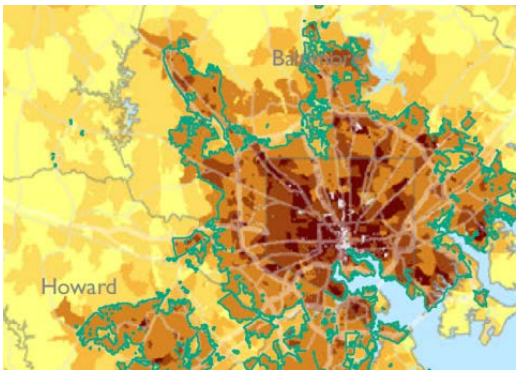
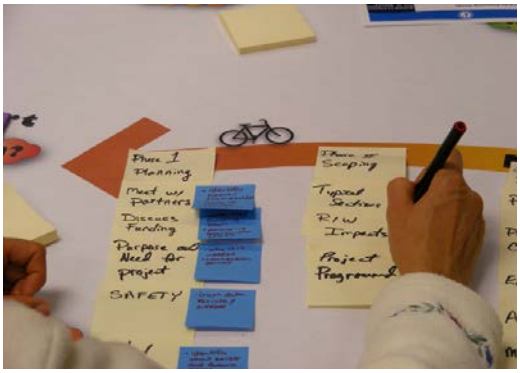
Statewide Pedestrian and Bicycle Planning Handbook





Clockwise from top left: North Carolina, Maryland, Minnesota, Hawaii

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13. ABSTRACT

This handbook is designed to help State departments of transportation (DOTs) develop or update State pedestrian and bicycle plans. Based on research including interviews with nine State DOTs and critical evaluations of documents from 15 States, this handbook covers statewide planning 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. For each stage of the planning process, this handbook uses recent experiences and noteworthy practices from DOTs around the country, helping inform a new generation of statewide nonmotorized planning and implementation.

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Executive Summary

1.1 Purpose and Approach

The purpose of this handbook is to help State departments of transportation (DOTs) develop or update State pedestrian and bicycle plans. Based on research including interviews with nine State DOTs and critical evaluations of plans and associated documents from 15 States (see Appendix A) this handbook covers statewide planning 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. For each stage of the planning process, this handbook uses recent experiences and noteworthy practices from DOTs around the country, helping to inform a new generation of statewide nonmotorized planning and implementation.

1.2 Key Themes

The following themes emerged from discussions with statewide pedestrian and bicycle coordinators in early 2014. Discussions with DOTs in Colorado, Hawaii, Iowa, Louisiana, Maryland, Minnesota, North Carolina, Vermont, and Washington yielded the following key themes.

Plan Focus

- **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.

- **The plan needs a clear purpose.** Many States felt it was important to think about how the results of the plan are used, beginning with the end in mind and working backwards. Planners should consider who will use it and what it will be used for; this helps to define the expectations of the process.

Planning Process

- **The plan is a point in time**. The plan may be prompted by legislative requirements, DOT priorities, and/or internal champions. Other plans and initiatives will follow it. Engagement, buy-in, and ownership are critical to making it a living document that influences departmental direction.

- **Public involvement is time intensive, but essential to a quality outcome**. Good public involvement requires significant energy and resources. If the budget does not allow many in-person meetings, webinars and interactive web tools can be effective.

- **Plan development can span a wide range of costs and effort**. Statewide pedestrian and bicycle planning efforts can vary widely in terms of cost and effort, from less than $100,000 to upwards of $800,000. The range depends on the level of detail, data collection, the balance between

focusing on specific projects and corridors versus policy, and the degree to which the plan is developed in-house or uses outside consultants. Some States break up the planning process into multiple, discrete phases in order to help with funding.

Institutional Analysis

- **Internal coordination is important, especially with district engineers and people tasked with collecting data**. The State DOT staff are the people that ultimately implement the plan. Coordination is key for information exchange, education, and buy-in.

- **Many plans place great emphasis on coordination with the agency's project development process.** It is critical to link planning to project development, in order 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.

Performance Management

- **Long-term data collection for performance management should be carefully considered**. In order 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.

List of Acronyms and Abbreviations

Abbreviation	Term
ADA	Americans with Disabilities Act
AASHTO	American Association of State Highway and Transportation Officials
CDOT	Colorado Department of Transportation
CSS	Context Sensitive Solutions
CTDOT	Connecticut Department of Transportation
DOT	Department of Transportation
FHWA	Federal Highway Administration
GIS	Geographic Information System
HSIP	Highway Safety Improvement Program
IDOT	Iowa Department of Transportation
ITE	Institute of Transportation Engineers
LaDOTD	Louisiana Department of Transportation and Development
LRTP	Long Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century
MDOT	Maryland Department of Transportation
MnDOT	Minnesota Department of Transportation
MPO	Metropolitan Planning Organization
NACTO	National Association of City Transportation Officials
NCDOT	North Carolina Department of Transportation
NCHRP	National Cooperative Highway Research Program
RTP	Recreational Trails Program
SHSP	State Highway Safety Plan
STIP	Statewide Transportation Improvement Program
TAP	Transportation Alternatives Program
TDOT	Tennessee Department of Transportation
TIP	Transportation Improvement Program
VDOT	Vermont Department of Transportation
WisDOT	Wisconsin Department of Transportation
WSDOT	Washington State Department of Transportation

The Federal Highway Administration (FHWA) developed this handbook to help State departments of transportation (DOTs) develop or update State pedestrian and bicycle plans using recent experiences and noteworthy practices from their peers. With assistance from the Volpe National Transportation Systems Center (Volpe), FHWA conducted detailed interviews with 9 State DOTs and critically evaluated plans and associated documents from 15 States. This report summarizes the findings of that effort and is designed to share recent experiences and noteworthy practices in preparing and implementing pedestrian and bicycle plans.

1. Introduction

Federal transportation law and U.S. DOT policy and guidance promote the planning and development of walking and bicycling networks as a key component of the transportation system. U.S. law requires the consideration of pedestrian and bicyclist needs in statewide and metropolitan transportation plans. The U.S. DOT Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations states that:

> "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."[1]

Approximately 33 States have either combined or standalone statewide pedestrian and bicycle plans, including 20 States with combined plans.

FHWA also offers several guidance documents for considering pedestrians and bicyclists in the transportation planning and programming process, with the goal of mainstreaming walking and bicycling into transportation planning, design, and operations.

FHWA has made a priority of accounting for pedestrian and bicycle networks that provide functional connections and enhance transportation choices in communities. FHWA will be reporting on the progress of network completion made by projects that receive federal funds as part of its Strategic Implementation Plan. FHWA defines nonmotorized networks broadly 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.

FHWA developed this document to frame key issues and highlight noteworthy practices in planning for walking and bicycling at the State level, particularly in the context of State pedestrian and bicycle plans. While such plans are becoming increasingly popular across the country, most of the current literature focuses on pedestrian and bicycle planning at the local level.

This document explores the state of the practice in conducting planning for nonmotorized

[1] http://www.fhwa.dot.gov/environment/bicycle_pedestrian/overview/policy_accom.cfm

transportation at the State level and highlights innovative ways that State DOTs are improving the transportation system for walking and bicycling. It is also meant to assist those involved in statewide planning to consider some of the experience and complexities faced by others in the field. The document is primarily targeted to State DOT staff, though it may also be useful for practitioners and advocates at the Federal, regional, and local levels.

All DOT employees are responsible for ensuring safe and appropriate pedestrian and bicycle accommodation. Every State has a designated State DOT bicycle and pedestrian coordinator, who has specific responsibility to lead nonmotorized programs and activities. Each State interprets the role of the coordinator differently, and across the country they are housed in different DOT divisions, including planning, engineering, transit, local programs, community development/design, and safety. Regardless of where they sit within the DOT organization and who has primary responsibility for developing the statewide pedestrian and bicycle plan, it is critical for the coordinator to work with staff throughout the DOT to integrate pedestrian and bicycle issues into all of the DOT's work. This guide is organized into the following chapters:

- **Getting Started:** This chapter covers key questions and considerations prior to beginning a statewide plan.

- **Institutional and Policy Analysis:** This chapter highlights several institutional and policy related considerations that could frame the planning process and the plan itself.

- **Developing Goals, Objectives, and Performance Measures:** This chapter introduces how to organize the planning process around goals, objectives, and performance measures.

- **Public Participation:** This chapter highlights the particular importance of involving the public and stakeholders in conducting a standalone pedestrian and bicycle plan, and offers examples and methods for doing so.

- **Information Base and Content:** This chapter describes 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:** This chapter uses examples to describe methods of identifying network improvement and safety projects to be pursued in a statewide nonmotorized transportation plan.

- **Implementation:** This final chapter describes key considerations for making an effective plan and setting a process in motion to realize the plan's objectives.

This statewide planning and policy handbook is meant to complement several existing resources, such as the Institute of Transportation Engineers' *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach* and AASHTO's *Guide for the Development of Bicycle Facilities* which each discuss planning at local or corridor levels. The noteworthy practices and approaches described throughout this document are specific to the context of the planning and programming responsibilities of State DOTs. However, some of these approaches may be practical for nonmotorized transportation planning at the local or regional scale.

