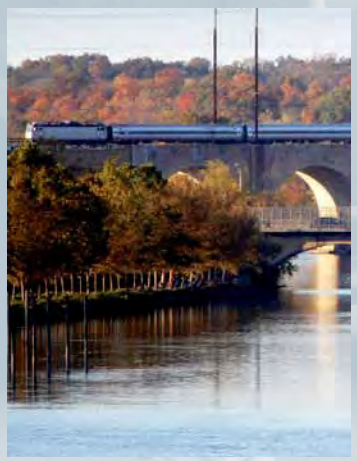
PLAN 2040

NJTPA Regional Transportation Plan for Northern New Jersey



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NJTPA

NORTH JERSEY
TRANSPORTATION
PLANNING AUTHORITY

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The NJTPA and Its Region

The NJTPA

The North Jersey Transportation Planning Authority (NJTPA) is the federally authorized Metropolitan Planning Organization (MPO) for the 13-county northern New Jersey region. 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 also sponsors and conducts studies, assists county 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 Citizens' Representative 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 http://www.njtpa.org.

The NJTPA Region

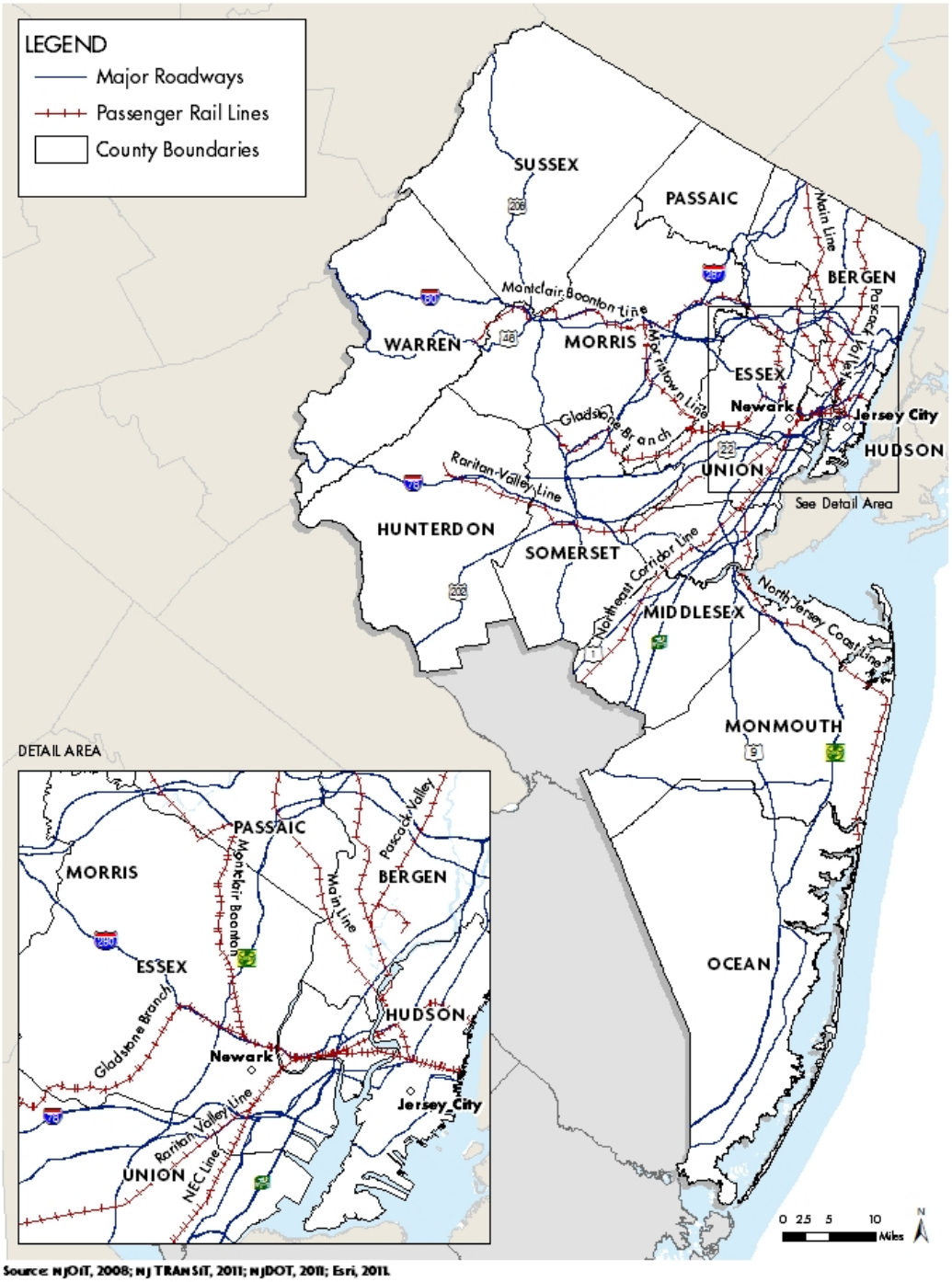
The NJTPA serves the fourth most populous MPO region in the nation with over 6.6 million people and over 2.9 million payroll jobs and 3.7 million total jobs. The 13-county region covers 4,200 square miles, half of the state's land area, and includes 384 municipalities. Key features of the regional transportation system serving the region 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 the 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 3rd largest in the US 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.

Map 1: The NJTPA Region



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

Chapter 1 – 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 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 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 (see Plan 2040 and the Regional Plan for Sustainable Development section), 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, as information is available.

- 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 federal law, Moving Ahead for Progress in the 21st Century (MAP-21), which governs MPO planning. The factors are shown in the box below.

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.*

MAP-21 & Performance Measures Sidebar

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 with 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.

Building on prior performance measure work, the NJTPA is working with the NJDOT and NJ TRANSIT to address federal requirements in the MAP-21 transportation law for the development of regional performance targets and system performance reports. 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.

Furthermore, this plan update carries forward the Regional Capital Investment Strategy (RCIS) from Plan 2035 and 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:

- **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 Greenhouse Gas Plan.
- **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:

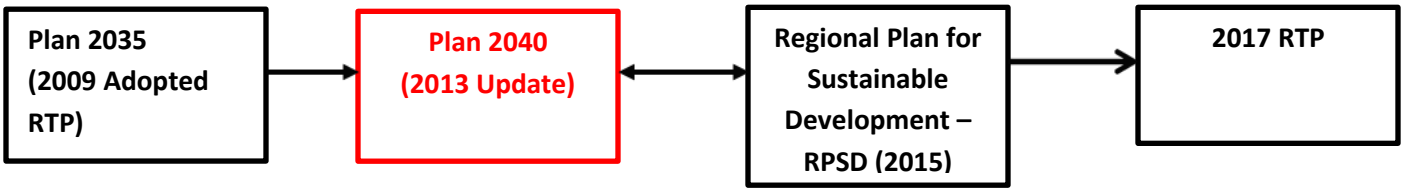
- The recession that began in 2008 negatively affected all sectors of the economy and society. The resulting drop in consumer demand led to a fall-off in business across virtually every sector, including transportation companies serving the region's extensive port facilities, as well as the warehousing 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 create a resilient transportation system that can better survive extreme weather and be brought back to working order more 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 and expanding opportunities for biking, and walking, is proving to be an effective spur to economic development and is gaining the attention of town officials.

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 below 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, 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).

As a member of the Executive Committee of Together North Jersey, the NJTPA has been actively involved in the initial work underway to prepare the RPSD. During the spring of 2013, Together North Jersey sponsored 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 are being incorporated into Plan 2040.

When the RPSD is completed in 2015, the NJTPA will be able to draw upon its findings and recommendations to create a long-range transportation plan in 2017 that will help 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 are being developed to 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.

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 the current economic uncertainties toward renewed growth and progress.

Chapter 2 – 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 the opportunities to participate into their homes through a combination of digital technologies. As a result, Plan 2040 is a document that takes 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 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 goals 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.

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 spend transportation dollars?" and "What sources of funds should be used to support transportation?"

The first question, "How should the region spend 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, either number one or tying for number one in all meetings except Sussex County. Other popular funding mechanisms included 'transit fares and tolls' 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.

Digital Outreach

Those who could not attend a Together North Jersey public workshop were invited to share their ideas via EngageNorthJersey.com. The free, interactive 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. Ultimately, 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 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 York 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 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.

Chapter 3 – 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 older citizens may shift the 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 though 2040.

More insight into these trends and issues and their implications will be forthcoming with the completion of the Regional Plan for Sustainable Development (RPSD) in 2015. One of the central goals of the RPSD 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 is being 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 people 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 help 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. The plan also encourages creative land use approaches

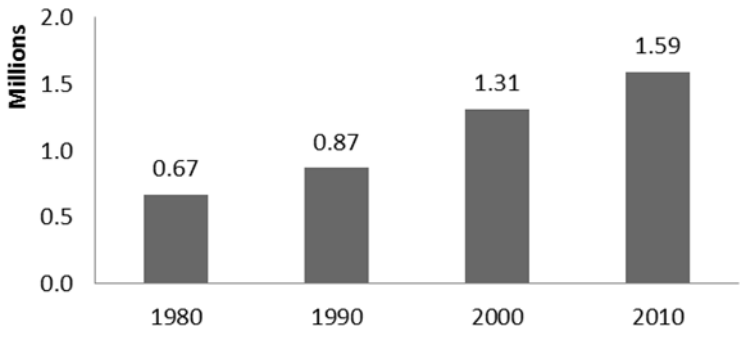
in less dense suburbs to improve sustainability, such as establishing town centers, expanding park-and-ride lots and clustering stores and homes.

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 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 below. This pattern of immigration is expected to continue and, based on existing settlement trends, to sustain population growth in existing urbanized areas.

Figure 3-1: Regional Foreign-Born Population

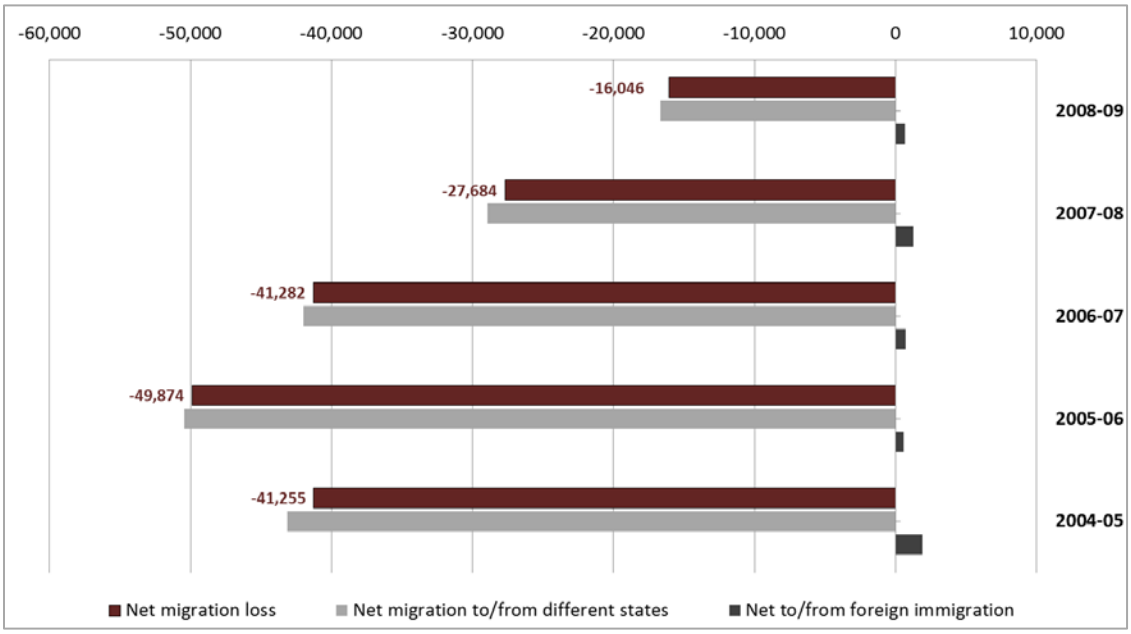


Source: US Census

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 in New Jersey 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 and 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).

Figure 3-2: Factor of Population Change, New Jersey



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

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

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

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 US.

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.

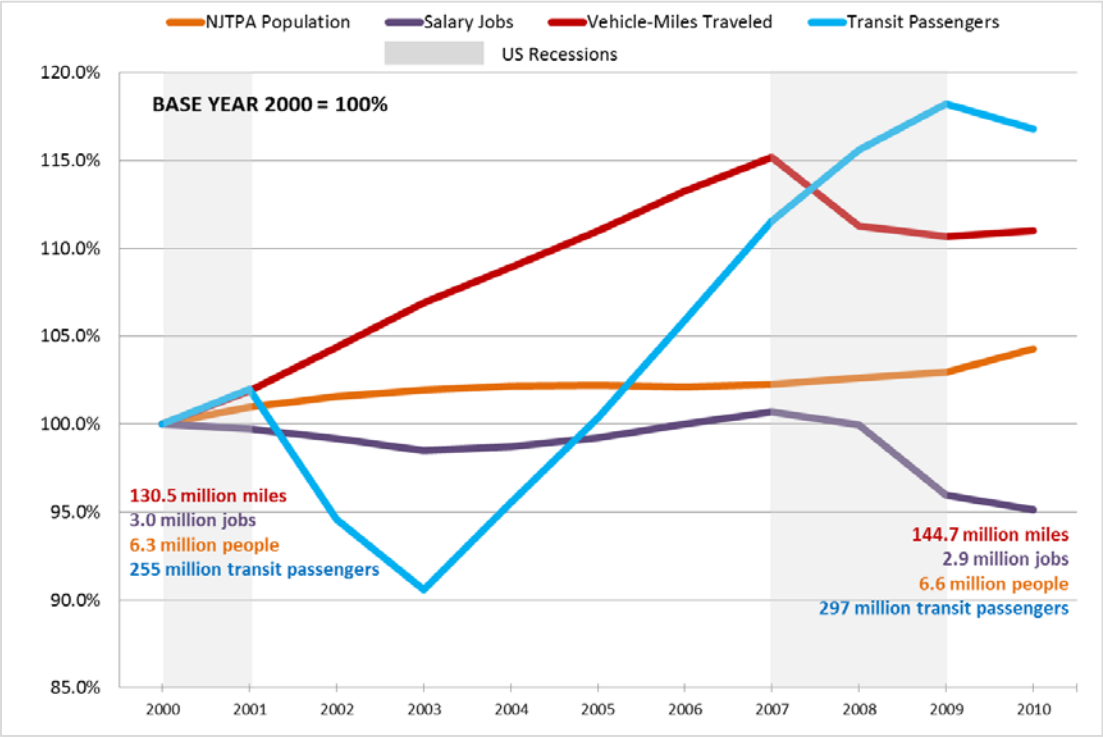
Payroll employment in the region increased from 2.6 million jobs in 1990 to 2.9 million in 2000. Employment grew to 3 million by 2007, but significant job losses due to the recession between 2007 and 2009 brought employment levels in 2009 back to the 2000 level of 2.9 million. Since 2009 the region has 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 the private sector employment was mainly due to the self-employed workers whose numbers grew about 63 percent (+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 2009As of April 2013, New Jersey's unemployment rate stood at 8.7%, seventh 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 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 identification of 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 & Air Quality

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 NJ 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:

- 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.

Because portions of the region fail 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 (RTP) 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. 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.

The NJTPA has also been active in addressing greenhouse gas emissions in the region, 28 percent of which are produced by the transportation industry. These efforts are discussed in Chapter 4.

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 provide 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 fourteen 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);
- Disrupting natural resources and making environmental preservation more difficult.
- 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).

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 the local level, per the Municipal Land Use Law. New Jersey's municipal "home rule" governance has been widely criticized as undermining the coordination of planning among levels of government needed 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. 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.

Transportation Trends

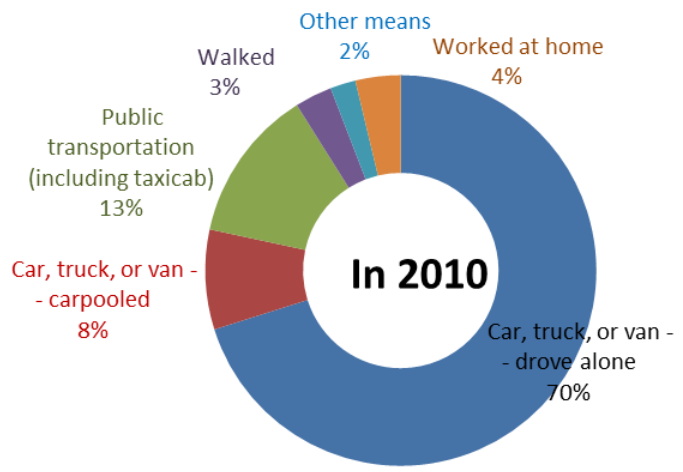
The factors discussed above – demographics, the economy, climate impacts and land use –influence the performance of the transportation system in meeting regional travel needs. This performance is also affected by the condition and the capacity of transportation infrastructure and is manifest in ongoing 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 below provides a breakdown of how commuters in the region travelled to work in 2010 and Table 3-2 shows the travel time to work for the 13 counties of the NJTPA region in 2010.

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



Source: US Census

Table 3-2: Travel Time to Work in the NJTPA Region, 2010

Travel Time to Work, NJTPA Region, 2010 (in minutes)	
Sussex	37.9
Warren	36.2
Hunterdon	35.2
Monmouth	34.3
Hudson	33.2
Essex	32.2
Middlesex	32.2
Somerset	32.1
Bergen	30.4
Ocean	30.3
Morris	29.9
Union	28.6
Passaic	26.3

Source: Census 2010 ACS 1-Year Estimates

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

- Percentage of commuters using public transportation increased from 11.3% in 2000 to 13% in 2010. Hudson County had the highest rate, 40% (2nd only to Manhattan), followed by Essex County, 21%.
- Over 287,000 (or over 9%) of the region's residents commute to Manhattan for work.
- 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 finding:

- 54% of all trips are between home and destinations other than work (e.g., social/recreation, shopping, school, etc.); on weekdays, 30% 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 (6 to 7.5 trips per day) among women from two-parent families while trip rates for men remain relatively stable.
- Full-time employed persons tend to travel more than unemployed persons.

- Children also generate travel (3.3 to 3.6 trips per day), with the result that parents who are not employed show relatively high levels of travel (for all purposes).
- 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 walk or bike strikingly more often than they drive (more than 80%). Walking is more prevalent for social/recreational 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 Monmouth, Hunterdon, and Warren counties, auto shares are over 90%.
- Lower income populations (making less than $30,000 annually) make greater use of bus service (27% by low income population), are significantly more likely to rideshare (43.5%), and walk or bike (36%) for a much greater portion of their trips than those of higher income.

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 systems 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.

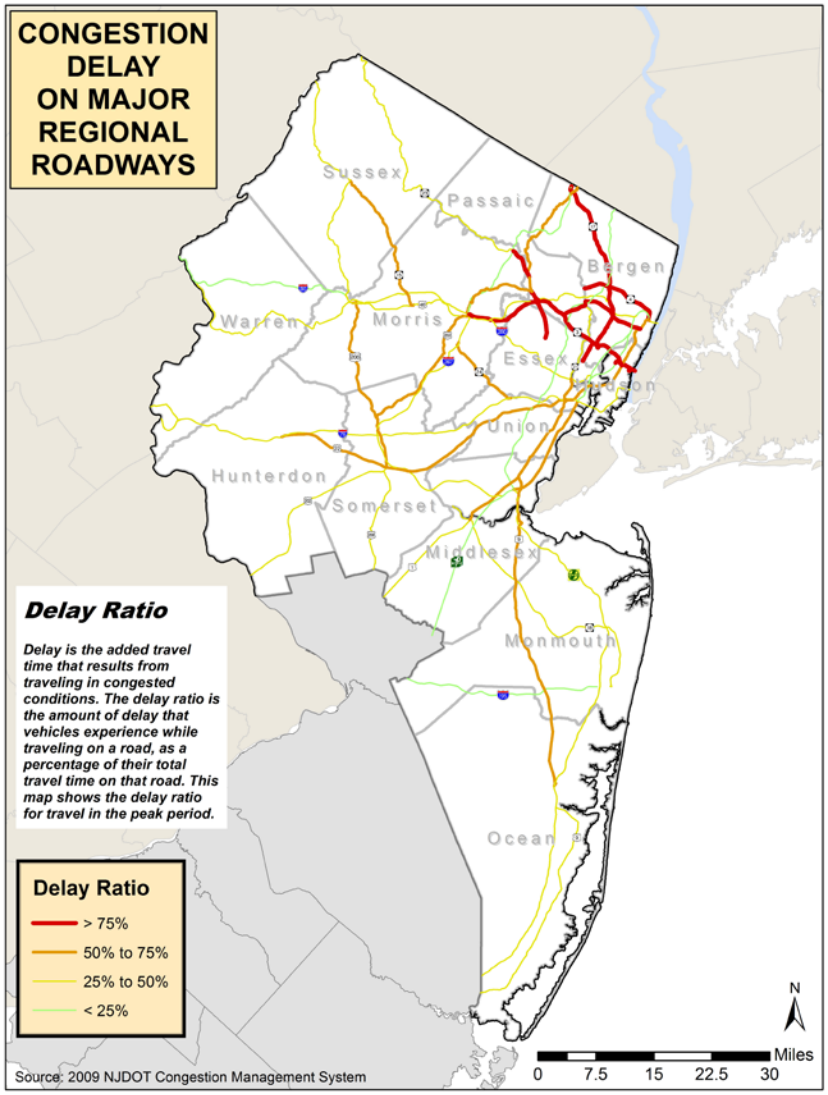
However, congestion, crowding, and unexpected incidents can hinder the region's accessibility, as can inefficient roads or transit connections, missing links such as sidewalks, or unavailable information on travel options. The cost of congestion can be measured in dollars, time, and its impact on quality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

Many of the region's interstates 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.

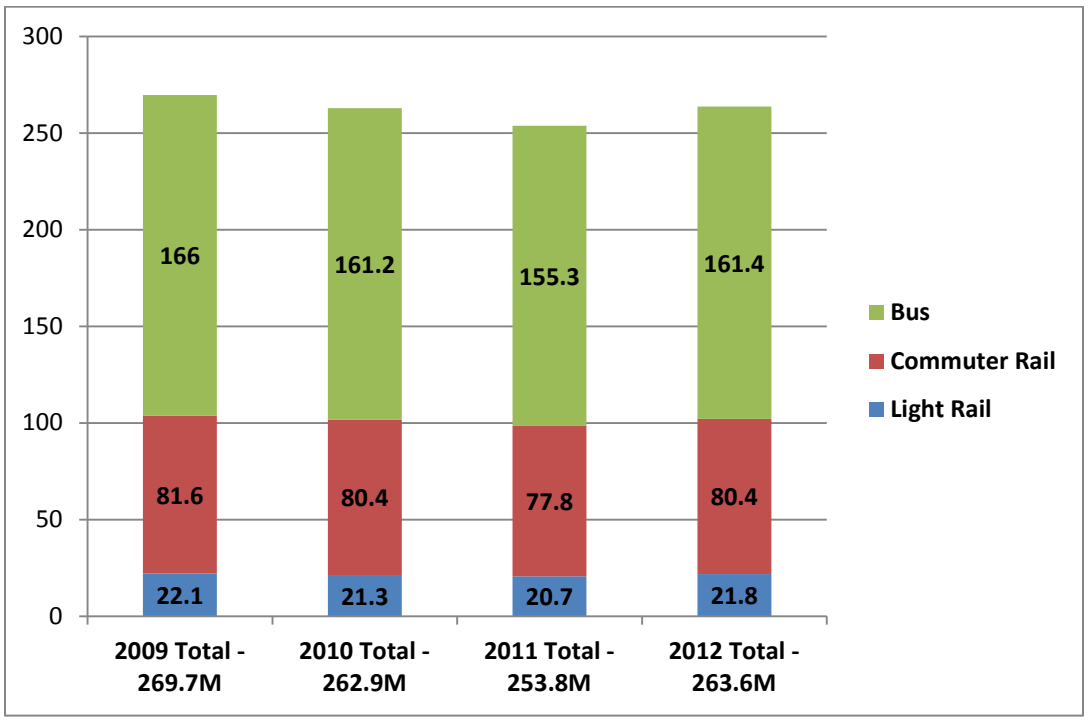
Map 2: Delay Ratio on Major Roadways in the NJTPA Region



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, 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

Figure 3-5: NJ TRANSIT Ridership, 2009 to 2012



Source: NJ TRANSIT's Annual Reports.

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.

Map 3: NJ TRANSIT Regional Rail System

Source: NJ TRANSIT

In addition to NJ TRANSIT and franchise bus service, private bus operations, using smaller bus vehicles, have been offering their services in portions of the region. Commonly known as jitneys, they are independent non-franchise companies that operate primarily interstate service to New York City. 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, 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 transportation services in the region.

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 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 and 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 termini 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 or, 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. Segments of I-78 and I-287 could carry 2,500 to 3,000 additional 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 3-3 below shows projected rail traffic and projected years when each rail line is expected to reach capacity.

