

# 7

## TRANSPORTATION, LAND USE, & THE ENVIRONMENT

**T**ransportation, land use, and the environment are inextricably linked. Even the most basic transportation feature—a naturally worn footpath—affects land use and the environment.

The NJTPA considers many factors when deciding how to invest transportation funds. How well the investment supports smart growth and environmental goals are two critical considerations. This chapter outlines the relationship between land use and transportation and provides guidance on how the region can best manage these factors to grow wisely over the life of Plan 2035. The chapter also contains information on the NJTPA’s efforts to address greenhouse gas emissions and to promote environmental mitigation activities in its planning efforts.



*Transit-oriented development can encourage ridership and help combat sprawl.  
Bradley Beach, Monmouth County.*

## Reversing Sprawl

In the NJTPA region, decades of low-density residential and commercial development, mainly on previously undeveloped land, have had significant impacts on the transportation system. Supported by a variety of government policies, the low density development in suburban areas has allowed large numbers of citizens to own homes and fostered an auto-oriented lifestyle often seen as part of fulfilling the American Dream for families. Yet as low-density settlement patterns and segregated land uses have taken over greater expanses of the landscape, their costs have become all too apparent. Such “sprawl” development generates greater dependency on the automobile, subjecting many roads and bridges to far more traffic than they were designed to handle. At the same time, sprawl settlement patterns leave too few people per square mile to support cost-effective public transit services and make it more expensive to provide homes with power, sewer, water and other public utilities.

Sprawl also has drastic impacts on the environment. Sprawl increases the number and distance of automobile trips, eroding the region’s air quality and adding to the release of carbon dioxide, a greenhouse gas that contributes to global warming. Sprawl development consumes large portions of the region’s landscape, converting agricultural land and woodlands into low-density development while negatively affecting water quality and wildlife habitat.

Reversing the trend towards increasing sprawl was one reason the New Jersey Legislature in 1985 enacted the State Planning Act, which led to the creation of a State Development and Redevelopment Plan. This “State Plan” went through updates in subsequent years and became a guide for smart growth investment strategies pursued by the NJTPA and other agencies.

Smart growth principles outlined in the State Plan encourage development in designated centers with existing infrastructure. In keeping with this smart growth approach, the NJTPA supports compact development in areas already served by transportation infrastructure, including redevelopment of urban areas. Compact development and redevelopment reduces development pressure on rural and exurban land and helps preserve



*Long-standing development patterns in the region have led to heavy reliance on the automobile. Route 10, Morris County.*

open space and protect the environment. It also creates more walkable, transit-friendly communities, helping improve the efficiency of the transportation system. Among the transportation benefits:

- Reducing the overall number trips of auto to help relieve region-wide congestion;
- Reducing the length of trips to remove a large number of trips from highways that now can be made locally;
- Increasing accessibility to a greater number of destinations in less travel time for residents;
- Providing centralized pick-up and drop-off locations for buses that boost ridership levels and make possible frequent, cost-effective services;
- Providing the population density needed to support expanded rail service.

Beyond these transportation impacts, there are more far-reaching effects of smart growth:

*Energy Efficiency* - Smart growth reduces reliance on fossil-based fuels. Not only are fewer autos burning gasoline, but walkable communities lend themselves to more energy-efficient buildings. Mixed-use buildings are generally more energy efficient, because shared walls are better insulators than exposed walls.

*Healthier living* - Living in walkable and bike-able communities is also healthier than living in a car-dependent neighborhood. In New Jersey, more than 20 percent of

adults and 16 percent of children are obese, reflecting a “nationwide obesity epidemic,” according to the Centers for Disease Control. Physical activity is key to a healthy lifestyle, and smart growth planning principles can encourage walking and cycling for local trips instead of traveling by automobile. Planners measure a neighborhood’s “walkability” in terms of how far a resident must walk between destinations. A 5 to 10-minute walk, or a quarter to half-mile, is considered the standard for how far a person will normally walk to get to transit or run an errand. Programs that support smart growth, like the Urban Hub Tax Credit, use a half-mile radius around a center to determine eligibility. A 2006 study published in the *Journal of the American Planning Association* found that a “modest 5 percent increase in neighborhood walkability was associated with a 32.1 percent increase per week in physically active travel (and) approximately a one-quarter point lower BMI (about 1.5 pounds).” There is also evidence that a reduction in vehicle miles traveled leads to a corresponding decrease in harmful air pollution.

