

STATE-OF-THE-PRACTICE AND FRAMEWORK  
FOR DEVELOPMENT OF A  
STATEWIDE BICYCLE PEDESTRIAN PLAN

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**OKLAHOMA**  
Transportation

September 2020

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## Introduction

According to the Federal Highway Administration (FHWA), the broad goal of its Bicycle and Pedestrian Program is “to improve conditions for bicycling and walking, consistent with [its] goals for a safe, comfortable, equitable, and integrated multimodal transportation network infrastructure that serves all ages and abilities” by providing “funding, policy guidance, program management, and resource development” (FHWA

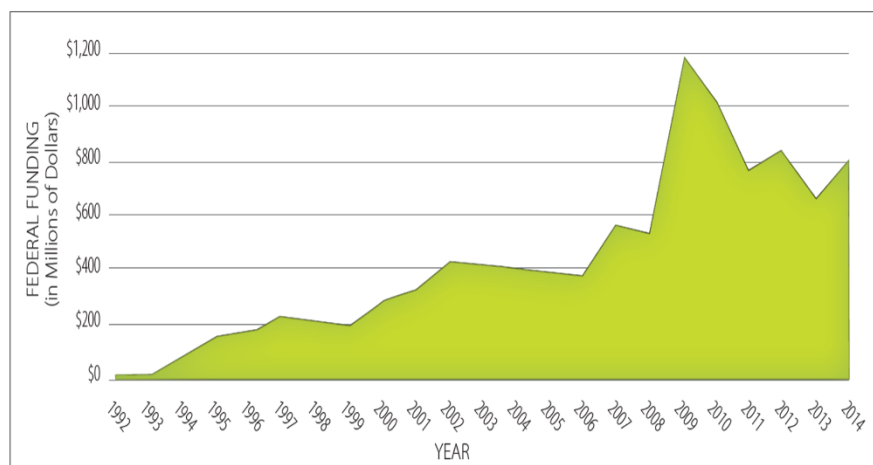


2019). In 1991, federal legislation (ISTEA) facilitated inclusion and eligibility of bicycling and walking-related projects and subsequent legislative acts and policy have continued to support DOT nonmotorized transportation planning and implementation. As a result of federal legislation, states and MPOs have been required to address bicycle and pedestrian needs during the transportation planning process. The FHWA released, “Bicycle and Pedestrian Planning, Program, and Project Development” in September 2019, provided in Appendix D. It provides a summary of applicable statutory/regulatory requirements, and a list of relevant design resources. In 2010, the USDOT set a nationwide policy for bicycle and pedestrian accommodation with the issuance of its “Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations.” That policy states in part:

“The 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.”

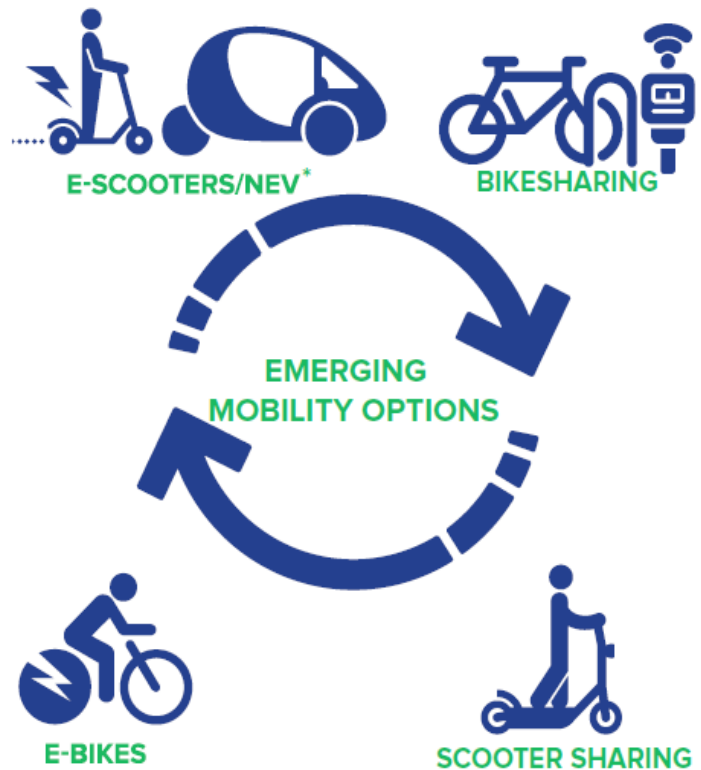
The federal policy encourages states and local agencies to adopt similar policies for bicycle and pedestrian accommodation and to go beyond minimum design standards to promote cleaner, healthier air; less-congested roadways; options for active, healthy transportation; more livable, safe, cost-efficient communities; and low-cost mobility options.

Federal-Aid Pedestrian and Bicycle Funding Obligations, FY 1992 – FY 2014 (\$ Millions)



Source: FHWA Fiscal Management Information System

Some states, such as PennDOT (2019), are focusing their bicycle and pedestrian plans on “active transportation” and micromobility (illustrated left) to more broadly accommodate options in addition to walking and bicycling, such as using wheelchairs, skateboarding, scootering, and rollerblading. Active transportation is “any self-propelled, human-powered mode of transportation” (PennDOT 2019). “Use of the term ‘active transportation’ highlights the growing recognition of the connection between public health outcomes and transportation planning” (PennDOT 2019). As a form of human-powered transportation, active transportation engages people in healthy physical activity while they travel from place to place and supports transit use since many people reach transit stops using active travel modes.



\*NEV: Neighborhood Electric Vehicle

### Overview: Developing a Statewide Bicycle and Pedestrian Plan

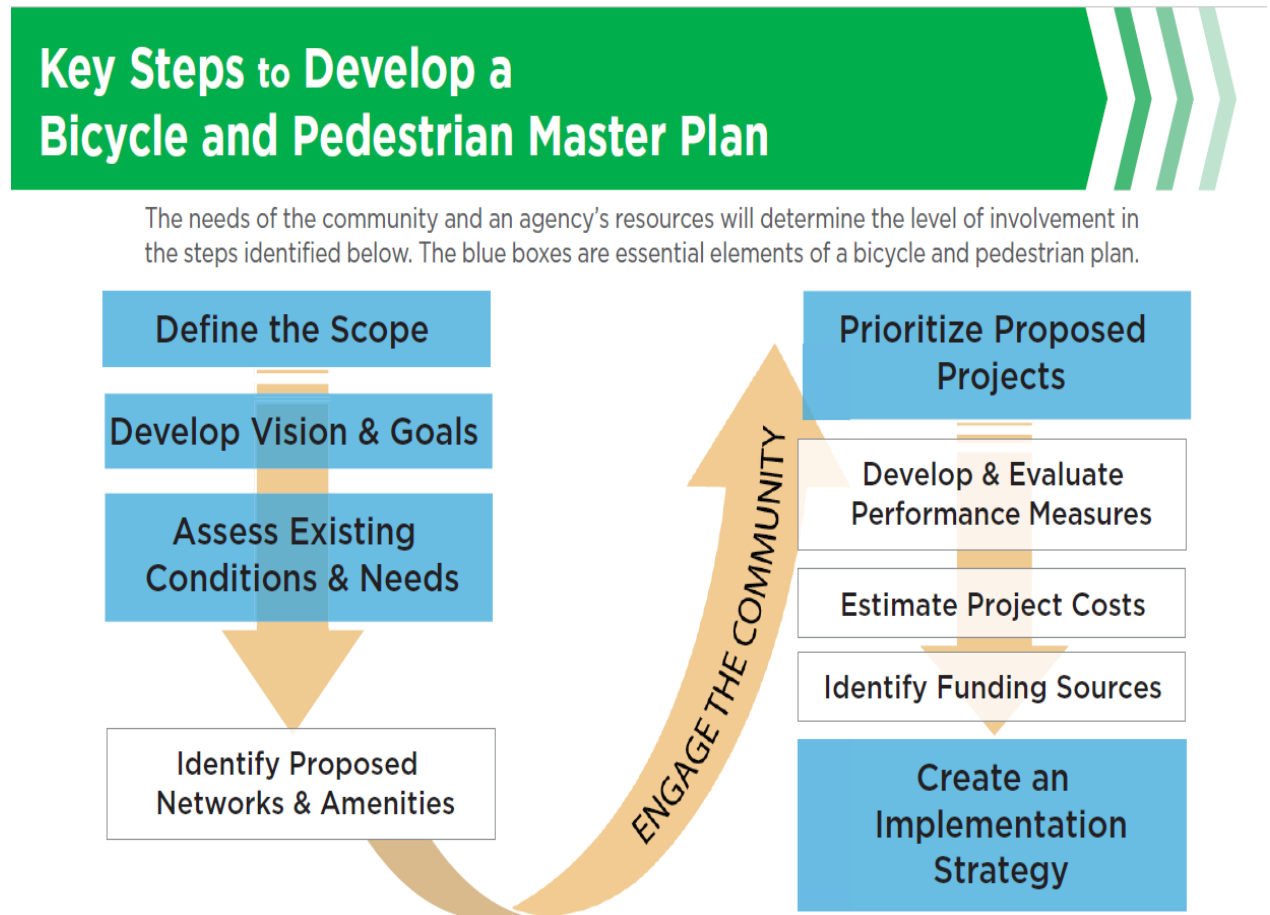
In 2014, FHWA released a handbook to help DOTs develop or update statewide pedestrian and bicycle plans “from plan inception and scoping to engaging stakeholders and the general public; developing goals, objectives, and strategies; collecting and analyzing data; linking to the larger statewide transportation planning process; and implementation”. The report also includes critical evaluation of plans from fifteen DOTs. The handbook, which is referenced in many of the current state plans, includes these chapters, which will be described in detail in the next section:

- **Getting Started:** key questions and considerations prior to beginning a statewide plan
- **Institutional and Policy Analysis:** institutional and policy related considerations that could frame the planning process and the plan itself
- **Developing Goals, Objectives, and Performance Measures:** how to organize the planning process around goals, objectives, and performance measures
- **Public Participation:** importance of involving the public/stakeholders in conducting a standalone pedestrian and bicycle plan and examples and methods for doing so
- **Information Base and Content:** methods and data sources for developing a statewide technical fact base on which to conduct a plan for nonmotorized transportation
- **Identifying Needs and Priority Areas:** examples to describe methods of identifying network improvement/safety projects for pursuit in a statewide nonmotorized transportation plan
- **Implementation:** key considerations for making an effective plan and setting a process in motion to realize the plan’s objectives

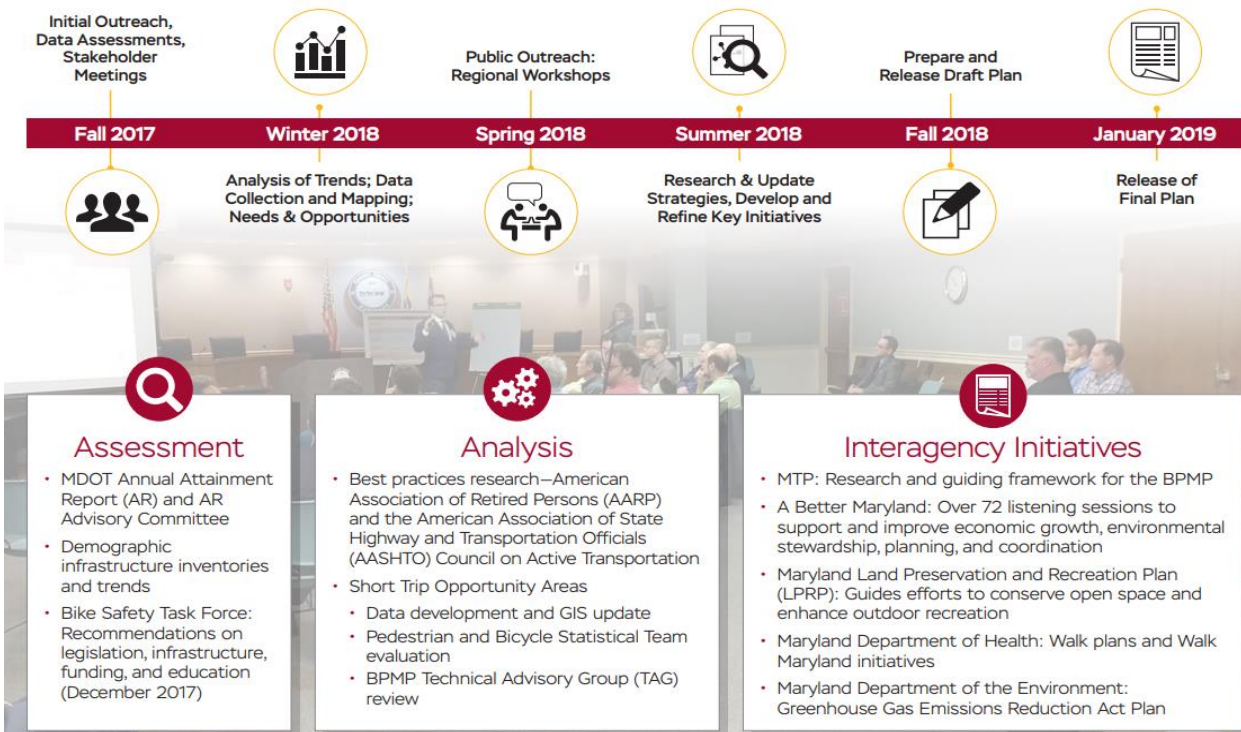
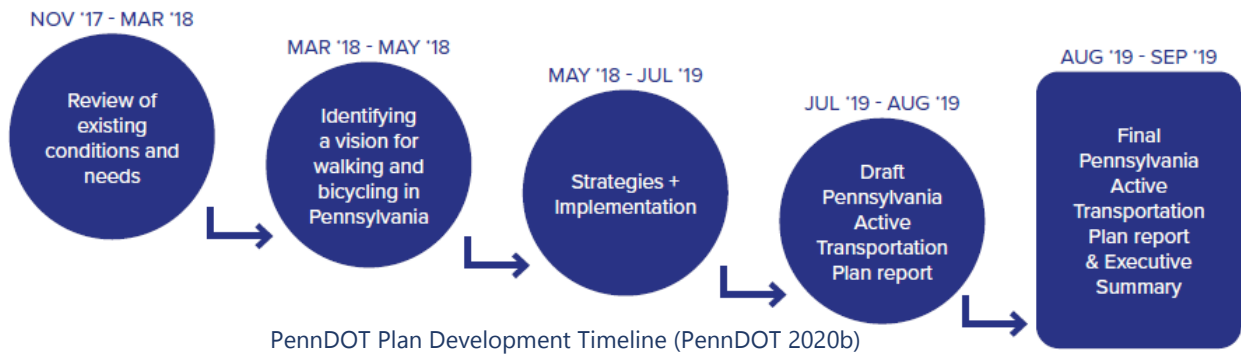
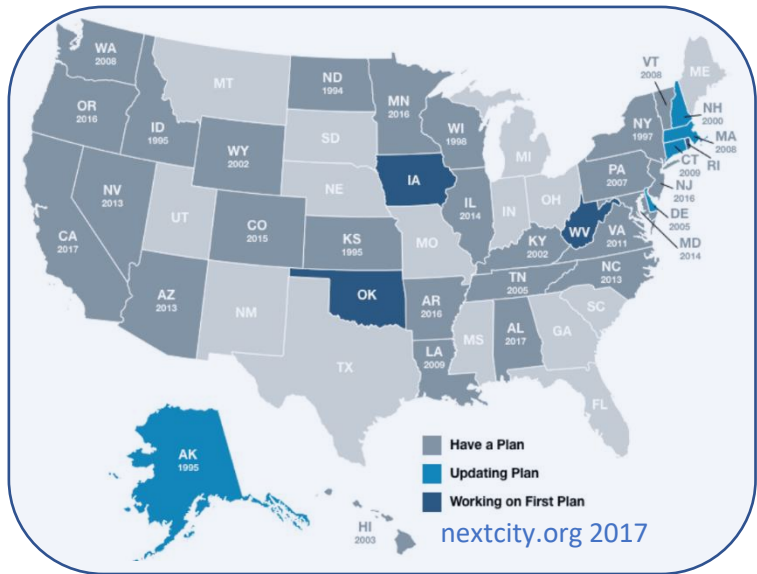
(FHWA 2014)



To illustrate the basic process of plan development, the Pennsylvania DOT summarized the steps based upon the preceding guidance (as shown in the following figure) and describes the steps in its “How To” Guide it created for its MPOs and regional/local agencies (PennDOT 2019, 2020c). PennDOT also commissioned a [Bicycle and Pedestrian Policy Study \(2016\)](#) prior to updating its current plan (2020) “to strengthen PennDOT’s policy for bicycles and pedestrians and establish new methods for policy implementation and follow-through”. The process “engaged PennDOT staff and leadership along with a broad spectrum of other stakeholders to obtain a range of expertise and perspectives” and the report “presents [PennDOT’s] bicycle and pedestrian policy recommendation to the State Transportation Commission (STC) for its consideration and endorsement” (PennDOT 2016).



Plan Development Timeline & Activities  
 DOTs have recently been developing or updating their statewide pedestrian and bicycle plans and documenting the process. PennDOT’s Bicycle Pedestrian Plan (“The Pennsylvania Active Transportation Plan”) was recently developed (updated) over a 20-month period (shown in the figure below) and engaged thousands of stakeholders and the general public (PennDOT 2020b). The Maryland DOT included similar development activities in the update of its recent plan (2019).




Maryland DOT Plan Development Timeline (Maryland DOT 2019)

Plan Elements

DOTs have been fairly consistent in including the following general elements [and documenting activities] in their bicycle and pedestrian plans, consistent with FHWA guidance (FHWA 2014, 2019):

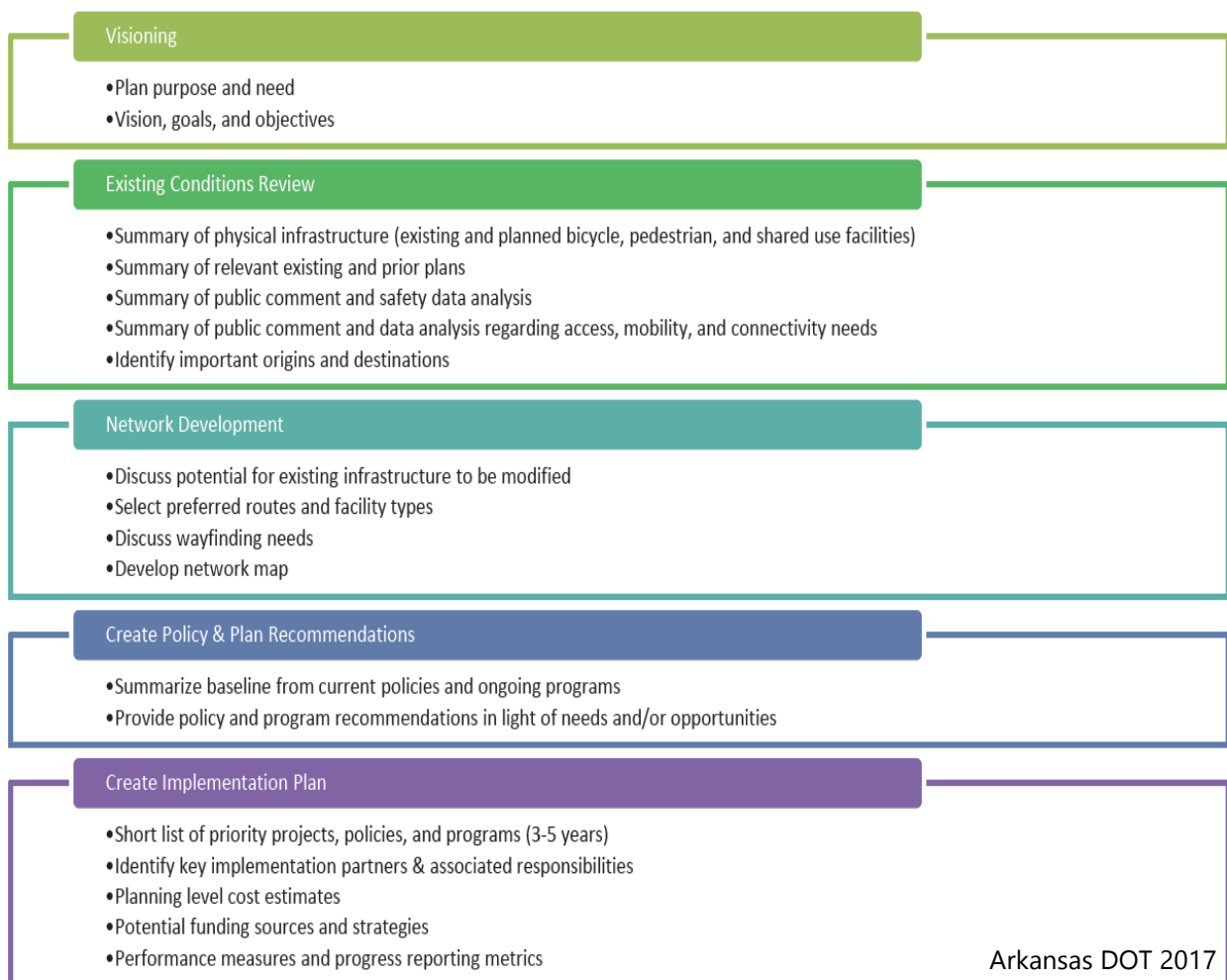
- [Align Plan with] Laws, Policies, Plans, Programs
- [Develop Plan] Vision, Goals, Objectives
- Stakeholder Engagement/Public Outreach
- [Determine] Existing Conditions and Trends
- [Develop] Recommendations
- [Develop] Implementation Strategies

Some states use different nomenclature and information groupings, as illustrated by the Iowa DOT bicycle pedestrian plan table of contents (2018), shown right.

	1. INTRODUCTION AND CONTEXT	4
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Iowa DOT 2018

The Arkansas DOT (2017) provides the following framework example created for use by its local agencies, which provides some descriptions for the bicycle and pedestrian plan elements.



“Keys to Success” in Plan Development (FHWA 2014)

The following keys to successful statewide pedestrian and bicycle plans emerged out of the research for the FHWA handbook (FHWA 2014). These points will be further elucidated and applied in the next section that details step-by-step plan development guidance.

**Be specific and clear about what the plan is expected to accomplish.** Limited resources will constrain the scope of any plan. At the start of the plan’s development, engage relevant staff and stakeholders to determine what actions are necessary to improve nonmotorized conditions in the State and how the plan can help to move the agency to prioritize them. In cases where the planning staff have latitude to determine the scope of the plan, focus first on topics over which the State DOT has clear responsibility or control. **Many State DOT nonmotorized transportation plans focus heavily on developing policies and institutional procedures that increase the attention to pedestrian and bicycle transportation before getting into specifics about network development or developing detailed project lists.** The degree to which a plan gets into the specifics of implementation depends on the agency’s needs/resources/time that it has to develop the plan.

**Take advantage of the opportunity to improve internal integration and communication throughout the DOT.** While nonmotorized transportation may be the specific focus of only a few individuals within the organization, almost every aspect of the DOT’s business impacts pedestrians and bicyclists. **Use the plan’s development to engage all divisions and districts within the DOT, focusing on its responsibility to enable safe and convenient travel conditions for pedestrians and bicyclists.** Involving staff from all areas of the DOT will build ownership and awareness of the plan and will grease the wheels of the organization to effectively implement its recommendations. As a result of engaging multiple internal stakeholders, many emerging State nonmotorized transportation plans are more explicitly considering pedestrian/bicycle needs in the project development process to ensure that each project is an opportunity to improve in this area.

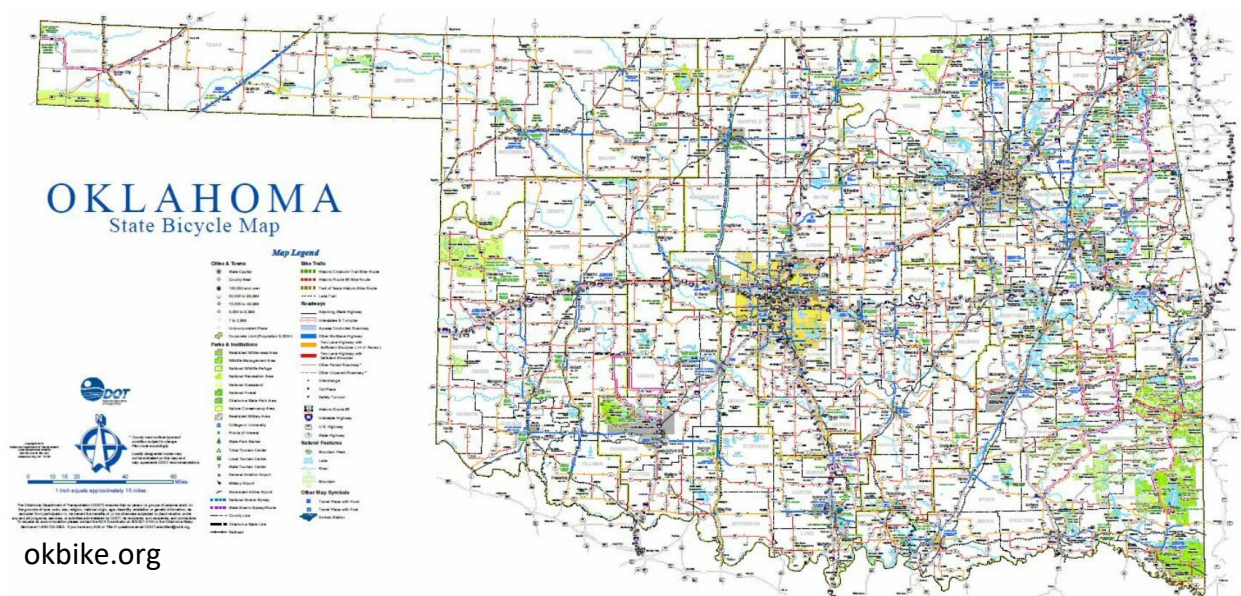
**Develop an action plan for measuring performance holistically.** Use goals, objectives, and performance measures to make the plan transparent and clear in its purpose and maintain its relevance over time. Effective performance measurement requires sufficient resources and time. Where possible, State DOTs should partner with existing data collection and performance tracking efforts undertaken across the DOT and by other State agencies and local partners. **Successful plans consider nonmotorized network extent and quality and nonmotorized expenditures in context of accessibility/mobility and equity, economic benefits, environment and energy, health, safety, and usage/mode share.** The plan should document the approach to track performance, including specific roles and responsibilities and time frames. **The most effective performance measures are those that can be measured quantitatively and over which the State DOT has some direct control.** A performance monitoring plan may also include specific action steps for the agency to commit to, such as developing interim deadlines for an annual performance monitoring report.



Address and influence the content of the State Transportation Improvement Program (STIP), the Long Range Transportation Plan (LRTP), and the Strategic Highway Safety Plan (SHSP). A nonmotorized plan should have a substantial linkage to these documents. The plan itself can explain the role and influence of these documents and [show how pedestrian and bicycle projects and policies can relate to them](#). It can also go further and recommend changes to the content of these documents. For example, for an agency to track its performance in delivering nonmotorized transportation, the STIP can be organized to identify nonmotorized elements of transportation projects. For the SHSP, the plan can recommend the inclusion of pedestrian or bicyclist safety countermeasures as well as the consideration of the impact of automobile safety countermeasures on pedestrian and bicycle travel.

Invest time and effort on involving the public to increase the plan's effectiveness and impact. Nonmotorized transportation plans benefit from significant public involvement by helping the agency understand the unique needs and concerns of pedestrians and bicyclists. The public is also a particularly valuable source for the collection of data to inform the plan because they understand the conditions on the ground. [Involving the public early and often throughout the planning process will build support for plan implementation and sustain the momentum of the planning effort once completed](#). Public outreach may take substantial time and resources and should be carefully integrated into the planning process.

Focus on State-owned facilities, but consider the larger implications of DOT facilities on local, regional, and statewide connectivity. The DOT role in accommodating pedestrians and bicyclists varies by State, but generally the majority of nonmotorized trips occur along urban, locally-owned routes. [Keeping in mind local and regional plans, consider how State facilities support or hinder the connectivity and safety of existing or planned routes](#). For example, bicycle accommodation in conjunction with a capacity expansion on a State-owned arterial route may further regional bicycle connectivity, but work at cross-purposes to local pedestrian connectivity.



## Best Practices in Developing a New Plan: Step by Step

This section provides the step-by-step process for developing a bicycle and pedestrian plan consistent with FHWA guidance (2014) and is elucidated by DOT plan elements. The focus will be on state DOTs who have **recently (since ~2014)** updated a plan or developed a plan where one has not previously existed. This section serves to provide the basis for the development of the “skeleton” outline and framework proposed in Appendix A to serve as the starting point for the development of the ODOT Bicycle and Pedestrian Plan.

### Step 1: Getting Started – Defining the Scope

There are key questions and considerations to be addressed prior to beginning a statewide plan (FHWA 2014). The goal is to direct the scope of the plan by defining users, roles and purpose.

1.1 Determine the Type of Plan: Policy Guidance or Project Prioritization? Most statewide plans are policy plans. Many states want plans that focus more on guidance and direction than lists of projects. Still, some plans identify specific corridors for statewide bicycling routes and include project scoping checklists and project prioritizing criteria (FHWA 2014).

1.2 Determine the Purpose of the Plan. Many states report the importance of how the results of the plan are used, beginning with the end in mind and working backwards. Understanding what the plan seeks to accomplish will help **clarify roles and responsibility, identify key stakeholders, eliminate duplicative efforts, and focus resources** to ensure strategic bicycle and pedestrian investments. Over the course of plan development and informed by users and stakeholders, the purpose (DOT examples [Table 1](#)) will evolve into a foundation for the subsequent steps (develop the goals, objectives, performance measures) as illustrated by the following PennDOT example.

<p>The <b>Core Policy Statement</b> was developed through the 2016 Transportation Advisory Committee and highlights the Department's complete commitment to supporting non-motorized transportation.</p> <p>The <b>Vision</b> is a narrow, future-oriented declaration of what we want walking and bicycling to be in Pennsylvania.</p> <p><b>Themes</b> are broad topics that provide insight into areas of interest which will guide the goals and objectives for advancing active transportation projects in Pennsylvania.</p> <p><b>Goals</b> are developed to track our success and will push initiatives forward. Goals should be S.M.A.R.T (Specific, Measurable, Achievable, Realistic, and Timely).</p> <p><b>Objectives</b> are more-specific action items that will help to achieve the goals.</p>	<h2 style="text-align: center; margin: 0;">Core Policy Statement</h2> <p style="text-align: center; font-style: italic; margin: 10px 0 0 0;">“PennDOT shall make accommodations for active transportation a routine and integral element of planning, project development, design, construction, operations, and maintenance.”</p> <p style="text-align: right; margin-top: 20px;">PennDOT 2020</p>
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Table 1 Purpose for Statewide Plan by State

DOT Plan (Year)	Bicycle Pedestrian Plan Purpose/Vision
<a href="#">Alabama</a> (2017) *new plan	The purpose of the Alabama Statewide Bicycle and Pedestrian Plan is to establish a vision that supports walking and bicycling as modes of transportation in Alabama: Alabama is a state where walking and bicycling are safe, comfortable, and convenient modes of transportation in communities across the state for people of all ages and abilities.
<a href="#">Arizona</a> (2013) *updated plan	The principal goal of the Arizona Statewide Bicycle and Pedestrian Plan is to establish materials and programs that, upon implementation, improve the safety and quality of bicycling and walking in Arizona.
<a href="#">Arkansas</a> (2017) *new plan	By fully embracing bicycling and walking, both as forms of transportation and recreation, Arkansas communities can provide transportation and lifestyle options for its citizens and strengthen the economic and social vitality of their communities.
<a href="#">California</a> (2017) *new plan	This policy direction continues support for the recent trend of increasing bicycle and pedestrian travel in the state and strengthens the connection between transportation, environmental sustainability, and public health. By 2040, people in California of all ages, abilities, and incomes can safely, conveniently, and comfortably walk and bicycle for their transportation needs.
<a href="#">Colorado</a> (2015) *updated plan	A key objective of this Plan is to create and implement an approach to evaluating competing projects that is consistent, defensible, and reflective of the needs and perspectives of various stakeholder groups.
<a href="#">Delaware</a> (2018) *updated plan (bicycle only)	The purpose of the Blueprint for a Bicycle-Friendly Delaware is to: • Identify Delaware specific goals and adopt new and best practices • Integrate efforts of stakeholders into a focused implementation strategy • Increase coordination and leveraging of resources • Communicate the value of bicycling toward achieving broad societal goals; This plan seeks to build on accomplishments to date, fill in the gaps, and take advantage of opportunities for improvements identified during stakeholder interviews.
<a href="#">Illinois</a> (2014) *updated plan (bicycle only)	Transforming Transportation for Tomorrow represents IDOT’s commitment to a safe, sustainable, integrated multi-modal transportation system. It embraces a planning and programming approach that ensures the continued effectiveness and efficiency of transportation investments and opportunities. It embodies our vision for transportation in Illinois that all modes be integrated, coordinated, planned, and built with the idea that present and future travel options are user focused, economically supportive, ecologically sensitive, and information centric
<a href="#">Iowa</a> (2018) *new plan	The Bicycle and Pedestrian Long-Range Plan has three key objectives: (1) Improve the policies and practices for the ongoing development of the Iowa bicycle and pedestrian system and program. This is especially important in light of the current national transportation bill (Fixing America’s Surface Transportation, or FAST Act) and evolving national design guidelines. Central to this objective is the development and adoption of a Complete Streets policy. (2) Expand the intercity and through-city bicycle network by providing guidance for the completion of national trail segments (including the Mississippi River Trail, American Discovery Trail, and Lewis and Clark Trail) and establishing additional US Bicycle Routes (national bikeways for cyclo-tourism and transportation). (3) Facilitate implementation of the plan by including a funding toolbox, enhancing design guidelines used by Iowa DOT and local agencies, and making recommendations for program priorities.



<a href="#">Louisiana</a> (2009) *updated plan	The Louisiana Department of Transportation and Development (LDOTD) has undertaken this plan to develop a comprehensive and integrated policy approach to guide decision-making on accommodating walking and bicycling on and along Louisiana’s roads.
<a href="#">Maryland</a> (2019) *updated plan	The state of Maryland has great opportunities for residents and visitors to walk and bicycle, both recreationally and as safe and convenient ways to get around. The 2019 Maryland Bicycle and Pedestrian Master Plan Update highlights the benefits of active transportation and offers solutions to Maryland’s current challenges, providing opportunities to better meet the needs of all of our transportation system users. With input from a wide array of stakeholders, the Plan brings a fresh perspective and strategic focus to the challenge of guiding investments and policy, and realizing a newly-articulated vision: Maryland will be a great place for biking and walking that safely connects people of all ages and abilities to life’s opportunities.
<a href="#">Minnesota</a> (2016) *new plan (bicycle only)	Bicycling contributes to the quality of life for people in Minnesota by connecting them to daily activities and creating access to the state’s amenities. The Statewide Bicycle System Plan provides a framework for how MnDOT will address bicycling needs and interests in Minnesota.
<a href="#">Montana</a> (2019) *new plan	The Montana Pedestrian and Bicycle Plan (Plan) is the first statewide effort to understand and address the needs of the non-motorized users across the state. MDT’s mission is to provide a transportation system and services that emphasize quality, safety, cost effectiveness, economic vitality and sensitivity to the environment. The Plan will be used by MDT and other partnering agencies as they work to fulfill the needs of pedestrians, bicyclists, and all who use Montana’s transportation system.
<a href="#">New Jersey</a> (2016) *updated plan	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.
<a href="#">Oregon</a> (2016) *new plan	The Oregon Bicycle and Pedestrian Plan provides a decision-making framework for walking and biking efforts in the State within the context of the overall transportation system.
<a href="#">PennDOT</a> (2020) *updated plan	The core policy statement, vision statement, themes, goals, and objectives of the Pennsylvania Active Transportation Plan were developed through extensive stakeholder and public input through the planning process. Together, they will guide the planning, funding, and implementation of multimodal infrastructure policies and programs.
<a href="#">Wyoming</a> (2017) *new plan	The overall objectives of this plan are: □ To increase safety for pedestrians and bicyclists via engineering, enforcement, and education □ To provide mobility for all transportation users, including disabled persons □ To increase economic development opportunities via bicycle and pedestrian facilities

1.3 Define the Intended Users of the Plan Planners should consider who will use the plan and how the plan will be used; this helps to define the expectations of the process (FHWA 2014). Specifically, this will facilitate the plan development process by helping to determine the **stakeholders to involve**, the **data to collect**, the **level of detail the plan should address**, and the **resources** required to develop it.

- Who are the intended users of the plan? Carefully consider and define who will use this plan and for what purpose.
  - **Internal to the State DOT:**
    - Users: road designers, project managers, and district engineers and planners
    - Purpose: to carry out the business of planning, design, construction, and maintenance of DOT facilities
  - **Other State Agencies:**
    - Users: trail system and park planners, law enforcement, the public health community, any other State agencies
    - Purpose: to provide pedestrian and bicycle facilities
  - **Local and Regional Government Agencies:**
    - Users: staff at metropolitan planning organizations (MPOs) or other regional transportation planning organizations, city and county engineers, and planners
    - Purpose: to provide pedestrian and bicycle facilities/connectivity
  - **Stakeholders:**
    - Users: advocates and others involved in transportation policy development at the local, regional, and State level
    - Purpose: to provide pedestrian and bicycle policy input
  - **General Public:** users of the pedestrian and bicycle system. (PennDOT states that its priority focus is on Pennsylvanians who walk and bicycle out of necessity rather than for leisure and recreation (PennDOT 2020), whereas other agencies do not make that distinction.)

1.4 Define the Role of the State DOT Per FHWA, State DOTs provide leadership regarding walking and bicycling in many ways. For example, some State DOTs use their pedestrian and bicycle plans to describe policies for how they will improve conditions for walking and bicycling through their transportation investments. They use the planning process to collaboratively develop a vision for MPOs and local governments to do the same. Other States develop plans that identify specific projects to complete nonmotorized networks or improve access and safety at key locations on State-owned roadways. How much a State plan goes into defining specific projects or networks depends in part on the maturity of pedestrian/bicycle planning in the State and the availability of comprehensive network data. Going beyond the plan to implementation, many States also develop design guidelines to enable context-sensitive design solutions that meet the needs of all users. They can encourage design flexibility to better accommodate walking and bicycling, and can provide a model for local transportation agencies to do the same (FHWA 2014).

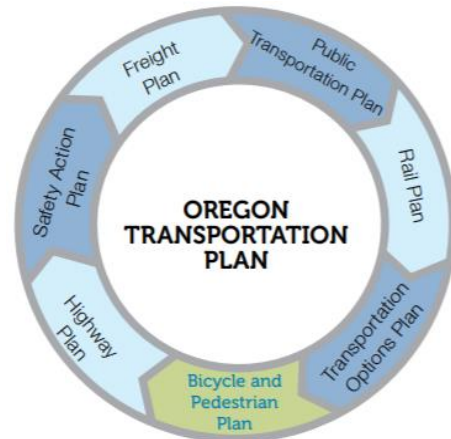
Some States own, operate, and maintain a significant amount of transportation infrastructure that is used by or affects pedestrians and bicyclists, including roadways, transit, and multi-use paths. In other States, this infrastructure is mostly managed by municipalities. Ideally, the planning process provides both a forum for statewide policy development and facility network planning.

Understanding the division of responsibility for facilities within the State can help stakeholders more effectively utilize limited resources (FHWA 2014).

1.5 Define the Function of the Plan within the State DOT

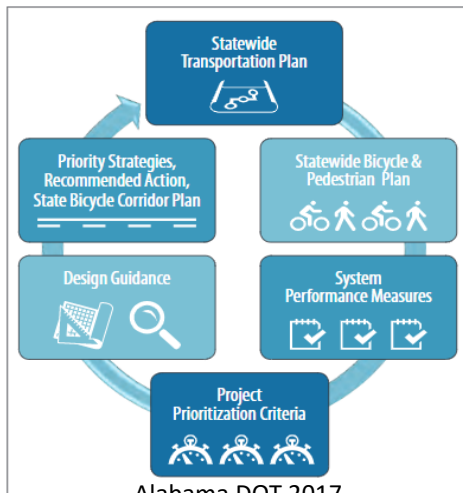
Early in the development of a State pedestrian and bicycle planning process, it is useful to consider how the plan relates to other statewide transportation activities. Plans are a tool for designing roadways that better accommodate walking and bicycling, thereby increasing mobility, reducing congestion, and improving safety. Some questions that may be appropriate to ask when beginning a new plan include (FHWA 2014):

- Why do a standalone pedestrian and/or bicycle plan? What purpose will it serve that is not already served by other statewide transportation documents?
- What direction does the State’s Long-Range Transportation Plan (LRTP) or Strategic Highway Safety Plan (SHSP) give to policymakers and practitioners at the DOT? What resources are needed for practitioners to carry out the strategies in the LRTP/SHSP?



Oregon DOT 2016

The **Oregon Bicycle and Pedestrian Plan** encapsulates the bike and walk modal elements of the OTP. The policies and strategies in this plan are written to refine the OTP and be consistent with the other mode and topic plans, such as the Oregon Highway Plan (OHP). For example, while the OHP has policies and strategies for driveway distances, this Bicycle and Pedestrian Plan enhances those policies by including a strategy to minimize sidewalk elevation changes at driveway locations. In this way, the suite of mode and topic plans under the OTP complement and build upon one another and provide comprehensive policy direction for the state.



Alabama DOT 2017

- How can the statewide pedestrian and/or bicycle plan inform and be explicitly linked to the LRTP and SHSP? How can the plan inform and be explicitly linked to the State Transportation Improvement Program (STIP)?
- How can the statewide pedestrian and/or bicycle plan best support network development at the local, regional, and State level?
- Do specific projects or priority corridors need to be identified and pursued on State routes? Should selection criteria be developed to prioritize project applications for funding programs (e.g., the Transportation Alternatives Program)?
- Who will be involved in plan development? Public, law enforcement, advocacy groups, champions in the community—and others?
- How will the State DOT measure the progress of plan implementation? Who will collect and analyze data?
- How much staff time/funding is the DOT prepared to commit to developing the plan?

Asking these questions and understanding the various roles of the State DOT early on will help to determine what kind of plan is both desirable and achievable. These steps are also necessary to articulate effective goals and objectives to guide the planning process.

1.6 Create a Combined Bicycle and Pedestrian Plan or Have Two Separate Plans Approximately 20 States have combined pedestrian and bicycle plans, while 13 States have standalone bicycle plans and 6 States have pedestrian standalone plans (FHWA 2014). Common reasons for combined plans include (FHWA 2014):

- These modes are often handled by the same team within an agency and are influenced by the same programs and processes.
- Pedestrians and bicyclists are both particularly vulnerable users of the highway system.
- It is less resource-intensive to develop only one plan.
- Both modes exist within the same Federal and statewide planning and funding context.

Where the policy context and organizational needs are the same for pedestrian or bicycle issues, a combined approach may be most appropriate. However, the needs of pedestrians are unique and distinct from those of bicyclists. When it comes to project planning, each mode may require its own approach for analyzing existing conditions, trends, and project analysis and project identification. If the planning process is going to go into more detail in identifying network and facility needs, it may be more appropriate to separate the planning processes to engage them adequately (FHWA 2014).

#### Step 2: Conducting Institutional [Internal] and [External] Policy & Plan Analysis

This step involves evaluating the internal and external institutional and policy related considerations that could frame the planning process and the plan itself (FHWA 2014).

2.1 Institutional Relationships Internal coordination is important, especially with district engineers and people tasked with collecting data (FWHA 2014). The State DOT staff are the people that ultimately implement the plan. Coordination is key for information exchange, education, and buy-in. **The following list of questions and considerations highlights some of the issues that may surface throughout the planning process (or may prompt the planning process).** Not all of these topics will be relevant or able to be addressed in all settings, but it may be useful to consider this full list as a way to see the many connection points for the pedestrian and bicycle planning process. These questions focus primarily on understanding the processes and knowing who manages them. Implementation focuses more on the content and how to use it to advance projects (FHWA 2014).

#### *Questions to Understanding Institutional Processes<sup>1</sup>*

- **Planning and Programming**
  - How are bicycling and walking accounted for in the State's long-range transportation plan (LRTP)?
  - How are bicycle and pedestrian projects and accommodations on multimodal projects accounted for in the STIP?
  - Who develops the capital improvement plan? What is the timeline? What are the targets and priorities?

