved coordination of transportation and land use and suggest new strategies for efficient use of the regional roadway network.

Transit

Needs

The regional transit network, consisting of rail, bus, and ferry facilities, provides a fast and reliable means of moving nearly one million travelers each weekday. It diverts thousands of vehicle trips, helps lessen congestion, safeguards air quality, reduces greenhouse gas emissions, provides essential travel for the disabled and those without cars, and contributes to the region's quality of life. The NJTPA seeks to support the RCIS Principle to "Expand Public Transit" by prioritizing support for enhanced transit services across the region. Plan 2040 calls for continuing strategic investment to make transit a viable alternative for an increasing share of residents. Appendix E, entitled "Future Transit Needs," discusses future investment needs and options in detail.

The current funding priority is for maintaining the system in a state of good repair and operating it in a safe and secure manner. This includes replacing vehicles (buses, railcars, and locomotives) as they age as well as attending to 600 rail bridges, over 500 miles of track, signal systems, stations, and other infrastructure—most of it located in the NJTPA region.

Funding is also needed to improve the operation and expand the capacity of the existing core rail and bus systems. Some core rail system improvement projects include the Midline Loop near the Jersey Avenue station on the Northeast Corridor, extending the turnback track near the Summit station on the Morris & Essex Line, track improvements along the Northeast Corridor, adding tracks to other heavily used lines, upgrading signals, installing Positive Train Control (PTC), and upgrading stations to ADA standards.

Planning for long-term system expansion is a regional priority and involves preserving rail rights of way (ROW) for future transportation projects. The NJTPA conducted the Rail Right-Of-Way Inventory

Expanding Access to New York City

Transportation agencies throughout New Jersey and the greater metropolitan region recognize the need for additional trans-Hudson transit capacity. The NJTPA is committed to working with partner agencies to address this vital regional need.

Various studies are underway to examine ways to increase trans-Hudson bus, rail and ferry capacities. The Gateway Project, being led by Amtrak, is focused on adding train capacity between New Jersey and Manhattan. The Gateway Project would provide two additional tunnels under the Hudson River for Amtrak and NJ TRANSIT, provide access to an expanded New York Penn Station and the future Moynihan Station, and replace the aging Portal Bridge over the Hackensack River. As a companion initiative, the Federal Railroad Administration is managing the "NEC Future" effort examining the future needs of the entire Northeast Corridor from Washington, D.C. to Boston. The Port Authority of NY & NJ is also examining the capacity of the bus system using the Route 495 Exclusive Bus Lane, Lincoln Tunnel and Port Authority Bus Terminal.

Other planning efforts are focused on PATH, ferries and possible extension of the NYC #7 Subway Line to New Jersey. Except for PATH, which has funding to expand its trans-Hudson capacity, the other proposed transit mode projects are still being progressed through their transportation and environmental planning phases. It is anticipated that once these efforts are sufficiently prepared, an effort to form a workable fair partnership of the right stakeholders will be initiated to fund and advance the implementation of one or more projects over the time period between now and 2040.

and Assessment study and identified specific abandoned and at-risk rail ROWs as being strategically important to the future commuter transportation needs of the region. Using a multi-tiered screening process, a list of priority ROWs that should be considered for preservation was created. Map 4 on page 62 illustrates those ROWs identified in the study for preservation.

Increased rail system capacity is needed to accommodate projected growth in transit demand. Additional trans-Hudson rail capacity is a prerequisite for improving and enhancing rail service into New York Penn station and connecting the region with the economic and cultural center of the larger metropolitan area (see Expanding Access to New York City sidebar, page 63).

There are two light rail systems operating in the NJTPA region: the Hudson Bergen Light Rail (HBLR) and the Newark Light Rail. Each system requires ongoing maintenance and two proposed extensions

Bus Rapid Transit in Northern New Jersey

Bus rapid transit (BRT) is the subject of extensive research and analysis across the region. While BRT lines vary around the country, common features include fewer stops spaced further apart than conventional bus lines, pre-boarding ticketing systems, level boarding, and, in some cases, dedicated lanes or mechanisms to control traffic light timing. Some of the operational benefits of BRT include flexibility (able to divert around incidents), quicker implementation, and faster running times. BRT also offers lower capital costs than light rail.

Newark, Essex County.

The NJTPA has funded several studies to examine BRT and its potential throughout the region and continues to work with partner agencies and organizations to support BRT efforts, including:

- **Evaluation of Next Generation Bus Rapid Transit (BRT) Services in the NJTPA Region**—The study evaluated the planning and implementation processes for BRT systems in environments commonly found in the NJTPA region. The study identified potential BRT corridors to analyze as case studies with application throughout the NJTPA region and beyond.
- **Bayonne/Greenville/Journal Square BRT**—This Subregional Study focuses on improving transit access to Journal Square for the residents of Bayonne and southern Jersey City. The analysis will aim to increase access to employment centers, educational institutions, the PATH Journal Square Transportation Center, and support quality of life.
- **US 1 BRT**—The study evaluated route alternatives, including the use of existing roads with improvements and new alignments, as well as station locations, ridership, potential for coordination with private sector development, municipal plans and cost effectiveness throughout the Route 1 corridor in Middlesex, Somerset and Mercer counties.
- **Union County Sustainability Transit Corridor**—Initial planning is underway exploring an innovative bus rapid transit service along a multi-town corridor in the county, including bicycle and pedestrian facilities.
- **The Bergen County BRT Implementation Study**—The County of Bergen and NJ TRANSIT have initiated a study to examine how BRT may improve travel within Bergen County.

Old Bridge, Middlesex County.

to the HBLR line will require a major capital investment and increasing core light rail system capacity. NJ TRANSIT is testing a prototype extended light-rail vehicle that would offer 50 percent more seating capacity per vehicle. As the system grows and capacity is added, maintenance and train storage facilities may need to be expanded. This is viewed as a longer range need which cannot yet be predicted as to timing or scale of need.

The PATH system recently completed replacement of its entire transit fleet, and is replacing its signal system, which will bolster peak-period capacity. Beyond these investments, in September 2012, the Port Authority's Board of Commissioners directed staff to update a previous feasibility analysis for a potential extension of the PATH World Trade Center service from its present terminus in Newark Penn Station to the vicinity of the Northeast Corridor transfer station, providing a connection with AirTrain/Newark to airport terminals and other facilities. The assessment, now underway, also encompasses an evaluation of the project's potential to serve area commuters as well as airport travelers and employees. The proposed extension would create a direct link between the airport circulator system and Lower Manhattan, as well as commercial centers in Jersey City and downtown Newark.

Bus service accounts for about two-thirds of overall system ridership. It is provided by both NJ TRANSIT and private bus companies, and consists of both intra-state (local and commuter) service and inter-state (primarily commuter) service. Addressing core bus system needs such as additional bus garages and layover locations is vital to maintaining quality bus service, meeting projected future transit demand, and addressing essential mobility needs of transit dependent populations, especially for riders living in more suburban areas with land uses that are less transit friendly. The Port Authority Bus Terminal in midtown Manhattan is the nation's largest bus terminal and the world's busiest. In 2012, more than 65 million passengers passed through the terminal. The Port Authority Bus Terminal is nearing its capacity to accommodate new or expanded bus service.

Bus rapid transit (BRT) service, which offers the speed and efficiency of a light rail system, but with lower costs and quicker implementation, provides the region with an opportunity to expand transit service especially during difficult financial times. As identified in Appendix E and the BRT sidebar at left, the NJTPA has worked closely with NJ TRANSIT to examine potential BRT applications in the region. Future BRT or BRT-like service will build on existing systems such NJ TRANSIT's GoBus and the operational experience gained from the use of shoulders along US 9 as peak hour bus lanes.

As discussed in Chapter 5, capital funding for implementing expansions to the bus and rail system over the long term will be very limited and NJ TRANSIT faces constraints on its operating budget. These constraints must be addressed to insure that the agency can meet the growth in demand for both bus and rail services over the long term. As a result, projects must be carefully studied and screened and must be coordinated with appropriate land uses, as discussed in the implementation section below.

NJ TRANSIT and the Port Authority of NY & NJ (operator of the PATH system) have committed to improving the resiliency of their systems to prevent future damage and to prepare for future extreme weather events. Investments include upgraded power systems, communications, maintenance facilities, emergency control centers as well as continued improvements to the security of the transit system.

Private bus carriers provide service to and from New York City and private ferry services, such as NY Waterway and Liberty Landing Ferry, provide service between the Hudson River waterfront, Manhattan, and the shore area. The NJTPA supports efforts to facilitate multi-modal access to bus stops and ferry terminals through improved access for pedestrians and bicyclists as well as through transit supportive land use near ferry terminals.

Implementation

Rebounding from the damage caused by Superstorm Sandy, the northern New Jersey transit system is in a position to achieve and maintain a state of good repair in the near- to mid-term, with needed upgrades for resiliency, security and core system capacity. Vehicle replacements are being accomplished at a needed pace. The challenges facing the system, as noted in Chapter 5, relate to continued pressure on operating funding and the need for capital funding to expand the system to meet growing demand, especially over the long term. The need for additional rail capacity across the Hudson River must be addressed on a cooperative basis by New York, New Jersey, Amtrak, and federal partners.

The numerous proposals for rail system expansions must be fully studied. To advance toward implementation, candidate projects must be physically and operationally feasible; be able to generate sufficient ridership and revenue; result in projected public benefits that will exceed the capital and operating costs, complete environmental review and obtain community acceptance.

In addition, expansions to the rail system must be accompanied by transit-supporting land use measures. These include creating walkable neighborhoods able to support development near transit stations and hubs and adapting existing major employment and retailing clusters to make them more accessible by transit. Without serious efforts to realize transit-supportive measures, many transit system expansions will not be viable from a policy, financial, and operational aspect. Expanded bus or BRT-type services may be appropriate for some markets. The RPSD is now exploring options for promoting transit-supporting land use, including funding demonstration projects around the region. The RPSD recommendations relating to transit will be integrated into the RTP update in 2017.

Although the NJTPA does not contribute financially to the capital and operating expenses of PATH, ferry services, and private bus operations in the region, the NJTPA is committed to investing capital and planning funds that support improved access to transit facilities and sustainable land use development patterns around transit facilities. Capital investment by the public sector in improvements to ferry terminals, vessels and supporting facilities will be considered to ensure their viability for meeting everyday travel needs as well as the need for redundant services during emergencies when normal trans-Hudson transportation is disrupted. Other vital transit services are provided by NJ TRANSIT, counties, many municipalities and non-profit organizations for senior citizens, persons with disabilities and low income

Weehawken, Hudson County.

residents with limited job access. NJTPA's involvement in updating the Regional Coordinated Human Services Transportation Plan (see next section) helps support these services.

The NJTPA also encourages and supports measures to facilitate access to the transit system and connections to a wide range of destinations. These create the kind of intermodal system that allows residents to routinely consider transit as an alternative for all or part of their trips. Among the key strategies that must be pursued: expanding park-and-rides, supporting local shuttles, developing new transit hubs, better accommodating bicycles on buses and trains and at stations, implementing fare automation and integrating fares across modes/systems, expanded real time transit information systems for travelers, and supporting Transportation Management Associations (see TDM section below).

Transportation Demand Management (TDM)

TDM focuses on strategies that increase transportation system efficiency by emphasizing the movement of people, rather than motor vehicles. It gives priority to more efficient modes (such as walking, cycling, ridesharing, public transit, and telework) and encompasses car sharing, bike sharing, guaranteed ride home programs, traffic calming measures, and shuttle services. Some of these options are already available in the NJTPA region and others may be viable for implementation in various parts of the region. Although the region has an extensive transit system, getting people from their transit station or facility to their final destination is an ongoing challenge—it is commonly referred to as the "last mile."

Transportation Management Associations (TMA) are the primary implementers of TDM strategies such as shuttles, carpools, and providing real-time traffic and transportation information. Seven of the eight TMAs in New Jersey serve the NJTPA region and, since 2011, the statewide TMA program has been administered by the NJTPA.

Needs

TDM options are supported through a variety of means and organizations from the public, private and non-profit sectors. For instance, government agencies and TMAs often cooperate with employers to promote car/vanpooling, telework or flexible workhours policies to help reduce peak hour highway and transit congestion. Many counties, municipalities, and private employers operate shuttle services between train stations and high density employment areas. Municipalities are encouraged to ensure that sidewalks are built and maintained, especially in areas with high pedestrian volumes such as main streets and around transit facilities.

Plan 2040 supports existing and ongoing efforts to provide commuters, residents, and businesses with as many transportation options as possible, options that are tailored and suited to particular land uses. As the region's economy and population grows, TDM is necessary to help reduce congestion and better manage the existing system.

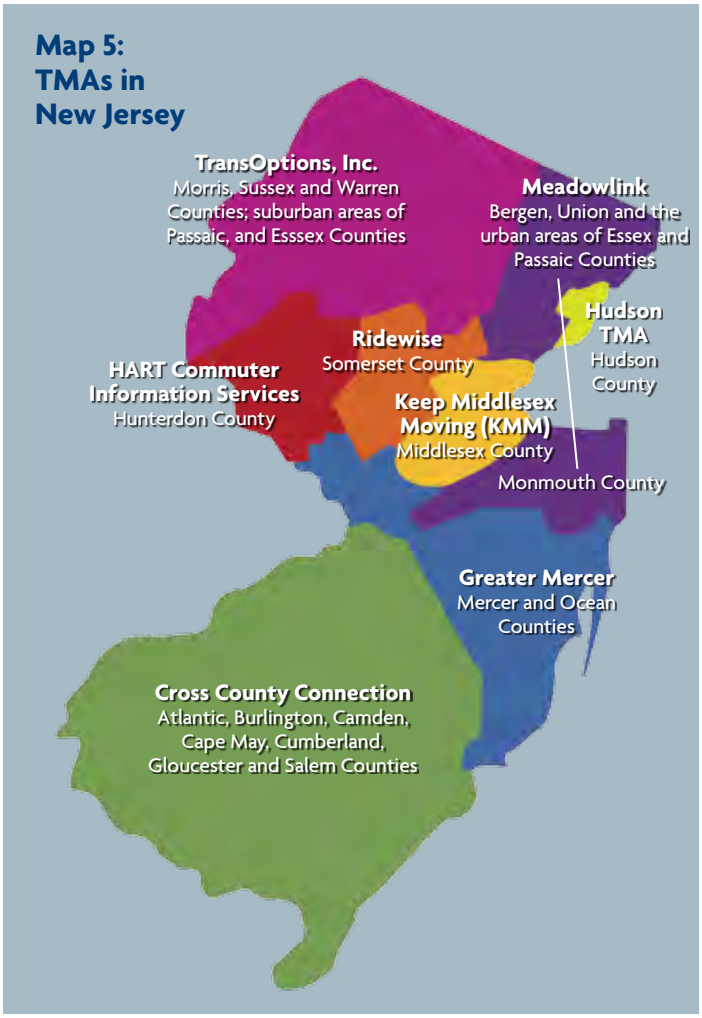
Implementation

Plan 2040 is committed to the goals of TDM and promotes these objectives through the NJTPA planning program and support of the eight TMAs in the state, the groups most responsible for promoting, operating, and managing TDM initiatives. Some ongoing TDM initiatives include:

- **Supporting 511NJ**—Real time traffic information from the region is provided to the statewide 511NJ system. This system provides a wealth of transportation information from a single source and takes advantage of the NJTPA's investment in technology —RCIS Investment Principle "Manage Incidents and Apply Transportation Technology."
- **Support for Local Shuttles**—The NJTPA, in cooperation with NJ TRANSIT, provides federal Congestion Management and Air Quality (CMAQ) funds for a variety of shuttle services across the region. These shuttles play an increasingly important role for local mobility in locations that do not have fixed-route, scheduled transit service, providing the "first mile" and "last mile" connection between transit facilities and customers' final destination. A more permanent funding source for well-performing and successful shuttles is needed so these vital links are not disrupted or abandoned when temporary funding sources, such as CMAQ, are exhausted. Another challenge to operating local shuttles is identifying the 50% local match required to access Federal funds.

- **Support for TMAs**—TMAs actively work at the local or county level to identify opportunities for TDM such as operating/managing shuttles, carpools and vanpools services, or working with employers to adopt TDM strategies such as TransitCheck or telework. TMAs also provide critical up-to-date transportation information to the general public such as traffic and transit alerts or notification of emergency or construction delays. The TMAs were vital information resources following Superstorm Sandy, helping residents navigate the transit system as it recovered from the storm.
- **Management of the Regional Coordinated Human Services Transportation Plan (CHSTP)**—This plan provides a regional perspective for ongoing efforts to coordinate and improve human services transportation, increase mobility options for individuals with disabilities, older adults, and lower income populations, and address transportation-related environmental justice issues. A service or need must be identified in the CHSTP in order to be eligible for federal funding. The NJTPA, in partnership with NJ TRANSIT, manages two federal grant programs to provide human services transportation. They are the Job Access and Reverse Commute (JARC) program, which helps low-income populations in urban areas reach jobs in the suburbs, and the New Freedom program, which provides enhanced access to transit facilities and transportation services for people with disabilities. It should be noted that under MAP-21, both JARC and New Freedom are ended as distinct programs, but remain eligible activities under new USDOT programs.

Map 5: TMAs in New Jersey



Freight Needs

Freight movement is a critical element of the regional economy that creates jobs and provides for residents' daily needs. As noted in Chapter 3, nearly one-third of all jobs in the NJTPA region are in businesses that are highly dependent on freight movement. However, along with the jobs and significant economic activity associated with freight movement in the region, the freight sector brings transportation and environmental challenges.

Plan 2040 projects a significant increase in regional freight activity, including a doubling of port volume, rail freight increasing by over 50% and truck tonnage increasing by over 40%. Accommodating these increases will require improvement to all freight-related infrastructures.

