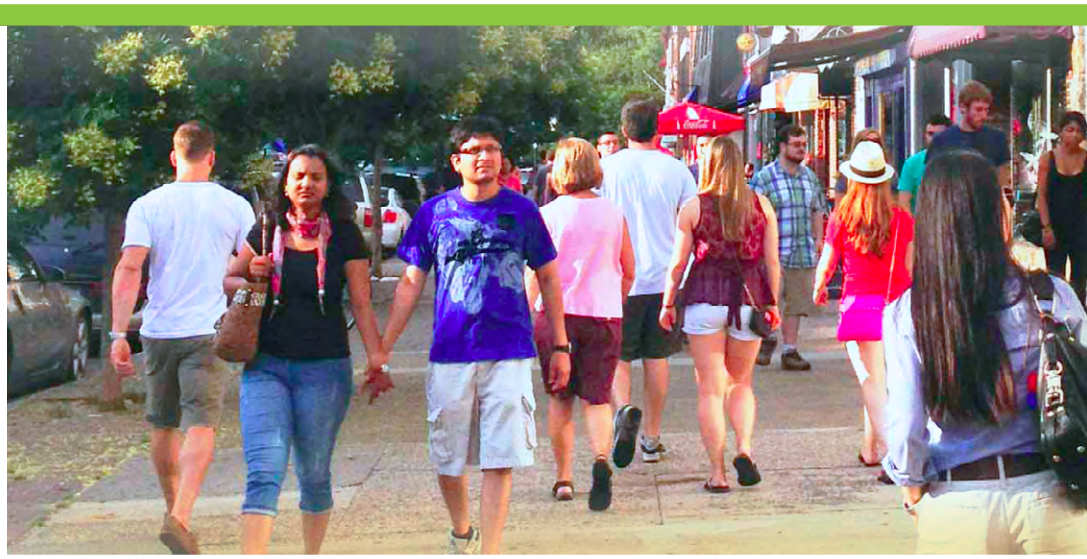
NEW JERSEY

BICYCLE & PEDESTRIAN MASTER PLAN.



November 2016

DEPARTMENT OF TRANSPORTATION
THE STATE OF NEW JERSEY

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Message from the Commissioner

The New Jersey Department of Transportation (NJDOT) is pleased to present the *New Jersey Bicycle & Pedestrian Master Plan.* NJDOT is committed to improving our quality of life by integrating bicycling and walking into the fabric of our transportation system. This master plan presents a vision, goals, and actions to do just that.

Our comprehensive transportation system is more than cars, trucks, buses, and trains. Walking and bicycling are smart transportation solutions that conserve energy, promote public health, protect the environment, provide access to public transit, contribute to our economies, and connect people across our communities. By investing in walking and bicycling, we are investing in clean and healthy transportation that is equitable for all New Jersey citizens.

The *New Jersey Bicycle & Pedestrian Master Plan* recognizes that the many decisions we face and actions to be accomplished in improving our pedestrian and bicycle transportation environment will take place in a dynamic setting and rely upon the diverse input of our citizens, transportation professionals, and government agencies. For that reason, this master plan is designed to bring people together through a series of annual summits, leverage their creativity and expertise, and foster the communication and collaboration that is necessary to achieve the master plan's goals.

NJDOT will continue working to improve pedestrian and bicycle transportation in communities throughout New Jersey. We value your input, perspective, and creativity, so please let us know if you have any ideas to share. You can reach us at BIKEPED@dot.nj.com.

Sincerely,

Richard T. Hammer
Commissioner, New Jersey Department of Transportation

In Memoriam

Jack M. Nata
1968 - 2016

Jack M. Nata worked for the City of Newark Department of Engineering for over 27 years, rising through its ranks to serve as the Manager of the Division of Traffic and Signals. As a well-known transportation leader in New Jersey and staunch advocate for improving safety, Mr. Nata recognized that meeting the needs of bicyclists and pedestrians was vital to improving the livability, economy, and equity of the city. Under his leadership, he helped the City of Newark advance numerous bicycle and pedestrian programs and projects.

This plan is dedicated to the memory of our friend and colleague, Jack Nata.

Acknowledgements

The project team would like to recognize and express appreciation to the numerous contributors and participants that took part in the development of the *New Jersey Bicycle & Pedestrian Master Plan.*

- Alan M. Voorhees Transportation Center, Rutgers University
- American Planning Association – NJ Chapter
- Bicycle Coalition of Greater Philadelphia
- Burlington County Government
- Camden County Government
- Circuit Trails Coalition Steering Committee
- Cooper's Ferry Partnership
- D&R Greenway Land Trust
- East Coast Greenway Alliance
- Lawrence Hopewell Trail Corporation
- New Jersey Bicycle & Pedestrian Advisory Council
- New Jersey Bike & Walk Coalition
- New Jersey Conservation Foundation
- New Jersey Police Traffic Officers Association
- New Jersey Society of Municipal Engineers
- New Jersey TransAction Conference & Expo
- NJ TRANSIT
- Pleasant Valley Civic Association
- Rails-to-Trails Conservancy
- Rutgers School of Public Health
- Sustainable Jersey
- Tri-State Transportation Campaign
- Contributors from New Jersey's eight Transportation Management Associations and three Municipal Planning Organizations
- ... and numerous individuals

Special thanks to the members of the **BPAC Executive Council** and attendees for their insight as a steering committee and to the **Alan M. Voorhees Transportation Center, Rutgers University** for their work to design and maintain the project website. Thanks also to the **New Jersey Bike & Walk Coalition** for their work in communicating the needs and progress of this project.

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Chapter 1

Purpose and Process

Walking and bicycling are healthy and economical modes of transportation that should be safe, secure, and convenient for all travelers. This chapter describes the purpose of the master plan, the policy and planning context, and the public input process. It ends with an overview of the many benefits of walking and bicycling.

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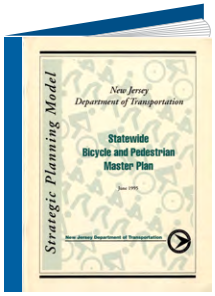
Introduction

Walking and bicycling are healthy, affordable, and environmentally-friendly modes of transportation that should be safe, secure, and convenient. For over 25 years, the New Jersey Department of Transportation (NJDOT) has been working to integrate walking and bicycling into the transportation system and has recognized the importance of nonmotorized modes as part of a comprehensive solution to the state's transportation needs.

NJDOT adopted its first *Statewide Bicycle and Pedestrian Master Plan* in 1995. This first plan provided a collective vision, policy, and actions for improving bicycling and walking environments throughout the state. Nine years later, NJDOT issued the *NJ Statewide Bicycle & Pedestrian Master Plan, Phase 2 (2004).* The *Phase 2 Plan* reiterated the vision and policy components of the *1995 Plan* and incorporated new analytical tools to better allocate resources for pedestrian and bicyclist improvements. The purpose of the *2016 New Jersey Bicycle & Pedestrian Master Plan* is to revisit and update the vision, goals, and implementation strategies to successfully advance bicycling and walking over the coming decade. The master plan is intended to be a living document and will require ongoing coordination among NJDOT, other state agencies, MPOs, counties, municipalities, nonprofits, consultants, developers, advocates, and the general public.

By working together, **we can** make New Jersey better for walking and bicycling.



1995

2004

2016

Plan Organization

This master plan is organized into the following chapters:

Chapter 1: *Purpose and Process* describes the purpose of the master plan, the public input process, and the benefits of walking and bicycling.

Chapter 2: Current Conditions and Needs provides a snapshot of current conditions and identifies key needs to be addressed by the master plan.

Chapter 3: Vision, Goals, and Strategies defines the critical framework and presents the vision, goals, and strategies to drive this master plan.

Chapter 4: Implementing the Master Plan identifies the entities responsible for initiating the strategies and achieving the goals. It also includes guidance on performance measures and identifies initial steps to advance the master plan.

The ***Appendix*** include an overview of funding sources and a description of related policies, plans, and programs.

New Jersey is well positioned for growth in walking and bicycling. It has the highest population density, the highest percentage of urban land, and the third highest percentage of commuters walking, bicycling, or taking public transit to work.

Context

Since the *NJ Statewide Bicycle & Pedestrian Master Plan, Phase 2 (2004)*, there have been significant changes in bicycle and pedestrian transportation. Complete Streets has become the overarching paradigm for considering and addressing bicycle and pedestrian travel. Innovative bicycling and pedestrian programs and networks have emerged and a number of New Jersey's municipalities are stepping forward to become bicycling and pedestrian friendly communities. There have been new developments in design solutions, studies revealing the economic impacts of improved bicycling and walking conditions, and interest in bicycle and pedestrian travel has grown. There are over 300 active Safe Routes to School (SRTS) programs statewide.

NJDOT has kept pace with and been a part of this change. NJDOT has joined other states in the Towards Zero Deaths initiative, a national vision for zero deaths on our nation's highways, and has been recognized as a national leader in advancing Complete Streets. NJDOT has been proactive in providing training on best practice bicycle and pedestrian design to staff and technical assistance to municipalities and counties regarding Complete Streets policy development, design, and implementation. This master plan builds on the successes and advances that have taken place since the *Phase 2 Plan* to provide a path forward over the next decade.

This master plan supports broader efforts to improve safety and reduce pedestrian and bicyclist fatalities. New Jersey is classified by the Federal Highway Administration (FHWA) as a Pedestrian-Bicycle Focus State for exceeding specific crash thresholds. Pedestrian fatalities account for 31% of fatal crashes in the state, averaging about 150 per year from 2005-2014, with incoming figures suggesting that percentage is on the rise. Bicyclist fatalities, though not of the same magnitude as the pedestrian crash problem, averaged about 15 per year from 2005-2014.

This plan is consistent with and supportive of other state plans. Each state is mandated by the United States Department of Transportation (USDOT) to develop a Strategic Highway Safety Plan to guide the allocation of safety funding and resources to reduce highway fatalities and serious injuries on public roadways. The *2015 New Jersey Strategic Highway Safety Plan* (SHSP) identifies pedestrians and bicyclists as a 1st priority safety emphasis area. The *New Jersey Highway Safety Plan* (2016), prepared by the New Jersey Division of Highway Traffic Safety (DHTS), also includes strategies that address pedestrian and bicycle safety.

Integrating the NJDOT Complete Streets Policy and design frameworks into a long-term vision for New Jersey is another goal of this master plan. Adopted in 2009, the Complete Streets Policy is the basis for the NJDOT's efforts to plan and provide for pedestrian and bicycle travel needs as part of the project development process. The tools and methods for designing Complete Streets, with facilities that benefit pedestrians and bicyclists, are included in NJDOT's *Complete Streets Design Guide* (2016).

Walking and bicycling continue to be recognized as healthy and essential modes of transportation that enhance quality of life. Since 2010 it has been USDOT policy to incorporate safe and convenient walking and bicycling facilities into transportation projects and encourage transportation agencies to go beyond minimum standards to provide safe and convenient facilities for these modes. In addition, the United States Centers for Disease Control and Prevention (CDC) *Healthy Community Design Initiative* promotes nonmotorized transportation systems to increase physical activity, improve air quality, lower the risk of injury, enhance social connections, and mitigate the impacts of climate change.

Achieving healthy, equitable, and sustainable communities through walking and bicycling, and fostering a cultural shift to support the mutual respect among all travel modes are goals of this master plan. Recent studies show that demographic trends and cultural attitudes are shifting in ways that require

a renewed focus on the needs of nonmotorized transportation users and the transportation system necessary to serve them. The percentage of 16 to 44-year olds with a driver's license has been steadily declining.[1.1] This is consistent with the characterization of Millennials as a multimodal generation, who prefer to live in communities with a range of transportation choices.[1.2] Relevant demographic and associated transportation behavioral shifts are not limited to Millennials. Older adults have expressed a strong desire to age in place and benefit greatly from access to transportation systems that keep them connected without being dependent on car ownership.[1.3]

New Jersey's population will continue to become older and more racially and ethnically diverse over the coming decades.[1.4] The state 65-and-older population will increase by almost half by 2032, comprising almost one fourth of the state population. The state non-Hispanic white population is anticipated to decline gradually, while Hispanic, Asian, and Black populations will grow. In addition to these demographic shifts, there is also a long overdue recognition of equity issues in the provision and safety of transportation systems. For example, minority communities that have historically been overlooked in transportation decision-making processes are leading contributors to the growth of bicycle travel in the US, yet suffer from higher fatality rates than white bicyclists.[1.5]

Since the *NJ Statewide Bicycle & Pedestrian Master Plan, Phase 2 (2004)*, many improvements have been made to address bicycling and walking. NJDOT is the main agency for many of these efforts, and the Office of Bicycle and Pedestrian Programs (OBPP) plays a leading role in addressing bicycle and pedestrian needs and safety programs and projects. OBPP's primary efforts include the Complete Streets Initiative, the Local Bicycle and Pedestrian Planning Assistance Program, and the Safe Routes to School Program. NJDOT's accomplishments since 2004 are listed in this chapter in the table "NJDOT Milestones & Successes Since 2004."

While the focus of this master plan is on state agencies, others including Metropolitan Planning Organizations (MPOs), counties, municipalities, nonprofits, consultants, developers, and advocates have been working to make New Jersey's streets safer and more accessible for pedestrians and bicyclists. Examples of local and regional success stories are highlighted throughout the plan and an overview of significant policies, plans, and programs can be found in the Appendix.

Step it Up! The Surgeon General's Call to Action to Promote Walking and Walkable Communities

The purpose of this 2015 Call to Action is to increase walking across the United States by calling for improved access to safe and convenient places to walk and wheelchair roll and by creating a culture that supports these activities for people of all ages and abilities. The Call to Action includes five strategic goals to promote walking and walkable communities: 1) make walking a national priority; 2) design communities that make it safe and easy to walk for people of all ages and abilities; 3) promote programs and policies to support walking where people live, learn, work, and play; 4) provide information to encourage walking and improve walkability; and 5) fill surveillance, research, and evaluation gaps related to walking and walkability.

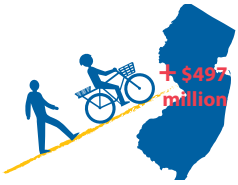
1.1: Sivak, M. & Schoettle, B. (2016)
1.2: American Public Transportation Association (2014)
1.3: Farber, N., Shinkle, D., Lynott, J., Fox-Grage, W., & Harrel, R. (2011)
1.4: New Jersey Department of Labor and Workforce Development. (2012)
1.5: League of American Bicyclists. (2013)

Why are Walking and Bicycling Important?

Transportation is a basic need, enabling people to go to work and school, shop, visit friends and family, and participate in civic or worship communities. Walking and bicycling are essential components of the transportation system. Walking is the most fundamental of all transportation modes and part of nearly every trip people make. Bicycling also holds potential to increase mobility options for the relatively short trips that make up the majority of daily travel. Although progress has been made and many communities in New Jersey recognize the value of walking and bicycling, there remains a need to articulate the wide range of individual and community benefits of nonmotorized transportation, as noted below.

Walking and bicycling are important to New Jersey because they...

... are healthy.



... contribute to the economy.

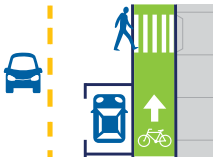
... promote equity.

... are good for the environment.

... improve access to schools.

... improve access to public transit.

... help enhance transportation systems to better serve disabled persons.



... are at the heart of Green, Smart, and Complete Streets.

... are fiscally attainable.

... are good for personal finances.

... are growing in acceptance, legitimacy, and preference.

... contribute to placemaking and quality of life in New Jersey.

NJDOT Milestones & Successes Since 2004

2004 - 2016	Provided technical assistance to 65 communities through the Local Bicycle & Pedestrian Planning Assistance Program	2012	Ranked strongest in the nation by National Complete Streets Coalition for NJDOT Complete Streets Policy
2004 - 2016	Conducted 16 senior mobility workshops	2012	Developed the *New Jersey Safety along Railroads Short-Term Action Plan* with NJ TRANSIT
2004	Completed the East Coast Greenway Route Development Study through New Jersey	2012	Developed the *New Jersey Bicycle Map and Resource Guide*
2005 - 2016	Funded 153 Safe Routes to School grants totaling $25.6 million in 116 municipalities	2012	Geocoded all of NJDOT's bicycle tour guides for use on mobile devices
2005	Published *Pedestrian Safety Management in New Jersey: A Strategic Assessment*	2012	Constructed a shared use path on the Route 52 Causeway
2006	Announced the Governor's Pedestrian Safety Initiative	2012	Installed a pedestrian hybrid beacon (HAWK signal) on Route 27 to improve access to Metropark Station
2006	Assigned a full-time SRTS Coordinator to the Office of Bicycle & Pedestrian Programs	2012	Completed a road diet of Route 45 in the City of Woodbury
2006	Created the Pedestrian Safety Management System	2012	Included sidewalk and bicycle accommodations in the Route 72 Manahawkin Bay Bridges Project
2009	Adopted a Complete Streets Policy	2013	Held the second New Jersey Complete Streets Summit
2009	Developed the *New Jersey Trails Plan Update* with NJ Trails Council and NJDEP	2013	Developed the Pedestrian Safety Analysis to assist NJDOT in focusing investments in areas of high need
2010 - 2016	Performed four Pedestrian Road Safety Audits	2013	Reconstructed Route 35 with sidewalks, bike lanes, and ADA ramps
2010	Published the *New Jersey Bicycling Manual*	2013	Installed bike lanes on 3.5 miles of Route 47 in Gloucester County
2010	Held the first New Jersey Complete Streets Summit	2014	Developed the *New Jersey Pedestrian Safety Action Plan & Toolbox*
2010	Replaced the Route 36 Highlands Bridge, including bike lanes, sidewalks, and two pedestrian overpasses	2014	Developed the *New Jersey School Zone Design Guide*
2011	Integrated the Complete Streets checklist into project delivery	2014	Revamped the New Jersey Bicycle & Pedestrian Advisory Council (BPAC) with establishment of Executive Council and Subcommittees
2011	Published *Making Complete Streets a Reality: A Guide to Policy Development*	2015	Held the third New Jersey Complete Streets Summit
2011	Implemented the SRTS non-infrastructure program through NJ's eight TMAs with assistance from the NJ SRTS Resource Center at Rutgers VTC	2015	Completed the routing study for the September 11th National Memorial Trail across New Jersey
2012	Published *A Guide to Creating a Complete Streets Implementation Plan*	2016	Developed the *New Jersey Complete Streets Design Guide*
2012 - 2015	Hosted a series of 18 Complete Streets training workshops across the state	2016	Developed the *New Jersey Bicycle Safety Action Plan & Toolbox*

Outreach Process

The development of the *New Jersey Bicycle & Pedestrian Master Plan* was guided by stakeholder and public input. Public outreach efforts included development of a project website and survey, participation at conferences and professional events, and interviews with stakeholders. A Steering Committee provided oversight and input on draft documents. The findings of these efforts helped identify needs, challenges, and priorities to improving walking and bicycling in New Jersey.

Steering Committee

The Executive Council of the New Jersey Bicycle and Pedestrian Council (BPAC) functioned as the Steering Committee for the master plan. BPAC members include a cross section of transportation, safety, and public health professionals representing FHWA, NJDOT, NJ Division of Highway Traffic Safety, NJ Motor Vehicle Commission, NJ TRANSIT, NJ Department of Environmental Protection (Trails Council), NJ Department of Health, Voorhees Transportation Center, South Jersey Transportation Planning Organization (SJTPO), Delaware Valley Regional Planning Commission (DVRPC), North Jersey Transportation Planning Authority (NJTPA), NJ Bike & Walk Coalition, and the Tri-State Transportation Campaign. The development of master plan content and the findings from the outreach processes were presented to the BPAC at quarterly public meetings in December 2015, March 2016, and June 2016. Through these presentations and feedback, BPAC helped develop the master plan vision, goals, and strategies.

Outreach Events

NJ American Planning Association Conference, January 2016

New Jersey Bike & Walk Summit, February 2016

TransAction Conference, April 2016

Project Webinar, April 2016

New Jersey Police Traffic Officers Association, April 2016

New Jersey Society of Municipal Engineers, April 2016

Rutgers University Public Health Symposium, April 2016

Sustainable Jersey Funding Walk and Bike Friendly Communities Workshops, May 2016

Environmental Justice Outreach, May – July 2016

Circuit Trails Coalition Steering Committee, June 2016

NJDOT Inreach, June 2016

Public Outreach

Public involvement was an important part of the planning process for this master plan. Public outreach efforts included developing and maintaining a project website, administering an online survey, and conducting targeted interviews to reach traditionally underserved communities.[1.6]

The project website was hosted at www.njbikepedplan.com. It was used to post information and updates, to present a draft of the master plan for public review and comment, and to solicit feedback on pedestrian and bicyclist success stories throughout the state. The website also hosted an electronic survey to gain insight on bicyclist and pedestrian experiences, perceptions, and needs. The online survey was conducted over six weeks in April and May 2016 and resulted in over 450 responses.