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<sup>1</sup> FHWA 2014

- How do the DOT and MPO project prioritization processes work and how do they account for nonmotorized needs?
  - How do congestion management plans account for walking and bicycling? Are walking and bicycling included in strategies to mitigate current and future congestion?
  - **Project Development**
    - Does the project development guide reference pedestrian/bicycle facilities? If so, at which stages are they referenced?
    - Are there efforts to integrate planning and project development?
    - What is the process for requesting design flexibility or exceptions?
    - Are district engineers familiar with pedestrian and bicycle facility design?
  - **Performance Management**
    - What are the key measures and targets currently tracked by the State?
    - In what areas do bicycling and walking play a role in these measures and targets?
    - What is the general approach for meeting [FAST Act] requirements? How do those priorities account for (or not) pedestrian and bicycle needs? Are there opportunities for connecting to Transportation Performance Management (TPM) priorities and data collection and analysis?
  - **Maintenance**
    - What are the priorities and schedule for repaving projects?
    - Are there opportunities to capitalize on repaving projects by adding bicycle and pedestrian improvements such as striping lanes, replacing drainage grates with more friendly grates, etc.?
    - Who are the people with whom to communicate about timing and opportunities to influence maintenance procedures?
    - Are pedestrian and bicycle facilities on State owned roadways typically maintained by the State or the municipality?
  - **Safety**
    - What are the key safety issues and areas of concern in the State?
    - Is there good data collection and reporting for pedestrian and bicycle safety issues?
    - Are nonmotorized users a focus of the development of the Strategic Highway Safety Plan and the project prioritization process for the Highway Safety Improvement Program (HSIP)?
  - **Right of Way**
    - Is the realty staff familiar with the right of way needs for pedestrian and bicycle facilities?
  - **Operations**
    - How do operations plans consider signal and timing needs for pedestrians and bicyclists?
  - **Security/Emergency Management**
    - Do security and emergency management plans consider the needs of pedestrians and bicyclists? Do they consider opportunities for how bicycling and walking could support their mission?
    - Do residents have information on how and where to walk/bicycle/take transit in case of emergency?
- (FHWA 2014)

2.2 Existing Policies and Plans Agencies evaluate existing policies and plans to understand how nonmotorized transportation fits into the broader planning and project development processes, and to identify internal policies or procedures that may need to be developed or revised (FHWA 2014). Before establishing plans and strategies, it is essential that plan developers understand the impact of Federal Laws (Appendix D), State Laws and other external and internal policies (e.g., **LRTP**, **STIP**, **TIP**) to obtain federal funding. Many state DOTs involve staff from MPOs in the development of their pedestrian and bicycle plans so that the state plan is consistent and well-coordinated with the strategies of MPOs (FHWA 2014), as illustrated by the following NJDOT (2016) example.



## 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 (NJCA)
- 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)*

NJDOT 2016



Many plans place great emphasis on coordination with the agency’s project development process. It is critical to link planning to project development, to ensure that the plan concepts are followed through into practice. This type of effort may relate to implementing “Complete Streets” policies or other design guidelines, changing internal procedures, or providing professional training internally and externally (FHWA 2014). States, MPOs, and local communities have used **“Complete Streets” policies or plans** to institutionalize the U.S. law that requires consideration of pedestrian and bicycle needs in transportation plans and federally funded projects. The purpose of the complete streets policy is to ensure that all user needs are fully considered during project development and to provide some parameters, boundaries, and exceptions for applying flexibility in roadway design and operation (FHWA 2014). Complete streets policies range widely—from simple resolutions stating support of the concepts, to detailed regulations discussing context, design, users, and exceptions. The Iowa DOT devoted a chapter of its bicycle pedestrian plan to its [“complete streets” policy](#).

**COMPLETE STREETS AND ACTIVE TRANSPORTATION POLICY AND PLANNING**

The Complete Streets and Active Transportation Policy and Planning core topic area first looks at Complete Streets policies. Since 2017, only one state has adopted a new Complete Streets policy. Overall, 36 states have some form of Complete Streets policy in place, with DOT policies being the primary tool that states rely on to put in place Complete Streets at the state level. Complete Streets policies continue to be less prevalent in the Midwest and Mountain West regions.

Using the National Complete Streets Coalition’s analysis of the strength of Complete Streets policies allowed for a more robust assessment of state policies in 2020. This analysis showed great variability in the strength of state Complete Streets policies, but overall state Complete Streets policies lacked many of the components of a strong policy. Out of a possible 20 points,

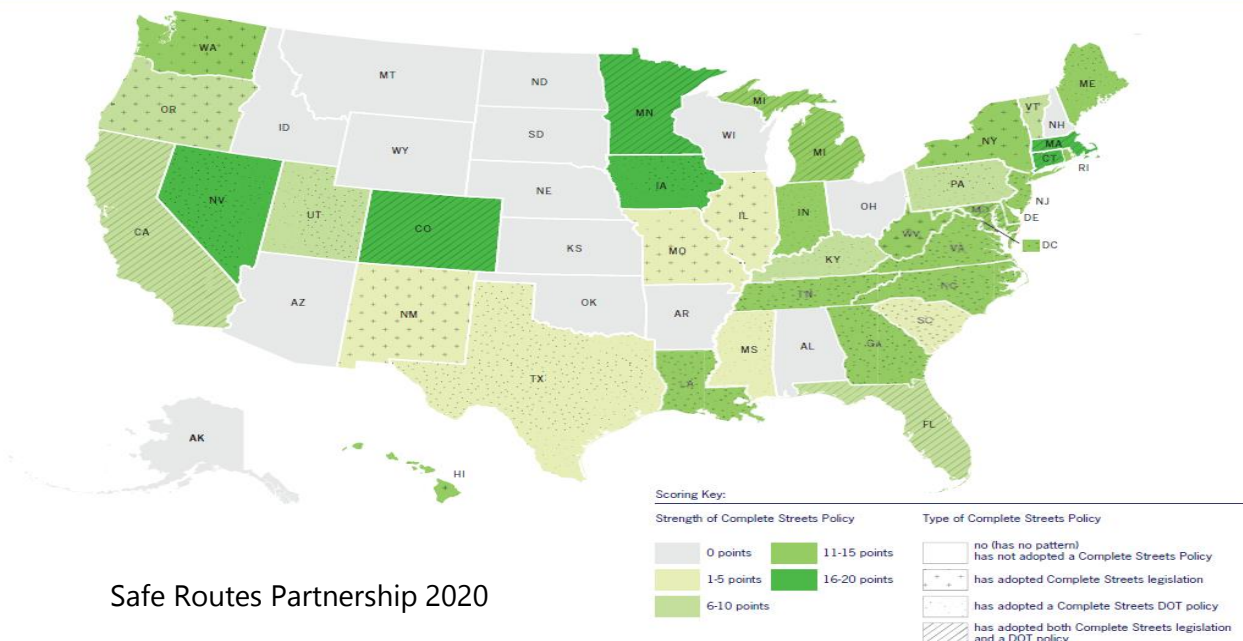
the average score for the strength of a Complete Streets policy was under 11 points. **See Figure 1** for state by state information.

This core topic area also looks at Active Transportation Planning and Design. In a continuation of analysis of state goals for increasing walking and bicycling mode share, we found that only 15 states had goals explicitly calling for an increase in both walking and bicycling and 3 had goals explicitly to increase walking or bicycling but not both. This was a drastic change from data reported in 2018. However, we hypothesize that in 2018 and previous years states reported having walking and bicycling mode share goals, but these goals were not explicit goals in adopted documents. Encouraging states to adopt explicit goals is important to provide accountability and increase likelihood of implementing actions.

In 2020, we only included state bicycle or pedestrian plans adopted/updated more than 10 years ago consistent with the League of American Bicyclists’ Bicycle Friendly Actions assessment. Thirty-one states have some form of plan in place, of which the majority (24 states) address both bicycles and pedestrians.

Finally in this core topic area, the number of states adopting the NACTO guides remains unchanged from 2018.

**FIGURE 1:**  
Complete Streets: Policy Type & Strength



Safe Routes Partnership 2020



In some States, such as in Louisiana and Washington, the pedestrian and bicycle plan has led to development of a comprehensive complete streets policy and implementation approach while in others, like North Carolina, the plan may follow a complete streets policy statement. Regardless of which effort comes first and whether it is formally called “complete streets,” the process of reviewing other plans and procedures across the DOT offers opportunities for focusing policy and defining roles, ultimately leading to a more holistic approach to managing roadways and better projects that serve all users. Louisiana’s plan was followed by a complete streets implementation report that includes many recommendations for specific actions that should be followed to implement complete streets (FHWA 2014).

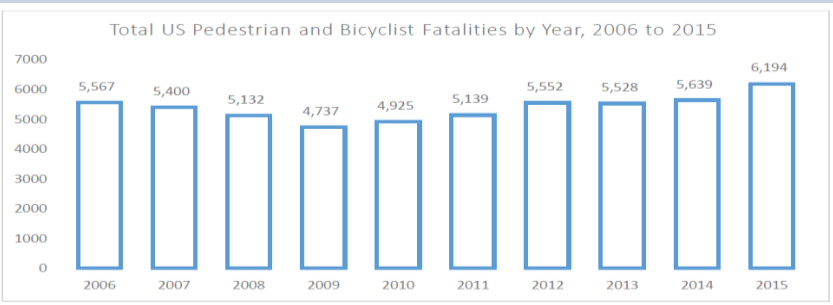
It is critical for any State DOT planning process to examine the agency’s **project development process** and analyze how it affects the provision of pedestrian and bicycle facilities (FHWA 2014). Each stage of project development presents an opportunity to consider nonmotorized transportation. Developing a statewide pedestrian and bicycle plan is an excellent time to review the project development process and institute new requirements for explicitly considering pedestrians and bicyclists in all projects. Some States have developed checklists for project development that require project managers to document inclusion of facilities or document why facilities were not included (FHWA 2014).

Once project development requirements are addressed, project managers need **design guidance** from the DOT (NCHRP 2014). This is an area where the State DOT can truly lead by encouraging flexibility in design and improving the design consistency of pedestrian and bicycle facilities throughout the State. It is common for State DOTs to base their design guidelines on the AASHTO guide (“Green Book”). There are several other design guides that are also appropriate for pedestrian and bicycle facilities, produced by the United States Access Board, AASHTO, the Institute of Traffic Engineers (ITE), and the National Association of City Transportation Officials (NACTO). Transportation projects must also meet the standards outlined in the **Americans with Disabilities Act Accessibility Guidelines** (NCHRP 2014).

Pedestrian and bicycle **safety** are of primary importance and a key priority of the U.S. DOT (FHWA 2014). There are several opportunities to coordinate statewide pedestrian and bicycle planning with ongoing statewide safety analysis and programs. The SHSP data analysis process identifies several safety emphasis areas, and strategies and priorities for addressing safety concerns within those emphasis areas. Pedestrian and bicycle safety are sometimes highlighted as their own emphasis areas; they are also sometimes included as part of a broader focus on vulnerable roadway users. The majority of States identify pedestrian and bicycle safety issues as either primary or secondary emphasis areas in their SHSP (FHWA 2014). For pedestrian and bicycle projects and programs to be eligible for HSIP funding, the need must first be demonstrated through the data analysis that feeds the SHSP. One challenge in funding pedestrian and bicycle projects through HSIP has traditionally been data—States must have sufficient data on pedestrian and bicycle usage patterns and accidents to identify it as an emphasis area, as well as to support the cost-benefit analysis to show the impacts of certain infrastructure or programmatic improvements on the system as a whole. The statewide pedestrian and bicycle planning process

may be another opportunity to better coordinate data collection/analysis to support better projects/countermeasures, and to take best advantage of existing funding sources (FHWA 2014).

Statewide planning practitioners should be aware that FHWA also administers the Focused Approach to Safety program, which provides additional technical resources to assist States in addressing critical safety problems. Since 2004, FHWA's Safety Office has been working to aggressively reduce pedestrian deaths by focusing extra resources on the cities and States with the highest pedestrian fatalities and/or fatality rates. Cities were identified as pedestrian focus cities if they had more than 20 average annual pedestrian fatalities or a pedestrian fatality rate greater than 2.33 per 100,000 population (the annual national average number of pedestrian fatalities is 20 and the average national rate of pedestrian fatalities is 2.33 per 100,000 population). States with a focus city were automatically identified as pedestrian focus States. The Focused Approach to Safety Program provides additional technical assistance resources to focus cities and states to help build local staff capacity in addressing pedestrian safety needs, and also help prioritize investments. FHWA has also created a guide to developing Pedestrian Safety Action Plans and offers free technical assistance and courses to each of the States and cities, and free bi-monthly webinars on subjects of interest. These documents and webinars are available for free to other States as well. The FHWA site provides links to Pedestrian Action Safety Plans developed by the focus cities and States, which may be a useful resource for any statewide pedestrian and bicycle planning process. FHWA plans to expand the focused approach program to include a focus on bicycle safety (FHWA 2014)

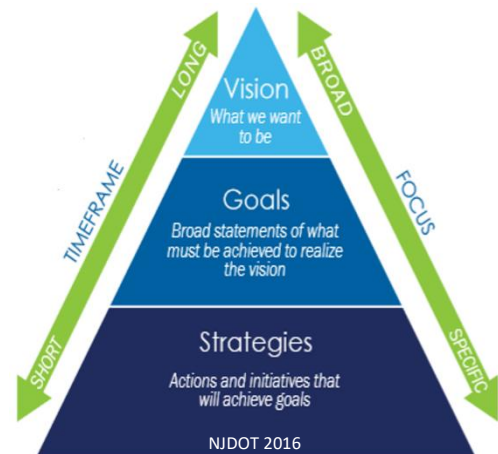


**Figure 1. Total pedestrian<sup>1</sup> and bicyclist<sup>2</sup> fatalities in the US by year, 2006 to 2015.**  
Source: NHTSA Traffic Safety Facts.

The number of pedestrians and bicyclists killed in crashes involving motor vehicles in the US represents almost 20% of all traffic related deaths, according to data compiled by the National Highway Traffic Safety Administration (NHTSA) (FHWA 2017).

### Step 3: Developing Goals, Objectives, Strategies and Performance Measures

It is effective to organize the statewide pedestrian and bicycle planning process around goals, objectives, and performance measures, consistent with other agency initiatives/federal guidance that follow a Performance-Based Planning approach (FHWA 2014). This approach improves decision making by linking plans to specific actionable strategies and provides agency accountability for following through on the plan. It is important to make sure that each goal, objective, strategy, and performance measure is meaningful, realistic, and relates to areas that the agency can influence (FHWA 2014). A performance-based plan usually begins with an overall vision



statement, which is supported by agency-wide goals and objectives that break the agency’s vision into focus areas. Objectives are achieved through strategies/actions and are monitored through performance measurement. Targets, which are often framed by benchmarking other jurisdictions, establish a standard for the State to achieve over an explicit time period. The following list defines these elements (FHWA 2014).

Goals, Objectives and Performance Measures (FHWA 2014):

- **Vision:** A concise expression of what the plan is expected to accomplish ([Error! Reference source not found.](#)).
- **Goal:** A broad statement that describes a desired end state ([Table 2](#)).
- **Objective:** A specific and measurable statement that supports achievement of a goal.
- **Strategy/Action:** An agency initiative that will be pursued to meet one or more objectives.
- **Performance measure:** A metric used to assess progress toward meeting an objective. A measure can be of an output or an outcome.
- **Target:** A specific level of performance that an agency hopes to achieve in a certain timeframe.
- **Benchmark:** A metric that is a national, peer State, or regional standard against which an agency can compare its performance.

The following figure was obtained from the Maryland DOT Plan (2019). Its newly articulated vision is: “Maryland will be a great place for biking and walking that safely connects people of all ages and abilities to life’s opportunities”. One of its goals is “Safety”, that has three main objectives and corresponding strategies. Performance metrics reference targets and baseline measures and the DOT provides cost estimates as well.



## Goal 1: Safety

Maryland DOT 2019

### Improve the Safety of Bicycle and Pedestrian Travel through Education, Enforcement, and Infrastructure Solutions

<p><b>Objective 1.1</b> Reduce the number of bicycle and pedestrian lives lost and injuries sustained on Maryland’s transportation system</p> <p><b>Strategies</b></p> <p><b>1.1a</b> Continue to improve data collection techniques and access to safety data to support efforts to plan for and implement safer networks</p> <p><b>1.1b</b> Refine techniques for understanding and evaluating safety issues and areas of concern</p> <p><b>1.1c</b> Implement effective design solutions and countermeasures to enhance safety of infrastructure</p>	<p><b>Objective 1.2</b> Improve the maintenance and operations protocols that support safe access for pedestrians and bicyclists</p> <p><b>Strategies</b></p> <p><b>1.2a</b> Improve methods for identifying maintenance and safety concerns and for communicating them to appropriate agencies</p> <p><b>1.2b</b> Enhance protocols that ensure safe access for pedestrians and cyclists during the construction phase of infrastructure projects</p>	<p><b>Objective 1.3</b> Improve education, enforcement, and training to support safe driving, biking, and walking</p> <p><b>Strategies</b></p> <p><b>1.3a</b> Regularly update and effectively communicate information on new safety laws and technologies</p> <p><b>1.3b</b> Improve training and education for all roadway users and design professionals in emphasizing bicycle and pedestrian safety</p>
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**Performance Metrics:**  
Statistics for fatalities and serious injuries continue to be acquired and compared with targets established by the SHSP. New baseline measures to estimate “exposure” data (i.e., number of people biking and walking) will be developed to improve understanding of actual progress and need. Continue with the Toward Zero Deaths approach in working to reduce bicycle and pedestrian fatalities and serious injuries in Maryland.

**Estimated Cost:**  
\$50 million to \$120 million

\*Estimates are based on current program expenditures with additional consideration for future system improvements and expansion. Figures are not intended for programming purposes.

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Goals, Objectives, and Strategies

An agency can approach the development of goals and objectives for statewide pedestrian and bicycle plans in several ways. In some cases, plans follow explicit purposes in a related plan, such as the State Long Range Transportation Plan (LRTP) or the Strategic Highway Safety Plan (SHSP). In other cases, members of an agency tasked with developing the plan work with stakeholders to identify goals, objectives, and performance measures. **Goals and objectives explicitly define what the agency would like to achieve through the plan.** Therefore, depending on the scope of the plan, goals and objectives may cover a range of topics and vary in specificity.

**Common categories of goals** for statewide bicycle and pedestrian plans include:

- **safety:** related to reducing fatalities/injuries, needs, design, O&M, enforcement, etc.
- **mobility:** providing people with other modes for going to work, school, etc.
- **accessibility/equity:** providing all people with accessibility to other modes
- **economy:** tourism, walk/bike to work to save money, for recreation, etc.
- **connectivity:** land use and transportation planning, strengthen bike/walk networks, close gaps, multimodal “first/last mile”, preservation/maintenance of system etc.

Some DOTs also include improving **public health**, as illustrated by the following Montana DOT plan example (2019) and **environment**, like CALTRANS (2017).



**Goal 1:** Reduce pedestrian and bicyclist fatalities and serious injuries in support of Vision Zero.



**Goal 2:** Educate, encourage, and promote safe and responsible travel practices of motorists, pedestrians, and bicyclists.



**Goal 3:** Preserve and maintain the pedestrian and bicycle transportation system.



**Goal 4:** Improve mobility and accessibility for all.



**Goal 5:** Support walking and bicycling as important transportation modes for access to destinations, economic vitality, and health.

Montana DOT 2019

[Table 2](#) lists categories of goals found (explicitly stated) in recent plans by state. It should be noted that states have documented different ways of articulating, approaching and measuring these goals (e.g., qualitatively vs. quantitatively; directly vs. indirectly). For example, the goal of implementing the plan to result in benefitting environment may be indirectly “captured” and evaluated by collecting data about mode shift (such is the case with the Colorado DOT 2015) or just assumed with a state’s improvement in bicycle/pedestrian policy (as is the case with Alabama DOT 2017). It is also important to note that the goals listed for each state should necessarily correspond with the agency’s initial data collection in Step 5 to identify baseline conditions and to support future performance monitoring.

Table 2 Goals for Statewide Plan by State


DOT Plan (Year)	Safety	Mobility	Equity	Economy	Connectivity	Public Health	Environment
<a href="#">Alabama</a> (2017) *new plan	X	X	X	X	X		X
<a href="#">Arizona</a> (2013) *updated plan	X	X			X		
<a href="#">Arkansas</a> (2017) *new plan	X	X	X	X	X		
<a href="#">California</a> (2017) *new plan	X	X	X	X		X	X
<a href="#">Colorado</a> (2015) *updated plan	X	X	X	X	X	X	X
<a href="#">Delaware</a> (2018) *updated plan (bicycle only)	X	X			X		
<a href="#">Illinois</a> (2014) *updated plan (bicycle only)	X	X	X		X	X	
<a href="#">Iowa</a> (2018) *new plan	X	X			X	X	
<a href="#">Louisiana</a> (2009) *updated plan	X	X	X	X		X	X
<a href="#">Maryland</a> (2019) *updated plan	X	X	X	X	X	X	
<a href="#">Minnesota</a> (2016) *new plan (bicycle only)	X	X	X		X		
<a href="#">Montana</a> (2019) *new plan	X	X	X	X	X	X	
<a href="#">New Jersey</a> (2016) *updated plan	X	X	X	X	X	X	
<a href="#">Oregon</a> (2016) *new plan	X	X	X	X	X	X	X
<a href="#">PennDOT</a> (2020) *updated plan	X	X	X	X	X	X	
<a href="#">Wyoming</a> (2017) *new plan	X	X	X		X		





Some states develop a pedestrian and bicycle plan that is derived from goals contained in another agency-wide plan and some states develop their own set of goals. Either way, it is good practice to develop specific and measurable objectives to achieve each goal (FHWA 2014). While goals relate to the "big picture" or desired end-result, objectives provide the specificity necessary to implement broader based goals. Furthermore, an objective is a specific, measurable statement that supports achievement of a goal. Objectives are best developed with the extensive participation of internal stakeholders such as district planners, engineers, and maintenance officials that are charged with carrying out agency policy. It is also useful to engage staff from MPOs, local governments, and advocacy groups when developing objectives. The engagement process will reveal opportunities to pursue strategies/actions for the agency to meet its objectives (FHWA 2014). See the PennDOT example that has its goals and supporting objectives (2020).





## Themes at a Glance


 ENHANCE SAFETY
<b>S1:</b> Increase PennDOT capacity to plan, design, construct, and maintain active transportation facilities that support and encourage users of all ages, skills, and abilities.
<b>S2:</b> Improve PennDOT processes to ensure the needs of bicyclists and pedestrians are adequately identified during scoping and included in design for all project types.
<b>S3:</b> Implement additional education and enforcement programs to reduce crashes and provide a better sense of security for people who walk and bicycle.
<b>S4:</b> Improve policies and practices for maintaining access for people who walk and bicycle during construction and maintenance projects.

 PROVIDE TRANSPORTATION EQUITY
<b>E1:</b> Integrate equity criteria into decision-making and prioritize walking and bicycling investments in underserved areas with transportation disadvantaged populations.
<b>E2:</b> Improve active transportation engagement as part of project-specific transportation planning/design and create specialized outreach for people with disabilities and people from minority groups.
<b>E3:</b> Improve non-motorized access to transit and other modal connections.
<b>E4:</b> Provide ongoing outreach and education to partners with a focus on partners that focus on underserved communities.

 CONNECT WALKING AND BICYCLING NETWORKS
<b>C1:</b> Support the development of regional and local plans that identify bicycle and pedestrian needs and priority projects with a focus on closing gaps and building complete, comfortable networks.
<b>C2:</b> Improve connectivity by addressing bicycling and pedestrian network gaps through the transportation project development process.
<b>C3:</b> Improve access to parks, trails, and other recreational amenities.

 LEVERAGE PARTNERSHIPS
<b>P1:</b> Strengthen ongoing coordination, cooperation, and collaboration between federal, state, regional, local, and private partners to facilitate a seamless pedestrian and bicycle system.
<b>P2:</b> Coordinate PennDOT planning and policy with all levels of government to encourage mode shifts, reduce emissions of greenhouse gases, and provide a flexible and resilient transportation network.
<b>P3:</b> Improve the quality and availability of data on bicycle and pedestrian travel and infrastructure.
<b>P4:</b> Engage in proactive evaluations and discussions on emerging technologies and mobility solutions.

 IMPROVE PUBLIC HEALTH
<b>H1:</b> Continue and enhance ongoing state agency coordination to improve public health outcomes through active transportation.
<b>H2:</b> Engage health policy practitioners in policy development, comprehensive transportation planning, and early project development.
<b>H3:</b> Link state grant program criteria to community projects designed to strengthen health and active transportation.
<b>H4:</b> Address health disparities through active transportation policies, plans, and project selection.
<b>H5:</b> Improve data collection and sharing between transportation and public health agencies.
<b>H6:</b> Improve access to community health resources.

 INCREASE ECONOMIC MOBILITY
<b>M1:</b> Promote local land use policies and practices that support increased bicycling and walking and add to the overall livability and vitality of communities.
<b>M2:</b> Build partnerships between PennDOT, other state agencies, visitors, and convention bureaus, chambers of commerce, local governments, and private sector to support bicycle and pedestrian infrastructure to enhance economic initiatives within communities.
<b>M3:</b> Identify pre-construction and post-construction assessment methodology to determine the economic vitality of completed pedestrian and bicycle projects.
<b>M4:</b> Improve access to job centers and downtown districts.

**More Information:** For more information on the Plan please visit: [Pennsylvania Active Transportation Plan](#).

For example, Arkansas has three (3) goals that include safety, connectivity and economic benefit and one associated performance metric being reduction of injury crashes by fifty percent (50%). It also developed eight (8) supporting objectives and thirty-five (35) specific action strategies that are recommended for implementation (Arkansas DOT 2017).

The Colorado DOT plan (2015) is highlighted in this section because it provides a comprehensive view of goals and performance measures. A summary for other states is included in Appendix B. The CDOT plan states that “for the most part, these goals originate with policy statements produced by other statewide planning initiatives including documents produced by groups such as the Colorado Transportation and Finance Implementation Panel, the Colorado Physical Activity and Nutrition Program, and the Colorado Climate Action Plan. The state’s two types of regional transportation planning agencies, MPOs and TPRs, have also adopted many of the goals in some form. Input from this Plan’s Stakeholder Group and through feedback received from the public via statewide goalsetting webinars also contributed to the development of goals. This process led to the creation and refinement of the following goals for CDOT’s ongoing promotion of bicycling and walking in Colorado” (CDOT 2015).

Additionally, “investment decision criteria” were developed to assist CDOT in incorporating bicycle and pedestrian considerations into its projects. The figure below shows its project evaluation calculator, with the box on the right side capturing the quantified values for each of its plan’s goals, as described in this section.

### *Bicycle & Pedestrian Candidate Projects Evaluation Calculator*

Input Information (use drop-downs for assistance)		
Variable/Characteristic	Input Type	Input
Bicycling/Walking Conditions Before Project (B/P LOS)	LOS value	3.62
Bicycling/Walking Conditions After Project (B/P LOS)	LOS value	2.09
Crash Rate Reduction Potential	0-10 scale	4
Motor Vehicle LOS	LOS grade	D
Roadway Functional Class	Classification Type	Major Collector
Population*Employment in Surrounding Area	0-5 scale	4
Population of Surrounding Area	0-5 scale	5
Corridor Aesthetics	0-5 scale	2
Count Device Included	Yes/No	Yes
Designated Scenic Byway	Yes/No	No
Direct Access to Designated Scenic Byway	Yes/No	No
Direct Access to Public Lands	Yes/No	Yes
Shared Use Path	Yes/No	No
Located in Designated Downtown Area	Yes/No	Yes
County Obesity Rate	0-5 scale	4
Minority/Low Income Population in Surrounding Area	0-5 scale	3
Access to School	Yes/No	Yes
Senior Population in Surrounding Area	0-5 scale	2
Closes Gap Between Two Existing Facilities	Yes/No	No
Extends Existing Facility	Yes/No	Yes
Fixed Route Transit Service	Yes/No	Yes
Access to Park and Ride Facility (including carpool/vanpool)	Yes/No	No
County Tourism Revenue	0-5 scale	1
Concerted Tourism Investment	Yes/No	Yes
Facility Construction Cost	\$	\$120,000

Evaluation Results: Advancement toward Statewide Goals	
Enhance Safety	4.0
Increase Bicycling and Walking Activity	4.3
Expand Recreational Opportunities & Enhance Quality of Life	2.5
Improve Public Health	3.8
Improve Environment, Air Quality, & Fossil Fuel Independence	3.5
Provide Transportation Equity	3.3
Maximize Transportation Investments	3.3
Improve State & Regional Economy	3.5
<b>Total Benefits Score Summary</b>	<b>43.10</b>
or	
<b>Benefit-to-Cost Index</b>	<b>35.91</b>

**Figure 2. Candidate Projects Evaluation Calculator**



CDOT includes “A Detailed Examination of Select System-Level Performance Measures” in its plan’s appendices (CDOT 2015) and provides both project- and system-level performance criteria, as described in this section.

The following goals, objectives and performance measures are described in the CDOT Plan (2015):

**GOAL: Enhance Safety**

OBJECTIVES/STRATEGIES (Investment Decision Criteria)

- Reduce crash rate or potential threat of crashes:  
 Many bicycle- and pedestrian related projects and programs are specifically geared to improve safety for users of those modes. Many innovative engineering approaches are available to improve non-motorized safety, particularly at intersections and mid-block locations, and the efficacy of safety projects can be measured using crash reports and statistics. This goal also incorporates efforts to improve safe operating behaviors among motorists, bicyclists and pedestrians through education and enforcement activities.

PERFORMANCE MEASURE – Project Level

- ✓ Project would result in safety improvement as quantified by Crash Modification Factors

PERFORMANCE MEASURE – System Level

- ✓ Change in bicycle and pedestrian crash rates
- ✓ State bicycle and pedestrian crash rankings
- ✓ Number of communities with adopted Share the Road programs or policies

**GOAL: Mobility/Accessibility**

Increase walking and bicycling

OBJECTIVES/STRATEGIES (Investment Decision Criteria)

- Improve (corridor) bicycling or walking conditions:  
 Increased bicycling and walking activity is the springboard that enables widespread benefits. Many communities statewide have found that the best way to increase non-motorized activity is by improving the bicycling and walking conditions in their transportation corridors
  - PERFORMANCE MEASURE – Project Level
    - ✓ Quality of improvement, measured as the change in bicycle or pedestrian LOS (primary benefit evaluation component)
  - PERFORMANCE MEASURE – System Level
    - ✓ Percent bike/ped mode share
    - ✓ Percent of CDOT’s system at bike LOS A-D, E, F
    - ✓ Percent of CDOT’s system at ped LOS A-D, E, F
- Expand permanent data collection infrastructure
  - PERFORMANCE MEASURE – Project Level
    - ✓ Project includes installation of permanent bike/ped counting device
  - PERFORMANCE MEASURE – System Level
    - ✓ Number of permanent bike/ped counting devices on the State’s system

**GOAL: Expand Recreational Opportunities and Enhance Quality of Life****OBJECTIVES/STRATEGIES (Investment Decision Criteria)**

Numerous quality of life indicators are enhanced by the ability to safely and comfortably bicycle and walk. Specifically, bicycle and pedestrian accommodation provides a greater variety of transportation choices, enables lifelong communities to be created in which residents of a particular place can comfortably progress through all stages of life, enhances and preserves the character of communities, helps maintain property values, and offers abundant recreational opportunities. Such opportunities can be enhanced by creating better access to public lands and offering more ways to enjoy the state's Scenic Byways.

- Enhance Scenic Byways
  - PERFORMANCE MEASURE – Project Level
    - ✓ Project is located along a Scenic Byway (Yes/No)
  - PERFORMANCE MEASURE – System Level
    - ✓ Percent of Scenic Byways miles that are bicycle/pedestrian compatible
- Create access to public lands
  - PERFORMANCE MEASURE – Project Level
    - ✓ Project provides direct access to public lands (Yes/No)
  - PERFORMANCE MEASURE – System Level
    - ✓ Percent of public lands with bike/ped access
- Provide multi-use pathways near populations
  - PERFORMANCE MEASURE – Project Level
    - ✓ Project is a multi-use pathway (Yes/No)
    - ✓ Relative population of project area
  - PERFORMANCE MEASURE – System Level
    - ✓ Miles of multi-use pathways
- Preserve and enhance downtown character
  - PERFORMANCE MEASURE – Project Level
    - ✓ Project is located in defined downtown or "Main Street" area
  - PERFORMANCE MEASURE – System Level
    - ✓ Number of communities participating in Main Street Program

**GOAL: Equity****Provide Transportation Equity**

For many Coloradans, bicycling and walking are key elements of transportation mobility. This mobility can be realized by providing safe non-motorized access to schools and learning centers for Colorado's youth, and by constructing new bicycle and pedestrian facilities in areas with significant senior, minority, and low-income populations.

**OBJECTIVES/STRATEGIES (Investment Decision Criteria)**

- Provide mobility options to underserved populations
  - PERFORMANCE MEASURE – Project Level
    - ✓ Project is located in an area of underserved population (low-income or minority)
  - PERFORMANCE MEASURE – System Level
    - ✓ Percent of underserved populations (low-income or minority) in the state living within a quarter mile of a defined bicycle or pedestrian facility

- Provide safe active transportation to schools and learning centers
  - PERFORMANCE MEASURE – Project Level
    - ✓ Project provides direct connection to school and would likely be used by students or staff to walk or bike to school
  - PERFORMANCE MEASURE – System Level
    - ✓ Percent of schools in Colorado that have a Safe Routes map and program
    - ✓ Number of schools teaching CDOT Safe Routes to School curriculum
    - ✓ Percentage of students who bicycle or walk to school
- Provide pedestrian mobility for seniors and disabled populations
  - PERFORMANCE MEASURE – Project Level
    - ✓ Project located in an area of high >65 population
  - PERFORMANCE MEASURE – System Level
    - ✓ Percent of >65 population living within a quarter mile of a defined pedestrian facility

### **GOAL: Economy**

#### Improve State/Regional Economy

Promoting and accommodating bicycling and walking can lead to economic benefits.

For example, new facilities (both on-road and off-road) can lead to active transportation-related tourism. The choice to bike or walk to work leaves more money in residents' pockets, otherwise used for fuel and other auto-related expenses, which is then frequently re-invested in the local economy. Bicycle and pedestrian facilities create access to jobs for much of the state's population. Bicycle infrastructure, in particular, attracts a creative and highly educated working class that develops new business in the state.

#### OBJECTIVES/STRATEGIES (Investment Decision Criteria)

- Provide better access to jobs
  - PERFORMANCE MEASURE – Project Level
    - ✓ Jobs \* population in vicinity
  - PERFORMANCE MEASURE – System Level
    - ✓ Employees who ride/walk to work (through employer survey)
- Bolster tourism
  - PERFORMANCE MEASURE – Project Level
    - ✓ Relative level of tourism in area
    - ✓ Demonstrated level of tourism promotion investment in local community
  - PERFORMANCE MEASURE – System Level
    - ✓ Tourists using bicycle/pedestrian facility, quality of their experience, would they come back (through phone survey)
- Induce mode shift to bicycling, walking, and transit = more household disposable income
  - PERFORMANCE MEASURE – Project Level
    - ✓ Mode shift
  - PERFORMANCE MEASURE – System Level
    - ✓ Mode split estimated through phone or mail survey
    - ✓ Change in biking and walking activity

**GOAL: Connectivity**

## Maximize Transportation Investments

Bicycling and walking can go a long way in optimizing the many types of transportation investments made by Colorado's public agencies. Roadway capacity projects, which represent significant capital expenditures, can be made more efficient if some auto trips are converted to bicycling and walking. Enhanced non-motorized access to transit expands the reach of public transportation systems and the effectiveness in those investments. Finally, the efficacy of bicycle and pedestrian networks themselves can be optimized by implementing strategic and logical connections.

## OBJECTIVES/STRATEGIES (Investment Decision Criteria)

- Complete or connect network or system
  - PERFORMANCE MEASURE – Project Level
    - ✓ Project connects to an existing bicycle or pedestrian facility
  - PERFORMANCE MEASURE – System Level
    - ✓ Percent of planned bicycle/pedestrian network complete
- Reduce motor vehicle traffic congestion
  - PERFORMANCE MEASURE – Project Level
    - ✓ Project located along or parallel to a congested roadway
  - PERFORMANCE MEASURE – System Level
    - ✓ Percent of State Highways (or congested State Highways) that are bicycle and pedestrian compatible, as measured through adopted level of service targets
- Enhance multimodal efficiency (expand utility of public transportation)
  - PERFORMANCE MEASURE – Project Level
    - ✓ Project provides direct connection to transit service
  - PERFORMANCE MEASURE – System Level
    - ✓ Percent of transit stations that have bicycle parking
    - ✓ Percent of stations that are bicycle and pedestrian accessible
    - ✓ Percent of transit vehicles that can accommodate bicycles
    - ✓ Percent of transit routes/systems that provide shared bicycles for the last mile connection

**GOAL: Public Health**

## OBJECTIVES/STRATEGIES (Investment Decision Criteria)

- Reduce disease/obesity in children, adults, and seniors:

Active transportation is an ideal way for Colorado's residents to build the recommended amount of daily exercise into their lives. Such activity has the potential to play a key role in reversing the trend of increased obesity in the state among children, adults, and senior citizens, as well as the associated chronic disease rates. Beyond the physical benefits, bicycling and walking activity can also improve mental health.

  - PERFORMANCE MEASURE – Project Level
    - ✓ Mode shift and induced recreational travel
    - ✓ Obesity rate in project county
  - PERFORMANCE MEASURE – System Level

- ✓ Percent Percent of Medically Underserved Populations in the state living within a quarter mile of defined bicycle or pedestrian facility
- ✓ Obesity Rate
- ✓ Bicycle and pedestrian mode share

**GOAL: Environment**

Improve Environment, Air Quality, and Fossil Fuel Independence

OBJECTIVES/STRATEGIES (Investment Decision Criteria)

- Reduce carbon-based vehicle miles traveled through increased bicycling and walking:  
 More people bicycling and walking instead of driving their cars leads to lower GHG emissions, thereby benefiting air quality for the state. The importance of this benefit is underscored by the fact that the short auto trips that bicycling and walking would replace are those that produce the highest level of emissions. Furthermore, shifting to active transportation modes helps reduce economic dependence on fossil fuels.
  - PERFORMANCE MEASURE – Project Level
    - ✓ Mode shift
  - PERFORMANCE MEASURE – System Level
    - ✓ Mode split estimated through phone or mail survey
    - ✓ Change in biking and walking activity

State DOTs have generally addressed the “5 Es” of bicycle and pedestrian transportation within their plans (Iowa DOT 2018, MnDOT 2016).

**The “5 Es” of bicycle and pedestrian transportation**

The “5 Es” are commonly referred to as a comprehensive way to consider the various factors that impact walking and biking.

**Education** efforts typically focus on teaching all transportation users (drivers, bicyclists, and pedestrians) how to safely interact and follow the rules of the road.

**Encouragement** activities focus on increasing biking and walking through fun and interesting activities. Encouragement efforts seek to demonstrate that biking and walking are valid modes of transportation.

**Enforcement** activities focus on enforcing the rules of the road for all users (motorists, bicyclists, and pedestrians). Enforcement also prioritizes having links between the law enforcement community and the biking community.

**Engineering** refers to the planning, design, and prioritization of physical infrastructure, such as multi-use trails, paved shoulders, and pedestrian safety improvements.

**Evaluation and planning** efforts seek to quantify the impact of the other “Es.” This category was not used for the open house exercise, because it was assumed that the majority of participants would lack adequate information to comment on the evaluation and planning activities occurring in Iowa.

The Arkansas DOT (2017) ties in the “5 Es” with plan development in the following figure:

**Common Bicycle and Pedestrian Plan Components**

Bicycle and pedestrian planning can be achieved in a variety of ways; however, there are eight key components integral to creating a successful plan that leads to buy-in and ultimately implementation. The eight components are shown in the figure. Three of the eight plan components are associated with the “five E’s” of bicycle and pedestrian planning: Engineering, Education, Encouragement, Enforcement, and Evaluation. These five E’s are used in active transportation planning to ensure a holistic approach to incorporating both engineering and programmatic recommendations into successful, implementable plans. (Arkansas DOT 2017)

Figure 1: Eight Essential Components of a Local Bicycle and Pedestrian Plan



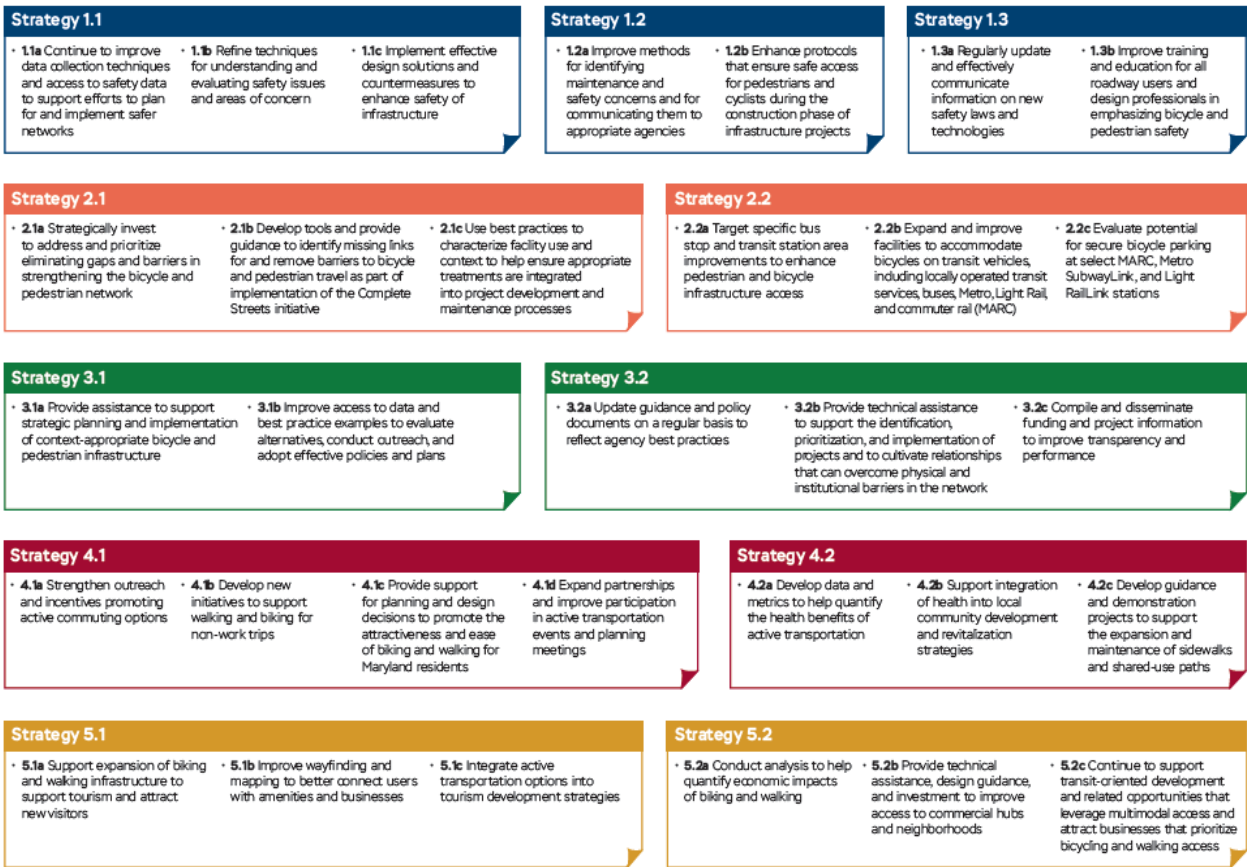
The Maryland DOT (2019) provides this snapshot of its plan’s framework.

## Goals, Objectives, and Strategies

The Plan process identified the following goals, objectives, and strategies to guide state support for bicycle and pedestrian activity in Maryland.

