

Assessing New Jersey's Transportation System



Transportation Choices

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INVENTORY AND CONDITION ASSESSMENT

INTRODUCTION

New Jersey's transportation system serves as a unique and critical link in the nation's transportation system. Functioning as a critical sub-corridor within the East Coast megalopolis, New Jersey's transportation system plays a critical role in moving both people and freight throughout the country.

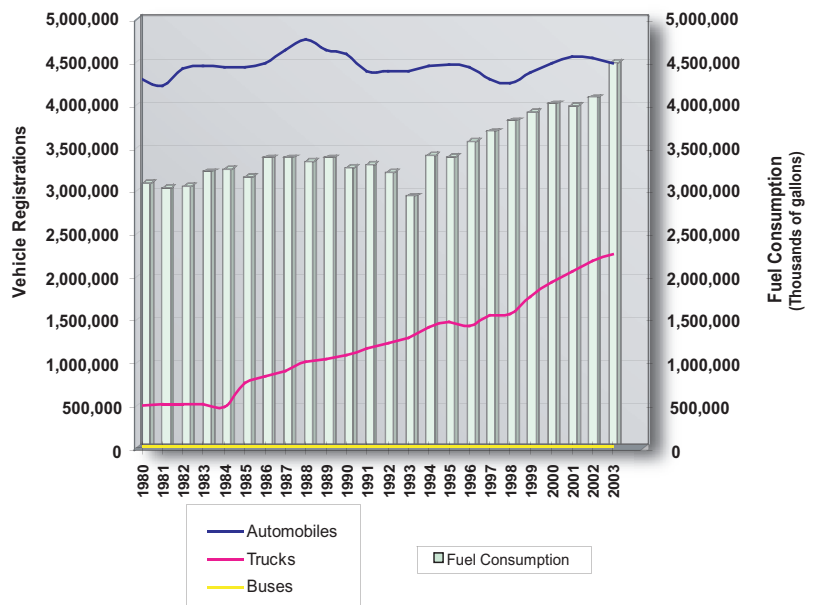
New Jersey is home to more than 8.5 million residents and over 4 million workers who rely on the state's roadway, transit, and freight network to meet their transportation needs. With over 38,000 miles of roadways, the third largest public transit system in the country, and an intricate air and freight network, New Jersey's transportation system is impressive by virtually any standard. However, despite continued investment in this system, the state's transportation network is not keeping pace with the growth in demand.

This chapter summarizes the existing state of New Jersey's transportation network, and offers some comparisons as to how the transportation network, and demand for facilities, have changed since the completion of the last Long Range Transportation Plan in 2000. It provides an overview of trends in system usage and conditions that have occurred since the completion of the last plan. This includes changes in roadway congestion, motorist delay, pavement and bridge condition, and transit system extent and usage. Following this discussion of recent trends, this chapter provides an overview of the extent and condition of New Jersey's transportation system: roadways, transit, airports, and freight. This chapter also describes new initiatives designed to change the way New Jersey funds transportation investments and meets the needs of its users.

OVERVIEW

Like many states throughout the country, New Jersey has dedicated significant resources to maintaining a state of good repair on the state's roadway, transit, and freight system. Unfortunately, despite efforts to improve the state's network and better meet existing and future needs, the state is struggling to keep pace with existing and projected demand on New Jersey's aging infrastructure. While automobile registrations have risen only marginally since 1980 (rising 4.5% between 1980 and 2003) truck registrations¹ have risen dramatically in the past several years, climbing 45% between 1998 and 2003, and fuel consumption continues to climb at a steady pace, rising 45% between 1980 and 2003 and 18% between 1998 and 2003.

Figure 1 - Fuel Consumption vs. Vehicle Registrations



Coupled with the increase in fuel consumption and vehicular registrations is a sharp increase in vehicle miles traveled. Vehicle miles traveled have increased 18% between 1980 and 2003 and 8% between 1998 and 2003.

¹ FHWA Definition of Trucks, Highway Statistics Publications, Office of Highway Policy Information

Trucks include pickups, panels, and delivery vans. Beginning in 1985, personal passenger vans, passenger minivans and utility type vehicles are NO LONGER INCLUDED IN AUTOMOBILES but are included in trucks.

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Despite this, roadway mileage has increased much more slowly, rising 9.3% between 1980 and 2002 and 1.8% between 1998 and 2002.

A predictable outcome of the relatively high growth in fuel consumption and VMT and modest increase in roadway lane miles is an increase in congestion levels and motorist delay. Both congestion measures have increased noticeably in the 5-year period since the last transportation plan was completed.

In fact, these measures might understate the actual increase in congestion. Since 1998, the NJDOT has begun monitoring additional roadways, many of which are relatively uncongested county and local roadways. These roadways skew the data slightly, indicating that a greater percentage of roadways remained uncongested between 1998 and the present day than is actually the case.

Along with the increase in VMT and roadway congestion has been a remarkable increase in the numbers of individuals using public transit. Annual rail passenger miles of service have increased from 1.2 billion in 1998 to 1.8 billion in 2003, a notable 50% rise. Bus ridership has risen from 470,000 daily riders in 1998 to 500,000 riders in 2003, a more modest but still healthy 6% daily ridership increase. Coupled with these trends have been several major transit infrastructure projects undertaken since the completion of the last Long Range Transportation Plan. Still, public transit operators face numerous difficulties in keeping pace with the increase in travel demand.

The freight system, largely reliant on the state's roadway network, is operating at above capacity levels, and significant improvements will need to be made in order for New Jersey to remain competitive from an economic and transportation standpoint. The following sections summarize these issues in detail. Figure 2 provides an overview of the core transportation system.

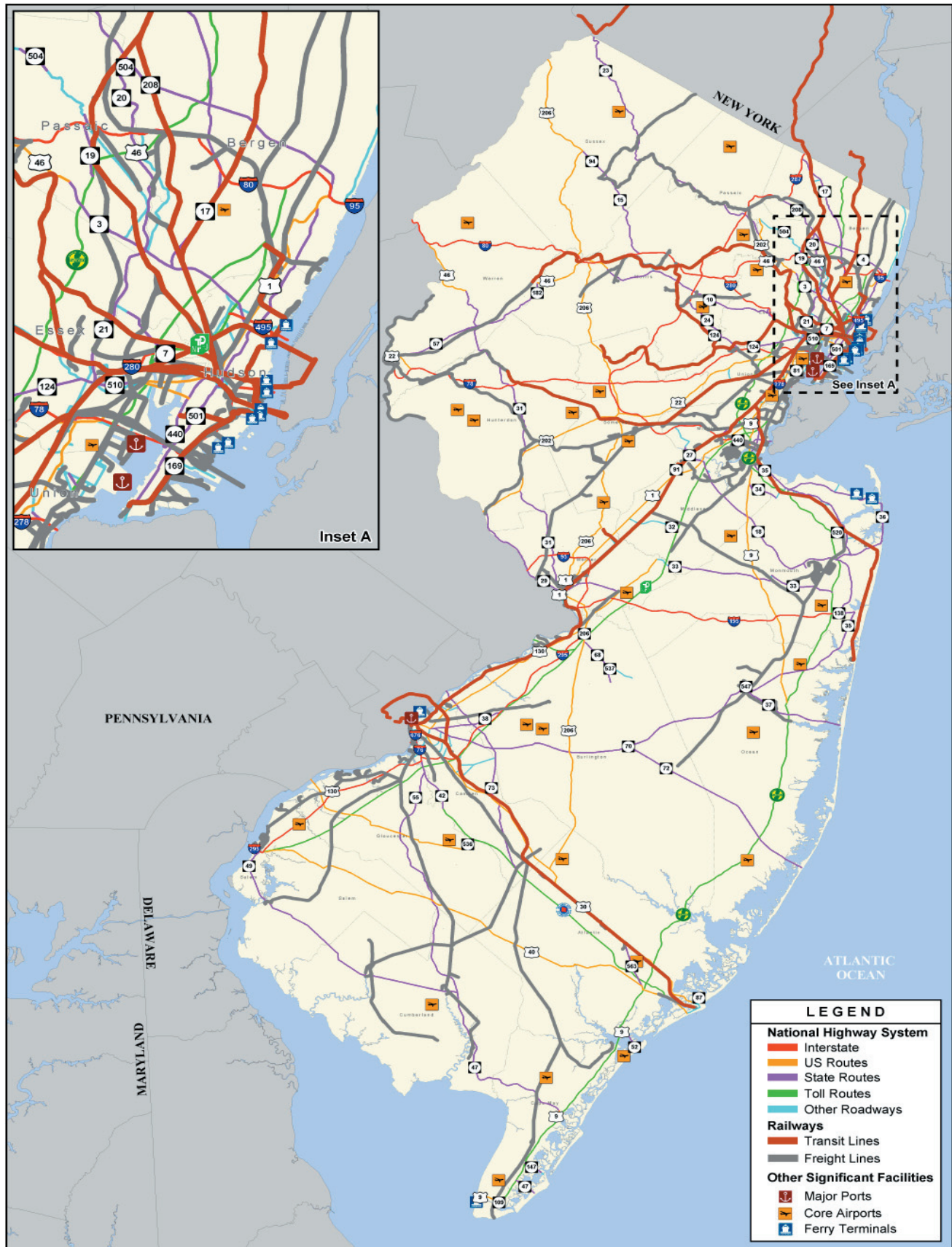
ROADWAY SYSTEM

Despite its close proximity to neighboring states, New Jersey almost functions as a peninsula, surrounded by rivers or other waterways for most of its borders. While it shares a northern border with New York State, 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 waterway to the northeast. The majority of transportation links between New Jersey and surrounding states require crossing a body of water, necessitating a system of 22 bridges, auto tunnels, and rail tunnels, and an intricate ferry system. Most crossings into New York operate at or near capacity, requiring additional capacity to ensure economic growth. Among the only roadways not requiring water-borne interstate connections are Interstate 287, NJ Route 17, the Garden State Parkway², and the Palisades Interstate Parkway.

