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Transportation System Assessment

This technical appendix accompanies the Regional Transportation Plan 2040. It contains a review of transportation resources in the SJTPO region. It begins with aviation and continues with bicycle and pedestrian movement, freight, and transit, concludes with an examination of the road network.

Aviation

A number of airports are located within the SJTPO region, including Atlantic City Airport, a commercial service airport and several general aviation airports (Figure 1).

1. Atlantic City International Airport

The South Jersey Transportation Authority (SJTA), an agency of the State of New Jersey, operates the terminal, runways and related facilities at Atlantic City International Airport (ACY). The Federal Aviation Administration William J. Hughes Technical Center and New Jersey Air National Guard are located at the airport. ACY is located 10 miles from downtown Atlantic City, a gaming and resort community that attracts millions of visitors annually. The airport is situated adjacent to the Atlantic City Expressway, which runs from Atlantic City to the Philadelphia metropolitan region, and intersects with the Garden State Parkway.

In May 2009, a study commissioned by the Casino Reinvestment Development Authority of Atlantic City laid out the plans for a 75,000 square foot, $25 million expansion to the airport. The project began in December 2010 and is on schedule to be completed by May 2012. The facilities added include three passenger gates, an expanded baggage claim area and a federal inspection station that would allow for international flights. Although the recession of the last few years has hurt tourism in the region, the airport has added demonstrable economic growth and holds strong potential for drawing visitors from across the nation and internationally.

2. General Aviation Airports

In addition to Atlantic City International Airport, the SJTPO region is home to several smaller publicly and privately owned and operated airports including Spitfire Aerodrome (formerly Oldmans Airport) and Millville Municipal Airport. These general aviation airports serve private passenger, agricultural, and/or commercial charter and freight aircraft (Table 1).
Table 1. Public Use Airports. Source: NJDOT, www.state.nj.us/transportation/airwater/aviation/.

<table>
<thead>
<tr>
<th>Airports</th>
<th>Location</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic City International Airport</td>
<td>Atlantic City</td>
<td>Atlantic</td>
</tr>
<tr>
<td>Buck's</td>
<td>Bridgeton</td>
<td>Cumberland</td>
</tr>
<tr>
<td>Cape May</td>
<td>Wildwood</td>
<td>Cape May</td>
</tr>
<tr>
<td>Hammonton Municipal</td>
<td>Hammonton</td>
<td>Atlantic</td>
</tr>
<tr>
<td>Kroelinger</td>
<td>Vineland</td>
<td>Cumberland</td>
</tr>
<tr>
<td>Millville Municipal</td>
<td>Millville</td>
<td>Cumberland</td>
</tr>
<tr>
<td>Ocean City</td>
<td>Ocean City</td>
<td>Cape May</td>
</tr>
<tr>
<td>Spitfire Aerodrome (formerly Oldmans)</td>
<td>Oldmans Twp</td>
<td>Salem</td>
</tr>
<tr>
<td>Vineland-Downstown (serves Vineland, but is not located within municipal boundaries)</td>
<td></td>
<td>Gloucester</td>
</tr>
<tr>
<td>Woodbine Municipal</td>
<td>Woodbine</td>
<td>Cape May</td>
</tr>
</tbody>
</table>

Bicycle and Pedestrian Facilities

1. Introduction
SJTPO makes bicycle and pedestrian mobility and safety a high priority by planning future initiatives and conducting safety campaigns. Each county has been active in planning efforts to further the development of bicycle and pedestrian facilities. Additionally, many municipalities in the SJTPO region require bicycle and pedestrian facilities in new development. Nearly every municipality in the four-county region has existing or planned bicycle and pedestrian facilities for both commuting and recreational purposes (Figure 2).

2. Existing Conditions
Currently, the region has a limited number of designated bicycle facilities. The majority of bicycle facilities in the region are non-designated facilities consisting of paved shoulders and shared roadways. However, the existing roadways and streets in the region provide the greatest potential resource for bicyclists. In most cases, existing roadway width, space, and surface conditions may be sufficient to allow safe bicycle travel. Under certain conditions, such as low traffic volumes and low operating speeds or where paved shoulders of adequate widths are present, the existing street and highway network can represent a cost-effective means for developing a bicycle network.

However, the identification of bicycle compatible streets and highways is a complex task. The factors that need to be examined include traffic volumes, lane widths, presence and width of shoulder, motor vehicle speeds, type of traffic, parking conditions, commercial driveways, grade, and sight distance. Therefore, to determine bicycle compatibility of area roadways, it is advisable that each be examined individually.
Figure 1. Public and Private Airfields in the SJTPO Region.
It is also not uncommon to find a lack of pedestrian accommodations or missing links in sidewalks in developed areas of the region as well. Pedestrian facilities include sidewalks, crosswalks, signals, overpasses, underpasses, malls, trails and greenway paths. Sidewalks are common in urban areas but are far less common in suburban and rural areas. Sidewalks need to be continuous, accessible and well maintained in order to be useful. Many sidewalks in the region do not meet these criteria.

Like the rest of New Jersey, the impediments listed above for both bicycle and pedestrian travel are common and many are widespread in the region. Steps need to be taken to remove these barriers to bicycle and pedestrian travel in the region. If bicycling and walking are to become more widespread, a more bicycle friendly and pedestrian friendly environment must be created. Creating these more friendly environments requires improvements in the engineering, design and operation of streets and highways and as well as the creation of more compact land use forms.

As can be seen in the number of projects specifically targeted for bicycle and pedestrian accommodation in the region and the number of roadway and bridge improvements that are being designed to be bicycle and pedestrian compatible where feasible, the SJTPO is actively engaged in making improvements to address the needs of bicyclists and pedestrians.

It is important to encourage the use of alternative modes to provide mobility, accessibility, and improve the quality of life of residents and tourists. This is particularly true in recreational areas where walking and biking trips can play an important role in transportation. It is very important that pedestrian and bicyclist safety be considered and efforts made to improve the facilities in the SJTPO region. Sharing the road and dedicated infrastructure including sidewalks and bike trails will help improve the accommodation of non-motorized modes.

3. State Bicycle and Pedestrian Goals

The New Jersey Statewide Bicycle and Pedestrian Master Plan offers five goals to encourage an approach to bicycling and walking as a routine part of the transportation system.

One: Create a bicycle and pedestrian infrastructure by planning, designing, constructing and managing transportation and recreation facilities that will accommodate and encourage use by bicyclists and pedestrians and be responsive to their needs.

Two: Make community destinations, transit facilities, and recreation facilities accessible and convenient to use by all types and levels of bicyclists and pedestrians.

Three: Reform land use planning policies, ordinances and procedures to maximize opportunities for walking and bicycling.

Four: Develop and implement education and enforcement programs that will result in reduction of crashes and a greater sense of security and confidence for bicyclists and pedestrians.