The study team also reached out to organizations that serve or advocate for the needs of low income and minority residents in New Jersey, to gain their perspectives on bicycle and pedestrian needs and concerns affecting their constituencies. The team identified an initial list of environmental justice, public health, and social service organizations serving areas of the state with concentrations of low income and minority residents, including Camden, Trenton, Newark, New Brunswick, Paterson, and Atlantic City. Each organization was contacted to request a telephone interview, which included questions on barriers to bicycling and walking, the most important actions needed to improve mobility, and other concerns and suggestions for the master plan. The interview findings, as well as a joint response received from members of the Circuit Trails Coalition, helped to shape the master plan and highlighted the following issues:

- the lack of bicycle and pedestrian facilities in low-income urban areas;
- the need for ADA improvements for wheelchair users;
- concerns about safety and personal security while walking or bicycling;
- poor communication between local governments and minority neighborhoods around the installation of bicycle facilities; and,
- a variety of funding challenges that are obstacles to improving transportation infrastructure.

Outreach to Planning, Design, and Health Professionals

From the early stages of master plan development, the professional communities of planning, engineering, safety, public health, and transportation advocacy were identified as key resources for pedestrian and bicyclist issues, as well as essential agents and partners in achieving the master plan's vision. Outreach to these professional communities was conducted through presentations and participation at meetings and conferences. In addition, a webinar for professional stakeholders was held to solicit input on this master plan and the *New Jersey Bicycle Safety Action Plan*.

Outreach to professional communities also included a series of interviews with NJDOT employees from the following areas within NJDOT - Capital Program Support, Traffic Engineering, Project Management, Local Aid & Economic Development, Transportation Systems Management, and Rights of Way and Access Engineering. These interviews focused on how NJDOT can better address the needs of pedestrians and bicyclists through changes to internal program and departmental processes and improved coordination. While internal discussions celebrated the success of NJDOT's Complete Streets Policy, they revealed a need to improve communication, education, and collaboration among NJDOT personnel related to pedestrian and bicyclist improvements.

1.6: Traditionally underserved populations are defined using FHWA's definition, which includes persons or communities fitting one or more of the following descriptions: low income, minority, older adults, limited English proficiency, and persons with disabilities.

Outreach Key Takeaways

The vision statement would benefit from additional language to emphasize that people of all ages and abilities walk and bicycle and that respect among all travel modes is very important.

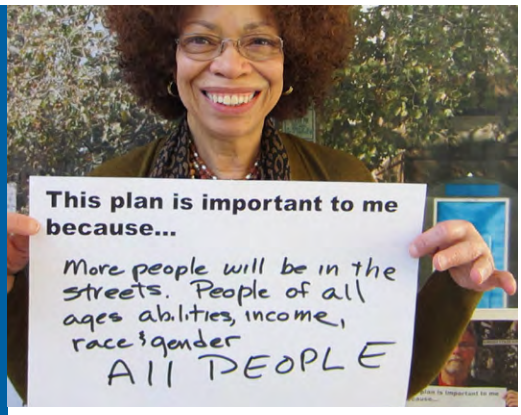
The master plan should identify collaborative actions with other state agencies, counties, municipalities, and non-governmental organizations to effect positive change for pedestrians and bicyclists.

Survey respondents identified improved facilities, slower traffic, and education for motorists and pedestrians as top improvements for pedestrian travel.

Survey respondents identified more on-road and off-road facilities, better accommodation at intersections, and increased enforcement and education of traffic laws as top improvements for bicycle travel.

Environmental justice interviews revealed a lack of bicycle, pedestrian, and ADA-compliant facilities in low-income urban areas, concerns about safety and personal security, and a variety of funding challenges.

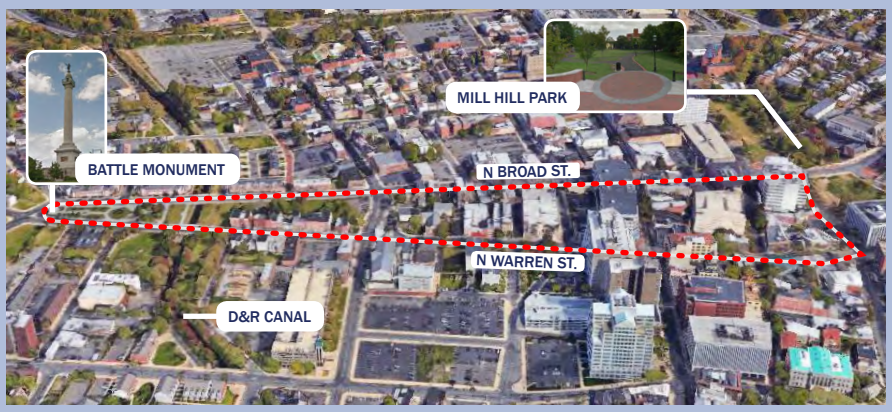
NJDOT 'inreach' interviews revealed a high regard for Complete Streets policy, but also the need for improved intra-departmental communication, collaboration, and education to overcome engineering and operational challenges to multi-modal improvements.



Success Stories

Camden GreenWay Circuit Trails Plan

With the support of NJDOT, Cooper's Ferry Partnership, and the City of Camden, the Camden GreenWay Circuit Trails Plan advances development of an active transportation network with regional connectivity throughout the City of Camden. The plan identifies proposed routes that will close gaps in the city's trails system and bicycle network, as well as integrate the Camden GreenWay (within the City of Camden) with the Circuit (Greater Philadelphia Regional Trails Network). Upon completion, the network will connect over 128 miles of bicycle and pedestrian facilities, with Camden acting as a hub for South Jersey.



Trenton Wellness Loop

The Wellness Loop serves Trenton citizens in a number of ways. It links Battle Monument and the D&R Canal trail system with Mill Hill Park and downtown Trenton, providing a safe opportunity for bicycle commuting, recreational use, and children traveling to and from school. In June of 2016, the project was awarded funding through a Phase IV Regional Trails Program Grant (DVRPC).

New Brunswick Ciclovia

The first of its kind in New Jersey, the New Brunswick Ciclovia is an open streets event where streets are closed to vehicular traffic and open to bicyclists and pedestrians. First held in 2013, the event draws thousands of residents, students, and visitors to downtown New Brunswick for a day of walking, bicycling, and festivities. Ciclovia strives to show the positives of walking and bicycling and how these modes of transportation help bring a community together. (Photo credit: nj.com).

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Chapter 2

Current Conditions and Needs

Walking and bicycling conditions have evolved in New Jersey since the *NJ Statewide Bicycle & Pedestrian Master Plan, Phase 2* (2004). This chapter provides a snapshot of current conditions and identifies key needs to be addressed by the master plan, beginning with a look at the facilities available for bicycling and walking, the people who are using them, and safety statistics.

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Walking and Bicycling in New Jersey

New Jersey's pedestrians and bicyclists reflect the state's diverse population. As workers, they range from lower income service workers and others without access to automobiles to affluent commuters who walk or bicycle to a rail station for their trip to Newark, New York City, or Philadelphia. As shoppers, they include both suburban residents and city dwellers who walk or bicycle to run errands and accomplish daily tasks, whether by choice or necessity. Still others walk or bicycle for recreation, fitness, or entertainment.

Relatively little data is available on the rates of walking and bicycling. However, the use of these modes tends to be concentrated in areas with relatively high population density and high transit use, and highest among households with limited access to automobiles.

Figure 2-1 shows the concentration of zero car households, according to 2014 American Community Survey (ACS) data. In 2014, this accounted for 11.7% of New Jersey households (373,136 households), with significant concentrations in Hudson, Union, Essex and parts of Bergen, Passaic and Camden counties.

Data on household income can also indicate areas with more limited access to vehicles and where bicycling and walking is a necessity for daily transportation. In 2014, nearly one million New Jersey residents (934,665, 10.7% of NJ population) were living below

11.7%

of NJ Households Do Not Have a Car

10.7%

of NJ Residents Live Below the Poverty Line

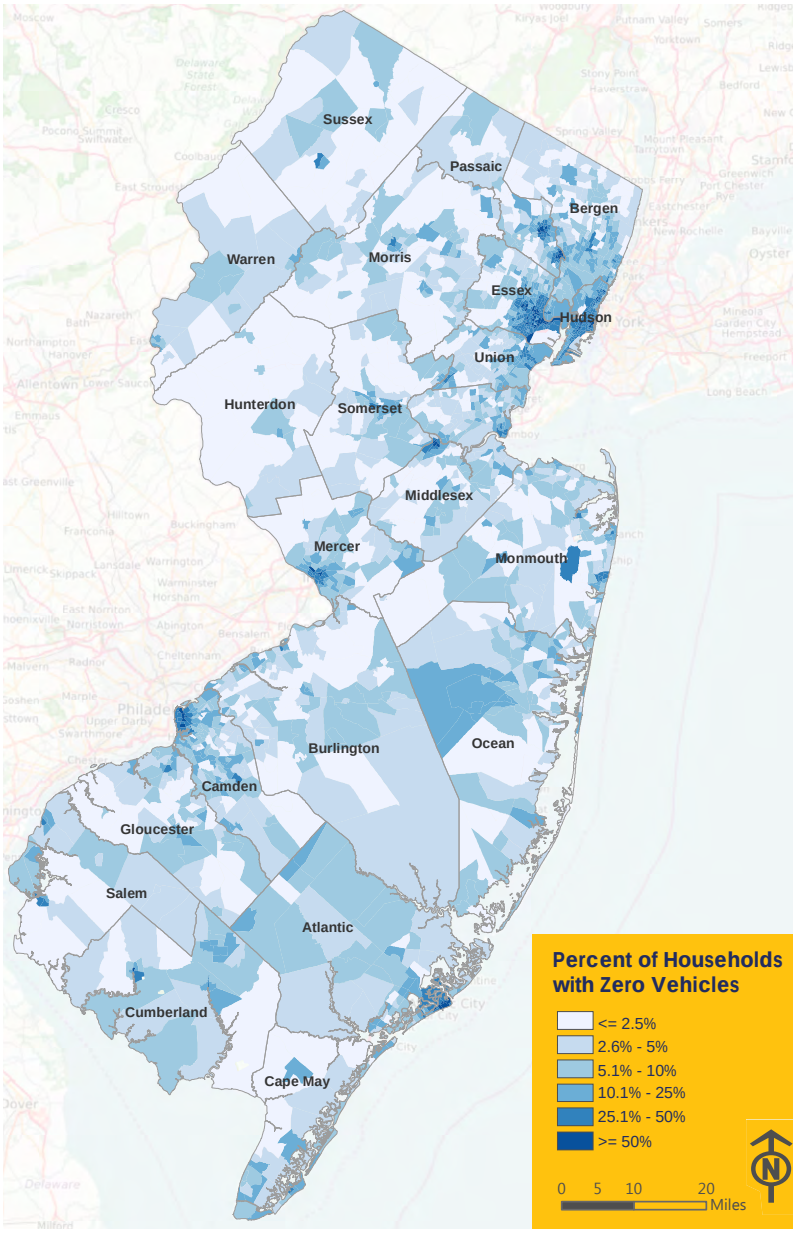


Figure 2-1. *Zero Car Households in New Jersey by Census Tract (ACS 2014)*

the poverty level. Incomes are lowest in several large, dense municipalities, such as Newark, Paterson, Camden, Trenton, and New Brunswick. These municipalities also have some of the highest rates of public transit use and households with limited or no access to autos.

The 2014 ACS provides a breakdown of transportation modes for the work trip. In New Jersey, walking accounts for 3% of work trips and bicycling accounts for 0.3%. This compares with 2.8% and 0.6%, respectively, for the nation as a whole. New Jersey ranks 20th out of 51 states, including Washington, D.C., in the percentage of workers walking to work, and 33rd in the percentage bicycling to work.

Since the ACS commutation data is only for the primary mode used, these figures do not reflect the use of walking and bicycling to access public transit services. As of 2014 ACS reporting, 11% of New Jersey workers used transit to commute to work, the third highest usage in the country behind only Washington, D.C. and New York State. The statewide transit share reflects recent ridership growth at NJ TRANSIT, which hit record levels in 2015.[2.1] Figure 2-2 illustrates the concentration of New Jersey residents who use public transit, walk, or bicycle to work.

Transit, walking, and bicycling are often complementary modes of transportation. All transit passengers must use another mode of travel to get to and from their station stops, and walking is a common element of at least one leg of the journey. This makes walking an integral part of the transit system. An interconnected pedestrian network and safe, comfortable, and convenient pedestrian access to transit are critical to support and encourage transit ridership in the state.

2.1: Driving to work alone accounts for nearly 72% of all households in New Jersey. Carpooling accounts for an additional 8%, and 4% work at home.

Meeting Needs: Most Vulnerable Users

While all pedestrians and bicyclists are vulnerable users of the roadway system, strategies that reduce risk for the most vulnerable are especially needed. These include persons in low-income communities, particularly those who depend on walking and transit, and those most at risk of injury from crashes, including youth, the elderly, and the disabled. Chapter 3 outlines strategies to improve conditions and reduce risks to the most vulnerable users.

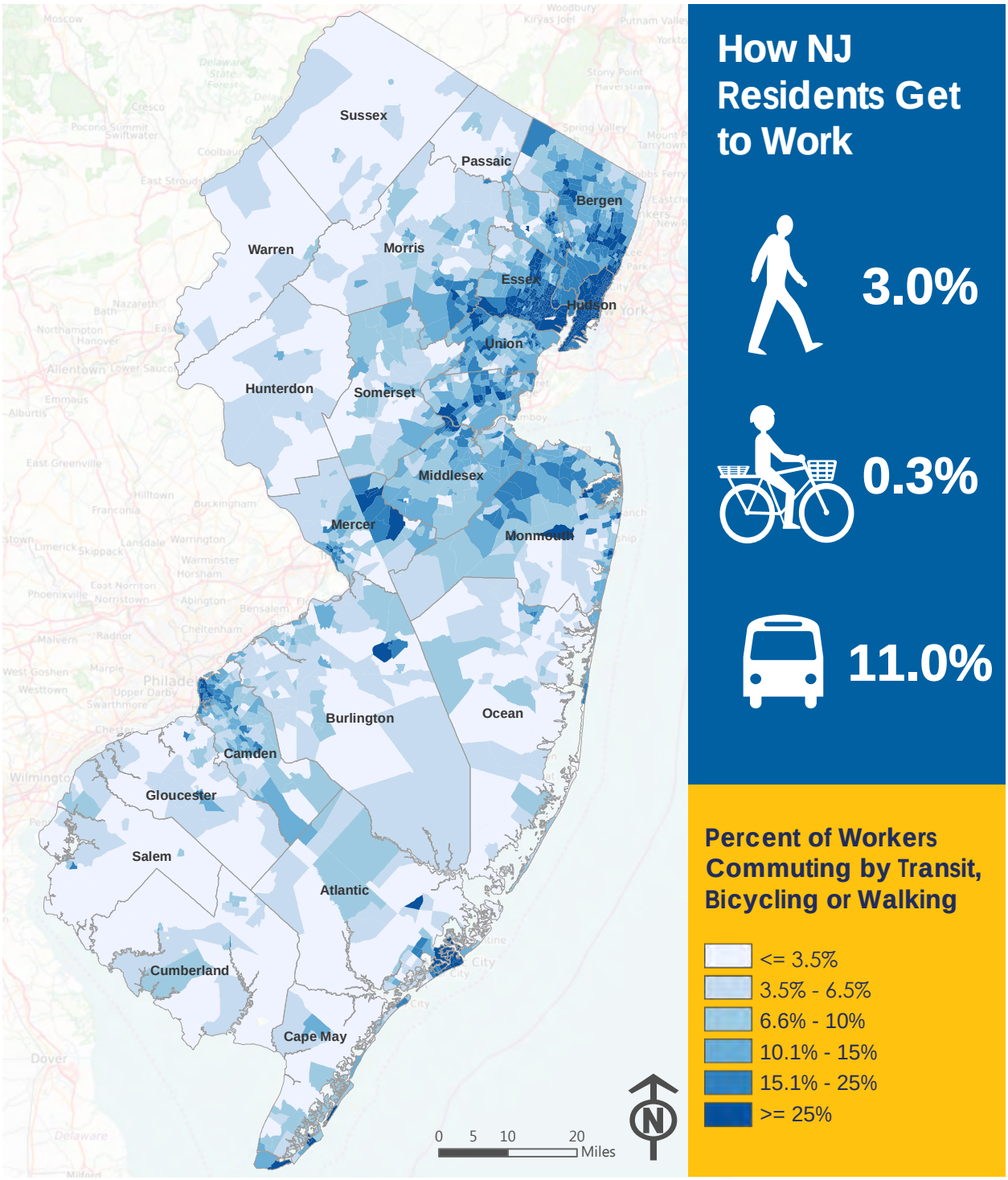


Figure 2-2. *Modeshare in New Jersey by Census Tract (ACS 2014) illustrating the concentration of New Jersey residents who use public transit, walk, or bicycle to work. Hudson, Bergen, and Essex Counties have the highest concentrations. Communities along the Northeast Corridor and the North Jersey Coast transit lines also have higher concentrations.*

Types of Pedestrian and Bicycle Facilities

Pedestrian Facilities

Pedestrians rely principally on sidewalks and crossing facilities to complete their trips. Since the *NJ Statewide Bicycle & Pedestrian Master Plan, Phase 2 (2004)*, the construction and improvement of pedestrian facilities has been a priority for many New Jersey communities and for NJDOT, as the level of interest in walkable environments continued to rise and Complete Streets policies began to take hold. There is also more widespread recognition of the need for enhanced pedestrian protection at crosswalks, particularly at midblock locations, and greater use of new technologies to increase awareness, visibility and compliance. In addition, national practice on pedestrian signal timing has changed to better accommodate the walking pace of senior pedestrians.

Lack of a sidewalk network, particularly along busy roadways, creates difficult and unfriendly conditions for pedestrians.

Pursuant to the Americans with Disabilities Act (ADA), curb ramp improvements are also an integral part of roadway improvement projects. Properly designed curb ramps improve access and mobility for all pedestrians, and particularly those with mobility or vision impairments, young families with strollers, and New Jersey's growing senior population. NJDOT's reconstruction of Route 35 following damage from Superstorm Sandy, for example, included installation of over 700 ADA-compliant curb ramps over a 12.5-mile corridor, as well as bicycle lanes and improved pedestrian crossings.

Streetscape and sidewalk improvements benefit pedestrians, but maintaining safe mobility should be considered during construction operations.

NJDOT's Complete Streets Policy has resulted in the inclusion of walkways along state highways and bridges that might otherwise lack pedestrian accommodation. Similarly, Complete Streets policies at the county and local level are promoting construction of new sidewalks and projects to fill gaps in existing sidewalks.

However, there are still many places in New Jersey where pedestrians must travel without the benefit of consistent sidewalks or convenient, protected crossings. Examples include numerous arterial highways with developments designed for auto access that are also utilized by pedestrians. Substandard pedestrian conditions persist at many bus stops and around other major pedestrian generators, such as schools. Inadequate pedestrian lighting is another systemic issue affecting the mobility, safety, and security of pedestrians in many areas. Aging and older infrastructure, such as deteriorating sidewalk and missing or substandard curb ramps, are also common throughout the state and create barriers to mobility and access for wheelchair users, older adults, and those with limited mobility.

Bicycle Facilities

Bicycle facilities are critical to accommodate cycling as an essential form of transportation and encouraging more people to bicycle. New Jersey's bicycle network is composed primarily of bicycle lanes, shared lanes, and shared use paths spanning a multitude of jurisdictions, ownership conditions, and maintenance responsibilities. Bicycle facilities also include bicycle parking, bike share programs, transit integration, and crossing treatments, such as bike boxes, traffic signal detectors, and intersection striping to improve the visibility of bicycle facilities and guide bicyclists across intersections. Newer types of bicycle facilities, such as physically separated bicycle lanes and bicycle boulevards, are also starting to be used in New Jersey.

In response to demand for more and better bicycle facilities, bicycling planning and design has advanced significantly since the *NJ Statewide Bicycle & Pedestrian Master Plan, Phase 2 (2004).* Guidebooks by FHWA and the National Association of City Transportation Officials (NACTO) reflect this evolution and current best practices. Nationally, there has been a rise in the use of separated bicycle lanes to more effectively separate bicyclists from other vehicles. The number of miles of separated bicycle lanes has doubled since 2011, and the number of streets in the U.S. with separated bicycle lanes has increased nearly ten-fold, from 28 in 2003 to 270 by winter 2016.[2.1]

New Jersey's shared use paths range from short, local facilities to larger regional trail corridors, such as the East Coast Greenway. They are used extensively by recreational riders as well as for basic transportation. Many shared use paths are prized local assets that provide fitness benefits, connect local destinations, and help attract visitors. According to research by the Voorhees Transportation Center, there are approximately 214 miles of shared use paths in New Jersey.

Bicycle lanes designate space for bicyclists through use of striping, pavement markings, and signs. They enable bicyclists to ride at their preferred speed without interference from motor vehicle traffic conditions and facilitate predictable behavior and movements among bicyclists and motorists.

Middlesex Greenway is a 3.5-mile off-road shared use path in Middlesex County. Roughly 6,000 feet of the Middlesex Greenway is designated as East Coast Greenway.

