For Public Dialogue

TRANSPORTATION CHOICES • 2025

New Jersey Long-Range Transportation Plan Update

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MARCH 2001

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New Jersey Transit Corporation

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PREPARATION OF THIS REPORT WAS FUNDED BY

Federal Highway Administration
Federal Transit Administration
New Jersey Transportation Trust Fund Authority

The preparation of this report has been financed in part by the U. S. Department of Transportation, Federal Highway Administration. This document is disseminated under the sponsorship of the U. S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

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CHOICES

The 21st Century is about choices. Never before have we had so many. But one result of the information age in which we now live is that we have an unprecedented ability to make these choices based on sound data and solid reasoning. The New Jersey Department of Transportation (NJDOT) and the New Jersey Transit Corporation (NJ TRANSIT) take seriously their obligation to collect and analyze data about the state's current transportation system, identify necessary changes based on trends in demographics and other factors, consider alternatives, and plan for the future. To this end, the statewide long-range transportation plan provides a basis for making informed decisions about transportation for the next five years, the next ten years, and the next 25 years. It is intended to spark public dialogue among all the state's transportation providers and all their customers.

Transportation Choices 2025 is about crucial decisions, decisions about how we will travel, certainly, but also about our quality of life: how we will protect our land, our environment, and our heath and safety; how we will stimulate our economy; how we will shape our communities; and what kind of legacy we will leave to the next generation. It is about planning for a future that embraces the values of our citizens. In short, it is about continuing to make New Jersey a better place in which to visit, live, work, and raise a family.

ABOUT THE PLAN

Purpose

Transportation Choices 2025 identifies the needs of New Jersey's transportation system to meet user expectations, for both person and goods movement, for the next 25 years. It establishes a vision and policy structure, sets forth strategies, provides a framework for directing investment, and identifies the financial resources needed to sustain the plan's vision. Transportation Choices 2025 builds upon New Jersey's previous statewide long-range transportation plan, *Transportation Choices 2020*. This document summarizes the results of a first step in a process that has been dubbed the "living plan." Future steps will include continuing efforts that will look more closely at some elements described here, and new efforts that will address issues already identified in the plan as well as future changes in needs and priorities. Public outreach will continue, primarily through the plan's web site, www.njchoices.com, but also through public meetings and discussions with key stakeholders. *Transportation Choices 2025* is not just a written report; it has launched an ongoing process.

Format

Transportation Choices 2025 has three components: a five-year program, a ten-year programmatic approach, and a 25-year strategic direction element. The five-year program reflects the current Five-Year New Jersey Transportation Capital Program. This program identifies projects that have gone through initial planning and project scope development and are undergoing final project design or construction.

The ten-year programmatic approach establishes a direction for investment and other system improvements for New Jersey through 2010. The 25-year strategic direction element is a forecast of projected needs for the entire transportation system for the year 2025. The 25-year element provides a picture of the nature and level of investments needed, based largely on travel demand analyses and an examination of various improvement scenarios, as well as financial analyses. Both the programmatic approach and the strategic direction element can guide the state's three metropolitan planning organizations (MPOs) as they develop their regional transportation plans.

Vision and Goals

This plan is the result of a process dedicated to achieving a carefully crafted vision, a vision that has been developed and refined over time. From that vision, the plan sets seven goals, each supported by specific objectives. Simply stated, the goals of *Transportation Choices 2025* are to:

- Maintain and Preserve Our Transportation System for Present and Future Generations
- Improve the Safety and Security of the Transportation System
- Improve the Effectiveness, Efficiency, and Attractiveness of Transportation Services Responsive to the Needs of the Customer
- Improve the Process of Providing Transportation Facilities and Services
- Promote Economic Development

- Improve the Quality of Life for Users of the Transportation System and Those Affected by Its Use
- Use Transportation to Shape Desired Development Patterns Consistent with the *State Development and Redevelopment Plan*

Technical Approach

The technical development of this long-range transportation plan update began with the identification of five core issues that are central to the success of the state's transportation system in serving its customers: congestion, mobility, the interrelationship between land use development patterns and transportation, freight transportation, and current and future preservation of the system's infrastructure.

The ten-year programmatic approach is based on the Governor's Vision, titled *New Jersey FIRST; A Transportation Vision For the 21st Century*, released in 1998; the closely related NJDOT *Capital Investment Strategy* (CIS), a twelve-year planning document also prepared in 1998 and updated in 2000; information collected and analyzed as part of the Urban Supplement reports on the seven major cities in New Jersey, considered a part of this plan; and the draft final *State Development and Redevelopment Plan* (SDRP), developed by the New Jersey State Planning Commission. The SDRP provides important guidance to direct investment and growth that can be sustained to areas in New Jersey where the essential infrastructure already exists. Emphasis is on creating center-based, liveable communities.

A strategic direction for 2025 was developed by identifying and evaluating alternative scenarios to determine an approach to relieving congestion and improving mobility. These scenarios assumed trend-based growth in population and employment. When future year demographic projections representing a more center-based growth scenario were examined, the results were encouraging. The scenario demonstrated that center-based growth in concert with multimodal transportation system improvement strategies may hold the promise of improving the effectiveness and efficiency of our transportation system as well as enhancing our quality of life. Further work is needed to refine the tools and to consider policy questions to determine the full extent of that promise.

A Study Advisory Committee, consisting of senior-level representatives from New Jersey's transportation authorities and commissions, MPOs, bi-state transportation agencies, and other stakeholder groups, convened at the beginning of the planning process and at milestone intervals to review the plan's process and results and offer expert advice.

Public Outreach

Transportation Choices 2025 also reflects the opinions of the citizens of New Jersey. An extensive public outreach program sought to determine what residents of the state want their transportation system to be and how it can best respond to their needs. At Public Information Centers throughout the state, people were asked what issues they think the plan should address. The plan web site, www.njchoices.com, provided (and continues to provide) a forum for the exchange of information about transportation in the state, including how visitors to the site think transportation funds should be spent and a comment section where they can express their opinions and offer suggestions.

NJDOT and NJ TRANSIT also gathered professionals and concerned citizens from throughout New Jersey to discuss issues crucial to the future of transportation, including freight transportation, travel and tourism, strategies to manage travel demand, issues relating to an aging population and their mobility needs, and the application of technologies to improve the transportation system. And they conducted focus groups to ask various segments of the population about their concerns and needs, including minority representatives, people with low-incomes, disabled individuals, transit users, and citizens in rural areas.

Finally, 800 residents were telephoned at random statewide and asked a wide variety of questions about New Jersey's transportation system, both now and in the future. Questions included some that have been asked before to determine whether perceptions about concerns have changed and how they are different. Questions were also asked about new issues, such as the importance of open space and managed growth, as well as other issues that have become more prominent since *Transportation Choices 2020* was published in 1995.

OVERVIEW OF THE EXISTING TRANSPORTATION SYSTEM

New Jersey's location at the crossroads between New England, New York, and the lower Middle Atlantic states makes the state a focal point for transportation throughout the Northeast Corridor, and the state

serves as a major gateway for domestic and international goods movement. New Jersey is home to more than 8 million people and more than 4 million jobs. Each day travelers drive more than 17.6 million miles for a variety of purposes, ranging from business and personal reasons to recreation and commercial needs. And on a typical day more than 255,000 people ride buses and another 100,000 travel by rail on the third most heavily used public transit system in the nation.

The Roadway Network

Of the nearly 36,000 miles of roadway in the state, only 2.1 percent of the total mileage - consisting of New Jersey's interstates, freeways, and expressways - experiences about one-third of the state's travel. The State of New Jersey owns only 9 percent of its roadway network (counties and municipalities own the other 91 percent), but about two-thirds of the travel in the state takes place on state highways. New Jersey is the most densely populated state in the nation, and its highways are the most heavily traveled.

The total number of miles traveled by vehicles in the state has increased by 55 percent since 1970, significantly faster than the numbers of licensed drivers, households, and population in New Jersey. However, this growth rate in vehicles miles traveled is lower than the nation's. The state boasts nearly one vehicle for every person old enough to drive, two for every household, more than one per licensed driver, and almost 1.5 per job.

The state has not been adding lane miles commensurate with the growth in vehicle miles traveled. Not surprisingly, 73 percent of New Jersey's residents identified congestion as the biggest transportation problem facing the state in the recent poll conducted for *Transportation Choices 2025*. The percentage of those saying traffic congestion is a very serious problem increased by 24 percent in the past decade.

Public Transit

In addition, New Jersey has one of the most extensive public transit systems in the United States. It includes a network of commuter and regional rail, light rail, regular-route bus services (both publicly and privately operated), and ferry lines. More specialized programs provide transportation services for persons with disabilities and the elderly and services geared to supporting employment transportation in various parts of the state.

NJ TRANSIT operates 591 daily commuter trains on 12 lines serving 161 stations in 137 communities statewide. NJ TRANSIT provides approximately 1.2 billion passenger miles of rail service annually, using a fleet of 928 vehicles. This service results in 52.1 million annual rail passenger trips.

NJ TRANSIT's bus ridership has reached 151.1 million annual passenger trips. NJ TRANSIT operates more than 1,600 peak-hour vehicles from 16 garage locations, covering 178 routes. An additional 68 routes are contracted to private carriers. NJ TRANSIT provides approximately 850 million passenger-miles of bus service annually. Including private carriers, the total fleet consists of 2,959 vehicles. Increases in both rail and bus ridership have created overcrowded conditions on some services, particularly during morning and evening commutes.

Goods Movement

New Jersey also occupies a critical link in the nation's freight transportation system, serving as a connection between New York and New England and the remainder of the continental United States. The freight transportation industry plays a substantial role in the state's economy. An estimated total of 375.2 million tons of freight moves in New Jersey each year.

On a tonnage basis, approximately three quarters of this freight - an estimated 283.1 million tons - travels by truck. In addition, the Port of New York and New Jersey is the third largest US port in terms of the dollar value of goods shipped, as of 1997, and the fourth largest US port in terms of tonnage. The Port of Newark/Elizabeth accounts for most of the freight movement in the Port of New York and New Jersey. In 1998, this port did $20 billion in business, handling 1.1 million ocean containers totaling 18.2 million tons. Newark International Airport also handled approximately 1.1 million tons of air cargo in 1998, making it the eight largest air cargo facility in the United States. This demand for the movement of freight by air is expected to increase significantly with the movement toward more overnight deliveries.

The consolidation of railroads and port development has increased the role of New Jersey as a regional freight activity center, further increasing the amount of freight that is expected to move through the state. New Jersey will face a challenge in providing locations for the needed intermodal and distribution centers. Poorly situated centers could further stress the already overburdened highway system and result in worsening congestion and travel delays. If the

freight distribution systems linking port, rail, and highway systems are not efficient and effective, the region will be faced with higher costs for needed goods and raw materials and will cease to be competitive in the global economy.

Aviation

New Jersey's air carrier airports are uniquely situated to support passenger and cargo demands from a multi-state region, and they act as gateways to the global economy. These facilities and the state's general aviation airports play a key role in the retention and attraction of major businesses and industrial firms. New Jersey's aviation industry annually generates nearly $10 billion for the state's economy and provides more than 100,000 jobs. NJDOT is in the process of developing a State Airport System Plan that will analyze the state's air transportation needs and identify airports that are crucial to a good air transportation system.

Newark International Airport in the north and Philadelphia International Airport in the southwest rank among the most congested airports in the nation. These hub airports continue to be challenged by air traffic congestion and delays that affect the state's residents and business people in their travels. Because the Federal Aviation Administration regulates and controls air traffic, the state has a limited direct role in reducing delays. However, New Jersey is working to develop a system of high-quality, small-aircraft airports as alternatives to divert small general aviation planes away from the major hub airports. The program will help to reduce delays at the hub airports by easing congestion at those locations. Most of these alternate "reliever airports" already exist and must be improved to properly serve the needs of the flying public and New Jersey's businesses.

Demographics

Population and employment growth will continue to make increasing demands on New Jersey's transportation system. If this growth continues to develop in a sprawl direction, it will create even greater demands. Population growth in the states surrounding New Jersey will also contribute to the flow of interstate traffic for those persons working in New Jersey. The generation of "baby boomers" will continue to influence transportation needs as they work their way through middle age, remain active in the workforce, continue to drive more miles, and demand more transportation services. As household size decreases and the number of households continues to rise, so will the number of trips as well as the demand for transportation services and system capacity.

Within New Jersey, the average number of miles vehicles travel each day continues to grow. People continue to drive longer distances and make more trips. In New Jersey, suburb-to-suburb and long-distance commuting from bedroom communities to employment centers has exacerbated peak-period congestion. As the state's population and employment continue to spread out, efficient transit service becomes increasingly difficult to provide.

The population of the state is expected to increase by 5.9 percent to almost 8.7 million persons by 2010, and to grow a total of 15 percent between now and 2025. The state's employment is projected to be more than 4.3 million jobs by 2010, an increase of 7.8 percent, and to grow by 24 percent by 2025. As a result, more people will use our highways, transit systems, and our airports, and more people will walk and bicycle. More goods will move through our ports and on our highway, rail, and aviation systems.

FIX IT FIRST

The State of New Jersey and its citizens have made an enormous investment in our highway, bridge, rail, port, and aviation facilities. Before we can even begin to address new transportation initiatives, such as a significant expansion in passenger rail service, we must ensure that these existing facilities are all brought to a state of good repair and kept there. This is becoming the top priority for NJDOT, NJ TRANSIT, and all other transportation providers in the state since the majority of our future transportation system is already in place.

In past years, New Jersey has fallen behind in its efforts to maintain its transportation system. Past practices of "deferred maintenance" mean that the cost to bring the system up to a state of good repair and then keep it there is high, for both the highway and public transportation network.

New Jersey's Five-Year Capital Program, which is included in *Transportation Choices 2025* as the short-term element of the plan, has allocated nearly one-third ($2.2 billion) of NJDOT's program toward projects that will help achieve a state of good repair and maintain capital assets to ensure their maximum useful life. These projects include reducing the back-

log of structurally deficient bridges, deficient pavement conditions, drainage problems, lead-based bridge coatings, and inadequate dams. Other state-of-good-repair initiatives include the implementation of maintenance programs for bridges, pavements, and drainage systems.

NJ TRANSIT's capital program is structured to maintain its bus and rail capital assets in a state of good repair as well as to provide added capacity and new services to enhance market competitiveness. Rail capital projects, including maintenance, infrastructure, passenger facilities, and rolling stock, equal $2.2 billion, or 43 percent, of the transit program. Projects will be undertaken to purchase new rail cars, rehabilitate tunnels and bridges, and upgrade track, signal and communication systems, stations, support facilities, and rights-of-way.

This plan's programmatic approach, which addresses improvements to the transportation system through 2010, calls for further efforts to achieve a state of good repair, as well as continued efforts to implement full maintenance programs for the state's bridges, highway pavements, and drainage systems. During this ten-year period, NJ TRANSIT will replace overage buses in its fleet and those of the private carriers under its jurisdiction, replace a significant number of rail passenger cars and locomotives, upgrade passenger stations, and continue to invest maintenance dollars in rail tracks, bridges, and yards to ensure this infrastructure is in a state of good repair. NJ TRANSIT is also committed to advancing work on a number of bus and rail system enhancement projects during this period, including substantial progress toward the development of new trans-Hudson capacity.

LOOKING TO THE FUTURE: 2025

While the five-year capital program and ten-year programmatic approach set forth by *Transportation Choices 2025* are largely based on existing documents and directions, determining a strategic direction for 2025 took a different, more visionary approach. Using the three regional travel demand models developed by New Jersey's MPOs, a statewide travel demand tool was created to analyze future scenarios from a multimodal perspective. Emphasis was on the related issues of congestion and mobility. Although the regional models are based on assumptions about highway use, they have proven to be useful for assessing the effects on other transportation options as well, such as what would happen to the highway system as a whole if some people used public transit instead of driving for at least a portion of their trips.

Different scenarios examined the following conditions:

- What would likely happen if no projects were initiated beyond those already committed by the Five-Year Capital Program (to establish a base case)
- The results if an extensive program of travel demand management (TDM) strategies was applied to reduce the use of single-occupant vehicles
- The consequences of increasing the supply of public transportation by as much as 50 percent (the model assumed the transit system would be able to absorb these new passengers)
- The effects of applying intelligent transportation system (ITS) and transportation system management (TSM) strategies to increase the efficiency of the existing highway system
- The outcome of expanding the highway system to reduce congestion.

An additional scenario looked at the effectiveness of a multimodal approach that would combine the individual scenarios. This approach analyzed two alternatives: 1) combining travel demand management methods, ITS/TSM strategies, and an aggressive increase in public transit; and 2) applying these three approaches as well as expanding the highway system at a very reduced, selectively focused level.

The multimodal approach, using all the strategies available in a combination appropriate for each of the regions of the state, is extremely encouraging. It should be possible to maintain the highway system near its current level of service despite an increase of about one million people and almost five million daily vehicle trips in the next 25 years.

To address the critical interrelationship between land use and transportation, additional scenarios were developed to gauge what might happen to highway conditions if a different pattern of growth were to occur, based on the land use concepts of the *State Development and Redevelopment Plan*. The SDRP emphasizes redevelopment of the state's urban areas and encourages compact or centered-based growth, in contrast to the low-density, decentralized sprawl development typical of recent decades. The results of these scenarios demonstrate the potential for a broadened application of center-based growth throughout the state and indicate that this type of

growth and development may enhance the effectiveness of supporting transportation strategies.

The plan shows that no single transportation strategy is likely to preserve the level of highway performance experienced today in New Jersey through 2025, let alone improve it. However, a combination of strategies could offer significant improvements over the level of congestion that can otherwise be expected by 2025. The plan also suggests that center-based growth policies may contribute to improved future highway system performance.

FINANCING THE TRANSPORTATION SYSTEM

The capital costs required to maintain and expand New Jersey's transportation network are significant. Between fiscal years (FYs) 2001 and 2010, total capital costs are estimated to be $35.4 billion (all numbers shown here are in year-of-expenditure dollars). The cumulative capital costs will grow to $85.8 billion by FY 2025. NJDOT's and NJ TRANSIT's capital resource costs would be funded from a combination of federal and state sources. Highway capital costs would be primarily for addressing the deficiencies of the current network and for bringing assets to a state of good repair. Limited expenditures would be made for new highway capacity; the plan assumes a rate of expansion of only about 20 lane-miles per year over the next 25 years, for a total of about 500 miles.

Over the long-range planning period, NJ TRANSIT will need $17.0 billion by FY 2010 to maintain its existing facilities in a state of good repair, provide for the normal replacement of the bus and rail fleet, and implement new bus, commuter rail, and light rail services to accommodate the state's growing mobility needs. Capital costs for the FY 2025 milestone year equal $40.1 billion. Note that the costs defined above exclude the capital costs for the Access to the Region's Core (ARC) project, which is assumed to be separately funded. ARC is essential to increase rail capacity across the Hudson River and to ensure that demand for rail service between New Jersey and New York can be met.

During the long-range plan period, NJDOT's operating costs are projected to grow from $285 million in FY 2001 to $478 million in FY 2025 based on annual inflation, the limited increase in highway capacity, and the implementation of ITS and travel demand management strategies. Most of this increase is attributable to annual inflation. In real terms (i.e., excluding inflation), operating costs are forecasted to grow through FY 2025 by only 12.3 percent as a result of new costs associated with the maintenance and operation of additional highway capacity, enhanced maintenance and operation of the existing system, and ITS.

NJ TRANSIT's FY 2001 operating budget is $1.06 billion. Operating costs are projected to increase as a result of annual inflation, the operation of new services, and the need to meet growing demand on existing services. In contrast to highway operating costs, most of the growth in NJ TRANSIT's operating costs is attributable to the expansion of the transit network. NJ TRANSIT's operating costs are projected to grow by 81 percent (43 percent in real terms) between FY 2001 and FY 2010, and by 239 percent (63 percent in real terms) between FY 2001 and FY 2025.

Transportation Choices 2025 establishes an aggressive strategy for improving New Jersey's existing highway and transit network and for offering new options to meet the travel needs of the state's citizens, businesses, and visitors. The resources required to implement this strategy are significant. Current Transportation Trust Fund revenues will not be sufficient to meet the capital funding costs of the long-range plan.

The specific funding sources to meet the long-range transportation plan's capital and operating requirements will need to be evaluated by the state's citizens and policy makers based on:

- The benefits of the recommended long-range plan strategies in improving the state's quality of life and enhancing its economic competitiveness
- The potential adverse environmental, economic, and social impacts from not maintaining current transportation assets and providing capacity to accommodate future growth
- The increased financial burden on New Jersey's citizens and businesses associated with the increased transportation funding need
- The impacts on other state programs if existing resources were to be diverted to meet increased funding requirements for transportation.

STRATEGIC TRANSPORTATION DIRECTION

The travel demand modeling described earlier has provided a technical underpinning for setting a strategic direction over the next 25 years. This approach, along with the public outreach that has taken place during the development of this plan,

including the public opinion survey, the interviews, the focus groups, the issue groups, and the comments from the web site, has shaped the strategic direction of the plan.

Listed below is the plan's policy direction for each of the travel modes.

Multimodal - Integrate travel modes to provide connectivity and choices

Transit - Preserve and expand our transit system and make the system safe, reliable, comfortable, and convenient

Bicycle and Pedestrian - Provide non-motorized travel options by routinely integrating bicycling and walking into transportation system improvements and promoting bicycling and walking as a preferred choice for short trips

Ferry - Support the private sector through landside access, parking, and terminal facilities

Aviation - Maintain the critical airport and heliport network and improve landside access at airport sites

Goods Movement - Integrate freight facilities and modes to provide a multimodal system through public/private partnerships

Highway - Maintain and preserve a safe existing highway system as a first priority, using travel demand management measures to reduce highway trips and operating strategies like intelligent transportation systems to increase highway efficiencies. Add highway capacity at selective locations based on need.

THE "LIVING PLAN"

Transportation Choices 2025 is unique in long-range transportation planning in New Jersey. It is a process, not a document, although this document obviously is an important part of that process. This long-range planning approach has been designed to provide continuous opportunities for updates and changes in focus, as well as ongoing public involvement, to keep current with the concerns of transportation users in the state.

To date, NJDOT and NJ TRANSIT have identified a number of future actions that should be considered part of this planning effort, and they expect to identify other efforts that will contribute significantly to their commitment to consider New Jersey's transportation future, as well as its immediate requirements. So far, elements in this process include:

•Continued dialogue with the public. In its most basic form, this will include maintaining the plan's web site, www.njchoices.com, and continuing to promote it as a forum for the exchange of information about the transportation system. At least one electronic town meeting is envisioned via television, as well as a number of more traditional public meetings, to enable members of the public to ask questions and comment about the plan and both ongoing and new issues that concern them. In addition, the public opinion survey described in this plan will be conducted yearly to identify changing perspectives and determine customer satisfaction.

•Continued evolution of the travel demand modeling tools. As travel demand models become even more sophisticated, the agencies will use them to ask more questions about the probable effects of short-, mid-, and long-term changes in the transportation system and land use in New Jersey.

•Integration of the State Airport System Plan (SASP). The SASP is currently being updated by NJDOT. It will become an integral part of the long-range planning process.

•Implementation of transportation strategies for the state's urban centers. Further work will be undertaken to examine the transportation needs of the state's urban centers. The *State Development and Redevelopment Plan* identifies New Brunswick as an urban center and Hudson County as an urban complex. Urban Supplement reports will be developed for these locations to support NJDOT's and NJ TRANSIT's efforts to plan and implement transportation strategies that respond to the needs of their customers.

•Ongoing progress reports. Indicators will be used to identify progress in meeting the goals of *Transportation Choices 2025*, and results will be reported on a regular basis.

•Commitment to environmental justice. NJDOT and NJ TRANSIT will advance efforts to undertake a statewide analysis of environmental justice throughout New Jersey's transportation system to ensure that disproportionately high adverse effects are not focused on minority, low-income, elderly, or disabled populations. This will include updating demographic profile mapping, conducting focused public out-

reach, and performing a systems-level analysis of how target populations are affected by transportation projects and services.

•Changes in plan focus. Over time, additional areas for consideration will emerge that NJDOT and NJ TRANSIT will investigate to set or refine policy, alter strategic direction, or guide program development.✲

I. INTRODUCTION

Transportation Choices 2025 identifies and addresses the needs and priorities of New Jersey's transportation system for the next 25 years. It establishes a vision and a policy structure to direct and implement the future of the state's transportation system, and sets forth the strategies and financial resources needed to sustain the plan's vision. Transportation Choices 2025 is an update of the state's previous plan, Transportation Choices 2020.

PURPOSE OF THE PLAN

The federal Transportation Equity Act for the 21st Century (TEA-21) and New Jersey law mandate that the New Jersey Department of Transportation (NJDOT) and the New Jersey Transit Corporation (NJ TRANSIT) update the statewide long-range transportation plan. State law requires an update every five years. The process of revising the plan allows NJDOT and NJ TRANSIT to keep current with the changing system needs, vision for development, and goals for transportation in New Jersey. This update evaluates the current range of options available for the future transportation system in the state. The planning process focuses on the movement of people and goods, including automobiles, bus, rail, paratransit, bicycle, pedestrian, air, and water travel. It provides policies, choices, directions, and actions that will lead to an improved system for all users.

Transportation Choices 2025 is a far-reaching plan and process that seeks to guide investment decisions for the next 25 years, while anticipating changes in technology, population, industry, employment, recreation, and travel patterns. It represents the continued shift in focus to the users and operators of the transportation system, rather than focusing on transportation system facilities. The plan offers recommendations and strategies to help satisfy the needs of system customers.

This long-range transportation plan update includes a comprehensive analysis of current and projected transportation needs. It is the result of the active participation of the public, as well as the involvement and expertise of transportation operators, agencies, planners, and engineers in New Jersey. This dialogue was necessary, and continues to be necessary, to help understand the changing focus and needs of the state's transportation system five, ten, and 25 years into the future.

Recognizing that the needs and concerns of the customers of the transportation system are always changing, NJDOT and NJ TRANSIT acknowledge the need for a more dynamic and enduring planning process that goes far beyond producing a static long-range planning document. Instead of a traditional plan, *Transportation Choices 2025* seeks to serve as a platform for a "living plan" process that provides continuous opportunities for updates and changes in focus, as well as ongoing public involvement, to keep current with the concerns of transportation users in the state.

A "living plan," such as *Transportation Choices 2025*, allows for growth, changes in public opinion, and input about the wide range of issues facing New Jersey today and in the future. As a "living plan," *Transportation Choices 2025* is a flexible document that can adjust to changing issues and needs.

THE PLANNING PROCESS

Transportation Choices 2025 has three components: a five-year plan, a ten-year programmatic approach, and a 25-year strategic direction element. The five-year plan is the current Five-Year New Jersey Transportation Capital Program. This program identifies projects that have gone through study and development and are undergoing final project design or construction.

The ten-year programmatic approach establishes an investment direction and other system improvements for New Jersey through 2010. The ten-year outlook is based largely on the Governor's transportation Vision, as described in *New Jersey FIRST*, and NJDOT's and NJ TRANSIT's capital investment strategies. As such, it identifies programs and activities to guide the state's three metropolitan planning organizations (MPOs) in developing their regional transportation plans over the next ten years.

The 25-year strategic direction element is a forecast of projected needs for the transportation system for the year 2025. The 25-year element provides a picture of the types of investments needed, based largely on travel demand forecasts, analyses of various improvement scenarios, and financial analyses.

Transportation Choices 2025 sets strategic investment direction for transportation in New Jersey. Project definition is left to the state's MPOs, which identify projects and priorities through their planning processes.

All three of the plan's components draw from the Urban Transportation Supplement, which identifies and addresses the transportation needs and issues of New Jersey's urban centers.

RELATIONSHIP TO OTHER PLANS

Transportation Choices 2025 provides strategic direction for the metropolitan planning organizations, which then conduct corridor studies and complete other preparatory project development work in order to identify projects. The MPOs also develop long-range plans. These plans analyze how transportation facilities in a specific region interact. They look for ways to address certain problems or issues on a regional basis.

The MPOs consist of the North Jersey Transportation Planning Authority (NJTPA), with planning responsibility for the northern 13 counties; the Delaware Valley Regional Planning Commission (DVRPC), with responsibility for Burlington, Camden, Gloucester and Mercer counties; and the South Jersey Transportation Planning Organization (SJTPO), with responsibility for Atlantic, Cape May, Cumberland, and Salem counties.

The MPO plans and *Transportation Choices 2025* all help to implement New Jersey's *State Development* and *Redevelopment Plan*. The *State Development* and *Redevelopment Plan* is a guide to direct investment and growth that can be sustained in areas in New Jersey where infrastructure already exists. This approach also protects rural and sensitive lands from development.

CREATING THE PLAN

The development of *Transportation Choices 2025* began with the identification of a set of core issues. These core issues were evaluated using travel demand and financial analysis models.

Two of the core issues, *congestion* and *mobility*, were evaluated in terms of their future performance by analyzing comparative investment scenarios. Travel demand models were used to analyze the *interrelationship between land use development patterns and transportation*, a third core issue. Alternative future-year demographic projections (population and employment) were examined in a case study to determine the highway system impacts under a trend demographic scenario versus a center-based growth scenario.

A Freight Issue Group was convened periodically during the plan development process and provided important dialogue regarding current and future issues for *freight transportation*, the fourth core issue. A statewide model assisted in identifying the volumes of trucks on highways, and future year forecasts of locations where congestion affects trucking and where trucks affect congestion were projected. This information, as well as the results of the state rail freight planning process, was used to develop freight-related recommendations.

The fifth core issue for analysis was current and future *infrastructure preservation needs*. Management system data were used to evaluate current needs, and financial models were used to evaluate future system costs. The financial analysis process defined future year capital and operating costs and funding strategies for meeting these costs.

All these technical efforts, combined with the public involvement process described below, contributed to the development of an investment direction for a multimodal transportation system for 2025.

A wide array of techniques was used to reach the state's citizens and interested organizations. An interactive web site was constructed to explain the long-range plan to the public and provide opportunities for comment. The web site, www.njchoices.com, includes links to viewing traffic trends over time, a virtual budget game, a dynamic population map, a description of the plan and specific issues, an on-line survey, and discussions of the user's region and interests. In addition, a customer survey was conducted with 800 residents statewide by telephone. The survey focused on perceptions about the transportation system. It included questions from previous transportation surveys to identify trends or changes in opinions over time.

Numerous interviews were conducted with individuals from various organizations and public interest groups, including grassroots organizations, local and statewide planning organizations, and human services agencies. Several issue groups focused on freight movement, travel and tourism, the aging and transportation, travel demand management, and the effects of technology on transportation now and in the future. Five focus

groups reached out to transit-dependent individuals, minorities, people with disabilities, rural transportation users, and low-income users of the system.

In addition, four information centers contributed to the public outreach effort, at Atlantic City, Newark, Somerville, and Woodcrest. At all the information centers, participants had the opportunity to explore the project web site and to comment about transportation issues. They were able to view a long-range plan video identifying the major transportation issues in the state and to play the virtual budget game, available on the web site.

Employee in-reach included interviews with agency planners and engineers, meetings with senior staff, as well as in-reach to all employees of NJDOT and NJ TRANSIT via articles in newsletters and lobby displays. For more details on the public involvement efforts, refer to Chapter IV.

ORGANIZATION OF THE PLAN

Transportation Choices 2025 is organized as follows. Chapter II describes the framework for *Transportation Choices 2025*. NJDOT's and NJ TRANSIT's mission statements are included, as well as the vision, goals, and objectives of the plan. These elements were formed as a collective effort from the goals of the metropolitan planning organizations, stakeholder interviews, the *State Development and Redevelopment Plan*, NJDOT's *Capital Investment Strategy*, and *New Jersey FIRST*. They are based on the foundation laid by the previous plan, *Transportation Choices 2020*. The building blocks for the plan development are also described in Chapter II.

On overview of the conditions currently affecting the state's transportation system is provided in Chapter III. In that chapter, an inventory of the existing system and an assessment of how it meets customer needs are presented. The discussion also includes an examination of past, present, and projected trends, and a look at how technology is being applied in providing and improving transportation in New Jersey.

Chapter IV - What We Have Heard describes the public involvement process undertaken in the development of the plan, and the important role that process played in shaping policy direction. It also includes information obtained during the process.

Our urban centers are evaluated in Chapter V, where a summary is provided of the transportation needs of the state's seven major cities: Atlantic City, Camden, Elizabeth, Jersey City, Newark, Paterson, and Trenton. Discussions in this chapter link these needs to the 2010 programmatic approach and the 2025 strategic direction.

Chapter VI - New Jersey's Five-Year Capital Program discusses near-term capital priorities, how those priorities were developed, and sources of funding. It also shows how these planned projects fit in with the overall vision and objectives of the long-range plan.

Chapter VII explains the plan's longer-term recommendations, covering the next ten years through 2010. It sets forth a programmatic approach for system preservation, maintenance, new capacity, and other investment categories.

Chapter VIII - The Outlook for 2025 and Strategic Direction extends the vision to the next 25 years. The chapter explores a variety of transportation scenarios developed using sophisticated models, including scenarios that examine the potential impacts of the center-based growth policies of the New Jersey *State Development and Redevelopment Plan*. Ultimately, it recommends a strategic direction for transportation investments that balances the anticipated needs of transportation users with the economic development of New Jersey communities and the pressing need to preserve the state's environmental resources.

Chapter VIII concludes with a summary of the strategic initiatives of this plan as they relate specifically to bus and rail service, bicycle and pedestrian access, ferry transportation, aviation, goods movement, and the highway system.

Chapter IX presents the financial outlook for 2010 and 2025. It includes a discussion of the financial resources required to achieve the objectives set forth in *Transportation Choices 2025*.

Chapter X discusses the emerging initiatives of the New Jersey Department of Transportation and NJ TRANSIT. This chapter looks at how the principles of context sensitive design are changing the way transportation improvements are made, and discusses ways in which increased access to transit can actually complement ongoing community revitalization efforts. In addition, the chapter presents an urban investment strategy and a framework for addressing environmen-

tal justice, and details ongoing efforts to preserve and enhance the environmental quality of the state.

Chapter XI addresses the crucial question of how this long-range plan will be implemented. It discusses the roles and responsibilities of the various stakeholders - from NJDOT, NJ TRANSIT, and their partners to municipal and county officials, special interest groups, policy makers and private citizens - in enacting the vision contained in *Transportation Choices 2025*.

The last two chapters, Chapters XII and XIII, set forth criteria for identifying the progress of the plan and describe the "living plan" concept by which this document, and the insights contained herein, can be adapted to respond to unforeseen circumstances and new trends.✲

II. PLAN FRAMEWORK

MISSION STATEMENTS

Transportation in New Jersey requires our attention to make our state an even better place to live and work. To this end, the New Jersey Department of Transportation has adopted as its mission "to deliver a safe, reliable, affordable and an environmentally responsible system that is considered to be the best - every day and in every way - by those who live, work, play and invest in New Jersey."

The mission of NJ TRANSIT, New Jersey's statewide public transportation agency and the nation's third largest public transportation provider, echoes this purpose. NJ TRANSIT strives to be the best public transit agency in the nation, while caring for its customers, providing commitment to the state's communities, and taking pride in its service and itself. To achieve this objective, NJ TRANSIT has adopted as its mission "to provide safe, reliable, convenient and cost effective transit service with a skilled team of employees, dedicated to our customers' needs and committed to excellence."

THE VISION

Transportation Choices 2025 has a foundation built upon the previous statewide long-range transportation plan, *Transportation Choices 2020*. An important element of both plans is their visions of a future New Jersey and transportation's role in that future. The public involvement process undertaken for *Transportation Choices 2025* confirmed that the Vision set forth in the 2020 plan remains true for this update.

The Vision emphasizes linkages among transportation choices and other economic and social objectives, such as fostering a robust state economy linked to global markets, providing affordable housing, revitalizing New Jersey's urban areas, promoting a sense of community, and preserving natural areas and open space.

A Vision For New Jersey - A View From 2025

New Jersey's citizens enjoy an enviable quality of life, with greater choice, access, and opportunity. The state is widely heralded as a leader in forging successful community and economic development patterns. These patterns, combined with an advantageous location, have made New Jersey a leading competitor in the global economic market. New Jersey's strong economy provides jobs for the labor force's many segments. The state's diverse service sector includes goods movement, tourism, and research. The state's manufacturing sector includes advanced, clean, energy- and resource-efficient technologies, as well as innovative low-tech operations. The state's centerpiece of investment is based on fostering liveable communities of every size and scale where people choose to live. Development and redevelopment patterns follow a more compact form promoted in the *State Development and Redevelopment Plan*, and supported by the transportation policies of *Transportation Choices 2025*.

In 2025, the changes of the past have been harnessed to provide a balanced approach to the future. New Jersey's state, regional, and local policies are aggressively protecting valued natural and historic areas, open space, farmland, and recreational lands. The state has achieved the mandates of the Clean Air Act Amendments, in part through creating an efficient transportation network with a range of choices and connections for those who walk, bicycle, or take buses, trains, automobiles, or planes. Goods movement is a strong component of the state's economy, supported by a multimodal system that connects road, rail, port, and air. New Jersey's citizens are able to travel with greater access and mobility than ever before. New Jersey's major activity nodes are connected to each other, and with neighboring regional centers such as New York and Philadelphia. Transit-friendly centers are being developed that incorporate the liveability of traditional small towns through easy access between homes, shopping, work, services, restaurants, and other amenities. Whether city or suburb, new or redevelopment, new comprehensive and coordinated planning processes have proved to be instrumental in creating an improved quality of life, from preserving natural resources to saving money, preventing crime, reducing alienation from public life, and fostering greater tolerance and civility.

Transportation choices made in the early part of the 21st Century have been crucial to the successes New Jersey has achieved in 2025, and will achieve in the years beyond. Transportation decisions and investments are coordinated with land use and other public investment decisions, private initiatives, and public-private partnerships to guide new development and redevelopment. These choices, and the coordinated approach, spur both desirable growth and desirable patterns of growth. Transportation infrastructure invest-

ment decisions - whether to invest in maintenance, replacement, expansion, or a higher quality of transportation service management - make the state's transportation networks more efficient and effective.

Between the reality at the turn of the century and the vision for 2025, a desire and a willingness to change brought an atmosphere of energy and innovation to solving problems. To achieve these changes, a greater number of constituencies were part of finding and implementing the solutions. The public became an active participant in the decision-making process, informed about transportation needs, costs, and benefits. Necessary changes were made in the organizational culture of transportation agencies, and state government in general. Agencies and transportation providers began by recognizing that the needs of affected constituencies are a crucial component in the decision-making process. This new partnering between providers and consumers generated the political will necessary to provide stable transportation funding and allow consistent, long-term investments around the goals reached by consensus.

GOALS AND OBJECTIVES

Transportation Choices 2025's goals and objectives provide structure to direct us toward the Vision. The updated plan's goals and objectives are built upon the foundation laid in the previous statewide long-range transportation plan and are consistent with those of other significant planning documents in New Jersey, including the *State Development and Redevelopment Plan*, NJDOT's *Capital Investment Strategy*, and the three metropolitan planning organizations' Regional Transportation Plans. All these documents, along with the public involvement process, were used to update the goals and objectives for *Transportation Choices 2025*.

The goals are broad concepts that, when realized, will create the New Jersey and the transportation system we desire. The objectives nested under each goal are more specific, achievable improvements that advance a particular goal. When linked with the performance measures identified in *Transportation Choices 2025*, they will serve as a basis for evaluating progress in implementing the plan, moving New Jersey towards its goals and the Vision for 2025. The goals and objectives collectively address seven critical areas for the users of New Jersey's transportation system.

I. Maintain and Preserve Our Transportation System for Present and Future Generations

- Achieve and maintain a state of good repair on all elements of our transportation system to ensure maximum useful life
- Eliminate the backlog of deficiencies on all elements of transportation infrastructure
- Maintain the multimodal system on a normal replacement cycle
- Implement a full maintenance program for all transportation and transportation-related infrastructure

II. Improve the Safety and Security of the Transportation System

- Reduce the rate of motor vehicle crashes, fatalities, and injuries on state highways through the implementation of a countermeasure program
- Reduce bicycle and pedestrian fatalities and injuries on state highways through the implementation of a countermeasure program
- Improve intermodal safety where modes intersect such as at highway railroad crossings, etc.
- Improve the safety of commercial vehicles, rail facilities, and public transportation vehicles and facilities (bus, train, and paratransit)
- Improve the environment of transit stations and facilities, including better passenger information resources, permitting safer, more secure use of these facilities by transit customers

III. Improve the Effectiveness, Efficiency, and Attractiveness of Transportation Services Responsive to the Needs of the Customer

- Reduce travel time and delays
- Improve reliability
- Provide affordable transportation services
- Increase convenience for transportation users
- Improve comfort and amenities for transportation users
- Make access to the transportation system easier
- Encourage greater energy efficiency

- Reduce crime and the perception of crime on the transportation system

- Raise the quality and increase the productivity of the transportation system, while reducing costs

IV. Improve the Process of Providing Transportation Facilities and Services

- Involve the customer and host community in the process of service and system development and use

- Provide adequate information and public education to encourage informed customer/stakeholder participation in decision-making

- Create regional and local linkages for transportation and land use development decisions

- Establish partnerships among all levels of government, and with the private sector, to provide transportation improvements

- Develop and use both proven and innovative technology

- Provide a stable, dedicated, and adequate source of funds for transportation

V. Promote Economic Development

- Improve access to more job opportunities

- Provide for more cost-efficient movement of goods

- Upgrade intermodal facilities and access to them

- Improve access to passenger and freight facilities to serve international markets

- Stimulate tourism

- Encourage development/redevelopment around transit facilities

VI. Improve the Quality of Life for Users of the Transportation System and Those Affected by Its Use

- Improve safety on the transportation system

- Meet or exceed environmental standards

- Provide mobility for all segments of the population

- Provide additional transportation choices

- Reduce stress associated with traveling in the state

- Reduce the need for travel by use of single-occupancy vehicles

VII. Use Transportation to Shape Desired Development Patterns Consistent with the State Development and Redevelopment Plan

- Invest to support and strengthen liveable communities to focus growth and development

- Preserve and protect open space and environmentally sensitive areas

- Advance development patterns and land uses that can support a greater range of transportation services

BUILDING BLOCKS FOR THE PLAN

Along with the vision, goals, and objectives outlined above, the building blocks for the plan include ideas and commitments expressed in a number of other policy documents, as well as information gained from technical analyses specifically undertaken to inform *Transportation Choices 2025*. This long-range plan presents an integrated approach to transportation investments for three time periods: a five-year capital program, a programmatic element through 2010, and the long-range strategic direction element for 2025. While all these plan components draw on a common foundation, each provides a different emphasis suitable to the requirements of short-range, medium-range, and long-range planning.

2005 Element

The five-year element is based on the Transportation Capital Program which was jointly prepared by NJDOT/NJ TRANSIT for the years 2000-2005. The Capital Program includes commitments drawn from the NJDOT *Capital Investment Strategy* and is consistent with long-range goals. The Capital Program is prepared in coordination with the three MPOs and reflects detailed decision-making concerning the projects and initiatives needed to implement the MPO long-range plans for each region of the state as well as statewide goals and objectives.

The Transportation Capital Program is the product of extensive deliberation and outreach. It includes improvements to state highways, rail and bus systems, local transportation, airports, intermodal goods movement, and transportation and economic development projects. A critical emphasis of the program is the preservation and maintenance of the state's existing transportation systems, with projects including the rehabilitation of deteriorated bridges, rail trackage, and highway drainage improvements, and replacement of outworn transit vehicles. The five-year program also includes major initiatives to improve safety at high-accident locations, improve some of the most heavily congested highway locations, and improve pedestrian safety, as well as funds for bicycle facilities and local bicycle and pedestrian improvements.

2010 Element

The building blocks for the 2010 programmatic approach include *New Jersey FIRST*, the Governor's Vision for transportation released in 1998, and the closely related NJDOT *Capital Investment Strategy* (CIS), a twelve-year planning document also prepared in 1998 and updated in 2000. The top priority of the Governor's Vision and the CIS is to fix the existing transportation system, including actions to reduce the backlog of structurally deficient bridges and to upgrade transit stations and equipment. *New Jersey FIRST* and the CIS also call for measures to improve safety and to relieve congestion, including travel demand management strategies and strategic highway improvements at the state's most congested locations. Expanded community transit initiatives at the county level are also part of the Governor's Vision.

The 2010 element also reflects internal strategic planning work undertaken by NJ TRANSIT. It calls for the implementation of strategic mobility projects, such as rail line extensions and improved bus facilities to support increased bus service. Like the 2005 element, the 2010 element also calls for airport improvements and freight initiatives, including rail freight infrastructure improvements drawn from the New Jersey State Rail Plan prepared in 1999. In addition, the 2010 element builds on the results of two technical efforts undertaken for this plan: a study of the transportation needs of the state's seven major urban centers (Urban Supplement), described in Chapter V, and a statewide scenario analysis of congestion and mobility, described in Chapter VIII. The policy direction for the 2010 element also draws on the goals of the New Jersey *State Development and Redevelopment Plan*.

2025 Element

For the 2025 element of the plan, the approach was necessarily less specific and more strategic in nature, due to the uncertainties a 25-year period presents with respect to changing needs, opportunities, and financial resources. Building blocks for the 2025 element included the Urban Supplement, a statewide scenario analysis, NJ TRANSIT's strategic planning initiatives, and the SDRP, as well as extensive input from stakeholder groups and the public.

The statewide scenario analysis was designed to assess future demands on the transportation system and analyze the strategies that might be needed to accommodate anticipated increases in travel. This involved developing a new analytical methodology to link the results of the three regional MPO travel demand models and to measure the future performance of the transportation system under alternative assumptions.

Scenarios included a travel demand management strategy, a major transit system expansion, an intelligent transportation systems strategy, and a strategy of expanding the most severely congested roadways, as well as combinations of these individual strategies. Additional scenarios assessed the effects of implementing center-based development patterns in New Jersey, as envisioned in the SDRP. A comprehensive multimodal scenario is presented as a starting point for discussion of New Jersey's long-range mobility needs. The multimodal scenario also forms the basis for the projected financial costs of the 2025 element, described in Chapter IX. The scenario provides an overall direction that can be used to support the crafting of regional corridor-level plans, local land use plans, and related policy measures throughout the state. The strategic direction will be further refined and translated into programmatic initiatives through the "living plan" process described in Chapter XIII.

III. OVERVIEW
Inventory and Condition Assessment

New Jersey's transportation system consists of many physical infrastructure elements, including roadways, rail lines, ports, and airports; vehicles (private automobiles, trucks, and public transit fleets); and related facilities such as bus stops, stations, sidewalks, and traffic control systems. This chapter provides an overview of the principal highway, transit, aviation, and freight systems and their usage, as well as selected summary information on system condition.

New Jersey's location at the crossroads between New England, New York, and the lower Middle Atlantic states makes the state a focal point for transportation throughout the Northeast Corridor, and the state serves as a major gateway for domestic and international goods movement. New Jersey is home to more than 8 million people and more than 4 million jobs. Each day travelers drive more than 17.6 million miles for a variety of purposes, ranging from business and personal reasons to recreation and commercial needs. And on a typical day more than 255,000 people ride buses and another 100,000 travel by rail on the third most heavily used public transit system in the nation. Table III.1 summarizes these and other transportation-related statistics for 1998.

Table III.1 - New Jersey Snapshot - 1998

The State of New Jersey
- 8,115,011 residents, 9th largest population in the United States
- 7,799 square miles, 46th largest state
- 1,041 persons per square mile, making it the most densely populated state
- Total employment of 4,009,111 persons
- 2,956,576 household units
- 2.74 persons per household

Transportation Facilities
- 36,000 linear miles of roadway
- 3,301 miles owned by the various state agencies, authorities, and commissions
- More than 90 percent of roadway mileage owned by counties and local governments
- 365 miles of tolled highways
- Nearly 7,000 bridges
- 3 air carrier and 45 general aviation airports
- 4 major passenger rail providers
- 3rd largest US port

Vehicles and Drivers
- 5,563,492 licensed drivers
- 5,780,336 registered vehicles
- 88 percent of driving age population licensed to drive
- More than one vehicle available per licensed driver
- More than one vehicle available per worker
- Nearly two vehicles available per household
- More than 65 billion vehicle miles traveled in 1998, 13th highest total in the US

HIGHWAYS

Roadway Ownership

The State of New Jersey owns only 9 percent of its nearly 36,000 miles of roadway, which is well below the nationwide average of about 20 percent. This includes 2,331 miles owned by NJDOT, 399 owned by the four independent authorities and commissions (the New Jersey Turnpike Authority, New Jersey Highway Authority, South Jersey Transportation Authority, and Palisades Interstate Parkway Commission), and 571 miles owned by various other state agencies. However, these state roadways take the majority of travel. This concentration of travel on a small portion of the overall highway network accounts, in part, for the chronic congestion experienced by many motorists. Almost all of the remaining roadways, more than 32,600 miles, are owned by various counties and local governments.

Total roadway mileage in the state has grown slowly during the past three decades, increasing just 12 percent since 1970. Numerous constraints, including financial limitations and environmental and other public concerns, have inhibited the construction of new roadways. Table III.2 shows the state's total route mileage in 1998, grouped according to functional classification (a commonly used system denoting the character of service a roadway is intended to provide). Almost two-thirds of the state's roads are in urban areas. The vast majority, more than 91 percent, are collectors and local streets, designed to provide local access and serve short trips at relatively low speeds. Comparatively few routes provide for travel at higher speeds over longer distances.

Table III.2 - New Jersey Route Mileage by Functional Classification, 1998

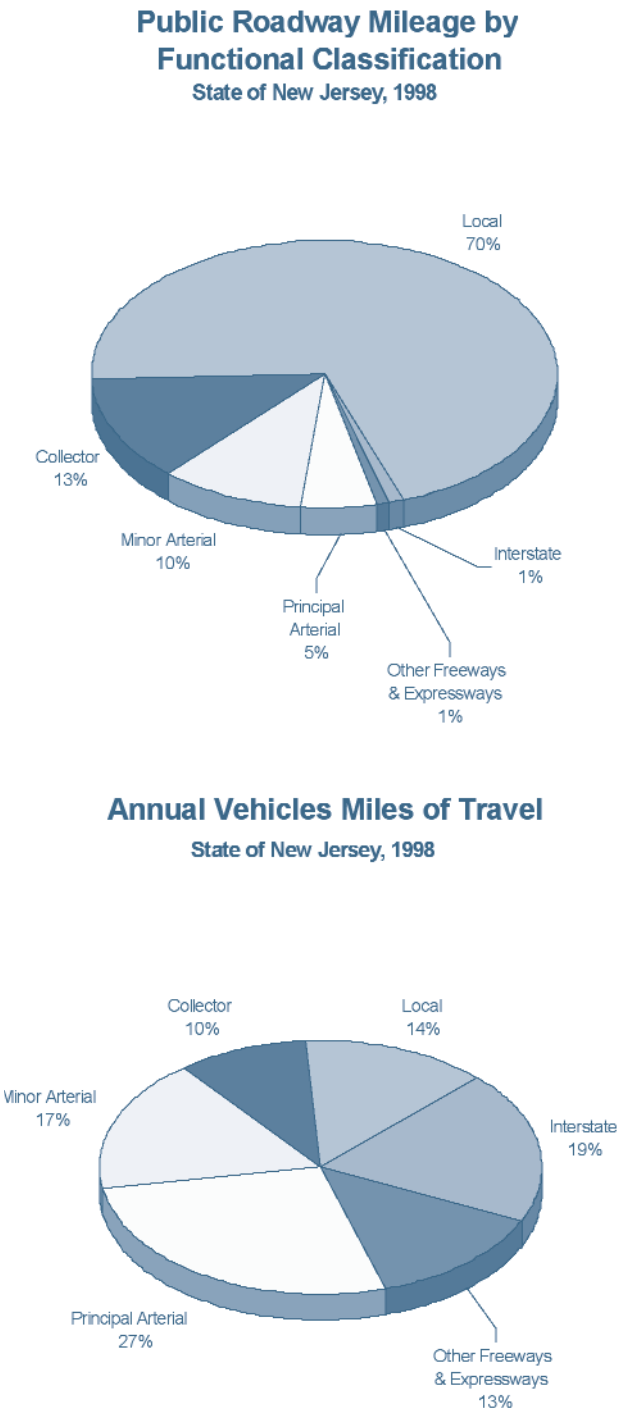
	Rural	Urban	Total	% of Total
Interstate	119	301	420	1.2%
Freeway and Expressway		312	312	0.9%
Other Principal Arterial	532	1,309	1,841	5.1%
Minor Arterial	490	3,081	3,571	9.9%
Collectors	2,423	2,164	4,587	12.8%
Local Streets	8,144	17,045	25,189	70.1%
Total	11,708	24,212	35,920	100%
% of Total	32.6%	67.4%		

Source: FHWA Table HM-220; NJDOT

Vehicle miles of travel (VMT) represents an estimate of the total miles driven by all motorists on an annual basis and is generally considered the key statistical measure of motor vehicle travel. The highest classification roadways - interstates, freeways, and express-

ways - account for only 2.1 percent of the total mileage, yet these roadways carry about one-third of VMT in the state, as shown in Figure III.1.

Figure III.1
Functional Class and Vehicle Miles of Travel



National Highway System

In 1995 Congress designated a nationwide total of more than 160,000 miles of roads as the National Highway System (NHS). Its purpose is to provide an interconnected network of principal travel routes that serve major population centers, international border crossings, ports, airports, public transportation and other intermodal facilities; meet national defense requirements; and serve interstate and interregional travel. The NHS was created to provide for the continued maintenance and repair of those roads most important for both commercial and defense-related purposes. The system consists of the entire Interstate Highway System plus other urban and rural principal arterial roadways. Dedicated funding is provided for these roads of national significance. Map III.1 shows the NHS in New Jersey and connecting roadways in neighboring states.

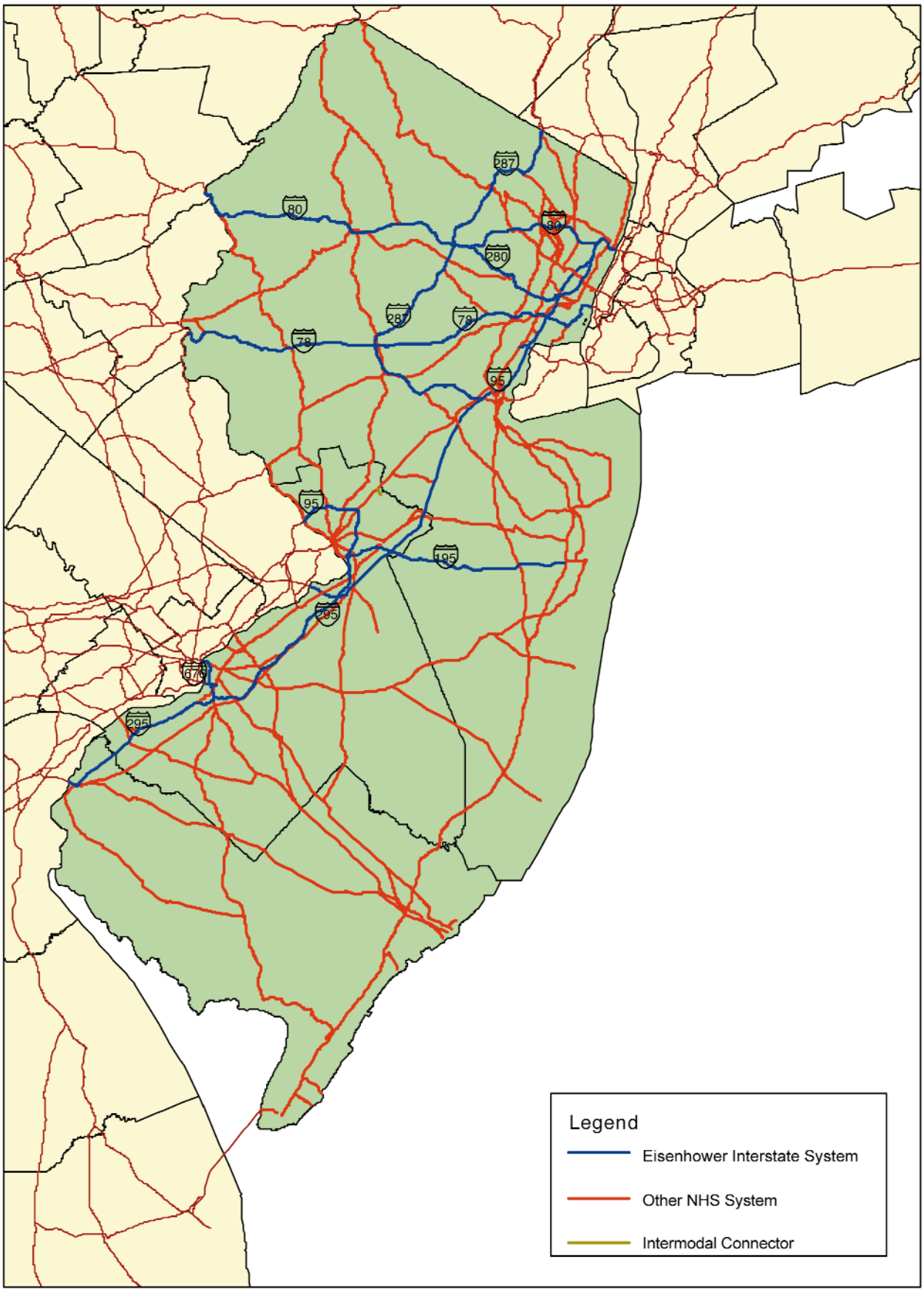
Interstate Connections

Although New Jersey shares its northern border with New York, most of its boundaries are formed by the Delaware River and Bay to the west and south, the Atlantic Ocean to the east, and the Hudson River and Arthur Kill to the northeast. Numerous transportation links between New Jersey and its surrounding states cross a major body of water, requiring a system of 22 bridges, auto and rail tunnels, and a variety of ferries. Virtually all New York crossings operate at or near capacity and additional capacity is crucial to accommodate continued economic growth. Major roadways that do not require water-borne connections are Interstate 287, NJ Route 17, the Garden State Parkway, and the Palisades Interstate Parkway.