Five: Increase bicycling and walking by fostering a pro-bicycling and pro-walking ethic in individuals, private sector organizations and all levels of government.

Although multimodal options are preferable, the availability of current bicycle facilities and paths as well as proposed facilities varies in density across the four counties, as illustrated in Table 2, below.
Table 2. SJTPO Region, Existing and Proposed Bike Lane Miles.

<table>
<thead>
<tr>
<th></th>
<th>Existing bike lane miles</th>
<th>Proposed bike lane miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic County</td>
<td>37</td>
<td>213</td>
</tr>
<tr>
<td>Cape May County</td>
<td>39</td>
<td>79</td>
</tr>
<tr>
<td>Cumberland County</td>
<td>75</td>
<td>116</td>
</tr>
<tr>
<td>Salem County</td>
<td>7</td>
<td>114</td>
</tr>
</tbody>
</table>

4. Performance Criteria

- **Shared use**: Transportation facilities, at a minimum, shall be planned, designed, constructed and maintained to accommodate shared use by motor vehicles, bicycles, and pedestrians.
- **Encouraging walkability**: Where appropriate, and especially when a roadway project is an integral element of a city, town, or village center development plan, transportation facilities shall be designed, constructed, and maintained to encourage pedestrian activity.
- **Encouraging biking**: Where appropriate, or when a roadway project is an integral element of a bicycle transportation plan or designated bicycle facility system, transportation facilities shall be designed, constructed, and maintained to encourage use by bicyclists.
- **Keeping pedestrians safe**: Pedestrian traffic shall be given primacy over motor vehicle traffic in the design of projects located within zones dedicated to pedestrian movement.
- **Keeping bicyclists safe**: Bicycle traffic shall be given primacy over motor vehicle traffic in the design of projects that encourage use by bicyclists.

5. Journey to Work

Bicycling and walking continue to capture relatively small percentages of regional work trips compared to other modes. The goal of smart growth development and initiatives such as NJDOT’s integrated land use and transportation plans is to create communities and road systems that are more accommodating to alternate modes including bicycling, walking, and transit.

Some areas in Atlantic and Cape May counties have high population and employment densities, as well as mixed land uses and a resort environment; these attributes are conducive to alternate mode travel.

6. Transit Services and Intermodal Connections

There exist several strategies in linking bicyclists and pedestrians with transit services. Providing bicycle-exclusive parking facilities at transit stops and stations is effective in connecting bicyclists with transit facilities.

NJ Transit provides parking capacity for approximately 1,600 bicycles at its public facilities. Racks are located at 90% of the train stations in New Jersey, at several NJ Transit-owned and operated park-and-ride facilities, and at several bus terminals.
Figure 2. Existing and Proposed Bike Routes.
NJ Transit allows bicycles on transit vehicles, including trains and buses. Bicycles are permitted on all buses with bike racks or having an under floor luggage compartment. This service is on a first come, first served basis. As of 2003, half of the NJ Transit bus fleet was considered “bicycle friendly.” Further, bicycles can be accommodated on all NJ Transit buses from Atlantic City to areas south; however, due to ADA requirements and the lack of low level platforms on the Atlantic City Rail line, only collapsible bicycles are permitted on that line.

7. Impediments to Pedestrian and Bicycle Travel

To facilitate pedestrian and bicycle travel, the built environment must encourage and facilitate walking and cycling by ensuring that these users are taken into consideration during planning and design. Some common obstacles to pedestrian travel include: inadequate pedestrian facilities and signal clearance time, high-speed traffic, high-volume traffic, sidewalk gaps or obstructions, inadequate lighting, lack of pedestrian advocacy groups, little consideration of pedestrians by drivers, and land use patterns that discourage pedestrian usage. Challenges for bicycle travel include: lack of pavement width for shared roadways, pavement with debris or cracks, rumble strips and roadway reflectors, utility covers and drainage grates, lack of consideration from motor vehicles, lack of bicycle parking facilities at activity centers, barriers or restrictions to traveling on bus or rail with bicycles, and safety issues in areas with many driveways.

Freight

The Southern New Jersey Freight Transportation and Economic Development Assessment report (SNJFTEDA), published in 2010, identified freight and goods movement as critical to the economic stability and vitality of the region, suggesting the following strategic and targeted improvements:

- Enhancing the region’s access to key national and international transportation corridors and facilities by providing multimodal connections between freight-related businesses and transportation infrastructure.
- Developing readily available and affordable land adjacent to interstate trucking routes to support warehousing and distribution
- Utilizing the region’s available, affordable, and skilled labor pool
- Promoting key industries derived from the region’s natural resources, including agriculture and seafood production and processing, glass production, and sand/aggregate
- Taking advantage of the region’s access to some of the largest consumer markets and population centers in the nation
- Streamlining the regulatory process to remove impediments to the growth of freight and logistics industries
- Implementing an overall “One Region – One Port” strategy through strategic investments in critical needs. Southern New Jersey can best contribute to attaining this goal by focusing on its strengths, resources, and assets in ways that complement regional facilities in Philadelphia and northern New Jersey.
The same report indicated that the overwhelming majority of freight moves to, from, and within the region and state by truck. While the overall amount of truck traffic in the SJTPO region is modest, it is forecast to grow. Trucks are also the dominant mode of transport in the intermodal freight business: truck to rail, truck to ship, and truck to air.

However, rising diesel and gasoline prices as well as increasing interest in reducing greenhouse gas emissions have prompted greater consideration of alternative freight modes. While rail may be a viable alternate mode (Figure 3); nonetheless, the report identified several gaps in the region’s rail infrastructure that must be addressed first. Currently, short line railroad operators in the region link area industry and businesses to the Class I railroad system; this is done through the Conrail network which provides access primarily to Norfolk Southern (NS) and CSX railroads. The rail infrastructure is in a poor state of repair, unable to support standard interstate rail capacity and speeds, resulting in slow speeds and frequent derailments. Investing in improvements to the rail infrastructure would greatly increase rail freight capacity.

Maritime freight transport is of particular interest to Atlantic and Cape May counties; especially as the latter is the fourth largest fishing port in the nation. The market for seafood products originating at this fishing port is both national and international. The sector is currently constrained by limited truck routes and the narrow width of the Middle Thorofare at Ocean Drive that restricts vessel size. Adding truck capacity and wider maritime navigation channels could assist the growth of the fishing industry.

Intermodal connections should be improved in the SJTPO region to facilitate the movement of goods through the region. Improving connections between truck, rail, and maritime traffic would allow goods produced in the region to have greater access to state and national markets.