<p><b>1. Safety</b> Improve the Safety of Bicycle and Pedestrian Travel through Education, Enforcement, and Infrastructure Solutions</p>	<p><b>Objective 1.1</b> Reduce the number of bicycle and pedestrian lives lost and injuries sustained on Maryland’s transportation system</p>	<p><b>Objective 1.2</b> Improve the maintenance and operations protocols that support safe access for pedestrians and bicyclists</p>	<p><b>Objective 1.3</b> Improve education, enforcement, and training to support safe driving, biking, and walking</p>
<p><b>2. Connected Networks</b> Enhance Transportation Choice and Multimodal Connectivity through Linked Networks</p>	<p><b>Objective 2.1</b> Leverage strategic investment in planned routes to support the creation, identification, and use of safe, lower-stress routes for biking and walking for all user groups</p>	<p><b>Objective 2.2</b> Improve bicycling and walking accessibility to transit facilities</p>	
<p><b>3. Analysis and Planning</b> Support Efficient and Equitable Planning and Project Development with Data-driven Tools and Innovative Techniques</p>	<p><b>Objective 3.1</b> Improve access to data and decision tools to support effective and inclusive planning for all Maryland communities</p>	<p><b>Objective 3.2</b> Create tools to facilitate the development and delivery of more efficient, effective, and equitable projects</p>	
<p><b>4. Partnerships</b> Build Partnerships to Promote Active Transportation and Strengthen the Health of our Communities</p>	<p><b>Objective 4.1</b> Leverage partnerships to encourage more Maryland residents of all ages, abilities, and income levels to participate in active transportation to meet more of their transportation needs</p>	<p><b>Objective 4.2</b> Strengthen partnerships so Maryland communities are better equipped to implement active transportation solutions to achieve health and other benefits</p>	
<p><b>5. Economic Development</b> Advance Biking and Walking as an Economic Development Strategy</p>	<p><b>Objective 5.1</b> Develop biking and pedestrian facilities and programs to promote active tourism</p>	<p><b>Objective 5.2</b> Expand access to economic benefits of bicycling and walking to more Maryland residents and businesses</p>	

The Maryland DOT (2019) provides this snapshot of its plan’s framework (continued).



A pedestrian and bicycle plan is often a product of a State’s LRTP (FHWA 2014). LRTPs vary considerably in detail but most include a vision for the State’s transportation system and list several goals that the agency aims to achieve. Organizing a planning process on the foundation of the LRTP can be an effective way to ensure that pedestrian and bicycle issues are incorporated into the wider statewide multimodal transportation planning framework. It can also clearly link pedestrian and bicycle related strategies with crosscutting agency objectives.

By linking pedestrian and bicycle safety objectives and performance measures to focus areas identified in the SHSP, they can be integrated into the State’s wider safety program, allowing pedestrian and bicycle safety projects to compete for dedicated safety funding through the Highway Safety Improvement Program (HSIP). In other cases, the pedestrian/bicycle plan will reference the State’s LRTP or SHSP but will offer its own list of pedestrian/bicycle specific goals. When a pedestrian and bicycle planning process is initiated independently of these wider agency plans, the State DOT will need to engage in significant stakeholder outreach and data collection at the outset to agree on a series of goals to guide it. The following table provides pedestrian traffic fatalities by state (2019 preliminary data)



# Pedestrian Traffic Fatalities by State

2019 PRELIMINARY DATA

**Table 5**

**Pedestrian Fatalities by State Per 100,000 Population: Jan-June 2019**

*Source: State Highway Safety Offices and U.S. Census Bureau*

Table 5 shows the rate of pedestrian fatalities per 100,000 population by state for the first six months of 2019. New Mexico had the highest rate (2.24), while Vermont had the lowest (0.18). Fifteen states had pedestrian fatality rates of 1.0 or higher per 100,000 population, compared with 12 states in 2018.

Sorted by State		Sorted by Fatality Rate	
State	Pedestrian Fatalities Per 100K Population	State	Pedestrian Fatalities Per 100K Population
Alabama	1.04	New Mexico	2.24
Alaska	0.68	Hawaii	1.77
Arizona	1.53	Florida	1.72
Arkansas	0.96	South Carolina	1.61
California	1.31	Arizona	1.53
Colorado	0.55	Louisiana	1.38
Connecticut	0.77	Nevada	1.36
Delaware	1.09	California	1.31
District of Columbia	0.82	Wyoming	1.27
Florida	1.72	Delaware	1.09
Georgia	1.09	Georgia	1.09
Hawaii	1.77	Texas	1.08
Idaho	0.19	North Carolina	1.06
Illinois	0.48	Alabama	1.04
Indiana	0.53	Mississippi	1.00
Iowa	0.31	Arkansas	0.96
Kansas	0.26	Oregon	0.95
Kentucky	0.76	Tennessee	0.94
Louisiana	1.38	Maryland	0.92
Maine	0.52	New Jersey	0.89
Maryland	0.92	Oklahoma	0.85
Massachusetts	0.46	District of Columbia	0.82
Michigan	0.62	Missouri	0.77
Minnesota	0.34	Connecticut	0.77
Mississippi	1.00	Kentucky	0.76
Missouri	0.77	Montana	0.75
Montana	0.75	Alaska	0.68
Nebraska	0.36	Virginia	0.67
Nevada	1.36	North Dakota	0.66
New Hampshire	0.29	West Virginia	0.65
New Jersey	0.89	Michigan	0.62
New Mexico	2.24	New York	0.62
New York	0.62	Washington	0.61
North Carolina	1.06	Pennsylvania	0.58
North Dakota	0.66	Colorado	0.55
Ohio	0.52	Indiana	0.53
Oklahoma	0.85	Maine	0.52
Oregon	0.95	Ohio	0.52
Pennsylvania	0.58	Illinois	0.48
Rhode Island	0.30	Massachusetts	0.46
South Carolina	1.61	Utah	0.44
South Dakota	0.34	Nebraska	0.36
Tennessee	0.94	Minnesota	0.34
Texas	1.08	South Dakota	0.34
Utah	0.44	Iowa	0.31
Vermont	0.18	Rhode Island	0.30
Virginia	0.67	New Hampshire	0.29
Washington	0.61	Kansas	0.26
West Virginia	0.65	Wisconsin	0.22
Wisconsin	0.22	Idaho	0.19
Wyoming	1.27	Vermont	0.18
<b>Total</b>	<b>0.92</b>	<b>Total</b>	<b>0.92</b>

The FHWA also provides the following guidance based upon state input when developing goals, objectives, strategies and performance criteria (FHWA 2014):

A high quality and transparent plan sets up a framework from which to evaluate the plan's progress. Plans use **targets** to identify a specific performance level that the agency wants to achieve by a certain time. Targets should be ambitious but realistic in terms of available resources and support to make the investments or decisions necessary to achieve them. **Benchmarks** help agencies set targets in the context of national standards or provide examples of how peer agencies are approaching similar issues. DOTs use **performance measures** to monitor and track progress toward meeting the targets, and sometimes help provide a framework for identifying specific strategies for how to meet the objectives. Performance measures can be quantitative (e.g., reduction in bicyclist injuries/fatalities, commute mode split, pavement management system) or qualitative (e.g., milestones to achieve process objectives) (FHWA 2014).

Performance measures can also focus on either **output** or **outcome**. An example of an output measure is the number of gaps in the sidewalk network. Outputs are measures or descriptions of what an agency does in its efforts to meet its goals and objectives. Outcomes, on the other hand, are measures of the results that agency actions have on changing the experience of users of its facilities. An example of an outcome measure is the number of pedestrian injuries or fatalities.

Great performance-based plans will typically measure both outcomes and outputs.

Outcomes are more meaningful metrics of success or failure but they are more difficult to measure than outputs. Before committing to specific metrics or targets through this planning process, State DOTs should evaluate whether there are resources to measure them, and whether the measures provide meaningful information about the agency's progress toward meeting a stated objective. It is also important to only measure outcomes that the agency is able to influence, so that the plan can have a realistic

## Performance Measures and Safety Goals

At the national level, agencies can look to guidance from FHWA for establishing and tracking safety performance measures as part of the Highway Safety Improvement Program (HSIP) (<https://safety.fhwa.dot.gov/hsip/spm/>). The following five performance measures are used to track and measure safety performance as five-year rolling averages:

- Number of Fatalities.
- Rate of Fatalities per 100 million Vehicle Miles Traveled (VMT).
- Number of Serious Injuries.
- Rate of Serious Injuries per 100 million VMT.
- Number of Non-motorized Fatalities and Non-motorized Serious Injuries.

Another useful resource for safety performance measurement is the FHWA **Guidebook for Developing Pedestrian and Bicycle Performance Measures** ([https://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/performance\\_measures\\_guidebook/page02.cfm](https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/performance_measures_guidebook/page02.cfm)), which identifies the following performance measures that relate to achieving safety goals:

- |                                     |   |
|-------------------------------------|---|
| ■ Access to Community Destinations. | ■ Level of Service.                       |
| ■ Adherence to Accessibility Laws.  | ■ Miles of Pedestrian/Bicycle Facilities. |
| ■ Adherence to Traffic Laws.        | ■ Network Completeness.                   |
| ■ Average Travel Time.              | ■ Pedestrian Space.                       |
| ■ Average Trip Length.              | ■ Population Served by Walk/Bike/Transit. |
| ■ Connectivity Index.               | ■ Route Directness.                       |
| ■ Crashes.                          | ■ Street Trees.                           |
| ■ Crossing Opportunities.           | ■ User Perceptions.                       |
| ■ Delay.                            | ■ Vehicle Miles Traveled (VMT) Impacts.   |
| ■ Density of Destinations.          | ■ Volume.                                 |
| ■ Facility Maintenance.             |   |

For more information about these measures and others, please refer to Table 5 from the **Guidebook for Developing Pedestrian and Bicycle Performance Measures** ([https://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/publications/performance\\_measures\\_guidebook/page02.cfm](https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/performance_measures_guidebook/page02.cfm)).

FHWA 2017

chance of success and so that the public understands the capabilities and limitations of the State DOT to affect pedestrian and bicycle system performance. For example, if an agency wants to increase walking or bicycling in the State by investing in an expanded facility network it may want to focus its measurement on the State owned roadway network and not on counting usage on municipally owned or maintained roads, which the DOT does not control. State DOT headquarters staff should engage with all local divisions to agree on specific tasks that the agency will commit to so as to achieve progress toward its objectives and to measure that progress.

- **Long-term data collection for performance management should be carefully considered.** To successfully track plan and program performance over time, agencies must identify the right mix of accountability, ownership, and resources for long-term data collection.
- **The connection between performance measures and project selection criteria needs to be strengthened.** This is an emerging area in planning that some States are making progress on, but there is still much to learn about the most effective pedestrian and bicycle performance measures and how to best apply them at the statewide level.
- **When selecting performance measures and indicators, planners should be careful to focus on what the State DOT can control.** Performance monitoring is important for tracking progress of planning efforts and continuing to make the case for increased investments. However, planners should consider carefully the measures and indicators that they will be able to influence and track through the planning process. For instance, does the plan address bicycle facility development across the State or only on State routes? DOT plans should not rely too heavily on decisions or data collection by other entities to track the plan's success. (FHWA 2014)

#### Step 4: Engaging Stakeholders and the Public

Because some State transportation agencies have not historically focused on walking and bicycling, it is especially important to have an effective public involvement strategy when planning for these modes. Public Involvement helps planners:

- **Understand and gauge citizens' concerns**—Pedestrians and bicyclists, including those who do not have access to a car, are equal users of the transportation system and the attitudes and opinions of these roadway users may be different than of those focused on driving.
- **Identify specific problems to address**—Nonmotorized transportation lacks the data that informs the planning for motor vehicles and transit; the public is one of the best resources for collecting and analyzing new data to inform a bicycle or pedestrian plan.
- **Build public support for plan implementation and sustain momentum**—Participation increases the visibility and accountability of the plan and can generate champions for the plan's implementation.  
(FHWA 2014)

In addition to being a legal requirement, public involvement provides the foundation for a good plan and planning process. One pitfall that can plague a State DOT in developing its pedestrian or bicycle plan is to not adequately scope out the requirements for conducting public outreach, as well as not adequately summarizing and documenting the results of the public involvement activities. **In some cases, the public outreach component of the plan development can be as large as one quarter to one third of the total cost of the planning process.** According to many practitioners who have recently completed pedestrian and bicycle plans, the outreach was worth the time and effort, as public involvement improved the content, increased the visibility, and improved the implementation of the plan's recommendations. (FHWA 2014)

The first step in a public involvement strategy is **identifying stakeholders** (FHWA 2014). While everyone is a user of the transportation system, certain individuals or organizations are key stakeholders. Identifiable stakeholders differ from the general public in that they are expected to actively engage with the end product of the planning process. In the case of developing a statewide plan for walking and bicycling, stakeholders may include (FHWA 2014):

- **Advocacy/special interest groups**—Includes groups representing underserved communities, transit riders or devoted to pedestrian and bicycle issues.
- **Environmental professionals**—Includes staff from State and local natural resource, recreation, and parks agencies.
- **General public**—Includes spokespeople for particular groups, local thought leaders, and other interested individuals.
- **Geographically-based community organizations**—Includes neighborhood associations and advisory boards.
- **Government sponsored boards and commissions**—May fill an advisory or regulatory role.
- **Law enforcement** – Includes State and local police charged with enforcing traffic laws and collecting accident data.
- **Public health professionals**—Includes staff from State, regional, and local public health agencies.
- **Representatives of persons with disabilities**—May include representatives from advisory boards on disabilities.
- **Transportation professionals**—Includes staff from State, regional, or local transportation, transit, or planning agencies.
- **Tourism and economic development groups**—Includes departments of tourism and chambers of commerce.

The second step is to **develop/deliver public involvement methods**, which can vary considerably, ranging from in-person workshops and meetings to virtual comment forms and interactive websites (FHWA 2014). The mix of approaches employed in any given State depends on timing, budget, and staff availability. No matter which public involvement methods used, practitioners need to allow plenty of time to analyze the results in such a way that the information learned can be most effectively utilized. Responding to comments also helps to build trusting relationships between the State DOT and the stakeholders who have participated in the preparation of the plan,

which can result in the creation of champions for the plan's implementation. Methods can include (FHWA 2014):

- ✓ **Workshops, Meetings, and Focus Groups**—In-person meetings are excellent ways to engage stakeholders and the general public. Meetings should be held on different days of the week and at different times to accommodate schedules of potential participants. Every effort should be made to host events in locations throughout the State instead of one central location. To reach as many people as possible, in-person meetings can be supplemented with Web and video conferences that allow members of the public who cannot or prefer not to attend in person to hear about the planning process and provide input.
- ✓ **Surveys**—Broad surveys can reveal information about the latent demand for bicycling or walking in communities. They can gauge the range of types of bicyclists, for example, from frequent commuters, to recreational bicyclists, to those who would like to bicycle more but do not because of safety or other concerns. Besides telephone surveys, agencies can employ Web-based surveys or mail-in surveys. One easy method to reach out to the general public is to conduct a survey.
- ✓ **Websites and Social Media**—It is essential for a pedestrian and bicycle planning project to have a website where stakeholders and members of the interested public can go to learn about the project, obtain public information materials, technical reports, draft policy, and plan language. A website, however, can be more than just a public information portal. It can also be designed to include opportunities for visitors to comment on or interact with the project in a way that can be beneficial to its development. It is now common for agencies to develop a social media presence using tools like Facebook and Twitter, to keep subscribers up to date about the status of the plan and to solicit comments and discussion from interested parties. In addition to public meetings, agencies can reach a broader segment of the public through conducting webinars to provide information about the plan and to answer questions and gather feedback from participants.
- ✓ **Crowd Sourcing**—The proliferation of information technology and social media in recent years has opened up emerging opportunities for public agencies to involve the public in meaningful and constructive ways. There are many examples of innovations in crowd sourced mapping applications that allow bicyclists to log trips and make comments about road conditions. The North Carolina DOT contracted to develop an available tool to build an online map that was used to reach new audiences and gather input on the official State bicycle routes. The tool reached many new people previously not involved in the development of the plan. Similarly, Arkansas recently employed the use of a wiki map for both bicycling and walking that allows the public to provide comments about where they walk and bicycle and issues that they experience at points displayed on the map. It is advantageous for agencies to explore these emerging methods for gathering public input but they cannot alone form a public participation plan because it is important to provide multiple ways of engaging people to ensure that a diverse cross section of the interested public is involved.
- ✓ **Advisory Committees**—Agencies can involve stakeholders by forming a project advisory committee that meets regularly throughout the planning process, or creating stakeholder partnerships to actively participate in plan development. They often provide the best opportunities for resolving conflict through compromise and consensus. There are three main types of advisory committees common to planning processes: 1) a **technical advisory**



**committee** comprises DOT technical staff and staff from partner agencies in State, local, and regional government; 2) a **citizen’s advisory committee** comprises a diverse cross-section of the interested public; and 3) a **policy advisory committee** may include more senior policy staff and may include elected officials or board members. Not all nonmotorized planning processes will include all three types of project advisory committees although some State DOTs may choose to develop one committee that includes all of these constituencies. Such committees present an excellent opportunity for citizen and technical experts to continually review each stage of the planning process.

Finally, it is important to **document each stage of the public involvement process in the plan**. Sometimes the documentation can be detailed in a separate appendix but providing some narrative public involvement approach in the body of the plan can help to communicate how the DOT has incorporated public opinion and local knowledge into specific policies and recommendations.

The following figure is a “snapshot” of the Maryland DOTs engagement process over the past few years that it documented in its plan (2019).



CALTRANS documented its three-phase process to engage with its stakeholders and the public guided by its policy and technical-advisory committees composed of various stakeholder groups within its plan (2017). The first phase involved information gathering via forums, focus groups and surveys.

## ONGOING



6 TO 8 MEMBERS



### POLICY ADVISORY COMMITTEE

Composed of Caltrans executive leadership and the California State Transportation Agency

Met throughout the planning process

Provided oversight and strategic guidance on policy language as well as general direction of the plan



ABOUT 50 MEMBERS



### TECHNICAL ADVISORY COMMITTEE

Members represent most Caltrans headquarters divisions; all 12 districts; bicycling and walking advocacy groups; cities, counties, transit agencies, metropolitan planning organizations, and rural transportation planning agencies; and partners including the California Highway Patrol, Department of Motor Vehicles, California Transportation Commission, Office of Traffic Safety, and the Department of Public Health

Met six times during the planning process

Reviewed public input, develop recommendations, and provided feedback on Plan drafts

## PHASE 1: Gathered information on challenges, opportunities, and priorities to help identify objectives and strategies



10 FORUMS

### REGIONAL FORUMS

Spring 2016 forums included approximately 300 participants at the following locations: Redding, Oakland, Fresno, Riverside, San Diego, San Luis Obispo, Los Angeles, Folsom, Bishop, and Eureka

Forums were divided into morning and afternoon sessions – morning **Agency Roundtables** and afternoon **Public Open Houses**



**Agency Roundtables** engaged city, county, and Caltrans District staff in a discussion of opportunities and challenges for implementing active transportation projects



**Public Open Houses** engaged members of the public to identify draft strategies and action items



MORE THAN 3,200 RESPONDENTS



### ONLINE SURVEY

Survey open from October 2015 - July 2016

Offered in Spanish and English

Gathered information on current transportation habits, improvement priorities, and needs and preferences related to bicycling and walking facilities



11 FOCUS GROUPS

### STAKEHOLDER FOCUS GROUPS

Convened focus groups with over 120 participants throughout the state in Eureka, Redding, Yuba City, Oakland, Salinas, Modesto, Bakersfield, Coachella, Paramount, Santa Ana, and Logan Heights (a neighborhood of San Diego)

Conducted in both English and Spanish

Targeted outreach to gather feedback from disadvantaged and hard-to-reach communities that rely on active transportation

CALTRANS Stakeholder Engagement Process 2017

The second phase involved gathering input and feedback on objectives and strategies via workshops, listening sessions and a questionnaire (CALTRANS 2017). Lastly, CALTRANS requested public review of its draft plan via workshops, webinar and online comment.

### PHASE 2: Sought input and feedback on draft objectives and strategies



**2**  
WORKSHOPS

#### PUBLIC WORKSHOPS

Held two workshops with more than 200 participants, one in the Bay Area and one in Southern California

Participants were also able to participate in either session online via webinar

Held in October 2016

Gathered feedback on draft objectives and strategies



**3**  
SESSIONS

#### TRIBAL LISTENING SESSIONS

Three sessions held: Palm Springs, Woodland, and Trinidad

Sessions held in October and November 2016

Gathered input from California Native American Tribes about critical bicycle and pedestrian issues, concerns, and priorities in tribal communities



**MORE THAN 1,000**  
RESPONDENTS

#### QUESTIONNAIRE

Questionnaire open from October 2016 through November 2016

Gathered feedback on draft strategies

### PHASE 3: Public review of the draft plan



**2**  
WORKSHOPS

#### PUBLIC WORKSHOPS

In-person workshops were held in Orange County and Fresno. A third in-person workshop in San Jose was converted to a webinar due to flooding near the event site.

Also included participation via webinar

February-March 2017



**2**  
WEBINARS

#### PUBLIC WEBINAR

Two webinar only meetings held, with an emphasis on reaching the remote areas of the state. Webinars followed the same presentation and approach as the public workshops.

March 2017



**OVER 500**  
COMMENTS

#### ONLINE COMMENT

Draft plan was available for public review and comment online from plan website

Intent was to gather feedback on all elements of the draft plan. 500 comments received on the website and through formal comment letters.

CALTRANS Stakeholder Engagement Process 2017



The Iowa DOT summarized the results from its outreach efforts in its plan related to the “5Es” of bicycle pedestrian impact and its plan goals (2018).



Table 2.1: Summarized public input meeting comments – Four of the “5 Es”

	What is done well in Iowa?	What could be done better?
 <b>Education</b>	<ul style="list-style-type: none"> <li>• RIDE RIGHT education materials (Des Moines Register)</li> <li>• Walking school bus program</li> <li>• Bike rodeos</li> <li>• Bike map</li> <li>• This meeting</li> </ul>	<ul style="list-style-type: none"> <li>• Better driver education – bike passing</li> <li>• Youth education – school programs</li> <li>• Share the road</li> <li>• Engineer training</li> <li>• Public service announcements</li> <li>• Education of legislators</li> </ul>
 <b>Encouragement</b>	<ul style="list-style-type: none"> <li>• Bike map</li> <li>• Organized rides</li> <li>• Iowa Bicycle Coalition efforts</li> <li>• Increase in accommodation (trails and bike lanes)</li> </ul>	<ul style="list-style-type: none"> <li>• Need a “World Capital of Trails” annual event</li> <li>• Promote strategies to businesses to encourage bicycling by employees</li> <li>• Transportation centers with lockers, showers, and vending (tubes)</li> <li>• Promote safe bicycling loops</li> <li>• Tax credits for bicycling to work</li> <li>• Bike share programs in more cities</li> </ul>
 <b>Enforcement</b>	<ul style="list-style-type: none"> <li>• Passing rule</li> <li>• Law enforcement support during RAGBRAI</li> <li>• Cops on bikes</li> </ul>	<ul style="list-style-type: none"> <li>• Tough enforcement/fines for motorists that hit bikers/walkers</li> <li>• Enforced stops</li> <li>• Adopting Utah/Idaho stops (bicyclists treat red lights as stop signs and stop signs as yield signs)</li> <li>• Cyclists obeying traffic laws</li> <li>• Headlights and taillights required</li> </ul>
 <b>Engineering</b>	<ul style="list-style-type: none"> <li>• Specific trail projects and networks</li> <li>• New bike lanes</li> <li>• Road diets</li> <li>• City implemented bike plans</li> </ul>	<ul style="list-style-type: none"> <li>• More communication on upcoming projects so accommodations can be proposed</li> <li>• Consider accommodations as integral parts of projects</li> <li>• Connect towns – more connectivity</li> <li>• Design for people, not only for cars</li> <li>• Many specific improvements/connections noted</li> <li>• Many specific design standards recommended</li> </ul>

Table 2.2: Summarized public input meeting comments – Plan goals

Draft Goals	Comments
<b>Valid</b> Ensure that policy makers, roadway designers and planners, law enforcement officials, motorists, bicyclists, and pedestrians recognize that bicycling and walking are valid modes of transportation.	<ul style="list-style-type: none"> <li>• Study the economic impact of trails</li> <li>• Add bicycling to driver’s education</li> <li>• Allow use of eminent domain to complete routes</li> <li>• Add trails to the DOT 5-year plan</li> <li>• Study the health benefit of increased bicycle and pedestrian accommodation</li> <li>• Get policy makers on bikes</li> <li>• Adopt complete streets policies statewide</li> </ul>
<b>Safe</b> Improve the safety and friendliness of Iowa’s roads and trails to accommodate on-road bikeways and sidewalks, reduce crashes, and eliminate fatalities.	<ul style="list-style-type: none"> <li>• Wider paved shoulders on rural roads</li> <li>• Increased signage toward shared use or full lane use</li> <li>• Adjust rumble strips to have gaps and provide buffer between bicyclists and vehicles</li> <li>• Add driver’s test questions about interactions with bicycles and pedestrians</li> <li>• Revise the hierarchy from fastest to smallest - pedestrians and bicyclists first</li> <li>• Higher maintenance for bike facilities, lighting</li> </ul>
<b>Coordinated</b> Improve coordination between Iowa DOT Central Office, each DOT District, regional agencies and local partners to streamline maintenance and the implementation of programs, policies, and infrastructure projects and increase consistency.	<ul style="list-style-type: none"> <li>• Consistent design standards</li> <li>• Cooperation between DOT, Conservation Boards, and trail groups</li> <li>• DOT take a larger role in coordinating town to town connections</li> <li>• Improvement in regional trail plans</li> <li>• State Bicycle Advisory Commission</li> <li>• Include non-cyclists on committees</li> <li>• Web page / map to show connection status</li> </ul>

Iowa DOT Stakeholder Engagement Process Results 2018

Draft Goals	Comments
<p><b>Connected</b></p> <p>Enact policies and develop infrastructure to create an interconnected network of on-road bikeways, sidewalks, multi-use trails, and end-of-trip facilities that uses the appropriate facility type (bike lane, shared road, paved shoulder, etc.) to connect people to where they want to go.</p>	<ul style="list-style-type: none"> <li>Numerous specific improvements</li> <li>More grade separations for bicycles/pedestrians</li> <li>Connect discontinuous sidewalks</li> <li>Continuous bike lanes</li> <li>DOT should help coordinate where trails go between communities</li> <li>Connect cities as a priority</li> <li>Connect employment to retail</li> </ul>
<p><b>Funded</b></p> <p>Increase the overall level of funding for bicycle and pedestrian infrastructure and programs, explore the flexibility of funding sources, and maximize the efficiency of funding to bridge the gap between what is needed and what is available.</p>	<ul style="list-style-type: none"> <li>Funding for maintenance</li> <li>Mandate 3% of all state and federal transportation funding for bicyclists/pedestrians</li> <li>Bike registration</li> <li>Take the Transportation Alternatives Program (TAP) back to the State level</li> <li>State needs to fund priority trails</li> <li>Establish Iowa's Water &amp; Land Legacy funding</li> <li>Include trails in Iowa DOT 5-yr plan</li> <li>Increase gas tax with % to bicycles/pedestrians</li> </ul>
<p><b>Well-Designed</b></p> <p>Establish guidelines for the design of on-road bikeways, sidewalks, and multi-use trails to ensure they are comfortable, sustainable, convenient, and consistent.</p>	<ul style="list-style-type: none"> <li>Add connections to existing trails for better mobility</li> <li>Sharrows are not enough</li> <li>Larger buffers between bikes and vehicles at higher speeds</li> <li>Wider paved shoulders for 3-wheeled and trailers</li> <li>Appropriate railings on bridges</li> <li>Consider capacity in trail design, and amount of pedestrian traffic</li> </ul>
<p><b>Healthy</b></p> <p>Promote opportunities for active and sustainable lifestyles that include walking and bicycling on a daily basis.</p>	<ul style="list-style-type: none"> <li>Encourage businesses to promote wellness programs, with incentives for bicycling to work</li> <li>Tax breaks for bike commuting</li> <li>Combine with Healthiest State Initiative</li> <li>More trails and bike lanes to promote healthy lifestyle</li> </ul>

Iowa DOT Stakeholder Engagement Process Results 2018

The Arkansas DOT devoted a significant portion of its plan to documenting its extensive engagement process, full survey and results (2017).

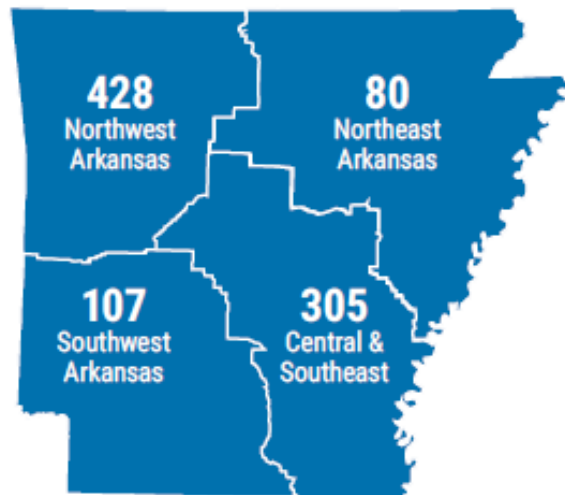
**Key Findings**

This section provides a summary of findings from all of the public outreach activities described in the previous section. In Chapter Four, additional detail from each of the four planning sub-regions is provided.

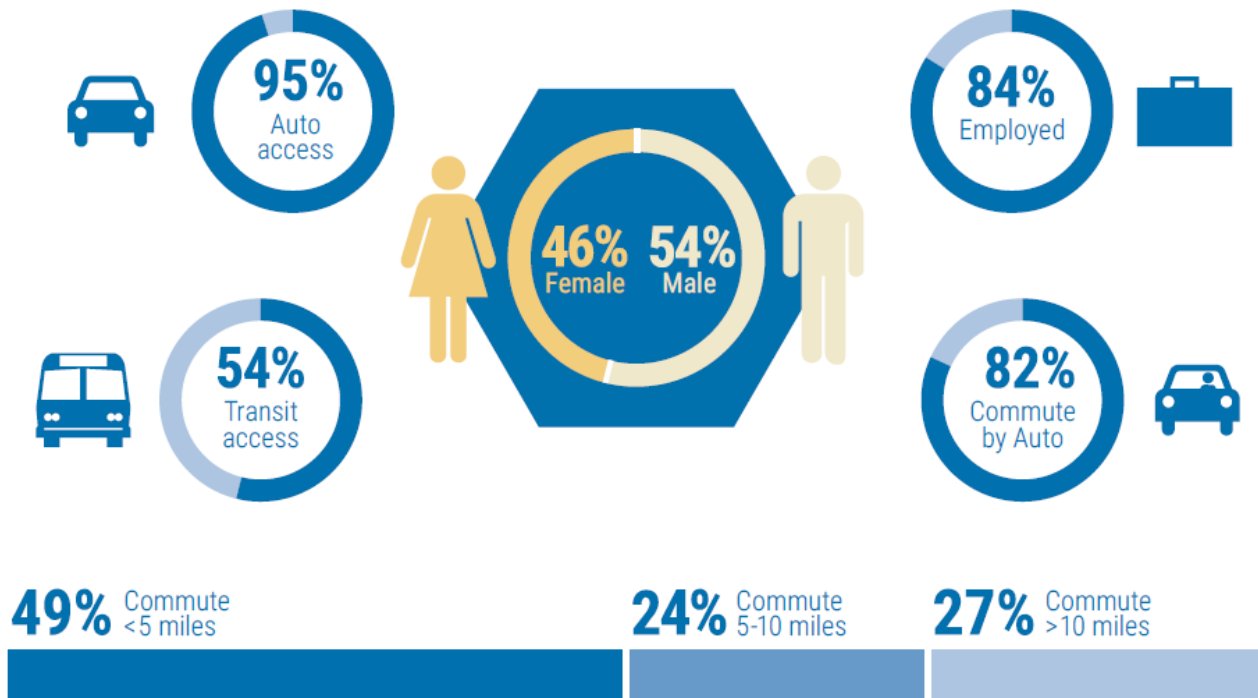
**ONLINE SURVEY**

Survey responses were received from 920 Arkansas residents and 5 non-residents. Within Arkansas, most of the responses came from Northwest Arkansas or the Little Rock metropolitan area. The participation rates from Jonesboro, Hot Springs, Fort Smith and Russellville were also strong. Conducting a statistically valid sample of the state's population was not possible for this study, however this survey revealed how bicycling and walking in the state is viewed by those who are actively engaged in these activities.

**Responses by Region**



## Transportation Profile of Survey Respondents



Arkansas DOT 2017 Stakeholder Engagement Survey

### Step 5: Developing Information Base and Content (Existing Conditions and Trends)

CALTRANS and PennDOT have sections in their plans entitled “California Today” and “Pennsylvania Today” that provide a “snapshot” of existing conditions and trends. The vision, goals, and objectives of statewide pedestrian and bicycle plans should be firmly established in a technical fact base, including existing conditions and trends. Recalling, however, that a plan should also rely on and be closely connected with other relevant plans, policies, and processes at the Federal, State, regional, and local levels as evaluated in Step 2 and be influenced by the stakeholder engagement process in Step 4 (FHWA 2014).

Regardless of whether a plan recommends specific infrastructure projects, there should be a clear connection between its goals, objectives, strategies, and performance measures, and a robust technical analysis (FHWA 2014). **Data collection during the planning process may form the foundation for future monitoring and reporting.** Before assembling data and conducting an analysis, planners generally first consider to what extent data collection, modeling, and evaluation are appropriate at a state level. In developing a technical analysis strategy, planners are advised to keep in mind (FHWA 2014):

- the plan purpose
- the role of the State DOT in advancing nonmotorized transportation across the State
- the institutional role of those charged with implementing the plan
- limited data availability and consistency across municipal, county, and regional jurisdictions

In the final plan, the technical analyses are usually provided in an appendix, with key findings summarized in the body of the plan. The planning process will uncover data limitations, which should be clearly documented in the plan along with a strategy to address them in advance of the next plan (FHWA 2014).

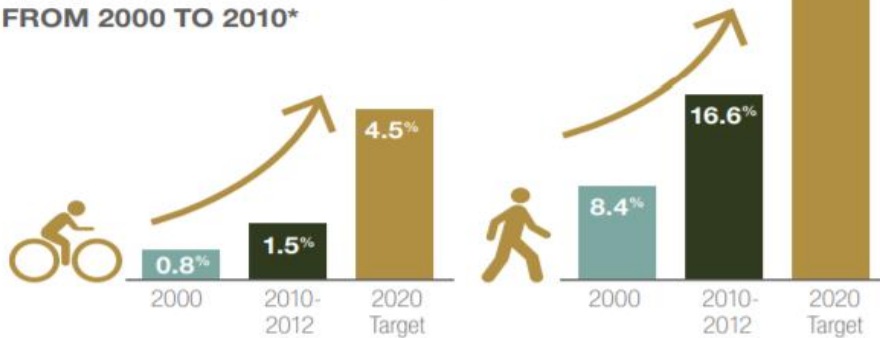
When developing the technical fact base for a statewide bicycle and pedestrian plan, planners often analyze data to **identify existing conditions and trends** and **assess benchmarking statistics** in six key subject areas (FHWA 2014):

- ✓ safety
- ✓ accessibility/mobility and equity,
- ✓ economic benefits,
- ✓ environment and energy,
- ✓ health, and
- ✓ usage/mode share.

**These areas of measurement are consistent with agencies' goals, as shown for recent plans in Table 2.** For example, in the following figure, CALTRANS has linked its demographic data to its performance target of increasing bicycling and walking in the state.

California has seen significant growth in the use of active transportation over the last decade and has set an ambitious target to increase walking and bicycling across the state.

**BICYCLING AND WALKING DOUBLED FROM 2000 TO 2010\***



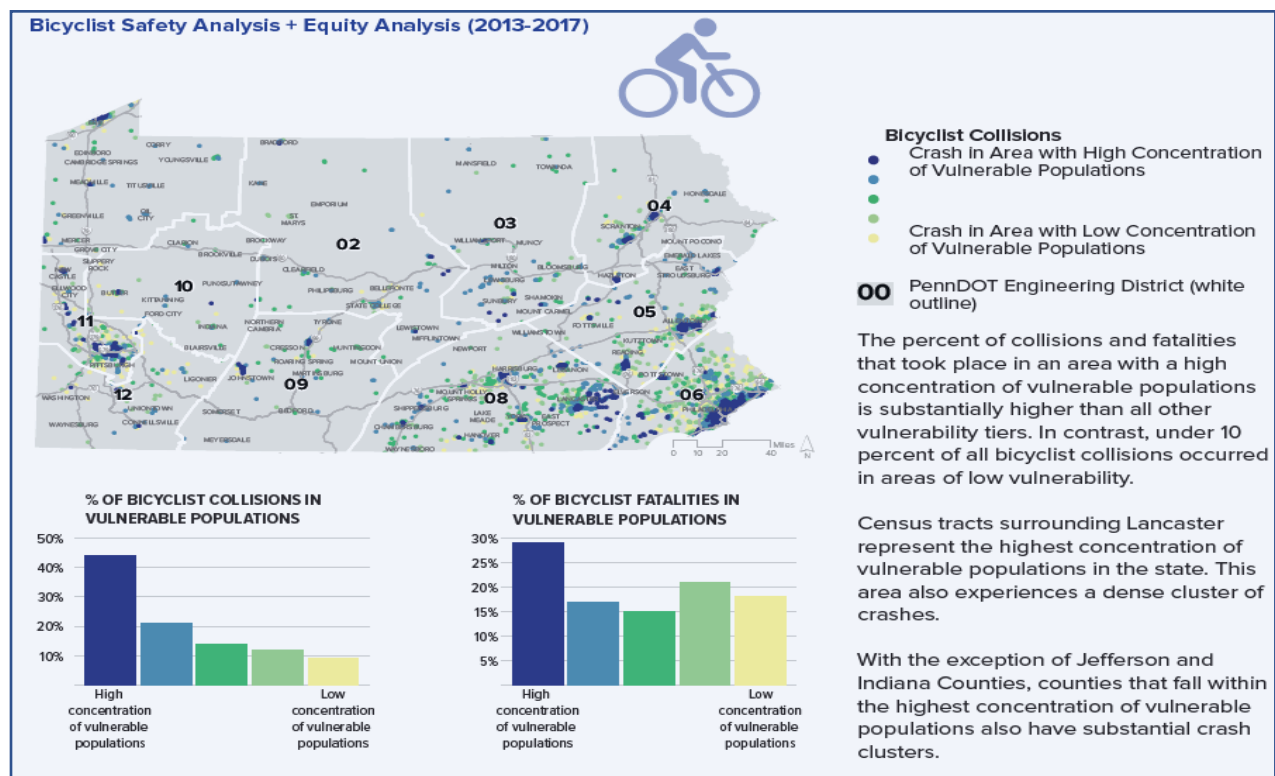
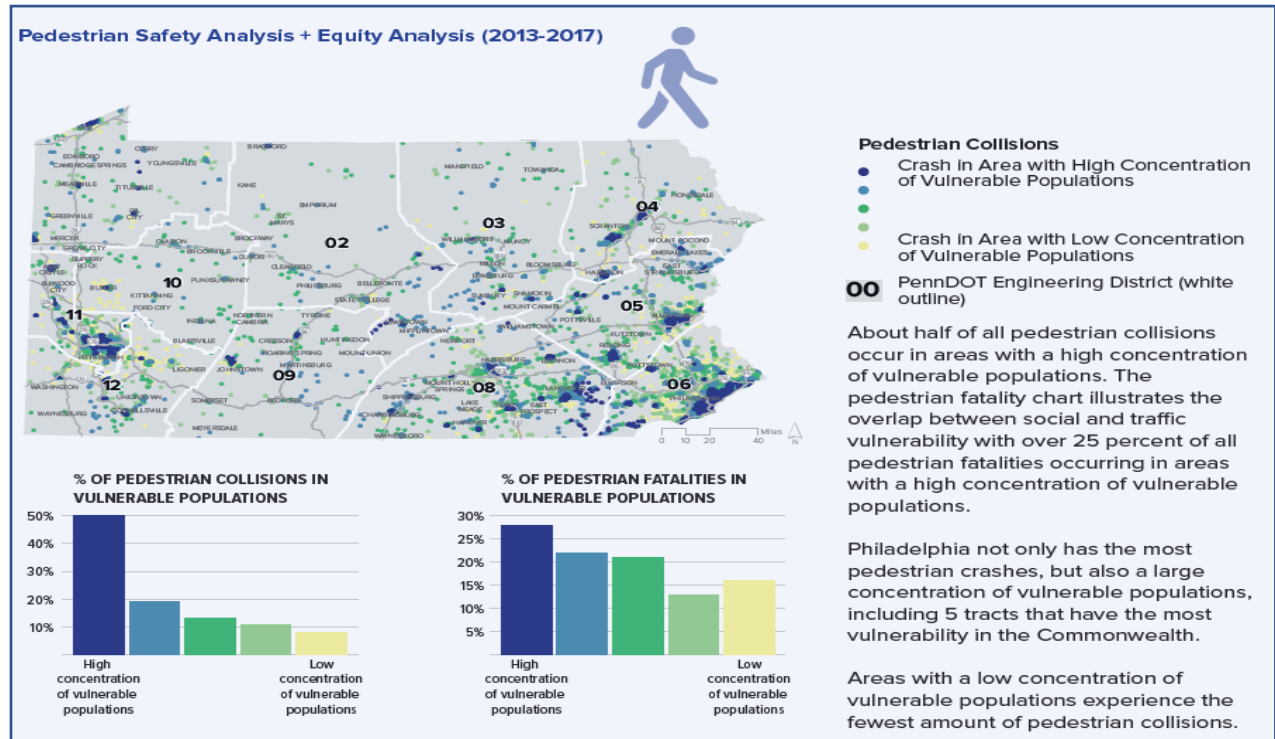
Data from 2010-2012 California Household Travel Survey. Figures are as a percent of all trips. Charts are not to scale.

*More people walk and bicycle in California than in many other states. Only in Oregon do residents both walk and bike more. In a few peer states with major urban areas, residents either walk or bicycle more for their trips.*



Data from National Household Travel Survey for 2010-2012

In the PennDOT example (2019), safety analysis was geo-displayed with equity analysis for both pedestrians and bicyclists within the state, to serve as baseline for its goals related to safety and equity.



PennDOT 2019



The list below describes each key subject area in more detail, including types of analyses planners may conduct and links to specific examples (see Table B-2 in Appendix B in FHWA 2014).

- **Accessibility/Mobility and Equity:** Existing nonmotorized transportation facilities can be analyzed in the context of connections to key destinations, including population centers, jobs, and retail, as well as transit. Accessibility and mobility options for underserved communities who may depend more on walking and bicycling are of particular interest. For example, Maryland DOT used population and employment density, proximity to transit, vehicle ownership, and school location data in their statewide Bicycle and Pedestrian Plan to identify “[Short Trip Opportunity Areas](#)” statewide. North Carolina’s plan, [WalkBikeNC](#), considers census tracts with a higher than average rate of poverty, minority populations, and zero-car households.

- **Economic Benefits:** Pedestrian and bicycle routes impact the local economy, so it is useful to understand the return on investment for existing nonmotorized transportation infrastructure in terms of jobs, economic activity, tourism, and property values. For example, in 2012 the Vermont Agency of Transportation [developed a study of the total economic benefit of pedestrian and bicycle facilities](#)—including direct, secondary, and spin-off benefits—stemming from increased tourism, environmental quality, improved air quality and reduced greenhouse gas emissions, real estate values, health, reduction in demand on the motorized transportation system, and other economic benefits.

- **Environment and Energy:** Because nonmotorized transportation provides an alternative to driving in many cases, it is important to assess how the nonmotorized transportation system reduces or has the potential to reduce emissions that contribute to local air pollution and global climate change. Through the planning process, the State DOT may also partner with natural-resource agencies to understand how the nonmotorized network, particularly multi-use paths, impacts natural and cultural resources. Such off-road facilities are often located in sensitive natural or cultural landscapes like waterways or historic districts. These impacts can come in the form of increased impermeable surfaces (adding to rainwater runoff), destruction or fragmentation of wildlife habitat, and increased human influence in previously inaccessible areas (such as soil compaction off-trail, noise, and trash).

- **Health:** Many medical conditions, such as high blood pressure, diabetes, and obesity are preventable, in part, through more active lifestyles. Researchers can measure the cost of physical inactivity in terms of increased medical costs and lost productivity from chronic disease or premature death. At a macro level and through project-specific health impact assessments, public health practitioners are developing increasingly sophisticated methods for understanding the cost-effectiveness of infrastructure investments at increasing physical activity. For example, in coordination with North Carolina’s plan, [WalkBikeNC](#), researchers assessed the health and financial impacts of pedestrian improvements in three demonstration communities. The plan also looks at the incidence of chronic health conditions relative to other States and disparities in health across the State and by gender, race/ethnicity, and socioeconomic status.

- **Safety:** Because of Federal reporting requirements, bicycle and pedestrian fatality and injury data are often the most consistent and accurate information reported annually at a State level. Planners will often display fatality and injuries in a time series and assess trends in terms fatalities or injuries per capita, as a percent of all traffic incidents, or exposure. Collision data may be geocoded and mapped for efficient analysis of trends and to identify hot spot locations. Depending on data availability, planners can also assess incidents in terms of victim demographics, setting (urban versus rural), contributing factors (including time of day or involvement of alcohol), the pedestrian’s or bicyclist’s action at the time of the crash, and injury seriousness. [Wisconsin Bicycle Transportation Plan 2020](#) employs many of these analysis approaches using national data sets as well as locally specific studies.