2.1: People for Bikes, 2016

Since the *Phase 2 Plan* (2004), bicycles are also now accommodated on a greater proportion of transit vehicles. As of 2015, roughly half of NJ TRANSIT's bus fleet is bicycle-friendly, including all bus services in the Southern Division (Princeton and south). In addition, bicyclists with nonfolding bicycles can now board NJ TRANSIT commuter trains at any station, as well as SEPTA rail and PATH rail services, subject to peak period and holiday restrictions. Bicycles are permitted on PATCO rail services at any time. PATCO also provides bicycle parking behind the turnstiles, providing a covered and more secure parking option with 24 hour access. Long haul commuter buses permit bicycles in the under carriage storage area. On New Jersey ferry services, there is a surcharge for nonfolding bicycles.

Roll-on bicycle access allows better integration of transit and bicycle trips (Left: New Brunswick station. Right: NJ TRANSIT's RiverLine service (photo credit: Sue Prant).

Personal Security in the Walking Environment

In many of New Jersey's urban neighborhoods, concerns about personal security are paramount in the decision of whether to walk or allow a child to walk. Moreover, concerns about crime significantly affect the walking experience and overall quality of life for those who depend on walking. A lack of security also inhibits access to parks and other recreational facilities, thereby limiting opportunities for physical activity.

In interviews conducted for this master plan with community-based urban organizations, participants mentioned property maintenance as a significant security issue; abandoned or vacant properties and overgrown vegetation contribute to a lack of security. Suggested improvements included implementing Crime Prevention through Environmental Design (CPTED) measures to create safer environments, so that residents are comfortable using sidewalks and parks.

Bike share is another new bicycle program emerging in the United States and New Jersey since the *Phase 2 Plan*. Bike share further integrates bicycling into the transportation network. It improves mobility options and makes bicycling a more convenient and accessible transportation choice for residents and visitors. It also makes bicycling a more visible part of the transportation system and encourages higher ridership. Bike share stations can also be paired with transit stops to help extend the reach of transit services, providing another alternative for the "last mile" transit connection. Several bike share systems are currently operating in New Jersey, including Collingswood, Hoboken, Jersey City, and Princeton.

Bike exchanges also help to promote bicycling by making bicycles available at low cost. The New Jersey Bike Exchange currently operates exchanges in Plainfield, New Brunswick, and Trenton. At the Trenton facility, donated bicycles are repaired by teens who gain skills through the program. Proceeds of bicycle sales are donated to the Boys & Girls Clubs of each community.

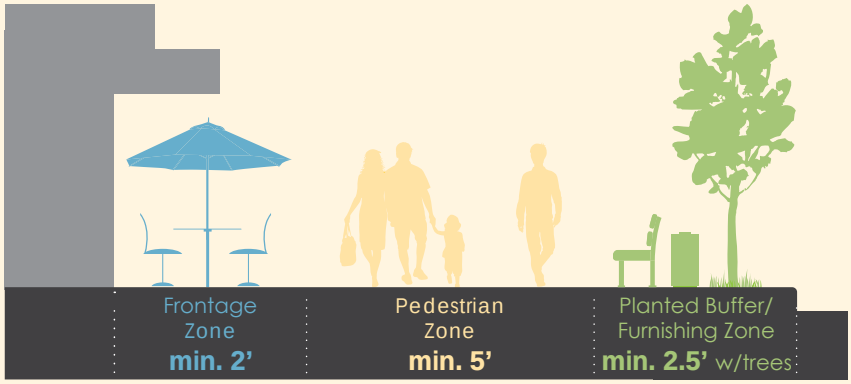
Clockwise from top left, bike share stations in Hoboken, Jersey City, and Princeton

Pedestrian Facilities

Pedestrian facility design focuses on creating a safe and comfortable walking environment for people of all ages and abilities. Pedestrian features cover a range of design elements, from sidewalks and paths, to crossing treatments, lighting, street furniture, and amenities to enhance the streetscape. The design resources listed below provide standards and guidelines that should be adhered to, ensuring that appropriate and accessible pedestrian facilities are provided.

Sidewalks

The primary objective in designing sidewalks is to provide continuous, safe, and accessible pathways for pedestrians. Sidewalks should be designed to follow as much as possible the natural path of travel. In some cases, it is more desirable for a sidewalk to divert from that path to provide a more adequate facility or a greater degree of separation between the sidewalk and the roadway.



This sample sidewalk cross section, from the NJDOT Complete Streets Design Guide, illustrates how different sections of the sidewalk space are allocated to different uses to ensure a comfortable and accessible walking environment.

Pedestrian Crossings

A well-designed pedestrian crossing facilitates visibility and predictability for all users. A multitude of different treatments and strategies are available to help designers enhance pedestrian crossings and mitigate potential conflicts with motor vehicles, including signing and striping options, traffic calming, and pedestrian beacons and traffic signals. Accessible curb ramps are essential to any crossing.

This sample pedestrian crossing treatment, from the NJDOT Complete Streets Design Guide, illustrates how effective striping and a center crossing island create a shorter and more visible pedestrian crossing.

Design Guidance

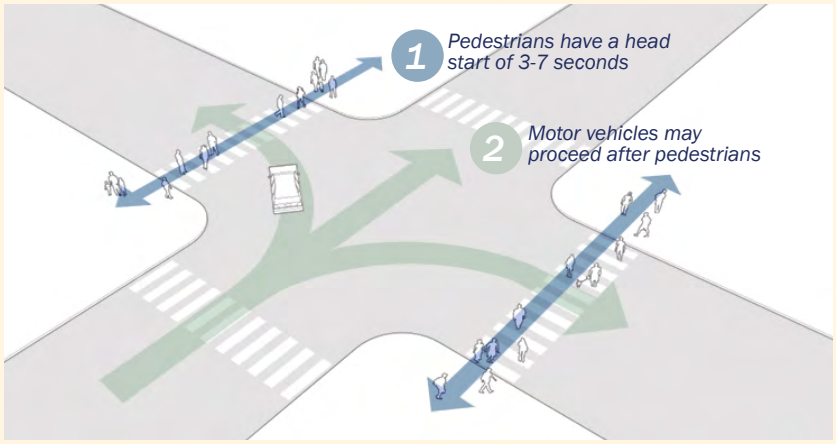
- NJDOT *Complete Streets Design Guide*
- AASHTO *Guide for the Planning, Design, and Operation of Pedestrian Facilities*
- NACTO *Urban Street Design Guide*
- *Americans with Disabilities Act Accessibility Guidelines* (ADAAG)
- *Manual on Uniform Traffic Control Devices* (MUTCD)
- ITE *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*

Signal Accommodations

At signalized intersections, design must take into account the needs of all users and all abilities. This includes providing pedestrian signal heads to clearly indicate when it is safe to cross and ensuring sufficient time for pedestrians to safely cross the street. Depending on the context of the intersection and the amount of pedestrian traffic, the "walk" signal can be manually actuated by pedestrian push buttons, or it can be integrated into the timing plan and automatically occur during each cycle of the traffic signal.

Signal heads with countdown timers clearly indicate when it is safe to cross the street and how much time pedestrians have to complete the crossing.

The leading pedestrian interval (LPI) is one signal timing strategy to help mitigate conflicts between pedestrians and turning vehicles. LPIs give pedestrians a head start, providing a few seconds (typically 3 – 7 seconds) to begin their crossing before vehicles have a green light. This lead time helps reduce the risk of collisions by increasing the visibility of pedestrians, establishing them in the crossing before vehicles begin their turning movements.



A leading pedestrian interval increases pedestrian visibility. (Image credit: NACTO, modified for this document.)

Curb ramps must be provided at all crosswalks. Ramps and pedestrian push buttons must be accessible to all users and meet the requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG), which include standards on ramp width and slope.

Accessibility

Streets and trails must accommodate safe travel for everyone, including those with disabilities. Designing for accessibility not only benefits those with disabilities, limited mobility, or parents with strollers, but helps create a more complete and mobility-supportive built environment for all users. Complete and maintained sidewalk networks, accessible transit stops, properly placed and designed curb ramps and pedestrian push buttons, and other accessible design features make walking easier for everyone and create a more pedestrian friendly environment.

Bicycle Facilities

Many communities in New Jersey are taking the lead and applying design strategies to better accommodate bicycling, both on local streets and off-road paths. NJDOT's *Complete Streets Design Guide* provides information on bicycle facilities that can be combined to create a safe, comfortable, and connected bicycle network. Bicycle facilities should be selected based on local context and needs of the community, bearing in mind that the majority of the population prefers cycling where there are slower traffic speeds and/or separate space for cyclists. Common types of bicycle markings or facilities include:

- Standard Bicycle Lane
- Buffered Bicycle Lane
- Separated Bicycle Lane
- Bicycle Boulevard
- Shared Lane Markings
- Shared Use Path
- Bike Box
- Intersection Striping
- Bicycle Signal

Shared Use Paths

Shared use paths are travel ways that are physically separated from motorized vehicular traffic and provide travel accommodation for bicyclists, pedestrians, inline and roller skaters, skateboarders, and kick scooter users. A shared use path may operate within a roadway right-of-way or within an independent right of way. Shared use paths are appropriate in a range of contexts, from urban to rural, and are an efficient way to build out bicycle and pedestrian networks that may operate independently of established motor vehicle rights-of-way.

This shared use path at Sandy Hook is part of a five-mile paved network shared by bicyclists, hikers, and in-line skaters.

Bicycle boulevard on Haven Avenue in Ocean City, NJ, has a 15 mph speed limit and uses curb extensions and a raised median to slow traffic and reduce cut-through traffic.

Bicycle Boulevards

Bicycle boulevards are linear corridors of interconnected, traffic-calmed streets where bicyclists are afforded an enhanced level of safety and comfort. Key features include a reduced speed limit (25 mph or less), wayfinding signage and pavement markings, traffic calming features, and traffic volume management strategies.

Separated Bicycle Lanes

Separated bicycle lanes are bikeways that are at street level and use a variety of methods for physical separation from passing traffic, such as bollards, planters, on-street parking, curbing, or medians. Unlike a conventional or buffered bicycle lane, a separated bicycle lane provides vertical separation to prevent encroachment, improve safety, and deter double-parking. The vertical separation of the bicycle lane from motor vehicle traffic makes a separated bicycle lane more attractive for bicyclists of all ages and abilities.

Two-way separated bicycle lane in Hoboken, NJ, with bollards and on-street parking separate bicyclists from motor vehicle travel lanes. Local preference can determine the use of a colored pavement treatment, as shown.

Illustration of a bike box, from the NJDOT Complete Streets Design Guide, used to mitigate conflicts between bicycle and motor vehicle traffic at signalized intersections and improve the visibility of bicyclists.

Bike Boxes

A bike box is a designated area at the head of a traffic lane at a signalized intersection, providing bicyclists with a safe and visible way to position themselves ahead of queuing traffic during the red signal phase. This can help mitigate potential conflicts between bicyclists and vehicles, making it easier for bicyclists to make left turns and helping through-bicyclists avoid right turning vehicles ("right hook" crashes).

Design Resources

- NJDOT *Complete Streets Design Guide*
- AASHTO *Guide for the Development of Bicycle Facilities*
- NACTO *Urban Bikeway Design Guide*
- FHWA *Separated Bike Lane Planning and Design Guide*
- *Manual on Uniform Traffic Control Devices* (MUTCD)

Major Roadway Retrofits

One of the major challenges pedestrians and bicyclists face in New Jersey is navigating along or across multi-lane, high speed roadways. The combination of high traffic speeds, high volumes, and wide cross section on many of New Jersey's arterial roadways creates an inhospitable environment for walking and biking. These roadways also form barriers that divide communities and disconnect neighborhoods from schools, local businesses, and job centers.

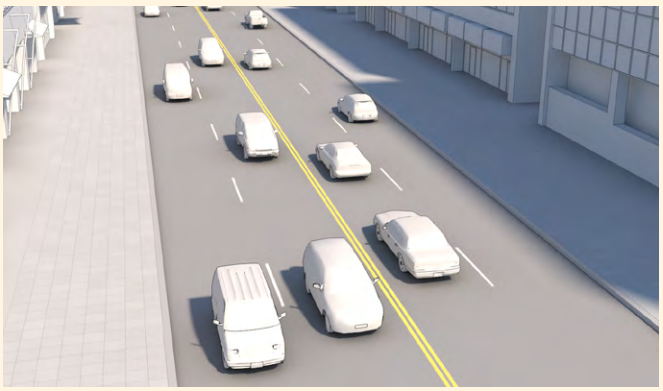
A promising approach for retrofitting major roadways is to reallocate roadway space or adjust the character of the roadway to better meet the needs of all modes. Examples include road diets and other traffic calming measures, such as curb extensions.

Road Diet

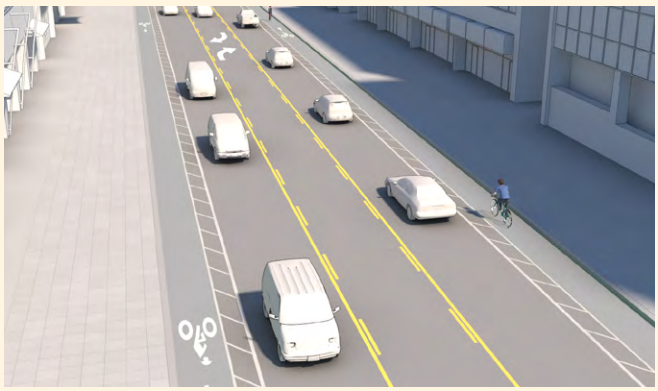
Where there is excess capacity, a road diet can be used to reduce the number of travel lanes and reallocate space for other modes of travel, often bicycle lanes. In addition to reallocating space to other modes, road diets have numerous benefits that improve conditions for bicyclists and pedestrians. Road diets are endorsed by FHWA as a proven safety countermeasure. Removing travel lanes to provide a dedicated turn lane reduces the number of potential conflict points, lowers motor vehicle speeds, and shortens pedestrian crossings. Road diets have been implemented on major roadways throughout New Jersey to help improve safety and create streets that are more bicycle and pedestrian friendly. In the last five years, more than 47 road diets have been undertaken on New Jersey roadways. Recent projects include NJ 45 in downtown Woodbury, Main Street in Avon-by-the-Sea, County Road 656 in Ocean City, and County Road 529 in Green Brook.

Road diet implemented on CR 656 in Ocean City integrates bicycle lanes and curb extensions.

Road Diet - Before



Road Diet - After



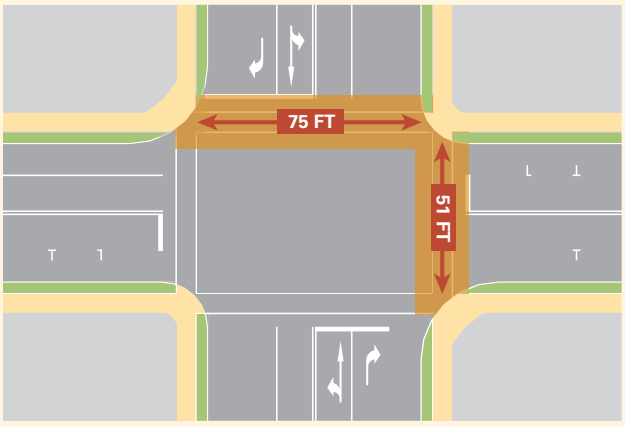
A road diet is a reduction in the number of travel lanes on a roadway. In the above example, a four-lane roadway is converted to a three-lane roadway, including a center turning lane and the addition of buffered bicycle lanes.

Traffic Calming

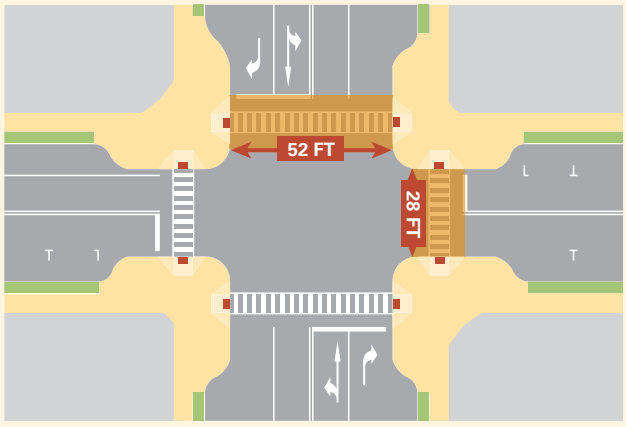
Where implementing a road diet is not feasible, other traffic calming techniques can be used to retrofit major roadways and create a more attractive and safe environment for bicyclists and pedestrians. Some techniques alter the configuration of the roadway, while others change how people psychologically perceive and respond to a street. Different techniques are appropriate for different contexts.

A curb extension, also referred to as a bulb-out or bump-out, is one technique that can be applied to major roadways to improve the quality and safety of the pedestrian environment at intersections and midblock crosswalks. The benefits of curb extensions include improving visibility for drivers and pedestrians, shortening the pedestrian crossing distance, narrowing the roadway to slow traffic, and shielding on-street parking from encroaching traffic. They also create opportunities for pedestrian amenities such as street furniture, bicycle parking, as well as space for green stormwater treatments such as rain gardens.

Curb Extension - Before



Curb Extension - After



In the above example, the addition of curb extensions significantly shortens the pedestrian crossing distances, while also improving visibility and reducing traffic speeds.

Design Resources

NJDOT has developed several resources to support the implementation of road diets, traffic calming, and other Complete Streets design treatments throughout the New Jersey:

- NJDOT *Complete Streets Design Guide* - compilation of best practices, design standards, and strategies to integrate Complete Streets into new and existing roadway projects
- Road Diet video - informational guide on how road diets work, benefits, and examples of implementation in a variety of contexts across NJ *http://www.state.nj.us/transportation/eng/completestreets/roaddiet.shtm*

Success Stories

Division Street

Division Street in Somerville became a pedestrian-only street in 2013. The street has attracted new businesses, serves as a focal point for the community, and provides a flexible public space for community events.

Crossing Guard Training

The Safe Routes To School Resource Center (SRTSRC) compiles research and tools to support school crossing guards and conducts training programs for the municipal police traffic safety officers that supervise school crossing guards. The SRTSRC has released a Crossing Guard Training Manual detailing topics ranging from post routines to incident reporting. The training program, which has proven to be a major success, is offered regionally throughout the state and is open to any municipality. The SRTSRC offers other vital resources on their website, such as New Jersey traffic laws and legislation, crossing guard placement considerations and gap assessment, and a crossing procedures tip sheet.

Montclair Bike Depot

With support from the NJ Bike & Walk Coalition, Montclair opened a bike depot at the Bay Street NJ TRANSIT commuter rail station in 2014. The first of its kind in New Jersey, the depot features 24 indoor bike parking spaces, storage lockers, key card access control, and 24/7 security camera monitoring (photo credit: nj.com).

Success Stories

Route 23 Bicycle Lanes

NJDOT completed the reconstruction and realignment of Route 23 in Sussex Borough in 2015. The project predated NJDOT's Complete Streets policy and the final design did not initially include bicycle accommodations. However, public comments during the preconstruction phase indicated a need for bicycle accommodations, and the final striping plans were revised to convert the shoulder to a buffered bicycle lane. The project was awarded a 2015 engineering excellence award by the American Council of Engineering Companies of New Jersey.

Rt 52 Causeway

Completed in 2012, NJDOT's Route 52 bridge replacement project is an example of synergy between local and state Complete Streets policies to create a more robust, complete network. The bridge project links Ocean City with its mainland neighbors and features a separated shared use path for pedestrians and bicyclists. Since a permanent count station was installed in 2014, over 250,000 people used the shared use path between August 2014 and September 2015, with an average of over 1,400 people per day in July and August.

The Ironbound, Newark

The City of Newark developed BIKE IRONBOUND, a bicycle master plan for the Ironbound neighborhood, with a vision to create a safe, comfortable, and convenient environment for cyclists of all ages and abilities. The plan's principal goal is to increase bicycle ridership in the Ironbound and foster more widespread bicycle usage citywide through the implementation of high quality bicycle infrastructure improvements. The plan's proposed bicycle network, improvement strategies, and design guidelines provides a blueprint to achieve these goals, not only for the Ironbound neighborhood, but through strategies and designs that can be replicated across the entire city. The City of Newark identified pilot projects within the plan and began to implement elements of the network within months of the plan's adoption, quickly demonstrating the impacts of the improvements and building momentum and support to advance the plan.

Crash Data Analysis

One of the most important elements to any successful transportation network is safety. Analysis of crash data can help focus on specific needs, identify areas with a history of safety issues, better understand common factors associated with crash occurrence, and prioritize improvement projects. While many New Jersey residents walk and bicycle safely everyday, New Jersey is categorized as a Pedestrian-Bicycle Focus State by FHWA, placing an increased emphasis on bicycle and pedestrian safety across the state.

Between 2010 and 2014, 36,468 crashes involving bicyclists or pedestrians were documented in New Jersey. Of these, 26,548 (72.8%) involved pedestrians while the remaining 9,920 (27.2%) involved bicyclists. The number of bicycle and pedestrian crashes occurring each year has been trending downwards. Crashes that resulted in fatalities or serious injuries (KSI crashes) accounted for 5.3% of all bicycle and pedestrian crashes, or an average of 363 serious pedestrian crashes and 57 serious bicycle crashes each year. As with all crashes, KSI crashes have also trended downwards since 2010, as shown in Figure 2-3.