The amount of roadway mileage in New Jersey has grown relatively slowly over the past several decades, increasing 17% between 1980 and 2003 from 33,438 miles to 38,952 miles. This is due to a variety of factors including environmental, political, and economic constraints, as well as the fact that New Jersey already has a densely developed roadway network. During the same period vehicle miles of travel (VMT), a major statistical measure of motor vehicle travel, has increased by 35% between 1980 and 2003 from 51,841,000 to 69,778,000. VMT represents an estimate of the total miles driven by all motorists annually. By examining Figure 3, it can be seen that the growth in roadway mileage is not keeping pace with the increase in travel. Therefore as travel has increased over the years, and continues to increase, congestion or peak spreading is bound to occur.

² While not requiring waterborne connections between New Jersey and New York State, the Garden State Parkway does have a series of critical bridges within the state, including the Walter Driscoll Bridge which is currently being rehabilitated and expanded to increase capacity and operational efficiency.

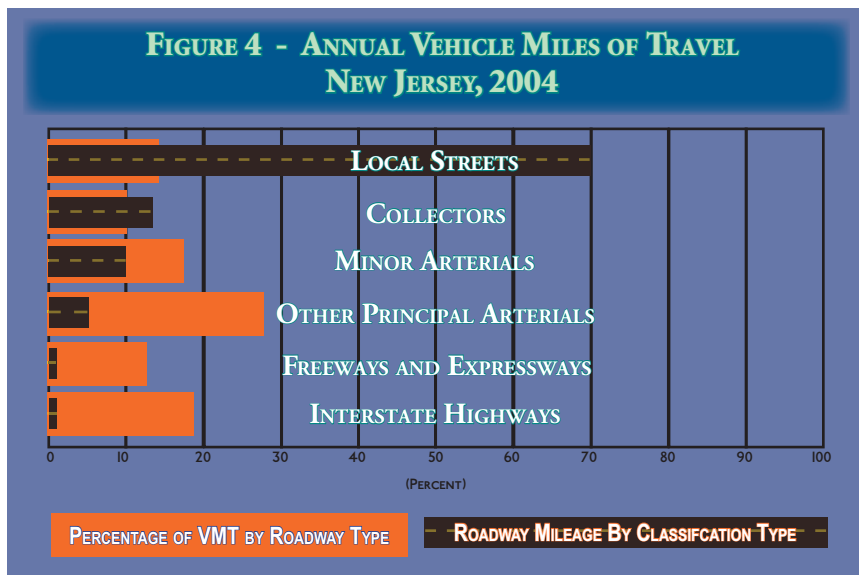
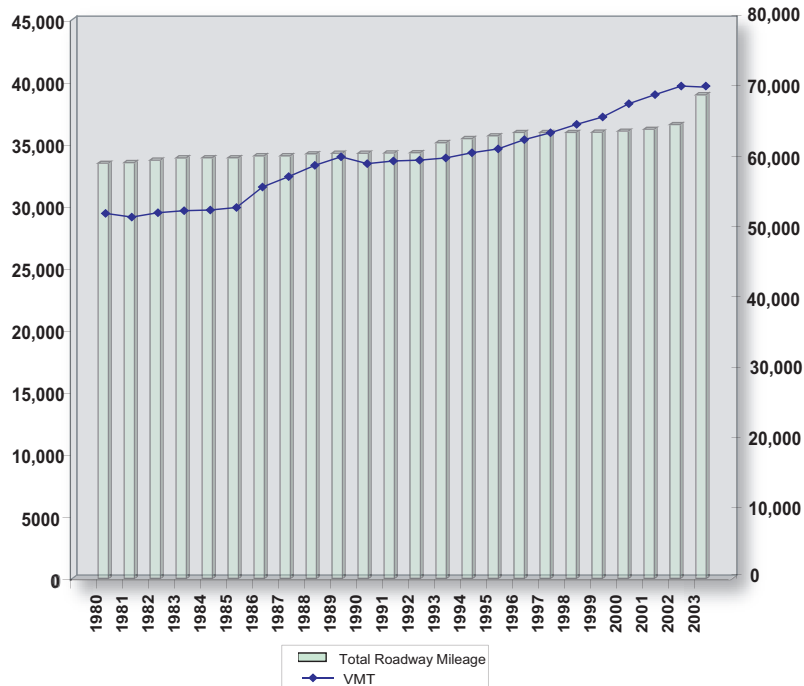
Figure 2 - Core Transportation System



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Another interesting statistic on how we travel is found when examining the total route mileage by functional classification versus VMT as seen in Figure 4 . Functional classification is a commonly used system denoting the character of service a roadway is intended to provide. The vast majority of New Jerseys roadways are collectors and local streets designed to provide local access and serve short trips at relatively low speeds. By comparison, few routes are designed for travel at higher speeds over longer distances. The highest classification roadways, including limited access interstates, freeways, and expressways, account for just under 3 percent of total roadway mileage, and yet this relatively small group of roadways carry over one-third of VMT in New Jersey. By contrast, local roads account for only 14% of VMT statewide.

Figure 3 - VMT vs. Roadway Mileage



ROADWAY OWNERSHIP

The State of New Jersey owns only approximately nine percent of its roadway system, which is significantly below the nationwide average of 20 percent. This includes 2,313 miles owned by the NJDOT, and 399 owned by the independent authorities and commissions (the New Jersey Turnpike Authority, South Jersey Transportation Authority, and Palisades Interstate Parkway Commission). Additionally, there are 7,335 miles of county owned roads, 27,921 miles of municipally owned roadways, 1,025 miles owned by other jurisdictions, as well as 375 miles owned by federal agencies. These roadways, totaling 38,951 miles in length, represent one of the densest roadway systems in the country.

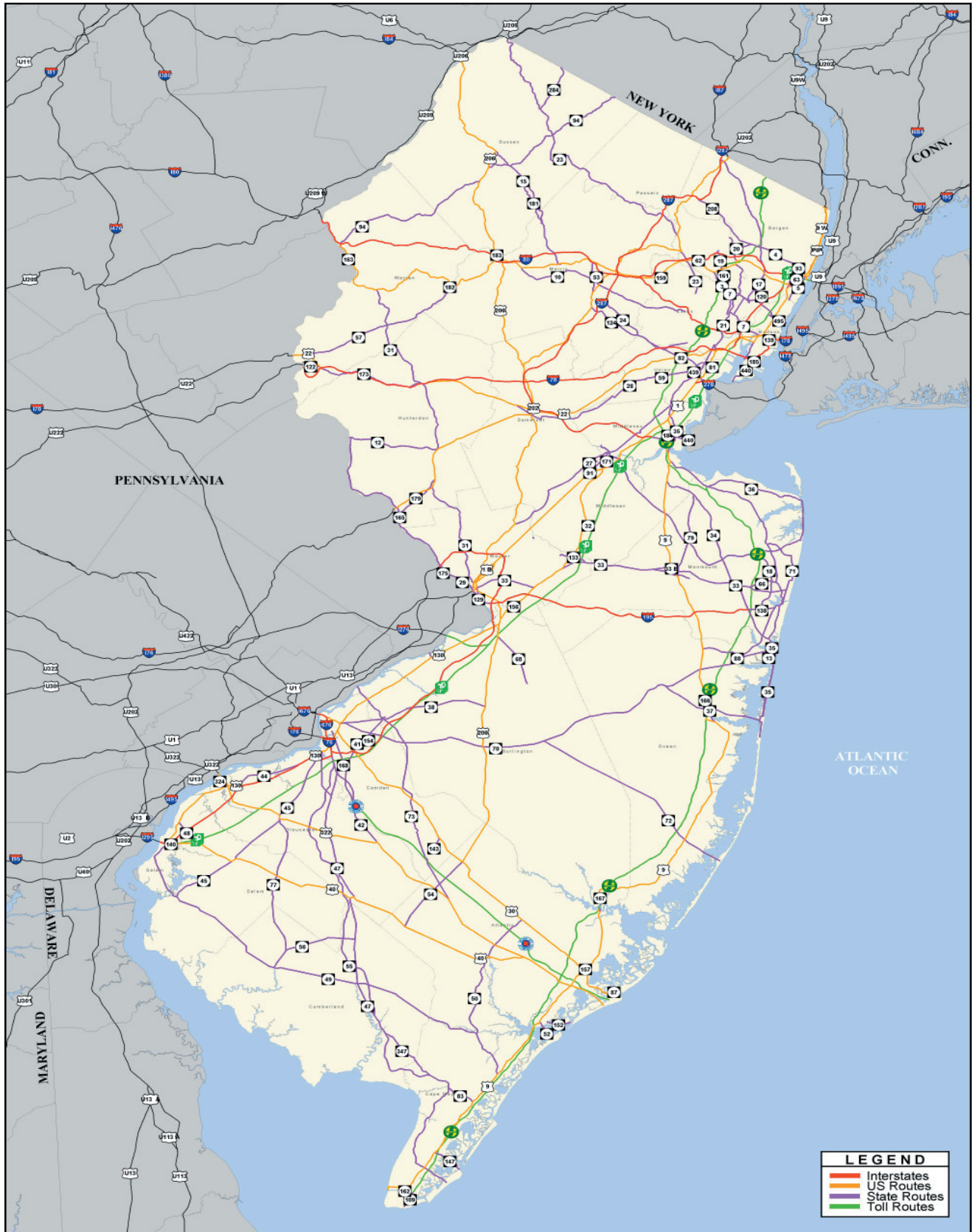
In terms of lane miles, the state owns over 84,000 lane-miles of state highway agency-owned roadways.³ New Jersey has more lane miles of highway per square mile (11.4) than any other state except Rhode Island; the national average is only 2.4.⁴ An average of 2.6 million vehicles travel each lane-mile of roadway in New Jersey each year, compared to a national average of 1.5 million vehicles per lane mile.

Core roadways are shown in Figure 5.

³ Includes roadways owned by the State highway agency; excludes roadways owned by State toll, State park and other State agencies

⁴ May 3, 2000, issue of New Jersey Future

Figure 5 - Core Statewide Roadways



CONDITION ASSESSMENT

The NJDOT has made significant strides in tracking the condition of New Jersey's transportation infrastructure through the implementation of a number of information management systems. The following section provides an overview of selected condition information.