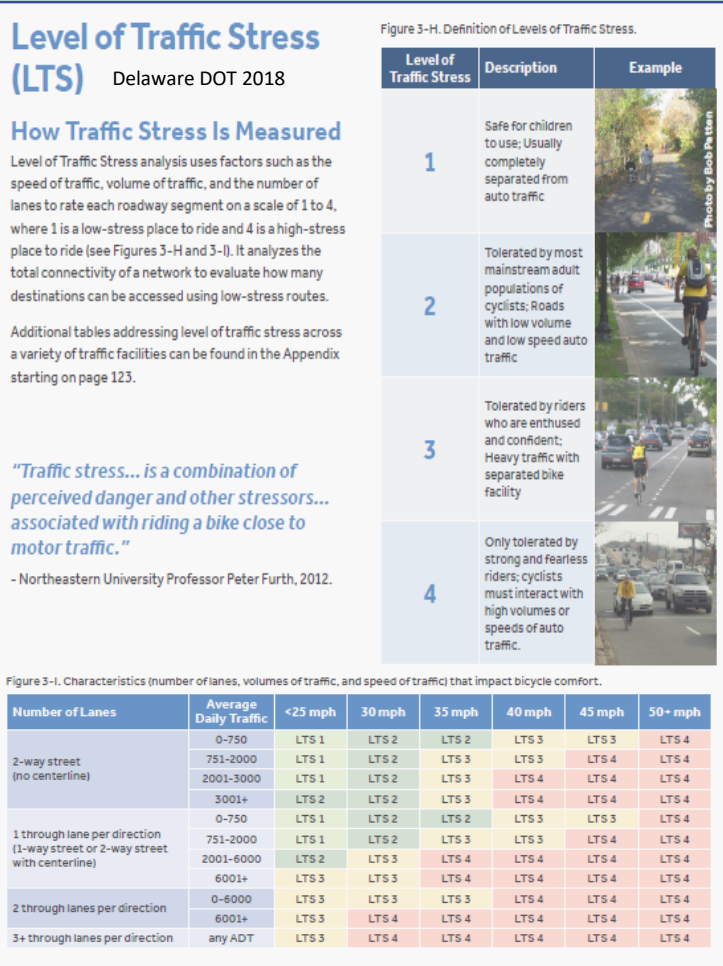
- **Usage/Mode Share:** Understanding the quantity and distribution of nonmotorized users on the transportation network is critical to prioritizing projects and understanding the impact of walking and bicycling on the economy, emissions and energy consumption, health outcomes, and safety. However, States generally have very limited automated or pedestrian and bicycle counts relative to automobile counts, especially along State routes and in non-urban areas. Some States a limited number of automated counters. For example, Colorado DOT deploys both continuous and mobile, short-duration counters at key locations on its highway system to estimate pedestrian and bicycle usage. Other States may have to rely exclusively on manual counts conducted at the local level. NCHRP Report 797 (2014) provides a guidebook and best practices on counting. FHWA 2014



Depending on data availability, planners may map and analyze these six subject areas geographically given the following factors (FHWA 2014):

➤ **Network extent and quality:**

Planners consider and map the existing and planned nonmotorized network and the quality of the existing network at a variety of scales. At a State level, planners may apply a suitability analysis to State roadways. These analyses consider safety and comfort for pedestrians and bicyclists using information likely to be available across a broad geographic area: proximity of motor vehicles or shoulder width, speed and volume of traffic, percent of heavy vehicles, and pavement condition. Common analysis approaches include Level of Service, Level of Comfort, Level of Stress, and the Bicycle Compatibility Index. Methodologies for these approaches vary and can be customized based on context and data availability. Some State DOTs



maintain comprehensive roadway inventory data which may include specific pedestrian and bicycle facilities locations and dimensions. Florida DOT’s [Roadway Characteristics Inventory database](#) includes detailed georeferenced nonmotorized facilities. At a local level, planners use a variety of more data-intensive methods to assess nonmotorized infrastructure quality and assess the implications of individual projects. The most common methodology, which is more appropriate at a smaller geographic scale, is the multimodal level of service analysis outlined in the [2010 Highway Capacity Manual](#).

➤ **Nonmotorized expenditures:** Since pedestrian and bicycle projects are frequently co-mingled with roadway projects, it is often difficult to track and map annual expenditures over time. Some States, such as Vermont, are moving toward better tracking of the funds spent on pedestrian and bicycle elements of larger roadway projects.


In the FHWA Handbook (2014), Appendix A entitled “State Pedestrian and Bicycle Plans” identifies key data sources for each key subject area and outlines the advantages and drawbacks of each data source in terms of accuracy, granularity/scale, and consistency over time. While federal and national data sources are available for each state, state and local data sources can vary considerably in consistency and quality. Appendix B provides “Key Pedestrian and Bicycle Data Sources by Subject Area” (FHWA 2014).

Step 6: Identifying Needs and Priority Areas (Recommendations)

Using the information gathered from the preceding steps related to existing conditions and trends to establish the current state of walking and bicycling, goals and objectives to define a desired future, and stakeholder input, planners then analyze and identify ways to accomplish the objectives—both through changes to the physical network as well as through policies and programs (FHWA 2014). **The planning process may identify key corridors/priority areas to focus pedestrian and bicycle investments.** This could go into as much detail as identifying specific projects or corridors, or could be more general, establishing the criteria or methodology by which the DOT would analyze project proposals and determine investment priorities. Having such information in place will not only help to target State funds for standalone pedestrian/bicycle projects, it could also help to identify opportunities for phasing larger roadway projects on key priority corridors. Whether or not a State DOT uses the planning process to identify specific project locations may depend in part on the extent of the roadway network in its jurisdiction, as well as available data on facilities, usage, safety, etc. Another issue worth considering is the expected time horizon of the plan and if or when an update is likely. It may be appropriate for plans with a longer time horizon to focus more on the process and criteria for identifying priorities and analyzing projects while States with a more regular plan update schedule, relatively fewer State roadways, or plans with a more specific focus (e.g., safety) may be better suited to more detailed project analysis (FHWA 2014).

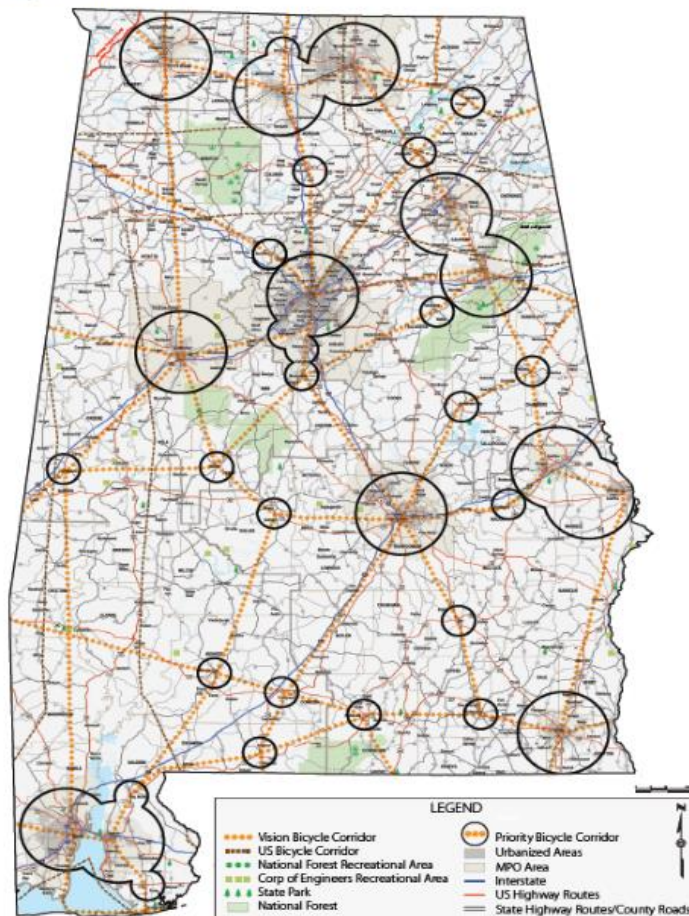
The Alabama DOT (2017) provides the following recommendations in its plan: from more than 40 potential strategies to improve walking and bicycling in Alabama, stakeholders and the general public prioritized three fundamental strategies focused on safety, access, and economic development. Each of the three priority strategies, summarized in Table ES-2, includes related actions to support implementation and help achieve the plan’s overall goals and objectives.

Table ES-2. Summary Table: Priority Strategies and Recommended Actions

Priority Strategy	Recommended Action
 <p>1. Prioritize Pedestrian and Bicycle Safety Programs and Improvements</p>	<ul style="list-style-type: none"> <li>a. Develop a Pedestrian and Bicycle Safety Action Plan</li> <li>b. Establish Statewide Pedestrian and Bicycle Safety Goals and Performance Measures</li> <li>c. Incorporate Pedestrian and Bicycle Safety in Project Selection, Planning, and Design Processes</li> <li>d. Provide Technical Training on Pedestrian and Bicycle Facility Planning and Design</li> </ul>
 <p>2. Increase Access to Walking and Bicycling Facilities for Traditionally Underserved Populations</p>	<ul style="list-style-type: none"> <li>a. Collaborate on Local Bicycle and Pedestrian Plans in Traditionally Underserved Communities</li> <li>b. Incorporate Pedestrian and Bicycle Access for Traditionally Underserved Populations in Project Selection, Planning, and Design Processes</li> <li>c. Expand Walking and Bicycling Outreach and Education Programs in Traditionally Underserved Communities</li> </ul>
 <p>3. Improve Connections between Pedestrian and Bicycle Facilities on State Highways and Local Greenway and Shared Use Path Systems as well as to Natural and Scenic Areas</p>	<ul style="list-style-type: none"> <li>a. Inventory and Map Existing and Planned Greenways, Shared Use Paths, Parks, and Natural Areas</li> <li>b. Utilize Best Practices in Greenway and Shared Use Path Planning and Design</li> <li>c. Collaborate with Public and Private Sector Partners on Economic Development Opportunities Related to Greenway and Shared Use Path Systems</li> </ul>

Identifying the priority areas could be based upon physical inventory or demand studies, but may also be more policy based, using policy directives from agency leadership, environmental goals, outputs from other plans, and input from internal and external stakeholders to inform priority investment areas (FHWA 2014). State DOTs may also consider whether local or MPO plans have identified key corridors and incorporate them as appropriate. The process should consider both on- and off-road investments. While State DOTs will typically consider primarily on-road facilities because those are more likely to be the areas over which they have jurisdiction, there may be instances in which off-road facilities are either within DOT jurisdiction or serve a key strategic role in filling gaps in the network (FHWA 2014).

Figure ES-4. Bicycle Corridor Plan



The bicycle corridors shown on this map are for planning purposes only. Within each corridor projects can be evaluated for bicycling as a viable mode of transportation based upon standard engineering practices adopted by the Alabama Department of Transportation.

To support the future development of a comprehensive system of statewide bicycle routes, the Alabama plan also identifies and recommends a network of bicycle corridors. The corridors (left figure) highlight areas with higher potential for bicycle transportation demand and connections among them (Alabama DOT 2017).

Since 1978, AASHTO has defined a United States Bicycle Route System (USBRS) (FHWA 2014). The National Corridor Plan is a living dynamic plan and new corridors can be added and existing corridors can be revised based upon State needs. State bicycle and pedestrian plans can recognize existing or

planned routes that can help to implement the National Corridor Plan. These routes may include long trails, existing touring and event routes, greenways and municipal bicycle routes that could serve the corridors identified in the National Corridor Plan. Statewide bicycle plans have often shown a state bicycle route map overlaid with the U.S. Bicycle Route corridor(s), providing an overview or state/interstate connectivity, such as in the Arkansas (2017), Alabama (2017), CALTRANS (2017) and Iowa DOT plans (2018).





The goal of The United States Bicycle Route System is to connect America through a network of numbered interstate bicycle routes.



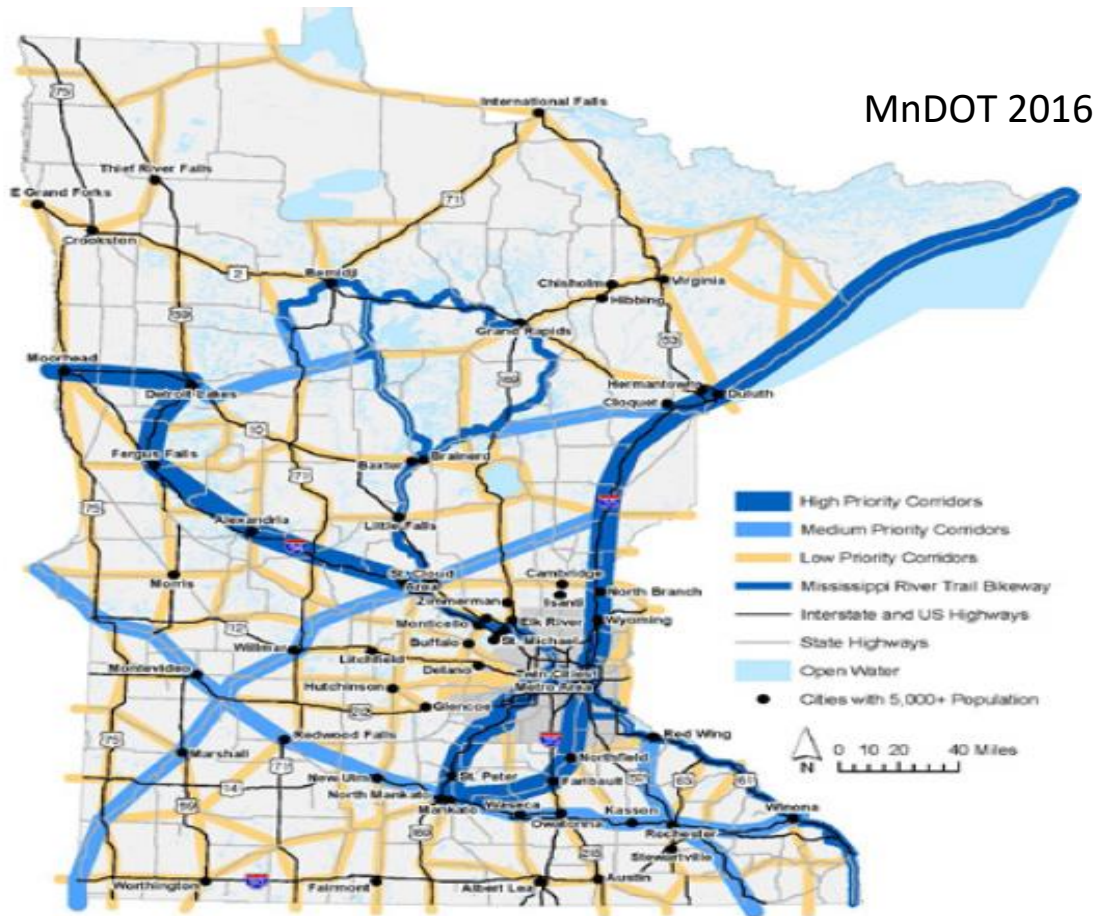
Planning for a U.S. Bicycle Route in a State includes assessment of routes and trails that lie within a corridor included in the National Corridor Plan (FHWA 2014). State plans may establish criteria and methods for field reviews for choosing the specific route, and the proposed/existing process for working with local communities to designate route segments as part of the route. Routes can be on state highways, county and municipal roads, trails and/or greenways (FHWA 2014).

### Network and Gap Analysis

FHWA defines networks as interconnected pedestrian and bicyclist transportation facilities that allow people of all ages and abilities to safely and conveniently get where they want to go. The following network principles can be used to evaluate the condition of a network and the value added by proposed projects (FHWA 2014):

- **Cohesion:** How connected and linked together is the network?
- **Directness:** Does the network provide access to destinations along a convenient path?
- **Alternatives:** Is only one transportation option available or does the network enable a range of mode and/or route choices?
- **Safety and Security:** Does the network provide real and/or perceived freedom from risk of injury, danger, or loss of property?
- **Comfort:** Is the network appealing to a broad range of age and ability levels and is consideration given to user amenities?

The State DOT can use the planning process to identify the bicycle network and existing facilities and gaps in the network (FHWA 2014). It can also establish expectations for pedestrian networks in the State. The extent of the State-owned network and available geospatial data may dictate the level of detail of the gap analysis. It may be appropriate to determine the key priority travel corridors first, and then use the gap analysis to further prioritize, such as in this MnDOT (2016) example. Conversely, performing the gap analysis may help to identify priority corridors needing additional focus (FHWA 2014).



## The State Bikeway Network

The State Bicycle Network identified through this plan will function as a guide for prioritizing future infrastructure investments and formal designation of state bicycle routes along specific routes. Statewide high priority corridors are the first corridors on the State Bicycle Network that MnDOT will consider for infrastructure improvements and future designation as state bicycle routes.

The destinations on the statewide high priority corridors include:

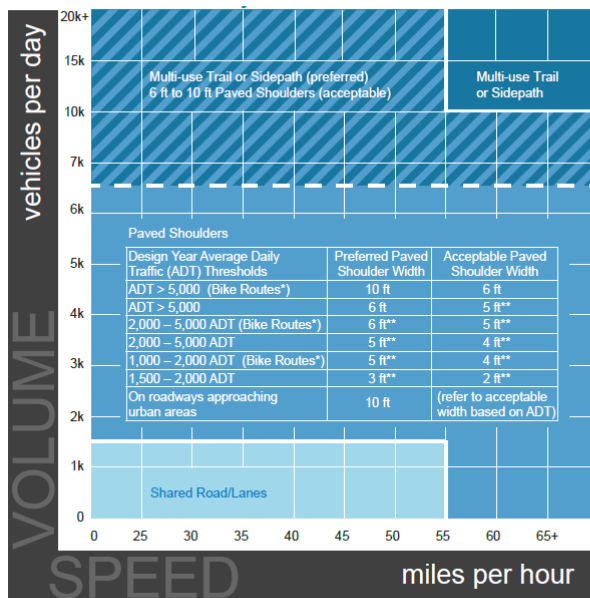
- Twin Cities to Grand Portage, via Hinckley and Duluth
- Twin Cities to Mankato loop via the Minnesota River Valley and Northfield
- Moorhead to St. Cloud, via Detroit Lakes, Fergus Falls and Alexandria

As part of identifying the full network and existing gaps, the State will need to define what types of facilities (and in what contexts) are considered to be part of the network (FHWA 2014). In some areas a paved shoulder or signed on-road route may be considered an appropriate component of a walking or bicycling network; in other contexts, such facilities would be considered inadequate. The following selection matrices are featured in the Iowa DOT Plan (2018). The planning process may also consider existing and projected future vehicle traffic volumes on facilities that are considered suitable for walking and bicycling, and if or how those may change in the future. For example, the Wisconsin 2020 Bicycle Plan includes discussion of many smaller roads that are suitable for cycling without dedicated bicycle facilities (as of the writing of the plan). The plan highlights the State DOT’s concern that increased urban development could add more traffic volume and opportunity for conflicts between drivers and cyclists.

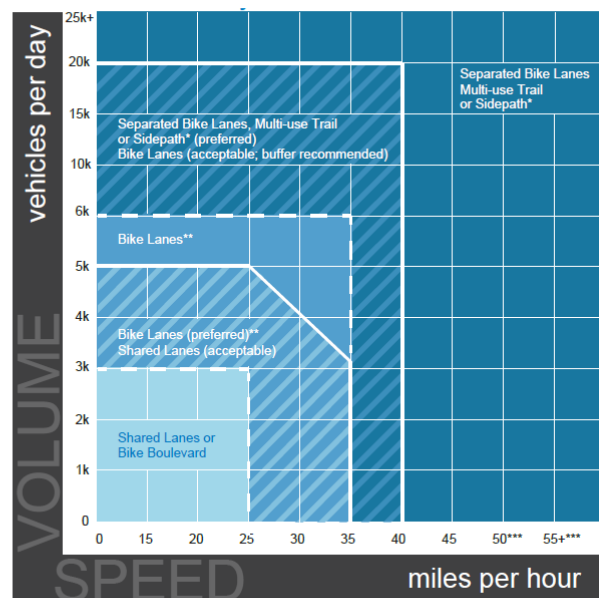
Figure 4.15: Rural facility selection matrix

Iowa DOT 2018

Figure 4.16: Urban and suburban facility selection matrix



\*On roadways where a higher level of bicycle traffic is expected (e.g., bike routes identified by cities, counties, RPAs, and MPOs, as well as official US Bicycle Routes and national trails).  
 \*\*Paved width exclusive of rumble strips.



\*To determine whether to provide a multi-use trail/sidepath or separated bike lane, consider pedestrian and bicycle volumes or, in the absence of volume, consider land use.  
 \*\*Advisory bike lanes may be an option where traffic volume < 4,000 ADT  
 \*\*\*Speeds 50 mph or greater in urban areas are typically found in urban/rural transition areas.

Planning at the State level should be coordinated with local and regional planning. In many cases, a State facility, such as a limited access highway, will not be on a pedestrian or bicycle network because the function of the facility is for motor vehicle mobility. However, it may pose a barrier to the cohesion of an important regional bicycle or pedestrian network. In such situations, the pedestrian and bicycle plan can be a first step in identifying those locations and how the State will work with regional and local jurisdictions to correct the network deficiency (FHWA 2014).

### Evaluate and Select Specific Project Locations

After identifying priority corridors, it may be appropriate to take the analysis further to evaluate specific project locations (FHWA 2014). Some States identify the actual projects while others may establish the criteria for prioritizing and identifying specific facility-related improvements but leave discussion of actual projects to take place separately. In many cases, plans will identify



specific corridors as priorities and try to focus future funds to those areas, but do not go into detail about the specific project boundaries and treatment types. This is the approach highlighted in the examples above for Wisconsin and Massachusetts and is typically a more appropriate approach at the statewide planning level, given the scale of the statewide roadway network. Some plans, however, do go into more detail for specific locations or project characteristics, as has been the case for Tennessee and Hawaii. However, the newer plans use the former approach. For States that have defined networks and established guidelines for the types of facilities appropriate in each context, this may be an opportunity to begin to apply the guidelines. States may also choose to refer to various facility design guides that address both pedestrian and bicycle facilities in urban and non-urban contexts, as well as NCHRP report 07-17 which addresses prioritization of pedestrian and bicycle improvements along existing roadways (FHWA 2014).

### Recreational Routes/Trails

While State DOTs focus on pedestrian and bicycle routes that serve a transportation purpose, many paths intended primarily for recreation can be used for commuting or other personal travel depending on the types of destinations that they connect, and can therefore be eligible for Federal aid funding (FHWA 2014). Except at crossings, the right of way for off-road paths typically are not located within State DOT jurisdiction. The State DOT also has some control over various funding sources under which shared-use paths are eligible; the DOT can use the priorities for continuous networks among the criteria for allocating funds from those sources. For example, State DOTs control the Recreational Trails Program (RTP), which funds recreational projects. Some projects funded by the RTP may also be eligible for other Federal-aid highway funds, and other Federal highway funds may be used to make up the matching fund requirements for RTP projects. The DOT may consider measures to ensure that off-road facilities developed for both recreational and transportation uses maintain the transportation focus, for example, by requiring certain widths and surface types, lighting, and snow clearing (FHWA 2014).

### Step 7: Developing Implementation Strategies

The ability of a plan to influence infrastructure and policy toward achieving its goals is critical to its success. It is therefore important to document how the plan will be put into action following adoption. There are four key areas to address when implementing the plan (FHWA 2014):

- Tying the plan's goals, objectives, and strategies to the project development process.
- Assigning explicit roles, responsibilities, and timelines to the Plan's objectives/DOT practices.
- Developing strategies for the programming of future funds.
- Developing a program of benchmarking and measuring performance of the Plan's objectives. (FHWA 2014)

Snapshots of state implementation plans can be found in Appendix C.

### Tying the plan's goals, objectives, and strategies to the project development process

U.S. DOT policy states that it is the responsibility of all transportation agencies to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems (FHWA 2014). Therefore, all transportation projects should consider the safety and mobility needs of all existing and potential users of the system. The ideal time to do this is during the initial project scoping and conceptual design phase of any project. A good

practice for pedestrian and bicycle plans is to explain how DOT projects are developed from planning to conceptual and preliminary engineering to final design and construction, and to have policies that require the explicit consideration of pedestrian and bicyclist safety and mobility early in the project development process (FHWA 2014).

One way that many States and local governments institutionalize incorporating bicyclist and pedestrian needs in project development is by adopting **complete streets policies** (FHWA 2014). These policies are consistent with and encouraged by Federal transportation planning laws and requirements. Numerous methods are available to States to implement a complete streets policy. The State's pedestrian and bicycle plans should include extensive discussion of these methods using its role as the steward of the State highway system and also its role as the recognized leader of transportation policy throughout the State. Developing a process requirement for project scoping is one way to implement a complete streets policy for State DOT projects. State DOTs such as Washington and Tennessee have also found innovative ways to encourage local governments to adopt a complete streets approach or to conduct pedestrian and bicycle planning through funding incentives (FHWA 2014). The Iowa plan devotes one of its chapters to its [complete streets policy](#).

## The role of the Complete Streets Policy

The primary recommendation of this plan is for a statewide Complete Streets policy that applies to all Iowa DOT projects, including new construction, reconstruction, and 3R projects (resurfacing, restoration, or rehabilitation). From an infrastructure perspective, this is the most important recommendation of this plan. The Complete Streets Policy was developed based on the National Complete Streets Coalition's guidelines for state legislation. However, this policy is written as an Iowa DOT policy (rather than state legislation).

The policy is purposefully lacking in specifics (e.g., the criteria used to determine what *type* of accommodation must be provided) in order to maintain flexibility and avoid incompatibilities. Guidance for selecting appropriate facility types is provided in Chapter 5.

The specifics of Complete Streets design and policy implementation (which are recommended by this plan) should reside in modifications to the Iowa DOT's Design Manual and Bridge Design Manual. Periodic reports (see section 3.5 of the policy) should reflect whether the Iowa DOT and the state as a whole are adequately following this policy.

Section 4 of the policy outlines its effective date for Iowa DOT projects. Although it is non-binding to other transportation agencies (MPOs, RPAs, counties, and municipalities), these agencies are encouraged to adopt similar policies, as some have already.

## 6.1 Complete Streets Policy language

### Section 1 – Complete Streets

- 1.1 Motor vehicle, public transportation, bicycle, and pedestrian modes are each integral to the transportation system, and the Iowa Department of Transportation (DOT) shall view all transportation improvements as opportunities to improve safety, access, and mobility for all transportation users.
- 1.2 Accommodations for all users shall be considered in the planning, design, construction, and reconstruction of any primary highway, and should be considered for any secondary or local transportation project receiving federal or state funding. New accommodations shall be considered in Iowa DOT 3R projects (Resurfacing, Restoration, or Rehabilitation) whereby bicycling, pedestrian, and transit provisions can be added within the scope of the project. This shall include the reduction of barriers by including accommodations across, as well as along, transportation facilities. The Iowa DOT shall create a safe, comprehensive, integrated, and connected network to accommodate all users in a manner that is suitable and sensitive to the rural, suburban, or urban context.
- 1.3 The Iowa DOT shall (and any regional or local entity using state or federal funds to plan, design, or construct a transportation facility should) consult the latest versions of the following design guidelines and standards, which clarify and expand upon the Iowa DOT's design manuals and specifications:
  - a. *A Policy on Geometric Design of Highways and Streets* (American Association of State Highway and Transportation Officials);
  - b. *Guide for the Development of Bicycle Facilities* (American Association of State Highway and Transportation Officials);
  - c. *Guide for the Planning, Design, and Operation of Pedestrian Facilities* (American Association of State Highway and Transportation Officials); and
  - d. *Public Rights-of-Way Accessibility Guidelines* (United States Access Board).

Finally, the Iowa DOT should utilize the latest version of the following guidelines, which apply to unique situations and where accommodation treatments are needed beyond typical applications:

**Many plans place great emphasis on coordination with the agency's project development process.** It is critical to link planning to project development, to ensure that the plan concepts are followed through into practice. This type of effort may relate to implementing "Complete Streets" policies or other design guidelines, changing internal procedures, or providing professional training internally and externally. (FHWA 2014)

Assigning explicit roles, responsibilities, and timelines to the Plan’s objectives/DOT practices

An effective plan includes strategies for putting the plan into action (FHWA 2014). Action plans include the explicit definition of roles and responsibilities for each strategy recommended by the plan, a timeline for strategy implementation, and identification of funding. The DOT-specific roles should be broken out between different divisions within the DOT that are required to implement the strategy (e.g., Planning, Maintenance, Design and Construction). The plan may also include ways to involve external partners (e.g., local transportation agencies, MPOs, and police departments). The following figure shows an example of Iowa DOT implementation strategy for its’ goals including the short-term strategies/actions, roles/responsibilities and timeline. The mid-term and long-term goals are also listed with decreasing level of detail. In some cases, a separate integration strategy may be necessary to institutionalize these critical relationships.

**8. IMPLEMENTATION** IowaDOT 2018

**8.2 Short-term actions**

The first steps to be taken toward implementing this plan are those that affect the greatest change or those that require minimal investment. As such, most of the short-term implementation actions are policy and program-oriented. These actions should be initiated as soon as possible, with the goal of having actions completed (or well-established in the case of on-going programs) within two to three years.

Table 8.1: Short-term implementation actions

Action	Responsible	Timeline	Steps	Other considerations	Associated recommendations <sup>4</sup>
Implement the Complete Streets Policy.	Iowa DOT	By Spring 2019	<ul style="list-style-type: none"> <li>Complete policy</li> <li>Train staff</li> <li>Modify project development processes</li> </ul>	Requires modifying Iowa DOT’s project scoping process as outlined in the Design Manual.	1.1, 1.3, 1.4 3.1 – 3.3 See Chapters 6 and 7
Modify Iowa DOT’s project scoping process in accordance with the Complete Streets Policy.	Iowa DOT Highway Division	By Spring 2019	<ul style="list-style-type: none"> <li>Develop a one-stop comprehensive project scoping process guide</li> <li>Distribute to staff</li> </ul>		1.1, 1.3, 1.4
Modify the Design Manual to uniformly comply with the latest version of national standards and best practices (AASHTO Guide for the Development of Bicycle Facilities, AASHTO Pedestrian Guide, and NACTO Urban Street Design Guide).	Iowa DOT Office of Design	By Spring 2019	<ul style="list-style-type: none"> <li>Develop an on-road bikeways section</li> <li>Specify 4’ minimum effective paved shoulder width for bicyclists</li> <li>Add 5’ sidewalks and bike lanes to urban typical sections</li> </ul>		1.3, 1.4 2.1 3.1 – 3.3
Modify the Bridge Design Manual to uniformly comply with the latest version of national standards and best practices (AASHTO Guide for the Development of Bicycle Facilities and NACTO Urban Street Design Guide).	Iowa DOT Office of Bridges and Structures Iowa DOT Office of Design	By Summer 2019	<ul style="list-style-type: none"> <li>Align bridge designer and county engineer judgment statements with the Complete Streets Policy</li> <li>Add requirement to consider bicycle accommodations when determining bridge width</li> </ul>		1.3, 1.4 2.1 3.1 – 3.3

Developing strategies for the programming of future funds Some State plans identify priority projects to be programmed in future STIPs. This may include a table that lists the projects currently programmed in the STIP, which have already been prioritized and scoped. The pedestrian and bicycle plan may also identify priority projects to be included in the medium term but beyond the life of the current STIP (4 years). The Hawaii Pedestrian Plan identifies all projects currently programmed in the STIP as a springboard for consideration of additional projects that were identified during the planning process, and the additional projects that are to be included in the next several iterations of the STIP (FHWA 2014). These projects may be more conceptual in scope, but are clear about the location and type of facility to be constructed in the system.

## Appendix A: Bicycle and Pedestrian Funding Opportunities

Table A-1. Bicycle and Pedestrian Funding Opportunities: US Department of Transportation, Federal Transit, and Federal Highway Funds (October 2015)

Activity	TIGER Discretionary Grants	Federal Transit Administration	Associated Transit Improvement	Congestion Mitigation and Air Quality Improvement (CMAQ) Program
Access Enhancements To Public Transportation	\$	\$	\$	\$
ADA/504 Self-Evaluation/Transition Plan	\$plan			
Bicycle and/or Pedestrian Plans	\$plan	\$		
Bicycle Lanes on Road	\$	\$	\$	\$
Bicycle Parking	\$*	\$	\$	\$
Bike Racks on Transit	\$	\$	\$	\$
Bicycle Share (Capital and Equipment; Not Operations)	\$	\$	\$	\$
Bicycle Storage or Service Centers	\$*	\$	\$	\$
Bridges/Overcrossings For Bicyclists and/or Pedestrians	\$	\$	\$	\$*
Bus Shelters	\$	\$	\$	\$
Coordinator Positions (State or Local)				\$ Limit 1 per state
Crosswalks (New or Retrofit)	\$	\$	\$	\$*
Curb Cuts and Ramps	\$	\$	\$	\$*
Data Collection and Monitoring For Bicyclists and/or Pedestrians	\$plan	\$	\$	
Helmet Promotion (For Bicyclists)				
Historic Preservation (Bicycle and Pedestrian and Transit Facilities)	\$	\$	\$	
Landscaping, Streetscaping (Bicycle and/or Pedestrian Route; Transit Access)	\$*	\$	\$	
Lighting (Pedestrian and Bicyclist Scale Associated With Pedestrian/Bicyclist Project)	\$	\$	\$	
Maps (For Bicyclists and/or Pedestrians)		\$	\$	\$
Paved Shoulders For Bicyclist and/or Pedestrian Use	\$			\$*
Police Patrols				
Recreational Trails	\$*			
Safety Brochures, Books				
Safety Education Positions				
Separated Bicycle Lanes*	\$	\$	\$	\$
Shared Use Paths/Transportation Trails	\$	\$	\$	\$*
Sidewalks (New or Retrofit)	\$	\$	\$	\$
Signs/Signals/Signal Improvements	\$	\$	\$	\$
Signed Bicycle or Pedestrian Routes	\$	\$	\$	\$
Spot Improvement Programs	\$	\$		
Stormwater Impacts Related To Pedestrian and Bicycle Projects	\$	\$	\$	
Traffic Calming	\$	\$		
Trail Bridges	\$			\$*
Trail/Highway Intersections	\$			\$*
Training				\$
Tunnels/Undercrossings for Bicyclists and/or Pedestrians	\$	\$	\$	\$*

Source: Bicycle and Pedestrian Funding Opportunities: US Department of Transportation, Federal Transit, and Federal Highway Funds. US Department of Transportation, Federal Highway Administration. [http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/funding/funding\\_opportunities.cfm](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm); Accessed June 2015.

**KEY**  
 \$ = Funds may be used for this activity.  
 \$plan = Eligible for TIGER planning funds.  
 \$\* = Eligible, but not competitive unless part of a larger project.  
 \* TIGER: Subject to annual appropriations.

Some DOTs may also identify projects to be completed in a longer time frame (10-20 years or longer), but these are best to be more conceptual and corridor- or systems-based (e.g., identifying the corridor segment of a bicycle route without specifically identifying the facility to be constructed) (FHWA 2014). The first step in making a financially realistic plan is to account for all funding sources currently available for bicycle, pedestrian, and multimodal projects, as well as a discussion of potential new funding sources that may be used by the agency in the future (FHWA 2014). Some State DOTs have conducted rough cost estimates for implementing a longer-term plan. In some cases, the plan's vision may not be realized with the expected funding available, but the plan can explore potential new funding mechanisms that State and local governments can explore. The Oregon DOT plan (2016) provides insight about conditions for various funding scenarios. FHWA offers guidance on Federal funding of bicycle and pedestrian projects and programs. In general, Federal surface transportation law provides significant flexibility to States and MPOs to fund bicycle and pedestrian improvements from a wide variety of programs. Virtually all the major transportation funding programs can be used for bicycle and pedestrian-related projects. Detailed guidance as well as information on the types of projects that are eligible for various funding sources is available from FHWA. A nonmotorized transportation plan implementation strategy may recognize existing State or MPO project selection criteria for receiving Federal funding for inclusion into the TIP. The plan can also be an opportunity to revisit the State criteria and revise it so that it is aligned with the goals, objectives, or performance measures developed in the plan (FHWA 2014). The Iowa DOT devotes a chapter of its plan to funding strategy (2018).

## Financing the vision

Funding is critical to the successful implementation of bicycle and pedestrian facilities along roadways as well as multi-use trails, including those that comprise the Statewide Trails Vision. Numerous funding sources are available, though the flexibility and availability of funds varies between programs. This chapter includes an overview of the funding programs available for bicycle and pedestrian accommodations, a brief review of the current funding practices in Iowa, a new strategy for funding, and recommendations to enact the new strategy.  
IowaDOT 2018

## 7.1 Available funding programs

### Federal programs

The Federal Transportation Bill signed into law in December 2015—known as Fixing America's Surface Transportation (FAST) Act—retained many of the previous federal funding programs for which bicycle and pedestrian projects are eligible. The FAST Act contains five funding programs for which bicycle and pedestrian infrastructure projects are eligible:

- National Highway Performance Program (NHPP)
- Surface Transportation Block Grant Program (STBG)
- Highway Safety Improvement Program (HSIP)
- Congestion Mitigation and Air Quality (CMAQ)
- Surface Transportation Block Grant-Transportation Alternatives Set-Aside (STBG-TA)

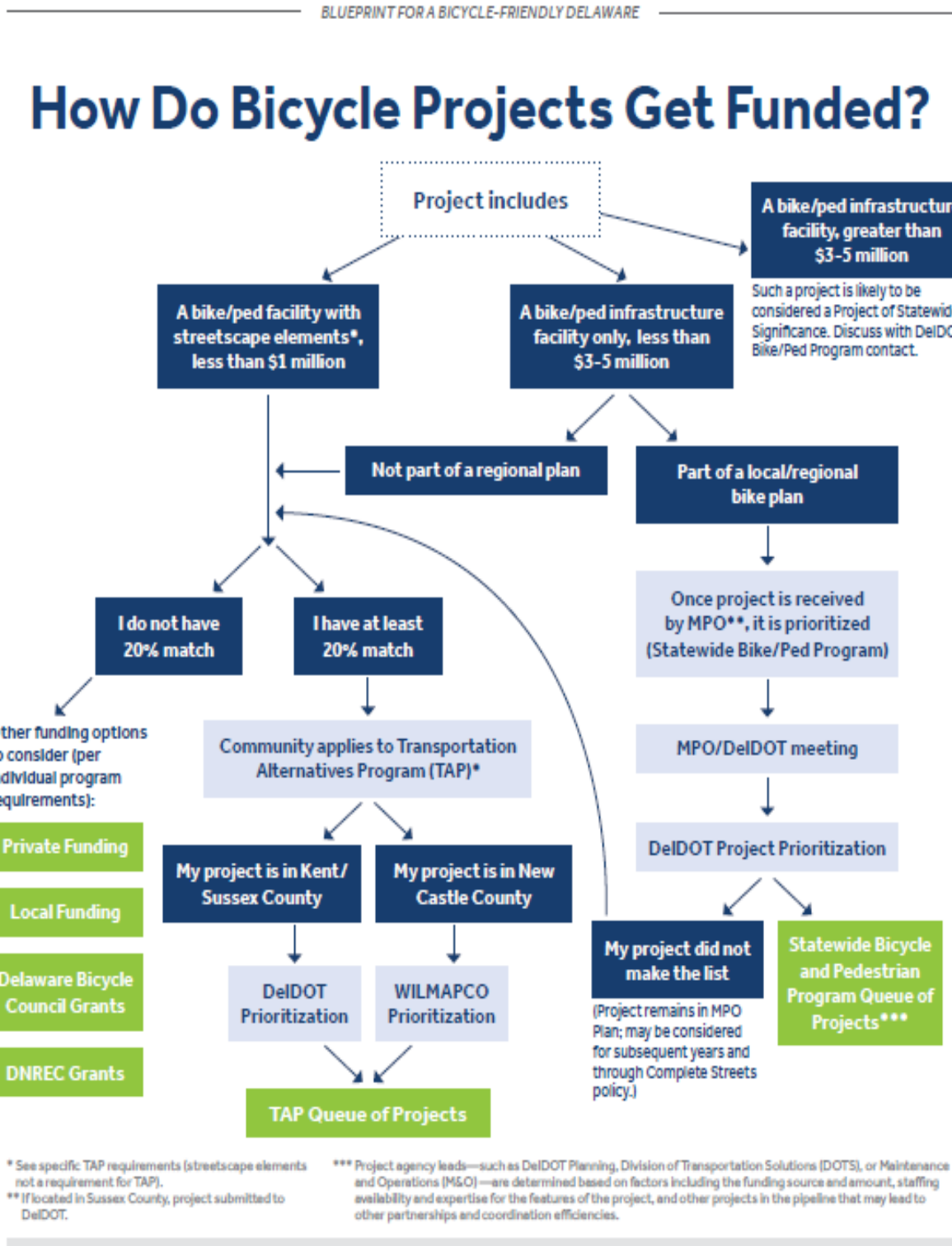
Any of these five FAST Act program funds can be legitimately used for bicycle and pedestrian projects, even when such projects are constructed independently of roadway projects.

### Surface Transportation Block Grant-Transportation Alternatives Set-Aside (STBG-TA)

The STBG-TA program replaces the Transportation Alternatives Program (TAP), which itself



The Delaware DOT (2018) provides the following flow chart for its funding strategy.



\* See specific TAP requirements (streetscape elements not a requirement for TAP).

\*\* If located in Sussex County, project submitted to DeIDOT.

\*\*\* Project agency leads—such as DeIDOT Planning, Division of Transportation Solutions (DOTS), or Maintenance and Operations (M&O)—are determined based on factors including the funding source and amount, staffing availability and expertise for the features of the project, and other projects in the pipeline that may lead to other partnerships and coordination efficiencies.

Developing a program of benchmarking and measuring performance of the Plan’s objectives

Structuring transportation plans around goals, objectives, and performance measures ensures that planning processes are data driven and transparent to the public (FHWA 2014). Many bicycle and pedestrian plans describe all data relevant to safety and demand currently being collected. These data may include crash rates involving pedestrians or bicyclists, commute mode split, bicycle or pedestrian counts at strategic locations, miles of bikeway facilities or sidewalks, bicycle level of service or level of comfort measures, and many others. Since data collection is a major need in bicycle and pedestrian planning, new data collection is likely to be one of the action strategies that the DOT will take with its partners to improve the state of bicycle and pedestrian planning. As apparent in the Maryland DOT example (right), data attainment is included in its short-term implementation (2019). Such an action strategy will identify who will be responsible for collecting the data and how it will be managed and structured. A plan with identified performance measures should include a description of who will be responsible for ongoing data collection and analysis required for the performance measurement. It is important to consider what resources are available to agencies assigned with data collection responsibilities before committing to performance measurement. Questions that may be useful to ask when developing performance measures include (FHWA 2014):

- Does the performance measure by itself adequately monitor progress towards an identified objective?
- Do you have the technical capability to measure it?
- How will you measure it?

If the answer is no or unsure, then it may be appropriate to consider a different measure that is more realistic but still useful for monitoring the progress of plan implementation (FHWA 2014).

A particularly well-developed and transparent transportation plan includes **performance targets** with identified benchmarks that can help the State understand how well it is progressing in achieving its goals. The **performance measures** collected on an ongoing basis can be used to measure this progress. **Benchmarks** can be used as standards to help an agency to measure its achievements toward reaching its ambitious goals and help the public understand that the State is making progress in delivering results (FHWA 2014).

### Key Initiative Schedule

For more information on these key initiatives, see pages 34-38.