Speed Limit

In December 1995, Congress repealed the National Maximum Speed Limit (NMSL), originally established to conserve fuel following the energy shortages of the 1970s. The NMSL set speed limits at 55 mph on urban interstate highways and 65 mph on rural interstate and certain rural interstate "lookalikes." This action returned full authority to set posted speed limits on all public roads once again to state and local governments. Since 1995, most states have raised, and in some cases eliminated, speed limits on certain roadways. New Jersey followed suit in May of 1998, when the speed limit on a total of 475 miles of interstate, state, and toll road highways was raised to 65 miles per hour. The list of applicable highways was developed by NJDOT in consultation with the

MAP III.1 - NATIONAL HIGHWAY SYSTEM - STATE OF NEW JERSEY



state Legislature, and the change in speed limit was designed as a trial program. An evaluation period is being used to determine whether any adverse impacts occur related to the higher speeds, particularly in terms of safety. Roadways affected by the trial program include Route 18, Route 55, I-78, I-80, I-195, I-287, I-295, the New Jersey Turnpike, the Garden State Parkway, and the Atlantic City Expressway.

High-Occupancy Vehicle Facilities

High-occupancy vehicle (HOV) facilities have been used in a number of states as a means of relieving traffic congestion and improving air quality. The objective is to entice single-occupant vehicle (SOV) drivers into ridesharing by providing travel time savings and more predictable trip times. Currently, New Jersey operates HOV facilities on the New Jersey Turnpike and an exclusive bus lane on the approach to the Lincoln Tunnel. HOV facilities previously established on I-80 and I-287 have now been converted to general-purpose use.

The New Jersey Turnpike HOV lanes operate on the outer roadway's inner lane between Interchange 11 in Woodbridge and Interchange 14 in Newark. The northbound HOV operates weekdays between 6:00 AM and 9:00 AM. The southbound HOV operates between 4:00 PM and 7:00 PM. These lanes are open to passenger cars with three or more persons and buses and motorcycles regardless of the number of passengers. The Lincoln Tunnel Express Bus Lane (XBL) is a dedicated contra-flow bus lane that operates weekday mornings. Each day approximately 1,700 buses, carrying more than 60,000 commuters, use the XBL.

Bicycle Facilities

A significant number of New Jersey's state highways are suitable for bicycling on certain segments. The major factor determining bicycle compatibility is the presence of wide, paved, continuous shoulders. Currently, NJDOT is in the process of identifying additional highway segments which can be made bicycle-compatible. In addition, bicycle-friendly features are incorporated in selected highway improvement projects during the design process.

In addition to on-road designated bikeways and bicycle-compatible shoulders, 47 off-road bicycle facilities are available for cyclists in New Jersey. These facilities include state and county multi-use trails and paved, designated bikeways within parks.

Intelligent Transportation Systems

The primary focus of New Jersey's transportation agencies has shifted from one of construction to the management and operation of existing facilities, placing a greater emphasis on measures for improving the safety, reliability, and efficiency of the existing system. These include a set of techniques known as intelligent transportation systems, or ITS. ITS refers to the application of advanced technologies (sensors, communications, computers, electronics) in an integrated manner for the optimal operation of transportation systems. For New Jersey's highway system this includes such elements as variable message signs (VMS), electronic tolls (E-ZPass), vehicle detection and signal coordination systems, and the improved detection, response and clearance of incidents, as described below.

Advanced Traffic Management/Incident Management Systems

New Jersey has initiated several programs to alert motorists to upcoming traffic conditions and expedite incident response. These include two traffic operations centers (TOCs), located in Mt. Arlington and Mt. Laurel. The TOCs monitor traffic conditions using loop detectors, weather sensors, and closed-circuit TV cameras and deliver real-time information to motorists about congestion or emergencies, as well as coordinating response teams when incidents occur. They communicate with motorists using variable message signs and radio advisories.

In addition, the New Jersey Turnpike Authority (NJTA) uses a network of loop detectors, cameras, and VMS to manage traffic operations on the Turnpike. An operations center monitors a graphic display of the system, dispatches service, and communicates with more than 200 changeable message signs and other devices over radio links using a universal protocol.

TRANSCOM, the tri-state regional agency which has assumed responsibility for coordinating many of the technological developments in New Jersey, New York and Connecticut, is developing an Interagency Remote Video Network (IRVN) that will provide the hardware, software, and communications network to support sharing "full-motion" video among twelve of its member agencies. Another project, TRANSMIT, is being used to evaluate the use of automatic vehicle identification (AVI) technology as an incident detection tool on the Garden State Parkway (as well as on the New York Thruway).

In addition, rapid response patrols can help to significantly reduce incident-related delay. Motorist aid call boxes offer connections to state police on the Atlantic City Expressway, I-80, I-280, I-95, and I-295. Emergency service patrols are currently operated by NJDOT on Routes 42, 55, 76, 80, 280, 295, and 676, and by NJTA on some of its roadway sections. This fleet of vans, which patrols the major commuting routes during the peak periods, is equipped to handle minor auto repairs, push disabled vehicles from the travel lanes, and serve as support for major incidents.

Traffic Signal Systems

NJDOT continues to increase the number of coordinated signal systems throughout the state each year. Closed loop computerized signal systems have been completed and are operational on Routes 18, 9, 37, 1 & 9, and 73, and the signal system on Route 1 is nearly complete. Several more systems are in the planning, design, or construction stages. They all employ state-of-the-art technology for signal systems, video surveillance, VMS, highway advisory radio, and advanced traffic control software using fiber optic communications to improve mobility along corridors.

Electronic Toll and Traffic Management

The introduction of electronic toll collection is a significant innovation in travel technology, one designed to reduce traffic congestion and improve air quality and traveler convenience by eliminating bottlenecks at toll booths and plazas. It is estimated that electronic toll collection can increase toll facility throughput by 250-300 percent per lane over conventional toll collection methods.

During 2000 this technology, known as E-ZPass, was introduced on the New Jersey Turnpike and the Garden State Parkway. The E-ZPass system also operates on the Port Authority of New York and New Jersey bridges and tunnels, the Pennsylvania Turnpike, and the Atlantic City Expressway. New Jersey is participating with other states in a regional effort to make a uniform, integrated E-ZPass available throughout a 415-mile system of roads, tunnels, and bridges in the northeastern United States.

Trends in Highway System Usage

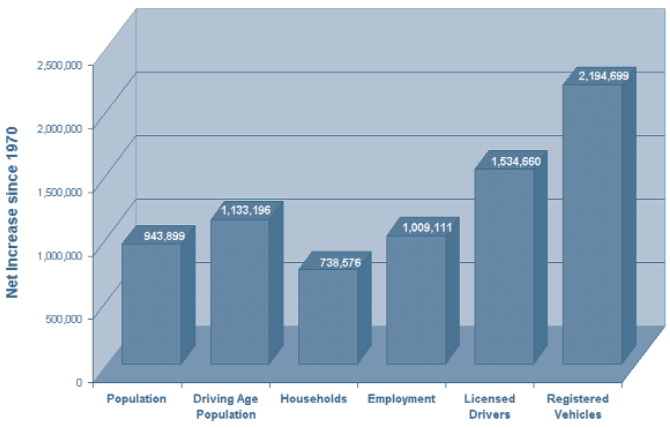
Total vehicle miles traveled in New Jersey has grown by 55 percent since 1970 to almost 65 billion miles per year. This rate of growth, about 1.5 percent per year, is less than the national average of more than 3 percent per year over the same period, due in part to the slower growth of travel demand factors such as the number of households, workers, and licensed drivers in New Jersey. Still, New Jersey's VMT has significantly outpaced its population growth. Other important factors promoting increased driving are the growth of the labor force, a greater number of licensed drivers, more widespread automobile ownership, and an increase in low-density, auto-oriented land uses.

As Figure III.2 shows, over the past three decades New Jersey has added 2.2 million registered vehicles and 1.5 million drivers, but fewer than 950,000 people and 1,133,000 people of driving age. The number of jobs has risen about as much as population, even though only about half of the population is employed.

New Jersey boasts nearly one vehicle for every person old enough to drive, two for every household, more than one per licensed driver, and almost 1.5 per job. Together these data indicate that the need to drive, and the demand for access to a vehicle, has been largely fulfilled among the general population.

Figure III.2

Net Change in Factors Contributing to Travel Demand, 1970-1998



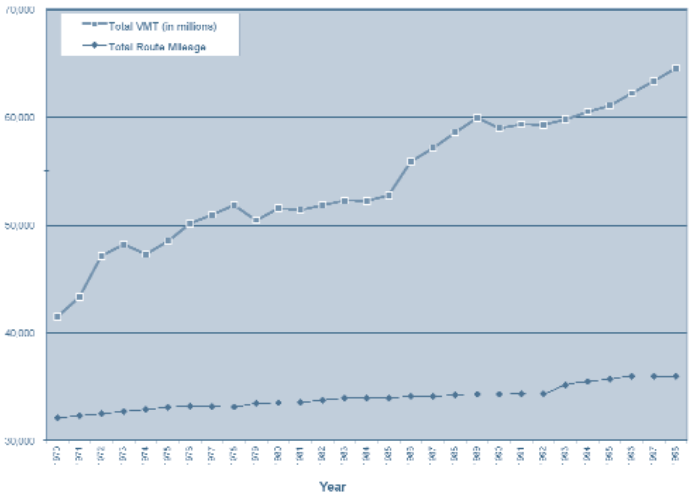
The past decade has seen some leveling off in the growth in numbers of licensed drivers, driving-age population, and automobile registrations. The number of licensed drivers in New Jersey reached a peak of more than 6 million in 1987, as did the driving age population. At this zenith, nearly 80 percent of the state's residents were licensed to drive, and households averaged more than 2.2 drivers each. Since then, the number of drivers per household has declined to slightly less than two. Contributing factors in this leveling off of growth in driving include the aging of the state's population and lower birth rates. Poverty also continues to inhibit vehicle ownership among the lowest-income groups, including many recent immigrants.

Consequently, the growth of VMT has slowed in recent years. Annual travel on the nation's highways grew by about 38 percent during the 1970s, 37 percent in the 1980s, and just 22 percent in the 1990s. In New Jersey, the rate has dropped from 22 percent in the 1970s to 16 percent in the 1980s and 10 percent in the 1990s. Although annual VMT per vehicle is actually down slightly since 1970, most other per capita VMT measures continue to grow. This includes annual VMT per resident, driving age population, household, licensed driver, and job. Nearly all are significantly higher than 30 years ago, which further reflects the continued growth in VMT despite relatively small changes in population.

Despite this slowing of growth, New Jersey's roads have not kept pace with VMT. The 12 percent increase in roadway mileage is significantly lower than the 55 percent increase in VMT since 1970, as shown in Figure III.3. Roadway mileage has, in fact, trailed all the leading indicators of travel demand discussed in this section, with the exception of one - total population.

Figure III.3

Growth in VMT vs. Route Mileage, New Jersey 1970-1998



This has led to a growing burden on New Jersey's roads. Data for 1996 show that VMT per lane mile is more than 2.5 times the national average, indicating much higher levels of demand and congestion on the state's roads than that experienced by the average American. While roadway mileage measures only linear distance, lane mileage better reflects the true capacity by taking into account the number of lanes on each roadway segment. On an annual basis, New Jersey's roads carried 802,828 vehicle-miles of travel per lane mile in 1996, compared to the national average of 303,528, a ratio of 2.64 to 1.

Condition Assessment

In recent years, significant progress has been made in tracking the condition of New Jersey's transportation infrastructure through the implementation of a number of information management systems, some computer based and some manual. This section provides an overview of selected condition information, including the condition of the state's bridges and pavement as well as congested highway conditions and highway safety.

Bridge Condition

There are nearly 7,000 bridges in New Jersey. NJDOT employs a Bridge Management System (BMS) to maintain an inventory of all bridges in the state with a span over 20 feet, listing the physical characteristics, condition, and ownership of each bridge. Bridges are inspected periodically to ensure that each bridge can safely carry vehicles at the post-

ed truckload. The bridges are rated for their structural condition as well as functional characteristics. Information on structural condition is also combined with bridge size and roadway type to help determine priorities for bridge improvement projects.

A bridge's structural condition is given a rating between 9 (excellent) and 0 (representing a failed condition). A bridge is deemed structurally deficient if its deck, superstructure, substructure, or culvert is rated 4 (poor) or less, or if the overall structure evaluation for load capacity or waterway adequacy is rated 2 (critical) or less. Structural deficiency does not necessarily mean that a bridge is unsafe. It could mean that the bridge is unable to handle the vehicle loads or speeds that would normally be expected on the roadway where the bridge is located, and that the bridge is posted to indicate these limitations.

A bridge is classified as functionally obsolete if the deck geometry, underclearances, approach roadway alignment, overall structural evaluation for load capacity, or waterway adequacy is rated as 3 (serious) or less. Functional obsolescence could mean the width or vertical clearance of the bridge is inadequate for current needs. Bridges become functionally obsolete due to highway improvements, such as lane additions on the approaches to the bridge, or changes in freight movement technology or practice.

Table III.3 summarizes bridge conditions for the state as a whole as well as for the three regions in New Jersey defined by the MPO coverage areas. Overall, 14 percent of New Jersey's bridges are considered structurally deficient and 20 percent are functionally obsolete.

Table III.3 - Bridge Conditions by Region

	DVRPC		SJTPO		NJTPA		Statewide	
Bridge	Number	% of Total	Number	% of Total	Number	% of Total	Number	% of Total
Structurally Deficient	176	13%	92	17%	681	13%	949	14%
Functionally Obsolete	246	18%	83	15%	1,071	21%	1,400	20%
Neither StructurallyDeficient/ Functionally Obsolete	929	69%	377	68%	3,341	66%	4,647	66%
Totals	1,351	100%	552	100%	5,093	100%	6,996	100%

Source: NJDOT Bridge Management System, July 1, 2000

Pavement Condition

NJDOT also maintains a Pavement Management System (PMS) database with information on the current condition of pavement throughout the state. The PMS is updated every two years; the 1997 database was used for this report. The PMS includes all interstate, toll, state, and US highways, plus significant 500- and 600-level county roads and some local routes of regional significance.

The rating system used to rank the roadways is based primarily on two criteria: ride quality and surface distress. The Ride Quality Index (RQI) describes the comfort level by measuring roughness, and the Surface Distress Index (SDI) compiles and measures the severity of surface distresses such as cracking, patching, shoulder condition, shoulder drop, faulting, and joints. The average rut depth (RD) is also taken into account, but is of lower priority. A final pavement rating is calculated from RQI and SDI to determine the quality of pavement. The ratings, in conjunction with roadway type, are used to determine priorities for resurfacing projects throughout the state.

Table III.4 summarizes the pavement condition data for the state overall and by region. It shows that roughly half the state's major highway mileage falls in the good/very good category and half falls in the fair or poor category. A regional distinction can be seen in which the majority of highway mileage in central and southern New Jersey (the DVRPC and SJTPO regions, respectively) is in good or very good condition, while only 36 percent of the northern New Jersey (NJTPA) mileage is in good or very good condition.

Table III.4 - Highway Pavement Conditions by Region

	DVRPC		SJTPO		NJTPA		Statewide	
Pavement Conditions	Miles	% of Total	Miles	% of Total	Miles	% of Total	Miles	% of Total
Very Poor	6.8	1.3%	3.4	0.8%	17.4	1.6%	27.6	1.3%
Poor	63.2	11.8%	49.2	12.0%	353.6	32.0%	466.0	22.7%
Fair	104.0	19.4%	106.6	25.9%	339.0	30.7%	549.6	26.8%
Good/Very Good	362.8	67.6%	252.2	61.3%	395.6	35.8%	1010.6	49.2%
Totals	536.8	100.0%	411.4	100.0%	1,105.6	100.0%	2053.8	100.0%

Source: NJDOT Pavement Management System, 1997

Highway Congestion

A primary source of information on highway congestion in New Jersey is NJDOT's Congestion Management System (CMS). Version 1.2 of the CMS contains conditions for 1990 and more recent years and offers calculated data such as volume-to-capacity ratio, average weekday daily traffic, and daily truck volumes. These data were mapped to the NJDOT half-mile Geographic Information Systems base map and evaluated. Two key measures of effectiveness that show a clear picture of how the state's roadways operate are the level of congestion and the duration of congestion.

Level of congestion can be measured based upon the maximum volume-to-capacity (v/c) ratio. The v/c ratio is a measure of operational performance and indicates how well a given roadway segment is able to accommodate demand. A v/c ratio below 0.75 (*Under Capacity*) suggests that a roadway is operating well and has capacity available to accommodate traffic growth. A v/c ratio approaching 1.0 (*Approaching Capacity*) suggests that a roadway is operating poorly with little capacity available for growth. A v/c ratio over 1.0 (*Over Capacity*) suggests that a roadway is operating at failing conditions with no available capacity for growth.

As shown in Table III.5, CMS data for New Jersey indicate that a majority of the state's roadway network is operating at *Under Capacity* conditions on a typical weekday. In the DVRPC region, 72 percent of roadway miles are rated *Under Capacity*, compared to 84 percent in the SJTPO region and 60 percent in the NJTPA region. A small percentage of SJTPO roads operate *Over Capacity* (3 percent), with larger percentages in the DVRPC (11 percent) and NJTPA (15 percent) regions operating at failing conditions during the worst peak hour of the day. The conditions summarized here do not reflect seasonal peaks in southern New Jersey, which becomes significantly more congested during the summer. Maps III.2, III.3, and III.4 illustrate these conditions by region.

Table III.5 - Congested Roadways by Region

	DVRPC		SJTPO		NJTPA	
Level of Congestion	Miles	% of Total	Miles	% of Total	Miles	% of Total
Under Capacity	472.50	72%	434.10	84%	1021.74	60%
Approaching Capacity	108.65	17%	65.17	13%	429.28	25%
Over Capacity	70.95	11%	16.50	3%	255.48	15%
Totals	652.10	100%	515.77	100%	1706.50	100%

Source: NJDOT Congestion Management System, Version 1.2

The amount of time a particular route is rated *Approaching Capacity* or *Over Capacity* is another method of quantifying traffic congestion. The Duration of Congestion statistic is a measure of the number of hours per day the v/c ratio is greater than 0.9. For example, a route with a high v/c ratio for only one hour may be less problematic for highway travelers than a route with a moderately high v/c ratio for more than one hour. A higher Duration of Congestion statistic, therefore, indicates a longer peak traffic period and a more serious congestion problem.

The data for Duration of Congestion are averaged to represent a typical day and do not reflect worst-case conditions, seasonal fluctuations, or unusual single-day peaks such as special events, accidents, holidays, or summer travel. As such, this analysis may depict better conditions for a given roadway than those experienced by some travelers.

As shown in Table III.6, New Jersey CMS data indicate that most roadways within the state do not experience congestion for more than one hour per day. The SJTPO region experiences the lowest level of Duration of Congestion - only 2 percent of the region's roadways are congested (have a v/c ratio of >.90) for more than two hours per day. The NJTPA region experiences the most congestion, with 11 percent of the CMS network in this region operating under poor conditions for more than two hours per day. The DVRPC region experience congestion for more than one hour per day on a typical weekday.

Table III.6 - Duration of Congestion by Region

Number of	DVRPC		SJTPO		NJTPA	
Congested Hours	Miles	% of Total	Miles	% of Total	Miles	% of Total
<1	573.34	88%	500.77	97%	1375.60	81%
1 to 2	40.76	6%	4.00	1%	137.37	8%
>2	38.00	6%	11.00	2%	193.53	11%
Total	652.10	100%	515.77	100%	1706.50	100%

Source: NJDOT Congestion Management System, Version 1.2

Highway Safety

In addition to the condition of New Jersey's bridges and pavement, the safety of the highway system is another important element in assessing the performance of the transportation system. In 1999, the most recent year for which complete information is avail-

able, a total of 239,700 motor vehicle accidents were reported statewide. Of these accidents, 65,332, or 27 percent, involved injuries and 605 involved fatalities. A total of 3,274 accidents involved pedestrians, with 58 pedestrian deaths.

As is the case for the US overall, the number of fatal accidents per vehicle mile driven in New Jersey has been decreasing in recent years, due to improvements in automotive safety and other factors. Additional improvements are possible through the application of a variety of countermeasures, including NJDOT's ongoing program of fast-track improvements to the most dangerous intersections throughout the state.

TRANSIT

New Jersey has one of the most extensive public transit systems in the United States. It includes a network of commuter and regional rail, regular-route bus services (both publicly and privately operated), and ferry lines. More specialized programs provide transportation services for persons with disabilities and the elderly and services geared to supporting recreational and employment transportation in various parts of the state.

Passenger Rail System

The primary passenger rail facilities and service providers in New Jersey include NJ TRANSIT, the Port Authority Trans-Hudson (PATH), the Port Authority Transportation Corporation (PATCO), and Amtrak. In addition, SEPTA provides train service between Philadelphia and Trenton on the R-7 line and West Trenton on the R-3 line. Map III.5 depicts the principal passenger rail service in New Jersey.

NJ TRANSIT Rail

NJ TRANSIT operates 591 daily commuter trains serving 161 stations in 137 communities statewide. NJ TRANSIT provides approximately 1.2 billion passenger miles of rail service annually, using a fleet of 928 vehicles. The average fleet age is 18.5 years.

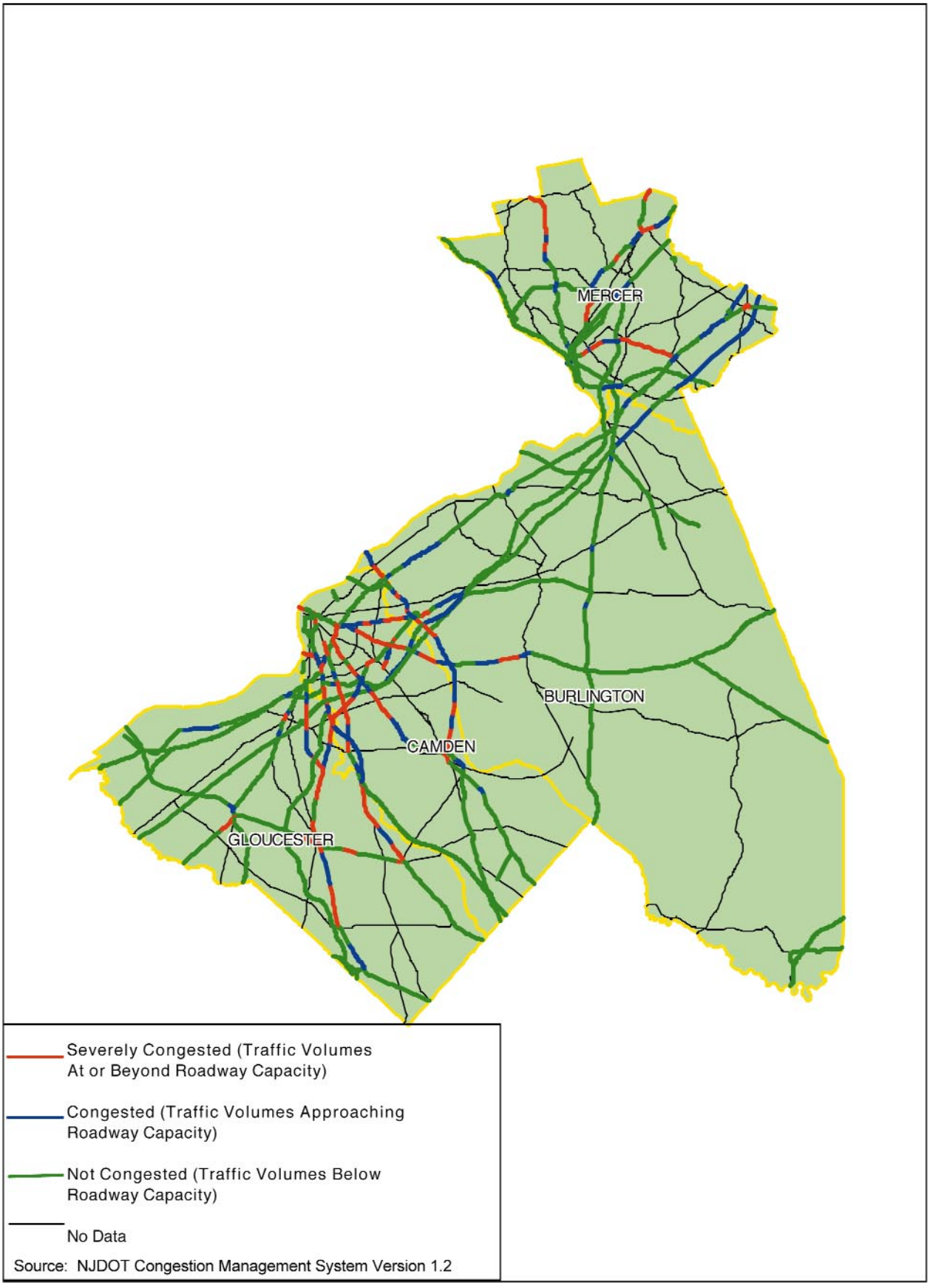
The commuter rail system's 12 lines are grouped into three divisions: the Hoboken Division (which includes lines operating to and from Hoboken Terminal on the Morris & Essex, Main/Bergen, Pascack Valley, and Boonton lines); the Newark Division (includes the Northeast Corridor, North Jersey Coast, and Raritan Valley lines operating to and from Newark Penn

Station, Hoboken Terminal, and New York Penn Station); and the Atlantic City Rail Line (which operates between the seaside resort city and Philadelphia. NJ TRANSIT also provides rail service to and from points in New York State on the Pascack Valley and Port Jervis lines under contract with the Metropolitan Transportation Authority.

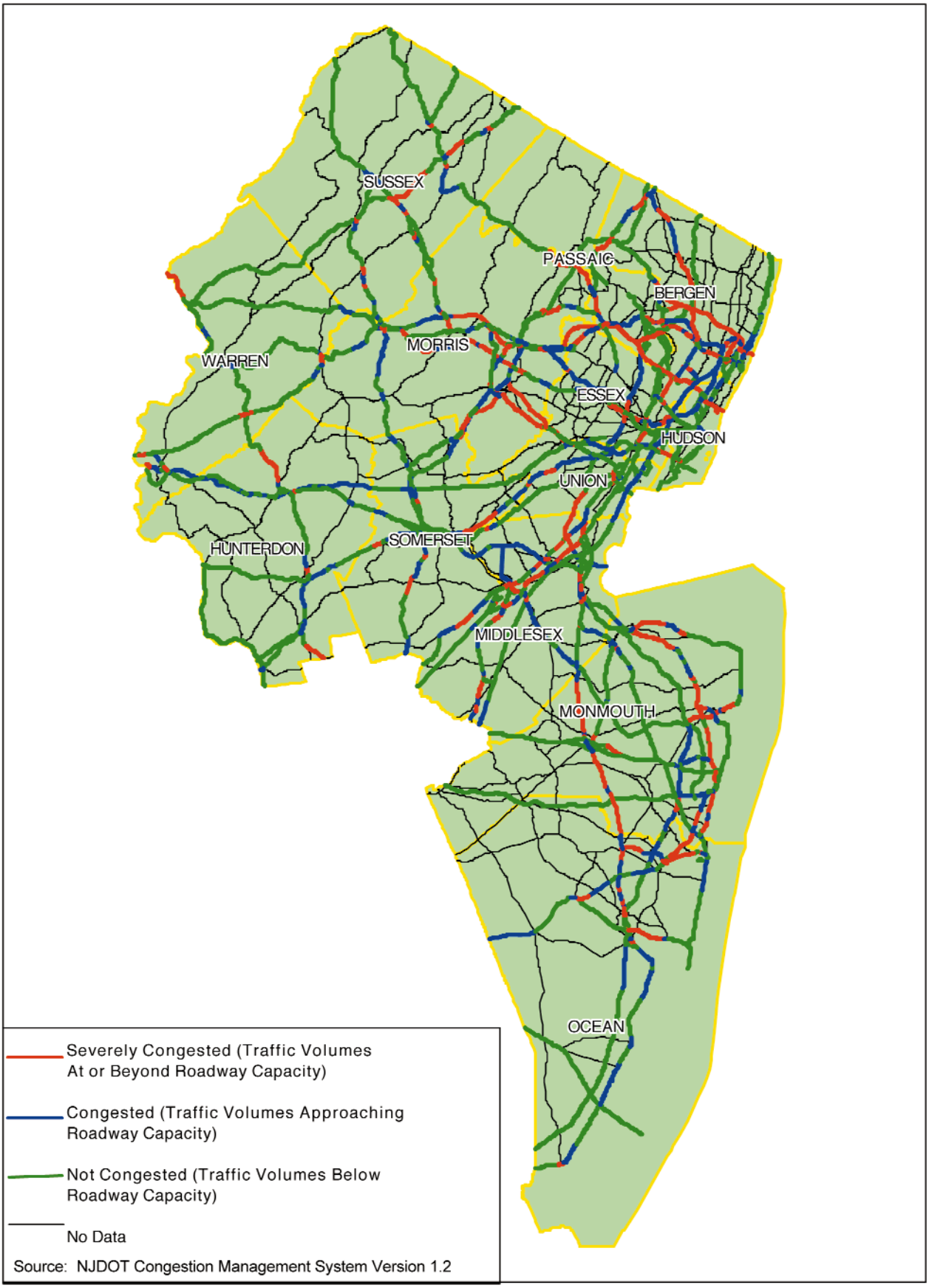
In addition to the commuter rail system, NJ TRANSIT operates the Newark City Subway and the Hudson-Bergen Light Rail Line. The Newark City Subway serves eleven stations on a 4.3-mile route connecting Newark Penn Station with other Newark destinations, with a daily ridership of 17,000. Extensive renovations are currently planned. The first segment of the Hudson-Bergen Light Rail Line opened in April 2000. This segment has 12 stations, including four with park-and-ride facilities, and connects with PATH trains and NY Waterway ferries at Exchange Place, as well as with many NJ TRANSIT buses along the route. The next phase, between Exchange Place and Newport, is scheduled to open early in 2001. The final phase, between Newport and Hoboken Terminal, is scheduled to open early in 2002. The system is designed to eventually span more than 20 miles between Bayonne and Ridgefield.

Many NJ TRANSIT services are interconnected. Transfers to the state's bus system are possible at 123 rail stations. At New York Penn Station, connections are available to Amtrak, the Long Island Rail Road, and the New York City subway system. At Trenton, riders can connect to SEPTA and Amtrak. At Hoboken Terminal, transfers can be made to PATH trains traveling between Hoboken and Jersey City, Newark, the World Trade Center, and midtown Manhattan, and to Manhattan-bound ferry service. At Newark Penn Station, connections to PATH, Amtrak and the Newark City Subway are possible.

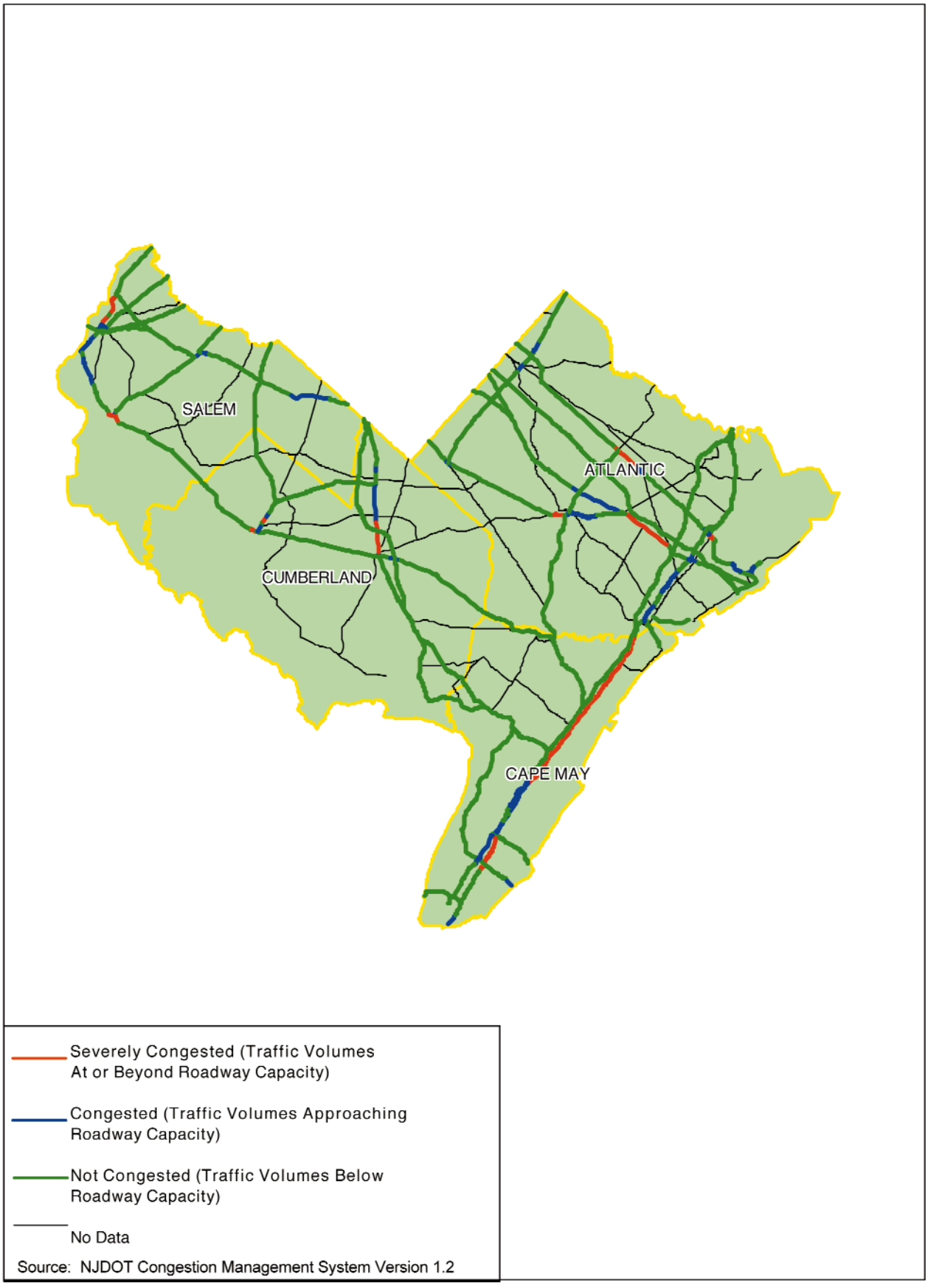
MAP III.2 - DVRPC REGION - CONGESTED LOCATIONS



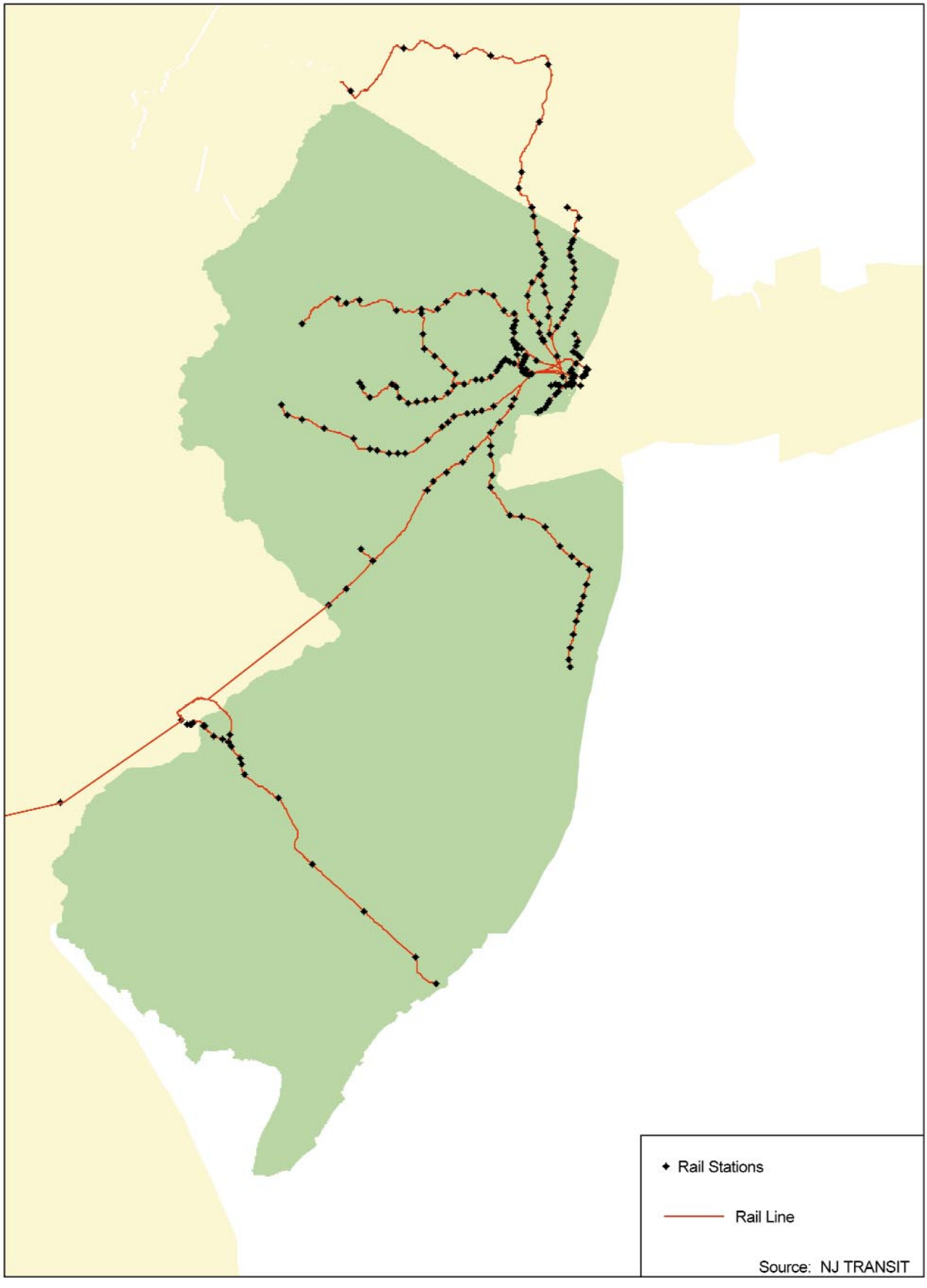
MAP III.3 - NJTPA REGION - CONGESTED LOCATIONS



MAP III.4 - SJTPO REGION - CONGESTED LOCATIONS



MAP III.5 - PRINCIPAL PASSENGER RAIL SERVICE - STATE OF NEW JERSEY



On South Jersey's Atlantic City Rail Line, connections can be made to Amtrak and SEPTA at Philadelphia's 30th Street Station.

PATH

The PATH system carries over 70 percent of all passengers entering New York City by rail from New Jersey. Approximately 220,000 passengers use PATH each weekday, more than two-thirds of these during the morning and evening peak hours. PATH is the only rail service that provides a direct connection between New Jersey and the employment hub of lower Manhattan, one of the largest employment destinations in the world. PATH operates more than 1,100 trains daily on a frequent schedule. With a fleet of 342 vehicles, it provides approximately 300 million passenger-miles of service annually on 28.6 route miles. The average fleet age is 26 years.

PATCO

A subsidiary of the Delaware River Port Authority, the Port Authority Transit Corporation of Pennsylvania and New Jersey (PATCO) operates a 14.2-mile rail line between Lindenwold, NJ, and Center City Philadelphia. Designated the PATCO Hi-Speedline, this service has a total of 13 stations: nine in New Jersey and four in Philadelphia. Transfers to SEPTA are possible at three stations in Philadelphia. The NJ TRANSIT Atlantic City Rail Line, which originates and terminates at 30th Street Station in Philadelphia, stops at Lindenwold for transfers to PATCO. PATCO provides approximately 95 million passenger-miles of service annually with a fleet of 121 vehicles. The average fleet age is 25 years.

Amtrak

Amtrak service caters to mostly long distance travel and its trains operate over more than 22,000 route miles nationally. In New Jersey, Amtrak operates the Northeast Corridor line, which is shared by NJ TRANSIT between Trenton and New York Penn Station. Stations in New Jersey include Trenton, Princeton Junction, New Brunswick, Metropark, and Newark.

Bus Services

NJ TRANSIT Bus Service

NJ TRANSIT operates an extensive network of routes throughout New Jersey and connects to New York City and Philadelphia via commuter, local, and minibus services. Commuter service covers New York City, Philadelphia, and Newark. Additionally, local service is provided in Newark, Elizabeth, Paterson, Atlantic City, Camden, and Trenton, and in Hudson, Morris, Bergen, Middlesex, and Monmouth counties. Minibuses serve as feeders to rail stations and provide transport in lower-density areas. Map III.6 depicts NJ TRANSIT's bus service coverage across the state.

NJ TRANSIT bus ridership has reached nearly 470,000 daily, increasing 15 percent in the past several years. The fleet consists primarily of 40-foot vehicles. NJ TRANSIT operates more than 1,600 peak-hour vehicles from 16 garage locations, covering 178 routes. An additional 68 routes are contracted to private carriers. NJ TRANSIT provides approximately 850 million passenger-miles of bus service annually. Including private carriers, the total fleet consists of 2,959 vehicles. The average age of NJ TRANSIT's bus fleet is 11 years.

Private Bus Carriers

Private carriers operate a number of independent commuter bus routes in New Jersey in addition to operating on a contract basis to NJ TRANSIT. Most of these independent routes serve New York City destinations. Private bus carriers operating in New Jersey include Greyhound, Bieber, Academy, Coach-USA, DeCamp, Lakeland, Martz, Red and Tan, and Transbridge.

Access Link and Paratransit

NJ TRANSIT's Access Link provides curb-to-curb paratransit service along regular bus routes for people whose disability prevents them from using existing local bus service. In addition, each of the 21 counties in New Jersey provide county-based paratransit service for senior citizens and people with disabilities. NJ TRANSIT assists in the provision of accessible services by the counties and non-profit agencies through a variety of state and federal funding sources.

Park-and-Ride Facilities

New Jersey has more than 250 park-and-ride facilities available to commuters, including 51 lots operated by NJ TRANSIT and 38 operated under the jurisdiction of NJDOT, the New Jersey Highway Authority or the New Jersey Turnpike Authority. Most of the remaining facilities are either municipal or privately owned. The park-and-ride lots range from joint use on commercial properties to exclusive park-and-ride facilities.

Bicycle Access to Transit

One way to both encourage transit use and provide improved accommodations for bicycling is to make transit accessible to bicycles. Currently, NJ TRANSIT promotes bicycle access though the Bike Aboard Program, which enables passengers to bring bicycles aboard trains on most NJ TRANSIT lines during off-peak periods. As of May 2000, NJ TRANSIT no longer requires bicycle permits. Bicycles are also allowed aboard PATH, PATCO, and SEPTA trains during off-peak travel periods, with certain limitations, as well as on some Amtrak trains by prior reservation. NJ TRANSIT provides bicycle parking facilities at each of its rail stations, typically in the form of bicycle racks. The agency has also installed bicycle lockers at some stations that are available on a lease basis. NJ TRANSIT has also begun a pilot program to allow cyclists to place bicycles on racks located on the fronts of buses.

Advanced Public Transit Management

Various agencies in New Jersey are installing advanced public transit management systems to improve transit service in the state. Such systems are another application of intelligent transportation systems, as described in the section on highways. The following activities are planned or under way:

- In Newark, NJ TRANSIT is implementing a vehicle tracking system for over 1,000 buses for scheduling and operational purposes.
- TRANSCOM is considering options for alternate bus routing systems.
- An effort is underway by New Jersey Highway Authority (NJHA) and transit agencies to provide priority handling of buses at the Garden State Parkway toll plazas.
- NJHA/NJDOT/FHWA funding is being used to develop a bus inspection (safety and emissions) and credential handling system in Herbertsville, NJ.

FERRY SERVICE

Fifteen ferry routes are currently operated between New York City and New Jersey by five different operators. According to NJ TRANSIT estimates, these ferries carry a total of approximately 30,000 passengers daily.

- New York Waterway operates ferry service from a variety of locations including Hoboken, Jersey City, and Weehawken to the World Financial Center; Pier 78 in Midtown, and Pier 11 at Wall Street. They also operate seasonal services from Weehawken to Yankee Stadium and Shea Stadium.
- The Port Authority of New York and New Jersey (PANYNJ) co-sponsors ferry service from Hoboken to the World Financial Center.
- Seastreak operates ferry service from both Atlantic Highlands and Highlands in Monmouth County to Pier 11, as well as seasonal service from Highlands to Yankee and Shea stadiums.
- NY Fast Ferry provides ferry service from Highlands to Pier 11 at Wall Street, East 34th Street, and Shea stadiums.
- Liberty Landing Marina offers ferry service from Liberty State Park to the World Financial Center.

Three additional ferry services serve the southern region of New Jersey.

- The Delaware River and Bay Authority (DRBA) operates the Cape May-Lewes Ferry, a year-round operation that primarily serves summertime recreational travelers.
- The Delaware River Port Authority assumed responsibility for operating the Riverlink Ferry service between the New Jersey aquarium in Camden and Penns Landing in Philadelphia in 2000. The service operates seven days a week between April 1 and November 30.
- DRBA's Three Forts Ferry Service runs between Fort Mott in New Jersey, Fort Delaware State Park on Pea Patch Island, and Delaware City in Delaware. Operating from mid-April to mid-September, it is the only crossing of the Delaware River open to bicycle traffic between the Ben Franklin Bridge and the Cape May-Lewes Ferry.

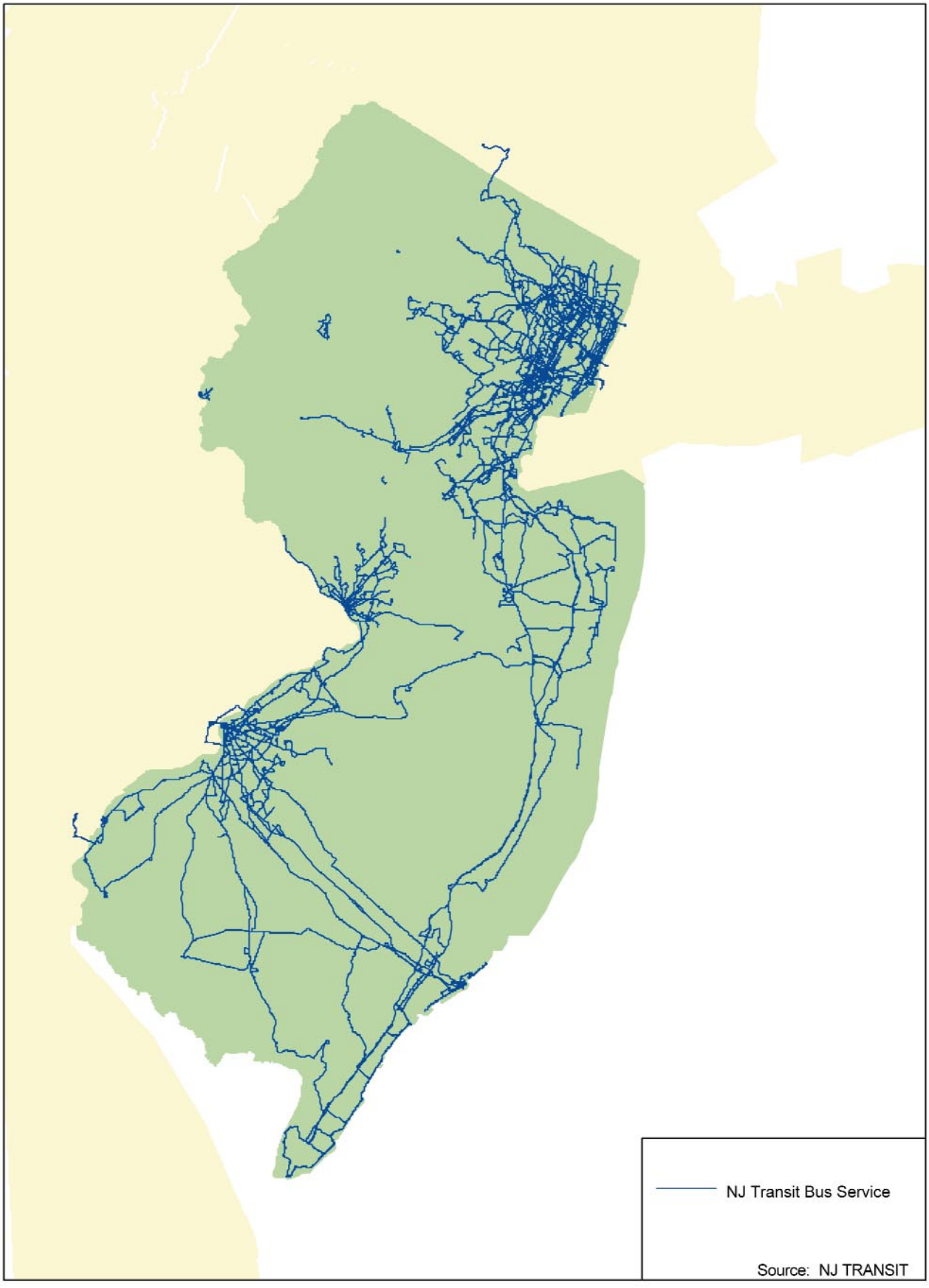
AIRPORTS

New Jersey is home to a diverse and active system of airports. The state's current system of public use airports is comprised of 53 facilities including 48 airports, four heliports, and one seaplane base. Included among the 48 airports are three commercial service airports providing regularly scheduled passenger service (Newark International, Atlantic City International, and Trenton-Mercer), and 45 general aviation airports. During 1999, more than 17.1 million passengers boarded commercial passenger aircraft at New Jersey's commercial service airports and more than 480,000 commercial airline operations (takeoffs and landings) took place.

Newark International Airport

Newark International Airport (EWR), one of the nation's busiest airports, is operated by PANYNJ. More than 16 million passengers boarded commercial

MAP III.6 - NJ TRANSIT BUS SERVICE COVERAGE



flights at Newark in 1998. A new $120 million International Arrivals Facility opened in January 1996, with nearly twice the capacity of the former facility. Some 3,000 passengers per hour can now efficiently clear immigration and customs in the new facility.

The Newark Airport Monorail operates 24 hours a day between each of the three airport terminals, the monorail parking lots, and the rental car agencies. PANYNJ is expanding the system by linking the airport monorail to lines served by Amtrak and NJ TRANSIT, making it possible to reach the airport directly by rail. The connection will be provided by extending the monorail system to a new intermodal rail transfer station on the Northeast Corridor line. This project is part of a more than $3 billion expansion program of the airport's facilities.

Atlantic City International Airport

The South Jersey Transportation Authority operates the terminal, runways, and related facilities at Atlantic City International Airport (ACY), located 10 miles from downtown Atlantic City. The airport is situated adjacent to the Atlantic City Expressway and two miles from the Garden State Parkway. In 1998, approximately 394,000 passengers boarded at ACY. The airport's recently expanded terminal can accommodate up to 1.3 million passengers per year.

Trenton-Mercer Airport

Trenton-Mercer Airport (TTN), located in Ewing Township, offers an alternative to the large hub airports at Newark and Philadelphia. In 1999, approximately 86,000 passengers boarded commercial flights at Trenton-Mercer. Plans for an $18 million expansion, which would include a new passenger terminal and improved passenger facilities, are being reviewed by the FAA, but face opposition from several citizen groups.

General Aviation

General aviation activity primarily refers to corporate, business, recreational, and training flight activity. New Jersey's 45 general aviation airports range in size from facilities that are home to numerous corporate aircraft and have runways in excess of one mile in length to small, privately owned turf strips that are primarily used for recreational purposes. No matter how big or small, each type of airport serves a particular market niche. During 1999, approximately 2.5 million general aviation operations (operations by all types of aircraft except commercial passenger and

military) occurred at New Jersey's airports. More than 4,200 general aviation aircraft were permanently based at New Jersey system airports as of 1999.

State Airport System Plan (SASP)

NJDOT's Division of Aeronautics is currently sponsoring a detailed analysis of New Jersey's public use airport system. The SASP is a multi-year project that will inventory the state's existing public use airport system, identify each airport's functional role within the system, evaluate each airport's performance relative to its functional role, identify facility gaps in the system, and develop long-range goals for the system. The outcome of the SASP will identify specific airport projects that should be implemented to allow individual airports to better realize their functional roles and thereby allow the system as a whole to better meet the demand and specific needs of the users.

One important concern to be addressed by the system plan is the decline in the number of airport facilities in New Jersey over the last several decades. One of the primary reasons for this loss is the ever-increasing pressure to develop open space with higher density land uses. Although the decline has recently slowed, the significant loss in the number of airports affects the viability of New Jersey's overall aviation system. As small publicly owned and privately owned airports close, other airports are required to accommodate the aircraft that were based and operated at the closed facilities. Ultimately, larger general aviation and commercial service airports are affected by this increased activity, which in many cases leads to capacity shortfalls with regard to aircraft storage and runway capacity. Therefore, the closure of small, local airports can lead to increased congestion and delays at airports

such as Newark International, and other facilities of importance to the overall transportation system.

The SASP will also include an evaluation of runway safety areas at 34 of the state's airports, an economic impact study, and the development of land use compatibility guidelines. The purpose of the economic impact study is to better measure the economic benefit generated by the aviation industry, which is a significant and growing component of the New Jersey's economy. The land use compatibility guidelines are intended to help municipalities protect aviation facilities from future encroachment by incompatible land uses, such as residential development. By protecting airports from incompatible land uses, the existing airport system can continue to provide safe operating conditions and play an important role in the state's transportation system.

FREIGHT TRANSPORTATION

New Jersey occupies a critical link in the nation's transportation system, serving as a connection between New York and New England and the remainder of the continental United States. In addition, New Jersey serves as a terminal for air- and sea-borne freight from both inside and outside the country. The freight transportation industry plays a substantial role in the state's economy, not only by providing jobs within the industry, but also by creating jobs in a variety of industries that benefit from favorable access to freight. The following sections describe New Jersey's major truck routes, rail freight, maritime freight, and air cargo. Principal facilities are shown in Map III.7.

An estimated total of 375.2 million tons of freight moves in New Jersey each year, either originating or terminating in the state or traveling through the state. On a tonnage basis, approximately three quarters of this freight — an estimated 283.1 million tons — travels by truck.

The US Census Bureau Commodity Flow Survey indicates that a total of 224 million tons of domestic (non-export) freight was shipped from New Jersey origins in 1997. This freight was valued at $286 billion, and the average shipment traveled 466 miles. Between 1993 and 1997, parcel shipments from New Jersey, including US Postal Service and courier shipments, rose 33.1 percent on a tonnage basis and 43.8 percent on a dollar basis, and the average distance for parcel shipments increased from 648 to 709 miles.

The Commodity Flow Survey shows that most of the freight originating in New Jersey remains within the state. Over two-thirds of the domestic freight tonnage originating in New Jersey was destined for in-state locations in 1997, with another 9.6 percent destined for New York State and 7.8 percent for Pennsylvania. Similarly, 65.2 percent of all U.S. domestic freight tonnage destined for New Jersey originated within the state, with 5.1 percent from New York State and 9.3 percent from Pennsylvania. Other significant origins for New Jersey-bound freight included the South Atlantic states and Louisiana.

Truck Routes

New Jersey Turnpike/Interstate 95 Corridor

The I-95 corridor represents one of the most critical through truck routes in the state. The corridor extends through New Jersey from Fort Lee in the north to Deepwater in the south. Interstate connections are provided to New York and New England via the George Washington Bridge, to Pennsylvania via the Scudder Falls Bridge, and to Delaware and the southeastern region of the United States via the Delaware Memorial Bridge. The main line of the New Jersey Turnpike (I-95 for most of the Turnpike's length) serves as the backbone of the corridor. US 1 serves a large number of trucks with local destinations in the corridor, and I-295 and I-676 also have significant truck activity.