CONGESTION LEVELS

As previously stated, the roadways owned by the NJDOT and commissions, while representing a relatively small percentage of state roadway mileage have a concentrated amount of highway travel statewide and account for the majority of travel/usage in the region.

New Jersey's Congestion Management System⁵ is one means of gauging the extent of traffic congestion in New Jersey's transportation network. Two key measures of effectiveness that show a clear picture of how New Jersey's roadway's 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.

Out of a total of 3,477 roadway miles currently monitored by the NJDOT, 66% operate under capacity (v/c ratio under 0.75), 22% are approaching capacity (v/c ratio 0.75-1.00), and 12% are operating above capacity (v/c ratio above 1.00). This is shown in Figure 6.

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 a 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 consequently indicates a longer peak traffic period and a more serious congestion problem.

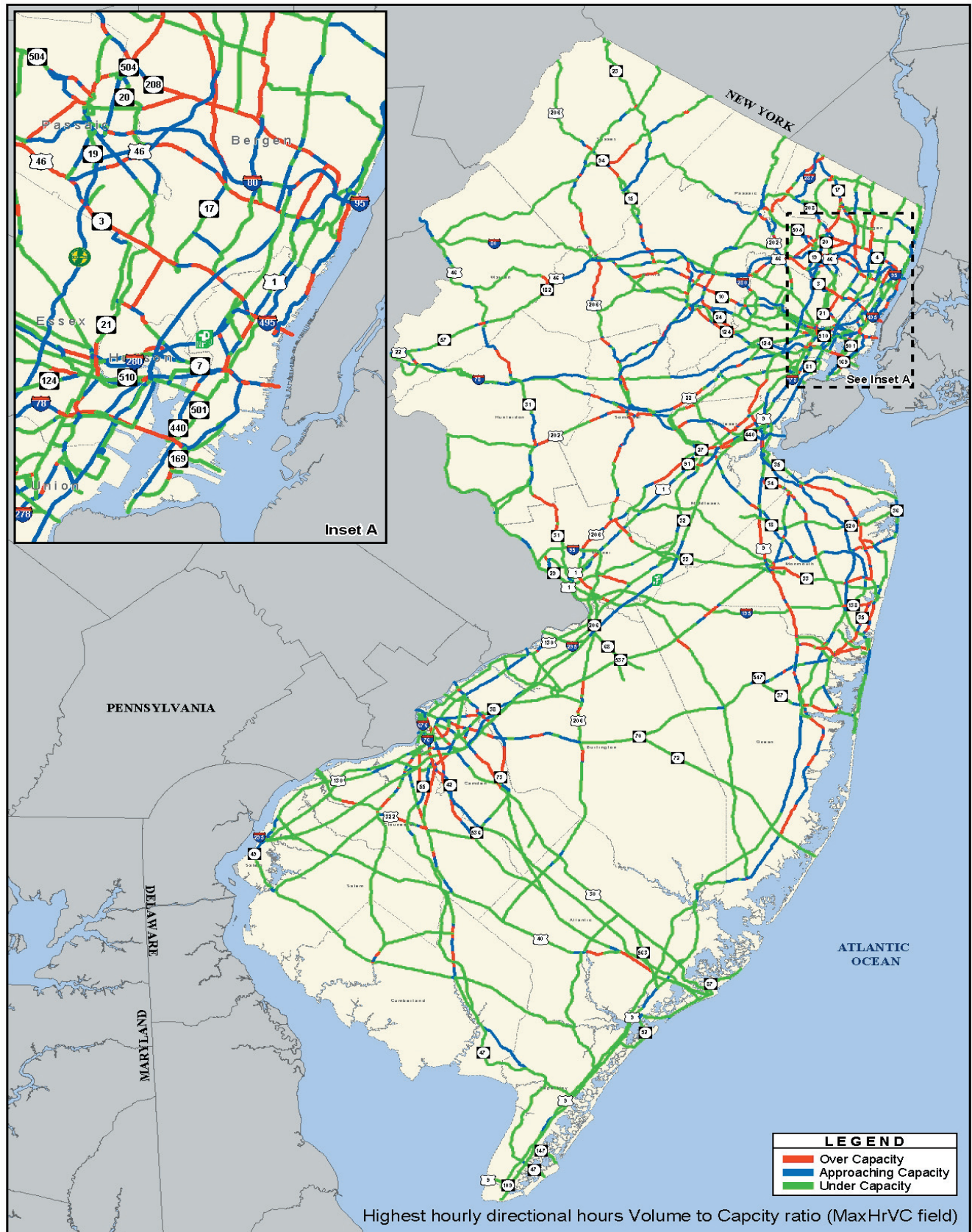
In terms of duration of congestion, 76% of roads experience less than 1 hour of delay per day, 16% experience 1-2 hours per day, and 8% experience greater than 2 hours per day. This is shown in Figure 7.

Predictably, those areas with the highest congestion levels are centered in the northeastern New Jersey area, particularly in the vicinity of Newark and Jersey City. Other areas with high levels of congestion include areas near Camden and Philadelphia. The least amount of congestion occurs in less densely populated areas of southern New Jersey. It is important to note that these congestion figures do not represent summer tourist traffic, which can significantly impact roadway operations.

It is important to note changes in the 2005 NJDOT CMS numbers compared to earlier versions. 2005 numbers have an increased number of relatively uncongested county and other roads that are now being monitored by the state when compared to 1998 numbers used in the 2000 plan. When comparing 1998 and 2005 numbers,

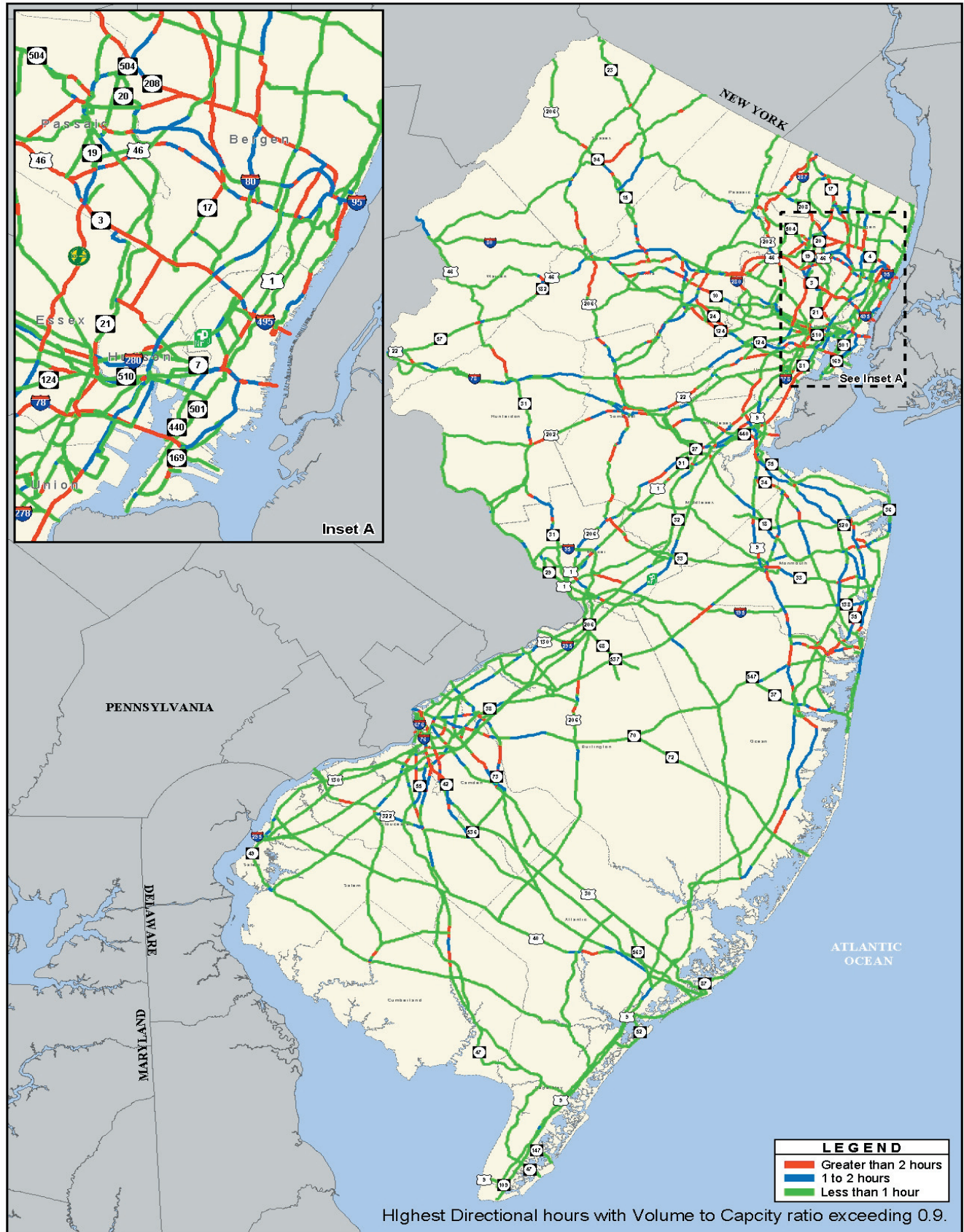
⁵ NJDOT Congestion Management System Version 4.04.9, July 2005.

Figure 6 - Congestion Levels on New Jersey Roadways



* - Based on NJCMS, July 2005

Figure 7 - Duration of Congestion on New Jersey Roadways



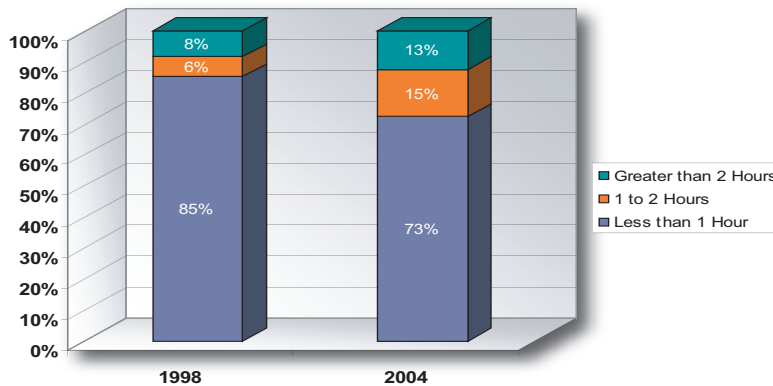
* - Based on NJCMS, July 2005

Figure 8 - New Jersey Congestion Levels, 1998 - 2004



this might understate worsening congestion levels in the state. When comparing 1998 and 2005 congestion levels using the original 2,800 miles of roadway monitored in 1998, it is clear that congestion has worsened noticeably statewide, as is shown in Figure 8. For instance, the number of roadways operating below capacity has decreased from 67% in 1998 to 59% in 2005, while the number of roadways operating at congested levels has increased two percentage points.