1. Key Freight Issues Summary

In 2004, county representatives of SJTPO’s Technical Advisory Committee (TAC) met to discuss issues related to the movement of freight in the region; many of the issues and concerns they raised were also reflected in the 2010 SNJFTEDA report. The following list emerged:

- Beyond I-295 and the Turnpike, freeway capacity is limited and the region’s locational advantages dissipate rapidly. The time-cost of travel to available and affordable inland properties renders them ineffective for supply chain expansion.
- Double-stacked container freight on rail is increasing in an effort to accommodate the significant rise in the amount of freight that must be moved. Because of height restrictions, however, it cannot travel in southern New Jersey.
- Direct rail connections between North and South Jersey are limited and slow and the movement of goods by heavy rail is limited by 286,000 pound (286k) railcar capacity restrictions. This limits access of construction aggregates to large markets to the north, hampering the region’s cost competitiveness and renders many potential customers and markets for South Jersey’s high quality aggregates inaccessible.
• The Delair Bridge is a major chokepoint for freight entering from Pennsylvania. An engineering analysis is needed to determine the modifications necessary to correct this problem.

• All major freight corridors in the SJTPO region should be analyzed to identify any other chokepoints (e.g., Hunter Street Bridge in Woodbury) that preclude double-stacked containers.

• Significant trucking activity is causing capacity problems at many intersection and corridors across the region. Turning radii in the Route 322 and 40 corridors (especially during the summer) and are very hard on pavement surfaces. This is also true to a lesser extent in the Route 30 corridor (Egg Harbor is a chokepoint). Freight movement in Atlantic City is not a major problem since the casinos have established their own distribution centers off island; however, trucks bringing products in compete with tour buses and have difficulty navigating the city streets because of their size. Unlike the buses, trucks do not have designated routes in the city.

• Maintenance of rail facilities is crucial. Once rail freight capacity is lost, it cannot be easily regained.

• Freight movement in the SJTPO region is inherently disadvantaged and inefficient, because of its peninsular shape. Rather than accommodating through-travel, freight routes operate as one-way spur movements, moving into and out of the region and often traveling empty on the reverse leg.

• Existing horizontal and vertical clearances of the navigation channel of Middle Thoroughfare at Ocean Drive (CR 621) in Cape May restrict the movement of fishing vessels and hamper operations and cost-efficiencies of fishery operations.

• The Port of Salem offers limited facilities and poor highway access; existing rail is virtually unusable.

• For a full assessment of freight issues, refer to the Southern New Jersey Freight Transportation and Economic Development Assessment report (SNJFTEDA) available at the Freight Planning section of the NJDOT website: www.nj.gov/transportation/freight/plan/initiatives.shtm
Figure 3. Rail Lines including Freight and Passenger Lines.
Public Transportation

This section examines transit services in the SJTPO region (Figure 4). It includes an examination of regional transit services including passenger rail, bus, and ferry services, ridesharing and specialized transit.

1. Regional Transit Services Overview

Although transit service is available in every county of the SJTPO region, most of this service is within Atlantic County and focused within Atlantic City in particular. The tens of thousands of commuters and tourists that work and visit the city on a daily basis provide the demand that is necessary for successful transit operations. The demand for access to Atlantic City is forecast to continue growing and in recognition of the limits of highway development and the desirability of more sustainable options, the 2009 Atlantic City Regional Transportation Plan (ACRTP), developed by the Casino Reinvestment Development Authority (CRDA), highlights the need for a regional multimodal center. The regional multimodal center would be located at the Atlantic City Airport but would act as the point where auto and air travelers convert to transit travelers. The center is planned to include substantial parking to encourage visitors to park and then take bus services into Atlantic City. The project is planned to be completed in 2023.

Relatively low population densities outside the Atlantic City area mean that transit service in the rest of the region is sparse because of lower demand and therefore higher costs.

2. Passenger Rail Service

Atlantic City Line

NJ Transit offers commuter rail services between 30th Street Station in Philadelphia to the Atlantic City Rail Terminal seven days a week on its Atlantic City Line (ACL). The ACL includes stops in Philadelphia (30th Street), Cherry Hill, Lindenwold, Atco, Hammonton, Egg Harbor, Absecon, and Atlantic City.

3. Passenger Bus Service

Local and Intrastate Bus Service

NJ Transit provides a variety of local bus routes within the SJTPO region, as indicated in Table 3, below.

In addition to NJ Transit’s local bus service, other operators also provide local bus service. In Atlantic City, mobility is fostered by the Atlantic City Jitneys, providing service along four primary routes. The service is operated 24 hours a day, 365 days a year. Additional shuttle bus services are also operated in the region. Tropiano Transportation, a private carrier, offers shuttle bus service from the Atlantic City International Airport to casinos within Atlantic City. Shoreline Express Tours runs a non-casino hotel and motel shuttle.
Table 3. NJ Transit Local Bus Service Routes. Source: NJ Transit.

<table>
<thead>
<tr>
<th>Route number</th>
<th>Routes</th>
</tr>
</thead>
<tbody>
<tr>
<td>468*</td>
<td>Penns Grove – Woodstown</td>
</tr>
<tr>
<td>501</td>
<td>Atlantic City – Brigantine Beach</td>
</tr>
<tr>
<td>502</td>
<td>Atlantic City – Hamilton Township</td>
</tr>
<tr>
<td>504</td>
<td>Bungalow Park – Ventnor Plaza</td>
</tr>
<tr>
<td>505</td>
<td>Atlantic City – Longport</td>
</tr>
<tr>
<td>507</td>
<td>Atlantic City – Ocean City</td>
</tr>
<tr>
<td>508</td>
<td>Atlantic City – Hamilton Mall</td>
</tr>
<tr>
<td>509</td>
<td>Atlantic City – Somers Point</td>
</tr>
<tr>
<td>552</td>
<td>Atlantic City – Cape May</td>
</tr>
<tr>
<td>553</td>
<td>Atlantic City – Upper Deerfield</td>
</tr>
<tr>
<td>554</td>
<td>Atlantic City – Lindenwold</td>
</tr>
<tr>
<td>559</td>
<td>Atlantic City – Lakewood</td>
</tr>
</tbody>
</table>

Note: *Operated by Salem County Transit under contract with NJ Transit Corporation.

The 2009 Atlantic City Regional Transportation Plan (ACRTP) includes the addition of a city transit hub designed to improve connections between rail services and casinos. Planned for completion in 2017, this new hub would facilitate easier mobility from outside Atlantic City to the waterfront tourist areas for both visitors and workers employed by the casinos and other tourism-oriented businesses. The ACRTP further identified two potential bus rapid transit (BRT) routes to facilitate commutes from neighboring municipalities. These routes would improve access for commuters who work in the tourism-oriented shore regions: the first BRT line is planned to run between Atlantic City and Egg Harbor Township; and the second, between Egg Harbor Township and Mays Landing. The ACRTP forecasts the first line to be implemented by 2014, while the second would be completed in 2018.