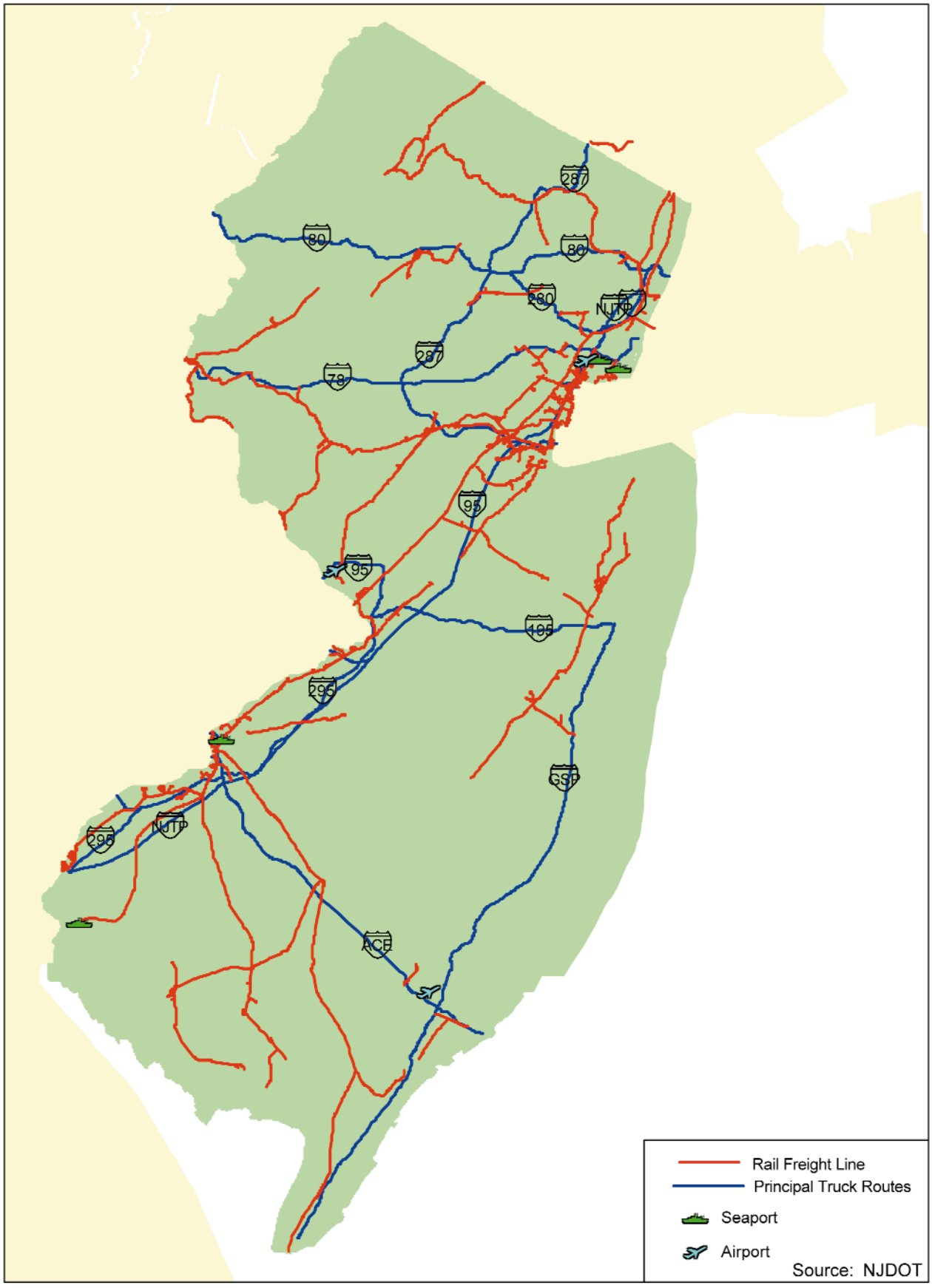
Other Major Truck Routes

Major east-west truck routes include I-78 and I-80, which stretch across northern New Jersey from New York to Pennsylvania. I-78 may currently be the busiest truck route in the state. Trucks also use US 9, Route 18, and certain portions of the Garden State Parkway to access southern New Jersey. I-287, which connects to many of the above routes, provides an additional route for freight truck movement.

Truck Travel Restrictions

The change in traffic patterns resulting from the completion of I-287 through northwestern New Jersey, along with the growing level of truck traffic throughout the state, has raised public concerns about the safety of large trucks in certain areas of New Jersey. NJDOT has responded to these concerns by placing restrictions on the routes available to larger trucks (102 inches wide) traveling through the state that are not making pickups or deliveries in New Jersey. Through movements by these larger trucks are now restricted to designated "National Network"

MAP III.7 - FREIGHT SYSTEM - STATE OF NEW JERSEY



routes, most of which are limited-access highways.

Rail Freight

While most of New Jersey's freight travels by truck for some portion of its trip, rail freight is also a significant mode of transport for certain goods. The availability of a viable rail freight network has helped to moderate increases in truck traffic impacts that might have otherwise been greater. In 1998, according to the Association of American Railroads, more than 38.5 million tons of freight were shipped by rail in New Jersey. Much of this freight passed through the Port of New York and New Jersey.

Until last year, Conrail was the only freight carrier with a major presence in the state. In 1999, the company was acquired by CSX and Norfolk Southern, which now share the Conrail trackage in New Jersey. This change has produced shifts in rail freight operations, since freight customers can now choose between competing rail companies. The Canadian Pacific Railroad also serves New Jersey freight customers at its Newark and Philadelphia terminals.

Shortline Carriers

In addition to the major freight carriers, 13 shortline railroads operate in New Jersey and provide local connections in limited geographic areas of the state. The 13 railroads in New Jersey are the New York Susquehanna and Western, the Morristown & Erie, the Black River and Western, the Belvidere and Delaware, the East Jersey, the Port Jersey, the Southern Railroad of New Jersey, the West Jersey, the Winchester and Western, the SMS, the Durham, the New York and Greenwood Lake, and the New York Cross Harbor. Among the shortline carriers, the NY Cross Harbor is unique in that it allows rail freight to cross the New York Harbor to Brooklyn, where it connects to the New York & Atlantic Railway via barge.

Infrastructure Limitations

Physical constraints on rail service in New Jersey include the weight capacity of older bridges and low overpasses on some freight lines. Another issue affecting rail service is inefficient signaling systems, which reduce operating efficiency. The limited capacity of switching and intermodal yards also restricts the expansion of rail freight service in New Jersey. In addition, the lack of direct freight rail across New York Harbor forces rail freight bound for points east to either be routed via an indirect route through Albany, NY, or to be ferried across the harbor via the New York Cross Harbor Ferry.

Shared Freight/Passenger Trackage

Another constraint on freight rail transportation is the growing volume of passenger rail service in New Jersey, which is competing for the limited capacity of New Jersey's rail network. Both NJ TRANSIT and Amtrak own rail lines that are shared by passenger and freight uses, and NJ TRANSIT already operates on line segments owned by freight railroads. In addition, NJ TRANSIT has proposed new passenger service on lines that are currently used only for freight. Shared trackage with light rail passenger service, such as the South Jersey Light Rail System (currently under construction), is subject to federal safety restrictions on the intermixing of light rail and heavy freight equipment.

Maritime Freight

In addition to New Jersey's surface transportation network, the state has a significant volume of waterborne freight. New Jersey's principal seaports are the Port of New York and New Jersey and the Port of Philadelphia and Camden, and a number of smaller ports provide for freight movement (Bridgeton, Fieldsboro, Florence/Roebling, Gloucester City, Paulsboro, and Salem). The seaports located in northern New Jersey and New York make up the largest container port region on the East Coast.

Port of New York and New Jersey

The Port of New York and New Jersey is the third largest US port in terms of the dollar value of goods shipped, as of 1997, and the fourth largest US port in terms of tonnage. The Port of Newark/Elizabeth accounts for most of the freight movement in the Port of New York. In 1998, this port did $20 billion in business, handling 1.1 million ocean containers totaling 18.2 million tons.

One of the most serious physical constraints facing waterborne shipments in New Jersey is the depth of the navigation channels approaching Port Newark/Elizabeth. Over time, silting has gradually filled in the sea lanes, restricting deep-draft ships from gaining access to the seaport. In addition, the maritime shipping industry has shifted towards the use of larger ships that require even deeper sea lanes to reach port. A number of dredging projects have been undertaken, while additional dredging proposals are under consideration. However, the presence of contaminated silt complicates dredging operations, due to the need for an appropriate disposal site. Another important issue is access to landside facilities

such as warehouses, terminals, and surface transportation connections. The planned Portway project seeks to address some of these concerns for the New Jersey side of the Port of New York and New Jersey.

Port of Philadelphia and Camden
New Jersey's second major port is the Port of Philadelphia and Camden, which is controlled by the Delaware River Port Authority (DRPA.) It is the 11th largest US port in tonnage as of 1997, and the 19th in dollar value. This port does $1.2 billion in business and is the largest break-bulk facility on the East Coast.

Ports/Pipelines
Many private facilities also support the tremendous volumes of petroleum that literally flow into the state's refineries.

Air Cargo

Although air freight makes up a comparatively small portion of New Jersey's total freight, most shipments tend to be high in value. Newark International Airport serves as the state's major air freight terminal. PANYNJ reports approximately 1.1 million tons of air cargo was shipped through Newark International in 1998. This makes Newark Airport the eighth largest air cargo facility in the United States. New Jersey's air cargo is also shipped through Philadelphia and Atlantic City international airports. Landside access to each of these airports affects the efficiency of air shipments to and from New Jersey shippers.✲

III. OVERVIEW
Meeting Customer Needs

Determining how well an existing transportation system serves its customers goes far beyond an inventory of the physical facilities. Ultimately, the citizens of New Jersey make decisions about how and where they want to travel by influencing how money is spent to operate, maintain, and expand the system. Their perceptions about how well the transportation network meets their needs are critical to any long-range plan.

A variety of techniques were used to solicit comments from the public about transportation in New Jersey:

- Public Information Centers were conducted early in the study at four locations throughout the state: Newark Penn Station, PATCO's Woodcrest Station, the Atlantic City Bus Terminal, and the Bridgewater Commons Mall.

- A project web site - www.njchoices.com - was created to both provide information to the public and seek input from individuals.

- Issue groups were conducted with experts to discuss transportation issues as they relate to five key areas: freight, travel and tourism, mobility and the aging, travel demand management, and technology.

- Focus groups were held in which citizens from different demographic groups were asked how transportation affects their lives and what changes they would like to see. This included representatives of the following: low-income transportation users, minorities, people with disabilities, rural transportation users, and transit users.

- A public opinion survey was conducted by telephone throughout the state to capture a snapshot of public perceptions of various aspects of the transportation system in 2000, and to track trends. The survey included 800 residents over the age of 18 selected at random on a regional basis. It asked many questions that have been used on previous surveys to identify changes in perspectives, as well as additional questions developed for this long-range planning effort.

PUBLIC INFORMATION CENTERS

Many of the people questioned at the Public Information Centers are very satisfied with New Jersey's transportation system. However, there were specific comments on improving the system. Participants frequently commented that buses and trains are too crowded, schedules are not coordinated, service is too limited (particularly at nights and on weekends), and other areas are not served by public transit at all. In addition, they noted that roads are too congested and highway signage is often inadequate or confusing.

PROJECT WEB SITE

People who visited the project web site expressed similar perspectives about New Jersey's current transportation system. In addition, they commented on a need for more parking at train stations, facilities for bicycles, greater safety for pedestrians at intersections, and fewer potholes.

ISSUE GROUPS

Freight

Participants in the issue group on freight agreed that goods movement has become a major challenge in New Jersey and that efficient and effective freight movement is critical to the state's economy and to the quality of life of its citizens.

New Jersey is a major market for goods and a significant multimodal point of entry, exit, and distribution for the entire nation; the movement of goods is currently the fourth largest industry in the state. The next 25 years are expected to feature a tremendous demand for goods movement. The number of containers the Port of Newark/Elizabeth currently handles annually is predicted to double within the next ten years, and to double again in the next forty years. Similar increases are expected at the Port of Camden and the state's smaller ports, as well as at its international and regional airports. Although the use of rail is expected to increase, trucks will still dominate freight movement, adding to the congestion on the state's roadways and being slowed by that congestion, at a cost to everyone.

Major congestion is not limited to the port areas. Everything the eight million citizens of New Jersey use in their daily lives represents a freight movement of some type. In addition, the freight industry is now competing for available land to use for terminals, sidings, and storage yards.

Travel and Tourism

Travel and tourism are important sources of jobs and revenue for New Jersey. To maintain and expand these economic benefits, the state needs to attract increasing numbers of travelers; competition with similar shore areas such as those in Delaware and Maryland is strong. The transportation network must serve travelers well or they may choose to go elsewhere.

Increased development in the southern and eastern part of the state, coupled with an expansion in the hours and seasons when people travel for recreation, has seriously increased congestion on the roadways leading to and serving the Jersey Shore. A significant increase in local traffic is now combined with recreational traffic on a much more regular basis. At the same time, however, opportunities to increase capacity are limited. Measures must be found to accommodate recreational travel throughout this state, including in the gateway area into New York City.

Mobility and the Aging Population

Currently 13 percent of all Americans are 65 and over. By 2030, 20 percent of all Americans are expected to be 65+. That would total 70 million people, more than twice the number in 1998. In New Jersey, the percentage of people 65 and older is expected to increase at a similar rate from its current 13 percent.

More of our elderly are living alone and in communities where public transportation is not always accessible, yet they want and expect to be independent and included in social and community activities. Although senior centers and community-assistance agencies provide subsidies or operate paratransit services to meet mobility needs, limited resources sometimes restrict these trips to those that are medically necessary and to shopping for food and basic essentials; all other travel, including visits with friends, religious activities, and continuing education, may be difficult or even impossible. In addition, more people aged 65 and older will be driving on our state's streets and highways.

Travel Demand Management (TDM)

TDM refers to programs and techniques designed to relieve congestion by reducing the number of single-occupancy vehicles on the highways. It includes such elements as ridematching, carpooling and vanpooling, telecommuting, establishing shorter work weeks, providing park-and-ride facilities and shuttles to transit stations, making amenities available for bicyclists, and offering tax incentives to promote transit use. Perhaps most important, it also includes marketing public transportation and these other measures as desirable alternatives to driving alone. New Jersey's nine Transportation Management Agencies (TMAs) are the main proponents of these programs. They see an increased and continuing need for funding and commitment to the programs if they are to succeed in their mission.

Technology

Intelligent transportation systems (ITS) represent an exciting way to improve travel by managing the transportation system better. These advanced information and communications technologies offer a wide variety of applications that can improve travel in the state using the transportation network that is already in place. They not only permit a more efficient use of the existing transportation infrastructure, they do so at a lower cost than would be required for system expansions, and without compromising social, economic, or environmental concerns.

Institutional changes may be required in how projects are funded if they are to succeed in the long run, however. In addition, a trained workforce will be needed to develop, operate, and maintain these systems.

FOCUS GROUPS

The focus groups that included citizens who live in mostly urban area (low-income and minority transportation users and transit riders) repeated many of the concerns expressed at the Public Information Centers and on the web site. These people emphasized aspects of the public transportation system. They noted that buses and trains are too crowded, schedules are not coordinated, and service is too limited (particularly at nights, on weekends, and in poorer neighbor-

hoods). They also commented that there are not enough bus shelters and many existing shelters are in poor condition. In addition, they said that getting schedule and fare information can be difficult, and the zone payment structure is confusing. When asked what transportation improvement they would like to see most, they stressed the need for more bus service.

The participants in the group for people with disabilities emphasized the need to accommodate wheelchairs on public transportation, including providing better training for bus drivers and train conductors in providing assistance. They also mentioned difficulties in traveling on uneven sidewalks and in crossing at intersections with the current signal timing. Although they acknowledged the usefulness of Access Link, NJ TRANSIT's paratransit service, they were vocal in describing its limitations on their personal mobility.

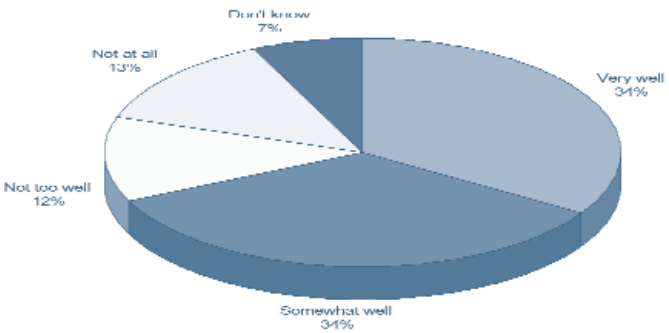
The rural transportation users, on the other hand, talked primarily about problems arising from road and bridge construction and flooding. They focused primarily on safety concerns, including the lack of shoulders on highways, inadequate lighting and signs, and not enough guardrails. They would also like to see more bicycle and pedestrian facilities.

PUBLIC OPINION SURVEY

Several of the questions posed in the survey were included to identify changes in the public's perspectives about New Jersey's transportation system.

Figure III.4

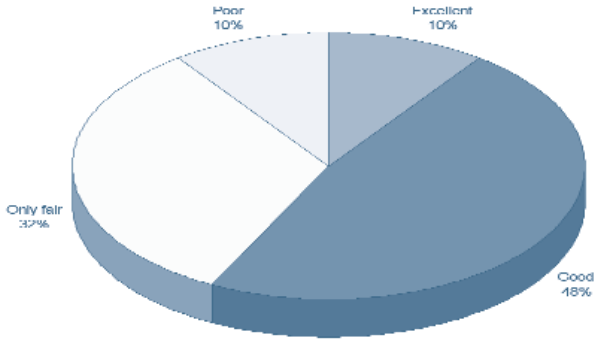
How Well Does NJ's Transportation System Meet Your Needs?



When asked how well New Jersey's transportation system meets their travel needs, 68 percent of the respondents reported that it meets their needs somewhat or very well.

Figure III.5

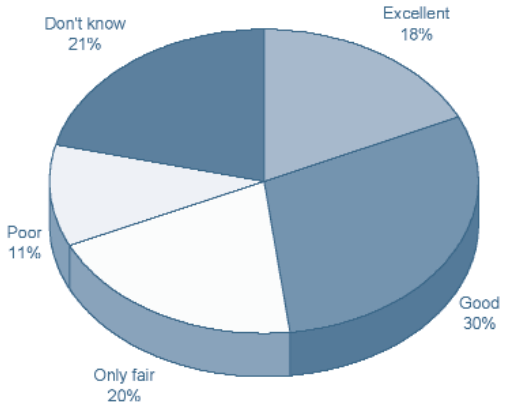
How Would You Rate the Condition of NJ's Roads and Highways?



Respondents were asked to rate the overall condition of the state's roads and highways. Ten percent rated them as excellent, 48 percent good, 32 percent only fair, and 10 percent poor. Although 29 percent indicated that the condition of roads and highways has improved in the past few years, 25 percent reported they are worse, with 46 percent saying they are about the same.

Figure III.6

How Would You Rate NJ's Public Transit System?



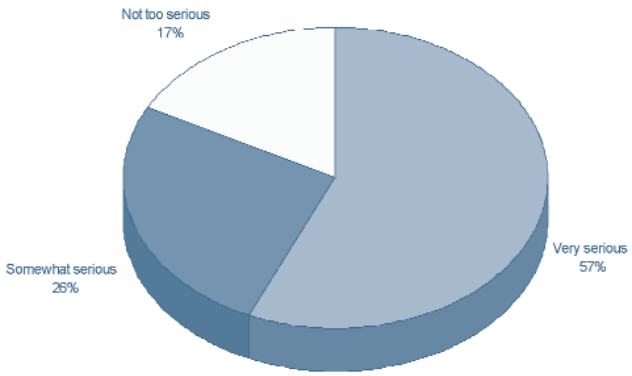
Eighteen percent of respondents rated the state's public transit system as excellent, 30 percent good, 20 percent only fair, and 11 percent poor. However, 26 percent thought the state's public transportation system has gotten better over the past few years, and

only 16 percent reported that it is worse. Significantly, the percentage who perceive that the state's transportation system has improved has moved up 10 percent since the 1990 survey.

The theme of this long-range plan update is transportation choices. Survey respondents were asked what modes they would like to have access to that they don't have now. Thirty-nine percent want access to buses, 39 percent want access to rail services, 4 percent want access to a car, and 2 percent want access to a bike.

Figure III.7

How Serious Is Traffic Congestion in Your Area?



Respondents were also asked how serious traffic congestion is in their areas. Fifty-seven percent said very serious, 26 rated it somewhat serious, and 17 percent said it is not too serious. The percentage of those saying traffic congestion is a very serious problem moved up 24 percent in the past decade.

Looking to the Future

The public involvement effort for this update also solicited comments and suggestions about the future of New Jersey's transportation system - what it should include, what should be emphasized, how it can serve its customers better. Please see Chapter IV for "What We Have Heard."

III. OVERVIEW
Historical Patterns and New Directions

New Jersey's transportation system serves its citizens every day. The state's highway system, maritime ports, airports, ferry terminals, freight railroads, passenger rail system, bus terminals, train stations, and all the vehicles and equipment associated with them are important assets for current and future generations. This transportation system enables people to reach their destinations and goods to reach their intended customers.

The people who use these highways, railroads, waterways, and air space live, work, shop, visit, and do business in New Jersey. Each year there are more of them than ever before. As the state's population grows and new businesses open, more trips are made and more miles are traveled on our transportation system.

The sections that follow examine the forces that influence travel in New Jersey within the context of transportation patterns of past decades. They also identify new trends and issues that must be considered in this long-range transportation plan update.

POPULATION CHARACTERISTICS AND TRENDS

Since the 1970s, the rate of population growth in New Jersey has been lower than that of the nation as a whole, and both have gradually slowed. According to the New Jersey Department of Labor, from 1980 - 2000, the state's total population increased by 40,000 persons annually, or approximately 1/2 percent. This compares with the US rate of more than 1 percent per year.

From 1960 - 1998, the central counties in New Jersey, specifically Ocean, Middlesex, Monmouth, Somerset and Morris, accounted for nearly 60 percent of the total population growth in New Jersey. Other high-growth counties were Burlington, Camden, Gloucester and Cape May in the south, and Sussex and Hunterdon in the north. Three counties with population decreases in that period were the more urbanized Essex, Hudson, and Union counties.

Somewhat faster population growth is predicted in the future for New Jersey. Based on forecasts prepared by the state's three metropolitan planning organizations, New Jersey's population is estimated to grow from 7,365,011 in 1980 to 8,198,307 in 2000, an increase of 11.3 percent. From 2000 to 2020, nearly one million more people are expected to live in New Jersey, accounting for a growth rate of 12.2 percent. By the year 2025, our population will be 9,447,422. This means that New Jersey's population is forecasted to grow by more than 1.2 million people, or slightly more than 15 percent, in the next 25 years. The number of people living in every county in the state is expected to increase during that period, and Atlantic, Cape May, Burlington, Gloucester, Hunterdon, Monmouth, Ocean, Somerset, Sussex, and Warren counties are forecasted to grow by 30 percent or more. Map III.8 depicts New Jersey's projected population change from 2000 to 2025 by county.

The two components of population change are natural increase (births minus deaths) and net migration (the number of people moving in minus the number moving out). Net migration is typically more volatile than natural change because it primarily reflects the condition of the labor market.

From 1995 - 2025, projections indicate that more people will move out of New Jersey than will move in to it from other states, but this state will experience a positive natural increase and continued net immigration from other countries. In fact, New Jersey will have the fourth highest net immigration of all states (behind only California, New York, and Florida).

In terms of age distribution, the "baby boom" generation (those persons born between 1946 and 1964) comprises the largest generation in New Jersey. This is significant for two reasons: this generation includes people whose economic productivity and income are at their peak, placing great demands on the state's transportation system, and it will mean a rapid increase in the percentage of elderly population (65+) after 2010. This change will be accompanied by a decrease in the percentage of people aged 20-64.

Seniors are currently such a significant portion of the population that they can be separated into three segments: the "young elderly" (65-74) the "middle-aged elderly" (75-84), and the "elderly elderly" (85 plus). For the period 1990 - 1998, the young-elderly segment growth rate declined slightly, while the middle-

aged elderly segment grew at a faster rate (20.6 percent) and the elderly-elderly segment grew at an explosive rate of 37.8 percent.

Currently, Ocean, Bergen, and Essex counties have the greatest concentration of the state's senior population. Other counties with at least 6 percent of the over 65 population are Hudson, Union, Middlesex, and Monmouth in east central New Jersey. The state's senior population is concentrated more in the metropolitan and suburban counties and less so in the rural areas. However, according to the New Jersey Department of Labor, more than 15 percent of the total population in each county will be 65+ by 2010 in Cape May, Salem, Ocean, Union, and Bergen counties. In particular, Bergen, Middlesex, and Ocean counties will each have more than 100,000 people aged 65 or older.

New Jersey 's population is also becoming increasingly diverse. The US Census Bureau classifies population into five major ethnic groups: White, Black, Hispanic, Asian, and American Indian. National trends indicate that from 1995 - 2025 the largest absolute growth will be in the Hispanic population. By 2025, Hispanics will surpass Blacks as the most populous minority group in the country. This trend is largely the product of immigration.

From 1995 - 2000, New Jersey had a 17 percent increase in its Hispanic population. Between 2000 and 2025, New Jersey's Asian population is projected to grow by 109 percent, the largest growth of all ethnic groups. In fact, by 2025, New Jersey will rank fourth among all states in its Asian population. New Jersey's Hispanic population is projected to grow by 78 percent, the White population will grow by 6 percent, and the Black population will grow by 39 percent. By 2025, the state's Hispanic population will exceed the state's Black population.

New Jersey's ethnic diversity is especially apparent in its more urban areas. In general, the Hispanic population is expected to increase in older urban areas and the Asian population to increase in older suburban areas.

Household characteristics are also important factors in transportation planning because the characteristics of households are used to predict demand for travel. Nationally, trends have shown rapidly increasing numbers of households, decreasing household size, and increased diversity in types of households. Similar trends are occurring in New Jersey - more households but smaller ones, more households that comprise people who are not related, fewer households with married couples, and more single-parent households.

New Jersey continues to be the most densely settled state in the nation, with an average estimated population density of 1,077 persons per square mile. However, the population trend has been one of dispersion as residents continue to move into newer suburbs and rural areas while the population of our urban centers decreases. The majority of residential growth has been in newer suburbs and rural areas - mostly in areas 30-50 miles from Manhattan and 15-25 miles outside Philadelphia.

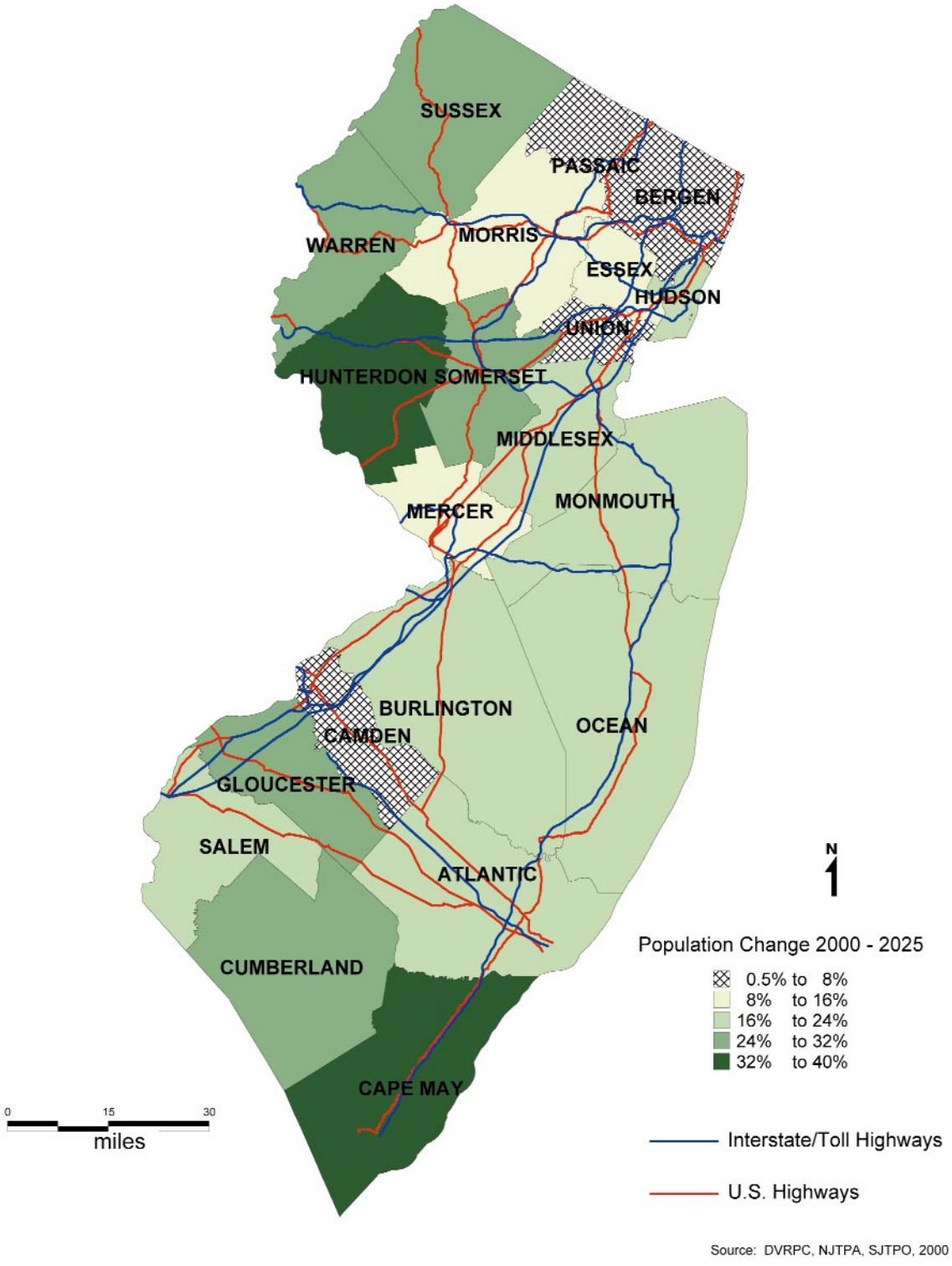
The 2000 Census is expected to show that only 11 percent of New Jersey's total population is based in its cities, and that four suburban townships (Edison, Woodbridge, Dover, and Hamilton) will each reveal populations that exceed those of Trenton and Camden.

IMPLICATIONS

Overall population growth will continue to make increasing demands on New Jersey's transportation system. Population growth in the states surrounding New Jersey will contribute to the flow of interstate traffic, and the more suburban and rural central and coastal counties of New Jersey will experience greater travel because of increases in the number of people who live there. The generation of "baby boomers" will continue to influence transportation needs as they work their way through middle age, remain active in the workforce, continue to drive more miles, and demand more transportation services. As household size decreases and the number of households continues to rise, so will the number of trips as well as the demand for transportation services and system capacity.

The current concentrations of elderly persons are in the metropolitan and suburban areas of New Jersey including Ocean, Bergen and Essex counties. The services needed by seniors are largely available in these areas, and they will be in even greater demand. Mobility issues will arise especially for the elderly living in rural areas of the state, where a sparser population and greater distances affect the type of transportation services that can be provided efficiently.

MAP III.8 - PROJECTED POPULATION CHANGE 2000-2025



The growing senior population has a number of transportation implications for the state. The availability of senior transit services for medical and personal travel will become increasingly important, especially during off-peak periods.

New Jersey and other states also face the question of how to identify and address safety issues associated with senior drivers. Some states have implemented voluntary driver testing once a certain age is reached. Others are considering requiring eye testing and/or driver testing every ten years as part of the license renewal process. As adult living communities are developed, it will be important to work with transportation providers and other agencies to focus senior transportation strategies on particular areas. Alternatively, New Jersey may need to consider providing developer incentives for building transit-oriented senior living communities.

New Jersey's increasing immigrant population will require communicating with increasingly diverse groups of residents. Highway signage, travel advisories, and other information about the transportation system may need to be translated into multiple languages. New Jersey's transportation providers may also need to hire more multilingual employees, especially in customer service, to adequately serve this diverse population. In addition, these immigrant populations may also affect the average household size within the state over time because some cultures typically have an extended family household. Larger household sizes can have implications for trip making and the transportation system.

Small, two-wage earner households with high incomes have created the "demographics of affluence." Throughout the US, high incomes are related to higher auto ownership, and in New Jersey they are also related to longer commutes. Many wage earners work in Manhattan, particularly in the financial center. This phenomenon has led to increased demand for housing in northern New Jersey and, in turn, to higher housing costs. Additionally, trans-Hudson commutation needs are expanding.

The trip-making patterns of New Jersey's increasing single-parent households may also change the demands on the transportation system. This type of household often combines trips, using a trip to day care to also run other errands or buy groceries, for instance. This kind of travel makes using transit and ridesharing more difficult. Longer-term trends may affect average trip distances as single parents choose to live nearer to employment, schools, and recreation facilities.

ECONOMIC AND EMPLOYMENT CHARACTERISTICS AND TRENDS

Economic trends in New Jersey are influenced by both national and international conditions. New Jersey is located in a megalopolis between two of the largest cities in the nation. Economic forces beyond its control therefore affect it.

New Jersey had the eighth largest economy in the nation in 1996 as measured by Gross State Product. In a regional context that includes New York, Connecticut, and Pennsylvania, New Jersey's economy is growing the fastest; it has outperformed these nearby states for the past twenty years. In times of economic expansion the state's economy has expanded more than those of neighboring states, and in the recession of the late 1980s it declined less.

While total employment in the US increased 1.5 percent annually, in New Jersey it increased one percent per year from 1980 - 1999. New Jersey's employment growth outpaced that of New York and Pennsylvania from 1993 - 1997. Statewide employment growth for 1990-2000 was about 5 percent; however, five northern counties (Passaic, Bergen, Essex, Hudson, and Union) lost employment during this period. Recent data reveal job growth of 67,200 in New Jersey in the one year from June 1999 to June 2000. The 1999 - 2000 unemployment rate in New Jersey dropped to 3.4 percent, the lowest since 1970.

For 2000 - 2025, New Jersey is projected to have a 25 percent growth in employment based on metropolitan planning organization forecasts (see Map III.9). All counties are projected to experience job growth, with Hunterdon and Somerset counties expected to have the largest percentage increase.

Mirroring the US economy, New Jersey's economy will continue to experience a shift from goods-producing industries to service-producing industries. New Jersey's manufacturing economy peaked in 1969. Manufacturing employment in New Jersey declined by 38 percent from 1980 - 1998, while service employment increased by 99 percent during the same time period. The New Jersey Department of Labor anticipates that manufacturing jobs will continue to decline, except in high value-added busi-

nesses such as pharmaceuticals. The largest percentage increases will be in the service sector, which will grow at three times the rate of all jobs. This growth will offset declines in making goods.

The greatest employment growth is expected to occur in the business, health, and social services sectors. The greatest employment decreases are expected in the electronic equipment, industrial machinery, and apparel and textile products sectors. Business services such as computer, data processing, and personnel supply services are projected to be strong in New Jersey. The health services sector will grow, in part, because of the increasing senior population. Employment growth in sectors such as engineering, management, and commodity brokers are likely to lead to increased demand for office space.

Similar to the national trend, females and non-Whites have increased their shares in New Jersey's labor force. Since 1989, the growth rate for women in the workforce has slowed, but it is faster than that of males. Between 1990 - 1999, women accounted for nearly all the net labor force increase. During the same period, the growth rate for non-Whites in the labor force was 20 percent, nearly 70 percent of the total increase. Growth in the non-White share is largely a function of increasing immigration.

From 1969 - 1997 the state's base for total personal income, "personal economic capacity," shifted from the northern urban counties toward the "wealth belt" in central New Jersey, where four of the top five wealthiest counties are located. Somerset County was ranked #1 in per capita income at 143 percent of the statewide per capita income. However, there are still large income gaps between rich and poor counties in New Jersey. In 1997, the average per capita income in Cumberland County was less than half that of Somerset County. The rate of New Jersey families living in poverty has been lower than that of the country as a whole for at least ten years. Seven percent of all New Jersey families were at the poverty level in 1997 - 1998, compared to 10.2 percent in the nation as a whole.

Tourism plays a major role in New Jersey's economy. In 1998, the travel and tourism industry in New Jersey directly generated 408,000 jobs. Taking into account the additional indirect impacts of tourism, this industry created 635,000 jobs that year, contributing $2.2 billion in state and local taxes to New Jersey. Nearly 164 million travel and tourism trips were taken to New Jersey in 1998, almost 19 million of which were for business.

The geographic distribution of New Jersey's tourism has implications for the transportation system. Approximately 25 percent of the tourism trips made in 1998 were to casinos in Atlantic City, 12 percent were to New Jersey's beaches, and 7 percent were destined for other outdoor activities. New Jersey's tourism industry also has seasonal implications for the transportation system, with June through September as the busiest months.

The new economy that is emerging has spread throughout the state rather than remaining focused in central cities as in the past. Large regional shopping malls began to dominate New Jersey retailing in the 1980s, and more than 80 percent of all the office space ever built in the state was constructed in that decade. In the 1990s big box retailing emerged as a trend primarily along suburban highways. These retail centers consist of single stores with sizes of 20,000 to 100,000 square feet and are frequently developed into "power centers" of up to 1 million square feet - as large as many regional shopping malls. These centers are almost totally dependent on automobile access and generate substantial traffic.

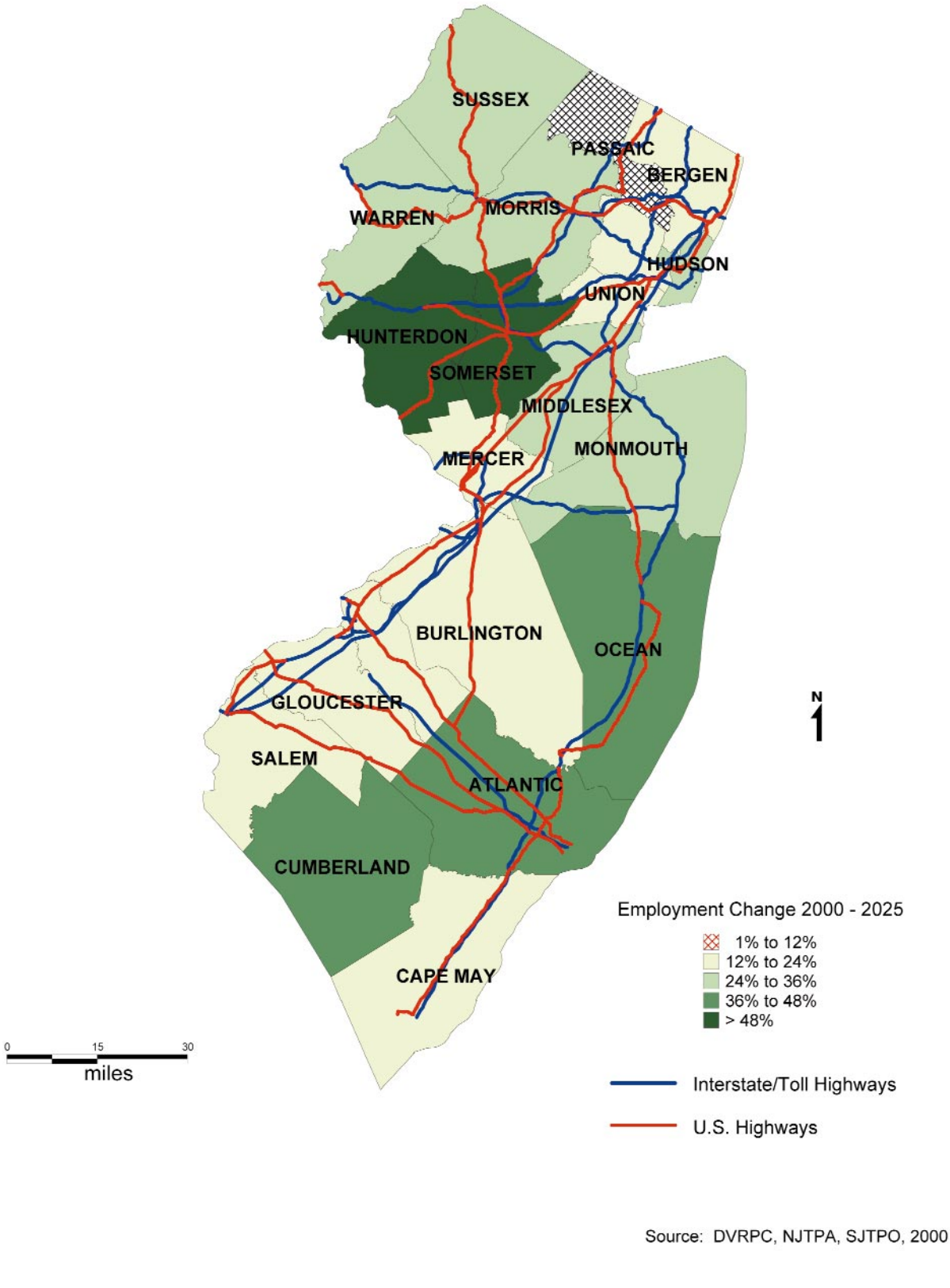
New businesses are a sign of economic growth. New business incorporations in New Jersey declined by 7 percent in the late 1980s but then increased by 33 percent from 1990 - 1995. Recent New Jersey data indicate that for every 1,000 jobs lost through downsizing in larger corporations approximately 300 new home-based businesses are created. National estimates indicate home-based businesses increase at 12-18 percent per year.

IMPLICATIONS

All New Jersey counties are projected to have employment growth over the next 25 years. The services sector will continue to increase while manufacturing declines. Although less freight may be shipped from the state, increased freight activity associated with the Port of New York and New Jersey will more than take its place on the state's highways and rail freight system.

More home-based businesses made possible by modern technologies can reduce some commuting trips. Trends already show that peak periods have been spreading out over longer portions of the day as peo-

MAP III.9 - PROJECTED EMPLOYMENT CHANGE 2000-2025



Source: DVRPC, NJTPA, SJTPO, 2000

ple take longer to get to their destinations and some choose to travel at less congested times. These extended peak periods are also influenced by strategies such as travel demand management that encourage flextime and compressed workweeks. Continued growth in home-based businesses should reduce peak-period trip making. However, the services economy will continue to promulgate a high level of business travel between offices, clients, and customers.

The combination of a growing labor force and slower job growth will mean small increases in unemployment. If new businesses continue to locate in suburban areas, and many of the new jobs are in highly skilled technology fields, the unemployment problems facing urban areas will likely increase. The geographic shift to suburban work locations and the shift toward a need for a highly skilled work force may contribute to continued concentrations of poverty in New Jersey's cities. To combat this possible trend, improving access to jobs for urban residents, through work force training, job and skill matching networks, transportation, communications, and education, is critical.

TRENDS IN AUTOMOBILE OWNERSHIP, TRANSIT USE, AND GOODS MOVEMENT

In 1960, about one of five New Jersey households had two or more automobiles. By 1990, more than one-half of the state's households had two or more cars. In 1998, 5.6 million people were licensed to drive, while 5.8 million vehicles were registered, more than one vehicle per driver.

Ridership on the state's transit system is also increasing. NJ TRANSIT's daily bus and rail ridership has grown from 290,000 in 1992 to 357,900 in 1999, an increase of 23 percent. However, transit's share of work trips has decreased over time.

In the 1970s New Jersey, like other northeastern states, went through a period of abandonment of unprofitable urban rail freight lines. The Northeast's rail infrastructure has been downsized over the past thirty years in an effort to make freight services more manageable and profitable. Conrail inherited most of the system's freight operations, while NJ TRANSIT took over the rail passenger market.

The recent CSX/Norfolk Southern purchase of Conrail has changed the role of the state's freight rail lines. New Jersey now has more regional market ties, which significantly influences the role of freight lines in the movement of goods throughout the region. Major rail competition will deliver more rail options to shippers and may lead to some growth in the amount of goods moved by rail in coming years.

Smooth intermodal linkages are now a vital aspect in the coordination between rail services and trucking. The emergence of intermodal distribution centers in suburban and rural areas will make possible the use of rail freight lines for long haul service, but trucks are still needed for shorter distances. Locations between the rail lines and highways have become desirable for warehousing and distribution centers.

E-commerce and the global marketplace are affecting the movement of goods and services throughout New Jersey. Although the impacts on New Jersey have not yet been quantified, experts recognize that business practices are quickly changing. Market dynamics have begun to shift with the globalization of the economy. The "just-in-time" inventory practices made possible by modern technology are in use. Geography no longer defines the market of a business that uses the Internet in daily operations. In New Jersey and elsewhere, intermodal centers will become increasingly important hubs for shipping goods to the global marketplace.

The northern New Jersey metropolitan area is facing a number of unprecedented developments in its freight distribution system that will challenge its existing physical infrastructure. The key port and intermodal freight facilities located in the region are major economic assets and play a key role in allowing the region to participate in the international economy. The Port of Newark/Elizabeth captures more than 50 percent of the market for containerized freight moving through North Atlantic ports. More and more cargo is also being moved by air. Typically, air cargo is low in weight but high in value. One million tons of air cargo moved through Newark International Airport in 1999. Steady increases are expected in the future as freight carriers such as Federal Express, Airborne, and UPS expand their presences at the airport.

PANYNJ officials are forecasting a doubling of port traffic over the next 10 years and a quadrupling from current levels over the next 40 years. In addition, CSX and Norfolk Southern have projected that perhaps a million domestic containers will be diverted from main north-south interstate highway corridors, with much of this traffic potentially headed to

rail terminals in this region. The huge regional market drives this increased freight traffic in northern New Jersey and New York City as well as the growth in world trade. According to PANYNJ, these factors virtually guarantee that there will be large increases in truck trips through northern New Jersey.

IMPLICATIONS

As noted earlier, New Jersey has more than one vehicle for every licensed driver, two vehicles for every household and 1.5 vehicles per job. These data indicate that the potential supply of travelers and demand for automobiles may finally be reaching equilibrium. Nationally and within New Jersey, the average number of miles vehicles travel each day continues to grow. People continue to drive longer distances and make more trips. In New Jersey, suburb-to-suburb and other long-distance commuting has exacerbated peak-period congestion.

While the state's population and employment centers continue to spread out, efficient transit service is becoming increasingly difficult to provide.

The consolidation of railroads and port development has increased the role of New Jersey as a regional freight activity center, further increasing the amount of freight that is expected to move through the state. New Jersey will face a challenge in providing locations for the needed intermodal and distribution centers, and it must work to ensure that plans and policies for infrastructure are adequate to support newly located distribution centers. Locations for distribution centers must be consistent with the surrounding land uses and transportation policies for the areas. Poorly situated centers could further stress the already overburdened highway system and result in worsening congestion and travel delays. If the freight distribution systems linking port, rail, and highway systems are not efficient and effective, the region will be faced with higher costs for needed goods and raw materials.

TECHNOLOGY TRENDS

The growth in information technology (IT) has already affected the nation's transportation system and will have a much greater impact in the future. Determining the impact of the digital economy, however, remains a challenge, since new measures are needed. The technology is also changing faster than the ability of business economists to develop measures to gauge them.

US producers of everything from IT infrastructure equipment to Internet content should continue to expand in the worldwide market. The new technology has helped to create new relationships and to streamline the supply chain processes. As these changes are occurring, the roles of logistic intermediaries such as FedEx and UPS are expanding.

Electronic commerce can reduce the influence of distance as a factor in personal and business decision-making and can alter the concept of community. It enables people to maintain contact over long distances and to have online communities with global memberships. In the business world it means global markets. As a result of developing a global market however, a company can become less loyal to the community in which it is physically situated. It is possible that this may contribute to a greater decentralization effect, enabling businesses and individuals to locate in more remote locations.

Telecommuting and telecommunications technology create and enhance the potential for home-based businesses. Some estimate that in just a few years half of all homes will have a home-based business.

IMPLICATIONS

The ability of New Jersey to accommodate communications system conduits in transportation rights-of-way or on other properties and facilities is essential now and will be essential in the future. It is important for NJDOT and NJ TRANSIT as well as other transportation agencies to establish the institutional structures needed to enable shared right-of-way agreements.

With the globalization of the economy and development of IT technology, businesses may continue to lose their links to the specific community in which they are located. This may contribute to a continued trend in employment and residential decentralization, further straining our state highway and local road system.

LAND USE AND RELATED TRENDS

Beginning in the 1950s, New Jersey, like other states, began to emphasize new investment in suburban infrastructure over the maintenance and repair of its urban infrastructure as people began to move out from its cities. As a result, more than 40 percent of New Jersey's total identified infrastructure needs are for roads, bridges, and tunnels.

New development in New Jersey continues to occur at relatively low densities, thereby consuming land at high rates. Transportation expenditures to accommodate this development are being made at the expense of maintaining the infrastructure that already exists.

As a consequence of development patterns, commuting patterns have shifted from the suburb–city commute to suburb–suburb and city–suburb. This occurs as cities lose prominence as regional centers. Although ridership on public transit has increased over the past decade in New Jersey, the percentage of commuters using public transit for the journey to work has decreased. One of the consequences of the land development pattern and the increased automobile use is that every county in New Jersey has transportation-related air quality problems. Each one has been designated as being in non-attainment of the federal standard for ozone.

Most new housing is being built in medium- and low-density single-family subdivisions in newer suburbs and rural areas. Residential development is spreading into the outer ring of suburbs in New Jersey, particularly in the following corridors - Interstates 287 and 78, Route 1, Interstate 295, the Atlantic City Expressway, and the Garden State Parkway/Route 9 corridor in Monmouth and Ocean counties. This residential development foreshadows further economic development in these areas in terms of retail stores and offices in the near future.

Many new subdivisions tend to be designed for automobile access with little or no regard for other modes of transportation. Their layouts do not recognize the special travel needs of young, elderly, or handicapped persons or the travel needs of anyone without an automobile. Often the roads are not designed to accommodate transit vehicles or efficient transit routing even if the density is adequate to justify the cost to provide transit service. Many young people are precluded from walking to playgrounds, school, and other activities because there are no sidewalks or the circuitous route and separation of land uses makes the trip too long. Because subdivisions tend to separate residential uses from shopping, office, and other services, elderly persons often have difficulty meeting their medical, social, or shopping needs. Disabled persons may be scattered in suburbs at such low density that it is not cost efficient to provide regular transportation services to them.

IMPLICATIONS

According to the New Jersey Office of State Planning, no precise measures exist for the amount of land consumed for development since the *State Development and Redevelopment Plan* was adopted in 1992. However, indirect measures suggest that land is being consumed at high rates and at low densities, with New Jersey losing about 10,000 acres of farmland each year. Since the SDRP serves as a long-term strategy to guide growth and development throughout the state, it is not reasonable to expect major changes in land use patterns to occur in a short time period.

The state is now developing indicators to monitor the progress made in implementing the plan. As the state's development and redevelopment policies, regulations, and infrastructure funding programs are refocused to be more consistent with the content of the plan, urban areas should begin to capture more of the development, and environmental areas will be protected. Over longer periods of time, the trends may begin to show more of a shift, as measured by indicators such as infrastructure costs, developed land per capita and per job, and proportion of jobs located in urban areas.

New Jersey building trends over recent years indicate that seasonal, resort communities along our coast are becoming year-round places of residence, changing the demands on the transportation system. Development that is inconsistent with the SDRP's objectives will further increase the need for transportation services and infrastructure. The big box or power center trend has significant implications for the transportation system since these centers are almost totally dependent on automobile access.

A potential inconsistency with New Jersey's long-term planning strategy, however, is that business patterns are also undergoing rapid change as a result of emerging digital technologies. The factors that have historically influenced business location decisions may be less important in the future, especially for certain industries. In a global economy where digital information is the service or product, the location of the building where information is processed is not significant.
The state's recent commercial development patterns have shifted employers to suburban locations where transportation facilities and services are generally inadequate to meet the need. Meanwhile the existing infrastructure in many urban areas is underused. In addition, poor urban residents tend to lack the

resources needed to reach the decentralized jobs in the suburbs, contributing to the persistence of poverty in urban areas. In accordance with federal policies, New Jersey will continue to find ways to match people needing employment with the jobs that have relocated in suburban areas. Public/private partnerships are emerging all over the country to address the reverse commute in innovative ways.

Continuation of current residential development patterns at low density and outside urban areas is the major factor contributing to the great increase in vehicle miles of travel. Improved fuels and engine technology have reduced vehicle emissions. However, the large increases in vehicular travel negate some of the progress that has been made in improving the state's air quality. The low-density development patterns put a strain on the suburban transportation network and lead to larger increases in vehicular travel demand. The demand for road capacity leads to an emphasis on road construction rather than on alternatives to driving, especially in low-density environments that cannot support transit.

There are still under-served transit markets in New Jersey, especially for lower-income transit-dependent persons and in our urban areas. There are limited transit options for New Jersey' s suburban commuters, resulting in increased commuting time, commuting costs, and congestion. The dispersed employment locations are generally impossible to serve efficiently by conventional bus or rail transit. The existing low-density land use patterns with streets that are not connected render pedestrian and bicycle access difficult, or impossible. Employer-sponsored transportation programs and initiatives may emerge as part of the solution to suburban congestion and employee transportation problems that have resulted from these land use patterns.

CRITICAL AREAS

To provide access and mobility for people and goods, New Jersey must address the following areas:

The Needs of an Aging Transportation Infrastructure

The majority of the state's future transportation system is already in place, but this system must be maintained and preserved so it can continue to serve both current and future generations. Years of deferred maintenance are beginning to take a toll on the mobility of New Jersey's citizens - both on the highway and by transit. Past patterns of neglect must be corrected if we are to continue to provide essential mobility. Structurally deficient bridges and deficient pavement conditions must be corrected; deficient dams rebuilt; overage buses, rail cars, and locomotives replaced; rail and bus stations rehabilitated; bus garages and rail maintenance facilities modernized; and tracks, railroad bridges, and yards brought up to a state of good repair. New Jersey cannot afford to continue past practices - a transportation system in a state of good repair is essential if its citizens are to prosper.

Lack of Coordination Between Land Use and Transportation Planning and Implementation

There is evidence from other states that center-based growth and related initiatives may provide guidance to effectively coordinate land use and transportation planning and achieve comprehensive planning goals through policy and investment practices. Other states have adopted transportation plans that provide geographically specific investment designations designed to implement their plans in a comprehensive manner. Municipal government has a significant role in maintaining and expanding the local road network. Equally important is the role of municipal government in developing land use plans that determine the style and amount of development affecting the state's transportation system. However, many municipalities do not undertake the required minimum of planning, including the development of circulation plans.

State agencies are directed to use the *State Development and Redevelopment Plan* as a guide to setting investment priorities. More importantly, the general concepts and policies of the SDRP support the development of growth patterns that increase transportation options and reduce growth in the number of miles vehicles travel. However, current population and employment projections do not reflect an aggressive implementation of the vision presented by the SDRP, especially in view of current expectations for continued high growth rates in outlying suburban and rural areas.

New Jersey must be aggressive in correcting the disconnect between land use and transportation planning and work to change the status quo if the state is to realize the promise of the *State Development and Redevelopment Plan*.

Congestion on the Existing Multimodal Transportation System

New Jersey suffers from pervasive congestion on many of its critical highways. Congestion also

impairs the mobility of passengers on the state's public transit system - buses operate on congested highways, many rail and bus lines are too crowded at rush hours, and the capacity of some critical transit facilities is being taxed, including the Exclusive Bus Lane at the Lincoln Tunnel, the rail tunnel into New York, the rail system at Penn Station New York, and the Port Authority Bus Terminal. Congestion affects this state in many ways on a daily basis in terms of delay, lost time, and increased business costs. New Jersey must seek multimodal solutions as well as land use solutions to address this issue.

Freight Transportation Needs

Planning for the movement of goods needs to be brought into the mainstream of the transportation planning process. The failure to do so results in a lack of investment resources being applied to a highly important area for the economy of New Jersey. It also contributes to a lack of communication on issues and problems that result from the interaction between the movement of goods and the movement of people.

Issues relating to goods movement are complex and extensive. Highly important concerns are: landside access to port facilities, how to maximize the transport of goods by rail, defining growth opportunities and operational challenges related to the purchase of Conrail by CSX and Norfolk Southern, and the need to balance the rail access needs of passengers and freight. In addition, the distribution and access of trucks on the highway network must be addressed. Other issues include understanding and planning to implement new technologies that assist in the efficient movement of goods, and understanding the long-term trends in shipping and warehousing that will dramatically affect the transportation system over the next 25 years.

Recreational Travel Needs

The transportation planning process and existing planning tools need to more effectively evaluate non-work trips, to accommodate off-peak and seasonal travel needs, and to support new tourism initiatives.

Research on travel behavior indicates that a decreasing percentage of trips are for work, and recreational travel has increased. Combined with the fact that tourism makes significant contributions to New Jersey's economy, there is a need to more effectively evaluate the ability of the transportation system to respond to the needs of the recreational traveler. Recreational travel tends to follow seasonal peaks, not the traditional commuter morning and evening rush hours. Transportation data collection and modeling are often not sensitive to these patterns. As a result, an inaccurate picture of how well the transportation system serves people who want to travel to major tourism centers is created. Similarly, much of the data used to identify and plan for transportation corridors is based on journey-to-work flows. Data to identify significant recreational travel patterns, origins, and destinations often do not exist or are not regularly applied in many parts of the state.