Trucks and roads are the mainstay of the goods movement system. Unless shippers and receivers are located directly at ports, airports or along rail lines, trucks are necessary to deliver/pick up their goods. Even for industries with direct access to other modes, final distribution must still be done by truck. This is especially evident in the NJTPA region—five of the six major truck corridors in New Jersey are located in northern New Jersey: the New Jersey Turnpike, I-78, I-80, I-287, and NJ 17. The projected growth in truck traffic means that the busiest roads will see even more intense truck traffic and there is a growing need to ensure that pavement and bridges along key trucking routes are maintained and able to meet future wear and travel to ensure safe, efficient truck movements.

Manville, Somerset County.

Often, the only roads available to connect freight facilities and major highways are local roadways, some of which pass through residential areas. Working to make local roads that accommodate freight safer for all users and ensuring that roadways are built to withstand the stresses of large vehicles is a priority of the NJTPA and reflected in the RCIS Investment Principles to "Move Freight More Efficiently" and to "Make Travel Safer."

A 2010 NJTPA study identified the need for additional secure parking facilities for truck drivers, primarily to accommodate overnight parking so they can meet federal driver rest requirements and have access to adequate services and facilities. In 2010, over 80% of the region's truck parking facilities were over capacity—an estimated shortage of approximately 1,300 truck parking spaces. The shortage results in trucks being parked on highway shoulders which creates a serious safety hazard.

The Port of New York and New Jersey District, which encompasses publicly-owned PANYNJ facilities as well as privately-owned marine terminals, is the largest international gateway on the East Coast and the country' third largest container port. Major key projects are now underway or pending, including raising the Bayonne Bridge and continued dredging of the harbor, that will ensure the long term viability of the port.

Port Newark/Port Elizabeth has only two truck routes to and from its terminals. A substantial portion of truck traffic relies on the North Avenue corridor where large trucks mix with auto traffic travelling to and from retail, hotel, and other commercial land uses in the area. There is a growing need to address the severe shortage of accessible truck/freight-friendly routes and the lack of redundancy in the local roadway system accessing Port Newark/Port Elizabeth.

In recent years, many warehouse and distribution facilities have been moving to outlying "greenfields" far from the ports, including parts of eastern Pennsylvania. This trend has generated increased truck traffic along already congested highways in northern New Jersey, increased VMT, and increased emissions. To help slow the trend, NJTPA policies (including study programs and project scoring criteria) seek to encourage freight-related development of existing brownfields and older industrial areas located closer to both the port and to the enormous customer markets of the metropolitan area.

The freight rail network in northern New Jersey is a critical and well utilized element of the freight system. Challenges to the freight rail system include addressing capacity constraints and related issues such as congestion, scheduling conflicts, and limited operating speeds. A 2013 NJTPA study shows that most of the region's rail freight lines will not be able to handle the projected 2040 demand without major capacity improvements and addressing identified "bottlenecks." Any investments should also upgrade tracks from the existing weight limit of 263,000 pounds to the industry standard of 286,000 pound track. Weight restrictions hamper a railroad's ability to offer their customers the economies of scale that result from larger, heavier rail cars. Left unaddressed, this could prompt freight rail customers to move out of the northern New Jersey region.

Complete Streets

Complete Streets policies take into consideration providing safe access for all users, including bicyclists, pedestrians, transit users, and motorists, and can be incorporated into most roadways across the region. Complete streets make it safer and easier to cross a street, walk within the community or to transit stations, and to bicycle to work.

Metuchen, Middlesex County.

There are a variety of ways to implement complete streets to match the needs of any community. For example, wider sidewalks, bike lanes, dedicated bus lanes, curb extensions, additional pedestrian crossings, median islands, narrower lanes to slow traffic, roundabouts, and transit and pedestrian friendly streetscapes all contribute to making a street "complete". Also, research shows that investment in active transportation infrastructure (for example, bike lanes and sidewalks), a key component of a complete street, has a positive impact on the attractiveness of a town to business and residential development, contributing to a stronger regional economy.

As of 2013, five of the NJTPA subregions have adopted complete streets policies—Hudson County, Monmouth County, Middlesex County, Essex County, and the City of Newark. Statewide, over 60 municipalities and five counties have adopted complete street policies. The NJDOT adopted a complete streets policy in 2009 and has incorporated complete streets into its Greenhouse Gas (GHG) Reduction Plan.

Newark Liberty International Airport (EWR) is the hub for the movement of air cargo in the NJTPA region, including significant Federal Express and UPS facilities. In 2011, half of the 1.5 million tons of air freight through EWR was carried by Federal Express. However, there are many needs associated with moving freight to and from EWR, including improved access to air cargo facilities, improved connections between the air terminal and offsite warehouse and distribution centers, and improved signage for freight related access and facilities.

Implementation

Plan 2040 recognizes the need to address the impacts of freight movement throughout the region to promote and enhance the benefits of the freight industry. Based on the planning and analysis performed at the NJTPA and with extensive coordination and input from the freight industry, listed below are strategies that should be pursued to address the needs identified in the section.

- Support new and complete ongoing improvements to the region's major truck corridors, primarily the NJ Turnpike and the Interstate system.
- Support highway improvements that could improve truck flow, such as separating trucks from general purpose lanes where applicable.
- Apply new and existing technology to improve freight flow, operations, safety, and security.
- Enhance access to all port facilities with improvements such as turning lanes, increased bridge clearance, upgraded pavement, improved signal timing, improved and enhanced rail access, and upgraded intermodal transfer facilities.
- Provide and maintain adequate channel depth to support post-Panamax ships.
- Provide adequate port capacity to handle the projected increase in freight and port activity.
- Work with private railroads to improve the efficiency of the rail freight network, including upgrading rail lines to the industry standard of 286,000 pound track.
- Explore off-peak delivery of goods in coordination with retailers and shippers.

Liberty State Park in Jersey City, Hudson County.

Bike & Pedestrian Needs

Increasing the share of walking or biking trips in the region is a continuing NJTPA priority—reflected in the RCIS Investment Principle to "Support Walking and Biking." On a regional basis, only 3% of work trips and 10% of non-work trips are made by foot or bike. However, this varies significantly across the region from a high of 9% of work trips and 31% of non-work trips in the more urban Hudson County to only 2% of work trips and 4% of non-work trips in more rural counties such as Hunterdon and Somerset.

The demand for better and safer bike and pedestrian facilities is growing, not just in the NJTPA region, but across the country, notably among the young. Between 2001 and 2009 the average VMT per capita by young people ages 16-34 decreased by 23%, indicating a dramatic shift away from driving. In addition, many people over 50 years old have embraced walking for quality of life and health reasons.

Upgrading transportation facilities to allow bicyclists and pedestrians to safely and conveniently reach shopping, employment, entertainment, and service locations is a NJTPA priority.

Bicyclists have benefited from NJ TRANSIT's Bike Aboard Program which expands options for bringing bicycles onboard trains at all stations. The agency is also working to increase the number of buses that can accommodate bicycles. Bike-share programs also hold promise for expanding bicycle use, having proven successful in Washington, D.C., and other cities. A large scale program was recently implemented throughout New York City. Bike-sharing is being explored by a number of New Jersey communities.

Encompassing all these strategies are complete streets (see sidebar on page 70) policies which are designed to enable safe access for all users (bicyclists, pedestrians, transit users, and motorists), make walking and biking an attractive mode for short trips and recreation, and provide transportation independence for those who do not drive (children, seniors, the disabled). As of 2013, five of the NJTPA subregions have adopted complete streets policies.

The NJTPA encourages localities to adopt land use policies that support walking and biking by encouraging, as appropriate, mixed use development particularly in downtown areas and at transit hubs. The NJTPA and Together North Jersey planning efforts are helping towns plan for improving non-motorized travel opportunities and safety throughout the region.

Implementation

Plan 2040 is committed to improving walking and biking in the region by incorporating complete streets principles into the NJTPA planning process. NJTPA continues to sponsor Walkable Community Workshops, a program developed to identify barriers to walking and ways to improve pedestrian safety. Nine workshops were held across the region in recent years, as shown in Table 4-6 below.

The NJTPA continues to support bike and pedestrian initiatives by:

- Providing funding to subregions to undertake bicycle and pedestrian planning studies.
- Encouraging counties and municipalities to develop bicycle and pedestrian plans.
- Assisting counties and municipalities with complete streets policy development and implementation.
- Working with subregions to prioritize and incorporate bicycle and pedestrian projects into the Transportation Improvement Program (TIP).
- Supporting expanded bike trails and designated bike routes including the East Coast Greenway.
- Ensuring that roadway, intersection, and other projects incorporate features to make walking and biking a safe, attractive travel option.
- Encouraging expanded accommodations for bicycles on buses and trains and at transit stations.

As discussed below in the safety section, the NJTPA is also piloting a pedestrian safety education campaign and coordinating with the NJDOT and

Table 4-6: Walkable Community Workshops from 2010 to 2012

2010	Warren	Phillipsburg	Route 22 & Roseberry Street
	Ocean	Manchester	48 Schoolhouse Rd, Crestwood Village, Whiting
	Hudson	Jersey City	Grove PATH Area, Harsimus Cove, 3rd & Erie St
	Hunterdon	Annandale	Main Street, Beaver Street (CR626), Center Street - all within 1/2 mile of Annandale train station
2011	Hudson	Jersey City	McGinley Square
	Essex	East Orange	Freeway Drive East and west
	Morris	Randolph	Intersection of Center Grove Road and Route 10
2012	Passaic	City of Paterson	Napier Academy neighborhood, bounded by Haledon Ave, Temple St, Presidential Blvd., Garfield Ave
	Union	Borough of Garwood	½ mile vicinity of Garwood Train Station along North Ave and South Ave

Source: NJTPA Walkable Community Program

High Risk Rural Roads project site on County Route 517, Sussex County.

other organizations on a variety of safety initiatives oriented towards improving pedestrian and bicycle infrastructure and safety.

Safety and Security Needs

Safety is a priority at the NJTPA and is factored into all aspects of planning. As mentioned in Chapter 3, even with a growing population and increasing VMT, the region's crash rates have been steadily declining. Injury-related crashes have also decreased over the past five years, but crashes involving pedestrians (also on the decline, but at a slower rate) remain a major safety issue. This is of particular importance since one of the NJTPA's goals is to increase the mode share of pedestrians and promote walkable communities to implement the RCIS Investment Principles of "Make Travel Safer" and "Support Walking and Bicycling." People will choose to walk only if they can do so in a safe environment and for those who must walk, investments in pedestrian infrastructure is a necessity, not a luxury.

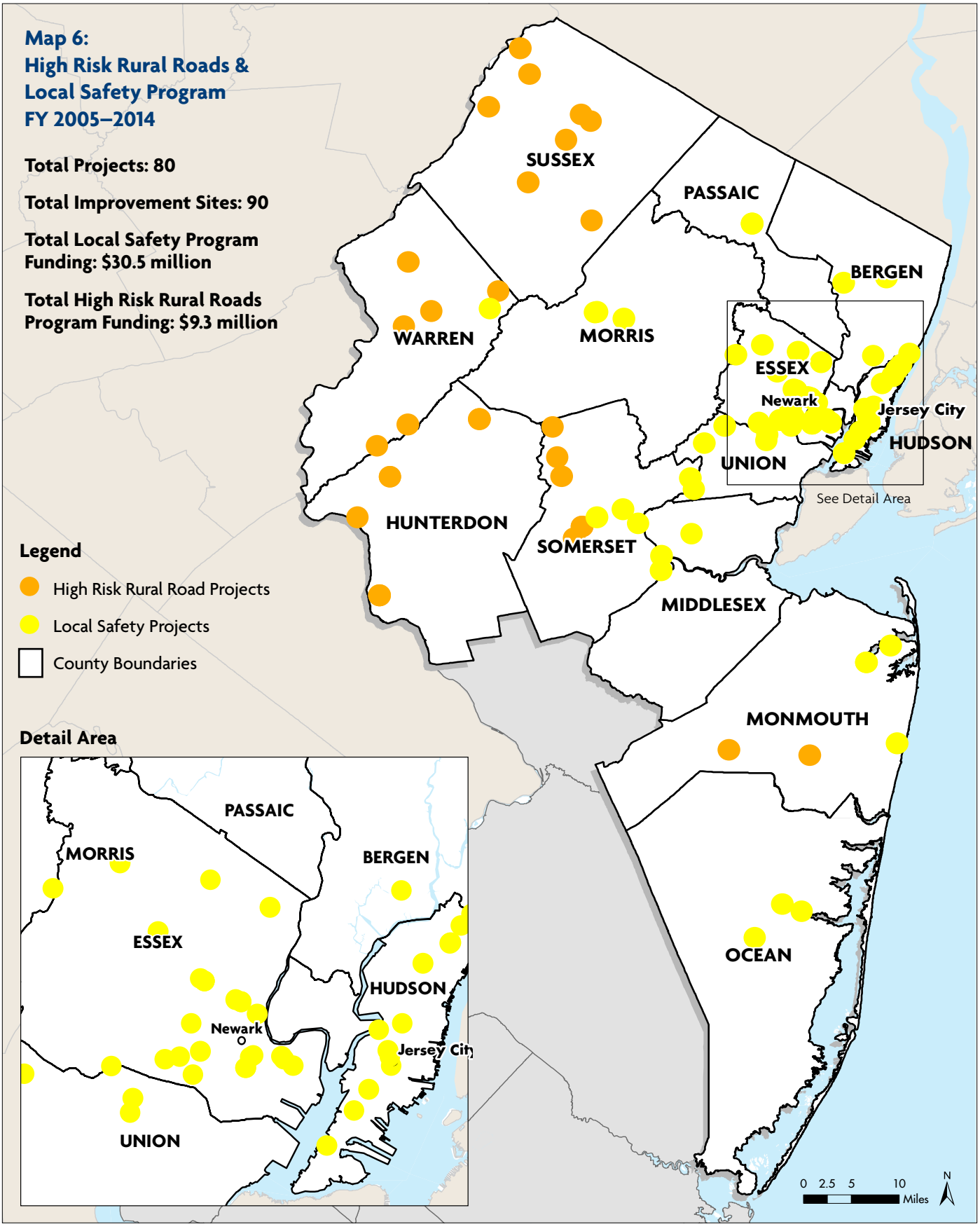
In addition to preserving transportation infrastructure in a state of good repair, ensuring it performs in a safe manner is essential. In addition to property damage, injury, and the potential loss of life, crashes add to congestion and unpredictable travel times and have economic costs, particularly in crash-prone locations. Plan 2040 is committed to investing in a transportation system that is safe for all users and all modes. It is also committed to working with partner agencies to develop safeguards against security threats and plans for addressing evacuations and recovery from man-made and natural disasters.

Implementation

The NJTPA, in coordination with the state's other two MPOs and statewide safety agencies, is coordinating the development of an update to the Statewide Strategic Highway Safety Plan (SHSP) to meet MAP-21 requirements. In 2007 the NJTPA and a broad coalition of state agencies and safety stakeholders partnered with NJDOT to develop the state's first SHSP which identified strategies for addressing eight safety emphasis areas. The NJTPA continues to play a leadership role in updating the plan to ensure that it addresses the state's (and region's) most critical transportation safety issues.

The NJTPA is developing a Pedestrian Safety Education Campaign, a first-of-its-kind initiative in New Jersey. The campaign will be piloted in the NJTPA region and evaluated for its effectiveness. The campaign will be implemented in five pilot communities: Newark, Jersey City, Hackettstown, Woodbridge, and Long Beach Island. These communities represent a range of settlement patterns (i.e., urban, suburban, beach/vacation) allowing the education strategies developed for the pilot locations to be applied to similar communities throughout the state. The campaign will address pedestrian and motorist behavior with a goal of reducing pedestrian crashes, injuries and fatalities. This effort builds upon the 2011 Pedestrian Safety at and Near Bus Stops Study, led by the NJTPA in partnership with NJ TRANSIT.

The NJTPA is committed to the ongoing funding of transportation safety programs, projects, studies,


Map 6:
High Risk Rural Roads &
Local Safety Program
FY 2005–2014
Total Projects: 80
Total Improvement Sites: 90
Total Local Safety Program Funding: $30.5 million
Total High Risk Rural Roads Program Funding: $9.3 million
SUSSEX
PASSAIC
BERGEN
WARREN
MORRIS
ESSEX
Newark
Jersey City
HUDSON
UNION
See Detail Area
HUNTERDON
SOMERSET
MIDDLESEX
MONMOUTH
OCEAN
Legend
High Risk Rural Road Projects
Local Safety Projects
County Boundaries
Detail Area
PASSAIC
MORRIS
BERGEN
ESSEX
HUDSON
Newark
Jersey City
UNION
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and educational campaigns to make the transportation system as safe as possible for all users. This is reflected in RCIS Investment Principle "Make Travel Safer." Among NJTPA safety programs and initiatives:

- **Local Safety Program** (see Map 6)—The Local Safety Program funds high impact, low cost safety improvements on local and county roads. Since 2005 the NJTPA has allocated more than $30 million for motorist, bicycle, and pedestrian safety-related improvements that include installation of upgraded traffic control and pedestrian countdown signals, new signage and crosswalks, reflective striping, and other safety improvements.
- **High Risk Rural Roads Program** (see Map 6)—Since 2009 the NJTPA has allocated $10 million in federal safety funds to improve safety on eligible crash-prone roadways in rural areas.
- **Road Safety Audits**—Using crash data and input from multi-disciplinary teams (composed of representatives from law enforcement, elected officials, public health, academia, engineering, planning, and the general public), Road Safety Audits are conducted in cooperation with the NJDOT to identify and develop quickly implementable solutions for crash prone locations.
- **Freight Rail Grade Crossing Assessment Study**—The NJTPA conducted this study to identify safety, traffic, and community impact issues at 64 grade crossings along five of the region's major freight rail lines. The study developed reports that identify issues and potential solutions at 15 selected crossings. Funding for improvements at these and other grade crossings will be sought throughout the span of Plan 2040.
- **System Security**—The NJTPA will continue to work with its partners to fund new strategies, technologies, and projects that will help prevent and better prepare the region for possible security threats; advance projects that address transportation security; disseminate information on transportation security; coordinate with state, county and local emergency operations agencies; and conduct transportation network analyses to determine the most effective recovery investment strategies.
- **Safe Streets to Transit**—This program provides funding to counties and municipalities to improve access to transit facilities. The objectives of this state funded program are to improve the overall safety and accessibility for mass transit riders walking to transit facilities, encourage mass transit users to walk to transit stations, and facilitate the implementation of projects that will improve safety in the vicinity of transit facilities (approximately one-half mile for pedestrian improvements).
- **Safe Routes to School**—Safe Routes to School (SRTS) is a federal, state and local effort to enable and encourage children, including those with disabilities, to walk and bicycle to school. SRTS facilitates the planning, development and implementation of projects that improve safety and air quality, as well as reduce traffic and fuel consumption around schools. Activities funded through the SRTS program can be physical safety improvements (such as crosswalks) or pedestrian and bicycle safety educational efforts geared towards elementary school children. The TMAs are instrumental in these educational efforts. Under MAP-21, SRTS is no longer a distinct program, but remains an eligible activity under other USDOT programs.