The Delaware River and Bay Authority (DRBA) also provides bus shuttles from the Cape May Ferry Terminal to the Cape May Bus Terminal. All shuttle bus service is scheduled to coincide with the arrival and departure of the ferry. According to the DRBA website, two continuously looping shuttles operate in Delaware: one between Lewes and the ferry terminal; the other among the Delaware Transit Corporation (DART) Park & Ride lot, the Tanger Outlets, Rehoboth Beach and the ferry terminal. The Cape May shuttle continuously loops between downtown Cape May and the ferry terminal. The shuttle operates with weekend service only from May to mid-June and October. During the summer tourist season it operates daily. More information is available from the DRBA’s website at www.cmlf.com or from their information and reservation office at 1-800-64-FERRY.

Lion Trailways provides bus shuttle services in the city of Cape May called Cape Area Transit (CAT) Shuttle System. This service operates on Fridays and weekends in the late spring and early fall, while service is provided seven days a week during the summer.
**Interstate Commuter Bus Service**

In addition to operating commuter rail service on the Atlantic City Line, NJ Transit provides interstate commuter bus services in the region, linking the SJTPO region to cities such as Wilmington, Philadelphia and New York City. Table 4 lists interstate bus services operating in the SJTPO region and the average number of weekday passenger trips.

**Table 4. NJ Transit Interstate Commuter Bus Routes. Source: NJ Transit.**

<table>
<thead>
<tr>
<th>Route number</th>
<th>Routes</th>
</tr>
</thead>
<tbody>
<tr>
<td>313</td>
<td>Philadelphia – Wildwood – Cape May via Route 47</td>
</tr>
<tr>
<td>315</td>
<td>Philadelphia – Wildwood – Cape May via Black Horse Pike</td>
</tr>
<tr>
<td>316</td>
<td>Philadelphia – Wildwood – Cape May Express</td>
</tr>
<tr>
<td>319</td>
<td>New York – Atlantic City – Wildwood – Cape May</td>
</tr>
<tr>
<td>401</td>
<td>Philadelphia – Salem</td>
</tr>
<tr>
<td>402, 410, 412</td>
<td>Philadelphia – Woodbury</td>
</tr>
<tr>
<td>408</td>
<td>Philadelphia – Millville</td>
</tr>
<tr>
<td>410</td>
<td>Philadelphia – Bridgeton</td>
</tr>
<tr>
<td>551</td>
<td>Philadelphia – Atlantic City</td>
</tr>
</tbody>
</table>

Note: *Operated by Salem County Transit under contract with NJ Transit Corporation.

**Casino Bus**

In 2011, Atlantic City was visited by more than 25 million people; about 13 percent of whom, or more than 3.3 million, arrived by bus.¹ This high number of visitors arriving by transit reduces thousands of auto trips in the city each day, improving the overall operating characteristics of the region’s and Atlantic City’s roadway system and reducing the environmental impacts of automobile traffic.

The South Jersey Transportation Authority (SJTA) actively supports programs to facilitate the casino bus operations. The SJTA oversees a bus management program to regulate all casino related bus activities in Atlantic County, including bus intercept, bus parking, bus maintenance, site capacities, traffic management, computerized and electronic permits or medallion validation, routes of travel, discharge and loading of passengers, bus operations and activities, enforcement, and maintenance of a daily bus manifest. The SJTA operates several casino bus parking facilities, providing services to help promote the ongoing use of transit vehicles to bring at least a quarter of all visitors to Atlantic City.

The environmental benefit of these visitors arriving by bus versus private automobile is significant. The SJTPO supports the SJTA’s efforts to promote, manage and enhance private bus operations within Atlantic City.

**4. The Five-Mile Beach Electric Railway Company**

The Five-Mile Beach Electric Railway Company (run by the Great American Trolley Co.) operates a trackless boardwalk tram, trackless trolleys, and "community-based services" in Cape May County. Service is provided via the Cape May Loop, Ocean City Loop, Wildwood Crest Loop, and the Rio Grande, Wildwood and North Wildwood routes. Service is provided on some routes year round, however, some

¹ Atlantic City Tourism Sales Barometer (1/10/2012), www.atlanticcitynj.com/about/stats.aspx
trips are only made once or twice a day. The Wildwood/Rio Grande/Cape May Court House service has a summer and winter schedule, and during the summer only, the service to Wildwood Crest/North Wildwood operates seven days a week with many trips per day. A complete listing of the routes and schedules can be found at www.gatrolley.com.

5. Ferry Services
Cape May has a bi-state ferry service that offers a 17-mile, 80-minute cruise across the Delaware Bay from Lewes, Delaware, to Cape May on a daily basis throughout the year. The Cape May-Lewes Ferry, owned and operated by the DRBA, provides the service via a fleet of five vehicles. This service runs 365 days a year and accommodates pedestrians, bicyclists, and autos. For more information, visit the website at www.cmlf.com. The DRBA operates a “three fort ferry crossing” linking Fort DuPont in Delaware City, Delaware, to Fort Delaware on Pea Patch Island to Fort Mott.

6. Park-n-Ride Facilities
There are a number of park-and-ride facilities in the SJTPO region, both state-owned and joint-use facilities. Table 5 provides a description of the official park-and-rides available in the SJTPO region.

<table>
<thead>
<tr>
<th>County</th>
<th>Location</th>
<th>Town</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atlantic</td>
<td>Atlantic City Expressway, Intercept lot</td>
<td>Pleasantville City</td>
</tr>
<tr>
<td>Atlantic</td>
<td>Atlantic City Bus Terminal</td>
<td>Atlantic City</td>
</tr>
<tr>
<td>Atlantic</td>
<td>Atlantic City Service Area, Garden State Parkway</td>
<td>Galloway Township</td>
</tr>
<tr>
<td>Cape May</td>
<td>Interchange 25, Garden State Parkway</td>
<td>Upper Township</td>
</tr>
<tr>
<td>Cape May</td>
<td>Ocean View Service Area</td>
<td>Dennis Township</td>
</tr>
</tbody>
</table>


7. Ridesharing/Alternative Commuter Services
There are no county-based Transportation Management Associations (TMA) in Atlantic, Cape May, Cumberland or Salem counties. TMAs are non-profit member corporations that coordinate local commuter transportation services, including, but not limited to, public transportation, vanpools, carpools, bicycling, and pedestrian modes, as well as trip reduction strategies such as alternative work schedules and telecommuting; and provide other similar services for New Jersey businesses, employees, developers, individuals and other groups. However, because there is some demand for ridesharing, NJDOT has provided the Cross County Transportation Management Association (CCTMA) funding to provide rideshare matching in southern New Jersey. The CCTMA is available to assist any resident, business or local government agency in southern New Jersey with their rideshare or other transportation needs. The CCTMA, which operates primarily in Camden and Burlington Counties, keeps potential carpool participants on file for possible matching.
Figure 4. Selected Public Transportation Routes in the SJTPO Region.
8. Human Service Transportation

Numerous Human Service Transportation Programs are administered or operated by various state, county and local agencies and organizations. At the state level, two services are provided: Access Link, which is a state-administered demand-responsive transportation service for the disabled; and Medicaid transportation (LogistiCare), which provides Medicaid recipients with transportation to medical services. County governments in the region operate specialized county-wide transportation for populations who are transit dependent (at present, Salem County’s service, operated by the County Office on Aging, is limited to seniors, veterans and disabled) and various county agencies provide transportation for their clients. Non-profit agencies such as Easter Seals, the Puerto Rican Action Committee and Pearl Transit of Salem County provide transportation services to their clients at the local, county or regional level.