Further, the potential effect of recreational traffic congestion on the state's economy needs to be fully understood. Facility constraints could cause travelers to avoid tourism in New Jersey. Compared to daily traffic congestion that delays the regular traveler, recreational congestion can alter the travel destination, making the difference between tourism dollars being spent in New Jersey or elsewhere. Further, transportation investments can have a significant role in spurring the development of new tourist facilities and corresponding jobs in areas of the state that have few other opportunities for economic development.

Work First New Jersey Job Access Needs

Recent changes in welfare programs at the state and federal levels have drawn attention to the need to provide transportation linkages between unemployed populations and potential employers. The State of New Jersey funds the development of transportation plans to address this issue for each county. The state's three metropolitan planning organizations receive federal grants to develop supportive plans. The MPOs also actively work with NJ TRANSIT to identify and prioritize demonstration services for state and federal funding. The transportation services to meet the needs of Work First New Jersey should not be considered outside the transportation planning process or the regular transportation system. These services should be integrated into a comprehensive transportation system that provides a greater range of options and greater accessibility for all citizens.

The Transportation Needs of an Aging Population

The transportation needs of older citizens have become a more important issue as the "baby boomer" segment of the population begins to reach retirement. Over the 25-year planning horizon of the updated statewide transportation plan, a larger segment of the population will be categorized as elderly.

One issue is safety, and the ability of aging members of the population to operate a motor vehicle on increasingly congested streets and highways. Given the limited sets of options and the convenience, often by design, of automobile travel, it is difficult to identify either incentives or opportunities for the elderly to use other modes of travel if they are able to drive. Another issue relates to special services designed to address the mobility needs of the elderly population. Specific transit vehicles or other services that are required to move older individuals are a need not generally addressed by the traditional transportation planning process, but through specialized transit service operations, often in coordination with NJ TRANSIT.

Transportation Choices 2025 recognizes the need to address the growth of this segment of the population and their growing requirements over the horizon of the plan, and to identify existing and planned actions by NJDOT, NJ TRANSIT, and other state agencies to coordinate with and support those charged with responding to this challenge.

Environmental Justice in New Jersey

Recent federal guidance has placed a greater emphasis on environmental justice. Meeting the goals of environmental justice generally means ensuring that the negative effects and the positive benefits of any transportation policy or investment are not focused on any particular segment of the population. In addition, agencies must make special efforts to ensure that disadvantaged and minority populations have the opportunity to participate in and comment on the transportation planning process and specific investment studies. Federal guidance to date is that environmental justice issues must be dealt with in a comprehensive manner, early in the planning process.

This issue has three potential aspects in transportation planning in New Jersey. First, the transportation planning and development process must ensure that sufficient outreach and involvement is undertaken early and on a continuing basis to include participation and comment from disadvantaged and minority communities. Second, the planning process must develop an assessment of the distribution of these segments of the population and determine how well they are served or negatively affected by the existing transportation system, and how they will be affected by the implementation of planned transportation improvements. Third, the transportation planning process should identify potential strategies to address environmental justice issues and detail internal efforts by NJDOT and NJ TRANSIT to examine and adjust their own planning processes and public participation policies to meet this mandate.

A foundation for this work and the many issues related to environmental justice has been laid in the development of the Urban Supplement to *Transportation Choices 2025*.

III. OVERVIEW
Technology Applications

Advanced technologies are changing the way we live and work, and how we travel. The Internet has brought the world into our homes and offices, communicating vital information, providing entertainment, and permitting people to browse and shop online. With the advent of the Internet, the transportation system is just beginning to experience impacts from this new form of communication and commerce. The number of home-based businesses has increased, and hundreds of thousands of people now telecommute at least one day a week. As visual displays become more convenient and less expensive, business travel can be expected to decrease in favor of video conference calls and meetings.

Intelligent transportation systems represent one way to improve travel by managing the transportation system better. These advanced information and communications technologies offer a wide variety of applications that will improve travel in the state by making the transportation network that is already in place more efficient.

These technologies are beginning to enable agencies to keep track of all aspects of the transportation network: highways and city streets, buses and commuter rail, and specialized services such as paratransit for the elderly and disabled. The information they gather makes it possible to respond quickly to increased congestion and interruptions in travel flow caused by accidents, breakdowns, emergencies, weather, etc. When it becomes available, detailed information about current travel conditions in the region will enable travelers to make informed decisions about how they travel, both before they make their trips and while they are en route. And the data that is collected will enhance planning for future transportation improvements.

One of the most visible ITS applications in New Jersey is E-ZPass. The benefits of E-ZPass are many. Motorists using this system no longer have to wait in long lines to pay a toll and they don't have to worry about having cash or tokens available. Reducing the congestion levels at toll plazas also improves air quality in the region, which benefits even those who do not drive. Fewer lines enable tourists and infrequent visitors to the region who may not have E-ZPass to pay their tolls more conveniently. Travelers can use the same E-ZPass tag with equal ease in New Jersey, New York, Delaware, and Pennsylvania.

Other ITS applications include:

- Variable message signs and dedicated radio stations that indicate problems on the roadway ahead due to accidents, construction, etc., and suggest alternative routes when possible

- Automatic announcements at each stop on commuter trains, including what the next stop will be

- Electronic displays, supplemented by public address announcements, that indicate in real time whether trains and buses are on schedule and their expected arrival times

- In-vehicle devices that provide directions to destinations and display traffic conditions for selected areas on the dashboards of automobiles.

Information of all types is at the heart of intelligent transportation systems. A variety of technologies is used to monitor existing conditions - detectors in or near roadways indicate when traffic has slowed or stopped; sensors identify the presence of adverse weather (wet surfaces, snow or ice, fog); closed-circuit television cameras provide visual images of highway conditions; transponders attached to vehicles automatically identify the locations of buses.

The data generated by all this instrumentation are processed immediately by sophisticated computer programs, enabling the state's transportation providers to respond to problems and to alleviate them more quickly. When the data indicate difficul-

ties that require diversions, the public can be advised immediately, enabling travelers to make alternative plans - change the mode they use, the time they travel, or the route they take.

TRANSCOM, a coalition of sixteen transportation agencies in the New York/New Jersey/Connecticut area, keeps regional agencies as well as radio and television stations regularly informed about travel conditions. It uses an intelligent system called TRANSMIT that measures the flow of vehicles on area highways by reading E-ZPass toll tags. (The tags are read without billing the traveler or identifying specific owners.) Thus one intelligent system builds on another intelligent system to offer additional benefits. TRANSCOM also provides traveler information, using other methods, on bus, commuter rail, and ferry conditions.

Beyond improved mobility, intelligent transportation systems also offer other potential benefits to commercial vehicles. Delays increase the cost to transport goods, affecting both the carrier and the consumer. Intelligent tags, similar to those used for E-ZPass, can be encoded so that a truck can be weighed in motion and electronically inspected for safety without stopping. Other intelligent applications enable commercial vehicle operators to obtain all the licenses and permits they need at one location, pay their vehicle taxes electronically, and obtain clearance for state and even international border crossings simply and quickly.

ITS PRIORITY CORRIDORS

NJDOT has identified two priority corridors for implementation of a comprehensive program of ITS. The I-80 Corridor, including parallel Routes 4, 17, and 46, has been designated as an "ITS Showcase." This corridor is one of the most heavily traveled in the state, and will benefit greatly from the installation of an advanced traffic detection and management system. The system is expected to reduce accidents by 15 percent, increase capacity by 20 percent, and decrease incident-related congestion by as much as 50 percent.

Work has already begun on implementing ITS on the I-80 Corridor; the total program should be completed by 2003. It includes:

- Installation of an advanced incident system that will improve traffic and bus operations as well as incident detection, response, and management capabilities between I-287 and the George Washington Bridge. This system includes a traffic operations center, closed-circuit television cameras (CCTV), variable message signs (VMS), vehicle detection devices, weather stations, and highway advisory radio (HAR).

- Construction of a state-of-the-art multimodal transportation center, including a car and bus pool lot, a train station, kiosks providing travel information, and additional traffic management devices

- Fully staffed and expanded emergency service patrols, route diversion plans, and incident management response teams

- Replacement of existing truck scales to improve efficiency and to enable trucks to be weighed in motion. This will enhance the ability to target overweight vehicles and improve safety.

The second priority corridor is the South Jersey Urban Commuting Corridor, which extends through Burlington, Camden, and Gloucester counties and includes travel into Philadelphia. An advanced traffic management system for signalized highways has already been installed on Routes 30, 38, 70, and 73. This system also includes the installation of closed-circuit television cameras, highway advisory radio, and variable message signs to communicate with the transportation operations center in Cherry Hill. Components that are expected to be complete by 2003 include:

- Installation of a multimodal transportation freeway management system on Routes 42, 76, 295, and 676, including CCTV, VMS, HAR, and detection technology to improve incident response and management. ITS technology on I-295 will also alert motorists about PATCO operations at Woodcrest Station.

- Fully staffed and expanded emergency service patrols, route diversion plans, and incident management response teams.

ITS PLANNING CORRIDORS

NJDOT's Strategic Business Plan for Intelligent Transportation Systems also identifies three planning corridors for future ITS investments. They are described below.

The Central NJ North-South Commuting Corridor is the most heavily used multimodal commuting corridor in the state. It is served by the Northeast Rail Corridor (NJ TRANSIT and Amtrak), the North Jersey Coast Line (NJ TRANSIT), numerous public and private bus lines, the New Jersey Turnpike, the Garden State Parkway, and several major state highways (Routes 1, 9, 18, and 130). This is also the most heavily used goods management corridor in the nation, and it serves the Jersey Shore on weekends. The implementation of E-ZPass on the toll roads is the first step in ITS. Improvements over the next 5-10 years are expected to include:

- The computerized connection and integration of traffic signals, including CCTV, HAR, and VMS

- Operation of an alternative bus routing project at the Raritan River crossings and better management of the I-495 express bus lanes

- Connection to the New Jersey State Police West Trenton Facility to support statewide emergency management and communications

- Traveler information dissemination on the Northeast and North Jersey Coast lines concerning parking at rail stations.

The I-78/I-287 Suburban Growth Corridor is one of the fastest growing corridors, and I-78 is second only to the Turnpike in truck travel. The use of future technology is being considered to improve bus and truck safety and incident management. In addition, new technology will be used to replace the current outdated truck weighing station.

The Jersey Shore Recreational Corridor runs the entire length of New Jersey's shore line. NJDOT will continue to work with the Committee for a Smart New Jersey (this state's primary ITS proponent) to improve access to the shore area through such programs as "Reach the Beach." Other efforts are expected to focus on computerized signal systems on Route 36 between the Garden State Parkway and Sandy Hook and in the Atlantic City region. Signs and other information systems will also be improved to address the needs of recreational travelers.

EVOLVING AGENCY NEEDS

While these technologies are changing the way people travel, they are also changing the ways in which NJDOT works. Historically, the Department of Transportation has built and maintained highways to increase capacity. In this new millennium, however, a new highway is often not a viable solution. In a state as densely populated as New Jersey, the lack of available land, environmental constraints, and increasingly the will of the people argue against new construction. Instead, NJDOT's role is evolving more into managing the state's highway system so that all available capacity can be used as efficiently as possible. ITS is a major tool to help relieve congestion and improve safety.

Emphasis on new technologies requires that the state make major capital investments, as well as financial commitments, to operate and maintain ITS systems once they are in place. In addition, highly trained personnel are needed to oversee the development, installation, operation, and maintenance of increasingly complex electronic equipment, and ongoing education is a must.

SERVING CUSTOMERS BETTER

Information technology is also improving customer service. New Jersey is taking immediate actions to use the Internet to its best advantage. Numerous web sites serve the traveling public, providing multimodal information about NJDOT, NJ TRANSIT, the Division of Motor Vehicles, and a host of other transportation-related agencies and activities. In addition, NJDOT and NJ TRANSIT are taking increasing advantage of project-specific web sites, such as www.njchoices.com, designed to share important information with the public and solicit their comments and questions.✲

IV. WHAT WE HAVE HEARD

Congestion on our roads and highways is the biggest transportation problem facing New Jersey in the next 25 years, according to all the tools used in this study to determine the public's perceptions. Second in importance is a public transportation system that both provides mobility for New Jersey's citizens and reduces the number of single-occupancy vehicles on those roads. Related concerns such as too much development and pollution - while they exist - do not begin to compare with these critical issues.

This chapter summarizes the results of the public outreach effort as it looks toward the future. It also includes representative comments and suggestions from the public for improvements to New Jersey's transportation system.

PUBLIC INFORMATION CENTERS

Comments from participants at the Public Information Centers tended to be about public transportation, although some people did offer suggestions regarding highway travel. Remarks ranged from broad statements about extending rail service to very specific observations about particular bus or train routes. These comments also stressed the importance of increasing public transportation - in the evenings and on weekends - and extending it to areas not currently served. Representative suggestions by participants included:

- Offer weekly and monthly passes for off-peak hours
- Provide direct service to Manhattan on the Raritan Valley Line
- Extend rail service to New Jersey's southern communities
- Provide bus shuttle service to train stations
- Extend the service area and hours of public transit
- Create a continuous bus fare card to cover all NJ TRANSIT zones
- Renew rail service to Cape May
- Computerize more intersections
- Improve traffic flow at Metropark Station.

PROJECT WEB SITE

People who visited the project web site offered a broad array of comments and suggestions, covering such topics as public transportation, highway construction and operation, land use, and advice about funding. Again, the focus was on relieving congestion and improving public transportation. Representative suggestions included:

- Provide convenient, free parking near train stations
- Create more park-and-ride lots in Camden County
- Ensure compatible land use near large and small airports
- Complete the missing I-95 link (Trenton-Somerville)
- Increase the gas tax and eliminate toll roads
- Increase emergency van service for stranded motorists
- Make traffic signal maintenance a priority
- Assign exclusive E-ZPass lanes on the Garden State Parkway
- Provide security at all train stations, such as telephones and good lighting
- Focus future investments to support "centers" and major intermodal transportation facilities
- Construct more service roads to separate business traffic from through traffic
- Inspect and service ticket vending machines just before the start of the month
- Provide exclusive bus service for wheelchair customers in areas where many use public transit
- Provide commuter rail in Sussex and Warren counties
- Raise train fares to pay for more rail cars
- Develop ecotourism-related bike trails from Egg Harbor City to the NJ TRANSIT train station and eventually to Hamilton Township.

ISSUE GROUPS

Freight

Participants in the Freight Issue Group focused on the tremendous increase in freight traffic anticipated in the next 25 years, an increase that will affect both truck and rail deliveries. In general, members agreed that the current system of financing freight movement is inadequate to nurture and support their transportation needs. It has too short a focus and lacks financing mechanisms that are committed for the long term. New Jersey would be well-served by a joint investment on the part of both the public and private sectors to handle increased demand based on common objectives.

To meet the market demand for rail freight and to accommodate NJ TRANSIT's need to use freight right-of-way to move passengers, more funds are needed to build additional capacity and remove bottlenecks. This is particularly true in the port areas. Most of the representatives believe that some relatively low-cost highway improvements, such as eliminating bottlenecks in critical areas, may be more important than building new capacity for truck movements. When new capacity is added, it should be enough to accommodate future expectations. They also stressed the need to develop and share a full-fledged goods movement database for both the public and private sectors, an effort that has already begun.

Despite environmental contamination issues, there is significant competition for land in areas around port facilities for use as freight terminals, rail sidings, and equipment storage yards. As state agencies work to implement the policies of the *State Development and Redevelopment Plan* and the effects of programs to redevelop brownfields are felt, this issue is anticipated to become more urgent.

It was noted that there needs to be an explicit link between greenfields and brownfields. The redevelopment of brownfields will make possible delivering goods using the shortest distance possible because they are geographically centered and near the labor market. The use of brownfields will also save open space and farmland in the rest of the state. Siting unique intermodal transfer areas could provide the flexibility and agility needed to be responsive to changing demands.

The members of this issue group emphasized the need to build support for investments in freight movement by educating the public about its importance to their daily lives. They also stressed that better cooperation and coordination among public agencies that plan and fund transportation investments are essential.

Travel and Tourism

The Travel and Tourism Issue Group focused primarily on the Jersey Shore and the southern part of the state, although it did recognize that tourism is becoming increasingly popular in the gateway area near New York City, Camden with its new attractions, and the Delaware Water Gap. More capacity is planned for the Garden State Parkway and the Atlantic City Expressway, but east-west travel is limited, as are opportunities for increasing capacity on other roads. In the far south of the state, more emphasis should be placed on Transportation System Management (TSM) and other operational improvements to improve intersections and remove bottlenecks.

Although members of the group would like to see transit geared toward recreational needs, they acknowledged that traditional fixed-route services may not be appropriate. They would like to see a summer recreational transit system with park-and-ride lots and jitneys. All agreed that shuttle connections between Atlantic City and its rail station and airport would be valuable.

Signage was a major topic. An attractive and consistent signage system should be developed that would provide visitors with clear directions, including identifying the locations of various attractions. More visitor centers and welcome signs would also make travel more friendly for tourists; ideally, these centers should offer real-time traffic information and travel advisories, including alternate routes. On crowded week-

ends, variable message signs on the highways and at service areas should notify people about state park closings, as well as highway conditions, and suggest alternative destinations. In addition, there needs to be better information available on interstate bus service.

Bike lanes could be used for intra-town trips, particularly in areas of New Jersey that are flat, but this will be practical only if sufficient shoulders are added to many of the roads.

Mobility and the Aging Population

This issue group addressed concerns about the travel of senior citizens in three primary areas: transit, driving, and paratransit. Many seniors are afraid to take transit, even though they used it when they were younger. In areas where trains and buses are available, a transit buddy system such as that used in Texas could be tried. The transit buddy system provides volunteer companions to go with people on their first transit trips to instruct them on using the transit system (how to get fares, schedules, transfers, etc.). This works particularly well for mid- to high-income individuals.

A critical issue for the elderly is the problem of vision. Many have difficulty reading signs, especially at night, and are affected by the glare of lights. Street signs need to be more reflective, especially in the suburbs. The elderly need travel information that is presented clearly and accurately, including signs and other written information, such as transit schedules, that use large letters and are easy to read. The group recommended a system that would feed signage problems to NJDOT, such as a suggestion box or toll-free number. Information on lower-speed alternatives to major state highways and interstates needs to be developed and shared with the elderly. Many senior citizens also need more time at crosswalks.

The expectations of seniors for specialized transit services are increasing. While the more affluent adult communities have their own transit services, there has been little success in coordinating paratransit services, especially across county lines, or in extending the eligibility requirements to include both the elderly and persons with disabilities. In addition, paratransit service differs greatly between counties, affecting the expectations of the elderly when they relocate to different counties. Flexibility about how current paratransit can now be used is constrained by certain limitations, including the requirement that new systems to provide mobility for the elderly cannot compete with fixed-route services. By revisiting the Casino Act, there may be opportunities to fund feeder services to transit buses. There may also be incentives for private/public partnerships since many more of these seniors are now able to pay for services.

The issue group also made some recommendations regarding the relationship between transportation and land use:

- Future retirement communities should consider what transportation services are there now, and locate near them.
- Townships must consider the infrastructure and transportation that will be needed to support the large communities that are being developed.
- Before approvals are made, developers should be required to contribute money or services to the transportation system.
- Developers should build some services within the communities (public/private ownership).

Travel Demand Management

TDM will be an even more important component in New Jersey's future transportation system as the trend continues away from building new highways and towards managing and operating the highways we now have more efficiently. The state's nine Transportation Management Agencies (TMAs) are ready and eager to take on this challenge.

The TMAs would like to take a more proactive role in educating the public about alternatives to driving alone (ridematching, car- and vanpooling, telecommuting at least one day a week, etc.) by actively marketing these programs. They are enthusiastic about taking advantage of recent technologies to model traffic and to reach a wider audience through the Internet. The TMAs believe their activities should be better coordinated with those of the metropolitan planning organizations to take advantage of the greater resources the MPOs can offer.

They would like to see TDM promoted in a manner similar to context sensitive design: future development should consider TDM at the planning stage, not after congestion has become a problem. This would include the development of unbiased guidelines for development, since many current site plans accommodate only cars, with few if any provisions for bus stops, bicycle facilities, and sidewalks. Incentives need to be devel-

oped and improved at all levels to make this happen. Perhaps most important, TMAs require both recognition of the importance of their function and adequate funding to pursue their programs. As they noted, "TDM is the policy; TMAs are the tools."

Technology

Advanced technologies are not only changing the way people travel, they are also changing the ways in which NJDOT meets the needs of its customers. As new highway construction becomes less viable, NJDOT is placing more and more emphasis on managing the state's highway system so that all available capacity can be used as efficiently as possible. Intelligent transportation systems will increasingly play a key role in helping to relieve congestion and improve safety.

Emphasis on new technologies requires that the state make financial commitments to operate and maintain ITS systems on a 24/7 basis once they are in place, in addition to the initial capital investments. A new high-technology infrastructure must be created for future generations. In addition, highly trained personnel are needed to oversee the development, installation, operation, and maintenance of increasingly complex electronic equipment, and ongoing training is a must.

The Technology Issue Group largely focused on the kinds of institutional issues that must be addressed to be able to use technology fully. Participants stressed the need to educate the public about the benefits of technology to gain support. In addition, state and regional agencies must strongly commit to coordinating their efforts.

The driving force of new technology is to spread travel peaks and relieve congestion. Unless land use and development issues are addressed simultaneously with technological advances, however, ITS can have only limited success.

FOCUS GROUPS

For the most part, participants in all five focus groups believe transportation has improved in New Jersey over the past five years. The urban groups, which consisted of the low-income group (Camden), the minority group (Jersey City), and the transit users group (Newark), were similar in that the participants all rely heavily on public transportation, especially bus service. Participants in the Salem/rural group rarely take public transportation and are concerned mainly with road and bridge safety. They were open to the possibility of public transportation in the future, such as direct train or ferry service to urban areas. The majority of the disabled group's needs were related to paratransit and handicapped accessibility issues.

Transportation Improvements Desired by All Groups

Participants in all the focus groups were unanimous in requesting the following:

- Better attitudes and skills on the part of bus drivers. Some bus drivers are particularly impatient with the disabled and the elderly. Participants observed that drivers do not always stop at the bus stops, they are often rude, and they are often not prepared to deal with wheelchairs.

- Improved pedestrian and bicycle pathways. This is particularly important to the rural group and to those who must use wheelchairs.

- Less construction and congestion. Drivers complained that bridges and roads are constantly under construction. The members from a rural area were also concerned about road and bridge flooding.

- Better signage.

Transportation Improvements Desired by the Urban Groups

The minority and low-income transportation users and the transit users were particularly interested in the following:

- Increased bus service, including both frequency and the number of routes, especially on nights and weekends. This is particularly true for the low-income group because they rely most heavily on bus service.

- Improved security, especially for those traveling in poorer neighborhoods, including designated bus stops, safe shelters, police patrols, cameras on buses and in train stations, and plainclothes police.

- Schedule and fare information that is more accessible.

- Separate vehicles for students, whom they consider loud and ill-mannered.

- Transit-friendly development, such as stores and shopping near stations.

Transportation Improvements Desired by People with Disabilities

This group focused primarily on the needs of wheelchair users:

- Wider doors and better lock-in systems on trains and buses
- Greater assistance and patience from bus drivers on both Access Link and other systems
- Handicapped accessibility at all stops
- More reliable handicapped equipment on buses
- Better sidewalks and more depressed ramps
- Unisex bathrooms in rest areas (to permit opposite-sex assistants to aid disabled individuals)
- Longer signal timing at street crossings
- Paratransit that is:
  - Convenient
  - Less expensive
  - More responsive
  - Flexible in terms of reservation and notification requirements.

Transportation Improvements Desired by Rural Transportation Users

The residents of Salem County who participated in this focus group were primarily concerned about road safety. They would also like to see investments in

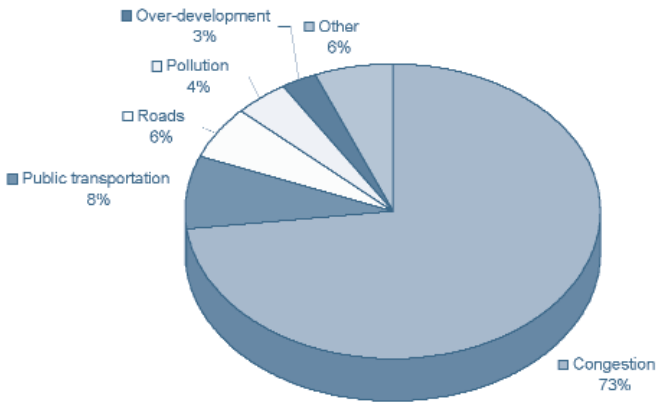
- Sidewalks along rural residential areas
- Road shoulders and guardrails along rural routes
- Widened and improved roads, especially those that lead to resort areas (like Atlantic City) or employment centers
- Improved lighting and signage

PUBLIC OPINION SURVEY

The results of the public opinion survey strongly support the observations individuals made through the other public involvement tools used to develop this plan. The survey is statistically valid, within 3.5 percent.

Figure IV.1

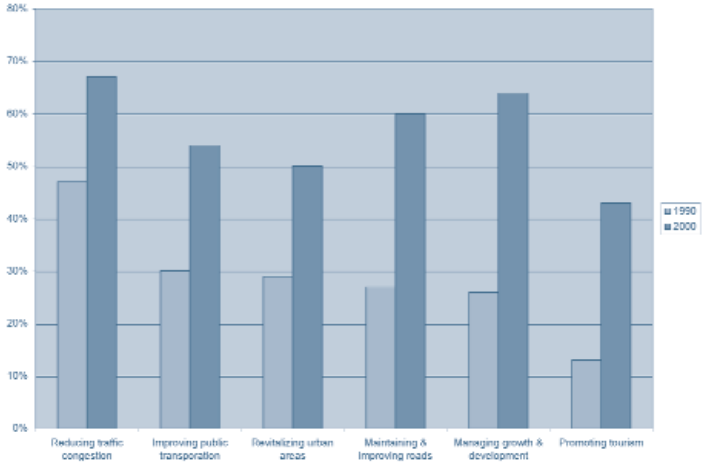
What Is the Biggest Transportation Problem that Will Face NJ Over the Next 20 Years?



Seventy-three percent of the New Jersey residents polled believe congestion is the biggest transportation problem facing the state. The percentage naming congestion as a critical issue has moved up 20 points since 1990. Other issues identified as most critical are public transportation, roads, pollution, and too much development.

Figure IV.2

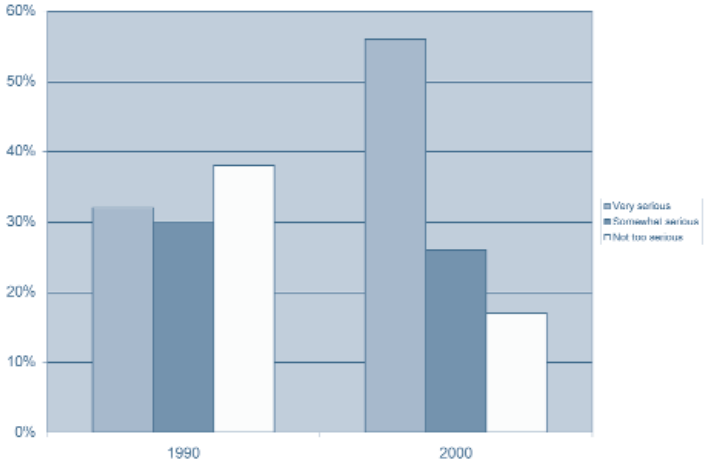
Which of These Issues Are Critical?



Respondents were also presented with a list of issues that New Jersey will face in the next 5 to 10 years and asked to rate whether each issue is critical, important, or not important. Several issues have gained considerably in significance since 1990, as the chart above illustrates. For example, the percentage of New Jersey residents who say managing development is a critical issue has moved from 26 percent in 1990 to 64 percent today. Preserving open space and farmland was also ranked as critical by 64 percent of the participants. This question was new in 2000.

Figure IV.3

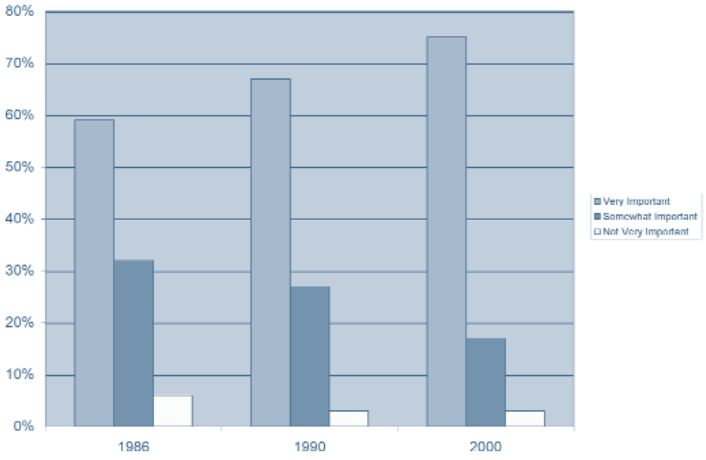
How Serious Is Traffic Congestion in Your Area?



When asked how serious traffic congestion is in their area now, 56 percent of the respondents said it is very serious, 26 rated it somewhat serious, and 17 percent said it is not too serious. The percentage of those saying traffic congestion is a very serious problem moved up 24 percent in the past decade.

Figure IV.4

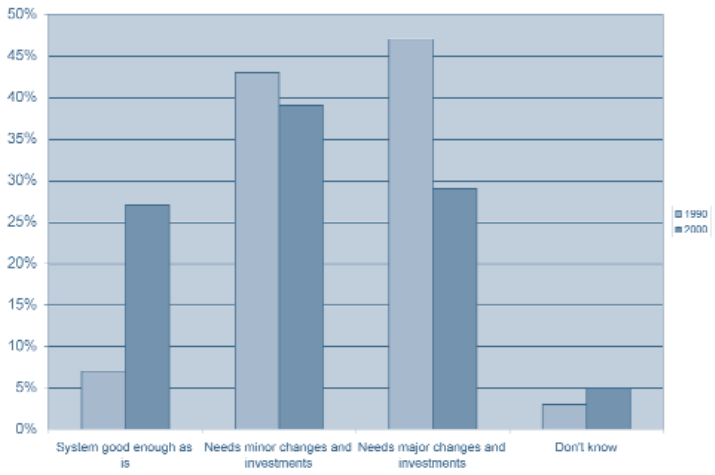
How Important Is a Good Public Transportation System to the Economy?



Similarly, when they were asked how important a good public transportation system is to the state's economy, 75 percent said that is was very important, 17 percent said it was somewhat important, and only 3 percent said it was not important. The number of people who said a good system is very important was 8 points higher than in 1990 and 16 points higher than in 1986. In addition, 75 percent of the respondents now believe that subsidizing transit fares is very important, the highest percentage since the question was first asked in 1986 and 14 points higher than in 1995.

Figure IV.5

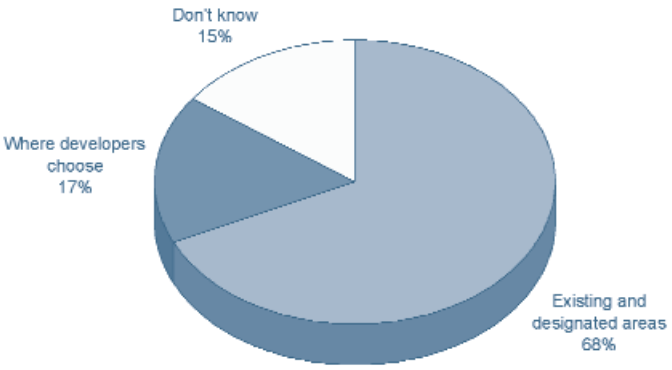
How Much Change and Investment in NJ's Transportation System Is Needed to Maintain Economic Growth?



On the whole, the public appears to be more satisfied with New Jersey's transportation system than it was a decade ago. As the chart above indicates, fewer survey participants believe that major changes are required to maintain economic growth in the next 5 to 10 years than those who completed the survey in 1990. Twenty-seven percent indicated that the system is good enough as is, compared to only 7 percent in 1990. Twenty-nine percent said the system needs major changes and investments, compared to the very high 47 percent in 1990.

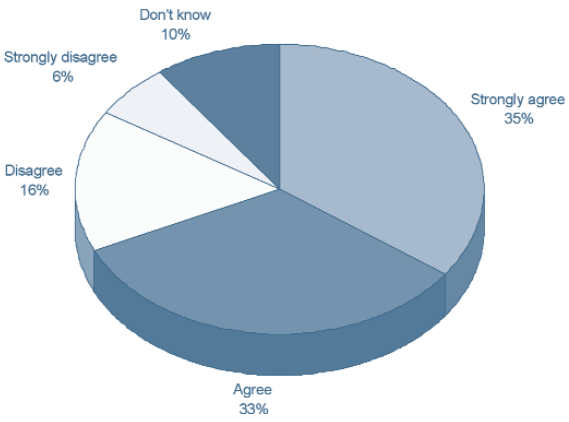
The citizens of New Jersey were also asked about growth and development since these elements are critically important to the state's ability to continue to provide an excellent transportation system.

Figure IV.6
Where Should New Development Be Concentrated?



Respondents were asked where new development should be concentrated - in existing towns and new villages, in designated growth areas, or wherever the developers and landowners choose. A wide margin, 68 percent, indicated growth should be concentrated in the existing towns and designated growth areas, while 17 percent said this decision was up to the developers and landowners. Respondents with lower family income levels were more likely to support developers' choice than those with higher income levels.

Figure IV.7
"Mixing appropriate commercial services with new residential development should be encouraged." Agree or Disagree?



Respondents were also asked whether they agreed or disagreed with the statement above. Thirty-five percent strongly agreed with this statement and 33 percent agreed. Sixteen percent disagreed and 6 percent strongly disagreed.

When asked how they felt about the following statement: "Revised zoning codes to promote land uses and site designs that better support transit use, bicycling, and walking should be encouraged," 48 strongly agreed and 36 percent agreed. Only 6 percent disagreed, and one percent strongly disagreed.

Finally, participants in the survey were asked how effective they thought a list of possible improvements would be on the transportation system. Creating service patrols to respond to accidents was rated very effective by 70 percent, 6 percent more than any other suggestion. Other improvements that were rated as potentially very effective were:

- Improve rail freight service to help take trucks off the road
- Implement new technologies to make highways more efficient
- Design communities to make it easier to walk and bicycle to stores, schools, and public facilities.

Building more highways, the transportation solution of past decades, was rated least in effectiveness of all the possible improvements. Expanding bicycle networks and constructing new sidewalks were both rated as potentially more effective.✲

V. OUR URBAN CENTERS

Historically, New Jersey's urban centers have been the focus for commerce, industry, government, culture, and education. Our major cities were developed because they were located near a transportation corridor, power source, or other natural resource.

Jersey City arose from scattered Dutch settlements facing New York Bay, and this strategic location has been critical to its development. Early on in its history, Jersey City served as a ferry and railroad terminal, and witnessed the construction of the Hudson & Manhattan Tubes and the Holland Tunnel. Elizabeth and Newark became major manufacturing and distribution hubs given their central location in the northeast corridor. Paterson developed an extensive manufacturing base, using the power of the Great Falls of the Passaic River, and then hydroelectric power, and many silk, textile, and paper mills, and other industries were built. By 1900 Paterson was the fifteenth largest city in the country. Atlantic City thrived in its dual role as shore tourism magnet and central city. And from the beginning, Trenton has served to link the movement of people and goods between Philadelphia and New York City. On the Delaware River, Trenton and Camden developed diversified manufacturing bases.

In the recent past, however, the precipitous decline of manufacturing employment and the movement of office, service, and retail employment to suburban and rural areas of New Jersey have substantially eroded the population, employment, and tax base of many of New Jersey's major urban centers. This loss of public- and private-sector resources has placed a disproportionate burden on the economies of New Jersey's urban centers. As a result, action is required not only by each urban center, but also by state government, counties, and the private sector to reverse trends and to put forth worthwhile opportunities and strategies for revitalization.

The *State Development and Redevelopment Plan* recognizes the critical role our state's urban centers play and can play in New Jersey's future; the plan's first goal is "revitalize our state's cities and towns." NJDOT and NJ TRANSIT are committed to the rebirth of New Jersey's urban centers and to supporting the implementation of the SDRP. This commitment is reflected in the recommendations contained in this chapter, as well as in other chapters of *Transportation Choices 2025*.

Additionally, policy-makers and legislators must realize the importance of the mobility offered by local bus services in New Jersey's major urban centers. Many urban residents simply do not have access to an automobile. Local bus service and other transit services provide all the mobility of many urban residents. These local transit services must be maintained, and many need significant service expansion. It is vital to New Jersey's overall economic health and the health of our urban centers to maintain critical operating funds and support increased operating funds for local bus and other urban transit services.

The problems of New Jersey's urban areas are well known. From highways to classrooms the infrastructure of our cities is aging, and public policy must guide investments to maintain and use existing infrastructure while building needed new facilities. However, affording the construction and upkeep of infrastructure is challenging as needs nearly always exceed available resources. Despite these problems, outreach conducted for the development of *Transportation Choices 2025* found that planners, economists, employment professionals, and others throughout New Jersey are optimistic, albeit cautiously, that many of our major urban centers are experiencing or are at the brink of comebacks.

NJDOT and NJ TRANSIT will continue to work to bolster urban redevelopment activities and, to the extent possible, use transportation investments to redirect growth to our state's urban areas in support of the policy guidance provided by the *State Development and Redevelopment Plan*. See Chapter X for NJDOT/NJ TRANSIT's Urban Investment Strategy.

DEVELOPMENT OF THE URBAN SUPPLEMENT REPORTS

This chapter of *Transportation Choices 2025* highlights the findings of the seven Urban Supplements prepared as part of the long-range transportation plan update. State law requires that NJDOT, in conjunction with NJ TRANSIT, prepare and submit to the New Jersey Legislature an Urban Transportation Supplement to the statewide long-range transportation

plan. The aim of the Urban Supplement, which must be updated every five years, is to identify and address the transportation needs and issues of seven major urban centers in New Jersey, including Atlantic City, Camden, Elizabeth, Jersey City, Newark, Paterson, and Trenton. Map V.1 depicts the cities for which an Urban Supplement was developed. The first Urban Supplements were prepared in 1993, and new reports were prepared as part of *Transportation Choices 2025*.

The Urban Supplement reports outline how to improve access to these major urban centers, emphasizing the transportation problems of city residents who are employed or who are seeking employment in suburban areas - the reverse commute. They also address improvements to the circulation needs within each city to support the growth and redevelopment of our urban areas, consistent with the *State Development and Redevelopment Plan*. Inasmuch as transportation can be a catalyst for redevelopment and increased employment in our urban areas, our urban cities should be able to provide jobs for city residents, as well as other residents of our state. If the SDRP is successful at redirecting growth, urban residents should be able to avail themselves of job opportunities near their residences, making for shorter and less expensive commutes.

Information for the Urban Supplement reports was gathered from the US Census, NJDOT, NJ TRANSIT, county and local master and transportation plans, the New Jersey Department of Labor, the Office of State Planning, the three metropolitan planning organizations for New Jersey, and other sources of published data and materials. Importantly, information on the transportation needs of each of the urban areas was gathered from personal interviews with professionals working in planning, transportation, economic development, and job placement and training at the local, county, and state levels. More than 60 individuals were interviewed to learn their thoughts and opinions about the transportation needs of our urban centers.

Each Urban Supplement report:

- Provides a demographic, labor force, and employment profile of the city
- Examines suburban and in-city employment locations
- Describes the transportation network serving the city and its environs
- Assesses progress made in bringing the transportation improvements and strategies recommended in the 1993 Urban Supplement to fruition
- Updates the progress made to develop new services as proposed in the Community Transportation Plans prepared to address the needs of Work First New Jersey participants and other transit-dependent individuals in each county
- Identifies transportation improvement strategies and recommendations for that city
- Summarizes employment-related funding programs for transportation services
- Examines other significant problems facing urban residents who are seeking employment.

MAJOR THEMES FROM THE URBAN SUPPLEMENT WORK

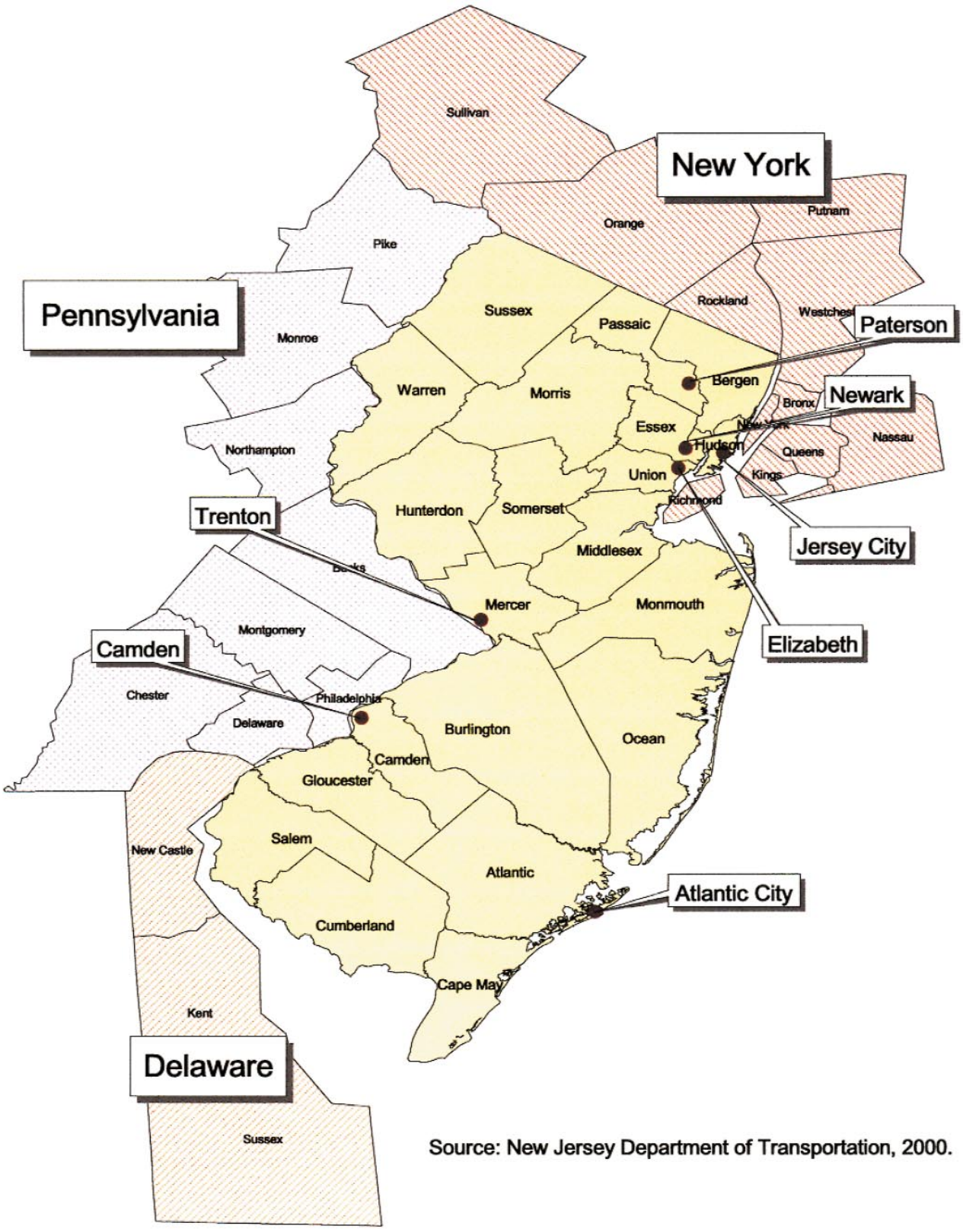
Financial Commitment

- New Jersey needs to commit more financial resources to meeting the increasing demand for local bus service and other bus and transit services. Bus ridership in our urban areas has shown steady growth over the past eight years because of the increase in employment, the number of people working, and improvements to bus services. Marked increases are on weekends and during early and late runs. New Jersey needs to develop more services to meet this demand, which will continue to increase. Sufficient operating funds for these vital transit services must be made a priority.
- New Jersey should ensure that financial resources are committed to transit services that serve the most needy. Many of New Jersey's urban residents do not have access to a vehicle; transit service alone provides all their mobility. It is vital that these services be maintained and expanded when needed through the dedication of sufficient capital and operating funds.

Urban Economic and Community Development

- New Jersey should encourage urban growth and redevelopment, thus enabling urban residents to seek urban jobs first, thereby supporting the policy guidance offered by the *State Development* and *Redevelopment Plan*. People should work as close as possible to where they live. Short commutes are less expensive (in terms of fares and time) and more readily enable working parents to meet childcare obligations.
- New Jersey needs to continue to make transportation improvements and investments that sup-

MAP V.1 - NEW JERSEY URBAN SUPPLEMENT CITIES



Source: New Jersey Department of Transportation, 2000.

port the *State Development* and *Redevelopment Plan*. New Jersey needs to invest in more bus service, expanded rail and light rail transit, and facilities like shelters in the most urbanized areas of our state instead of investing heavily in getting suburbanites to work in areas where transit may be less efficient.

•New Jersey should use transit services and facilities to enhance the livability of communities. Transit can be the focal point of a community and a catalyst for urban development and redevelopment.

Service Improvements

•New Jersey needs to address intra-city circulation needs as a first priority. The first focus should be to ensure that there are adequate and convenient connections between neighborhoods and employment destinations within the city. The second focus should be connecting the cities to the near suburbs where transit already exists.

•New Jersey needs to improve regional mobility. Improvements are needed to allow cross-county trips for all residents between urban and suburban areas, not for just one group of people to a particular job site.

•New Jersey needs to improve bus service between cities in the state. Many routes are structured for a commute into New York or Philadelphia, secondarily providing intra-state service. Many of our urban centers need services matched to their needs as final destinations.

•New Jersey should build on existing transit services first. The Urban Supplement work has identified the need for expansions of service frequencies and hours and extensions of service to weekends. This is less expensive to implement than wholly new services, and does not require expensive marketing. For example, people soon hear from others that a bus now operates until midnight.

•New Jersey should address the gaps in second- and third-shift service. Service is desperately needed in these areas to get employees to jobs. Again, service extensions are relatively inexpensive and the payoffs are immediate compared to starting new routes.

•New Jersey should address the lack of Saturday and Sunday service and 24-hour service. In numerous instances, a bus route could add a significant number of new riders with a service expansion because the demand already exists. A classic example is services to malls - bus service may end at 9:00 PM while people have to work until 9:30 PM.

•New Jersey should review traditional hub-and-spoke-oriented bus service and make appropriate changes that facilitate both intra-city and reverse commuting.

•New Jersey should improve the frequency of service and facilities for reverse commuters and develop intermodal connections to suburban locations.

•New Jersey needs better feeder and intermodal services to maximize rail transit for the reverse commute. Many suburban jobs could be reached by rail if there were transit connections at the destination station. This is true for better bicycle and pedestrian connections as well. Where possible, rail schedules should be examined to help support the reverse commute market.

•New Jersey should continue to look at innovative ways to serve small travel markets. New Jersey should examine changing regulations to allow for shared-ride taxis where transit is not economically feasible. Subsidizing these services may be less expensive than other alternatives.

•New Jersey needs to address security issues related to bus operations, particularly at night. This is an issue both for bus drivers and for passengers who must board/debark.

•New Jersey needs to continue addressing the safety of transit riders as pedestrians and bicyclists. Attention must be paid to the complete trip - facilities for pedestrians and bicyclists for both rail and bus are important, and ensuring good connections at the destination is also important. This means improving street crossings, sidewalks, and other pathways. Increasing the capacity of roadways should not result in the destruction of sidewalks, shoulders, and bus stops.

•New Jersey must alleviate congestion because it seriously affects bus operations. Operating bus transit costs more because of delays, such as along Routes 9 and 21, and at other locations in New Jersey. Saturday and Sunday congestion has been increasing because of travel to malls and other retail corridors.

•New Jersey should continue leading efforts in developing a transit system that integrates NJ TRANSIT bus, rail and light rail services with those provided by private carrier bus, van, jitney operators, and paratransit operators.

Education and Information

•New Jersey should do a better job of educating job placement and training professionals and the general public about how to use transit. They need more information about the various modes, operators, services and fares so that transit can be used most efficiently and conveniently.

•New Jersey needs to educate employment pro-

fessionals and the general public about how and where transit works. Everyone wants a bus, but transit isn't the answer in some cases because of cost, operating constraints, insufficient demand, lengthy routing, or destinations that are not transit- or pedestrian-friendly. People need to understand why transit cannot be provided everywhere.

•New Jersey should inform and educate firms that relocate about the "cost" of locating in suburbia. After they have moved, firms frequently contact NJ TRANSIT to request bus services that simply cannot be provided. Instead, firms should consciously locate near transit services that are in and near our urban centers, if they have a workforce that they know is located predominantly in an urban area.

•New Jersey needs to better inform people about transit services by reaching into various immigrant communities to expand market penetration and develop context sensitive services. Unregulated and uninsured services are being used by the uninformed and by those more comfortable riding in a smaller vehicle driven by someone who speaks their language.

•New Jersey needs increased communication among various agencies and employers and NJDOT and NJ TRANSIT. School districts and colleges need to convey information on class schedule changes to NJ TRANSIT. Large employers along a bus route need to inform NJ TRANSIT about shift changes, facility expansions, and the like so that the agency can proactively rather than retroactively address service modifications. NJDOT and NJ TRANSIT need to consider a relationship with local governments because the construction of low- and moderate-income housing should be in areas near transit and where pedestrian and bicycle amenities can be provided.

Highway System

•New Jersey should address the effects of highway congestion as it affects thousands of bus riders every day.

•New Jersey should repair or renovate structurally deficient bridges to enable buses to use the most direct routes and travel unimpeded.

•New Jersey should continue to address safety, particularly at high-accident locations.

•New Jersey should bring substandard pavement up to a state of good repair.

•New Jersey should continue to address highway improvement, preservation, and maintenance programs.

SUMMARY OF THE URBAN SUPPLEMENT REPORTS AND RECOMMENDATIONS

Information derived from each city's Urban Supplement report is provided below along with the specific recommendations to improve commutation in and around each urban area.

Atlantic City

The transition of Atlantic City to a service economy dependent on tourism accelerated in the 1990s so that today more than 87 percent of its jobs are in the service industries. Casinos and related service industries will continue to dominate the local economy as new casino-hotels and entertainment centers are built.

After decades of declining population, Atlantic City may have stemmed the flight to the suburbs. The population figure of approximately 38,000 has remained virtually unchanged since the last census, and projections for the next 25 years show that the city's population may grow slightly. While a greater percentage of residents are working now than in 1990, the percentage of unemployed has increased as casinos have cut payrolls. With the opening of two new casinos and hotel rooms and the redevelopment of the eight-block area between the Atlantic City Convention Center and the Boardwalk, employment is expected to bounce back again over the next five years.

Despite the overwhelming impact of the casino industry on the city and the billions upon billions of dollars spent there, Atlantic City's local economy is still struggling. Over the past few years, experts have come to the conclusion that what is necessary for Atlantic City to thrive is broader-based tourism that brings in non-casino hotels, family entertainment, and other types of attractions. According to the Convention and Visitors Authority, only about 20 percent of tourists stay overnight, and half of the total visitors come mostly to gamble. The city lacks enough hotel rooms to expand the market beyond casino goers, and quality shopping and retail businesses are scarce. Finally, an increasing number of gaming and gambling opportunities on the northeastern seaboard all compete with Atlantic City.

Nevertheless, there are signs of rebirth in many locations. The new Convention Center opened in 1997, the Atlantic City International Airport was expanded and upgraded, and the Atlantic City Expressway recently developed a new gateway to the city. Over

the past several years, the central business district added a new supermarket and shopping plaza and a Special Improvement District is working on beautification projects. Several residential neighborhoods from Venice Park to Lower Chelsea, from Ducktown to Kentucky Avenue, and from Bungalow Park to the Northeast Inlet are being rejuvenated.

A number of features set Atlantic City apart from the other six cities reviewed in the Urban Supplement. First, the city is physically smaller than the others, so that most of its population is within easy access of transit. Second, unlike the other cities, Atlantic City is located far from the main highways, making access to some of the state's largest employment centers difficult. Most important, because of the casino industry, Atlantic City is now the major job site in both Atlantic County and the southern New Jersey region. As a result, the reverse commute as a key to future employment of residents is much less an issue in Atlantic City than it is in New Jersey's other major urban centers. Atlantic City is the main economic engine of the region, but suburban corridors contain concentrations of jobs that can be filled by city residents. Despite these major differences, Atlantic City shares many problems common to major cities, including poverty, crime, and poor housing.

Even though a high proportion of Atlantic City residents work within the city, suburban job locations afford many opportunities, and several corridors are important, including Route 40/322, Tilton Road and Delilah Road, and Route 30. Both skilled and less-skilled jobs are represented by a mix of retail, warehousing, manufacturing, and service industries.

Although the regional highways are fairly good, sections of Routes 30, 40 and 322/40, as well as the Garden State Parkway, face highly congested conditions and are prone to accidents. Absecon Boulevard, one of the main arteries in Atlantic City, is nearing the limit of its ability to carry traffic. The only significant travel option for the reverse commute is NJ TRANSIT bus service.

Transit in Atlantic City and from Atlantic City to the suburbs is also good, and nearly all bus routes are experiencing increasing ridership on weekdays and weekends. Still, NJ TRANSIT tries to meet the demand for more service. There are requests to add service to relieve overcrowding, to better accommodate early morning and late evening shifts, and to provide more extensive weekend service. Added to these pressures is the desire to operate in locations along suburban corridors that are either not currently served or underserved by buses. Initiating new transit services in suburban areas where residential and employment densities are low is likely to be less successful than building on existing bus routes, as evidenced by the results of recent experimental services.

Mobility in Atlantic City is enhanced by the Atlantic City Jitney Association, which runs 190 13-seat jitneys (mini-buses) on four routes throughout the city.

Under the auspices of the Job Access and Reverse Commute Program, the Atlantic County/Cape May Workforce Investment Board has been approved to run a new service to link people and jobs in suburban areas. Although there is fairly good transit service in the Atlantic City area, the lack of adequate transportation to job sites remains a very important problem.

Highway Recommendations

- Initiate studies and implement recommended improvements to relieve congestion on major roadways, especially along Routes 30, 40, 322, and 40/322, and along Absecon Boulevard in Atlantic City. Severe congestion in the vicinity of Atlantic City impedes mobility for drivers, truckers, and bus riders. Congested interchanges on both the Garden State Parkway and the Atlantic City Expressway are being addressed by construction projects planned or underway.
- Undertake bridge upgrades and replacements. Because Atlantic City is an island, the condition of bridges serving the city is critical. Structurally deficient bridges in Atlantic County should be addressed, with emphasis on bridges on the approaches to Atlantic City and within the city itself.
- Improve pavement conditions on sections of Routes 30, 40, and 40/322 outside Atlantic City.
- Continue to address and implement safety improvements at high-accident locations along Route 30, the White Horse Pike and Absecon Boulevard, on the Garden State Parkway at the interchange with Route 40/322, and at other high-accident locations.

Transit System Recommendations

- Improve cross-county bus service. Radial service into and from Atlantic City is quite extensive along the major corridors, but service that runs north to south is non-existent.
- Provide bus service that runs 24 hours a day, 7 days a week to hotel-casinos.

•Coordinate jitney service schedules with the start times of casino work shifts at the Taj Mahal and Showboat.

•Ensure that bus service schedules complement work shifts in Atlantic City.

•Monitor bus routes to ensure that bus service meets the needs of employers in Atlantic City as employment and employers grow.

•Add bus service to Routes 30 and 322/40 and Tilton and Delilah Roads, and in Buena, Buena Vista, industrial areas of Egg Harbor City, and other locations in western Atlantic County. These routes would serve major employment destinations, malls, and other commercial activity centers, community resources such as hospitals, and rail stations in Hammonton and Egg Harbor. They would connect with other NJ TRANSIT bus routes to extend the utility of the new services.

•Alleviate current overcrowded conditions on some bus routes.

•Increase information about transit services in Atlantic City, Atlantic County, and southern New Jersey, including information not only on schedules, routes and fares, but also on how to use the bus service.

•Support the implementation of a transit village in the Urban Enterprise Zone of Pleasantville. A transit village is a compact, mixed-use community centered around a transit facility that invites residents and workers to use transit more and automobiles less.

Camden

Camden, the seat of Camden County, is located within the heart of a network of roads that carry the largest vehicular traffic in the eastern United States. This network gives direct access to the Port of Camden and Philadelphia and the Delaware River Waterway, and connects the Port of Newark/Elizabeth and the Atlantic seaboard to the east with Pittsburgh and Chicago to the west. Camden remains the largest port on the New Jersey side of the Delaware River.