Intelligent Transportation Systems (ITS)

Needs

Technology applications, known as intelligent transportation systems (ITS), are increasingly being employed to improve transportation reliability, efficiency and safety and to reduce congestion. ITS can also help reduce greenhouse gas emissions and improve air quality through more efficient vehicles and transportation systems.

Examples of ITS include variable message signs that direct travelers to alternate routes and provide information about delays; incident management coordination to clear crashes and incidents more quickly and to manage affected traffic; integration of transit fares through smart cards; and the use of real-time data to inform travelers, manage road and transit systems, and to assess facility operational needs. Many additional ITS systems are under development including connected vehicle technologies, where cars can communicate with each other or with roadway monitors to allow greater speeds, reduced distances between vehicles and crash prevention. In addition, the New Jersey Turnpike Authority has implemented EZPass' "open road tolling" which allows for toll collection without affecting driving speed.

Garden State Parkway, Union County.

ITS is particularly important for the region as a means for addressing congestion, which occurs not just along major highways during the peak commuting hours, but on many local roads throughout the day. Addressing congestion through new or expanded roads has not been an effective long term solution. ITS approaches to congestion include computerized signal systems, more rapid clearance of auto breakdowns and crashes and real time monitoring of traffic flows, among other measurers. ITS technologies help maximize the use of existing road capacity and improve roadway operations. For example, ITS technology is planned for Route 78 in Hunterdon, Somerset, and Union Counties, including surveillance cameras, dynamic message signs, speed/travel time detection, ramp metering, and other emerging technologies.

ITS also provides important benefits to transit users, such as speeding bus trips by reducing congestion and implementing bus priority traffic signals, improving real-time bus routing information, providing real-time transit information to allow passengers to make informed transit mode choices, and monitoring of system performance, among others. ITS can also contribute to effective mobilization of resources, evacuations, and other responses to storms and other emergencies by integrating weather-related data into decision support tools for the operation of the transportation system during emergencies.

Implementation

Plan 2040 supports continued investment in ITS infrastructure and the development of ITS policy for the region. Some of on-going efforts include:

- **Update of New Jersey's ITS Architecture**—The statewide ITS Architecture represents a shared vision of how each agency's systems work together, sharing information and resources to provide a safer, more efficient, and more effective transportation system. It provides an overarching framework that spans all organizations and transportation projects. Under development with close coordination with the NJDOT and other agencies, this federally mandated program will include a Strategic Deployment Plan to optimize the performance of existing and future technology infrastructure.
- **Planning for Operations Program**—This program identifies opportunities for expanding the role of the NJTPA in regional operations planning, developing a framework for addressing operational issues, and incorporating them into ongoing and future work plans and the Project Development process.
- **New Jersey Meadowlands ITS Implementation**—NJDOT is installing 128 new traffic signals across the Meadowland District and a central control system that adjusts signals to adapt to current traffic flows. The objective of this program is to reduce congestion, delays, travel time, fuel consumption, and vehicle emissions.
- **TRANSCOM**—a coalition of the 16 major traffic, transit and public safety agencies in the New York/New Jersey/Connecticut region, the organization uses real-time data on travel flow, video sharing, written advisories and other methods to help reduce the impact of incidents that threaten to disrupt the

regional transportation system.

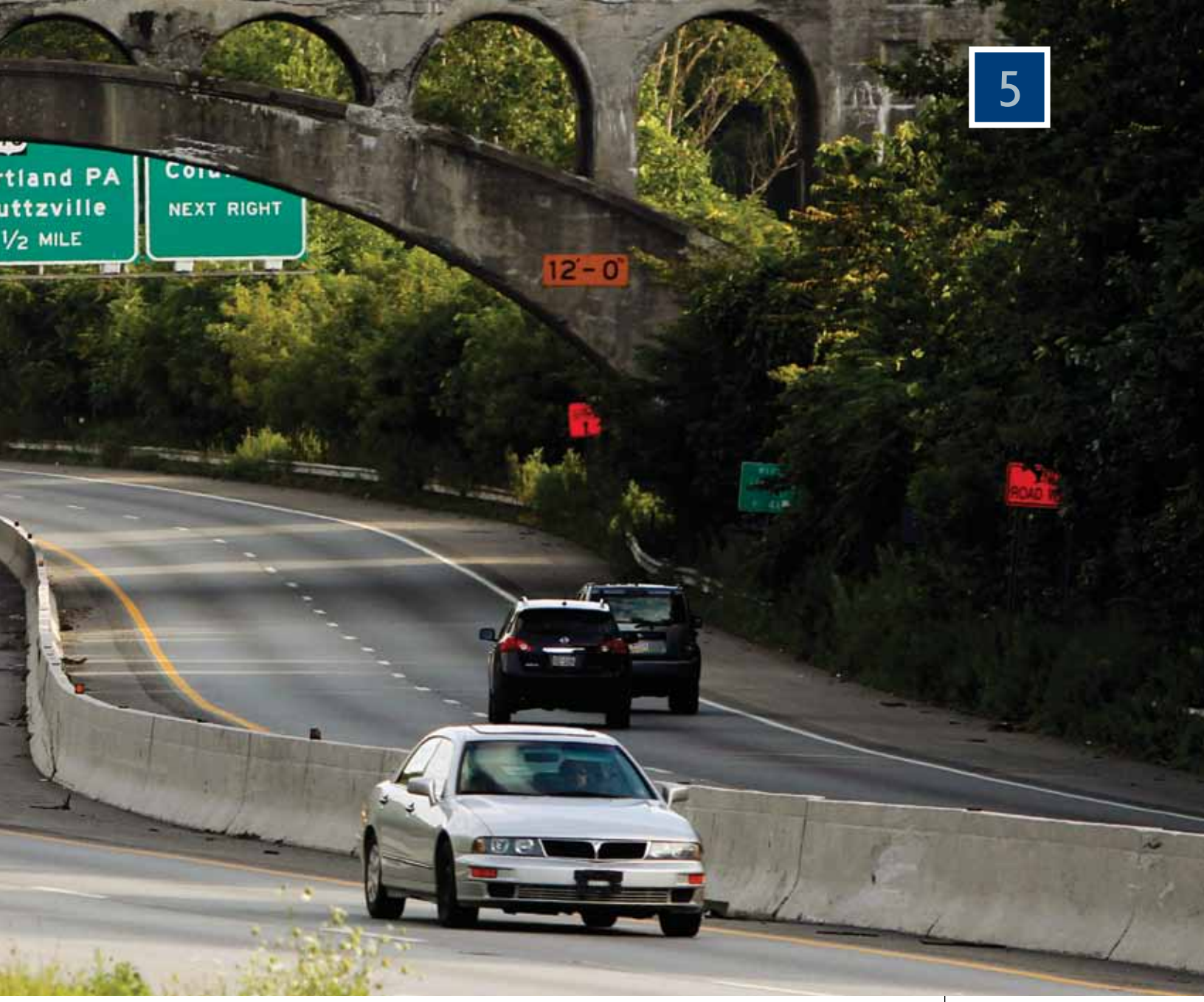
In pursuing these and other ITS initiatives, the NJTPA recognizes that, in addition to its many benefits, technology presents challenges of compatibility, rapid obsolescence and privacy concerns. The resilience of various technologies itself to weather and unforeseen emergencies is important as operators and travelers become more reliant on it, particularly in emergency situations. Equity concerns may arise if ITS services and information relies on connections to user technology (such as smartphones or advanced vehicles). These issues must be addressed as the region pursues current and future ITS implementation. Even though investments in ITS require complex, multi-jurisdictional commitments and, in some cases, significant capital costs, ITS holds the promise of greatly improving the efficiency of the transportation system in the long run.

Future Steps

Plan 2040 recognizes that the needs of the region far outweigh the financial resources available as discussed in Chapter 5. However, as discussed in this chapter, the NJTPA, through its planning process, identifies cost-effective strategies to address the most pressing regional needs, allowing continued progress over the long term. The implementation strategies identified in this chapter will continue to undergo refinement based on the findings and recommendations of the RPSD including incorporating support for sustainable land use and economic development and new measures to help minimize and prevent damage from future extreme weather events and the impacts of climate change. The next update of the RTP in 2017 will reflect these further refinements based on continuing technical analysis and public outreach.

Financing Plan 2040

Over the course of the Plan 2040 period (2014-2040), the NJTPA region will confront significant needs, and limited resources, to maintain its multimodal transportation network in a state of good repair and to provide carefully targeted capacity improvements to accommodate future growth and facilitate economic development. Plan 2040 has identified a broad range of capital investments to meet these needs. Most focus on preserving and maintaining transportation assets and modest strategic improvements. The cost of implementing the plan is significant given that investments require the rehabilitation and replacement of legacy infrastructure and construction in a densely



Interstate 80, Warren County.

developed and environmentally sensitive environment. Consequently, over the horizon of Plan 2040, the NJTPA region will need to secure significant and growing revenues in order to make progress with important transportation improvements. ▪ Federal regulation requires that the Regional Transportation Plan contain a fiscally constrained financial plan that is based on reasonable assumptions of future funding and meets basic transportation needs for the region. This chapter describes the assumptions and strategies used to develop the plan's projected expenditures and revenues and to demonstrate fiscal constraint. This discussion is framed around a Regional Capital Invest-

ment Strategy (RCIS), which targets resources towards asset preservation and management. The chapter concludes with a discussion of alternative revenue and project implementation strategies that may be considered to facilitate the earlier implementation of plan initiatives and/or the accommodation of additional projects.

The Challenging Transportation Funding Landscape

The region's transportation funding is primarily generated from federal and state motor fuel taxes. Federal motor fuel taxes, along with other taxes and federal general fund contributions are deposited into the Highway Trust Fund (HTF) and the Mass Transit Account (MTA). Northern New Jersey receives a portion of these funds pursuant to the federal surface transportation program currently authorized by Moving Ahead for Progress in the 21st Century (MAP-21). State motor fuel taxes, along with the petroleum products gross receipts tax, a portion of the sales tax, certain registration fees and contributions from the New Jersey Turnpike Authority are appropriated to the New Jersey Transportation Trust Fund (TTF). Given the region's population base and scope of its transportation network, the NJTPA region receives the bulk of TTF funds with the balance allocated to southern New Jersey under the jurisdiction of the Delaware Valley Regional Planning Commission (DVRPC) and the South Jersey Transportation Planning Organization (SJTPO). Tolls from the Port Authority's Interstate crossings and tolls received by the New Jersey Turnpike Authority on the Garden State Parkway and New Jersey Turnpike support critical regional facilities that do not typically receive state or federal transportation funding for their operation and capital improvements.

Northern New Jersey's capacity to meet its transportation funding needs is challenged by a combination of economic, financial and technological factors that are impacting its primary funding sources. The Great Recession of 2008-2009 and the resulting slow pace of recovery has constrained transportation revenues derived by motor fuel taxes resulting from the reduction and subsequent flattening of the quantity of vehicle miles traveled. New Jersey's motor fuel tax revenues have remained essentially unchanged since 2005. At the same time the federal HTF has become dependent upon transfers from the general fund to support funding for the federal highway and transit programs, and is not assured year-to-year. Prospects for raising the federal or state motor fuel tax are unlikely. Increasing motor vehicle fuel efficiency, while providing important environmental and energy independence benefits, will further contribute to a flat-to-declining trend for motor fuel tax revenues. The United States Energy Information Administration projects in its 2013 Annual Energy Outlook that average fuel efficiency will increase 2% annually through 2040, while gasoline fuel consumption will decline by 0.9% annually over this period.

Although motor fuel tax revenues have been impacted by challenging economic conditions and improving motor vehicle fuel efficiency, federal and state officials have taken actions to provide supplemental resources

Lakewood Bus Terminal, Ocean County.

to support transportation funding. MAP-21 provides $18 billion in general fund transfers to the HTF, while the TTF has received additional funding over the last 15 years from increased appropriations of the motor fuel tax, petroleum products tax, and sales tax. While these efforts to provide additional resources demonstrate the importance of sustained transportation funding to policy makers and elected officials under a challenging financial environment, resource constraints are expected over the near- to mid-term. The Congressional Budget Office estimates the HTF will require substantial external support just to maintain the FHWA and FTA programs at approximately current levels. In addition, the state is also facing a highly challenging revenue environment with the combination of flat or declining revenues from the TTF through 2023 and a one time, $1.8 billion Port Authority contribution to the NJTPA region for four specific NJDOT projects.

Electric car charging station in Newark, Essex County.

Over the near- to mid-term (2014-2023) Plan 2040 calls for investments in the transportation network of $26.8 billion, which is in line with projected available revenues during this period. Given that transportation investment needs continue to exceed available revenues, expenditures at this level are focused on preserving, improving and replacing existing assets in order to increase performance and maintain a state of good repair. Expansions or major enhancements to the transportation system are very limited.

In this environment, the NJTPA and its statewide and county/subregional local partners must carefully establish priorities and manage limited resources. Monitoring system performance is essential to effective asset management strategies and is required under MAP-21 (see the Performance Measures sidebar in Chapter 1). While the funding challenge is particularly great, elected officials in Congress and the state Legislature have the authority and tools available to address funding needs. These strategies could encompass the funding sources described under the section entitled "Options for a More Robust Plan 2040." The NJTPA is fully confident that, recognizing the state's pressing needs, adequate funding will be provided through the plan period.

Issues and Uncertainties

The NJTPA recognizes that there are inherent uncertainties in projecting the region's resources and needs over a 26 year period. These include projected economic growth and demographic conditions which will impact the rate at which revenues grow and, to a certain extent, the timing and magnitude of transportation needs, programs, and projects. MAP-21 expires after two years at the end of federal Fiscal Year 2014. At the same time, the state has nearly exhausted the funding capacity of the TTF and, as it has done in the past, will need to define a program of new or increased resources to address long term needs. Recognizing these issues and uncertainties and the expectation for continuing support for transportation funding at the federal and state level, the financial plan was developed based upon reasonable assumptions for available revenues and estimated program and project expenditures.

As the NJTPA projects transportation revenues and expenditures, it recognizes that the region is in a "trend breaker" situation due to a confluence of recent economic, technological and environmental events that have imposed unprecedented constraints on resources. Federal and state funding is increasingly constrained,

and, in fact, has struggled to keep up with inflation, focusing on the maintenance and safety of the existing transportation system with very limited capacity expansion. At the same time, the region's aging "legacy" infrastructure requires continuing and potentially increasing investment to maintain and adjust to 21st century needs.

As mentioned in Chapter 4, technological changes present both risks and opportunities. As noted earlier, increasing motor vehicle fuel efficiency threatens the long term viability of traditional transportation funding sources reliant on fuel consumption. At the same time, technological advances in traffic information and management, including technologies to increase transit efficiency and information, present an opportunity to better manage existing transportation capacity and reduce the need, in part, for costly expansion projects.

As demonstrated in 2012 with Superstorm Sandy, changing weather patterns and the potential impacts from severe events present unexpected challenges. This includes adapting the multi-modal transportation system to better withstand such events and maintaining financial flexibility to accommodate the repair costs and economic aftermath of severe weather and other unanticipated events.

Transportation policy also remains in flux. While elected officials at the federal and state level recognize transportation's important role in supporting economic development, maintaining competitiveness and providing upward mobility for the economically disadvantaged, the extended period of constrained funding following the Great Recession and slow recovery has limited policy makers' ability to make long term funding commitments or to provide a significant increase in funding to support additional system expansion and new initiatives such as high speed rail.

Investment Strategies

The NJTPA based the assumptions that underpin the Plan 2040 financial plan on two complementary efforts which were used to develop investment strategies and to guide long term transportation planning and investment.

The first is the NJTPA Regional Capital Investment Strategy (RCIS), which was initially developed for Plan 2030 and approved in September 2005. The RCIS was modified slightly and carried forward into Plan 2035, and continues to guide Plan 2040. The RCIS includes eight investment principles and sets goals for levels of investments among broad categories of funding. The eight principles are listed in Chapter 1 of Plan 2040.

The second source of guidance for long term investment is the 10-year New Jersey Statewide Capital Investment Strategy (SCIS). This stems from a collaborative effort involving NJDOT, NJ TRANSIT, the New Jersey Turnpike Authority (NJTA), the South Jersey Transportation Authority (SJTA) as well as the state's three Metropolitan Planning Organizations (MPOs)—the NJTPA, DVRPC and SJTPO. The SCIS provides investment recommendations for transportation categories based upon goals, objectives, and performance measures and is well aligned with the RCIS.