*Improved Social Capital* - A new and growing field of study into social capital—the relationships and bonds between people in a community—tells us that walkable, compact development enhances connections between residents and their communities, as reflected by surveys on civic engagement. It is estimated that every 10 minutes of commuting reduces social capital by 10 percent. That means those with long commutes interact less with their neighbors and are less likely to join community groups or local teams.

*Reducing Greenhouse Gas Emissions* - Smart growth strategies for reducing auto dependence can also cut greenhouse gas emissions. In 2007, the Intergovernmental Panel on Climate Change declared that “Most of the observed increase in global average temperatures since the mid-20th century is very likely due to observed increase in anthropogenic GHG concentrations.” New Jersey has been a leader in taking steps to reduce greenhouse gases. In 2007, the Legislature passed the Global Warming Response Act, which sets targets for greenhouse gas reduction in the state. Transportation-related sources make up the largest portion of New Jersey’s greenhouse gas emissions and are growing. In order to reduce these emissions, the region’s dependence on automobile use—specifically single occupancy vehicles—must be reduced through changes in land use policy, as well as improvements in technology and expansion of non-auto travel options.

Recognizing these benefits, increasing numbers of residents, elected officials and planners are coming to embrace

smart growth policies. This increase in support follows a number of developments in recent years:

- Emergence of new and better data on the causes of climate change;
- Increased realization of the importance of wetlands and open space;
- Greater awareness of the geopolitical ramifications of oil consumption after the run-up in prices in 2008;
- Deeper knowledge of the health and social effects of a motorized lifestyle;
- Market acceptance of compact communities with urban lifestyles

Progress on smart growth is being made in northern New Jersey. For example, in the last five years two of the region’s urban areas have expanded their light rail service with great success. And more and more communities are developing smart growth agendas, Complete Streets ordinances, and sustainability plans.