Once a leading industrial city, Camden faces an uncertain future. While the city maintains its role as an important center of freight and vehicular traffic and is slowly adding a core of business and health services, the weakening in its manufacturing base has created a deep economic decline. The robust growth in New Jersey over the past several years has helped lift Camden's economic situation to only a limited degree. Unemployment remains very high, even compared to the other Urban Supplement cities. Nevertheless, Camden's transportation infrastructure is a valuable resource.

Unlike some other Urban Supplement cities, Camden has not yet redefined its role in the regional economy for the 21st century. Unlike cities in northeastern New Jersey that are helped by their proximity to New York, Camden is located next to Philadelphia, a city that continues to lose jobs and population. The level of physical and social degradation is severe in Camden, and investors need incentives to go into the city with their plans and dollars. Despite some new development, such as the Sony/Blockbuster E Center and the NJ State Aquarium, and redevelopment in Camden, the surrounding areas remain empty and unattractive. In contrast to the other Urban Supplement cities, Camden has virtually no middle-class upon which to rebuild the city. While many Urban Supplement cities are finally at the threshold of a comeback or already undergoing a renaissance, Camden remains left behind.

On the other hand, many job opportunities are developing in suburban locations in Camden, Burlington, and Gloucester counties. Bi-state commuting to Pennsylvania has always been an important part of the journey to work in Camden. Although there are psychological, informational, and institutional barriers to crossing state lines to work, there is a great potential for an increased number of Camden city residents to work in Philadelphia and suburban Pennsylvania because a rich network of transit service is available. Both skilled and less-skilled employment opportunities exist in most of these locations.

Camden residents enjoy a fairly high level of public transit service. Improvements to this service are critical, however, especially since there is a low level of household automobile ownership and a subsequent dependence on these services. Several new services are operating or are proposed to assist the reverse commute. A shuttle service from Camden and suburban locations was expanded to accommodate off-hour commuting and new employment sites in 1999. A new service has been approved to provide door-to-door shuttle service from Camden and other locations to the United Parcel Service Lawnside Facility. Additionally, the new Southern New Jersey Light Rail Line that will operate between Camden and downtown Trenton will enhance access to the city.

In addition to transit improvements, nearly all of Camden County's roadways are congested, and many are aging. The Statewide Transportation Improvement Program projects addressed by the

state's Local Aid Program target these concerns through operational improvements, resurfacing, and bridge replacement projects, and projects that enhance mobility for pedestrians, bicyclists, and transit users. But there are always more improvement needs than there are resources. Camden County's most pressing needs continue to be in the areas of relieving congestion, improving the flow of traffic, and enhancing access to other modes.

Highway Recommendations

- Initiate studies and implement recommended improvements to relieve congestion on major roadways, particularly along Routes 30, 38, 42, 70, 73, 168, 561, and I-676. Alleviate local congestion on Mickle Boulevard and mitigate the effects of truck traffic on residential areas from Delaware to Seventh Street.
- Undertake bridge upgrades and replacements, with particular attention to the Broadway, State, and Federal Street bridges and the Route 641 bridge in Haddon Township.
- Improve pavement conditions on Routes 30, 70, and I-676, as well as segments of Jackson, Laurel, and Cedarbrook roads.
- Continue to address and implement safety improvements at high-accident locations in Camden County, including those clustered around intersections along Routes 130 and 42 outside Camden.
- Make improvements to local city streets by upgrading the traffic signal system and network of sidewalks and other pedestrian facilities.
- Increase access to the Camden waterfront along Delaware Avenue and Front Street and to Petty's Island Maritime Complex.
- Provide adequate signage throughout the city to direct visitors to major destinations.
- Improve the traffic flow along various roadways and at key intersections on Routes 168, 536, 604, 673, 689, 705, 716, at Brooklawn Circle, in the Erial area, and at interchange 3 of the New Jersey Turnpike.

Transit Recommendations

- Comprehensively review Camden bus routes and schedules to determine whether the current frequency of service and transfers are appropriate and meet the needs of users.
- Improve intra-city bus service so that all transit routes do not funnel into the downtown transportation center and service is not limited between the city's neighborhoods and employment sites.
- Provide 24-hour-a-day, 7-day-a-week bus service in Camden, especially on Routes #400 and #413.
- Add late evening and/or early morning bus service to accommodate employees who work the second and third shifts, especially on Routes #404, #451, #452, and #453.
- Address security issues for both drivers and passengers who travel during the late evening and early morning hours.
- Add or expand Saturday and Sunday service to Routes #401, #412, #451, #453, and #457. Add evening and weekend service to the Woodbury corridor.
- Alleviate overcrowded conditions on Routes #404 and #409.
- Increase service in locations that are underserved, including Pureland Industrial Park, Pennsauken Industrial Park, Airport Industrial Park, and the East Gate Industrial Corporate Center.
- Facilitate bi-state commuting by transit. NJ TRANSIT and SEPTA should make it easier for riders to transfer between the two systems by improving the coordination of schedules and fares.
- Improve sidewalks, lighting, bus signs and shelters, and other amenities for bus transit riders.
- Use transit stations to enhance livability in Camden. Stations should be integrated functionally and visually, streetscapes should be updated, and these facilities should serve as catalysts for economic development. This is particularly important for the new station construction that will be occurring for the Southern New Jersey Light Rail Transit System.
- Improve transit facilities and intermodal connections in Camden County. Make improvements to the Beckett Street and Broadway terminals in Camden. Construct additional park-and-ride lots along I-295. Improve access to the Atco rail station, expand parking there, and consider adding a rail station at Pennsauken along the Atlantic City Rail Line. Install trailblazers on roadways in the vicinity of PATCO's Ferry Avenue, Haddonfield, and Westmont stations.
- Make all PATCO stations handicapped and wheelchair accessible.

Elizabeth

For much of its existence, Elizabeth has been a transportation center. It remains a transportation hub for New Jersey and boasts two NJ TRANSIT rail lines, the New Jersey Turnpike, the Garden State Parkway, many other highways, and a multitude of bus routes serving its citizens. The importance of transportation is likely to continue growing as Elizabeth and Union County encourage the expansion of the

capacity to move both people and goods along the Route 1&9 corridor, at the Port of Newark/Elizabeth, and at Newark International Airport. In addition to various major highways and rail and bus transit, Port Newark/Elizabeth and Newark International Airport provide Elizabeth with access to regional, national, and global destinations. Over the next several years the Newark-Elizabeth Rail Link will be built to extend direct rail service from Elizabeth and Newark to the airport.

Since the mid 1990s, Elizabeth has aggressively pursued development and redevelopment within the city. As a result, various industries have grown, including manufacturing, retail, and warehousing and distribution. An increase in jobs over the next 25 years appears inevitable as Elizabeth and Union County target an extensive amount of new commercial and industrial development along Routes 1&9, at the Port, and at Newark Airport. Elizabeth has designated its midtown area and the Elizabeth Seaport for new housing stock for residents to support the increase in the number of jobs.

Elizabeth has a wide variety of job locations in the city, including downtown retail districts, hospitals, government offices, the Port of Newark/Elizabeth, Newark International Airport, Jersey Gardens, and IKEA. Jobs in the suburbs are plentiful and equally as varied and may be found in Linden and Rahway, in the Union/Kenilworth area, and along Route 22 between Mountainside and Cranford, Interstate 78 from Millburn to Berkeley Heights, Interstate 287 in Piscataway, and Routes 1 and 18 in New Brunswick and East Brunswick.

Although transportation is plentiful, there are problems. Serious congestion and frequent accidents are common along the Garden State Parkway, Route 439, and Route 27, and the condition of pavement is poor in the city of Elizabeth. The network of public transportation is extensive and serves many locations outside the city. However, reaching suburban locations can be unsafe, slow, and inconvenient. More often than not, the lack of Sunday or late evening service is a problem, and some routes do not operate frequently enough. One of the most pressing needs for the reverse commute in Union County is to establish appropriate transit service from Elizabeth to employment sites along the Route 22 corridor.

The increasing development and redevelopment of locations both inside and outside the city limits will create the need to assess the adequacy of public transit service operations in the vicinity of Elizabeth. Many highway improvements have been suggested for the Transportation Development District and for the Port areas to accommodate growth. These improvements are addressed in the most recent Statewide Transportation Improvement Program developed by NJDOT in conjunction with the North Jersey Transportation Planning Authority. Similar recommendations for transit users will be necessary, and proposals to improve intermodal connections should be seriously considered.

Elizabeth has many major highways that link the city with outlying areas, and its has a variety of bus routes that serve major local destinations, as well as other Urban Supplement cities such as Newark, and New York City. However, some highways approaching Elizabeth and some roadways within the city are congested, and capacity will be stressed by additional anticipated growth. Automobile ownership among households is rather high compared to other Urban Supplement cities, but still about one-quarter do not own vehicles. NJ TRANSIT operates most of the bus service in Elizabeth, and is assisted by the Orange-Newark-Elizabeth bus company, which operates in these locations. Between 1993 and 2000, bus ridership increased dramatically by 50 percent, 70 percent during weekdays and Saturdays, and Sunday ridership more than tripled.

Highway Recommendations

- Initiate studies and implement recommended improvements to relieve congestion on major roadways, especially at the southern end of the Garden State Parkway in Union and along Routes 22, 24, 27, and 439.
- Undertake bridge upgrades and replacements. Structurally deficient bridges in Union County should be addressed, particularly bridges on the New Jersey Turnpike entrance to Elizabeth and within the city itself.
- Improve pavement conditions on sections of Routes 22, 24, 28, and 439.
- Continue to address and implement safety improvements at high-accident locations, including the intersections of Route 439 with Routes 1&9 and 27, and other places along Route 1&9.

Transit Recommendations

- Add late evening and/or early morning bus service to accommodate employees who work the second and third shifts. Routes that would benefit are #40,

#56/57, #58, and #59.

- Increase the frequency of bus service on some bus routes, including Routes #56/57, #59, and #112.
- Add Saturday and Sunday service to some bus routes, especially Routes #56/57 and #58.
- Add more late evening and Saturday service and institute Sunday service on Routes #26 and #52.
- Increase the efficiency of off-peak and morning reverse commute service on Route #113.
- Add bus service to new locations.
- Improve transit and pedestrian facilities in the Route 22 corridor. More direct and frequent bus service is needed to the various retail, industrial, and office establishments.
- Investigate ways to serve employment centers by transit. Options could include an expansion of WHEELS or traditional transit service. Employment centers include various hospitals, medical centers, malls, and hotels along Routes #26, #52, #66, and #70; the Port and Linden Municipal Airport; and offices along I-78.
- Monitor bus routes to ensure that bus service meets the needs of employers in Elizabeth and surrounding areas as employment and employers grow.

Jersey City

Jersey City's locational advantage and extensive transportation infrastructure, which initially fueled the city's growth, have once again become important. Due to the foresight and planning efforts of the city and Hudson County, Jersey City has emerged as a major center of employment growth and opportunity. Over the past ten years, many financial businesses in New York City have moved to Jersey City in search of plentiful office space and access to transportation.

Two particular sources of transportation have been especially advantageous to employers in the city. The Port Authority of New York and New Jersey Trans-Hudson Corporation (PATH), which had taken over the Hudson & Manhattan Tubes years ago, expanded its service and operates a terminal and transportation center in Journal Square. In addition, in 2000 the first operating segment of the Hudson-Bergen Light Rail Transit System (HBLRTS) opened in Jersey City. The HBLRTS, as well as other transportation investments planned in the city, is central to Jersey City's vision for the future as a "community of neighborhoods and a regional, national and global center." Jersey City seeks to use the transportation system to enhance the quality of life of residents while developing the city into a center of international business and commerce.

A new economic development program led to the redevelopment of housing and industrial properties. The waterfront has lured developers seeking to create high-density housing and commercial properties. Downtown Jersey City, the heart of the central business district, is experiencing a significant increase in commercial development, and the southern portion of the peninsula continues to attract industrial development. Jersey City, freed of its dependence on manufacturing, has become the financial center of the region. Software and Internet companies as well as the media industry have also discovered Jersey City. Not surprisingly, both population and employment are increasing and are projected to continue to grow over the next 25 years. More than three-quarters of Jersey City's residents hold jobs in the city.

Jersey City has a diverse and extensive roadway and public transportation network that facilitates the movement of people and goods within the city and connects it with other regions throughout the United States. Numerous highways are easily accessible, and the state is working to upgrade aging facilities and to complete missing links that improve the commute. NJ TRANSIT operates six rail lines that connect to Jersey City via PATH, moving passengers throughout the region, the state, and the city itself. The recently completed segment of the Hudson-Bergen Light Rail Transit System provides connections for city residents and has facilitated development and redevelopment within the city. Jersey City also has ferry service as a part of its transportation network. Seven routes link residents and commuters to New York City, with further connections linked to new development on the waterfront.

Bus service by NJ TRANSIT and private carriers is also extensive, and commuters can use the bus system to reach many locations in Jersey City, Manhattan, other New Jersey cities, and in suburban locations. There is little difficulty in moving around the city via bus or in traveling south or north from Jersey City in Hudson County. However, many routes operated in the city experience problems ranging from poor on-time performance to inadequate service frequency to a lack of late night and weekend service. Some sites, like the Hackensack Meadowlands, need better access to public transportation. Finally, traffic congestion, aging facilities, and the obsolete nature of some infrastructure create

operating problems for some bus routes. It is critical for New Jersey to make continued transit improvements for Jersey City since nearly half of all households do not have automobiles.

Although the number of jobs is expanding in Jersey City, many residents will continue to pursue employment in locations outside of the city. Significant employment centers for Jersey City workers are in Bayonne, Newark, Union City, West New York, North Bergen, Secaucus, Carltstadt, Moonachie, East Rutherford, Linden, Elizabeth, and along I-78.

Highway Recommendations

- Initiate studies and implement recommended improvements to relieve congestion on major roadways, especially Routes 495, 440, I-78, and I-280.
- Improve east to west access.
- Address growing circulation and parking needs.
- Provide adequate signage.
- Undertake bridge upgrades and replacements.
- Improve pavement conditions on Routes 3, 7, and 169.
- Continue to address and implement safety improvements at high-accident locations, especially along Routes 1&9, 3, 495, and along Tonnelle Avenue.

Transit Recommendations

- Rationalize public transportation services in Hudson County. A full integration of the transportation system, including NJ TRANSIT bus and light rail, private bus, jitney, and van service, is needed. Comprehensive information about these services is also needed in the county through county-wide transit maps and other venues.
- Preserve PATH as the major east-west transit link to New York City.
- Add late evening and/or early morning bus service to accommodate employees who work the second and third shifts, particularly for employment sites along Tonnelle Avenue and West Side Avenue and in Secaucus. Buses from Jersey City to IKEA in Elizabeth also need to run longer hours. Add more evening service on Route #85.
- Add Saturday and Sunday service to some bus routes and increase the frequency of some.
- Increase service in locations that are underserved, with emphasis on Secaucus, the Port area, and the southern portion of Jersey City at Greenville Yards. Additional service to Newark's Ironbound District on Route #1, Caven Point, and the Post Office in South Kearny is desired.
- Consider adding bus service to new locations, including extending Route #2 to new companies, Route #43 along Route 508 in Kearny, and Route #85 in East Rutherford.
- Improve transit facilities and intermodal connections. Maximize connections to the HBLRTS and the ferry service and ensure that transfers are seamless. Revise bus signage to make it compatible with the city's program. Improve PATH station facilities.
- Monitor bus routes to ensure that bus service meets the needs of employers in Jersey City and other locations as employment and employers grow. This is particularly important on Routes #2, #82, #83, and #87, where ridership is growing or expected to increase in response to job growth.
- Reduce the impact of van, jitney, and private carrier service on NJ TRANSIT. NJ TRANSIT should seek to mitigate the erosion of ridership due to a duplication of services provided by private bus carriers, jitney, and van operators. NJ TRANSIT routes affected include #80, #81, #84/86, #88, #126.
- Provide bilingual transit information. Riders on Route #84/86 have requested bilingual transit information, and many others would benefit from this approach.

Newark

Newark is the seat of Essex County and a major industrial and financial metropolis. The city's extensive transportation network includes a comprehensive bus system and state and federal highways. It also has a major maritime port in the New York-New Jersey harbor complex and one of the largest air, rail, and truck transportation centers in the United States. The Port of Newark/Elizabeth marine terminal handles millions of containers and million of tons of freight annually, and Newark International Airport served more than 32 million passengers in 1998. Newark Airport is the nation's eighth largest air cargo facility, handling more than 1.1 million tons of cargo in 1998. Growth in both the Newark/Elizabeth Port and Newark Airport is assured by the Portway projects that aim to expedite freight movements within a dedicated corridor, and a major expansion of the airport. Goods movement by truck, air, and rail, as well as passenger travel, is expected to rise through the foreseeable future. As the airport expands, it is fueling the demand for related services and facilities in adjacent areas, such as warehousing and storage, flight kitchens, and maintenance.

Newark is linked to Manhattan by many forms of rail transit, allowing an easy commute between the two cities, and these transportation and locational advantages fuel Newark's growth. The airport, the port, and the area in the immediate vicinity of the rail link to New York combine to provide a strong employment base for the city. Manufacturing remains a major employer locally, although its importance has declined steadily. The central business district of Newark is the largest single center of office employment in New Jersey. The 1990s has represented a watershed decade for the city, and new private construction of commercial, cultural, and entertainment facilities, as well as building upgrades. have led to economic growth. Due to the investment infrastructure and support services, Newark has established itself as the high technology center of the region.

New economic development programs and initiatives are seeking to develop more downtown parking, an arena for the New Jersey Nets, light industrial space in neighborhoods, including Urban Enterprise Zones, additional hotel rooms, and shopping centers. To assist newcomers, Newark is offering an informational clearinghouse for the business community and aggressively signing city highways to provide directions and local identity. New transit and highway transportation improvements will support and sustain growth. Indeed, both resident population and employment are projected to stabilize and grow over the next 25 years. Even though unemployment is still much higher than in state of New Jersey as a whole, it has fallen over the past ten years.

Newark, once one of America's leading industrial cities, has lost significance as a manufacturing center, and the economy is making a transition to one dominated by service industries. A growing proportion of the city labor force holds jobs in service-producing sectors. There are more transportation, communications, utilities, finance, real estate and insurance and public sector jobs than can be filled by Newark residents. On the other hand, there are not enough jobs in manufacturing, retail trade, services, and construction to fill the demand by Newark residents for these jobs.

According to the 1990 Census, half of Newark residents are employed in the city and half work outside of the city. Newark is a major employment center that offers over 160,000 jobs. Thanks to an improved national economy and new development, Newark's in-city jobs have been increasing in the past several years. The most significant areas of job growth are at the Newark Airport and its periphery and at the Port.

The city of Newark benefits from an extensive roadway and public transportation network that facilitates the movement of people and goods within the city and connects it with other regions of the United States. Numerous highways provide access to and from Newark, and the state is working to upgrade aging facilities and to complete missing links that will improve the commute. Four rail lines transport people to or through Newark on their way to New York City and allow residents of the city to reach jobs in suburban locations. The Kearny and Secaucus rail connections are designed to improve rail access by linking various rail lines. Additionally, the new Newark-Elizabeth Rail Link and the new intermodal station that will serve the Newark International Airport will open new locations for reverse commute employment opportunities. The Newark City Subway line in the city provides convenient transportation to and from the core of the city and the planned expansion of this system will improve access for Newark residents. While all the new rail service will improve access, using the commuter rail service from Newark to the suburbs is difficult because train schedules are designed for inbound commuting trips.

Bus service is also extensive, and commuters can use the bus system to reach many locations in suburban Newark. However, the absence of night and weekend bus service on some routes hinders working at work sites with less traditional hours. Some work sites like Newark International Airport and the Newark/Elizabeth Port desire service that operates daily around the clock. Increased express service is often wanted by Newark residents and suburban employers, and service extensions into new locations are also requested. Finally, traffic congestion, aging facilities and the obsolete nature of some infrastructure creates operating problems for some bus routes. Under the auspices of the New Jersey Jobs Access and Reverse Commute Program, Essex County is launching new reverse commute services that will assist Newark residents in obtaining and maintaining employment in suburban job locations. It is critical for New Jersey to make continued transit improvements for Newark since nearly half of all households are without autos.

Although new jobs are being created in Newark every day, many city residents work in the area's sub-

urban locations. Suburban employment corridors that are particularly important include Bloomfield Avenue, Springfield Avenue, Routes 1&9, 3, and 7. Secaucus and the Oranges continue to offer jobs. Areas that are growing in significance include Hillside, West Caldwell, Fairfield, and I-280. Newark is well connected to the New York metropolitan area through major interstates such as I-78, I-280, and the New Jersey Turnpike, and by state roads such as Routes 1&9, 21, and 22, but many are congested in and around the city. Key connections between local roadways and interstates do not exist, although many of these are being built over the next several years.

Highway Recommendations

- Initiate studies and implement recommended improvements to relieve congestion on major roadways, especially along the length of Routes 24, 46, and 124. In Newark itself, Route 21 and I-78 are saturated with traffic and cannot tolerate increases.
- Undertake bridge upgrades and replacements, particularly addressing a concentration of bridge problems along the New Jersey Turnpike, the Garden State Parkway, and I-280.
- Improve pavement conditions on Routes 28, 124, 439, and sections of I-280 and Routes 1&9, 21, and 124.
- Continue to address and implement safety improvements at high-accident locations, including at sites along Routes 1&9, 21, 439, and I-78.

Transit Recommendations

- Provide 24-hour-a-day, 7-day-a-week bus service to destinations like Newark Airport.
- Add late evening and/or early morning bus service to accommodate employees who work the second and third shifts on Routes #11/28/29, #26, #37/107, #42, #71, #73, and #79. Coordinate transportation services with shift times at employment sites in the Meadowlands.
- Add Saturday and Sunday service to some bus routes, including Routes #5, #11/28/29, #26, #37/107, #65/66, #72, #78, #79, and #92.
- Alleviate overcrowded conditions.
- Increase the frequency of some bus routes, especially on Routes #43 and #73.
- Offer more express bus service on Route #40 and Route # 71 at Becker Farms, and in Roseland and Fairfield.
- Consider offering bus service in new locations, particularly along Routes 10 and 46 to Fairfield and in the Meadowlands.
- Improve the coordination between NJ TRANSIT and private shuttle services to Newark Airport.
- Improve transit and pedestrian facilities in the Route 22 corridor.
- Enhance rail access to suburban locations. Intermodal connections should be improved to increase the likelihood of using the train to reverse commute, as well as the frequency of train service for riders commuting from Newark to work.

Paterson

A modest level of new residential, retail and commercial development is occurring in Paterson, several new businesses have established themselves, and some employers have increased their payrolls. Despite this activity, Paterson's economy still struggles. The city has never recovered from the loss of industry and, unlike Jersey City and Newark, it has not been able to attract firms from New York because of its location farther west. Nevertheless, employment numbers are expected to stabilize over the next 25 years. The population grew in the 1990s due to a new wave of immigration. One of Paterson's greatest assets is its people; nearly 60 different nationalities are represented in the city, creating a diverse and ambitious labor force.

Paterson's transportation network was established to support industry, and its street pattern is based upon grids connected to major arterials. Today, the area is oriented to highways but, although the city is located close to the Garden State Parkway and Interstate 80, access from these highways to the city is not easy. The public transportation system was created to be radial in nature because it served to bring workers to Paterson's mills, and this structure persists today. Paterson is served by NJ TRANSIT buses, and the NJ TRANSIT Main Line railroad links Paterson to residential communities north of the city as well as to employment in Hoboken and, via PATH, in New York City.
Paterson promotes economic development, urban and suburban redevelopment, and historic preservation activities, and is aggressively pursuing improvements to public facilities and services. In addition to historic designations and the construction of new housing in the central city, two new Special Improvement Districts have been formed.

Despite the fact that new firms are locating into Paterson, and some establishments are increasing their payrolls, Paterson continues to lose employment. Paterson has

never recovered from the loss of the textile industry, and its dependence on manufacturing as a base of the local economy makes the city particularly vulnerable to economic downturns. Although in-city jobs have been declining during the last decade, employment opportunities in the Paterson suburbs are increasing. The 1990 census data indicate that almost two-thirds of Paterson residents commute outside the city; the majority travel to Wayne and Clifton. Virtually all the major highways in lower and central Passaic County are experiencing increased development and employment. The number of retail jobs, in particular, is expanding, but so are jobs at industrial and healthcare establishments.

Corridors with current employment opportunities for Paterson residents include Route 3 in Clifton and the Meadowlands, Route 4 in Paramus, Route 17 in Bergen County, Route 20 to Fairlawn, Route 23 from Clifton to Morris County, Route 46 from Fairfield to Parsippany in Morris County, Routes 208 and 504, and I-287 from Oakland and Franklin Lakes to Ringwood. High-growth corridors for the future are expected to include Routes 23 and 46, I-287 in Ringwood, and the Meadowlands.

Paterson is situated in northern New Jersey, with easy access to midtown Manhattan, and near many New Jersey corporations. Paterson is accessible by automobile, bus, freight and passenger trains, and air. The city is at the crossroads of a number of New Jersey's major highways, linking Paterson with the rest of New Jersey and New York. Transit in Paterson and from the city to the suburbs is fairly good, and nearly all bus routes have experienced increasing ridership. Still, NJ TRANSIT tries to meet the demand for more service. There are requests to add service to relieve overcrowding, to better accommodate late evening shifts, and to provide more extensive weekend service. Added to these pressures is the desire to operate in locations along suburban corridors that are either not served or underserved by buses. Paterson's bus service suffers from an antiquated and outmoded route structure that funnels all riders into central downtown. Improved crosstown and intracity travel is needed to accommodate the trips that riders need to make in today's world. There is also a need for improved service to connect the towns within Passaic County and to connect Passaic County with its neighbors in Bergen, Morris, and Essex counties.

Many roadways suffer from severe congestion that is increasing as a consequence of the expanding economy and increased development. Some highway projects are being undertaken to alleviate congestion and upgrade bridges and roadways. Other new projects are being undertaken to improve roadway operations at major intersections and connections between highways. One focus is to build better connections between the city of Paterson and surrounding roadways. Paterson's rail service to midtown Manhattan and access to other sections of northern and central New Jersey will improve with the completion of the Secaucus Transfer. To address the needs of reverse commuters from Paterson, the County of Passaic is working with NJ TRANSIT to develop services from the city to Morris and western Passaic counties, as well as to nearby cities such as Passaic City.

Many Paterson residents work in suburban areas outside the city. Relevant suburban employment corridors include Routes 3, 4, 17, 20, 23, 46, 202, 208, 504, and I-80. Many of these corridors have only recently emerged as employment growth areas. Because Paterson is divided by the Passaic River, the condition of its bridges is important. Unfortunately, many bridges need rehabilitation and widening or replacement and, as mentioned, highway connections are incomplete. Bridge projects feature prominently in plans to improve transportation in Paterson. In addition, congestion and bottlenecks, particularly at the intersection of Routes 23, 46 and I-80, are severe. Auto ownership is relatively high among Paterson households, yet transit remains an important part of the transportation system in the city.

Highway Recommendations

- Initiate studies and implement recommended improvements to relieve congestion on major roadways, including Routes 3, 4, 17, 23, and 46. Future growth and development at the interchange of I-80 with Routes 23 and 46 and at the interchange of I-287 with Route 23 will exacerbate already congested conditions. In Paterson, sections of I-80 are severely congested.
- Improve access to Paterson from I-80.
- Make improvements to Squirrelwood Road interchanges.
- Undertake bridge upgrades and replacements.
- Improve pavement conditions along Routes 3, 20, 46, and a section of Route 504 in the city.
- Continue to address and implement safety improvements at high-accident locations, especially along Routes 4, 7, 23, and 46 near Paterson but not within the city limits.

Transit Recommendations

•Improve intracity bus service. The hub-and-spoke route structure that funnels all buses into the center of downtown should be modified to provide more crosstown service to directly link Paterson's neighborhoods and work sites.

•Add late evening and/or early morning bus service to accommodate employees who work the second and third shifts. Many manufacturing firms operate on a 24-hour basis, and retail centers like Willowbrook Mall need late evening service to bring workers home after the stores close. Increase the span of service on Routes #704, #707, #712, and #744.

•Add Saturday and Sunday service to some bus routes and increase the frequency on others.

•Consider adding bus service to new locations. There are requests to improve local destinations on Route #190 and to extend bus service along Route 46 to Fairfield and on Routes #704, #705, and #712. Areas of Route 17 with strong job growth in northern Bergen County do not have bus service.

•Offer more express bus service from Paterson to the Meadowlands.

•Address competitive local van services. Local minivan service, based in several ethnic communities in Paterson, is eroding the ridership of publicly funded bus Routes #74, #712 and #770.

Trenton

Trenton never fully recovered from its loss of manufacturing jobs and, along with Paterson and Camden, the city is one of the most distressed in the state. Nonetheless, the city continues to move forward development and redevelopment projects in an effort to turn the economy around. Trenton is redeveloping its waterfront through the addition of a baseball stadium and other attractions, new retail has been added at the Historic Roebling Complex, and an arena and bank have been built. Over the next several years, a hotel and convention center will be built opposite the War Memorial and a major development is planned in the area of the Trenton Battle Monument. Restoration of state buildings has also occurred.

Despite these actions, both population and employment are declining, and projections show a continuation of these trends. Suburban sprawl will continue, increasing the significance of major employment centers in locations outside the city. These trends create the need for an improved reverse commute transportation infrastructure and inherently raise transportation challenges for city residents trying to reach the best job opportunities.

Trenton continues to have an excellent transportation network. It is well connected by road, rail, and air to all metropolitan centers in the Northeast. Sixteen miles southeast of Trenton is the New Jersey Turnpike. Route I connects Trenton and Philadelphia. Other highways include Routes 206, 31, 33, and 29. Trenton is also linked to Route 130, I-195 and I-295. Various city and intercity buses operate from Trenton. The Trenton rail station is served by Amtrak, NJ TRANSIT, and SEPTA. The Southern New Jersey Light Rail Transit System will provide improved access to Trenton, particularly if the service continues into the downtown. Air services consist of the Trenton-Mercer Airport and connections with Philadelphia and Newark international airports. All these facilities have greatly contributed to the development of Trenton, as have the state capital and county seat, serving its state, county, and local employees, state legislators, and numerous private-sector businesses.

Transit within the city of Trenton is fairly good, and ridership has increased on most bus routes. However, more service is needed for residents who reverse commute to suburban employment centers. Another transit need is extended service in off-peak hours to meet a variety of work shifts, especially third shift workers, outside the traditional 9-5 workday. Several new services are operating or proposed to assist the reverse commute. The Route 130 Shuttle Service is proposed to operate from Trenton to Hightstown and the Route 130 employment corridor where there is currently no transit service. However, issues are slowing the implementation of the service, such as the locations of bus stops and traffic engineering concerns. In addition, the Mercer County Night Line has been approved to fill the transit gap in late evening service along Route 1, although funding has not yet been provided. The city is also looking at pedestrian needs and encouraging the use of bicycles for commuting and recreation. In fact, within the next five years, there should be a pathway for pedestrians and bicyclists for the entire length of the Delaware River in the city.

The reverse commute is important in a city like Trenton that is not experiencing an increase in the number of available jobs. Trenton residents must seek employment in suburban locations in New Jersey and Pennsylvania. Employment corridors that are considered to be important include Route 1 in New Jersey

and Pennsylvania, including Princeton, Route 130, Hamilton, and specific work sites along Routes 31, 195, I-295, and I-95. In addition, NJ TRANSIT offers extensive bus service to the downtown's major destinations and to the region's shopping centers and malls. Trenton, unlike most Urban Supplement cities, suffers from only minimal congestion, but the city is poorly connected to the regional roadway network. Bus service is inadequate in suburban locations where the growth in employment is occurring. As suburban employment expands and the workforce grows, the use of NJ TRANSIT buses will increase.

Highway Recommendations

•Initiate studies and implement recommended improvements to relieve congestion on major roadways. Congestion is minimal in the city of Trenton, but it does occur at the Calhoun Street Bridge. Suburban congestion is a problem along Business Route 1 and Routes 27, 31, 33, 206, 571, and 579.

•Improve access to Trenton from major roadways. The completion of improvements along Route 29 is critical.

•Address downtown parking needs.

•Improve bicycle and pedestrian facilities. In Trenton pedestrian improvements are needed along Calhoun, Willow, Perry, and Carroll streets. Add pedestrian trailblazers at the Princeton rail station. Provide a bicycle lane along Grand Avenue at the West Trenton rail station.

•Provide adequate signage along Route 1.

•Improve the traffic flow along various roadways and at key intersections, especially on Routes 27, 206, 583, Nottingham Way, and Alexander Road.

•Undertake bridge upgrades and replacements, with emphasis on Scudders Falls Bridge and those located along Routes 1, 29, 31, and the New Jersey Turnpike. Other bridges that need improvements include the Route 635 bridge over Amtrak and the Wall Street bridge. Bridges that need replacement include those on Route 604 over Stony Brook and those on Fackler and Old Mill roads.

•Improve pavement conditions on Business Route 1 and Routes 27, 29, 33, 156, and I-295. Repave Hightstown and Etra roads and Snowden Lane.

•Continue to address and implement safety improvements at high-accident locations, with particular attention to two locations along Route 29 near the waterfront area and on Route 130 at the border of Mercer and Middlesex counties.

Transit Recommendations

•Add late evening and/or early morning bus service to accommodate employees who work the second and third shifts, especially along Route 1.

•Increase service in locations that are underserved. Route 1 is a major source of jobs in central New Jersey, but service may not be adequate. There are suggestions to increase service to the Princeton area and to extend service into Middlesex County. Route 1 in Pennsylvania has many retail jobs associated with malls and shopping centers as well as industrial jobs, but the corridor is only minimally served by SEPTA bus service. The service is inadequate for reverse commutation from Trenton.

•Consider adding bus service to new locations. There is no continuous crosstown bus service along Olden Avenue, nor is there bus service along the Route 130 corridor in Hightstown/East Windsor and Washington and Hamilton townships where a significant number of new jobs are being created. Also, there is virtually no service from Trenton to locations west and north of the city. Outside of Trenton, not all employment centers in Hamilton, Ewing, and Lawrence are served by transit from Trenton, although job growth is strong in these locations. Bus service from Hamilton to Exit 8A of the New Jersey Turnpike should also be explored. Additionally, new services to major employment sites in Bucks County, Pennsylvania, should be considered.

•Improve transit facilities and intermodal connections in Mercer County. Construct additional park-and-ride lots along the New Jersey Turnpike and explore the creation of a formal park-and-ride at the Quaker Bridge Mall.

•Facilitate bi-state commuting by transit. There are many jobs for Trenton residents in Pennsylvania, but NJ TRANSIT and SEPTA operations are not integrated. The two transit agencies should make it easier for riders to transfer between the two systems by improving the coordination of schedules and fares.

•Use transit stations to enhance livability in Trenton. NJ TRANSIT should use its facilities to enhance the residential and business communities surrounding stations. Stations should be integrated functionally and visually and serve as catalysts for economic development. This will be important at the Trenton rail station and at stations for the new Southern New Jersey Light Rail Line✲

VI. NEW JERSEY'S FIVE-YEAR CAPITAL PROGRAM

The resources required to maintain New Jersey's transportation infrastructure and provide new capacity to meet the state's growing mobility needs are significant. Between fiscal years 2001 and 2005, NJDOT and NJ TRANSIT are planning to undertake capital projects totaling $12.0 billion (2000 dollars) to improve and expand the state's transportation network.

Near-term capital priorities are established each year through the Statewide Transportation Improvement Program (STIP). The STIP, which is required by the federal Transportation Equity Act for the 21st Century (TEA-21), is a multimodal capital improvement program covering all areas of the state. It includes statewide initiatives and regional programs developed by the state's three metropolitan planning organizations. The current STIP covers fiscal years 2001 through 2005. Federal regulations mandate that the STIP is constrained during the first three years by the amount of projected funding available.

This section describes New Jersey's multimodal capital investment strategies for the 2001-2005 STIP period. It begins with an overview of the STIP's funding sources. This is followed by a discussion of the programmed uses of those funds.

2001-2005 SOURCES OF FUNDS

STIP projects are primarily funded by a combination of federal and state sources. During the 2001-2003 fiscally constrained portion of the plan, federal sources represent 50 percent of the combined NJDOT/NJ TRANSIT program, while state sources equal 48 percent. Other resources make up the balance. Federal sources fund a higher percentage of the NJDOT program (52 percent) than the NJ TRANSIT program (47 percent). The following outlines the major sources of federal and state funding for the STIP.

Federal Transportation Funding

The federal government receives funds for transportation from gas tax revenues and user fees, which are placed in the Highway Trust Fund (HTF). The HTF is composed of the Highway Account, which funds highway and intermodal programs, and the Mass Transit Account. Funds are allocated to states on a formula and discretionary basis to support the following major infrastructure programs:

Highway Programs

- National Highway System (NHS): The National Highway System includes the interstate system, other urban and rural principal arterials, highways that provide motor vehicle access between the NHS and major intermodal transportation facilities, the defense strategic highway network, and strategic highway network connectors. NHS funds are distributed on a formula based primarily on the extent of a state's principal arterial network (measured in lane miles) and the uses of the system (measured in vehicle miles).
- Interstate System/Interstate Maintenance (IM): This program provides funds to ensure the continued maintenance and improvement of the interstate system. Grants are distributed based on each state's lane miles of interstate routes open to traffic, the vehicle miles traveled on those interstate routes, and the contributions to the Highway Account of the Highway Trust Fund attributable to commercial vehicles.
- Surface Transportation Program (STP): The STP provides flexible funding that may be used by states and localities for projects on any federal-aid highway, including the NHS; bridge projects on any public road; transit capital projects; and public bus terminals and facilities. A new provision permits a portion of funds reserved for rural areas to be spent on rural minor collectors. Funds are distributed among the states based on each state's lane miles of federal-aid highways, the total vehicle miles traveled on those federal-aid highways, and estimated contributions to the Highway Account of the HTF. Once the funds are distributed to the states, 10 percent are set aside for safety construction activities (i.e., hazard elimination and railway-highway crossing improvements), and 10 percent are set aside for transportation enhancements, which encompass a broad range of environmentally related activities.
- Bridge Replacement and Rehabilitation: This program provides resources to ensure a state of good repair and the normal replacement of bridges.

• Federal Lands Highways: Funding for this program is provided for highways on federal lands - Indian reservation roads, park roads and parkways, and public lands highways (discretionary and forest highways) - and federally owned public roads providing access to or within the National Wildlife Refuge System.

• Emergency Relief (ER): The Emergency Relief program assists state and local governments with the expense of repairing serious damage to federal-aid highways and highways on federal lands resulting from natural disasters or catastrophic failures.

Transit Programs

• Section 5309 Federal Transit Capital Program: This program funds major capital and special transit projects. A portion of the federal funding authorized through this source is provided on a formula basis in the form of Section 5309 Fixed Guideway and Rail Modernization funds to individual urban areas. The remainder of the capital program funding for this source is distributed on a discretionary basis in the form of Section 5309 New Starts funds for fixed guideway systems, the introduction of new technology, and the acquisition, construction, and improvement of bus and rail facilities and equipment.

• Section 5307 Urbanized Area Formula Program: This program provides funds for planning, acquisition, construction, improvement, and associated capital maintenance items. The distribution of resources is on a formula basis. Capital projects are funded with a maximum 80 percent federal contribution and a minimum 20 percent local match.

• Other Programs: In addition to the two major funding programs described above, federal resources are available to fund transit providers serving individuals living in rural areas, as well as those who are elderly and/or disabled, and the procurement of clean fuel transit vehicles and over-the-road buses accessible to the disabled.

Other Federal Programs

In addition to the major highway and transit programs described above, federal grants are available to states to support maritime and seaports, and rail programs such as high-speed rail and magnetic-levitation vehicle technologies. For aviation, New Jersey has been designated one of ten states that receive Federal Aviation Administration Block Grants. The FAA gives a single grant to the state, which, in turn, offers grants for airport and heliport improvements at the state's public use facilities. Special programs, including welfare-to-work and on-the-job training, have also been implemented to help meet the mobility needs of the economically disadvantaged.

State Funding

The primary state funding source is the Transportation Trust Fund. Trust Fund revenues are derived from a portion of the state's motor fuels gallonage tax, petroleum products tax, sales tax on new motor vehicles, motor vehicle registration fee, and annual contributions from the state's three toll road authorities, the New Jersey Turnpike Authority, the New Jersey Highway Authority, and the South Jersey Transportation Authority. These revenue sources are leveraged through bond financing. Bond proceeds are allocated from the Trust Fund to provide state resources for STIP highway, transit, and intermodal projects.

Transportation Trust Fund resources were supplemented in 1999 when voters approved a bond resolution for certain bridge and highway improvements. Proceeds from the bonds are being used to fund a portion of STIP projects such as intersection upgrades, drainage improvements, and traffic operations and bridge improvements.

2001-2005 USES OF FUNDS

Table VI.1 presents a summary of the five-year STIP, while Tables VI.2 and VI.3 describe the highway and transit capital programs in more detail. The $12.0 billion STIP includes projects that will help bring the state's highway and transit systems to a state of good repair and keep them there, enhance system safety, and provide new capacity and services to reduce congestion, enhance mobility, and support economic growth.

Table VI.1 - New Jersey Statewide Transportation Improvement Program
FY 2001-FY 2005 (in millions of 2000 dollars)

	2001	2002	2003	2004	2005	Total
NJDOT	$1,262.8	$1,484.6	$1,364.4	$1,323.9	$1,380.5	$ 6,816.1
NJ TRANSIT	$ 906.1	$ 983.1	$ 862.5	$1,262.9	$1,188.2	$ 5,202.7
Total	$2,168.8	$2,467.6	$2,226.9	$2,586.9	$2,568.7	$12,018.9

The following sections summarize the major elements of the highway and transit improvement programs.

NJDOT CAPITAL PROGRAM

The $6.8 billion NJDOT Capital Program is guided by the Department's Capital Investment Strategy (CIS). The CIS is a performance-based decision-making tool to develop investment options for major program categories, to provide strategic direction in the formulation of the capital program, and to guide project prioritization and selection decisions. Table VI.2 presents the 2001-2005 NJDOT Highway Capital Program organized by major CIS category.

Table VI.2 - New Jersey Department of Transportation
Transportation Improvement Program FY 2001-FY 2005
(in millions of 2000 dollars)

	2001	2002	2003	2004	2005	Total
State of Good Repair	370.3	589.0	477.4	355.9	456.7	2,249.3
Safety	33.7	53.7	49.4	83.7	51.4	271.9
Congestion Relief	303.5	257.9	313.9	368.6	392.2	1,636.1
Travel-Friendly System	36.0	41.3	21.3	21.3	21.3	141.1
Economic Growth Initiatives	52.9	63.4	56.0	27.4	45.7	245.4
Quality of Life System Improvements	84.1	80.6	69.4	63.5	23.8	321.5
Local Partnerships	185.9	177.3	210.9	230.2	196.9	1,001.2
Operations & Project Delivery Effectiveness	196.4	221.3	166.1	173.4	192.5	949.7
Total	$1,262.8	$1,484.6	$1,364.4	$1,323.9	$1,380.5	$6,816.1

Nearly one-third ($2.2 billion) of NJDOT's program is allocated toward projects that will help achieve a state of good repair and maintain capital assets to ensure their maximum useful life. These projects include eliminating the backlog of structurally deficient bridges, deficient pavement conditions, drainage problems, lead-based bridge coatings, and inadequate dams. Other state-of-good-repair initiatives include the implementation of maintenance programs for bridges, pavement, and drainage systems.

Congestion relief is the next largest category, representing 24 percent ($1.6 billion) of the total program. This includes initiatives to address congestion at the top 40 most congested areas in the state, build certain strategic mobility highway projects (such as the recently completed Route 133 Hightstown By-Pass), construct multimodal access points between the interstate and commuter rail systems, implement demand management programs, enhance highway operations, and ensure the viability of general aviation airports.

Local partnerships represent 15 percent ($1.0 billion) of the planned capital expenditures. This primarily includes the allocation of resources to counties and municipalities for improvements to the locally owned bridge and road network.

In addition to the above, NJDOT's program provides resources for:

- Improving the safety of the transportation network and reducing highway and pedestrian fatalities
- Promoting a more user-friendly network through the use of intelligent transportation systems, signage and other technologies
- Progressing economic growth initiatives such as rail freight improvements
- Enhancing the state's quality of life through projects such as the construction of new bike lanes and highway landscaping
- Improving highway operations and project delivery through supporting a sustainable planning and scoping work program
- Implementing state-of-the-art management systems for tracking the condition of capital assets
- Enhancing productivity through funding capital program support services.

NJ TRANSIT CAPITAL PROGRAM

NJ TRANSIT's capital program is structured to maintain bus and rail capital assets in a state of good repair as well as to provide added capacity and new services to enhance market competitiveness. Rail capital projects, including maintenance, infrastructure, passenger facilities, and rolling stock, equal $2.2 billion, or 43 percent of the transit program. Projects will be undertaken to purchase new rail cars, rehabilitate tunnels and bridges, and upgrade track, signal and communication systems, stations, support facilities, and rights-of-way.

Extension of the Hudson-Bergen light rail and initial construction of the Southern New Jersey light rail equal $1.4 billion of the capital program (27 percent of the total). More than $800 million in systemwide projects will be undertaken to improve NJ TRANSIT's fare collection, passenger information, and management information systems. Bus and light rail infrastructure and rolling stock represent $709.1 million, or 14 percent of the capital program. This includes terminal and parking facilities, bus signs, shelters, bus overhauls, and new buses for NJ TRANSIT and private carriers.

Table VI.3 - NJ TRANSIT

Transportation Improvement Program FY 2001-FY 2005
(in millions of 2000 dollars)

	2001	2002	2003	2004	2005	Total
Bus Passenger Facilities	7.3	6.1	5.1	5.1	5.1	28.5
Bus-LRT Infrastructure	47.9	66.3	76.4	87.3	58.3	336.3
Bus-LRT Rolling Stock	83.8	44.2	54.0	89.5	101.7	373.1
Southern NJ Light Rail	60.3	60.3	60.3	203.0	168.0	551.9
Rail Capital Maintenance	48.8	38.5	36.9	32.7	35.3	192.2
Rail Infrastructure	179.7	178.6	159.8	181.1	166.3	865.5
Rail Passenger Facilities	54.6	114.0	86.0	86.5	101.4	442.5
Rail Rolling Stock	122.2	46.7	98.3	247.4	227.4	742.1
Systemwide	81.8	172.9	177.8	184.4	183.9	800.6
Transit Enhancements	0.2	0.3	0.3	0.4	0.4	1.6
Hudson-Bergen LRT	219.5	255.2	107.6	145.6	140.5	868.4
Total	$906.1	$983.1	$862.5	$1,262.9	$1,188.2	$5,202.7

RELATIONSHIP OF FIVE-YEAR CAPITAL PROGRAM TO LONGER-RANGE GOALS

Work to realize the vision, goals, and objectives of *Transportation Choices 2025* has begun. New Jersey cannot afford to wait to implement its long-range transportation plan. Plan implementation is already underway and will continue for the next 25 years and beyond.

The current Five-Year Capital Program reflects the policy direction contained in the previous long-range plan, *Transportation Choices 2020*, and New Jersey's center-based growth plan, the *State Development and Redevelopment Plan*. Since the vision, goals, and objectives of *Transportation Choices 2025* were laid on the foundation of those of the previous plan, the Capital Program is fully compatible with the long-term direction set forth in *Transportation Choices 2025*. Their similarities are highlighted below.

Five-Year Program Highlights

Transportation Choices 2025 advocates a strong focus on system preservation and maintenance activities to ensure that New Jersey achieves a state of good repair for the state's transportation system. This emphasis will ensure that the system is maintained for its maximum useful life to serve current and future generations. The Five-Year Program continues New Jersey's major commitment to reducing and eventually eliminating the backlog of structurally deficient bridges. Additionally, special emphasis is placed on upgrading New Jersey's local bridges. Highway rehabilitation is also given increased importance, especially for New Jersey's interstate system. Improvement projects are planned for segments of I-78, I-80, I-287, and I-295 to allow these facilities to better withstand the demands of modern traffic and heavier truckloads.

System preservation and maintenance activities are equally important on the state's transit system. The Five-Year Program funds NJ TRANSIT's basic rail infrastructure to maintain a state of good repair where it exists and to continue progress to that end where it is not yet at that level. Importantly, the Bergen Tunnel rehabilitation will begin. This important effort is needed to ensure the successful implementation of the Secaucus Transfer project, a project that links the Main, Bergen, and Pascack Valley lines with the Northeast Corridor line.

Transportation Choices 2025's safety goals reflect Governor Whitman's "Safety First" focus as expressed in her strategic transportation policy document, *New Jersey FIRST: A Transportation Vision for the 21st Century*, and the major commitment to promote the safety of the transportation system expressed in New Jersey's *Capital Investment Strategy*.

The Five-Year Program also continues New Jersey's major commitment to transportation safety. It includes increased funding for the state's Intersection Improvements Program, which provides for low-cost, fast-track improvements at problem intersections. Increased funding is also provided for pedestrian safety improvements, as well as guiderails and other highway safety features. A critical safety project on NJ TRANSIT's rail system - the installation of Automatic Train Control and Positive Train Stop - is continued in the Five-Year Program. This investment is needed to ensure that New Jersey's passenger rail system is the safest in the country. For aviation, the focus is to bring the state's critical general aviation airports up to today's design standards to enhance their operational safety characteristics.

Transportation Choices 2025 and the Five-Year Program also reflect Governor Whitman's focus on mobility and the major commitment to promote mobility and reduce congestion contained in New Jersey's *Capital Investment Strategy*. The Five-Year Program allocates funding to build "strategic mobility" projects - projects that are key missing links in the state's trans-

portation system. One such example is the Flemington Area Congestion Mitigation project, which provides a partial by-pass of the Borough of Flemington and the Flemington Circle. Other funds are aimed at projects that address highway congestion at the most congested locations in New Jersey, such as the work to widen sections of Routes 1 and 9 in Rahway and Woodbridge. Funds are also directed at intersection improvements; one example is the improvement of the interchange of I-80, Route 23, and US 46. In addition, the Five-Year Program allocates money to strategic mobility projects for NJ TRANSIT, including final funding for the Montclair Connection, construction funding for the Newark-Elizabeth Rail Link, and continued funding for the Hudson-Bergen Light Rail Transit System.

The Five-Year Program and *Transportation Choices 2025* also both seek to improve the effectiveness, efficiency, and attractiveness of the transportation system. NJDOT and NJ TRANSIT are continuing to make improvements to the state's transportation system to make it easier to use for the traveling public. Examples are the addition of new routes to the Emergency Service Patrol areas, the South Jersey Visitor Center (a state-of-the-art visitor center near the Delaware Memorial Bridge in Deepwater), and a program for new bus stop signs and shelters.

Common economic development goals are reflected by Portway, which will provide an efficient, intermodal goods movement corridor in the northern New Jersey port area, increases in funding for rail freight programs and aviation, and improvements in intermodal circulation on I-78 in the City of Newark near the airport.

Both *Transportation Choices 2025* and the Five-Year Program stress improving the quality of life for users of the transportation system and those affected by its use. Funding is provided in the Five-Year Program for upgrading the landscaping of key state highways in urban and rural gateways, the Washington Township Route 33 by-pass, and improved communications systems and new technology to enhance bus and rail customers' experiences.

Transportation Planning Initiatives Needed For 2010 and 2025

Implementation of the Five-Year Capital Program represents a planning process involving a thorough and ongoing examination of existing conditions, an in-depth analysis of current trends, and a careful evaluation of proposed alternatives. As near-term capital improvement projects proceed, NJDOT and NJ TRANSIT will also be looking forward to identify specific actions to enact the programmatic approach for 2010 and strategic directions for 2025 and beyond.

The 2010 programmatic approach calls for building multimodal access points at key connections between the interstate highway system and NJ TRANSIT's commuter rail lines. To advance this goal, a study and development program must be initiated to identify possible key locations, screen the locations, initiate concept development, and advance preliminary engineering.

The 2010 programmatic approach also calls for implementing or seeking alternatives for strategic mobility projects on the state highway system. With the increases in VMT forecasted, New Jersey must move on selected projects that have already been identified as needed to increase capacity. Planning must begin now to identify what improvements will be implemented and where alternative solutions will be sought.

The 2010 programmatic approach also highlights the urgent need to expand or improve local bus services in New Jersey, particularly to and from our state's major urban centers, based on work contained in the Urban Supplement. Additional buses and bus maintenance facilities are needed. Planning must begin now to determine the best locations for these support facilities.

In addition, the 2010 programmatic approach identifies the need for further implementation of intelligent transportation systems technology. Work is progressing on the installation of the MAGIC system along I-80. Studies should be conducted and analyzed to determine the effectiveness in New Jersey of these various technologies. Using these results, a study and development initiative should be undertaken to advance plans for other corridors based on NJDOT's Intelligent Transportation Systems Master Plan update. NJDOT appreciates the potential offered by intelligent transportation systems and will continue to identify further applications as technology evolves.

The increases in VMT by 2025 cannot be accommodated by our existing highway and transit system; to attempt to do so would threaten our economy and degrade our quality of life. The technical work undertaken to develop this plan has identified those areas where future congestion will occur. This work

will be shared with the three MPOs in New Jersey and solutions to these future year capacity needs will be identified through the MPO planning process. But the 2025 scenario development process will show that highway capacity must be balanced with both increases in travel demand management techniques as well as a major program to expand transit in markets where it can be supported.

The planning process for the future must also evaluate non-highway alternatives based on emerging technology and developing trends.

Communities in New Jersey must work to advance strategies to reduce travel demand. Such efforts could include the promotion of more center-based development; local ordinances specifying the maximum number of parking spaces at a location and requiring connectivity between developments; and design and subdivision regulations that require designs that support transit use and access by walking and bicycling. Major study efforts must also be undertaken to vigorously expand the state's transit system by 2025.

VII. THE OUTLOOK FOR 2010 AND PROGRAMMATIC APPROACH

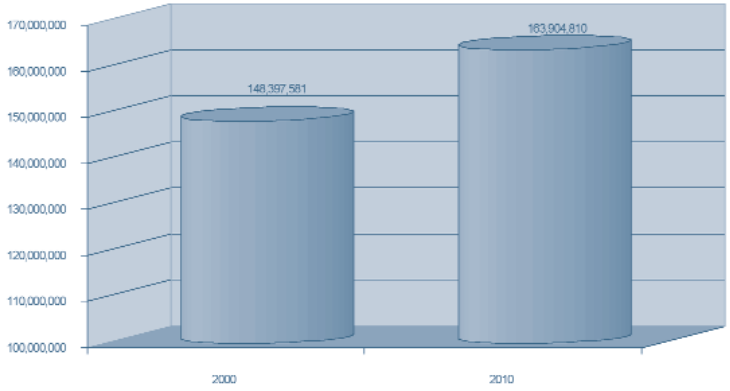
THE 2010 TRAVEL OUTLOOK

Travel in New Jersey will continue to grow over the next ten years. The population of the state is expected to increase by 5.9 percent to almost 8.7 million persons by 2010. The state's employment is projected to be more than 4.3 million by 2010, an increase of 7.8 percent. As a result, more people will use our highways, transit systems, and our airports, and more people will walk and bicycle. More goods will move through our ports and on our highway and rail systems.

Based on statewide travel projections, these increases in population and employment will mean an increase in the number of daily vehicle trips from just over 21 million in 2000 to more than 22.7 million trips in 2010, or an increase of 8.1 percent. The daily vehicle miles of travel will increase from more than 148 million miles to just under 164 million miles, an increase of 10.5 percent in the ten-year period. Figure VII.1 illustrates the ten-year change in vehicle miles of travel without any change in the transportation system, representing the base case condition.

Figure VII.1

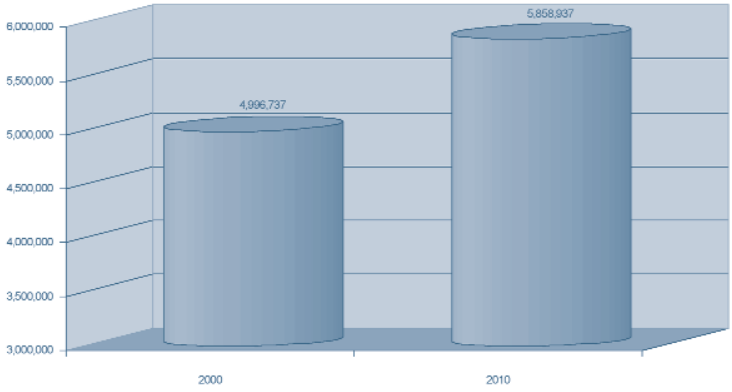
Daily Vehicle Miles Traveled
Base Case - Statewide



Without any change in the highway system, the daily vehicle hours of travel will increase by more than 17 percent, or more than 862,000 hours. Figure VII.2 shows the change in vehicle hours of travel between 2000 and 2010. Without any changes in the highway system, increase in transit usage, or reduction in travel demand (base case), the delay on the highway system will grow faster than the population over the next ten years. Furthermore, this increased demand will occur during a time in which New Jersey's existing transportation infrastructure will need heavy investments to offset the effects of aging and deterioration.