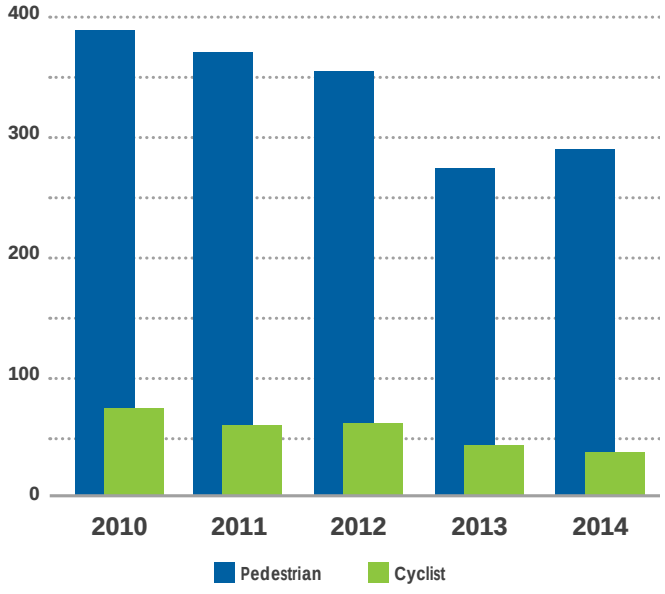


Figure 2-3. *Number of bicycle and pedestrian fatal and severe injury (KSI) crashes by year*

How Does New Jersey Compare to National Trends?

Within the national context, in 2014 New Jersey's pedestrian fatality rate exceeded the national average and ranked as the 10th highest pedestrian fatality rate among the 50 states and the District of Columbia. Pedestrian fatalities also accounted for a much higher proportion of all fatal crashes than the national average.

For bicycle safety, New Jersey stood in a slightly better position than the national average. Bicycle fatalities also accounted for a slightly lower proportion of all fatal crashes than the national average (NHTSA, 2014).

Bicycle & Pedestrian Fatality Rates (2014)		New Jersey	National
Pedestrian	Fatality Rate	1.88	1.53
	% of All Traffic Fatalities	30.3%	16.3%
Bicyclist	Fatality Rate	0.12	0.23
	% of All Traffic Fatalities	2.1%	2.4%

Where Are Bicycle and Pedestrian Crashes Occurring?

As shown in Figure 2-4, fatal and severe injury bicycle and pedestrian crashes tend to be most prevalent in the more urban and densely populated parts of New Jersey, including the northeast counties and the Trenton and Camden metropolitan areas, as well as smaller clusters around Asbury Park, Atlantic City, and Lakewood.

The location of crashes can also be examined in terms of crash rate per 100,000 residents. Normalizing the crash data by population is one way to account for different development patterns and to compare crash risk in different parts of the state. When viewed at the census tract level, areas of high crash rates are dispersed throughout the state (Figure 2-5). Similar to the distribution of crashes by location, there are pockets of higher crash rates in the northeast counties and near Trenton, Camden, and Atlantic City. Additionally, there are areas of higher crash rates in Cape May County, and some of the more rural areas in the south and west.

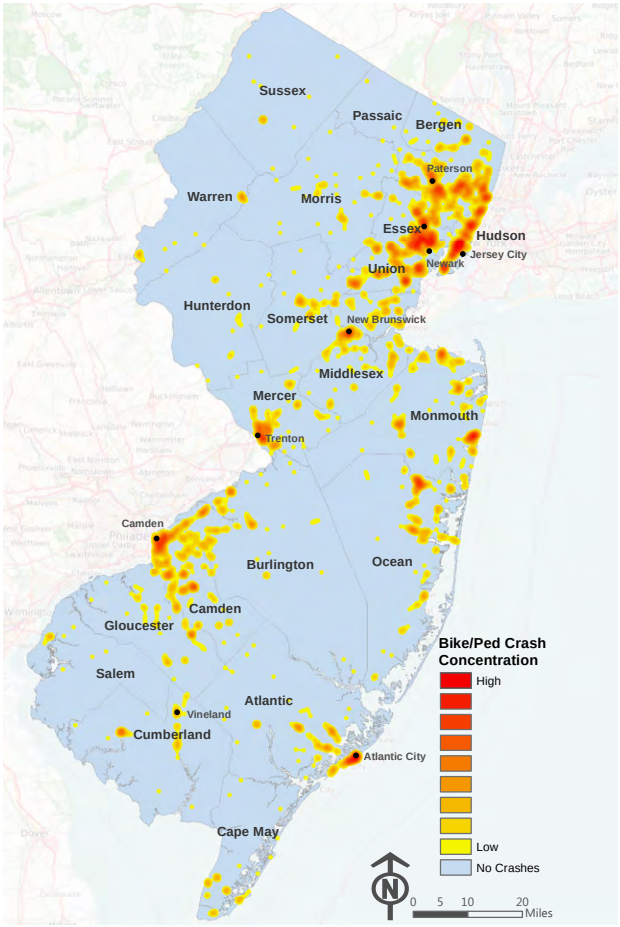


Figure 2-4. *Bicyclist and pedestrian crash hot spots in New Jersey [crashes involving serious injury or fatality, Plan4Safety 2010-2014]*

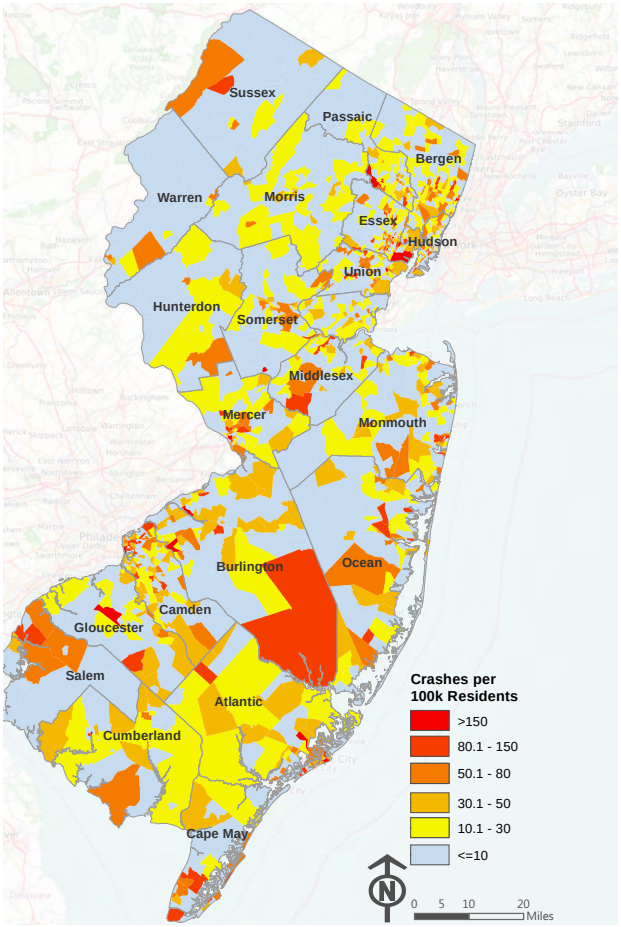


Figure 2-5. *Bicyclist and pedestrian crashes per 100,000 residents in New Jersey, by census tract [crashes involving serious injury or fatality, Plan4Safety 2010-2014]*

Safety Action Plans

The *New Jersey Pedestrian Safety Action Plan* and *New Jersey Bicycle Safety Action Plan* both conducted an in-depth analysis of crash data, examining various crash, demographic, roadway, and temporal factors to better understand pedestrian and bicycle safety issues throughout the state. These plans paid particular attention to fatal and severe injury (KSI) crashes in order to identify ways to mitigate the most severe safety issues. Among the findings include:

Severe pedestrian crashes:

- 72% of fatal and severe injury crashes occur away from intersections
- 29% of fatal and severe injury crashes occur along principal arterials (7.29 crashes per 1 billion VMT)
- 68% of fatal crashes occur under dark conditions
- Fatal pedestrian crash rates increase with pedestrian age, with those over 84 having the highest rate (3.23 pedestrian fatalities per 100,000 population)
- When also accounting for severe injuries (KSI crashes), young people ages 15-17 and 18-24 also have a high crash rate (6.30 and 5.91, respectively)
- Males are involved in two-thirds of fatal pedestrian crashes

Severe bicyclist crashes:

- 55% of fatal crashes occur at intersections
- 24% of fatal and severe injury crashes occur along principal arterials (1.03 crashes per 1 billion VMT)
- 42% of fatal crashes occur under dark conditions
- Bicycle crash rates are highest for those aged 15-17 for all levels of crash severity (0.54 bicycle fatalities per 100,000 population)
- Males are involved in 85% of fatal bicycle crashes

The two action plans include detailed recommendations and targets for improvement over a five-year period. These recommendations are integrated into the strategies outlined in this plan in Chapter 3.

Land Use Patterns, Bicycling, and Walking

Land use, community design, and development patterns have a direct influence on transportation options and choices. Traditional towns with residential neighborhoods in close proximity to major destinations, such as shopping, parks, schools, or jobs provide more opportunities for walking and bicycling. However, as a result of the decentralized development patterns that began in the mid-20th Century, bicycling and walking to destinations has become increasingly difficult for those living outside dense urban cores and older communities.

Demographic and land use trends are shifting, however. Over the past 15 years, there has been a renewed interest in smart growth, mixed use, and new urbanism development patterns. Young people and empty nesters, in particular, are returning to cities and large towns, seeking places to live that are not reliant on a car to get to work, shop, or visit friends. Developers have followed the market demand, increasingly focusing on mixed use or new "town center" development. This, in turn, has sparked a renewed interest in walking and bicycling, particularly in tandem with the revitalization of older urban communities, as well as a growing need to improve access, network connectivity, and safety for these modes.

Local zoning ordinances shape the way communities develop and impact how people and goods move around the community. Factors such as block length, mix of land uses, lot size, floor-area ratio, and parking requirements can all influence how accessible and convenient walking and bicycling is in a municipality. These zoning issues can affect development density, network connectivity, and how close residents live to key destinations.

Many other local decisions affect the ability to bicycle and walk for basic transportation needs, including planning and zoning for mixed use development, school location decisions, the location of housing in relation to other land uses, on-street parking configurations, particularly in downtowns, and provisions for affordable housing. Some municipalities use design guidelines to help promote pedestrian-friendly development and redevelopment. Other communities have experimented with on-street parking configurations, such as head-out angle parking, that improve safety for nonmotorized travelers.

Along with adequate facilities, safety, and accessible destinations, the overall quality of the walking environment is a large factor affecting people's willingness to walk. Visual interest, shade trees, plants, benches, lighting, cleanliness, and an absence of litter are design elements that contribute to the quality of the walking environment, along with a sense of security. In the survey conducted for this plan, a "more appealing pedestrian environment" ranked among the top three improvements that could help promote walking in respondents' communities.

Parking Ordinances

Most local parking ordinances set a minimum or maximum standard for automobile parking but do not require developers to provide bicycle parking. Adding a bicycle parking requirement to the ordinance helps communities establish this much-needed infrastructure. Chatham, Jersey City, and Montclair have all enacted parking ordinances that require bicycle parking.

Short Trip Opportunity Analysis

A high-level analysis of land use and demographic patterns can help illustrate where bicycle and pedestrian travel is more likely to occur in New Jersey. Figure 2-7 illustrates areas of the state that have a higher potential for short trips (shown in red). In this analysis, six key criteria (Figure 2-6) were used: population density, employment density, proximity to public transportation, density of zero car households, population below the poverty level, and proximity to schools. Overlaying these variables revealed areas in New Jersey where short trips are more likely to be taken, and hence where bicycle and pedestrian travel may be a viable, preferred, or necessary transportation option. Large concentrations of short trip potential exist throughout Bergen, Hudson, Essex, Union, Mercer, and Camden Counties, as well as urban nodes throughout the state.

The short trip opportunity analysis can also be correlated with bicycle and pedestrian crash data. The highest potential for short trips is found in approximately 12% of New Jersey's land area. Nearly 70% of all documented serious bicycle and pedestrian crashes between 2010 and 2014 occurred within these areas. These are high priority areas where investment is likely to have the largest return.

Criteria	Weight	Description
Population Density	25%	Areas with high population density have shorter distances between origins and destinations, leading to more frequent walking and bicycling trips.
Employment Density	25%	Commuter trips are a significant portion of all traffic. Areas with high employment density provide greater opportunities for people to walk or bicycle to work.
Proximity to NJ TRANSIT Bus or Rail Station	15%	Walking and bicycling are an integral part of transit trips, and the most common way to get to and/or from a transit stop.
Proximity to Schools	15%	Schools are a major generator of walking and bicycling trips. Most students cannot drive, and walking and bicycling provides a way for them to get to and from school independently.
Population Below Poverty Level	10%	Low income populations may not be able to afford the costs associated with car ownership, and may rely more frequently on walking, bicycling, and transit options.
Percent of Households with No Motor Vehicle Access	10%	Households without access to a car depend on walking, bicycling, and transit options for travel.

Figure 2-6. *Short trip analysis criteria*

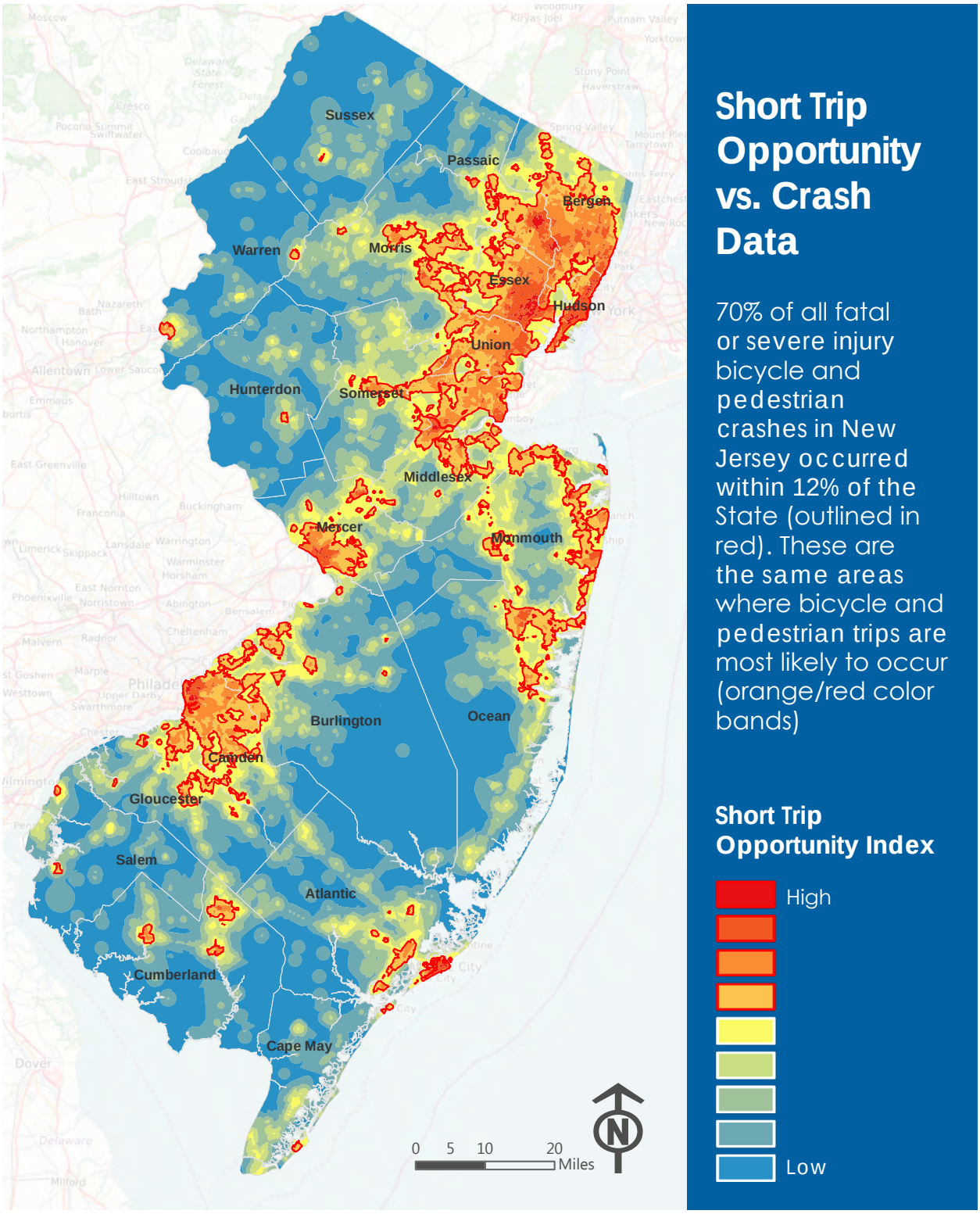


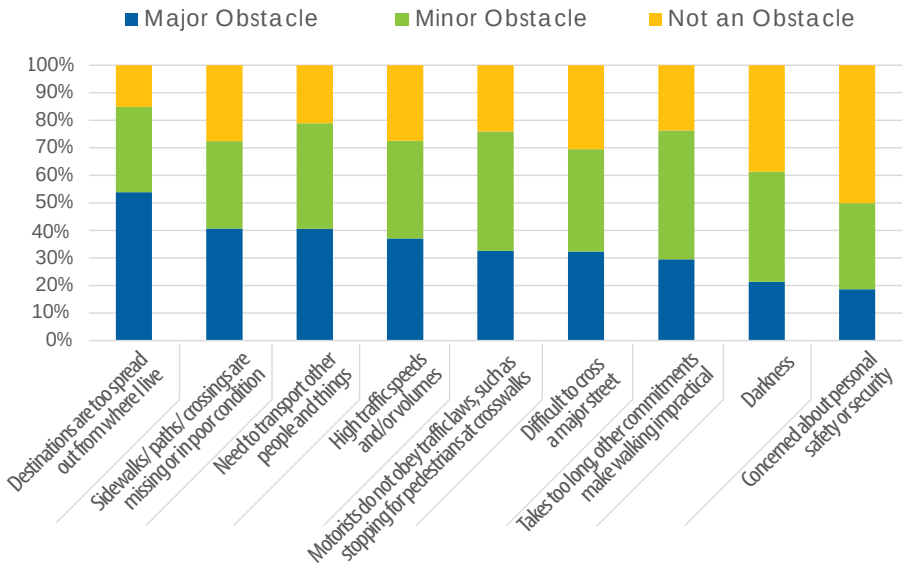
Figure 2-7. *Short trip opportunity analysis*

Survey Results

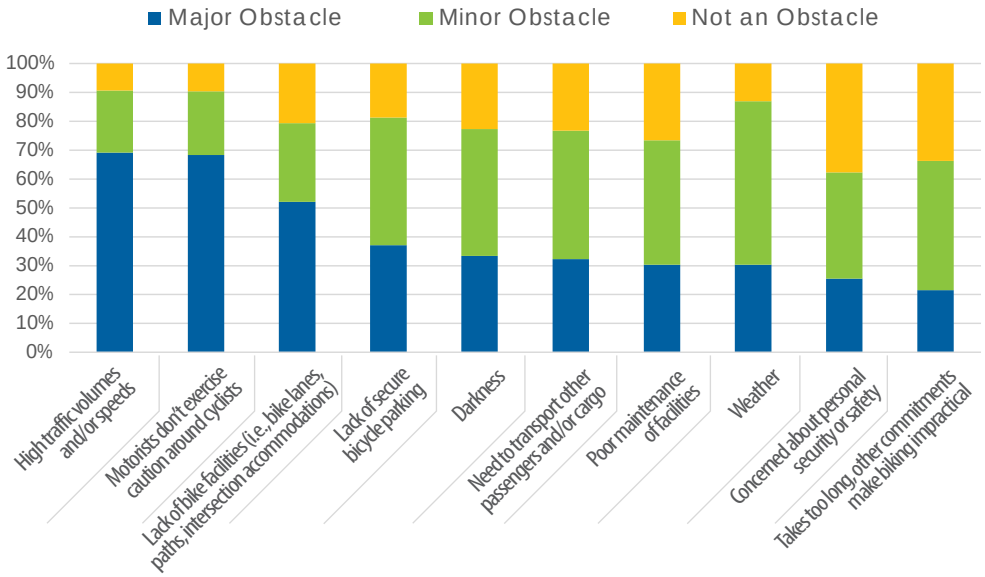
As one element of the outreach process, the *New Jersey Bicycle & Pedestrian Master Plan* included an online survey to gauge interest in bicycling and walking and factors that influence transportation choices. Open for a six-week period, over 450 respondents completed the survey. In general, the demographics of the survey respondents tended to be less racially diverse, older, and more highly educated than New Jersey residents as a whole. Respondents also tended to be more experienced bicyclists than the general population. These differences should be kept in mind in interpreting the results.