Table 3-3: Current and Projected Freight Rail Traffic

Corridor	Capacity		Projected Trains				Year Demand Exceeds Capacity	
	Maximum Freight Trains on Line – Throughput Analysis	Maximum Freight Trains on Line – AAR Analysis	2012	2020	2030	2040	Throughput Analysis Result	Capacity Estimate Based on AAR Study Result
CSX Trenton Line	45	38	20	27	31	34	Not at capacity	Not at capacity
NS Lehigh Line	47	37	24	36	42	49	2040	2030
Conrail Lehigh Line	43	60	44	64	72	83	2020	2020
CR P&H	36	34	29	41	47	53	2020	2020
CR National Docks	45	36	18	24	29	33	Not at capacity	Not at capacity
CR Northern Branch	47	48	36	52	60	70	2020	2020
CSX River Line	40	46	30	42	48	56	2020	2030

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

Safety Trends

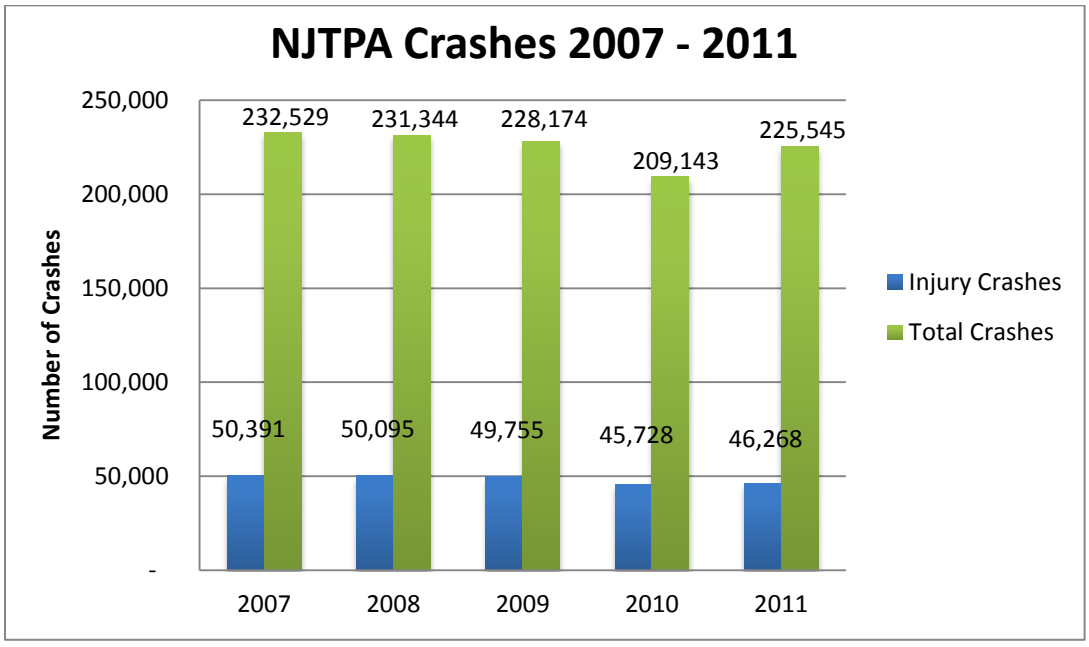
Safety is a priority at the NJTPA and is factored into all aspects of transportation planning. Working in partnership with NJDOT, engineers, planners, local elected officials, and stakeholders, the NJTPA is committed to helping design, maintain, and improve a safe and reliable multi-modal transportation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

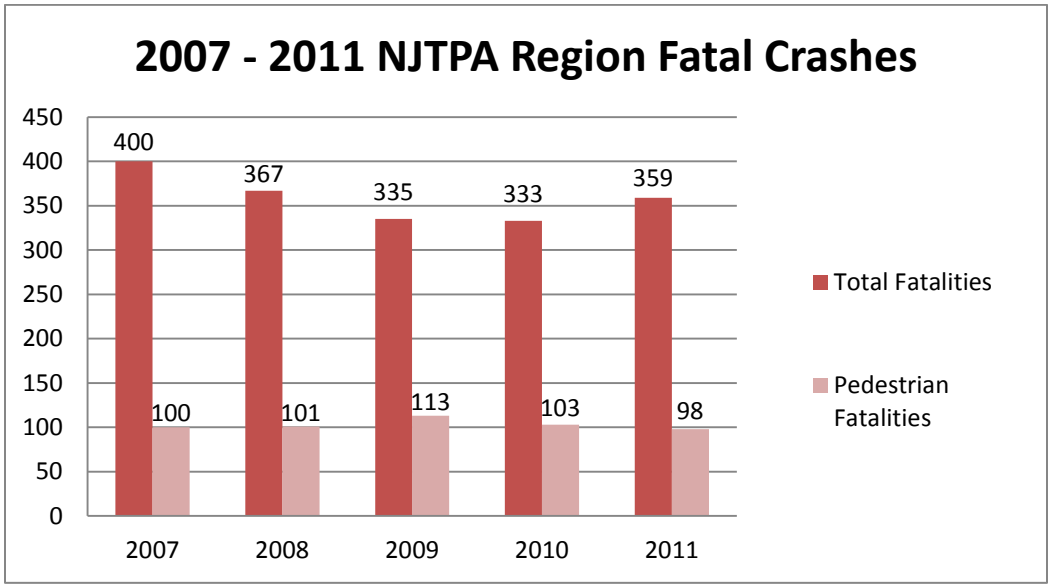
Figures 3-6 through 3-8 below illustrate safety trends that have been identified in the NJTPA region. Despite continued growth in population and vehicle miles traveled, the regions crash rate has declined steadily from 2007 to 2011, mirroring what is happening at both the state and national level. Injury-related crashes in the region have also decreased between 2007 and 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.

Figure 3-6



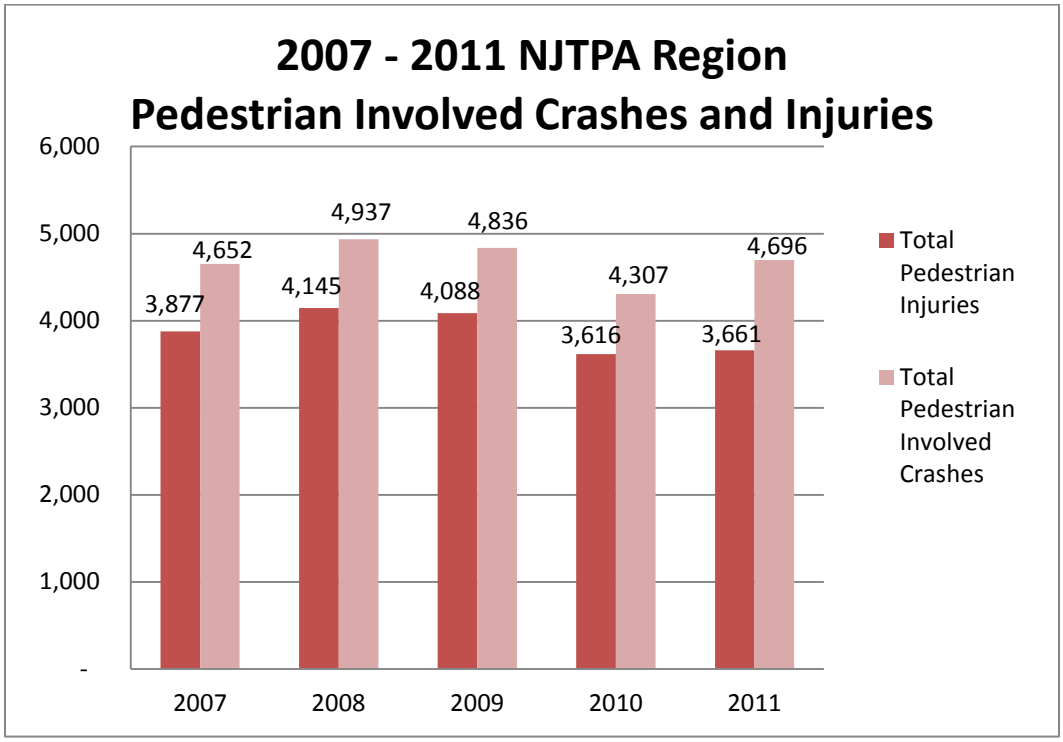
Source: Plan4Safety Crash Data

Figure 3-7



Source: Plan4Safety Crash Data

Figure 3-8



Source: Plan4Safety Crash Data

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 individuals. 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 pedestrian safety education campaign in cooperation with NJDOT and the N.J. Division of Highway Traffic Safety. 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 has not been a downward trend in crashes. 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 circumstances most prevalent in bicyclist crashes are: driver inattention, failure to obey a traffic control device, failure to yield the right-of-way, and 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 (NJDHTS), 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.

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 discussed 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 jeopardizing other vital work.

Over the long term, the prospect of new transportation technologies will provide new opportunities for progress. Yet, 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 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

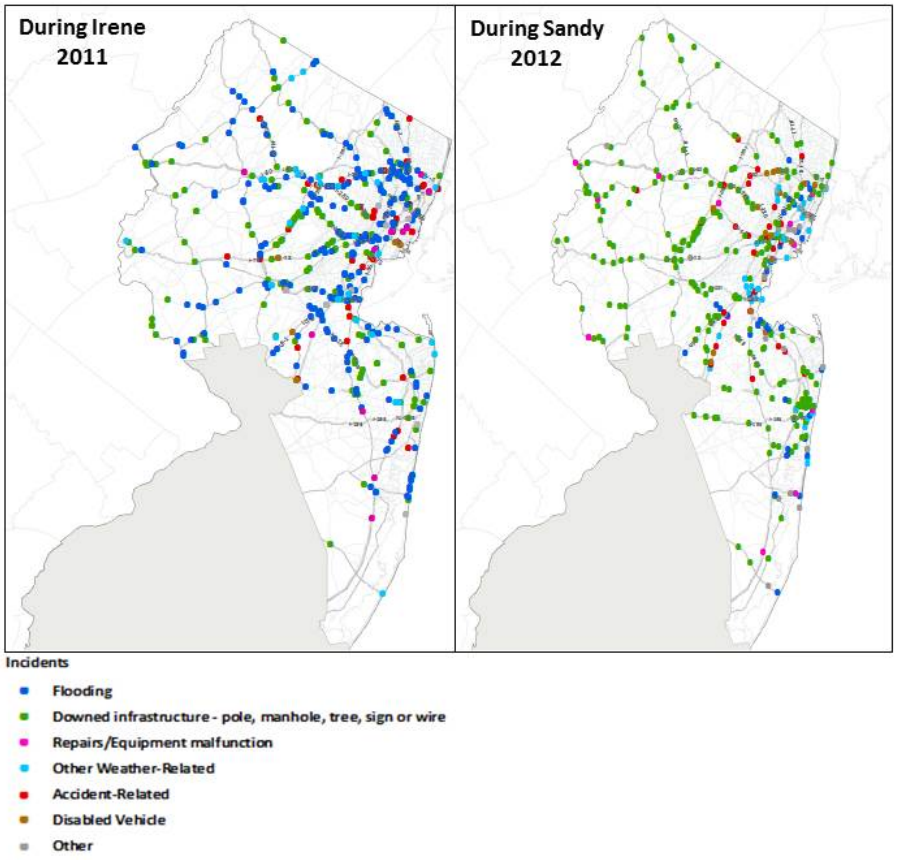
The northern New Jersey region confronted the devastating impacts of extreme weather during Hurricane Irene in 2011 and Superstorm Sandy in 2012. The NJTPA and other transportation agencies have had to seriously consider that similar events will occur in the future based on the scientific consensus about 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 NJ 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 with their daily lives immediately following the storm. Figure 4-1 below shows the impact of extreme weather events on the region's transportation network.

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



Source: TRANSCOM

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 NOx 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 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 program 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 through 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 NJ State 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 development of the RPSD, for example, the NJTPA is supporting the City of Hoboken is developing 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).

TCAM Sidebar

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.

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 the NJDOT, New Jersey Turnpike Authority, NJ TRANSIT, counties, and municipalities.

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

Overall bridge conditions must be considered when allocating limited resources to bridges. Based on the NJDOT's 2012 Bridge Management System, Table 4-2 below 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 regions bridges, there is a continuing need for bridge investments.

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: NJDOT 2012 Bridge Conditions

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. According to the NJDOT, this and other investments in other parts the state, puts New Jersey on a course towards maintaining the current condition level of 88 percent on NJDOT-owned bridges in acceptable condition by 2023. Over the long term, it is 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 available 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.

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
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.

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 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.

Local Capital Delivery Program Sidebar

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.

Implementation

In the near- to mid-term, analysis conducted through the NJDOT Bridge Management System shows improvement in relation to 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 the large scale bridge maintenance and preservation efforts, 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.

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 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.

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

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.
- 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.

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.

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

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 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

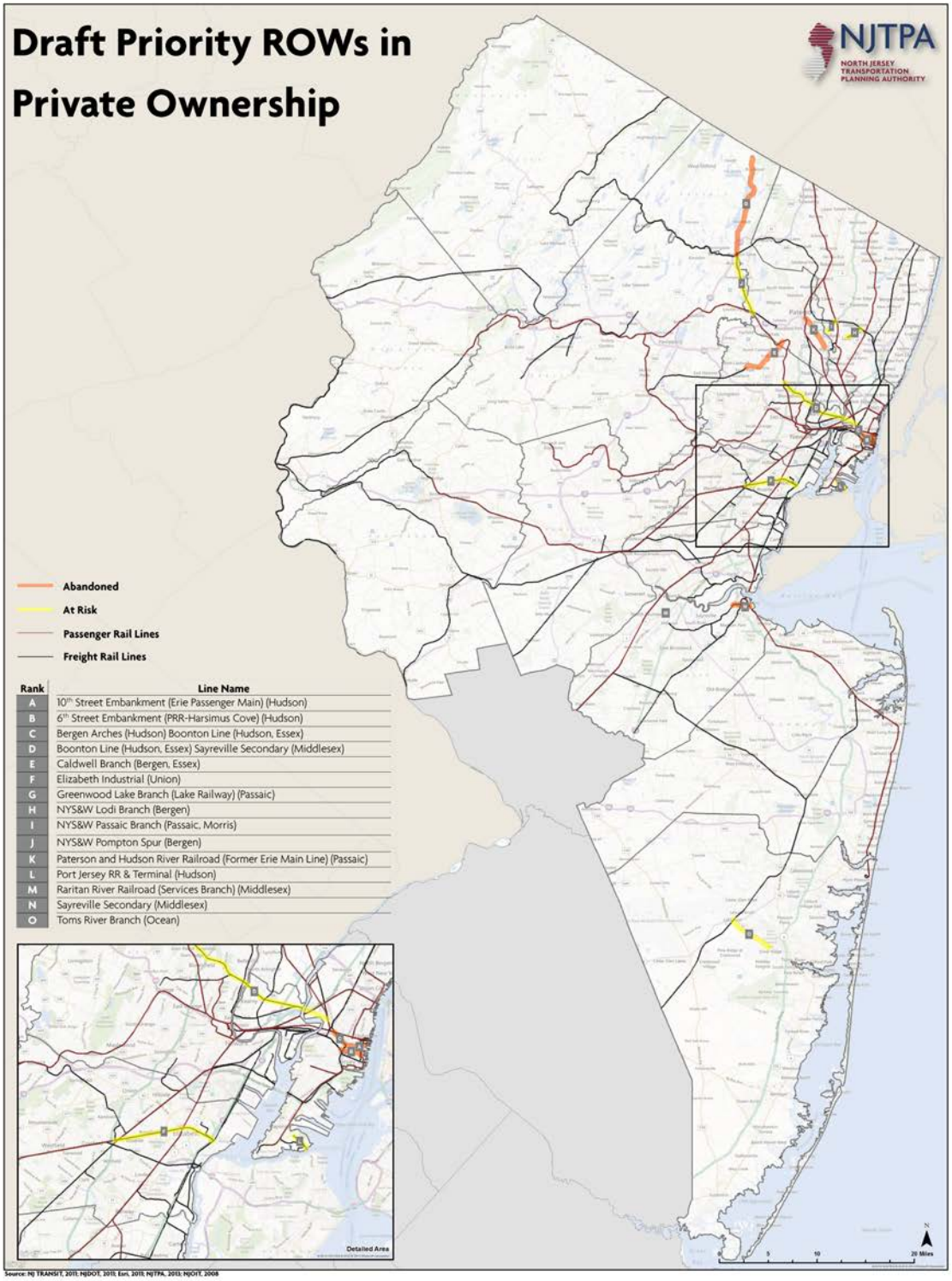
The regional transit network, consisting of rail, bus, and ferry facilities, provides a fast and reliable means of moving nearly one million travelers each weekday. It diverts thousands of vehicle trips, helps lessen congestion, safeguards air quality, reduces greenhouse gas emissions, provides essential 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 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 below illustrates those ROWs identified in the study for preservation.

Map 4



Source: NJTPA Rail Right-Of-Way Inventory and Assessment Study

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 trans-Hudson Capacity Needs sidebar).

Trans-Hudson Capacity Needs Sidebar

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.

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 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 interstate (primarily commuter) service. 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. 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 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 expand transit service at a lower cost, especially during difficult financial times. As identified in Appendix E and the BRT Sidebar, 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.

BRT Sidebar

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 lower capital costs than light rail.

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.

As discussed in Chapter 5, capital funding for implementing these candidate projects 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, etc., 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 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).

TDM (Transportation Demand Management)

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."

Non-profit 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 work-hours 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 NJ511** – Real time traffic information from the region is provided to the statewide NJ511 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 traditional (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

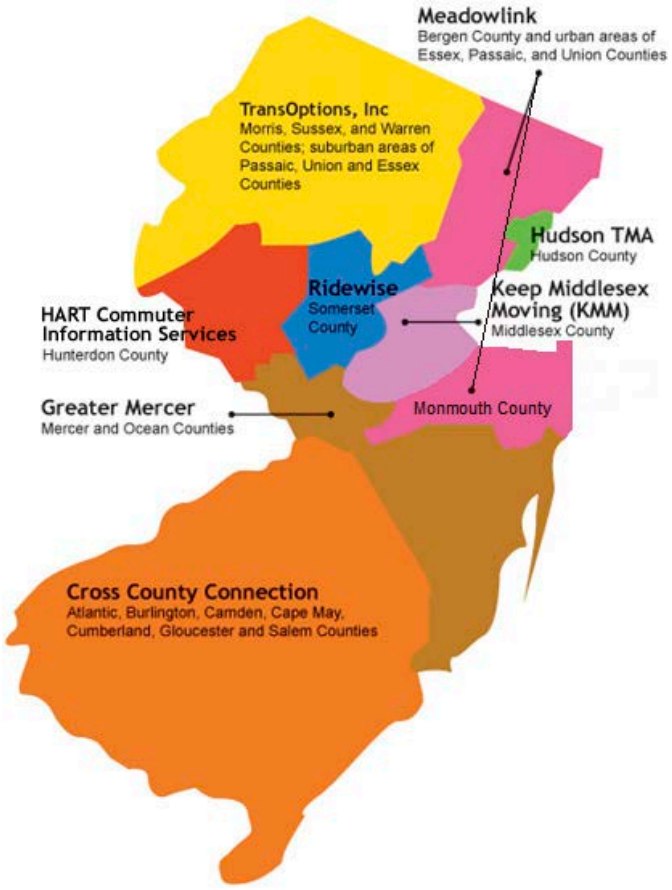
following Superstorm Sandy, helping residents navigate the transit system as it recovered from the storm.

- **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



Source: TMA Council of 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. 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, will ensure the long term viability of the port.

Port Newark/Port Elizabeth, a major source of freight arriving and leaving the U.S., 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 is a critical and well utilized element of the freight system in northern New Jersey. 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 track with a 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 relocations of freight rail customers out of the northern New Jersey region.

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.

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 expanded 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, DC 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 Complete Streets Sidebar) 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 Street policies – Hudson, Monmouth, Middlesex, Essex Counties and the city of Newark. Statewide, over 60 municipalities and five counties have adopted Complete Street policies and the NJDOT adopted a Complete Streets policy in 2009 and incorporated it into their greenhouse gas (GHG) reduction plan.

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. NJTPA and Together North Jersey sponsored planning efforts are helping towns plan for improving non-motorized travel opportunities and safety throughout the region.

Complete Streets Sidebar

Complete Streets takes 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 makes it safer and easier to cross a street, walk within the community or to transit stations, and to bicycle to work.

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".

As of 2013, five of the NJTPA subregions have adopted Complete Street 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, NJDOT adopted a Complete Streets policy in 2009, and NJDOT has incorporated Complete Streets into their Greenhouse Gas (GHG) Reduction Plan.

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. Since Plan 2035 was adopted, nine workshops have been held across the region as show in Table 4-6.

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

2010	Warren	Phillipsburg	Route 22 & Roseberry Street
2010	Ocean	Manchester	48 Schoolhouse Rd, Crestwood Village, Whiting
2010	Hudson	Jersey City	Grove PATH Area, Harsimus Cove, 3rd & Erie St
2010	Hunterdon	Annandale	Main Street, Beaver Street (CR626), Center Street - all within 1/2 mile of Annandale train station
2011	Hudson	Jersey City	McGinley Square
2011	Essex	East Orange	Freeway Drive East and west
2012	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
2012	Union	Borough of Garwood	1/2 mile vicinity of Garwood Train Station along North Ave and South Ave

Source: NJTPA Walkable Community Program

The NJTPA continues to support bike and pedestrian initiatives across the 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 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 increase in 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.

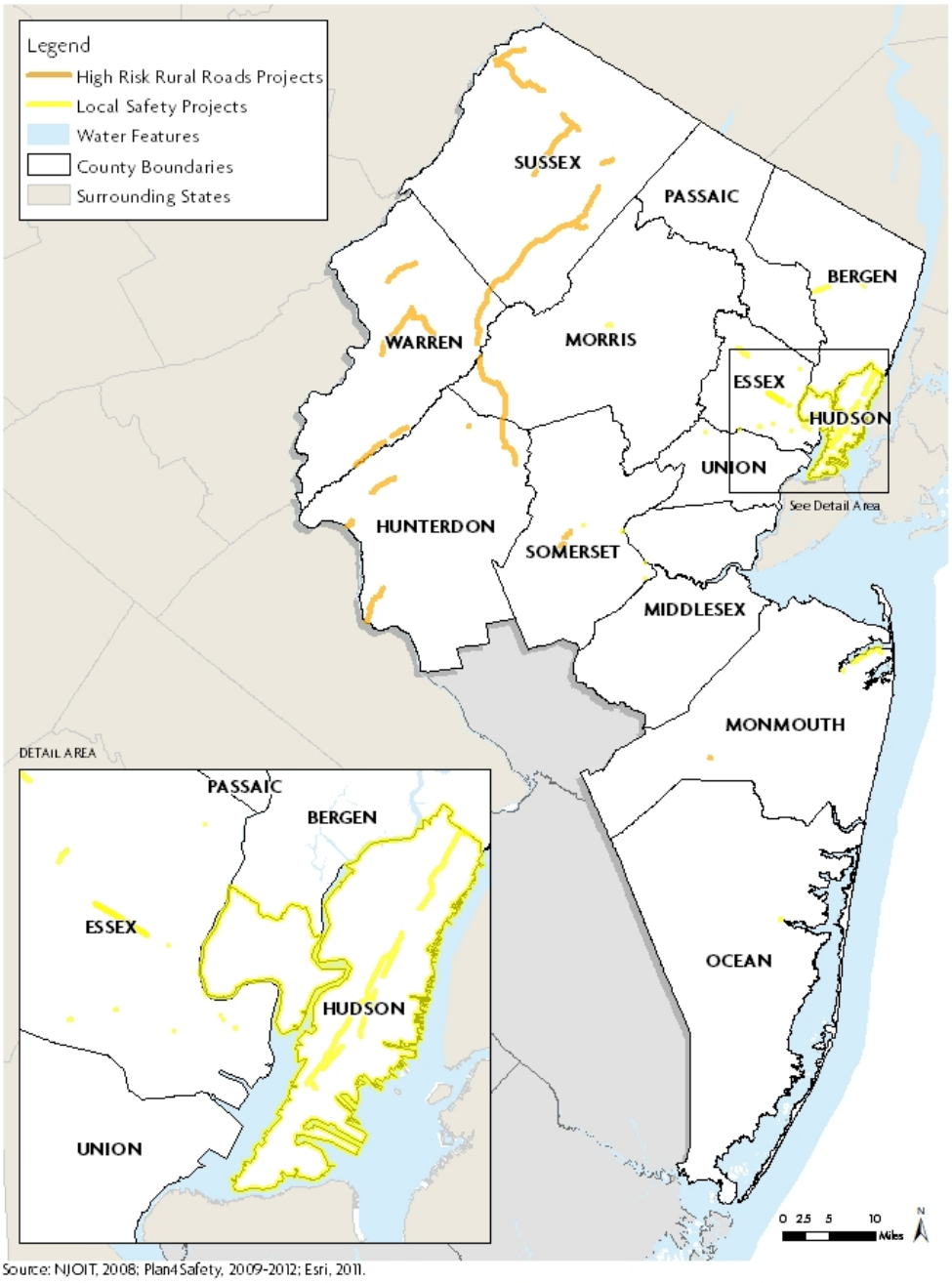
The NJTPA is committed to the ongoing funding of transportation safety programs, projects, studies, and educational campaigns to make the transportation system as safe as possible for all users. This is reflected in RCIS Investment Principle "Make Travel Safer. Among NJTPA safety programs and initiatives:

- **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 $21 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 and other safety improvements.
- **High Risk Rural Roads Program** (see Map 6) – Since 2009 the NJTPA has allocated over $4 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.

Map 6: High Risk Rural Roads & Local Safety Program



Source: Plan4Safety Data

ITS (Intelligent Transportation Systems)

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 NJ Turnpike Authority has implemented EZPass' "open road tolling" which allows for toll collection without affecting driving speed.

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.

ITS also provides important benefits to transit users, such as reducing congestion that delays bus trips by allowing for more efficient traffic flow and with 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 metro region, thethe 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 improvintg 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 global warming. The next update of the RTP in 2017 will reflect these further refinements based on continuing technical analysis and public outreach.

Chapter 5 -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 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 Investment 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 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 declining through 2023 and a one time, $1.8 billion Port Authority contribution to the NJTPA region for four specific NJDOT projects.

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 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, have 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.