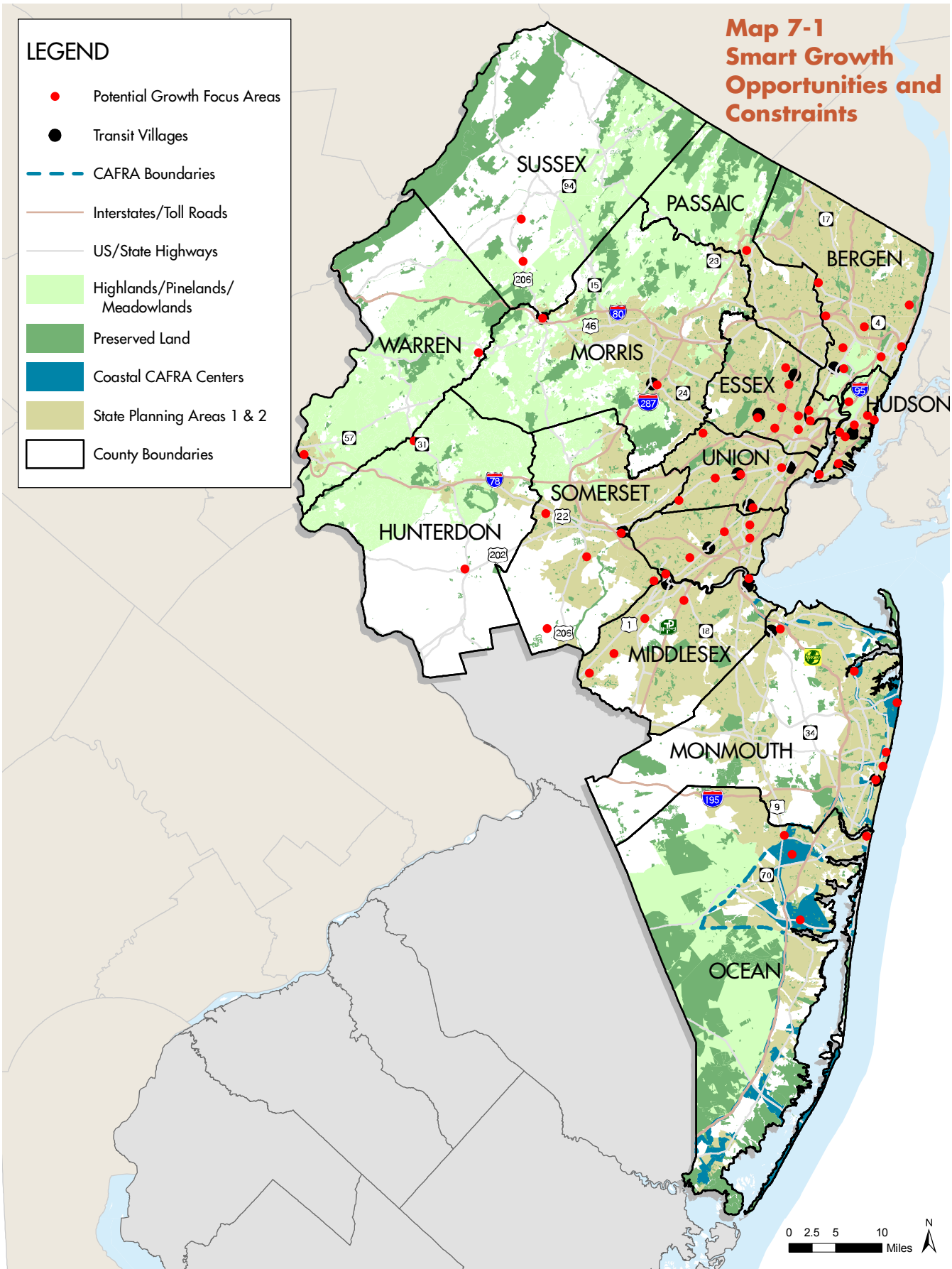


*Plan 2035 encourages sustainable transportation approaches such as alternate fuels and higher-efficiency vehicles.*

# Map 7-1 Smart Growth Opportunities and Constraints

**LEGEND**

- Potential Growth Focus Areas
- Transit Villages
- CAFRA Boundaries
- Interstates/Toll Roads
- US/State Highways
- Highlands/Pinlands/  
Meadowlands
- Preserved Land
- Coastal CAFRA Centers
- State Planning Areas 1 & 2
- County Boundaries



## NJTPA Land Use & Environmental Strategies

Environmental stewardship is central to the transportation planning process. Federal and state regulations (discussed later in this chapter) require careful assessment and mitigation of the potential negative environmental impacts of transportation improvements. Wherever possible, the NJTPA seeks to avoid negative impacts—and the need to mitigate them—through the application of smart growth planning principles in transportation investment decisions. The following sections discuss some key approaches Plan 2035 will pursue to encourage smart growth land use, attend to environmental and climate needs and promote a sustainable transportation system. Map 7-1 shows smart growth opportunities and constraints.

### Place-Based Planning

Transportation infrastructure is an especially important determinant of how places develop. From the interstate highways of the 1950s to the new light rail lines of recent years, development and redevelopment has followed transportation. To help identify investments that will both support appropriate development and address mobility needs, the NJTPA uses a system of “place types.”

The region’s 384 municipalities (and, in some cases, parts of municipalities), were assigned place types, creating 397 “places” in the region for the purpose of identifying needs (see Map 7-2). This approach helps the NJTPA consider the varying needs of different sorts of communities when making investment decisions. For example, a new highway off-ramp in a rural area would have the potential to change the character of the area by encouraging sprawl development. The same type of investment in a place identified as “Metropolitan with Industry” could encourage continued industrial growth or redevelopment while diverting heavy truck traffic from local roads.

### Linking Investment With Smart Growth

The NJTPA is positioned to support smart growth and transit-oriented development through its funding decision making process. NJTPA’s project prioritization criteria, which are used to score and rank proposed projects for possible funding, take into account direct land use and environmental issues such as the redevelopment of brownfields, the protection of special environmental districts, reduction of noise pollution, and the improvement of air quality. The criteria consider the effect projects may have in reducing automobile use, such as increasing ac-

## Complete Streets

The National Complete Streets Coalition is a group dedicated to advancing the concept that streets do not only belong to automobiles. The group advocates inclusive roadway design that is accessible to all users, including cyclists and pedestrians of all mobility levels. The Coalition’s belief is that the streets belong to everyone, not just the people who are able to or choose to use an automobile. For the millions of Americans who cannot drive—including children, the elderly, and the disabled—complete streets offer transportation independence. Complete Streets can have a wide range of effects in a variety of ways. For instance, walkable communities lend themselves to extensive use of shade trees, which also play an important role in reducing the effects of climate change.

They also offer cleaner air, increased social capital, congestion relief, reduced dependency on imported oil, and many other social, economic, health, and environmental benefits. Many of North Jersey’s roads are notoriously dangerous for pedestrians. Incomplete and poorly maintained sidewalks, too many curb cuts, along with wide and poorly controlled crossings reduce the opportunity to walk safely for even short distances. Building complete streets is a part of NJDOT’s greenhouse gas reduction plan, and the NJTPA supports the use of these methods and other pedestrian-friendly projects through its planning and project prioritization criteria.



cess to rail stations and segregating bike and pedestrian facilities from auto traffic.