The survey included questions on the factors that prevent people from walking or bicycling more often for short trips. For walking, land use patterns with destinations too spread out was the leading barrier, identified as a "major obstacle" by 54% of respondents. Other key issues were a lack of/poor condition of pedestrian infrastructure (41%), need to transport people or things (41%), and high traffic speeds and/or volumes (37%). For bicycle trips, the "major obstacles" cited were high traffic speeds and/or volumes (69%), the lack of caution by motorists around bicyclists (68%), and the lack of bicycle facilities (52%).

What keeps you from walking more often for short trips?



What keeps you from bicycling more often for short trips?



Bicyclists' Perceptions of Facilities, Safety, and Comfort

There are many opportunities to expand and improve New Jersey's bicycle facilities over the next ten years. Different types of facilities will be needed to accommodate different types of cyclists. As was shown in the data on the previous page, concerns related to safety and interacting with automobiles are a common barrier that deters people from bicycling more often. To help address these concerns, the survey data also indicate the need for increased separation between bicyclists and motorists in order to be attractive to the largest potential ridership base and significantly increase ridership.

The survey included a question to rate comfort level for different types of bicycle facilities. Among all responses to the question (352), 82% indicated they would be very comfortable in a separated bicycle lane, compared to 55% in a standard bicycle lane and 40% on a low speed (25mph) street with shared-lane markings.

However, compared to national surveys characterizing different types of bicyclists, the survey respondents included an over-representation of experienced bicyclists (58%). When experienced bicyclists are removed from the survey sample, the remaining responses (134) indicate an even higher relative preference for increased separation (see Figure 2-8). Among those respondents identifying as "less confident" or "casual" bicyclists, 66% would be "very comfortable" in a separated bicycle lane, compared to 26% in a standard bicycle lane and only 8% on a low speed (25mph) street with shared-lane markings.

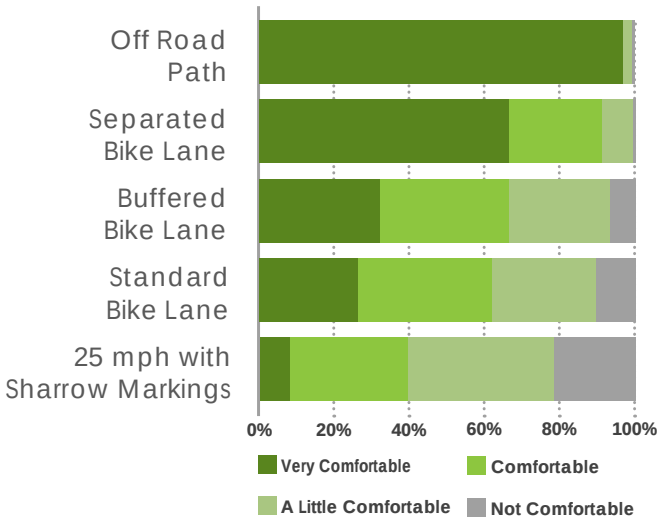
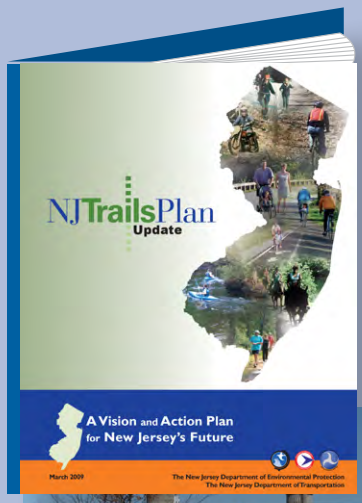


Figure 2-8. *Responses by those self-identifying as not "experienced" cyclists to survey question: "Please rate how comfortable you would be using the following types of bicycle infrastructure"*

Level of Traffic Stress Metric

Bicycle Level of Traffic Stress (LTS) is an analysis tool used to quantify a bicyclist's comfort level relative to the prevailing conditions of a roadway. Because different bicyclists have different tolerances for stress created by volume, speed, and proximity of automobile traffic, the LTS method identifies four levels of stress. Each stress level correlates to a different type of bicyclist and ranges from a facility that is comfortable for all riders, including children (LTS 1), to a facility for the most experienced, confident, and assertive vehicular bicyclists (LTS 4). LTS analysis provides a framework for developing a bicycle network that is accessible to the largest number of riders, and follows the Complete Streets principle of accommodating all ability levels.

Success Stories



New Jersey Trails Plan Update (2009)

This update of the *New Jersey Trails Plan,* developed in coordination among NJDOT, NJDEP, and the New Jersey Trails Council, presents a renewed vision, goals, and strategic actions to help guide and coordinate the efforts of all those who plan, build, operate and maintain New Jersey's trails. The *Trails Plan* reaffirms the importance of providing trails for all and emphasizes the value of trails in supporting a wide range of benefits.

Liberty Water Gap Trail

The Liberty Water Gap trail is a 130-mile long pedestrian trail that connects two national landmarks at each end: the Delaware Water Gap and the Statue of Liberty. The trail is comprised of six individual, interlinked trails. The segment of the trail towards the eastern terminus that passes through the City of Newark, Kearny, and into Jersey City is known as the East Coast Greenway.

Lawrence Hopewell Trail

The Lawrence Hopewell Trail (LHT) is a 22-mile bicycle and pedestrian recreational trail and transportation corridor through public and private lands in Lawrence and Hopewell Townships, Mercer County, New Jersey. Through public-private partnerships, trail segments have been added over time to create a robust trail system that connects neighboring communities, parks, employment hubs, and schools.

East Coast Greenway

The East Coast Greenway is a 3,000-mile urban trail from northern Maine to southern Florida. The Greenway covers 93 miles in New Jersey, passing through urban centers, suburban settings, and rural landscapes. More than half of the Greenway in New Jersey is off-road, the second highest rate of completed trail in any Greenway state.

Chapter 3

Vision, Goals, and Strategies

The vision, goals, and strategies constitute a critical framework of actions and initiatives for the master plan to move forward. This chapter defines the critical framework and presents the vision, goals, and strategies that will drive this master plan.

By working together, **we can** make New Jersey better for walking and bicycling.

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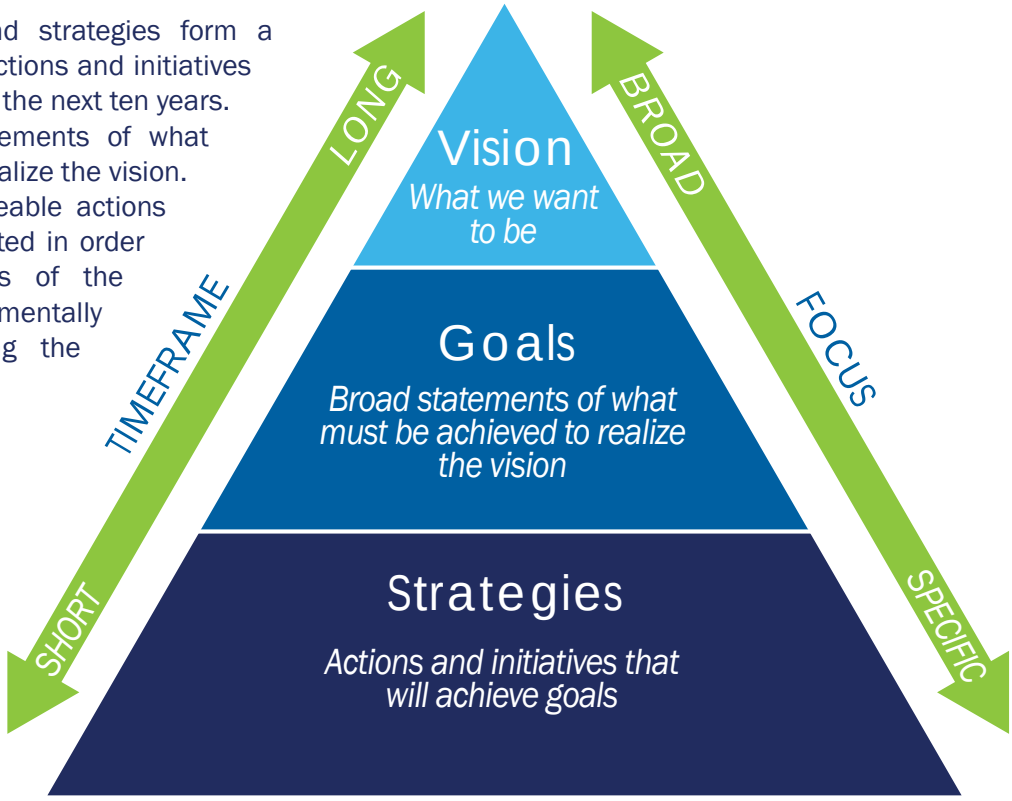
Vision for Walking and Bicycling in New Jersey

The vision statement is an aspirational description of desired future conditions for walking and bicycling in New Jersey that guides the development and execution of all goals and strategies.

Vision Statement

New Jersey is a place where people of all ages and abilities are able to bicycle and walk. Those who live, work, or visit are able to conveniently walk and bicycle with confidence, a sense of security in every community, and with the respect of all modes. Both activities are a routine part of the transportation and recreation systems.

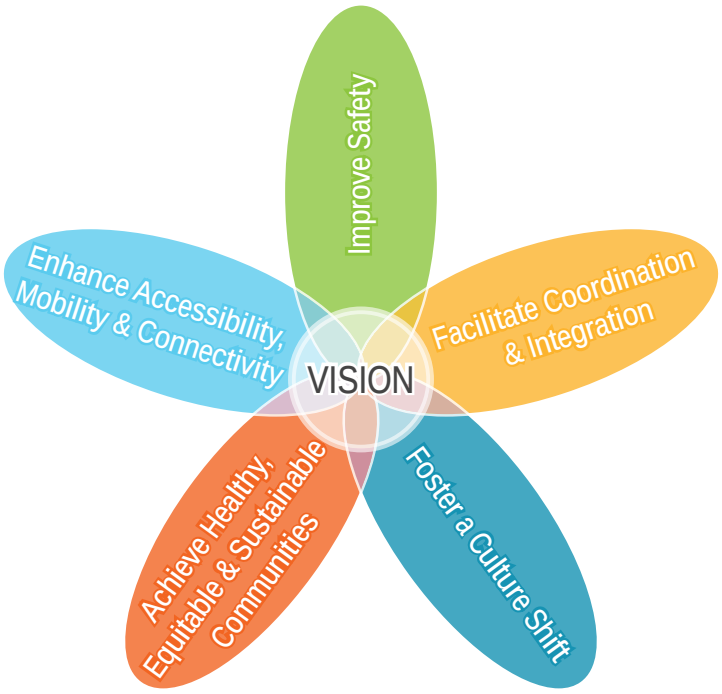
The vision, goals, and strategies form a critical framework of actions and initiatives to be undertaken over the next ten years. Goals are broad statements of what must be achieved to realize the vision. Strategies are manageable actions that can be implemented in order to achieve the goals of the master plan and incrementally contribute to realizing the vision.



Goals and Strategies

Using federal policy and guidance as a framework, the issues and trends identified in previous chapters, and synthesizing what we have heard in the public process, the master plan identifies five broad goals to achieve the Vision: (1) Improve Safety; (2) Enhance Accessibility, Mobility & Connectivity; (3) Achieve Healthy Sustainable Communities; (4) Foster a Culture Shift and (5) Facilitate Coordination & Integration.

In the pages that follow, each goal is defined with a nest of strategies to achieve it, identifying those who will be instrumental in a leadership or support capacity to fulfill that strategy. Goals are not mutually exclusive, nor are strategies. For example, improving safety will help enhance accessibility, and enhancing accessibility will help achieve healthy sustainable communities. Strategies, while organized under the most relevant goal, many times benefit other goals.



Who are the most vulnerable of vulnerable users?

This master plan acknowledges the importance of equity in transportation policy and infrastructure investment decision-making. As such, there is a focus on the needs of disadvantaged/high risk populations – specifically youth, seniors, low-income, disabled, and minority populations.

GOAL #1: IMPROVE SAFETY

Eliminate pedestrian and bicycle fatalities and serious injuries, and improve the sense of safety experienced by all who bike or walk.

As a FHWA designated Pedestrian-Bicycle Focus State, New Jersey has adopted the national vision for highway safety, which calls for reducing the number of traffic fatalities by half by the year 2030. New Jersey's crash reduction goal is to reduce the 5-year rolling average of serious injuries and fatalities by 2.5% annually. NJDOT has a Pedestrian Safety Management System (PSMS), and a number of statewide plans have been developed to address safety, with set goals and targets. These include the *Highway Safety Plan*, the *Strategic Highway Safety Plan*, the *Bicycle Safety Action Plan* and the *Pedestrian Safety Action Plan*.

The strategies for this goal are designed to achieve the targets established in these plans by undertaking measures to improve data collection, so that a data driven approach in the longer term can be achieved.

Strategies

1. Prioritize the most vulnerable (disadvantaged/high-risk groups — youth, seniors, low-income, disabled and minority populations) of vulnerable user needs in projects and decision-making.

A. Develop a data-driven approach to the project prioritization process for bicycle and pedestrian safety and mobility needs.

B. Develop a Short Trip Opportunity Analysis tool to help inform mobility needs in projects under consideration, using six criteria (population density, employment density, proximity to a NJ TRANSIT bus or rail station, proximity to schools, population below Poverty Level, and percent of households with no motor vehicle access). Over time, refine and use this tool to reflect and inform other goals with respect to health, equity and sustainability.

2. Maximize use of HSIP funding for ADA, pedestrian, and bicyclist safety projects.

A. Adopt project prioritization criteria that create incentives for bicycle and pedestrian projects or establish minimum set-asides.

3. Improve data collection and data management systems.

A. Reduce the incidence of null records and, over the longer-term, customize crash reports for crashes involving pedestrians and for crashes involving bicyclists. This should occur in conjunction with training the enforcement community on crash report completion.

B. With improved data and land use criteria, continue to identify high-risk locations and populations needing targeted improvements.

C. Establish an online tool and mobile application (with geolocation capability) where the public can report bicycle and pedestrian problem locations – "near misses", etc.

D. Develop bicycle and pedestrian safety performance measures as part of the new FHWA rules for implementing MAP-21 and the FAST Act.

4. Implement the *Pedestrian Safety Action Plan* and the *Bicycle Safety Action Plan*.

A. Review priority actions and recommendations of the *Pedestrian Safety Action Plan* (2014) and *Bicycle Safety Action Plan* (2016) and integrate implementation efforts with this master plan.

GOAL #2: ENHANCE ACCESSIBILITY, MOBILITY, AND CONNECTIVITY

Provide a connected and accessible network for bicyclists and pedestrians throughout New Jersey.

A connected and accessible network helps to make walking and bicycling more efficient, effective, and attractive for traveling. By expanding pedestrian and bicycle infrastructure in a fashion that considers safety, public input, transit access, development patterns, and proper maintenance, more citizens will have the opportunity to walk or bicycle to meet their everyday transportation needs.

Strategies

1. Continue to move Complete Streets from policy to implementation.

A. Maximize Complete Streets Implementation through education, training, funding support, tools and best practices.

B. Develop and fund pilot projects in communities that have adopted Complete Streets implementation plans.

C. Test and evaluate innovative concepts, new practices and technological advances.

2. Improve and expand the transportation infrastructure for bicyclists and pedestrians throughout the state.

A. Develop a data-driven approach to the project prioritization process for bicycle and pedestrian safety and mobility needs.

B. Adopt NACTO *Urban Bikeway Design Guide, Urban Street Design Guide,* and *Transit Street Design Guide* at the state, MPO, county, and local levels.

C. Update guidance on the evaluation of bicycle and pedestrian facility types to include user need, comfort, and perceptions of safety.

D. Identify and complete trail system gaps.

E. Improve access to transit.

F. Improve maintenance of facilities to ensure safety of users.

G. Support construction of bicycle facilities to improve connectivity and mobility of non-motorized transportation networks to attract the widest range of potential users.

3. Collaborate with counties, municipalities, and school boards on land use and transportation decisions.

A. Using the *PSAP* (2014), *BSAP* (2016), and *New Jersey Complete Streets Design Guide* (2016) as framework, develop a training tool for local officials and municipal planning and zoning board members who review and approve site plans. Include issues such as aging in place, ADA and other relevant topics. Consider infographics and video as elements of the training program.

B. Train and coordinate municipal engineers for funding and prioritization.

C. Collaborate with school boards to support and coordinate SRTS efforts.

D. Conduct training via a coordinated, geographically informed strategy to bring together local, county, and NJDOT liaisons on resources including the NJDOT *Complete Streets Design Guide* (2016) and NACTO *Urban Bikeway Design Guide, Urban Street Design Guide,* and *Transit Street Design Guide.*

GOAL #3:
ACHIEVE HEALTHY, EQUITABLE, SUSTAINABLE COMMUNITIES

Provide opportunities for people to become more healthy and active through walking and bicycling.

Healthy, sustainable communities provide opportunities for walking and bicycling, which in turn supports more active and healthy lifestyles, and achieves healthier communities. People are more active when they live in communities that have sidewalks, open space, bicycle lanes and safe streets that are well maintained in all seasons. But healthy and sustainable communities must also be equitable. They must provide opportunity and choice for all people, with particular consideration for the most vulnerable (disadvantaged/at-risk populations) of vulnerable users.

Strategies

1. Continue to educate the public on the benefits of and safe practices for walking and bicycling.

A. Create and publicize a pilot program for safe walking practices and coordinate dissemination with partners.

B. Support efforts to improve community/local enforcement relationships through educational programs/outreach based on positive reinforcement of safe bicycling and walking practices.

C. Create a multilingual Public Service Announcement (PSA) or video for safe bicycling in underserved communities.

2. Continue and prioritize all Safe Routes To School initiatives.

A. Continue to promote and encourage schools and municipalities to support and implement SRTS programs, including education and encouragement programs and policies, and school travel plans.

B. Leverage SRTS networks to achieve complementary goals around community health and wellness.

3. Continue to partner and build relationships outside of traditional transportation circles to strengthen communities, particularly those at high risk and with health concerns.

A. Collaborate with health, enforcement, business, and environmental partners (NJ Department of Health, NJ Conservation Foundation, NJ Prevention Network, New Jersey Partnership for Healthy Kids, Rails-to-Trails Conservancy, NJ Healthy Communities Network, NJ Bike Walk Coalition, Sustainable Jersey & Sustainable Jersey for Schools, and others).

B. Collaborate with equity and environmental justice partners (NJ Department of Environmental Protection (NJDEP) Office of Environmental Justice, NJ Department of Labor, and MPOs (including DVRPC's Equity through Access Program), New Jersey Environmental Justice Alliance, and others).

C. Collaborate with community design and placemaking partners (American Planning Association New Jersey Chapter (APA NJ), AARP, Active Living Network, National Consortium for Creative Placemaking, Project for Public Spaces, Main Street New Jersey, and others).

D. Re-evaluate NJ BPAC membership and amend bylaws to add one or two additional seats to NJ BPAC Executive Council to expand formal representation of equity and/or community health and sustainability partner agencies.

E. Support development of job training opportunities through support of bicycle co-operatives and other community-based programs that provide training opportunities for youth and underserved communities.

GOAL #4:
FOSTER A CULTURE SHIFT

Considering the needs of all users becomes the default way of doing business, with Complete Streets integrated into everyday practice.

Creating a safe and enjoyable walking and bicycling environment cannot be achieved only through providing infrastructure. The strategies for this goal recognize that education, encouragement and enforcement are also needed to increase public awareness of the benefits of bicycling and walking, and create a culture of confidence, responsibility, and respect among all users of the system now, and in the future.

Strategies

1. Increase public awareness of the benefits of bicycling and walking.

A. In concert with education, employment, equity, health, housing and other partners, conduct an alternating year bicycle and pedestrian survey. Add questions about cultural acceptance of bicycling and walking so that change over time can be studied.

2. Improve bicyclist, pedestrian, and driver behavior.

A. Adopt Safe Passing legislation.

B. Increase compliance with Stop and Stay Stopped crosswalk law.

C. Support/expand pedestrian safety enforcement training tools, including development of a pilot pedestrian safety campaign.

D. Develop a statewide public campaign to foster respect among modes.

E. Partner and build relationships outside of traditional circles to build awareness and understanding of the need to improve safe driving and road sharing practices. Partners include those organizations and entities that address the needs of New Jersey's aging population, insurance companies, cellular companies, driver's education companies, and others.

F. Launch a joint initiative among agencies such as NJDOT, NJDHTS, and NJMVC to educate the public on existing rules that govern how pedestrians, bicyclists, and motor vehicle operators share the roadway.

3. Address emerging technologies, such as electric bikes and bike share.

A. Develop a White Paper on emerging technologies and identify critical education, enforcement and other issues.

GOAL #5: FACILITATE COORDINATION AND INTEGRATION

No one entity alone can achieve the goals of this master plan — a partnership of public, private, and nonprofit partners is needed.

The opportunities for growth in walking and bicycling are expansive and dependent upon many agencies, jurisdictions, and organizations throughout New Jersey. This master plan recognizes that sensible partnerships must be developed, maintained, and leveraged for the vision of pedestrian and bicycle travel to come to fruition.