There is an insufficient level of coordination of services among providers within each of the counties. Agencies tend to operate their own transportation program independently, serving only clients who meet specific eligibility requirements (for example, senior citizens, the disabled, low-income persons). The Federal “United We Ride” initiative was created to address the need to coordinate human service transportation in order to reduce costs and increase the quality, efficiency and expansion of services. In the most recent response to this initiative, SJTPO completed the 2010 Human Service Transportation Plan Update (HSTP) for its four counties. Furthermore, SJTPO is assisting Atlantic and Cumberland counties in developing specific strategic plans for implementing the 2010 HSTP recommendations.

The 2010 HSTP includes an inventory of existing services and providers, identifying service needs and gaps, and recommending improvements to correct needs and deficiencies. Most importantly, it proposes various options for achieving service coordination at the county and regional level. Government and private agency applications for various FTA grant programs (for example, JARC, New Freedom, 5310) that fund human service transportation systems operations must be compatible with the identified needs and recommendations of the HSTP; SJTPO reviews and ranks these applications based on the 2010 HSTP Update.

Within each SJTPO County, the 2010 HSTP recommends four coordination alternatives for organizing human service transportation to reduce service duplication:

- Create a coordinating committee between some or all of the current service providers
- Consolidate transportation service functions into one or more agencies (partial consolidation)
- Consolidate all human service transportation service functions into a single agency (full consolidation)
- Create a broker system which would be a framework for the purchase and delivery of transportation services

Specific HSTP recommendations for each county are detailed below.
**Atlantic County**

- For the county-run transportation system, provided by the Atlantic County Transportation Unit-(ACTU): create a new transit service on major north-south corridors in the county and add additional vehicles to ACTU’s weekday service to expand service capacity
- Implement a shuttle service between Pleasantville and the marina casinos (proposed by SJTA).

**Cape May County**

- For the county-run transportation system, Fare Free Transportation: expand service to weekday evenings and weekends, expand weekday service coverage to each of the county’s municipalities since not all municipalities are served daily, and increase frequency of weekday service to each community
- Create a new demand-responsive feeder service to facilitate the work commute between Woodbine and Atlantic City
- Consider non-traditional options for providing service to the county’s transit dependent populations, such as the use of cab companies with wheelchair-accessible vehicles to serve the disabled.

**Salem County**

- Restore the Salem County Interagency Council’s JARC-funded services which was suspended in 2010 due to loss of local matching funds
- If the Council’s service is restored, expand it to serve the third shift at several companies in the county (within the Gateway Business Park, for example) and to serve the county’s school-to-work trips.
- Address and promote coordination opportunities with the State to incorporate Medicaid and Access Link trips into the proposed County consolidated transportation system.

**Cumberland County**

- For the county-run transportation system, CATS: expand service to weekday evenings and weekends, and add an additional vehicle to CATS’ weekday demand responsive service to provide additional service
- Create a fixed route shuttle to link to downtown Millville from the Millville Industrial Park
- Maintain the current Landis Avenue Express by identifying new funding sources to support continuation of service.

The 2010 Human Service Transportation Plans for the four counties can be accessed on the SJTPO website at www.sjtpo.org/Publications.html. The HSTP implementation plans for the Cumberland and Atlantic counties will be available on the SJTPO website when they are completed in January 2013.
Highway System

1. Introduction
This section presents a review of highway travel and needs in the SJTPO region. The section begins with an overview of the highway system that describes some of the unique characteristics and principal highway facilities in the region (Figure 5). A conditions assessment follows, derived from data from NJDOT’s management systems (Congestion, Bridge, and Pavement), as well as a safety assessment, which draws upon data from the NJDOT, the South Jersey Traffic Safety Alliance, and references the SJTPO Safety Management System. The analysis concludes with a summary of highway needs and problem assessment. This assessment uses a variety of data sources to establish highway travel performance for both the baseline (2010) and future (2040). This process makes use of the South Jersey Travel Demand Model as an analysis tool, and the model scenarios are driven by the SJTPO demographic projections.

2. Regional Highway System Overview

Atlantic County
Home to world famous beaches and the center of the gaming industry on the East Coast, Atlantic County receives a significant amount of traffic on its toll, state, and county roadways (Figure 6). Two limited access roadways play a major role in traffic movement in Atlantic County. The Garden State Parkway, which has four lanes in this area, runs north-south and provides beach and Atlantic City access from North Jersey and New York. The Atlantic City Expressway is also primarily a four lane highway, providing similar access from western New Jersey and Pennsylvania. These two roadways also provide access to AC International Airport, which serves passenger demand along with cargo and New Jersey Air National Guard functions.

The 2009 Atlantic City Regional Transportation Plan (ACRTP) includes plans to widen the Garden State Parkway to accommodate current and future growth as this is a heavily used corridor. Similarly, the ACRTP planned for the addition of a third lane to the Atlantic City Expressway, westbound between Interchange 7 (Garden State Parkway) and Interchange 31 (Atlantic City); this would relieve congestion going westbound, as the attendant eastbound segment of the Atlantic City Expressway already has three lanes. The lane expansion project, undertaken by the SJTA, began in May 2011 and is scheduled for completion in July 2012.

Parallel to the Garden State Parkway, US 9 provides alternate north-south access to the shore communities of Margate, Atlantic City and Brigantine. In the center of the county, NJ 50, which becomes CR 563 north of US 30, provides north-south movement through Mays Landing and Egg Harbor City, as well as access to the Atlantic City Expressway, US 322, US 40, and US 30. In the western portion of the county, NJ 54 passes through Buena and Hammonton, and provides similar highway connections before connecting to US 206 and Burlington County.
US 322 and US 30 run parallel to the Atlantic City Expressway and provide alternate movement from western New Jersey and Pennsylvania to Atlantic City and the shore communities, passing through Hammonton at the western edge of the county. US 40 continues east from the Delaware Memorial Bridge through Buena in the southwest corner of the county until it merges with US 322 near Atlantic City.