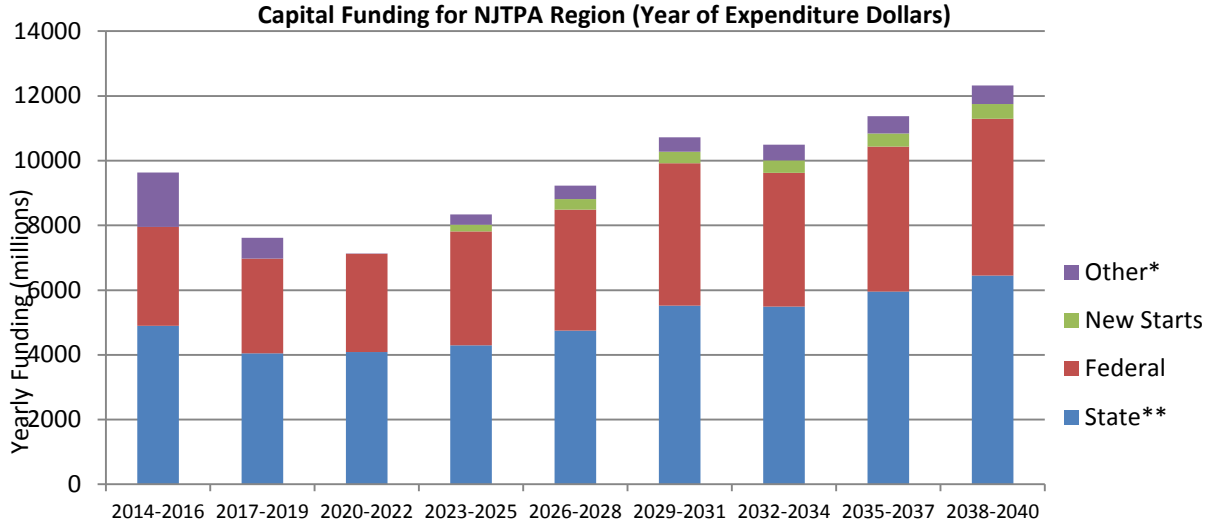
Federal regulations require that MPO long-range transportation plans show financial projections in year-of-expenditure ("YOE") dollars. That is, MPOs must explicitly account for expected future inflation and its impact on both their forecasted revenues and the costs of future projects. In accordance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

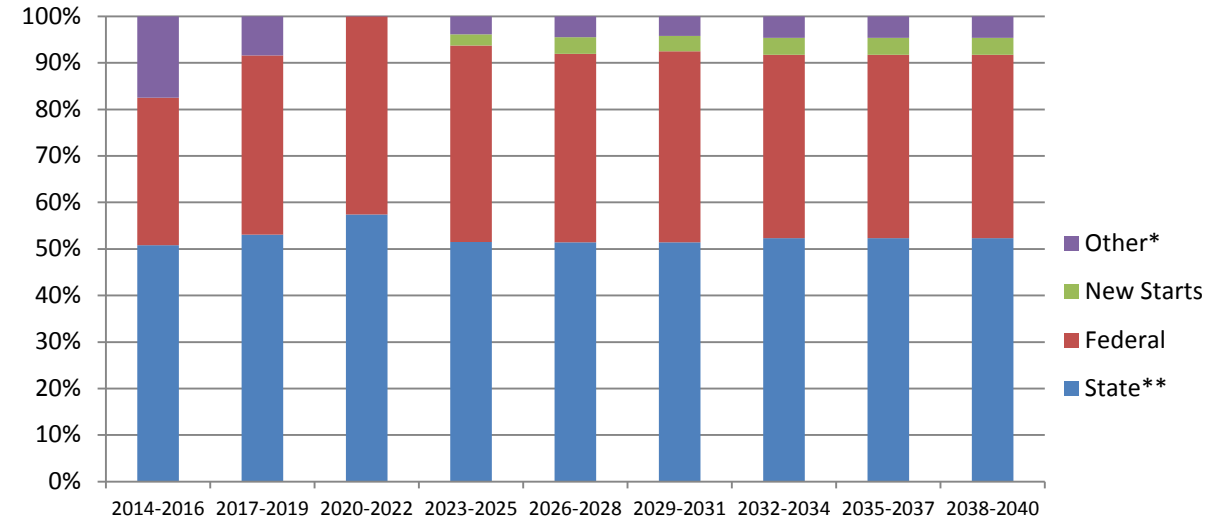
state's share of total resources, including Port Authority contributions is expected to increase from 50% to a peak of nearly 60% over this period (see Figure 5.2) and levels out at around 50% over the long term. As discussed in the expenditures section below, the constrained funding in the near and mid-term will be sufficient to support a maintenance-oriented mix of projects and programs but with limited capacity expansion or system enhancements.

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 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 Port Authority of NY & NJ

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 considerations 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 on-going operations.

For 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.

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.

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, the following table 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.

Table 5-1

NJ TRANSIT Operating Budget Projections NJTPA Region		
	FY 2014 Budget Projection	FY 2040 Budget Projection
Expenses		
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	**$1,552.8**	**$4,108.8**
($ in millions)		

Source: NJ TRANSIT

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 F, 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 is scheduled for adoption in Summer 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 NJTRANSIT is based on average annual levels of anticipated constrained Federal and State funding 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 5-1 shows forecasted near, mid-and long term revenues by sources and expenditures by RCIS category.

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				
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 5-2 depicts anticipated revenues on an average annual basis.

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

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 5-3, 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 5-3
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	40%	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**	

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 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 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 Boston; New York City, where it is 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.

- **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 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.

- **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; North Carolina Turnpike Authority; and 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, multi-modal 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 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.

Chapter 6 – 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 interim 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, 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, include:

Visioning Outreach – As a follow up to the initial workshops held around the region in spring 2013, a number of "visioning" workshops will be conducted to develop to guide 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 are being prepared focusing on key issues that must be address in the final RPSD. The NJTPA is taking the lead in developing the Transportation and Climate & Energy topic papers and will be leading a regional Comprehensive Economic Development Strategy (CEDS) effort.

In parallel with 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 performance measures.

Intelligent Transportation System (ITS) **–** An update of the statewide regional ITS architecture and deployment plan will be created and 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 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 more efficient use of the region's transportation network. In coming years, the efforts will also help the region meet some of its looming financial challenges, for instance, by using technology to gain new capacity without expensive infrastructure upgrades, or shifting land use in ways 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 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 the transportation network effectively serves the mobility needs of the region's residents and businesses and continues to function as premier asset for the region's economy.

Project Index

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 would include projects contained in the 4-year Transportation Improvement Program. Mid-term projects are scheduled to be completed within five to 10 years. They include the six out-years of the State's 10-year Transportation Capital Program as well as projects in the NJTPA Study and Development Program. Long-term projects are estimated to be completed during the final 15 years of the Plan, which include years 11 to 25. Projects are listed in their respective timeframe category based on the year they will be completed (near, mid, long-term).

The DBNUM designators in the Project Index refer to distinct database numbers assigned to all projects that allow them to be electronically tracked. The Index also includes the appropriate Regional Capital Investment Strategy (RCIS) category for each project. The RCIS is described in Chapter 1 of Plan 2040. Projects are classified and grouped within eight investment principles covering the following categories: Bridges, Roads, Transit, Freight, ITS, Travel Demand Management, Safety, and Bike/Pedestrian.

All costs are revenues for Plan 2040 are presented in Year of Expenditure (YOE) dollars, as required by federal regulations for MPO long-range plans. This method allows for financial consistency as both costs and revenues are in comparable dollars. Year of Expenditure dollars are adjusted for inflation. Cost estimates for projects in the Index were developed by the sponsoring agency (NJDOT, NJ TRANSIT, and member subregions). Additional up-to-date financial and project status information can be obtained through the NOTIS program available on the NJTPA website (http://www.njtpa.org).

Also included in the Index are projects provided by the sponsoring authorities (NJ Turnpike Authority, Port Authority of NY & NJ, Delaware River Joint Toll Bridge Commission, NJ Meadowlands Commission, Amtrak, and the Palisades Interstate Parkway).

Cost estimates for NJDOT and NJ TRANSIT on-going programs were developed by these agencies for the near and mid-term periods in YOE dollars. NJTPA estimated the cost of these programs for the remainder of the Plan (Long-term) also using YOE dollars. Programs include a variety of improvement types (generally, where locations are not currently known) such as: resurfacing; milling and repaving; drainage and traffic signal repair or replacement; etc.) These programs are listed at the end of the Project Index.

Projects in the early stages of the NJTPA Study and Development Program – such as the Concept Development (CD) phase of work – are included in the "Projects Under Study" category of the Index for NJDOT and NJ TRANSIT. Projects under study are in various phases of planning and project development

and generally do not have available cost estimates as the project scope and limits have not been finalized.

Projects with congressionally-designated funding reflect the initial federal appropriation that has been allocated to each project. However, it does not necessarily reflect the total cost of implementation of the projects. These congressionally-designated projects are shown with an asterisk in the Index.

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

***: Denotes projects with Congressionally designated funding which does not necessarily reflect the full cost of projects, nor the YOE amount.**
****: Funding is programmed in DB# N063 (NJTPA, Future Projects) for the Local Lead TTF program.**

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

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 (B12)	MC09050_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	
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	

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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)
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	

***: Denotes projects with Congressionally designated funding which does not necessarily reflect the full cost of projects, nor the YOE amount.**
****: Funding is programmed in DB# N063 (NJTPA, Future Projects) for the Local Lead TTF program.**

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

***: Denotes projects with Congressionally designated funding which does not necessarily reflect the full cost of projects, nor the YOE amount.**
****: Funding is programmed in DB# N063 (NJTPA, Future Projects) for the Local Lead TTF program.**

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

NJ TRANSIT

Projects Under Study

Routes 46/3 Corridor Bus Improvements	TN10003	Transit Enhancement	

Authority Projects

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	

***: Denotes projects with Congressionally designated funding which does not necessarily reflect the full cost of projects, nor the YOE amount.**
****: Funding is programmed in DB# N063 (NJTPA, Future Projects) for the Local Lead TTF program.**

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

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
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

***: Denotes projects with Congressionally designated funding which does not necessarily reflect the full cost of projects, nor the YOE amount.**
****: Funding is programmed in DB# N063 (NJTPA, Future Projects) for the Local Lead TTF program.**

Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
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	NLCD1402	Bridges	
Jersey Avenue Extension over Mill Creek	NLCD1404	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/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	

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
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 B11)	MC09045_B	Bike/Ped	
Secaucus Greenway Bicycle Improvements (NJMC MTPD Project B3)	MC09040_B	Safety	
Secaucus Greenway Bicycle Improvements (NJMC MTPD Project B9)	MC09044_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	

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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	

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

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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Middlesex

Highway/Bridges

Near-Term

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

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

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	

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Monmouth

Highway/Bridges

Near-Term

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

Long-Term

Route 71, Wyckoff Road, CR 547	HP01001	Road Enhancement	$6.30

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

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

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

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

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

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Ocean

Highway/Bridges

Near-Term

Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
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	06369	Bridges	$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

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	NLCD1405	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	

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

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	

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

Passaic

Highway/Bridges

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
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

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

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

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
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

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
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	NLCD1407	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	

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

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
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	

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

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
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

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Project Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
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	NLCD1409	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	

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

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

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	

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

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

Various

Highway/Bridges

Long-Term

* NJ Underground Railroad	09345	Economic Development	$0.32

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Ongoing Programs

Highway/Bridges

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

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

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

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Program Name	DBNUM	RCIS Category	YOE Estimate (in $ millions)
Resurfacing Program	X03E	Road Preservation	$3,978.45
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

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

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
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

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

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Appendix A - 2040 Demographic Projections

For this 2040 RTP update, NJTPA updated and extended the demographic (population, household, and employment) forecasts for the region. These forecasts were created in consultation with our regional and county partners and used NJTPA's updated Demographic and Employment Forecast Model (DEFM) to help allocate county level forecasts to the local level. The process for developing forecasts was split into two processes: the creation of county-level forecasts and the allocation of those forecasts to a Traffic Analysis Zone (TAZ) and municipal level.

County-Level Forecasts

The county-level forecasts were based on updated econometric modeling conducted in the spring and summer of 2011 by the New York Metropolitan Transportation Council (NYMTC) in partnership with the NJTPA. This modeling used NYMTC's regional economic model using updated national drivers provided by Global Insight, Inc. and economic data from the Regional Economic Information System (REIS) of the U.S. Bureau of Economic Analysis (BEA). Also, NYMTC continued to use Bureau of Labor Statistic (BLS) data as a basis for identifying employment in the region. The employment forecasts were produced first; population and household forecasts were driven by employment. NJTPA used the payroll component of employment produced from the NYMTC modeling for subsequent analyses.

The econometric model does not consider land use constraints. Therefore, after consultation with county planners, the resultant county level employment levels were shifted between counties based on known limitations (e.g., Highlands building constraints) making use of analysis completed for the 2035 forecast efforts to help with these adjustments. A further adjustment was made to interim year periods in 2015 and 2020 to suppress a jump in growth the model forecast based on an anticipated quick recovery from the 2008/2009 recession (the jump was smoothed into later time periods).

During this process, the NJTPA started using a new source of employment data: the U.S. Census Longitudinal Employer-Household Dynamics data (LEHD; also known as on-the-map data). Subsequent analysis in the summer of 2012 showed that the difference between LEHD data and BLS employment data was substantial enough to cause some Trans-Hudson modeling issues. The 2010 LEHD employment numbers tended to be less than the BLS numbers which caused the econometric model to forecast high employment growth in NJ in 2015 and 2020 which led to understated work trips from NJ to Manhattan. NJTPA increased the 2010 numbers to equate to the BLS numbers which reduced the NJ employment growth in 2015 and 2020 and improved the work trip forecasts from NJ to Manhattan.

Once employment forecasts were developed, the population and household model was used to produce forecasts. The population model is a modified Cohort-Survival model. Historical birth, survival and migration data were updated. As with the employment forecasts, the model results were adjusted to consider land use constraints in consultation with county planners. The household size assumptions

from the model were also decreased to replicate what was done in 2009; the belief was that the model was overstating increases in household size due to immigration.

The county-level forecasts were sent to county planners and regional agencies during early autumn of 2011 for agreement with the subsequent employment adjustments agreed to during the summer of 2012.

Allocation of county-level forecasts to the TAZ and Municipal levels

Once the county-level control total forecasts are established, they need to be allocated to the TAZ and municipal levels. In 2011, NJTPA enhanced the demographic forecasting model, the DEFM, providing more flexibility in making adjustments on a TAZ and municipal basis. During the spring 2012, NJTPA requested detailed zoning and development information from each sub-region to help with the process of allocating the county-level control totals to the TAZ and municipal levels.

The allocation process is an iterative process that involves a great deal of GIS and spreadsheet analysis. Since the available data is different among counties, the analysis process varies slightly between counties but, in general, involves estimating current land uses (including eliminating preserved areas) and estimating residential and employment densities that can be applied to future growth in available vacant land and redevelopment areas. The DEFM allocates growth based on the characteristics of each TAZ, (e.g., historical growth rates, available land, transit/highway connectedness). Known developments are also considered in the allocation process. The model results are evaluated for reasonableness and adjustments are made when necessary. These draft forecasts are reviewed by county planners and regional agencies for reasonableness and adjustments are made based on their input. Agreement is reached when all reviewers find the forecasts reasonable.

NOTE: Due to the timing of Hurricane Sandy, the impacts of the storm could not be included in the analysis. From previous experience, it is expected that the biggest impacts will be felt in the near term and that most communities that suffer major storm impacts tend to comeback in 5-10 years. Exceptions to this tend to be larger and poorer communities (e.g. New Orleans after Hurricane Katrina). Another factor will be any future changes that might be made to change the development patterns in the hardest hit area to lessen the impacts of future storms. These are unknowns that could not be evaluated or included in this forecast analysis.

The following tables show the updated 2040 household, population and employment forecasts by county and muncipality.

County	Muncipality Code	Municipality Name	Population			Households			Employment		
			2010 Population	2040 Population	Annualized % Population Change 2010-2040	2010 Households	2040 Households	Annualized % Household Change 2010-2040	2010 Employment	2040 Employment	Annualized % Employment Change 2010-2040
Bergen	3400300700	Allendale borough	6,510	7,620	0.5%	2,240	2,610	0.5%	2,870	3,760	0.9%
Bergen	3400301090	Alpine borough	1,850	1,850	0.0%	610	610	0.0%	430	460	0.2%
Bergen	3400305170	Bergenfield borough	26,760	28,980	0.3%	8,850	9,560	0.3%	3,680	5,700	1.5%
Bergen	3400306490	Bogota borough	8,190	8,950	0.3%	2,770	3,010	0.3%	960	1,480	1.4%
Bergen	3400310480	Carlstadt borough	6,130	7,020	0.5%	2,380	2,710	0.4%	13,590	15,370	0.4%
Bergen	3400313570	Cliffside Park borough	23,590	25,490	0.3%	9,950	10,720	0.2%	2,670	4,020	1.4%
Bergen	3400313810	Closter borough	8,370	9,750	0.5%	2,750	3,180	0.5%	3,030	4,080	1.0%
Bergen	3400315820	Cresskill borough	8,570	9,620	0.4%	3,000	3,360	0.4%	3,290	4,040	0.7%
Bergen	3400317530	Demarest borough	4,880	5,600	0.5%	1,600	1,820	0.4%	850	1,360	1.6%
Bergen	3400318400	Dumont borough	17,480	18,760	0.2%	6,360	6,820	0.2%	1,920	2,960	1.4%
Bergen	3400319510	East Rutherford borough	8,910	10,010	0.4%	3,790	4,230	0.4%	10,900	22,900	2.5%
Bergen	3400320020	Edgewater borough	11,510	13,120	0.4%	5,640	6,410	0.4%	4,720	6,390	1.0%
Bergen	3400321300	Elmwood Park borough	19,400	21,980	0.4%	7,030	7,930	0.4%	9,050	11,710	0.9%
Bergen	3400321450	Emerson borough	7,400	7,840	0.2%	2,480	2,630	0.2%	2,540	3,060	0.6%
Bergen	3400321480	Englewood city	27,150	31,290	0.5%	10,060	11,550	0.5%	15,650	19,390	0.7%
Bergen	3400321510	Englewood Cliffs borough	5,280	6,000	0.4%	1,820	2,060	0.4%	9,580	10,830	0.4%
Bergen	3400322470	Fair Lawn borough	32,460	36,780	0.4%	11,930	13,510	0.4%	12,620	15,830	0.8%
Bergen	3400322560	Fairview borough	13,840	15,050	0.3%	4,850	5,260	0.3%	2,470	3,450	1.1%
Bergen	3400324420	Fort Lee borough	35,350	41,810	0.6%	16,370	19,280	0.5%	15,820	19,510	0.7%
Bergen	3400324990	Franklin Lakes borough	10,590	12,680	0.6%	3,530	4,210	0.6%	8,410	10,390	0.7%
Bergen	3400325770	Garfield city	30,490	33,890	0.4%	11,070	12,280	0.3%	5,510	8,160	1.3%
Bergen	3400326640	Glen Rock borough	11,600	13,670	0.5%	3,920	4,590	0.5%	2,720	4,190	1.5%
Bergen	3400328680	Hackensack city	43,010	48,190	0.4%	18,140	20,220	0.4%	44,250	51,670	0.5%
Bergen	3400330150	Harrington Park borough	4,660	5,470	0.5%	1,590	1,860	0.5%	1,080	1,630	1.4%
Bergen	3400330420	Hasbrouck Heights borough	11,840	13,730	0.5%	4,430	5,110	0.5%	4,020	5,570	1.1%
Bergen	3400330540	Haworth borough	3,380	4,220	0.7%	1,110	1,380	0.7%	760	1,340	1.9%
Bergen	3400331920	Hillsdale borough	10,220	12,200	0.6%	3,490	4,150	0.6%	2,300	3,710	1.6%
Bergen	3400332310	Ho-Ho-Kus borough	4,080	4,610	0.4%	1,400	1,580	0.4%	1,070	1,620	1.4%
Bergen	3400340020	Leonia borough	8,940	10,290	0.5%	3,280	3,760	0.5%	2,350	3,470	1.3%
Bergen	3400340680	Little Ferry borough	10,630	11,480	0.3%	4,240	4,560	0.2%	2,980	3,800	0.8%
Bergen	3400341100	Lodi borough	24,140	27,250	0.4%	9,470	10,640	0.4%	5,530	8,080	1.3%
Bergen	3400342090	Lyndhurst township	20,550	23,240	0.4%	8,340	9,400	0.4%	11,230	14,230	0.8%
Bergen	3400342750	Mahwah township	25,890	29,390	0.4%	9,510	10,730	0.4%	16,400	19,600	0.6%
Bergen	3400344880	Maywood borough	9,560	11,320	0.6%	3,650	4,290	0.5%	2,970	4,480	1.4%
Bergen	3400346110	Midland Park borough	7,130	8,010	0.4%	2,760	3,090	0.4%	3,900	4,710	0.6%
Bergen	3400347610	Montvale borough	7,840	9,170	0.5%	2,780	3,230	0.5%	11,620	13,410	0.5%
Bergen	3400347700	Moonachie borough	2,710	3,390	0.7%	1,010	1,250	0.7%	6,420	7,480	0.5%
Bergen	3400351660	New Milford borough	16,340	18,740	0.5%	6,140	7,000	0.4%	2,220	4,050	2.0%
Bergen	3400352320	North Arlington borough	15,390	17,260	0.4%	6,300	7,030	0.4%	2,900	4,460	1.4%
Bergen	3400353430	Northvale borough	4,640	5,280	0.4%	1,560	1,780	0.4%	3,900	4,700	0.6%

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Bergen	3400353610	Norwood borough	5,710	6,610	0.5%	1,930	2,220	0.5%	1,920	2,570	1.0%
Bergen	3400353850	Oakland borough	12,750	14,920	0.5%	4,340	5,040	0.5%	5,190	7,030	1.0%
Bergen	3400354870	Old Tappan borough	5,750	6,620	0.5%	1,930	2,220	0.5%	1,680	2,270	1.0%
Bergen	3400354990	Oradell borough	7,980	8,670	0.3%	2,750	2,980	0.3%	3,910	4,720	0.6%
Bergen	3400355770	Palisades Park borough	19,620	21,450	0.3%	6,930	7,580	0.3%	3,150	4,340	1.1%
Bergen	3400355950	Paramus borough	26,340	30,710	0.5%	8,630	10,030	0.5%	44,280	51,090	0.5%
Bergen	3400356130	Park Ridge borough	8,650	10,380	0.6%	3,280	3,920	0.6%	3,680	5,180	1.1%
Bergen	3400361680	Ramsey borough	14,470	16,750	0.5%	5,360	6,170	0.5%	11,130	13,500	0.6%
Bergen	3400362910	Ridgefield borough	11,030	12,810	0.5%	3,910	4,520	0.5%	5,000	6,530	0.9%
Bergen	3400362940	Ridgefield Park village	12,730	14,070	0.3%	4,850	5,360	0.3%	3,860	5,230	1.0%
Bergen	3400363000	Ridgewood village	24,960	29,720	0.6%	8,460	10,000	0.6%	12,130	16,160	1.0%
Bergen	3400363360	River Edge borough	11,340	13,000	0.5%	4,130	4,720	0.4%	3,850	5,380	1.1%
Bergen	3400363690	River Vale township	9,660	10,180	0.2%	3,420	3,610	0.2%	3,040	3,680	0.6%
Bergen	3400363990	Rochelle Park township	5,530	6,300	0.4%	2,090	2,370	0.4%	5,000	5,900	0.6%
Bergen	3400364170	Rockleigh borough	530	810	1.4%	80	110	1.3%	1,690	2,010	0.6%
Bergen	3400365280	Rutherford borough	18,060	21,020	0.5%	6,950	8,050	0.5%	7,110	9,820	1.1%
Bergen	3400365340	Saddle Brook township	13,660	15,670	0.5%	5,290	6,040	0.4%	9,550	11,630	0.7%
Bergen	3400365400	Saddle River borough	3,150	4,260	1.0%	1,220	1,630	1.0%	5,250	6,590	0.8%
Bergen	3400368970	South Hackensack township	2,380	2,910	0.7%	850	1,030	0.7%	5,890	6,530	0.3%
Bergen	3400372360	Teaneck township	39,780	45,010	0.4%	13,470	15,190	0.4%	15,830	20,160	0.8%
Bergen	3400372420	Tenafly borough	14,490	15,700	0.3%	4,770	5,150	0.3%	3,920	4,890	0.7%
Bergen	3400372480	Teterboro borough	70	90	1.1%	30	30	0.8%	6,790	8,390	0.7%
Bergen	3400375140	Upper Saddle River borough	8,210	9,350	0.4%	2,640	2,990	0.4%	4,610	5,580	0.6%
Bergen	3400376400	Waldwick borough	9,630	11,300	0.5%	3,420	3,990	0.5%	2,700	4,090	1.4%
Bergen	3400376490	Wallington borough	11,340	12,400	0.3%	4,640	5,060	0.3%	2,600	3,810	1.3%
Bergen	3400377135	Washington township	9,100	10,170	0.4%	3,260	3,640	0.4%	780	1,630	2.5%
Bergen	3400380270	Westwood borough	10,910	12,450	0.4%	4,440	5,040	0.4%	3,910	5,360	1.1%
Bergen	3400382300	Woodcliff Lake borough	5,730	6,910	0.6%	1,920	2,300	0.6%	6,010	7,260	0.6%
Bergen	3400382570	Wood-Ridge borough	7,630	9,900	0.9%	2,940	3,830	0.9%	2,060	2,300	0.4%
Bergen	3400383050	Wyckoff township	16,700	19,260	0.5%	5,650	6,470	0.5%	5,370	7,450	1.1%
Bergen Total			905,100	1,030,400	0.4%	335,700	380,600	0.4%	451,100	578,100	0.8%
Essex	3401304695	Belleville township	35,930	39,670	0.3%	13,400	14,690	0.3%	9,320	11,310	0.6%
Essex	3401306260	Bloomfield township	47,320	55,850	0.6%	18,390	21,490	0.5%	12,840	15,680	0.7%
Essex	3401309220	Caldwell borough	7,820	8,420	0.2%	3,360	3,600	0.2%	2,380	2,610	0.3%
Essex	3401311200	Cedar Grove township	12,410	13,940	0.4%	4,520	5,040	0.4%	5,020	5,670	0.4%
Essex	3401313045	City of Orange township	30,130	33,740	0.4%	11,200	12,410	0.3%	7,080	8,780	0.7%
Essex	3401319390	East Orange city	64,270	73,580	0.5%	24,950	28,220	0.4%	15,100	19,560	0.9%
Essex	3401321840	Essex Fells borough	2,110	2,650	0.8%	730	900	0.7%	280	500	2.0%
Essex	3401322385	Fairfield township	7,470	8,370	0.4%	2,650	2,950	0.4%	23,720	24,510	0.1%
Essex	3401326610	Glen Ridge borough	7,530	8,350	0.3%	2,480	2,730	0.3%	1,080	1,370	0.8%