Figure 9 - New Jersey Duration of Congestion, 1998 - 2004



The duration of congestion has also increased between 1998 and 2005. As Figure 9 shows, the number of roadways that were monitored in 1998 that experience less than one hour of delay decreased from 85% to just under 73% between 1998 and 2005. The number of roadways with over 2 hours of congestion per day increased from 8.4% to 12.5% during this same period.

BRIDGE CONDITION

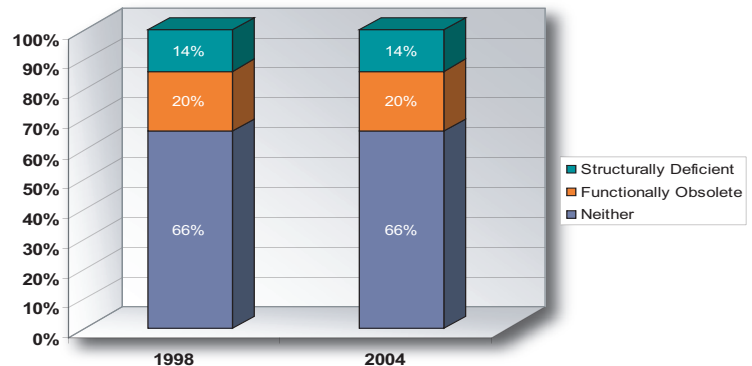
Management System to maintain an inventory of all bridges in the state with a span over 20 feet, listing the physical characteristics, condition, and ownership of each bridge. Bridges are inspected periodically to ensure that each bridge can safely carry vehicles at the posted weight. The bridges are 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.

There are approximately 7,000 bridges in New Jersey. The NJDOT employs a Bridge

A bridge's structural condition is given a rating between 9 (excellent) and 0 (representing a failed condition). Structural deficiency does not necessarily mean that a bridge is unsafe. It could mean that the bridge is unsafe 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 are inadequate. Functional obsolescence could mean the width or vertical clearance of the bridge is inadequate for current needs. Bridges may also become functionally obsolete due to highway improvements, such as lane additions

Figure 10 - Bridge Conditions, New Jersey, 1998 - 2004



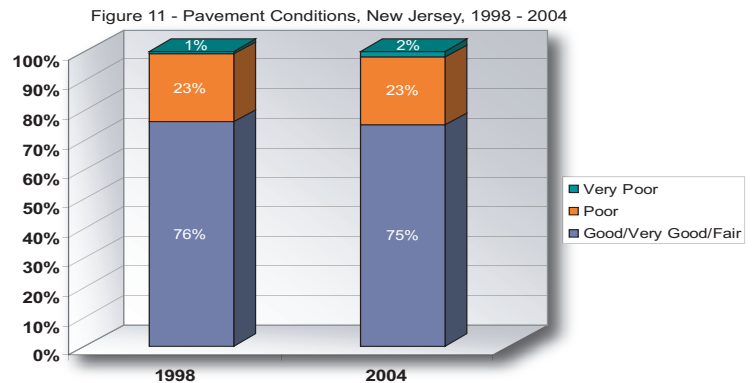
⁶ NJDOT Bridge Management System, 2003

to the approaches to the bridge, or changes in freight movement technology or practice.

In New Jersey, there are 949 bridges (14%) that are structurally deficient, 1,400 (20%) that are functionally obsolete, and 4,647 (66%) that are neither structurally deficient nor functionally obsolete.⁶

PAVEMENT CONDITION

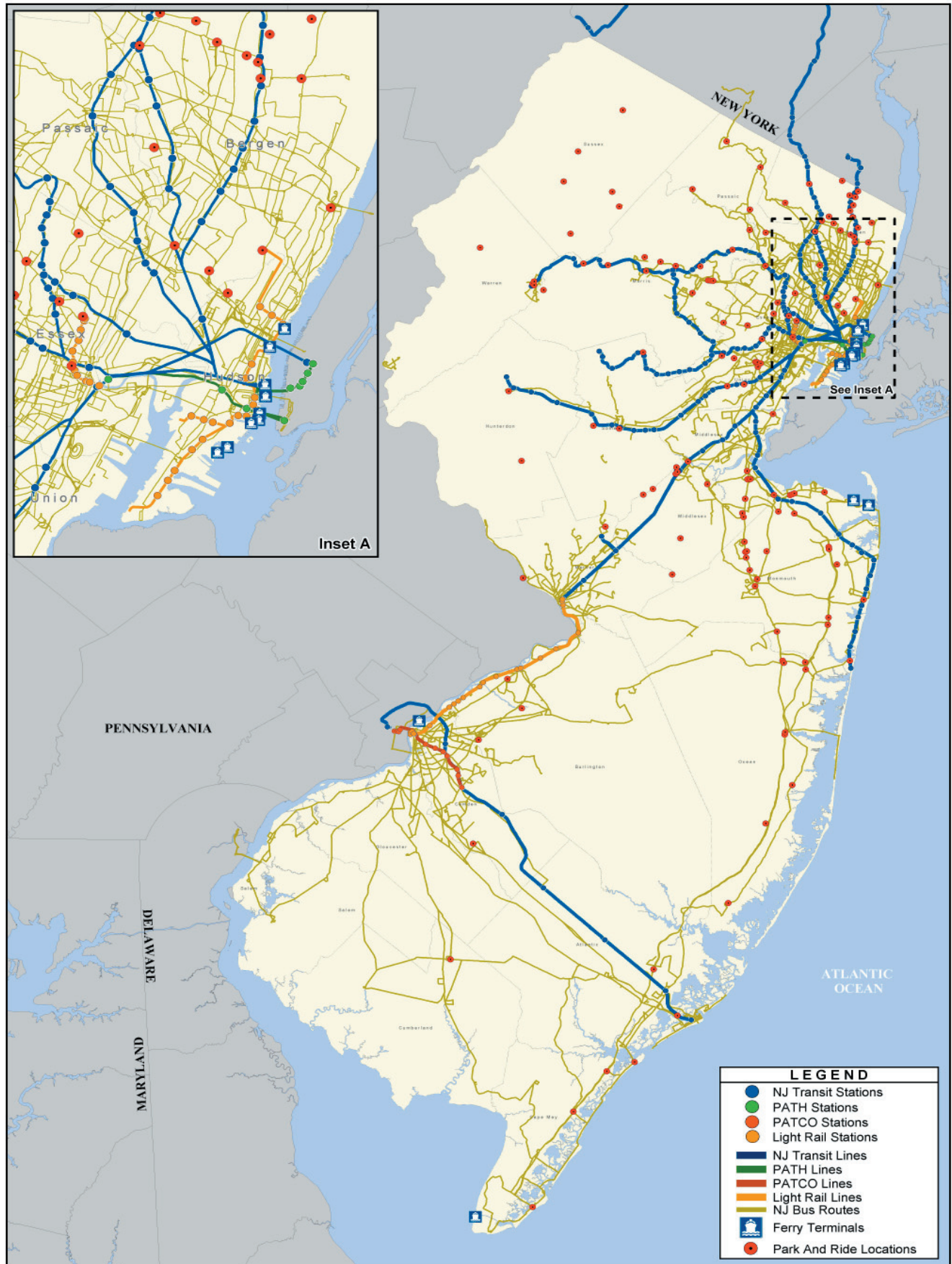
The NJDOT maintains a Pavement Management System database with information on the current condition of pavement throughout the state. 2004 data was used for this report.⁷ The rating system used to rate the roadways is based primarily on two criteria: ride quality and surface distress. The Ride Quality Index (RQI) describes the comfort level by measuring roughness, and the Surface Distress Index (SDI) compiles and measures the severity of surface distress such as cracking, patching, shoulder condition, shoulder drop, faulting and joints. A final pavement rating is calculated from RQI and SDI to determine the quality of the pavement. The ratings, in conjunction with roadway type, are used to determine priorities for resurfacing projects throughout the state. Figure 10 summarizes the pavement condition data for the state overall. 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.



However, this varies by region. New Jersey is divided into three MPO regions. In northern New Jersey, the North Jersey Transportation Authority Region includes 15 “subregions” consisting of 13 counties: Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union and Warren; and two cities: Newark and Jersey City. The southern portions of the state are overseen by the Delaware Valley Regional Planning Commission (DVRPC), which includes the counties of Burlington, Camden, Gloucester, and Mercer, and the South Jersey Transportation Planning Authority (SJTPA), which covers Atlantic, Cape May, Cumberland, and Salem Counties. In the NJTPA region, pavement condition is worst, with less than 1/3 providing good pavement condition. In the DVRPC and SJTPA regions, almost 3/4 of state roadway pavement is in fair, good, or very good condition.

⁷ NJDOT Pavement Management System , 2004

Figure 12 - New Jersey Statewide Transit Network



TRANSIT SYSTEM

NJ TRANSIT operates the largest statewide public transportation system in the country, providing bus, commuter rail, and light rail services throughout New Jersey. This network is complemented by a number of other publicly and privately operated rail lines and bus and ferry services. More specialized programs provide transportation for persons with disabilities and the elderly and support recreational and employment travel in various parts of the state. Major transportation facilities are shown in Figure 12.

PASSENGER RAIL SYSTEM



In addition to NJ TRANSIT, the following agencies provide passenger rail facilities and services in New Jersey: the Port Authority Trans-Hudson Corporation (PATH), the Port Authority Transit Corporation (PATCO), the Southeastern Pennsylvania Transportation Authority (SEPTA), and Amtrak. Figure 12 depicts New Jersey's public transit infrastructure, including its passenger rail system.