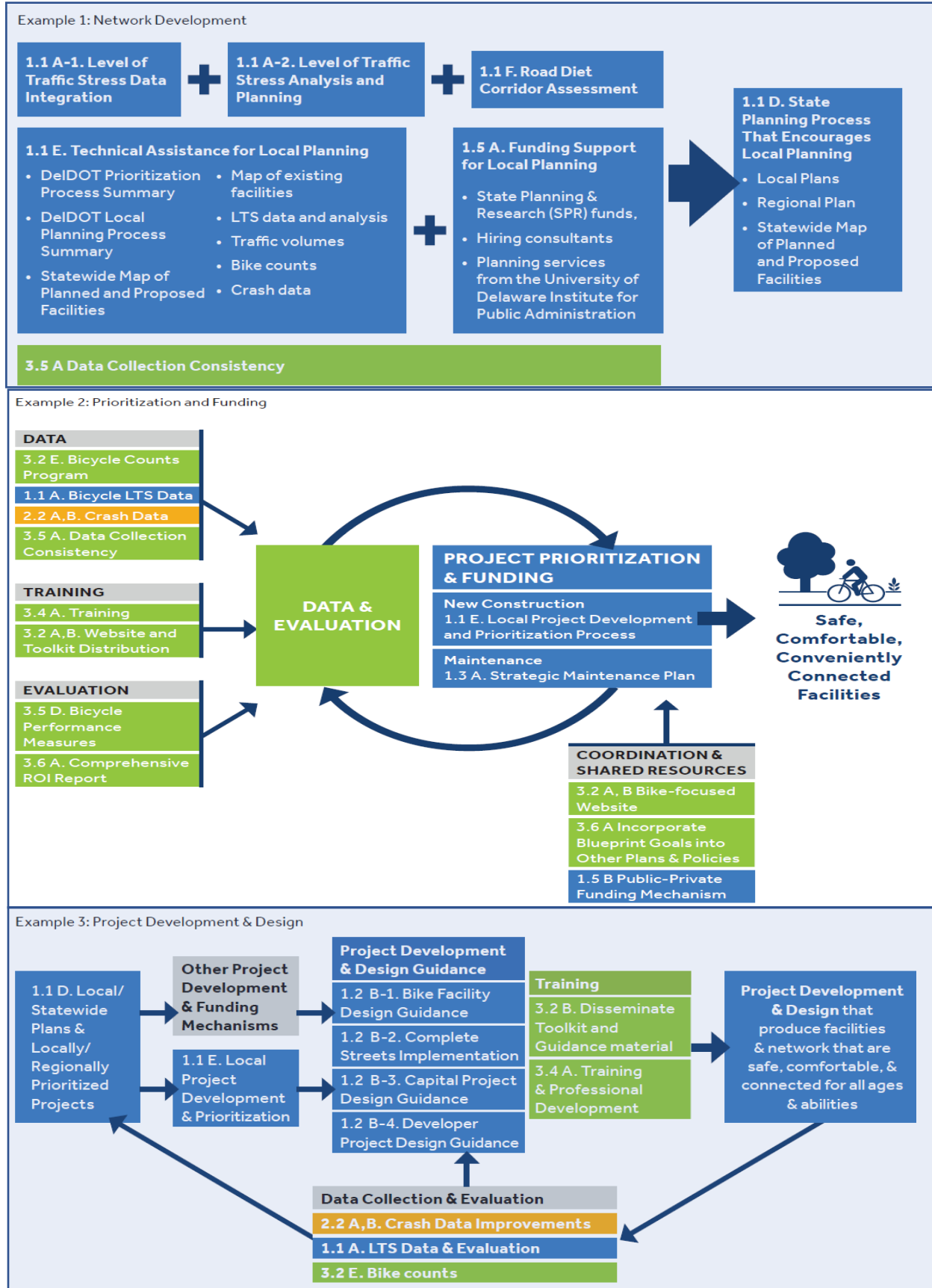
	Short-Term (5 Years)	Long-Term (20 Years)
1	Level of Traffic Stress analysis	Barrier identification and prioritization
	GIS inventory	
	Transit access improvements	
	On-board transit facilities	
2	SHSP implementation	Local context analysis
	Refined analysis tools	
	Statewide Complete Streets policy and Guidelines	
	Health data and analysis	
3	Complete Streets policy for underserved and under invested communities	Local mode share goals
	Amended Bicycle Pedestrian Priority Areas program	
	Streamlined funding	
4	Demonstration projects	Web-based information dashboard
	Network of bicycle and pedestrian counters	
	Safety data	
	Survey strategy	
	Legislative information	
5	Tourism promotion materials	Economic benefits information for local stakeholders
	Statewide economic impact study	
	Active recreation and transportation research and demonstration projects	

The Delaware DOT plan (2018) provides the following strategic implementation plan framework and examples of each of the core recommendations for implementing its bicycle policy.

## Strategic Implementation Plan Framework

★ Core Recommendation





Examples of Delaware DOT (2018) Core Recommendations Implementation

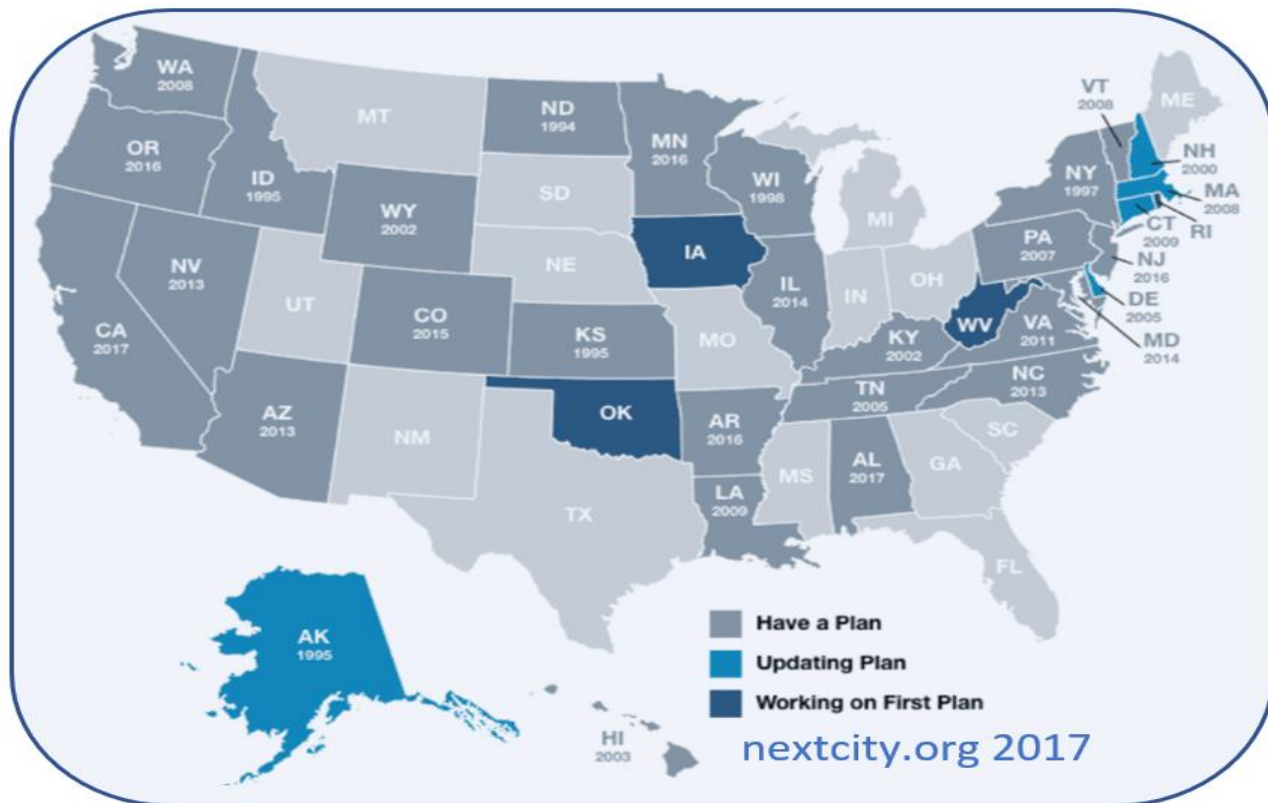
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Appendix A: “Skeleton” Statewide Bicycle and Pedestrian Plan Outline and Framework

The following draft outline and framework have been developed based upon a comprehensive review of current FHWA and DOT state-of-the-practice guidance, as summarized in this report. Specifically, the format contained herein is consistent with [FHWA guidance \(2014\)](#) that provides the “how to” for creating a new plan and the guidance is reflected in other DOTs’ recent bicycle/pedestrian (“active transportation”) plans (shown in the following map and hyperlinked in the following table). The goal is to provide ODOT with a working platform from which to begin development of its statewide bicycle and pedestrian plan.



DOT [Recent] Plans & Type (Year)			
<a href="#">Alabama</a> (2017) *new plan	<a href="#">Colorado</a> (2015) *updated plan	<a href="#">Louisiana</a> (2009) *updated plan	<a href="#">New Jersey</a> (2016) *updated plan
<a href="#">Arizona</a> (2013) *updated plan	<a href="#">Delaware</a> (2018) *updated plan (bicycle only)	<a href="#">Maryland</a> (2019) *updated plan	<a href="#">Oregon</a> (2016) *new plan
<a href="#">Arkansas</a> (2017) *new plan	<a href="#">Illinois</a> (2014) *updated plan (bicycle only)	<a href="#">Minnesota</a> (2016) *new plan (bicycle only)	<a href="#">PennDOT</a> (2020) *updated plan
<a href="#">California</a> (2017) *new plan	<a href="#">Iowa</a> (2018) *new plan	<a href="#">Montana</a> (2019) *new plan	<a href="#">Wyoming</a> (2017) *new plan

## ODOT Bicycle and Pedestrian Plan Sections - Draft Outline

### Executive Summary

#### 1.0 Introduction

#### 2.0 Bicycle and Pedestrian Laws, Policies, Plans, Programs, and Standards

#### 3.0 Stakeholder Engagement/Public Outreach

#### 4.0 Vision, Goals, Objectives

#### 5.0 Existing Conditions and Trends

#### 6.0 Recommendations

#### 7.0 Implementation Strategies

### Appendices

The content contained herein is consistent with [FHWA guidance \(2014\)](#) that provides the “how to” for creating a new plan and this same content is reflected in other DOTs’ recent bicycle/pedestrian plans. The sequence presented here is also consistent with the FHWA guidance (2014). However, it is important to note that the sequence of steps (chapters) varies among DOTs – since some of the activities occur in parallel. Specifically, the vision, goals, and objectives in statewide pedestrian and bicycle plans are informed by the technical fact base (existing conditions and trends), as well as other policies/plans and stakeholder input. Additionally, organization, depth and nomenclature of plan content varies among states. For example, some states include brief reference to the stakeholders’ engagement process (e.g., Delaware DOT 2019), while others prominently feature full documentation within its own chapter(s) (e.g., Arkansas 2017). Some states have a chapter devoted to funding/investment strategies (e.g., Iowa 2018), while others provide summary information within other chapters (e.g., Maryland 2019, FHWA 2014) and some add it to the appendices (e.g., New Jersey DOT). The framework will feature content, nomenclature and organization that is consistent with the [FHWA guidance \(2014\)](#) and will provide DOT reference.

#### Pre-Plan Activities to Define Plan Scope

FHWA suggests that an agency executes these activities to define scope, users, roles and purpose related to the statewide plan, since this will direct the development of the major components of the plan (e.g., stakeholder engagement, goals and implementation).

See FHWA Guidance (2014) [Step 1: Getting Started – Defining the Scope](#) for detail about these activities:

- ✓ Determine type of plan: policy guidance or project prioritization? Most statewide plans are policy plans.
- ✓ Determine the purpose of the plan ([Table 1](#)) Understanding what the plan seeks to accomplish will help **clarify roles and responsibility, identify key stakeholders, eliminate duplicative efforts, and focus resources** to ensure strategic bicycle and pedestrian investments.
- ✓ Define the intended users of the plan: facilitates the plan development process by helping to determine the **stakeholders to involve**, the **data to collect**, the **level of detail** the plan should address, **and the resources**.
- ✓ Define the role of ODOT: understanding the division of responsibility for facilities within the state can help stakeholders more effectively utilize limited resources.
- ✓ Define the function of the plan within ODOT: consider how the plan relates to other statewide transportation activities
- ✓ Create a Combined Bicycle and Pedestrian Plan or Have Two Separate Plans?

## ODOT Bicycle and Pedestrian Plan – Draft Framework Executive Summary

### Examples

[PennDOT 2020 Executive Summary](#) (2-page)

[Oregon DOT 2016 Executive Summary](#) (12-page)

## 1.0 Introduction

### 1.1 Plan Purpose/Vision

Be specific and clear about what the plan is expected to accomplish ([Table 1](#))

### 1.2 Background Information

Many states include benefits of bicycling and walking

Some states include information from [Step 1: Getting Started – Defining the Scope](#)

### 1.3 Summary of Plan Goals, Objectives

Many states include summary of goals/objectives detailed in subsequent chapter

### 1.4 Plan Organization

Many states include summary and organization of subsequent chapters

### Examples

[Arkansas DOT Plan \(2018\) Introduction](#) (pp. 5 – 15)

[CALTRANS Plan \(2017\) Introduction](#) (pp. 2 – 6)

[Alabama DOT \(2017\) “Best Practices” in Bicycle Pedestrian Plans](#) (Section A, 4.0)

## 2.0 Bicycle and Pedestrian Laws, Policies, Plans, Programs, and Standards

This section involves evaluating the internal and external institutional, relational and policy related considerations that could frame the planning process and the plan itself (FHWA 2014):

### Step 2: Conducting Institutional [Internal] and [External] Policy & Plan Analysis

#### 2.1 Federal Policies

Describe federal legislation and guidance related to the bicycle pedestrian plan

#### 2.2 State Policies

Describe how the bicycle pedestrian plan is impacted by/impacts other state policies

#### 2.3 Regional Policies

Describe how the bicycle pedestrian plan is impacted by/impacts regional policies

#### 2.4 State Plans, Programs and Processes

Describe how the plan fits in with other agency plans/programs/processes (Questions [1](#))

#### 2.5 Relationships (Roles) within the Institution and with Partners

Describe the relationships/coordination that will facilitate plan implementation

### Examples

[New Jersey DOT \(2016\) Summary of Laws, Policies, Plans \(short, appendix\)](#) (pp. 61 – 68)

[Alabama DOT \(2017\) Full Description](#) (Section A pp. A:1 – A:21)

[Iowa DOT \(2018\) Full Description](#) (pp. 30 – 37)

[PennDOT Policy Study \(2016\)](#) (Section 2 pp. 10 – 17)

[Federal Policy Summary \(2019\)](#) (9 pages)

[Iowa DOT Complete Streets 2018](#)

### 3.0 Vision, Goals, Objectives

This section involves presenting the statewide pedestrian and bicycle planning process around goals, objectives, and performance measures, consistent with other agency initiatives/federal guidance that follow a Performance-Based Planning approach (FHWA 2014).

[Step 3: Developing Goals, Objectives, Strategies and Performance Measures](#)

#### 3.1 Vision

Provide the plan vision ([Table 1](#)) for what the plan is expected to accomplish

#### 3.2 Goals

Provide the plan goals ([Table 2](#)) that describes a desired end state

#### 3.3 Objectives

Provide the plan objectives to support achievement of a goal

#### 3.4 Strategies/Actions

Provide agency initiative that will be pursued to meet one or more objectives

\*Some states place this content in the Implementation section

#### 3.5 Performance Measures

Provide metrics used to assess progress toward meeting an objective

\*Some states place this content in the Implementation section

#### 3.6 Targets

Specify level of performance that an agency hopes to achieve in a certain timeframe

\*Some states place this content in the Implementation section

#### 3.7 Benchmark

Specify metric that is a standard against which the agency will compare its performance

\*Some states place this content in the Implementation section

#### Examples

Appendix B: Goals, Objectives and Performance Measures by Selected States

[Maryland DOT \(2019\) \(goals, objectives, strategies, performance metrics pp. 10,11; 31 - 36\)](#)

[Maryland DOT \(2019\) \(strategies \(initiatives\) and targets pp. 37 - 46\)](#)

[PennDOT 2020 Executive Summary \(goals and objectives p.2\)](#)

[Montana DOT \(2019\) \(goals and strategies for "recommendations/implementation" pp. xiv, 64\)](#)

[Arkansas DOT \(2017\) \(pp.14 – 15\)](#)

[New Jersey DOT \(2016\) \(Chapter 3, pp. 39 – 47\)](#)

[Oregon DOT 2016 Goals, Objectives and Strategies \(pp.37 – 53\)](#)

[Oregon DOT 2016 Appendix D: Performance Measures \(pp.117 – 131\) \(white paper\)](#)

[Colorado DOT \(2015\) \(pp. 17, 20-21\)](#)

Best Practices "5 E's" of Biped Planning ([Iowa](#) p. 26, [Arkansas](#) p. D-2, [Alabama](#) pp. A13 – A18)

[Alabama DOT \(2017\) "Best Practices" in Bicycle Pedestrian Plans \(Section A, 4.0\)](#)

#### 4.0 Stakeholder Engagement/Public Outreach

This section involves presenting engagement/outreach efforts and impact. Because some DOTs have not historically focused on walking and bicycling, it is especially important to have an effective public involvement strategy when planning for these modes.

##### [Step 4: Engaging Stakeholders and the Public](#)

##### 4.1 Stakeholders/Public

Identify stakeholders involved/impacted ([Step 1: Getting Started – Defining the Scope](#))

##### 4.2 Public Involvement Methods/Process

Document the methods and process for engagement/outreach

##### 4.3 Results

Describe the results of the effort and impact on the plan goals and objectives

##### Examples

[Arkansas DOT \(2017\)](#) Extensive Effort (Chapter 2; Appendix A: survey questions)

[Montana DOT \(2019\)](#) Succinct Summary (pp. 5 – 10)

[Iowa DOT \(2018\) Full Description](#) (included in “Vision and Goals” Chapter: pp. 23 – 29)

[Alabama DOT \(2017\)](#) (included in “Recommendations”, Section C: pp. C1 – C2)

[CALTRANS \(2017\)](#) (Chapter 3; pp. 16 –18)

[PennDOT Policy Study \(2016\)](#) (Section 2 pp. 10 – 17)

#### 5.0 Existing Conditions and Trends

This section provides the clear connection between plan goals, objectives, strategies, and performance measures, and a robust technical analysis ([Table 2](#)). Data collection during the planning process may form the foundation for future monitoring and reporting. Depending on data availability, **planners may map and analyze these six subject areas geographically given the following factors: network extent and quality and nonmotorized expenditures.**

##### [Step 5: Developing Information Base and Content \(Existing Conditions and Trends\)](#)

##### 5.1 Safety

Identify existing conditions, trends, benchmarking statistics

##### 5.2 Accessibility/Mobility and Equity

Identify existing conditions, trends, benchmarking statistics

##### 5.3 Economic Benefits (if applicable)

Identify existing conditions, trends, benchmarking statistics

##### 5.4 Environment and Energy (if applicable)

Identify existing conditions, trends, benchmarking statistics

##### 5.5 Public Health (if applicable)

Identify existing conditions, trends, benchmarking statistics

##### 5.6 Usage/Mode Share (if applicable)

Identify existing conditions, trends, benchmarking statistics

##### 5.7 Data Limitations

Clearly document any data limitations and the strategy to address them before the update



**Examples**

[Alabama DOT \(2017\)](#) Extensive Effort (Section B)

[PennDOT 2020](#) Extensive effort that covers most goal categories (Section 3)

[CALTRANS \(2017\)](#) (Section 2)

[Arkansas DOT \(2017\)](#) More qualitative approach (pp.23; also Section 4: “Regional Reports”)

[FHWA Handbook \(2014\)](#) (Appendices A & B have key data sources for each area)

[PennDOT 2020](#) Data “needs” (pp. 80 – 81)

**6.0 Recommendations**

Using the information gathered from the preceding steps related to existing conditions and trends to establish the current state of walking and bicycling, goals and objectives to define a desired future, and stakeholder input, analyze and identify ways to accomplish the objectives—both through changes to the physical network as well as through policies and programs (FHWA 2014).

NOTE: Not all states distinguish between this section and Sections 3 & 7; some states do not have a “Recommendations” section in their plans.

[Step 6: Identifying Needs and Priority Areas \(Recommendations\)](#)

**6.1 Priority Areas**

Identify priority areas (e.g., safety) to focus pedestrian and bicycle investments

\*could identify specific projects (requiring analyses), or just decision criteria/methodology

**6.2 Key Corridors (if applicable)**

Identify key corridors to focus pedestrian and bicycle investments

\*could identify specific projects, or just decision criteria/methodology

**6.3 National Corridor Plan (if applicable)**

Identify route segments on the US Bicycle Route System to prioritize

**6.4 Network and Gap Analysis (if applicable)**

Evaluate connectivity, condition and comfort of the network

\*Some states develop a prioritization scheme for addressing corridor gaps

**6.5 Regional and Local Coordination (if applicable)**

Identify and document any coordination needed for implementing recommendations

**Examples**

[Alabama DOT \(2017\)](#) (Section C)

[MnDOT \(2016\)](#) Extensive Corridor Analysis (Chapter 3)

[Iowa DOT \(2018\)](#) Design Guidance and Decision Methodology for Priority Areas

## 7.0 Implementation Strategies

The ability of a plan to influence infrastructure and policy toward achieving its goals is critical to its success. This section involves documenting how the plan will be put into action following adoption.

### Step 7: Developing Implementation Strategies

#### 7.1 Tying Goals, Objectives and Strategies to the Project Development Process

Present strategy for requiring the explicit consideration of pedestrian and bicyclist safety and mobility early in the project development process (e.g., “complete streets” policy)

#### 7.2 Roles, Responsibilities and Timelines

Assign explicit roles, responsibilities, and timelines to the plan’s objectives/DOT practices

#### 7.3 Funding Strategies

Present strategies for the programming of future funds for bicycle and pedestrian projects

#### 7.4 Benchmarking and Performance Measures Program

Present a program of benchmarking and measuring performance of the plan’s objectives

#### Examples

[Iowa DOT \(2018\)](#) “Complete Streets” Policy chapter to tie goals to project development process

[Iowa DOT \(2018\)](#) “Funding Strategies” chapter

[Iowa DOT \(2018\)](#) comprehensive “Implementation” chapter for roles/responsibilities, timelines; benchmarking and performance measures

[PennDOT \(2020\)](#) “Implementation” chapter for roles/responsibilities, timelines (pp. 39 – 79)

[New Jersey \(2016\)](#) More qualitative, succinct, less comprehensive (pp. 49 – 58)

Appendices commonly include:

Documentation summarized in [2.0 Bicycle/Pedestrian Laws, Policies, Plans, Programs](#)

Survey information summarized in [3.0 Stakeholder Engagement/Public Outreach](#)

Analyses summarized in [5.0 Existing Conditions and Trends](#)

Appendix B: Goals, Objectives and Performance Measures by Selected States

Alabama DOT 2017

Alabama is a state where walking and bicycling are safe, comfortable, and convenient modes of transportation in communities across the state for people of all ages and abilities.

System performance measures represent a pivotal first step in plan implementation. As noted in earlier sections of the plan, federal legislation, policies, and programs have all placed increasing importance on performance measures and the role they can play in better managing transportation systems, in particular, system safety. Building on federal guidance, the recommended system performance measures for walking and bicycling (Table ES-3) in Alabama initially focus on the plan’s two principal goals: safety, and access and mobility. The initial set of recommended performance measures provides a clear and understandable basis for describing how the pedestrian and bicycle systems are currently functioning in Alabama. Over time, as new goals and objectives are established and new data sources become available, the performance measures can be modified and expanded to address other goals and objectives related to economic development (e.g., intermodal connections) and quality of life (e.g., access to essential needs).

Goals and Objectives

Goal A: Improve safety for bicyclists and pedestrians of all ages and abilities

1. Identify and address high priority safety locations and corridors
2. Educate users on safe interactions among motorists, bicyclists, and pedestrians
3. Implement laws and regulations consistently

Goal B: Develop complete and connected bicycle and pedestrian systems

1. Expand and improve bicycle and pedestrian networks along state highway corridors
2. Incorporate bicycle and pedestrian needs in all phases of project development, routine maintenance, and system preservation
3. Coordinate state improvements with local and regional goals and objectives





Goal C: Support state, regional, and local economic development

1. Link bicycle and pedestrian systems with other modes of transportation
2. Promote bicycle and pedestrian connectivity in major employment and activity centers

Goal D: Increase travel options for all transportation system users and protect the natural environment

1. Expand and improve bicycle and pedestrian access to basic goods and services such as food, education, health care, parks, and transit
2. Encourage walking and bicycling for shorter everyday trips (e.g., school, shopping, social)
3. Preserve and protect the natural environment

Table ES-3. Recommended Performance Measures and Targets

 Goal	 Performance Measure	 Target	 Data Sources
Safety	Annual number of combined non-motorized fatalities and serious injuries (5-year rolling average)	2% annual decrease up to a total 50% decrease	Fatality Analysis Reporting System (FARS), National Highway Traffic Safety Administration; State crash database
Access and Mobility	Annual pedestrian commuting mode share (5-year rolling average)	Average Annual Regional* Percentage Increase	American Community Survey, US Census Bureau
Access and Mobility	Annual bicycle commuting mode share (5-year rolling average)	Average Annual Regional* Percentage Increase	American Community Survey, US Census Bureau
Access and Mobility	Annual consistency with the scheduled right-of-way improvements in current state ADA Transition Plan	100%	State ADA Transition Plan
Access and Mobility	Percentage of priority bicycle corridors designated as state bicycle routes	4% annual increase up to a total of 100% of corridors	Statewide Bicycle and Pedestrian Plan; State inventory
Access and Mobility	Total number of vision bicycle corridors designated as state bicycle routes	One new route every five years	Statewide Bicycle and Pedestrian Plan; State inventory

\*Region includes Alabama, Arkansas, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee

Arizona 2013

Table 1 - Plan Goals, Objectives, and Performance Indicators

Goal and Supporting Objectives	Performance Indicator	Existing Status/Baseline	Target
<b>Goal No. 1: Increase Bicycle and Pedestrian Trips</b>			
i. Double the percentage of trips to work by walking and bicycling statewide within the next 10 years.	Percentage of trips to work by walking and bicycling statewide.	Trips to Work by Bicycle: 1.0% Trips to Work by Walking: 2.2% (American Community Survey [ACS] 2009-2011)	Double the percentage of total trips made primarily by bicycling and walking in Arizona within the next 10 years.
Notes: In 2010, ACS data shows that out of 2.6 million workers in Arizona, 58,000 workers commute by walking and 25,000 workers commute by bicycling.			
<b>Goal No. 2: Improve Bicyclist and Pedestrian Safety</b>			
i. Zero Fatalities: Reduce the number of bicycle-motor vehicle crashes statewide.	Number of bicyclist injuries and fatalities statewide.	2008 to 2010 Average Bicyclists Injured: 1,636/year Bicyclists Killed: 21/year	<i>The overall goal is to eliminate all crashes involving bicyclists - "Zero Fatalities."</i> A progress goal is to reduce the number of bicycle-motor vehicle crashes (injuries and fatalities) by 12 percent by the year 2018, to fewer than 1,440 bicycle-motor vehicle crashes and 18 fatalities.
ii. Zero Fatalities: Reduce the number of bicycle-motor vehicle crashes on the SHS.	Number of bicyclist injuries and fatalities on the SHS.	217 crashes per year (average 2004-2008) on the SHS Analysis of 2007-2010 data shows average: Bicycle-motor vehicle crashes/year on the SHS: 177/year Bicyclists Injured: 19/year Bicyclists Killed: 4/year	<i>The overall goal is to eliminate all crashes involving bicyclists - "Zero Fatalities."</i> A progress goal is to reduce the number of bicycle-motor vehicle crashes (injuries and fatalities) by 12 percent by the year 2018. This goal represents a reduction of 21 crashes-per-year by the year 2018 (as compared to 2007-2010 data) to fewer than 156 crashes-per-year, 16 bicyclists injured, and three bicyclists killed per year.
Notes: <i>The ultimate goal is eliminate all crashes involving bicyclists and pedestrians - "Zero Fatalities."</i> To chart progress toward this goal, the ADOT Bicycle Safety Action Plan established a goal to reduce bicycle-motor vehicle crashes by 12 percent by 2018, as compared to 2004-2008 baseline data. Analysis of 2010 data establishes a baseline of 177 crashes-per-year.			

Table 1 - Plan Goals, Objectives, and Performance Indicators (continued)

Goal and Supporting Objectives	Performance Indicator	Existing Status/Baseline	Target
<b>Goal No. 2: Improve Bicyclist and Pedestrian Safety (continued)</b>			
iii. Zero Fatalities: Reduce the number of pedestrian-motor vehicle crashes statewide.	Number of pedestrian injuries and fatalities statewide.	2008 to 2010 Average Pedestrians Injured: 1,321 Pedestrians Killed: 134	<i>The overall goal is to eliminate all crashes involving pedestrians - "Zero Fatalities."</i> A progress goal is to reduce the number of pedestrian-motor vehicle crashes (injuries and fatalities) by 20 percent by the year 2018, to fewer than 1,057 crashes and 107 fatalities.
iv. Zero Fatalities: Reduce the number of pedestrian-motor vehicle crashes on the SHS.	Number of pedestrian injuries and fatalities on the SHS.	2008 to 2010 Average Pedestrians Injured: 38/year Pedestrians Killed: 42/year	<i>The overall goal is to eliminate all crashes involving pedestrians - "Zero Fatalities."</i> A progress goal is to reduce the number of pedestrian-motor vehicle crashes (injuries and fatalities) by 20 percent by the year 2018, to fewer than 30 pedestrians injured per year and fewer than 34 pedestrians killed per year.
<i>The ultimate goal is eliminate all crashes involving bicyclists and pedestrians - "Zero Fatalities."</i> To chart progress toward this goal, the ADOT Pedestrian Safety Action Plan established a goal to reduce pedestrian crashes (fatal and non-fatal) by 20 percent by the year 2016, as measured by a five-year average.			
<b>Goal No. 3: Improve Pedestrian and Bicycle Infrastructure</b>			
i. Provide pedestrian infrastructure in urbanized areas along non-access controlled state highways.	Number of miles of SHS with adjacent/parallel sidewalks or shared-use paths in urban areas/small urban areas.	Total sidewalk length on SHS: 319.2 miles Total shared-use path length on SHS: 19.6 miles Total length (centerline miles) where pedestrian infrastructure is needed: 169 miles	Provide pedestrian infrastructure including sidewalks, shared-use paths, and crossings in urbanized areas where there is a demonstrated need for the infrastructure.
Notes: Pedestrian Demand Index for State Highway Facilities (May 2007) used GIS mapping of population and roadway network data to identify areas of potential pedestrian demand. State Highway segments with Pedestrian Demand Index (PDI) of "Moderate" or above represent segments where pedestrian infrastructure may be most beneficial. Segments with "Highest," "High," and "Moderate" were combined with the ADOT sidewalk and shared-use path inventory to identify lengths of state highway (represented as centerline miles) where pedestrian infrastructure may be most beneficial.			

Table 1 - Plan Goals, Objectives, and Performance Indicators (continued)

Goal and Supporting Objectives	Performance Indicator	Existing Status/Baseline	Target
<b>Goal No. 3: Improve Pedestrian and Bicycle Infrastructure (continued)</b>			
ii. Accommodate bicyclists on all non-access controlled state highways.	Number of miles of SHS with a paved shoulder that meets AASHTO guidelines (four feet or greater).	Number of miles with effective shoulder width (four feet or greater): 2,852.65 miles (approximately 48.9% of the SHS) Effective shoulder width considers rumble strips, providing four feet of rideable shoulder exclusive of the rumble strip.	Provide minimum effective shoulder width of four feet or greater on all State Highways.

Arkansas 2017

**THE GOALS**

To pursue this vision, the Plan establishes three overarching goals for the State’s bicycle and pedestrian initiatives:

**Goal 1:** Realize the economic benefits of bicycle and pedestrian-friendly communities and bicycle-related tourism and recreation on Arkansas’ roads, shared use paths and mountain bike trails.

**Goal 2:** Develop a statewide Bicycle and Pedestrian Network that supports a) on-road bicycling for recreation and transportation, b) pedestrian access and safety within municipalities and unincorporated rural communities, c) development of shared use paths with regional and/or statewide significance, and d) access to mountain bicycling venues.

**Goal 3:** Conduct research and analysis leading to implementation of specific strategies for achieving zero pedestrian and bicyclist deaths from crashes with motor vehicles by 2025, and reducing injury crashes by 50 percent (over 2010-2014 levels).

**THE OBJECTIVES**

The following eight objectives define areas of activity that are central to achieving the goals.

**Objective 1:** Enhance laws and policies, enforcement, and local empowerment to promote alternative transportation and increase safety.

**Objective 2:** Sustain and continue to improve the bicycle and pedestrian program in Arkansas.

**Objective 3:** Consider innovative or non-traditional funding sources.

**Objective 4:** Review of the bicycle and pedestrian accommodation guidelines for Arkansas highways.

**Objective 5:** Develop a Statewide Bikeway Network using a tiered system that coordinates and connects to the United States Bicycle Route Numbering System.

**Objective 6:** Research and develop marketing strategies to be used at the state, regional, and local levels.

**Objective 7:** Further integrate bicycle and pedestrian safety into the Toward Zero Deaths campaign.

**Objective 8:** Provide leadership and support for education and advocacy efforts that relate to the built environment.

**PERFORMANCE MEASURE: Reduce injury accidents by 50% by 2025**

Strategies to Support Objective 1

Recommended Action Strategies	Proposed Lead Agency	Proposed Key Partners
1 Reactivate the Arkansas Bikeways Commission including a pedestrian component.	General Assembly	
2 Study state liability laws to increase motorists’ liability/consequence when involved in crashes with pedestrians or bicyclists.	Arkansas General Assembly	ASP
3 Modify the school sitting laws to make walking and cycling to school more feasible	Arkansas General Assembly or AR Dept. of Ed.	ADH & AR Dept. of Ed. Local Jurisdictions
4 Enact legislation to require all new public schools to include sidewalks, shared-use paths or bikeways within school property and appropriate access roads to ensure safe bicycle and pedestrian travel to the school	Arkansas General Assembly or AR Dept. of Ed.	ADH & AR Dept. of Ed. Local Jurisdictions



Strategies to Support Objective 2 (Arkansas 2017)

Recommended Action Strategies	Proposed Lead Agency	Proposed Key Partners
<p><b>1</b> Within two years of adoption of this plan, the State of Arkansas (not just AHTD) has at least 4 FTE including the Bicycle / Pedestrian Coordinator working exclusively on bicycle and pedestrian activities including engineering, roadway planning and development, plan review, local assistance, grants administration, federal program administration, maintenance, and public involvement.</p>	ADPT, ADH	Local Jurisdictions
<p><b>2</b> Integrate bicycle and pedestrian training into on-going and routine activities for staff training planning, design, and maintenance practices.</p>	AHTD, ADPT	
<p><b>3</b> Investigate the following:</p>	ADPT, AHTD, ADH	AML & MPOs, Local Jurisdictions
<p><i>A) A bicycle and pedestrian planning <b>guidance template</b> for local communities. Provided in draft form as Appendix D of this Plan.</i></p>		
<p><i>B) A set of <b>guidelines</b> which describe how agencies will coordinate with communities that have adopted bicycle/pedestrian plans and/or Complete Streets policies.</i></p>		
<p><i>C) Explore the use of innovative or non-traditional funds. To be matched by local communities (and MPOs where relevant)(see Sidebar 2).</i></p>		
<p><i>D) A small <b>Project Funding Program</b> using innovative or non-traditional funds to make grants to municipalities, colleges and universities, governmental agencies, or regional economic development commissions for a select set of bicycle and pedestrian project types. Local match will be required. (For a list of suggested eligible projects, see Sidebar 3.)</i></p>		
<p><b>4</b> Identify ways to improve communications with local cyclists regarding AHTD maintenance activities.</p>	AHTD	AHTD Districts, Bicycling Organizations, ADPT, Local Event Sponsors

Strategies to Support Objective 3 (Arkansas 2017)

Recommended Action Strategies	Proposed Lead Agency	Proposed Key Partners
<p><b>1</b> Consider regular funding cycles for State allocated TAP funds.</p>	AHTD FHWA	
<p><b>2</b> Explore innovative or non-traditional funding sources.</p>	ADH ADPT	Local Jurisdictions

Strategies to Support Objective 4 (Arkansas 2017)

Recommended Action Strategies	Proposed Lead Agency	Proposed Key Partners
<p><b>1</b> Review the current Bicycle and Pedestrian Accommodation guidelines.</p>	AHTD	Local Jurisdictions, AHTD Districts, Bicycle Advocacy Organizations, ASP
<p><b>A)</b> Develop common terms, definitions, and cross-sections to promote a consistent set of bicycle and pedestrian references for use by state agencies and all stakeholders.</p>		
<p><b>B)</b> Consider development of a shoulder width design guidelines based upon posted travel speed limits, ADT, status as part of the Statewide Bikeway Network and other factors related to bicyclists' comfort and multi-modal traffic safety.</p>		
<p><b>C)</b> For all projects, consider appropriate bicycle and pedestrian accommodations.</p>		
<p><b>D)</b> Consider use of bicycle- and pedestrian-friendly intersection improvements to reduce traffic congestion, moderate speeds, reduce crashes and efficiently use existing rights-of-way.</p>		
<p><b>E)</b> For arterial road widening project costs for urban and suburban arterials and collectors, consider appropriate cross section elements.</p>		
<p><b>F)</b> For sidewalks along state roadways consider adopting the following minimum design guidelines:</p> <ul style="list-style-type: none"> <li>• in suburban settings, provide a 5-foot sidewalk and a 3-foot minimum buffer and ADA compliant curb ramp and driveway design.</li> <li>• in urban settings, provide a 5-foot minimum sidewalk and 3-foot minimum buffer, and ADA compliant curb ramp and driveway design</li> <li>• in urban commercial or mixed-use settings with higher density land uses, provide a minimum 5-foot buffer and minimum 8-foot clear pedestrian travel space.</li> </ul>		
<p><b>G)</b> Require municipal governments to provide routine maintenance of buffers and sidewalks on state roadways within their jurisdiction.</p>		
<p><b>2</b> Encourage municipal and county governments to develop Complete Streets policies for their jurisdictions, including their applicability to state highways within their jurisdiction.</p>	Local Jurisdictions	AHTD ADH

Strategies to Support Objective 5 (Arkansas 2017)

Recommended Action Strategies	Proposed Lead Agency	Proposed Key Partners
<p><b>1</b> Coordinate designation of U.S. Bicycle Routes:</p> <ul style="list-style-type: none"> <li>• Routes 80, 84, 51 and 45 as identified in the U.S. Bicycle Route System</li> <li>• Trans-America bicycle touring route through Arkansas, from southeast to northwest Arkansas (propose this route to AASHTO).</li> <li>• Southwest Trail Heritage route from the northeast corner of Arkansas to the southwest corner (propose this route to AASHTO).</li> </ul>	AHTD	ADPT, Bike/Walk Arkansas; Adventure Cycling, Local Jurisdictions
<p><b>2</b> Identify potential routes for further study within the corridors/areas identified on the Preliminary Statewide Bikeway Map. This includes routing through the urbanized areas and municipalities shown on the map. Coordinate with relevant municipalities, counties and MPOs regarding routing issues and planned bikeway improvements within their jurisdiction.</p>	AHTD	ADPT, Local Governments, MPOs, State Bicycle Organizations
<p><b>A)</b> Adopt bicycle level of service assessment methodologies; consider one methodology for rural routes, one for urban and suburban routes, and one for trails<sup>1</sup>.</p>		
<p><b>B)</b> Establish criteria describing a minimum level of suitability for inclusion in the Statewide Bikeway Network (consider use of LOS methodologies, slope analyses and other factors).</p>		
<p><b>C)</b> Evaluate the need for bike-safe shoulders or bicycle lanes along roads in the Statewide Bikeway Network, as appropriate.</p>		
<p><b>D)</b> Research a cost-effective surface life extension treatment for low-volume roadways which also preserves riding comfort for cyclists.</p>		
<p><b>3</b> Review the rumble strip guideline for relevance, effectiveness, and implementation along state bike routes, on an as needed basis.</p>	AHTD	Bicycle Organizations
<p><b>4</b> Develop an online suitability map that is accessible for use by the public through the internet, including access for mobile devices; consider providing in other formats as may be needed.</p>	AHTD, ADPT	Leading Bicycle Organizations, AEDC

<sup>1</sup> A number of methodologies are available, including the Wisconsin Rural Roadway Evaluation, the Bicycle Level of Service (found in the TRB Highway Capacity Manual, Level of Bicyclists' Stress Analysis, and the Shared Use Path Bicycle Level of Service method, developed by the Federal Highway Administration.)

Strategies to Support Objective 6 (Arkansas 2017)

Recommended Action Strategies	Proposed Lead Agency	Proposed Key Partners
<p><b>1</b> Make development of the Trans-America bicycle touring route through Arkansas a top priority; it can serve as a prototype state route and model of interagency partnership in route planning and development.</p>	ADPT	AHTD, Bike/Walk Arkansas, Adventure Cycling
<p><b>2</b> Conduct a field review of all highway guide and recreational information signs in the vicinity of major mountain bicycling venues and trailheads and shared use path trailheads; ensure that the appropriate recreational activity symbol(s) are included on these signs (mountain bicycle, standard bicycle, pedestrian, hiker, access for the disabled, etc.).</p>	ADPT	AHTD
<p><b>3</b> Publish a study that uses examples from the Arkansas experience to document and promote the economic and other benefits of bicycling, trail development, and creation of bicycle/pedestrian friendly communities.</p>	ADPT	NW Arkansas Council, ADH, Universities
<p><b>4</b> Develop the concept of Bicycle Hub Communities that serve as gateways to bicycle touring regions and mountain bicycling areas. Like Oregon’s bicycle tourism training programs, business and public officials within Hub Communities will receive education and training to ensure success in serving this growing market.</p>	ADPT	Experienced Bicycle Travel Outfitters, Hospitality Industry, Consultants from model programs
<p><b>5</b> Develop a coalition of business, foundation and user group partners to educate about bicycle-based tourism potential and coordinate marketing efforts. Include representatives of the hospitality, restaurant, outdoor recreation, and travel industries as well as the Chamber of Commerce, Convention Bureaus and others.</p>	ADPT	AEDC, Walton Family Foundation,
<p><b>6</b> Conduct a statewide assessment of railroad corridors with low use, and abandoned and reverted corridors to determine which may have the most potential for development as shared use paths. Consider railbanking, conversion to rail-trails, and trails with active rail lines.</p>	ADPT	AHTD, Consultant, Rails-To-Trails Conservancy
<p><b>7</b> Conduct a statewide personal travel survey to identify current levels of bicycling and walking for the following activities: utilitarian transportation, recreation, types of recreational biking: non-competitive mountain, touring, trails, sports training/competition, close to home recreation on local streets and trails. The research should also assess the potential to expand engagement in recreational and utilitarian bicycling and walking and factors influencing potential market expansion.</p>	ADPT	AHTD, ADH, Universities
<p><b>8</b> Conduct a survey of both in-state and out-of-state residents who participate in bicycle touring or mountain biking to determine what improvements would enhance the experience and likely generate more activity within Arkansas.</p>	ADPT	Bicycling Organizations and Clubs
<p><b>9</b> Explore development of a music history and heritage based bicycle tour of the Arkansas Delta region.</p>	ADPT	Arkansas Heritage Department, Delta Byways Regional Tourism Assn.
<p><b>10</b> Coordinate federal and state land managers to keep track of trails and trail mileage that is open to mountain bicycling, as well as the status of other support facilities for bicycle tourism such as camping sites, availability potable water, general conditions, participation rates and other baseline information needed to track the provision of needed support infrastructure and services over time.</p>	ADPT	NPS, USFS, USF&W, Recreational Bicycling Organizations

Strategies to Support Objective 7 (Arkansas 2017)

Recommended Action Strategies	Proposed Lead Agency	Proposed Key Partners
<p><b>1</b> Analyze pedestrian and bicycle crash data in urban areas. Develop countermeasures to be included in the Highway Safety Improvement Program.</p>	<p>AHTD ASP</p>	<p>ADH, MPOs, FHWA</p>
<p><b>2</b> Consider the use of Federal Safety program funds toward achieving the bicycle and pedestrian safety goals, that are consistent with the SHSP.</p>	<p>ASP AHTD</p>	<p>MPOs</p>
<p><b>3</b> Create a multi-media safety education campaign focused on fostering greater respect among all modes.</p>	<p>ASP AHTD</p>	<p>Arkansas Broadcasters Assn. and Arkansas Press Assn., Bicycle and Pedestrian Organizations</p>

Strategies to Support Objective 8 (Arkansas 2017)

Recommended Action Strategies	Proposed Lead Agency	Proposed Key Partners
<p><b>1</b> Provide education at the grassroots level on the importance of complete street policies for their communities for economic growth, sustainability, active living, smart growth, walking and biking.</p>	<p>ADH</p>	<p>Bicycle and Pedestrian Advocacy Organizations</p>
<p><b>2</b> Provide technical assistance to communities to develop master pedestrian and bicycle plans and tie those plans into the Arkansas Statewide Pedestrian and Bicycle Transportation Plan.</p>	<p>ADH</p>	<p>AHTD, Bicycle and Pedestrian Advocacy Organizations</p>
<p><b>3</b> Implement a community mentoring program for communities to use regarding lessons learned, sample policies, infrastructure design, etc. through the Growing Healthy Community projects.</p>	<p>ADH</p>	<p>AHTD, ARCOP</p>
<p><b>4</b> Conduct walking or bicycling audits annually, as funding is available, within communities throughout the state.</p>	<p>ADH</p>	<p>Municipalities, AARP, Bicycling Organizations</p>
<p><b>5</b> Continue support of the Arkansas Coalition for Obesity Prevention (ARCOP) and their programs addressing the built environment.</p>	<p>ADH</p>	<p>AHTD, ARCOP member groups</p>
<p><b>6</b> Exploring innovative funding sources for local assistance.</p>	<p>ADH ADPT</p>	



## CALTRANS 2017

*Toward an Active California* includes four **OBJECTIVES** and fifteen **strategies** that emerged from community input during the extensive outreach process. Each strategy includes multiple actions for implementing this Plan. The objectives and strategies are listed below.