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Essex	3401334450	Irvington township	53,930	57,660	0.2%	20,090	21,260	0.2%	9,000	11,790	0.9%
Essex	3401340890	Livingston township	29,370	33,030	0.4%	9,990	11,160	0.4%	22,440	24,710	0.3%
Essex	3401343800	Maplewood township	23,870	27,260	0.4%	8,240	9,320	0.4%	6,210	7,660	0.7%
Essex	3401346380	Millburn township	20,150	22,940	0.4%	6,810	7,680	0.4%	16,690	18,530	0.3%
Essex	3401347500	Montclair township	37,670	43,150	0.5%	15,090	17,040	0.4%	21,600	25,240	0.5%
Essex	3401351000	Newark city	277,140	345,180	0.7%	94,540	115,560	0.7%	151,930	185,480	0.7%
Essex	3401352620	North Caldwell borough	6,180	6,890	0.4%	2,090	2,310	0.3%	300	520	1.8%
Essex	3401353680	Nutley township	28,370	31,580	0.4%	11,310	12,510	0.3%	11,190	12,770	0.4%
Essex	3401364590	Roseland borough	5,820	6,520	0.4%	2,350	2,610	0.4%	12,720	13,750	0.3%
Essex	3401369274	South Orange Village township	16,200	18,810	0.5%	5,520	6,340	0.5%	7,660	9,590	0.8%
Essex	3401375815	Verona township	13,330	14,700	0.3%	5,320	5,820	0.3%	4,480	5,180	0.5%
Essex	3401378510	West Caldwell township	10,760	12,070	0.4%	3,910	4,360	0.4%	10,060	10,940	0.3%
Essex	3401379800	West Orange township	46,210	51,670	0.4%	16,790	18,620	0.3%	15,570	18,270	0.5%
Essex Total			784,000	916,000	0.5%	283,700	326,600	0.5%	366,700	434,400	0.6%
Hudson	3401703580	Bayonne city	63,020	78,650	0.7%	25,230	31,700	0.8%	14,540	23,840	1.7%
Hudson	3401719360	East Newark borough	2,410	4,510	2.1%	760	1,410	2.1%	380	680	2.0%
Hudson	3401728650	Guttenberg town	11,180	11,650	0.1%	4,470	4,700	0.2%	1,080	2,030	2.1%
Hudson	3401730210	Harrison town	13,620	32,050	2.9%	4,870	12,940	3.3%	4,540	15,920	4.3%
Hudson	3401732250	Hoboken city	50,010	57,630	0.5%	25,040	28,710	0.5%	19,070	27,090	1.2%
Hudson	3401736000	Jersey City city	247,640	356,250	1.2%	96,870	144,430	1.3%	105,730	155,670	1.3%
Hudson	3401736510	Kearny town	40,680	43,000	0.2%	13,460	14,340	0.2%	12,890	17,070	0.9%
Hudson	3401752470	North Bergen township	60,770	70,830	0.5%	22,060	26,380	0.6%	18,950	25,890	1.0%
Hudson	3401766570	Secaucus town	16,260	22,840	1.1%	6,300	8,830	1.1%	36,390	44,230	0.7%
Hudson	3401774630	Union City city	66,440	69,870	0.2%	22,810	24,090	0.2%	11,580	17,380	1.4%
Hudson	3401777930	Weehawken township	12,550	17,200	1.1%	5,710	7,850	1.1%	6,330	9,190	1.3%
Hudson	3401779610	West New York town	49,710	52,840	0.2%	18,850	20,060	0.2%	7,380	11,360	1.4%
Hudson Total			634,300	817,300	0.8%	246,400	325,400	0.9%	238,900	350,300	1.3%
Hunterdon	3401900550	Alexandria township	4,940	5,890	0.6%	1,760	2,020	0.5%	830	1,700	2.4%
Hunterdon	3401905650	Bethlehem township	3,980	4,910	0.7%	1,340	1,590	0.6%	2,060	3,410	1.7%
Hunterdon	3401906370	Bloomsbury borough	870	980	0.4%	340	370	0.3%	360	560	1.4%
Hunterdon	3401909280	Califon borough	1,080	1,180	0.3%	390	420	0.2%	190	230	0.7%
Hunterdon	3401913720	Clinton town	2,720	2,930	0.2%	1,060	1,120	0.2%	2,760	3,190	0.5%
Hunterdon	3401913750	Clinton township	13,480	14,960	0.3%	4,570	4,960	0.3%	4,350	7,670	1.9%
Hunterdon	3401917170	Delaware township	4,560	5,630	0.7%	1,790	2,110	0.6%	630	1,230	2.2%
Hunterdon	3401918820	East Amwell township	4,010	5,040	0.8%	1,520	1,820	0.6%	1,000	1,800	2.0%
Hunterdon	3401923700	Flemington borough	4,580	4,800	0.2%	1,820	1,880	0.1%	8,150	9,070	0.4%
Hunterdon	3401924870	Franklin township	3,200	4,330	1.0%	1,140	1,450	0.8%	1,310	3,020	2.8%
Hunterdon	3401925350	Frenchtown borough	1,370	1,450	0.2%	600	620	0.1%	450	580	0.9%
Hunterdon	3401926550	Glen Gardner borough	1,700	1,810	0.2%	770	810	0.2%	70	140	2.1%
Hunterdon	3401929460	Hampton borough	1,400	1,520	0.3%	570	610	0.2%	230	420	2.0%

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Hunterdon	3401931320	High Bridge borough	3,650	3,830	0.2%	1,420	1,470	0.1%	840	1,120	0.9%
Hunterdon	3401932460	Holland township	5,290	6,170	0.5%	1,970	2,230	0.4%	750	1,380	2.0%
Hunterdon	3401937065	Kingwood township	3,850	5,230	1.0%	1,450	1,850	0.8%	820	1,650	2.4%
Hunterdon	3401938610	Lambertville city	3,910	4,060	0.1%	1,960	2,020	0.1%	1,330	1,610	0.6%
Hunterdon	3401939630	Lebanon borough	1,360	1,830	1.0%	600	780	0.9%	1,620	2,070	0.8%
Hunterdon	3401939660	Lebanon township	6,590	7,950	0.6%	2,300	2,670	0.5%	1,240	2,040	1.7%
Hunterdon	3401946260	Milford borough	1,230	1,320	0.2%	520	550	0.2%	220	370	1.6%
Hunterdon	3401961920	Raritan township	22,190	24,080	0.3%	8,060	8,600	0.2%	8,230	15,960	2.2%
Hunterdon	3401962250	Readington township	16,130	18,520	0.5%	5,970	6,690	0.4%	8,190	11,340	1.1%
Hunterdon	3401970980	Stockton borough	540	570	0.2%	240	250	0.2%	140	210	1.4%
Hunterdon	3401972510	Tewksbury township	5,990	7,380	0.7%	2,190	2,590	0.6%	2,060	4,130	2.3%
Hunterdon	3401974420	Union township	5,910	6,680	0.4%	1,750	1,930	0.3%	970	1,890	2.3%
Hunterdon	3401978230	West Amwell township	2,840	4,010	1.2%	1,100	1,360	0.7%	820	1,500	2.0%
Hunterdon Total			127,400	147,100	0.5%	47,200	52,800	0.4%	49,600	78,300	1.5%
Middlesex	3402310750	Carteret borough	22,840	29,050	0.8%	7,590	10,520	1.1%	8,010	9,910	0.7%
Middlesex	3402315550	Cranbury township	3,860	4,780	0.7%	1,320	1,820	1.1%	7,790	11,560	1.3%
Middlesex	3402318490	Dunellen borough	7,230	8,360	0.5%	2,570	3,100	0.6%	1,010	1,350	1.0%
Middlesex	3402319000	East Brunswick township	47,510	54,510	0.5%	16,810	20,120	0.6%	24,530	28,780	0.5%
Middlesex	3402320230	Edison township	99,970	115,000	0.5%	34,970	41,730	0.6%	75,450	87,250	0.5%
Middlesex	3402330840	Helmetta borough	2,180	2,820	0.9%	890	1,240	1.1%	200	300	1.4%
Middlesex	3402331470	Highland Park borough	13,980	14,690	0.2%	5,880	6,280	0.2%	2,620	3,110	0.6%
Middlesex	3402334890	Jamesburg borough	5,920	6,330	0.2%	2,170	2,370	0.3%	3,500	3,840	0.3%
Middlesex	3402345690	Metuchen borough	13,570	15,480	0.4%	5,240	6,210	0.6%	5,900	7,030	0.6%
Middlesex	3402345900	Middlesex borough	13,640	19,620	1.2%	4,980	7,800	1.5%	5,510	8,020	1.3%
Middlesex	3402346620	Milltown borough	6,890	10,550	1.4%	2,600	4,340	1.7%	1,510	2,530	1.7%
Middlesex	3402347280	Monroe township	39,130	55,150	1.2%	16,500	24,030	1.3%	8,940	14,590	1.6%
Middlesex	3402351210	New Brunswick city	55,180	79,700	1.2%	14,120	23,250	1.7%	41,920	50,950	0.7%
Middlesex	3402352560	North Brunswick township	40,740	54,490	1.0%	14,550	20,730	1.2%	24,290	31,260	0.8%
Middlesex	3402354705	Old Bridge township	65,380	82,620	0.8%	23,780	32,890	1.1%	11,210	17,160	1.4%
Middlesex	3402358200	Perth Amboy city	50,810	58,390	0.5%	15,420	18,510	0.6%	13,760	17,690	0.8%
Middlesex	3402359010	Piscataway township	56,040	73,280	0.9%	17,050	24,760	1.3%	40,970	51,810	0.8%
Middlesex	3402359280	Plainsboro township	23,000	24,930	0.3%	9,400	10,260	0.3%	14,520	26,120	2.0%
Middlesex	3402365790	Sayreville borough	42,700	56,950	1.0%	15,640	22,200	1.2%	9,670	18,840	2.2%
Middlesex	3402368550	South Amboy city	8,630	12,230	1.2%	3,370	5,090	1.4%	1,950	3,040	1.5%
Middlesex	3402368790	South Brunswick township	43,420	64,470	1.3%	15,070	24,930	1.7%	24,310	34,260	1.2%
Middlesex	3402369390	South Plainfield borough	23,390	30,280	0.9%	7,880	10,800	1.1%	22,280	26,110	0.5%
Middlesex	3402369420	South River borough	16,010	18,410	0.5%	5,650	6,770	0.6%	2,760	3,780	1.1%
Middlesex	3402369810	Spotswood borough	8,260	9,710	0.5%	3,130	3,890	0.7%	2,250	2,840	0.8%
Middlesex	3402382000	Woodbridge township	99,590	121,290	0.7%	34,620	44,590	0.8%	54,320	70,470	0.9%
Middlesex Total			809,900	1,023,100	0.8%	281,200	378,200	1.0%	409,200	532,600	0.9%

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Monmouth	3402537560	Lake Como borough	1,770	1,780	0.0%	790	790	0.0%	250	270	0.3%
Monmouth	3402500070	Aberdeen township	18,210	20,070	0.3%	6,880	7,370	0.2%	3,540	5,730	1.6%
Monmouth	3402500730	Allenhurst borough	500	500	0.1%	220	220	0.0%	190	200	0.2%
Monmouth	3402500760	Allentown borough	1,830	1,840	0.0%	700	700	0.0%	620	670	0.2%
Monmouth	3402501960	Asbury Park city	16,120	23,230	1.2%	6,730	9,060	1.0%	3,740	4,760	0.8%
Monmouth	3402502110	Atlantic Highlands borough	4,390	4,530	0.1%	1,870	1,900	0.1%	1,310	1,560	0.6%
Monmouth	3402502440	Avon-by-the-Sea borough	1,900	1,910	0.0%	900	900	0.0%	310	340	0.3%
Monmouth	3402504930	Belmar borough	5,790	5,850	0.0%	2,690	2,700	0.0%	1,210	1,380	0.4%
Monmouth	3402506970	Bradley Beach borough	4,300	4,780	0.4%	2,100	2,310	0.3%	710	840	0.6%
Monmouth	3402507750	Brielle borough	4,770	4,920	0.1%	1,810	1,840	0.1%	1,350	1,610	0.6%
Monmouth	3402514560	Colts Neck township	10,140	11,920	0.5%	3,280	3,520	0.2%	2,730	4,080	1.3%
Monmouth	3402516660	Deal borough	750	760	0.0%	330	330	0.0%	520	530	0.1%
Monmouth	3402519840	Eatontown borough	12,680	15,360	0.6%	5,370	6,350	0.6%	15,080	21,050	1.1%
Monmouth	3402521570	Englishtown borough	1,850	1,990	0.2%	620	650	0.1%	810	1,050	0.9%
Monmouth	3402522440	Fair Haven borough	6,120	6,270	0.1%	1,970	1,990	0.0%	910	1,050	0.5%
Monmouth	3402522950	Farmingdale borough	1,330	1,410	0.2%	550	570	0.1%	1,780	2,050	0.5%
Monmouth	3402525200	Freehold borough	12,050	12,590	0.1%	4,010	4,090	0.1%	3,360	4,050	0.6%
Monmouth	3402525230	Freehold township	36,180	41,700	0.5%	12,580	13,990	0.4%	26,040	34,000	0.9%
Monmouth	3402530690	Hazlet township	20,330	21,340	0.2%	7,140	7,350	0.1%	6,050	7,710	0.8%
Monmouth	3402531500	Highlands borough	5,010	5,110	0.1%	2,620	2,650	0.0%	920	1,090	0.5%
Monmouth	3402532640	Holmdel township	16,770	20,210	0.6%	5,580	6,530	0.5%	10,310	15,780	1.4%
Monmouth	3402533300	Howell township	51,080	56,790	0.4%	17,260	18,740	0.3%	13,360	19,890	1.3%
Monmouth	3402534200	Interlaken borough	820	830	0.0%	360	360	0.0%	40	40	0.0%
Monmouth	3402536480	Keansburg borough	10,110	10,370	0.1%	3,810	3,860	0.0%	1,770	2,160	0.7%
Monmouth	3402536810	Keyport borough	7,240	7,460	0.1%	3,070	3,120	0.1%	2,580	3,020	0.5%
Monmouth	3402540770	Little Silver borough	5,950	6,240	0.2%	2,150	2,210	0.1%	2,210	2,570	0.5%
Monmouth	3402541010	Loch Arbour village	190	200	0.1%	80	80	0.0%	30	40	0.4%
Monmouth	3402541310	Long Branch city	30,720	31,820	0.1%	11,750	11,990	0.1%	9,730	11,790	0.6%
Monmouth	3402542990	Manalapan township	38,870	42,540	0.3%	13,260	14,100	0.2%	9,340	13,160	1.1%
Monmouth	3402543050	Manasquan borough	5,900	6,080	0.1%	2,370	2,410	0.1%	1,450	1,670	0.5%
Monmouth	3402544070	Marlboro township	40,190	44,350	0.3%	13,000	13,910	0.2%	9,730	14,080	1.2%
Monmouth	3402544520	Matawan borough	8,810	9,240	0.2%	3,360	3,450	0.1%	3,790	4,600	0.6%
Monmouth	3402545990	Middletown township	66,520	70,720	0.2%	23,960	24,980	0.1%	19,950	25,770	0.9%
Monmouth	3402546560	Millstone township	10,570	11,150	0.2%	3,300	3,370	0.1%	1,620	2,670	1.7%
Monmouth	3402547130	Monmouth Beach borough	3,280	3,310	0.0%	1,490	1,500	0.0%	450	520	0.5%
Monmouth	3402549890	Neptune township	27,940	30,850	0.3%	11,200	12,050	0.2%	13,340	17,280	0.9%
Monmouth	3402549920	Neptune City borough	4,870	5,050	0.1%	2,130	2,180	0.1%	1,420	1,750	0.7%
Monmouth	3402554270	Ocean township	27,290	28,630	0.2%	10,610	10,920	0.1%	9,570	11,640	0.7%
Monmouth	3402554570	Oceanport borough	5,860	7,950	1.0%	2,170	2,930	1.0%	3,870	6,580	1.8%
Monmouth	3402562430	Red Bank borough	12,210	13,410	0.3%	4,930	5,270	0.2%	12,540	15,200	0.6%

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Monmouth	3402564410	Roosevelt borough	880	900	0.1%	310	320	0.0%	70	80	0.4%
Monmouth	3402565130	Rumson borough	7,120	7,640	0.2%	2,340	2,450	0.2%	1,690	2,350	1.1%
Monmouth	3402566240	Sea Bright borough	1,410	1,500	0.2%	790	790	0.0%	470	530	0.5%
Monmouth	3402566330	Sea Girt borough	1,830	1,840	0.0%	820	820	0.0%	1,090	1,130	0.1%
Monmouth	3402567350	Shrewsbury borough	3,810	4,280	0.4%	1,260	1,360	0.2%	5,990	6,930	0.5%
Monmouth	3402567365	Shrewsbury township	1,140	1,190	0.1%	580	590	0.1%	770	900	0.5%
Monmouth	3402570110	Spring Lake borough	2,990	3,000	0.0%	1,250	1,250	0.0%	830	900	0.3%
Monmouth	3402570140	Spring Lake Heights borough	4,710	4,790	0.1%	2,320	2,330	0.0%	1,140	1,330	0.5%
Monmouth	3402573020	Tinton Falls borough	17,890	24,120	1.0%	8,360	10,940	0.9%	9,070	15,140	1.7%
Monmouth	3402574540	Union Beach borough	6,250	6,400	0.1%	2,140	2,170	0.0%	790	1,000	0.8%
Monmouth	3402574900	Upper Freehold township	6,900	7,290	0.2%	2,360	2,480	0.2%	1,990	2,550	0.8%
Monmouth	3402576460	Wall township	26,160	30,290	0.5%	10,050	11,220	0.4%	18,000	23,580	0.9%
Monmouth	3402579310	West Long Branch borough	8,100	8,630	0.2%	2,380	2,480	0.1%	5,780	6,570	0.4%
Monmouth Total			630,400	696,900	0.3%	234,000	252,500	0.3%	246,200	327,200	1.0%
Morris	3402706610	Boonton town	8,350	9,220	0.3%	3,240	3,670	0.4%	3,470	5,590	1.6%
Morris	3402706640	Boonton township	4,260	4,590	0.2%	1,580	1,720	0.3%	680	1,180	1.9%
Morris	3402709040	Butler borough	7,540	8,400	0.4%	3,030	3,480	0.5%	2,370	3,890	1.7%
Morris	3402712100	Chatham borough	8,960	9,130	0.1%	3,070	3,180	0.1%	4,250	5,960	1.1%
Morris	3402712130	Chatham township	10,450	11,380	0.3%	3,920	4,360	0.4%	2,200	3,920	1.9%
Morris	3402712580	Chester borough	1,650	1,790	0.3%	620	690	0.4%	2,840	3,670	0.9%
Morris	3402712610	Chester township	7,840	7,870	0.0%	2,590	2,630	0.0%	1,410	1,780	0.8%
Morris	3402717650	Denville township	16,640	18,310	0.3%	6,430	7,370	0.5%	9,840	13,580	1.1%
Morris	3402718070	Dover town	18,160	19,970	0.3%	5,560	6,400	0.5%	6,000	8,610	1.2%
Morris	3402719210	East Hanover township	11,160	12,490	0.4%	3,890	4,480	0.5%	17,870	22,470	0.8%
Morris	3402723910	Florham Park borough	11,700	13,440	0.5%	4,000	4,800	0.6%	17,190	22,090	0.8%
Morris	3402729550	Hanover township	13,710	15,700	0.5%	5,310	6,270	0.6%	14,850	19,190	0.9%
Morris	3402729700	Harding township	3,810	4,220	0.3%	1,460	1,690	0.5%	1,220	2,130	1.9%
Morris	3402734980	Jefferson township	21,310	21,350	0.0%	7,830	8,120	0.1%	3,630	3,730	0.1%
Morris	3402737110	Kinnelon borough	10,250	10,250	0.0%	3,470	3,580	0.1%	1,950	2,030	0.1%
Morris	3402740290	Lincoln Park borough	10,520	11,350	0.3%	4,000	4,600	0.5%	3,860	5,490	1.2%
Morris	3402741362	Long Hill township	8,700	9,460	0.3%	3,110	3,500	0.4%	2,930	4,160	1.2%
Morris	3402742510	Madison borough	15,850	16,630	0.2%	5,490	5,830	0.2%	7,300	10,460	1.2%
Morris	3402745330	Mendham borough	4,980	5,110	0.1%	1,720	1,760	0.1%	1,920	2,270	0.6%
Morris	3402745360	Mendham township	5,870	6,100	0.1%	1,950	2,030	0.1%	850	1,180	1.1%
Morris	3402746860	Mine Hill township	3,650	4,190	0.5%	1,330	1,590	0.6%	500	580	0.5%
Morris	3402747670	Montville township	21,530	23,100	0.2%	7,490	8,250	0.3%	11,270	15,220	1.0%
Morris	3402748090	Morris township	22,330	24,130	0.3%	8,140	9,040	0.4%	10,460	14,940	1.2%
Morris	3402748210	Morris Plains borough	5,530	5,860	0.2%	2,130	2,320	0.3%	6,310	7,280	0.5%
Morris	3402748300	Morristown town	18,410	22,490	0.7%	7,420	9,340	0.8%	24,700	31,710	0.8%
Morris	3402748480	Mountain Lakes borough	4,160	4,450	0.2%	1,310	1,440	0.3%	3,060	4,000	0.9%

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Morris	3402748690	Mount Arlington borough	5,050	5,480	0.3%	2,280	2,570	0.4%	1,420	2,270	1.6%
Morris	3402749080	Mount Olive township	28,110	30,150	0.2%	10,690	11,740	0.3%	9,390	13,150	1.1%
Morris	3402750130	Netcong borough	3,230	3,500	0.3%	1,380	1,520	0.3%	1,900	2,650	1.1%
Morris	3402756460	Parsippany-Troy Hills township	53,240	57,950	0.3%	20,280	22,730	0.4%	53,090	67,930	0.8%
Morris	3402758110	Pequannock township	15,540	16,200	0.1%	6,470	6,750	0.1%	6,690	8,250	0.7%
Morris	3402761890	Randolph township	25,730	27,280	0.2%	9,010	9,720	0.3%	8,110	11,120	1.1%
Morris	3402763300	Riverdale borough	3,560	4,680	0.9%	1,550	2,220	1.2%	2,580	2,840	0.3%
Morris	3402764050	Rockaway borough	6,440	7,060	0.3%	2,440	2,740	0.4%	4,720	6,210	0.9%
Morris	3402764080	Rockaway township	24,160	24,360	0.0%	8,980	9,260	0.1%	10,860	11,560	0.2%
Morris	3402764980	Roxbury township	23,330	25,660	0.3%	8,290	9,400	0.4%	8,740	12,780	1.3%
Morris	3402775890	Victory Gardens borough	1,520	1,520	0.0%	530	550	0.1%	130	140	0.3%
Morris	3402777240	Washington township	18,530	18,650	0.0%	6,240	6,400	0.1%	3,430	3,690	0.2%
Morris	3402780390	Wharton borough	6,520	6,680	0.1%	2,300	2,360	0.1%	2,420	2,810	0.5%
Morris Total			492,300	530,200	0.2%	180,500	200,100	0.3%	276,400	362,500	0.9%
Ocean	3402973125	Toms River township	91,260	117,430	0.8%	34,770	45,280	0.9%	39,670	52,200	0.9%
Ocean	3402903050	Barnegat township	20,940	30,880	1.3%	8,130	12,460	1.4%	2,420	4,580	2.1%
Ocean	3402903130	Barnegat Light borough	570	810	1.1%	270	390	1.2%	130	210	1.6%
Ocean	3402903520	Bay Head borough	970	1,270	0.9%	460	620	1.0%	300	590	2.3%
Ocean	3402903940	Beach Haven borough	1,170	1,490	0.8%	530	680	0.8%	350	420	0.5%
Ocean	3402904180	Beachwood borough	11,050	13,340	0.6%	3,680	4,510	0.7%	900	1,570	1.8%
Ocean	3402905305	Berkeley township	41,260	53,870	0.9%	20,350	25,420	0.7%	5,550	9,760	1.9%
Ocean	3402907420	Brick township	75,070	95,570	0.8%	29,840	38,540	0.9%	19,800	27,770	1.1%
Ocean	3402918670	Eagleswood township	1,600	4,480	3.5%	620	1,820	3.6%	710	1,800	3.2%
Ocean	3402930390	Harvey Cedars borough	340	410	0.7%	170	210	0.7%	60	110	2.2%
Ocean	3402934530	Island Heights borough	1,670	1,820	0.3%	680	750	0.3%	310	420	1.0%
Ocean	3402934680	Jackson township	54,860	92,440	1.8%	19,420	33,760	1.9%	11,420	22,700	2.3%
Ocean	3402937380	Lacey township	27,640	37,180	1.0%	10,180	13,790	1.0%	5,640	8,300	1.3%
Ocean	3402937770	Lakehurst borough	2,650	3,620	1.0%	880	1,220	1.1%	1,220	1,660	1.0%
Ocean	3402938550	Lakewood township	92,840	133,730	1.2%	24,280	35,470	1.3%	28,700	39,050	1.0%
Ocean	3402939390	Lavallette borough	1,850	1,970	0.2%	930	990	0.2%	370	440	0.6%
Ocean	3402940560	Little Egg Harbor township	20,070	30,930	1.5%	8,060	12,590	1.5%	2,990	6,080	2.4%
Ocean	3402941250	Long Beach township	3,050	3,880	0.8%	1,540	1,970	0.8%	1,200	1,490	0.7%
Ocean	3402943140	Manchester township	43,070	61,440	1.2%	22,840	32,110	1.1%	5,390	11,170	2.5%
Ocean	3402943380	Mantoloking borough	300	360	0.6%	160	190	0.6%	20	100	6.0%
Ocean	3402954300	Ocean township	8,330	11,900	1.2%	3,480	5,080	1.3%	1,260	2,160	1.8%
Ocean	3402954450	Ocean Gate borough	2,010	2,140	0.2%	830	890	0.2%	120	220	1.9%
Ocean	3402958590	Pine Beach borough	2,130	2,360	0.3%	820	910	0.4%	220	330	1.4%
Ocean	3402959790	Plumsted township	8,420	17,200	2.4%	2,940	6,190	2.5%	1,200	3,820	3.9%
Ocean	3402959880	Point Pleasant borough	18,390	21,580	0.5%	7,270	8,620	0.6%	4,130	5,710	1.1%
Ocean	3402959910	Point Pleasant Beach borough	4,670	5,550	0.6%	1,990	2,380	0.6%	2,480	3,110	0.8%