NJ TRANSIT RAIL

In 2004 NJ TRANSIT's rail system carried 227,250 passengers on an average weekday for a total of approximately 63 million passengers per year.⁸ NJ TRANSIT operates 685 weekday commuter trains serving 162 stations statewide.⁹ NJ TRANSIT provides approximately 1.8 billion passenger miles of rail service annually using a fleet of 1,091 vehicles.¹⁰ The average fleet age is 23.3 years.¹¹

The commuter rail system's 11 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 the Raritan Valley lines operating to and from Newark Penn Station); and the Atlantic City Rail Line, which operates between the seaside resort city and Philadelphia.¹² 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 three light rail lines: the Newark City Subway, the Hudson-Bergen Light Rail Line, and the RiverLINE. The Newark City Subway serves twelve stations on a 9.9-mile route between Newark Penn Station and Bloomfield, including several downtown destinations, with an average weekday ridership of 17,250.¹³ New light rail vehicles and new stations were introduced in 2001. Service is scheduled to begin in 2006 on a one-mile extension of the subway service from Newark Penn Station to Broad Street Station.

The Hudson-Bergen Light Rail opened in April 2000. It has 20 stations, including five with park-and-ride

⁸ NJ TRANSIT, Facts at a Glance, Fiscal Year 2004, www.njtransit.com

⁹ NJ TRANSIT, Facts at a Glance, NJ TRANSIT, September 22, 2005.

¹⁰ NJ TRANSIT, Facts at a Glance,

¹¹ National Transit Database, 2003.

¹² NJ TRANSIT, Facts at a Glance

¹³ Directional routes reported for all services, NJ TRANSIT, Facts at a Glance.

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facilities, and connects with PATH and NJ TRANSIT trains and NY Waterway ferries, as well as with many NJ TRANSIT buses along the route. Three new stations are scheduled to open between Weehawken and North Bergen in 2005. The system is designed to eventually span more than 20 miles between Bayonne and Ridgewild. In 2005 average weekday ridership on the Hudson-Bergen Light Rail is more than 21,000.¹⁴

The RiverLINE, the newest addition to NJ TRANSIT's light rail services, is an approximately 70-mile rail line linking Trenton with Camden.¹⁵ It allows for connections to NJ TRANSIT bus and rail services, Amtrak, PATCO, and SEPTA. The River LINE, which opened for service in March 2004, has 20 station stops and carried 4,250 average weekday passengers in its first three months of operation. Since the River LINE opened, ridership has increased steadily and it carries 6,100 average weekday passengers in 2005.¹⁶



Many NJ TRANSIT services are interconnected.

Transfers to the state's bus system are possible at most 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, Amtrak, and the River LINE. At the Hoboken Terminal, transfers can be made to PATH trains traveling between Hoboken and Jersey City, Newark, the World Trade Center, and midtown Manhattan, to the Hudson-Bergen Light Rail, and to Manhattan-bound ferry service. At Newark Penn Station, connections to PATH, Amtrak, and the Newark City Subway are possible. On South Jersey's Atlantic City Rail Line, connections can be made to Amtrak and SEPTA at Philadelphia's 30th Street Station and to PATCO at the Lindenwold Station.



With the opening of Secaucus Junction in December 2003, New Jersey unified its rail transit network. The new station serves as the interconnecting node for all NJ TRANSIT rail lines serving northern New Jersey. The station permits commuters to transfer from the Main, Bergen, Port Jervis and Pascack Valley lines to all Northeast Corridor, North Jersey Coast Line, and Mid-Town Direct trains.

ADDITIONAL RAIL FACILITIES

In addition to NJ TRANSIT, the following agencies provide passenger rail facilities and services in New Jersey: the Port Authority Trans-Hudson Corporation (PATH), the Port Authority Transit Corporation (PATCO), the Southeastern Pennsylvania Transportation Authority (SEPTA), and Amtrak.

¹⁴ NJ TRANSIT, September 22, 2005.

¹⁵ NJ TRANSIT, Facts at a Glance

¹⁶ NJ TRANSIT, September 22, 2005, NJ TRANSIT, September 12, 2005.

PATH

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. Approximately 225,000 passengers use PATH each weekday, more than two-thirds of these during the morning and evening peak hours.¹⁷ With a fleet of 259 vehicles, PATH provides approximately 254 million passenger-miles of service annually on 28.6 route miles.¹⁸ The average fleet age is 31 years.¹⁹

PATCO

A subsidiary of the Delaware River Port Authority, the Port Authority Transit Corporation (PATCO) operates a 14.2-mile rail line between Lindenwold and Center City, Philadelphia. Designated the PATCO Speedline, this service has a total of 13 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 76 million passenger-miles of service annually with a fleet of 121 vehicles. The Speedline serves approximately 33,000 passengers on a typical weekday.²⁰ The average fleet age is more than 30 years.²¹

AMTRAK

Amtrak serves mostly long distance travel; its trains operate over more than 22,000 route miles nationally to serve more than 25 million passengers per year.²² 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. Amtrak carries approximately 13,550 riders on weekdays to and from New Jersey stations on the Northeast Corridor Line.²³

SEPTA

The Southeastern Pennsylvania Transportation Authority (SEPTA) provides public transportation services in Bucks, Chester, Delaware, Montgomery, and Philadelphia counties, with selected rail service in New Jersey and the state of Delaware. In New Jersey, SEPTA operates regional rail service between Philadelphia and Trenton on the R7 line and West Trenton on the R3 line. SEPTA also operates bus service on its Route 127 service between Trenton and the Neshaminy Mall in Pennsylvania.



BUS SERVICES

NJ TRANSIT BUS SERVICE

NJ TRANSIT operates an extensive network of bus 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.

¹⁷ National Transit Database, 2003.

¹⁸ National Transit Database, 2003.

¹⁹ National Transit Database, 2003.

²⁰ PATCO, July 2005.

²¹ PATCO, July 2005.

²² Amtrak, July 2005.

²³ Amtrak, July 2005.

Minibuses serve as feeders to rail stations and provide transport in lower-density areas.

NJ TRANSIT serves 17,000 bus stops linking major points in New Jersey, New York and Philadelphia.²⁴ NJ TRANSIT bus ridership has increased steadily over the past several years and now exceeds 500,000 daily riders.²⁵ The fleet consists primarily of 40-foot vehicles. NJ TRANSIT bus service covers 176 bus routes and provides 884.1 million passenger-miles annually.²⁶ NJ TRANSIT also contracts an additional 64 bus routes to private carriers. Including private carriers, the total fleet consists of 2,982 vehicles. The average age of NJ TRANSIT's bus fleet is 5.5 years.²⁷

PRIVATE BUS CARRIERS

Private carriers operate a number of independent commuter bus routes in New Jersey in addition to providing service 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, and Trans-Bridge.

ACCESS LINK AND PARATRANSIT

NJ TRANSIT's Access Link provides curb-to-curb paratransit service along regular bus routes for people whose disabilities prevent them from using existing local bus service. Access Link carries 471,000 passengers annually on 241 routes in 18 of the 21 counties in New Jersey.²⁸ NJ TRANSIT provides more than 3.6 million passenger-miles of Access Link service annually.²⁹ In addition, each county in New Jersey provides county-based paratransit service for senior citizens and people with disabilities. NJ TRANSIT assists the counties and non-profit agencies in providing accessible services through a variety of state and federal funding sources.

PARK-AND-RIDE FACILITIES

The focus of the NJDOT park-and-ride program is to establish parking lots along commuter routes served by bus and rail operations and in areas where ridesharing activity takes place. New Jersey has more than 300 park-and-ride facilities available to commuters; 130 of these lots are operated by NJ TRANSIT and 39 are operated under the jurisdiction of NJDOT, or the New Jersey Turnpike Authority. Most of the remaining facilities are either municipal or privately owned.³⁰ The park-and-ride lots range from joint use on commercial properties to exclusive park-and-ride facilities. In 2002 then-Governor McGreevey established a goal of 20,000 new park-and-ride spaces throughout the state by the end of five years. NJDOT has made steady progress toward this goal each year, with more than 12,000 new spaces added to the park-and-ride system. Another 5,000 spaces are actively being advanced.³¹ In the near future NJDOT intends to construct park-and-ride lots with Intelligent Transportation System (ITS) components such as information kiosks, video monitor displays, and variable message signs.

²⁴ NJ TRANSIT, September 22, 2005.

²⁵ NJ TRANSIT, Facts at a Glance

²⁶ NJ TRANSIT, Facts at a Glance

²⁷ NJ TRANSIT, Facts at a Glance, National Transit Database, 2003.

²⁸ NJ TRANSIT, Facts at a Glance

²⁹ NJ TRANSIT, August 2005, NJ TRANSIT, Facts at a Glance.

³⁰ New Jersey Department of Transportation (NJDOT), August 2005.

³¹ NJDOT, NJDOT and NJ TRANSIT 2004 Park-and-Ride Program

BICYCLE ACCESS TO TRANSIT³²

One way to both encourage transit use and support bicycling is to make transit accessible to bicycles. Currently, NJ TRANSIT promotes bicycle access through the Bike Aboard Program, which allows collapsible bicycles on all NJ TRANSIT trains at all times and enables passengers to bring standard bicycles aboard trains on most NJ TRANSIT lines during off-peak periods. There is no extra charge for bicycles brought aboard NJ TRANSIT vehicles, and no “permit” is required. Approximately 70 percent of NJ TRANSIT’s rail car fleet is accessible to bicycle users. Bicycles are also allowed aboard PATH, PATCO, and SEPTA trains during off-peak periods, with certain limitations, as well as on some Amtrak trains by prior reservation.

NJ TRANSIT provides free bicycle parking racks at about 90 percent of the train stations in New Jersey. In addition, bicycle racks are located at several park-and-rides along the Route 9 corridor, at some bus terminals, and at most Hudson-Bergen Light Rail stations and River LINE stations. The agency has also installed bicycle lockers at some train stations that are available on a lease basis. The local Transportation Management Associations (TMAs) or municipalities administer the rentals. Overall, NJ TRANSIT provides parking capacity for about 1,975 bicycles at its public facilities.