The Atlantic City-Brigantine Connector opened to the public in 2001. The 2.3 mile connector is a limited access roadway linking the Atlantic City Expressway with U.S. Route 30 and Atlantic City’s Marina District and Brigantine City. The project includes a covered tunnel section as it passes though the city’s Westside section.

Cape May County
Because of its recreational and tourist attractions, Cape May County encounters significant seasonal recreational travel. The major traffic movement in Cape May County is north-south travel along the Garden State Parkway and US 9 (Figure 7). The Garden State Parkway is a four-lane divided limited access highway that services the shore communities such as Ocean City, Sea Isle City, Avalon, Stone Harbor, Wildwood, and Cape May. US 9 runs parallel to the Garden State Parkway and serves as an alternate north-south route in different sections of the county. These two roadways serve both inter- and intra-county travel. NJ 47 provides north-south access from areas such as Cumberland and Salem Counties to the western Cape May County shore. At its southernmost end, it turns east to carry motorists directly into Wildwood, one of the county’s busiest towns.

The majority of east-west traffic travels along a series of county roads which connect Ocean Drive and the seaside communities to the Garden State Parkway and US 9. West of US 9 and the Garden State Parkway, several county roads connect US 9 to NJ 47. Coupled with NJ 83, which also runs west from US 9, and CR 550 from US 9 to Woodbine, a limited network is formed across the county.

The current termination of the NJ 55 expressway in Cumberland County complicates travel to and from Cape May County from points west. This condition contributes to congestion along the supplementary routes used to complete movements from the terminus of Route 55 to the shore, which are forced to serve conflicting local access with this regional mobility need.

Cumberland County
A four-lane limited access freeway, NJ 55, allows north-south travel in Cumberland County, passing through Millville and Vineland, the largest cities in Cumberland County (Figure 8). The NJ 55 expressway terminates at NJ 47, south of Millville. NJ 47 runs mostly parallel to NJ 55 as a two to four lane principal arterial until the two run coincident and then split into NJ 47 and NJ 347. From there, NJ 47 continues into Cape May County, providing access to the shore communities. NJ 77 continues south from Salem County to Bridgeton in Cumberland County. Smaller county roads such as 555, which runs through Millville and Vineland, and 553, which runs through Bridgeton, also service north-south traffic.
Figure 5. Overview of Roadways.
Figure 6. Major Roadways, Atlantic County.
East-west travel in Cumberland County is serviced by NJ 49, a two to four lane minor arterial that connects eastern New Jersey with the Delaware Memorial Bridge via Cumberland County.

**Salem County**
In Salem County, the Delaware Memorial Bridge provides a major regional connection between New Jersey and Delaware. Several major highways provide access to this bridge, including I-295, the New Jersey Turnpike, and US 130 from the north, US 40 from the east, and NJ 49 from the southeast (Figure 9). US 40 is a two-lane principal arterial that stretches from the vicinity of the Delaware Memorial Bridge to Atlantic City. US 130 provides access to and from the bridge to Gloucester County and areas to the north such as Camden and Mercer County.

**Roadway Ownership**
Total linear roadway mileage in the SJTPO region is over 5,100 miles. State ownership includes 397 miles owned by NJDOT, 94 by the independent authorities and commissions, and 45 miles by various other State agencies. Almost all of the balance, nearly 4,600 miles, is owned by various counties and local governments.

3. **Electronic Tolls**
Significant congestion occurs at many of toll New Jersey’s collection facilities in both AM and PM peak travel hours and during many holidays and weekends. Electronic toll collection is designed to reduce traffic congestion and improve air quality and traveler convenience by mitigating bottlenecks that occur at toll booths and plazas.

The E-ZPass electronics toll system is in wide use in the eastern United States, including each state between Maine and West Virginia, and also includes facilities in Indiana and Illinois. The E-ZPass electronic toll collection is operational on all of New Jersey toll roadways (Garden State Parkway, New Jersey Turnpike, and Atlantic City Expressway). In the SJTPO region, the Atlantic City Expressway (ACE) offers a discount to frequent patrons who sign up for the E-Z Pass Frequent User Plan.

4. **Safety Strategies**
The SJTPO incorporates safety considerations into the planning process through two primary venues: the Road Safety Audit Program, and the South Jersey Traffic Safety Alliance.

**Road Safety Audit Program**
SJTPO advances safety in the South Jersey region by needs identification, project development, project selection and programming, as reflected in SJTPO’s Road Safety Audit Program. SJTPO annually conducts Road Safety Audits (RSAs) to generate improvement recommendations for roadway segments or intersections demonstrating a history of, or potential for, a high incidence of motor vehicle crashes.
Figure 7. Major Roadways, Cape May County.
Figure 8. Major Roadways, Cumberland County.

Legend:
- Garden St Pkwy
- NJ Turnpike
- I-295
- AC Expressway
- CR 500-Level
- CR 600-Level
- US Highway
- NJ Highway
- All other roads

Source: New Jersey Department of Transportation, April 2021. Reproduced April 2021 by A.J. Conley, SITPO.
An RSA is a proactive approach to improving transportation safety and it can be performed during any stage of a project. In an RSA, an existing or future roadway is examined by independent qualified experts who report on the safety issues. SJTPO’s RSA program responds to the Federal Highway Administration’s call for New Jersey’s MPOs to advance low-cost, quick turnaround safety improvements. For larger scale improvements, an audit can be the basis for a Problem Statement and eventual Study and Development or TIP entry. The RSA program is a key element in achieving a reduction in fatalities and injuries on the highway system in our region, which aligns with the current SAFETEA-LU legislation and the Highway Safety Improvement Program flexibility for safety initiatives.

In the SJTPO region, conducting RSAs on existing roads is the primary approach to implementing safety improvements in a timely fashion. Site selection for the audit location is both qualitative and quantitative, drawing on local knowledge and incorporating historic crash data. The procedure for selecting the sites for the audits is outlined below.

**Site Nomination:** This process is primarily qualitative, relying on recommendations from county engineers, planners and SJTPO staff, based on their knowledge and experience. These officials are asked to consider the potential for the safety impacts that could be realized by low-cost, quick turnaround measures. SJTPO then screens the nominated sites for suitability in terms of geographic compactness, local support, local control and available planning funds.

The process also has a quantitative component in which sites are reviewed and ranked on crash history (a high number of total crashes, crash clusters, and a high number of crashes per mile). Crash totals and rates for these sites are obtained using Plan4Safety, a crash analysis tool developed by Rutgers University for NJDOT.

**Crash Data Analysis:** SJTPO also identifies RSA candidates through an extensive crash data analysis. This investigation uses a “top down” approach looking at three years of crash data covering all roads in the SJTPO region, isolating those roads with the highest crash per mile history. These sites are also verified to contain the qualities of a suitable selection listed above (local control, etc.).