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Ocean	3402966450	Seaside Heights borough	2,890	3,140	0.3%	1,380	1,510	0.3%	1,260	1,340	0.2%
Ocean	3402966480	Seaside Park borough	1,580	1,640	0.1%	830	870	0.1%	140	180	0.9%
Ocean	3402967110	Ship Bottom borough	1,160	1,350	0.5%	560	650	0.5%	480	590	0.7%
Ocean	3402969510	South Toms River borough	3,680	4,980	1.0%	1,100	1,510	1.1%	290	550	2.1%
Ocean	3402970320	Stafford township	26,540	36,640	1.1%	10,100	14,300	1.2%	9,600	13,100	1.0%
Ocean	3402971640	Surf City borough	1,210	1,320	0.3%	620	690	0.3%	390	500	0.8%
Ocean	3402974210	Tuckerton borough	3,350	4,840	1.2%	1,400	2,050	1.3%	490	950	2.3%
Ocean Total			576,600	801,600	1.1%	221,100	308,400	1.1%	149,200	223,000	1.3%
Passaic	3403182423	Woodland Park borough	11,820	13,480	0.4%	4,630	5,320	0.5%	4,990	5,920	0.6%
Passaic	3403106340	Bloomingdale borough	7,660	9,630	0.8%	2,940	3,730	0.8%	1,370	2,320	1.8%
Passaic	3403113690	Clifton city	84,140	99,560	0.6%	30,660	36,620	0.6%	30,970	40,050	0.9%
Passaic	3403129070	Haledon borough	8,320	9,790	0.5%	2,780	3,290	0.6%	1,400	2,040	1.3%
Passaic	3403130570	Hawthorne borough	18,790	22,250	0.6%	7,450	8,890	0.6%	6,010	7,910	0.9%
Passaic	3403140620	Little Falls township	14,430	16,380	0.4%	4,740	5,400	0.4%	6,330	7,350	0.5%
Passaic	3403153040	North Haledon borough	8,420	10,030	0.6%	3,120	3,760	0.6%	1,540	2,170	1.1%
Passaic	3403156550	Passaic city	69,780	82,210	0.5%	19,410	23,060	0.6%	16,570	22,060	1.0%
Passaic	3403157000	Paterson city	146,200	179,020	0.7%	44,330	54,900	0.7%	41,570	59,470	1.2%
Passaic	3403160090	Pompton Lakes borough	11,100	12,620	0.4%	4,190	4,800	0.5%	2,120	2,730	0.8%
Passaic	3403161170	Prospect Park borough	5,870	6,920	0.6%	1,800	2,140	0.6%	560	960	1.8%
Passaic	3403163150	Ringwood borough	12,230	14,380	0.5%	4,180	4,960	0.6%	2,140	3,060	1.2%
Passaic	3403173140	Totowa borough	10,800	13,310	0.7%	3,780	4,650	0.7%	12,690	14,630	0.5%
Passaic	3403176730	Wanaque borough	11,120	13,160	0.6%	4,020	4,800	0.6%	2,160	2,920	1.0%
Passaic	3403177840	Wayne township	54,720	66,060	0.6%	19,130	23,150	0.6%	37,800	45,240	0.6%
Passaic	3403179460	West Milford township	25,850	32,550	0.8%	9,630	12,250	0.8%	4,450	7,710	1.8%
Passaic Total			501,200	601,300	0.6%	166,800	201,700	0.6%	172,700	226,500	0.9%
Somerset	3403504450	Bedminster township	8,170	8,310	0.1%	4,100	4,160	0.0%	9,590	9,850	0.1%
Somerset	3403505560	Bernards township	26,650	27,370	0.1%	9,780	10,040	0.1%	15,360	16,250	0.2%
Somerset	3403505590	Bernardsville borough	7,710	7,990	0.1%	2,690	2,780	0.1%	2,810	2,960	0.2%
Somerset	3403506790	Bound Brook borough	10,400	13,160	0.8%	3,590	4,530	0.8%	3,890	4,540	0.5%
Somerset	3403507180	Branchburg township	14,460	18,140	0.8%	5,270	6,580	0.7%	10,010	14,660	1.3%
Somerset	3403507720	Bridgewater township	44,460	47,810	0.2%	16,110	17,290	0.2%	32,190	52,250	1.6%
Somerset	3403522890	Far Hills borough	920	1,050	0.4%	380	420	0.4%	580	590	0.1%
Somerset	3403524900	Franklin township	62,300	71,390	0.5%	23,300	26,930	0.5%	30,460	42,910	1.1%
Somerset	3403527510	Green Brook township	7,200	8,300	0.5%	2,380	2,720	0.5%	3,860	3,980	0.1%
Somerset	3403531890	Hillsborough township	38,300	53,230	1.1%	13,570	18,750	1.1%	11,370	30,240	3.3%
Somerset	3403543620	Manville borough	10,340	10,810	0.1%	4,020	4,190	0.1%	2,090	2,440	0.5%
Somerset	3403546590	Millstone borough	420	530	0.8%	160	210	0.8%	10	80	8.7%
Somerset	3403547580	Montgomery township	22,250	26,060	0.5%	7,640	8,930	0.5%	11,220	19,340	1.8%
Somerset	3403553280	North Plainfield borough	21,940	23,030	0.2%	7,450	7,760	0.1%	2,800	3,170	0.4%
Somerset	3403557300	Peapack and Gladstone borough	2,580	3,040	0.5%	890	1,040	0.5%	1,980	3,080	1.5%

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Somerset	3403561980	Raritan borough	6,880	8,380	0.7%	2,670	3,220	0.6%	9,480	9,770	0.1%
Somerset	3403564320	Rocky Hill borough	680	810	0.6%	280	330	0.5%	410	600	1.3%
Somerset	3403568460	Somerville borough	12,100	17,830	1.3%	4,590	6,750	1.3%	10,530	14,210	1.0%
Somerset	3403568730	South Bound Brook borough	4,560	4,620	0.0%	1,730	1,750	0.0%	430	470	0.4%
Somerset	3403576940	Warren township	15,310	17,450	0.4%	5,060	5,790	0.4%	13,910	14,810	0.2%
Somerset	3403577600	Watchung borough	5,800	7,300	0.8%	2,110	2,650	0.8%	4,690	6,260	1.0%
Somerset Total			323,400	376,600	0.5%	117,800	136,800	0.5%	177,700	252,500	1.2%
Sussex	3403701330	Andover borough	610	930	1.4%	240	390	1.6%	140	340	2.9%
Sussex	3403701360	Andover township	6,320	9,130	1.2%	2,070	3,110	1.4%	2,350	3,770	1.6%
Sussex	3403707300	Branchville borough	840	1,160	1.1%	360	520	1.2%	360	580	1.6%
Sussex	3403709160	Byram township	8,350	11,090	0.9%	2,930	3,970	1.0%	1,110	2,410	2.6%
Sussex	3403724810	Frankford township	5,570	9,470	1.8%	2,050	3,610	1.9%	2,360	4,360	2.1%
Sussex	3403724930	Franklin borough	5,050	6,700	1.0%	1,940	2,660	1.1%	1,640	2,200	1.0%
Sussex	3403725140	Fredon township	3,440	5,730	1.7%	1,210	2,110	1.9%	940	2,120	2.7%
Sussex	3403727420	Green township	3,600	5,690	1.5%	1,180	1,950	1.7%	510	1,460	3.6%
Sussex	3403729220	Hamburg borough	3,280	3,730	0.4%	1,360	1,570	0.5%	1,230	1,460	0.6%
Sussex	3403729490	Hampton township	5,200	7,970	1.4%	2,020	3,220	1.6%	1,100	2,580	2.9%
Sussex	3403729850	Hardyston township	8,210	10,830	0.9%	3,260	4,410	1.0%	1,390	2,620	2.1%
Sussex	3403732910	Hopatcong borough	15,150	17,450	0.5%	5,650	6,620	0.5%	1,320	2,500	2.1%
Sussex	3403737440	Lafayette township	2,540	4,870	2.2%	880	1,780	2.4%	1,760	3,000	1.8%
Sussex	3403747430	Montague township	3,850	6,030	1.5%	1,540	2,510	1.6%	580	1,780	3.8%
Sussex	3403751930	Newton town	8,000	9,260	0.5%	3,170	3,710	0.5%	4,290	5,020	0.5%
Sussex	3403754660	Ogdensburg borough	2,410	2,850	0.6%	860	1,040	0.6%	180	390	2.6%
Sussex	3403765700	Sandyston township	2,000	3,500	1.9%	790	1,450	2.1%	330	1,170	4.4%
Sussex	3403769690	Sparta township	19,720	24,260	0.7%	6,870	8,510	0.7%	5,580	7,510	1.0%
Sussex	3403770380	Stanhope borough	3,610	4,160	0.5%	1,400	1,630	0.5%	1,590	1,950	0.7%
Sussex	3403770890	Stillwater township	4,100	4,910	0.6%	1,550	1,900	0.7%	430	830	2.2%
Sussex	3403771670	Sussex borough	2,130	2,510	0.5%	900	1,070	0.6%	680	900	0.9%
Sussex	3403775740	Vernon township	23,940	28,530	0.6%	8,620	10,400	0.6%	5,770	8,170	1.2%
Sussex	3403776640	Walpack township	20	20	0.0%	10	10	0.0%	-	-	0.0%
Sussex	3403776790	Wantage township	11,360	18,730	1.7%	3,910	6,770	1.8%	2,010	5,680	3.5%
Sussex Total			149,300	199,500	1.0%	54,800	74,900	1.1%	37,600	62,800	1.7%
Union	3403905320	Berkeley Heights township	13,180	17,270	0.9%	4,470	5,830	0.9%	7,550	9,340	0.7%
Union	3403913150	Clark township	14,760	17,250	0.5%	5,560	6,530	0.5%	6,680	7,930	0.6%
Union	3403915640	Cranford township	22,630	27,420	0.6%	8,580	10,410	0.6%	13,680	16,710	0.7%
Union	3403921000	Elizabeth city	124,970	147,790	0.6%	41,600	48,980	0.5%	48,130	63,750	0.9%
Union	3403922860	Fanwood borough	7,320	8,200	0.4%	2,630	2,940	0.4%	1,150	1,490	0.9%
Union	3403925800	Garwood borough	4,230	5,500	0.9%	1,780	2,310	0.9%	2,070	2,650	0.8%
Union	3403931980	Hillside township	21,400	26,160	0.7%	7,110	8,690	0.7%	7,060	9,300	0.9%
Union	3403936690	Kenilworth borough	7,910	10,020	0.8%	2,840	3,590	0.8%	14,850	16,510	0.4%

County	Muncipality Code	Municipality Name	Population			Households			Employment		
			2010 Population	2040 Population	Annualized % Population Change 2010-2040	2010 Households	2040 Households	Annualized % Household Change 2010-2040	2010 Employment	2040 Employment	Annualized % Employment Change 2010-2040
Union	3403940350	Linden city	40,500	48,220	0.6%	14,910	17,760	0.6%	18,480	24,140	0.9%
Union	3403948510	Mountainside borough	6,690	7,980	0.6%	2,470	2,950	0.6%	5,770	6,390	0.3%
Union	3403951810	New Providence borough	12,170	15,410	0.8%	4,410	5,570	0.8%	9,050	10,250	0.4%
Union	3403959190	Plainfield city	49,810	56,150	0.4%	15,180	17,270	0.4%	8,500	11,580	1.0%
Union	3403961530	Rahway city	27,350	32,780	0.6%	10,530	12,620	0.6%	12,960	16,070	0.7%
Union	3403964620	Roselle borough	21,090	24,330	0.5%	7,410	8,550	0.5%	4,480	6,240	1.1%
Union	3403964650	Roselle Park borough	13,300	15,450	0.5%	5,000	5,800	0.5%	1,960	3,100	1.5%
Union	3403966060	Scotch Plains township	23,510	26,820	0.4%	8,600	9,830	0.4%	6,070	7,650	0.8%
Union	3403970020	Springfield township	15,820	19,080	0.6%	6,510	7,850	0.6%	10,750	12,630	0.5%
Union	3403971430	Summit city	21,460	25,160	0.5%	7,710	9,060	0.5%	15,650	20,370	0.9%
Union	3403974480	Union township	56,640	68,720	0.6%	19,560	23,710	0.6%	32,460	39,640	0.7%
Union	3403979040	Westfield town	30,320	37,360	0.7%	10,570	13,010	0.7%	9,820	13,240	1.0%
Union	3403981650	Winfield township	1,470	1,470	0.0%	710	710	0.0%	10	140	10.9%
Union Total			536,500	638,500	0.6%	188,100	224,000	0.6%	237,100	299,100	0.8%
Warren	3404100670	Allamuchy township	4,320	4,930	0.4%	1,950	2,050	0.2%	640	860	1.0%
Warren	3404101030	Alpha borough	2,370	3,150	1.0%	960	1,180	0.7%	890	1,180	0.9%
Warren	3404104990	Belvidere town	2,680	3,960	1.3%	1,050	1,430	1.0%	1,550	1,960	0.8%
Warren	3404106160	Blairstown township	5,970	7,180	0.6%	2,120	2,350	0.3%	1,870	2,500	1.0%
Warren	3404124960	Franklin township	3,180	4,030	0.8%	1,120	1,310	0.5%	450	600	1.0%
Warren	3404125320	Frelinghuysen township	2,230	2,640	0.6%	760	830	0.3%	190	200	0.3%
Warren	3404128260	Greenwich township	5,710	6,280	0.3%	1,810	1,830	0.0%	1,840	2,100	0.4%
Warren	3404128710	Hackettstown town	9,720	12,100	0.7%	3,580	4,090	0.5%	7,210	8,320	0.5%
Warren	3404129820	Hardwick township	1,700	1,930	0.4%	570	600	0.1%	210	230	0.3%
Warren	3404130090	Harmony township	2,670	3,700	1.1%	1,020	1,300	0.8%	530	700	1.0%
Warren	3404133060	Hope township	1,950	2,340	0.6%	740	820	0.3%	470	510	0.3%
Warren	3404133930	Independence township	5,660	6,290	0.4%	2,230	2,280	0.1%	760	1,010	1.0%
Warren	3404137320	Knowlton township	3,060	3,440	0.4%	1,100	1,140	0.1%	800	1,060	1.0%
Warren	3404140110	Liberty township	2,940	3,220	0.3%	1,050	1,050	0.0%	210	220	0.1%
Warren	3404141490	Lopatcong township	8,010	8,990	0.4%	3,140	3,230	0.1%	4,520	5,410	0.6%
Warren	3404143320	Mansfield township	7,730	10,010	0.9%	2,970	3,540	0.6%	1,370	2,000	1.3%
Warren	3404155530	Oxford township	2,510	2,920	0.5%	950	1,010	0.2%	1,150	1,290	0.4%
Warren	3404158350	Phillipsburg town	14,950	17,460	0.5%	5,930	6,360	0.2%	4,910	6,680	1.0%
Warren	3404159820	Pohatcong township	3,340	3,640	0.3%	1,310	1,310	0.0%	370	840	2.8%
Warren	3404177270	Washington borough	6,460	8,370	0.9%	2,620	3,120	0.6%	1,240	1,660	1.0%
Warren	3404177300	Washington township	6,650	8,810	0.9%	2,380	2,900	0.7%	3,020	3,900	0.9%
Warren	3404180570	White township	4,880	6,460	0.9%	2,120	2,570	0.7%	820	1,100	1.0%
Warren Total			108,700	131,800	0.6%	41,500	46,300	0.4%	35,000	44,300	0.8%
Total NJTPA Region			6,578,900	7,910,400	0.6%	2,398,800	2,908,400	0.6%	2,847,400	3,771,700	0.9%

NOTE: Municipal numbers have been rounded to the nearest 10; county totals have been rounded to the nearest 100. All calculations were doned on unrounded values so totals and growth percentages calculated using the rounded numbers may not match the values in this table.

Appendix B - Mitigating Adverse Environmental Impacts of Transportation Improvements

The thirteen county NJTPA region is made up of diverse ecological resources from the lush environment of the Highlands to fragile wetlands to farmlands of rural Central New Jersey to the unique Pinelands to the New Jersey Meadowlands to historic parks to the miles of exceptional coast line and barrier islands found on the Jersey shore. One of the goals identified in Plan 2040 is to "protect and improve the quality of natural ecosystems and the human environment." Reflecting this goal, the NJTPA's planning and project development programs are designed to explicitly consider the impacts that transportation investments can have on both the human and natural environments, and focus specifically on minimizing or mitigating negative impacts.

Considering the complexity and diversity of the environment across the region, the NJTPA uses readily available published environmental inventories to identify protected landscapes and historical features. Beginning at the early stages in the planning process and continuing throughout, this information is used first as a contextual backdrop for the identification of transportation needs, and later as an important factor in prioritizing and selecting the most appropriate transportation improvement strategies for specific locations. Identifying environmental issues (through mapping overlays) early in the planning process helps determine whether particular types of projects should be advanced or avoided in vulnerable areas. It also helps address National Environmental Policy Act (NEPA) requirements more effectively than if such issues would be left for consideration until late in project development. Where project development proceeds, the inventories of environmental features are used to fully incorporate environmental mitigation techniques that minimize unavoidable impacts to these areas.

Environmental mitigations called for by this plan are to be developed in consultation with numerous federal, state and local agencies responsible for and interested in environmental stewardship, including:

- New Jersey Department of Environmental Protection
- Division of Land Use Regulation Freshwater Wetlands Stream Encroachment Coastal Regulation Tidelands Management
- Bureau of Dam Safety and Flood Control
- Division of Fish and Wildlife Office of Historic Preservation Green Acres Program
- Bureau of Air Quality Planning Division of Parks and Forestry Division of Water Quality
- New Jersey Department of Transportation, Bureau of Environmental Program Resources
- NJ TRANSIT
- New Jersey Department of Community Affairs, Office of Smart Growth

- Federal Highway Administration, Environmental Coordinator
- Federal Transit Administration
- U.S. Environmental Protection Agency
- U.S. Army Corp of Engineers
- All NJTPA Member Agencies and municipalities, as appropriate

The specific types of environmental mitigation activities implemented are ultimately determined by the governing regulatory authority and are dependent upon the resource being impacted and the severity of that impact. Among the key environmental areas of concern to the NJTPA are the following:

Regional Air Quality/Non-attainment and Maintenance Areas

Air quality is a regionally scaled environmental issue, with the NJTPA seeking attainment and maintenance of the National Ambient Air Quality Standards throughout northern New Jersey. Mitigation activities are applicable throughout the region, represented throughout this plan by the emphasis on Smart Growth, support for public transit, walking and biking, limiting the addition of new highway capacity, and support for a variety of Transportation Demand Management (TDM) and highway operational improvement initiatives. These approaches seek to significantly curb the growth in vehicle miles traveled and reduce vehicular pollutant emissions, including greenhouse gas emissions in accordance with the New Jersey Global Warming Response Act of 2007.

Water Quality Management Planning Areas

The establishment of Water Quality Management Planning Areas by the State, including the New Jersey Highlands and New Jersey Meadowlands, supports the preservation and protection of the quality of the region's precious water resources. Mitigation within these areas focuses on growth management and protecting, preserving and repairing critical areas such as wetlands and open water features.

Freshwater Wetlands, Lakes, Rivers and Streams

To preserve and protect the ecological integrity of the region's wetlands, the NJTPA and its member agencies seek to avoid disruptive transportation improvements located within identified wetland areas. Where disruption is unavoidable, projects are developed and designed to be consistent with the requirement of the New Jersey Department of Environmental Protection's Freshwater Wetlands Protection Act. That is, proposed projects seek to minimize adverse impacts to the maximum extent practical and include, or are accompanied by, appropriate mitigation measures. Applicable mitigation techniques are ultimately determined with the New Jersey Department of Environmental Protection, New Jersey Department of Transportation, and New Jersey Transit. Examples of common mitigation techniques that may be applied in these areas include:

- Minimizing adverse environmental impacts and restoring temporarily impacted areas to preconstruction conditions;
- Transportation facility design that minimizes the "footprint" of new impervious surfaces;
- The creation of new wetland areas at a ratio ranging up to 1-acre of disturbance to 3-acres newly created wetlands;
- The restoration or rehabilitation of damaged wetlands again at a ratio ranging up to 1-acre of disturbance to 3-acres of enhancement; or
- If available, the purchase of wetland credit acres from an existing wetland mitigation bank within the same watershed.

New Jersey Coastal Areas

Protection of New Jersey's remarkable coastal areas is addressed by the Coastal Area Facility Review Act (CAFRA) or the Waterfront Development Law. The CAFRA jurisdictional area begins where the Cheesequake Creek enters Raritan Bay in Old Bridge, Middlesex County. It extends south along the coast around Cape May, and then north along the Delaware Bay ending at the Kilcohook National Wildlife Refuge in Salem County. The inland limit of the CAFRA area follows an irregular line drawn along public roads, railroad tracks, and other features. The Waterfront Development Law generally regulates all development within 500 feet of any tidal water body.

Avoiding damage to these areas is preferable, but sometimes a transportation project is warranted within the CAFRA zone or adjacent to any tidal water body. To mitigate negative impacts, techniques can include monetary contributions or designating compensation land for the loss of resources. To offset for removal of vegetation or addition of impervious surfaces, Conservation Easement/Restrictions protecting other areas from future development may be executed.

Designated "Green Acres" Areas

Properties designated under the state Green Acres program represent historic, scenic, and recreational open spaces acquired and owned by the State to be preserved for public use and enjoyment. Where any Green Acres property is encumbered by the construction of a roadway, bridge or other transportation right-of-way, mitigation must provide replacement land of equal or greater value, provide parkland improvements, provide funds for the acquisition of land for recreation and/or conservation purposes or provide another type of monetary compensation.

Forested Areas

Forested parts of the region include those in the Pine Barrens of the Pinelands Preservation Area as well as the Highlands. Avoiding disturbance of these natural areas is most desirable to preserve water and wildlife resources. Where transportation improvements do have negative impacts, such impacts should be minimized and mitigated. Mitigation practices within forest areas include the replacement

of upland forest with forest of equal ecological value and function. Forest replacement may be achieved by either onsite plantings or if onsite plantings are not feasible offsite plantings within preservation or planning areas may be permitted. If neither option is feasible, payment into a fund dedicated the purchase of upland forest may be allowed.

Flood Hazard Areas

State designated Flood Hazard Areas identify locations with significant risk of flooding, particularly during hurricanes or other major storms. Transportation projects and land development can change natural drainage and create new paths for runoff, with potentially dangerous consequences. Any development within a regulated flood hazard zone is required to take all reasonable measures necessary to minimize adverse environmental impacts resulting from the construction of the proposed project. Building in and maintaining effective drainage systems, including ditches, culverts, and catch basins are critical in infrastructure improvements and maintenance. Other mitigation techniques include restoring temporarily disturbed vegetation with vegetation of equal or higher quality, restoring all habitats, restoring all land and water features to their pre-construction condition, and preventing sedimentation and erosion to the greatest extent possible.

Historic Districts and Sites

The historic and aesthetic value of northern New Jersey's built environment is also recognized as key to the quality of life of the region's residents. Where transportation improvements are developed which may impact on such resources, appropriate mitigation and design elements should be addressed. Section 106 of the National Historic Preservation Act (NHPA) requires all federal agencies to take into account the effects of their undertakings on historic properties. All properties listed or eligible for inclusion into the National Register and/or State Register are protected by the New Jersey Historic Preservation Office. Typically mitigation activities include the preservation and documentation of these assets along with context-sensitive design of new or renovated infrastructure to complement existing streetscape or architectural features as closely as possible.

Rare, Threatened and Endangered Species

Currently the ecosystem in New Jersey provides habitat to nearly 500 wildlife species, 73 of which are listed as threatened or endangered. In an effort to help protect these species, the NJDEP has surveyed the entire State and delineated potential critical habitats. A significant portion of this critical habitat is protected from development through the establishment of Wildlife Management Areas (WMA) and the enforcement of the various State regulations. In the event that a planned transportation project will encumber identified critical habitat, various mitigation measures are immediately triggered. These mitigation measures included possible realignment of the entire facility or portion thereof or the establishment of new habitat either on or off site.

Soil Erosion and Sediment Control

To reduce soil erosion and sedimentation during and upon construction completion, the majority of NJTPA's transportation improvement projects require compliance with the New Jersey Soil Erosion and Sediment Control Act of 1975. The local Soil Conservation District is responsible for reviewing and certifying all Soil Erosion and Sediment Control Plans prior to any construction activities. Certification of a Soil Erosion and Sediment Control Plan ensures that the proper soil stabilizing techniques have been fully incorporated into the project design.

To minimize unavoidable soil displacement occurring during construction and prevent future soil erosion, the Soil Erosion and Sediment Control Act requires that all steep slopes (slopes exceeding 15%) be stabilized, silt fencing securing the project area be installed, all temporarily disturbed areas be re-vegetated and stormwater runoff be properly collected and conveyed.

Stormwater Management

Non-point pollution or uncontrolled and untreated stormwater runoff from paved and other impervious surfaces carries pollutants into surface and ground waters, with negative effects on aquatic life, drinking water, and recreational resources. Additionally, fast moving surface runoff erodes stream banks, channeling meandering streams into fast moving torrents during storm events. The NJ DEP's stormwater management rules (N.J.A.C. 7:8) regulate discharges of pollutants to surface and ground water by controlling the construction of impervious surfaces. These include paved roads and paths, parking facilities, and other development. In addition to limits on impervious surfaces, additional strategies are required to control and treat stormwater in order to mitigate its potential impacts.

Appendix C – Air Quality Conformity Determination

Upon approval by the NJTPA Board of Trustees, the Air Quality Conformity Determination will be inserted into Appendix C.

The Air Quality Conformity Determination Report will be available for public comment from July 11, 2013 to August 12, 2013, the same public comment period as the Regional Transportation Plan (RTP), Plan 2040, and the Transportation Improvement Program (TIP).

Appendix D – NJTPA Congestion Management Process

Introduction

The region's extensive transportation infrastructure assets are the result of continued investment over time, empowering the region's economic and social activity by enabling the movement of persons and the flow of goods. Preservation, management and targeted expansion of infrastructure capacities are fundamental to sustaining the region's development and well-being. (Conversely, allowing the existing assets to degrade over time would greatly and adversely affect the region.)

The NJTPA operates a Congestion Management Process, or CMP, systematically investigating the region's complex travel patterns and looking toward suitable approaches for improving the transportation system's convenience and reliability. Such a "performance-based" process is federally required[i] as an integral part of the metropolitan planning process in MPOs like the NJTPA.