State and Metropolitan Planning Requirements

The following references apply to incorporating pedestrian and bicycle projects and considerations into statewide and metropolitan long-range planning. The references all come from the U.S. Code, which organizes general and permanent laws of the United States.

23 USC 217 (g) Planning and Design.—
1.In General.--Bicyclists and pedestrians shall be given due consideration in the comprehensive transportation plans developed by each metropolitan planning organization and State in accordance with sections 134 and 135, respectively. 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.

2.Safety considerations.—Transportation plans and projects shall provide due consideration for safety and contiguous routes for bicyclists and pedestrians. Safety considerations shall include the installation, where appropriate, and maintenance of audible traffic signals and audible signs at street crossings.

23 USC 135 Statewide Transportation Planning
(a) (2) Contents.—The statewide transportation plan and the transportation improvement program developed for each State shall provide for the development and integrated management and operation of transportation systems and facilities (including accessible pedestrian walkways and bicycle transportation facilities) that will function as an intermodal transportation system for the State and an integral part of an intermodal transportation system for the United States.

(d)(1) In general.—Each State shall carry out a statewide transportation planning process that provides for consideration and implementation of projects, strategies, and services that will—
(A) support the economic vitality of the United States, the States, nonmetropolitan areas, and metropolitan areas, especially by enabling global competitiveness, productivity, and efficiency;
(B) increase the safety of the transportation system for motorized and nonmotorized users;
(C) increase the security of the transportation system for motorized and nonmotorized users;
(D) increase the accessibility and mobility of people and freight;
(E) protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
(F) enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight;
(G) promote efficient system management and operation; and
(H) emphasize the preservation of the existing transportation system.

(f)(3)(A) In general.—In developing the statewide transportation plan, the State shall provide citizens, affected public agencies, representatives of public transportation employees, freight shippers, private providers of transportation, representatives of users of public transportation, representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of the disabled, providers of freight transportation services, and other interested parties with a reasonable opportunity to comment on the proposed plan.

(g)(3) Participation by interested parties.—In developing the (Statewide Transportation Improvement) program, the State shall provide citizens, affected public agencies, representatives of public transportation employees, freight shippers, private providers of transportation, providers of freight transportation services, representatives of users of public transportation, representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of the disabled, and other interested parties with a reasonable opportunity to comment on the proposed program.

2. Getting Started

The motivation for conducting a statewide pedestrian and/or bicycle plan can arise from a variety of sources. Many times, a State legislature passes a law requiring the State DOT to conduct a pedestrian and/or bicycle plan in a State such as in Colorado and Maryland. Other times, the State's long-range transportation plan, Strategic Highway Safety Plan, or other planning or policy document will identify the need to conduct planning specifically for walking and bicycling. Frequently, the decision to focus on pedestrian and bicycle planning comes from internal agency discussions or in response to needs identified through public involvement. Whatever the initial impetus for undertaking the plan, it is important to consider the:

- Users of the plan;
- Role of the State DOT;
- Function of the plan within the State DOT; and
- Whether to create a combined pedestrian and bicycle plan, or two separate plans.

2.1 Understand the Users of the Plan

A good first step in developing a pedestrian and/or bicycle plan is to carefully consider who will use it; this helps to determine the stakeholders to involve, the data to collect, the level of detail the plan should cover, and the resources required to develop it. Potential users generally fall into five groups:

- **Internal to the State DOT:** road designers, project managers, and district engineers and planners who carry out the business of planning, design, construction, and maintenance of DOT facilities.
- **Other State Agencies**: trail system and park planners, law enforcement, the public health community, as well as any other State agencies that provide pedestrian and bicycle facilities.
- **Local and Regional Government Agencies**: staff at metropolitan planning organizations (MPOs) or other regional transportation planning organizations, city and county engineers, and planners.
- **Stakeholders**: advocates and others involved in transportation policy development at the local, regional, and State level.
- **General Public**: users of the pedestrian and bicycle system.

2.2 State DOT Role

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.

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.

Defining the Role of the State DOT (Massachusetts)

As part of its 2008 bicycle plan, the Massachusetts DOT made the effort to explicitly define its role in bicycle transportation in the following way: "Massachusetts covers over 7,800 square miles of land area. Most bicycle trips are of relatively short distance, typically about 3 miles or fewer, and most take place on local roads, the majority of which are owned and controlled by municipalities. As with all modes of transportation, the Commonwealth's role and perspective is thus inherently broader. Issues such as interregional connectivity, consistent and pervasive education and enforcement, and large-scale infrastructure investments are rightly the domain of statewide planning processes. For bicycling, the Commonwealth's role is to plan and program projects, enact laws, and to offer programs that support a variety of bicycle-related policies such as education, safety, land development, and health and wellness, among others."

2.3 Function of the Plan

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:

- 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 need to be developed for practitioners to carry out the strategies in the LRTP or SHSP?
- 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 and 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 in order to articulate effective goals and objectives to guide the planning process.

Defining Plan Purpose

Hawaii DOT describes the motivation for its pedestrian plan: "To complement other programs that address pedestrian safety, the State of Hawaii DOT prepared a community-based Statewide Pedestrian Master Plan (Plan) for the State's highway system. The Plan's comprehensive approach not only focuses on improving pedestrian safety, it evaluates ways to enhance pedestrian mobility and accessibility to help create a multimodal transportation system."

2.4 Pedestrian Plan, Bicycle Plan, or Both?

A key question to ask beyond those listed above is whether to focus on pedestrians, bicyclists, or both. Approximately 20 States have combined pedestrian and bicycle plans, while 13 States have standalone bicycle plans and 6 States have pedestrian standalone plans.[2] Common reasons for combined plans include:

- 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.

[2] Alliance for Biking and Walking (2014). *Bicycling and Walking in the United States: 2014 Benchmarking Report.* https://www.bikewalkalliance.org/resources/benchmarking/

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 in order to engage them adequately.

Combining or Separating Pedestrian and Bicycle Planning

Some States that have chosen to follow a separate planning process for each mode are Hawaii, which adopted a statewide pedestrian plan; Minnesota, which is currently developing separate pedestrian and bicycle plans; and Massachusetts. In the case of Minnesota; however, both plans expect to use the policy and procedural findings from its Statewide Bicycle Planning Study, which details the planning and organizational context for providing bicycle facilities since they are similar to those for pedestrian facilities.

3. Institutional and Policy Analysis

In addition to analyzing physical roadway or project needs on a State's right of way, the pedestrian/bicycle planning process is an opportunity to look inward at the State DOT and consider how to improve internal coordination and statewide policies. Internal examination will help to focus the planning effort and ultimately make it more successful.

The first section of this chapter highlights several institutional questions and considerations to help frame the context of plan development and identify areas where the staff with primary responsibility for developing the plan may need to learn from and educate other DOT staff. The second section looks to existing plans and policies to understand how nonmotorized transportation fits into the broader planning and project development processes, and to identify policies or procedures that may need to be developed or revised.

3.1 Institutional Relationships

One benefit of the pedestrian and bicycle planning process is the opportunity to strengthen cross-departmental relationships within the DOT and better integrate pedestrian and bicycle considerations throughout all aspects of the agency. The internal focus can be a significant undertaking but is well worth the effort. Improving internal awareness and communication is critical to developing successful pedestrian and bicycle plans and projects. Further, better understanding the needs, concerns, and constraints of other divisions within the State DOT may help planners better scope and plan projects so that they can address such constraints in advance. Finding ways to give more people ownership over the process often leads to greater commitment and accountability.

Conducting a Statewide Planning Study (Minnesota)

Prior to beginning its upcoming bicycle plan and pedestrian plan, the Minnesota Department of Transportation (MnDOT) conducted a Statewide Bicycle Planning Study. The study's purpose was "to provide foundational information to assist MnDOT in better integrating bikeway facility planning and implementation into its day-to-day business." It includes an extensive analysis of inconsistencies and gaps between policies and statutes at the State and Federal levels and provides recommendations for MnDOT to use in planning, scoping, and programming of transportation projects. In addition, it includes a revised statewide bikeway inventory which provides recommendations for the development of performance measures. In order to carry out the study, the project team relied on extensive outreach to engineering and planning staff in the districts in order to fully understand the concerns and interests of those responsible for implementing transportation projects as well as to take advantage of their knowledge of local bicycle networks for the bikeway inventory. The study's project managers felt that this effort has improved coordination and dialogue between district engineering staff, the planning division, and the pedestrian and bicycle section. This coordination will allow them to conduct a more impactful bicycle plan and pedestrian plan that should include realistic performance measurement and reflect the priorities and knowledge of staff in the districts.

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. Chapter 8 on plan implementation focuses more on the content and how to use it to advance projects.

Questions to Understanding Institutional Processes

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?
- 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 MAP-21 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?