## SAFETY

Reduce the number, rate, and severity of bicycle and pedestrian involved collisions



- » **S1: Safer Streets & Crossings:** Address safety of vulnerable users in roadway design and operations
- » **S2: Education:** Provide consistent, accessible, and universal education about the rights and responsibilities of all roadway users
- » **S3: Safety Data:** Invest in the quality, completeness, timeliness, and availability of data on bicycle and pedestrian collisions
- » **S4: Enforcement:** Focus state and local enforcement of safety laws on highest risk behaviors by all road users

## MOBILITY

Increase walking and bicycling in California



- » **M1: Connected & Comfortable Networks:** Develop local and regional networks of high-quality bicycle and pedestrian facilities for all ages and abilities
- » **M2: Multimodal Access:** Integrate bicycle and pedestrian needs in planning and design of multimodal transportation systems and services
- » **M3: Efficient Land Use & Development:** Support regional and state efforts to integrate land use and transportation planning to maximize the effectiveness of active transportation investments
- » **M4: Network & Travel Data:** Develop consistent, high-quality data on bicycle and pedestrian travel and facilities
- » **M5: Statewide & Regional Trails:** Support low-stress or physically separated pedestrian and bicycle trail routes of statewide or regional significance for tourism, recreation, and utilitarian transportation
- » **M6: Encouragement:** Promote bicycling and walking for everyday transportation, recreation, improved health, and active living

CALTRANS 2017

## PRESERVATION

Maintain a high quality active transportation system



- » **P1: Quality of Condition:**  
Establish and meet an expected quality of condition for bicycle and pedestrian infrastructure
- » **P2: Program Integration:**  
Pursue internal and external partnerships to address bicycle and pedestrian needs in maintenance and preservation activities

### EQUITY



*Throughout the strategies and actions, this **Equity Check** icon is used near actions where an equity lens might be particularly important, along with a brief description of the equity considerations that should be made.*

## SOCIAL EQUITY

Invest resources in communities that are most dependent on active transportation and transit



- » **E1: Community Support:**  
Strengthen engagement with disadvantaged communities by proactively seeking input on needs and providing technical guidance
- » **E2: Equity Lens:** Address social equity when implementing all strategies from this Plan
- » **E3: Access to Funding:** Provide disadvantaged communities with the opportunity to participate in active transportation funding programs

### TARGETS

- Reduce fatalities by 10% each calendar year
- "Toward Zero Deaths" goal
- Double walking and triple bicycling trips in the state by 2020
- Caltrans will work to provide equity in mobility and accessibility to meet the needs of all community members regardless of age, race, gender, ability, or income

### PERFORMANCE MEASURES

- Tracking the rate of bicycle and pedestrian collisions, serious injuries, and fatalities relative to the amount of bicycle and pedestrian travel in the state
- Percent of projects that include complete streets features
- Pedestrian miles of travel and bicycle miles of travel
- Bicycle level of traffic stress
- Social equity can be partially tracked through levels of investment in funding programs

Colorado DOT 2014

**Table 2. Goals, Criteria, and Project-Level Performance Measures**

Goals and Investment Decision Criteria	Project-Level Performance Measures
<b>Enhance Safety</b>	
Reduce crash rate or potential threat of crashes	<ul style="list-style-type: none"> <li>▪ Project would result in safety improvement as quantified by Crash Modification Factors<sup>12</sup></li> </ul>
<b>Increase Bicycling and Walking Activity</b>	
Improve (corridor) bicycling or walking conditions	<ul style="list-style-type: none"> <li>▪ Quality of improvement, measured as the change in bicycle or pedestrian LOS (primary benefit evaluation component)</li> </ul>
Expand permanent data collection infrastructure	<ul style="list-style-type: none"> <li>▪ Project includes installation of permanent bike/ped counting device</li> </ul>
<b>Expand Recreational Opportunities and Enhance Quality of Life</b>	
Enhance Scenic Byways	<ul style="list-style-type: none"> <li>▪ Project is located along a Scenic Byway (Yes/No)</li> </ul>
Create access to public lands	<ul style="list-style-type: none"> <li>▪ Project provides direct access to public lands (Yes/No)</li> </ul>
Provide multi-use pathways near populations	<ul style="list-style-type: none"> <li>▪ Project is a multi-use pathway (Yes/No)</li> <li>▪ Relative population of project area</li> </ul>
Preserve and enhance downtown character	<ul style="list-style-type: none"> <li>▪ Project is located in defined downtown or “Main Street” area</li> </ul>
<b>Improve Public Health</b>	
Reduce disease/obesity in children, adults, and seniors	<ul style="list-style-type: none"> <li>▪ Mode shift and induced recreational travel</li> <li>▪ Obesity rate in project county</li> </ul>
<b>Improve Environment, Air Quality, and Fossil Fuel Independence</b>	
Reduce carbon-based vehicle miles traveled through increased bicycling and walking	<ul style="list-style-type: none"> <li>▪ Mode shift</li> </ul>
<b>Provide Transportation Equity</b>	
Provide mobility options to underserved populations	<ul style="list-style-type: none"> <li>▪ Project is located in an area of underserved population (low-income or minority)</li> </ul>

Colorado DOT 2014

Goals and Investment Decision Criteria	Project-Level Performance Measures
Provide safe active transportation to schools and learning centers	<ul style="list-style-type: none"> <li>▪ Project provides direct connection to school and would likely be used by students or staff to walk or bike to school</li> </ul>
Provide pedestrian mobility for seniors and disabled populations	<ul style="list-style-type: none"> <li>▪ Project located in an area of high &gt;65 population</li> </ul>
<b>Maximize Transportation Investments</b>	
Complete or connect network or system	<ul style="list-style-type: none"> <li>▪ Project connects to an existing bicycle or pedestrian facility</li> </ul>
Reduce motor vehicle traffic congestion	<ul style="list-style-type: none"> <li>▪ Project located along or parallel to a congested roadway</li> </ul>
Enhance multimodal efficiency (expand utility of public transportation)	<ul style="list-style-type: none"> <li>▪ Project provides direct connection to transit service</li> </ul>
<b>Improve State/Regional Economy</b>	
Provide better access to jobs	<ul style="list-style-type: none"> <li>▪ Jobs * population in vicinity</li> </ul>
Bolster tourism	<ul style="list-style-type: none"> <li>▪ Relative level of tourism in area</li> <li>▪ Demonstrated level of tourism promotion investment in local community</li> </ul>
Induce mode shift to bicycling, walking, and transit = more household disposable income	<ul style="list-style-type: none"> <li>▪ Mode shift</li> </ul>

**Table 3. Goals, Criteria, and System-Level Performance Measures**

Goals and Investment Decision Criteria	System-Wide Performance Measures
<b>Enhance Safety</b>	
Reduce crash rate or potential threat of crashes	<ul style="list-style-type: none"> <li>▪ Change in bicycle and pedestrian crash rates</li> <li>▪ State bicycle and pedestrian crash rankings</li> <li>▪ Number of communities with adopted Share the Road programs or policies</li> </ul>
<b>Increase Bicycling and Walking Activity</b>	
Improve (corridor) bicycling or walking conditions	<ul style="list-style-type: none"> <li>▪ Percent bike/ped mode share</li> <li>▪ Percent of CDOT's system at bike LOS A-D, E, F</li> <li>▪ Percent of CDOT's system at ped LOS A-D, E, F</li> </ul>
Expand permanent data collection infrastructure	<ul style="list-style-type: none"> <li>▪ Number of permanent bike/ped counting devices on the State's system</li> </ul>

<b>Expand Recreational Opportunities and Enhance Quality of Life</b>	
Enhance Scenic Byways	<ul style="list-style-type: none"> <li>▪ Percent of Scenic Byways miles that are bicycle/pedestrian compatible</li> </ul>
Create access to public lands	<ul style="list-style-type: none"> <li>▪ Percent of public lands with bike/ped access</li> </ul>
Provide multi-use pathways near populations	<ul style="list-style-type: none"> <li>▪ Miles of multi-use pathways</li> </ul>
Preserve and enhance downtown character	<ul style="list-style-type: none"> <li>▪ Number of communities participating in Main Street Program</li> </ul>
<b>Improve Public Health</b>	
Reduce disease/obesity in children, adults, and seniors	<ul style="list-style-type: none"> <li>▪ Percent of Medically Underserved Populations<sup>15</sup> in the state living within a quarter mile of defined bicycle or pedestrian facility</li> <li>▪ Obesity Rate</li> <li>▪ Bicycle and pedestrian mode share</li> </ul>
<b>Improve Environment, Air Quality, and Fossil Fuel Independence</b>	
Reduce carbon-based vehicle miles traveled through increased bicycling and walking	<ul style="list-style-type: none"> <li>▪ Mode split estimated through phone or mail survey</li> <li>▪ Change in biking and walking activity</li> </ul>
<b>Provide Transportation Equity</b>	
Provide mobility options to underserved populations	<ul style="list-style-type: none"> <li>▪ Percent of underserved populations (low-income or minority) in the state living within a quarter mile of a defined bicycle or pedestrian facility</li> </ul>
Provide safe active transportation to schools and learning centers	<ul style="list-style-type: none"> <li>▪ Percent of schools in Colorado that have a Safe Routes map and program</li> <li>▪ Number of schools teaching CDOT Safe Routes to School curriculum</li> <li>▪ Percentage of students who bicycle or walk to school</li> </ul>
Provide pedestrian mobility for seniors and disabled populations	<ul style="list-style-type: none"> <li>▪ Percent of &gt;65 population living within a quarter mile of a defined pedestrian facility</li> </ul>



<b>Maximize Transportation Investments</b>	
Complete or connect network or system	<ul style="list-style-type: none"> <li>▪ Percent of planned bicycle/pedestrian network complete</li> </ul>
Reduce motor vehicle traffic congestion	<ul style="list-style-type: none"> <li>▪ Percent of State Highways (or congested State Highways) that are bicycle and pedestrian compatible, as measured through adopted level of service targets</li> </ul>
Enhance multimodal efficiency (expand utility of public transportation)	<ul style="list-style-type: none"> <li>▪ Percent of transit stations that have bicycle parking</li> <li>▪ Percent of stations that are bicycle and pedestrian accessible</li> <li>▪ Percent of transit vehicles that can accommodate bicycles</li> <li>▪ Percent of transit routes or systems that provide shared bicycles for the last mile connection</li> </ul>
<b>Improve State/Regional Economy</b>	
Provide better access to jobs	<ul style="list-style-type: none"> <li>▪ Employees who ride/walk to work (through employer survey)</li> </ul>
Bolster tourism	<ul style="list-style-type: none"> <li>▪ Tourists using bicycle/pedestrian facility, quality of their experience, would they come back (through phone survey)</li> </ul>
Induce mode shift to bicycling, walking and transit = more household disposable income	<ul style="list-style-type: none"> <li>▪ Mode split estimated through phone or mail survey</li> <li>▪ Change in biking and walking activity</li> </ul>

Delaware DOT 2018 (bicycle only plan)

## Goals and Objectives

### **Goal 1: Develop a Complete, Comfortable, Connected Bicycle Network**

- 1.1** Increase the number of homes and destinations connected entirely by the low-stress bicycle network.
- 1.2** Increase bicycling comfort—Increase the amount of the bicycle network (streets and paths) that is safe and comfortable for all ages and abilities.
- 1.3** Improve maintenance of shoulders, trails, and on-street bicycle facilities.
- 1.4** Increase regional and long-distance travel possibilities for bicycles.
- 1.5** Increase funding options and strategic partnerships for network investment.

### **Goal 2: Improve Bicyclist Safety and Confidence**

- 2.1** Improve skill and care of drivers, bicyclists, and other users of streets, sidewalks, and trails.
- 2.2** Improve non-motorized crash and injury data collection, analysis, and report dissemination to guide system and program improvements.

- 2.3** Reduce risk and perceived risk associated with bicycling, creating a reputation that Delaware is serious about protecting non-motorized/vulnerable users.

### **Goal 3: Foster a Culture of Bicycling that Benefits All Delawareans**

- 3.1** Increase bicycle use through encouragement of bicycling as safe, convenient, affordable, and fun.
- 3.2** Increase awareness/understanding/coordination of statewide bicycle resources.
- 3.3** Increase number and distribution of bicycle organizations and events statewide to encourage bicycling for fun, fitness, and transportation.
- 3.4** Improve awareness and application of bicycle policies, guidelines, and planning tools throughout DelDOT and beyond.
- 3.5** Establish consistent, uniform, coordinated data gathering and management across agencies that leverages existing data and provides value to all interested stakeholders in their efforts to improve processes, systems, and programs.
- 3.6** Increase appreciation for and leveraging of bicycling and its broad benefits throughout Delaware.

Illinois DOT 2014

ACTION ITEMS		PLANNING AND POLICIES
<b>OBJECTIVE:</b> Improve Complete Streets inventory and roadway evaluation procedures		
BICYCLE INVENTORY SYSTEM	Implement the proposed Bikeway Inventory System. Encourage MPOs and other relevant jurisdictions to participate.	
	Assign staff member to manage the Bikeway Inventory System and promote the system statewide.	
ENHANCE ROADWAY SYSTEM	Incorporate recommended Complete Streets inventory items into the Illinois Roadway Information System (IRIS).	
INNOVATIVE TOOLS	Develop tools for planners and engineers to assist in bicycle and pedestrian project identification and development.	
LATENT DEMAND	Review potential methodologies for bicycle latent demand and incorporate into the roadway planning process.	
GAP ANALYSIS	Create inventory of complete street barriers (especially near schools).	
GAUGE DEMAND	Develop baselines using pedestrian and bicycle counts to gauge statewide walking and bicycling demand.	
<b>OBJECTIVE:</b> Ensure that Complete Streets projects have an equal consideration in the Multi-Year Planning Process		
MULTI-MODAL PLANNING	Develop a system that prioritizes projects with Complete Streets improvements.	
<b>OBJECTIVE:</b> Develop policies, design guidelines and programs that support the IDOT zero fatality policy		
MULTI-MODAL PLANNING	Continue and expand upon education encouragement and enforcement programs such as SRTS and informational brochures through the Division of Traffic Safety.	

ACTION ITEMS		PLANNING AND POLICIES	ACTION ITEMS		PLANNING AND POLICIES
<b>OBJECTIVE:</b> Continue to explore ways to improve the quality and completeness of bicycle and pedestrian crash data					
INNOVATIVE TRAININGS	Educate department staff about crash data collection and crash data analysis procedures and trends and investigate ways to supplement current data.		LAND USE PLANNING	Review IDOT and regional partner planning agencies' transportation policies to ensure that land use is a key element in planning.	
IMPROVE DATA COLLECTION	Modify reporting methods to improve reporting for bicycle-related crashes.		MULTI-MODALISM	Prioritize projects that develop land use and corridor plans that support multi-modal transportation.	
<b>OBJECTIVE:</b> Investigate opportunities for collaboration with the We Choose Health Initiative through IDPH					
PARTNER WITH PUBLIC HEALTH	Encourage collaboration between IDOT and IDPH Healthy and Safe Built Environment Program.		OBJECTIVE:	Make intermodal connections a priority in bikeways planning efforts	
HEALTHY DATA SETS	Prepare health data sets and reports that can be used in transportation planning, implementation and performance evaluation.		INTER-MODALITY	Plan and prioritize the statewide network so that multi-modal connections with and between local transit operator stops are priorities.	
<b>OBJECTIVE:</b> Develop a state bicycle network that connects with population centers, popular destinations, and national bicycle networks					
INTEGRATED NETWORKS	Develop a system that prioritizes projects with Complete Streets improvements.		TRACK PERFORMANCE	Develop a system that prioritizes projects with Complete Streets improvements.	
<b>OBJECTIVE:</b> Continue to support the SRTS Program and establish goals with performance measures to support its advancement and programs that support the IDOT zero fatality policy					
IMPROVE SAFE ROUTES	Review current SRTS practices to assist in improving and streamlining SRTS operations.		SAFETY	Evaluate the existing HSIP prioritization and project programming process to ensure pedestrian and bicycle safety performance measures are met.	
SAFE ROUTES COORDINATOR	Assign a dedicated, full-time state SRTS coordinator		OBJECTIVE:	Work with public transit and rail partner agencies to improve intermodality	
SAFE ROUTES PLANNING	Collaborate to incorporate more local school officials into transportation planning efforts.		BIKES ON TRANSIT	Work with transit and rail partner agencies to ensure that bike racks are present or bicycles are allowed on all systems throughout the state.	
			WORKING GROUP	Work with Metra, Amtrak, and other regional passenger rail carriers within the state to ensure that bikes are allowed and reasonably stowed on all trains.	
			COMPLETE STREETS	Consider roadways within the bicyclist/pedestrian catchment areas of local and regional transit access (3 miles) as high priorities for Complete Streets.	

ACTION ITEMS		PLANNING AND POLICIES	ACTION ITEMS		PLANNING AND POLICIES
<b>OBJECTIVE:</b> Coordinate with other agencies on bicycle and pedestrian issues					
INTER-AGENCY COLLABORATION	Establish a working group that satisfies the requirements of 605 ILCS 301 Bikeway Act while facilitating inter-agency coordination.		OBJECTIVE:	Promote the institutionalization of health professionals/advocates into transportation planning processes	
REGIONAL COORDINATION	Coordinate and encourage involvement with state Metropolitan Planning Organizations, Regional Planning Organizations, Transit Planning Organizations, and local governments.		PARTNER WITH PUBLIC HEALTH	Engage local health directors and boards of health to participate in local regional transportation planning.	
TRAIL COORDINATION	Coordinate on connectivity to trails and trails access. Coordinate on ROW easement for trails/trailheads.		ENGAGE WITH ADVOCATES	Engage network of possible non-profit partners in Illinois, many of which support healthy living initiatives.	
STATE TRAIL SYSTEM	Work with IDNR to plan and develop an interconnected state network of greenway trails.		OBJECTIVE:	Incorporate Environmental Justice considerations in project planning and development	
LOCAL PLANNING ASSISTANCE	Create a bicycle and pedestrian master planning guide for local agencies.		BICYCLE INVENTORY SYSTEM	Update IDOT planning guidelines to include a prioritization of transportation options for vulnerable system users.	
PROMOTE FUNDING OPPORTUNITIES	Provide updated resources that advertise funding programs for bicycle and pedestrian improvements.		WORKING GROUP	Establish an Environmental Justice working group, with a focus on targeted and vulnerable constituencies.	
TOURISM COLLABORATION	Partner with agencies such as the Department of Tourism in developing community development type bike recreational programs.		ENHANCE ACCESS	Partner with other Illinois agencies to improve methods of addressing ADA considerations.	
<b>OBJECTIVE:</b> Gather data, best practice, examples, and lessons learned for design treatments and planning					
INNOVATIVE DESIGN	Continue to work with partners such as the Congress for New Urbanism and Institute of Transportation Engineers to share best design practices.		OBJECTIVE:	Enhance the "Complete Streets" capabilities within the department	
<b>OBJECTIVE:</b> Improve District Bicycle Maps					
ENHANCE MAPS	Improve bikeways facility data collection and bicycle level of service using emerging industry research and portray this on district maps. Improve the accuracy of bicycling conditions as described on District Maps.		COORDINATOR	Create a dedicated bicycle pedestrian coordinator.	
			DISTRICT COORDINATORS	Ensure that there is at least one person at each district who coordinates bicycle and pedestrian issues.	



**ACTION ITEMS** DESIGN AND MAINTENANCE

**OBJECTIVE:**  
Update design guidance and policies for bicycle and pedestrian projects and programs within department manuals

**ENHANCE COMPLETE STREETS CAPABILITIES** Review and implement "Design & Maintenance Recommendations" included in the plan to ensure that bicycle and pedestrian policies and design guidelines are consistent. These technical recommendations are available at [www.IllinoisBikePlan.com](http://www.IllinoisBikePlan.com)

**ACTION ITEMS** FUNDING

**OBJECTIVE:**  
Enhance the efficiency and effectiveness of the state's grant programs

**ITEP** Provide funding resources for communities and streamline the ITEP application process. Enhance the online application process by providing tools such as a detailed facility cost-estimation tool.

**PROMOTION** Continue advertising the program through IDOT media channels. Work with LB on outreach and community assistance efforts.

**SHOVEL-READY PROJECTS** Ensure only shovel-ready projects receive funding by requiring minimum phase 1 design and engineering.

**ITEP TRANSPARENCY** Increase transparency and guidance in the ITEP program by establishing a project ranking matrix based on factors such as project readiness, potential impact, receipt of past ITEP grants, etc.

**STATE PLANNING & PROGRAMMING** Continue to supplement bicycle and pedestrian program funds with Surface Transportation Program (STP) funds sufficiently to meet the goals of this plan.

**OBJECTIVE:**  
Set funding targets for bicycle and pedestrian projects

**DEDICATED FUNDING** Dedicate funding to Complete Streets projects in IDOT's MYP

**GENERAL REVENUE FUND (GRF)** Develop a minimum funding requirement for Complete Streets improvements within the general revenue fund

**SURFACE TRANSPORTATION PROGRAM** Generate a minimum requirement for Complete Streets funding as part of the STP funds.

**ACTION ITEMS** FUNDING

**OBJECTIVE:**  
Enhance the efficiency and effectiveness of the state's grant programs (continued)

**FUND LOCAL PLANNING** Establish a bike planning program fund for local communities. Establish a funding source for improvements in communities outside of urbanized areas.

**HIGHWAY SAFETY IMPROVEMENT PROGRAM (HSIP)** Assign adequate Highway Safety Improvement Program funding to meet bicycle and pedestrian performance measures.

**FEDERAL TRANSPORTATION ALTERNATIVES PROGRAM (TAP)** Continue to make 100 percent of Transportation Alternative Program (TAP), MAP-21, funds available for eligible activities.

**COMPLETE STREETS FUNDING** Address the issue with the 80/20 funding match for pedestrian and bicycle accommodations.

**INNOVATIVE FUNDING** Establish a bicycle planning program fund to cover technologically innovative projects that support biking.

**PROMOTE FUNDING OPPORTUNITIES** Provide updated resources that advertise funding programs for bicycle and pedestrian improvements.

**OBJECTIVE:**  
Set funding targets for bicycle and pedestrian projects

**DEDICATED FUNDING** Dedicate funding to Complete Streets projects in the IDOT MYP

**GRF** Develop a minimum funding requirement for Complete Streets improvements within the general revenue fund.

**SURFACE TRANSPORTATION PROGRAM** Generate a minimum requirement for Complete Streets funding as part of the Surface Transportation Program (STP) funds.



**ACTION ITEMS** EDUCATION / PROMOTION

**OBJECTIVE:**  
Expand public education, outreach and enforcement for bicycling

**RULES OF THE ROAD** Develop and implement programs that educate all types of roadway users on the rules of the road and safety for non-motorized users.

**DRIVER'S EDUCATION** Incorporate bicycling into driver's educational driver's test. Incorporating bicycling skills/safety into driver's education programs.

**ENFORCEMENT** Ensure proper enforcement of bicycle traffic laws.

**GENERAL OUTREACH** Conduct outreach to public officials, transportation professionals and residents at large about the benefits of bicycling and reasons to accommodate it.

**EARLY CHILDHOOD EDUCATION** Institutionalize elementary school education for bicyclists.

**PARTNERSHIPS** Partner with external stakeholders to encourage active transportation among low income, people of color, older adults, women and children.

**OBJECTIVE:**  
Provide modern, innovative means of collecting information, sharing information and mapping on regional trails through internet, smartphone, etc

**DIGITAL AND PRINT RESOURCES** Provide bikeways information in easily accessible digital and physical formats.

**COMMUNICATE COMMITTING OPTIONS** Develop a statewide online and/or smartphone app for bicycling that includes information on preferred routes and realtime information on roadway conditions such as maintenance and weather.

**INTERNAL TRAINING** Promote the regional bicycling system through online and offline mapping and wayfinding, and coordinated outreach efforts with assistance from partner agencies.

**ACTION ITEMS** EDUCATION / PROMOTION

**OBJECTIVE:**  
Expand available information, information sharing, and training on Complete Streets

**ENHANCE TRAFFIC SAFETY MATERIALS** Expand department approved, online resources for Complete Streets planning and design.

**INNOVATIVE TOOLS** Expand department approved, online resources for Complete Streets planning and design.

**INTERNAL TRAINING** Create an internal, online forum for sharing Complete Streets information and resources among districts.

**OBJECTIVE:**  
Improve IDOT's online educational resources

**ENHANCE MAPS** Regularly update the IDOT "Transportation Alternatives" website and include resources for the public such as safety resources, trip planning maps and resources, and contact information.

**OBJECTIVE:**  
Continue to develop and expand educational resources for residents

**PARTNER WITH PUBLIC HEALTH** Conduct targeted social media, advertisements, marketing campaigns and/or other promotional efforts to increase active transportation.

**ENGAGE WITH ADVOCATES** Promote walking and bicycling as an amenity by continuing to feature exemplary facilities/projects around Illinois.

**OBJECTIVE:**  
Expand public education, outreach and enforcement for bicycling

**PARTNER WITH PUBLIC HEALTH** Continue involvement in annual Illinois bicycle summit and expand broad engagement of non-traditional groups/organizations.

**OBJECTIVE:**  
Expand public education, outreach and enforcement for bicycling

**ENGAGEMENT** Reach out to other organizations, including state and local non-profits, to identify appropriate ways to boost resident engagement in bicycle transportation planning.



## Iowa DOT 2018



## 2.2 Goals

A small set of clear, easy-to-remember goals were developed based on input from a Policy Advisory Committee and a Technical Advisory Committee (described later in this chapter) to simplify the vision and the steps needed to achieve it. These goals shaped the development of the Plan and should continue to influence programs, investments, and other actions related to bicycling and walking into the future.

1. **Valid** – Ensure that policy makers, roadway designers and planners, law enforcement officials, motorists, bicyclists, and pedestrians recognize that bicycling and walking are valid modes of transportation.
2. **Safe** – Improve the safety and friendliness of Iowa's roads and trails to accommodate on-road bikeways and sidewalks, reduce crashes, and eliminate fatalities.
3. **Coordinated** – Improve coordination between the Iowa DOT Central Office, each Iowa DOT District, regional agencies, and local partners to streamline maintenance and the implementation of programs, policies, and infrastructure projects, and to increase consistency.
4. **Connected** – Enact policies and develop infrastructure to create an interconnected network of on-road bikeways, sidewalks, multi-use trails, and end-of-trip facilities that uses the appropriate facility type to connect people to their destinations.
5. **Funded** – Increase the overall level of funding for bicycle and pedestrian infrastructure and programs, explore the flexibility of funding sources, and maximize the efficiency of funding to bridge the gap between what is needed and what is available.
6. **Well-Designed** – Establish guidelines for the design of on-road bikeways, sidewalks, and multi-use trails to ensure they are comfortable, sustainable, convenient, and consistent.
7. **Healthy** – Promote opportunities for active and sustainable lifestyles that include walking and bicycling on a daily basis.

### The "5 Es" of bicycle and pedestrian transportation

The "5 Es" are commonly referred to as a comprehensive way to consider the various factors that impact walking and biking.

**Education** efforts typically focus on teaching all transportation users (drivers, bicyclists, and pedestrians) how to safely interact and follow the rules of the road.

**Encouragement** activities focus on increasing biking and walking through fun and interesting activities. Encouragement efforts seek to demonstrate that biking and walking are valid modes of transportation.

**Enforcement** activities focus on enforcing the rules of the road for all users (motorists, bicyclists, and pedestrians). Enforcement also prioritizes having links between the law enforcement community and the biking community.

**Engineering** refers to the planning, design, and prioritization of physical infrastructure, such as multi-use trails, paved shoulders, and pedestrian safety improvements.

**Evaluation and planning** efforts seek to quantify the impact of the other "Es." This category was not used for the open house exercise, because it was assumed that the majority of participants would lack adequate information to comment on the evaluation and planning activities occurring in Iowa.



Louisiana DOTD 2009

## VISION & GOALS

It is the mission of the LDOTD “to deliver transportation and public works systems that enhance quality of life and facilitate economic growth and recovery.”

*The vision for this plan is to enable people to regularly walk and bike safely and comfortably along and across Louisiana’s roads to access schools, jobs, social services, shopping, and transit and for health and recreation. To this end, the Department will undertake the actions outlined throughout the plan on all transportation projects that involve federal or state funding, jurisdiction or approval. Additionally, the Department will encourage Metropolitan Planning Organizations, Cities, Parishes and local governments to do the same on other transportation projects across the state.*

This plan provides a detailed policy and action plan that will guide the Department’s actions to help achieve its vision. The following are high-level goals that have been established for this plan:

**Social Equity** – Plan, design and fund a transportation system that enables mobility and access for all residents whether or not the individual has access to a motor vehicle.

**Personal Safety** – Increase the safety of the walking and bicycling environment and reduce injuries and fatalities by providing a high level of care and consideration for these modes.

**Economic Development** – Support Louisiana’s economic development by planning and maintaining a transportation system that supports walkable and bikeable local shopping districts, offers diversified travel options to visitors, and supports increased tourism and recreational opportunities.

**Public Health** – Improve the health of Louisiana residents by increasing opportunities for combining physical activity with transportation and recreation.

**Environmental Stewardship** – Preserve the health of the natural environment, improve air and water quality and reduce energy consumption by increasing the rates of walking and bicycling.

Maryland DOT 2019

# Goals, Objectives, and Strategies

The Plan process identified the following goals, objectives, and strategies to guide state support for bicycle and pedestrian activity in Maryland.

 <h3>1. Safety</h3> <p>Improve the Safety of Bicycle and Pedestrian Travel through Education, Enforcement, and Infrastructure Solutions</p>	<h4>Objective 1.1</h4> <p>Reduce the number of bicycle and pedestrian lives lost and injuries sustained on Maryland's transportation system</p>	<h4>Objective 1.2</h4> <p>Improve the maintenance and operations protocols that support safe access for pedestrians and bicyclists</p>	<h4>Objective 1.3</h4> <p>Improve education, enforcement, and training to support safe driving, biking, and walking</p>				
 <h3>2. Connected Networks</h3> <p>Enhance Transportation Choice and Multimodal Connectivity through Linked Networks</p>	<h4>Objective 2.1</h4> <p>Leverage strategic investment in planned routes to support the creation, identification, and use of safe, lower-stress routes for biking and walking for all user groups</p>	<h4>Objective 2.2</h4> <p>Improve bicycling and walking accessibility to transit facilities</p>					
 <h3>3. Analysis and Planning</h3> <p>Support Efficient and Equitable Planning and Project Development with Data-driven Tools and Innovative Techniques</p>	<h4>Objective 3.1</h4> <p>Improve access to data and decision tools to support effective and inclusive planning for all Maryland communities</p>	<h4>Objective 3.2</h4> <p>Create tools to facilitate the development and delivery of more efficient, effective, and equitable projects</p>					
 <h3>4. Partnerships</h3> <p>Build Partnerships to Promote Active Transportation and Strengthen the Health of our Communities</p>	<h4>Objective 4.1</h4> <p>Leverage partnerships to encourage more Maryland residents of all ages, abilities, and income levels to participate in active transportation to meet more of their transportation needs</p>	<h4>Objective 4.2</h4> <p>Strengthen partnerships so Maryland communities are better equipped to implement active transportation solutions to achieve health and other benefits</p>					
 <h3>5. Economic Development</h3> <p>Advance Biking and Walking as an Economic Development Strategy</p>	<h4>Objective 5.1</h4> <p>Develop biking and pedestrian facilities and programs to promote active tourism</p>	<h4>Objective 5.2</h4> <p>Expand access to economic benefits of bicycling and walking to more Maryland residents and businesses</p>					
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# Goal 1: Safety

## Improve the Safety of Bicycle and Pedestrian Travel through Education, Enforcement, and Infrastructure Solutions

### Objective 1.1

Reduce the number of bicycle and pedestrian lives lost and injuries sustained on Maryland's transportation system

#### Strategies

**1.1a** Continue to improve data collection techniques and access to safety data to support efforts to plan for and implement safer networks

**1.1b** Refine techniques for understanding and evaluating safety issues and areas of concern

**1.1c** Implement effective design solutions and countermeasures to enhance safety of infrastructure

### Objective 1.2

Improve the maintenance and operations protocols that support safe access for pedestrians and bicyclists

#### Strategies

**1.2a** Improve methods for identifying maintenance and safety concerns and for communicating them to appropriate agencies

**1.2b** Enhance protocols that ensure safe access for pedestrians and cyclists during the construction phase of infrastructure projects

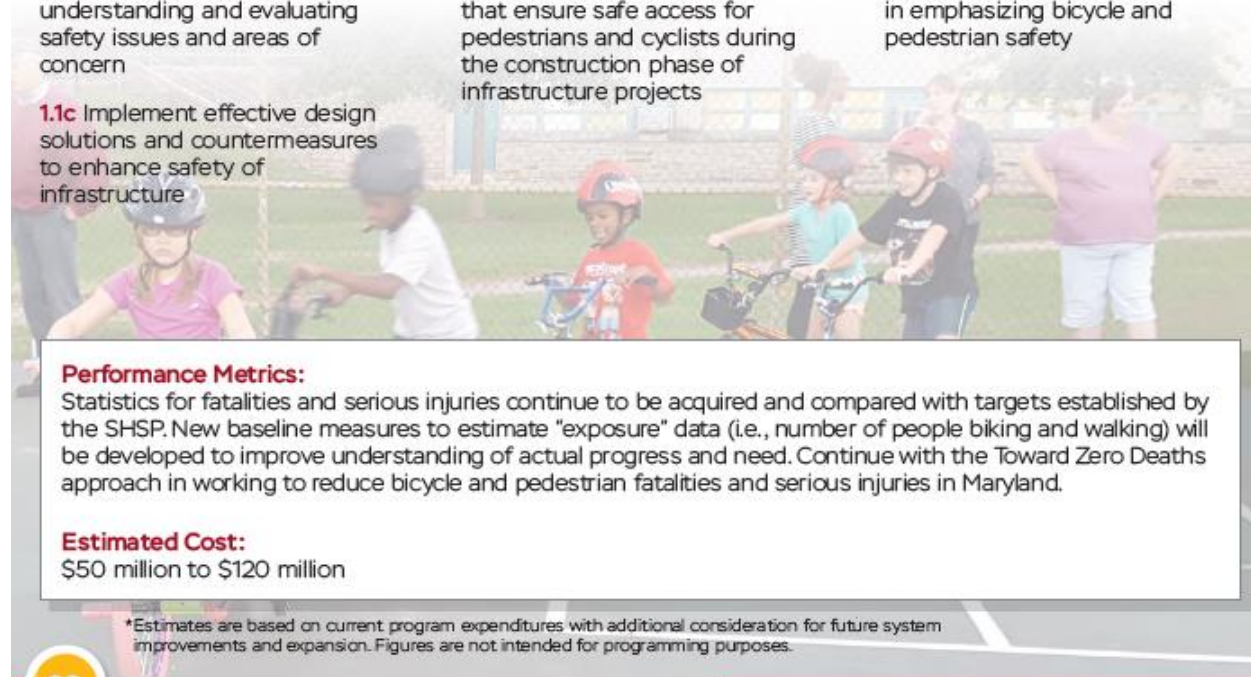
### Objective 1.3

Improve education, enforcement, and training to support safe driving, biking, and walking

#### Strategies

**1.3a** Regularly update and effectively communicate information on new safety laws and technologies

**1.3b** Improve training and education for all roadway users and design professionals in emphasizing bicycle and pedestrian safety



#### Performance Metrics:

Statistics for fatalities and serious injuries continue to be acquired and compared with targets established by the SHSP. New baseline measures to estimate "exposure" data (i.e., number of people biking and walking) will be developed to improve understanding of actual progress and need. Continue with the Toward Zero Deaths approach in working to reduce bicycle and pedestrian fatalities and serious injuries in Maryland.


#### Estimated Cost:

\$50 million to \$120 million

\*Estimates are based on current program expenditures with additional consideration for future system improvements and expansion. Figures are not intended for programming purposes.



Maryland DOT 2019



## Goal 2: Connected Networks

### Enhance Transportation Choice and Multimodal Connectivity through Linked Networks

#### Objective 2.1

Leverage strategic investment in planned routes to support the creation, identification, and use of safe, lower-stress routes for biking and walking for all user groups

#### Strategies

**2.1a** Strategically invest to address and prioritize eliminating gaps and barriers in strengthening the bicycle and pedestrian network

**2.1b** Develop tools and provide guidance to identify missing links and remove barriers to bicycle and pedestrian travel as part of implementation of the Complete Streets initiative

**2.1c** Use best practices to characterize facility use and context to help ensure appropriate treatments are integrated into project development and maintenance processes

#### Objective 2.2

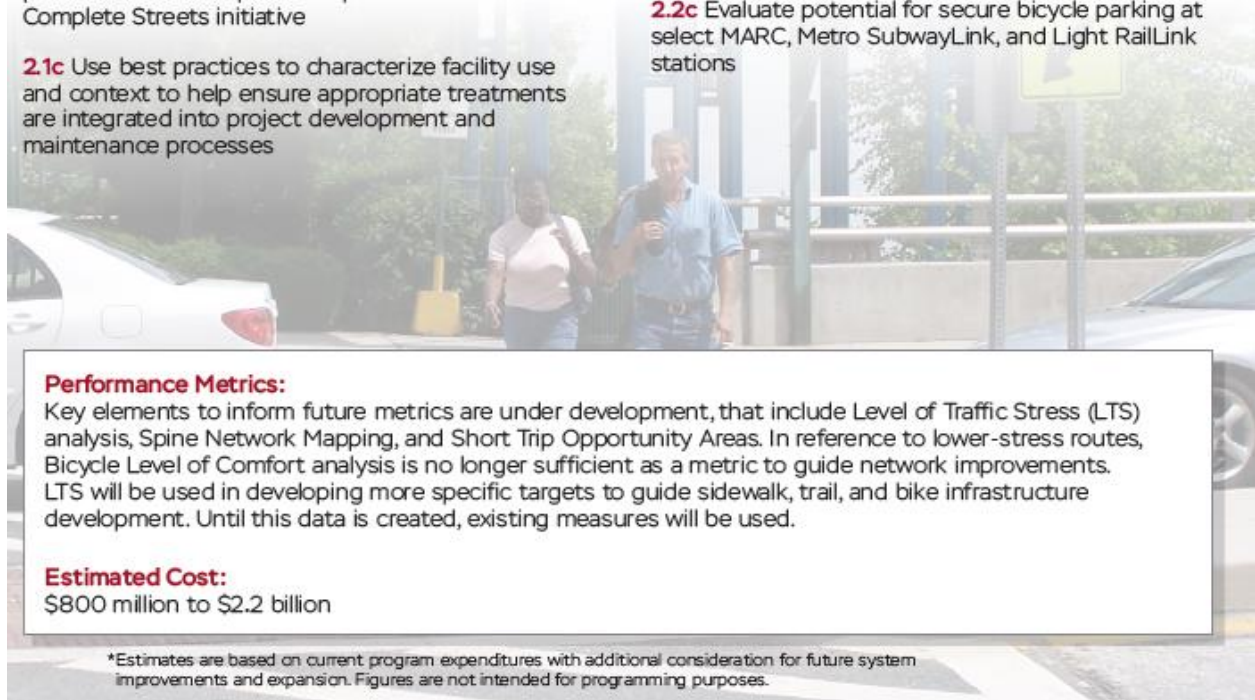
Improve bicycling and walking accessibility to all transit facilities

#### Strategies

**2.2a** Target specific bus stop and transit station area improvements to enhance pedestrian and bicycle infrastructure access

**2.2b** Expand and improve facilities to accommodate bicycles on transit vehicles, including locally operated transit services, buses, Metro, Light Rail, and commuter rail (MARC)

**2.2c** Evaluate potential for secure bicycle parking at select MARC, Metro SubwayLink, and Light RailLink stations



#### Performance Metrics:

Key elements to inform future metrics are under development, that include Level of Traffic Stress (LTS) analysis, Spine Network Mapping, and Short Trip Opportunity Areas. In reference to lower-stress routes, Bicycle Level of Comfort analysis is no longer sufficient as a metric to guide network improvements. LTS will be used in developing more specific targets to guide sidewalk, trail, and bike infrastructure development. Until this data is created, existing measures will be used.

#### Estimated Cost:

\$800 million to \$2.2 billion

\*Estimates are based on current program expenditures with additional consideration for future system improvements and expansion. Figures are not intended for programming purposes.



## Goal 3: Analysis and Planning

### Support Efficient and Equitable Planning and Project Development with Data-driven Tools & Innovative Techniques

#### Objective 3.1

Improve access to data and decision tools to support effective and inclusive planning for all Maryland communities

#### Strategies

**3.1a** Provide assistance to support strategic planning and implementation of context-appropriate bicycle and pedestrian infrastructure

**3.1b** Improve access to data and best practice examples to evaluate alternatives, conduct outreach, and adopt effective policies and plans

#### Objective 3.2

Create tools to facilitate the development and delivery of more efficient, effective, and equitable projects

#### Strategies

**3.2a** Update guidance and policy documents on a regular basis to reflect industry best practices

**3.2b** Provide technical assistance to support the identification, prioritization, and implementation of projects and to cultivate relationships that can overcome physical and institutional barriers in the network

**3.2c** Compile and disseminate funding and project information to improve transparency and performance

#### Performance Metrics:

Compilation of multiple data sources for a newly created MDOT Bicycle/Pedestrian "Dashboard" with public access (continual updates and expansion of a web-based dashboard). Improve quality and coverage of planning resources (increase the number of counties and jurisdictions with adopted plans). Reduce time for project completion and the number of grant extensions required. Better articulate bicycle and pedestrian priorities (reflecting all agency inputs) in annual transportation priority letters.

#### Estimated Cost:

\$15 million to \$60 million

\*Estimates are based on current program expenditures with additional consideration for future system improvements and expansion. Figures are not intended for programming purposes.





## Goal 4: Partnerships

### Build Partnerships to Promote Active Transportation and Strengthen the Health of our Communities

#### Objective 4.1

Leverage partnerships to encourage more Maryland residents of all ages, abilities, and income levels to participate in active transportation to meet more of their transportation needs

#### Strategies

**4.1a** Strengthen outreach and incentives promoting active commuting options

**4.1b** Develop new initiatives to support walking and biking for non-work trips

**4.1c** Provide support for planning and design decisions to promote the attractiveness and ease of biking and walking for Maryland residents

**4.1d** Expand partnerships and improve participation in active transportation events and planning meetings

#### Objective 4.2

Strengthen partnerships so Maryland communities are better equipped to implement active transportation solutions to achieve health and other benefits

#### Strategies

**4.2a** Develop data and metrics to help quantify the health benefits of active transportation

**4.2b** Support integration of health into local community development and revitalization strategies

**4.2c** Develop guidance and demonstration projects to support the expansion and maintenance of sidewalks and shared-use paths



#### Performance Metrics:

Increase participation in events, initiatives, and projects. Develop new partnerships in providing financial and political support. Improve data availability and the analysis of social determinants of health in relation to active transportation, land use, and environmental issues. Enhance local outreach to residents resulting in consensus and broader support for projects and compliance with safety regulations.

#### Estimated Cost:

\$10 million to \$75 million

\*Estimates are based on current program expenditures with additional consideration for future system improvements and expansion. Figures are not intended for programming purposes.