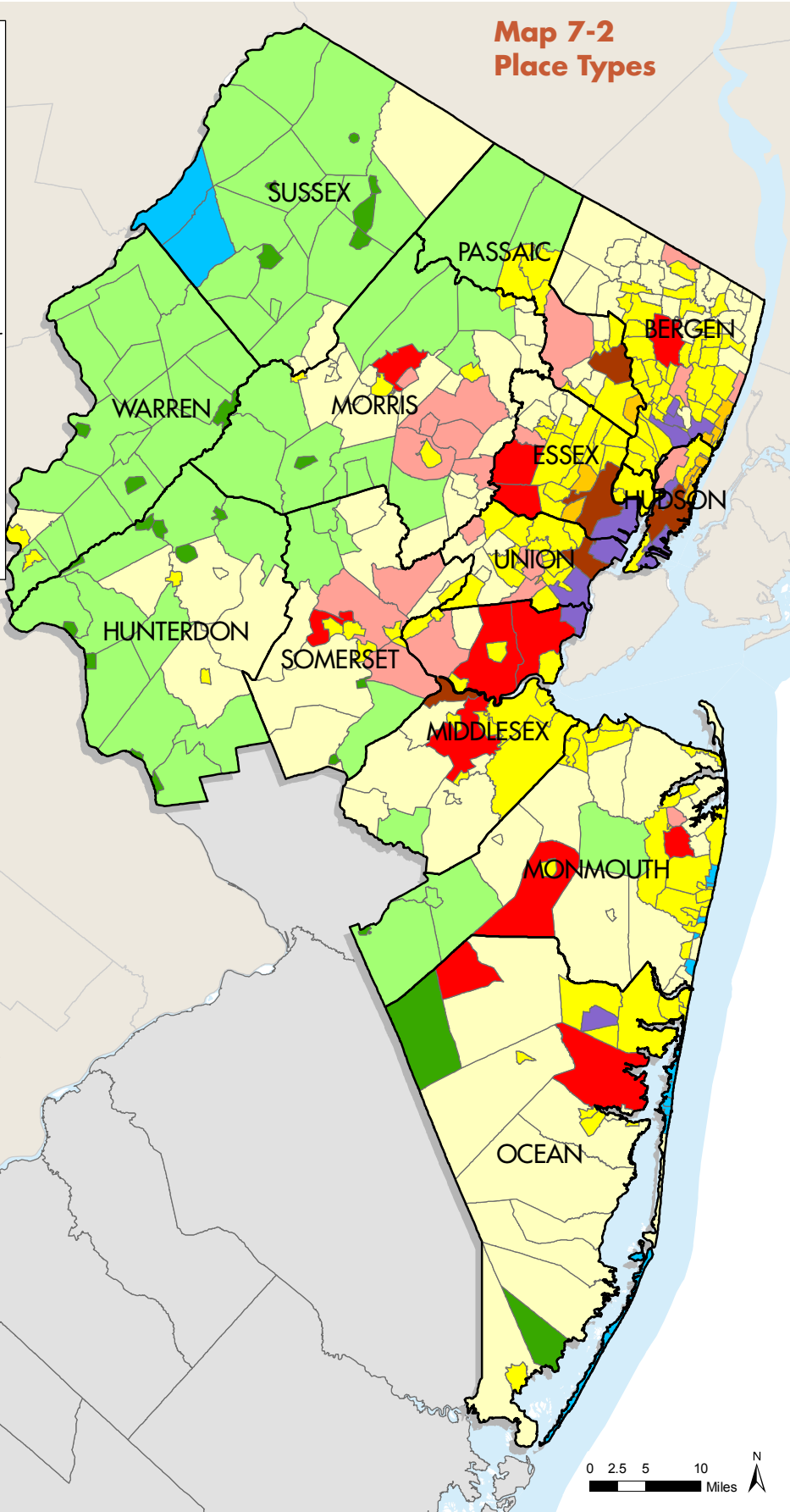
The next 25 years will undoubtedly see changes in land use regionwide. In addition, advances in technology, such as the potential widespread adoption of electric cars, promise to create new options for transportation systems. NJTPA will work to improve current criteria as well as develop new criteria to respond to new technologies and development patterns. Future re-examination of the NJTPA’s criteria would include consideration of various issues related to smart growth, including agriculture, open space preservation and conservation.