NJ TRANSIT launched its Rack ‘n Roll Program, offering bike racks on the front of buses in southern New Jersey, in 2000. Currently, bicycles can be accommodated on all buses in the NJ TRANSIT Southern Division (from the Princeton area south), and about half of the total NJ TRANSIT bus fleet contains bike racks. Bicycles are permitted at all times on buses with bike racks or with underfloor luggage compartments.

Bicycles are permitted on Newark City Subway and Hudson-Bergen Light Rail cars during off-peak hours only, and on Hudson-Bergen Light Rail cars all day on Saturday, Sunday, and state holidays. Bicycles are permitted onboard the RiverLINE at all times.

FERRY SERVICE

Fifteen ferry routes currently operate between New York city and New Jersey by five different operators.

- New York Waterway operates ferry service from a variety of locations including Hoboken, Jersey city, and Weehawken to various destinations in New York City.
- The Port Authority of New York and New Jersey co-sponsors ferry service from Hoboken to the World Financial Center
- Sea Streak operates ferry service from Atlantic Highlands, Highlands, and Keyport in Monmouth County to various locations in New York City
- NY Fast Ferry provides ferry service from Highlands to Pier 11 at Wall Street, East 34th Street, and Shea Stadium
- 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 recreational travelers.
- The Delaware River Port Authority operates the Riverlink ferry service between the New Jersey State Aquarium at Camden and Penns Landing in Philadelphia.

³² NJ TRANSIT, www.njtransit.com.

- 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 is the only crossing of the Delaware River open to bike 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 public use airports comprise 45 public use general aviation airports, 3 commercial air carrier airports, 77 special and restricted use airports and 361 heliports and helistops.³³ The three commercial service airports provide regularly scheduled passenger service: Newark Liberty International, Atlantic City International, and Trenton-Mercer. There are 15,000 FAA licensed aviators in New Jersey and 4,000 permanently based general aviation craft.³⁴ Over half of New Jersey's public use airports are privately owned, which is unique in the United States. Figure 13 depicts New Jersey's airport infrastructure.

STATE AIRPORT SYSTEM PLAN (SASP)

The primary objective of NJDOT's Aviation Program is to protect the core airport system by supporting the state's "fix-it-first" and smart growth policies that would preserve, improve, and rehabilitate airports without expanding runway lengths. NJDOT's Division of Aeronautics recently completed a detailed analysis of New Jersey's public use airport system. The State Airport System Plan (SASP) inventories the state's existing public use airport system, identifies each airport's functional role within the system, evaluates each airport's performance relative to its functional role, identifies facility gaps in the system, and establishes long-range goals for the system. The purpose of the SASP is to 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.

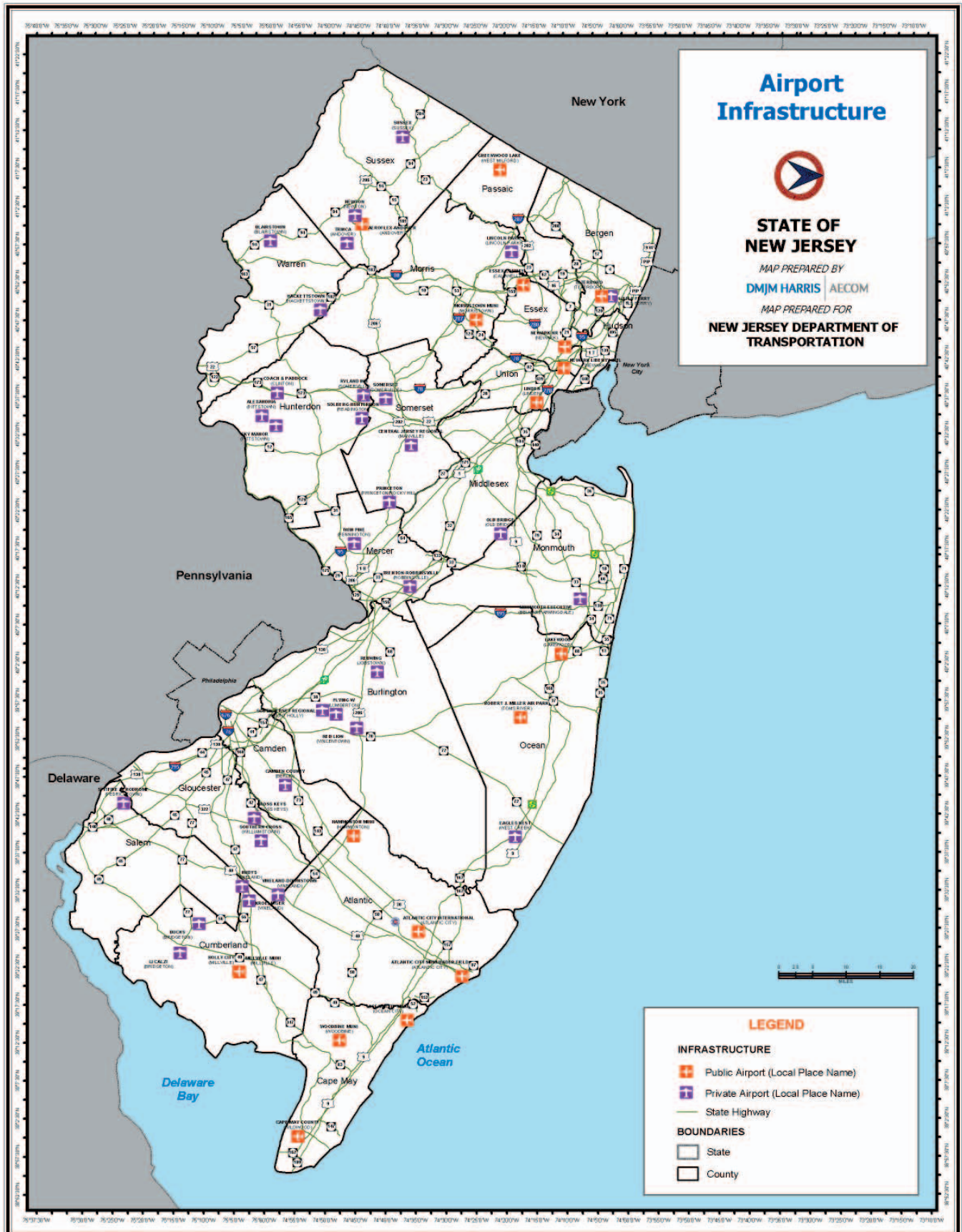
The SASP also addresses the decline in the number of airport facilities in New Jersey over the past several decades. One of the primary reasons for this loss is the ever-increasing pressure to develop open space with higher density land uses. Although the decline has recently slowed, the significant loss in the number of airports affects the viability of New Jersey's overall aviation system. As small publicly 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. As a result, the closure of small, local airports can lead to increased congestion and delays at airports such as Newark Liberty International, and other facilities of importance to the overall transportation system. This is especially important due to New Jersey's reliance on corporate air travel as a significant component of its economic strength.

In October 2003 Executive Order #78 established the General Aviation Review Commission in response to the pressure on the state's aviation network caused by the continued loss of public use general aviation airports. The charge of the Commission is to inventory the state's public use general aviation airport facilities and identify the role of each facility and the demands of its users. In addition, the Commission will develop solutions, alternatives, and recommendations for the preservation of airports, consistent with the state's "fix-it-first" and smart growth policies. The Commission is within the Department of Transportation and consists of 17 members, including several state department commissioners and individuals who represent facets of the aviation industry. It is expected that the SASP will assist the Commission in fulfilling its role in the state.

³³ New Jersey Executive Order No. 78.

³⁴ New Jersey Executive Order No. 78.

Figure 13 - Airport Infrastructure



The following section summarizes the major airport facilities serving the state.

NEWARK LIBERTY INTERNATIONAL AIRPORT

Newark Liberty International Airport (EWR), one of the nation's busiest airports, is operated by PANYNJ and is located in Essex and Union counties between the New Jersey Turnpike, US Routes 1 and 9, and I-78. More than 31.9 million passengers boarded commercial flights at Newark in 2004.³⁵ In 2002 the airport completed construction of its new administration building, which incorporates a new emergency response facility. Newark Liberty International is nearing completion of a \$3.8 billion redevelopment program that includes extension of the AirTrain system, a second International Arrivals facility, modernized passenger terminals, improved airport access, additional parking facilities, expanded roadways, and improved runways and taxiways. More than 24,000 people are employed at the airport, and the facility contributes more than \$11 billion in economic activity to the New York/New Jersey metropolitan region.³⁶



AirTrain Newark provides service 24 hours a day among each of the three airport terminals, parking lots, rental car agencies, and the Newark Liberty International Airport train station. AirTrain Newark connects passengers to NJ TRANSIT and Amtrak Northeast Corridor trains via the Airport train station. AirTrain served more than 1.1 million passengers at Newark Liberty International in 2003.

ATLANTIC CITY INTERNATIONAL AIRPORT

The South Jersey Transportation Authority operates the terminal, runways, and related facilities at the Atlantic City International Airport (ACY), located 10 miles from downtown Atlantic City. The airport is adjacent to the Atlantic City Expressway and two miles from the Garden State Parkway. The Atlantic City International Airport exceeded 1 million passenger boardings in 2004.³⁷ The ACY Master Plan projects will enlarge the airport and include expanding the terminal, relocating a taxiway, adding an instrument landing system, and building a parking garage. In addition, the airport will make security and environmental upgrades. More than 425 jobs are generated by the Atlantic City International Airport.³⁸

TRENTON-MERCER AIRPORT

Trenton-Mercer Airport (TTN), located in Ewing Township, offers an alternative to the large hub airports at Newark and Philadelphia. In 2004 Trenton-Mercer Airport boarded 13,100 passengers.³⁹ Plans for an \$18 million expansion, which would include a new passenger terminal and improved passenger facilities, have been under review by the FAA for several years. They face stiff opposition from several citizen groups.

³⁵ Newark Liberty Fact Sheet, The Port Authority of New York & New Jersey (PANY&NJ).