Based on established NJTPA policy, the Regional Capital Investment Strategy[ii], the CMP is structured around a broad regional analysis of transportation needs and strategies called Strategy Evaluation. Recommendations for action in specific locations is drawn from and related to Strategy Evaluation findings in Strategy Refinement and CMP Compliance activities. Projects are prioritized, selected for funding and subsequently implemented based on consistency with CMP objectives. Regular monitoring of performance is conducted and comprehensive methods for evaluating impacts of projects have been developed.

The CMP has been in place for several plan cycles and undergone periodic enhancements. Some features have been updated leading up to *Plan 2040*, while other important enhancements are still in progress. Consistent with the overall approach for *Plan 2040*, the CMP is building on prior planning work while evolving to meet broader emerging priorities and support the *Together North Jersey Regional Plan for Sustainable Development* effort.

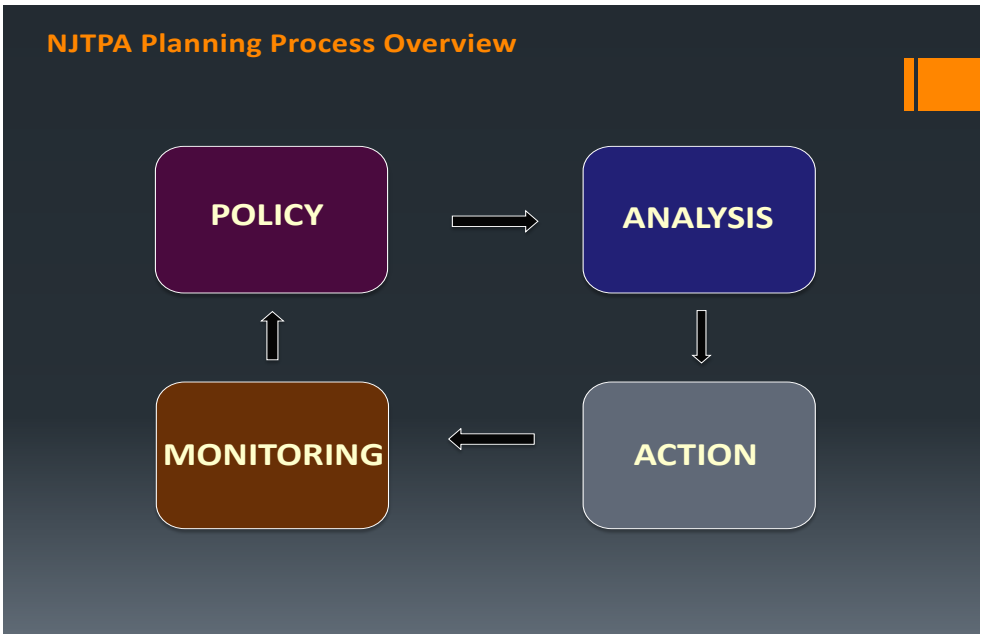
This appendix briefly describes established elements within the CMP, especially those related to the Strategy Evaluation analysis. Priorities and projects within *Plan 2040* and the NJTPA Transportation Improvement Program (TIP) are already supported by operation of the CMP. In addition, CMP analytical findings have been made available and utilized by NJTPA partner agencies, including NJDOT (for statewide assessment of congested places), subregions (for the development of studies and project concepts), and Transportation Management Associations (for work program development).

New system performance measures are currently being explored to address requirements enacted in the federal MAP-21 legislation. Once national performance measures are set (by 2015) related to national congestion, reliability and freight movement goals, new state and regional targets will need to be established, system reports will need to be developed, and plan and TIP impacts will need to be assessed.

Further, the NJTPA is developing an innovative web-based platform intended to strengthen the integration of the CMP and other planning work for the region. The Planning Recommendations Integration Management Engine, or PRIME, will help regional, subregional, state and other partner planners query, draw from, and connect planning findings. This should help to advance recommendations that emerge from systematic planning work like the CMP and subregional planning studies toward implementation. It should also help to find synergies among needs so that complementary strategies can be packaged appropriately and advanced concurrently (a core feature of the CMP).

As required by Federal transportation law, and reflected in new planning requirements in the MAP-21 legislation, MPOs must base their planning decisions on the performance of the transportation system. Since the NJTPA region's air has concentrations of ozone that exceed national standards (i.e., the region is part of federally designated non-attainment areas), the use of a CMP is an integral part of the NJTPA planning process and addresses Federal requirements to provide information and strategies to decision-makers regarding accessibility, mobility, and congestion as they relate to the movement of persons and goods in northern New Jersey.

The NJTPA planning process, including the CMP (see figure below), is guided by regional policy that drives a broad multi-modal analysis of congestion-related issues, in turn producing recommendations for public agency action**.** Periodic monitoring examines whether desired policy objectives are achieved.



POLICY

The CMP is guided by adopted NJTPA policy – especially the Regional Capital Investment Strategy (RCIS) and other elements of the Regional Transportation Plan (RTP) – and through substantial review by NJTPA member and partner agencies. National, state and local priorities are fully incorporated as conveyed through federal CMP requirements, directions set by the NJDOT Long Range Transportation Plan and the State Development and Redevelopment Plan, preservation needs identified by the Highlands, Pinelands, and Meadowlands agencies, and continual subregional input into the metropolitan process.

As a crucial foundation, the RCIS explicitly emphasizes smart growth, safe travel, preserving existing transportation infrastructure, expanding the region's transit system, operationally improving the roadway system, efficient goods transport, managing incidents and applying technology, and supporting walking and bicycling. All of these priorities are in some way connected to how well the transportation system performs its essential functions, and how congestion and related issues reflect on that performance.

In this policy context, it is recognized that traffic congestion is complex to address. While widening roadways at a bottleneck may help manage or reduce congestion, widening long stretches of roadways may add a level of additional capacity that can lead to overall increased vehicle volumes, more traffic congestion and air pollution over time. Also, many vibrant commercial districts, urbanized areas and important major roadway arteries experience daily recurring "routine" traffic congestion that cannot realistically be eliminated due to potential costs, limited land availability and/or potential quality of life impacts to communities. Recognizing these limitations, the NJTPA's multi-modal CMP is used to explore a full range of transportation solutions, including finding alternatives to avoid all but the most essential additions of roadway capacity.

Importantly, the NJTPA recognizes that congestion is most problematic when it hinders accessibility, a key contributor to the region's economic and community well-being. Transportation works well when it puts travelers' desired destinations (jobs, shopping, schools, parks, and so on), within reach, making them accessible. It works well when trips are predictable, with reasonable expected travel times and actual travel times matching those expectations. Effective transportation provides flexibility and convenience, in terms of available routes and a good choice of possible means of transportation.

ANALYSIS

Congestion, crowding, incidents and accidents can hinder the region's accessibility, as can inefficient roads or transit connections, missing sidewalks, or unavailable information on travel options. But 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. Overall, the northern New Jersey transportation system provides enormous accessibility to the region, but addressing the challenges of a growing and changing region require understanding congestion in these broader contexts. Analysis within the CMP contributes to this understanding.

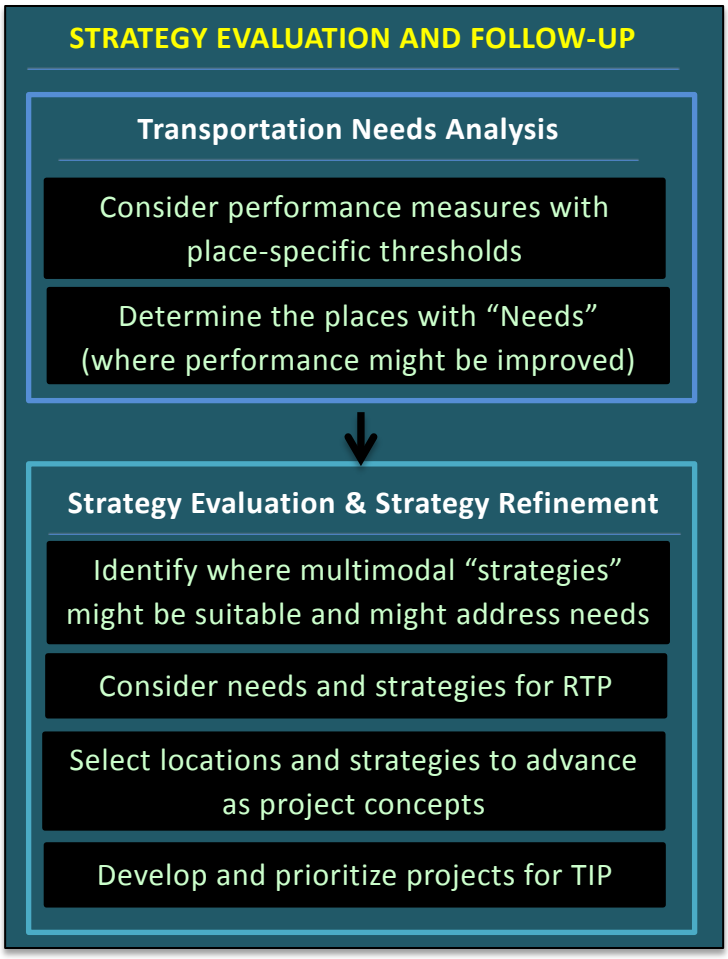
Strategy Evaluation Analysis

NJTPA analysis related to the CMP is developed and presented in various venues, including the main text of *Plan 2040*. Central to the CMP, however, is an ongoing regional study called Strategy Evaluation. This study focuses on questions such as:

- How reliable is the transportation system?
- Can people readily access jobs and other destinations?
- Do they have access to transit?
- How bad are highway delays?
- Is freight movement efficient?
- How safe and convenient is travel by bicycle and on foot?

And for each question, what improvement strategies are most appropriate and where should they be implemented?

First conducted for the NJTPA's 2002 RTP and updated in subsequent plan cycles, Strategy Evaluation is a data-driven study that identifies specific accessibility and mobility needs and connects these to origins and destinations of travel. In this way, Strategy Evaluation orients its findings around context, selecting solutions that are appropriate for prevailing land uses and activities in particular places. The study explicitly draws attention to the diversity of land use and environmental conditions ("place types") present in northern New Jersey municipalities. Special considerations regarding environmentally sensitive areas and low-income and minority communities are also taken into account. A wide variety of data is applied, place-specific objectives are considered, established performance measures are assessed, regional needs are identified, and strategies throughout the region are investigated. The results of the Strategy Evaluation, identification of suitable places in the region for possible improvement strategies, support the NJTPA Regional Transportation Plan and, with follow-up "Strategy Refinement" and project-level planning, support development of the Transportation Improvement Program. The diagram below illustrates the process:



It is important to note that needs and strategies emerging from Strategy Evaluation represent but one avenue for identifying and beginning to plan improvements in the region. While it is an essential part of the planning process, other sources include corridor and subregional studies, statewide management systems, freight studies, transit studies, intelligent transportation studies, Transportation Management Association work, local transportation circulation elements and public input.

To support consistency among these complementary efforts with regard to the CMP, Strategy Evaluation findings are also used by the NJTPA as a regional reference. This is particularly critical for initiatives that may result in significant expansion of roadway space as CMP assessment is mandated for capacity increasing projects before Federal funds may be applied. For such projects, the CMP looks at road expansions as a last resort and as appropriate, requires that they be coupled with complimentary operational and travel demand management strategies.

Some detail on the Strategy Evaluation is offered here, with recognition that updating of the study will continue beyond *Plan 2040.* In fact, features currently being added are specifically oriented toward the broader perspectives appropriate to the *Together North Jersey* cooperative *Regional Plan for Sustainable Development* effort. Referencing findings produced earlier for *Plan 2035*, updates either completed or in progress are indicated below.

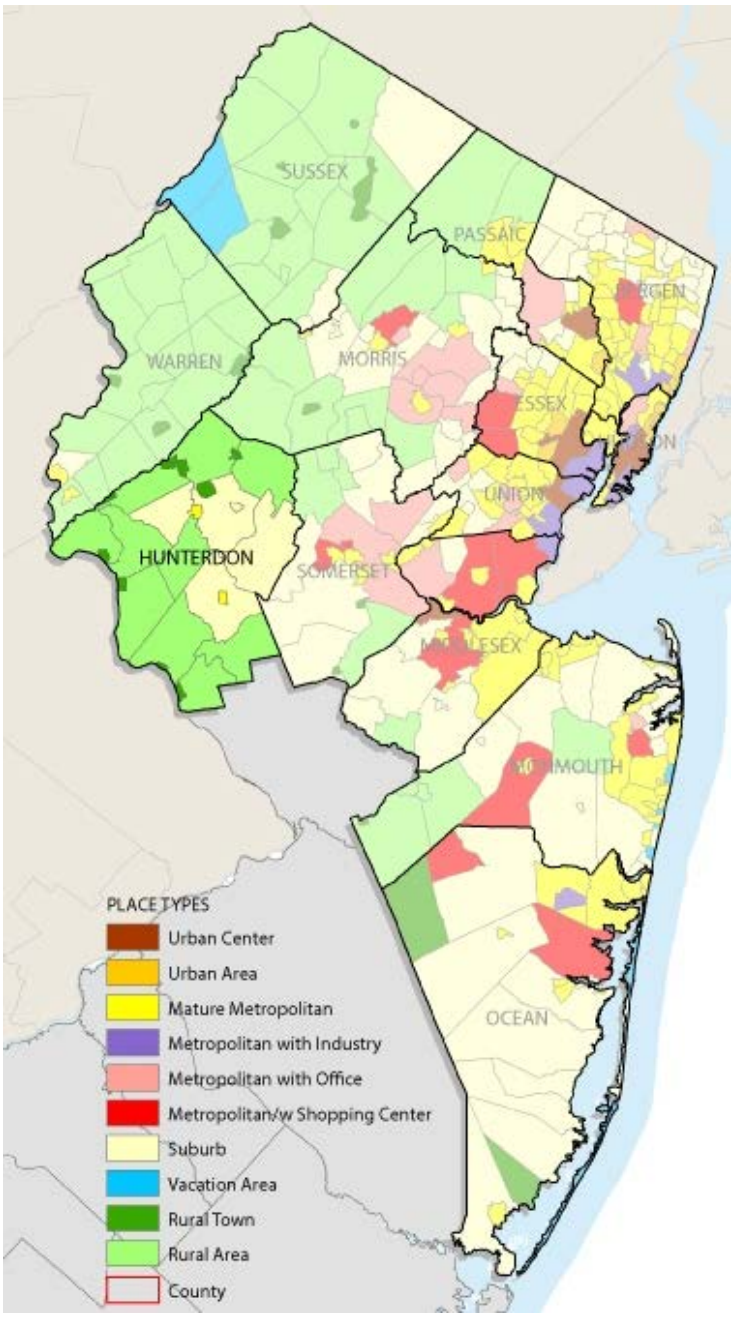
Regional Transportation Needs

Update of the Strategy Evaluation's place-based needs analysis is underway, with initial results echoing those detailed in an *NJTPA Strategy Evaluation Regional Transportation Needs* produced for *Plan 2035.*

Place Types

Transportation performance and needs vary greatly depending on the landscape – ranging from the urban core to exurban and rural areas. The region contains large environmentally sensitive areas close to developed areas, adding to its complexity. The variety of place types – considering land use, population density, employment, the nature of economic activities, street patterns, and so on – help point the way to how future land use and transportation features should be supported or discouraged.

The desired objectives, in turn, allow for settings standards of performance according to context. For instance, levels of congestion that indicate a "need" can be set lower in rural or suburban areas (where a greater level of congestion can be expected). Where performance standards are not met, needs for improving accessibility and mobility are identified and improvements area sought. Strategy Evaluation identified ten place types, each with specific standards for transportation performance (see map).



Places with Special Considerations

Assessing needs takes into account that some places in the region have features warranting special consideration. Of particular concern are environmentally sensitive areas and places with high concentrations of low-income and minority populations.

To fulfill its goals for preserving the environment and the region's natural resources, the NJTPA seeks to minimize impacts on wetlands, floodplains, coastal areas, lakes, streams, dunes, beaches, parks, forests, natural habitats, and other environmentally sensitive areas. The NJTPA also pays particular attention to the transportation needs of low income and minority populations to ensure an equitable and inclusive

planning process. In both cases, these special considerations are mandated by Federal and state policy and regulations.

Performance Measures

A range of performance measures of accessibility to and from these different types of places support further assessments of location-specific needs. These measures have been analyzed in relation to places throughout the region, places that serve as the origins and destinations of travel for people and goods:

- Roadway Accessibility: Performance measures associated with roadway travel such as excess routine travel delay, likelihood of unexpected delays, hotspot delay or time spent in extreme congestion
- Public Transit and Shared Ride Use: Performance measures associated with emphasis on availability of alternate travel modes, providing travel options and reducing the need for automobile trips
- Walking and Biking: Performance measures associated with making walking and bicycle share to supplant shorter automobile trips and promote health and add liveliness of streets and community character
- Goods Movement: Performance measures associated with efficient and reliable movement of freight in and through the NJTPA region

Roadway Accessibility and Delay

Given the extensive automobile and truck travel in the region, the analysis looks at several aspects of performance associated with roadway travel: routine delay, hotspot congestion, and likelihood of unexpected or incident delay. These are highly interrelated and paint a picture of where overflowing roadways hinder or constrain accessibility. Unexpected and hotspot congestion are considered more onerous than routine delay.

Unexpected roadway delay results from unpredictable events on roadways such as accidents/crashes, stalled vehicles, unforeseen failure of the roadway system or unforeseen breakdowns of public utilities. Because of its unpredictable nature and monetary and other costs associated with it, unexpected delay is highly frustrating to travelers and strongly impacts the reliability of the movement of people and of freight. Crashes are a major contributor to this delay.

Many needs have been identified in many parts of the region based on these roadway delay measures. Some notable places affected by unexpected delay include areas along the east-west I-80 corridor from north Warren to central Morris, in the southern Bergen/Hudson County area, in central Union/Middlesex County, in northwest Monmouth County, in western Somerset and in central Ocean Counties. Also important are those in very dense origin and destination of Hudson, Essex, and Bergen Counties, denser parts of Union, Middlesex, and Monmouth Counties, and burgeoning areas in and around the New Jersey Highlands. Given the width of diversity of these locations and markets, approaches to addressing these needs will vary markedly from place to place.

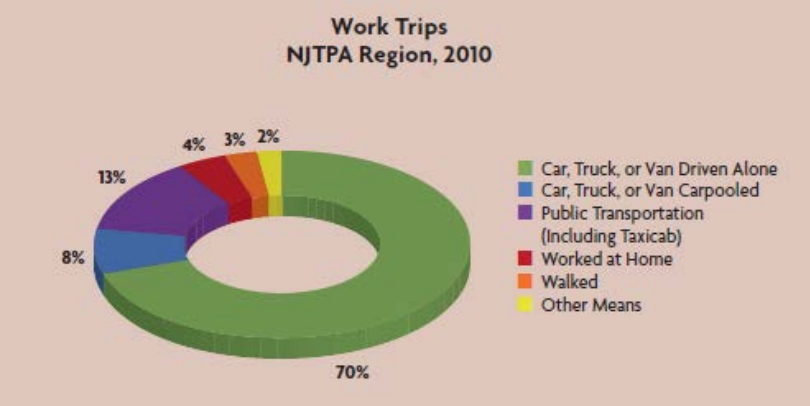
Reliability of the Interstates and National Highway System is one of the national goals newly identified by MAP-21 and one drawing significant attention by agencies throughout the nation (including the

NJTPA). The importance of the goal is coupled with powerful new data—data utilized daily for real-time operations and for traveler information, but also becoming increasingly available in archived form for planning purposes. The NJTPA has begun to make use of such data, including working with NJDOT, DVRPC, TRANSCOM, the I-95 Corridor Coalition, and other partners. As the field matures, applications within the NJTPA CMP are expected to increase dramatically.

Use of Public Transit and Shared Ride

The success of the region's bus and rail transit system and shared-ride travel (such as carpools) in general is highly desirable. Given the air quality benefit of reducing auto use, the energy efficiency of transit, the sustainable economic benefits of encouraging smart growth, and the preservation of natural resources based on management of land use, the NJTPA has embraced public transit as a major regional priority. The success of transit and shared ride modes depend on the availability of fast, frequent, and direct service to major regional destinations.

As described within *Plan 2040*, regionally, about 13% of the region's commuters take public transportation, 8% carpool, and 3% walk to work (see figure). For many of the region's densely developed areas, over 25 percent of their residents' daily commuting trips are made by public transit, including Newark, Jersey City, Union City, and Hoboken. The region's major urban destinations, including Newark, Jersey City, and of course, Manhattan, enjoy large percentages of transit and shared commuters.



Source: US Census

Some areas in the region have densities that might yield larger public transit shares than they currently experience, but land use patterns, demographics or available services may have room for improvement. These include places along the northern Hudson River, inner core areas in Bergen, Passaic, Essex and Union, and parts of the Route 9 corridor from north Ocean to Middlesex such as Lakewood, Freehold, Old Bridge, and East Brunswick. In addition to noting that increased transit and shared ride use is desirable everywhere, needs like these are highlighted by in the current Strategy Evaluation analysis.

Further study of this performance measure is taking place for *Together North Jersey*, as it has been identified as a key indicator for the effort. Among a host of other areas, a transportation topic report

prepared as background for the RPSD looks at a variety of behavioral, demographic, market and infrastructure dimensions that relate to transit mode share. Considering how transit use can be enhanced in support of a more sustainable region is important not only to the transportation topic, but also to the RPSD's economic development, land use, environmental, housing and other topics.

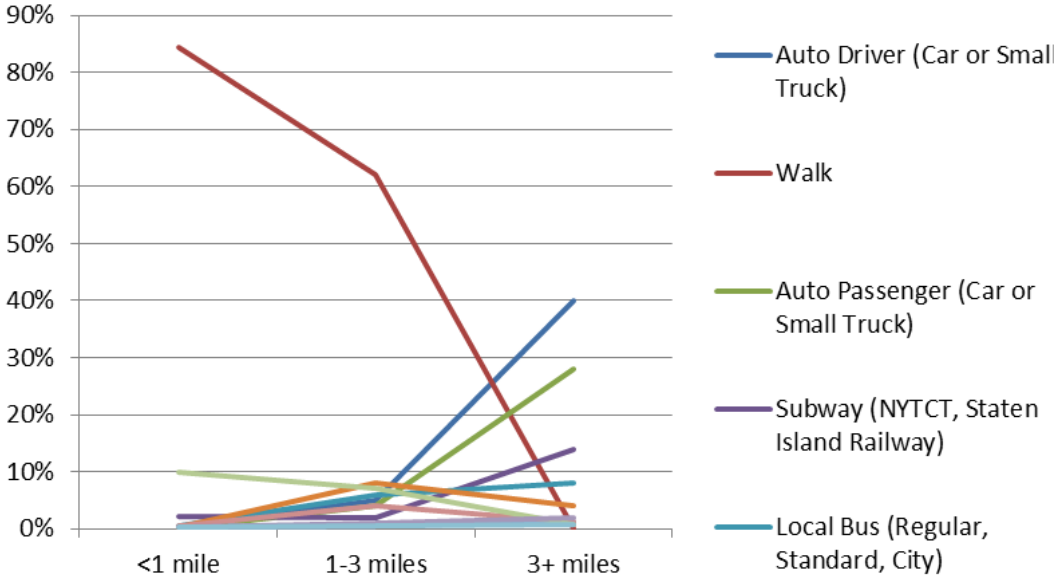
Walking and Biking

For their health and environmental benefits as well as their contribution toward efficient mobility and land use, the NJTPA is also committed to promoting walking and biking. The agency seeks to make these two travel modes convenient, safe, efficient, and attractive for shorter trips. Increased walking and biking is therefore seen as a need for all places in the region.

Relatively high needs have been identified for Urban Centers, Urban Areas, Mature Metropolitan Areas, Metropolitan Places with Industry, and Rural Towns because they provide greater opportunities for enhancement than other place types. However, as the prevalence of walking and biking may depend on unique local features, improvements may be quite viable in other place types as well. For example, places identified as Metropolitan with Shopping Center of Metropolitan with Office may benefit from enhanced sidewalks or bicycle paths connecting shopping malls and office complexes with surrounding residential area.

New information regarding the overall prevalence of walking and biking has been produced in a recently completed major survey of travel behavior for the New York-New Jersey-Connecticut metropolitan area, conducted in a partnership of the New York Metropolitan Transportation Council and the NJTPA. Initial results show that walking in northern New Jersey is a more common mode for social/recreational and shopping trips than for work trips. Schools are frequently reached by school bus or walking. For shorter trips, residents walk or bike strikingly more often. Walking is the mode used for the vast majority of the shortest trips (see figure).

Mode Use for Short Trips (NJTPA region, weekdays)



Source: NYMTC/NJTPA Regional Household Travel Survey, 2010-11

As for the public transit mode share indicator, the proportion of trips taken on foot or bicycle is a key indicator being examined further and supported for *Together North Jersey.*

Goods Movement

Freight movement is a critical element of the region's economy and quality of life. Each year about 473 million tons of domestic freight is moved into, out of, or within the region. In terms of tonnage, for domestic freight traveling to, from or within North Jersey, more than 80% travels by truck, nearly 12.7% by water and 6.5% by rail. Truck is the preferred mode choice of freight movement for shorter length of trip, time sensitive delivery trips, and the door-to-door service trips. A number of facilities make northern New Jersey a hub for goods movement for the northeastern and mid-Atlantic states including:

- Port Newark/Port Elizabeth/Port Jersey, the East Coast's largest container port (third largest nationally);
- Newark Liberty International Airport's air cargo facilities;
- The NJ Turnpike and major Interstate and State Highways;
- Rail terminals connecting to points throughout North America;
- Warehousing and distribution facilities operated by some of the nation's largest logistics companies

These networks and facilities serve as gateways to not only the NJTPA region, but also the larger New York/New Jersey metropolitan region as a whole.