**Map 7-2  
Place Types**

**LEGEND**

PLACE TYPES

- Urban Center
- Urban Area
- Mature Metropolitan
- Metropolitan with Industry
- Metropolitan with Office
- Metropolitan/w Shopping Center
- Suburb
- Vacation Area
- Rural Town
- Rural Area
- County Boundaries



### *Transit-Oriented Development*

Mixed-use development around rail stations and other public transportation hubs is called transit-oriented development, or TOD. TOD creates compact mixed-use communities adjacent to transit infrastructure with the goal of increasing transit use and reducing automobile commuting trips. There are more than 100 commuter rails stations in the region, as well as dozens of major bus facilities, PATH, and light rail stations. Many of these could potentially serve as locations for future transit-oriented development.

In New Jersey, the state's Transit Village program supports these efforts. Acceptance into this program makes a municipality eligible for state funding and technical assistance, and gives it access to grant programs from NJDOT. There are 19 designated Transit Villages in New Jersey, 15 of them within the NJTPA region.

The NJTPA supports transit-oriented development and the state's Transit Village program as part of the overall effort to increase transit accessibility, and to guide infrastructure investment where it is appropriate and can have the greatest effect.

### *Goods Movement and Brownfields Redevelopment*

Trends in the goods movement industry also have had serious impacts on land use in the region. As discussed in Chapter 6, Plan 2035 continues NJTPA's efforts to encourage freight-related development on brownfield and other under-utilized sites close to the port, rather than on distant, undeveloped properties. The New Jersey Economic Development Authority and the Port Authority have identified 17 sites as part of the current "Portfields" program. Most are located in Essex, Hudson, and Union counties, where former industrial uses have left many sites contaminated, and where warehouse and port-related employment is in demand. Working with the State and the Port Authority, the NJTPA will continue to identify transportation investments and policies to encourage eventual redevelopment of these sites for freight-related uses. The redevelopment of these brownfield sites fulfills smart growth goals by encouraging industrial development in the region's urban core, bringing valuable jobs to residents, and limiting the growth of truck travel on the regional transportation network by keeping freight activity close to the port.

Port operations and related commercial activity cause several environmental impacts, some related to their location in riparian areas and wetlands. An ongoing challenge is to promote goods movement while preserving wetland and water quality. The Port Authority has been very active



*Union, Union County*

### **Land Use in Plan 2035's Scenario Modeling**

The scenario modeling conducted in the development of Plan 2035 (discussed in greater detail in Chapter 5) shows that land use decisions do affect the performance of the transportation system. In each scenario, the region's total population remained the same, but development patterns—along with varying investments in transportation—affected how well people were able to get from place to place.

The Baseline Scenario assumes that current demographic trends in the region will continue, with no new changes in land use to focus residential and job development near transit stations and in urban and regional centers. Even under this scenario, the region is expected to see a greater increase in transit use rather than auto use, largely due to extensive transit investment and existing smart growth trends.

The Plan 2035 Scenario assumes the region will develop improved land use policies and incentives to focus more of the region's growth around existing or planned transit stations and stops, while increasing mixed-use development. Policies and indicators used to develop the scenario included the Urban Hub Tax Credit program, State Plan designations, Transit Village designations, Urban Enterprise Zone designations, local plans, redevelopment zoning and input from the workshops conducted for Plan 2035 (see Chapter 2).

The Aspirational Scenario assumes an even greater concentration of development and redevelopment. It includes more mixed-use centers in urban core areas, centers along transit lines and some in smaller cities and towns. While the total regional growth remained the same in this scenario, county-level projections did not. These growth patterns help fuel further increases in transit ridership and a significant growth in walking and biking as more of the population would live and work in mixed-use centers that cluster housing and jobs closer together. Under this scenario, transit use would increase significantly, as would the number of walking and biking trips in the region.

in addressing the environmental impact of port operations, including seeking emissions reductions for all sources (vessels, cargo handling equipment, harbor craft, rail, and trucks). The NJTPA also supports continuing efforts to pursue measures that will adapt freight facilities to be more environmentally friendly by using clean engine technology, noise reduction measures, architectural improvements, and road and rail network improvements.

### *Special Planning Regions*

The NJTPA region is home to three special environmental districts, natural areas that are crucial to the lives of New Jersey residents and are managed outside of the usual municipal process. Plan 2035 foresees continued coordinated transportation planning with all three districts:

#### *The Highlands*

The Highlands Water Protection and Planning Act (The Highlands Act) was enacted in 2004 for the purposes of protecting the source of drinking water for over 5 million New Jerseyans and preserving an area of diverse natural and historic resources. The Highlands Act created a regional council charged with adopting a regional master plan for this 860,000-acre area, which is home to 88 municipalities in seven counties. The regional master plan calls for future growth to take place in designated centers or, in certain areas, as clustered development. The NJTPA supports the efforts of the Highlands Council to protect the area's natural resources and future land use goals.