Figure VII.2

Daily Vehicle Hours Traveled
Base Case - Statewide



The New Jersey Department of Transportation and NJ TRANSIT have developed a programmatic approach to meet this increased demand on our transportation system. This approach builds on several building blocks:

- The state's transportation "vision" plan, put forward in 1998, *New Jersey FIRST, A Transportation Vision for the 21st Century*
- The Department's *Capital Investment Strategy* documents, which relate policy directions (including *New Jersey FIRST*) to measurable performance objectives
- The technical analyses used in preparing this plan
- Information gained in preparing the Urban Supplement reports and from focus and issue groups.

THE PROGRAMMATIC APPROACH

The objective of the programmatic approach is to establish a direction for investments in the transportation system through 2010. This direction will be translated into investment and project selection decisions at NJDOT using the *Capital Investment Strategy*, which will be updated annually. Under the provisions of the Congestion Relief and Transportation Trust Fund Renewal Act of 2000, the Department is required to submit its proposed Capital Investment Strategy to

the Legislature each March 1, along with its proposed annual capital program. The programmatic approach will also help to guide the state's three metropolitan planning organizations as they develop their regional transportation plans, plan for their corridors, and identify projects. This approach should also lead other New Jersey and bi-state transportation agencies in their planning and investment decisions. The programmatic approach focuses on the elements described below.

Keep the Transportation System in a State of Good Repair

The *New Jersey FIRST* plan calls for fixing the existing transportation system first. This should be the top priority for all agencies and governments with transportation infrastructure. NJDOT's *Capital Investment Strategy*, which implement *New Jersey FIRST*, calls for bringing key elements of the transportation system to a state of good repair by 2010. The objectives include:

- Reduce or eliminate the backlog of structurally deficient bridges
- Eliminate the backlog of deficient pavement conditions on state highways
- Eliminate the backlog of serious drainage problems on state highways
- Correct all deficiencies on state highway dams
- Resolve all serious flooding problems on state roadways
- Develop and implement an effective preventive maintenance program for state bridges, highway pavements, and drainage systems.

In addition, the following key actions will occur during this ten-year period to provide on-time performance, ensure safe operations, and sustain customer satisfaction on the public transit system:

- Replace overage buses in the fleets of both NJ TRANSIT and private carriers
- Replace 424 rail passenger cars and 17 locomotives
- Upgrade the top twenty passenger stations that are most in need of repair
- Continue to invest maintenance dollars in rail tracks, bridges, and yards to ensure this infrastructure is in a state of good repair

Improve Highway, Rail, and Pedestrian Safety

The number of older drivers aged 70 and above killed in crashes nationwide increased by 39 percent from 1989 to 1999; in the same time overall fatalities declined by 9 percent. Also, pedestrian fatalities involve more children and older adults, as indicated by the National

Highway Traffic Safety Administration's *Traffic Safety Facts - 1999*. For these reasons, the safety improvements and countermeasure programs must concentrate on these two age groups.

Public safety will continue to be a cornerstone of the ten-year programmatic approach of all state and local governments and transportation agencies. Key actions will include:

- Implement countermeasure programs to reduce auto fatalities by 25 percent and pedestrian fatalities by 50 percent
- Implement safety improvements at the top 100 intersections identified by the safety management system
- Bring highway-rail crossings up to current safety standards by continuing to upgrade twenty or more grade crossings per year
- Implement full maintenance programs for safety systems on highway, rail, and bus facilities

These safety improvements and countermeasure programs will be implemented by applying a variety of strategies, including improving highway design, installing traffic calming devices, providing better roadway lighting, installing large-letter signs, employing safety technology, enforcing truck and weight limitations, and working with communities, school systems, and senior citizen centers to heighten public awareness and responsibility.

Relieve Congestion and Increase Mobility

Relieving congestion can be accomplished by either reducing the demand for transportation (known as travel demand management - TDM) or expanding the capacity of the transportation system. Reducing demand on the highway system means moving persons out of their automobiles. This can take a number of forms, from encouraging people to use public transit, carpool/vanpool, and bicycle or walk to work, to increasing the use of telecommuting or shortened work weeks.

It also means providing incentives for people to drive at other times of the day, through such measures as encouraging flextime, implementing value pricing, and educating transportation users about the time and fuel that can be saved by avoiding congested periods and locations whenever possible.

New Jersey's nine transportation management associations (TMAs) are critical facilitators of travel demand management programs. Working with employers and employees, the TMAs promote and help to implement measures to reduce the use of highways. NJDOT and NJ TRANSIT are also key players in advancing travel demand management. The 2010 programmatic approach emphasizes continuing and expanding the following strategies:

- Ride matching
- Park-and-ride facilities
- Transit shuttles
- Vanpool incentives
- Bicycle amenities
- Tax incentives to encourage transit use
- Marketing to create behavior change

In addition, travel demand strategies related to land use need to be further promoted and implemented. These include:

- Center-based development as called for in the *State Development and Redevelopment Plan*
- Local ordinances that support TDM, such as requiring developers to reduce the number of single-occupant vehicles generated by their developments
- Local ordinances that indicate the maximum number of parking spaces for a development rather than a minimum number
- Local subdivision regulations that support transit use and connectivity between developments
- Local initiatives to realize transit-oriented development in proximity to the state's bus and rail transit network

Increasing the supply of transportation facilities and services will also reduce congestion. The Department's *Capital Investment Strategy* calls for a number of actions to be implemented by 2010:

- Make improvements to reduce highway congestion at the top 40 most congested locations in the state
- Build all committed strategic mobility projects (i.e., major mobility projects with regional impacts)
  - Route 18 extension, Piscataway
  - Route 21 missing link
  - Route 31 Flemington Area Congestion Mitigation project
  - Route 33 Freehold by-pass
  - Route 206 by-pass
  - Hudson-Bergen light rail transit extension
  - Rail storage facilities
  - Bus facilities to support expanded bus service
- Implement an effective program of highway operational improvement projects
- Build multimodal access points at key connections between the interstate highway system and commuter rail lines
- Ensure the viability of New Jersey's general aviation airports

All these actions must be consistent with the *State Development and Redevelopment Plan*. No highway widening will be implemented if another feasible solution is available, and access management techniques, as defined in the Highway Access Code, must be applied. Access will be controlled on all new alignments. In addition, the project development process will use context sensitive design. This means that communities and people will shape NJDOT an NJ TRANSIT's project concepts and alternatives in the early phases of a project's development.

Access to the Region's Core (ARC) is a project that will significantly expand rail access to New York City from New Jersey. All the alternatives under study involve construction of a new tunnel under the Hudson River. Over several years of study, numerous alternatives have been narrowed to less than half a dozen, which will be studied in further detail through an environmental review.

ARC must be the subject of intensive and comprehensive study over the next several years. After the studies are completed, it is imperative that the preferred alternative be implemented as soon as possible. ARC provides the needed additional trans-Hudson capacity so that plans for commuter rail projects can move forward. More detailed discussion of this project will be included in long-range plan updates.

As its title states, *Transportation Choices 2025* is also about providing mobility choices for all the citizens of New Jersey, including transportation services for those who do not have an automobile. This includes persons with

disabilities, people who cannot afford to buy and operate an automobile, senior citizens who are no longer able to drive, and everyone who chooses not to drive.

To support travel choices, the Governor's Vision calls for:

- Building 2,000 miles of bicycle paths
- Empowering counties so they can coordinate and expand community-based transit services
- Working with communities to create "transit villages" around rail stations that will maximize existing transportation services

In addition, the Urban Supplements prepared for seven cities in New Jersey support the need for expanded bus service to enable reverse commuting (see Chapter V, "Our Urban Centers"). The mobility recommendations include providing:

- More frequent service on existing bus routes, including increasing the service during off-peak hours
- Additional bus routes or extensions to existing routes into outlying suburban areas
- Expanded weekend service

Develop a "Travel-Friendly" Transportation System

The Governor's Vision also recognizes the need for a transportation system to get people where they want to go that is quicker, safer, smarter, and more convenient. E-ZPass, which has been implemented on New Jersey's toll roads and bi-state bridge and tunnel crossings, is already contributing to quicker and more convenient travel. *New Jersey FIRST* and the *Capital Investment Strategy* have identified a number of additional initiatives to be implemented or further enhanced by 2010. These include:

- Create a regional transit fare card. This "smart card" would provide commuters with access to all transit systems in the region.
- Install a computerized data information system at selected rail stations so commuters have access to real-time updates on train arrivals and departures
- Further implement the Intelligent Transportation System Business Plan projects:
  - Expand the Emergency Service patrols to new routes
  - Improve NJDOT's Traffic Operations Centers, including expanded coordination with NJ TRANSIT, PATCO, TRANSCOM, and other incident management teams
  - Continue to interconnect traffic signal systems on major highways

- Install "travel-friendly" road signs with larger letters and symbols and identify important locations such as hospitals, cultural centers, park-and-ride facilities, etc.
- Build state-of-the-art visitor centers at all major entry points into New Jersey

Support Economic Growth Consistent with the State Development and Redevelopment Plan

The Governor's Vision calls for making New Jersey the world's premier gateway to America by 2010. Freight transportation is currently the fourth largest industry in New Jersey. The Vision is to make New Jersey the number one port and freight state in America.

New Jersey has two international airports, Newark and Atlantic City, and 45 other public use airports. Thirty-three million people are served annually by the two international airports. In addition, Newark International Airport is a major air cargo facility. Major capital investments are being made at each of the international airports to meet air traveler and air cargo needs.

The public use airports are used mostly by corporate planes and recreational flyers. New Jersey has lost half of its airport inventory since 1950, primarily because of rising real estate values. With the reduction in the number of smaller airports, several of the public use airports are expected to experience capacity problems within the next ten years. New Jersey's Airport Master Plan, which is currently being updated, will address both short- and long-term improvement needs.

The Port of New York and New Jersey, which includes Port Newark/Elizabeth, is the largest and busiest on the East Coast. New Jersey is also served by the South Jersey Port Corporation in Camden and the Port of Salem. Trucks carry the majority of goods, with almost 1.3 million daily truck movements. The purchase of Conrail by Norfolk Southern and CSX has

also given the state real rail competition and more national rail access. New Jersey has 13 shortline rail operators that also serve the state's freight industry.

In addition to improving goods movement, targeted transportation improvements can act as incentives in attracting and retaining major employers, thereby bolstering weak market forces in redevelopment areas. They can also be used to leverage private development funding.

To meet the Governor's Vision and the goals of the *State Development and Redevelopment Plan*, the following programmatic direction has been identified:

- Target investments to make sure the ports of New Jersey are among the best in the world
- Preserve part of the Marine Ocean Terminal, in partnership with the city of Bayonne, for use as a commercial deep-water port
- Build Portway projects, a premier intermodal facilities connector, in conjunction with the private sector
- Support access improvements to land development projects that are regional economic anchors and projects that promote urban redevelopment
- Finance improvements to shortline railroads to promote economic growth along existing rail freight routes
- Explore with Norfolk Southern and CSX public/private financing of key projects that support better rail and intermodal access

Implement Transportation Improvements That Improve Our Quality of Life and Promote Community Values

The Governor's Vision is to provide a transportation system that brings communities closer together. Such a system will give people greater access to places where they can enjoy their leisure time. It will also pay attention to aesthetic detail and work in harmony with the environment, in accordance with the principles of context sensitive design.

To meet the Governor's Vision and the goals of the *State Development and Redevelopment Plan*, the following programmatic direction has been identified:

- Re-landscape major state highways
- Support local transportation enhancement projects that advance *State Development and Redevelopment Plan* goals
- Expand the Adopt-a-Highway Program to provide more funding to enlist the support of civic groups to aesthetically improve state highways
- Continue to implement a program of demonstration grants for ecotourism

Develop the State's Partnership with Counties and Municipalities and Create Public/Private Partnerships for the Improvement of Local Transportation Systems

An objective of *Transportation Choices 2025* is to "establish partnerships among all levels of government, and with the private sector, to provide transportation improvements." NJDOT has long supported communities with funding and technical assistance as they make transportation improvements on local systems. Public/private partnerships have been created with shortline railroad operators and for design/build highway projects. Under an agreement with private carriers, NJ TRANSIT leases buses to these carriers using Federal Transit Administration capital funds.

The *Capital Investment Strategy* outlines two objectives that support partnerships between NJDOT and local governments:

- Support Local Aid programs that are adequate to meet the needs of transportation systems under county and municipal jurisdiction
- Provide funding for Local Aid to Centers of Place. This program provides funds to assist communities that have become "designated centers of place" under the *State Development and Redevelopment Plan*.

In addition to these more traditional programs, over the next ten years NJDOT and NJ TRANSIT will seek to develop other programs to encourage the development of public/private partnerships. In this direction, NJDOT recently created the Division of International Intermodal Corridor Coordination. The International Intermodal Corridor is a transportation mobility corridor in northeastern New Jersey that establishes an effective system of intermodal connections to satisfy both goods movement and passenger needs. The Division of International Intermodal Corridor Coordination is charged with coordinating transportation initiatives being proposed by public and private entities to ensure an integrated transportation network in the corridor. This high-visibility group is charged with coordinating a financing decision-support structure for implementing the intermodal transportation plan.

The FY - 1999/2000 Update Report of the New Jersey State Rail Planning Process contains a Norfolk Southern and CSX overview titled "New Jersey and Freight Rail - A New Partnership." This overview indicates the need for public/private funding of rail freight infrastructure in New Jersey by specifically identifying investments needed for rail freight in northern New Jersey. The State Rail Freight Assistance Program has assisted eight shortline railroads since its inception in 1984. The current update report identifies more than $236 million in ongoing and proposed new projects. Over the next ten years, the New Jersey Department of Transportation and the private railroads need to continue to work together to support rail freight growth.

VIII. THE OUTLOOK FOR 2025 AND STRATEGIC DIRECTION

Looking beyond the short term to 2025, New Jersey's projected growth in population and employment will increase demand on the state's transportation system still further. This much is certain, but what this growth will mean for the system as a whole is more difficult to predict. A statewide scenario analysis was therefore designed to address several questions: How much travel will occur in 2025? What kind of demand will this create on the transportation system? How will these new trips affect the daily experiences of New Jersey's transportation users? What types of improvements, and what level of investment, might be needed to accommodate the anticipated increase in travel?

Exploring these questions required linking the results from three regional travel demand models, each representing conditions in one of the three metropolitan planning organization areas of the state: northern, central, and southern New Jersey. The travel demand models use mathematical relationships to estimate the ability of the highway system to satisfy demand. While each of the three models has a different structure and was run independently, they provide a common basis for forecasting future travel conditions.

The scenario analysis provides a multimodal perspective on statewide transportation needs for 2025. Although the regional models are based on assumptions about highway use, they have proven to be useful for assessing other transportation options as well. For example, the models can be used to measure what would happen to the system if more people used public transit instead of driving. They can also be used to gauge the effects of adjusting transit and highway system capacity to better meet projected travel demands in the different regions of the state. In addition, they can provide an idea of what can be accomplished through travel demand management measures, such as ridesharing and telecommuting, or by steering future growth toward planned centers that already have a good supply of transportation.

The scenario results are presented as a starting point for public discussion of New Jersey's long-range transportation needs, which vary from one part of the state to another and which may require different approaches in different communities. The model results can help to inform that discussion and to support the crafting of region-level corridor plans, transit service plans, local land use plans, and a range of related policy measures throughout the state.

STUDY METHOD

The regional travel demand models use mathematical relationships to estimate the ability of the highway system to satisfy demand. A large portion of the highway network is represented as a series of individual links, each having an estimated capacity based on characteristics like the number of lanes and the type of roadway. The model forecasts the number of trips that will be made based on the characteristics of the population and employment in an area. It then assigns these trips to the highway network by selecting the best route from each trip's origin to its destination, which is usually the route that takes the shortest travel time.

As all the trips are assigned to the highway network, traffic volume builds on each link. The capacity of each link is then compared to the number of vehicles desiring to use it, which results in a measure called the volume-to-capacity ratio, or v/c ratio. The higher the ratio for a given link in the system, the more crowded it is with traffic. If the v/c ratio is below 0.8, the roadway is said to be *under capacity*. In under capacity conditions, a roadway typically operates well and has capacity available to accommodate additional traffic. Motorists experience little delay and generally satisfactory levels of comfort and convenience. But when conditions on a roadway are *approaching capacity*, traffic begins to slow, driving is less comfortable, and even minor incidents can disrupt traffic flow. For this analysis, *approaching capacity* is defined as having a v/c ratio between 0.8 and 1.2. (While 1.0 is often used as the upper end of this range in traffic studies, for regional modeling a slightly higher value is needed to better relate model performance to real-world performance.) Finally, *over capacity* conditions are defined as those having a v/c ratio greater than 1.2. In these "failing" conditions, traffic flow breaks down, lines form, and motorists often become very dissatisfied. These three conditions, known as levels of service (LOS), are illustrated in Figures VIII.1, VIII.2, and VIII.3.

Figure VIII.1

LOS Under Capacity

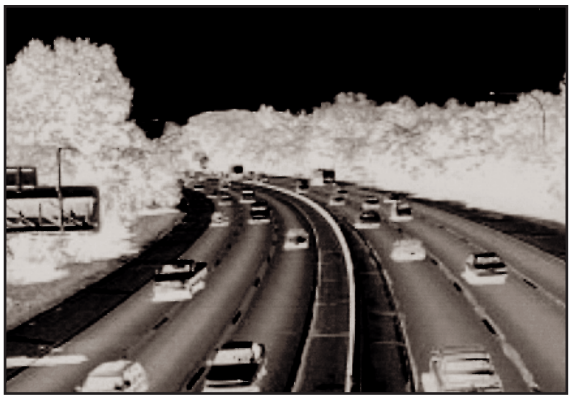


Figure VIII.2

LOS Approaching Capacity

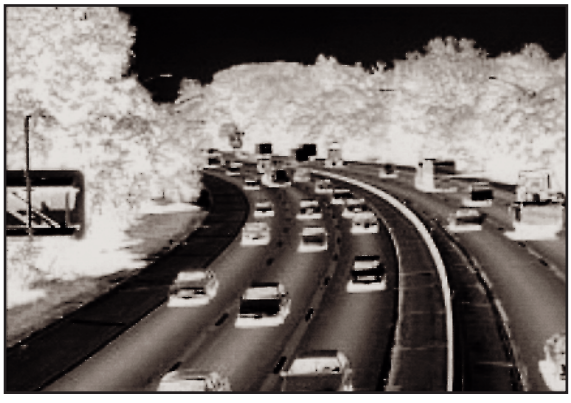


Figure VIII.3

LOS Above Capacity

MEASURING THE RESULTS

Each scenario analysis produces performance measures for the highway system that can be used to compare one scenario to another. They allow comparison, for example, of how much travel would occur and how much time people would spend driving in congested conditions under the different scenario assumptions. Measures of congestion are of particular interest due to the emphasis citizens placed on this issue in a survey undertaken for this plan update (see Chapter IV).

The region-level models generate several performance measures that indicate how well vehicles flow through the highway network. A set of performance measures was chosen that provides a common basis across the three models and is suitable to a statewide assessment. Together these measures tell the story of how the highway system will operate in the future. They include the total number of trips made, vehicle miles of travel (VMT), vehicle hours of travel (VHT), and the proportion of travel that occurred under the three levels of service defined above (under, approaching, and over capacity). For this analysis, projected conditions during an evening peak hour (rush hour) were chosen as the basis for comparison. Since each of the regional models bases performance measures on different peak hours, a normalizing factor was used to combine the three results into a statewide estimate. Definitions of the key performance measures are as follows:

- Vehicle miles of travel (VMT) represents an estimate of the total miles driven by all motorists on the highway system in a defined time period (a year or a day, for example). It is generally considered the key statistical measure of motor vehicle travel.
- Vehicle hours traveled (VHT) represents the total number of hours spent driving by motorists within that same time period.
- Amount of travel by level of service represents the total miles of travel or total hours of travel that occurred under each of the three operating conditions (under, approaching, and over capacity). VMT by level of service tells us how many miles were driven in relatively uncongested, congested, or severely congested conditions; VHT by level of service tells us how much time was spent driving under each condition.

SCENARIO CONSTRUCTION

The study process began with the construction of a "base case" as a framework for the analysis. The 2000 base case reflects today's conditions, and the 2025 base case indicates what would happen in the future without any long-range transportation improvements. Next, a set of scenarios was developed, each representing one strategy that could potentially improve transportation conditions over the base cases. The scenarios were first evaluated individually, and then in combination. The results of these evaluations led to the selection of a comprehensive multimodal scenario that would be used in further analysis. The multimodal scenario set direction for the analysis of financial needs presented in Chapter IX, and is intended as a basis for discussing the state's long-range transportation strategic direction. A separate analysis of alternative land use assumptions was also conducted and is described in a subsequent section.

Base Case

A base case is a reference point for comparing the effectiveness of alternative strategies. In regional modeling, a base case representing a current or recent year is needed to ensure the model's assumptions properly reflect reality. It also provides a familiar reference against which hypothetical future conditions can be judged. But a future base case representing a "do nothing" or "no build" alternative is also critical, as it provides a reference point for future scenario outcomes.

In this study, the future base case helped assess the impacts of doing nothing beyond the set of committed short-term projects in each MPO region's Transportation Improvement Program (TIP). To create the base case, a network including these TIP projects was developed. Then each MPO's forecast of future population and employment was used to project the travel demand on that network. This resulted in an assessment of existing and future year performance in terms of number of vehicle trips, VMT, and VHT.

The combined MPO demographic forecasts for 2025 indicate a statewide population increase of 15 percent and a 24 percent increase in employment compared to today's levels. The regional travel models show that this level of growth would produce a 24 percent increase in daily vehicle trips (Figure VIII.4). However, daily VMT would rise by more than 85 percent - from an estimated current base of 148 million miles to 275 million miles in 2025. Evening peak hour VMT would rise by 34 percent, and evening peak hour VHT would increase by 74 percent (see Figures VIII.5 and VIII.6).

Figure VIII.4
New Jersey Daily Vehicle Trips

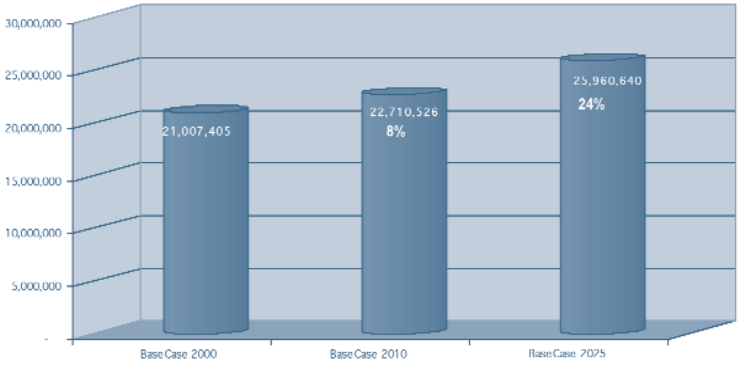


Figure VIII.5
Vehicles Miles Traveled PM Peak Hour Statewide

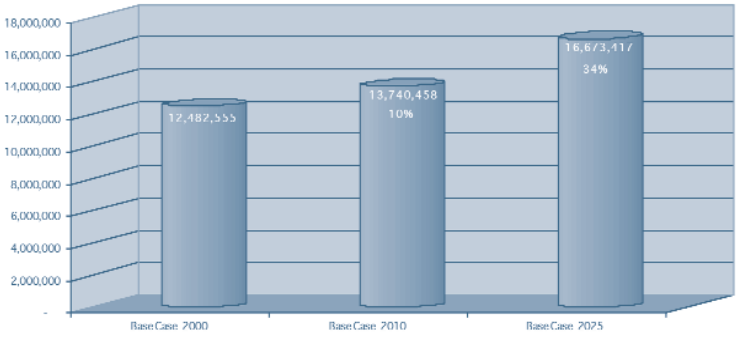
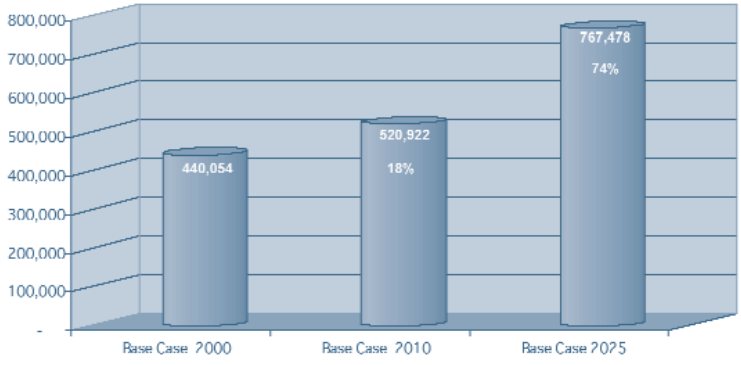


Figure VIII.6
Vehicle Hours Traveled PM Peak Hour Statewide



Growth of this magnitude can be expected to produce traffic conditions that are significantly worse in 2025 than they are today. For example, while the models estimate that 15 percent of peak hour VHT

in New Jersey currently occurs under severely congested conditions, in the 2025 base case this figure rises to 27 percent of VHT.

For comparison purposes, a separate base case was developed using a statewide model developed by NJDOT. This model covers a larger network including not only New Jersey, but New York City and surrounding portions of New York State, eastern Pennsylvania including Philadelphia, and northeastern Delaware. The statewide model projects travel conditions from 1990 to 2020 and includes projections of truck trips as well as travel by all vehicles.

The statewide model projects significant deterioration in roadway performance for both autos and trucks by 2020. The number of daily truck trips in this larger region is projected to rise by 19 percent, from 1.21 million daily truck trips in 1990 to 1.44 million in 2020. For trucks alone, the percentage of daily VHT occurring under severely congested conditions is projected to nearly double during this period, from 18 percent in 1990 to 34 percent in 2020. In other words, by 2020 one third of all the hours trucks spend on the road would be spent in severe congestion, with implications for the economy of the northeastern region as well as for the transportation system.

What actions could be taken to improve system performance compared to the base case forecast? A variety of scenarios were developed to gauge how well different strategies would combat the effects of growth on the operation of the highway system. These scenarios can be categorized into those that reduce highway demand and those that increase highway supply. Those on the highway demand reduction side include travel demand management strategies and a "transit rich" scenario that would significantly increase the amount of public transportation available. Those testing for supply include a scenario using intelligent transportation systems/transportation system management strategies (ITS/TSM) that improve traffic flow without major new construction, and one involving building, or expanding, roadways.

Travel Demand Management

Travel demand management, or TDM, is a policy approach that seeks to influence travel behavior in order to reduce the number of trips made by people driving alone. The objective of this scenario was to gauge the ability of a comprehensive TDM program to take some vehicles off the road that would otherwise be used by commuters. These diversions would be voluntary, but they would be aggressively supported through policy incentives such as employer support services for carpoolers and transit users, employer-supported vanpooling with a "guaranteed ride home" program, and alternative work arrangements such as telecommuting and flexible work hours. The target population for many TDM measures is people traveling to work, because of the predictable and repetitive nature of these trips as well as their significant contribution to congestion.

The TDM scenario applied trip reductions at the county level to allow for variation in such factors as the existing mode share, existing levels of ridesharing, and the percent of office workers in each county. (The percent of office workers is important since certain TDM strategies, such as flexible work hours, are generally available only to office workers.) The reduction in work trips ranged from a high of 5.6 percent in Somerset County to a low of 3.2 percent in Salem County. Systemwide, daily vehicle trips were reduced by about 0.5 percent by 2025, and peak hour VMT and VHT were reduced by 1.6 percent and 4.0 percent, respectively. An analysis of the level of service during the PM rush hour shows similar modest improvements to the transportation system.

Transit Rich

The second scenario was an aggressive transit scenario that models the effect of diverting numerous vehicle trips from the highway system to public transit. The "transit-rich" scenario assumed capacity will be available on the transit system to absorb these new passengers, and therefore implies major service increases.

The projected reductions in vehicle trips were tailored to regional conditions and trip purposes. For the North Jersey Transportation Planning Authority's region, reductions were based on a methodology that NJ TRANSIT recently developed to assess the potential demand for transit in different areas of the state. This methodology assigns each geographic area a score for transit potential (i.e., propensity for transit use) based on measures such as the density of households, population and employment levels, and the number of zero- and one-car households. These scores were used to estimate the number of trips from the regional travel forecasts that could likely be diverted to transit. In the central and southern regions of the state, reductions were applied across the board based on planning judgement.

Since work trips are more easily diverted to transit than non-work trips, higher reductions were applied for work trips, and smaller reductions were applied for shopping and other trips. The resulting trip diversions ranged from 0 to 5 percent. The total number of vehicle trips eliminated from the highways is estimated at nearly 400,000 by 2025. This corresponds to about 1.5 percent of daily vehicle trips on the highway system. PM peak hour VMT and VHT were reduced by 1.0 and 3.4 percent, respectively, producing modest improvements in peak hour level of service.

ITS/TSM

The Intelligent Transportation Systems/Transportation System Management scenario aims to increase the efficiency of the existing highway system, rather than expanding it. This evaluation used New Jersey's Intelligent Transportation Management System Master Plan as a guide to ITS deployment. The Master Plan includes 17 different ITS/TSM strategies and recommends different combinations of the strategies for application to specific corridors around the state. The strategies include such techniques as traffic signal synchronization, intersection improvements, electronic toll collection, provision of traveler information about alternative routes, and techniques for managing the disruption caused by traffic incidents. Assumptions were developed as to the likely effectiveness of each strategy in maintaining or improving capacity on the applicable corridors. The increases projected for individual strategies ranged from 3 to 15 percent. Overall, the strategies could theoretically add 30 percent capacity if they were all applied to a particular highway segment, but the maximum benefit was capped at 20 percent to avoid overstating the effectiveness of combining the strategies.

Systemwide, the number of daily vehicle trips was not affected because the measures act on only transportation supply, not demand. Route selection was influenced, however, resulting in PM peak hour VMT and VHT reductions of 0.5 and 9.2 percent, respectively. Level of service during the PM rush hour showed modest improvement.

System Capacity

This scenario tested the effect of expanding portions of the highway system to address severe congestion. Under this scenario, roadway sections that were operating unacceptably (at a v/c ratio greater than 1.2) were improved by adding capacity until each section was brought to an acceptable level of service (a v/c ratio less than 0.8). Initially, this was done without regard to the number of lane-miles added. Accomplishing this meant adding nearly 1900 lane-miles to the existing system (about 1500 to the NJTPA region and about 200 each to the SJTPO and DVRPC regions). Since today's system currently totals approximately 78,000 lane-miles, this scenario represents an increase of 2.4 percent in statewide highway capacity for the 25-year period.

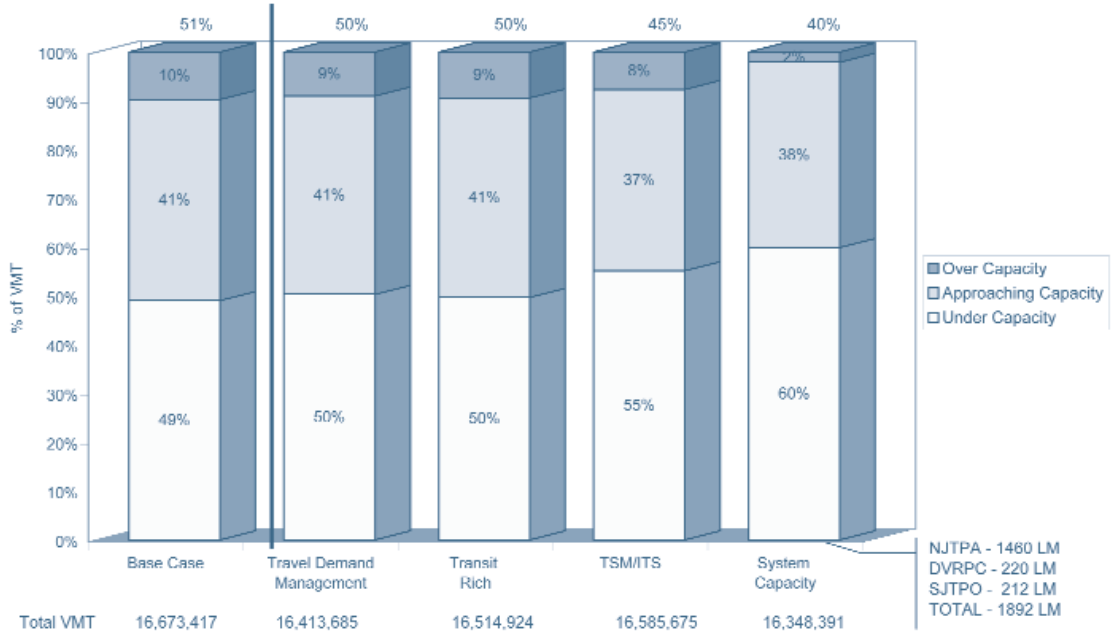
This rate of expansion would be the equivalent of adding approximately 75 lane-miles statewide per year. This is significantly more than the recent rate of road construction in New Jersey, and may not be a realistic rate of expansion, nor one that would necessarily be accepted by local communities. The scenario is presented for comparison purposes to gauge the effectiveness of targeted highway widenings as a long-range transportation strategy. A subsequent version, described below, was modified to limit expansion to an average rate of 20 lane-miles annually, in line with the recent rate of construction.

Once again, systemwide daily vehicle trips were not affected. Route selection was affected, however, and resulted in a 2 percent reduction in PM peak hour VMT. PM peak hour VHT was reduced much more significantly, by 25.5 percent, and the level of service during the PM rush hour was improved.

Comparison of Individual Scenarios

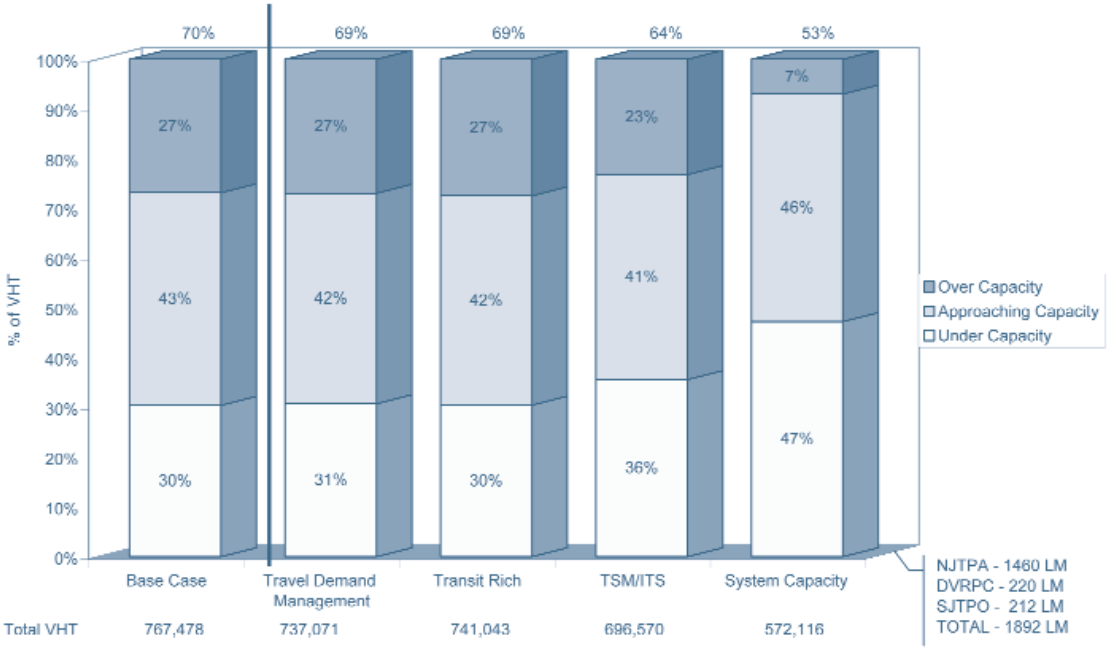
Figure VIII.7 compares the results of the individual scenarios for PM peak hour VMT by level of service. It shows the percentage of miles traveled under each of the three operating conditions described earlier: under capacity, approaching capacity, and over capacity. Figure VIII.8 provides the same comparison for VHT, indicating the proportion of total PM peak hour

Figure VIII.7
Vehicle Miles Traveled by Level of Service
2025 PM Peak Hour Statewide



Note: % above each bar is the sum of VMT approaching and over capacity

Figure VIII.8
Vehicle Hours Traveled by Level of Service
2025 PM Peak Hour Statewide



Note: % above each bar is the sum of VHT approaching and over capacity

vehicle hours spent in each condition.

The figures show that the two scenarios addressing demand for highway travel - TDM and Transit Rich - had little effect on peak hour conditions relative to the 2025 base case. Overall peak hour VMT reductions for TDM and Transit Rich were approximately 260,000 and 160,000, respectively. VHT reductions were approximately 30,000 for TDM and 26,000 for Transit Rich. Approximately 50 percent of VMT and 30 percent of VHT were under capacity in these scenarios, with 9 percent of VMT and 27 percent of VHT over capacity.

Conditions improved when the highway supply aspect of travel was addressed. For ITS/TSM applications, VMT improved to 55 percent under capacity and 8 percent over capacity. Improvements were more obvious in VHT, with 36 percent under capacity and 23 percent over capacity. Even more significant is the congestion reduction that occurs when system capacity is expanded. VMT under capacity improves to 60 percent and the number of segments over capacity decreases dramatically to 2 percent. Even more striking are VHT reductions to 47 percent under capacity (from 30 percent in the base case) and only 7 percent over capacity (from 27 percent in the base case). Overall VMT reductions for ITS/TSM and System Capacity are approximately 90,000 and 325,000, respectively. More striking are VHT reductions of 70,000 for ITS/TSM and 195,000 for System Capacity.

Combining Strategies

Once these individual scenarios had been analyzed and compared, the next step was to combine portions of each to determine the effect on future travel conditions. The first combination package consisted of three of the four individual scenarios: TDM, ITS/TSM, and Transit Rich. This combination package showed encouraging results: PM peak hour VMT under capacity would be 59 percent in 2025, and PM peak hour VMT under severe congestion would be 8 percent. Although these conditions would be worse than today's, they would be significantly better than 2025 base conditions. The TDM/Transit Rich/ITS scenario returns PM peak hour VHT under capacity to 39 percent and reduces VHT over capacity to 23 percent. Overall, PM peak hour VHT is reduced by 115,000 compared to 2025 base case conditions.

A second multimodal combination package tested the effect of adding a modified highway expansion strategy to the package above. This less ambitious highway expansion strategy was based on an analysis of highway expansion in New Jersey, which revealed that historically somewhat more than 20 lane-miles are added to the highway system per year statewide in recent years. Therefore, in the second combination package, capacity additions were limited to an average of 20 lane-miles per year, or 500 lane-miles through 2025. (To put this number in perspective, if each county in the state were to widen a one-half-mile segment of road in each direction per year, the overall total over the 25-year-period would be about 500 lane-miles.) The modified lane-mile additions were allocated among the three MPO regions based on the proportion of congested links found in each area (about 340 in the NJTPA region, 90 in the DVRPC region, and 70 in the SJTPO region). The lane-miles were added to those sections of roadway with the worst v/c ratios, with a maximum increase of one lane in each direction.

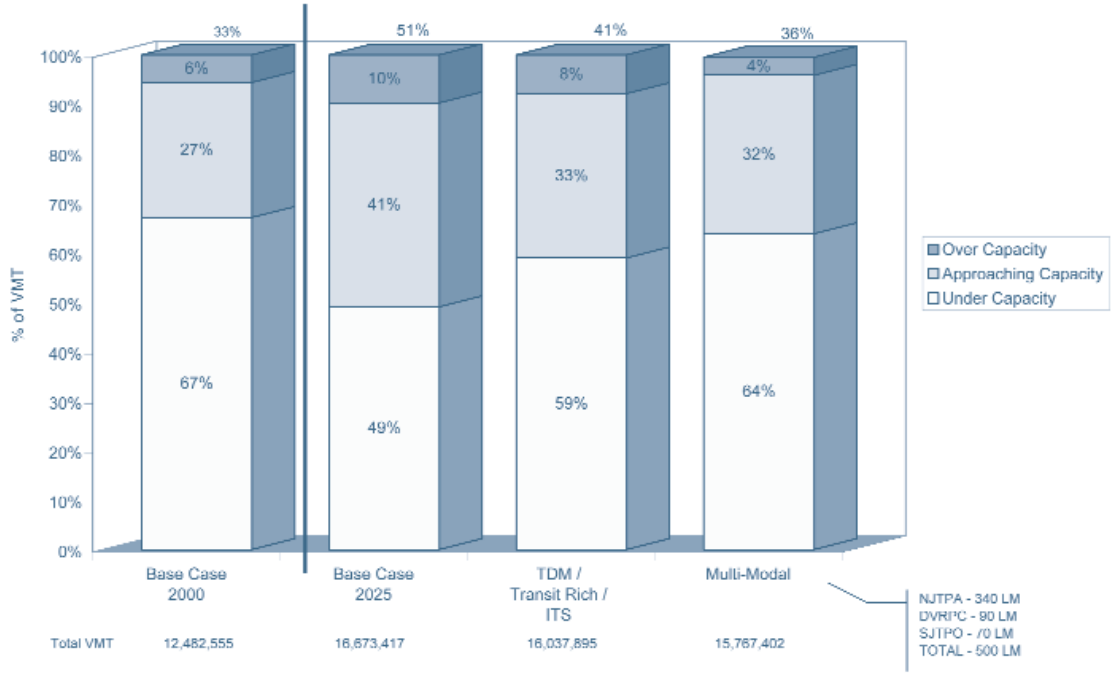
The multimodal combination package shows even more encouraging results than the first package. The percentage of peak hour VMT under capacity would be nearly restored to today's conditions at 64 percent. The percentage of PM peak hour VMT over capacity is actually better than current conditions, at 4 percent. Overall, PM peak hour VMT is reduced by 906,000 over 2025 base case conditions. See Figure VIII.9.

Similar results are seen for PM peak hour VHT by level of service. The multimodal option nearly returns to the 2000 base case at 51 percent under capacity, and reduces the over-capacity segments to only 7 percent compared to 2025 base conditions, resulting in a slight to moderate improvement over today's performance. Overall, peak hour VHT is reduced by 200,000 over 2025 base case conditions. The multimodal scenario produces results better than any of the others tested, as shown in Figure VIII.10.

ALTERNATIVE DEMOGRAPHIC ANALYSIS

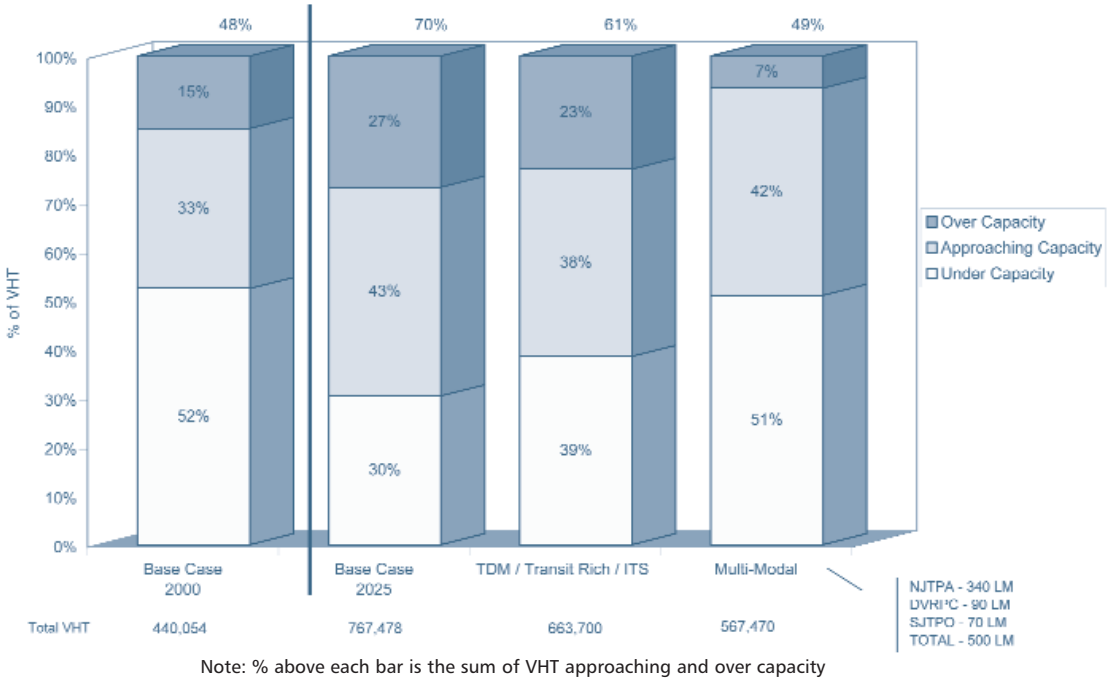
The initial scenario work described above was based on MPO estimates of the distribution of population and employment growth through 2025. These demographic projections are considered "trend" projections in that they largely assume a continuation of today's development patterns. To gauge what might happen to highway conditions if a different pattern of growth were to occur, additional scenarios

Figure VIII.9
Vehicle Miles Traveled by Level of Service
PM Peak Hour Statewide



Note: % above each bar is the sum of VMT approaching and over capacity

Figure VIII.10
Vehicle Hours Traveled by Level of Service
PM Peak Hour Statewide



Note: % above each bar is the sum of VHT approaching and over capacity

were developed based on the land use concepts of the *State Development and Redevelopment Plan*.

The SDRP emphasizes redevelopment of the state's urban areas and encourages compact, center-based growth, in contrast to the low-density, decentralized suburban development typical of recent decades. A recent impact assessment of the SDRP developed a methodology for apportioning each county's projected growth to municipalities in keeping with SDRP policies. Using a forecast year of 2020, the impact assess-

ment projects an alternative distribution of population and employment that can be used to test the effect of a center-based development strategy on highway system performance. SDRP impact assessment projections were compared with MPO "trend" forecasts for 2020.

The alternative projections were tested for the NJTPA region and for a subarea case study within that region. The region and subarea were chosen because of their well-established transit service (both buses and trains) and the presence of both urban centers and lower-density suburbs, all important elements for a meaningful hypothetical study of land use and travel changes. The case study was developed to examine the effects of alternative demographic patterns at a more fine-grained level, taking into account the location of existing transit services and regional activity centers.

Case Study Subarea Profile

The case study subarea, shown in Figures VIII.11 and VIII.12, includes sections of five counties: Hunterdon, Middlesex, Morris, Somerset, and Union. With 684 square miles and 46 municipalities, the estimated 2000 population of the subarea is 788,293, while total employment is 499,002. Urban centers in the subarea include New Brunswick, Plainfield, and Somerville, while rural areas are found in portions of Hunterdon and Somerset counties.

Figure VIII.11

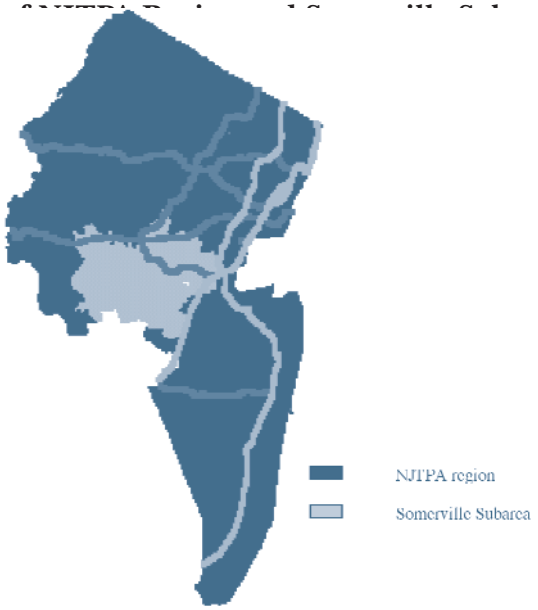
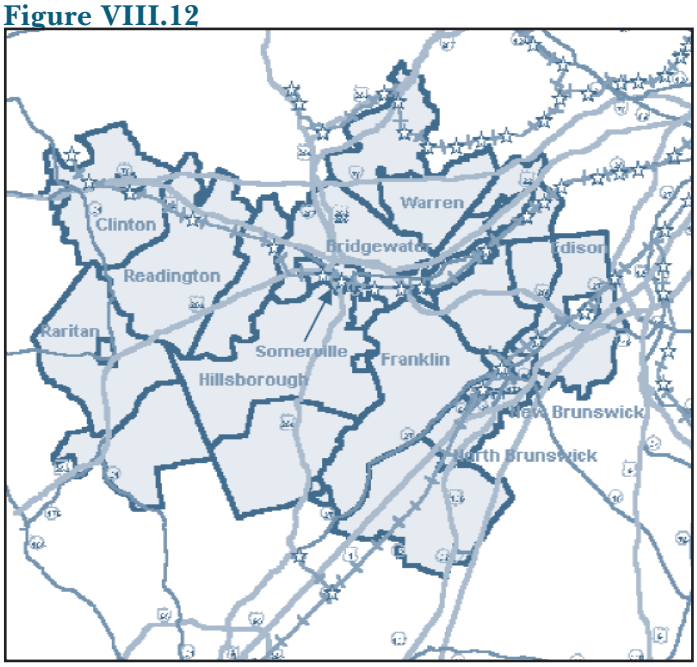


Figure VIII.12



The "nerve center" of the subarea is the town of Somerville and its surroundings, where several major highways intersect. Interstate 287 intersects with Routes 22, 202, and 206 near the Bridgewater Commons, a major shopping mall, and I-287 also passes close to New Brunswick to the east. In Somerville, Route 202/206 intersects with Route 28 at a circle known for its consistent congestion.

Interstate 78, the main thoroughfare between the New York/Newark metro area and Allentown, Pennsylvania, passes through the northernmost section of the subarea. The New Jersey Turnpike and Routes 1, 130, and 27 also pass through the subarea. Rail service in the subarea includes a Northeast Corridor station in New Brunswick; the Raritan Valley Line, serving Plainfield, Bound Brook, Somerville, and Hunterdon County; and the Gladstone Branch of the Morristown Line, which serves Berkeley Heights, Gillette, and Far Hills. The stars on the subarea map indicate transit stops.

Bus service in the subarea includes Routes #65 and #66. Routes #114 and #117 provide interstate service to New York City.

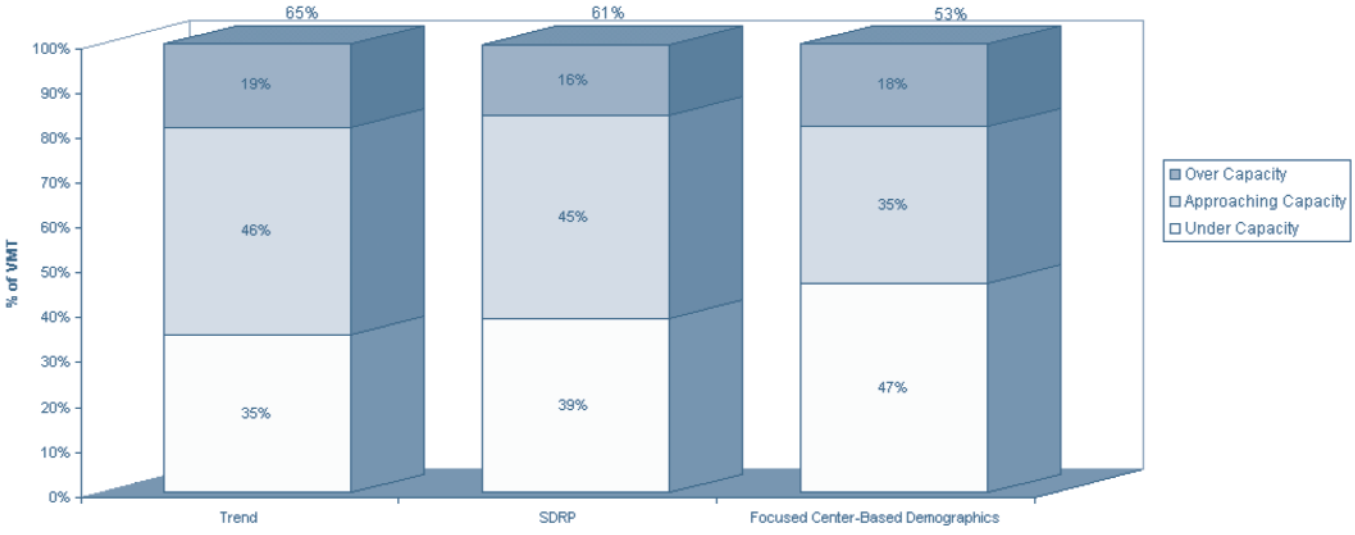
Results of Alternative Demographic Scenario

For the NJTPA region as a whole, the SDRP impact demographics showed very minor daily improve-

ment over trend conditions. Daily trips were reduced by 0.1 percent, VMT by 0.3 percent, and VHT by 0.5 percent. The PM period level of service for VMT and VHT showed nearly identical results, with a gain of approximately one percent in each case in under capacity conditions under the SDRP scenario. Approximately 45 percent of PM peak hour VMT and 30 percent of PM peak hour VHT operated under capacity, and 11 percent of VMT and 27 percent of VHT operated over capacity.

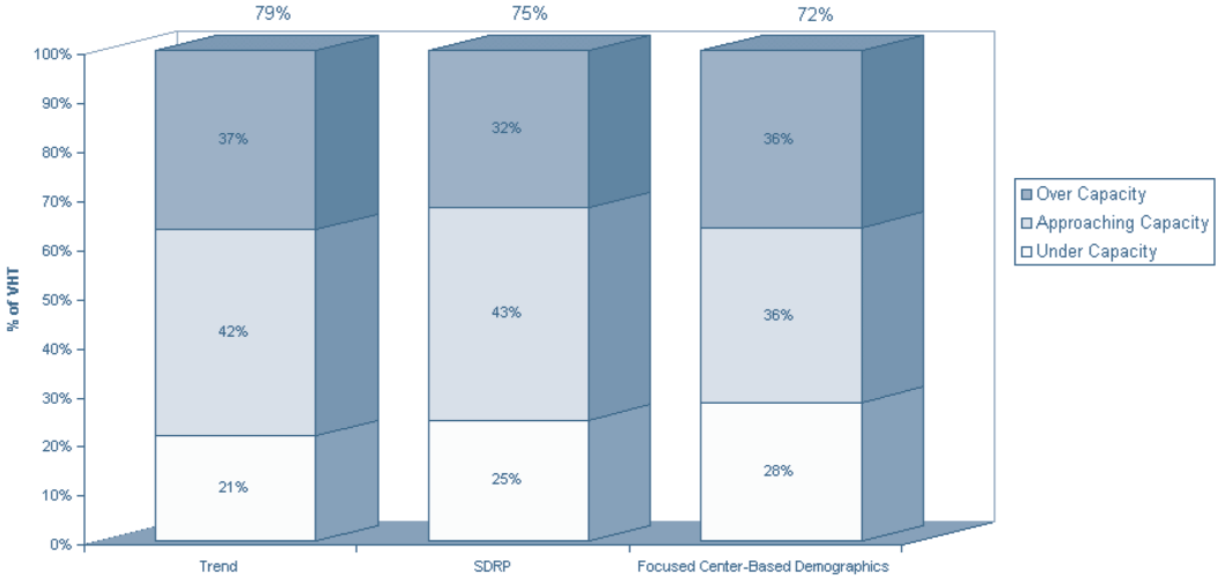
These results should be interpreted cautiously, since a changed demographic pattern may produce

Figure VIII.13
Somerville Subarea
Vehicle Miles Traveled by Level of Service
2020 PM Period



Note: % above each bar is the sum of VMT approaching and over capacity

Figure VIII.14
Somerville Subarea
Vehicle Hours Traveled by Level of Service
2020 PM Period



Note: % above each bar is the sum of VHT approaching and over capacity

improved transportation performance that was not captured in the regional highway network contained in the model. The subarea analysis provides another perspective. While the subarea also experienced minor changes in the number of daily trips and VMT, daily VHT was reduced by 2 percent, and the level of service indicators (VMT and VHT) showed modest improvements in the PM period, as shown in Figures VIII.13 and VIII.14. Subarea peak VMT at under capacity conditions increased 4 percent over the trend conditions, and VMT under severe congestion decreased 3 percent from the trend. Subarea VHT under capacity increased 4 percent over the trend conditions, and severely congested VHT decreased 5 percent from the trend. Moreover, these improvements occurred in spite of modest increases in subarea population and employment over the trend conditions (a result of some redistribution of growth into the subarea's centers).

The figures also show the results of a modified, still more compact growth scenario, which resulted in a very slight improvement for these indicators. This more focused center-based scenario further compacted growth within the subarea, focusing it along transportation corridors (highway or transit) and in core areas within each municipality. The results of this variant of the center-based growth scenario are quite similar to the basic SDRP scenario. Overall, the demographic analysis suggests that center-based growth policies such as those envisioned in the SDRP may make a positive contribution to future highway system performance and should receive further consideration and analysis.