Analysis of goods movement within the CMP framework builds largely on numerous NJTPA freight planning studies and deliberations with public and private partners. Supporting movement of freight by alternate modes is an important emphasis of the NJTPA and its CMP. On the region's roadways, major freight movements are recognized to involve these corridors:

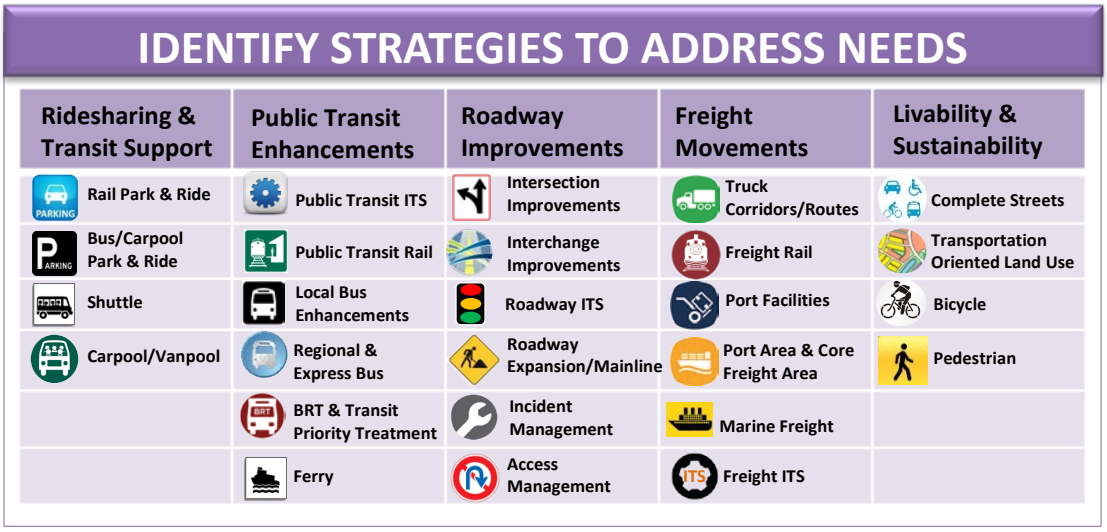
- East-West Corridor (Interstates 80 and 78)
- North-South Corridor (New Jersey Turnpike)
- Bergen County Connector Corridor (NJ Route 17)
- Northeastern New Jersey Beltway Corridor (Interstate 287)

Because of the enormous amount of goods moved annually through these corridors, it is critical that the roadways operate efficiently and provide freight carriers with predictable and reliable travel times. Doing so helps to lower the costs of transportation related delay, which are passed along to the region's consumers. To assess freight reliability, the amount of additional travel Time needed by trucks caused by congestion along major freight highway corridors is measured for both peak AM and PM hours over a normal month of operation. This is an emerging measure for the CMP, and it makes use of newly available operations data noted above. The reliability measure and freight movement performance are also highlighted in MAP-21 and will draw increasing attention as its provisions are implemented.

Strategy Identification

Following the Strategy Evaluation identification of transportation needs, the analysis delineates areas throughout the region where particular types of transportation improvements might be appropriate.

These types of improvements (referred to as "strategies") were previously grouped into four categories: Ridesharing and Transit Support; Public Transit Enhancement; Roadway Improvements; and Freight Movement. More recently, a fifth category; "Livability and Sustainability" has been added to more fully support RPSD development (see chart below). Within each of these groups, more specific strategies are identified, such as highway operational improvements, local buses, rail freight projects, park and ride lots and most recently Complete Streets as part of the new category.



Based on a broad series of screening criteria and observations of connections with identified travel markets and performance needs, Strategy Evaluation study generates a comprehensive series of maps for all categorized strategies. The maps show where particular transportation improvement strategies are recommended for further consideration, such as bus and rail initiatives, roadway restructuring, intermodal freight infrastructure, and intelligent technology for keeping travelers informed. These Strategy Evaluation maps help illustrate how these strategies fit into the northern New Jersey landscape and transportation infrastructure.

This approach is currently being updated in consideration of the RPSD effort. Strategy areas identified within *Plan 2035* largely remain valid for *Plan 2040*, with the continuing caveat that they represent potential strategies that warrant additional study rather than definitive findings of beneficial or desirable improvements. Of note, the NJTPA Planning Recommendation Information Management Engine (PR!ME), a planning tool currently under development, is intended to support further accounting for strategies of the CMP and other NJTPA and partner planning studies. Moving beyond static mapping of areas, PRIME should make CMP findings more available and relatable to planners in the region, hence supporting the advancement of those findings toward implementation as appropriate.

Strategy Considerations

The following summarizes some of the considerations that are taken into account for each strategy category in the Strategy Evaluation analysis.

Roadway Improvements

One approach to addressing roadway mobility is to directly improve roadway operations or capacities. Based on the analysis of congestion and other variables around the region and taking into account expected roadway performance standards in each of the region's place types—together with the results of consultations with county and local officials— the CMP identifies potentially appropriate locations for making various roadway improvements. As noted previously, expansion of roads 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. 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.

The main focus for road investment in the region is to optimize the existing network through road enhancement projects, such as redesigning intersections, improving signal timing, managing roadway access, and interchanges at key chokepoints. The following describe general strategies the CMP identifies to improve the efficiency or throughput of roadways:

- Improve Operation of Roadways, Intersections, and Interchanges: Road improvements can make traffic flow more smoothly and provide better access to destinations. Improvements to intersections, which are often congestion hot spots, are particularly important. They can include signalization, signage upgrades, intersection geometry modifications, lane and shoulder widening, channelization, restriping, and new turning or acceleration/deceleration lanes. Grade separation of existing intersections or reconfiguration as roundabouts may also be an option. In addition, improved signage, including coordinated efforts to meet upgraded reflectivity standards, will help improve operational efficiency
- Manage Roadway Access: Improving the location, spacing and design/operation of driveways, median openings and street connections, and coordinated planning of adjacent land uses can prevent conflicts between through travel and local activity. Access on many roads is controlled by the state Highway Access Code. Roadway access controls include limiting curb cuts, providing service roads, designating limited use of breakdown lanes and allowing for bus stops, pullouts, and priority lanes.
- Implement Intelligent Transportation Systems: Technological improvements can be used to improve traffic flow and provide real-time information to help drivers speed their trips by changing routes or modes in response to notification of delays. Some technologies include traffic control centers, high speed toll plazas, ramp metering electronic incident notification networks, roadside traffic monitors and computerized traffic signaling. "Smart" traffic signaling, where the signal timing changes depending on traffic conditions, are also an option. Statewide and regional traffic coordination will play an increasingly important role.
- Improve Incident Management: Improving incident detection through the use of emergency patrol and closed circuit television monitoring and timely dispatch of incident response team could lessen the impacts of incidents such as vehicle breakdowns or accidents along strategic and major corridors in the NJTPA region.

In considering expansion of the roadway system, fiscal, environmental, and planning considerations have combined to make this a solution with only very limited application in the NJTPA region. Past experience has shown that expanding roadway capacity is expensive and often faces strong local opposition. It also may not provide permanent congestion relief, since it can encourage sprawl development that adds more cars to the road and, under some circumstances, can even induce additional auto trips that otherwise would not be made. Nevertheless, increases in road capacity may be considered after detailed study. In addition, any capacity increases must be advanced in conjunction with appropriate complementary strategies—including ITS, smart growth, ridesharing and transit enhancement measures—to manage demand and maintain performance. Importantly, proposed projects that would significantly expand roadway space or add new roads will continue to require special analysis in the NJTPA CMP before federal funds may be applied.

Public Transit Enhancement

While many significant enhancements to public transit infrastructure have been made over the last two decades, providing convenient access to bus and rail transit as an alternative to driving to work and for other trips remains a challenge for many parts of the region. Improving the reach of the transit system and supporting its use helps to remove trips from the region's congested highway networks, increases the public transit mode share, supports land development in focused regional centers, safeguards the region's air quality and provides essential travel to lower income residents, the disabled, elderly and those without cars.

The CMP assesses strategies for public transit enhancement by considering a host of measures. These include current patterns of bus and rail usage, residential densities around the region that can support bus and rail transit, and the current ability of residents to access destinations—such as employment and commercial centers—that have the potential to be served by transit.

The following describe general strategies used to enhance or improve public transportation:

- Support Enhancements to Rail Service: Possible rail improvements include new stations on existing lines, new lines or increased frequency of service, improvement of on-time performance and reliability, rail system resilience from weather related incidents, intermodal connections, and use of diesel-electric locomotives. Given the expense of fixed rail infrastructure, difficult choices must be made on where best to invest in rail enhancements
- Enhance and Expand Local Bus Service: Bus service in northern New Jersey is the backbone of mass transit in the region, used by almost two-thirds of NJ Transit passengers in the region. Bus transit is less expensive to operate and more flexible than new rail lines in addressing the transit market needs of a dispersed development pattern.
- Implement Bus Rapid Transit and Enhance Express Bus: Premium buses and long distance express buses can cost-effectively deliver service that is comparable in many ways to fixed guide way rail
- Public Transit Intelligent Transportation Systems: Transit technologies can be applied at different scales in the NJTPA region commensurate with the level of communication or monitoring required or resources available. For instance, real time monitoring of transit vehicles, priority signal

treatments or transit customer information systems could be applied on a single transit route, over a series of routes, across a service area or across the entire system. (Much progress is underway on such technological improvements.)

- Enhance and expand Ferry Services: Strategies that would be considered for Ferry Services range from development of new routes, terminals and/or parking facilities, expansion of existing routes, service levels or facilities, and/or improved land-based transit connections (e.g., shuttles, rail, bus routes). Although policy strategies (e.g., changes in fare policy and/or subsidies to make service more affordable or attractive to additional users) could also be considered, they would likely face significant challenges.

Ridesharing and Transit Support

The CMP assesses opportunities for strategies that enable travelers to conveniently access bus, rail and ferries and to coordinate their travel in shared autos and vans. These are important in helping improve the efficient movement of people, including increasing transit ridership. This assessment involves considering residential patterns around current transit stations, hubs and routes; patterns of regional commuting; and demographic trends, among others.

- Expand Bus and Carpool Park-and Rides: There are many opportunities throughout the region to expand bus park-and-ride capacity. These facilities serve as cost-effective collecting points for commuters, especially in low density suburban areas “upstream” of major highway congestion.
- Improve Rail Park-and-Rides: For large parts of the region, adequate parking is essential to enable commuter rail or light rail use.
- Support Community Shuttles: Community shuttles can play an important role in providing access to the transit system. These small buses can often link residents with rail or bus service during peak commuting hours and then serve other purposes during the day.
- Support Ridesharing and Other Trip Reduction Programs: NJDOT, Transportation Management Associations (TMAs) and numerous employers operate programs to encourage the formation of carpools and vanpools and to link residents with employment centers. They include programs such as ride-matching and guaranteed ride-home services that make shared rides commutes a viable option, and telecommuting and flex- time policies help to either reduce trips or at least shift them out of the most congested times.

Freight Movement

As touched on earlier, the NJTPA region is one of the busiest freight handling centers in the nation. Goods from all over the world enter and leave the United States through its marine terminals, and raw materials and finished products arrive and depart through major rail freight terminals. In addition, high-value, time-sensitive commodities are shipped via air cargo through its international airport and numerous small airports; and distribution centers along major highways dispatch goods via trucks to much of the northeastern U.S. The region’s status as a freight hub is a key advantage in retaining and attracting businesses, and in supporting its overall economy. But it also creates ongoing needs to address increased highway traffic and improve infrastructure to support the port, rail terminals and other freight facilities.

The CMP examines a host of potential strategies for improving the efficiency of goods movement in the region. They address freight movement needs involving: highways and bridges; ports and port access initiatives; warehousing initiatives; rail initiatives; and air cargo initiatives.

The facilities in the port area have been greatly developed over the past 100 years and will continue to play a critical role in the region's growth. Among the key initiatives for improving port access will be addressing inadequate clearance under the Bayonne Bridge (currently advancing) and improving roads, possibly through grade separations or exclusive truck routes.

Goods movement strategies identified by the CMP include:

- Improve Rail Freight: The improvement needs of the region's rail corridors are centered on a lack of capacity and the elimination of existing bottlenecks. These bottlenecks include: a lack of direct connectivity at a number of locations (Marion Junction, Waverly Loop, Greenville Yard); weight restrictions on many short line railroads and NJ TRANSIT-owned lines; clearance restrictions, and insufficient line and yard capacity (primarily in areas where mainlines have been single tracked). At this time, there is not an on-time performance issue in rail freight operation. However, capacity constraints are likely to be exacerbated by increased freight volumes forecast for the future.
- Freight ITS: Deploying Freight ITS strategies such as Variable Message Signs warning truckers on delays, available parking spots at rest areas at major entry and exit points of key truck corridors in the region such as I-80, I-78, New Jersey Turnpike, State Route 17 and I-287 and in the core freight areas will increase the reliability and efficiency of the freight movement in the region.
- Truck Corridors: Strategies in this category concentrate on the five major truck corridors identified earlier, addressing safety, congestion, and reliability. Specific issues include high truck crash rate locations, roadway capacity, bottleneck interchanges, bridge improvements, pavement improvements, truck parking, improved management of incidents and construction projects, and roadway/ramp geometry improvements.
- Core Regional Freight Facilities: Beyond the port area, a broad Core Freight Facilities Area represents the concentration of cargo facilities, warehouses, custom firms, intermodal facilities and rail yards in Bergen, Essex, Hudson, Middlesex, and Union Counties. Improvements here should focus on capacity of the facility, access to national highway/rail network/maritime networks, community issues (such as redeveloping old industrial sites (brownfields) for the purpose of expanding/adding capacity, reducing pollution on-site via new "green" equipment, routing trucks away from residential areas as they access the freight facilities), facility expansion, operational changes such as increasing hours of operation, new technologies, new/expanded road/rail connections, dredging channels to provide adequate depth for the ever larger vessels, and increased clearance under the Bayonne Bridge.

Livability and Sustainability

With increased attention paid to the implications of transportation on economic development, community health, equity, climate change and other societal issues, the NJTPA CMP specifically highlights strategies oriented toward promoting livability and sustainability. These largely focus on land use, development, climate resilience, and support for "active" transportation (such as walking and bicycling). They also dovetail significantly with the *Together North Jersey* efforts and the development of a RPSD.

- Promote Complete Street Policies: The strategy to encourage complete streets is to add or enhance infrastructure that improves the ability of the street to accommodate users who are not traveling in a motorized vehicle. Depending on the needs of the area, sometimes a complete re-design of a street may be necessary. Municipalities and counties can promote complete streets by adopting complete streets policies. Such policies should define what elements of complete streets are most important to their community and develop a plan to convert auto-oriented streets to complete streets. The conversion plan could include criteria for prioritizing which locations and what types of treatments would receive funding first. Such policies also could require the inclusion of complete streets elements for new streets and for any major reconstruction of existing streets.
- Pedestrian facilities and programs: For their health and environmental benefits as well as their contribution toward efficient mobility and land use, the NJTPA is also committed to promoting walking and biking. The agency seeks to make these two travel modes convenient, safe, efficient, and attractive for shorter trips. Adding or enhancing pedestrian infrastructure provides friendly, safe and secure sidewalks with sufficient clear space for walking and with the amenities that facilitate travel by walking. Street design and safe pedestrian crossings and connections to other modes of transportation can help. Land use changes such as converting single use areas to multi use areas with mixed income residences and improved access to local shops and services also will yield more pedestrian activity.
- Bicycle facilities and programs: Providing quality, exclusive, safe and secure facilities can encourage travel by bicycle in all places within the NJTPA region. Providing dedicated paths and an inviting main street with a variety of stores and services or a public transit stop within a half mile bicycle ride can significantly encourage biking. Design improvements on shared streets can also facilitate the use of bicycles. Land use policy changes that that encourage mixed use development or redevelopment (e.g., transit oriented development, Transit Village programs) and that seek to increase population and/or employment densities in proximity to key service, cultural or recreational destinations can also support bicycle connectivity.
- Land Use Policies: A primary factor in developing land use strategies is each community's vision for its future. Any vision will consider the type of land uses people want to welcome into their community or prohibit from their community, the type and amount of population and economic growth the community is willing to embrace, and the strategies they are pursuing to achieve those goals. In addition, the community must consider the feasibility of achieving its goals in concert with what nearby communities are doing and regional and national trends that may affect the likelihood of successfully implementing their plan. Ongoing work on the

New Jersey State Development and Redevelopment Plan/State Strategic Plan represents important work in connection with the establishment and enhancement of local land use policies.

ACTION

As needs and strategies are identified in various paths in the NJTPA planning process, public action related to and drawing from the CMP can follow in a myriad of ways. One important resource for generating potential project concepts from CMP analysis has been the NJTPA Strategy Refinement process, periodically conducted to follow Strategy Evaluation. Dozens of concepts emerging from Strategy Refinement have been included in prior NJTPA plans, and consistency with both Strategy Evaluation and Refinement findings has been considered by NJTPA as studies, work programs and projects have been advanced by NJDOT, NJ TRANSIT, TMAs, subregions and others. For examination of consistency, a CMP Compliance process has been developed, focusing on ensuring that required features of planning work are conducted as projects advance.

In project prioritization stages of the NJTPA process, well-defined project candidates are considered for inclusion in the TIP according to a broad range of goal-oriented criteria. CMP-related criteria are among these, providing consistent input as projects compete for implementation funding. The NJTPA is currently updating the project prioritization process, which should allow consideration of updated CMP measures and findings.

STRATEGY REFINEMENT AND PRIME

Project concepts emerging from the CMP's performance-based Strategy Refinement are important candidates for further planning, project development, and implementation. While these candidates have been subject to the region's fiscal constraints (like all potential improvements) and compete against numerous other critical priorities, a number have moved directly toward implementation or are closely related to projects that have been implemented. To move specific concepts, detailed study and project implementation is the responsibility of the NJTPA and the region's implementing agencies, including NJDOT, NJ TRANSIT, subregions and Transportation Management Associations.

In the Strategy Refinement effort conducted for Plan 2035, areas and associated strategies were extracted from Strategy Evaluation findings and factors including:

- Compatibility with smart growth principles, including compact development, preservation of natural resources, and economic diversity.
- Advancing sustainability by addressing energy and environmental issues.
- Serving people in areas with identified needs listed in Strategy Evaluation.
- Impacts and benefits to minority and low-income communities.
- Compatibility with NJTPA's RCIS principles.
- Level of local and institutional support.
- Cost.

- Magnitude of benefits.
- Difficulty of implementation.
- Synergies between two or more areas in the same vicinity.
- Impact on multiple subregions.

Unaddressed priorities from the earlier Strategy Refinement remain as potential improvements, but the ongoing update of Strategy Evaluation will set the stage for comprehensively revisiting the region's needs. Importantly, PRIME, the Planning Recommendations Integration Management Engine under development should provide an excellent platform to support future Strategy Refinement, naturally drawing from Strategy Evaluation findings and finding synergies among appropriate regional, state and subregional planning work. The vision for PRIME is to help advance systematic performance-based planning toward implementation, and support for the CMP is to be a principal application of the tool.

CMP COMPLIANCE

Beyond strategies and concepts that directly emerge from the CMP's Strategy Evaluation and Refinement, the NJTPA examines congestion-related projects proposed for the RTP, UPWP/PDWP, and TIP for CMP consistency. This CMP Compliance process provides support for efforts of all participants in the planning process, while maintaining the essential integrity of the CMP approach.

To that end, NJTPA has recently developed a set of screening guidelines in a template structure to help conduct such examination. The guidelines ask study and project sponsors (such as those producing a Local Concept Development study) to assist in making connections to RTP and CMP identified priorities, specific objectives, and established performance measures. Where initiatives are not drawn from or cannot reference such elements, additional work may be required or reexamination of established priorities may need to be considered by the NJTPA. Connections are also made to the ranges and types of considered strategies. Here again, consistency with NJTPA established priorities and findings is required or differences must be justified. For projects proposing additional carrying capacity for single occupancy vehicles, NJTPA CMP compliance requires that studies carefully demonstrate that the road expansion is fully warranted and that all appropriate complementary operational improvement and travel demand management strategies are packaged with the project.

For illustration purposes, a current version of the template structure (as developed to review products of the Local Concept Development Program) is pictured, with some of the steps that the NJTPA takes in ensuring consistency with the CMP.

CMP STUDY INFORMATION	
DATE: ***CMP DOCUMENTATION COMPLETED BY:*** ***STUDY TITLE:*** ***SPONSORING AGENCY:***	
STUDY AREA INFORMATION	
DESCRIPTION OF CMP STUDY AREA	**Describe the Study Area** *(attach maps and/or illustrations)* *To complete this section, the applicant will need, at minimum, to provide a description of transportation-related issues in the study area in the context of the categories such as:* • *Land Use* • *Economic Characteristics* • *Roadway Design Characteristics* • *Roadway Operational Issues* • *Pedestrian and Bicycle Considerations* • *Environmental Issues* • *Access Management Issues* • *Public Transit Issues* • *Freight Movement Issues*
STUDY GOALS AND OBJECTIVES	
IDENTIFICATION OF STUDY GOALS AND OBJECTIVES	**Describe the Goals and Objectives Defined for the Study Review Process** *To complete this section, the applicant will need to describe the guiding goals and objectives established for the evaluation process used in the study*
IDENTIFICATION OF PROPOSED PROJECT CONCEPT	
IDENTIFICATION OF PROJECT CONCEPT	**Describe the Overall Project Concept** *To complete this section, the applicant will need to describe the project concept identified (based on the analysis documented below) to address the study area goals and objectives*
DETERMINE ACCESSIBILITY/MOBILITY/ CONGESTION-RELATED ELEMENTS	**Determine Whether the Proposed Project Concept has Accessibility/Mobility/Congestion-Related Elements** *To complete this section, the applicant will need to determine whether the approach will address accessibility, mobility and/or traffic congestion related to the movement of persons or goods in the study area. If the project concept contains congestion-related elements, proceed further with CMP Study documentation*
CONSISTENCY WITH STUDY AREA GOALS AND OBJECTIVES	
DETERMINE PROPOSED PROJECT CONCEPT CONSISTENCY WITH REGIONAL AND LOCAL GOALS AND OBJECTIVES	**Determine Whether The Proposed Project Concept Is Consistent with Regional and Local Goals and Objectives** *To complete this section, the applicant will need to evaluate the consistency of the proposed project approach with goals and objectives that have been identified through the following:* *1. NJTPA Strategy Evaluation planning and transportation objectives for affected Place Type(s)* *2. NJTPA Regional Transportation Plan goals* *3. NJ State Development and Redevelopment Plan, NJDOT Long Range Plan goals* *4. Other Relevant Policy Goals and Objectives.* *Although complete consistency is not required, documentation should clearly demonstrate that the proposed project concept supports the overall planning objectives for the study area*
REGIONAL PERFORMANCE NEEDS AND MEASURES FOR ANALYSIS	
DETERMINE REGIONAL PERFORMANCE NEEDS AND ANALYSIS MEASURES	**Determine Study Area Needs Using Transportation Performance Measures** *To complete this section, the applicant will need to identify the relevant performance needs in the study area in terms of specific performance measures. As applicable, regional needs identified in the NJTPA Strategy Evaluation analysis[1] should be highlighted. Identified quantitative (or where appropriate, qualitative) performance measures should serve as a basis for assessment of multimodal, mode-specific, travel demand management, operational management, transportation technology, and/or capacity-oriented strategies. Care should be taken to ensure that measures sufficiently represent the identified planning and transportation objectives; e.g., facility performance measures (e.g., LOS, v/c ratios) may inform the assessment but may be incomplete on their own.*
IDENTIFY CONSIDERED STRATEGY ALTERNATIVES	
DESCRIBE RANGE OF STRATEGY ALTERNATIVES CONSIDERED	**Describe the Strategy Alternatives Considered** *To complete this section, the applicant will need to identify the range and definition of strategy alternatives considered through the study process. Each strategy will need to be defined in terms of the scale and scope as considered by the study, and identified in the context of the NJTPA Strategy Evaluation Detail Strategy Categories.[2] The range of strategies considered*

[1] For more information, see the NJTPA Regional Transportation Needs Report.
[2] See Appendix A of this document below

	should, as appropriate, include travel demand management, including growth management and congestion pricing; traffic operational improvements; multimodal improvements, including public transportation and non-motorized; intelligent transportation systems technologies; and additional roadway system capacity
IDENTIFY SUPPORTING STUDIES AND PROJECTS	
IDENTIFY AND DOCUMENT RELEVANCE OF SUPPORTING STUDIES	**Identify Previous Studies Used to Support the Study Area Evaluation Process** *To complete this section, the applicant will need to identify the range of studies reviewed to support to development of the proposed project concept*
IDENTIFY AND DOCUMENT RELEVANT CAPITAL AND PLANNING PROJECTS	**Identify Relevant Improvement Projects That Have Been Programmed or Completed in the Study Area** *To complete this section, the applicant will need to identify the range and relevance of capital and planning improvement projects categorized as follows:* *1. Projects Recently Completed* *2. Projects Under Construction* *3. Projects in Preliminary/Final Design* *4. Projects in Feasibility Assessment*
IDENTIFY PROJECT OUTREACH AND COORDINATION	
IDENTIFY AND DOCUMENT PUBLIC AND INTERAGENCY PARTICIPATION	**Identify and Document Outreach Performed** *To complete this section, the applicant will need to identify the range of outreach participants and their involvement responsibilities categorized as follows:* *1. Interagency Participation / Technical Advisory Committee* *2. Community and Local Officials / Stakeholder Participation* *3. Public Participation* *4. Special Populations Participation (e.g. Environmental Justice communities)*
ADDITIONAL DECISION FACTORS CONSIDERED	
IDENTIFY AND DOCUMENT ADDITIONAL DECISION FACTORS CONSIDERED	**Identify and Document Relevant Factors Considered** *To complete this section, the applicant may wish to identify additional factors that may provide support for the proposed project concept and/or clarification of specific study area needs and appropriate strategies. These factors may include, but are not limited to, the following categories:* *1. Environmental* *2. Land Use* *3. Smart Growth* *4. Capital Cost of Potential Improvements* *5. Economic Development*
IDENTIFY AND SELECT PRIMARY AND COMPLEMENTARY STRATEGY ALTERNATIVES	
IDENTIFY PRIMARY AND COMPLEMENTARY STRATEGIES	**Identify Appropriate Primary and Complementary Strategies** *To complete this section, the applicant will need to quantitatively or, where appropriate, qualitatively assess the applicability and, where possible, anticipated performance of each strategy. Evaluation should seek to determine whether each strategy can independently address the full identified needs in the study area as a stand-alone primary alternative, or whether it may require the support of or work more effectively with other complementary strategies*
RECOMMENDED PROJECT CONCEPTS	
RECOMMEND PROJECT CONCEPTS	**Recommend Strategy Alternatives** *(attach maps or illustrations where necessary)* *To complete this section, the applicant will need to recommend appropriate multi-modal primary and complementary strategy alternatives that to the extent possible collectively address the accessibility, mobility and congestion-related needs identified for the study area. As the NJTPA region is in non-attainment of national air quality standards for ozone, special requirements are in effect for highway projects that result in significant increases in carrying capacity for single occupant vehicles (such as a new general purpose highway on a new location or adding general purpose lanes, with the exception of safety improvements or the elimination bottlenecks)[3]. Where significant new SOV capacity is recommended, the applicant will need to document the evaluation of the full reasonable set of alternatives that were considered and identify reasonable context-specific complementary strategies that must accompany the project*
RECOMMEND FUTURE DATA COLLECTION AND PERFORMANCE MONITORING REQUIREMENTS	
RECOMMEND FUTURE DATA COLLECTION AND PERFORMANCE MONITORING METHODS	**Recommend Methods to Collect Data and Measure Performance of Recommended Strategy Alternatives** *To complete this section, the applicant will need to identify appropriate data collection and performance monitoring methods that will evaluate the ongoing effectiveness of strategies recommended for implementation. This documentation will need to provide specific methods for completing these assessments and identify appropriate responsible agencies for conducting these assessments in the future*

[3] See Final Rule, Metropolitan Transportation Planning and Programming, 23 CFR 450.320(e), February 14, 2007

PARTICIPATION

The CMP overall and its analytical Strategy Evaluation and Strategy Refinement elements, have relied on substantial interagency participation during their analytical phases, with materials posted online and findings incorporated during plan development (including material for public review during visioning outreach). Application of the results of these studies is also subject to input in follow-up planning and project development and in further regional analysis as part of the normal NJTPA planning cycle.