3.2 Taking Stock of Existing Policies and Plans

The planning process is a time to consider existing plans, programs, and policies that can either provide opportunities or serve as barriers or obstacles to developing pedestrian and bicycle facilities. This guide considers other plans as a source of background data (Chapter 5) or as opportunities for plan implementation (Chapter 8), but it is equally valuable to consider needs for policies to be developed or adjusted in order to advance walking and bicycling in the State. The following examples offer some specific policies, plans, and processes to analyze and consider when embarking on a statewide pedestrian and bicycle plan.

3.2.1 State Capital Programming

Each State has a short-term 4-year capital and operational program called the State Transportation Improvement Program (STIP). The STIP includes all State DOT projects that may receive Federal funds and also includes the projects defined in each MPO Transportation Improvement Program (TIP).

The STIP should include and classify all pedestrian and bicycle projects that may or will receive Federal funding in the four-year program. It can also be used to inventory programmed projects being developed by local governments and funded through MPO and State programming processes. When pedestrian and bicycle elements are included as part of larger roadway construction projects, these elements should be included in a detailed project description. Washington and Colorado are two examples of States that typically have provided longer descriptions in the STIP to ensure that critical project elements like pedestrian or bicycle facilities are included in a transparent fashion.[3]

Before being included in the STIP, projects typically compete for Federal funding through MPO and State programming. Therefore, it is important to understand the State and MPO project selection processes. Good selection processes require discussion of the pedestrian and bicycle elements of all projects.

Project selection varies considerably by State and region but always involves prioritizing projects based on selection criteria that typically grow from State and regional plans, and reflect those priorities. Project selection criteria may include how well projects advance nonmotorized transportation planning objectives, such as encouraging walking and bicycling and improving safety for pedestrians or bicyclists. Having a thorough understanding of how all pedestrian and bicycle facilities are funded—whether as individual projects or as elements of larger roadway projects—is critical to making effective recommendations in a new, nonmotorized transportation plan. It may be useful to document these practices in the pedestrian/bicycle plan and actively engage those responsible for overseeing them in the plan development.

3.2.2 Metropolitan Planning Organization Long-Range Plans

Metropolitan planning organizations (MPOs) are in charge of multimodal transportation planning in metropolitan areas. They are required to address pedestrian and bicycle safety and mobility in their

[3] Advocacy Advance. (2014). *Lifting the Veil on Bicycle & Pedestrian Spending: An Analysis of Problems & Priorities in Transportation Planning and What to Do About It.* Retrieved from http://www.advocacyadvance.org/MAP21/LiftingTheVeil

long-range transportation plans, and to include pedestrian and bicycle projects in their TIPs. The relationship between the State DOT and the MPOs is important because they cooperatively manage the State's federally funded transportation program. MPOs are well positioned to conduct pedestrian and bicycle planning through policies that guide regional transportation investments and to provide assistance to local governments to provide safe, nonmotorized networks. 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. The State pedestrian and bicycle plan can discuss how the DOT will assist the MPOs in implementing their plans.

Inventory of MPO Nonmotorized Plans (Connecticut)

The Connecticut Department of Transportation (CTDOT) developed a matrix listing the various components of bicycle and pedestrian issues that exist in each of the regional transportation plans, as well as whether the MPOs have a pedestrian and/or bicycle plan in addition to the regional transportation plans. CTDOT's plan also includes a description of each of the pedestrian/bicycle plans of its regional planning organizations.

Topic	CRCOG RTP & Bike / Ped Plan	CCRPA RTP & Altern Transp Plan	SCRCOG RTP & Bike/Ped Plan	COGCNV RTP & Bike Plan	GBRPA RTP, Bike, & Ped Plan	HVCEO RTP & Bike Plan	LHCEO RTP & Bike Plan	Midstate Bike Plan	CRERPA RTP	Midstae RTP	SECCOG RTP	SWRPA RTP	VCOG RTP	WINCOG RTP
General														
Benefits of Walking/Bicycling	X	X		X						X		X		
Bicycling & Walking Trends	X	X		X		X	X							X
History/Context	X	X		X	X	X	X	X		X	X			X
Vision, Goals, and/or Objectives	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Existing Conditions														
Facility Inventory & Evaluation	X	X	X	X	X		X		X			X		X
Safety Analysis	X	X	X											
Collision/Crash Analysis		X	X											
Needs Analysis	X	X	X		X							X		
Attractors & Generators		X	X			X	X	X						
Challenges & Opportunities	X	X	X	X		X	X				X	X		
Practices & Policies														
Previous Regional Planning Efforts		X			X									X
Existing Policies & Law	X	X			X	X	X		X		X			X
Benchmark/Performance Standards	X						X	X						
Public Involvement Process/Stakeholder Input	X	X	X			X	X	X						
Proposed Bicycle & Pedestrian System														
Bicycle System	X	X	X	X	X	X	X	X		X	X	X	X	
Pedestrian System	X	X	X		X						X	X		
Multi-Use Trails	X	X	X		X	X	X	X	X		X	X	X	X
Bicycle Suitability Model/Criteria														
Priority Ranking of Projects/Selection Criteria		X	X	X	X							X		
Design Standards														
Restriping Roads with Bike Lanes		X	X	X				X	X	X				
Shoulder path design		X		X	X	X	X		X	X			X	X
Shared-use Path Design		X			X									
Wide Curb Lane Design		X			X					X				
Intersection Designs		X	X		X					X		X		
Signals, Signing and Marking		X		X	X	X	X	X		X		X		
ADA, AASHTO, MUTCD		X	X		X	X								
Lockers, Maps, Bike Parking/Racks, etc.		X	X	X	X		X	X		X		X		
Planning & Design Checklist														
Implementation														
Roles & Responsibilities	X		X		X	X						X		
Operation & Maintenance			X	X	X	X	X		X					
Potential Funding Sources/Strategies		X	X		X		X	X	X	X		X	X	X
Education & Training	X	X	X	X	X	X	X			X		X		
Enforcement	X		X		X	X				X				
Recommended Policies, Procedures & Practices														
Promotion of Livable Communities/Healthy Living	X	X	X									X		
Promotion of Environmental Stewardship	X	X										X		
Traffic Calming		X	X		X									

CTDOT analysis of regional pedestrian and/or bicycle plans and regional transportation plans across the State.

3.2.3 Complete Streets

As described in Chapter 1, U.S. law requires consideration of pedestrian and bicycle needs in transportation plans and federally funded projects. Many States, MPOs, and local communities have used "Complete Streets" policies or plans to institutionalize this requirement.

The complete streets approach focuses on designing and operating the entire roadway right of way to enable safe access for all users, regardless of age, ability, or mode of transportation. It means that transportation projects should result in a better and safer street network for drivers, transit users, pedestrians, and bicyclists. The actual final design of the roadway will vary depending on context and function; 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.[4]

Complete streets policies range widely—from simple resolutions stating support of the concepts, to detailed regulations discussing context, design, users, and exceptions. These policies can be particularly effective in institutionalizing the provision of pedestrian and bicycle transportation, incorporating it as a consideration into each stage of project development in all roadway activities.

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.

The Vermont Department of Health developed a detailed Complete Streets Guide that discusses project development phases, opportunities for improving access and safety, and appropriate treatments for differing contexts. It also discusses how to determine special cases where an exception to providing facilities for all users is not feasible or appropriate. The guide is focused on users rather than on specific design elements, leaving the details up to project managers and developers to agree upon after a project has been appropriately scoped. While the guide is not an official document of the Vermont Agency for Transportation, it is nonetheless a useful reference for agencies interested in developing a

[4] As of the beginning of 2014, the National Complete Streets Coalition has identified 27 States as well as the Commonwealth of Puerto Rico and the District of Columbia with complete streets policies. Fifty-one regional planning organizations, 48 counties, and 482 municipalities in 48 States also have adopted such policies. This list includes various different types of policy statements as official commitments to a complete streets approach, including: legislation, resolutions, executive orders, departmental policies, policies adopted by an elected board, plans and design guidance. http://www.smartgrowthamerica.org/complete-streets/complete-streets-fundamentals/complete-streets-faq

comprehensive guide to implementing complete streets policies.

3.2.4 Project Development Process

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. Typically, a State will have an established process that all projects must follow through each stage of development. Sometimes this includes a checklist that must be signed off before a project can move to the next phase. The project development process includes planning, defining the purpose and scope, preliminary engineering, environmental review, design, and construction. 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.

Project Development Checklist (Louisiana)

The Louisiana Statewide Bicycle and Pedestrian Plan recommended a new approach to project development in which each project would need to pass a checklist review at the third stage of LDOTD's project development process between defining the scope during programming and final design.