Revenue Assumptions And Projections

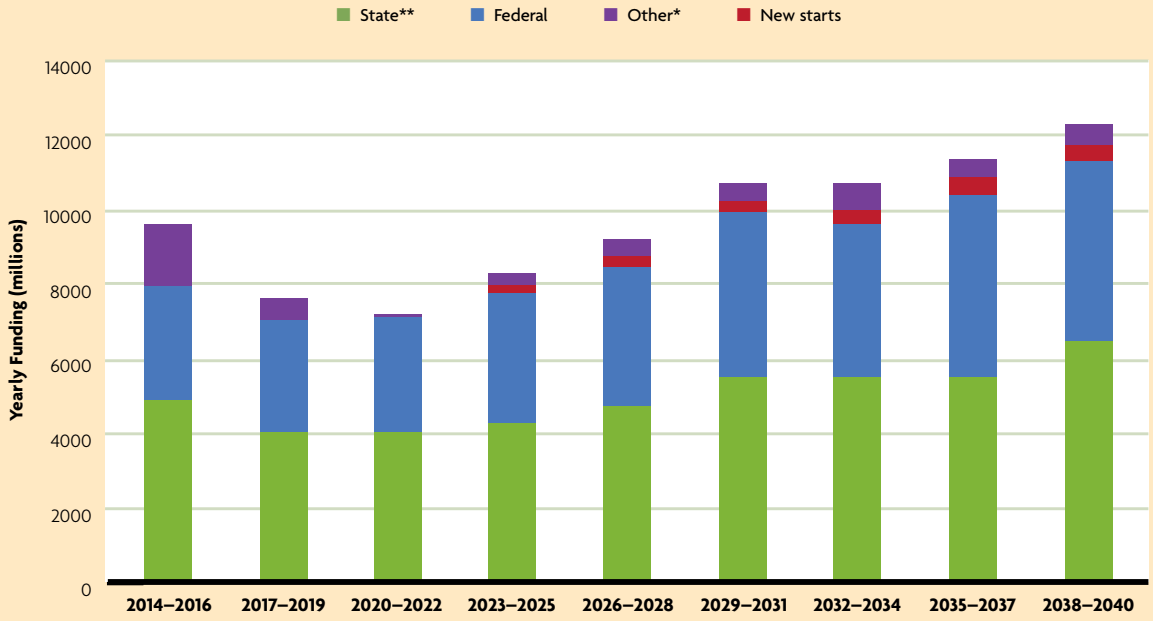
The NJTPA region expects to receive approximately $3.3 billion in state, federal, Port Authority and other revenues in Fiscal Year 2014 to support transportation projects and programs and to support NJ TRANSIT preventative maintenance expenditures. The NJTPA has worked closely with NJDOT and NJ TRANSIT to assess the long-term revenue and expenditure needs for the region and to determine the appropriate assumptions about future transportation funding. The NJTPA developed a scenario for the financial plan that is fiscally constrained and meets the transportation needs of the region.

Federal regulations require that MPO long-range transportation plans show financial projections in year-of-expenditure ("YOE") dollars. That is, MPOs must explicitly account for expected future inflation and its impact on both their forecasted revenues and the costs of future projects. In accordance with the regulations, this plan provides revenues and expenses in YOE dollars.

Capital Funding Assumptions

The near-term (2014-2017) and mid-term (2018-2023) elements of the capital funding projections are based on NJDOT and NJ TRANSIT revenue assumptions for the northern and central New Jersey region. Federal and state funds will continue to provide most of the resources for the region's transportation needs with an additional committed contribution of $1.8 billion from the Port Authority of New York and New Jersey

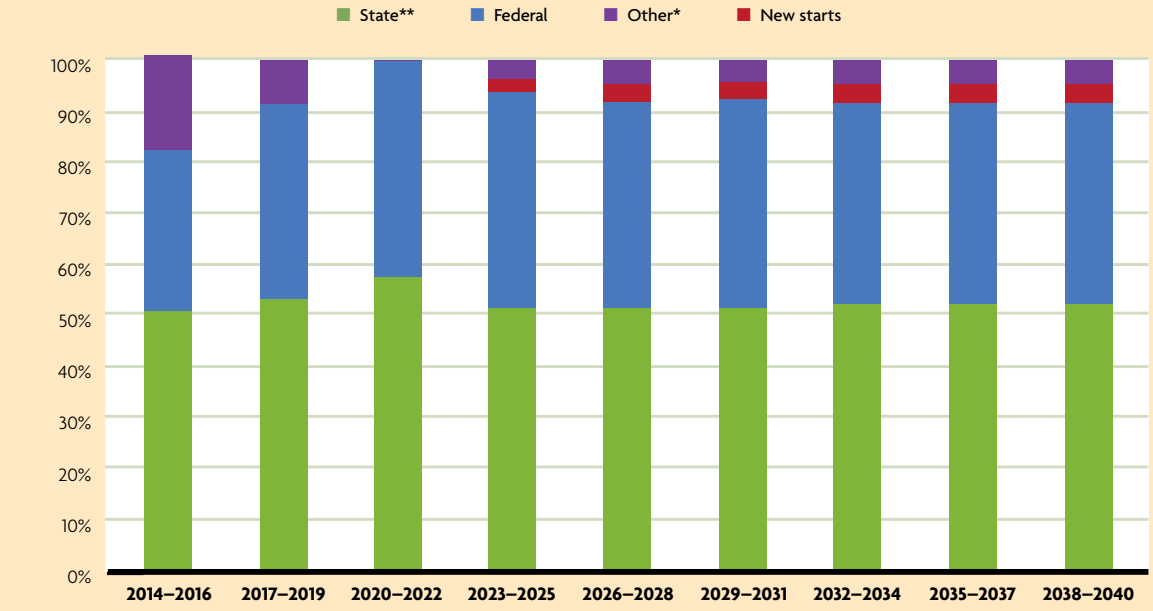
Figure 5-1: Capital Funding for NJTPA Region (Year of Expenditure Dollars)



*Other consists of contributions from Metro North, NJMC, NJ Turnpike and NJDOT portions funded by the private sector. For the period 2017–2019, *Other* includes contributions from the Port Authority of NY & NJ. Beginning in 2023, *Other* is resources that may be a combination of funding sources described at the end of this chapter.

**For the period 2014–2016, State funding includes contributions from the Port Authority of NY & NJ.

Figure 5-2: Capital Funding Share for NJTPA Region



*Other consists of contributions from Metro North, NJMC, NJ Turnpike and NJDOT portions funded by the private sector. For the period 2017–2019, *Other* includes contributions from the Port Authority of NY & NJ. Beginning in 2023, *Other* is resources that may be a combination of funding sources described at the end of this chapter.

**For the period 2014–2016, State funding includes contributions from the Port Authority of NY & NJ.

Light rail commuters in North Bergen, Hudson County.

and other sources. Total revenues during this period are projected to decline by 3.4% annually, reflecting the expected spend down of Port Authority and other revenues for certain NJDOT projects, and flat to declining federal revenues. Federal funds represent about 42% of resources and are projected to decline by 0.9% annually. As shown in Figure 5-1 on the previous page, state funding, including Port Authority contributions, remains effectively flat at around $1.4 billion per year in the NJTPA region through 2023. As a result, the mix of funding is changing, with more state funds being expended. The state's share of total resources, including Port Authority contributions is expected to increase from 50% to a peak of nearly 60% over this period (see Figure 5-2) and levels out at around 50% over the long term. As discussed in the expenditures section below, the constrained funding in the near and mid-term will be sufficient to support a maintenance-oriented mix of projects and programs but with limited capacity expansion or system enhancements.

Over the long term (2024-2040), the financial plan assumes that baseline federal and state revenues will increase by 2.7% annually, which is based on a combination of projected inflation and real growth as measured by population. The long term revenue growth rates were derived from the Rutgers Economic Advisory Service (R/ECON) econometric model, which is used extensively for economic conditions and forecasting in New Jersey. Projected revenue growth reflects that, over the long term, policymakers and elected officials will need to address the declining funding power and actual revenue stream of per gallon based motor fuel taxes and replace or supplement them with revenues sources that are sustainable with real growth prospects. Given transportation's importance and support at the federal and state levels, the NJTPA is confident that this is a reasonable assumption and necessary action for the long term.

In addition to assumed growth in baseline state and federal revenues, the financial plan assumes that beginning in 2024 approximately $100 million, growing by 2.7% annually, in FTA New Starts and other transit funds would be available to provide resources for limited and carefully evaluated core capacity and long term system expansion initiatives. Matching state funds of approximately $100 million, also growing 2.7% annually, and additional public or private resources (possibly from sources outlined at the end of this chapter), would be provided during this period to support these annual expenditures for a total of approximately $325 million growing to $550 million per year over the long term. Lastly, 2024-2031 federal and state revenues were increased to accommodate $1.4 billion in bridge, freight, ITS and road enhancement and expansion projects which currently cannot be accommodated over the near and mid-term. These additional resources may be a combination of federal, state, or private funds, and might employ innovative financing. These additional funds, possibly utilizing new funding options, will be needed to make even modest expansion to the roads and transit system. Total capital funding over the Plan 2040 period is estimated to be $86.7 billion.

To summarize, the revenue assumptions underlying Plan 2040 are as follows:

- Near- to mid- term revenues are based on the 2014-2023 NJDOT and NJ TRANSIT 10-year capital plan.
- State funding, including Port Authority contributions, stays flat through 2023 at around $1.4 billion per year.
- Federal funding is assumed to decline by 0.9% annually to $1.0 billion by 2023.
- Long term (2024-2040) baseline federal and state funds increase annually by 2.7%.
- It is assumed that approximately $100 million/year after 2024 for New Starts and other transit funding together with state or other funds will be available to support annual transit expansion expenditures of approximately $325 million growing to $550 million per year over the long term.
- An additional $1.4 billion in federal and state funds are provided in the long term for certain NJDOT bridge, freight, ITS and road projects.

Operating Funding Assumptions

While capital funding is critical for the repair and replacement of the existing transportation network and the completion of new capacity investments, the NJDOT and NJ TRANSIT also require and receive appropriations from the state general fund for ongoing operations.

For the NJDOT, this covers direct maintenance and operations expenses including snow removal, pothole filling, maintenance of roadside lighting, vegetation, inspections, technical studies and general and administrative services. The 2014 appropriation is $45 million, a relatively small amount compared to capital expenditures. Nevertheless, the NJDOT continues to face reductions in its operating support. Plan 2035 noted that the 2008 appropriation was about $100 million. Over time such reductions could affect the NJDOT's ability to monitor and maintain the roadway and bridge network. This reduction in monitoring and regular maintenance leads to higher longer term capital costs.

Table 5-1:
NJ TRANSIT Operating Budget Projections—NJTPA Region (millions)

EXPENSES	FY 2014 BUDGET PROJECTION	FY 2040 BUDGET PROJECTION
Labor & Services	994.32	2,201.71
Energy & Utilities	163.12	613.55
Materials & Supplies	122.24	309.40
Tolls, Trackage Fees, Rentals & Leases	52.80	136.45
Purchased Transportation	178.96	768.62
Claims & Insurance	20.64	35.36
Taxes & Miscellaneous	20.72	43.68
Total Expenses	**$1,552.80**	**$4, 108.80**

Source: NJ TRANSIT

NJ TRANSIT's operating funding needs are substantial since it is the nation's largest public transit system by service area covering the entire state and is the nation's third largest provider of bus, rail and light rail transit by ridership, making almost 900,000 daily passenger trips. The agency provides service throughout New Jersey as well as running commuter service into New York City and Philadelphia.

NJ TRANSIT is constantly pursuing initiatives to maximize system generated funding to reduce dependence on taxpayer supported funding. Expenses are controlled in a similar fashion to ensure the most cost effective means of delivering service and using available public funding. NJ TRANSIT also aggressively pursues maintaining a state of good repair, for which it has received federal recognition.

NJ TRANSIT continues to be one of the most efficient transit operators, with 53% of its operating budget supported by passenger fares and other system-generated revenues (such as parking fees and advertising payments). NJ TRANSIT's 2014 operating budget projects an expenditure of about $1.9 billion to provide public transit services on the current system. The NJTPA region accounts for approximately 80% of these costs, or about $1.5 billion. The expenses which are not covered by system revenues are supported by yearly appropriations from the state and by various federal funding sources. The NJTPA region receives about $725 million of that funding annually. The level of federal resources needed to operate NJ TRANSIT's extensive transit system is expected to decline over the duration of the Regional Transportation Plan, to approximately 7 percent by FY 2040.

Looking at the need for existing services and growing those services to accommodate future demands, assuming that capital funding will be sufficient to fund the needed state of good repair and

capacity enhancements, Table 5-1 (on previous page) was prepared. This shows that projected operation costs by 2040 will reach $4.1 billion. These projections include allowances for inflation, growth in service to accommodate a moderate rate of growth in ridership demand, and limited initiation of new services beyond the current system. To fund this projected increase NJ TRANSIT will continue, as stated, to seek the best means of providing a high level of customer service while seeking future partnerships with the private sector and communities, and efficiencies to hold down expenses.

For purposes of creating these projections, rail service expenses related to increases in service levels to accommodate growth in demand equals about +.8% per year. For bus and light rail those growth rates are +.7% and +2.1% respectively. These growth rates account for limited new services. Improvements to bus services are mostly viewed as enhancements to existing services since they only modestly extend the geographic reach of current services. Expansion of NJ TRANSIT's existing light rail services is included, such as the Hudson Bergen Light Rail extension into Bergen County on the Northern Branch and west of Route 440 in Jersey City. More extensive transit expansions for the long term, including additional trans-Hudson transit capacity, will likely require additional operating funding beyond that shown in the table above. An outline of potential core capacity or transit expansion initiatives that could be realized in the long term is outlined in Appendix E, Future Transit Needs. With the exception of those mentioned above, none are beyond the early planning stages at this time.

Expenditures and Investments

Plan 2040 expenditures over the near- and mid-term are based on the NJTPA Transportation Improvement Program, or TIP, (the latest update of which was adopted in Sept. 2013) and the NJDOT's Transportation Capital Program for the Northern and Central New Jersey region through 2023 (on which the TIP is based). Plan initiatives during this period, which total $26.8 billion, are focused on the maintenance and state of good repair of existing assets, accounting for 88% of all expenditures. For the NJDOT, this includes bridge maintenance and replacement, roadway preservation and enhancements, interchange improvements, safety and Intelligent Transportation Systems (ITS). For NJ TRANSIT, capital expenditures are for preservation projects such as vehicle maintenance and overhauls; on-going track, station, bridge and tunnel maintenance; replacement of aging bus, commuter rail and light rail cars and equipment; and technology initiatives.

If targeted investment levels are programmed over the next ten years, according to the SCIS, NJDOT expects that the condition level of State highway bridges will achieve a 93% acceptability rating by reducing the total square footage of structurally deficient bridge decks by 50%. In addition, 80% of the state highway system is expected to be at least rated in good or fair condition. NJ TRANSIT's expenditures are focused on state of good repair investments for its track, structures, electric traction and signal systems. Expenditures for fleet purchases are based on maintaining an average age of 12.5-15 years for rail cars and locomotives and 6-8 years for buses.

Over the long term (2024-2040), it is assumed the on-going NJDOT and NJ TRANSIT programs will continue growing at an inflationary rate. For purposes of this analysis a 3.3% annual rate was applied. This is consistent with R/ECON's long range forecast for national non-residential construction. While the 3.3% cost inflation rate is somewhat higher than the 2.7% revenue inflation factor, the NJTPA believes this difference is reasonable given that needs have historically exceeded available revenues and annual expenditure increases are expected to be greater given the scope of northern New Jersey's legacy transportation infrastructure and the need to maintain and improve assets in a high cost, urbanized and environmentally sensitive environment.

Plan 2040 also reflects transit expansion (New Starts) investments to accommodate future transit ridership needs starting at approximately $325 million in 2024 and growing annually by the 3.3% cost inflation rate through 2040. Finally, $1.4 billion in freight, bridge, road enhancement and expansion and ITS projects are anticipated for the long term period of the plan.

In the SCIS, the revenue assumption for NJDOT and NJ TRANSIT is based on average annual levels of anticipated constrained federal and state funding

Table 5-2:
Plan 2040 Total Revenues and Expenditures (millions of year of expenditure dollars)

REVENUES	NEAR TERM (2014-2017)	MID TERM (2018-2023)	LONG TERM (2024-2040)	TOTAL
All Federal	4,014.22	6,039.18	26,221.11	**36,274.51**
All State	4,465.12	8,136.07	31,090.17	**43,691.37**
Other*	1,840.87	254.46	2,776.23	**4,871.57**
PANY&NJ	2,024.00			**2,024.00**
TOTAL	**$12,344.21**	**$14,429.71**	**60,087.52**	**$86,861.44**

EXPENDITURES	NEAR TERM (2014-2017)	MID TERM (2018-2023)	LONG TERM (2024-2040)	TOTAL
Bridges	5,310.93	3,851.02	10,423.56	**19,585.50**
Road Preservation & Enhancement	1,769.38	2,981.35	10,250.72	**15,001.45**
Road Expansion	350.30	170.68	967.12	**1,488.11**
Transit Preservation & Enhancement	3,787.77	5,935.29	24,179.20	**33,902.26**
Transit Expansion	188.54	235.26	9,130.87	**9,554.67**
Freight, ITS, TDM, Safety & Bike/Ped	937.29	1,256.10	5,136.06	**7,329.46**
TOTAL	**$12,344.21**	**$14,429.71**	**$60,087.52**	**$86,861.44**

*Other consists of contributions from Metro North, NJMC, NJ Turnpike and NJDOT portions funded by the private sector. In the Long Term, "Other" is resources that may be a combination of funding sources described at the end of this chapter

Table 5-3:
Plan 2040 Average Annual Revenues (millions of year of expenditure dollars)

REVENUES	NEAR TERM (2014-2017)	MID TERM (2018-2023)	LONG TERM (2024-2040)
All Federal	1,003.56	1,006.53	1,542.42
All State	1,622.28	1,356.01	1,828.83
Other*	460.22	42.41	163.31
TOTAL	**$3,086.05**	**$2,404.95**	**$ 3,534.56**

* In the Near Term, State Funding includes contributions from Port Authority of NY & NJ

**Other consists of contributions from Metro North, NJMC, NJ Turnpike and NJDOT portions funded by the private sector. In the Long Term, "Other" is resources that may be a combination of funding sources described at the end of this chapter

through the 2014-2023 period. Based on this revenue estimate, sufficient revenues are predicted to be available to meet near and mid-term state of good repair needs of $26.8 billion. As noted above, this focuses on essential state of good repair of the system and limited system expansions/enhancements. Expansion might include wider roads and new rail or bus services. Enhancements might include reconfigured intersections and accelerated purchase of new transit vehicles. Thus, in the near and mid-term, the funding available will maintain adequate performance, though it may not support substantial improvements in mobility and addressing some chronic problems (such as congestion or limited transit access in some locations).