IMPLICATIONS FOR MANAGING CONGESTION

This study shows that no single transportation strategy is likely to preserve the level of highway performance experienced today in New Jersey through 2025, let alone improve it. However, a combination of strategies could offer significant improvements over the level of congestion that can otherwise be expected by 2025.

If population and employment growth are consistent with MPO forecasts, in the 2025 base case daily VMT will increase by about 85 percent - close to doubling - and peak hour VMT will rise by about one third. The percentage of peak hour VHT under severely congested conditions will also nearly double, from 15 to 27 percent. The scenario analysis shows that a combination of strategies, each relatively aggressive in its assumptions about the policies that would be implemented, would be needed to significantly reverse this decline. For this reason, a multimodal combination package is recommended in this plan. Study results suggest that center-based development policies may also contribute to improved future highway performance.

It is important to note that congestion on the transit system is also an important issue to many citizens who experience crowded buses and trains. While the scenario analysis did not directly address transit congestion, it assumed a preservation of today's levels of service on the transit system in addition to the increased transit capacity in the Transit Rich scenario.

USING THE SCENARIO ANALYSIS RESULTS

The scenario results provide a basis for public discussion of New Jersey's long-range mobility needs, as well as an analytical framework for future examination of changing conditions and assumptions. They are most useful for making relative comparisons of possible futures, rather than for predicting absolute levels of transportation activity. In other words, the scenarios do not tell us exactly how many people will ride the transit system, carpool, or drive in 2025; rather, they show the general magnitude of the shifts in travel behavior that might be possible and the effects that such shifts could have on the performance of the highway system. The results also suggest the general magnitude of increases in transit service that would be necessary to accommodate the assumed shifts.

The scenario results also provide a framework for analyzing order-of-magnitude financial requirements, as discussed in Chapter IX. For example, the technologies applied in the ITS/TSM scenario would have certain capital and operating costs, as would the major increases in transit capacity and the selective increases in highway capacity envisioned in the comprehensive multimodal scenario.

It is important to recognize that even the best long-range forecasts are subject to change. Although the alternative demographic scenarios considered the effect of shifting projected growth within a region, the aggregate growth forecasts could be too high or too low. For example, an economic downturn could reduce the projected growth in employment, significantly affecting predicted growth in the number of

trips and the performance measures for the period of the downturn. Or a very major increase in gas prices could create a significant disincentive for driving, either reducing total trip making from the estimated levels or causing large-scale shifts to ridesharing and transit, or both. It is also difficult to predict the extent to which technological changes may affect travel behavior. For instance, telecommuting and flexible work hours could grow more significantly than is envisioned in the TDM scenario, helping to reduce rush-hour congestion - the potential for such changes is not well understood at this time.

While travel demand models are well suited to predicting the effects of demographic changes on the transportation system, they provide little guidance in understanding the converse relationship: how changes to the transportation system may affect future land development. For example, would the major investment in transit capacity assumed in the Transit Rich scenario help to stimulate urban reinvestment, by making it easier to travel to and from centers like Newark, New Brunswick, and Somerville? Or would such investments simply foster more low-density development, by making it possible for people to live farther from their workplaces while still maintaining a convenient commute? At present, few technical tools are available for answering this type of question.

Providing for continued mobility and curtailing the growth of congestion are key concerns for the future, but they are by no means the only important transportation issues facing New Jersey. A number of critical issues were not addressed through scenario analysis but are considered elsewhere in this plan. These include the need to maintain the existing infrastructure in a state of good repair; improve safety; increase accessibility to jobs, services, and other destinations for persons with limited incomes; support the efficient movement of freight; create more pedestrian- and bicycle-friendly environments; and ensure that transportation improvements help to improve the overall quality of life within New Jersey's communities. The relative emphasis to be placed on mobility and congestion relief and the fulfillment of other goals requires continued dialogue within each region and community.

STRATEGIC TRANSPORTATION DIRECTION

The travel demand and financial analyses described earlier in this plan provide a technical underpinning for setting a strategic direction for transportation over the next 25 years. Combined with the public outreach, these efforts have shaped the strategic policies of the plan for each of the travel modes. The following discussion helps form the basis for establishing these policies.

The multimodal scenario builds on the "transit rich" scenario that calls for a 50 percent increase in transit ridership. To achieve this level, an extensive expansion of New Jersey's transit system will need to take place. As the Urban Supplements stress, an expansion of bus hours of service (especially for late night and weekend service) will be necessary to ensure workers can travel to their places of employment, as well as increased service on existing bus routes, particularly during the peak periods. New bus routes will also have to be added to meet the population and employment growth. Additionally, improvements must be made to important bus corridors, like Route 9, to prioritize and improve the flow of buses. To support these new services, existing bus garages must be modernized and new bus garages and maintenance facilities constructed.

NJ TRANSIT has a number of committed passenger rail expansion projects, as well as many potential rail line expansion and light rail service proposals. The committed rail projects must continue to move forward. Planning studies and draft environmental impacts statements must be prepared for any new potential commuter rail and light rail facilities. Like bus service, rail service will have to be increased on the existing rail system, and as new rail lines are added, the level of service must be sufficient to meet the projected demand. Improved station facilities must also be provided, as well as reconstruction of a number of critical railroad drawbridges.

The Access to the Region's Core project is a critical part of expanding rail passenger services in New Jersey as it will significantly increase rail capacity across the Hudson River into New York City. ARC must be completed prior to the completion of many of NJ TRANSIT's rail expansion projects, since without ARC there would not be sufficient cross-Hudson capacity to meet the growth in demand for rail passenger service. Planning, environmental, and engineering studies must proceed on this important project.

Keeping the transit system in a state of good repair is also crucial to providing existing and future public transportation services. The existing transit system must be

brought up to a state of good repair and that system and the expanded system must then be kept at that level. Ferry service across the Hudson and Delaware rivers is operated by the private sector. This service complements existing bus and rail transit and provides capacity relief to the Hudson River crossings. Public-sector support for these ferry services should include landside assistance.

A concern that needs to be addressed is the decline in the number of general aviation facilities in New Jersey. Because of ever-increasing development pressures, numerous airports have been lost. With these closures, increased aircraft activity takes place at larger general aviation and commercial service airports, thereby increasing congestion and delays at these airports. NJDOT will provide land use compatibility guidelines to help municipalities protect aviation facilities from further encroachment and work with these municipalities to preserve existing general aviation facilities.

Not only is New Jersey a major gateway with respect to the movement of goods, it is also a major consumer of goods. To enjoy the quality of life New Jersey's citizens expect, products must move efficiently to the marketplace. The statewide truck model predicts that by 2020, one-third of all the hours trucks spend on the road will be spent in severe congestion. This has dramatic economic implications since it adds to the costs of goods shipped and negatively affects just-in-time delivery systems. Intermodal facilities must also be planned and implemented to support truck travel. NJDOT will work with the private sector, including the railroad and trucking industries and major shippers, to move as much freight as possible in a multimodal fashion.

Like the public transportation system, the highway system must be brought up to a state of good repair. Deferred maintenance of both these transportation systems has caused them to fall far behind the standards of a well-maintained system.

This plan calls for limited highway capacity expansion beyond the capital needs identified in the FY 2001-2005 State Transportation Improvement Program. The forecasted need for highway expansion is approximately 500 lane-miles over the next 25 years as long as major initiatives are undertaken to reduce highway travel demand and make the most efficient use of the highway system.

Rather than a major highway expansion program to meet the transportation needs for the next 25 years, other measures are proposed. In addition to the major transit system expansion, reducing highway demand through an aggressive travel demand management program and providing bicycle and pedestrian travel options wherever possible are proposed. We must also continue to make more efficient use of the existing highway system through continued implementation of intelligent transportation systems such as integrated traffic signals and motorist advisory signs. Transportation system management techniques like turning lanes at intersections will also continue to be applied.

This plan supports the principles of the SDRP and through the demographic analysis shows that center-based development can have a positive impact on reducing the number of highway trips. Higher-density development along established transportation corridors and mixed-use development help make for more efficient use of the transportation system.

Municipalities need to work with NJDOT and NJ TRANSIT to establish zoning ordinances that regulate land use in a manner that promotes higher density, mixed uses and discourages sprawl. The subdivision regulations of many municipalities need to be rewritten so that they promote transit-friendly design and provide connections between land uses so that bicycling and walking are both possible and practical.

MULTIMODAL

Integrate travel modes to provide connectivity and choices.

NJDOT and NJ TRANSIT need to plan and implement transportation improvements in a multimodal fashion that supports center-based growth. Working with the other state and bi-state transportation agencies, they will advance a coordinated and integrated transportation system that serves the state, the region, the nation, and the world.

TRANSIT

Preserve and expand our transit system and make the system safe, reliable, comfortable, and convenient.

Moving towards and maintaining a state of good repair for the existing core public transit system is critical. New and expanded bus and rail services are necessary to keep pace with our state's forecasted

growth. A fare policy that is equitable to transit riders and taxpayers must be maintained.

BICYCLE AND PEDESTRIAN

Provide non-motorized travel options by routinely integrating bicycling and walking into transportation system improvements and promoting bicycling and walking as a preferred choice for short trips.

Continued diligence is needed to ensure that bicycle and pedestrian issues will be routinely addressed as part of the activities of all units of NJDOT and NJ TRANSIT. Beginning at the earliest stage of needs analysis and problem definition, and continuing through the entire project development process, bicycle and pedestrian travel needs should be incorporated in the planning, scoping, design, construction, and management of all transportation projects and programs and as independent projects funded by NJDOT and NJ TRANSIT.

FERRY

Support the private sector through landside access, parking, and terminal facilities.

Ferry service is again becoming a viable mode of travel, typically serving bi-state niche markets. The private sector should continue to determine needs and provide the equipment and personnel to operate and maintain this marine mode of travel. The public sector can support ferry service by providing land, terminal, and parking facilities, as well as adequate access to the landside facilities.

AVIATION

Maintain the critical airport and heliport network and improve landside access at airport sites.

NJDOT is currently updating the New Jersey State Aviation System Plan. Through this effort, aviation policies will be reviewed and revised to meet current and future needs. The results of this update effort will become part of the "living plan."

GOODS MOVEMENT

Integrate freight facilities and modes to provide a multimodal system through public/private partnerships.

An International/Intermodal Corridor Coordination Division has been established within NJDOT to support the development of private/public partnerships on freight initiatives in northern and central New Jersey. A major initiative of NJDOT's is the Portway International/Intermodal Corridor. Portway is a series of transportation improvement projects that will strengthen freight access to and between the Newark/Elizabeth Air/Seaport Complex, intermodal rail facilities, trucking and warehousing/transfer facilities, and the regional surface transportation system.

In addition, NJDOT will continue its partnerships with the state's shortline rail operators, and will continue to support the Port of Camden and the Port of Salem with landside access.

NJDOT must also investigate statewide freight and logistics trends and opportunities and define and implement strategies to exploit New Jersey's global competitive advantages.

HIGHWAY

Maintain and preserve a safe existing highway system as a first priority, using travel demand management measures to reduce highway trips and operating strategies like intelligent transportation systems to increase highway efficiency. Add highway capacity at selective locations based on need.

The majority of our future highway system is in place today. To meet tomorrow's mobility needs, therefore, it is imperative to provide a safe system and to maintain and preserve this important asset for current and future generations.

The Congestion Management System study approach, used by the state's MPOs and NJDOT, is to first look at the demand side and see if demand management techniques will reduce or eliminate the additional demand generated and thus resolve the issue or problem. If supply side measures need to be undertaken, strategies to increase transit usage and bicycle and pedestrian alternatives will be identified. If the travel demand still cannot be accommodated, highway capacity increases can then be undertaken.✲

IX. FINANCIAL PICTURE FOR 2010 AND 2025

This section describes the financial resources required to achieve the objectives set forth in Transportation Choices 2025. It includes an overview of the framework that was used to guide the development of the long-range plan financial analysis and discusses the capital costs and revenues needed to bring New Jersey's transportation system to a state of good repair and keep it there and to provide new capacity that will help address crowded conditions and meet future travel demand. This is followed by an analysis of the projected costs and revenues to operate the state's transportation system during the long-range plan period. The section concludes with a discussion of the policy issues associated with funding New Jersey's long-term transportation needs. For the purposes of this analysis, projected financial needs and revenues are presented for the long-range plan fiscal year (FY) 2010 milestone year and FY 2025 horizon year.

FINANCIAL ANALYSIS FRAMEWORK

The objective of the analysis is to project on a needs basis the annual expenses and revenues, both capital and operating, from FY 2001 to FY 2025 for NJDOT (including the Motor Vehicle Services Division) and NJ TRANSIT. The analysis does not project the operating and capital needs associated with the independent transportation authorities, such as the highway authorities, the Port Authority of New York and New Jersey, and the Delaware River Port Authority. The highway authorities are addressed in the financial analysis in terms of their legislatively mandated annual contribution to the New Jersey Transportation Trust Fund.

The needs basis perspective of this analysis must be emphasized. The financial analysis was structured recognizing that funding constraints have historically limited transportation investment in New Jersey, particularly for infrastructure renewal. This analysis specifically assumes that a prompt recovery from deferred maintenance occurs (particularly for highway bridges).

The Access to the Region's Core project is a vital component of the long-range plan. It will significantly increase the capacity to move passengers across the Hudson River into Manhattan. Completion of this project must occur to support the current system and many of NJ TRANSIT's prospective commuter rail projects. The capital cost of this project is quite large (estimated at $6 billion in FY 2001 dollars, including rolling stock), and no determinations have been made regarding critical institutional arrangements (e.g., construction management and funding responsibilities). As a result, the capital costs for the ARC project are NOT included in the financial analyses presented herein. The net operating subsidy of the ARC, however, is included, as the assumption has been made that NJ TRANSIT will be responsible for operating and funding the agency's ARC services.

As part of the financial analysis effort, the following annual costs were projected.

Operating Costs

•Baseline System - This refers to the resources required to maintain and operate the existing highway and transit network. It also includes the annual costs to operate Motor Vehicle Services.

•System Expansion - This includes the incremental costs associated with the operation of new NJ TRANSIT bus, rail, and light rail services, creating additional highway capacity, and implementing intelligent transportation systems.

Capital Costs

•State of Good Repair and Normal Replacement - This includes costs to bring existing NJDOT, including Motor Vehicle Services (MVS), and NJ TRANSIT facilities to a state of good repair and provide for a normal replacement of these assets. State of good repair and normal replacement needs are also projected for new highway and transit facilities as they reach the end of their projected useful life. Estimates are also included for the regular replacement of rail cars and buses.

•System Expansion/New Capacity - This includes construction costs associated with the implementation of new transit services, incremental additions to the highway network, implementation of intelligent transportation system strategies, and expansion of transportation demand management initiatives.

• Debt Service and Financing - As described below, a portion of the state's highway and transit capital needs is funded from the New Jersey Transportation Trust Fund. The Trust Fund has the authority to leverage its revenue sources through the use of debt financing. This allows the Trust Fund to better match highway and transit resource needs with funding. This financial analysis projects the annual debt service on existing Trust Fund bonds as well as debt service and other financing costs associated with the projected issuance of new bonds.

The proposed implementation schedules for highway and transit capacity expansion and ITS initiatives were based on a number of factors, including construction time frame, relationship to/impact on the existing transportation network, and funding constraints/magnitude of new funding needed.

In addition to operating and capital costs, the following revenue sources were projected as part of the financial analysis.

Operating Funds

• New Jersey General Fund - General Fund resources would be available to fund all the operating needs for NJDOT, the MVS, and the portion of NJ TRANSIT operating costs not covered by fares, other operating revenues, and federal funds for capitalized maintenance.

• Fares and Other Operating Revenues - This source would be available to fund a portion of NJ TRANSIT's annual operating costs. Fares and other operating revenues would increase based on projected growth in ridership and assumed fare levels.

• Federal Transit Funds for Capitalized Maintenance - While the goal of NJ TRANSIT is to lease finance rolling stock through application of the annual federal transit apportionment, a portion of these funds is assumed to fund a portion of capitalized maintenance activities for the bus and rail system.

Capital Funds

• Federal Funds - As noted in the Five-Year Capital Program section of this plan, New Jersey receives federal funds from a variety of infrastructure grant programs to cover a portion of its highway and transit capital needs. These funding sources are assumed to be available during the period covered by *Transportation Choices 2025* based on assumptions described later in this section.

• New Jersey Transportation Trust Fund - This funds the portion of highway and transit capital costs not funded by federal grants. The Trust Fund receives revenue from a variety of sources, including a portion of the state's motor fuels gallonage tax, petroleum products tax, sales tax on new motor vehicles, motor vehicle registration fee, and annual contributions from the state's three toll road authorities, the New Jersey Turnpike Authority, the New Jersey Highway Authority, and the South Jersey Transportation Authority. The Trust Fund has the authority to leverage these revenue sources through the use of debt financing.

• New Jersey General Fund - Based on current practice, General Fund resources would be used to fund MVS capital needs.

The long-range plan financial analysis is performed in year-of-expenditure (inflated) dollars so that debt financing computations, if required, can be accomplished. In addition to projecting a baseline rate of inflation, inflation assumptions are required for construction and vehicle capital costs and for operating costs and revenues. Results are stated in both year-of-expenditure and base year dollars.

The financial analysis is then undertaken and the year-end balances are reviewed to ensure that neither capital nor operating shortfalls occur. For the purposes of the financial analysis, this was accomplished by considering the following:

Potential responses to capital funding shortfalls:

• Apply new capital funding sources - If existing funding sources are inadequate, additional sources could be assumed. This could include the implementation of a new revenue source.

• Apply debt financing - The use of debt financing provides the ability to advance project implementation by borrowing against projected future revenues.

• Delay service growth and/or delay construction - Short-term delays in the implementation of new services and facilities would result in a lower demand on available funds. Assuming that additional revenue sources are secured, this would reduce interest expenses and increase the ability to finance on a pay-as-you-go basis.

Potential responses to operating shortfalls:

• Delay new services and capacity expansion initiatives growth - As with capital shortfalls, delays in the

growth of transit service would result in a lower demand on available funds. This would also result in lower annual operating and maintenance subsidies.

•Apply new funding sources - This could include higher revenues from dedicated sources.

•Apply new fare funding sources - For the purposes of this analysis, this would require a higher transit target farebox recovery ratio. However, the adoption of a higher farebox recovery ratio may adversely impact ridership.

Financing Alternatives

This financial analysis allows for the evaluation of various financing options. The first and most desirable choice is pay-as-you-go financing, whereby available revenue sources fund the construction and implementation of capital projects. The second option is to finance the project by issuing long-term debt. The use of debt financing provides the ability to advance project implementation by borrowing against projected future surpluses.

The financial analysis continues with an exploration of these potential remedies until no further capital and operating shortfalls remain. At that point, a series of financial feasibility tests are examined to assure that the financial plan is feasible and (if debt financing is applied) acceptable to the capital markets.

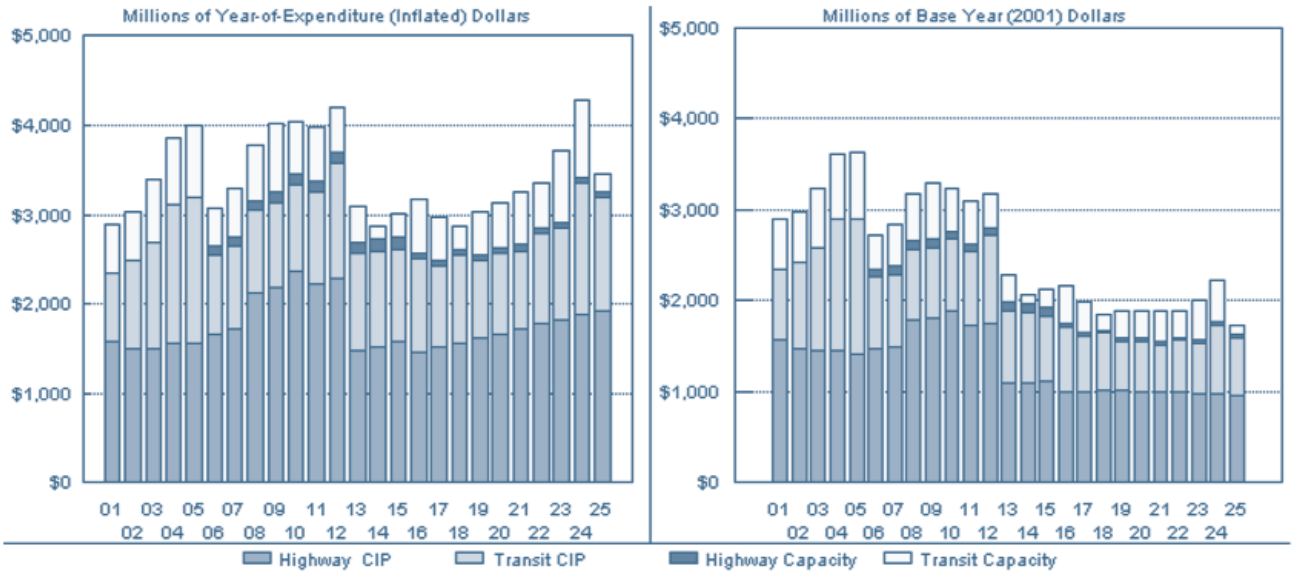
At this point in the process, the financial analysis has defined a scenario, which is described in the remainder of this section, based on a *most likely* set of cost and revenue projections, implementation of a state of good repair, normal replacement and capacity expansion construction projects, operating efficiencies, transit fare revenues, the implementation schedules for facilities and services, and inflation. It must be recognized that many *uncertainties* can affect this most likely scenario. This includes factors beyond the control of the state's transportation policy makers and managers, e.g., inflation and interest rates, construction and operating costs, ridership, and dedicated revenue growth.

In the context of debt financing, minimum debt service coverage was considered to evaluate the feasibility of the proposed financial plan. This measure is defined as the ratio of current year dedicated revenues divided by current year debt service payments. This is a conventional measure of financial feasibility whereby higher values are better. The financial analysis assumes that revenues used to repay debt issued for highway and transit capital needs are derived from the Transportation Trust Fund's revenue sources. Under this financing structure, a minimum coverage ratio of 1.50 was assumed.

CAPITAL FUNDING REQUIREMENTS

The capital needs required to maintain and expand New Jersey's transportation network are significant. Between FY 2001 and FY 2010, total capital costs are estimated to be $35.4 billion (all costs and revenues in this section are expressed in year-of-expenditure dollars) (see Figure IX.1). The cumulative capital costs will grow to $85.8 billion by FY 2025. NJDOT's portion of capital costs represent 51.8 percent of the FY 2010 milestone and 53.2 percent of the FY 2025 horizon year. NJ TRANSIT's portion of these costs equals 48.2 percent of the FY 2010 milestone and 46.8 percent of the FY 2025 horizon year. NJDOT's and NJ TRANSIT's capital costs would be funded from a combination of federal and state sources.

Figure IX.1
Projected Highway and Transit Capital Costs



Note that the costs defined above exclude the capital costs for the Access to the Region's Core project, which is assumed to be funded through pools of federal and state funding separate from the pools applied to fund the capital portion of this long-range transportation plan. The institutional arrangement for the construction of ARC will likely be outside the existing NJDOT/NJ TRANSIT structure. The net operating subsidy of ARC is included in the financial plan of this plan because NJ TRANSIT will probably be responsible for the operation of the agency's ARC services.

The following discusses projected highway and transit capital costs and funding requirements in more detail.

Uses of Funds

Highway Capital Funding Requirements

Highway capital needs are primarily for addressing the deficiencies of the current network and for bringing assets to a state of good repair (SOGR). There would be limited expenditures for new highway capacity. Figures IX.2 and IX.3 summarize highway infrastructure renewal capital needs; Figure IX.4 compares the infrastructure renewal needs against investment requirements for highway capacity expansion.

Highway capital needs were estimated based on the FY 2001-2005 STIP; NJDOT's 1998 *Capital Investment Strategy* (which was updated in 2000), Motor Vehicle Services facility needs, and long-range-plan-related highway capacity, intelligent transportation system, and travel demand management initiatives. Overall, expenditures to bring bridges to a state of good repair represent the largest percentage of projected capital needs (33.4 percent through 2025). This is followed by initiatives to enhance highway operations and capital project delivery (18.8 percent through 2025) and support for local highway systems (16.7 percent through 2025).

Figure IX.2
Projected Annual Highway Infrastructure Renewal Costs

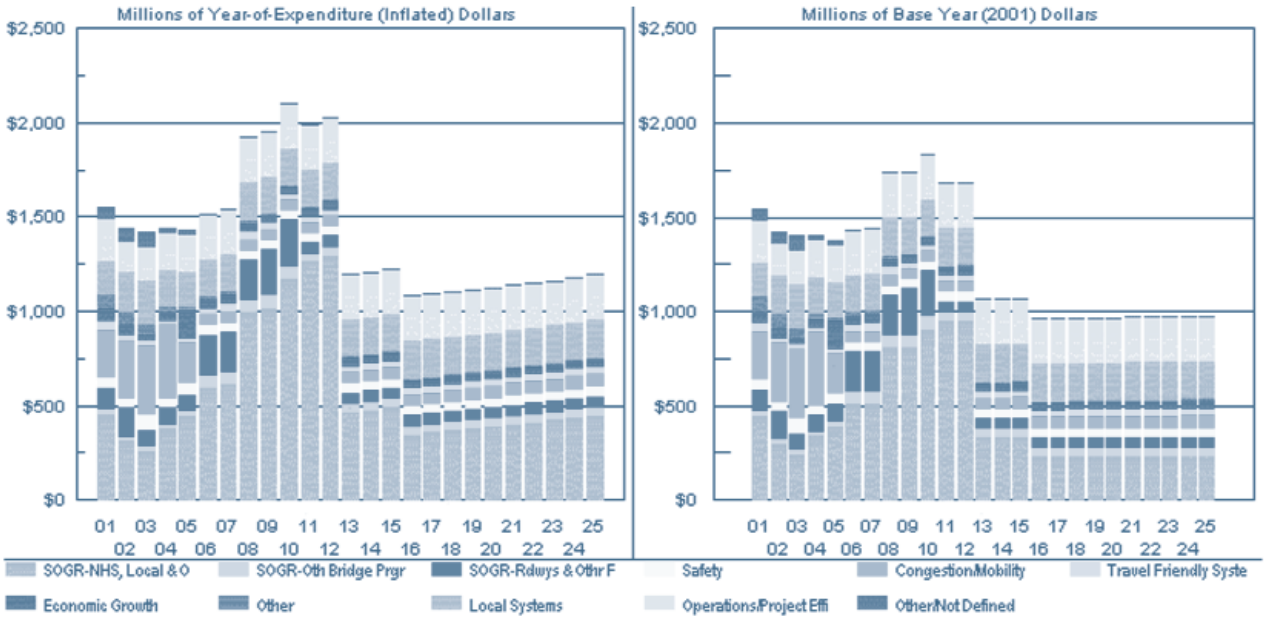


Figure IX.3
Projected Total Highway Infrastructure Renewal Costs

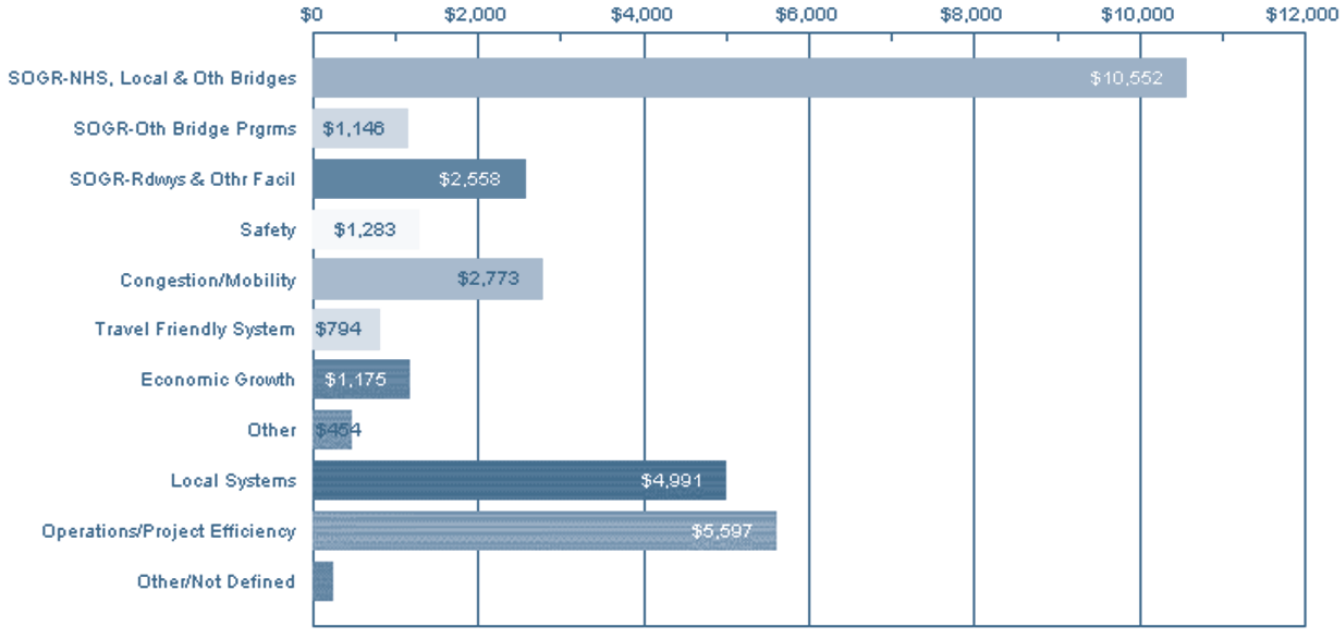
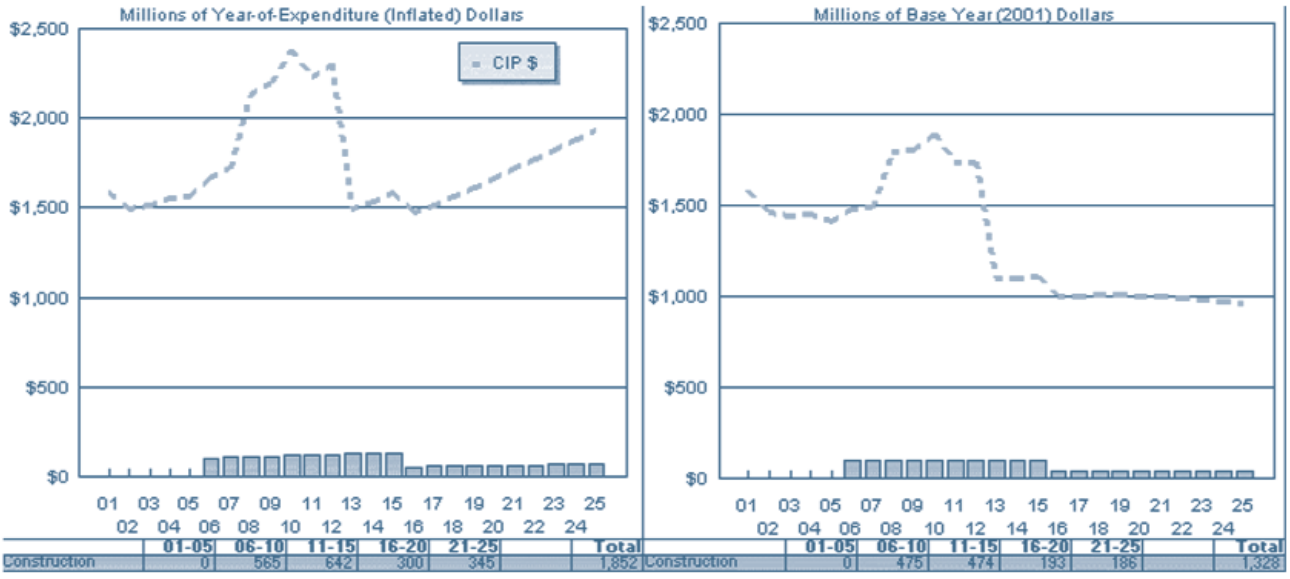


Figure IX.4
Projected Highway Infrastructure Renewal Costs (Dotted Line) and Capacity Capital Projects (Bars)



	01-05	06-10	11-15	16-20	21-25	Total
Construction	0	565	642	300	345	1,852

	01-05	06-10	11-15	16-20	21-25	Total
Construction	0	475	474	193	186	1,328

Long-range plan highway capacity needs total $1.1 billion for the construction of 502 new lane-miles of highway facilities by 2025 ($231.0 million by the FY 2010 milestone year). The need for this additional highway capacity was identified as part of the long-range plan travel demand forecasting effort. As part of this effort, a transportation investment strategy was structured to facilitate the development of an integrated, multimodal transportation network. Additional highway capacity strategies were identified to complement expanded transit capacity initiatives. The additional capacity represents a small portion of total highway capital needs (4.1 percent of the total through FY 2025 total) and a slight increase in roadway capacity, an only 0.67 percent growth from current statewide total lane-miles and only 4.7 percent of the state highway system.

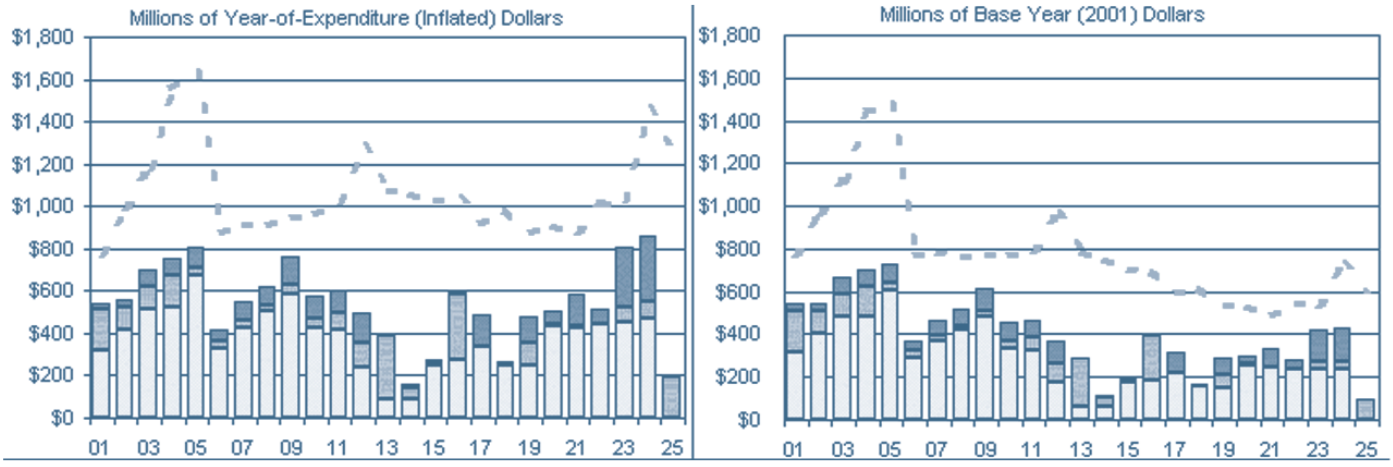
In addition, the long-range plan's multimodal transportation strategy identifies needs for intelligent transportation systems and travel demand management initiatives. ITS strategies, which include the use of technologies such as variable message signage alerting motorists to traffic conditions and alternative routes, remote traffic monitoring, and incident management, would better help the movement of vehicles over the existing highway network. TDM initiatives refer to strategies that promote better use of the state's limited highway capacity during the peak hours, such as car pools and van pools and programs to promote flexible work hours that could spread a portion of peak hour travel demand to less congested periods. ITS capital investments equal $713 million by the FY 2010 milestone year.

Transit Capital Funding Requirements

Over the long-range planning period, NJ TRANSIT will need $40.1 billion by FY 2025 to maintain its existing facilities in a state of good repair, provide for the normal replacement of the bus and rail fleet, and implement new bus, commuter rail, and light rail services to meet the state's growing mobility needs. Capital needs for the FY 2010 milestone year equal $17.0 billion. Long-range transit capital needs were estimated based on the FY 2001-2005 STIP, historic expenditures for recurring facility needs, current bus and rail fleet profiles and replacement schedules, new rail capacity expansion initiatives, and bus service growth.

In contrast to the highway needs identified in this plan, the capital needs for transit involve a greater percentage allocated to new services and capacity expansion (36.8 percent and 33.7 percent of the FY 2010 and FY 2025 totals, respectively - see Figure IX.5). The transit candidate projects are shown here only to represent the level of transit service assumed in the multimodal scenario for 2025 discussed in Chapter VIII. Whether any of these projects will

Figure IX.5
Projected Transit Infrastructure Renewal Costs (Dotted Line) and Capacity Capital Projects (Bars)



move forward has not been determined. These individual projects have yet to be fully developed. Baseline system capital needs, bus and rail car replacements, and regular rehabilitation and replacement of capital assets for system expansion projects equal 63.2 percent and 66.3 percent of the FY 2010 and FY 2025 totals, respectively.

Major new service and capacity expansion strategies included in the long-range plan have been categorized by NJ TRANSIT as committed and candidate projects. Specifically, these projects include:

Committed Projects:

- Hudson-Bergen Light Rail System
- Secaucus Transfer
- Newark City Subway Extension
- Newark-Elizabeth Rail Link (first operable segment)
- Southern New Jersey Light Rail System
- Montclair Connection
- Newark Airport Station
- Morrisville Train Storage Yard

Candidate Projects

- West Shore Line
- Northern Branch
- Bergen Cross-County Connection
- Sports Complex Rail Spur
- Newark-Elizabeth Rail Link (second and third operable segments)
- Union Cross-County Connection
- Monmouth-Ocean-Middlesex Line
- Cape May Seashore Lines (Hammonton-Cape May Courthouse)
- Camden-Glassboro Line
- West Trenton Line
- Phillipsburg Extension (via Raritan Valley and Boonton lines)
- New York, Susquehanna and Western
- Lackawanna Cut-Off
- Perth Amboy/South Amboy-New York Ferry
- Elizabeth-New York Ferry
- Newark City Subway Extension to Paterson
- Bus Priority - Route 9 Corridor
- Access to the Region's Core-Two-Track Tunnel to Penn Station New York *(NOTE: Capital costs excluded from the financial analysis, but net operating subsidy included.)*

Sources of Funds

NJDOT's and NJ TRANSIT's long-range capital needs would be funded from a combination of federal and state resources. The following describes the long-range plan forecasts for baseline federal and state capital funding and the need for supplemental state revenues to meet projected highway and transit needs.

Federal Funds

As described in the Five-Year Capital Program section of this plan, a portion of New Jersey's highway and transit capital needs is funded from a number of federal transportation infrastructure grant programs (see Table IX.1).

Table IX.1 - Federal Funding Assumed in the Financial Analysis

Millions of Year-of-Expenditure Dollars	2001 2005	2006 2010	2011 2015	2016 2020	2021 2025	Total
HIGHWAY						
Bridge	$953	$964	$964	$964	$964	$4,809
STP	$769	$775	$775	$775	$775	$3,867
NHS	$663	$669	$669	$669	$669	$3,337
CMAQ	$466	$490	$490	$490	$490	$2,426
IM	$451	$455	$455	$455	$455	$2,269
Minimum Guarantee	$198	$194	$194	$194	$194	$972
Other	$265	$196	$196	$196	$196	$1,047
Total	$3,764	$3,741	$3,741	$3,741	$3,741	$18,726
TRANSIT						
Section 5309 New Starts	$659	$748	$467	$672	$683	$2,570
Section 5309 Fixed Guideway Mod	$511	$616	$735	$961	$1,021	$3,333
Section 5307 Urbanized Area	$911	$1,093	$1,294	$1,503	$1,796	$5,686
Total	$2081	$2,457	$2,497	$3,136	$3,500	$11.589

For the purposes of the long-range plan financial analysis, it was assumed that total annual federal highway funds would remain flat at $748.1 million (in year-of-expenditure dollars) between FY 2002 and FY 2025. In other words, federal highway funding is assumed to decline in real terms. This is a conservative assumption that reflects uncertainty about the annual amount of federal highway funds that will be allocated to the state after the expiration of the current federal transportation program in 2003.

Similarly, conservative assumptions were developed to project the amount of federal transit funds that would be apportioned to NJ TRANSIT. Federal transit funds allocated on a formula basis are projected to grow based on forecasted growth in service and ridership. For the purposes of the long-range plan financial analysis, it is assumed that federal transit formula funds will not grow in real terms. This is based on the assumption that transit services in New Jersey will not grow as rapidly as in the rest of the nation (particularly in the Southwest, where the 2000 Census shows a significant shift in population).

In addition, the financial analysis assumes that discretionary federal transit resources would fund an average of 50 percent of the construction cost of NJ TRANSIT's proposed capacity and service expansion projects. The statutory maximum federal share for capacity/service expansion, or "new starts" projects, is 80 percent. However, the demand for limited federal new starts funds has increased as a result of the growing number of metropolitan areas pursuing transit strategies to address their transportation needs. For this reason, the Federal Transit Administration is encouraging project sponsors to fund a greater share of their costs with non-federal new starts funds, typically in the range of 50 percent.

State Funding

The State of New Jersey would provide the resources for the portion of NJDOT, excluding MVS, and NJ TRANSIT capital needs not funded by federal grants. MVS capital needs would be funded from New Jersey's General Fund resources. Highway and transit capital needs would be funded from a combination of pay-as-you-go and bond proceeds from the state dedicated transportation fund. As part of the long-range plan financial analysis, long-range forecasts of current dedicated transportation fund revenue sources were developed. Forecasts were based on projected growth in population, employment, and vehicle miles traveled as well as increased motor vehicle fuel efficiency. Current Trust Fund revenues would be available to pay annual debt service on existing bonds and a portion of annual debt service and capital costs associated with future highway and transit needs. The specific amount applied from the Trust Fund varies from year to year based on needs and authorization by the Legislature.

The financial analysis projected the amount of supplemental revenues that would be required to bridge the gap between current revenue sources and projected long-range plan highway and transit capital costs. Supplemental revenues could be provided from a variety of sources. The specific amount and mix of supplemental revenues dedicated to transportation will ultimately need to be agreed upon by New Jersey's citizens, elected officials, and transportation policy makers.

By FY 2010, total state transportation revenue needs will equal $2.78 billion; by 2025, this figure grows to $3.13 billion. Of this amount, current revenue sources represent approximately one third and supplemental revenues represent two thirds.

Figure IX.6 presents the amount of total state revenues, including pay-as-you go cash payments and bond proceeds, that will be required to fund the state's portion of projected highway and transit capital needs. Bond proceeds are based on the current annual limit of $650 million per year, adjusted for inflation every five years. The balance of the payments is from annual revenues from existing sources and from additional bond authority and annual revenues from new sources. By the FY 2010 milestone year, total state revenues to fund highway and transit capital needs will equal $37.1 billion; by FY 2025, state revenues for highway and transit capital needs will equal $102.9 billion.

As noted above, dedicated state revenues are used to provide funding for highway and transit capital projects on a pay-as-you-go basis and are also used to pay annual debt service on the portion of capital costs that are bond financed. Figure IX.7 shows projected dedicated state revenues and annual debt service over the long-range plan period. The 1.50 minimum coverage ratio requirement is met throughout the long-range plan period. The minimum projected coverage forecasted during the plan period is 1.55 in FY 2015. Excess revenues not used for debt service are available to fund highway and transit capital costs on a pay-as-you-go basis. Note that initial high coverage ratios could be reduced by reducing the annual additional revenues to the dedicated state fund. The financial analysis assumed no significant year-to-year adjustments in revenues, although this could be accomplished through legislative action.

Figure IX.7
Projected Debt Service Coverage

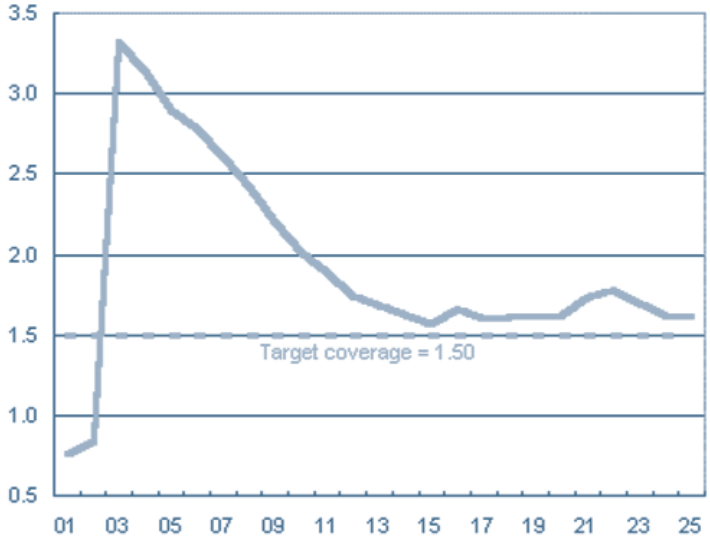
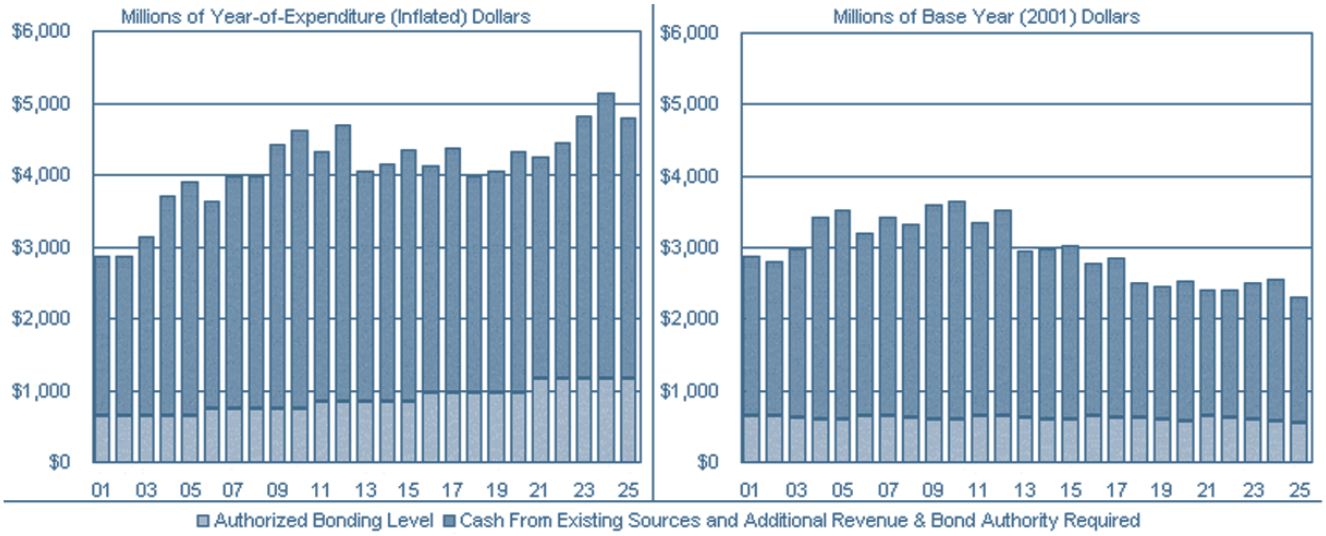


Figure IX.6
Capital Sources Applied to Pay-as-You-Go and Debt Financing



OPERATING FUNDING REQUIREMENTS

Uses of Funds

NJDOT's FY 2001 operating budget equals $224.6 million. Of this amount, 50 percent is for Motor Vehicle Services, 37 percent is for highway maintenance and operations, and the balance is for regulation and general management, physical plant and support services, and security responsibility. During the long-range plan period, operating costs are projected to grow based on annual inflation, the limited increase in highway capacity, and the implementation of ITS strategies. The financial analysis also projects the costs for travel demand management strategies to be implemented by transportation management associations. The cumulative TDM expenditures equal $40.3 million and $126.1 million by FY 2010 and FY 2025, respectively.

Figure IX.8 shows the projected growth in highway operating needs from the FY 2001 base year to the FY 2010 milestone and FY 2025 horizon years. NJDOT's operating costs are projected to increase from $285 million to $478 million. This increase is mostly attributable to annual inflation. In real terms (i.e., excluding inflation), operating costs are forecasted to grow through FY 2025 by only 12.3 percent as a result of new needs associated with maintenance and the operation of additional highway capacity, enhanced maintenance and operation of the existing system, and ITS.

NJ TRANSIT's FY 2001 operating budget is $1.06 billion. Rail and bus operations equal 37 percent and 35 percent of this total, respectively. Purchased transportation services represent 10 percent, while corporate operations are the balance. Operating costs are projected to increase as a result of annual inflation and the operation of new services. In contrast to highway operating needs, most of the growth in NJ TRANSIT's operating costs is attributable to the expansion of the transit network. As shown in Figure IX.9, NJ TRANSIT's operating costs are projected to grow by 81 percent (43 percent in real terms) between FY 2001 and FY 2010. Between FY 2001 and FY 2025, NJ TRANSIT's operating costs are projected to grow by 239 percent (63 percent in real terms).

Figure IX.8
Highway Capital and Operating Costs

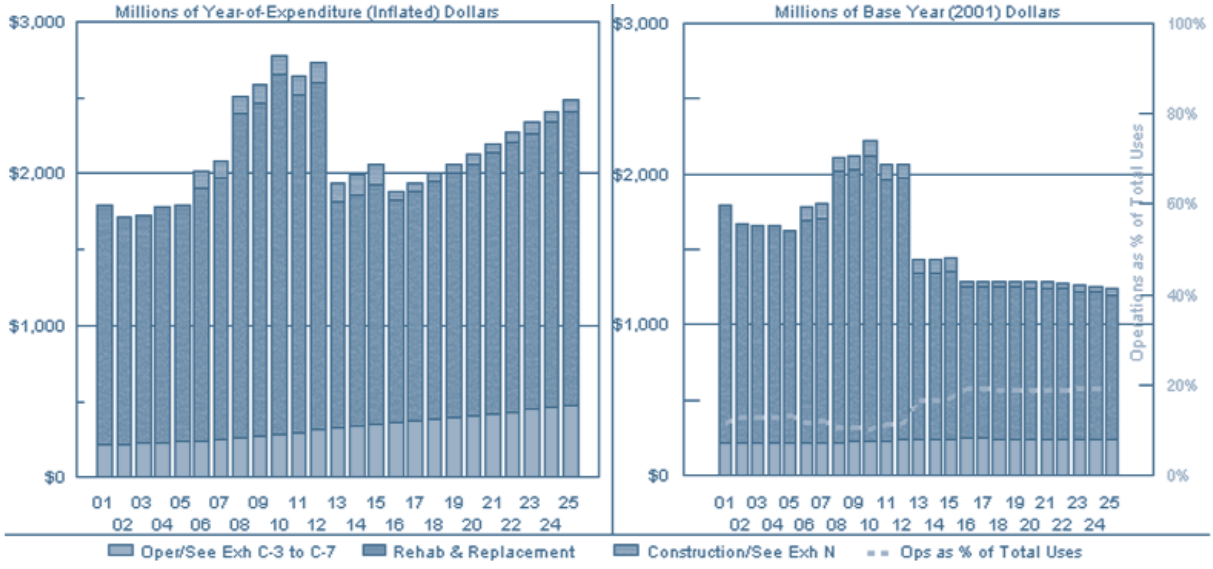
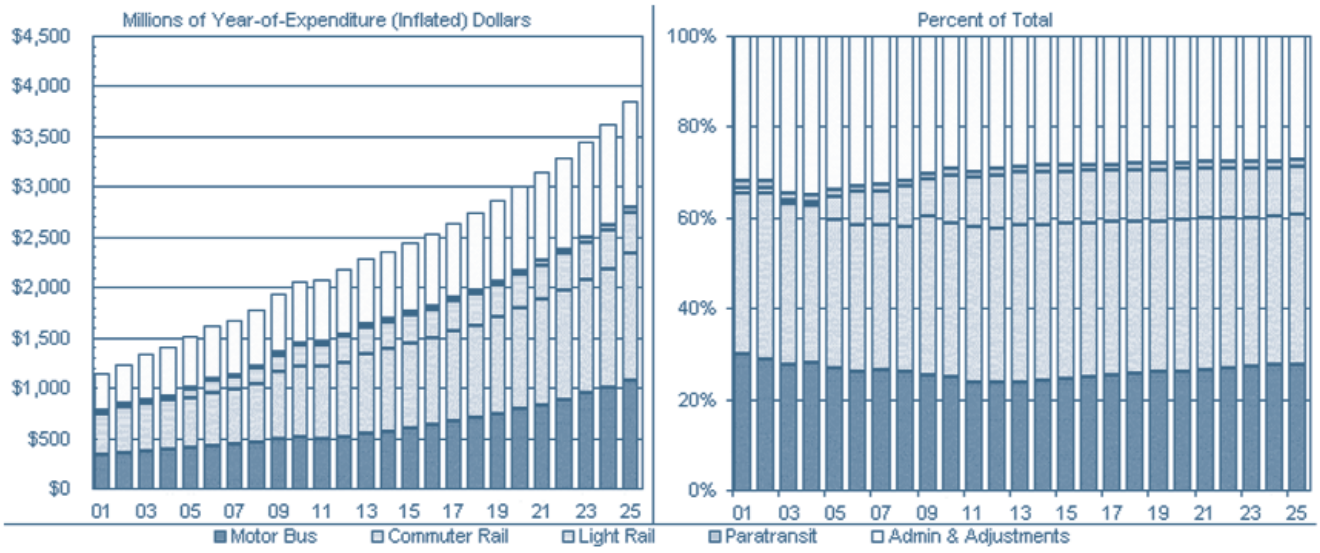


Figure IX.9
Projected Transit Operating Costs



Sources of Funds

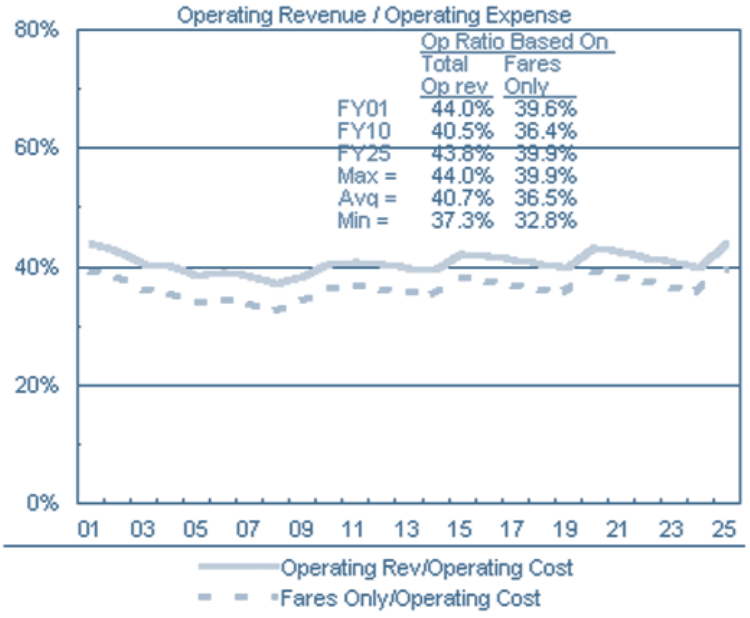
All NJDOT operating costs, both highway and MVS-related, would continue to be funded from New Jersey General Fund sources. Similarly, NJ TRANSIT's operating costs would continue to be funded from a combination of fare and other operating revenues, federal funds for capitalized maintenance activities, and the New Jersey General Fund. It is assumed that proceeds from the dedicated state fund would not support NJ TRANSIT's operating budget, a practice that has been used in the past to solve near-term operating shortfalls but has diverted funding from the capital program

During the long-range plan financial analysis period, the portion of NJ TRANSIT's operating costs funded from fares and other operating revenues is projected to decline (see Figure IX.10). FY 2001 fare and other operating revenues are budgeted to cover 44.0 percent of NJ TRANSIT's operating costs. The percentage of operating costs covered by fares and other operating revenues is projected to decline to 40.5 percent by FY 2010 and return to 43.8 percent by 2025. The decline in this percentage is due to:

- Service Productivity - Although the proposed new services allow NJ TRANSIT to provide increased capacity and comfort for its existing customers and to serve new markets, they are not as productive as the current baseline service the transit agency provides.

- Fare Revenue Growth - Fare revenues are projected to increase with projected ridership growth and periodic fare adjustments. For the purposes of the long-range plan financial analysis, it is assumed that fares charged to customers will grow at an overall rate that is less than inflation.

Figure IX.10



Projected Transit Operating Ratio

Figure IX.11 summarizes the projected FTA Section 5307 Urbanized Area formula funds and their application to leases, other capital projects, and preventive maintenance. NJ TRANSIT's goal is to leverage these funds to finance the acquisition of rolling stock. The financial plan accomplished this to the maximum extent possible.

The demands on New Jersey's General Fund resources are expected to grow as a result of projected increases in NJDOT's operating costs and the portion of NJ TRANSIT's operating costs not funded by fare and other operating revenues and federal capitalized maintenance funds. Figure IX.12 shows the growth in the demand for General Fund revenues over the long-range plan period. By the FY 2010 milestone year, total General Fund requirements will equal $11.4 billion (21.3 percent for highway and 78.7 percent for transit); by FY 2025 the cumulative need will be $40.6 billion (20.1 percent for highway and 79.9 percent for transit).