Providing transportation improvements for designated centers in the Highlands while acting within the spirit and regulations of the Highlands Act presents an ongoing challenge to the NJTPA. While the Highlands plan would slow sprawl in the area, growth is expected to continue. Plan 2035 projects annual population growth of up to 1.6 percent and annual employment growth of up to 2.8 percent through 2035.

Certain types of transportation investment can best encourage development in designated areas in the Highlands. These include efforts to expand transit, ride sharing and non-motorized travel, while presenting options to reduce vehicle miles traveled. This smart growth approach would accommodate the region's growth potential while protecting the environment, reducing infrastructure costs, and maximizing transportation system efficiency.

#### *The Pinelands*

In 1978 the Pinelands region was designated as a National Reserve. It was recognized as a United Nations International Biosphere Reserve in 1983. (Other U.N. International Biosphere Reserves in the United States are the Adirondack-Champlain Biosphere Reserve, The Everglades, Sequoia National Park, and Yellowstone National Park.) The Pinelands rests on top of one of the largest and cleanest sources of drinking water in the United States, the Kirkwood-Cohansey Aquifer. The aquifer is estimated to hold 17.7 trillion gallons, enough to supply the United States with water for six months. Development limitations in the Pinelands are intended to protect the land's recharge capacity, as well as rare plants and animals. Much of the Pinelands area falls outside the NJTPA region, but it does include portions of Ocean County. Any transportation projects designated for that part of Ocean County must be



*Special planning regions such as the Meadowlands provide planning challenges and opportunities. Lyndhurst, Bergen County.*



in accordance with the Comprehensive Management Plan for the area, as overseen by the New Jersey Pinelands Commission.

### *The Meadowlands*

The Meadowlands region also has its own planning agency, the New Jersey Meadowlands Commission. However, unlike the largely untouched ecosystems in the Highlands and Pinelands, the vast majority of the ecosystems in the Meadowlands have been heavily exploited—used as grazing land, a timber resource, and more recently as a landfill. Through its history, there have been numerous attempts to drain and fill it, and often those attempts failed leaving behind environmental damage.

The Meadowlands historically has played a key role in transportation in the region. Crossing the area used to be an exercise in frustration, with travelers facing deep mud, floods and swarms of mosquitoes. After the opening of the Holland Tunnel in 1927, but before the 1932 construction of the Pulaski Skyway, the 13-mile trip from Jersey City to Newark across the Meadowlands took two and a half hours by car over a bumpy wooden plank roadway.

The Meadowlands is unique among the special regions because of its location. The Hackensack Meadowlands Reclamation and Development Act (1969) cites the “strategic location in the heart of a vast metropolitan area with urgent needs for more space for industrial, commercial, residential, and public recreational and other uses.” The Act seeks to simultaneously protect the natural and unique resources of the area while promoting large scale economic development. Plan 2035 supports the mission of balancing these objectives in all special planning regions.

### *Transportation and Climate Change*

Research has documented worldwide changes in climate. In the U.S., data generally show that spring is arriving earlier, summers are growing hotter, and winters are becoming warmer and less snowy. These changes reflect global warming, exacerbated by heat-trapping emissions from human activities, including transportation. Projections indicate that if the current trends in emissions continue, New Jersey will experience deteriorating air quality, high ozone levels, increasing temperatures, more winter precipitation (though less snow), rising summer temperatures, more droughts and rising sea levels. Analysis sug-

gests that by 2070, summers in New Jersey could feel like those now experienced in coastal South Carolina and Georgia.

Climate change poses potential threats to the region’s physical landscape, built environment, and socio-economic conditions. These include poor air quality, more high ozone days, higher sea levels, more frequent extremes in temperature and precipitation and more frequent incidents of flooding and drought. In turn, these conditions might negatively affect the health of the region’s residents—as well as the economy and environment—for generations to come.

These effects of climate change directly pose a very real threat to transportation systems. In addition to diminished air quality, the region faces the very real possibility of flooded roads, rail lines, tunnels, bridges, port facilities, airports, and other low-lying infrastructure. Several major facilities in low-lying areas are especially vulnerable to flooding, including the Lincoln Tunnel, the Holland Tunnel, the PATH system, the Hudson Bergen Light Rail, the MTT project, Newark Liberty International Airport, and port facilities in Newark and Elizabeth. In addition to coastal flooding, inland flooding is a concern—the Delaware River basin has experienced six major floods in the last ten years. All of these extreme events would create human health and safety hazards, disrupt passenger travel and goods movement, and cause economic losses.