While long term expenditure and revenue growth rates differ somewhat over the long term, forecasted expenditures were balanced with forecasted revenues to achieve fiscal constraint. Table 5-2 shows forecasted near, mid-and long term revenues by sources and expenditures by RCIS category.

It is important to note that given the limited resources the region faces, Plan 2040 investments are significantly less than those envisioned in Plan 2035. The prior plan projected $141 billion in revenues and expenditures. This is attributable to different funding assumptions. For instance, Plan 2035 reflected increases in both HTF and TTF funding through the near and mid-term; Plan 2040 assumes funding declines modestly during this period and spending power will decline due to inflation over the long term, necessitating additional revenue.

The Regional Capital Investment Strategy (RCIS), outlined in Chapter 1, guides strategic investment to preserve and improve the transportation system. Reflecting the more limited revenues projected to be available under Plan 2040, investments, as noted earlier, are closely focused on the preservation of the existing system. As shown in Table 5-4 below, the Plan 2040 percent of total investments over the entire 26 year funding period 2014-2040 for bridges exceeds the region's RCIS goal. This reflects the state's efforts to address deficient bridge decks in the near to mid-term and to improve bridges constructed since the 1950's during the longer term, many of which are showing signs of wear. Transit enhancements encompass improving the speed and reliability of trips, facilitating access to the system, incorporating pedestrian and bicycle facilities, integrating bus and rail services and achieving new intermodal connectivity. Transit expansion improves the transit system in measured steps to attract new riders and to achieve cost-effective operations. Investments for other RCIS categories are generally in line with the region's goals. The NJTPA will be reexamining RCIS investment goals based on the Regional Plan for Sustainable Development (discussed in Chapter 1) and other analysis for the next plan update expected in 2017.

Table 5-4:
Plan 2040 Compared to RCIS Goals
In Year of Expenditure Dollars (millions)

RCIS Summary Category	RCIS Goal	Plan 2040	
Bridges	15%	19,585.50	23%
Road Preservation & Enhancement	20%	15,001.45	17%
Road Expansion	3%	1,488.11	2%
Transit Preservation & Enhancement	20%	33,902.26	39%
Transit Expansion	16%	9,554.67	11%
Freight, ITS, TDM, Safety, Bike/Ped	7%	7,329.46	8%
Total		**86,861.44**	

Source: NJ TRANSIT

Other Funding For Transportation

The state and federal investments in transportation discussed in this chapter are supplemented by additional investments by a number of transportation authorities in the region—principally the Port Authority of New York and New Jersey, New Jersey Turnpike Authority and the Delaware River Joint Toll Bridge Commission. Their investments will continue over the life of this plan. Key projects planned by the authorities are included in the Project Index. The jurisdiction of these authorities is as follows:

- **Port Authority of New York and New Jersey**: Key facilities operated by the Port Authority include Newark Liberty International Airport, Teterboro Airport, the PATH rail system, the Port complex in Newark and Elizabeth and major interstate New York-New Jersey crossings—Outerbridge Crossing, Goethals Bridge, Bayonne Bridge, Holland Tunnel, Lincoln Tunnel and the George Washington Bridge. The agency has built passenger ferry facilities, maintains roadways within its facilities, provides on-dock and cross-harbor rail service, and contributes to other key infrastructure elements that access its facilities and aid the movement of goods and people throughout the region. The Port Authority Board of Commissioners has ordered a review of the agency's capital program, while maintaining momentum on priority investments in its interstate transportation facilities. The Port Authority also has committed a total of $1.8 billion towards four NJDOT projects: rehabilitation of the Route 7 Wittpenn Bridge, Pulaski Skyway (Route 1/9), Route 1/9T Extension, and Route 139.
- **New Jersey Turnpike Authority**: The NJTA operates and maintains both the New Jersey Turnpike and

Driscoll Bridge on the Garden State Parkway, Middlesex County.

the Garden State Parkway. The Turnpike is 146 miles long (56 miles in the NJTPA region) and includes 27 interchanges, nearly 500 bridges and 12 service areas. The Garden State Parkway is 173 miles long (121 miles within the NJTPA region) and includes 90 interchanges, approximately 300 entrance and exit ramps and nearly 500 bridges. NJTA's funding comes from toll revenues which it uses to meet operations and maintenance expenses, finance its capital needs, and to make contributions to the TTF. The NJTA's $7 billion 2008-2018 capital improvement program is focused on widening the Turnpike between interchange 6 and 9 and the Parkway between interchange 35 and 80, as well as bridge, road, facility and interchange improvements. The Authority raised tolls in 2008 and 2012 to finance its capital program. In addition, the NJTA provides $22 million annually to the TTF, $12.5 million annually to fund feeder road projects and additional $2.0 billion projected between 2012 and 2020 for statewide needs.

- **Amtrak:** Amtrak owns the Northeast Corridor and provides intercity passenger rail service including regional and high speed Acela trains connecting northern New Jersey with Philadelphia, Wilmington, Baltimore and Washington, D.C. to the south; New York City, Providence and Boston to the north and other metropolitan areas throughout the nation. Amtrak, in concert with NJ TRANSIT, is progressing the planning and development of the Gateway Project, which calls for a series of improvements between Newark Penn Station and Penn Station New York including a new alignment and bridges, an additional Hudson River tunnel crossing and the construction of the Moynihan Penn Station New York complex.
- **Delaware River Joint Toll Bridge Commission:** This Commission maintains and operates seven toll

Metuchen, Middlesex County.

bridges and thirteen non-tolled bridges over the Delaware River spread out along 139 miles from northern Burlington County, New Jersey and Bucks County, Pennsylvania northward toward the New York State line. All DRJTBC toll bridges are in the NJTPA region except for the Trenton-Morrisville Bridge. The Commission is also responsible for the repair and maintenance of the first seven miles of I-78 in Warren County. The Commission relies on its toll revenues to fund its operations, maintenance and capital needs. Capital projects are focused on bridge repair, replacement and rehabilitation.

- **The Private Sector**: Private funding also makes substantial investments that enhance the regional transportation system. In particular, developers are frequently called upon to construct local streets as part of the development process and often will construct or improve county or state facilities impacted by their developments. Private operators of ferry and bus lines help supplement or offer alternatives to public transit operators. In the freight sector, private companies are engaged in nearly every aspect of goods movement including private port operations, trucking companies, rail lines and brokering/forwarding firms. All these private operations depend upon government-supported infrastructure investments. As a result, Plan 2040 continues the call for on-going cooperation and coordination by NJTPA with private sector interests as well as the regions' transportation authorities in its year-to-year investments of state and federal funding.

Options for a More Robust Plan 2040

The NJTPA clearly recognizes that the existing transportation funding model severely restricts the region's ability to pursue new initiatives and, over time, presents challenges for the preservation of existing assets. Given this constrained funding outlook, it is vitally important for elected officials and policy makers to undertake efforts to implement new funding, financing and project implementation efficiencies so that the region has a well maintained transportation network with the capacity that can meet future travel needs. This financial plan assumes additional revenue of at least 2.7 percent per year will be required after 2024 to meet inflation, address increasing repair and rehabilitation needs and to accommodate growing travel demand. Funding above this level would allow the region to move beyond a predominant focus on "fix-it first" to consider more expansions and enhancements to the region's infrastructure, opening up new travel options and further spurring regional economic growth.

It is important that the region continue the dialogue on the consideration of new funding sources and the potential benefits and costs to residents, businesses and users of the transportation network. As demonstrated through the years, strategic investments that provide for a viable and robust transportation network serve as the foundation for the region's economic competitiveness and quality of life. Options to expand the region's ability to deliver a more robust transportation plan may include:

- **Motor Fuels Sales Tax**: As noted throughout this chapter, Plan 2040's fiscal constraints are being

driven by the declining viability for federal and state gallonage based motor fuel taxes. Increased fuel efficiency has led to a decline in projected future revenues; as such raising the motor fuels tax only provides a limited benefit. Rather, the approach being pursued by states including Virginia, Maryland and Pennsylvania to replace all or a portion of the motor fuels tax with a sales tax on the wholesale price of fuel can provide an alternative source of funding that grows generally in line with inflation and consequently is more sustainable over the mid-term.

In fact, some states are beginning to address the issues posed by the motor fuel tax. This year the Commonwealth of Virginia enacted legislation to replace its existing 17.5 cent per gallon motor fuel tax with a 3.5% sales tax on the wholesale price of gasoline and a 6% tax on the wholesale price of diesel, increased the general sales tax by 0.3%, adjusted certain titling and registration fees and increased certain regionally based taxes for transportation. In addition, Maryland recently passed legislation to index its motor fuel tax with inflation and phase in a 3% sales tax on motor fuel. Pennsylvania has proposed reducing its gallonage based motor fuel tax and increasing its wholesale tax on motor fuels.

- **Vehicle Miles Traveled ("VMT") Fee:** While a motor fuels sales tax could provide a revenue source that grows at an inflationary rate, it is still sensitive to the long term declining trend in fuel consumption. Over the long term, the region could consider the implementation of a VMT fee where revenues raised are directly linked to usage of the transportation system. The viability of this fee is contingent upon resolution of technological issues surrounding the accurate and fair measurement of travel, the imposition of the fee and the protection of privacy.
- **Dedicated Transportation Sales Tax:** An increase in the general sales tax dedicated to transportation provides an option for a long term, sustainable funding solution. While such a fee is not directly linked to transportation system usage and is to a certain degree a regressive form of taxation that burdens the non-driving poor the most, users and non-users of the transportation system both benefit from the network's presence which is manifested in part by the economic activity that it supports and is measured by a sales tax. Regional dedicated sales taxes are typically implemented to support the capital and operating needs of transit systems including in Boston, New York City (where they are one of several revenue sources), Chicago, Los Angeles, Miami, Cleveland, Dallas, and Denver. In addition, several California counties have imposed sales taxes to fund both highway and transit projects.
- **Transportation Development Districts:** This funding mechanism features a property tax surcharge that is levied on properties within a defined geographic area that benefit from a transportation improvement such as a new transit line, highway or interchange. Such districts have been used to fund highway improvements and contribute a portion of the funding for the extension of Metro rail service in Northern Virginia.

Lincoln Tunnel approach, Weehawken, Hudson County.

- **Tolls:** The NJTA currently provides a portion of its toll revenues to support the TTF. In addition a number of other toll entities contribute funding to support off-system needs used by the region's commuters and travelers including MTA Bridges and Tunnels for subways, buses and commuter rail needs in New York City, the Port Authority of New York and New Jersey for PATH and the Port Authority Bus Terminal, Delaware River Port Authority for the PATCO High Speed Line, and Pennsylvania Turnpike for statewide roadway, bridge and transit needs. Over time, increasing the NJTA's tolls and/or introducing new toll facilities could provide additional revenues to fund transportation needs. It is important to note that the NJTPA is sensitive to the NJTA's financial obligations to maintain and expand the Turnpike and the Garden State Parkway as well as service its current debt.

- **Public Private Partnerships:** Public Private Partnerships ("P3s") hold the promise of delivering transportation projects in a timely and cost effective manner. Although P3s do not represent new funding, they can be effectively used to better leverage existing resources and to introduce private sector efficiencies and financing through risk sharing and contractual incentives and disincentives that improve the delivery and quality of transportation projects and services. The Port Authority of New York and New Jersey is pursuing a P3 for the Goethals Bridge project, while NJ TRANSIT has utilized a partnership with the private sector to design, construct, operate and maintain the Hudson-Bergen Light Rail and the River Line. P3s are increasingly being evaluated and implemented around the country. In 2012, for example, Pennsylvania became the 33rd state or US territory to pass legislation enabling the use of P3s for infrastructure projects.

View of George Washington Bridge in Fort Lee, Bergen County.

- **Transportation Infrastructure Finance and Innovation Act ("TIFIA") Loans**: The TIFIA credit program provides federal credit assistance to nationally/regionally significant surface transportation projects. TIFIA was designed to fill market gaps and leverage substantial public and private co-investment by providing supplemental and subordinate capital. Loans can finance up to 49% of eligible project costs. TIFIA loans have been undertaken by public entities such as the Washington DC Metropolitan Area Transit Authority; the North Carolina Turnpike Authority; and the Florida Department of Transportation. Repayment is flexible and can be deferred for five years after project completion, with the loan fully repaid 35 years after completion. The interest rate for TIFIA loans is attractive and is currently equal to the treasury rate for the term of the loan plus one basis point, which as of June 2013 was about 3.4% A TIFIA loan is being explored by the Port Authority as a possibility as part of the financing for the Goethals Bridge Project.
- **Freight Rail Funding**: New Jersey's Freight Rail Assistance Program receives about $10 million in appropriations from the TTF each year. Current funding levels allow the NJDOT to support eight to 12 targeted rail freight projects selected by the agency annually. Project selection is based on the program's goal of facilitating economic activity in the state through the provision of a strong, multimodal transportation system that makes competitive rail freight service available and effective for as many businesses as possible. The NJDOT notes that capital needed to preserve and improve the state's freight rail system exceeds available funding by three times.

To address this issue, the NJDOT is examining a range of funding options and best practices utilized other states to support their rail infrastructure. Practices from other states include funding swaps in Connecticut and New Mexico, where railroads are exempt from certain taxes if they commit to making capital improvements in the state; a tax on freight car revenues used to support a revolving loan program in Oklahoma; and P3s such as those used in Delaware where contributions from a freight railroad are based on its usage of the project. In addition to funding strategies, Railroad Rehabilitation and Infrastructure Financing (RRIF) loans provided by the Federal Railroad Administration provide low cost financing similar to TIFIA. As of June 2013, there were three bills pending in the state Legislature that would: establish a state transportation infrastructure bank featuring a special non-lapsing revolving loan fund; double the railroad property tax and railroad franchise tax, which have not been adjusted since 1948 to fund freight rail improvements; and authorize the NJDOT Commissioner to identify and select P3 projects.

Public-private partnerships, as well as private investment in the state's rail system, are viewed as essential given that rail freight operations are generally conducted by private companies using private infrastructure. Indeed, the freight railroads operating in New Jersey, as well as the Port Authority of New York and New Jersey, have invested and continue to invest their funds into the rail system. Such projects are generally not included in the NJTPA TIP, are outside the financial accounting for the long range plan, and remain as an on-going assumption in financing the rail freight system.

Looking Forward

Plan 2040 fulfills federal mandates for updating the NJTPA's long range plan to guide the year-to-year investments of federal funding in the regional transportation system. As noted in Chapter 1, this plan update is being adopted while the NJTPA is in the midst of working with a consortium of public, private and non-profit organizations known as Together North Jersey to develop a Regional Plan for Sustainable Development, or RPSD. The RPSD promises to create new, more effective strategies for realizing economic growth while protecting the environment, creating strong communities, improving access to jobs, encouraging cultural participation and integrating art into all aspects of

Kingston, Middlesex County.

community planning, promoting affordable housing, supporting quality education and encouraging other measures of progress for the region. Transportation is a key focus of the RPSD. ▪ As discussed in Chapter 2, public workshops conducted for the RPSD were used to gather input for Plan 2040. In addition, Plan 2040 incorporates initial analyses of regional trends and issues conducted for the RPSD. The findings and recommendations of the RPSD, scheduled for completion in 2015, will provide the foundation for the NJTPA's 2017 Regional Transportation Plan update. ▪ The next steps toward developing the RPSD for the region, including sustainable transportation strategies,

Morristown, Morris County.

include:

Visioning Outreach—As a follow up to the initial workshops held around the region in spring 2013, a number of "visioning" activities will be conducted to gather input on future development of the region. Participants will engage in exercises to suggest where and how development should occur including transportation investment.

Local Demonstration Projects—Grants supporting up to 15 Local Demonstration Projects are creating "on-the-ground" success stories and will be an important component of creating a supportive implementation framework and informing plan development. Potential projects include a variety of local project planning and other implementation activities to make transit corridors and communities "more livable."

Local Government Capacity Grant Program—Financial and technical assistance is being provided to county and local governments to conduct outreach, analysis, coordination and planning activities to support and advance the development of the RPSD. This includes studies of various regional sustainability issues, including transit supportive development, complete streets, and flood mitigation.

Technical Analysis—A series of topic papers have been prepared focusing on key issues that must be addressed in the final RPSD. The NJTPA led development of the Transportation and Climate & Energy topic papers and will be leading a regional Comprehensive Economic Development Strategy (CEDS) effort.

In parallel with these efforts, the NJTPA will continue to conduct and support regional transportation planning in cooperation with its member subregions. Plan 2040's data and analysis, Regional Capital Investment Strategy and identified project and policy priorities will guide this continued planning. Notable planning efforts looking forward include:

Studies of Regional Issues—The NJTPA will conduct a wide range of studies, in partnership with municipal, county, and state agencies, focused on the issues identified in Plan 2040.

Local Project Support—Grant funding will be provided for concept development and environmental reviews for priority subregional projects through the Local Capital Project Delivery Program and for implementation of "quick fix" safety projects though the Local Safety and High Risk Rural Roads programs.

Planning Technical Assistance—Support for counties and municipalities will be provided through the NJTPA Planning for Emerging Centers program, walkability workshops, and other efforts in keeping with the objectives of Plan 2040.

Performance Measures—To meet requirements of the MAP-21 transportation law, the NJTPA, in cooperation with the NJDOT and NJ TRANSIT, will establish regional performance measures and targets aligned with seven identified national goals (Safety; Infrastructure Condition; Congestion Reduction; System Reliability; Freight Movement and Economic Vitality; Environmental Sustainability; Reduced Project Delivery Delays).