Stage 0 Feasibility Study	Stage 1 Planning and	Stage 2 Funding	Stage 3 Final Design	Stage 4 Letting Preparation	Stage 5 Construction	Stage 6 Operations
Project Initiation to include DOTD Bicycle and Pedestrian Coordinator Stage 0 Checklist to reference Pedestrian and Bicycle accommodation checklist Project Scoping to include consideration of appropriate pedestrian and bicycle accommodations. Purpose and Need Development to include identification of walking and bicycling needs Alternatives Development to include conceptual development of walking and biking accommodations as appropriate.	Solicitation of Views (SOV) to include pedestrian and bicycle and groups Coordination with local government and MPO for consistency with local planning efforts Need statement development to include review of pedestrian and bicycle needs Alternatives Development to determine appropriate accommodations for Context (Rural, Suburban, Urban) CE, EA, EIS Checklist to refer to pedestrian and bicycle accommodation checklist	Pedestrian and bicycle elements to be considered and funded as integral project components	Detailed design and engineering of pedestrian and bicycle accommodations supported by new checklist and revisions and supplements to the following documents: o Roadway Design Procedures and Details Manual o Bridge Design Manual o English Design Standards o Engineering Directives and Standards Manual Traffic management plan to include plans for the protection and maintenance of pedestrian and bicycle traffic during construction.	No new actions required	No new actions required	Monitor maintenance needs and program repairs as necessary Monitor pedestrian and bicycle crash data on an annual basis.

Proposed Louisiana project development checklist.

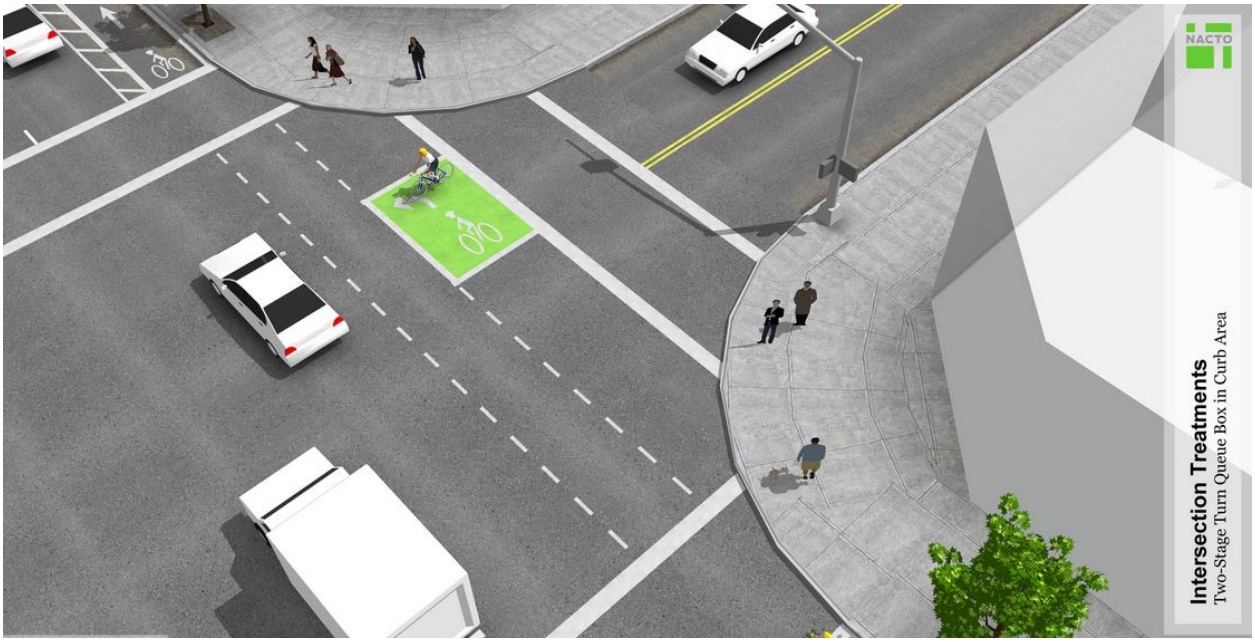
Another example is the Massachusetts DOT comprehensive project development and design guide. The guide includes detailed discussion of design standards, traffic calming, context sensitivity, and work zone management. All Massachusetts projects are subject to the requirements and recommendations laid out in the guide. Massachusetts followed the design guide by passing the Healthy Transportation Policy Directive in 2013. The directive institutionalizes design review requirements for all transportation projects to ensure that they improve pedestrian and bicycle safety and experience.

3.2.5 Design Guidelines and Flexibility

Once project development requirements are addressed, project managers need design guidance from the DOT. 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 American Association of State Highway and Transportation Officials (AASHTO) guide, the Policy on Geometric Design of Highways and Streets (also known as the "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.

In 2013, FHWA released a memo encouraging and supporting flexibility in the design of pedestrian and bicycle facilities.[5] FHWA asserts that the AASHTO bicycle and pedestrian design guides are the primary national resources for planning, designing, and operating bicycle and pedestrian facilities, and that the ITE Designing Urban Walkable Thoroughfares guide and NACTO Urban Bikeway Design Guide build upon the flexibilities provided in the AASHTO guides. FHWA supports the use of these resources to further develop nonmotorized transportation networks, particularly in urban areas. Several states have endorsed the NACTO Urban Street Design Guide and Urban Bikeway Design Guide as acceptable guidelines for designing transportation facilities in urban areas.[6]



Example design of a two-stage turn queue box (NACTO Urban Bikeway Design Guide)

While design flexibility is encouraged, all project developers should know the requirements of the Manual on Uniform Traffic Control Devices (MUTCD) when considering treatments involving changes to signage and pavement markings.

Planners and project managers must also be cognizant of evolving requirements of the Americans with Disabilities Act (ADA). The United States Access Board, a Federal agency that promotes equality for people with disabilities, is close to releasing final guidelines for the design of public rights-of-way that will address issues such as access for blind pedestrians at street crossings, wheelchair access to on-

[5] FHWA Memorandum: Bicycle and Pedestrian Facility Design Flexibility. http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design_guidance/design_flexibility.cfm.
[6] Urban Streets: http://nacto.org/urban-street-design-guide-endorsement-campaign/; Urban Bikeways: http://nacto.org/nacto-endorsement-campaign/

street parking, and various constraints posed by space limitations, roadway design practices, slope, and terrain. The new guidelines will cover pedestrian access to sidewalks and streets, including crosswalks, curb ramps, street furnishings, pedestrian signals, parking, and other components of public rights-of-way. Proposed guidelines were released in 2011 and the Department of Justice, which enforces the ADA, will adopt them shortly and they will become enforceable requirements under the ADA.

State design standards may be more or less conducive to encouraging walking and bicycling, with respect to the inclusion of specific walking or bicycling facilities, as well as more general roadway elements such as minimum lane widths and turning radii. The statewide pedestrian/bicycle planning process is an important opportunity to review roadway design standards and work with State DOT engineers to update standards to reflect best practices. The review of design standards should include consideration of roadway and nearby context; for example, while rural areas may require wider travel lanes to accommodate farm equipment or other large vehicles, narrower lanes in more urban contexts can help to manage vehicle speeds and allow sufficient right-of-way to provide dedicated walking and bicycling facilities.

Some State pedestrian and bicycle plans, such as Louisiana's and Tennessee's, discuss facility design guidelines or refer to a separate document that includes them. Including reference to design guidelines or standards in the plan will help managers of transportation projects to understand the array of design options available to them. They can also serve as a resource for local governments who seek to improve conditions for bicycling and walking on local streets and trails. The design guidelines or standards for pedestrian and bicycle facilities on roadways should be consistent with the overall design guidelines or standards used for all DOT construction projects; they must include specifics on the pedestrian or bicycle facility itself, and also show how they fit into the broader roadway context.

Louisiana Recommends Reviewing Design Guidelines

The Louisiana Department of Transportation and Development (LaDOTD) includes a discussion of several design manuals that may be consulted when initiating a project design. It also discusses different design considerations for bicyclists and for pedestrians. Furthermore, it offers recommendations to amend the State's Engineering Directives and Standards Manual to be consistent with policy recommendations from the bicycle and pedestrian plan. The Policy and Program Recommendations include several actions for LaDOTD to re-evaluate design guidelines and standards to reflect the state of the practice in transportation facility design when it pertains to bicycling and walking facilities.

Tennessee Identifies Opportunities to Update Pedestrian and Bicycle Design Guidelines

The Tennessee Department of Transportation (TDOT) plan includes a section that explains the TDOT approach toward the design of bicycle and pedestrian facilities. At the time of publication in 2005, TDOT had adopted the AASHTO guides on designing bicycle and pedestrian facilities as the official guidelines for the State. However, the plan also addresses inadequacies in those guides for all of the situations that are faced by designers at TDOT. There is an extensive discussion about standards versus best practices, and innovative treatments; all proposed designs that do not fall within the adopted sources must provide a "design exception report" that documents the reasons and engineering analysis that led to the different design.

3.2.6 Safety

Pedestrian and bicycle safety are of primary importance and a key priority of the U.S. DOT. There are several opportunities to coordinate statewide pedestrian and bicycle planning with ongoing statewide safety analysis and programs.