In addition to the RSA Program, SJTPO has partnered with Rutgers Transportation Safety Resource Center (TSRC) and Salem County to take a systemic approach to utilizing FHWA Highway Safety Improvement Program funding. The typical approach to identifying locations for safety improvements is a *hot spot* approach where a location is selected because of a high instance of crashes. In contrast, in a *systemic* approach, locations are targeted for improvements when they share similar geometric characteristics even though they may not have a history of crashes. With the release of the *Highway Safety Manual (HSM)* in 2011, SJTPO has begun incorporating the predictive methods outlined in the publication in the evaluation of safety countermeasure selection. The *HSM* allows agencies to integrate safety into their decision-making process by quantifying safety alongside other transportation performance measures such as traffic operations and environmental impacts. Using crash predictive methods along with a calculation of economic benefit ensures monies are spent in the most effective
means possible. SJTPO will also incorporate HSM methodologies into other stages of the project development process.

In all SJTPO’s safety efforts, consistency with Federal and State initiatives is essential. In 2005, the FHWA created a Focused Approach to Safety (updated in 2011) with the purpose of addressing the most critical safety needs for each state; New Jersey is a Focus Approach state for pedestrians and intersections. To compliment the FHWA focus areas for New Jersey, the State’s Comprehensive Strategic Highway Safety Plan (CSHSP) identifies emphasis areas with supporting strategies and actions. Three of the eight areas directly align with SJTPO’s safety program and can benefit from low-cost safety improvements, including minimizing roadway departure crashes, improving design and operation of intersections, and reducing pedestrian, bicycle, rail, and vehicular conflicts.

_South Jersey Traffic Safety Alliance (SJTSA)_

Working with the New Jersey Division of Highway Traffic Safety, SJTPO spearheaded the creation of the South Jersey Traffic Safety Alliance in 1998. Based on its record of regional cooperation, the SJTPO Policy Board supported forming a similar four-county organization to help SJTPO carry out federally-funded regional planning and project development in the region, as well as develop regionwide traffic safety programs, train traffic safety professionals and educate motorists about the dangers of driving, in an effort to reduce motor vehicle collisions, injuries and fatalities.

Since 1998, the SJTSA has helped SJTPO select locations for sidewalks, acquire speed trailers, and identify specific problem locations for the Regional Transportation Plan. In a reciprocal relationship, SJTPO has acted on behalf of the SJTSA by making connections with members of the county planning departments, county engineers, and the NJDOT, to address specific safety concerns identified by SJTSA members.

The SJTSA is headed by an Executive Board made up of twelve members, three from each county and it is in charge of policy and direction of the SJTSA. The SJTSA is a unique traffic safety organization with the goal of creating an alliance with traffic safety professionals from law enforcement, community education, fire, rescue, engineering and planning.

Motor vehicle fatalities in the SJTPO/SJTSA region account for nearly 20% of all motor vehicle fatalities in the State of New Jersey. Distracted driving, including cell phone use, speeding and impaired driving contribute to over 50% of the regions fatal crashes. Lack of seatbelt use is an additional factor.

The SJTPO and SJTSA conduct an annual regionwide seatbelt observational survey. Survey findings show that general public seatbelt use is over 90%; whereas seatbelt use for teens is only 85%; for seniors, only 76%; and for commercial vehicle drivers it is 75%. The SJTSA will continue to make education and instruction for these users a priority, with the goal of increasing seatbelt use.

The FY2012 seatbelt survey will also gather information on backseat belt use and child restraint use for children under 18. National studies indicate that backseat belt use is between 50% and 75% and
booster seat use for children 5 to 8 years old is less than 50%. The SJTSA will continue to educate motorists on the importance of buckling up in the backseat and promote booster seat use.

5. Management Systems
A significant source of data that is available to evaluate conditions in the SJTPO region is the management system data. Information from available management systems were obtained and utilized in the development of the RTP, including information from NJDOT’s Bridge Management System, Pavement Management System, and Congestion Management System, and the SJTPO Congestion Management Process. Data derived from the Safety Management System was also utilized.

The information presented in this section refers to state highways in the SJTPO region. Similar information will soon be available to SJTPO for its county and select municipal roads. Presently, SJTPO is implementing an Asset Management System (AMS) throughout its region. The system implementation process and final product will provide inventory and condition information for pavements as well as other select road assets. A description of the SJTPO AMS process and product follows at the end of this section.

Bridge Management System
NJDOT employs a Bridge Management System (BMS) to maintain an inventory of all bridges with a span over 20 feet in New Jersey with information on their physical characteristics, condition, and ownership. Bridges are inspected periodically and the various characteristics are rated on numerical scale. The scale ranges from 0 to 9, with 0 representing a failed condition and 9 representing an excellent condition. A bridge can be defined as Structural Deficient, Functionally Obsolete, or both. A bridge is deemed Structural Deficient if its deck, superstructure, substructure or culvert are 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 may 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 is posted to indicate these limitations.

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

The overall rating given to each bridge is called the sufficiency rating which indicates a bridge’s ability to remain in service. The rating may range from 100 which represents a bridge meeting state-of-the-art standards, to 0 which represents a bridge in need of immediate repair or replacement. The physical condition of the structure is monitored by NJDOT at a minimum of once every two years to ensure that each bridge can safely carry vehicles at the posted truck load.
The primary use of the sufficiency rating is to allocate federal funds to address bridge needs. A structure is eligible for federal funds if its sufficiency rating is less than 80 and is designated as *Structurally Deficient* or *Functionally Obsolete*. If the sufficiency rating is between 50 and 80, the federal funds are applied for rehabilitation purposes only, while a sufficiency rating of less than 50 allows federal funds to be used for rehabilitation and replacement.

Data sets for two years, 2008 and 2012, are included in Table 6. The trend line indicates some improvement in the overall state of the region’s bridges during this period, with the percentage of NJDOT owned *Structurally Deficient* or *Functionally Obsolete* bridges decreasing from 28.1% of the total in 2008 to 21.25% in 2012.

This is a significant finding as it indicates that the region has made significant progress in addressing bridge needs over the four year period covered by the data. This finding is in accordance with the overall progress that NJDOT has made in increasing the percentage of its bridges that are neither structurally deficient nor functionally obsolete from 2008 to 2011.

Table 6. Bridge Ratings in the SJTPO Region.