Project Selection Criteria—The system for scoring and ranking candidate projects for funding will be updated reflecting the priorities of Plan 2040 and MAP-21 performance measures.

Intelligent Transportation System (ITS)—An update of the statewide regional ITS architecture and deployment plan will be created and will serve as a shared vision of technology investment for a more efficient transportation system.

Public Outreach and Education—Along with a region-wide pedestrian safety education campaign, the NJTPA will continue to disseminate information about the planning process and will encourage public participation through public meetings and events, symposiums, the NJTPA website, Facebook, Twitter, the agency email list and other means.

All these planning and implementation activities by the NJTPA, its subregions and Together North Jersey will help the region continue its progress in renewing regional economic growth while making the most efficient use of the region's transportation network. In coming years, these efforts will also help the region meet some of its looming financial challenges. Some examples include using technology to gain new capacity without expensive infrastructure upgrades or encouraging land uses that will reduce the burden on key roads and rail lines.

As Chapter 5 makes clear, the region will still need to consider additional revenues over the long term to support increasing travel demands from a growing population and to address accumulating maintenance needs. Yet Plan 2040 lays the foundation for an ongoing transportation planning and investment process—including the completion of the RPSD and future RTP updates—to ensure that the transportation network effectively serves the mobility needs of the region's residents and businesses and continues to function as a premier asset for the region's economy.

Supporting Documents

The following Project Index contains current and future candidate projects that have been identified through the metropolitan planning process in northern New Jersey and whose costs can be accommodated based on the 25-year funding assumptions as set forth in Chapter 5. The Index arrays projects by the county in which they are located. They are further arrayed by Highway/Bridges, Transit and Authority categories as well as by timeframe. Near-term projects are those that can be completed within one to four years. This includes projects contained in the 4-year NJTPA Transportation Improvement Program (TIP). Mid-term projects are scheduled to be completed in years 5 through 10. They include the six out-years of the 10-year State Transportation Improvement Program (STIP). Long-term projects are estimated to be completed during the final 15 years of the Plan, years 11 to 25. Projects in the Study and Development Program are included in the "Projects under Study" category of the Index. Projects are listed in their respective timeframe category based on the year they will be completed (near, mid, or long-term). All costs are presented in Year of Expenditure (YOE) dollars.

Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)

Bergen

Highway/Bridges

Near-Term

* Bergen County, Specialized Bus Transit	N1129	TDM	0.97
** Eighth Street Bridge	NS0109	Bridges	15.00
** Fifth Avenue Bridge (AKA Fair Lawn Avenue Bridge) over Passaic River	NS9606	Bridges	13.25
* Hackensack River Walkway	07368	Bike/Ped	1.44
* Market Street/Essex Street/Rochelle Avenue	98546	Road Enhancement	3.44
Meadowlands Adaptive Signal System for Traffic Reduction (MASSTR)	N1101	ITS	6.25
Route 17, Airmount Ave. to I-287, Pavement	11333	Road Preservation	8.80
Route 46, Main Street to Vicinity of Frederick Place, Safety Improvements	93287A	Safety	10.13
Route 287, Glaser's Pond, Long-term Drainage Improvements	02399	Road Preservation	0.91

Mid-Term

Route 4, Bridge over Palisade Avenue, Windsor Road and CSX Railroad	065C	Bridges	44.80
Route 4, Grand Avenue Bridge	08410	Bridges	20.55
Route 4, Hackensack River Bridge	02346	Bridges	39.50
Route 4, Jones Road Bridge	94064	Bridges	9.80
Route 4, Teaneck Road Bridge	93134	Bridges	16.84
Route 9W, Palisades Avenue to New York State Line	11406	Bike/Ped	1.90
Route 17, Central Avenue Bridge, Rochelle Park	94056	Bridges	7.50
Route 17, NYS&W Bridge	94057	Bridges	14.50
Route 80, WB, Pavement, Bergen & Passaic Counties	11415	Road Preservation	51.50
Route 208, Bergen County Drainage Improvements	11381	Road Preservation	7.40
Route 208, Wyckoff Twp., Bergen Co., Culvert Replacement	11355	Bridges	2.10

Long-Term

Route 1&9, NYS&W RR Bridge (23)	9240	Bridges	56.32
Route 17, Essex Street to South of Route 4	103A1	Road Expansion	272.19
Route 17, Williams Avenue to I-80	103A2	Road Expansion	256.94
Route 80, Elmwood Park/Rochelle Park/Saddle Brook, Noise Walls	00370	Road Enhancement	16.94

Projects Under Study

Route 80, River Road Park & Ride, Elmwood Park, Bergen County	10350	TDM	
Route 287, Truck Weigh Station, Bergen County	858	Road Preservation	

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** Funding is programmed in DB# N063 (NJTPA, Future Projects) for the Local Lead TTF program.

Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
NJ TRANSIT			
Near-Term			
Lyndhurst Improvements	T610	Transit Enhancement	10.50
Projects Under Study			
Northern Branch Project Draft Environmental Impact Statement	TN08002	Transit Expansion	
Passaic/Bergen NYS&W Project	TN05004	Transit Expansion	
Routes 46/3 Corridor Bus Improvements	TN10003	Transit Enhancement	
Authority Projects			
Near/Mid-Term			
New Jersey Meadowlands Commission			
Carlstadt Bicycle Improvements (B1)	MC09038_B	Bike/Ped	
Carlstadt/Moonachie Shuttle (NJMC MTPD Project T6)	MC09031_T	Transit Enhancement	
East Rutherford Bicycle Improvements (B2)	MC09039_B	Bike/Ped	
Meadows Path Bicycle Improvements (B5)	MC09047_B	Bike/Ped	
Meadows Path Bicycle Improvements (B6)	MC09048_B	Bike/Ped	
Meadows Path Bicycle Improvements (B8)	MC09049_B	Bike/Ped	
Meadows Path Bicycle Improvements (B12)	MC09050_B	Bike/Ped	
Moonachie Avenue and Grand Street, Moonachie (NJMC MTPD Project E2)	MC09020_R	Road Enhancement	
Moonachie Avenue Pedestrian Improvements, Moonachie (NJMC MTPD Project P6)	MC09037_P	Safety	
Moonachie Bicycle Improvements (B7)	MC09041_B	Bike/Ped	
Murray Hill Parkway and East Union Avenue, East Rutherford (NJMC MTPD Project E4)	MC09021_R	Road Enhancement	
Murray Hill Parkway and East Union Avenue, East Rutherford (NJMC MTPD Project I4)	MC09006_R	Road Enhancement	
NJ Route 46 and Industrial Avenue, Teterboro (NJMC MTPD Project I1)	MC09004_R	Road Enhancement	
Paterson Plank Road Pedestrian Improvements, East Rutherford/ Carlstadt (NJMC MTPD Project P4)	MC09035_P	Bike/Ped	
Rutherford Bicycle Improvements (B10)	MC09042_B	Bike/Ped	
Teterboro Bicycle Improvements (B13)	MC09043_B	Bike/Ped	
Valley Brook Avenue and Orient Way, Lyndhurst (NJMC MTPD Project E8) MC09024_R Road Enhancement			
Valley Brook Avenue Pedestrian Improvements, Lyndhurst (NJMC MTPD Project P1)	MC09032_P	Bike/Ped	
New Jersey Turnpike Authority			
GSP, Interchange 163 Improvements	GSP1407	Road Enhancement	
New Jersey Turnpike Improvements at Interchanges 15W and 16W	TPK1401	Road Enhancement	
Port Authority of NY & NJ			
Palisades Interstate Parkway Connector Ramp	CB04-161	Road Enhancement	

Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)

Essex

Highway/Bridges

Near-Term

** Berkeley Avenue Bridge	NS9810	Bridges	3.70
Bloomfield Avenue Bridge over Montclair Line	98342	Bridges	7.45
* Bridge St., Clay St., Jackson St. Bridges; Essex County	09339	Bridges	0.98
** Delancy Street, Avenue I to Avenue P	NS0504	Road Enhancement	13.50
* Edison National Historic Site, Traffic Improvements	08447	Road Enhancement	0.17
* Irvington Center Streetscape	08443	Bike/Ped	0.72
** McClellan Street Underpass	NS9812	Road Enhancement	6.50
Newark Access Variable Message Signage System	08442	ITS	0.36
* North Broad Street Redevelopment Project	N1126	Economic Development	0.49
* Rahway River Corridor Greenway Bicycle and Pedestrian Path	04390	Bike/Ped	1.08
Route 1&9, Haynes Ave. Operational Improvements	94047	Road Enhancement	21.59
Route 1&9, Local and Express, Newark, Pavement	11336	Road Preservation	14.00
Route 10, Passaic River	95069	Bridges	4.35
* Route 21, Newark Waterfront Community Access	98540	Bike/Ped	5.26
Route 46, Passaic Avenue to Willowbrook Mall	9233B3	Road Enhancement	28.80
Route 80, EB, West of Rt. 280 to East of Two Bridges Road	11335	Road Preservation	10.58
** Two Bridges Road Bridge and West Belt Extension	NS9801	Bridges	18.00

Mid-Term

PANY&NJ-NJDOT Project Program	11407	Bridges	1,504.00
Route 21, Newark Needs Analysis, Murray Street to Edison Place	99381	Road Enhancement	3.50
Route 78, PA State Line to NJ Turnpike, ITS Improvements	06360	ITS	1.30
Route 280, Route 21 Interchange Improvements	00314	Bridges	119.00

Long-Term

EWR Southern Access Roadway	94047A	Road Enhancement	63.56
Portway, Passaic River Crossing	97005D	Freight	696.37
Route 23/80, Long-term Interchange Improvements	9233B6	Road Enhancement	50.68
Route 46, I-80 to I-80/280, ITS Improvements	06366	ITS	16.58
Route 80, Noise Barriers, Parsippany–Troy Hills to Fairfield, Baldwin Road to Passaic River	94004	Road Enhancement	24.18

Projects Under Study

Clay Street Bridge over the Passaic River	NLCD1402	Bridges	
Route 280, WB Ramp over 1st & Orange Streets, Newark Subway & NJ TRANSIT	12318	Bridges	

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
NJ TRANSIT			
Projects Under Study			
Routes 46/3 Corridor Bus Improvements	TN10003	Transit Enhancement	
Authority Projects			
Near-Term			
Port Authority of NY & NJ			
Ductbanks	PA1414	Transit Preservation	123.75
Equipment Purchases	PA1421	Transit Preservation	102.00
Priority Protective Measures	PA1410	Transit Preservation	9.75
Salt Mitigation	PA1412	Transit Preservation	15.00
Signals Replacement Program	PA1418	Transit Preservation	386.00
Substations	PA1413	Transit Preservation	193.38
Trackwork Repair and Restoration	PA1419	Transit Preservation	210.00
Near/Mid-Term			
New Jersey Meadowlands Commission			
Kearny Shuttle (NJMC MTPD Project T1)	MC09026_T	Transit Enhancement	
New Jersey Turnpike Authority			
GSP Interchange 142 Improvements (I-78)	GSP140	Road Expansion	
GSP, Interchange 145 Improvements	GSP1406	Road Enhancement	
Port Authority of NY & NJ			
Corbin Street Intermodal Facility—Phase 2A	CP05-148	Freight	
Corbin Street Intermodal Facility—Phase 2B	CP05-149	Freight	

Hudson

Highway/Bridges

Near-Term

Greenville Yard and Lift Bridge—State-of-Good-Repair	09338B	Freight	87.51
Greenville Yard and Lift Bridge—Temporary Maintenance of Barge Operations	09338A	Freight	1.50
Hoboken Observer Highway Operational and Safety Improvements	08441	Safety	1.80
* Hudson County Pedestrian Safety Improvements	08450	Bike/Ped	0.72
Meadowlands Adaptive Signal System for Traffic Reduction (MASSTR)	N1101	ITS	6.25
Newark and First Street Improvements, Hoboken	08446	Road Enhancement	0.22
Riverbank Park Bike Trail	08440	Bike/Ped	1.68
Route 3, Bridge over Northern Secondary & Ramp A	08346	Bridges	21.00

* Denotes projects with Congressionally designated funding which does not necessarily reflect the full cost of projects, nor the YOE amount.

Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Route 7, Bridge over CONRAIL	10340	Bridges	13.10
Route 440, Bayonne Bridge Navigational Clearance Project	N1301	Bridges	920.00
Mid-Term			
* Canal Crossing Infrastructure Planning Project	N1102	Economic Development	1.96
* Intermodal Access Improvements to the Peninsula at Bayonne	09344	Freight	1.44
PANY&NJ-NJDOT Project Program	11407	Bridges	1,504.00
Portway, Fish House Road/Pennsylvania Avenue, CR 659	97005B	Freight	17.80
Route 7, Kearny, Drainage Improvements	93186	Road Preservation	31.72
* Route 280, Harrison Township Operational Improvements	04305	Road Enhancement	13.66
Route 280, Route 21 Interchange Improvements	00314	Bridges	119.00
* Route 440, NJ Turnpike Interchange Upgrade, Jersey City	09350	Road Enhancement	2.34
* Route 440/1&9, Boulevard through Jersey City	06307	Road Enhancement	0.90
Long-Term			
* 6th Street Viaduct Pedestrian and Bicycle Pathway	06322	Bike/Ped	1.44
* McGinley Square Parking Facility	06321	TDM	0.76
Portway, Passaic River Crossing	97005D	Freight	696.37
Route 1&9, NYS&W RR Bridge (23)	9240	Bridges	56.32
Projects Under Study			
Clay Street Bridge over the Passaic River	N1402	Bridges	
Jersey Avenue Extension over Mill Creek	N1404	Bridges	
Route 1&9T, Secaucus Road to Little Ferry	97005E	Freight	
Route 3, EB & S Service Road over Route 495 Ramp J	12386	Bridges	
NJ TRANSIT			
Projects Under Study			
Hudson Bergen Light Rail Extension across Route 440	T565	Transit Expansion	
Northern Branch Project Draft Environmental Impact Statement	TN08002	Transit Expansion	
AMTRAK			
Mid-Term			
NEC Portal Bridge	T539	Transit Preservation	TBD
Authority Projects			
Near-Term			
Port Authority of NY & NJ			
Ductbanks	PA1414	Transit Preservation	123.75
Equipment Purchases	PA1421	Transit Preservation	102.00
Lifts	PA1416	Transit Preservation	2.59

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
MacMillan-Bloedel Building Roof Replacement Project	PA1417	Transit Preservation	9.91
Priority Protective Measures	PA1410	Transit Preservation	9.75
Priority Protective Measures with Potential Environmental Impacts	PA1411	Transit Preservation	11.25
Rail Rolling Stock Resiliency	PA1420	Transit Preservation	10.00
Salt Mitigation	PA1412	Transit Preservation	15.00
Signals Replacement Program	PA1418	Transit Preservation	386.00
Substations	PA1413	Transit Preservation	193.38
Trackwork Repair and Restoration	PA1419	Transit Preservation	210.00
Vertical Transportation	PA1415	Transit Preservation	30.85
Near/Mid-Term			
New Jersey Meadowlands Commission			
83rd Street, between US 1&9 and Westside Avenue, North Bergen (NJMC MTPD Project L15)	MC14001_R	Road Enhancement	
County Avenue and Secaucus Road, Secaucus (NJMC MTPD Project I6)	MC09008_R	Road Enhancement	
Harrison Avenue Area Pedestrian Improvements, Kearny (NJMC MTPD Project P2)	MC09033_P	Bike/Ped	
Kearny Shuttle (NJMC MTPD Project T1)	MC09026_T	Transit Enhancement	
Meadowland Parkway, between NJ Route 3 and Broadcast Plaza, Secaucus (NJMC MTPD Project L10)	MC09002_R	Road Enhancement	
Meadowlands Parkway and NJ Route 3 westbound ramp, Secaucus (NJMC MTPD Project E9)	MC09025_R	Road Enhancement	
Meadows Path Bicycle Improvements (B4)	MC09046_B	Bike/Ped	
New County Road and County Road Extension Pedestrian Improvements, Secaucus (NJMC MTPD Project P5)	MC09036_P	Bike/Ped	
NJ Route 3 eastbound service road & Plaza Drive, Secaucus (NJMC MTPD Project E7)	MC09023_R	Road Enhancement	
Paterson Plank Road and 1st Street, Secaucus (NJMC MTPD Project I12)	MC09013_R	Road Enhancement	
Paterson Plank Road and Harmon Meadow Boulevard, Secaucus (NJMC MTPD Project I5)	MC09007_R	Road Enhancement	
Paterson Plank Road and Terminal Road, Secaucus (NJMC MTPD Project E5)	MC09022_R	Road Enhancement	
Secaucus Greenway Bicycle Improvements (NJMC MTPD Project B3)	MC09040_B	Safety	
Secaucus Greenway Bicycle Improvements (NJMC MTPD Project B9)	MC09044_B	Bike/Ped	
Secaucus Greenway Bicycle Improvements (NJMC MTPD Project B11)	MC09045_B	Bike/Ped	
Secaucus-North Bergen Shuttle (NJMC MTPD Project T5)	MC09030_T	Transit Enhancement	
Westside Avenue and Paterson Plank Road, North Bergen (NJMC MTPD Project I3)	MC09005_R	Road Enhancement	
Westside Avenue Pedestrian Improvements, North Bergen (NJMC MTPD Project P3)	MC09034_P	Bike/Ped	
Whitpenn Bridge Travel Lane Metering (NJMC MTPD Project L16)	MC09003_R	Road Preservation	
New Jersey Turnpike Authority			
New Jersey Turnpike Improvements at Interchanges 15W and 16W	TPK1401	Road Enhancement	
Turnpike Interchange 14A Reconstruction	TPK14A	Road Enhancement	

Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)