Strategies

1. **Conduct a comprehensive review and evaluation of bicycle and pedestrian legislation, regulations, plans and policies at the state, regional and county level to understand what exists and where there are gaps.**
2. **Monitor and track progress for adoption and implementation of state funded bicycle and pedestrian local technical assistance projects.**
   - A. Conduct an annual scorecard, and a mid-horizon (Year 5) more detailed evaluation of progress toward master plan implementation.
3. **Partner with the public, private, and nonprofit communities in the education, employment, environment, enforcement, equity, health, and housing sectors to integrate Complete Streets, Safe Routes to School, Safe Streets to Transit and bicycle and pedestrian initiatives.**
   - A. Continue to improve internal coordination and collaboration within NJDOT. Hold an internal partners Summit at NJDOT for units that have a role in implementing bicycle and pedestrian projects in the state.
   - B. Hold an external partners summit to share data, analysis/trends, and to kick off master plan implementation and partnership efforts.
   - C. Review and assess NJ BPAC membership.

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Chapter 4

Implementing the Master Plan

Implementation is a cooperative effort among NJDOT and a number of stakeholders. Recognizing that this master plan is a living document, this chapter describes a path forward that builds momentum through outreach, collaboration, and transparency.

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Coordinate and Collaborate

NJDOT has long functioned as the state's leader and main resource for encouraging routine, convenient, and secure nonmotorized travel in New Jersey. It has done so through project delivery, research, county and municipal funding and planning assistance, design guidance, and policy development.

In spearheading this master plan, NJDOT will act as a transformational leader, providing direction and guidance to its partner entities and functioning as a resource to all those involved in achieving the vision and goals. As part of this leadership, NJDOT will continue to improve coordination among its programs and its units responsible for planning, designing, and constructing bicycle and pedestrian projects.

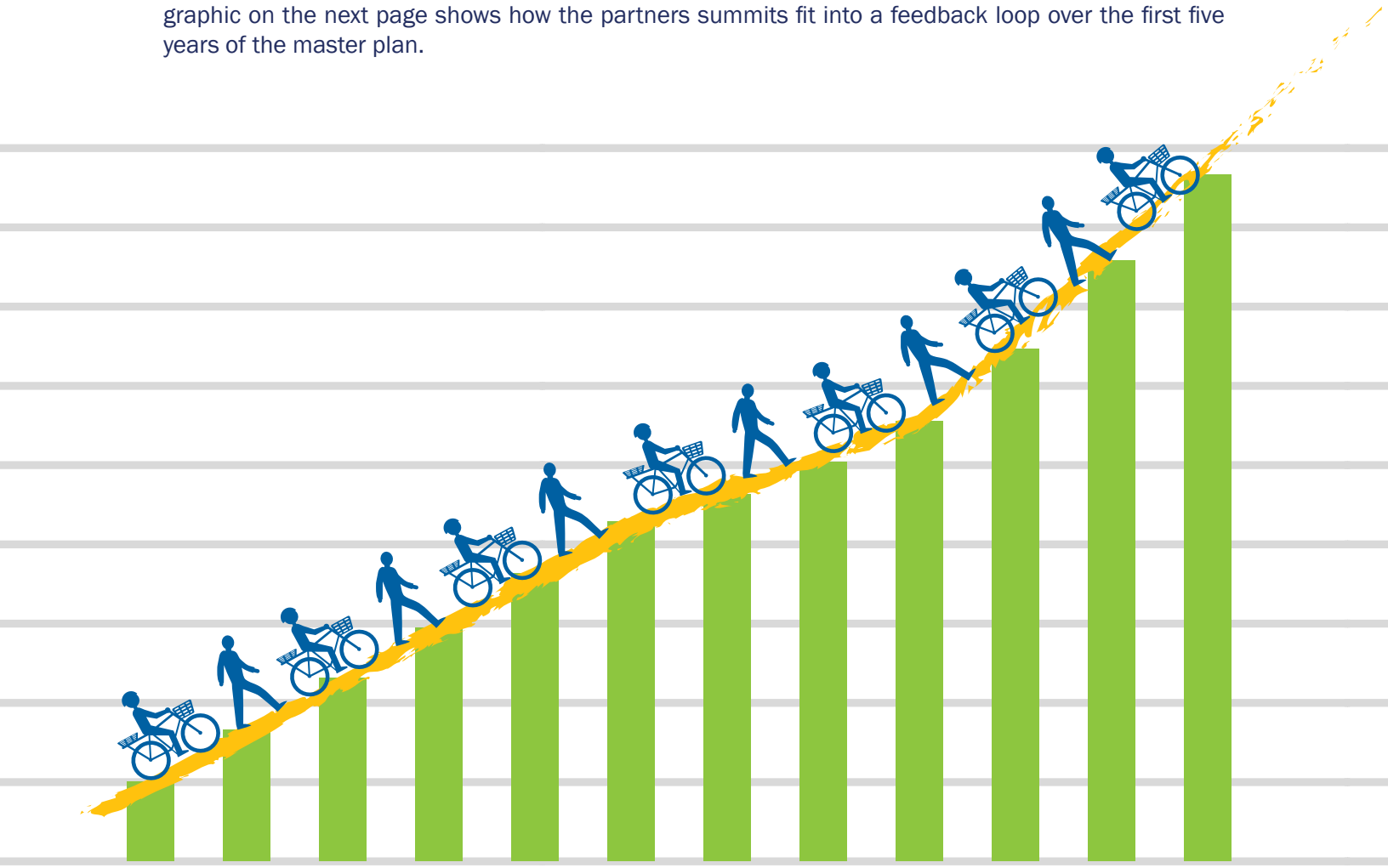
Collaboration and coordination are instrumental to realizing this master plan. Along with NJDOT, a number of entities must embrace the roles and responsibilities identified in the master plan and earnestly pursue the goals and strategies in support of the vision. Strengthening existing relationships and forging new relationships with partners across the state will be an important part of successful implementation. To achieve the goals, NJDOT will lead from the front, with a collaborative effort among NJDOT, other state agencies, Metropolitan Planning Organizations (MPOs), counties, municipalities, nonprofits/NGOs, consultants, developers, advocates, and the general public in implementing the strategies identified in Chapter 3. Periodic outreach efforts, such as surveys, annual assessments, and website updates, will help to track progress towards implementation and keep the master plan current.

Lay the Groundwork in Years 1-3

This master plan is intended to be a living document. As relationships develop and collaboration occurs, data is gathered and analyzed, trends are understood (including those that may change or are new) and projects are implemented, the master plan and its implementation measures must be evaluated and re-evaluated as needed. Implementing the master plan over the next ten years will require flexibility and transparency. To begin this process, a series of steps with feedback loops has been identified for the first three years. The focus of these early years will be on actions that will help address the challenges of jurisdictional authority, data collection and analysis, and reaching and engaging the public. These actions will help lay the groundwork for developing other strategies, and track how progress on the master plan is being made.

In its role as a transformational leader, NJDOT will initiate two key initiatives to provide the framework. A series of internal and external partners summits will be held each year over the first three years of the master plan. The purpose of each summit is to share knowledge and data in a two-way information exchange, and identify specific opportunities for collaboration.

At the conclusion of each of the first three years, a scorecard on progress will be developed and reviewed with internal and external summit partners, and reported out to the public. In Year 4, the effort will be to assess where we are and what actions are needed as the plan approaches mid-horizon. These scorecards will inform an overall master plan implementation progress report in Year 5. The graphic on the next page shows how the partners summits fit into a feedback loop over the first five years of the master plan.



Internal Partners Summits

NJDOT will conduct a series of internal partners summits as an important first step towards an improved collaborative environment. NJDOT units responsible for planning, designing, and constructing bicycle and pedestrian facilities should:

- meet to review the master plan's goals and strategies,
- exchange knowledge about trends, critical issues, and best practices (including performance measures), and
- develop a collaborative approach to identifying, planning, designing, and constructing future projects.

One outcome of the internal partners summits should be to identify future activities that will help all NJDOT staff and their consultants, such as training sessions and opportunities for collaborative project development. A specific outcome of the internal partners summits should be to lay the groundwork for developing a Bicycle and Pedestrian Management System.

External Partners Summits

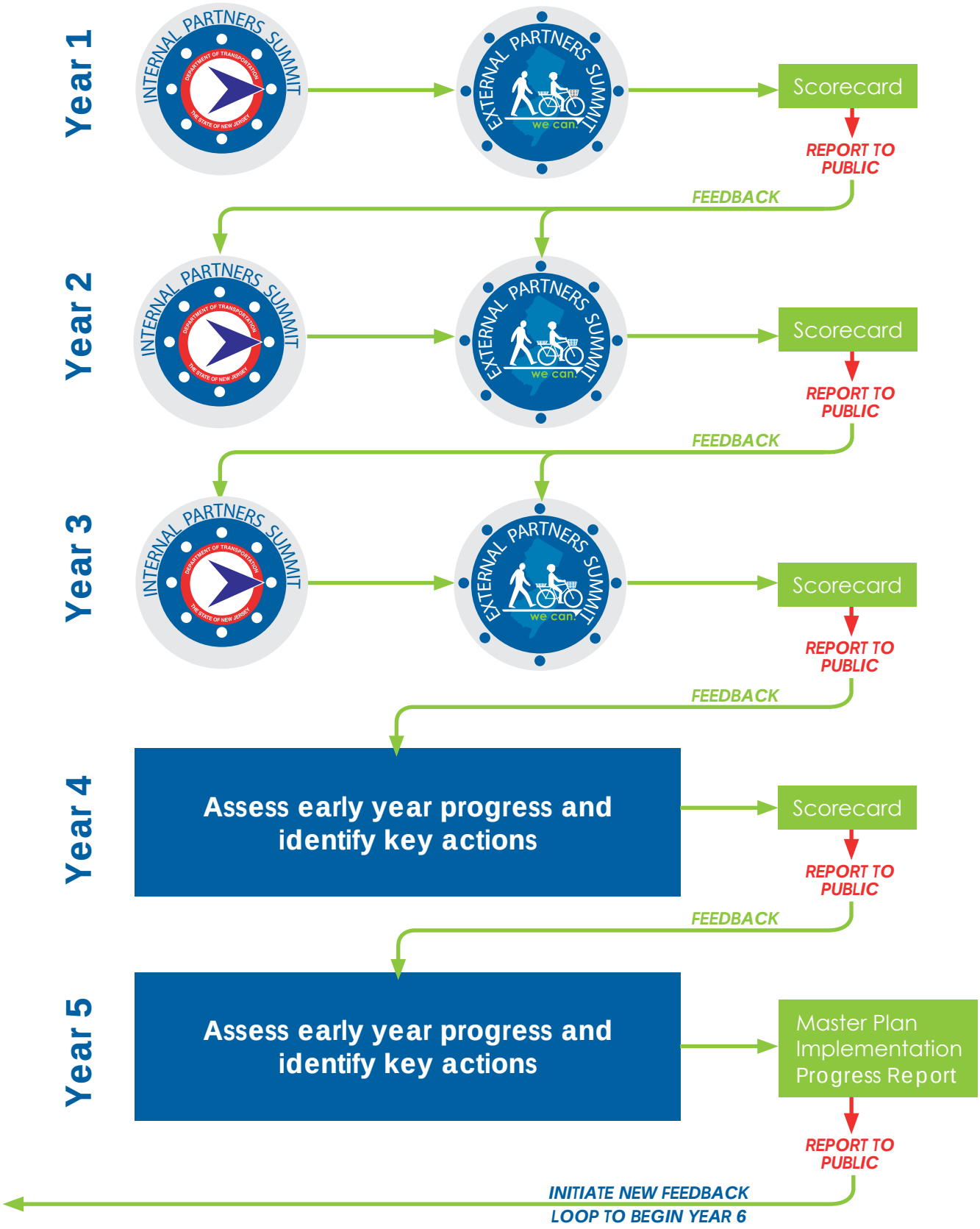
NJDOT will convene a series of external partners summits to bring together entities external to NJDOT who are directly involved in pedestrian and bicycling projects, programs, and activities. Participants will include BPAC members, along with nontransportation entities from fields such as health, environmental justice and equity, education, or development. These partners include other state agencies, institutions, counties, municipalities, NGOs, developers, and others. The purpose of the external partners summits will be to not only to develop an understanding of the range of plans and activities underway and how they could inform each other, but also a two-way information exchange.

The external partners summits will be held after the internal partners summits. The external partners summits should:

- review the master plan,
- review outcomes of the internal partners summits, and
- coordinate plans, policies, available data and analysis to lay the groundwork for implementing the master plan and measuring progress.

The outcome of the external partners summits should include how to collaborate on broad objectives (to address key issues such as outreach to disadvantaged and vulnerable populations) as well as address specific needs (data sharing).

Partners Summits Feedback Loop



Improve Data Collection

Several data collection and analysis activities are also envisioned in the early years. These include:

1. Conducting a public survey to assess attitudes and perceptions about walking and biking, and to track changes to behavior and use over time.

2. Developing and publicizing an online reporting tool for the public to report problem locations for pedestrians and bicyclists.

3. Conducting a Complete Streets Local Planning Assistance survey to develop a database of what has been accomplished in Complete Streets plan adoption and implementation. With an eye towards continuing to increase the number of Complete Streets plans in the state, the survey will also be used to identify problems in implementation that must be addressed.

4. Developing a short trip opportunity analysis tool as part of creating a project selection process.

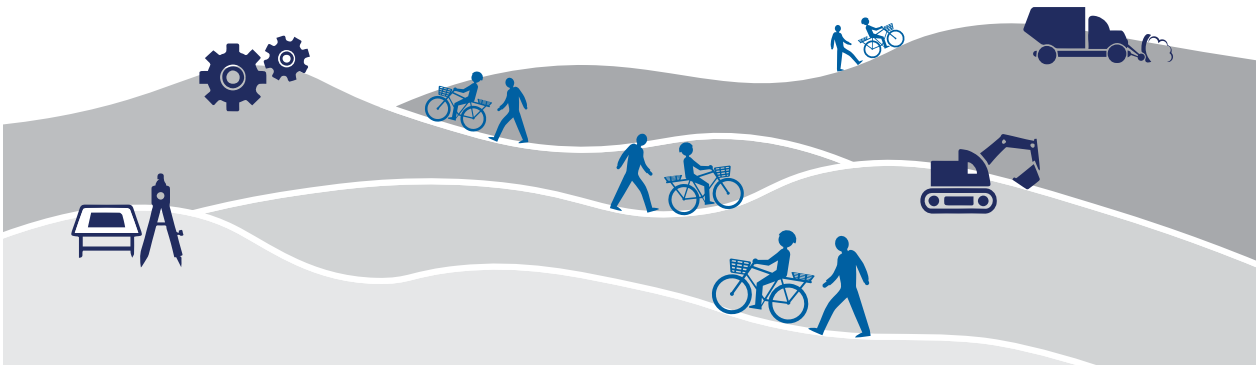
Each of these activities are interrelated in that they provide structure for future actions. For example, the summits, Bicycle and Pedestrian Management System, online reporting tool, and short trip opportunity analysis tool all will be helpful to identify needed projects, achieving the strategy of defining a more rational project selection process. The Complete Streets Local Planning Assistance survey results will help future plans have a greater likelihood of being adopted and successfully implemented.

Opportunities and Challenges

Jurisdictional Authority, Responsibility, and Coordination

In New Jersey, there are many different transportation entities responsible for planning, building, and maintaining walking and biking infrastructure. Many develop and implement plans and policies that directly or indirectly affect bicycle and pedestrian modes. Often they operate in their own silos, making unique decisions within their authority that impact the continuity and seamlessness of the walking and biking system.

Since the *Phase 2 Plan* in 2004, the many benefits of biking and walking are being recognized by a broader landscape and as a result, are being incorporated into the plans and actions of others. Many nontransportation entities have a role in New Jersey's vision for bicycle and pedestrian modes in the future, including those who lead education, health policy and advocacy, community planning and placemaking, or development in the state. Better coordination and communication between all of these entities is essential to establish consistent objectives, priorities, and projects.



Data Collection, Analysis, and Performance Management

The move towards planning and delivering a more performance-based transportation system provides a great opportunity to gauge how well plans are achieving goals. There are two key challenges to performance management. While there are many performance measures designed to evaluate programs and outcomes, the practice is still evolving. Data to support performance measures is often unavailable, inconsistently collected, incomplete (or unavailable at a statewide level). Data collection is often cost prohibitive, particularly at a statewide level. The many entities directly and indirectly involved, and the silos noted above further complicate data collection, sharing and analysis efforts.

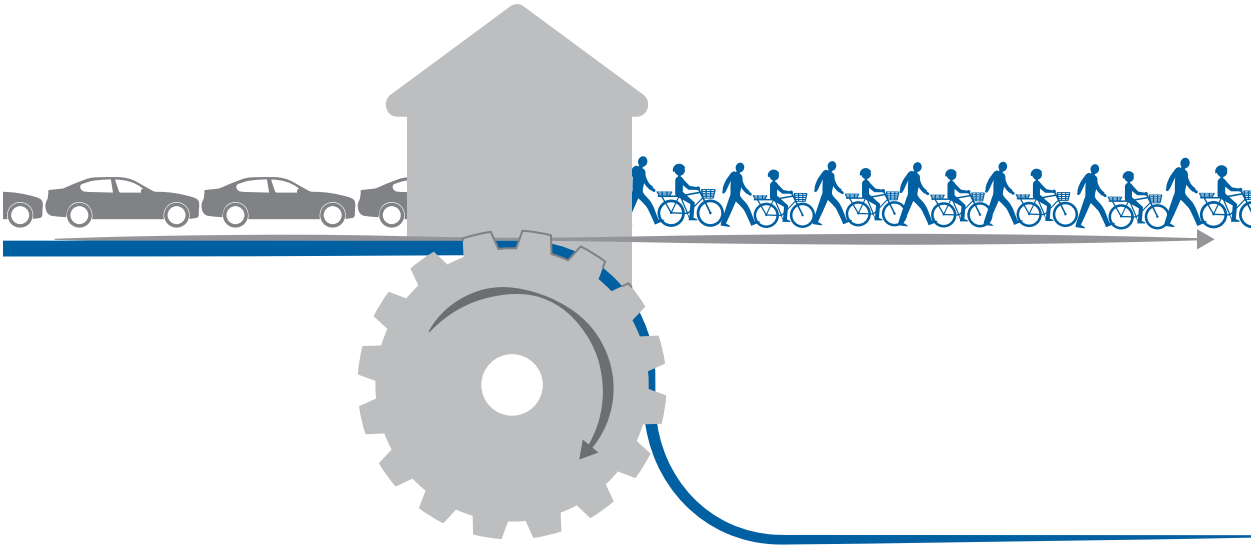
Reach and Engage the Public

While public engagement is important in the implementation of any plan, reaching, informing, educating, and providing meaningful opportunities for input is a challenge, especially with disadvantaged segments of the population which are difficult to reach yet have the most profound needs.

Implementing the master plan will require specific actions to successfully reach all segments of the public, and flexibility in plan implementation to learn from and address issues as they arise, including bringing new actors into the process.

Available Resources

Implementing a plan requires consistent and dedicated resources to gather and analyze data, communicate and coordinate information, develop plans and projects, and measure and report results. An overview of funding sources is provided in the appendix.



New Jersey Bicycle & Pedestrian Master Plan

Key Actions for Years 1-3

Goal	Within One Year	Within Two Years	Within Three Years
Goal 1: Improve Safety	Develop and publicize an online reporting tool for the public to report problem locations	Develop and test a training program for crash reporting Develop and test a short trip opportunity analysis tool for the project prioritization process	Develop and test bicycle and pedestrian crash reporting templates
Goal 2: Enhance Accessibility, Mobility, and Connectivity	Conduct a Local Planning Assistance survey to inventory Complete Streets plan adoption and implementation Identify critical issues for increasing the number of adopted Complete Streets plans Establish a yearly tracking system	Develop and fund pilot projects in communities with adopted Complete Streets implementation plans	Develop a data-driven management system for the project prioritization process
Goal 3: Achieve Healthy, Equitable, Sustainable Communities		Create a bilingual public service announcement for safe bicycling Create a pilot program for safe walking (identify and implement in three pilot communities; conduct before and after surveys	
Goal 4: Foster A Culture Shift	Conduct a public survey on travel, attitudes, and perceptions about walking and bicycling Identify and conduct pedestrian/bicycle safety enforcement and educational training and events on annual basis		Develop a statewide campaign: Respect for All Modes
Goal 5: Facilitate Coordination and Integration	Conduct Internal Summit (conduct survey; develop joint action plan) Conduct External Summit (share plans and data, collaborate)	Conduct Internal Summit (conduct survey; assess progress of joint action plan) Conduct External Summit (review progress and findings)	Conduct Internal Summit (conduct survey; assess progress of joint action plan) Conduct External Summit (review progress and findings)
Reporting Progress	Year One Scorecard	Year Two Scorecard	Year Three Scorecard

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Related Policies, Plans, and Programs

In order to provide a blueprint for improving bicycle and pedestrian safety and mobility in New Jersey, it is necessary to understand related policies, plans, and programs at the federal, state, and local levels. While the focus of this master plan is on state agencies, bicycle and pedestrian safety and mobility has been an important part of other federal, regional, and private efforts. The following section provides an overview of significant policies, plans, and programs related to walking and bicycling, including:

Federal

General overview of recent federal guidance and legislation related to pedestrian and bicycle transportation.