FHWA requires each State to develop a Strategic Highway Safety Plan (SHSP). The SHSP is a statewide, coordinated safety plan that provides a comprehensive framework for reducing highway fatalities and serious injuries on all public roads. The SHSP uses a data-driven approach to analyze a State's key safety needs, and guides investment decisions towards strategies and countermeasures with the greatest potential to save lives and prevent injuries.[7]

The SHSP data analysis process identifies several safety emphasis areas, and strategies and priorities for addressing safety concerns within those emphasis areas. Projects that support the emphasis areas are eligible for funding through the Highway Safety Improvement Program (HSIP). There is no requirement for how many emphasis areas to include, though the choice of emphasis areas must relate directly to the statewide safety data analysis. 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.

In order 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 and analysis to support better projects and countermeasures, and also to be able to take best advantage of existing funding sources.

Using the Walking and Bicycling Data from the Strategic Highway Safety Plan (Connecticut)

CTDOT identifies each of the relevant statewide plans that address nonmotorized issues and includes an extensive discussion of the contents of the State's SHSP that relate to bicycling and walking. This discussion involves crash/fatality statistics on the highway system that were identified in the Safety Plan. It also discusses the work of a bicycle and pedestrian safety task force that was involved in developing the Strategic Highway Safety Plan in 2005 that resulted in a revised driver's manual.

[7] http://safety.fhwa.dot.gov/hsip/shsp/

Locating "Areas of Concern" (Hawaii)

Hawaii's Statewide Pedestrian Plan was an outgrowth of its Strategic Highway Safety Plan, which had identified the relatively high rate of pedestrian fatalities on the Hawaii road network. Hawaii prioritized projects in the plan by first looking at locations with identified safety deficiencies (in addition to other criteria such as the location and intensity of pedestrian attractors, and vulnerable populations). By structuring its plan this way, Hawaii focused on its most important goal, which was to improve pedestrian safety statewide.

Using Safety Data to Leverage Funding for Pedestrians (Louisiana)

Louisiana has identified bicycle and pedestrian crash reduction as one of its core emphasis areas in its Strategic Highway Safety Plan. The Louisiana plan identifies pedestrians and bicyclists as vulnerable road users because they are at a higher risk from crashes when compared to drivers of motor vehicles. This plan also notes that 1 in 10 transportation fatalities is a pedestrian. The SHSP leverages limited resources by recommending that safety be a major component of all transportation investments. LaDOTD's Bicycle and Pedestrian Plan followed the recommendations in the SHSP, which also precipitated the relocation of the bicycle and pedestrian coordinator to the LaDOTD Safety Division.

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 100,00 population). States with a focus city were automatically identified as pedestrian focus States.[8]

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. For FY15, FHWA plans to expand the focused approach program to include a focus on bicycle safety.

3.2.7 Accessibility

The Americans with Disabilities Act (ADA) of 1990 requires State and local governments to ensure that individuals with disabilities are not excluded from any publicly provided programs, services, or activities. Pedestrian facilities are one example of a program. One of the requirements of the ADA is that State DOTs develop a transition plan that shows how the DOT is working toward the goal that all of its facilities and services, including nonmotorized facilities and transit, are universally accessible. Additional

[8] FHWA Pedestrian Focus States & Cities: http://safety.fhwa.dot.gov/ped_bike/ped_focus/

information related to accessibility is available on the FHWA Bicycle and Pedestrian Accessibility Guidance site.[9]

Statewide pedestrian and bicycle planning efforts should be aware of the transition plan and concepts of universal design of pedestrian facilities. In many cases, ADA-mandated sidewalk or signal work that is included as part of a roadway project can be coordinated with opportunities to improve overall pedestrian safety and connectivity.

While the status of ADA transition plans varies widely across State DOTs, they offer an opportunity to join efforts and leverage resources in developing the statewide pedestrian and bicycle plan. To the degree that transition plans inventory sidewalks and intersection signals and prioritize improvements, it may be possible to share data and help coordinate project prioritization and funding, thus helping the State DOT to meet or even go above and beyond its requirements.

[9] FHWA Bicycle and Pedestrian Accessibility Guidance: http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/accessibility_guidance/

4. Developing Goals, Objectives, and Performance Measures

It is effective to organize the statewide pedestrian and bicycle planning process around goals, objectives, and performance measures. This approach is known as Performance-Based Planning. The Federal Highway Administration (FHWA) has many available resources that explain and support performance-based planning and programming. This approach improves decisionmaking 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 is able to influence.

A performance-based plan usually begins with an overall vision statement. The vision is supported by agency-wide goals and objectives that break the agency's vision into focus areas. Objectives are achieved through strategies/actions and can be 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 list below defines these plan elements:

- **Vision:** A concise expression of what the plan is expected to accomplish.
- **Goal:** A broad statement that describes a desired end state.
- **Objective:** A specific and measurable statement that supports achievement of a goal.
- **Strategy/Action:** An agency initiative that will be pursued in order 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.

4.1 Articulating 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. However, no matter how far reaching the scope, each objective and performance measure should relate to an activity that can be carried out by the department or to a process over which the department has some authority.

Goals articulate a desired end state that lines up with the vision. These goals are best developed with extensive public participation so that they can accurately reflect the priorities and needs of a diverse cross-section of the State's residents and business community (see Public Participation for examples of

approaches to public participation at the statewide level).

Whether a pedestrian and bicycle plan is derived from goals contained in another agency-wide plan or develops its own set of goals, it is good practice to develop specific and measurable **objectives** to achieve each goal. As described in the FHWA [Performance-Based Planning and Programming Guidebook], 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. The Maryland DOT organized its statewide plan around five goals and identified objectives and strategies under each.

Internally Consistent Goals, Objectives, and Strategies/Actions (Maryland)

As part of its 2014 Bicycle & Pedestrian Master Plan, the Maryland DOT (MDOT) developed several objectives and strategies for each of its five goals. Each goal supports the direction of the 2035 Maryland Transportation Plan and PlanMaryland, the statewide sustainable growth policy plan. The objectives help Maryland mark progress towards each goal and the strategies are specific actions MDOT will pursue to accomplish each objective. Each goal has an estimate cost and each strategy and estimated timeline. The State's "Strengthen Communities" goal is provided below as an example.

Goal 4: Strengthen Communities

Partner with local governments to support walkable and bikeable communities to achieve sustainability, livability, health, equity and economic benefits.

Walkability and bikeability of the places we live is widely supported by public health organizations for its benefits to community health both from increased activity and the potential for decreased pollution. They are often supported by citizens and neighborhood groups for the improvements to mobility choices and quality of life. Places that can support vibrant foot traffic also benefit local businesses, especially small businesses. This benefit comes not only in direct ways because of increased access by customers, but indirectly through supporting lifestyles that require less income to be spent on owning and maintaining a vehicle, and reducing costs associated with providing customer parking. The State can support local efforts to achieve these benefits by educating and sharing success stories, being flexible to support and encourage local efforts to improve bikeable and walkable environments.

These efforts can be direct, through assistance and incentives to local governments, or indirect, through supporting local planning efforts as stakeholders and property owners. The State can help improve coordination between agencies, with local governments, and with educational institutions. Improved outreach and engagement with the community on all projects is critical to supporting its goals and vision.

Estimated Cost: $30-200 million *(not for programming purposes)*

Objective 4A: Provide assistance and incentives to local governments to improve biking and walking.

Strategies	2013-2018	Ongoing
1. Provide funding support and technical guidance for the development of local bicycle and pedestrian plans and projects.		✔
2. Support efforts to share successful bicycle and pedestrian policies and guidelines and educate partners about available resources for models and case studies.	✔	
3. Review, approve and adopt, as necessary, any professionally published bicycle, pedestrian, or urban design guidelines including NACTO, AASHTO, ITE, and others as soon as they become available.	✔	
4. Encourage local jurisdictions to identify desired bicycle and pedestrian facilities in comprehensive plans, and then to secure those facilities through private development and other opportunities.		✔

Objective 4B: Improve coordination between state agencies, and with local governments to support bikeable and walkable communities.

Strategies	2013-2018	Ongoing
1. Coordinate with local jurisdictions and other State agencies to promote and facilitate bike and walk friendly street design, placemaking and development (ex. parklets, bicycle parking, plazas, seating, etc.).		✔
2. Coordinate with partner agencies to implement complete streets and trails	✔	
3. Promote siting and design practices that encourage biking and walking to public facilities (schools, medical centers, state offices, etc) and increase connectivity and access to and within adjacent neighborhoods.		✔
4. Lead by example by creating access and facility guidelines for State employment sites and educational institutions.	✔	

Objective 4C: Support efforts to increase biking and walking to schools, colleges and universities.

Strategies	2013-2018	Ongoing
1. Encourage local public school officials to support biking and walking to school, by providing reference materials, bike racks at schools and supporting bike-to-school day programs.	✔	
2. Provide infrastructure that supports safe bike and walk access for students, faculty, staff and visitors.		✔
3. Work with the University System of Maryland and post-secondary institutions of education to improve walk and bike access to and within their campuses and ensure compliance with § 21-1008(b).[13]		✔
4. Encourage Maryland communities, businesses and universities to pursue Bicycle Friendly and Walk Friendly awards.		✔

Objective 4D: Expand outreach and engagement in bicycle and pedestrian initiatives.