Hunterdon

Highway/Bridges

Near-Term

** Church Street Bridge, CR 579	NS9806	Bridges	4.20
** Milford-Warren Glen Road, CR 519	NS9703	Road Enhancement	4.70
Route 22, I-78 Interchange to West of Peters Brook, Pavement	11409	Road Preservation	15.63
Route 29, South of Alexauken Creek Road to Washington Street, Pavement	11413	Road Preservation	9.65
Route 31, Northbound, Minneakoning Road to MP 24.92	08327A	Road Enhancement	4.80
Route 31, South of Rt. 78 to North of CR 634	11342	Road Preservation	7.38
Route 31/202, Flemington Circle	403B	Road Enhancement	6.31
Route 173, I-78 to Fox Hill Lane, Pavement	12338	Road Preservation	8.50
Route 173, Musconetcong River, Culvert Replacement	11353	Bridges	2.92
Route 173, Strotz Road to Route 78	13335	Road Preservation	2.08
Route 179, Route 165 to Route 31/202, Pavement	11419	Road Preservation	5.30

Mid-Term

Route 31, Church Street to River Road	08327	Road Enhancement	6.25
Route 78, Edna Mahan Frontage Road	9137A	Road Enhancement	8.90
Route 78, PA State Line to NJ Turnpike, ITS Improvements	06360	ITS	1.30

Projects Under Study

Route 31, Integrated Land Use & Transportation Plan	403A	Road Expansion	
Route 78, Interchange Study at Route 31	93141	Road Enhancement	

NJ TRANSIT

Projects Under Study

Central NJ/ Raritan Valley Transit Study	TN10001	Transit Expansion	
Flemington Transit Study, Hunterdon County	TN09001	Transit Expansion	

Authority Projects

Near/Mid-Term

Delaware River Joint Toll Bridge Commission

Lumberville-Raven Rock Pedestrian Bridge Rehabilitation	DB14003	Bridges	
New Hope-Lambertville Toll Bridge Approach Roadways & Bridges Improvements	DB14001	Bridges	

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)

Middlesex

Highway/Bridges

Near-Term

* East Coast Greenway, Middlesex/Union Counties	04327B	Bike/Ped	0.72
* New Brunswick Station Pedestrian Access Improvements (Liberty Corridor)	N1203	Bike/Ped	4.67
Route 1, CR 531 to Smith Street	13327	Road Preservation	2.83
Route 1, Prince Street, Culvert Replacement	11346	Bridges	0.68
Route 18, Bridge over Route 1	FS09644	Bridges	24.80
Route 18, South of Old Texas Road to Rues Lane, Pavement	11408	Road Preservation	7.00
Route 27, Carter's Brook & Ten Mile Run Tributary Culvert Replacement	10380	Bridges	3.27
Route 27, Riverside Drive W to Vliet Road	13326	Road Preservation	2.01
Route 35, SB Cliff Avenue to Route 9	13328	Road Preservation	1.31
Route 130, Main Street to Route 1	11309A	Road Preservation	10.36
Route 130, Westfield Ave. to Main Street	11309	Road Preservation	8.78
Schalk's Crossing Road Bridge, CR 683	00321	Bridges	10.05
South Amboy Intermodal Center	98541	Transit Enhancement	9.63
Tremley Point Access Local Roadway Improvements	9324A	Road Expansion	120.06

Mid-Term

* Carteret Ferry Service Terminal	06316	Transit Expansion	3.24
Oak Tree Road Bridge, CR 604	99316	Bridges	7.20
* Robert Wood Johnson University Hospital Parking Facility	08449	Transp. Enhancements	1.44
Route 9/35, Main Street Interchange	079A	Road Enhancement	35.00
Route 18, East Brunswick, Drainage and Pavement Rehabilitation	10354	Road Preservation	26.48
Route 18, Edgeboro Rd. & Tices Rd., Intersection Improvements	X221B1	Road Enhancement	2.90
Route 287, Interchange 10 Ramp Improvements	9169Q	Road Enhancement	6.10
Route 287, River Road (CR 622), Interchange Improvements	9169R	Road Enhancement	3.00
* Route 440, High Street Connector	99379	Road Expansion	3.60

Long-Term

Route 34, Amboy Road/Morristown Road (5)	9227	Road Enhancement	8.44

Projects Under Study

Route 1, Forrestal Road to Aaron Road	08417	Road Expansion	

NJ TRANSIT

Near-Term

Perth Amboy Station Improvements	T620	Transit Enhancement	44.00

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Projects Under Study			
Central New Jersey Route 1 Bus Rapid Transit	TN10002	Transit Expansion	
Monmouth—Ocean—Middlesex Corridor Project	TN05001	Transit Expansion	
Route 9 Bus Enhancements	TN12001	Transit Enhancement	

Authority Projects

Near/Mid-Term

New Jersey Turnpike Authority

New Jersey Turnpike Improvements to Interchange 10	TPK1403	Road Enhancement	
New Jersey Turnpike Interchange 9 Improvements	TPK1402	Road Enhancement	
NJ Turnpike, Interchange 8A and Route 130 Improvements	TPK1404	Road Enhancement	
NJ Turnpike Widening, Interchange 6 to Interchange 9 Program	TPK0501	Road Expansion	
Parkway Interchange 125 (Phase I)	GSP1003	Road Enhancement	

Monmouth

Highway/Bridges

Near-Term

** County Route 6 Bridge (MA-14)	NS9811	Bridges	11.00
* Englishtown Borough, Road Improvements	N1128	Road Enhancement	0.75
Halls Mill Road	HP01002	Road Enhancement	17.70
Route 9, Craig Road/East Freehold Road, Intersection Improvements	97071	Road Enhancement	18.68
Route 18, CR 547 to Rt 34	13324	Road Preservation	4.36
Route 18, NB, North of Route 138 to South of Deal Road, Pavement	11412	Road Preservation	5.30
Route 18, South of Old Texas Road to Rues Lane, Pavement	11408	Road Preservation	7.00
Route 33, Operational and Pedestrian Improvements, Neptune	N09670	Safety	7.50
Route 34, Colts Neck, Intersection Improvements (CR 537)	96040	Road Enhancement	12.84
Route 34, CR 537 to Washington Ave., Pavement	11307	Road Preservation	10.76
* Route 35, Eatontown Borough Downtown Redevelopment	98539B	Economic Development	0.57
* Route 35, Eatontown Borough Intersection Improvements	98539A	Road Enhancement	0.57
Route 35, North of Lincoln Dr to Navesink River Bridge	12308	Road Preservation	3.00
Route 36, North of Stone Road to Route 35, Pavement	12376	Road Preservation	2.30
Route 71, Main Ave to Cedar Ave, Pavement	11379	Road Preservation	13.80
** Sunset Avenue over Deal Lake (O-10)	NS0106	Bridges	10.00

Mid-Term

* Laurel Avenue NJ Transit Bridge Replacement	08379	Bridges	0.72
** Monmouth County Bridge S-31 (AKA Bingham Avenue Bridge) over Navesink River, CR 8A	NS9603	Bridges	58.00
** Monmouth County Bridges W7, W8, W9 over Glimmer Glass and Debbie's Creek	NS9306	Bridges	34.16
Route 34, Bridge over former Freehold and Jamesburg Railroad	11315	Bridges	10.10

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Long-Term			
Route 71, Wyckoff Road, CR 547	HP01001	Road Enhancement	6.30
Projects Under Study			
County Route 537 Corridor, Section A, NJ Rt. 33 Business and Gravel Hill Road	NS0403	Road Enhancement	
Route 9, Bus Rapid Transit	07350	Transit Enhancement	
Route 66, West of Jumping Brook Road to East of Wayside Avenue	08329	Road Enhancement	
Rumson Road over the Shrewsbury River, CR 520	NS9706	Bridges	
NJ TRANSIT			
Projects Under Study			
Monmouth—Ocean—Middlesex Corridor Project	TN05001	Transit Expansion	
Route 9 Bus Enhancements	TN12001	Transit Enhancement	
Authority Projects			
Near/Mid-Term			
New Jersey Turnpike Authority			
GSP Shoulder Restoration and Improvements Program, MP 83 to 100	GSP1401	Safety	
GSP, Interchange 105 Improvements	GSP1404	Road Enhancement	
GSP, Interchange 109 Improvements	GSP1405	Road Enhancement	

Morris

Highway/Bridges

Near-Term

** Landing Road Bridge Over Morristown Line, CR 631	NS9708	Bridges	8.38
** NY Susquehanna and Western Rail Line Bicycle/Pedestrian Path	NS9803	Bike/Ped	12.00
Route 10, Hillside Ave (CR 619) to Mt. Pleasant Tpk (CR 665)	11339	Road Preservation	20.40
Route 10, Passaic River	95069	Bridges	4.35
Route 23, CR 695 to Belcher Lane	13325	Road Preservation	5.83
Route 23, Pavement, Morris & Passaic Counties	11424	Road Preservation	11.12
Route 23, Riverdale Boro, Culvert	11348	Bridges	2.04
Route 46, Fox Hill Road to Columbus Way	13332	Road Preservation	2.56
Route 80, EB, West of Rt. 280 to East of Two Bridges Road	11335	Road Preservation	10.58
** Sussex Turnpike, CR 617	L070	Road Enhancement	6.50
** Two Bridges Road Bridge and West Belt Extension	NS9801	Bridges	18.00
** Waterloo Road over Musconetcong River	NS0107	Bridges	2.78

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Mid-Term			
Route 23, Bridge over Pequannock River / Hamburg Turnpike	08347	Bridges	34.23
Route 57/182/46, Hackettstown Mobility Improvements	9237	Road Enhancement	10.00
Route 80, Route 15 Interchange	93139	Road Enhancement	37.70
Route 80, Route 46 to West of Change Bridge Road, ITS Improvements	06361	ITS	13.00
Long-Term			
* Long Valley Safety Project	NP0301	Road Enhancement	0.72
Route 10, Jefferson Road	00312	Road Enhancement	15.54
Route 10/202, NJ 53 to Johnson Road, Operational Improvements	98338C	Road Enhancement	30.81
Route 46, I-80 to I-80/280, ITS Improvements	06366	ITS	16.58
Route 80, Noise Barriers, Parsippany-Troy Hills to Fairfield, Baldwin Road to Passaic River	94004	Road Enhancement	24.18
Projects Under Study			
Openaki Road Bridge	NS9802	Bridges	
Route 46 and Canfield Avenue	13316	Road Enhancement	
NJ TRANSIT			
Near-Term			
Lackawanna Cutoff MOS Project	T535	Transit Expansion	24.00
Projects Under Study			
Lackawanna Passenger Rail Study—Northeast Pennsylvania Northwest New Jersey—Lackawanna Cut-Off Passenger Restoration	TN05006	Transit Expansion	

Ocean

Highway/Bridges

Near-Term

County Route 571/County Route 527, Reconstruction, Toms River Township	N1127	Road Enhancement	0.30
** Garden State Parkway Interchange 91 Improvements and Burnt Tavern Road	NS0414	Road Enhancement	25.10
Route 9, Indian Head Road to Central Ave/Hurley Ave, Pavement	11418	Road Preservation	6.60
Route 9, Jones Rd to Longboat Ave	11330	Road Preservation	6.25
Route 37, Mathis Bridge Eastbound over Barnegat Bay	06369B	ridges	79.00
Route 72, East Road	94071A	Road Enhancement	13.18
Route 72, Manahawkin Bay Bridges, Contract 2	00357A	Bridges	89.27
Route 72, Manahawkin Bay Bridges, Contract 3	00357B	Bridges	16.94
Route 166, Toms River Twp., Highland Parkway to Old Freehold Road, operational improvements	9028	Road Enhancement	10.23

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Mid-Term			
Route 9, Bridge over Waretown Creek	08316	Bridges	2.78
Route 70, East of North Branch Road to CR 539	10307	Road Preservation	11.86
Route 72, Manahawkin Bay Bridges, Contract 1A & 1B	11385	Bridges	40.42
Route 72, Manahawkin Bay Bridges, Contract 4	00357C	Bridges	104.43
Route 88, Bridge over Beaver Dam Creek	09322	Bridges	9.50
Long-Term			
* Western Boulevard Extension	10392	Road Expansion	2.88
Projects Under Study			
Garden State Parkway Interchange 83 Improvements	N1405	Road Enhancement	
Route 9, Bus Rapid Transit	07350	Transit Enhancement	
Route 9, Lakewood/Toms River, Congestion Relief	076C	Road Expansion	
Route 9, Mizzen Avenue and Washington Avenue, Intersection Improvements	97080N	Road Enhancement	
NJ TRANSIT			
Projects Under Study			
Monmouth—Ocean—Middlesex Corridor Project	TN05001	Transit Expansion	
Route 9 Bus Enhancements	TN12001	Transit Enhancement	
Authority Projects			
Near/Mid-Term			
New Jersey Turnpike Authority			
GSP Interchange 88 Improvements (Route 70)	GSP030	Road Enhancement	
GSP Shoulder Restoration and Improvements Program, MP 83 to 100	GSP1401	Safety	
GSP Widening, Interchange 48 to Interchange 63	GSP1402	Road Enhancement	

Passaic

Highway/Bridgest

Near-Term			
** Clove Road/Long Hill Road Improvements, CR 620/631	NS0412	Road Enhancement	6.90
** Eighth Street Bridge	NS0109	Bridges	15.00
** Fifth Avenue Bridge (AKA Fair Lawn Avenue Bridge) over Passaic River	NS9606	Bridges	13.25
** NY Susquehanna and Western Rail Line Bicycle/Pedestrian Path	NS9803	Bike/Ped	12.00
Route 3, Route 46, Valley Road and Notch/Rifle Camp Road Interchange, Contract A	059A	Road Enhancement	40.25

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Route 19, CR 609 to Route 46 & Route 46, Van Houten Ave to Broad St., Drainage Improvements	05363	Road Preservation	3.33
Route 23, CR 695 to Belcher Lane	13325	Road Preservation	5.83
Route 23, Pavement, Morris & Passaic Counties	11424	Road Preservation	11.12
Route 46, EB over Branch of Passaic River, Culvert Replacement	11350	Bridges	1.80
Route 46, Passaic Avenue to Willowbrook Mall	9233B3	Road Enhancement	28.80
Route 80, EB, Route 23 to Route 19	11341	Road Preservation	10.65
Route 80, EB, West of Rt. 280 to East of Two Bridges Road	11335	Road Preservation	10.58
Route 80, Totowa Boro., Passaic Co., Culvert Replacement	11362	Bridges	3.25
** Two Bridges Road Bridge and West Belt Extension	NS9801	Bridges	18.00
Mid-Term			
Route 3, Route 46, Valley Road and Notch/Rifle Camp Road Interchange, Contract B	059B	Road Enhancement	111.50
Route 20, Paterson Safety & Drainage	08372	Road Preservation	15.33
Route 23, Bridge over Pequannock River/Hamburg Turnpike	08347	Bridges	34.23
Route 46, Drainage Improvements, Little Falls, Clifton City, Passaic Co.	11367	Road Preservation	6.00
Route 80, WB, Pavement, Bergen & Passaic Counties	11415	Road Preservation	51.50
Long-Term			
Route 23/80, Long-term Interchange Improvements	9233B6	Road Enhancement	50.68
Route 46, I-80 to I-80/280, ITS Improvements	06366	ITS	16.58
Route 80, Noise Barriers, Parsippany-Troy Hills to Fairfield, Baldwin Road to Passaic River	94004	Road Enhancement	24.18
NJ TRANSIT			
Projects Under Study			
Passaic/Bergen NYS&W Project	TN05004	Transit Expansion	

Somerset

Highway/Bridges

Near-Term

* North Plainfield Downtown Streetscape and Pedestrian Improvements (Final Phase)	N1125	Bike/Ped	0.30
Route 22, I-78 Interchange to West of Peters Brook, Pavement	11409	Road Preservation	15.63
Route 22, Middle Brook to Westfield Road	11331	Road Preservation	13.63
Route 22, Sidewalk Improvements, Somerset County	03317D	Bike/Ped	3.36
Route 27, Carter's Brook & Ten Mile Run Tributary Culvert Replacement	10380	Bridges	3.27
Route 27, Riverside Drive W to Vliet Road	13326	Road Preservation	2.01
Route 202, CR 637 to Road to Route 287	13336	Road Preservation	1.66

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Route 202, Peter's Brook, Culvert Replacement at MP 27.13	11354	Bridges	1.36
Route 202, South of Miller Ln to North of Passaic River, Pavement	11420	Road Preservation	7.06
Route 202/206, over Branch of Peter's Brook, Culvert Replacement at MP 27.96	11363	Bridges	1.36
Route 206 Bypass, Contract C	779B	Road Expansion	10.00
Route 206, Crusers Brook Bridge (41)	94060	Bridges	6.22
Route 206, Southbound Merge Improvements with I-287 Ramp	02372A	Road Enhancement	0.80
Mid-Term			
Camp Meeting Avenue Bridge over Trenton Line, CR 602	99405	Bridges	6.90
Route 78, PA State Line to NJ Turnpike, ITS Improvements	06360	ITS	1.30
Route 202, First Avenue Intersection Improvements	02372B	Road Enhancement	5.40
Route 206 Bypass, Mountain View Road to Old Somerville Road (Sections 14A & 15A) Contract B	779	Road Expansion	58.30
Route 206, Doctors Way to Valley Road	780B	Road Expansion	40.28
Route 206, Valley Road to Brown Avenue	780A	Road Expansion	53.00
Route 287, Interchange 10 Ramp Improvements	9169Q	Road Enhancement	6.10
Route 287/78, I-287/202/206 Interchange Improvements	04389	Safety	34.00
Long-Term			
* Lehigh Rail Line Separation	08445	Safety	0.76
* Route 22, Sustainable Corridor Long-term Improvements	03318	Road Enhancement	3.98
Projects Under Study			
County Bridge K0607, New Brunswick Road over Al's Brook	N1407	Bridges	
Route 22, Utility Pole Mitigation	10310	Safety	
Route 202/206 and Route 22 Interchange, North Thomson Street to Commons Way, Operational and Safety Improvements	02372	Road Enhancement	
NJ TRANSIT			
Projects Under Study			
West Trenton Line Initiative	TN05003	Transit Expansion	