<table>
<thead>
<tr>
<th>Bridge Status</th>
<th>2008</th>
<th>2012</th>
<th>Change, 2008-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>% of Total</td>
<td>Count</td>
</tr>
<tr>
<td>Neither</td>
<td>383</td>
<td>71.9</td>
<td>378</td>
</tr>
<tr>
<td>Structurally deficient</td>
<td>78</td>
<td>14.6</td>
<td>48</td>
</tr>
<tr>
<td>Functionally obsolete</td>
<td>72</td>
<td>13.5</td>
<td>54</td>
</tr>
<tr>
<td>Total</td>
<td>533</td>
<td>100.0</td>
<td>480</td>
</tr>
</tbody>
</table>


**Pavement Management System**

NJDOT maintains a database with information on the current condition of pavement throughout the state of New Jersey, which is updated every two years. The most recent 2011 database was used for this report and comparison to data for 2008 to 2010 are also included, as shown in Table 7, Figure 10 and Figure 11. A detailed description of the Pavement Management System and the criteria behind the rankings is given below.

The process of pavement system condition analysis begins with collection of pavement condition data. Complete data are collected for all NJDOT maintained roadways throughout the State of New Jersey and are in the Pavement Management System (PMS) databases. Analysis is then performed to generate condition indices and to assess condition status.

**Pavement Condition Data**

All data with the exception of frictional skid data are collected on an annual basis using a high speed profiler van. Skid data are collected on an as-needed basis using a specially calibrated skid trailer. All data for network inventory purposes are collected in the rightmost lane in each direction of travel. Data are processed and recorded in tenth mile reporting intervals.
• **Roughness Data:** International Roughness Index (IRI) is collected using lasers to measure the deviations of the pavement surface from a perfectly flat condition. A dynamic computer model of vehicle suspension is then used to predict vehicle occupant response to the imposed road profile. IRI is generated in inches per mile, with a larger IRI representing a rougher road surface. IRI is collected and recorded for the left and right wheel paths and an average of the two is also calculated.

• **Rut Data:** Ruts (depressions in the pavement surface primarily in the wheel paths) are measured in inches using a laser line scan applied to images of the transverse road profile for the collection lane. Average rut is calculated as the average for each wheel path over the tenth mile reporting interval. Also calculated is the maximum rut for the left and right wheel path using a moving average of approximately 15 feet.

• **Surface Distress Data:** Surface distress assessments are based on windshield surveys done by a rater in the high speed profiler van. The rater uses a computer keyboard with each key representing a specific type of distress and a specific severity level. The computer software records the road locations when a particular key is toggled on and off. It then calculates the portion of the tenth mile reporting interval (represented as a percent of the tenth mile length) that the particular distress and severity were present.

• **Frictional Skid Resistance Data:** Skid numbers are measured in accordance with the ASTM E-274 method of testing using a wet condition wheel lockup. Measured numbers at various test speeds are normalized to equivalent skid resistance at 40 miles per hour called SN40R.

**Pavement Condition Indices**

• **International Roughness Index (IRI):** The IRI average of both wheel paths measured in inches per mile and reported on a tenth mile interval as described above is used for analysis purposes.

• **Surface Distress Index (SDI):** The SDI is an index measured on a 0 – 5 scale which indicates the sum total of distresses observed in each tenth mile reporting interval and also accounts for the types, severities and extents of distresses like cracking, rutting, patching, shoulder deterioration and drop-off, concrete faulting, and concrete joint deterioration (an SDI = 5 is a perfect pavement with no distresses).

To determine pavement condition status, IRI and SDI are combined using the following criteria:

• **Deficient (Poor):** IRI > 170 OR SDI ≤ 2.4

• **Fair:** Combinations between the Deficient and Good categories

• **Good:** IRI < 95 AND SDI ≥ 3.5

To summarize the overall pavement network status, the PMS database is queried for each of the conditions above and the corresponding lane miles of each tenth mile segment are allocated to the appropriate category. The sums of the lane miles in each category are used to calculate percentages of the total network lane miles.
Analysis results of the NJDOT maintained pavements under the SJTPO jurisdiction is shown below for the 2011 data collection cycle. Table 7, below, summarizes the pavement condition data. In the SJTPO region, 46% the total DOT-maintained system lane-miles were reported in *Fair or Poor* condition in 2011, and more than 54% are ranked "Deficient". When compared to previous years (Table 7), there has been a steady increase since 2008 in "Deficient" SJTPO pavements, and a steady decrease in pavements ranked “fair.”

Table 7. Current Status of State Maintained SJTPO Pavements (Based on NJDOT 2011 Roughness & Distress Data).

<table>
<thead>
<tr>
<th>Condition</th>
<th>Road Miles (2 Directions)</th>
<th>Lane Miles (2 Directions)</th>
<th>% of Total System Lane Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Deficient</td>
<td>424.4</td>
<td>541.4</td>
<td>54%</td>
</tr>
<tr>
<td>Total Fair</td>
<td>267.8</td>
<td>315.3</td>
<td>31%</td>
</tr>
<tr>
<td>Total Good</td>
<td>93.0</td>
<td>146.9</td>
<td>15%</td>
</tr>
<tr>
<td>Total SJTPO Pavements</td>
<td>785.2</td>
<td>1003.6</td>
<td>100%</td>
</tr>
</tbody>
</table>

A multi-year comparison of the SJTPO pavement system is shown in Figure 11. The data indicates a concern, as the trend is moving to a worse state of repair of the area’s pavement conditions. If pavement conditions continue to deteriorate, the impact due to user cost will rise and comfort and capacity will degrade. The identification of the need for more funding to support pavement rehabilitation projects in the SJTPO region will be recommended in the Regional Transportation Plan.

Figure 10. Pavement Conditions.
The SJTPO Asset Management System

SJTPO is presently implementing an Asset Management System (AMS) throughout its region. This process will produce many benefits, the most important of which will be a more systematic project prioritization process. This decision support system allows engineers and other users to maximize the cost-effectiveness of system expenditures.

**Scope:** The SJTPO AMS will encompass 1,747 county and municipal roads. The system implementation involves collecting inventory and condition data on roadways, signs, signpost, and guardrails. In Cape May County manhole cover information will be included.

**Database:** The product that results will provide improved network visualization. The software will dynamically link the GIS-based pavement and other data, mapping capabilities, and road asset images.

**Analysis and Reporting Components:** The AMS software provides a variety of analysis and reporting tools to summarize road assets and their condition. As the system is implemented, a road asset inventory is developed; this documentation can serve as a record that the assets existed at the time of the inventory date. The road asset condition is also evaluated and a score is provided for pavements. This score is
reflected as a locally-developed Pavement Condition Index (PCI) that incorporates multiple road condition attributes.

The AMS is also a flexible tool for budgeting and estimating the cost of pavement improvement. An important feature is the locally-developed Repair Decision Tree. This feature allows for the input of projected response (repair types) for certain pavement conditions, and to incorporate their cost estimates for various repairs.

Given these inputs, the system can:

- Project pavement conditions under different budget and strategy scenarios
- Estimate funds needed to reach a particular condition goal.

The SJTPO AMS will be instrumental in future regional transportation planning and programming.