Plan 2035 calls for addressing climate change and its threats in two ways—mitigation and adaptation. Mitigation involves reducing emissions of greenhouse gases, while adaptation involves planning to cope with the challenges that climate change will bring.

Mitigation is critical because transportation generates a significant portion of greenhouse gases. Reductions will come from changing technology and changing human behavior, such as by reducing the vehicle miles traveled in the region and using alternate fuels, energy sources and modes of travel. In terms of adaptation, there is a need to minimize the damage and dangers resulting from rising sea levels, severe storms, flooding, intense heat, drought and diminished air quality and to ensure that infrastructure can handle these threats.

Both of these responses—mitigation and adaptation—require an extensive range of policy and planning responses, such as:

- Considering the impacts of climate change in land use, zoning, development and infrastructure planning and investment decisions;



### Gen-Set locomotives at Port Elizabeth

The NJTPA has partnered with the PANYNJ and Conrail/CSX/NS Railroads to acquire two “green” locomotives for use – one by Norfolk Southern, and one by CSX – in the Port Elizabeth/Port Newark area. These new switch yard locomotives utilize what is known as Gen-Set technology, which are switcher diesel locomotives that are far cleaner than conventional uncontrolled or Tier 0 diesel locomotives and even cleaner than Tier 2 diesel locomotives. The project will enable railroad yard operations to use equipment that meets EPA Tier 4 emissions standards, making them compliant with EPA standards through 2018. These new locomotives will reduce fuel use and greenhouse gas emissions by 25 percent, reduce ozone precursors (NO<sub>x</sub> and volatile organic compounds) by 86 percent, reduce particulate emissions by 74 percent and lower maintenance and fuel costs as compared to the locomotives being replaced. This purchase is actually part of a larger acquisition that includes three additional locomotives being acquired through a partnership of NJDEP, PSE&G, and Conrail/CSX/NS.

The \$3 million project was funded in part with Congestion Management Air Quality (CMAQ) funds. The Gen-Set locomotives will help achieve PANY&NJ, NJTPA, State and National goals to reduce emissions, lower energy consumption, improve air quality and reduce noise. It will also expedite the conversion of locomotives that meet current regulatory standards to an emission standard not required for existing switching locomotives nor envisioned under the new locomotive rule. The result would be a major reduction in the emission of criteria pollutants – contributing to the improved health and quality of life within Northern New Jersey.

- Identifying long-term goals, policies and strategies to reduce greenhouse gas emissions;
- Increasing public awareness about climate change and garnering public support for policy and planning actions;
- Developing the tools and data needed to make the right planning and investment decisions;
- Identifying high-risk locations and facilities and conducting vulnerability assessments;
- Enhancing infrastructure design, construction and maintenance standards;
- Improving emergency response, evacuation and disaster recovery planning;

The NJTPA has brought this critical issue to the forefront in its development of Plan 2035. Following the fall 2009 roundtable on climate change (see Chapter 2), the NJTPA initiated its Climate Working Group. The group serves as a forum for concerned stakeholders to identify, support and coordinate efforts to reduce greenhouse gas emissions and to prepare the transportation system for the impacts of climate change. The Regional Capital Investment Strategy found at the back of this plan has been modified to reference climate change. The investment principle “Help The Region Grow Wisely” now specifically references New Jersey’s Climate Change plan. The related investment guideline now reads as follows:

Make investments that support the targets of the Global Warming Response Act of 2007, addressing New Jersey’s greenhouse gas reduction goals and related NJ State Plan recommendations. Coordinate such investments at state, regional and local levels.

As part of its efforts to implement Plan 2035 and address climate change, the NJTPA will, in 2010, develop a greenhouse gas inventory for the region to determine a baseline for future reduction goals and strategies, as well as the identification of key emission sources.

Another key initiative to reduce emissions of greenhouse gases and pollutants in the region is the NJTPA’s work in the area of Transportation Clean Air Measures. In 2007, the NJTPA identified strategies that could significantly reduce pollutants (including greenhouse gases) from mobile sources. A multi-agency working group is forging new partnerships and together implementing action plans throughout the region to make these measures a reality.

In implementing Plan 2035, the NJTPA will put a



*The NJTPA's extensive coastal areas have unique transportation and environmental needs. Shark River Inlet, Monmouth County.*

modifications and expansions of key roads and bridges leading to and from the Jersey Shore.