Strategies	2013-2018	Ongoing
1. Increase outreach regarding funding opportunities and engagement in context sensitive project development and design.		✔
2. Promote innovative public involvement strategies for local and state projects, such as use of social media and text message surveys.		✔
3. Educate local leaders and elected officials on the benefits of biking and walking and opportunities for state support.		✔

Maryland's "Strengthen Communities" Goals, Objectives, and Strategies.

4.2 Performance Management and Monitoring

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).

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 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 in order to achieve progress toward its objectives and to measure that progress.

The North Carolina DOT organized its bicycle and pedestrian plan around five goals and structured the discussion of the plan's implementation around objectives and performance measurement.

Connecting Planning and Performance Measurement (North Carolina)

As part of its statewide pedestrian and bicycle plan, WalkBikeNC, the North Carolina DOT (NCDOT) developed the following vision statement for integrating walking and bicycling into the State's transportation system and how these improvements will affect its future:

> *North Carolina is a place that incorporates walking and bicycling into daily life, promoting safe access to destinations, physical activity opportunities for improved health, increased mobility for better transportation efficiency, retention and attraction of economic development, and resource conservation for better environmental stewardship of our state.*

NCDOT oriented the plan around five goals (emphasized above) and developed a suite of objectives, strategies, and performance measures under each goal area. The State's nonmotorized safety goals are provided below as an example.

Safety: Public safety for pedestrians and bicyclists

Objectives (The WHAT)	Performance Measures (The EVALUATION)	Example Strategies (The HOW)
• Create a strategic, consistent, and connected pedestrian and bicycle network • Improve safety of pedestrians and bicyclists • Increase and improve enforcement of motorist/bicyclist/ pedestrian laws to ensure law abidance • Improve crash data reporting and mapping and preventative/ pro-active safety strategies	• Pedestrian and bicyclist crash and fatality rates (per capita) • Pedestrian and bicyclist crash and fatality rates (per capita) relative to other states • Number of schools, universities, and colleges participating in pedestrian and bicycle safety education/ encouragement programs • Cities, businesses, and universities designated as Bicycle and Walk Friendly by the League of American Bicyclists and the Highway Safety Research Center • Improvements at bicycle and pedestrian crash hotspots and the subsequent impact on crash reduction	• Make strategic facility improvements • Evaluate the factors considered as part of bicycle and pedestrian HSIP projects • Improve enforcement efforts • Continue education programs (including rights of the road) • Develop policies and strategies for accident prevention • Sustain Safe Routes to School program • Use FHWA Crash Modification Factors to support decision-making • Build partnerships between transportation and public safety agencies • Establish evaluation/benchmarking program

North Carolina's pedestrian and bicyclist safety objectives and performance measures.

4.3 When to Develop Goals and Objectives

A pedestrian and bicycle plan is often a product of a State's LRTP. 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.

A handful of States, including Louisiana and Hawaii, have specifically identified pedestrians and bicyclists as emphasis areas in their SHSP and a pedestrian/bicycle plan can arise as a subsequent product of the

SHSP. 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). For example, following the identification of pedestrians and bicyclists as vulnerable users in its SHSP, the Louisiana Department of Transportation and Development was tasked with developing a pedestrian and bicycle plan. Chapter 3 discusses the LRTP and SHSP in greater detail.

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.

Chapter 5 includes examples of stakeholder outreach and public participation; one of the primary purposes of stakeholder outreach is to identify issues in the current state of transportation planning, design, and maintenance as they relate to nonmotorized travel. Public participation can help the agency set a vision and goals for the future. Internal stakeholders at the DOT and their local government partners can then help to develop achievable objectives that put the State on the path to meet its goals.

5. Public Participation

Pedestrians and bicyclists are equal users of the transportation system. Everyone is a pedestrian at various points each day, and many car owners also use bicycles for transportation and recreation. There are a range of stakeholders in the pedestrian and bicycle "community," with different reasons for walking or bicycling. Some people have few choices but to walk and bicycle, while others choose to do so for reasons including health, exercise, environmental concerns, saving time and money, or general enjoyment. A nonmotorized transportation plan should involve the input of all of these people, as well as the input of those who do not typically use these forms of transportation.

MAP-21 requires States to involve the public in transportation planning and decisionmaking, and allows for a range of methods for doing so. Planning for walking and bicycling is subject to the same requirements as any other transportation mode, but beyond meeting requirements, involving the public early, often, and throughout the process of developing a plan will result in a more effective outcome. FHWA has provided a wealth of information on legal requirements for involving the public in transportation planning as well as resources to help an agency develop a public participation process that suits its needs.

5.1 Reasons to Involve 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.

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.

Building Support for the Plan (Louisiana and Minnesota)

When the Louisiana Department of Transportation and Development (LaDOTD) conducted public outreach by holding public workshops in each of the State's metropolitan areas, the turnout and interest was so large that it had the effect of elevating nonmotorized issues at several of the State's MPOs. The outreach brought out several interest groups not traditionally associated with bicycle and pedestrian advocacy, expanded the awareness of pedestrian and bicycle safety issues in the State, and laid the groundwork for a statewide complete streets policy.

At the same time as the Bicycle Planning Study, MnDOT conducted the Strategic Highway Investment Plan (MnSHIP) to guide its investment process for all transportation assets. Based on a strong foundation of public involvement, MnSHIP recognized the importance of walking and bicycling to the public and identified several objectives for meeting goals of improving nonmotorized conditions across the State. Minnesota's upcoming Bicycle Plan and Pedestrian Plan will each detail how MnDOT will implement the nonmotorized elements of MnSHIP, while the internal policy and communication work of the Statewide Bicycle Planning Study provides a realistic foundation within the department for meeting achievable objectives.

5.2 Identifying Stakeholders

The first step in a public involvement strategy is identifying stakeholders. 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:

- **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.

Agencies involve stakeholders through a variety of methods, including in-person interviews, forming project advisory committees that meet periodically throughout the plan's development, or creating a partnership with stakeholders to actively participate in the work of completing the plan.

5.3 Public Involvement Methods

Public involvement methods can vary considerably, ranging from in-person workshops and meetings to virtual comment forms and interactive websites. The mix of approaches employed in any given State depends on timing, budget, and staff availability. While some members of the public may prefer to participate in an open house or charrette, see a formal presentation, and provide public testimony, others may not have the time to attend an event or may be more comfortable providing information on a Web site and submitting written comments.

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.

Public involvement methods include:

Workshop participants take part in a Maryland Bicycle and Pedestrian Master Plan meeting

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. In order 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. The Washington State DOT conducted a telephone survey of residents about their attitudes toward nonmotorized issues and found that 86 percent walked or bicycled for transportation in the previous year and that the majority of those surveyed support "building more safe places to bicycle and walk."

Web sites and Social Media—It is essential for a pedestrian and bicycle planning project to have a Web site 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 Web site, 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.

Establishing a Citizens Advisory Committee and Technical Advisory Committee (Hawaii)

The Hawaii Department of Transportation used an application process to establish a citizens advisory committee (CAC) for the pedestrian plan. The department sought diverse representation on the committee—including seniors, students, the trucking industry, the public health sector, neighborhood organizations, and persons with disabilities. The CAC met through videoconference periodically throughout the development of the plan and interacted with the technical advisory committee (TAC), which included DOT staff from planning, design, traffic engineering and safety, as well as county agency and MPO staff. Project managers on the Hawaii Pedestrian Plan identified the participation of the CAC and its interaction with the TAC as being highly effective at moving the plan toward implementation because of the extensive knowledge and input provided, and the constructive discussions between diverse interests. By having joint videoconference meetings between the TAC and CAC, the discussion moved away from reasons to increase the amount of pedestrian facilities and rehashing past grievances to a productive problem-solving discussion about how to safely and affordably improve the environment for walking in Hawaii. The planners at HDOT did not have a preconceived idea of where to take the plan but took the time to engage a diverse citizenry and implementers of transportation projects, which resulted in a plan that was more ambitious and achievable than they previously assumed was possible.

Multifaceted, Regionally Specific Outreach (Iowa)

The Iowa Department of Transportation kicked off its plan development with a series of all-day outreach activities in each of the DOT's six regional districts. In the morning, the project staff met with district DOT staff, including planners, engineers, and operations and maintenance staff, to listen to their ideas about issues they have in carrying out their mission to deliver transportation projects that are inclusive of bicycling and walking. In the afternoon, the project staff asked the same questions of staff from regional planning organizations, MPOs, and major cities to understand how the DOT could improve bicycle and pedestrian transportation. In the evening, the project staff held a public workshop to invite members of the interested public to provide comments on bicycling and walking in their communities.

5.4 Documentation of Public Involvement

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.

6. Information Base and Content

The vision, goals, and objectives of statewide pedestrian and bicycle plans should have a firm footing in a technical fact base, including existing conditions and trends. First, however, a plan should rely on and be closely connected with other relevant plans, policies, and processes at the Federal, State, regional, and local levels.