State

General overview of the actions and initiatives of state agencies and affiliated organizations, including:

- New Jersey Department of Transportation
- New Jersey Division of Highway Traffic Safety (DHTS)
- NJ TRANSIT
- New Jersey Department of Environmental Protection (NJDEP)
- New Jersey Department of Community Affairs (NJDCA)
- New Jersey Department of Health (NJDOH)
- Rutgers Center for Advanced Infrastructure and Transportation
- Alan M. Voorhees Transportation Center (VTC) at Rutgers University

Regional

General overview of the actions and initiatives of transportation-related entities with a regional focus, including:

- Metropolitan Planning Organizations (MPOs)
- Counties
- Transportation Management Associations (TMAs)
- Private Foundations and Non-Profit Organizations

Plans

General overview of related transportation plans in New Jersey, including:

- NJDOT: *New Jersey Complete Streets Design Guide* (2016), *Bicycle Safety Action Plan & Toolbox* (2016), *Pedestrian Safety Action Plan & Toolbox* (2014), *New Jersey School Zone Design Guide* (2014)
- NJDOT & NJ TRANSIT: *New Jersey Long Range Transportation Plan* (2008)
- NJDHTS: *New Jersey Highway Safety Plan* (2016)
- NJDEP: *New Jersey Trails Plan Update* (2009)
- Together North Jersey: *The Plan* (2015)

Federal

Federal guidance and policies inform how goals, strategies, and performance measures should be considered and developed for this master plan. The USDOT 2010 policy statement in support of walking and bicycling marked a shift in federal policy from meeting minimum accommodation standards to recognizing the value and importance of safe and convenient facilities for walking and bicycling:

> *The [US]DOT policy is to incorporate safe and convenient walking and bicycling facilities into transportation projects. Every transportation agency, including DOT, has the responsibility to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems. Because of the numerous individual and community benefits that walking and bicycling provide — including health, safety, environmental, transportation, and quality of life — transportation agencies are encouraged to go beyond minimum standards to provide safe and convenient facilities for these modes.*[1]

In recent legislation and policies, there has been an emphasis placed on nonmotorized transportation and performance measures related to safety. In 2012, Moving Ahead for Progress in the 21st Century Act (MAP-21) created a performance-based surface transportation program that included National Goals of Safety supported by a planning process that applies performance based approaches to decision-making. In March of 2016, FHWA issued the *Safety Performance Management Final Rule* (23 CFR 490) and the *Guidebook for Developing Pedestrian and Bicycle Performance Measures*. The former includes a nonmotorized safety performance measure, encouraging states and Metropolitan Planning Organizations (MPOs) to address bicycle and pedestrian safety through annual targets for the reduction of non-motorized fatalities and serious injuries on all public roads.

In 2013, FHWA released a memo encouraging and supporting flexibility in the design of pedestrian and bicycle facilities. FHWA asserts that the AASHTO *Guide for the Planning, Design, and Operation of Pedestrian Facilities* (2004) and *Guide for the Development of Bicycle Facilities, 2012, Fourth Edition* bicycle and pedestrian design guides are the primary national resources for planning, designing, and operating bicycle and pedestrian facilities, and that the ITE *Designing Urban Walkable Thoroughfares* guide and NACTO *Urban Bikeway Design Guide* build upon the flexibilities provided in the AASHTO guides. FHWA supports the use of these resources to further develop nonmotorized transportation networks, particularly in urban areas. Planners and project managers must also be cognizant of evolving requirements of the Americans with Disabilities Act (ADA) and requirements of the Manual on Uniform Traffic Control Devices (MUTCD).

USDOT has also launched multiple policy initiatives in support of enhancing bicyclist and pedestrian accessibility and safety. In October 2015, USDOT launched the Safer People, Safer Streets: Pedestrian and Bicycle Safety Initiative to address nonmotorized safety issues and help communities create safer, better connected bicycling and walking networks. As part of the USDOT's Livability Initiative, FHWA works within the HUD/DOT/EPA interagency Partnership for Sustainable Communities to coordinate and leverage Federal housing, transportation, water, and other infrastructure policies and investments to provide more transportation choices. As part of this effort, the FHWA produced the *Livability in Transportation Guidebook* to illustrate how livability principles have been incorporated into transportation planning, programming, and project design. In 2015, USDOT along with the CDC developed the Transportation and Health Tool (THT) to provide data on a set of transportation and public health indicators for each U.S. state and metropolitan area that describe how the transportation environment affects safety, active transportation, air quality, and connectivity to destinations.

1: United States Department of Transportation. (2010).

State

A number of New Jersey agencies are engaged in a variety of programs to improve bicycle and pedestrian conditions. NJDOT is the lead agency for many of these efforts. While NJDOT's main focus is on engineering improvements, NJDOT and its partner agencies and organizations also have implemented education and enforcement programs as part of a holistic 5E (Engineering, Education, Encouragement, Enforcement, and Evaluation) approach to improving pedestrian and bicyclist safety.

New Jersey Department of Transportation

Since the *NJ Statewide Bicycle & Pedestrian Master Plan, Phase 2* (2004), NJDOT has worked to incorporate the needs of bicyclists and pedestrians into the Department's everyday project development activities and to encourage and support the efforts of others. The Office of Bicycle and Pedestrian Programs (OBPP) plays a leading role in addressing bicycle and pedestrian needs and safety programs and projects in New Jersey. OBPP's primary efforts include the Complete Streets Initiative, the Local Bicycle and Pedestrian Planning Assistance Program, and the Safe Routes to School Program.

Complete Streets Policy

The NJDOT Complete Streets Policy institutionalizes the needs of bicyclists and pedestrians into everyday operations. After adopting its policy in 2009, NJDOT updated each phase of its Capital Project Delivery Process to be consistent with Complete Streets principles, designated OBPP staff as Complete Streets Subject Matter Experts, and developed a checklist to assist project engineers and consultants in developing and designing projects that are in compliance with the policy. NJDOT has also promoted Complete Streets statewide through training workshops.

Local Bicycle and Pedestrian Planning Assistance Program

For almost 20 years, the OBPP has worked with local NJ communities to develop bicycle and pedestrian plans through a Local Bicycle/Pedestrian Planning Assistance Program. Through this program, the NJDOT has provided technical planning assistance to more than 80 municipalities and counties to develop plans which will help make their communities better and safer places to bike and walk. The program provides these services to local jurisdictions that express a strong desire to improving or enhancing bicycle and pedestrian travel within their communities.

Safe Routes to School Program

The New Jersey Safe Routes to School (SRTS) Program is administrated jointly by the SRTS Coordinator within NJDOT's OBPP and by the Division of Local Aid and Economic Development. Since 2005, NJDOT has overseen grant proposals and awarded millions of dollars to local communities to develop and implement infrastructure projects which enable safe and more accessible walking and bicycling environments and non-infrastructure activities to promote more walking and bicycling to and from school. In 2011 the non-infrastructure program was expanded to incorporate regional SRTS coordinators through New Jersey's eight Transportation Management Associations (TMAs), overseen by the NJ SRTS Resource Center. Regional SRTS coordinators offer technical assistance in starting or expanding a variety of education and encouragement programs in communities in all 21 counties.

New Jersey Division of Highway Traffic Safety (DHTS)

The DHTS is responsible for developing and implementing the *New Jersey State Highway Safety Plan* (HSP), with the ultimate goal of moving toward zero fatalities. Using federal funding provided by the National Highway Traffic Safety Administration (NHTSA), DHTS administers the State and Community Highway Safety Grant Program (Section 402 program), which provides funding for a variety of state and local projects. These projects address the national priority areas of NHTSA and FHWA, which include pedestrian and bicycle safety.

Major DHTS activities and programs that relate to bicycle and pedestrian initiatives include pedestrian decoy programs (Cops in Crosswalks), crossing guard training and resources, programs to promote bicycle helmet distribution and proper fittings, and funding a specialty course on pedestrian/bicycle crash investigation for police officers.

NJ TRANSIT

NJ TRANSIT implements several initiatives to improve bicycle and pedestrian access to stations and transit stops, promote walkability, and improve safety at rail crossings. Efforts include Safe Routes to Transit studies and support for bicycle access to transit through station parking infrastructure and policies to support bicycles on-board buses and trains. NJ TRANSIT has also appointed a "Bicycle Advocate" to serve as a liaison between their organization and the biking community.

New Jersey Department of Environmental Protection (NJDEP)

The NJDEP's Green Acres Program administers the Federal Highway Administration's Recreational Trails Program (RTP) in New Jersey. Projects are reviewed and recommended for funding by the New Jersey Trails Council and approved by the Federal Highway Administration under the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. The Trails Council comprises interest groups for hiking, mountain biking, horseback riding, motorized trail use and canoeing/kayaking, as well as several general trail advocates and state government representatives.

NJDOT and NJDEP have collaborated on planning projects including the *New Jersey Trails Plan Update* (2009) and the routing study for the September 11th National Memorial Trail across New Jersey (2015).

New Jersey Department of Community Affairs (NJDCA)

As part of the New Jersey Department of Community Affairs, the Main Street New Jersey program provides technical assistance and training to revitalize historic downtowns. The program helps municipalities improve the economy, appearance and image of their central business districts through the organization of local citizens and resources. Focus areas of the Main Street New Jersey program have a comprehensive approach which includes pedestrian, bicycling, and streetscape improvements as economic generators for local businesses.

New Jersey Department of Health (NJDOH)

New Jersey Department of Health administers several programs that address chronic disease prevention. The ShapingNJ Program is the state partnership for nutrition, physical activity, and obesity prevention. The goal of this partnership is to prevent obesity and improve the health of populations that are at risk for poor health outcomes in New Jersey by making "the healthy choice, the easy choice." The partnership's work takes place where New Jerseyans live, work and play including child care centers, schools, communities, worksites and businesses, and healthcare facilities. In addition, members of the Governor's cabinet formed the Population Health Action Team to work on creating and advancing health in all policies initiatives that build healthy communities and improve health outcomes.

Rutgers Center for Advanced Infrastructure and Transportation

Rutgers Center for Advanced Infrastructure and Transportation (CAIT) is one of five National University Transportation Centers, part of a consortium of academic research institutions sanctioned and supported by the Research and Innovative Technology Administration (RITA) of the USDOT.

With funding provided by the NJDOT through the Bureau of Transportation Data and Safety, CAIT has pursued research and developed programs related to pedestrian and bicycle safety in New Jersey. The Transportation Safety Resource Center (TSRC) provides technical assistance, training, data analysis and traffic safety programs to state/ local transportation and law enforcement agencies, including DOTs, state police, MPOs, county engineers, municipal administrators, and others. TSRC created Plan4Safety, a web-based platform for querying, analyzing, and displaying query results from NJDOT's crash database, and assists the NJDOT with crash data analysis and the development of safety programs by other federal, state and local agencies. TRSC provides training workshops and webinars, many of which focus on analyzing and reducing crashes, crash data collection and best practices in the design of bicycle facilities and infrastructure. TSRC also participates in Road Safety Audits.

Alan M. Voorhees Transportation Center (VTC) at Rutgers University

Located within the Edward J. Bloustein School of Planning and Public Policy at Rutgers, the Alan M. Voorhees Transportation Center's primary activities include applied and academic research, education and training, and service to the state and region on a variety of transportation planning and policy topics. VTC collaborates with NJDOT to conduct a number of programs related to bicycle and pedestrian issues and improving mobility statewide. These include operating two resource centers that assist public officials, transportation and health professionals, and the general public in creating a safer and more accessible walking and bicycling environment through primary research, education, and dissemination of information about best practices in policy and design.

New Jersey Bicycle & Pedestrian Resource Center serves as a clearinghouse for technical and educational information and resources. It supports the New Jersey Bicycle and Pedestrian Advisory Council (NJ BPAC) and runs the Ambassadors in Motion (AIM) program, which conducts education and outreach campaigns to promote safety and active transportation in New Jersey.

New Jersey SRTS Resource Center (NJ SRTSRC) works with NJDOT to support SRTS programming, including assisting schools, municipalities, and community groups with education, encouragement, enforcement, evaluation, planning and other non-infrastructure related SRTS activities. The NJ SRTSRC also conducts training programs, provides direct technical assistance, and produces primary research reports on best practices for program implementation.

Both Centers are supported by NJDOT through funds provided by FHWA.

Regional

Metropolitan Planning Organizations (MPOs)

New Jersey's MPOs — North Jersey Transportation Planning Authority (NJTPA), South Jersey Transportation Planning Organization (SJTPO), and Delaware Valley Regional Planning Commission (DVRPC) — are all active in identifying bicycle and pedestrian needs and supporting improvement projects. The MPOs prioritize bicycle and pedestrian safety and mobility as an integral part of their planning activities. Their programs include a variety of initiatives, including education and encouragement campaigns, road safety audits, evaluation and monitoring activities, and technical assistance and funding to support bicycle and pedestrian projects.

Counties

Counties in New Jersey have jurisdiction over 17% of the roadway network statewide, including many major and minor arterials, and play an important role in improving bicycle and pedestrian mobility. Many counties are actively incorporating bicycle and pedestrian needs into the planning process, whether as part of the circulation element of the master plan or as independent initiatives. Eight counties have adopted Complete Streets policies, and Essex and Sussex Counties developed Complete Streets implementation plans. Bergen County completed the Central Bergen County Bicycle and Pedestrian Plan in 2015, which identified infrastructure improvements in an eight-municipality study area to create a more robust bicycle and pedestrian network. Ocean County is advancing the planning and phased-construction of the Barnegat Branch Trail, a 15.6 mile "rail-to-trail" between Barnegat Township and Toms River Township. Over ten miles of trail have been completed since its inception in 2007.

Transportation Management Associations (TMAs)

Transportation Management Associations (TMAs) are private, non-profit, member-controlled organizations established to work with employers, local governments, and state agencies to help provide effective and efficient transportation options and commuter information. There are eight TMAs covering all 21 counties throughout New Jersey. Each has SRTS Regional Coordinators to assist schools and communities with events, education, travel plans, and surveys. The TMAs are also involved in other activities to support and promote bicycling and walking. Hunterdon Area Rural Transit TMA, for example, offers presentations to encourage senior citizens to walk regularly. Cross County Connection TMA has promoted Complete Streets in southern New Jersey through training workshops, and assisted Burlington County in developing the *Burlington County Bicycle Master Plan*.

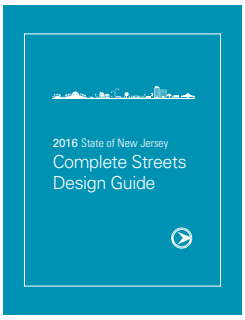
Private Foundations and Non-Profit Organizations

A variety of private sector and non-profit organizations are also active in supporting bicycle and pedestrian programs in New Jersey. For example, the New Jersey Bike & Walk Coalition provides bicycle education each year to third grade students in the Freehold Borough and Rutherford school districts, with funding from the Freehold Borough Education Foundation and Sustainable Jersey (Rutherford). The following organizations all promote the needs of bicyclists and pedestrians through research, advocacy, education programs, and/or grant funding:

- The Robert Wood Johnson Foundation (RWJF)
- American Association for Retired Persons (AARP)
- AAA Foundation for Traffic Safety
- Sustainable Jersey & Sustainable Jersey for Schools
- Rails-to-Trails Conservancy
- New Jersey Bike & Walk Coalition
- Brain Injury Alliance of New Jersey (BIANJ)
- Bicycle Coalition of Greater Philadelphia
- Tri-State Transportation Campaign
- Cooper's Ferry Partnership

Plans

NJDOT



New Jersey Complete Streets Design Guide (2016)

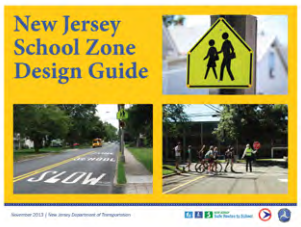
This guide will provide planners and engineers with strategies, design guidelines, and illustrative street typologies to support implementation of complete streets throughout New Jersey.

Bicycle Safety Action Plan & Toolbox (2016)

This data-driven study analyzes bicycle crash trends and current bicycle safety initiatives and identifies a broad range of targeted strategies to improve bicycle safety in New Jersey over the next five years.

Pedestrian Safety Action Plan & Toolbox (2014)

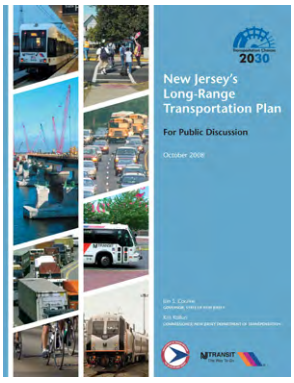
This data-driven study analyzes pedestrian crashes and presents strategies to reduce pedestrian fatalities and serious injuries in New Jersey by 20% in five years.



New Jersey School Zone Design Guide (2014)

This guide provides design recommendations to support safe and accessible school environments that encourage and enable students to safely walk and bike to school.

NJDOT & NJ TRANSIT



New Jersey Long Range Transportation Plan (2008)

New Jersey's most recent Long Range Transportation Plan, *Transportation Choices 2030*, recognizes the integration of transportation and land use planning, via the Smart Growth lens. Smart Growth refers to concentrating growth in existing centers that support public transit, walking, and bicycling, and is essential to achieving a sustainable transportation system.

NJ Division of Highway Traffic Safety

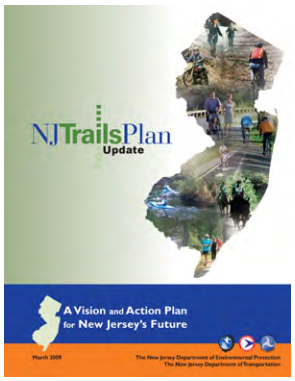
New Jersey Highway Safety Plan (2016)

The mission of the Highway Safety Plan is "the safe passage of all roadway users as we move toward zero fatalities." The plan supports NJDOT's *Pedestrian Safety Action Plan* and includes specific educational, enforcement and safety outreach strategies to reduce pedestrian and bicyclist injuries and fatalities.

NJ Department of Environmental Protection

New Jersey Trails Plan Update (2009)

Produced in coordination by the NJ Department of Environmental Protection (NJDEP) and NJDOT, the *New Jersey Trails Plan Update*, "presents a renewed vision, goals and strategic actions to help guide and coordinate the efforts of all those who plan, build, operate and maintain New Jersey's trails... to benefit New Jersey citizens and visitors of all ages and abilities, for whom t can provide access to nature and to community destinations, serving both recreation and transportation needs."



Together North Jersey

The Plan (2015)

Together North Jersey (TNJ) was created in 2011 to help develop a regional plan, *The Plan*, for North Jersey. Funded by a nearly $10 million federal grant and leveraged funds from members, TNJ formed a coalition of nearly 100 diverse partners—counties, municipalities, educational institutions, nonprofits, businesses and other groups—to develop the first comprehensive plan for sustainable development for the 13 northern New Jersey counties: Bergen, Essex, Hudson, Hunterdon, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union and Warren.

Bicycle and Pedestrian Funding Sources

Projects that benefit bicyclists and pedestrians are funded through federal and state programs, private sector investment, and Nonprofit initiatives. Current funding sources and their requirements are discussed in more detail in this section. Federal funding sources include the Fixing America's Surface Transportation (FAST) Act, Congestion Mitigation and Air Quality Improvement (CMAQ) Program, Transportation Alternatives (TA), Safe Routes to School (SRTS) Infrastructure Program, and the Local Safety Program/Highway Safety Improvement Program (HSIP). State funding streams are provided primarily through NJDOT, NJ TRANSIT or NJDEP. A small number of Nonprofit and NGO funding sources provide grants for tools, programs and projects.

Federal Funding Sources

Fixing America's Surface Transportation (FAST) Act

- *Congestion Mitigation and Air Quality Improvement (CMAQ) Program*
- *Transportation Alternatives (TA)*
- *Safe Routes to School (SRTS) Infrastructure Program*
- *Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Program*
- *Recreational Trails Program (RTP)*
- *Local Safety Program/Highway Safety Improvement Program (HSIP)*

State Funding Sources

Bikeway Grant Program
Municipal Aid Program
County Aid Program
Local Aid Infrastructure Fund (LAIF)
Local Bridges, Future Needs
Transit Village Grant Program
Green Acres Program

Nonprofit/NGO Funding Sources

Association of New Jersey Environmental Commissions (ANJEC) Grant Program
Kodak American Greenways Program
New Jersey Healthy Communities Network
New Jersey Prevention Network
PeopleForBikes Community Grants
Sustainable Jersey and Sustainable Jersey for Schools Small Grant Programs
Robert Wood Johnson Foundation
William Penn Foundation

Federal Funding Sources

Federal funding for transportation projects is primarily provided by programs established under the latest surface transportation legislation.

Fixing America's Surface Transportation (FAST) Act

In 2015, Congress adopted the first long-term surface transportation law in more than a decade. Known as the FAST Act, the bill provides federal transportation policy and funding for five years, authorizing $226.3 billion in Federal funding for fiscal years 2016 through 2020 for road, bridge, bicycling, and walking improvements.