³⁶ Airport Traffic Report, PANY&NJ, 2003.

³⁷ South Jersey Transportation Authority (SJTA) Annual Report, 2004.

³⁸ Atlantic City Airport, www.acairport.com

³⁹ Federal Aviation Administration, CY 2004 Enplanement Data, www.faa.gov

TETERBORO AIRPORT

Teterboro Airport (TEB), located in the boroughs of Teterboro and Moonachie in Bergen County, is owned and operated by PANYNJ. TEB is designated as a general aviation reliever airport that serves the region's small aircraft; it does not accommodate scheduled carrier operations. Teterboro Airport has a reputation as the airport of choice for serving humanitarian causes and medical emergencies that require the transport of patients and organs for medical transplant. During 2004 there were approximately 216,470 aviation operations at Teterboro Airport. There are over 1,000 employees at the airport.⁴⁰

GENERAL AVIATION

General aviation activity primarily refers to corporate, business, recreational, and training flight activity. New Jersey's 45 general aviation airports range from facilities that are home to numerous corporate aircraft and have runways longer than a mile 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 2004, approximately 2.3 million general aviation operations (operations by all types of aircraft except commercial passenger and military) occurred at New Jersey's airports. More than 3,900 general aircraft were permanently based at New Jersey airports as of 2004.

FREIGHT TRANSPORTATION

Each year, hundreds of millions of tons of freight move into and across New Jersey by truck, van, ship, plane, train, and barge. The goods within these shipments are valued at more than \$300 billion, and some 500,000 people work to move them to their destinations, whether they are local, regional, national, or international.



New Jersey is part of an enormous market of some 19 million people who now consume more than they produce. The state's largest maritime complex – Port Newark/Elizabeth – is the busiest port on the East Coast and serves as a gateway connecting North America to the world. In return for providing the infrastructure to support freight movement to the rest of the nation, New Jersey benefits from the industries that have emerged to add value to that freight. Over 620 million tons of freight was transported into, out of, within, and through New Jersey in 2003; approximately \$860 million worth of freight was transported throughout New Jersey by truck and rail.⁴¹ Table 1 provides a summary of tonnage information by mode below. Around 75% of tonnage is handled by truck; around 18% is handled by water; around 7% is handled by rail; and less than 1% is handled by air.

TRUCK/HIGHWAY FREIGHT

Trucks represent more than 75% of New Jersey tonnage (around 466 million tons), and provide critical first mile/last mile connections for rail, water, and air cargo. Truck tonnage is relatively evenly divided between tonnage

⁴⁰ Airport Traffic Report, PANY&NJ, 2003.

⁴¹ The overall value estimate only includes truck and rail values, since the waterborne and air freight data did not include value information. Value information for through moves was not available.

Table 1: Summary of Statewide Freight Flows by Weight

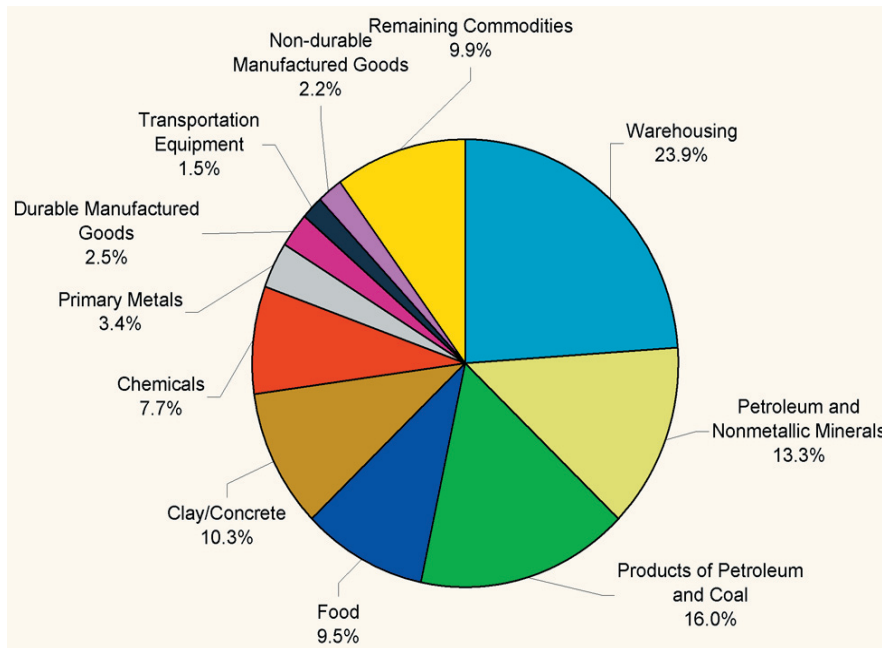
Flow Type	Total Tonnage	Mode			
		Truck	Rail	*Water	**Air
Inbound	198,642,999	103,873,482	22,518,945	72,069,000	n/a
Outbound	164,392,993	117,584,251	10,974,367	35,679,000	n/a
Intrastate	131,015,177	126,807,290	294,856	3,913,000	n/a
Through	125,840,867	118,059,233	7,781,634	n/a	n/a
Direction Unknown	964,323	n/a	n/a	n/a	964,323
TOTAL	620,519,381	466,324,256	41,568,802	111,661,000	964,323

* The waterborne estimates were derived from the U.S. Army Corps of Engineers data. The outbound tonnage is equivalent to domestic tonnage (27,522,000) plus international tonnage (8,157,000) = 72,069,000. The inbound tonnage includes domestic tonnage (18,581,000) plus international (53,488,000). The ACOE does not provide through tonnage.

** The air estimates were derived from The Port Authority of New York and New Jersey's 2003 Airport Traffic Report, which included domestic and international revenue freight and revenue mail totals. These totals were not disaggregated by flow type and are therefore presented as "unknown".

originating out-of-state and remaining in New Jersey (22%), tonnage originating in-state and destined for out-of-state markets (25%), tonnage produced and remaining in New Jersey (27%), and tonnage moving through the state on the way to other markets (25%).

The annual vehicle miles traveled (VMT) on the state's highway system is nearly 70 million. Trucks account for nearly 10 percent (6.69 million vehicle miles) of this travel. By far trucks are the predominant mode for moving freight throughout New Jersey.⁴² More than 466 million tons of freight, with a value of \$625 million, were transported to, from, or through New Jersey by truck in 2003.



The primary issues for highway freight include limited hours of operation, increased emphasis on security and safety, increasing delays caused by congestion, and lack of support facilities.

RAIL FREIGHT

Rail represents nearly 7% of total tonnage (around 43 million tons). It serves high-weight commodities, accommodates long-haul movement of containers and autos, and links seaports with inland markets. Around half

⁴² Reebie Associates Data, 2003

2030

the tonnage is inbound (54%); around one-quarter is outbound (26%); a small share is intrastate (1%); and the rest is through (19%), together valued at \$54 million. The primary issues for rail freight include a lack of rail network interoperability, constraints on throughput capacity, and operational integration.

MARITIME FREIGHT

Water represents around 18% of tonnage (nearly 112 million tons). New Jersey hosts some of the nation's leading port facilities, which accommodate major international trade as well as important domestic coastwise shipping activity. Nearly two-thirds of waterborne tonnage is inbound (65%); nearly one-third is outbound (32%); and a small share is intrastate (4%), totaling \$140 million. Through tonnage is not represented in the waterborne data. The primary issues for maritime freight is accommodation the increasing volumes of maritime cargo, managing the Port Selection Strategies of major shippers, and deepening and maintaining key waterway channels.

AIR FREIGHT

Air cargo through Newark Liberty International Airport (EWR) represents less than 1% of New Jersey tonnage (at less than 1 million tons), but is far more important than its tonnage share would suggest. Air specializes in low-weight, high-value, time-sensitive commodities. Over the past decade, air cargo has been the fastest-growing segment of the national freight market, and is critically important to New Jersey's businesses and consumers in New Jersey. The PANYNJ reports over 964 thousand tons of air cargo valued at \$41 million loaded and unloaded at EWR; this figure does not include through traffic.



The primary air freight issues include the following issues:

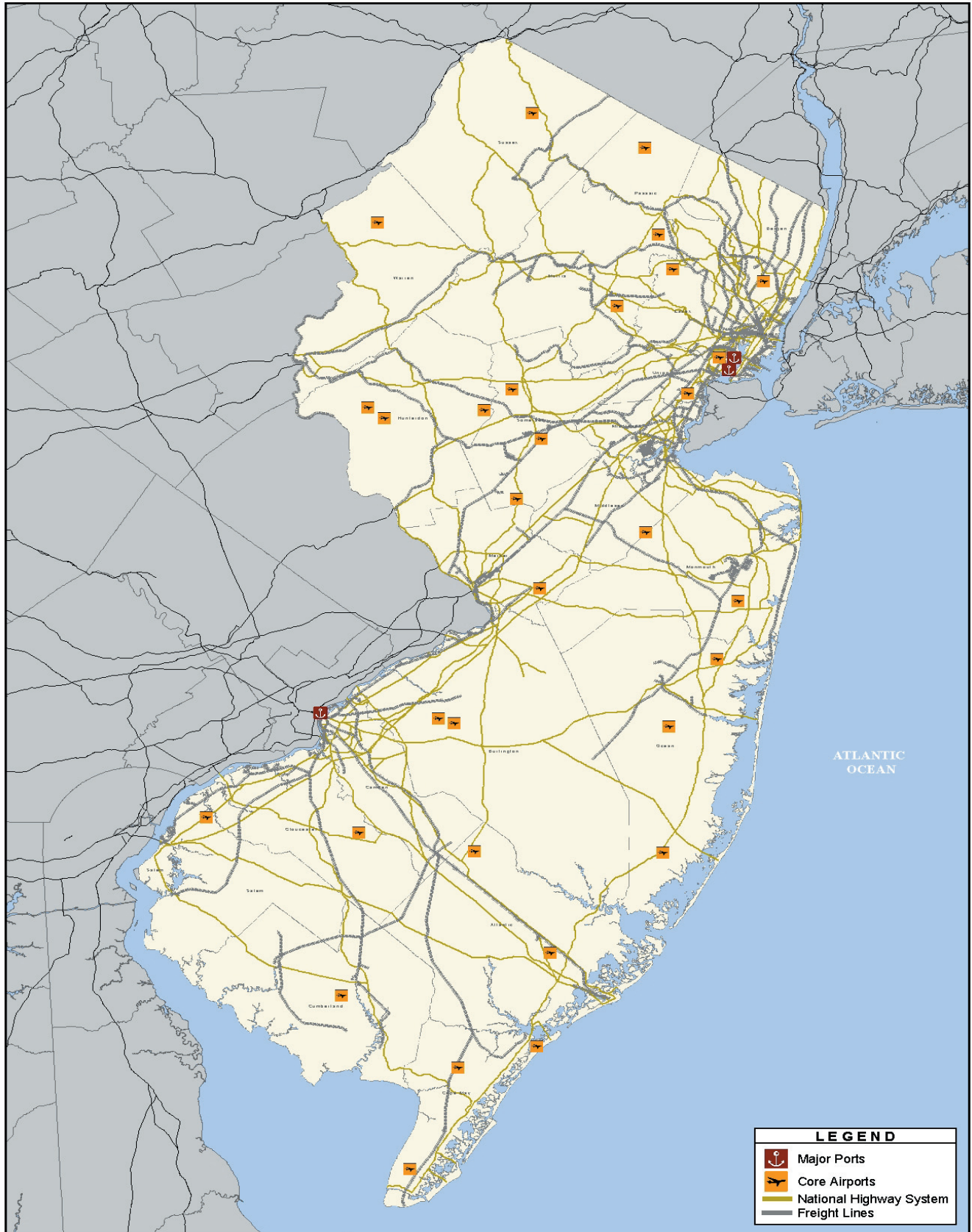
- Sufficiency of New Jersey's air cargo capacity;
- Extent to which domestic and international air cargo volumes will increase;
- Impact of potential new federal security and inspection requirements on air cargo movement and facilities;
- Extent to which domestic air cargo will be diverted to truck;
- Adequacy of capacity at and near Newark Liberty International Airport to accommodate trends;