Maryland DOT 2019



## Goal 5: Economic Development

### Advance Biking and Walking as an Economic Development Strategy

#### Objective 5.1

Develop biking and pedestrian facilities and programs to promote active tourism

#### Strategies

**5.1a** Support expansion of biking and walking infrastructure to support tourism and attract new visitors

**5.1b** Improve wayfinding and mapping to better connect users with amenities and businesses

**5.1c** Integrate active transportation options into tourism development strategies

#### Objective 5.2

Expand access to economic benefits of bicycling and walking to more Maryland residents and businesses

#### Strategies

**5.2a** Conduct analysis to help quantify economic impacts of biking and walking

**5.2b** Provide technical assistance, design guidance, and investment to improve access to commercial hubs and neighborhoods

**5.2c** Continue to support transit-oriented development and related opportunities that leverage multimodal access and attract businesses that prioritize bicycling and walking access



#### Performance metrics

Develop a metric to estimate the economic impact of bicycle and pedestrian investments, and track related revenues in conjunction with the Department of Commerce. Reduce percentage cost of transportation as a fraction of household income. Increase participation rates and distances traveled in running, walking, and biking events. Expand business participation in commuter choice programs and Trail Town Network partnerships.

#### Estimated Cost:

\$20 million to \$75 million

\*Estimates are based on current program expenditures with additional consideration for future system improvements and expansion. Figures are not intended for programming purposes.

Canal trail. Photo source: Wikimedia Common

Montana DOT 2019

The Montana Plan has a fairly extensive section that outlines the goals, objectives and strategies in the following format:



## 6.1. Structure for Defining Strategies

Strategies were identified to support each of the Plan's five goals to help achieve the vision for walking and bicycling in Montana. The strategies have been organized under the Plan's goals:



**Goal 1:** Reduce pedestrian and bicyclist fatalities and serious injuries in support of Vision Zero.



**Goal 2:** Educate, encourage, and promote safe and responsible travel practices of motorists, pedestrians, and bicyclists.



**Goal 3:** Preserve and maintain pedestrian and bicycle transportation facilities.



**Goal 4:** Improve mobility and accessibility for all.



**Goal 5:** Support walking and bicycling as important transportation modes for access to destinations, economic vitality, and health.

For each of the recommended strategies the following elements are discussed: the purpose of the strategy as it relates to the goal, the roles and responsibilities of implementation partners, and potential resources to support implementation. Each of these elements are defined in this section.

### STRATEGY

A strategy is an approach to improving walking and bicycling in support of the established goals. Implementation of the strategies will involve a series of more specific activities along with coordination from a variety of partners. Strategies consider the constraints and opportunities to target the most significant issues associated with walking and bicycling in Montana. Strategies provide broad guidance and suggestions to achieve the desired goal that will leverage changes to support walking and bicycling. It is envisioned that the strategies will help inform and direct decision making for implementation partners. The strategies are intended to be implementable over the 20-year planning horizon of this Plan but will require cooperative efforts and commitment of resources.

### PURPOSE

The purpose of the strategy provides context as to why it is needed or why it is beneficial in Montana to achieve the desired goal. The purpose also provides insight into how the strategy will improve or benefit walking and bicycling across the state.

### ROLES AND RESPONSIBILITIES

A variety of agencies and stakeholders may have the resources, jurisdiction, or special expertise necessary to accomplish the recommended strategies. As such, successful implementation of the strategies may require cooperation and effort from multiple entities. Depending on the strategies, roles and responsibilities may fall to a variety of entities, including MDT, the Montana Legislature, various state and federal agencies, local jurisdictions, stakeholders, and the public. A variety of illustrative activities for implementing the strategy over time are included. These are ideas that may help agencies and other partners implement the strategies. The ideas may not be applicable to all agencies, including MDT. Furthermore, the activities are not intended to be all inclusive, nor are they requirements to implement the strategy. Rather, they are suggestions to consider as agencies look to improve the state of walking and bicycling.

### RESOURCES

This information defines resources that may be of use when implementing a recommended strategy. Resources to support implementation include: national programs providing technical support; educational and promotional campaigns; and published guidebooks, manuals, policies that may aid in design of pedestrian and bicycle facilities. Note that the resources may only apply to some situations depending on jurisdictional authority, funding programs, and other implementation considerations.





## Recommended Strategies

### Goal 1: Reduce pedestrian and bicyclist fatalities and serious injuries in support of Vision Zero.



- Strategy 1A:** Improve safety at intersections through applicable design standards and new technologies.
- Strategy 1B:** Periodically review and update design guidance for pedestrian and bicycle facilities.
- Strategy 1C:** Improve safety on rural roadways through widened shoulders.
- Strategy 1D:** Collaborate across jurisdictions to support changes to traffic laws aimed at improving the safety and predictability of walking and bicycling.
- Strategy 1E:** Develop and implement non-motorized crossing treatment guidelines.
- Strategy 1F:** Analyze pedestrian and bicycle crashes and contributing factors to identify potential safety improvements.

### Goal 2: Educate, encourage, and promote safe and responsible travel practices of motorists, pedestrians, and bicyclists.



- Strategy 2A:** Explore cost-effective mechanisms to improve the quality of data on pedestrian and bicycle activity and travel behavior.
- Strategy 2B:** Improve and increase safety education and encouragement programs for pedestrians, bicyclists, and motorists.
- Strategy 2C:** Provide ongoing training programs for transportation engineers and planners focused on pedestrian and bicyclist needs and accommodations.

### Goal 3: Preserve and maintain pedestrian and bicycle transportation system.



- Strategy 3A:** Develop a consistent approach for preservation and maintenance of pedestrian and bicycle facilities.
- Strategy 3B:** Explore innovative viable funding alternatives for maintenance of pedestrian and bicycle facilities.

### Goal 4: Improve mobility and accessibility for all.



- Strategy 4A:** Improve accessibility and mobility using current design guidance and modern technology when building, upgrading, and retrofitting pedestrian and bicycle facilities.
- Strategy 4B:** Provide safe access to schools and areas with significant senior, minority and low-income populations.

### Goal 5: Support walking and bicycling as important transportation modes for access to destinations, economic vitality, and health.



- Strategy 5A:** Improve community health and economic vitality by promoting walking and bicycling.
- Strategy 5B:** Explore innovative viable funding alternatives for pedestrian and bicycle transportation.
- Strategy 5C:** Support access to recreational, historic, cultural, downtown, and scenic destinations for improved tourism and economic vitality.
- Strategy 5D:** Evaluate criteria that ensures safety and meets relevant guidelines for bicycle route identification.
- Strategy 5E:** Improve administrative efficiency, consistency, and coordination for pedestrian and bicycle transportation.

## New Jersey DOT 2016 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 #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 #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 #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.



## New Jersey DOT 2016

## 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.

## Oregon DOT 2016

The Oregon Plan has a fairly extensive section that outlines the goals, objectives and strategies:

The policies and strategies in this section were developed with the entire transportation system in mind. Several address modal connections or seek to enhance intermodal connections. All aspects of delivering a transportation system were considered, including planning, investing, constructing, and maintaining. The policies and strategies are the actions designed to help achieve each of the identified plan goals, which in turn refine the plan vision. The goals of the plan include:

- Safety
- Accessibility and Connectivity
- Mobility and Efficiency
- Community and Economic Vitality
- Equity
- Health
- Sustainability
- Strategic Investment
- Coordination, Cooperation, and Collaboration

Policies and strategies are organized under the most relevant goal but often relate to or benefit other goals. In particular, goals such as Equity, Sustainability, Health, and Community and Economic Vitality are benefited by most of the policies and strategies in this Plan, and the policies and strategies are written

to contribute to these outcomes. Another area of significant overlap is data, although it is not a goal area. The collection, process, dissemination, and use of data are important to each of the goal areas and a singular data source can be pertinent to a variety of issues. Some specific data strategies are included under goal areas and needs are discussed more thoroughly in the Implementation chapter of this plan.

The policies and strategies below focus on confirming existing practice, setting new direction, and providing support for decision making for state, regional, and local implementation. Federal and state laws or regulations pertaining to walking and biking are not duplicated in the policies or strategies, as they are already in effect. The policies and strategies are consistent with such requirements and are intended to be supportive.

The Plan provides direction to ODOT regarding planning, programming, and maintaining the walking and biking system. This plan will frame transportation decision making across the state, and local jurisdictions will have to demonstrate consistency with the Plan when they update their local Transportation System Plans. Chapter 5 discusses more on Plan implementation.

## Oregon DOT 2016

The Oregon DOT also has a fairly detailed Appendix (D) that contains current and anticipated future performance measures, along with the rationale, challenges, etc., associated with each measure that may serve as a good resource for ODOT.

Table 4: Plan Performance Measures

Performance Measure #	Performance Measures	Description
1 Safety	Number of pedestrian and bicycle fatalities (five-year average)	Average annual number of pedestrians and cyclists killed in crashes with motor vehicles over a five-year period.
2 Safety	Number of pedestrian and bicycle serious injuries (five-year average)	Average annual number of pedestrians and cyclists seriously injured in crashes with motor vehicles over a five year period.
3 Safety	Perceived safety of walking and bicycling	Percent of the public that feels safe walking and bicycling in their community.
4 Accessibility	Pedestrian access to transit	The percent of streets within ½ mile of a transit stop that have sidewalks.
5 Data	Identifying data needs for pedestrian and bicycle performance measures	ODOT, in consultation with local jurisdictions and other agencies when appropriate, will complete the Data Key Initiative by December 31, 2020.
6 Utilization	Utilization of walking or biking for short trips	Percent of commute trips less than 20 minutes that are accomplished by walking or biking.

*Note: It is important to note that as data improves, these measures could be revisited to better reflect the Plan vision. For example, commute data is easily obtainable given existing mechanisms, but data on all trips (not currently available) may be needed to better understand mode choices or rates of mode use, or to help identify the circumstances in which users feel comfortable walking in their community.*

Oregon DOT 2016

Table 5: Performance Measures for Future Evaluation


Performance Measures	Description	Explanation
Level of traffic stress (LTS) <i>and/or</i> Multi-modal level of service (MMLOS)	LTS is a way to consider user comfort levels on the biking and walking system, and MMLOS looks at service levels broader than vehicular traffic, considering the needs of all users.	Analysis methodology, especially as applied at a statewide level, is still evolving. However, it is important to note that LTS/MMLOS are becoming more frequently used in transportation analysis and may be suited for a nearer term performance measure, once wider statewide use has occurred.
Bicycle access to transit	The percent of streets within 1 mile of a transit stop with a Bicycle LTS 2 rating.	Access to transit was determined as a good proxy for accessibility, but ultimately the Plan advisory committees thought them too specific for a Plan level performance measure.
Bicycle Friendly State ranking	Oregon’s annual ranking in the League of American Bicyclists’ Bicycle Friendly State Ranking program.	State and local rankings were viewed as important information tools, but not suited for a Plan level performance measure due to changing evaluation criteria of recognition programs and the ability or inability of different communities to apply was thought to vary.
Bicycle Friendly Communities	Number of local jurisdictions with a Bicycle Friendly Community Designation, at any level.	
Walk Friendly Communities	Number of local jurisdictions with a Walk Friendly Community Designation, at any level.	

*Note: While recognized as important tools, the performance measures in table 5 were deemed either too detailed, or too broad, for measuring the Plan vision at time of Plan completion. However, it is important to note that these measures could be used in other efforts or could be better suited for future Plan updates once they have been further developed and tracked.*


PennDOT 2020


## Themes at a Glance





 <b>ENHANCE SAFETY</b>
<p><b>S1:</b> Increase PennDOT capacity to plan, design, construct, and maintain active transportation facilities that support and encourage users of all ages, skills, and abilities.</p>
<p><b>S2:</b> Improve PennDOT processes to ensure the needs of bicyclists and pedestrians are adequately identified during scoping and included in design for all project types.</p>
<p><b>S3:</b> Implement additional education and enforcement programs to reduce crashes and provide a better sense of security for people who walk and bicycle.</p>
<p><b>S4:</b> Improve policies and practices for maintaining access for people who walk and bicycle during construction and maintenance projects.</p>

 <b>PROVIDE TRANSPORTATION EQUITY</b>
<p><b>E1:</b> Integrate equity criteria into decision-making and prioritize walking and bicycling investments in underserved areas with transportation disadvantaged populations.</p>
<p><b>E2:</b> Improve active transportation engagement as part of project-specific transportation planning/design and create specialized outreach for people with disabilities and people from minority groups.</p>
<p><b>E3:</b> Improve non-motorized access to transit and other modal connections.</p>
<p><b>E4:</b> Provide ongoing outreach and education to partners with a focus on partners that focus on underserved communities.</p>

 <b>CONNECT WALKING AND BICYCLING NETWORKS</b>
<p><b>C1:</b> Support the development of regional and local plans that identify bicycle and pedestrian needs and priority projects with a focus on closing gaps and building complete, comfortable networks.</p>
<p><b>C2:</b> Improve connectivity by addressing bicycling and pedestrian network gaps through the transportation project development process.</p>
<p><b>C3:</b> Improve access to parks, trails, and other recreational amenities.</p>

 <b>LEVERAGE PARTNERSHIPS</b>
<p><b>P1:</b> Strengthen ongoing coordination, cooperation, and collaboration between federal, state, regional, local, and private partners to facilitate a seamless pedestrian and bicycle system.</p>
<p><b>P2:</b> Coordinate PennDOT planning and policy with all levels of government to encourage mode shifts, reduce emissions of greenhouse gases, and provide a flexible and resilient transportation network.</p>
<p><b>P3:</b> Improve the quality and availability of data on bicycle and pedestrian travel and infrastructure.</p>
<p><b>P4:</b> Engage in proactive evaluations and discussions on emerging technologies and mobility solutions.</p>

 <b>IMPROVE PUBLIC HEALTH</b>
<p><b>H1:</b> Continue and enhance ongoing state agency coordination to improve public health outcomes through active transportation.</p>
<p><b>H2:</b> Engage health policy practitioners in policy development, comprehensive transportation planning, and early project development.</p>
<p><b>H3:</b> Link state grant program criteria to community projects designed to strengthen health and active transportation.</p>
<p><b>H4:</b> Address health disparities through active transportation policies, plans, and project selection.</p>
<p><b>H5:</b> Improve data collection and sharing between transportation and public health agencies.</p>
<p><b>H6:</b> Improve access to community health resources.</p>

 <b>INCREASE ECONOMIC MOBILITY</b>
<p><b>M1:</b> Promote local land use policies and practices that support increased bicycling and walking and add to the overall livability and vitality of communities.</p>
<p><b>M2:</b> Build partnerships between PennDOT, other state agencies, visitors, and convention bureaus, chambers of commerce, local governments, and private sector to support bicycle and pedestrian infrastructure to enhance economic initiatives within communities.</p>
<p><b>M3:</b> Identify pre-construction and post-construction assessment methodology to determine the economic vitality of completed pedestrian and bicycle projects.</p>
<p><b>M4:</b> Improve access to job centers and downtown districts.</p>

**More Information:** For more information on the Plan please visit: [Pennsylvania Active Transportation Plan](https://www.penn.gov/active-transportation-plan).



### PennDOT 2016

PennDOT commissioned a [Bicycle and Pedestrian Policy Study \(2016\)](#) prior to updating its current plan (2020) “to strengthen PennDOT’s policy for bicycles and pedestrians and establish new methods for policy implementation and follow-through”. The process “engaged PennDOT staff and leadership along with a broad spectrum of other stakeholders to obtain a range of expertise and perspectives” and the report “presents [PennDOT’s] bicycle and pedestrian policy recommendation to the State Transportation Commission (STC) for its consideration and endorsement” (PennDOT 2016).

As part of the project’s research phase, the study team researched the bicycle and pedestrian programs of seven states selected based on the quality of bicycle and pedestrian integration efforts undertaken by the state government: Delaware, Georgia, Maryland, Minnesota, North Carolina, Oregon, and Washington. Five of the states—Delaware, Maryland, Minnesota, Oregon, and Washington—rank in the top 10 of the League of American Bicyclists’ Bicycle Friendly States rankings. Georgia was included because the 2013 University of Pittsburgh Study of Transit, Pedestrian, and Bicycle Guidelines recommended Pennsylvania adopt a bicycle and pedestrian planning process like that state. North Carolina was included because it has a long history of supporting bicycle and pedestrian planning, dating back to the passage of the first bicycle law in the nation, the 1974 Bicycle and Bikeway Act. Each state’s policies, plans, design manuals, and related documentation were gathered and analyzed to understand that state’s approach to bicycles and pedestrians and a summary was included (PennDOT 2016).

Appendix C: Implementation by Selected States

Alabama 2017

Alabama Statewide Bicycle and Pedestrian Plan



To support walking and bicycling in access controlled transportation corridors, state, regional, and local agencies should partner to identify alternate on-road or off-road routes and plan to accommodate pedestrians and bicyclists along intersecting roads. Specific circumstances may also call for constructing parallel facilities either immediately adjacent to or within the right-of-way of an access controlled highway. When parallel facilities are added, design considerations include:

- Physical separation, including barriers, between the pedestrian and bikeway facility and highway;
- Grade separated crossings of intersecting highways; and
- Routing around interchanges.

5.0 Key Findings

Implementing the priority strategies, recommended actions, and state bicycle corridor plan requires tools that can inform and guide decision making processes on a regular basis (Figure 5-1). While the focus of implementation is understandably on infrastructure improvements, building safe and efficient transportation options for pedestrians and bicyclists will depend significantly on the coordinated application of all five E's – evaluation and planning, engineering, education, encouragement, and enforcement. Infrastructure or engineering alone cannot maximize the potential benefits from new or improved facilities.

Implementation Step 1

The first step in plan implementation is to establish a clear and meaningful set of system performance measures that can guide statewide policy and programming decisions across the five E's – reflected in the bicycle and pedestrian plan's priority strategies, recommended actions, and state bicycle corridor plan. As proposed, the system performance measures will initially focus on the bicycle and pedestrian plan's two principal goal areas, safety and access and mobility. Over time, as new goals and objectives are established and new data sources become available, the performance measures can be adjusted and expanded. The recommended performance measures are intended to benchmark walking and bicycling annually in Alabama and include:

1. **Safety Performance Measure:** Annual number of combined non-motorized fatalities and serious injuries (5-year rolling average);
2. **Access and Mobility Performance Measure:** Annual pedestrian commuting mode share (5-year rolling average);
3. **Access and Mobility Performance Measure:** Annual bicycle commuting mode share (5-year rolling average);
4. **Access and Mobility Performance Measure:** Annual consistency with the scheduled right-of-way improvements in the current state ADA Transition Plan;

Figure 5-1. Implementation Process





5. **Access and Mobility Performance Measure:** Percentage of priority bicycle corridors designated as state bicycle routes; and
6. **Access and Mobility Performance Measure:** Total number of vision bicycle corridors designated as state bicycle routes.

### Implementation Step 2

With the system performance measures in place, the next step in the implementation plan shifts to individual projects. Again, while the emphasis is typically on evaluating new and improved facilities, the prioritization criteria are flexible enough to be applied to proposals spanning the five E's. For example, a safety education program and safety improvement project can both be assessed using the prioritization criteria. Like the performance measures, the prioritization criteria all build on the statewide plan's goals and objectives and utilize readily available data.

- a. **Safety Prioritization Criteria:** Documented high crash location (total and percent) or systemic safety need within 500 feet of proposed project;
- b. **Safety Prioritization Criteria:** Perceived high risk locations within 500 feet of proposed project;
- c. **Access and Mobility Prioritization Criteria:** Network completeness (addresses important gaps and/or barriers);
- d. **Access and Mobility Prioritization Criteria:** Percent of traditionally underserved population (total and percent) within 0.5 mile (ped) or 1.5 miles (bike) of project;
- e. **Economic Development Prioritization Criteria:** Jobs (total and percent) within 1.0 mile (ped) or 3.0 miles (bike) of project;
- f. **Quality of Life Prioritization Criteria:** Population (total and percent) living within 0.5 mile (ped) or 1.5 miles (bike) of project;
- g. **Quality of Life Prioritization Criteria:** Community destinations within 1.0 mile (ped) or 3.0 miles (bike) of project;
- h. **Regional and Local Support Prioritization Criteria:** Regional and/or local plan consistency and official and stakeholder support;
- i. **Project Feasibility Prioritization Criteria:** Environmental constraints within 100 feet of the right-of-way and easements of project; and
- j. **Project Feasibility Prioritization Criteria:** Total population (see "Population Served" above) and Jobs (see "Access to Jobs" above) divided by estimated cost.

### Implementation Step 3

For infrastructure projects, especially implementation of the state bicycle corridor plan, design guidance can be used to help identify walking and bicycling facility options. The guidance highlights different facilities within a given context, allowing decisions to reflect user types, operating conditions, development patterns, and various constraints. Further, the guidance can be applied routinely in construction, reconstruction, and 3R projects to incorporate pedestrian and bicycle facilities, or to select improvements that will result in the development of designated state bicycle routes.

Addressing three additional systemic design considerations will also help accelerate improvements in pedestrian and bicycle networks across the state. The first two issues, intersection/crossing design and rumble strips, will be addressed in two new ALDOT guidance manuals - *Guidance for Road Safety Assessments and Reviews* and the forthcoming *Vulnerable Road Users Guide*. The third issue, access controlled corridors, will require state, regional, and local coordination to identify alternate on-road or off-road routes and safely connect intersecting pedestrian and bicycle routes. Specific circumstances may also call for constructing parallel facilities (bridges, shared use paths, and walkways) either immediately adjacent to or within the right-of-way of an access controlled highway.





Source: Gresham, Smith and Partners

Alabama 2017

**Alabama Statewide Bicycle and Pedestrian Plan**

Table 5-1. Recommendations for Initial Implementation

	Category	Recommendation	
	Implementation Tool	<ul style="list-style-type: none"> <li>• Establish system performance measures</li> <li>• Define project prioritization criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Adopt design guidance</li> <li>• Address additional systemic design considerations</li> </ul>
	Recommended Action	<ul style="list-style-type: none"> <li>• Develop a pedestrian and bicycle safety action plan</li> <li>• Provide technical training on pedestrian and bikeway facility planning and design</li> <li>• Collaborate on local bicycle and pedestrian plans in traditionally underserved communities</li> <li>• Expand walking and bicycling outreach and education programs in traditionally underserved communities</li> </ul>	<ul style="list-style-type: none"> <li>• Inventory and map existing and planned greenways, shared use path, parks, and natural areas</li> <li>• Utilize best practices in greenways and shared use path planning and design</li> <li>• Collaborate with public and private sector partners on economic development opportunities related to greenway and shared use path systems</li> </ul>
	State Bicycle Corridor Plan	<ul style="list-style-type: none"> <li>• Identify one priority corridor in each region annually and develop it as a state designated bicycle route</li> </ul>	<ul style="list-style-type: none"> <li>• Identify one vision corridor statewide every three years and develop it as a state designated bicycle route</li> </ul>

Like other transportation modes, pedestrian and bicycle systems involve a wide range of public and private stakeholders at the federal, state, regional, and local levels. While the state bicycle and pedestrian plan recommends a broad set of strategies, actions, and tools to make walking and bicycling safe, comfortable, and convenient in Alabama, successful implementation will ultimately hinge largely on

strong collaboration and coordination among all public and private stakeholders. Implementation will take time, but given the necessary resources, many of the recommended strategies, actions, and tools are achievable within the near future. Table 5-1 spotlights recommendations that can be candidates for early implementation.

CALTRANS 2017

The agency follows the following framework for each of its goals (its safety goal is included here for example)

» 5 Implementation

## Action Plans

The plan identifies a number of actions to be implemented. This section describes the actions, responsibilities, expected time frame for implementation and potential cost, where that can be readily estimated. The Caltrans Division of Transportation Planning has several overall responsibilities for the execution of this plan, including:

- » Tracking fulfillment of these actions, including engaging with partner agencies outside of Caltrans.
- » Developing an approach for regular reporting of the actions of this plan (at least annual).
- » Establishing a schedule for regular plan updates, consistent with the update of the California Transportation Plan conducted every 5 years

Time frames have been identified for each action, including:

- » In Progress – for actions that were begun as part of an existing process
- » Short – for work that should be completed in the next 1 to 3 years
- » Medium – for work that will be completed in the next 4 to 6 years
- » Long – for work that will take up to 10 years to complete

Where initial steps are identified in Chapter 4, the time frame references that first step.

The remainder of this chapter captures the individual action items, expected time-frame, and provides some information about costs for major actions.

## Safety

Reduce the number, rate, and severity of bicycle and pedestrian involved collisions

### S1: Safer Streets & Crossings

Address safety of vulnerable users in roadway design and operations

Action	Partners	Time Frame
S1.1 Develop equity focused plans at the regional or district level to proactively identify opportunities for safer highway crossings, including addressing personal safety	Lead: Division of Transportation Planning, Division of Traffic Operations, metropolitan planning organizations, regional transportation planning agencies, District staff	Medium
S1.2 Work with regional and local agencies to apply the guidelines in Caltrans' Complete Intersections Guide, Main Street California Guide, and National Association of City Transportation Officials guidelines	Lead: metropolitan planning organizations, regional transportation planning agencies, Division of Transportation Planning, District staff	Medium
S1.3 Develop and implement a systemic safety analysis approach to address infrastructure that poses a higher risk to vulnerable users	Lead: Division of Traffic Operations	Short



» 5 Implementation

## Measuring Success

*Toward an Active California* provides a set of performance measures to track the success of the above actions. These are identified within each goal in Chapter 4, and reproduced here.

Objective	Measure	Status
Safety	Number of bicycle and pedestrian fatalities and serious injuries (5 year rolling average)	Already collected Federally required per MAP-21
	Bicycle and pedestrian fatalities	Already collected  Strategic Management Plan target to reduce by 10% per year
	Bicycle and pedestrian collision, serious injury, and fatality rate	Long term (requires exposure data)
Mobility	Walk and bicycle mode share (all trips)	Already collected (every 8 to 10 years as part of NHTS)
	Pedestrian and bicycle miles of travel	Long term (requires better count data)
	Bicycle level of traffic stress on the state highway system	Long term (requires finalizing measure and coding state highway network)
Preservation	Percent of bicycle and pedestrian facilities with a good condition rating	Long term (requires establishing condition ratings)
	Percent of bicycle and pedestrian facilities on state highways meeting established maintenance standards	Long term (requires establishing maintenance standards for bicyclists and pedestrians - P1.1)
Social Equity	Percent of transportation-disadvantaged population within 1/2 mile bicycling distance of on or off-street bicycle facilities	Long term (requires network data - M4.4)
	Percent of disadvantaged population for whom state highways serve as barriers to economic and other opportunities	Long term (need definition of barriers - S1.1 - and network data - M4.4)
	Percent of transportation-disadvantaged population with access to completed sidewalk network	Long term (need data on sidewalk network - M4.4)
	Bicycling and walking rates for low income communities, people of color, and women	Already collected (every 8 to 10 years as part of NHTS)

Iowa DOT 2018

8. IMPLEMENTATION

8.2 Short-term actions

The first steps to be taken toward implementing this plan are those that affect the greatest change or those that require minimal investment. As such, most of the short-term implementation actions are policy and program-oriented. These actions should be initiated as soon as possible, with the goal of having actions completed (or well-established in the case of on-going programs) within two to three years.

Table 8.1: Short-term implementation actions

Action	Responsible	Timeline	Steps	Other considerations	Associated recommendations <sup>2</sup>
Implement the Complete Streets Policy.	Iowa DOT	By Spring 2019	<ul style="list-style-type: none"> <li>Complete policy</li> <li>Train staff</li> <li>Modify project development processes</li> </ul>	Requires modifying Iowa DOT's project scoping process as outlined in the Design Manual.	1.1, 1.3, 1.4 3.1 – 3.3 See Chapters 6 and 7
Modify Iowa DOT's project scoping process in accordance with the Complete Streets Policy.	Iowa DOT Highway Division	By Spring 2019	<ul style="list-style-type: none"> <li>Develop a one-stop comprehensive project scoping process guide</li> <li>Distribute to staff</li> </ul>		1.1, 1.3, 1.4
Modify the Design Manual to uniformly comply with the latest version of national standards and best practices (AASHTO Guide for the Development of Bicycle Facilities, AASHTO Pedestrian Guide, and NACTO Urban Street Design Guide).	Iowa DOT Office of Design	By Spring 2019	<ul style="list-style-type: none"> <li>Develop an on-road bikeways section</li> <li>Specify 4' minimum effective paved shoulder width for bicyclists</li> <li>Add 5' sidewalks and bike lanes to urban typical sections</li> </ul>		1.3, 1.4 2.1 3.1 – 3.3
Modify the Bridge Design Manual to uniformly comply with the latest version of national standards and best practices (AASHTO Guide for the Development of Bicycle Facilities and NACTO Urban Street Design Guide).	Iowa DOT Office of Bridges and Structures Iowa DOT Office of Design	By Summer 2019	<ul style="list-style-type: none"> <li>Align bridge designer and county engineer judgment statements with the Complete Streets Policy</li> <li>Add requirement to consider bicycle accommodations when determining bridge width</li> </ul>		1.3, 1.4 2.1 3.1 – 3.3

Table 8.1: Short-term implementation actions (continued)

Action	Responsible	Timeline	Steps	Other considerations	Associated recommendations <sup>2</sup>
Encourage modifications to SUDAS <sup>2</sup> to uniformly comply with the latest version of national standards and best practices (AASHTO Guide for the Development of Bicycle Facilities, NACTO Urban Bikeway Design Guide, NACTO Urban Street Design Guide).	Iowa SUDAS Corporation with support from Iowa DOT and Iowa County Engineers Association	By Summer 2019	<ul style="list-style-type: none"> <li>Copy revised sections from the Bridge Design Manual</li> </ul>		1.3, 1.4 2.3 3.1 – 3.3
Develop Complete Streets training for Iowa DOT staff as well as interested local and regional staff.	Iowa DOT Office of Systems Planning Iowa DOT Office of Design	Spring 2019	<ul style="list-style-type: none"> <li>Develop training program</li> <li>Schedule workshops at each District office</li> </ul>		1.1, 1.3, 1.4 2.1, 2.3 3.1 – 3.3
Hold accessibility workshops designed to train local officials, agency staff, and professional engineers to effectively meet accessibility requirements on state, county, and local road projects.	Iowa DOT Central Office Iowa Bicycle Coalition	By Summer 2019	<ul style="list-style-type: none"> <li>Identify case study examples of challenges in meeting accessibility requirements during the design process</li> <li>Work through potential solutions and strategies with participants</li> </ul>	This could be coordinated with the annual Bicycle Summit	1.2; 1.3, 1.4 2.1, 2.3 3.1 – 3.3
Designate one <sup>3</sup> licensed engineer in the Iowa DOT Central Office to be dedicated to providing technical assistance on bicycle and pedestrian facility design.	Iowa DOT Central Office	By Summer 2019	<ul style="list-style-type: none"> <li>Determine responsibilities</li> <li>Determine appropriate division/office for employee</li> </ul>	This role could be addressed by modifying the responsibilities of one or more existing employees.	1.4 2.1, 2.3

<sup>2</sup> Statewide Urban Design and Specifications, the transportation infrastructure design manual used by municipalities and counties in Iowa.

<sup>3</sup> One full-time equivalent (FTE).

Table 8.1: Short-term implementation actions (continued)

Action	Responsible	Timeline	Steps	Other considerations	Associated recommendations <sup>4</sup>
Develop methodology for bicycle and pedestrian safety audits of high crash corridors and intersections to identify adequate countermeasures.	Iowa DOT FHWA Local jurisdictions	2019-2020	<ul style="list-style-type: none"> <li>Identify high bicycle and pedestrian crash corridors and intersections</li> <li>Determine participants</li> <li>Conduct audits</li> </ul>	FHWA or Iowa DOT could lead, depending on format.	2.1 3.1 – 3.3 4.1, 4.4
Incorporate bicycle and pedestrian safety into the Strategic Highway Safety Plan (SHSP) and consider the interrelated impacts of projects funded by the HSIP program.	Iowa DOT Office of Traffic & Safety Iowa DOT Office of Systems Planning	By end of 2018	<ul style="list-style-type: none"> <li>Identify the most common crash types/contributing factors</li> <li>Include strategies for reducing and ultimately eliminating bicycle and pedestrian crashes</li> </ul>		3.1 4.1, 4.2, 4.4
Enhance law enforcement curriculum for bicycle safety-related training.	Iowa DOT Iowa DPS Governor's Traffic Safety Bureau Iowa Bicycle Coalition	By end of 2019			4.2, 4.3 5.1 – 5.3
Develop and implement a Bicycle Awareness and Traffic Safety public relations campaign via web, billboards, dynamic message signs, bus advertisements, and other media.	Iowa DOT Office of Systems Planning Iowa DOT Office of Strategic Communications Iowa Bicycle Coalition	By Summer 2019	<ul style="list-style-type: none"> <li>Identify primary messages</li> <li>Develop graphics and copy</li> <li>Procure billboard space, bus advertisement space, web hosting, etc.</li> </ul>	An example is the Iowa Bicycle Coalition's "Sharing the Road with Bicyclists" radio campaign. <sup>4</sup>	4.3, 4.4 5.1 – 5.3
Support safety and skills training courses annually for adults and youth.	Iowa Bicycle Coalition Iowa DOT	By Summer 2019	<ul style="list-style-type: none"> <li>Develop/acquire curriculum</li> <li>Recruit and train instructors</li> <li>Identify local partners for hosting, advertising, etc.</li> </ul>	Instructors should be League Cycling Instructors (LCI), which costs \$300 for certification.	5.1 – 5.3

4 <http://traffic.iowabicyclecoalition.org/radio/>

Table 8.1: Short-term implementation actions (continued)

Action	Responsible	Timeline	Steps	Other considerations	Associated recommendations <sup>4</sup>
Identify the primary urban and rural crash types occurring in Iowa and develop strategies for reducing crashes.	Governor's Traffic Safety Bureau (DPS) Iowa DOT	By end of 2018	<ul style="list-style-type: none"> <li>Review crash data for previous 5-10 years</li> <li>Review crash reports to identify crash types</li> </ul>	Coordinate with the development of the Strategic Highway Safety Plan and FHWA-led safety audits.	1.3, 1.4 3.1 – 3.3 4.1 – 4.4
Review road project prioritization criteria to consider the project's potential benefits to bicycling and walking.	Iowa DOT MPOs & RPAs	By end of 2019	<ul style="list-style-type: none"> <li>Consider criteria that prioritizes projects that follow the Complete Streets process.</li> </ul>		1.3, 1.4 2.4 3.1 – 3.3 See Chapter 7
Develop clear and consistent criteria to prioritize funding for stand-alone bicycle and pedestrian projects, consistent with the Complete Streets Policy.	Iowa DOT	By end of 2019	<ul style="list-style-type: none"> <li>Develop criteria that prioritize projects that have the greatest impact on improving access and connectivity.</li> </ul>	Create a consistent methodology to apply to State RTP, TAP, and other dedicated funding programs.	2.1, 2.2 3.1 – 3.3 See Chapter 7
Apply for US Bicycle Route Designation for USBR 36, 40, 44, 51, and 55 (applications submitted to AASHTO).	Iowa DOT Affected Jurisdictions Advocates	TBD	<ul style="list-style-type: none"> <li>Review routes in detail with stakeholders.</li> <li>Develop or revise maps and turn-by-turn details.</li> <li>Coordinate with bordering states.</li> <li>Secure resolutions of support from cities, counties, and regional agencies.</li> <li>Prepare applications.</li> </ul>	Concurrently, implementation plans should be developed or updated to deploy route signage and prioritize infrastructure improvements (e.g., paved shoulders) where necessitated by traffic volumes.	2.2 3.3

### 8.3 Mid-term actions

Implementation actions in the mid-term category are important, but are more challenging to initiate or are dependent on the groundwork laid by the short-term actions. These actions are intended to be initiated within the next one to three years and completed (or well-established in the case of on-going programs) within five to ten years.

Table 8.2: Mid-term implementation actions

Action	Responsible	Associated recommendations <sup>5</sup>
Encourage and work with cities, counties, and MPOs/RPAs across the state to adopt Complete Streets policies using the Iowa DOT's Complete Streets Policy as a model.	Iowa DOT Cities Counties MPOs/RPAs Advocates	1.1 3.1 – 3.3 See Chapter 6
Support MPOs and RPAs in the development and adoption of bicycle and pedestrian plans that are coordinated with the statewide Long-Range Plan.	Iowa DOT MPOs/RPAs Advocates	2.2 – 2.4 3.1 – 3.5
Identify barriers and gaps in the state highway system for bicycling and walking that will not be corrected by planned reconstruction/3R activities and develop alternatives for providing adequate interim connections, especially in cities and metro areas.	Iowa DOT	1.2 3.1 – 3.5
Explore options for increasing the amount of dedicated funding allocated to bicycle and pedestrian projects and programs.	Iowa DOT Advocates	See Chapter 7
Develop and implement statewide maintenance and work zone guidelines to address bicyclist and pedestrian needs. These guidelines should be adaptable to city, county, and Iowa DOT maintenance and work zone responsibilities.	Iowa DOT Counties	1.5 2.2 – 2.4
Work with transit agencies across the state to provide bike racks on all compatible buses. This may include identifying a funding source for this relatively inexpensive action and/or developing product and operational guidelines to assist agencies with implementation.	Iowa DOT MPOs/RPAs	2.3 3.4

Table 8.2: Mid-term implementation actions (continued)

Action	Responsible	Associated recommendations <sup>5</sup>
Develop encouragement programs and events to get more people walking and bicycling. This includes designing safety and how-to materials, training courses, maps, and other education efforts that espouse the health, safety, environmental, and economic benefits of biking and walking.	Advocates Iowa DOT Iowa Department of Public Health	5.1 – 5.4
Recommend a safe passing law that requires drivers to change lanes when passing another vehicle (including cars, bicycles, agricultural equipment, construction equipment, etc.).	Iowa DOT Iowa DPS Advocates	4.3
Recommend a vulnerable road user law that increases penalties beyond the current penalties for a motorist that injures or kills a bicyclist, pedestrian, construction worker, law enforcement officer, or any other vulnerable roadway user.	Iowa DOT Iowa DPS Advocates	4.3
Continually revisit driver's education curriculum to include the rights of bicyclists and pedestrians, as well as current and future vulnerable road user laws (subsequent to adoption of new laws).	Iowa DOT Iowa Bicycle Coalition	5.1, 5.3 4.3
Annually or biennially recalculate the On-Road Bicycle Compatibility Rating for all rural and metro area periphery paved roads in order to identify segments with poor conditions for biking. Coordinate gap elimination efforts with opportunities in upcoming projects.	Iowa DOT	3.5
Update this Bicycle and Pedestrian Long-Range Plan in 5 to 10 years.	Iowa DOT	2.2 – 2.4 3.5 4.4

### 8.4 Long-term actions

Many of the direct and indirect recommendations of this plan can only be implemented by performing numerous implementation actions over the course of many years. Furthermore, some of the recommendations necessitate additional planning and analysis prior to implementation.

Below are examples of long-term implementation actions, which are not intended to be an exhaustive list of all future implementation needs. This plan will likely be updated before initiation begins for many of these actions, but it is important to consider future needs during current planning.

- Implement current plans for the US Bicycle Route and National Trails systems (which include the Mississippi River Trail, American Discovery Trail, and Lewis & Clark Trail). Revisit these plans every 5 to 10 years until each segment is completely implemented.
- Implement the Statewide Trails Vision plan discussed in Chapter 5 in an opportunity-based manner. This means constructing trails along the vision plan's alignment as right-of-way and funds become available. While the Iowa DOT has a role in providing funding for this purpose, implementation will primarily be the responsibility of cities, counties, MPOs/RPAs, the Department of Natural Resources, and nonprofit groups.

- Encourage every unit of government in Iowa that has jurisdiction of streets and roads to adopt a Complete Streets policy in order to accommodate bicyclists and pedestrians across the state.
- Continue to identify barriers and gaps in the state highway system for bicycling and walking that have not been corrected by reconstruction/3R activities and develop alternatives for providing adequate interim connections, especially in cities and metro areas.
- Continue to analyze crash data and develop strategies for increasing road safety for all users.
- Continue to expand education and encouragement programs to teach safe bicycling skills, educate road users on the rights and responsibilities of bicyclists and pedestrians, and encourage more people to ride and walk (since greater numbers of people biking has an inverse correlation with bicyclist crash rates).

Finally, it is important to update this Bicycle and Pedestrian Long-Range Plan at least every 10 years in order to account for infrastructure, legislative, and programmatic changes that affect bicycling and walking.



Maryland DOT 2019

1

Improving Statewide Connectivity

KEY INITIATIVE

**Improve connectivity to make biking and walking on the State Transportation Network possible for all user groups**

This key initiative supports:



Goal 1:  
Connected  
Networks



Goal 2:  
Safety

Short-term targets (5-year)	Long-term targets (20-year)
Level of Traffic Stress (LTS) analysis completed to inform creation of strategic plans and connected networks	Consistent protocols to develop a network-level analysis to identify and prioritize barriers and maximize opportunities to ensure ongoing improvement of connectivity for bicycling and walking—including at intersections, state highway crossings, and bridges
Statewide bicycle and pedestrian infrastructure inventory (based on GIS) produced and updated	
Bicycle and pedestrian infrastructure strategically expanded and improved at transit stations	
Onboard transit facilities included on all commuter bus, MARC, and light rail	
Completion of projects that address key network gaps	



SAMPLE INITIATIVE

## State Roadway Network Level of Traffic Stress

Level of Traffic Stress (LTS) presents a new approach to assessing roadway conditions for bicycle and pedestrian accommodation. Responding to statewide needs, recognized shortcomings of the existing Bicycle Level of Comfort measure (see page 11), and inputs from MDOT's annual Attainment Report Advisory Committee, MDOT will use this methodology to assess and inform potential improvements to all of Maryland's roads and selected bicycle and pedestrian infrastructure.

**Variables used in measuring traffic stress include:**

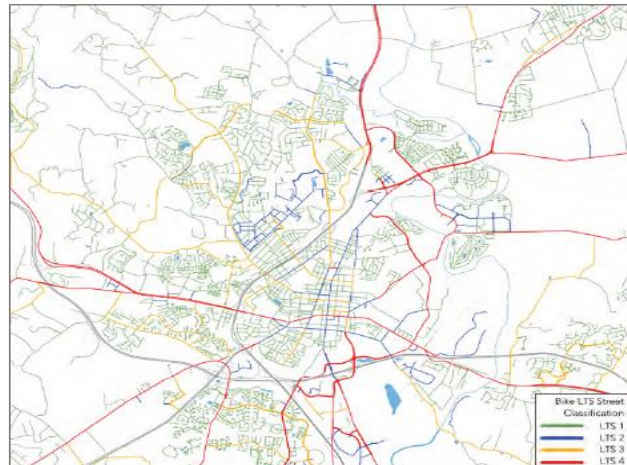
- speed limits
- number of travel lanes
- on-street parking presence and width
- bike facility presence and width (including physically separated bikeways and trails)
- traffic signals and traffic counts
- sidewalk condition and width
- buffer type and width
- illumination presence
- general land use
- presence of sidewalk ramps

**LTS will help MDOT and partners to:**

- assess network connectivity
- measure improvements to connectivity
- measure the percentage of trips and connected nodes
- facilitate an LTS-based performance measure
- develop a statewide measure focused on Short Trip Opportunity Areas (STOAs)
- strategically invest to make meaningful and cost-effective decisions that safely connect Maryland's bicycle and pedestrian networks

LTS Level	Target User Group
LTS 1	Most Children
LTS 2	Mainstream Adult Population
LTS 3	Enthusied and Confident
LTS 4	Strong and Fearless

### Level of Traffic Stress - City of Frederick (Sample)



Source: This representative sample was created by the State Highway Administration for illustrative purposes only.