Sussex

Highway/Bridges

Near-Term			
** County Route 517, Route 23 to Route 94	NS0505	Road Enhancement	32.00
Route 23, Bridge over Branch of Wallkill River	08348	Bridges	2.98
Route 23, CR 695 to Belcher Lane	13325	Road Preservation	5.83
Route 23, Hardyston Township Improvements	96039	Safety	9.99

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Route 94, Black Creek Tributary, Culvert Replacement	10383	Bridges	1.93
Route 206, Hi Glen Drive to High Street	11417	Road Preservation	4.49
Route 206, South of Paterson Ave. to South of Pine Rd.	10333	Road Preservation	8.40
** Waterloo Road over Musconetcong River	NS0107	Bridges	2.78
Mid-Term			
** County Route 515, Vernon Township, Phases II, III, IV	NS0002	Road Enhancement	43.40
Route 15, Bridge over Beaver Run	09319	Bridges	5.35
Projects Under Study			
County Route 653, Sussex County	NS0202	Road Enhancement	
NJ TRANSIT			
Near-Term			
Lackawanna Cutoff MOS Project	T535	Transit Expansion	24.00
Projects Under Study			
Lackawanna Passenger Rail Study—Northeast Pennsylvania Northwest New Jersey—Lackawanna Cut-Off Passenger Restoration	TN05006	Transit Expansion	

Union

Highway/Bridges

Near-Term			
* East Coast Greenway, Middlesex/Union Counties	04327B	Bike/Ped	0.72
** Gordon Street over "Out of Service" Conrail Branch, Replacement	NS0408	Bridges	5.60
New Providence Downtown Streetscape	09341	Transp. Enhancements	0.25
North Avenue Corridor Improvement Project (NACI)	06318F	Road Expansion	149.07
Route 22, Bloy Street to Liberty Avenue	658C	Bridges	11.20
Route 22, Chestnut Street Bridge Replacement (CR 626)	04361	Bridges	16.91
Route 22, Eastbound, Auxiliary Lane between U-Turns H and G	02374C	Safety	1.60
Route 22, Hilldale Place/North Broad Street	658E	Bridges	8.00
Route 22, Middle Brook to Westfield Road	11331	Road Preservation	13.63
Route 22, W. of Robin Hood Rd. to E. of Fairway Dr., Pavement Various Locations	10326	Road Preservation	6.74
Route 278, Goethals Bridge Replacement	N1205	Bridges	1,410.00
Tremley Point Access Local Roadway Improvements	9324A	Road Expansion	120.06
Mid-Term			
Route 22, Garden State Parkway/Route 82 Interchange Improvements	658A	Road Preservation	16.90
Route 22, Westbound, Vicinity of Vaux Hall Road to West of Bloy Street	658B	Road Enhancement	5.54

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Route 27, Grand Street NB Intersection	12437	Safety	3.10
Route 78, PA State Line to NJ Turnpike, ITS Improvements	06360	ITS	1.30
Route 82, Caldwell Avenue to Lehigh Avenue	11404	Bike/Ped	4.05
* St. Georges Avenue Improvements	08434	Road Enhancement	0.36
Long-Term			
* North Avenue, Elizabeth Pedestrian and Bicycle Project	08439	Bike/Ped	0.05
Projects Under Study			
Route 1&9: Safety improvements at the CSAO Railroad overpass	12311	Safety	
Route 22, Utility Pole Mitigation	10310	Safety	
Route 82, Rahway River Bridge	94019	Bridges	
South Front Street Bridge over the Elizabeth River	N1409	Bridges	
NJ TRANSIT			
Near-Term			
NEC Elizabeth Rail Station Improvements	T600	Transit Preservation	48.50
Projects Under Study			
Union County Rapid Transit System	TN05007	Transit Expansion	
Authority Projects			
Near/Mid-Term			
New Jersey Turnpike Authority			
GSP Interchange 142 Improvements (I-78)	GSP140	Road Expansion	
Port Authority of NY & NJ			
Corbin Street Intermodal Facility—Phase 2A	CP05-148	Freight	
Corbin Street Intermodal Facility—Phase 2B	CP05-149	Freight	

Warren

Highway/Bridges

Near-Term

Route 31, South of Rt. 78 to North of CR 634	11342	Road Preservation	7.38
Route 46, Hatchery Brook, Culvert Replacement	10382	Bridges	1.45
Route 57, Pohatcong Creek, Culvert Replace, Lopatcong Twp	11351	Bridges	1.90
Route 122, Dalton Street to Route 22	13334	Road Preservation	0.96
Route 173, Bridge over Pohatcong Creek	09320	Bridges	3.80
Route 173, I-78 to Fox Hill Lane, Pavement	12338	Road Preservation	8.50

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Mid-Term			
Route 22, Bates Avenue to Route 57	11369	Road Preservation	5.90
Route 31, Bridge over Furnace Brook	09325	Bridges	4.00
Route 46, I-80 to CR 618 (Serepta Road), Pavement	11340	Road Preservation	12.60
Route 57, CR 519 Intersection Improvement	97062B	Road Enhancement	14.00
Route 57/182/46, Hackettstown Mobility Improvements	9237	Road Enhancement	10.00
Route 80, WB Rockfall Mitigation, Hardwick Township	09545	Safety	8.07
Route 94, Bridge over Jacksonburg Creek	11322	Bridges	3.80
Projects Under Study			
Route 80, Park & Ride Improvements, Hope Township, Warren County (CR 521)	10351	TDM	
NJ TRANSIT			
Near-Term			
Lackawanna Cutoff MOS Project	T535	Transit Expansion	24.00
Projects Under Study			
Central NJ/ Raritan Valley Transit Study	TN10001	Transit Expansion	
Lackawanna Passenger Rail Study—Northeast Pennsylvania Northwest New Jersey—Lackawanna Cut-Off Passenger Restoration	TN05006	Transit Expansion	
Authority Projects			
Near/Mid-Term			
Delaware River Joint Toll Bridge Commission			
Delaware Water Gap Toll Bridge Improvements	DB12001	Road Expansion	
Easton-Phillipsburg Toll Bridge Rehabilitation	DB08002	Bridges	
I-78 Toll Bridge PA Approach Paving Improvements	DB14002	Road Preservation	
Northampton Street TSB Bridge Floor System Replacement & Rehabilitation	DB12011	Bridges	

Various

Highway/Bridges

Long-Term			
* NJ Underground Railroad	09345	Economic Development	0.32

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
NJ TRANSIT			
Near-Term			
Interoperational Communications Resiliency	T905	Transit Preservation	30.00
Light Rail Resiliency	T904	Transit Preservation	26.60
Meadows Maintenance Complex (MMC)/Rail Operations Center (ROC) Resiliency	T901	Transit Preservation	150.00
NJ TRANSIT System Repairs/Restoration	T906	Transit Preservation	159.35
Rail Infrastructure Resiliency	T903	Transit Preservation	194.25
Rail Rolling Stock Resiliency	T900	Transit Preservation	565.00
Rail Station Resiliency	T902	Transit Preservation	150.00

Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)

ONGOING PROGRAMS

Highway/Bridges

Acquisition of Right of Way	X12	Overhead	15.13
ADA Curb Ramp Implementation	11344	Bike/Ped	16.51
Airport Improvement Program	08415	Aviation	165.14
Asbestos Surveys and Abatements	04311	Overhead	15.13
Automatic Traffic Management System (ATMS)	13303	ITS	30.00
Betterments, Dams	01335	Road Preservation	11.56
Betterments, Roadway Preservation	X72B	Road Preservation	336.72
Betterments, Safety	X72C	Safety	231.19
Bicycle & Pedestrian Facilities/Accommodations	X185	Bike/Ped	198.17
Bridge Deck/Superstructure Replacement Program	03304	Bridges	1,082.71
Bridge Emergency Repair	98315	Bridges	867.98
Bridge Inspection	X07A	Bridges	709.17
Bridge Management System	X70	Bridges	9.99
Bridge Preventive Maintenance	13323	Bridges	1,154.63
Bridge Replacement, Future Projects	08381	Bridges	9,484.52
Bridge Scour Countermeasures	98316	Bridges	1.00
Capital Contract Payment Audits	98319	Overhead	45.38
Congestion Relief, Intelligent Transportation System Improvements (Smart Move Program)	02379	ITS	66.06
Congestion Relief, Operational Improvements (Fast Move Program)	02378	Road Enhancement	66.06
Construction Inspection	X180	Overhead	262.46
Construction Program IT System (TRNS.PORT)	05304	Overhead	20.98
Crash Reduction Program	X242	Safety	123.69
Culvert Inspection Program, Locally-owned Structures	99322A	Bridges	112.37
Culvert Inspection Program, State-owned Structures	99322	Bridges	19.98
Culvert Replacement Program	09316	Bridges	74.91
DBE Supportive Services Program	X142	Overhead	7.56
Design, Emerging Projects	X106	Overhead	151.26
Design, Geotechnical Engineering Tasks	05342	Overhead	2.50
Disadvantaged Business Enterprise	X197	Overhead	3.03
Drainage Rehabilitation & Improvements	X154D	Road Preservation	165.14
Drainage Rehabilitation and Maintenance, State	X154	Road Preservation	384.10
Electrical Facilities	X241	Overhead	164.76
Electrical Load Center Replacement, Statewide	04324	Safety	126.11
Environmental Investigations	X75	Environment/Air Quality	129.11
Environmental Project Support	03309	Environment/Air Quality	18.82
Equipment (Vehicles, Construction, Safety)	X15	Overhead	587.05
Ferry Program	00377	Transit Enhancement	66.06
Freight Program	X34	Freight	330.28
Highway Safety Improvement Program Planning	09388	Safety	132.11
Intelligent Transportation System Resource Center	13304	ITS	100.08
Intersection Improvement Program (Project Implementation)	98333	Safety	183.17

Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Interstate Service Facilities	X151	Road Enhancement	3.30
Job Order Contracting	13305	Bridges	59.93
Legal Costs for Right of Way Condemnation	X137	Overhead	48.40
Local Aid Consultant Services	10347	Other	30.01
Local Aid Grant Management System	06327	Other	2.96
Local Aid, Infrastructure Fund	X186	Other	221.96
Local Bridges, Future Needs	08387	Bridges	624.27
Local CMAQ Initiatives	X065	TDM	165.14
Local County Aid, NJTPA	X41B1	Other	1,590.13
Local Municipal Aid, NJTPA	X98B1	Other	1,591.88
Local Municipal Aid, Urban Aid	X98Z	Other	147.97
** Local Preliminary Engineering	N1202	Other	59.19
Local Project Development Support	06326	Other	86.56
Local Safety/ High Risk Rural Roads Program	04314	Safety	99.08
Maintenance & Fleet Management System	X196	Road Preservation	33.03
Maritime Transportation System	01309	Freight	33.03
Median Crossover Protection Contract #12	12367	Safety	10.51
Median Crossover Protection Contract #13	12368	Safety	5.24
Metropolitan Planning	X30A	Other	740.71
Minority and Women Workforce Training Set Aside	07332	Overhead	30.25
Mobility and Systems Engineering Program	13306	ITS	402.94
Motor Vehicle Crash Record Processing	X233	Safety	115.60
National Boating Infrastructure Grant Program	01342	Freight	52.84
NJTPA, Future Projects	N063	Other	2,189.97
Orphan Bridge Reconstruction	99372	Bridges	47.94
Park and Ride/Transportation Demand Management Program	X28B	TDM	33.03
Pavement Preservation	X51	Road Preservation	226.19
Pedestrian Safety Improvement Design and Construction	06403	Bike/Ped	132.11
Pedestrian Safety Improvement Program	06401	Bike/Ped	17.01
Physical Plant	X29	Overhead	211.77
Planning and Research, Federal-Aid	X30	Overhead	747.06
Planning and Research, State	X140	Overhead	30.25
Pre-Apprenticeship Training Program for Minorities and Women	X135	Overhead	15.13
Program Implementation Costs, NJDOT	X10	Overhead	3,617.12
Project Development: Concept Development and Preliminary Engineering	10344	Overhead	151.26
Project Enhancements	05341	Overhead	3.03
Rail-Highway Grade Crossing Program, Federal	X35A1	Safety	198.17
Rail-Highway Grade Crossing Program, State	X35A	Safety	195.77
Recreational Trails Program	99409	Bike/Ped	40.89
Regional Action Program	X144	Road Enhancement	59.56
Restriping Program & Line Reflectivity Management System	X03A	Safety	495.41
Resurfacing Program	X03E	Road Preservation	3,978.45

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Resurfacing, Federal	99327A	Road Preservation	3,127.47
Right of Way Database/Document Management System	05339	Overhead	0.30
Right of Way Full-Service Consultant Term Agreements	05340	Overhead	4.54
Rockfall Mitigation	X152	Safety	33.03
Safe Corridors Program (Project Implementation)	04313	Safety	82.57
Safe Routes to School Program	99358	Safety	184.53
Safe Streets to Transit Program	06402	Bike/Ped	33.03
Salt Storage Facilities - Statewide	13307	Overhead	4.50
Sign Structure Inspection Program	X239	Road Preservation	52.84
Sign Structure Rehabilitation/Replacement Program	X239A	Road Preservation	283.28
Sign Structure Replacement Contract 2011-1	11427	Bridges	5.50
Signs Program, Statewide	X39	ITS	94.08
State Police Enforcement and Safety Services	X150	Safety	115.60
Statewide Traffic Operations and Support Program	13308	ITS	784.41
Traffic Monitoring Systems	X66	ITS	474.81
Traffic Signal Replacement	X47	ITS	333.94
Training and Employee Development	X244	Overhead	30.25
Transit Village Program	01316	Economic Development	33.03
Transportation Alternatives Program	X107	Transp. Enhancements	439.95
Transportation and Community System Preservation Program	02393	Road Enhancement	132.11
Transportation Demand Management Program Support	X43	TDM	7.60
Transportation Management Associations	11383	TDM	130.62
Transportation Safety Resource Center (TSRC)	04364	Safety	52.84
Unanticipated Design, Right of Way and Construction Expenses, State	X11	Overhead	1,758.10
Underground Exploration for Utility Facilities	X101	Overhead	6.05
University Transportation Research Technology	X126	Overhead	53.51
Utility Reconnaissance and Relocation	X182	Overhead	60.51
Youth Employment and TRAC Programs	X199	Overhead	7.66
NJ TRANSIT			
ADA—Platforms/Stations	T143	Transit Enhancement	32.58
Bridge and Tunnel Rehabilitation	T05	Transit Preservation	777.29
Building Capital Leases	T32	Transit Enhancement	15.96
Bus Acquisition Program	T111	Transit Preservation	3,726.98
Bus Passenger Facilities/Park and Ride	T06	Transit Enhancement	20.50
Bus Support Facilities and Equipment	T08	Transit Preservation	152.67
Bus Vehicle and Facility Maintenance/Capital Maintenance	T09	Transit Preservation	684.71
Capital Program Implementation	T68	Overhead	496.40
Casino Revenue Fund	T515	TDM	470.41
Claims support	T13	Transit Enhancement	46.24
Environmental Compliance	T16	Transit Preservation	69.36
Hudson-Bergen LRT System	T87	Transit Expansion	658.65
Immediate Action Program	T20	Transit Preservation	310.42

Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Job Access and Reverse Commute Program	T199	Transit Expansion	514.47
Light Rail Infrastructure Improvements	T95	Transit Preservation	166.91
Light Rail Vehicle Rolling Stock	T550	Transit Preservation	88.10
Locomotive Overhaul	T53E	Transit Preservation	409.03
Miscellaneous	T122	Transit Enhancement	11.56
NEC Improvements	T44	Transit Preservation	2,957.47
NEC Newark Intermodal	T81	Transit Preservation	124.26
New Freedom Program	T552	Transp. Enhancements	0.00
Newark Light Rail Improvements	T28	Transit Expansion	1,118.58
Other Rail Station/Terminal Improvements	T55	Transit Enhancement	1,141.77
Physical Plant	T121	Transit Preservation	38.68
Preventive Maintenance-Bus	T135	Transit Preservation	2,770.07
Preventive Maintenance-Rail	T39	Transit Preservation	7,297.54
Private Carrier Equipment Program	T106	Transit Preservation	99.08
Rail Capital Maintenance	T34	Transit Preservation	1,663.77
Rail Fleet Overhaul	T53G	Transit Preservation	4,286.19
Rail Rolling Stock Procurement	T112	Transit Preservation	3,690.68
Rail Support Facilities and Equipment	T37	Transit Preservation	1,918.90
Section 5310 Program	T150	Transit Enhancement	254.94
Section 5311 Program	T151	Transit Enhancement	194.20
Security Improvements	T508	Security	60.44
Signals and Communications/Electric Traction Systems	T50	Transit Preservation	330.02
Small/Special Services Program	T120	Transit Enhancement	185.21
Study and Development	T88	Overhead	300.65
Technology Improvements	T500	Transit Enhancement	614.00
Track Program	T42	Transit Preservation	524.40
Transit Enhancements	T210	Transit Enhancement	16.18
Transit Rail Initiatives	T300	Transit Expansion	515.73
Programs Under Study			
Bus Rapid Transit Planning and Development	TN08004	Transit Expansion	
County Human Services Transportation (CHST) Coordination Projects Development—Interactive Provider Database and Management Information System	TN08006	Transit Expansion	
Greater Newark Area Bus System Study	TN08001	Transit Enhancement	
Market Research and Forecasting	TN05009	Transit Enhancement	
New Start/Concept Development	TN05011	Transit Expansion	
Station and Parking Planning	TN05008	Transit Enhancement	
System-wide Transit Capacity and Infrastructure Planning	TN05010	Transit Expansion	
Transit Friendly Planning, Land Use & Development Program	TN08005	Transit Enhancement	

NJTPA

November 2013

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