Figure IX.11
Projected Application of Section 5307 Urbanized Area Formula Funds

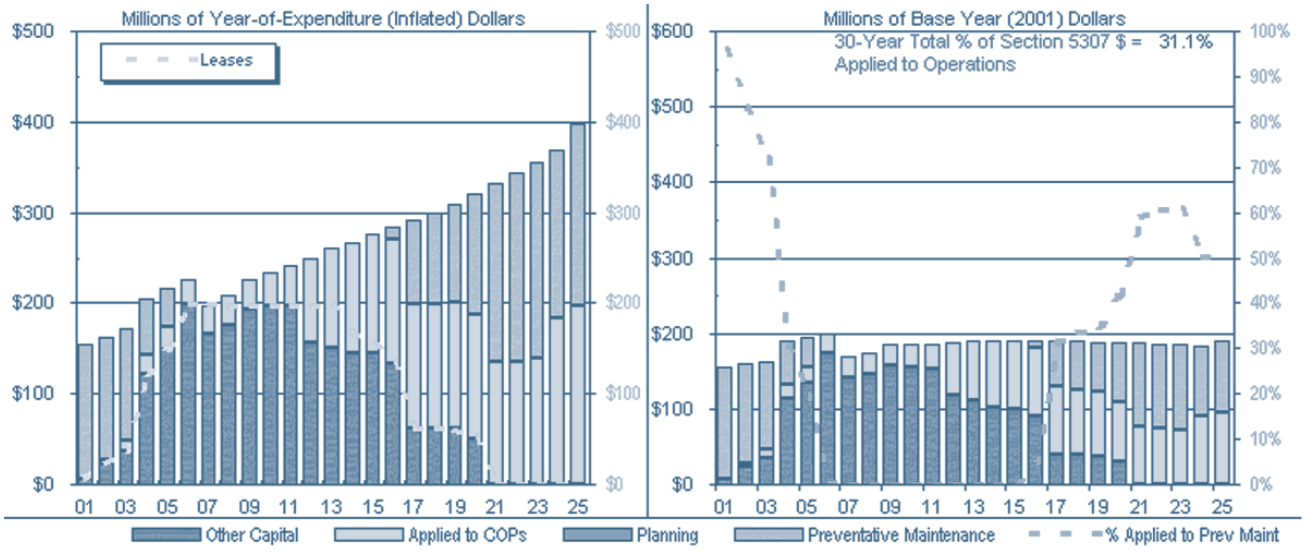
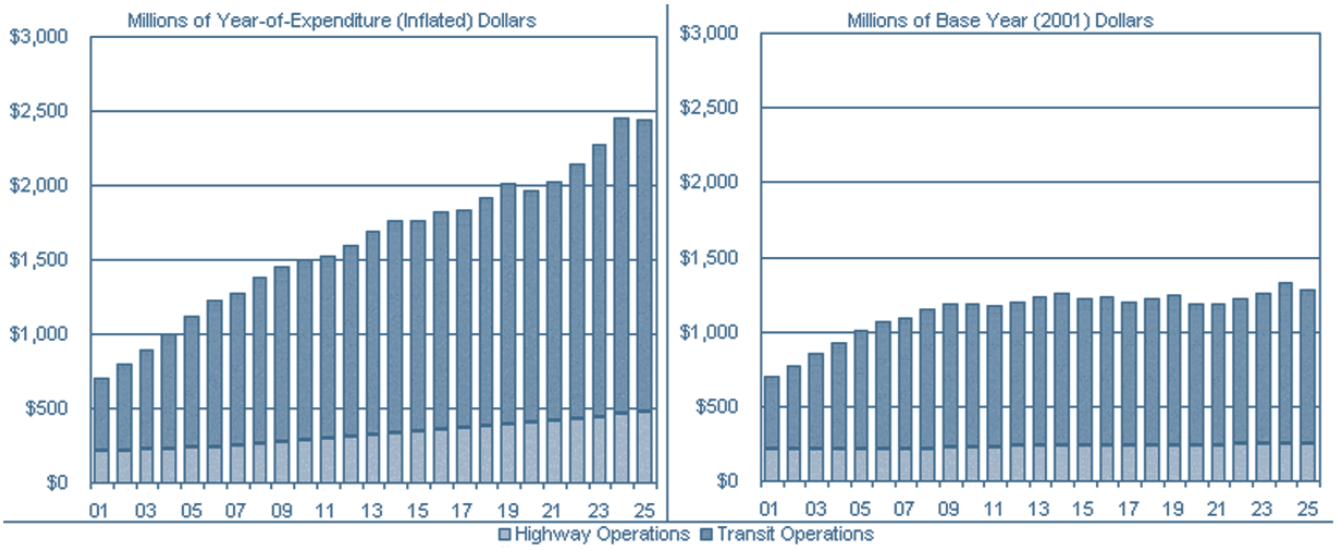


Figure IX.12
Projected Requirements for General Fund Revenues to Support Highway and Transit Operations



CONCLUSIONS

Transportation Choices 2025 establishes an aggressive strategy for improving New Jersey's existing highway and transit network and for offering new options to meet the travel needs of the state's citizens, businesses, and visitors. The resources required to implement this strategy are significant. Current Transportation Trust Fund revenues will not be sufficient to meet the capital funding needs of the long-range plan. The operating funds required will place significant additional demands on the state's General Fund. Supplemental revenues to the Transportation Trust Fund are projected to total $31.9 billion ($24.3 billion in 2001 dollars) through FY 2025. Additional demands on the General Fund for highway and transit operating needs are projected to total $15.7 billion ($10.9 billion in 2001 dollars) through FY 2025.

As described above, a variety of funding sources could be used to meet the supplemental revenue needs for the Trust Fund. Increased General Fund resources for NJ DOT's, MVS's, and NJ TRANSIT's operating needs and MVS's capital needs could be derived from a re-allocation of existing General Fund resources, an increase in General Fund-based revenue sources, or a combination of the two. The specific funding sources to meet the long-range transportation plan's capital and operating requirements will need to be evaluated by the state's citizens and policy makers based on:

- The benefits of the recommended long-range plan strategies on improving the state's quality of life and enhancing its economic competitiveness

- The potential adverse environmental, economic, and social impacts from not maintaining current transportation assets and providing capacity to accommodate future growth

- The increased financial burden on New Jersey's citizens and businesses associated with the increased transportation funding need

- The impacts on other state programs if existing resources were to be diverted to meet increased funding requirements for transportation.

X. EMERGING INITIATIVES

Quality of life is a central concern of New Jersey's citizens. This section of the plan describes a number of programs NJDOT and NJ TRANSIT have undertaken to both improve transportation facilities and services and support local governments as they work to enhance their communities.

These initiatives respond to the need to coordinate the planning of transportation improvements with the dynamic processes of revitalization and economic development underway in communities throughout the state. They also address the critical objectives of protecting and enhancing New Jersey's environmental and cultural resources, and ensuring that all residents share equally in the benefits derived from investments that are made.

CONTEXT SENSITIVE DESIGN

Context sensitive design (CSD) is an approach that emphasizes broad stakeholder participation and all-around ownership of results. This national trend is causing transportation professionals to re-think the way system improvements are developed and implemented by challenging engineers and planners to "think beyond the pavement." It is being implemented in many other states, and has been endorsed by the American Association of State Highway and Transportation Officials (AASHTO). In recent years, NJDOT has begun to incorporate CSD principles in the development of new projects.

Context sensitive design is a comprehensive and balanced approach to all transportation-related activities. Instead of focusing first on the desired systemwide outcome of a proposed transportation activity, and then mitigating community impacts, CSD projects begin with a careful evaluation of the "context" of a proposed project area. Using broad-based community participation, a context sensitive design assesses all the potential effects of the proposed activity on the project area and then harnesses the flexibility in engineering and policy principles to accomplish the project goals without compromising overall safety or the integrity of local environmental, economic, and cultural systems. CSD emphasizes identifying and involving all the stakeholders related to the transportation project at an early stage and working with them to identify problems and needs and to develop concepts and alternatives.

Following the principles of context sensitive design, NJDOT has started introducing changes in its project development process. The Department has established a Context Sensitive Design Implementation Team comprised of representatives from its planning, scoping, design, construction, operations and maintenance, and finance departments. Six subgroups of the team deal with various aspects of implementation. Perhaps the team's most important task is to educate the public about the CSD process to change the way communities interact with the Department. Because residents, local officials, and other stakeholders know their communities best, the team's efforts focus on enrolling communities at an early stage in the planning process and establishing mechanisms for collecting and recording suggestions and feedback. Other aspects, including standards and practices, policies and procedures, training, and organization are also important for the success of context sensitive design.

NJDOT's project development process involves five major steps. The initial planning phase in which transportation problems, community needs, and possible solutions are identified is concept development. Implementing CSD principles at this stage is very important as it establishes the foundation for all the later stages of the project. During this phase, understanding the community, defining problems, and developing general solutions are emphasized.

During the second step, known as feasibility assessment, or scoping, concepts and needs are refined into various alternatives. With continued community involvement, these alternatives are then assessed to select the preferred alternative, one that balances community, transportation, and environmental needs. Next is final scope development, in which the design focus shifts from general to detailed and the community focus shifts from the conceptual approach to refining these details.

During the final design step, specifications and construction plans are completed and construction cost is estimated. Quality assurance reviews are conducted, right-of-way is acquired, and environmental concerns are re-evaluated. In a context sensitive project, the dialogue with the community continues through the final

design phase and does not stop even after completion of construction. The community remains actively engaged through the operations and maintenance phases.

NJDOT has started implementing CSD with some existing projects and is committed to full implementation. Gathering knowledge from its early successes and lessons learned with context sensitive design, the Department recognizes the positive impact it can have in making and implementing policies to benefit all sectors of the state and is eager to proceed in this exciting and innovative direction.

ACCESS MANAGEMENT

Transportation Choices 2025 advocates a major expansion of transit facilities in the future, with only a limited increase in the highway system. Providing access to the transit system at rail stations and at bus stops, offering opportunities for transfers, and ensuring intermodal connections are critical for the success of New Jersey's future transportation system. Similarly, access to the highway system must be managed and controlled to preserve through traffic and enhance safety.

NJ TRANSIT's *Planning for Transit-Friendly Land Use*, published in 1994, provides guidance to local communities in planning for improved access at rail stations and other transit facilities. This handbook identifies strategies and methods to accommodate pedestrian, bicycle, and vehicular access and circulation, as well as land uses that support transit ridership. NJ TRANSIT continues to work with local governments to address access issues related to rail stations and bus stops, and to promote long-term planning for "transit-friendly" communities.

To maximize capacity on existing highways, NJDOT has been active in implementing intelligent transportation systems and traffic management systems. In addition, the Highway Access Code, adopted by NJDOT in 1992, mandates the proper spacing of roadways and driveways that intersect state highways to enable through traffic to proceed as smoothly as possible and allow for maximum capacity.

The proposed addition of 500 new highway lane-miles over the next 25 years will take the form of adding lanes to existing facilities and new alignments on new facilities. The Highway Access Code will be enforced along state highways where additional lanes of new capacity are added so that both the existing capacity of the facility and any new capacity will be maintained. For state highways on new alignments, full control of access will be obtained.

Access management plans provide another opportunity to manage state highway capacity by allowing changes in local land uses to be coordinated to promote highway access. For this reason, NJDOT has become active in assisting municipalities in the development of these plans. They help identify land uses and designs that meet community development objectives and provide access points along state highways, thereby preserving capacity.

VALUE PRICING

Traditional congestion relief measures, including transit and roadway expansion projects, are becoming less and less feasible due to financial and land use constraints as well as environmental issues. As a result, transportation officials must seek innovative ways to reduce congestion by modifying travel demand patterns. One such strategy is value pricing, a policy that charges a variable toll for road use determined by the amount of traffic at a particular time. For example, a toll bridge or tolled highway would charge more during the morning and evening rush hours.

Value pricing reduces congestion by giving drivers a financial incentive not to drive during peak traffic periods. Just as long distance phone companies and airlines vary their rates according to demand (i.e., weekday phone calls cost more than nighttime or weekend calls), variable road pricing can help reduce traffic congestion by encouraging drivers to switch modes, drive at different times of day, or carpool.

NJ TRANSIT and private bus carriers have used value pricing for some time. Riders purchasing individual tickets during the peak travel period pay a premium over tickets purchased for non-peak period times.

The New Jersey Turnpike Authority's E-ZPass service, launched in late 2000, was the first use of value pricing on the state's highway system. E-ZPass users can save money by traveling on the Turnpike at non-peak times. As part of its recent toll increases, PANYNJ has initiated value pricing for E-ZPass users during off-peak periods. Many other opportunities exist to implement value pricing at New Jersey toll facilities, as well as with bi-state transportation agencies that operate bridges and tunnels.

TRANSIT VILLAGES

NJDOT and NJ TRANSIT are fully committed to the recently established Transit Village Program because of its potential to promote the use of multi-modal means of transportation and serve as a catalyst for local economic revitalization. Other state agencies involved in this effort include the Economic Development Authority, Commerce & Economic Growth Commission, Department of Community Affairs, Office of State Planning, Redevelopment Authority, Department of Environmental Protection, Housing and Mortgage Finance Agency, and the State Council on the Arts.

A "transit village" is a compact and mixed-use community, having a substantial residential base, concentrated in the vicinity of a transit station. Compactness of the community ensures easy access to the transit station, which is located at the community's focal point. Residents living within a quarter mile can easily walk or bicycle to the transit station. Mixed-use development promotes resource efficiency and minimizes congestion. In a well-planned transit village, vehicle trips are diminished not only because of ready access to transit, but also because daily errands and other activities can be conducted in the shadow of the transit station.

The Transit Village Program focuses on renewing or upgrading a community's transportation system with the help of federal, state, and county agencies. It targets conservation of fuel and other natural resources by providing safe and attractive alternatives like landscaped walkways and bikeways linking the residential area and the business district. It also aims at encouraging private capital investment for community development. Neighborhood revitalization, improved public safety, and higher rates of transit use are among the many positive outcomes expected from the Transit Village Program.

A successful transit village begins with a strong public/private partnership. Local businesses and property owners must work together with dedicated public officials to forge a market-oriented revitalization plan, and local residents need to be engaged in redevelopment planning. An aggressive approach to zoning and rezoning sets the stage for the viable transit-oriented community, which balances commercial development with higher density housing without sacrificing the quality of life of its residents.

With a goal of establishing two demonstration projects, transit village partnerships were established in 1999 with five municipalities: Morristown, Pleasantville, Rutherford, South Amboy, and South Orange. These municipalities have diverse socioeconomic and ethnic compositions and contain a variety of transit station types and transportation modes. They will be given priority consideration for funding from NJDOT's Local Aid for Centers and Transportation Enhancement Programs, and will receive NJDOT's assistance in circulation plan preparation and partnership development.

SCENIC BYWAYS

NJDOT is part of a nationwide effort to cultivate and promote awareness of one of our state's most important resources - the view from the road. The Department has brought together a number of agencies and organizations with prior experience or mutual interest in scenic byways to develop New Jersey's Scenic Byways Program.

A "scenic byway" is a transportation corridor of regionally outstanding scenic, natural, recreational, cultural, historic, or archaeological significance. The corridor reflects the uniqueness and diversity of the place. New Jersey is rich in scenic, historic, and cultural resources, and the Scenic Byway Program is intended to enhance tourism, promote commerce, encourage other travel alternatives like bicycling and hiking, improve quality of life, and provide many other benefits to New Jersey's residents and visitors.

To ensure that the Scenic Byways Program is integrated with the state's development and conservation objectives as well as its transportation needs, the program is guided by an interdepartmental advisory committee with representatives from various state agencies. The committee offers a wide range of

technical assistance and expertise in maintaining the program and in reviewing and evaluating scenic byway management plans.

The Garden State Parkway and the Palisades Interstate Parkway are pioneering examples of scenic byways in New Jersey. The 34-mile stretch of Route 29 from Trenton to Frenchtown, with its picturesque and historic Delaware River views, has also received the designation, and other potential scenic byway projects are currently moving through the process at NJDOT.

ENVIRONMENTAL STEWARDSHIP

In the ongoing effort to provide excellent transportation service, NJDOT, NJ TRANSIT, and other transportation agencies have become increasingly mindful of the concept of environmental stewardship. As it relates to transportation initiatives, environmental stewardship means taking care to preserve and enhance the state's natural resources and ecosystems, adding an aesthetic dimension to facility designs, and preserving New Jersey's rich cultural heritage. Specific areas in which this heightened concern is manifest include the design and maintenance of transportation facilities, the administration of environmental protection and historic preservation programs, and the promotion of energy-saving and emission-free transportation.

As the implementation of context sensitive design continues to improve the way existing and new transportation facilities are developed, transportation projects are reflecting more and more the character of the surrounding communities. For example, the preservation of existing scenic and/or historic bridges is a top priority, but when they cannot be preserved, their replacements reflect the local surroundings. Similarly, noise walls and wetlands replacement (two for one) mitigate negative environmental impacts.

NJDOT is also concerned with enhancing and protecting the travel-way landscape - the trees and foliage along transportation pathways. This is accomplished through well-designed landscape plans and proper maintenance. In addition, NJDOT participates in the state's anti-global warming initiative by replacing two trees for each one removed.

The Department's maintenance procedures also recognize the importance of environmental stewardship. For example, NJDOT's standards dictate the use of environmentally safe materials and call for the storage of equipment and chemicals in a safe manner. When rebuilding maintenance facilities, NJDOT and NJ TRANSIT employ the latest methods to control and prevent air and water pollution, and the Department is currently experimenting with techniques to recycle project waste and by-products.

NJDOT also funds a variety of special projects intended to enhance the environment and quality of life. Transportation enhancement funds have been used for such projects as restoration of the tall ship *A. J. Merrwald* that features an on-board interactive classroom promoting ecological and historical awareness. Other funded projects include the stabilization of the historic lighthouse and interpretive facility in Absecon and the restoration of a sculpture, the Dublin Spring Water Boy, in Paterson.

NJDOT is also living up to its objective of protecting our state's natural resources while bringing about transportation improvements. Representative projects include the provision of safe crossing for wildlife in Clinton, the relocation of Flanders Brook to protect trout species, and the restoration of a salt marsh on Drag Island in Atlantic County.

More than a hundred years ago, railroad stations were built as architectural expressions of their owners and the communities in which they were located. Today, state agencies, communities, and businesses are once again paying close attention to aesthetic concerns as they build, rebuild, and restore rail stations and other passenger amenities and new commuters discover the convenience and environmental benefits of taking the train. The restoration of rail stations and historic bridges throughout the state exemplifies this renewed attention to architectural detail. Archaeological excavations related to transportation projects have also helped to save some of the state's heritage. At Abbott Farm National Historic Landmark in Mercer County, for instance, archaeological findings contributed to the understanding of prehistoric cultures in the Delaware River Valley.

Finally, an area that has long been a focus of NJDOT's and NJ TRANSIT's environmental stewardship efforts is the development and promotion of energy-saving and emission-free transportation alternatives. Current initiatives include the use of fuel cells, rather than conventional energy sources, to power variable message signs, as well as the use of electric cars by NJDOT and NJ TRANSIT. NJ TRANSIT has replaced 50 diesel-powered buses

with buses fueled by compressed natural gas to help reduce emissions along the Route 9 corridor. NJDOT is part of a public/private research team that is developing vehicles powered by electric and hydrogen fuel cells, and New Jersey's Clean Air program has launched a two-year vehicle inspection program with stricter emissions standards.

URBAN INVESTMENT STRATEGY

The *State Development and Redevelopment Plan* advocates the use of public investment priorities to guide growth to centers. Its approach to urban revitalization includes a strategy to expand and modernize urban infrastructure. Further, the SDRP advocates a system of public investment priorities that will be implemented through the policies of *Transportation Choices 2025*. The highest priority for system maintenance, preservation, and repair is New Jersey's cities. Specifically, priority is first to urban complexes and then secondly to urban centers for capacity expansion and other capital asset investment.

As the state's long-range transportation plan, *Transportation Choices 2025* sets forth an urban investment strategy. Under this strategy, NJDOT and NJ TRANSIT will prioritize transportation investments, for infrastructure preservation and maintenance as well as system capacity, to the state's urban complexes and urban centers. This represents an aggressive change in practice to support the implementation of the *State Development and Redevelopment Plan*.

Currently, through the Transportation Trust Fund, NJDOT provides local governments with funding for road, bridge, and other transportation improvements. Administered by NJDOT's Local Aid Program, the TTF provides millions annually in state aid to municipalities and counties.

In addition, NJDOT provides millions for local bicycle and pedestrian projects, and funding for the Centers of Place Program. Centers of Place grants are awarded for non-traditional transportation projects that support urban, regional, town, or village centers under the *State Development and Redevelopment Plan*. Several programs also provide funding to counties and municipalities with federal TEA-21 monies. The most important is the Transportation Enhancements Program, which is a non-traditional transportation program designed to promote alternative forms of transportation and support livable communities.

To employ the urban investment strategy, funding for all the above programs will be prioritized to New Jersey's urban complexes and urban centers. Additionally, NJDOT and NJ TRANSIT will work with their planning partners, the three metropolitan planning organizations in New Jersey, to advocate Transportation Improvement Program selection criteria that prioritize investments to urban complexes and urban centers in the state.

ENVIRONMENTAL JUSTICE

A major goal for environmental justice in the state is to re-emphasize NJDOT's and NJ TRANSIT's commitment to protect human rights and to enable all New Jersey citizens to participate in decisions affecting the transportation system and to enjoy the benefits it provides. NJDOT and NJ TRANSIT are fully aware of the importance of addressing environmental justice issues in the transportation development process.

NJDOT and NJ TRANSIT have reached out to the disadvantaged and minority groups in the state as a part of the public involvement process for the formulation of *Transportation Choices 2025*. Five focus groups were held throughout the state to discuss various transportation needs and issues. Three of these groups - the Low-Income Focus Group, the Minority Focus Group, and the Disabled Focus Group - specifically addressed issues associated with environmental justice. The results of each of these focus groups are presented in Chapter IV - What We Have Heard.

To understand the concerns of senior citizens - another traditionally under-served sector of the population with respect to transportation - a Mobility and the Aging Population Issue Group was convened. The forum gathered input from individuals and agencies involved in providing transportation to this sector of the population in an effort to identify their special transportation needs. Identification of the issues identified, problems encountered, and recommendations of this issue group are also contained in Chapter IV. The feedback and recommendations from all the focus groups and the issue groups have served as supportive material in the development of this plan.

The Urban Supplement reports for seven cities in New Jersey developed as part of this plan specifically focus on the needs of inner-city residents who are reverse commuting or are seeking employment out-

side the city in which they live. These data provide valuable insight on how the benefits derived from recent transportation investments have been distributed throughout all sectors of the population.

NJDOT and NJ TRANSIT have incorporated the discussions from the focus and issue groups, as well as the information gathered for the Urban Supplement, in the policies of this long-range transportation plan update. The public involvement process and concentration on urban issues has provided an opportunity to frame the plan for system improvements in terms of all the elements of a community, with special attention paid to the target population of minority, low-income, elderly, and disabled individuals.

NJDOT and NJ TRANSIT will continue to address environmental justice through the "living plan" process. Work is anticipated on three fronts and will be conducted with the state's MPOs. Work is envisioned on demographic profile mapping, outreach. and systems level analysis.

Working with the MPOs, NJDOT's and NJ TRANSIT's analyses are expected to focus on:

- Updating Demographic Profile Mapping
  - -Update the mapping of locations of minority and low-income population concentrations using 2000 Census data
  - -Develop maps for elderly and disabled population concentrations
- Continuing Focused Outreach
  - -Continue work on targeting and engaging populations of concern in identifying needs and in transportation decision-making, including involving them in context sensitive design projects
- Conducting Systems-Level Analysis
  - -Prepare an analysis using the three MPO travel demand models to evaluate if access to jobs and services is equitably distributed to populations of concern
  - -Develop strategies to address any disproportionately low benefits or high burdens on those populations

Both agencies are committed to integrating environmental justice into all transportation processes, and will evidence this commitment through continued efforts in fulfillment of public involvement and planning process requirements, as well as in the shaping of policy.

XI. ROLES AND RESPONSIBILITIES IN PLAN IMPLEMENTATION

The updated Statewide Long-Range Transportation Plan is multimodal in focus, addressing a range of transportation options for passenger and freight movements that include motor vehicle, bus, rail, paratransit, and bicycle and pedestrian travel, as well as air and waterborne transport. The multimodal approach of this "living plan" will require the involvement of a number of public and private transportation agencies, other organizations, and individuals as the plan moves toward implementation.

The process of moving a concept from idea to implementation becomes more specific as it becomes more local. The extent to which specific transportation agencies, organizations, and individuals will play a part in moving from ideas to actual projects depends on the roles and responsibilities of these entities.

NEW JERSEY DEPARTMENT OF TRANSPORTATION

The New Jersey Department of Transportation operates and maintains the 2,331 miles of interstate and state highway under its jurisdiction. While this represents only a small fraction of the nearly 36,000 miles of roadway in the state, the highway systems operated by NJDOT carry the heaviest volume of traffic. NJDOT is also charged with providing strategic direction for transportation planning within New Jersey.

NJDOT produces the Statewide Transportation Improvement Program (STIP), which is mandated by the federal government. The STIP serves two primary purposes. It presents a comprehensive, one-volume guide to major transportation improvements planned in New Jersey during the next five years that provides a valuable resource for the state's transportation agencies and everyone else who is interested in transportation issues. It also serves as the reference document required under federal regulations for use by the Federal Highway Administration and the Federal Transit Administration in approving the use of federal funds for transportation projects in New Jersey.

The federal Transportation Equity Act for the 21st Century (TEA-21) requires each state to develop one multimodal Statewide Transportation Improvement Program (STIP) for all areas of the state. In New Jersey, the STIP consists of a list of statewide line items, programs, and the regional Transportation Improvement Program (TIP) projects developed by the three metropolitan planning organizations MPOs (see below.) The MPO TIPs result from extensive deliveration with NJDOT and NJ TRANSIT. Once approved by each MPO Policy Board, each TIP is included in the statewide TIP without modification.

The Federal Statewide Planning Rule requires that the projects contained in the STIP be consistent with the statewide transportation long-range plan, including any updates. *Transportation Choices 2025* is therefore critical in setting the overall policy framework for the development and prioritization of capital programs.

NJDOT is responsible for presenting *Transportation Choices 2025* to other agencies, stakeholder groups, and the general public so they may comment on it and take ownership in its development. The agency will also be responsible for updating the "living plan" as needed. As the long-range plan advances toward implementation, NJDOT will need to assist other agencies, counties, and municipalities with funding for the long-range plan projects that fall within those jurisdictions. The agency also needs to continue and expand its efforts to develop public/public and public/private partnerships.

NJ TRANSIT

NJ TRANSIT, the nation's third largest public transportation provider, operates and maintains New Jersey's public rail, light rail, and bus systems. The agency's 178 bus routes and 12 rail lines cover a service area of 5,325 square miles. NJ TRANSIT also administers several publicly funded transit programs for people with disabilities, senior citizens, people living in rural areas, and the transportation disadvantaged. In addition, the agency provides support and equipment to privately owned contract bus carriers and actively supports private ferry operators by providing land, terminal, and parking facilities.

NJ TRANSIT is responsible for implementing those portions of the long-range plan that relate to public transit within the state. In addition, NJ TRANSIT is primarily responsible for conducting the planning and feasibility assessments for new transit services in the state, and thus plays a critical role in advancing the plan's strategic direction. It is also responsible for obtaining funding and for informing the public of all projects being undertaken as part of the long-range plan.

METROPOLITAN PLANNING ORGANIZATIONS

New Jersey has three metropolitan planning organizations. They are regional planning organizations designated by the Governor whose members include representatives from local governments and state and federal agencies. The MPOs are responsible for corridor planning and developing projects within their regions. They are each required to produce a multimodal TIP that lists all projects that will use federal funds as well as non-federally funded projects that are regionally significant. This includes state and local highway projects, public transit projects, and statewide transportation programs scheduled for implementation within the next three fiscal years. In addition, each MPO is charged with developing a regional long-range transportation plan.

The North Jersey Transportation Planning Authority is the MPO for the thirteen northern counties: Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.

The four central counties are within the area covered by the Delaware Valley Regional Planning Commission. They are: Burlington, Camden, Gloucester, and Mercer.

The southern region MPO is the South Jersey Transportation Planning Organization. The counties included in this region are: Atlantic, Cape May, Cumberland, and Salem.

The MPOs' regional long-range plans should incorporate the state's long-range plan as it relates to their individual regions. Through their public outreach programs, the MPOs should educate the public about their long-range plans, elicit comments, and share the public's comments with NJDOT and NJ TRANSIT.

TRANSPORTATION AUTHORITIES

The four independent authorities and commissions in New Jersey operate and maintain the specific highway systems under their control. Although these highways account for only 399 miles, they, like NJDOT's highways, are among the most heavily traveled in the state. They also provide a source of revenue.

These authorities include:

- The New Jersey Turnpike Authority, which operates and maintains the New Jersey Turnpike
- The New Jersey Highway Authority, which is responsible for the Garden State Parkway
- The South Jersey Transportation Authority, which operates the Atlantic City Expressway
- The Palisades Interstate Parkway Commission, which has jurisdiction over the Palisades Parkway

Various other state agencies own an additional 571 miles of highway.

In addition, a number of bi-state transportation agencies contribute to New Jersey's transportation system. They include:

- The Port Authority of New York and New Jersey, which is responsible for the development, operation, and maintenance of New York City metropolitan area tunnels, bridges, transportation and marine terminals; metropolitan area airports; the PATH rail system; and certain railroad freight, resource recovery, industrial, and regional development facilities
- The Delaware River Port Authority of Pennsylvania and New Jersey, which owns and operates the Benjamin Franklin, Walt Whitman, Commodore Barry and Betsy Ross bridges; the PATCO High Speed Rail Line; the Port of Philadelphia and Camden; the RiverLink Ferry; the International Cruise Terminal; and the Ameriport Intermodal Rail Center
- The Delaware River and Bay Authority, which is responsible for the operation and maintenance of the Delaware Memorial Twin Bridges; the Cape May-Lewes and Three Forts ferry systems; and the New Castle, Cape May, Millville, Delaware Airpark, and Dover Civil Air Terminal airports
- The Delaware River Joint Toll Bridge Commission, whose governor-appointed members represent eight counties in southern New Jersey and Pennsylvania and whose duties include overseeing port and terminal facilities; seven toll bridges and thirteen toll-supported bridges; and regional economic development

- The Burlington County Bridge Commission, which is responsible for operations of the Tacony-Palmyra, Burlington-Bristol, and Riverside-Delanco bridges, as well as various minor bridges

The transportation authorities and commissions are responsible for implementing the elements of the long-range plan that are related to their facilities. They will need to work with NJDOT in obtaining funding. In addition, these entities must keep the public informed as projects move forward and address the needs and concerns of the public.

COUNTIES AND MUNICIPALITIES

Of the nearly 36,000 miles of roadway, more than 32,600 miles are owned by various counties and local governments. While this represents 91 percent of the system miles, these roadways carry a much smaller amount of traffic than the state highway system. However, this system of arterial and collector roads plays an important role in the overall highway transportation network. The local and collector streets are designed to provide local access and serve shorter trips. The counties and municipalities maintain their roadway system through state local assistance funds and taxes.

The counties and municipalities identify problems to be included in the regional planning agenda of their respective MPOs. They also are responsible for identifying projects for NJDOT local aid funding. These projects should be consistent with the goals of *Transportation Choices 2025*. As with all parts of the plan, the counties and municipalities must work with the general public and other stakeholders to ensure that all concerns are addressed.

Municipalities, since they control land use decisions through local zoning ordinances and subdivision regulations, should:

- Encourage center-based development
- Promote transit-friendly design
- Support mixed-use developments
- Work with NJDOT in developing access management plans on state highways

TRANSPORTATION MANAGEMENT ASSOCIATIONS

New Jersey's nine transportation management associations are critical facilitators of travel demand management programs. TMAs are non-profit organizations that work with employers and government to reduce traffic congestion and improve mobility and air quality. The nine New Jersey TMAs include:

- TRANSIT PLUS (Essex, Union)
- Cross County Connection TMA (Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Salem)
- Greater Mercer TMA
- Hunterdon Area Rural Transit (HART)
- Keep Middlesex Moving (Middlesex, Monmouth, Ocean)
- MC RIDES (Morris, Sussex, Warren, suburban Passaic)
- Meadowlink (Bergen, urban Passaic)
- Ridewise of Raritan Valley (Somerset)

TMAs offer a variety of programs that provide transportation choices and reduce the use of highways by encouraging people to use carpools and vanpools, public transit, and bicycle or walk to work. They also work with employers to promote options like telecommuting and shortened work weeks. While some of the programs are specific to a particular TMA, the core programs offered include:

- Carpooling and rideshare programs and matching assistance
- Vanpooling assistance
- Guaranteed/Emergency Ride Home Program
- Transit assistance (bus and train schedules, fares, transfers, incentives)
- Marketing information and assistance
- Employer/employee education programs
- Traffic alerts
- Construction news
- Public/private transportation partnerships
- Innovative transportation programs
- Professional transportation advice and assistance
- Telecommuting options
- Compressed work schedule programs
- Office relocation services
- Bicycle maps/route information
- Ozone alerts

The TMAs will be responsible for implementing travel demand management programs that support *Transportation Choices 2025*. They will provide assistance to NJDOT and NJ TRANSIT in informing businesses and employees of the near-term projects and projects under construction that affect them.

NEW JERSEY'S POLICY MAKERS

Transportation Choices 2025 asserts the need for an aggressive strategy for improving New Jersey's transportation system. It identifies the critical need to bring our highway and transit systems up to a state of good repair and to maintain them at this level for current and future generations. The plan stresses the critical need to maintain and expand the core transit services that serve our state's urban centers. The plan also advocates new options for meeting the travel needs of New Jersey's citizens, businesses, and visitors. All these improvements are necessary if New Jersey is to remain competitive in the global economy.

Current revenues from the Transportation Trust Fund will not be sufficient to meet the capital funding needs for the long-range plan. Furthermore, the operating funds required will place additional demands on the state's General Fund. Policy makers must begin serious discussions on funding sources to meet the long-range capital and operating and maintenance requirements for transportation in New Jersey. Our state's long-term future depends on it.

PRIVATE SECTOR

The private sector plays various roles in New Jersey's transportation system. In some cases, private enterprises are instrumental in providing transportation facilities and services; in others, they offer transportation enhancements, such as the sort of compact development around a transit station needed to create a transit village. Freight would not move in New Jersey without privately owned trucking companies and freight railroads, and many passengers would lose some travel options without private bus operators.

The private sector has also developed, and continues to advance, many of the intelligent transportation systems used to increase the efficiency of the transportation system. Still other companies are soon expected to accept the "smart" cards and devices used for electronic fare collection and E-ZPass as payment for products or services, thus increasing the popularity of these technologies, and the number of people who use them. In addition, private developers are often key to ensuring that new developments are accessible by transit, compatible with other land uses, and "friendly" to pedestrians and bicyclists.

A continual open dialogue between NJDOT, NJ TRANSIT, and the private sector is crucial to identify opportunities that can benefit all parties. This can take place through many forums. Industry organizations such as the Alliance For Action, New Jersey Motor Truck Association, and New Jersey Motor Carrier Association routinely interact with transportation agency staffs and present their positions on various issues, and individual companies also have opportunities to express their ideas and concerns. The Goods Movement Issue Group that provided significant information in the development of this plan is another example of communication between the public and private sectors.

Public/private partnerships with transportation agencies are currently taking place, and their number is expected to increase. The Hudson-Bergen Light Rail Line and the Southern New Jersey Light Rail Transit System are two examples of current public/private partnerships that NJ TRANSIT has undertaken. The private sector is responsible for designing, building, operating, and maintaining these facilities. NJ TRANSIT also leases buses to private carriers using Federal Transit Administration capital funds. Registration of motor vehicles on-line is an initiative of a partnership between the private sector and NJDOT's Motor Vehicle Services, and the state-funded Rail Freight Assistance Program focuses on the preservation, rehabilitation, and enhancement of New Jersey's private rail freight network.

State transportation agencies need to continue to support these public/private partnerships and explore innovative ways to involve the private sector in transportation initiatives based on the guidance provided in *Transportation Choices 2025*. In turn, the private sector should work with New Jersey's transportation providers to develop mutually beneficial approaches to solving transportation issues.

SPECIAL INTEREST GROUPS

A wide range of special interest groups are concerned with transportation issues. They include transportation groups; advocacy organizations that support the elderly, disabled, minority, poor, etc.; and environmental groups. The functions of the special interest groups may differ, but they have in common their efforts to influence the policies and plans developed and implemented by NJDOT and

NJ TRANSIT, as well as other transportation agencies and providers. They also inform their constituencies about upcoming projects and issues.

All special interest groups have the responsibility for becoming informed about the plan. As plans move forward, they should work with NJDOT and NJ TRANSIT to ensure the successful implementation of projects.

GENERAL PUBLIC

The general public includes everyone who lives, works, and travels in New Jersey. The role of the public is to influence decision-makers and inform them about the concerns and issues they consider important. To achieve this goal, the public is responsible for understanding the issues and being aware of the results of specific decisions.

XII. IDENTIFYING PROGRESS

Performance indicators are critical tools that can be used to determine whether NJDOT and NJ TRANSIT are successfully meeting the goals of Transportation Choices 2025. These indicators also allow comparison of performance against benchmarks and identification of opportunities for improvement, and help guide the allocation of resources. This section is the beginning of a continuing process to develop appropriate indicators of progress through a dialogue with the public and other state and bi-state transportation agencies. Further investigation must be made in such areas as goods movement as part of this process.

A sound performance evaluation framework involves three key components:

- A clear direction or purpose, often expressed as a vision
- A simple set of measurement standards based on readily obtainable data and targeted to measures within agency control
- Routine, readable reports

Indicators should be understandable to decision-makers, planners, and the general public alike. They should rely on information or data that can be obtained at a reasonable cost and with reasonable effort. They should focus on outputs that can be influenced by NJDOT and NJ TRANSIT activities. Finally, these indicators should be reported regularly to monitor where the agencies are in relation to where they want to be.

Like *Transportation Choices 2025* itself, performance indicators also need to be "living" - they must be refined, added to, or deleted as goals and objectives are modified during the "living plan" process.

DEVELOPING PERFORMANCE INDICATORS

To develop performance indicators, the distinction between outputs and outcomes must be understood. An outcome is a consequence of the transportation system. An output, on the other hand, is a measurable result generated by the construction, operation, or use of the transportation system. Outputs are used to measure outcomes.

A performance indicator is a desired, measurable output level that relates strongly to a desired outcome. For example, a performance indicator for a bridge operation might be the passage of 2,500 people per lane per hour during peak commute periods. An output would be the measurement of how many people actually traveled per lane per hour during the peak commute period. The desired outcome might be increased access to employment locations on one side of the bridge from the other.

Performance measurement can assume perspectives as diverse as the transportation system itself. Total system performance depends upon subsystem performance from individual modes and programs (transit, highway, bicycle, pedestrian, bridge, rail, airport, and goods movement, for example). The system works well when all these subsystems and their components work well.

System outcome performance focuses on the benefits and costs accruing to society from a transportation system. Outcomes represent the values that society deems important and are often difficult to measure directly, thereby requiring indicators that can be measured using available output. Outcomes may be positive or negative. A positive outcome of a rail construction project, for example, may be to reduce traffic congestion. A negative outcome may be noise and the localization of air pollution around stations.

A technically sound way of determining whether a strategy is translated into an action and to what extent desired outcomes are achieved is to measure performance by means of a "scorecard." This is a framework for selecting a manageable number of useful indicators about performance on the strategic level. A scorecard is "balanced" when it measures success toward a goal using both internal and external indicators. A small set of carefully chosen indicators (selected by cause-effect analysis) can give a very accurate picture of overall performance in terms of making progress on plan implementation.

Performance in one area affects performance in another. For example, the best projects will be selected and constructed on schedule if the public has been properly involved and, if possible, innovative financing has been explored. One implication of this interdepend-

ence is that if the measures of the scorecard are well selected, all of them together will give a fairly accurate indication of how NJDOT and NJ TRANSIT as a whole are performing in terms of making progress toward the realization of the goals of *Transportation Choices 2025*.

Lessons Learned

Many states have incorporated performance measures or indicators in their transportation planning processes or for their long-range plans. While the measures or indicators differ, depending upon the needs and unique circumstances of that state's planning, a number of lessons are relevant:

- Keep the number of measures or indicators manageable. Limit the number used, keeping those with a clear purpose. Measures or indicators can and should be periodically reviewed for relevance and refined as needed. As part of this process, others may be added. Establish a regular timeframe to do so.

- There is no perfect measure or indicator.

- Involve stakeholders in the development of performance measures and indicators. This plan is the beginning of a dialogue with planning partners and the public on performance indicators for New Jersey's long-range transportation plan.

- Focus performance measures or indicators on telling a story and gauging progress, not assigning blame.

General Recommendations

Performance measures provide an effective means of evaluating system and agency performance, identifying plan implementation progress and issues, and tracking achievement of the goals of a plan. Care must be taken to ensure that they actually measure what they are intended to measure, and that they can be tracked with reasonably available data. A key point is that a performance measurement system must track indicators in relation to predetermined goals. Without predetermined goals, tracking the measures alone does not allow for a clear determination of success or failure.

A number of agencies and entities have developed performance measurement systems or identified and tracked key indicators, including a number of initiatives produced by NJDOT, NJ TRANSIT, the Office of State Planning, New Jersey Future, and the New Jersey Department of Environmental Protection. Most of these documents have been released to the public and some are available on the web. They were reviewed and provided input into the possible indicators identified for *Transportation Choices 2025*.

Core Issues

Technical analyses for *Transportation Choices 2025* worked from an identified set of core issues which were analyzed using travel demand models and financial models: congestion, mobility, the interrelationship between land use development patterns and transportation, freight transportation, and current and future transportation infrastructure needs. The possible performance indicators for *Transportation Choices 2025* were developed within this set of core issues, as well as the plan's goals. They use existing data.

Public involvement is also crucial. The vision for *Transportation Choices 2025* identifies the need for a greater number of constituencies to be part of finding and implementing transportation solutions. To do so, however, the public must become an active participant in the decision-making process, informed about transportation needs, costs, and benefits.

An important step in this process is to provide access to information about the state's transportation system on a regular basis to allow the public sufficient understanding to participate in the process. The "living" plan provides an opportunity to do so through an ongoing Internet web site, www.njchoices.com.

Possible Indicators

The plan's seven goals each have a series of objectives nested under them to provide more specific direction to each goal. Each goal has been rephrased into a desired outcome that captures the intent of the goal and incorporates the objectives of that goal. In many instances, indicators cannot be identified that exactly reflect each of the identified outcomes. "Promote Economic Development," for instance, cannot be exactly measured and quantified. Therefore, in most instances, performance indicators are identified that reasonably reflect a given outcome. These indicators generally use much of the traditional transportation output information routinely collected by transportation agencies.

The following chart summarizes the *Transportation Choices 2025* goals, a desired outcome of each goal, suggested indicators to gauge progress on that outcome, and possible outputs that support the indicators.

Transportation Choices 2025 Goal	Desired Outcome	Possible Indicator	Possible Output/Data Collected
I. Maintain and Preserve Our Transportation System for Present and Future Generations	Maintain the transportation system in a state of good repair	Backlog of deferred maintenance at 2005, 2010, 2015, 2020, and 2025	• % of NJDOT's and NJ TRANSIT's annual budget spent on maintenance and preservation programs and projects • % of general public reporting satisfaction with the general maintenance of NJ's transportation system
II. Improve the Safety and Security of the Transportation System	Improve safety	Injuries and fatalities by mode Customer perception of safety	• Number of transportation-related fatalities per 100,000 persons and per million VMT • Number of high-accident locations on the state highway system improved • % of general public reporting satisfaction with travel safety in New Jersey
III. Improve the Effectiveness, Efficiency, and Attractiveness of Transportation Services Responsive to the Needs of the Customer	Provide a user-friendly transportation system	Provision of real-time information to commuters on all modes Public transit on-time-performance Provision of attractive transportation services Vehicle hours traveled	• Number of projects to provide commuters with real-time information to select the most efficient route • On-time performance of public transportation • % of NJ TRANSIT's and NJDOT's annual budgets devoted to landscaping and other scenic enhancements, providing and upgrading visitor centers and rest areas, and rail station and bus stop renovation & rehabilitation • Number of context sensitive design projects implemented by NJDOT and NJ TRANSIT • Renovation, upgrading & periodical replacement of rolling stock. • Total vehicles hours traveled

Transportation Choices 2025 Goal	Desired Outcome	Possible Indicator	Possible Output/Data Collected
IV. Improve the Process of Providing Transportation Facilities and Services	Provide a transportation development process that engages customers & results in improved project delivery	Number of transportation projects that are being implemented Amount of interaction with the public	• Number of highway-related projects that have been bid • Number of transit projects that have been bid • Number of hits on NJDOT's and NJ TRANSIT's official websites
V. Promote Economic Development	Help support economic growth in New Jersey	Expenditure in dollars and number of projects that support state economic development goals	• Number and dollars of transportation projects that serve commercial centers, goods movement facilities, and international markets • Volume of goods carried on system • Number and dollars of transportation projects that support tourism goals
VI. Improve the Quality of Life for Users of the Transportation System and Those Affected by Its Use	Provide a transportation system that promotes a high quality of life, consistent with community desires and environmental justice	Standard environmental indicators Number and share of trips made using alternatives to the single-occupant vehicle Use of alternative fuels	• Conformity of state air quality with federal standards • Proportion of all trips made by non-SOV modes • Number of public transit passengers • Share of goods moved by rail • % of general public reporting that they have many modes to choose from • % of projects built using context sensitive design procedures • % of NJDOT and NJ TRANSIT fleet using alternative fuels • Number of private vehicles using alternative fuels
VII. Use Transportation to Shape Desired Development Patterns Consistent with the *State Development and Redevelopment Plan*	Support implementation of the *State Development and Redevelopment Plan* with transportation decisions	Number and dollar value of projects in SDRP Centers	• Number and dollars of transportation projects in NJ urban centers and urban complexes • Number and dollars of transportation projects within other centers designated by the State Planning Commission

XIII. THE "LIVING PLAN"

What differentiates this plan from other plans is simple: although these are the last pages in the document, this is not the end of the plan or the planning effort. Indeed, it won't be complete until 2025 or beyond. This book is the first publication of what is envisioned as a continuing process of plan development. It will include periodic updating and revising - within the broad policy framework established here - as new challenges and opportunities present themselves and new methods for approaching them become known.

CONTINUED DIALOGUE

Just as a broadly inclusive public involvement process is necessary for forming a long-range plan for strategic investment, it is equally essential after the plan is released for NJDOT and NJ TRANSIT to continue to engage in dialogue with New Jersey residents, local officials, metropolitan planning organizations, and other entities. A high level of communication among stakeholders will ensure that the priorities in the plan remain relevant and can be adapted to respond to changing circumstances. The activities described below will be further developed as the public participation program evolves.

NJDOT and NJ TRANSIT are committed to sustaining the public dialogue on the state's transportation priorities and will do so in a variety of ways. Upon release of *Transportation Choices 2025* for review and discussion, a series of meetings will be convened to solicit public comment on the document. All the activities in the public comment phase will be widely publicized to encourage maximum participation.

To broaden the outreach effort, an "Electronic Town Hall Meeting" is envisioned to be held with a live television audience and broadcast by NJN, New Jersey's statewide public television network. The electronic town meeting format will allow viewers at home to call in through a toll-free number to ask questions and make comments during the broadcast. The event will also be advertised on-line, so that the public will have the opportunity to present advance questions for panelists to answer during the broadcast.

A telephone survey conducted during the plan development process provided valuable insight into the attitudes and opinions of New Jersey residents on the state's transportation system. This effort will be renewed annually, with some new questions being introduced and some being asked year after year. In this way, NJDOT and NJ TRANSIT will be able to elicit citizen input on new issues and track changing perspectives as the statewide long-range transportation plan moves forward.

The project website for *Transportation Choices 2025* - www.njchoices.com - played an integral role in the development of the plan by serving as a clearinghouse for information and a readily available venue for public involvement in the planning process. As the process moves forward through the phases of public comment and implementation, the website will continue to serve the important function of providing a forum for dialogue on New Jersey transportation issues with the general public as well as key stakeholder groups.

In its most basic form, the website will function as a bulletin board: the plan document will be posted, and visitors will have opportunities to comment on what they read. In addition, www.njchoices.com will offer innovative ways for people to interact with the information presented - just as it has throughout the plan development process with such features as the virtual budget game and the dynamic population and traffic growth graphics.

A similar approach to illustrating the statistical models presented in Chapter VIII, for example - with dynamic images and the opportunity to "play out" various scenarios - will go a long way toward acquainting people with the abstract mathematical tools that help NJDOT, NJ TRANSIT, and its partners anticipate the changing needs of New Jersey's growing communities.

In Chapter IX, Financial Picture for 2010 and 2025, financial needs to support the capital and operating costs of the transportation system identified in *Transportation Choices 2025* are clearly defined. To meet the financial needs identified, a dialogue must take place between the state's citizens and policy makers to determine how best to fund, and at what level to fund, the transportation system.

EVOLVING TRANSPORTATION MODELS

The analysis of possible scenarios for New Jersey's transportation needs in 2025 is presented in this plan as a starting point for public discussion, and as a framework for further analysis of the state's long-range mobility needs. These scenarios are derived from a new tool based on the models of the three metropolitan planning organizations that is being applied statewide for the first time. To remain useful, the process of model development, like the evolution of the plan itself, needs to adapt to new information and unforeseen factors that begin to influence the ways people and goods move within and through the state. For example, as more is known about the prospect of alleviating congestion by limiting low-density development and promoting mixed-use development around designated centers, the projected scenarios and the models upon which they are based will need refinement. A unified set of demographics must be developed that represents growth under the *State Development and Redevelopment Plan* to do so.

In addition, as *Transportation Choices 2025* points out, the existing models cannot address how the projected improvements themselves might affect development patterns and enact altogether different scenarios. Similarly, the plan acknowledges as a significant unknown the potential that technological advances in the workplace and the market sector hold for changing transportation patterns, and people may actually lose their tolerance for congestion and change their travel behavior to avoid it. These issues are currently under study, and as more is learned and additional models with even more capability are developed, the "living plan" will consider them. NJDOT and NJ TRANSIT will continue their efforts to understand the connection between transportation and land use, and will maintain a dialogue about this issue with the MPOs, counties and municipalities, and other key stakeholders.

Congestion on the transit system is not directly addressed by the scenario analysis, which is based on estimates of travel demand on the highway system only. Future model development will need to look at congestion and mobility from different perspectives, particularly as strategies for promoting alternatives to highway driving begin to achieve their desired results. A fully integrated model of the complete system will be necessary to examine the interactions of highway travel, public transit, goods movement, and aviation.

INCORPORATING THE STATE AIRPORT SYSTEM PLAN

At the time of the publication of *Transportation Choices 2025*, NJDOT was in the process of updating the New Jersey State Airport System Plan (SASP). The strategic direction of the state's airport system must be incorporated into the overall long-range plan because of the importance of air travel and the state's growing air freight industry to New Jersey's multimodal transportation system.

The SASP will look five, ten, and 20 years into the future to determine the needs and capabilities of the airport system to meet its transportation modal role. It will also evaluate the impacts of urban and suburban growth, environmental reclamation, and other factors on the state's aviation facilities. Finally, it will develop a plan for how aviation will fulfill its role in the state's overall transportation system.

REFINING URBAN INVESTMENT STRATEGIES

An Urban Supplement examining the transportation needs of the state's seven major urban centers is a required component of the long-range plan update, and it provides key information on how to address the challenges faced in those areas with regard to access, mobility, and infrastructure. As the "living plan" evolves, it must take into account New Brunswick as an urban center and the designation of Hudson County as an urban complex by the State Planning Commission to help support implementation of the *State Development and Redevelopment Plan*.

To develop urban supplements for New Brunswick and Hudson County, NJDOT and NJ TRANSIT will undertake the same process it employed in studying the other seven urban centers - which placed special emphasis on identifying and addressing the transportation issues facing city residents. Information gathered from meetings with government officials at the city, county, and state levels and representatives from transportation agencies and other entities with a stake in meeting local transportation needs will be analyzed along with existing NJDOT and NJ TRANSIT data to create the new supplements. In an effort to identify the needs of reverse commuters and welfare-to-work recipients, NJDOT and NJ TRANSIT will also meet with local human services officials to learn about local employment patterns.

The additional supplements will allow the agencies to continue to plan and implement investment strategies that support SDRP's mandate to guide growth and public investment to urban centers and urban complexes. To further support this initiative, NJDOT and NJ TRANSIT are committed to providing priority funding for projects focusing on transportation improvements for New Jersey's cities.

IDENTIFYING PROGRESS

One key to the success of a "living plan" is the ability to identify progress and report on it to everyone with a stake in the plan's goals and objectives. NJDOT and NJ TRANSIT will provide regular updates on the progress of the plan in meeting its goals so that stakeholders can remain engaged in the process of refining strategies as they are adopted and implemented.

The Transportation Choices 2025 website will continue to provide access to information about the state's transportation system and the indicators used to measure its effectiveness. As described in Chapter XI - Identifying Progress, these proposed indicators will be clearly linked to the goals of the plan. Comments and suggestions on these proposed indicators will take place during the "living plan" process.

ENVIRONMENTAL JUSTICE

NJDOT and NJ TRANSIT will continue to be guided by the principles of environmental justice, which mandate fair treatment for people of all races, cultures, and incomes regarding the planning of new projects and the development of strategic directions for the future. Providing environmental justice also requires meaningful community participation with transportation providers.

Adherence to these principles means continually asking tough questions about prospective new investments. Such questions as "Does this project deny benefits to any particular person or group?" need to be considered with input from all stakeholders - even if it means that tougher questions or logistical problems are raised as a result.

Creating opportunities for public involvement from priority setting through implementation is essential to the practice of environmental justice. NJDOT and NJ TRANSIT will continue to employ the outreach strategies used in the development of *Transportation Choices 2025* - including public forums; focus groups; planning meetings with community officials and other stakeholders; the interactive website, publications, and other media - as well as exploring other means of keeping communities engaged in making transportation choices for New Jersey.

Equally important is continuing to allow for the flexibility to respond to community concerns. The further integration of context sensitive design processes in the work of planning, scoping, financing, building, operating, and maintaining transportation projects will help meet this objective.

The protection of human rights and the just provision of relief from disproportionately high adverse environmental effects are guiding principles for all aspects of planning and operations for publicly funded transportation systems and services in New Jersey. To monitor the success with which these principles are being integrated into operations at all levels, NJDOT and NJ TRANSIT will undertake a statewide analysis of environmental justice practices throughout New Jersey's transportation systems, working with their planning partners, the MPOs.✲

ACKNOWLEDGEMENTS

NJDOT and NJ TRANSIT wish to thank the following persons for their contributions to the preparation of *Transportation Choices 2025*. This effort could not have been completed without their diligence and dedication throughout the duration of this project. NJDOT and NJ TRANSIT would also like to acknowledge the hundreds of people who participated in the Public Information Centers and focus groups and offered comments on the plan's web site. Their involvement is greatly appreciated!

ACKNOWLEDGEMENTS

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John Allen	New Jersey Department of Transportation - Mobility Strategies
Jerry Allerdings	New Jersey Turnpike Authority
Gary Altman	Passaic County Workforce Investment Board
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Joseph Balzano	South Jersey Port Corporation
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Janine Bauer	Tri-State Transportation Campaign
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Wayne Bradley	North Jersey Transportation Planning Authority
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Beverly Braxton-Cannon	Elizabeth Development Company
Sandy Brillhart	Greater Mercer TMA
Michael Brimmer	CSX Transportation
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Ted Dahlberg	Delaware Valley Regional Planning Commission

ACKNOWLEDGEMENTS

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Kathy Higham	New Jersey Motor Vehicle Services
David Hojsak	New Jersey Office of State Planning

ACKNOWLEDGEMENTS

Raymond Hughes	Tosco Refining
John Hummer	North Jersey Transportation Planning Authority
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Bahman Izadmahr	Newark Department of Engineering
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ACKNOWLEDGEMENTS

Larry McElmoyl	New Jersey Department of Transportation - Capital Program Management
SFC William McGuire	New Jersey State Police, Troop E
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Vivien Shapiro	New Jersey Department of Labor
Judy Shaw	New Jersey Department of Environmental Protection
Chester Sherman	New Jersey Department of Labor
Herbert Simmens	New Jersey Office of State Planning

ACKNOWLEDGEMENTS

Andrew Sinclair	New Jersey Department of Transportation
Camille Sinclair	New Jersey Department of Transportation - Communications Office
Wendy Smith	New Jersey Department of Transportation
James Snyder	New Jersey Department of Transportation
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