Overall, the NJTPA Board of Trustees and its Planning and Economic Development Committee has guided the CMP via direction in the Unified Planning Work Program Tasks. Earlier Strategy Evaluation efforts included workshops with NJTPA member and partner agencies and regional stakeholders, particularly as represented through the standing NJTPA Regional Transportation Advisory Committee (RTAC). These workshops covered all phases of the studies: defining place types, setting planning and transportation objectives, choosing performance measures, setting targets, identifying needs, categorizing appropriate strategies, identifying strategy locations, and selecting strategy areas for refinement. In Strategy Refinement, fine-tuning and prioritizing strategy refinement areas involved extensive one-on-one coordination with subregions and implementing agencies.

Current CMP development in support of the Plan 2040 and further in preparation for the RPSD is principally relying on coordination and participation initiatives of those efforts. With the NJTPA co-leading (with NJ TRANSIT) the transportation topic for *Together North Jersey*, there is significant opportunity for interagency cross-fertilization and input regarding transportation priorities and technical review. Public input received through the RTP and RPSD outreach efforts are also instrumental in informing CMP development.

MONITORING

Examining the region's progress toward meeting its goals provides important feedback to decision-makers focusing on performance, and is a defined element within the CMP. The NJTPA monitors such progress in a variety of ways. This includes regular monitoring of key regional indicators, the periodic updates of performance measures and needs in Strategy Evaluation, and new techniques developed for tracking project-level performance results. The latter, NJTPA's Project Performance Results study[iii] drew from Strategy Evaluation and Refinement to identify performance measures of interest and is beginning to help planners investigate actual project accomplishments, fine tune improvements, and correct for unintended consequences in the future.

Plans 2040 (and prior NJTPA plans) incorporate information from these types of monitoring, which helps to frame considerations on the region's goals, investment strategy and selection of strategies and projects to implement. In addition, specific monitoring requirements are emerging from the MAP-21 legislation regarding national performance goals, state and MPO targets, and reporting on congestion, reliability, air quality, freight movement and other performance measures. These requirements will involve reporting in both the RTP and the TIP, and complementing (and contributing to the CMP), should help point the way toward beneficial, effective transportation investments for the region.

[i] See Final rule on Metropolitan Transportation Planning and Programming, 23 CFR 450.320, and on Management and Monitoring Systems, 23 CFR 500.109, published February 14, 2007.
[ii] NJTPA Regional Capital Investment Strategy, adopted March 14, 2005, updated for NJTPA Plan 2035, September 2009, and incorporated within Plan 2040, September 2013.
[iii] NJTPA Performance Results Study, Assessing the Impacts of Implemented Projects, Final Report and Guidebook, December 2011.

Appendix E - Future Transit Needs

The foremost concern in projecting future funding needs is fully funding a state of good repair for NJ TRANSIT's current public transit system and operating it in a safe and secure manner. NJ TRANSIT has the distinction of being recognized by the FTA as currently operating a system which is a state of good repair. Having a resilient system with hardened assets is also a focus of NJ TRANSIT. It is anticipated that as work progresses to understand what are the full range of actions which are necessary, more investments will be identified for advancement. However, ongoing investment is needed to sustain a functional, reliable, safe, and secure statewide public transit system responsive to customer needs.

After addressing system state of good repair, proposed future projects must go through a series of physical and operational feasibility, environmental and economic, and, ridership, fiscal and financial analyses. Among the future investment needs being considered for longer term capital funding are the following:

Capacity Improvements and Transit Service Expansions

Additional Trans-Hudson Public Transit Capacity

Various studies are underway to examine ways to increase trans-Hudson bus, rail, and ferry capacities. Among the major efforts is the Amtrak-led Gateway Project focused on adding train capacity between NJ and Manhattan and the companion Federal Railroad Administration (FRA) managed NEC Future effort examining the future needs of the entire Northeast Corridor from Washington, DC to Boston. 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.

The Port Authority of NY & NJ (PANYNJ) is also examining the potential for capacity improvement to the bus system using the Route 495 Exclusive Bus Lane, Lincoln Tunnel, and Port Authority Bus Terminal. This bus system is currently operating close to or above its practical capacity. Projected growth in trans-Hudson bus ridership indicates enhanced bus capacity is as important a need as the focus on rail and other modal capacity increases.

Other planning efforts are focused on PATH, ferries and possible extension of the NYC #7 Subway Line to NJ. Except for PATH, which has funding to expand its trans-Hudson capacity, the other proposed transit mode projects are being progressed through the required transportation and environmental planning phases. It is anticipated that once these efforts are sufficiently progressed, 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 between now and 2040.

Regional Rail System Core Capacity

Up through the early 1980's decisions were made to reduce the number of railroad track miles - whether whole lines, portions of lines, or the number of tracks on a line - because of insufficient demand at the time and the economics of keeping additional track miles in operation. Once that era ended, incremental investments have been made to add new tracks, extend services, and provide new connections to accommodate increased demand for rail service. Based on current and projected demand, there is a need to selectively add capacity to the core rail system to accommodate operating additional trains and projected ridership. Current projects, such as the Midline Loop on the Northeast Corridor or the pocket track in Summit on the Morris & Essex Line, are examples of what will be needed as rail service is increased. While there are some general ideas of where these additions should be located, much more work is needed to define them and place them in an investment timeline which marries with projected increased ridership and adding trains.

Among the new connections needed is the Hunter Flyover. This connection would allow an eastbound Raritan Valley Train to go from the Lehigh Line to the Northeast Corridor eastbound tracks without crossing at-grade in front of other westbound trains. The current eastbound train movement crossing four tracks at-grade in front of trains going in the opposite direction both slows down train services and reduces the capacity of the Northeast Corridor south of Newark Penn Station. Amtrak's plans for more intercity and faster train services require that this at-grade train movement be eliminated. Plus, NJ TRANSIT also needs to add trains on the Northeast Corridor to accommodate the projected growth in ridership.

There are several rail lines where additional tracks will be needed to accommodate additional train service. Among these lines are portions of the Bergen County, Main and Pascack Valley Lines; Morris & Essex Line, and Raritan Valley Line. There are also bridges on the rail system which are capacity constrained, such as the Main Line Bridge over the Hackensack River between Lyndhurst and Secaucus which is only a single track, and additional capacity will be necessary. Two other bridges with limited capacity include the Morris and Essex Line Bridge over the Passaic River and the North Jersey Coast Line Bridge over the Raritan River. The latter bridge includes rail freight considerations to permit additional freight access to the Jamesburg Branch.

Adding a third track for six miles between Cranford and the Northeast Corridor in Newark is critical to improving service along the Raritan Valley Line. This critical link is owned by Conrail, CSX and NS and known as the Lehigh Line. This is a former Lehigh Valley Railroad line which had accommodated a four track main line. The two remaining tracks are shared by NJ TRANSIT trains and a growing number of freight trains operated by the three freight railroads owning the line.

Regional Rail Extensions of Service

There are a number of projects progressing through the transportation and environmental planning process, but have not reached the implementation stage. They remain on the list of candidate future projects and it is likely that some will progress into implementation. Those projects are (in no special order):

- Monmouth-Ocean-Middlesex Rail Line
- West Trenton Rail Line
- Extension of Rail Service on the Raritan Valley Line
- Extension of Rail Service to Flemington
- Bergen-Passaic Rail Service on NYS&W

Except for the proposed new service on the NYS&W Railroad, the other proposed services will require use of the Northeast Corridor where future capacity will be an issue. Amtrak and the Federal Railroad Administration (FRA) are examining future demand for rail service on the Northeast Corridor, including capacity needs and additional improvements.. The segment between Newark Penn Station and Penn Station NY is of vital importance for the northern New Jersey region.

NJ TRANSIT is now implementing the extension of the Lackawanna Cut-Off from Port Morris to Andover, NJ in Sussex County, a distance of about 6 miles. NJ TRANSIT is not planning to fund any extensions further westward since the majority of the projected riders would be residents of Pennsylvania and the service is only operationally feasible if it were extended into Pennsylvania. If the State or local governments of Pennsylvania come forward with the necessary additional capital funding for the extension and funding to cover operating expenses not covered by fares, NJ TRANSIT will cooperate with them accordingly.

Bus Rapid Transit and Bus System Improvements

To offer improved bus service and to reorient the state's bus system to better connect people and places, a number of Bus Rapid Transit and Bus Improvement studies have been completed and are being advanced where possible, resulting in a need for capital funding.

Future implementation of the following projects would improve and increase bus services within the state and to Midtown Manhattan (not listed in any particular order).

- Route 1 BRT – Build a bus system, in phases, from Hamilton, extending to Trenton and New Brunswick. Interconnected bus routes will offer improved connectivity between four train stations along the Northeast Corridor and the residential, retail and commercial developments along the US 1 corridor.
- Route 9 Use of Shoulders by Buses – This project will extend the existing use of the shoulders by buses in Old Bridge southward along US 9 towards Lakewood. The shoulders are used by the buses when the highway becomes congested in peak weekday travel periods.
- Union County Sustainability Corridor – Using a former railroad right of way between Cranford and Elizabeth as the backbone, this east-west transit corridor would provide dedicated and shared bus lanes, bicycle / pedestrian paths, and connect riders to transit oriented development at appropriate locations. The corridor is centered on a new station on the Northeast Corridor in downtown Elizabeth which is being funded as a separate capital project in NJ TRANSIT's upcoming 5-year capital program.

- Greater Newark –Two earlier bus improvements, the Go 25 and Go 28, initiated NJ TRANSIT's interest in advancing incrementally into bus rapid transit services. A study of the bus system centered on downtown Newark and nearby communities was conducted and found there are five major bus corridors which warrant improvements offering BRT like services. Given this is a built up urban area with limited street widths and intense traffic, fully dedicated bus lanes are not feasible.
- Jersey City – There is an extensive bus system in Jersey City, a densely developed area with an intensely used street system. There is an opportunity to make incremental improvements to bus service and offer as many BRT attributes as are feasible.
- Bergen County – Land use density in Bergen County varies greatly. Linking residential, health, business and retail centers will require an improved bus system that offers as many BRT attributes as are feasible. This system is centered on Paramus and Hackensack.
- Passaic County –Centered on Paterson, Clifton and Passaic but extending to other portions of the county, there is an opportunity to improve bus service and provide as many BRT attributes as are feasible.
- Other –The more densely developed inner counties offer more opportunities to provide bus service with BRT-like amenities because of greater ridership potential. There are other individual corridors and portions of counties in the greater NJTPA region which may offer future opportunities for supporting improved bus services.
- Bus Passenger Facilities – As bus system improvements are implemented, the opportunity to identify potential new locations and construct new bus stations in northern New Jersey may arise to serve new transit routes. There is as ongoing need to improve existing and to add new bus stops, shelters and signage.

Trans-Hudson Commuter Ferry System

The trans-Hudson ferry system, especially those services using Hoboken Terminal and Weehawken Ferry Terminal, play a major role in accommodating current and future transportation from New Jersey to Manhattan. Capital investment by the public sector in improvements to terminals, vessels and supporting facilities is anticipated. Additional analysis of future needs will be conducted and examine the role of ferry services for everyday travel needs and ferry system availability when emergencies limiting normal trans-Hudson transportation system capacities occur.

HBLR Core System Capacity

The current Hudson Bergen Light Rail alignment from north of Liberty State Park to Hoboken Terminal operates on a combination of local streets and dedicated right of way in a manner which limits the number of trains that can be operated. The success of the current service requires that NJ TRANSIT, working within the spatial limits of the existing alignment, consider slightly lengthening existing 2-car trains to accommodate additional passengers. This will accommodate growth in the medium term, but looking past 2020, it is likely capacity issues both in terms of the number of trains that can be operated and their length and passenger capacity will require further action.

Light Rail System Extensions

Northern Branch – This is the extension of the Hudson Bergen Light Rail system from its present terminus in North Bergen into Bergen County through four communities ending in Englewood. This project is the subject of a Final Environmental Impact Statement being prepared for submittal to FTA.

Hudson Bergen Light Rail Route 440 Extension – This is an extension of the Westside Branch across highway 440 in Jersey City, which will serve a large scale, mixed use redevelopment project.

Resiliency Investments

Making critical assets less vulnerable to weather conditions and other incidents has recently gained added attention. NJ TRANSIT is both repairing assets damaged by Superstorm Sandy and also making them more resilient. Going beyond repair and hardening actions, there is a need for additional layers of protection from anything that impairs the normal functioning of the transportation network. The specific nature and scale of these investments is being investigated and involves not just actions by individual agencies but collective coordinated actions. In addition to repairs and resiliency improvements being made because of Superstorm Sandy, more projects are expected to be identified and advanced in future years.

Sustaining Capital Investments

Access Link

To best serve those customers who are disabled and cannot use NJ TRANSIT's fixed route services, NJ TRANSIT operates a customized service using vans, small buses and cars which functions within the fixed route service areas to comply with Federal law to provide mobility to these people. Vehicles, in addition to the technology required for communications, routing, tracking and managing these services, is another capital need which must be addressed.

Community Mobility

NJ TRANSIT administers Federal and state funds that go to counties, communities, and non-profit organizations to enable them to serve targeted population mostly of elderly and disabled people. A good portion of these funds are used, as in the case above, to purchase vehicles and technology to support the operation of these services.

Technology

There are at least four types of technology that are important to the long term success of NJ TRANSIT. First, there is technology for improved transit service information assembly, processing and distribution to customers. NJ TRANSIT is making more use of apps for smart phones. In addition, future ticketing purchases will rely on technological innovations. Second, there is another array of technology which is used to track, monitor and manage transit operations. NJ TRANSIT has installed tracking equipment on its new buses which allows management to know where they are as well as feed into the customer

information systems. An example of using technology to better manage bus services comes from building off the Automatic Passenger Counting (APC) software. NJ TRANSIT uses APC data to analyze passenger loads and provide improved service by matching specific passenger loads with the on time performance of lines. Third, there is technology which improves vehicles and facility operations. Examples of these are technologies which improve fuel efficiency or use solar power. Finally, there is technology for improved safety and security. NJ TRANSIT is actively uses video technologies to improve our ability to offer a safe and secure environment on our transit system.

Regional Rail Supporting Facilities

Under any assumptions to add more train service, NJ TRANSIT will need to expand yard space to store trains not in active service and maintenance facilities to handle a larger fleet of rail passenger cars and locomotives. Some of these additional facilities would involve expansion of existing rail yards but some additional facilities will require identifying new locations. The exact needs will depend on the future rail service plans, maintenance practices and other factors that cannot yet bet determined until other decisions about train service needs and capacity are made first.

Station Upgrades and Improvements

Approximately 100 of the 164 rail stations will require additional investment to provide all high level platforms on the rail system to address ADA requirements and also accommodate a projected aging population. About 82 stations have only low level platforms. These platforms require people boarding or alighting from trains to step up or down. Platform maintenance is a challenge and NJ TRANSIT plans to replace the remaining low level platforms with high level platforms over time. Hoboken Terminal, opened in 1907, will be an especially challenging project because of its historic designation. Making the physical changes for high level platforms will require an innovative approach must balance access needs and the historic design of the current platforms and overhead canopies.

Newark Penn Station was opened in 1935 and requires extensive rebuilding. The necessary improvements will maintain functionality, expand capacity to handle projected passenger growth, facilitate better transfers between modes, and improve connections to downtown Newark. NJ TRANSIT has begun the work of rebuilding the platforms by working on platform “E” which is the westernmost platform and is closest to the Gateway Complex. Amtrak and NJ TRANSIT are now partnering is a series of linked studies to determine short and longer term needs and establish a station improvement program. The initial work efforts are focusing on internal pedestrian circulation and platform capacities.

Bus Supporting Facilities

NJ TRANSIT has garages which date back to when trolley cars were operating. These facilities have been upgraded and will continue to require investment to maintain their functionality as the bus fleet is continually upgraded employing new technology, engines and new propulsion systems using different fuels. Also, bus sizes are changing and NJ TRANSIT may seek to operate more forty-five foot long buses, articulated buses, and possibly double deck buses on select interstate services. As the mix of vehicles change, existing bus facilities may no longer be able to adequately accommodate them. This approach fits with NJ TRANSIT’s focus on maintaining a bus fleet that is consistent with FTA’s focus on keeping the fleet’s average age within prescribed limits.

It is important to recognize that expansion of bus services and adding more buses to the fleet will require the locating and funding additional bus garages and layover locations. NJ TRANSIT's existing bus garages are filled to their practical capacity in the inner counties where most services are centered. This is also where the older bus garages are located.

Additional Light Rail Supporting Facilities

At some future point 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.

Multimodal Facilities

To provide more flexibility of choice for travelers and a more efficient use of available public transit capacity, NJ TRANSIT expects to increase the number of multi-modal facilities, permitting transfer between transit modes. In some cases this will allow greater service frequency for transit users traveling between the point of origin and the desired destination, plus flexibility on the return journey. This applies to existing facilities such as the Wayne Park and Ride, located off Routes 23/46/I-80. An example of a future candidate is along the Routes 46/3 corridor, possibly in the middle of the Routes 3 & 21 interchange.

Access to Public Transit

NJ TRANSIT works with NJDOT, other levels of government and the private sector to enhance and improve access to the locations where people get on and off NJ TRANSIT's services. These projects include pedestrian and bicycle access and park and rides. More emphasis is now placed on a multimodal approach, so, for example, bicycle access will get a proper level of attention.

Rail, Bus and Light Rail Equipment

NJ TRANSIT has large fleets of buses, railroad cars and locomotives, and light rail vehicles. Currently, the entire fleet is in a state of good repair and meets FTA guidelines for useful equipment life. To continue in this pattern, NJ TRANSIT has budgeted funds to permit regular ongoing annual replacement of equipment as it approaches the end of its useful life. As noted under bus supporting facilities, the size of the bus fleet and mix of vehicles types is expected to change to address future market demand, changes in technology and regulatory requirements. This approach also permits NJ TRANSIT to procure newer propulsion and fuel systems for vehicles and the railroad equipment as they are proven to be feasible, reliable, and cost effective. This creates a sustainable financial, maintenance and new order quantity program. It is expected this practice will continue into the future.

Other Support Equipment

To operate a statewide system of the scale being provided in NJ, a large number of support vehicles are required, including specialized trucks, vans and autos for use by NJT maintenance and operations staff and its police.

Additional Information

The following tables provide an overview of the NJ TRANSIT system and key assets vital to providing transit services in the NJTPA region and across the state.

NJTRANSIT
The Way To Go.

NJ TRANSIT is New Jersey's public transportation corporation. Covering a service area of 5,325 square miles, NJ TRANSIT is the nation's third largest provider of bus, rail and light rail transit, linking major points in New Jersey, New York and Philadelphia. On 236 bus routes and 11 rail lines statewide, NJ TRANSIT provides nearly 223 million passenger trips each year. NJ TRANSIT also administers several publicly funded transit programs for people with disabilities, senior citizens and people living in the state's rural areas who have no other means of transportation. In addition, the agency provides support and equipment to privately-owned contract bus carriers.

RAIL OPERATIONS

Commuter Rail Lines **12**
(NJ TRANSIT also operates service for MTA's Port Jervis Line)

Rail Network Directional Route Miles **1,001.8**

Rail Fleet

	Owned and Operated by NJT	Owned by Metro-North Operated by NJT	Total
Locomotives	**206**	**15**	**221**
Diesel Locomotives	91	15	106
Electric Locomotives	97	0	97
Dual Mode Locomotives	18	0	18
Cars	**1,081**	**65**	**1,146**
Electric Multiple Units	230	0	230
Push-Pull Rail Cars	851	65	916

Rail Non-Revenue Maintenance Fleet
- Railroad and Construction Equipment 160
- Rail Non- Revenue Equipment Cars 72
- Rail Non- Revenue Diesel Locomotives 9

Rail Passenger Facilities
- Stations 164
- Commuter Parking Capacity ..... over 63,000

Rail Layover Yards and Maintenance Facilities **16**
- Storage Yards Owned and Used by NJT 12
- Non-NJT Owned Storage Yards Used 3
- Maintenance Facilities 1

Rail Infrastructure
- Undergrade Bridges 570
- Overhead Bridges 100
- Moveable Bridges 12
- Track Miles Maintained (Not including Amtrak's Northeast Corridor) 544.4
- Interlockings 106
- Signals 1,336
- Grade Crossings 330
- Switches 1,271
- Miles of Catenary 264
- Substations 51

BUS OPERATIONS

Bus Fleet

NJ TRANSIT Bus/Private Carrier	Owned and Operated by NJT	Purchase Transportation	Private Carrier	Total
Cruiser*	1,076	0	518	1,594
Suburban**	249	0	0	249
Articulated	85	0	0	85
Transit***	776	204	106	1,086
Minibuses/WHEELS	0	13	0	13
Subtotal	**2,186**	**217**	**624**	**3,027**

*Includes 76 CNG & 4 Hybrid buses
** Includes 2 Hybrid buses
*** Includes 3 Hybrid buses

Local and Community Service Fleet	Total
Access Link	367
Vanpool	208
Subtotal	**575**
Total Bus Fleet	**3,602**

Total Non-Revenue Maintenance Fleet
- Bus Support Vehicles (Tow and Service Trucks) 19

Bus Passenger Facilities
- Stations 30
- Stops ..... over 18,500
- Commuter Parking Capacity ..... over 17,600

Bus Maintenance Facilities **17**
- Maintenance Facilities 15
- Heavy Maintenance Facilities 2

Bus Layover Areas (Loops Owned and Maintained) **10**

LIGHT RAIL OPERATIONS

Light Rail Lines **3**

Light Rail Network Directional Route Miles **107.1**
- Hudson-Bergen Light Rail 36.5
- Newark Light Rail 13.9
- River LINE 56.7

Light Rail Fleet

	Owned and Operated by NJT	Owned by NJT Operated via Contract
Hudson-Bergen Light Rail	0	52
Newark City Subway	21	0
River LINE	0	20
Total Cars	**21**	**72**

Light Rail Non-Revenue Maintenance Fleet
- Light Rail Railroad and Construction Equipment 11

Light Rail Passenger Facilities
- Stations 61
- Commuter Parking Capacity ..... over 6,700

Light Rail Layover Yards and Maintenance Facilities 5

Light Rail Infrastructure
- Undergrade Bridges 35
- Overhead Bridges 52
- Moveable Bridges 0
- Track Miles Maintained 107
- Interlockings 50
- Signals 285
- Grade Crossings 120
- Switches 282
- Miles of Catenary 51
- Substations 22

Appendix F – Acronyms

- NJTPA – North Jersey Transportation Planning Authority
- RPSD – Regional Plan for Sustainable Development
- SSP – State Strategic Plan
- MAP-21 – Moving Ahead for Progress in the 21st Century
- RTP – Regional Transportation Plan
- ITS – Intelligent transportation system
- TDM – transportation demand management
- PANYNJ – Port Authority of New York and New Jersey
- RCIS – Regional Capital Investment Strategy
- FHWA – Federal Highway Administration
- FTA – Federal Transit Administration
- MPO – Metropolitan Planning Organization
- VMT – vehicle miles travelled
- EPA – Environmental Protection Agency
- NJDOT – New Jersey Department of Transportation
- DVRPC – Delaware Valley Regional Planning Commission
- SJTPO – South Jersey Transportation Planning Organization
- NYMTC – New York Metropolitan Transportation Council
- HUD – United States Department of Housing and Urban Development
- USDOT – United States Department of Transportation
- ADA – Americans with Disabilities Act
- CMP – Congestion Management Process
- SAFETEA-LU – Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users
- CMAQ – Congestion Mitigation and Air Quality
- JARC – Job Access Reverse Commute
- TMA – Transportation Management Association
- SOV – single occupancy vehicle
- TIP – Transportation Improvement Program
- PATH – Port Authority Trans-Hudson
- SLR – Sea level rise
- EWR – Newark Liberty International Airport
- CHSTP – Coordinated Human Services Transportation Plan
- NJDHTS – New Jersey Division of Highway Traffic Safety
- AARP – American Association of Retired People
- UPWP – Unified Planning Work Program

- STIP – State Transportation Improvement Program
- TTF – Transportation Trust Fund (for New Jersey)
- TOD – Transit Oriented Development
- TNJ – Together North Jersey
- PIRG – Public Interest Research Group
- CNT – Center for Neighborhood Technology
- MSA – Metropolitan Statistical Area
- ACS – American Community Survey
- PABT – Port Authority Bus Terminal
- GWBBS – George Washington Bridge Bus Station
- SHSP – Strategic Highway Safety Plan