WAREHOUSING AND DISTRIBUTION CENTERS

Warehouses and distribution centers are an often-overlooked element of the freight transportation system because they are not transportation conveyances. New Jersey has nearly 838 million square feet of industrial space with 7 million more square feet under development. Over 70 million square feet have been added to the state's supply of industrial space since 1998, while the availability rate has continued to decrease.

The primary issue for warehousing is the need to accommodate the demand for space in New Jersey. This issue includes inconsistent assistance with environmental reviews of properties, along with changing standards for industrial properties, lack of an economic development program in New Jersey focused on retaining and attracting major distribution centers to sites in the state, excessive fees and time lines for the development of sites, and the need to better combine marketing of the port in northern New Jersey with available/ developable sites. Figure 14 shows New Jersey's Core Freight Network.

Figure 14 - Core Freight Network



NEW INITIATIVES

The NJDOT has undertaken a series of initiatives aimed at improving transportation efficiency, increasing public participation, and maximizing the return on scarce state funds. The following initiatives have been recently undertaken by the NJDOT with the aim of achieving these goals.

BICYCLE AND PEDESTRIAN MASTER PLAN UPDATE

The update of the New Jersey Bicycle and Pedestrian Plan provides a vision and action plan for improving bicycling and walking conditions throughout New Jersey. The plan seeks to make New Jersey a state where people choose to walk and bicycle, people are able to conveniently walk with confidence and security, and where both biking and walking are a routine part of the transportation and recreation systems and support active and healthy lifestyles. Additionally, the state has implemented a successful local assistance program which has provided bicycle and pedestrian planning guidance to numerous communities around the state, from Haddonfield in Camden County to South Orange in Essex County.

NJFIT – FUTURE IN TRANSPORTATION



NJDOT is changing the way it performs the business of transportation in New Jersey by launching the NJFIT: Future in Transportation initiative. NJFIT is a comprehensive and cooperative approach to transportation and land use planning. The goal is that by working with community planners the jobs, services, and goods that people seek can be kept within reach. By reinvesting in the state's infrastructure and shaping transportation to fit into the context of its communities, a better New Jersey will result for all.

NJFIT features three principal subject areas that include:

- NJFIT Outcomes: Rejuvenating New Jersey via Transportation
 - Benefits of a healthier transportation system
- NJFIT Toolbox: Prescriptions for Wellness
 - Tools to achieve our goals
- NJFIT Partnerships: Working Together to Create a Healthier New Jersey:
 - Education, funding, and technical assistance opportunities

Many communities across the New Jersey are already working with NJDOT to make intelligent land use and transportation decisions, realizing new visions for New Jersey. NJDOT has been developing a series of Integrated Land Use and Transportation Planning Studies to promote lively main streets, sensible land use, streets for the community, lasting investments, economic vitality, safe streets for all, more ways to travel, and healthier streets and communities. A key element of these studies is empowering towns to partner with NJDOT and other state agencies in creating the transportation/land use balance. Through this collaboration, NJDOT is providing municipalities with the tools they need to make smart development decisions, facilitating communication, and directing them to valuable resources.

NEW ITS SOLUTIONS

ITS solutions help monitor and manage traffic flow, reduce congestion, provide alternate routes to travelers, enhance productivity, and save lives, time and money. The NJDOT is continuously refining ITS technologies including:



integrated traffic signal systems, incident management systems, traffic management systems, traffic information systems and other ITS components, including computerized arterial traffic signals, Variable Message Signs, closed circuit television surveillance, Highway Advisory Radio and Phone Systems, traffic movement detectors, and a fiber optic communication network.

THE HYPERBUILD INITIATIVE

The Hyperbuild initiative provides a new process for meeting transportation needs and solving problems, with a strong sense of priority, urgency, and a target date established for project

completion. Hyperbuild means not only delivering projects faster to construction through innovative scoping and design, but also constructing projects faster in order to reduce impacts on the motoring public. However, Hyperbuild does not necessarily mean doing the same amount of work faster. By successfully employing cost effective solutions, Hyperbuild may involve doing less work with fewer resources. This may be accomplished by finding ways to limit project scopes, doing less internal reviews, and learning to be more comfortable with developing solutions based on sound engineering judgments and with less exhaustive checks. Developing projects from the beginning to minimize right-of-way acquisition costs, utility involvements, permit issues, and community impacts, as well as utilizing innovative construction methods and technologies whenever practical, are key elements of Hyperbuild.

THE SAFE CORRIDORS PROGRAM

The Safe Corridors Program is a part of New Jersey's "Safety First" initiative, which combines \$20 million in highway improvements over five years with stricter police enforcement, increased fines for unsafe equipment and hazardous driving, and enhanced driver education for all motorists. New Jersey's Safe Corridors Program focuses on improving safety along the State's most crash-prone corridors – nearly 130 miles of state roadway along sections of Routes 1, 9, 22, 40, 46, 47, 73, and 206. A targeted enforcement program in these corridors includes a law doubling fines for a variety of driving offenses, including speeding and aggressive driving. Engineering and education improvements will be determined through recommendations from a Safety Impact Team comprised of individuals with various backgrounds and expertise from the NJDOT, NJ TRANSIT, the Federal Highway Administration, state and local law enforcement, the Federal Motor Carrier Administration, and the National Highway Traffic Safety Administration. The team will visit each of the designated corridors to recommend opportunities for safety enhancements.



ELECTRONIC TOLL AND TRAFFIC MANAGEMENT

Following the debut of New Jersey's E-ZPass system on tollways, bridges and tunnels serving the state, significant upgrades have been undertaken to further improve the efficiency of this system. In the Fall of 2002, it was announced that Express E-ZPass would be introduced on the New Jersey Turnpike and Garden State Parkway. High speed E-ZPass allows vehicles to travel through toll lanes at highway speeds, which significantly reduces

bottlenecks at toll plazas. This innovation has been unveiled with the introduction of One-Way Alternating Tolls, which removed tollbooths in one direction at strategic barrier toll plazas on the Garden State Parkway and added Express E-ZPass in the opposite direction.

As of August 2005, the following innovations have been undertaken on New Jersey's transportation system

- One-Way Tolls with Express E-ZPass are successfully operating at Raritan and Asbury Park, and two-way Express E-ZPass at the Toms River Toll Plaza.
- One-Way Tolls are live at the Union Toll Plaza where motorists have toll-free travel southbound
- The Essex Toll Plaza now offers toll-free travel northbound, with final demolition/construction of the plaza set for mid-September.
- Tolls at the Bergen Plaza are scheduled to become toll-free in the southbound direction in the Spring of 2006.
- One-Way Tolling will also be implemented at the Cape May, Great Egg, and New Gretna Plazas in the Spring of 2006



EVALUATION OF TRANSPORTATION INFRASTRUCTURE

The NJDOT has begun evaluating the state's transportation infrastructure, with the goal of maximizing scarce resources for the greatest benefit to the state's infrastructure. This will lead to a better understanding of the state's existing assets and funding limitations, and will assist public agencies and authorities with their capital investment planning.

Statewide asset management is a theme that has been strongly encouraged by the United States Department of Transportation (USDOT). It emphasizes principles that focus primarily on infrastructure preservation, but apply to all areas of the capital investment decision-making process, including: defining policy objectives to planning, programming, budgeting, program and project development and design, operations, construction, maintenance, and system monitoring.

The effort will include public agencies and authorities receiving federal funding, including NJ TRANSIT, the New Jersey Turnpike Authority, and the South Jersey Transportation Authority. Initial work will focus on addressing issues on bridges, roads, rail assets, pavement, signs, and signals.

INTEGRATED MANAGEMENT SYSTEMS

The purpose of the Integrated Management Systems Initiative is to effectively compile all data currently gathered by the independent management systems into a single platform database. By combining all the various components, the New Jersey Department of Transportation can more effectively track the overall conditions of its system-wide qualities. The management systems currently in place include the Bridge Management System, the Safety Management System, the Maintenance Management System, Straight Line Diagrams, the Traffic Management System, the Congestion Management System, the Pavement Management System, and the Drainage Management System. These management systems range in complexity from a single spreadsheet to comprehensive client-server