The NJTPA also encourages its member subregions to actively plan for evacuation. It provides funding for such studies through its Subregional Studies Program. Monmouth County recently finalized its study which can be used as a model for others to come during the implementation of Plan 2035. As discussed in the Safety and Security section in Chapter 6 (Implementation), the NJTPA also coordinates with NJ Office of Homeland Security and Preparedness on evacuation and other transportation security issues.

greater emphasis on reducing greenhouse gas emissions when making its transportation planning and regional investment decisions. In addition, there will be greater coordination with the state's energy and greenhouse gas reduction plans.

Finally, the NJTPA encourages its member subregions to pursue their own efforts to reduce greenhouse gas emissions, such as a study just underway in Monmouth County.

### **Coastal Evacuation Planning**

In a region with a densely developed coast, evacuation planning is critical. With climate change likely to exacerbate storms and coastal flooding, the need to plan for safe evacuation of low-lying areas is even greater. Evacuation plans for the region must meet the needs of all, including transit-dependent, elderly, disabled and low income residents. In addition, the region could be the destination for millions of transit dependent potential evacuees from New York City.

An important element of successful emergency evacuation planning and implementation is intergovernmental coordination. NJTPA coordinates with and draws upon the work of emergency management staff and agencies responsible for creating emergency evacuation plans to identify evacuation infrastructure needs. For instance, a recent report by the state Assembly Coastal New Jersey Evacuation Task Force identified the possible need for structural

### **Environmental Mitigation**

The NJTPA's decision-making process seeks to maintain strong transportation performance without degrading quality of life or the environment. However, some negative environmental impacts are unavoidable.

For example, a new rail project may ease the commute of thousands of people and reduce their greenhouse gas emissions across the region while increasing local noise pollution and encroaching on sensitive water resources or wildlife habitat. Natural assets like wetlands and riparian buffers provide irreplaceable environmental functions directly related to transportation investment, including the management of non-point source pollution and storm water. The NJTPA process ensures that potential negative consequences are discovered in the planning process, and their effects are controlled through the use of a variety of mitigation and adaptation strategies.

Implementation of these strategies can originate in a variety of ways. Federal agencies such as FHWA, FTA or the US Army Corps of Engineers may require that certain measures be taken or commitments made. For example, the Corps of Engineers may require creation of a certain number of acres of wetlands to compensate for wetlands lost during highway construction, in order to comply with the Clean Water Act. A citizens group may bring attention to a local noise issue caused by train horns or speeding trucks,

which might be addressed through Quiet Zone regulations or speed restrictions.

Environmental mitigations called for by Plan 2035 are to be developed in consultation with numerous federal, state and local agencies responsible for and interested in environmental stewardship. The specific types of environmental mitigation activities implemented are ultimately determined by the governing regulatory authority and are dependant upon the resource being impacted and the severity of that impact.

### *Regional Air Quality*

As required, the NJTPA regularly conducts an air quality conformity determination in conjunction with the long-range plan and Transportation Improvement Program development (Appendix G). The NJTPA will continue to ensure that its projects, programs, and plans conform to the New Jersey State Implementation Plan and lead to attainment and maintenance of the National Ambient Air Quality Standards. The NJTPA will also conduct research and implement measures intended to reduce mobile source emissions of one or more pollutants of concern including PM<sub>2.5</sub>, VOC, NO<sub>x</sub>, CO, and/or CO<sub>2</sub>.

Maintaining and improving air quality can be achieved through a variety of mitigation activities in the region. Many of these are encompassed by the plan's key elements—emphasis on smart growth, support for public transit, walking and biking, limiting the addition of new highway capacity, and support for a variety of Transportation Demand Management (TDM) and highway operational improvement initiatives. These approaches seek to

significantly curb the growth in vehicle miles traveled and reduce vehicular pollutant emissions.

### *Other Environmental Concerns*

Several other environmental considerations must be taken into account in the planning process. These key areas of concern are discussed in greater detail in Appendix F:

- Water Quality Management Planning Areas
- Freshwater Wetlands, Lakes, Rivers and Streams
- New Jersey Coastal Areas
- Designated “Green Acres” Areas
- Forested Areas
- Flood Hazard Areas
- Historic Districts and Sites
- Rare, Threatened and Endangered Species
- Soil Erosion and Sediment Control

### **Conclusion**

The relationship between land use, transportation, and the environment is incredibly complex. Plan 2035 formalizes the NJTPA's commitment to managing these relationships, simultaneously providing needed transportation for the region while effectively mitigating environmental impacts. Additionally, Plan 2035 strengthens the NJTPA's efforts to deal with and address the regional health, economic and environmental effects of the transportation network by focusing on approaches that emphasize smart growth, place-based planning, transit-oriented development, energy efficiency, greenhouse gas emissions reduction and climate change adaptation.