Maryland DOT 2019

# 2 Developing Planning and Policy Tools KEY INITIATIVE

**Create and update planning and policy tools to ensure consistency and support local and regional partner initiatives**

This key initiative supports:

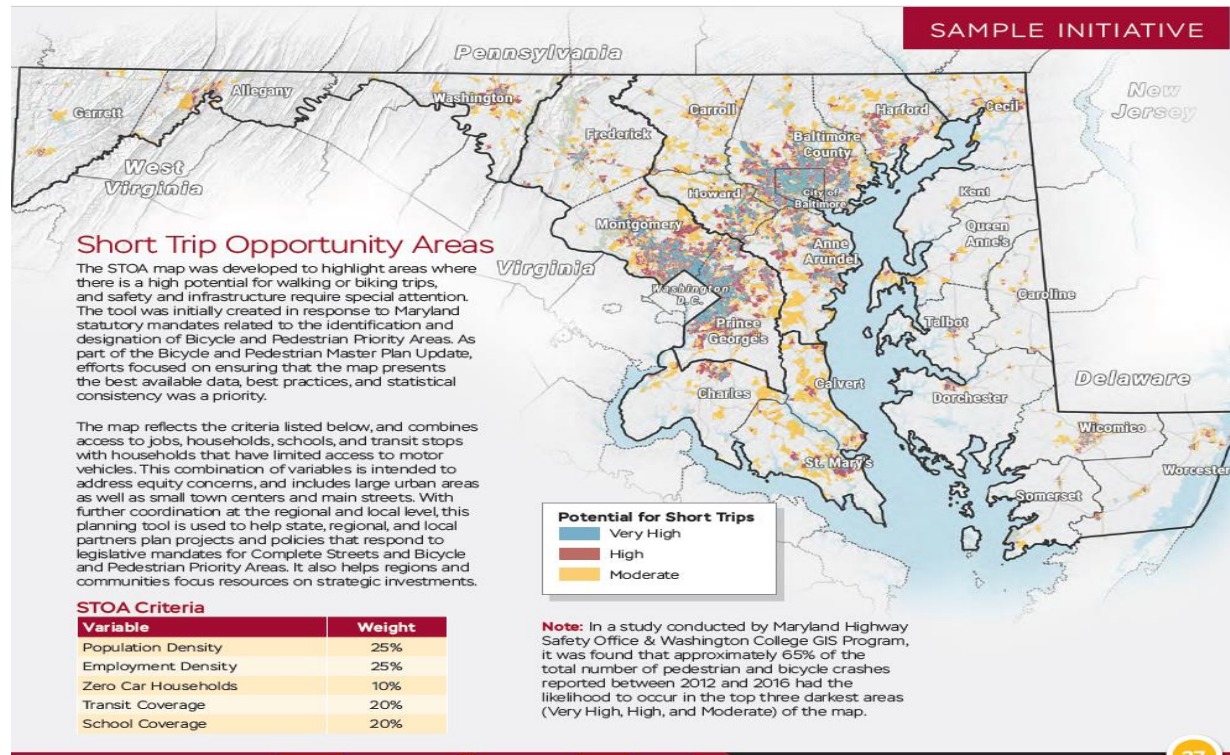


**Goal 3:**  
Analysis and Planning



**Goal 4:**  
Partnerships

Short-term targets (5-year)	Long-term targets (20-year)
Elements of the Strategic Highway Safety Plan that address bicycle and pedestrian issues achieved	Strong local context analysis continuously updated to provide more consistent and specific guidance on policy, planning, and design decision-making
Existing tools to prioritize areas of need and opportunity (STOAs, BPPAs, and Pedestrian Road Safety Audits) refined or restructured	
Complete streets policies adopted, strengthened, and expanded in order to effectively implement at the state, regional, and local levels	
Update Bicycle Policy and Design Guidelines to reflect Best Practices and to better support local planning efforts	
Develop new tools and frameworks to support the safe adoption and use of transportation technologies (electric scooters and automated vehicles)	



Maryland DOT 2019

4
Developing Better Data
KEY INITIATIVE

**Initiate efforts to improve problem-solving, project development, and planning initiatives**

This key initiative supports:



**Goal 2:  
Safety**



**Goal 3:  
Analysis and  
Planning**




**Goal 4:  
Partnerships**

Short-term targets (5-year)	Long-term targets (20-year)
Demonstration projects launched to explore real-time data sources for identifying and prioritizing areas to improve safety, connectivity, and economic development	<p>Creation of a web-based accessible database and increased staff resources focused on providing information for the development, funding, prioritization, and implementation of bicycle- and pedestrian-related projects for local and regional partners</p> 
Network of Bicycle and Pedestrian traffic counters expanded and consolidated to reflect each region	
Geospatial safety data (i.e., crash data) analyzed and shared with officials to improve education, enforcement, and engineering interventions	
Standardized survey created and implemented to supplement available data to identify and address equity issues	
Current information about legislative changes and transportation investments made more accessible	


5
Enhancing and Estimating Economic Impact
KEY INITIATIVE

**Pilot initiatives and materials that help strengthen and clarify the economic benefits of bicycling and walking activity in Maryland**


This key initiative supports:



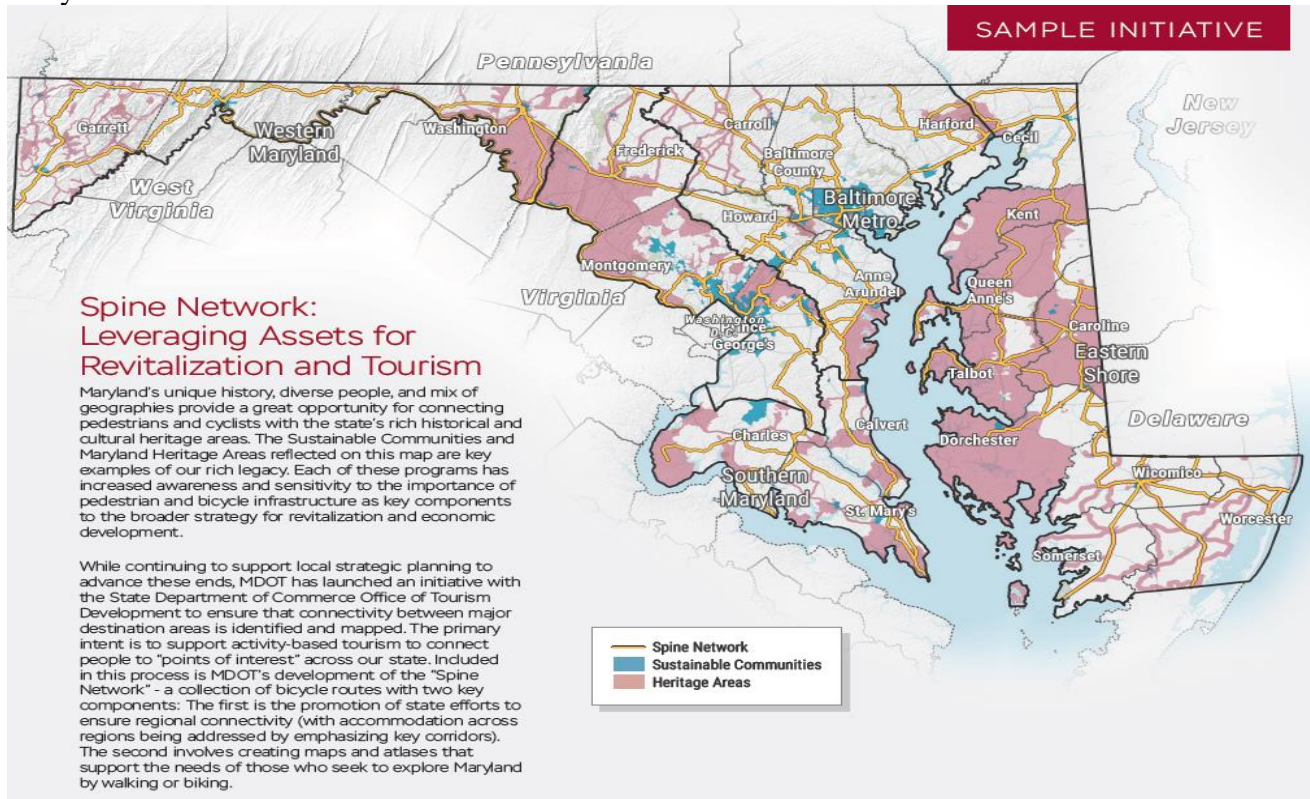
**Goal 4:  
Partnerships**



**Goal 5:  
Economic  
Development**

Short-term targets (5-year)	Long-term targets (20-year)
Publish print and digital materials that highlight activity-based tourism (e.g., Spine Network, heritage destinations, Trail Towns, etc.)	<p>Provide local stakeholders access to reliable data, information, and methodologies for estimating the economic benefits of cycling and walking</p> <p>Align programs to support enhanced economic impact for communities</p> 
Conduct statewide study of economic impacts of cycling and walking in Maryland	
Analyze incentive programs for businesses focused on activity-based products and services (in coordination with the Maryland Department of Commerce)	

Maryland DOT 2019





Maryland DOT 2019

# Key Initiative Schedule

For more information on these key initiatives, see pages 34-38.

	Short-Term (5 Years)	Long-Term (20 Years)
1	Level of Traffic Stress analysis	Barrier identification and prioritization
	GIS inventory	
	Transit access improvements	
	On-board transit facilities	
2	SHSP implementation	Local context analysis
	Refined analysis tools	
	Statewide Complete Streets policy and Guidelines	
	Health data and analysis	
3	Complete Streets policy for underserved and under invested communities	Local mode share goals
	Amended Bicycle Pedestrian Priority Areas program	
	Streamlined funding	
4	Demonstration projects	Web-based information dashboard
	Network of bicycle and pedestrian counters	
	Safety data	
	Survey strategy	
	Legislative information	
5	Tourism promotion materials	Economic benefits information for local stakeholders
	Statewide economic impact study	
	Active recreation and transportation research and demonstration projects	

Montana DOT 2019



## 7.1. Summary of Recommended Strategies

### **Goal 1: Reduce pedestrian and bicyclist fatalities and serious injuries in support of Vision Zero.**



- Strategy 1A:** Improve safety at intersections through applicable design standards and new technologies.
- Strategy 1B:** Periodically review and update design guidance for pedestrian and bicycle facilities.
- Strategy 1C:** Improve safety on rural roadways through widened shoulders.
- Strategy 1D:** Collaborate across jurisdictions to support changes to traffic laws aimed at improving the safety and predictability of walking and bicycling.
- Strategy 1E:** Develop and implement non-motorized crossing treatment guidelines.
- Strategy 1F:** Analyze pedestrian and bicycle crashes and contributing factors to identify potential safety improvements.

### **Goal 2: Educate, encourage, and promote safe and responsible travel practices of motorists, pedestrians, and bicyclists.**



- Strategy 2A:** Explore cost-effective mechanisms to improve the quality of data on pedestrian and bicycle activity and travel behavior.
- Strategy 2B:** Improve and increase safety education and encouragement programs for pedestrians, bicyclists, and motorists.
- Strategy 2C:** Provide ongoing training programs for transportation engineers and planners focused on pedestrian and bicyclist needs and accommodations.

### **Goal 3: Preserve and maintain pedestrian and bicycle transportation system.**



- Strategy 3A:** Develop a consistent approach for preservation and maintenance of pedestrian and bicycle facilities.
- Strategy 3B:** Explore innovative viable funding alternatives for maintenance of pedestrian and bicycle facilities.

### **Goal 4: Improve mobility and accessibility for all.**



- Strategy 4A:** Improve accessibility and mobility using current design guidance and modern technology when building, upgrading, and retrofitting pedestrian and bicycle facilities.
- Strategy 4B:** Provide safe access to schools and areas with significant senior, minority and low-income populations.

### **Goal 5: Support walking and bicycling as important transportation modes for access to destinations, economic vitality, and health.**



- Strategy 5A:** Improve community health and economic vitality by promoting walking and bicycling.
- Strategy 5B:** Explore innovative viable funding alternatives for pedestrian and bicycle transportation.
- Strategy 5C:** Support access to recreational, historic, cultural, downtown, and scenic destinations for improved tourism and economic vitality.
- Strategy 5D:** Evaluate criteria that ensures safety and meets relevant guidelines for bicycle route identification.
- Strategy 5E:** Improve administrative efficiency, consistency, and coordination for pedestrian and bicycle transportation.



Montana DOT 2019

## 7.2. Implementation

It will take time, commitment, and multiple jurisdictions and stakeholders to implement the recommended strategies. Investment in safety, new infrastructure, improved maintenance of non-motorized facilities, and development of programs that educate and encourage residents to walk or bike are necessary to improve the state of walking and bicycling in Montana. No single source of funding will be sufficient to fulfill the strategies in this Plan, nor can a single entity successfully carry out all recommended strategies.

Federal, state, county, city, and tribal government agencies, as well as stakeholders and the public, all play an important role in achieving a pedestrian- and bicycle- friendly Montana. Many different agencies may be involved in any number of phases of pedestrian and bicycle improvements including project development, funding, implementation, maintenance, or education. Input from the public and stakeholders helps to identify the needs of communities. Depending on the needs of the community, funding assistance, design support, or general guidance may be needed from state and other agencies. Cooperation and coordination between all agencies to ensure consistency of educational information, design, and maintenance is crucial to successful implementation.

### 7.2.1. Funding and Resources

The state of funding and resources available is constantly changing. Changes can occur due to the passage of a new federal transportation bill, or at the local level where projects may be creatively funded through evolving sources, which may include voter approved initiatives. What is clear is that in order to make Montana and its communities more pedestrian- and bicycle- friendly, it will be necessary to invest in new infrastructure, improved maintenance, and programs that educate and encourage users. Unfortunately, current funding levels are unable to keep pace with identified needs. The lack of adequate funding requires state and local governments to make decisions about how best to focus their resources.

Given constrained resources, it can be challenging to find a solution which accommodates the needs of all transportation users and the public at large. Consultation and coordination among agencies, local jurisdictions, stakeholders, and the public is conducted to help identify needs and determine the best solutions within the confines of the project. Using state and local transportation planning processes to establish goals and identify projects can be an effective way of managing limited funds to provide a transportation system that benefits all users to the greatest extent possible.



*Photo Credit: Alta Planning + Design*

*Many government agencies, stakeholders, and the public play an important role in making a pedestrian- and bicycle- friendly Montana.*

New Jersey DOT 2016

# New Jersey Bicycle & Pedestrian Master Plan

## Key Actions for Years 1-3



Goal	Within One Year	Within Two Years	Within Three Years
<b>Goal 1: Improve Safety</b>	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
<b>Goal 2: Enhance Accessibility, Mobility, and Connectivity</b>	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
<b>Goal 3: Achieve Healthy, Equitable, Sustainable Communities</b>		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)	
<b>Goal 4: Foster A Culture Shift</b>	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
<b>Goal 5: Facilitate Coordination and Integration</b>	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)
<b>Reporting Progress</b>	Year One Scorecard	Year Two Scorecard	Year Three Scorecard



## Oregon DOT 2016

## Roles and Responsibilities

The organizations listed below have a role or responsibility in helping achieve the Plan vision. Others not listed, but who do have critical funding, technical, and support roles, include partners such as the Federal Highway Administration (FHWA). While this role is integral to achieving the plan vision

FHWA is not an implementer of the plan itself, but does provide support for funding walking and biking improvements and develops directives and guidance to implementing agencies and organizations. The roles and responsibilities of implementing organizations are described below.

### Oregon Department of Transportation

ODOT has several key statewide responsibilities for Plan implementation. Within ODOT, the Plan provides direction for how ODOT will plan, program, deliver, and maintain the state walking and biking system. Implementation will require support and coordination among many of ODOT's business units. ODOT roles in Plan implementation include:



#### Statewide policy direction:

Implementing and integrating Plan policy recommendations, strategies, and key initiatives into Department guidance, planning, programming, project development, maintenance processes, and practices; including other modes and systems.

#### Statewide design direction:

Continuing to update Department design policies, standards, and guidance, considering system contexts and basing decisions on the latest federal guidance and best practices.

#### Technical assistance:

Encouraging opportunities for training, technical assistance, and understanding best practices in the planning, design, construction, and maintenance of safe and comfortable walking and biking facilities.

#### Safety and education:

Working with partners to provide safety education for all users through existing or new materials and messaging, working with state agency partners, and providing information to local partners.

#### Data collection, analysis and research:

Assessing statewide walking and biking needs through system inventories. Continuing to monitor implementation through Plan performance measures and supporting the collection of walking and biking data, as appropriate.

#### Investment, prioritization, and project development:

Leveraging federal and state funding sources to improve walking and biking networks. Institutionalizing walking and biking across the state through project development processes; and working with partners on efforts such as project prioritization.

#### Operations and maintenance:

Ensuring the effective use of resources by setting maintenance priorities and updating guidelines to support walking and biking safety and mobility based on local and national best practices.

#### National coordination:

Continue to monitor United States Department of Transportation (USDOT), Transportation Research Board, American Association of State Highway and Transportation Officials (AASHTO), etc. on policy guidance pertaining to walking and biking, especially as it relates to federal funding and facility design.

Appendix D: Summary of Federal Guidance for Bicycle Pedestrian Policy (2019)

# Federal Highway Administration Bicycle and Pedestrian Planning, Program, and Project Development

Revised on September 26, 2019

1. [Introduction](#)
2. [Bicycle and Pedestrian Policy](#)
3. [Selected Legislation](#)
4. [Integrating Bicycle and Pedestrian Facilities](#)
5. [Funding Eligibility](#)
6. [Federal Share and Matching Requirements](#)
7. [Project Development](#)
8. [Design Resources](#)

## Introduction

The purpose of this guidance is to identify references to certain Federal legislation, as well as other relevant guidance and reference materials, related to bicycling and walking safety and accommodation. The Intermodal Surface Transportation Efficiency Act ([ISTEA](#)) of 1991 enacted significant changes to Federal transportation policy and programs that expanded consideration of and eligibility for bicycling and walking. The Transportation Equity Act for the 21st Century ([TEA-21](#)) of 1998 and the Safe Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users ([SAFETEA-LU](#)) of 2005 continued these provisions. The Moving Ahead for Progress in the 21<sup>st</sup> Century Act ([MAP-21](#)) of 2012 enacted program changes and continued broad consideration and eligibility for bicycling and walking. The Fixing America's Surface Transportation ([FAST](#)) Act of 2015 allowed for additional design flexibility for projects that benefit pedestrians and bicyclists. The statutory provisions affecting bicycling and walking are codified in titles 23 and 49 of the [United States Code](#) (U.S.C.). This guidance describes the range of opportunities to improve conditions for bicycling and walking, consistent with Department of Transportation goals for a safe, comfortable, equitable, and integrated multimodal transportation network infrastructure that serves all ages and abilities.

## Bicycle and Pedestrian Policy

Improving safety and infrastructure for bicycling and walking creates an integrated, intermodal transportation system that provides travelers with a real choice of transportation modes. Bicyclists and pedestrians have the same origins and destinations as other transportation system users. It is important for all users to have safe and convenient access to airports, ports, ferry services, transit stations and stops, and other intermodal facilities as well as access to jobs, education, health care, and other essential services. Transportation professionals should plan, design, construct, and maintain transportation facilities for all users, including bicyclists and pedestrians.

Almost every transportation improvement is an opportunity to enhance the safety and convenience of walking and bicycling. Bicycle and pedestrian needs must be given “due consideration” under Federal surface transportation law (23 U.S.C. 217(g)(1)). This consideration should include, at a minimum, a presumption that bicyclists and pedestrians,



including persons with disabilities, will be accommodated in the design of new and improved transportation facilities. In the planning, design, and operation of transportation facilities, bicyclists and pedestrians should be included as a matter of routine, and the decision to not accommodate them should be the exception rather than the rule. New construction and alterations of pedestrian facilities must be consistent with requirements of the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973.

Relevant circumstances should be present before denying bicycle and pedestrian access either by prohibition or by designing highways that are incompatible with safe, convenient walking and bicycling (23 U.S.C. 217(g)(1)). Even where circumstances are exceptional, and bicycle use and walking are either prohibited or made incompatible, States, Metropolitan Planning Organizations (MPOs), and local governments should ensure that highway projects do not make bicycle and pedestrian access along a corridor more difficult or impossible (23 U.S.C. 109(m) and 217(g)). For example, there may be ways to provide alternate routes on parallel surface streets that are safe and convenient, or to provide shuttle bus service on major bridge crossings.

States, MPOs, and local officials should consider how to incorporate the needs of bicyclists and pedestrians, and the transportation networks, into emergency preparedness, response, and evacuation plans. Bicycle and pedestrian networks can provide access to facilitate emergency response and evacuation.

At the Federal level, the Federal Highway Administration ([FHWA](#)) works with the National Highway Traffic Safety Administration ([NHTSA](#)), the Federal Transit Administration ([FTA](#)), the Federal Railroad Administration ([FRA](#)), and other agencies to implement the bicycle and pedestrian provisions of Federal surface transportation law. State and local agencies are expected to work cooperatively with transportation providers, user groups, and the public to develop plans, programs, and projects that reflect this vision.

## **Selected Legislation**

There are several key provisions of Federal surface transportation law relating to planning requirements and building connected networks of bicycle and pedestrian facilities. The list below is not exhaustive; other sections of law support bicycle and pedestrian safety and mobility.

### **Planning**

Information on the transportation planning process is available in [The Transportation Planning Process: Key Issues: A Briefing Book for Transportation Decisionmakers, Officials, and Staff](#). The following list has statutory and regulatory citations relating to the transportation planning and bicycle and pedestrian programs and projects.

- “Bicyclists and pedestrians shall be given due consideration in the comprehensive transportation plans developed by each metropolitan planning organization and State...” (23 U.S.C. 217(g)(1)).
- The long-range metropolitan and statewide transportation plans, and the Metropolitan and Statewide Transportation Improvement Programs must “provide for the development and integrated management and operation of transportation systems and facilities (including accessible pedestrian walkways, bicycle transportation facilities, and intermodal facilities...)”

that will function as an intermodal transportation system...” (23 U.S.C. 134(c)(2) and 135(a)(2)).

- The process for developing long-range statewide and metropolitan transportation plans and transportation improvement programs shall provide for consideration of “all modes of transportation.” (23 U.S.C. 134(c)(3) and 135(a)(3)).
- The scope of the metropolitan and statewide planning processes shall provide for consideration of projects and strategies that will increase the safety and security for motorized and nonmotorized users (23 U.S.C. 134(h)(1) and 135(d)(1)) and that will ensure that the transportation planning process is being carried out in accordance with all applicable requirements of the Americans with Disabilities Act (ADA) of 1990 (42 U.S.C. 12101 et seq.) and 49 CFR parts 27, 37, and 38. (23 CFR 450.220(a)(6), 450.336(a)(7)).
- The long-range metropolitan transportation plans are to include “an identification of transportation facilities (including major roadways, transit, multimodal and intermodal facilities, nonmotorized transportation facilities, and intermodal connectors) that should function as an integrated metropolitan transportation system.” (23 U.S.C. 134(i)(2)).
- The long-range statewide transportation plans are to provide “for the development and implementation of the intermodal transportation system.” (23 U.S.C. 135(f)(1)).
- Metropolitan areas and States must include “representatives of users of pedestrian walkways and bicycle transportation facilities” among “interested parties” with whom metropolitan areas and States provide a reasonable opportunity to comment during the development of the long-range metropolitan and statewide transportation plans. (23 U.S.C. 134(i)(6)(A) and 135(f)(3)(A)).
- Metropolitan areas must include “investments in pedestrian walkways and bicycle transportation facilities” in the publication of annual listings of projects. (23 U.S.C. 134(j)(7)(B)).
- Bicycle and pedestrian projects of a similar nature may be grouped together for the purposes of funding without each project having to be approved individually. (23 U.S.C. 134(j)(3)(B)(ii) and 135(g)(5)(C)(ii)).

## **Connectivity**

The following list has statutory and regulatory citations focusing on network connectivity related to bicycle and pedestrian programs and projects.

- “Bicycle transportation facilities and pedestrian walkways shall be considered, where appropriate, in conjunction with all new construction and reconstruction of transportation facilities, except where bicycle and pedestrian use are not permitted.” (23 U.S.C. 217(g)(1)).
- “Transportation plans and projects shall provide due consideration for safety and contiguous routes for bicyclists and pedestrians.” (23 U.S.C. 217(g)(2)).
- “In any case where a highway bridge deck being replaced or rehabilitated with Federal financial participation is located on a highway on which bicycles are permitted to operate at each end of such bridge, and the Secretary determines that the safe accommodation of bicycles can be provided at reasonable cost as part of such replacement or rehabilitation, then such bridge shall be so replaced or rehabilitated as to provide such safe accommodations.” (23 U.S.C. 217(e)).
- “A design for new construction, reconstruction, resurfacing (except for maintenance resurfacing), restoration, or rehabilitation of a highway on the National Highway System

(other than a highway also on the Interstate System) shall consider, in addition to the criteria described in subsection (a)—

(A) the constructed and natural environment of the area;

(B) the environmental, scenic, aesthetic, historic, community, and preservation impacts of the activity; and

(C) access for other modes of transportation.” (23 U.S.C. 109(c)).

- FHWA interprets this provision to include consideration of community impacts and safety and access for pedestrians and bicyclists.
- “The Secretary shall not, as a condition precedent to his approval under section 106 of this title, require any State to acquire title to, or control of, any marginal land along the proposed highway in addition to that reasonably necessary for road surfaces, median strips, bikeways, pedestrian walkways, gutters, ditches, and side slopes, and of sufficient width to provide service roads for adjacent property to permit safe access at controlled locations in order to expedite traffic, promote safety, and minimize roadside parking.” (23 U.S.C. 109(f)).
  - FHWA interprets this provision to include bikeways and pedestrian walkways as reasonably necessary parts of highway projects.
- “The Secretary shall not approve any project or take any regulatory action under this title that will result in the severance of an existing major route or have significant adverse impact on the safety for nonmotorized transportation traffic and light motorcycles, unless such project or regulatory action provides for a reasonable alternate route or such a route exists.” (23 U.S.C. 109(m)).
  - FHWA interprets this requirement to include providing appropriate replacement detour accommodations in the event of permanent or temporary closures.
- Once a transportation project is constructed using Federal-aid funds, the State DOT or other recipient must maintain it (23 U.S.C. 116).
- Repair to damaged bicycle and pedestrian transportation facilities within the right-of-way of a Federal-aid highway or Federal Land transportation facility eligible for emergency relief funding should be considered in the same manner as other surface transportation facilities (23 U.S.C. 125).

## **Integrating Bicycle and Pedestrian Projects**

There are many simple and cost-effective ways to integrate nonmotorized users into the design and operation of the transportation system by including bicycle and pedestrian accommodation as part of larger programs and projects.

Project examples include:

- Building sidewalks and trails as a part of new or reconstructed highways, and including sidewalks and bicycle facilities with new or reconstructed bridges and tunnels.
- Installing [Proven Safety Countermeasures](#), such as [pedestrian crossing islands](#), [pedestrian hybrid beacons](#), and [leading pedestrian interval](#) signals.
- Integrating recreational trails into transportation networks, where appropriate.
- Providing paved shoulders on new and reconstructed roads for pavement integrity and motorist safety as well as providing bicyclists a place to ride.
- Purchasing transit vehicles that have bicycle racks and/or hooks already installed.
- Restriping roads, either as stand-alone projects or after resurfacing or reconstruction projects, to create marked crosswalks or on-street bike lanes.

The broad eligibility of bicycle and pedestrian facilities for Federal surface transportation programs means that additional improvements such as these are appropriate as part of larger transportation projects, except on highway facilities where bicycle and pedestrian travel is prohibited. One exception affects the Federal Lands Transportation Program: the appropriate Federal land management agency shall prohibit the use of bicycles on each federally owned road that has a speed limit of 30 miles per hour or greater and an adjacent paved path for use by bicycles within 100 yards of the road unless the Secretary determines that the bicycle level of service on that roadway is rated B or higher (23 U.S.C. 203(d)). The FHWA has several documents on its [Bicycle and Pedestrian Resources](#) webpage to provide information about incorporating bicycle and pedestrian facilities into highway projects. See also the [Design Resources](#) section.

In addition, planners, designers, and other decisionmakers might consider:

- How connected vehicle technologies may affect pedestrians, bicyclists, and other nonmotorized users within the highway right-of-way and how these technologies may affect access to transit services.
- How to consider transportation and recreation planning to connect and integrate transportation and recreation infrastructure to work together seamlessly.

## Funding Eligibility

Federal surface transportation law provides flexibility to States and MPOs to fund bicycle and pedestrian improvements from a wide variety of programs. Bicycle transportation facilities and pedestrian walkways are eligible under nearly all Federal-aid and Federal lands highway programs. Specific program requirements must be met, and eligibility must be determined on a case-by-case basis. When considering ways to improve conditions for bicycling and walking, States and MPOs are encouraged to:

- Integrate bicycle and pedestrian improvements into larger projects, as described above.
- Consider all Federal-aid highway programs as potential funding sources. The table [Pedestrian and Bicycle Funding Opportunities: US Department of Transportation, Federal Transit, and Highway, and Safety Funds](#), indicates potential eligibility for bicycle and pedestrian projects under several DOT funding programs. Note that Federal programs have specific requirements for projects, and eligibility must be determined on a case-by-case basis.
- See FHWA's [A Guide To Federal-Aid Programs And Projects](#).
- Explore State, local, and private funding sources, including public-private partnerships.

**Bicycle and pedestrian coordinator positions:** A State bicycle and pedestrian coordinator position at each State DOT must be funded if the State receives Surface Transportation Block Grant Program ([STBG](#)) or Congestion Mitigation and Air Quality Improvement Program ([CMAQ](#)) funding (23 U.S.C. 217(d)). Many States refer to this position as an Active Transportation Coordinator. State and local Safe Routes to School coordinator positions are eligible as Safe Routes to School projects under the STBG program (23 U.S.C. 133(b)(6) and (15)) and the TA Set-Aside (23 U.S.C. 133(h)), which authorize projects eligible under SAFETEA-LU Section 1404. For more information, see:



- [Memorandum on the Designation of Bicycle and Pedestrian Coordinators within State DOTs](#). Attachments to this memo list the typical duties and qualities for the position.
- [State Bicycle and Pedestrian Coordinator](#) contacts
- [FHWA Bicycle and Pedestrian Coordinator](#) contacts

**Motorized Vehicle Use:** In general, under Section 217(h), motorized vehicles are not permitted on nonmotorized trails and pedestrian walkways funded under Title 23. Exceptions to this general rule exist for maintenance vehicles; motorized wheelchairs; when State or local regulations permit; snowmobiles; electric bicycles (weighing under 100 pounds and a top speed of less than 20 miles per hour); “and such other circumstances as the Secretary deems appropriate” (except the RTP which specifically provides funds for motorized trails). In 2008, FHWA developed a [Framework for Considering Motorized Use on Nonmotorized Trails and Pedestrian Walkways](#) to provide guidance on when an exception may be granted under the “other circumstances” provision. If a project agreement specifies a nonmotorized trail or pedestrian walkway, then Section 217(h) applies.

**Nonconstruction activities:** Nonconstruction projects include any project not involving physical construction, such as safety education materials. Nonconstruction bicycle projects are eligible for [STBG](#) and [CMAQ](#) funding (23 U.S.C. 217(a)). State and Community Highway Safety Grant Program funds ([Section 402](#)) are to be used exclusively for nonconstruction activities (23 U.S.C. 402).

**Projects on local roads:** Bicycle and pedestrian projects may be funded under [STBG](#), [TA Set-Aside](#), [RTP](#), and [CMAQ](#) regardless of whether they are on or along Federal-aid highways (23 U.S.C. 133(c)(2), 133(b)(4) through (11), 133(h), and 149). Highway Safety Improvement Program ([HSIP](#)) funds may be spent on highway safety improvement projects on “any public highway or publicly owned bicycle or pedestrian pathway or trail.” (23 U.S.C. 148(e)).

**Transportation Purpose:** Section 217(i) of title 23 requires that bicycle facilities “be principally for transportation, rather than recreation, purposes.” However, the FAST Act revised sections 133(b)(6) and 133(h) to authorize “recreational trails projects” as eligible activities under the [STBG](#) program. Section 217(i) continues to apply to bicycle facilities using other Federal-aid funds (e.g., National Highway Performance Program ([NHPP](#)), [HSIP](#), [CMAQ](#)).

## Federal Share and Matching Requirements

The Federal share for bicycle and pedestrian projects funded under a Federal-aid highway program is the same as for any other projects funded under the program. The standard Federal share under the Federal-aid highway program is generally 80 percent of the cost of the activity or project funded, with a 20 percent State or local match (80/20 rule) (23 U.S.C. 120(b)). See the [FAST Act Fact Sheet on Federal Share](#).

There are, however, exceptions to the general 80/20 rule for programs that fund bicycle and pedestrian projects. The examples provided below are for illustrative purposes only. To determine whether a project qualifies for increased Federal share, consult with the FHWA Division Office or the Office of the Chief Financial Officer for additional information.

- For States with significant Federal land holdings, a [sliding scale](#) of up to 95 percent Federal funding is determined according to the percentage of Federal land holdings in the State (23 U.S.C. 120(b)).
- For the [HSIP](#), the Federal share is generally 90 percent or the application of [sliding scale](#) per 23 USC 120(b), whichever is higher.
- The Federal share may be 100 percent with eligible funds for certain safety improvements such as traffic control signalization, pavement marking, or installation of traffic signs or traffic lights (23 U.S.C. 120(c)(1)). Examples include pedestrian and bicyclist-focused countermeasures such as [leading pedestrian intervals](#), [pedestrian hybrid beacons](#), crosswalks, in-street pedestrian signs, and pedestrian lighting.
- The Federal share of a project incorporating innovations described in 23 U.S.C. 120(c)(3) may be increased by up to 5 percent if funded by the NHPP, STBG Program, or Metropolitan Planning Program. The FAST Act added specific mention of innovative engineering or design approaches and project delivery methods as activities eligible for this increased Federal share (see 23 U.S.C. 120(c)(3)(B)). Examples include pedestrian and bicyclist-focused projects under the [Every Day Counts](#) (EDC) initiatives such as Safe Transportation for Every Pedestrian ([STEP](#)) or [Value Capture](#).
- The Federal share of the cost of a project carried out under the Federal lands transportation program or the tribal transportation program shall be 100 percent (23 U.S.C. 201(b)(7)).
- There are flexibilities for the Federal share for bicycle and pedestrian projects using [RTP](#) funds. Individual [RTP](#) projects may exceed the 80 percent (or [sliding scale](#)) Federal share provided the State program does not exceed the State's Federal share for all projects in a given year (23 U.S.C. 206(f)(5)).
- A State can meet its and local match for Federal-aid highway projects through donations of funds, materials, services, or right-of-way (23 U.S.C. 323). In-kind contributions such as volunteer labor, land donations, and services may count towards matching share provided that a reasonable cash value can be attributed to the donated time, resource, or service. Also see [Federal-Aid Guidance Non-Federal Matching Requirements](#) (May 15, 2019), including soft match and documentation provisions.

See guidance for each specific funding program for more information on Federal share requirements.

## **Project Development**

Bicycling, walking, and enhancing accessibility embody several of the policy goals of Federal surface transportation law (23 U.S.C. 101(b)(3)). These modes quietly, cleanly, efficiently, and effectively serve local transportation needs and enhance quality of life, providing access to jobs, education, health care, and other essential services. They are also critical to ensuring that people can get to and from transit services.

Federal policy also supports expedited project delivery (23 U.S.C. 101(b)(4)). The FHWA provides maximum opportunities for States to accelerate the approval and implementation of bicycle and pedestrian projects and programs. States and MPOs can use accelerated project delivery measures and take any additional steps they can to speed up the implementation of projects that improve conditions for bicycling and walking.

FHWA-funded pedestrian and bicycle projects as well as larger Federal-aid and Federal Lands highway projects, and multimodal projects that include pedestrian and bicycle elements are subject to environmental review and approval under FHWA's [National Environmental Policy Act](#) (NEPA) implementing regulations in 23 CFR part 771. When NEPA reviews are required, bicycle and pedestrian project sponsors must identify, and should minimize or avoid, any environmental impacts the proposed projects may have on various environmental resources. Federal-aid and Federal Lands highway projects, such as bicycle lane marking, bicycle parking installation, crosswalk striping, [pedestrian crossing islands](#), [pedestrian hybrid beacons](#), [leading pedestrian intervals](#), and traffic signal operations to benefit bicycle and pedestrian safety and mobility typically qualify for a Categorical Exclusion under FHWA's NEPA implementing regulations in 23 CFR 771.117 and FTA's corresponding regulations in 23 CFR 771.118.

Bicycle and pedestrian facility project sponsors should work closely with their State DOTs and FHWA division staff to identify specific requirements for environmental review and documentation. The FHWA recognizes that building standalone bicycle and pedestrian facilities is an action that does not typically result in significant impacts on the environment, and thus it is explicitly identified as a category of action (categorical exclusion) not normally requiring extensive documentation (instead relying on a checklist for possible impacts) or a lengthy approval process ([23 CFR 771.117\(c\)\(3\)](#)).

Key provisions to keep in mind for FHWA projects include:

- Section 4(f): It is possible that a bicycle and pedestrian project could involve a park, recreation area, wildlife or waterfowl refuge, or historic site, and be required to undergo a Section 4(f) evaluation ([FHWA Memo, May 23, 1977](#)). See [Section 4\(f\) Policy Paper, Part II, Section 15](#). Exceptions to Section 4(f) approval are provided in 23 CFR 774.13(f) and (g) for projects involving “certain trails, paths, bikeways, and sidewalks,” and for “transportation enhancement activities, transportation alternatives projects and mitigation activities,” under certain conditions.
- Transportation conformity requirements: Stand-alone bicycle and pedestrian facilities are exempt from transportation conformity requirements. However, bicycle and pedestrian projects that are elements of larger transportation projects may be subject to transportation conformity as part of a larger project.
- Eligible Emergency Relief Projects: Categorical exclusions are available for certain emergency repairs arising from certain natural disasters or catastrophic failures from an external cause ([23 CFR 771.117\(c\)\(9\)](#)).
- Procurement: Some projects not located within highway right-of-way may be procured using State procedures and do not need to follow Federal procurement procedures. See [Procurement Memo](#). However, STBG (including TA Set-Aside, but excluding the RTP set-aside) projects must be treated as projects on Federal-aid highways (23 U.S.C. 133(i)).
- Nondiscrimination: Title VI of the Civil Rights Act (42 U.S.C. 2000) ensures that no person shall be subject to discrimination based on race, color, or national origin under any program or activity that receives Federal financial assistance. Title VI applies to bicycle and pedestrian projects of a State or local DOT recipient of Federal financial assistance even if the project is funded solely with the recipient's own funds. The Civil Rights Restoration Act of 1987 clarifies that “any program or activity” means “all the operations of” the State or local government department or agency that receives Federal financial assistance.

- **Accessibility:** Compliance with the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act: The primary purpose of FHWA’s accessibility program is to ensure that pedestrians with disabilities have an equal opportunity to use the public rights-of-way in the transportation system. FHWA’s regulatory responsibilities under Title II of the ADA and Section 504 of the Rehabilitation Act of 1973 (Section 504) include oversight of State and local entities and recipients of Federal funds that are responsible for roadways and pedestrian facilities to ensure that they do not discriminate on the basis of disability in any highway transportation program, activity, service, or benefit they provide to the public. See the U.S. Department of Justice’s ADA Title II regulations at 28 CFR part 35 and DOT’s Section 504 regulations at 49 CFR part 27.
- **Youth Service and Conservation Corps:** MAP-21 Section 1524 authorizes States and MPOs to sole source contracts and cooperative agreements to qualified youth service or conservation corps for appropriate bicycle and pedestrian projects. See the [MAP-21 Section 1524 Questions and Answers](#) and [Youth Workforce Development Resources](#).

## Design Resources

Under 23 U.S.C. 109(c), States must use design standards that FHWA has incorporated by reference in 23 CFR part 625 when developing projects on the National Highway System (NHS). Under 23 U.S.C. 109(o), States establish their own design standards for projects not on the NHS. A locality may use a different roadway design publication than the State (with State approval), if the roadway is owned by the locality, the roadway is not on the Interstate System, the locality is the direct recipient of Federal funds for the project, the publication is recognized by FHWA and adopted by the locality, and the design complies with all other applicable Federal laws (FAST Act § 1404(b)). See <https://www.fhwa.dot.gov/design/standards/161006qa.cfm> for more information.

The FHWA encourages States and MPOs to adopt design standards for Federal surface transportation projects that provide for the safe and adequate accommodation (as determined by the State) of all users of the surface transportation network, including motorized and nonmotorized users in all stages of project planning, development, and operation. [FAST Act § 1442]

The FHWA supports taking a flexible approach to bicycle and pedestrian facility design as described in the memo on [Bicycle and Pedestrian Facility Design Flexibility](#). The following list of references provide useful information for design decisions.

### Standards: Publications incorporated by reference in the Code of Federal Regulations

- [Manual on Uniform Traffic Control Devices](#) (MUTCD), FHWA (required national standard for all traffic control devices installed on any street, highway, or bicycle trail open to public travel).
- [A Policy on Geometric Design of Highways and Streets, 6<sup>th</sup> Edition, 2011](#), AASHTO (required geometric design standard for NHS highways).

### Guidance: Major national publications that provide advice on policy or technical design issues

- [Designing Walkable Urban Thoroughfares: A Context Sensitive Approach](#), March 2010, Institute of Transportation Engineers (ITE) and Congress for the New Urbanism.

- [Guide for the Development of Bicycle Facilities](#), 2012, AASHTO. *Update expected 2019-2020.*
- [Guide for the Planning, Design, and Operation of Pedestrian Facilities](#), 2004, AASHTO. *Note: AASHTO is updating this document, expected 2019-2020.*
- [Highway Capacity Manual](#), 2010, Transportation Research Board.
- [Highway Safety Manual](#), AASHTO (links to multiple resources).
- [Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations](#), March 2010, DOT.
- [Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way](#), 2011 [U.S. Access Board](#)
- [Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way; Shared Use Paths \(Supplemental Notice\)](#), 2013, [U.S. Access Board](#).
- [Roadside Design Guide, 4<sup>th</sup> Edition](#), 2011, AASHTO.
- [Urban Street Design Guide](#), October 2013, NACTO.

**Information: Publications and other resources providing education and knowledge on specific topics**

- [Accessible Shared Streets: Notable Practices and Considerations for Accommodating Pedestrians with Vision Disabilities](#), October 2017, FHWA.
- [Achieving Multimodal Networks: Applying Design Flexibility and Reducing Conflicts](#), August 2016, FHWA.
- [A Guide for Maintaining Pedestrian Facilities for Enhanced Safety](#), October 2013, FHWA.
- [Bicycle and Pedestrian Design Guidance](#), FHWA (links to multiple resources).
- [Bicycle and Pedestrian Facility Design Flexibility](#), FHWA, August 20, 2013
- [Bicycle and Pedestrian Funding, Design, and Environmental Review: Addressing Common Misconceptions](#), August 2015, DOT and FHWA.
- [Bike Network Mapping Idea Book](#), June 2016, FHWA.
- [BIKESAFE](#), 2014, FHWA.
- [Bike Share Station Siting Guide](#), 2016, NACTO.
- [Bikeway Selection Guide](#), 2019, FHWA.
- [Case Studies in Delivering Safe, Comfortable and Connected Pedestrian and Bicycle Networks](#), December 2015, FHWA.
- [Case Studies in Realizing Co-Benefits of Multimodal Roadway Design and Gray and Green Infrastructure](#), March 2018, FHWA.
- [Context Sensitive Solutions](#), FHWA (links to multiple resources).
- [DOT Pedestrian and Bicyclist Road Safety Assessments](#), October 2015, DOT.
- [Guidebook for Developing Pedestrian and Bicycle Performance Measures](#), March 2016, FHWA.
- [Guidebook for Measuring Multimodal Network Connectivity](#), February 2018, FHWA.
- [Handbook for Designing Roadways for the Aging Population](#), June 2014, FHWA.
- [Incorporating On-Road Bicycle Networks into Resurfacing Projects](#), December 2015, FHWA.
- [Information: Design Standards and Section 1404 of the FAST Act](#), FHWA, October 6, 2016
- [Memorandum on the Designation of Bicycle and Pedestrian Coordinators within State DOTs](#), January 17, 1992, FHWA



- [Noteworthy Local Policies That Support Safe and Complete Pedestrian and Bicycle Networks](#), November 2016, FHWA.
- [Pedestrian and Bicycle Information Center](#), FHWA-supported (links to multiple resources).
- [PEDSAFE](#), 2013, FHWA.
- [Pedestrian and Bicycle Funding Opportunities](#), May 2018, FHWA.
- [Performance Based Practical Design Webpage](#), FHWA (links to multiple resources).
- [Pursuing Equity in Pedestrian and Bicycle Planning](#), April 2016, FHWA.
- [Proven Safety Countermeasures](#), FHWA (links to multiple resources).
- [Questions & Answers about Design Flexibility for Pedestrian and Bicycle Facilities](#), FHWA, July 25, 2014
- [Rails-with-Trails: Lessons Learned](#), August 2002, FHWA, FRA. A *new report* is expected Fall 2019.
- [Road Diet Informational Guide](#), November 2014, FHWA.
- [Separated Bike Lanes Planning and Design Guide](#), May 2015, FHWA.
- [Small Town and Rural Multimodal Networks](#), December 2016, FHWA
- [Strategies for Accelerating Multimodal Project Delivery](#), October 2018, FHWA.
- [Transit Street Design Guide](#), April 2016, NACTO.
- [United States Department of Transportation Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations](#), March 11, 2010, DOT
- [Urban Bikeway Design Guide](#), March 2014, NACTO.
- [Urban Street Geometric Design Handbook](#), December 2008, ITE.