6.1 Consistency with Relevant Plans, Programs, Policies, and Processes

To effectively develop and achieve pedestrian- and bicycle-related goals and objectives, it is important to understand how the new plan will link to the broader planning context. Planners should be familiar with Federal, State, regional, and local plans, programs, policies, and processes that may affect pedestrian and bicycle planning, project prioritization, and development. While some of these things may not have a direct connection to the statewide pedestrian and bicycle planning process, it is important to understand them and their implications; they may also provide primary data sources and analyses that can support the statewide pedestrian/bicycle plan.

Existing plans, programs, policies, and processes to consider include:

Federal Plans, Programs, and Policies

Federal transportation policies and programs provide the broad direction and specific funding mechanisms for State and regional plans and programs, while allowing States flexibility to tailor policy implementation. Key resources include**:**

a) **Federal transportation legislation**—Guides Federal transportation policy with national goals, develops funding programs and levels, and outlines performance targets.

b) **Federal-Aid Bicycle and Pedestrian Funding Programs**—Pedestrian and bicycle facilities are eligible under most FHWA funding programs and many FTA programs but specific requirements must be met and eligibility must be determined on a case-by-case basis. The Transportation Alternatives Program is a common funding avenue for specific pedestrian and bicycle projects.

c) **Americans with Disabilities Act of 1990 (ADA)**—This policy requires that State transportation facilities include design measures for persons with disabilities, including, but not limited to, mobility, visual, hearing, cognitive, or other impairments. The United States Access Board is developing guidance for following the ADA law in the management of roads and trails.

d) **U.S. DOT Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations**—This policy statement reflects U.S. DOT's support for the development of fully integrated active transportation networks and the incorporation of safe and convenient walking and bicycling facilities into transportation projects.

State Plans, Programs, Policies, and Processes

State transportation policies and programs provide the decision-making and implementation framework for pedestrian and bicycle activities on State roadways while allowing regional and local flexibility to tailor policy implementation on local facilities. Key resources include**:**

a) **State Long Range Transportation Plan (LRTP) and State Transportation Improvement Program (STIP)**—State DOTs help develop and implement a shared vision for State transportation systems through the statewide transportation planning process. Goals, which are designed to achieve this vision, are expressed in State LRTPs with a minimum 20-year time horizon. States develop STIPs that include short-term project priority lists over a 4-year time horizon. Each document contains a list of significant transportation projects, including large bicycle and pedestrian projects, which may be significant to statewide pedestrian and bicycle planning.

b) **State project selection processes**—States use a variety of formal and informal processes for selecting projects for inclusion in LRTPs and STIPs, including projects selected under the State's Transportation Alternatives Program. These include some combination of technical analyses and other policy priorities, informed by decision support systems. Such processes while sometimes separate from statewide pedestrian and bicycle planning, ultimately determine how visions, goals, and objectives translate into transportation investments.

c) **Technical Assistance Program**—Many State DOTs have programs and staff that provide technical assistance to local and regional governments for transportation planning and implementation, sometimes specifically for nonmotorized transportation. These programs, which may receive further direction through statewide pedestrian and bicycle planning, often set the agenda for local-level project implementation.

d) **State performance management framework**—Under the 2012 transportation law, Moving Ahead for Progress in the 21st Century (MAP-21), State DOTs are required to adopt and implement a performance management framework. This includes setting targets and collecting data on performance measures related to seven key areas: safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and expedited project delivery.[10] Statewide pedestrian and bicycle planning efforts should take into account how nonmotorized investments affect and are affected by State performance management activities, and both the opportunities and implications related to any new processes for making investment decisions.

e) **State Strategic Highway Safety Plan (SHSP)**—Each State develops a statewide-coordinated safety plan that provides a comprehensive framework for reducing highway fatalities and serious injuries on all public roads. These plans establish statewide goals, objectives, and key emphasis areas, often with some focus on nonmotorized safety.

f) **Americans with Disabilities Act (ADA) transition plans**—All State and local government agencies must provide public access for persons with disabilities in compliance with the ADA. The ADA stipulates that every public agency with 50 or more employees, including State DOTs, develop an ADA transition plan. These plans identify physical obstacles that limit accessibility, describe methods that will be used to overcome those obstacles, and identify a schedule and

[10] For more information on Transportation Performance Management, see: http://www.fhwa.dot.gov/tpm/

responsible official for implementing the plan. Some ADA transition plans include an inventory of sidewalks, curb ramps, and intersection treatments within the State right of way; this information could provide a good resource for the pedestrian and bicycle plan.

g) **Roadway, bicycle, and pedestrian design guidelines and standards**—To supplement guidelines developed by Federal and professional organizations, States and large cities often develop design guidelines and standards to guide transportation project development. These documents help facilitate the adoption of innovative and experimental techniques for implementing bicycle and pedestrian facilities.

h) **Complete streets and context-sensitive solutions (CSS) policies**—While these policies vary considerably in terms of their specificity, they are adopted by State and local government to ensure that planners and engineers consistently design and operate roadways both with all users in mind and with respect to the immediate context.

i) **State DOT project development/delivery process**—Most State DOTs have an internal policy on the process to be followed for the development of transportation projects. These policies detail process requirements for each phase of project development from initial project scoping to design to construction. These processes have a great influence on the capability of an agency to carry out projects that are inclusive of bicycle and pedestrian facilities and are important to discuss when conducting planning for pedestrians and bicyclists.

Regional and Local Plans, Policies, and Processes

Regional and local policies and programs provide the decision-making and implementation framework for pedestrian and bicycle activities on local facilities. Key resources include**:**

a) **Regional LRTP and Transportation Improvement Program (TIP)**—Similar to the statewide transportation planning process, metropolitan areas develop regional LRTPs and TIPS.

b) **Regional project selection processes**—Regions use a variety of formal and informal processes for selecting projects for inclusion in LRTPs and TIPs. These include some combination of technical analyses and policy priorities, informed by decision support systems. Such processes determine how visions, goals, and objectives translate into transportation investments.

c) **Local and regional bicycle/pedestrian and greenway plans and initiatives**—Local and regional governments often develop pedestrian and/or bicycle plans to guide the development and evaluation of nonmotorized projects and programs. Concurrently or separately, and sometimes with nonprofit groups, these entities sometimes develop more recreationally focused on-road bicycle routes and off-road paths, hiking trails, or greenways.

d) **Land use/development management framework**—Existing and future land uses have a strong bearing on trip generation. All else being equal, denser, mixed-use development patterns with short blocks favor more nonmotorized trip making. This type of development pairs origins and destinations closer together, making walking and bicycling more feasible for everyday activities.

Making Plans Externally Consistent (Hawaii)

2013 Hawaii Pedestrian Master Plan

The 2013 Hawaii Pedestrian Master Plan provides a detailed description of how the plan is aligned and consistent with relevant Federal, State and local plans, programs, and policies. While key documents and programs are described in the body of the document, an appendix to the plan provides a comprehensive list of each document reviewed during plan development, a high-level summary of that document, and implications for the plan.

6.2 Existing Conditions and Trends

As with other planning processes, statewide pedestrian and bicycle plans should be firmly grounded in existing conditions and trends. 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. 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 the plan purpose, the role of the State DOT in advancing nonmotorized transportation across the State, and the institutional role of those charged with implementing the plan. Furthermore, planners should consider 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.

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: accessibility/mobility and equity, economic benefits, environment and energy, health, safety, and usage/mode share. Depending on data availability, planners may map and analyze these six subject areas geographically in light of the following factors (see Table B-1 in Appendix B):

- **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.[11] 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. 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 employ 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.

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).

- **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

[11] Common 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.

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.[12] Other States may have to rely exclusively on manual counts conducted at the local level.