The previous program, Moving Ahead for Progress in the 21st Century Act (MAP-21), made a number of reforms to the metropolitan and statewide transportation planning processes, including incorporating performance goals, measures, and targets into the process of identifying priority transportation improvements and project selection. The FAST Act includes provisions to support and enhance these reforms, with public involvement remaining a hallmark of the planning process. The FAST Act continues to develop requirements for a long range plan and a short-term transportation improvement program (TIP), with the long range statewide and metropolitan plans now mandated to include facilities that support intercity transportation, such as intercity buses. The statewide and metropolitan long range plans must describe the performance measures and targets that will be used to assess system performance and progress in achieving the performance targets. The FAST Act also requires the planning process to consider projects/strategies to improve the resilience and reliability of the transportation system, stormwater mitigation, and enhance travel and tourism.

A significant part of the reforms made by MAP-21 included transitioning to a performance-based program of establishing national performance goals for Federal-Aid Highway Programs. The FAST Act supports and continues this overall performance management approach, within which individual states invest in projects that will collectively make progress toward national goals. The FAST Act includes new performance management provisions, including a shortened time frame for states and MPOs to make progress toward meeting performance targets under the National Highway Performance Program (NHPP), and clarifies the significant progress timeline for the Highway Safety Improvement Program (HSIP) performance targets.

Programs under the FAST Act are summarized below. Safety throughout all transportation programs remains USDOT's number one priority. Consistent with this, the FAST Act continues to support the HSIP and the requirement that states pursue a data-driven, strategic, and performance-focused approach to improving highway safety on all public roads. The FAST Act clarifies the range of eligible HSIP projects, limiting eligibility to activities listed in statute (most of which are related to infrastructure safety). It also adds several activities to the list, including certain pedestrian safety improvements.

Congestion Mitigation and Air Quality Improvement (CMAQ) Program

CMAQ is a federal program that funds projects and programs that improve air quality and reduce traffic congestion. The construction of bicycle and pedestrian facilities that are not exclusively recreational (as they must reduce vehicle trips and therefore vehicle emissions), outreach promoting safe bicycle use, and other bicycle and pedestrian programs are eligible for funding.

The CMAQ program, continued in the FAST Act at an estimated average annual funding level of $2.4 billion, provides a funding source to state and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas), as well as former nonattainment areas that are now in compliance (maintenance areas).

Highlighted CMAQ eligibilities include public transit, bicycle and pedestrian facilities, travel demand management strategies, alternative fuel vehicles, and facilities serving electric or natural gas-fueled vehicles.

Transportation Alternatives (TA Set-Aside, or TA)

Created under Map-21, the Transportation Alternatives Program, or TAP, was designed to foster more livable communities and promote alternative modes of transportation, such as bicycling and walking, and encompassed activities that were previously funded separately by Transportation Enhancements (TE), Safe Routes to School (SRTS), and the Recreational Trails (RTP) programs. The FAST Act eliminated the MAP-21 TAP and replaced it with a set-aside of funds under the Surface Transportation Block Grant Program, referred to as the TA Set-Aside, or TA. These set-aside funds include all projects and activities that were previously eligible under TAP, encompassing a variety of smaller scale transportation projects such as pedestrian and bicycle facilities, recreational trails, Safe Routes to School (SRTS) projects, community improvements such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity. The FAST Act sets aside an average of $844 million per year for TA. Unless a state opts out, it must use a specified portion of its TA funds for recreational trails projects.

Similar to MAP-21, after the set-aside for the Recreational Trails Program, the FAST Act requires FHWA to distribute 50 percent of TA funds to areas based on population (suballocated), with the remainder available for use anywhere in the state.

States and MPOs for urbanized areas with more than 200,000 people conduct a competitive application process for the use of TA funds; eligible applicants include tribal governments, local governments, transit agencies, school districts, and a new eligibility for nonprofit organizations responsible for local transportation safety programs.

The NJDOT Division of Local Aid and Economic Development administers the TA funds. Eligible projects for TA funds include the provision of bicycle and pedestrian facilities and the preservation of abandoned rail corridors, including the conversion and use thereof for trails. While TE funded safety and education programs, these activities are no longer eligible candidates for TA funding.

Safe Routes to School (SRTS) Infrastructure Program

SRTS funds are intended to enable and encourage children in grades K-8 to walk or bicycle to school. Eligible infrastructure projects include the design and construction of sidewalks, crosswalks, signals, traffic calming, and bicycle facilities within two miles of a K-8 school. SRTS also has a noninfrastructure component, which consists of programing to educate children about safe walking and bicycling practices and encouragement activities, such as walk to school days.

The NJDOT Division of Local Aid and Economic Development administers the SRTS Program, and awards funds for SRTS projects through a competitive process. Local and regional governments, school districts and individual schools are eligible to be project sponsors and receive direct funding. Nonprofit organizations are not eligible to receive direct funding; however, they may partner with a Local Public Agency (LPA) that obtains and administers the grant.

Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Program

While known primarily as a mechanism to build and repair critical pieces of freight and passenger transportation networks, an intention of the program is to fund multimodal, multijurisdictional projects that would not be eligible for funding through traditional DOT programs.

To date, seven rounds of TIGER grants have been conducted. Eligible applicants for TIGER grants include state, local, and county governments, transit agencies, and metropolitan planning organizations (MPOs). Applicants must detail the benefits their project would deliver for five long-term outcomes: safety, economic competitiveness, state of good repair, livability, and environmental sustainability. A 20% match is required for urban areas; however, no match is required for applicants from rural areas as defined by the U.S. Census.

Recreational Trails Program (RTP)

The New Jersey Department of Environmental Protection administers the RTP under the Green Acres Program. The Recreational Trails program funds the development and maintenance of trails, including bicycle paths. Project costs may be funded up to an 80% federal share with a 20% local match.

Local Safety Program/Highway Safety Improvement Program (HSIP)

The purpose of the Local Safety Program is to achieve a significant reduction in fatalities and serious injuries on all public roads through a data-driven, strategic approach to improving highway safety. The program is implemented through the state's three MPOs. Applications for highway safety improvement projects must address priorities in the *New Jersey Strategic Highway Safety Plan* (SHSP) with project improvements selected based on a data-driven process.

Proposals must demonstrate a location's crash history (using multiyear data) and clearly show a relationship between the types of crashes and the proposed improvements. FHWA's proven safety countermeasures, which include road diets, are recommended to be considered in all HSIP projects. Road diets may include the installation of bicycle lanes. Assistance from SJTPO is available for several steps of the data-driven approach, including problem identification, countermeasure selection, and benefit-cost analysis. In FY 2015, $1 million is available in HSIP funds through NJDOT, with additional funding through the NJDHTS.

State Funding Sources

State funding for bicycle projects is provided primarily through NJDOT's Local Aid Program, which is funded by New Jersey's Transportation Trust Fund (TTF). Funds that may be spent on the planning, design, and construction of bikeways are primarily distributed through the programs listed below.

Bikeway Grant Program

To promote bicycling as an alternative mode of transportation and to further New Jersey's goal of creating 1,000 new miles of dedicated bike paths, NJDOT Division of Local Aid and Economic Development provides dedicated funds to construct bikeways. These funds can also be used for the preliminary and final design of bicycle facilities in municipalities that are eligible for Urban Aid or are Depressed Rural Centers according to the Transportation Trust Fund Authority Act.

The construction of bicycle paths that are physically separated from motorized vehicle traffic are given priority in the selection process; however, the proposed construction of any bicycle facility will be considered for funding. Proposals are also evaluated based on the creation of new bikeway mileage, connectivity to existing bikeways, and community support. Additional consideration is given to communities that have adopted a Complete Streets policy, are designated Transit Villages or Urban Coordinating Council (UCC) communities, or formally participate in the implementation of the *New Jersey State Development and Redevelopment Plan* (*NJ SDRP*).

Municipal Aid Program

Municipal Aid funds are distributed by NJDOT Division of Local Aid & Economic Development to help municipalities advance a variety of transportation projects without burdening local property taxpayers. Each county is appropriated funds for their constituent municipalities based on a formula. A municipality must submit an application, detailing a potential project, to their local NJDOT District Office. NJDOT has set a goal to distribute 10% of the competitive Municipal Aid funding to bicycle and pedestrian projects. Municipal Aid funds are also often used for routine roadway resurfacing and restriping, which can incorporate bikeways to maximize the effectiveness of these funds at little additional cost.

When evaluating municipal aid grant applications, NJDOT gives an additional credit to municipalities that have adopted Complete Streets policies.

County Aid Program

NJDOT Division of Local Aid and Economic Development distributes funds for the construction of roadway and bridge improvements on county roads through the County Aid Program. These funds are distributed on a formulaic basis, which considers factors such as population and county roadway mileage.

A project must be included in a county's Annual Transportation Program (ATP) to be considered for funding. The ATP is an annual list of transportation projects that are eligible for funding and includes a brief summary of the project and the estimated cost of construction. The ATP is approved by the County's Board of Chosen Freeholders before it is submitted to the local NJDOT District Office. County Aid funds are often used for routine roadway resurfacing and restriping. Incorporating bikeways into these projects can maximize the effectiveness of these funds at little additional cost.

Local Aid Infrastructure Fund (LAIF)

The Local Aid Infrastructure Fund is administered by NJDOT Division of Local Aid and Economic Development to address emergency and regional needs throughout New Jersey. Projects are selected at the discretion of the NJDOT Commissioner, and applications for funding may be submitted at any time.

High volume arterial and collector roadways that serve as bus routes are given the highest priority for funding, whereas dead end streets, parking lots, street lighting, and nonroadway related projects receive the lowest priority. Counties and municipalities may apply for funding for pedestrian safety and bikeway projects under this program.

Local Bridges, Future Needs

NJDOT Division of Local Aid and Economic Development provides funds for the improvement of bridges under county jurisdiction, including preventative maintenance, rehabilitation, and replacement. The construction of a bikeway on a county-owned bridge could be incorporated into a project that is funded by the Local Bridges, Future Needs program.

Transit Village Grant Program

New Jersey's Transit Village Initiative is a joint program between NJDOT and NJ TRANSIT to incentivize transit-oriented development and revitalization around New Jersey rail stations. Municipalities that are designated Transit Villages may apply for funds to be used for the construction and design of bicycle and pedestrian projects within the Transit Village area (within ½ mile of a transit station). Municipalities that are committed to TOD may be eligible for NJDOT Transit Village designation. Division of Local Aid and Economic Development administers the program.

Green Acres Program

Through the NJDEP, the Green Acres Program provides grants and loans for the acquisition and development of land for preservation and recreation. Funds from this program can be used to acquire open space that will be used for public outdoor recreation or conservation purposes and to build recreational facilities, such as bike paths, trails, and boardwalks.

Funding amounts vary depending on the type of project and other factors, such as whether a municipality has an open space tax. Projects are divided into the following categories:

Land Acquisition

- Planning Incentive: Local governments with an open space tax and Open Space and Recreation Plan (OSRP) are eligible for a 50% matching grant for land acquisition.
- Standard Acquisition: Local governments without an open space tax may qualify for a 25% grant and the balance as loan, at 2% interest over 30 years.
- Urban Aid: Acquisition projects in designated Urban Aid municipalities may qualify for a 75% grant with the balance as a 30-year, 0% interest loan.

Development Projects

- Standard Development: For local governments in rural, less developed municipalities and counties, funding is available for the development projects in the form of 20-year, 2% interest loan.
- Dense/Highly Populated: For local governments in more urbanized municipalities and counties, funding is available for development projects in the form of a 25% matching grant with the balance as a 2% interest loan.
- Urban Aid: Development projects in designated Urban Aid municipalities may be eligible to receive a 50% matching grant with the balance as a 20-year, 0% interest loan.
- Nonprofit Funding: Nonprofit organizations may be eligible for 50% matching grants for land acquisition or recreation development.

Nonprofit/NGO Funding Sources

Association of New Jersey Environmental Commissions (ANJEC) Grant Program

ANJEC is a statewide, nonprofit organization that provides leadership, education, grants and other support to environmental commissions and others to advocate for strong state and regional environmental policy. Grants are available for open space/greenways and trails assessments, including trail building, multitown efforts to link open spaces or trails, and programs to engage stakeholders.

Kodak American Greenways Program

Administered by the Conservation Fund, in partnership with Kodak and the National Geographic Society, this program provides grants of $500 to $2,500 to local greenways projects. These grants can be used for activities such as:

- Mapping,
- Conducting ecological assessments,
- Surveying land,
- Hosting conferences,
- Developing brochures,
- Producing interpretive displays and a/v material,
- Incorporating land trusts, and
- Building trails.

Grants cannot be used for academic research, general institutional support, lobbying or political activities. The submission period for grant applications is September 1st to December 31st.

New Jersey Healthy Communities Network

The New Jersey Healthy Communities Network (NJHCN) brings together local, regional and statewide leaders to support communities in developing healthy environments for people to live, work, learn and play. NJHCN began when ShapingNJ and New Jersey Partnership for Healthy Kids assembled leadership, resources, capacity, and collaborators to support healthy eating and active living through enhancement of the built environment. A funding collaborative that includes New Jersey Department of Health, Atlantic Health System, New Jersey Partnership for Healthy Kids, New Jersey YMCA State Alliance, Partners for Health Foundation, and Salem Health and Wellness Foundation provides grants to communities to enhance the built environment and advance policy to support healthy eating and active living. Grantees include health departments, non-profit organizations, parks and recreation departments, school boards, and more. The Community Grants Program has awarded $2 million in grants through 2017.

New Jersey Prevention Network

Through funding from the New Jersey Department of Health, New Jersey Prevention Network's "GET ACTIVE NJ" program provides technical assistance, training and incentives to assist municipalities to find ways to educate stakeholders on different policies that can help promote walking and the many benefits that this can have on their communities. New Jersey Prevention Network (NJPN) is a public health agency working to prevent substance abuse, addiction and other chronic diseases by building capacity among professionals, fostering positive collaboration among providers, and strengthening the field of prevention through the use of evidence-based practices and strategies. NJPN offers financial assistance to NJ communities to help them evaluate their current policies and educate stakeholders on potential policy changes. In addition to financial resources, NJPN provides technical assistance and trainings to municipalities as they move though the policy change process in order to help them navigate its complexities. NJPN's Walkability Toolkit includes the steps for identifying community needs, building capacity to address those needs, and explaining who makes policy at the local level.

PeopleForBikes Community Grants

The PeopleForBikes (formerly "Bikes Belong") Community Grant Program provides funding for important and influential projects that leverage federal funding and build momentum for bicycling in communities across the U.S. These projects include bike paths and rail trails, as well as mountain bike trails, bike parks, BMX facilities, and large-scale bicycle advocacy initiatives.

Since 1999, the program has awarded 356 grants to non-profit organizations and local governments in all 50 states and the District of Columbia. The PeopleForBikes Community Grant Program is funded by PeopleForBikes and partners in the bicycle industry, including Fuji, Giant, Shimano, Specialized, and Trek.

Sustainable Jersey and Sustainable Jersey for Schools Small Grant Programs

Sustainable Jersey is a nonprofit organization that provides tools, training and financial incentives for sustainable community initiatives. Their statewide certification program helps municipalities take steps to sustain their quality of life over the long term. In 2014, the Sustainable Jersey for Schools certification program was launched for New Jersey public schools interested in going green and conserving resources.

Participating local governments and schools voluntarily complete and document actions to earn points toward certification. Sustainable Jersey offers small grants ranging from $2,000 to $20,000 to assist communities and schools with completing Sustainable Jersey and Sustainable Jersey for Schools actions . To be eligible for a Sustainable Jersey or Sustainable Jersey for Schools Small Grant, a community or school must be registered or certified with Sustainable Jersey or Sustainable Jersey for Schools and have an active Green Team. The funds can only be used to implement actions that earn points in the Sustainable Jersey or Sustainable Jersey for Schools program.

Several Sustainable Jersey action items help provide sustainable transportation options. Safe Routes to School, Complete Streets Programs, Bicycle and/or Pedestrian Audits, and Bicycle and/or Pedestrian Plans can be funded. Sustainable Jersey for Schools actions related to active transportation include Pedestrian and Bicycle Safety Promotion Initiatives, Safe Routes to School District Policy, and School Travel Plan for Walking and Bicycling.

Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation (RWJF) invests in grantees (e.g., public agencies, universities, and public charities) that are working to improve the health of all Americans. Current or past projects in the topic area "walking and biking" include greenway plans, trail projects, advocacy initiatives, and policy development.

RWJF funds a wide range of activities, including but not limited to:

- Planning and demonstration projects,
- Research and evaluations,
- Policy and statistical analysis,
- Learning networks and communities,
- Public education and strategic communications,
- Community engagement and coalition-building,
- Training and fellowship programs, and
- Technical assistance.

New Jersey Health Initiatives (NJHI) is the statewide grantmaking program of the Robert Wood Johnson Foundation. New Jersey Health Initiatives supports innovations and drives conversations to build healthier communities through grantmaking across New Jersey.

William Penn Foundation

A family foundation with roots firmly planted in Philadelphia, the William Penn Foundation has been committed to improving the quality of life in the city and the region for the last 70 years. The foundation's mission is to help improve education for low-income children, ensure a sustainable environment, foster creative communities that enhance civic life, and advance philanthropy in the Greater Philadelphia region.

One key ingredient of a vibrant city is access to high-quality public spaces that provide opportunities for outdoor recreation and play, and serve as gathering places for people of all backgrounds to come together and build community. More than ever, high-quality public amenities such as parks, trails, bikeways and open spaces are essential to retain and attract residents, businesses and visitors.

List of Acronyms

23 CFR 490	FHWA Safety Performance Management Final Rule
5E Approach	Engineering, Education, Encouragement, Enforcement, and Evaluation
AARP	Formerly the American Association of Retired Persons
AASHTO	American Association of State Highway Transportation Officials
ACS	American Community Survey
ADA	Americans with Disabilities Act
ADAAG	Americans with Disabilities Act Accessibility Guidelines
ANJEC Grant Program	Association of New Jersey Environmental Commissions Grant Program
APA NJ	American Planning Association New Jersey Chapter
ATP	Annual Transportation Program
BIANJ	Brain Injury Alliance of New Jersey
BSAP	Bicycle Safety Action Plan (2016)
CAIT	Rutgers Center for Advanced Infrastructure & Transportation
CMAQ Program	Congestion Mitigation and Air Quality Improvement Program
CPTED	Crime Prevention Through Environmental Design
DVRPC	Delaware Valley Regional Planning Commission
FAST Act	Fixing America's Surface Transportation Act
FHWA	Federal Highway Administration
GIS	Geographic Information Systems
HSIP	Highway Safety Improvement Program
ITE	Institute of Transportation Engineers
KSI	Fatal and severe injury crashes
LAIF	Local Aid Infrastructure Fund
LPA	Local Public Agency
LTS	Level of Traffic Stress
MAP-21	Moving Ahead for Progress in the 21st Century Act
MPO	Metropolitan Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices
NACTO	National Association of City Transportation Officials
NGO	Non-governmental Organization
NHPP	National Highway Performance Program
NHTSA	National Highway Traffic Safety Administration
NJ BPAC	New Jersey Bicycle and Pedestrian Advisory Council
NJ BPRC	New Jersey Bicycle & Pedestrian Resource Center
NJ SDRP	New Jersey State Development and Redevelopment Plan
NJAIM	New Jersey Ambassadors in Motion
NJDCA	New Jersey Department of Community Affairs
NJDEP	New Jersey Department of Environmental Protection

NJDHTS	New Jersey Division of Highway Traffic Safety
NJDOH	New Jersey Department of Health
NJDOT	New Jersey Department of Transportation
NJEJA	New Jersey Environmental Justice Alliance
NJHCN	New Jersey Healthy Communities Network
NJHI	New Jersey Health Initiatives
NJPN	New Jersey Prevention Network
NJTPA	North Jersey Transportation Planning Authority
OBPP	Office of Bicycle and Pedestrian Programs (NJDOT)
OSRP	Open Space and Recreation Plan
PSA	Public Service Announcement
PSAP	Pedestrian Safety Action Plan (2014)
PSMS	Pedestrian Safety Management System
RITA	Research and Innovative Technology Administration
RTP	Recreational Trails Program
RWJF	Robert Wood Johnson Foundation
SJTPO	South Jersey Transportation Planning Organization
SRTS	Safe Routes to School
SRTSRC	Safe Routes to School Resource Center
TA	Transportation Alternatives (part of FAST Act)
TAP	Transportation Alternatives Program (part of MAP-21)
TE	Transportation Enhancements
THT	Transportation and Health Tool
TIGER Grant Program	Transportation Investment Generating Economic Recovery Discretionary Grant Program
TIP	Transportation Improvement Program
TMA	Transportation Management Associations
TNJ	Together North Jersey
TOD	Transit-Oriented Development
TSRC	Transportation Safety Resource Center
TTF	Transportation Trust Fund
UCC	Urban Coordinating Council
USDOT	United States Department of Transportation
VMT	vehicle miles traveled
VTC	Alan M. Voorhees Transportation Center at Rutgers University

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