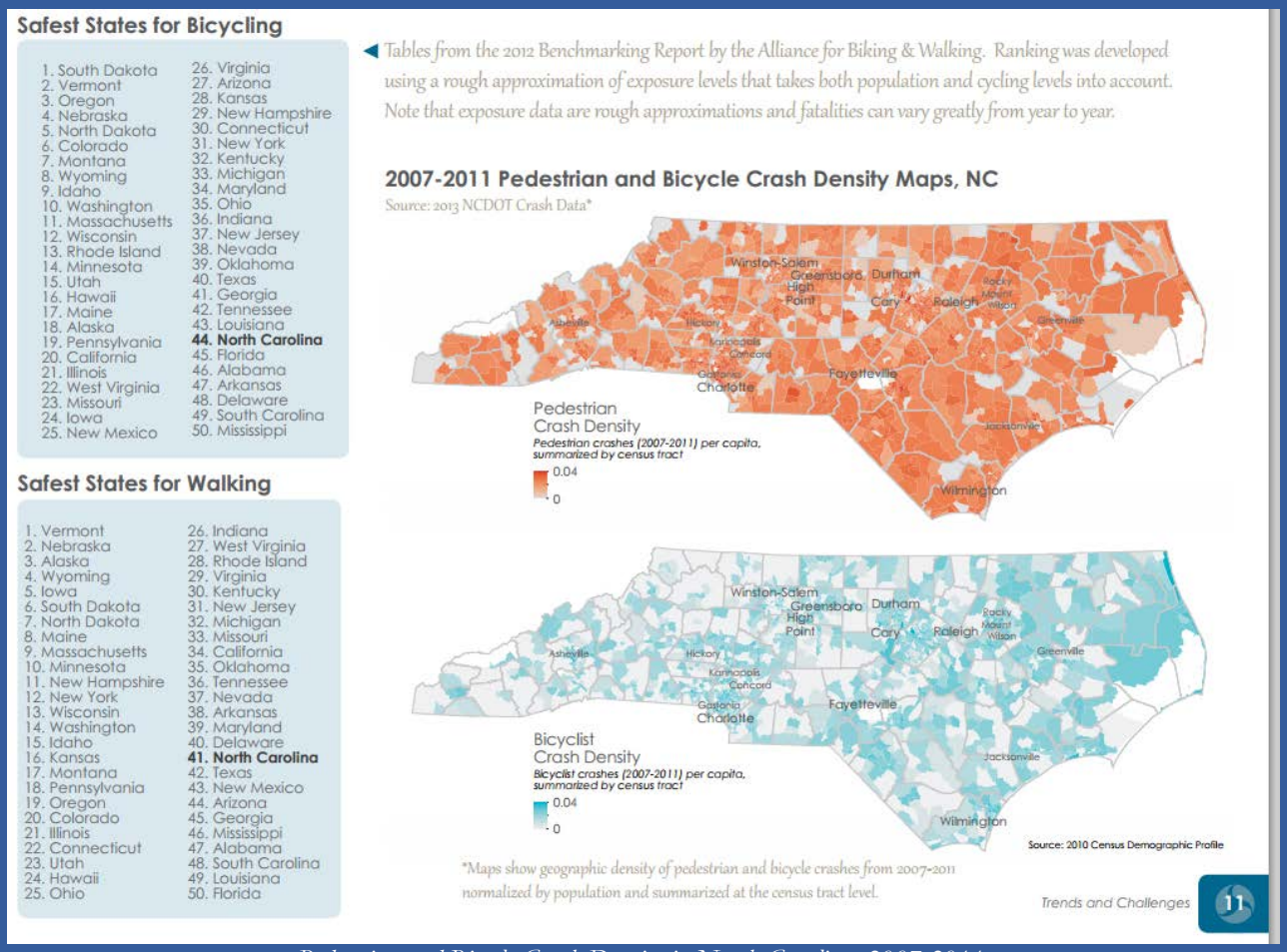
  Chapter 4 of FHWA's Traffic Monitoring Guide provides basic guidance on monitoring nonmotorized road and trail users, including information on monitoring technology, monitoring concepts, and recommendations on developing both permanent and short duration data programs. Also, the National Cooperative Highway Research Program (NCHRP) is developing

[12] Development of Estimation Methodology for Bicycle and Pedestrian Volumes Based on Existing Counts. Colorado Department of Transportation. http://www.trb.org/TerminalsFacilities/Blurbs/169746.aspx

report number 7-19, "Innovative Methods to Obtain Pedestrian and Bicycle Volume Data," which will outline best practices for conducting bicycle and pedestrian counts.[13]

Comprehensive Technical Analysis (North Carolina)

WalkBikeNC, North Carolina's 2013 Statewide Pedestrian and Bicycle Plan, provides a robust technical analysis of the statewide benefits of walking and bicycling to safety, health, mobility, the economy, and the environment. Each of these analysis themes, which align with the Plan's 5 main principles, or 'pillars', is directly connected to the Plan's goals, actions, strategies, and performance measures.



Pedestrian and Bicycle Crash Density in North Carolina, 2007-2011.

Appendix A: 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.

[13] Anticipated Summer 2014. http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=3159

7. Identifying Needs and Priority Areas

Using the discussion of existing conditions and trends to establish the current state of walking and bicycling, and goals and objectives to define a desired future, planners then analyze and identify ways to accomplish the objectives—both through changes to the physical network as well as through policies and programs. 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.

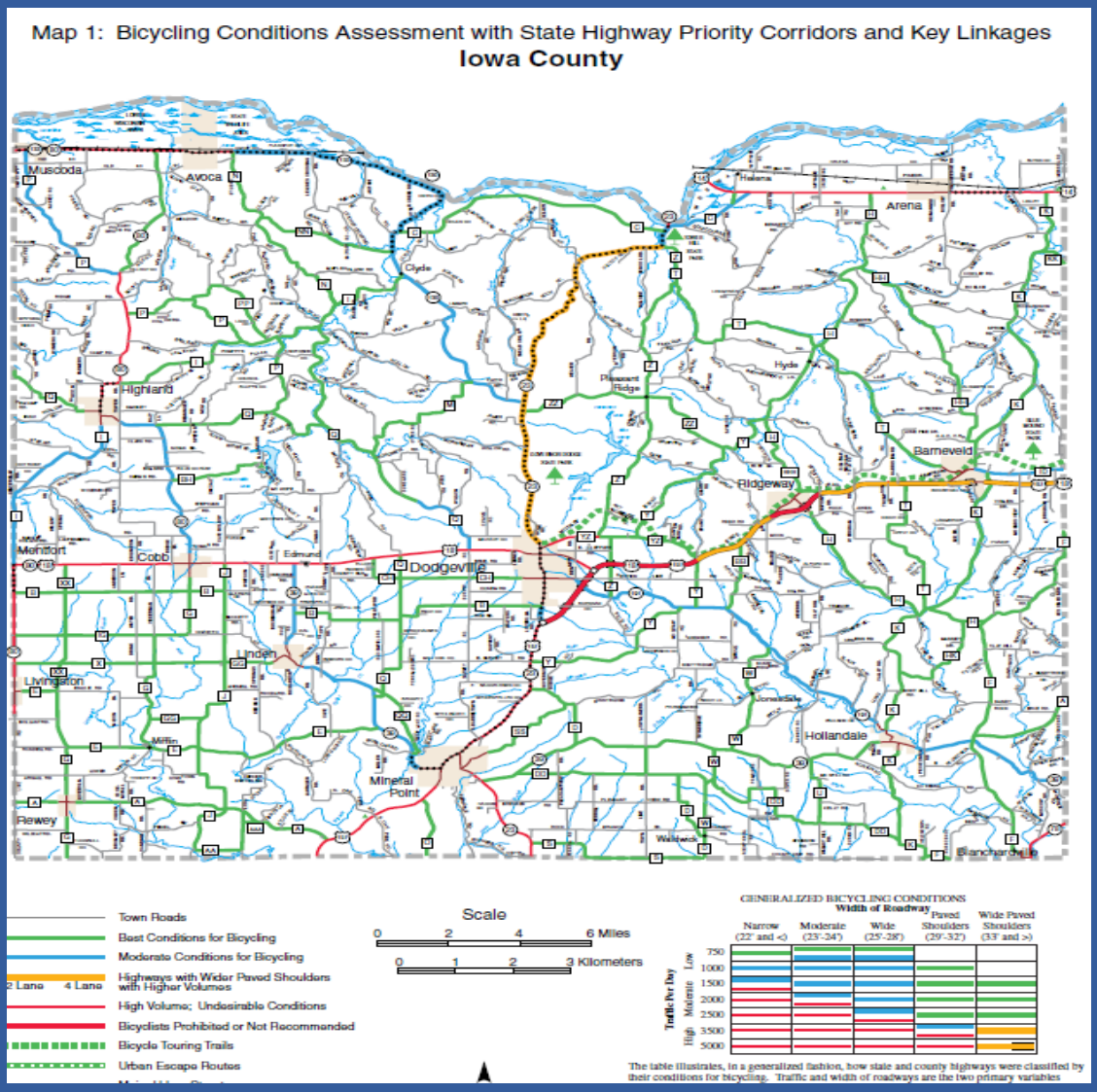
Whether or not a State DOT uses the planning process to identify specific project locations may depend in part on the extent of the roadway network in its jurisdiction, as well as available data on facilities, usage, safety, etc. Another issue worth considering is the expected time horizon of the plan 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.

7.1 Key Corridors and Priority Areas

As discussed in Chapter 7, State DOTs may rely on several information sources to identify priority corridors, including specific bicycle and pedestrian facilities, as well as land use, demographics, safety, and usage statistics. Facility data may be included in the State roadway inventory file; other data may be available through the U.S. Census, travel surveys, origin-destination studies, and public involvement. Some States use GIS or other spatial analyses to identify roadway facilities and proximity to key destinations and trip generators. Identifying the priority areas could 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. 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.

Identifying Priority Corridors (Wisconsin)



Wisconsin DOT (WisDOT) bicycling conditions assessment with State highway priority corridors and key linkages - Iowa County.

The Wisconsin 2020 Bicycle Plan discussion of Intercity Connections defines Priority Corridors as State Trunk Highway connections between major bicyclist destinations, and Key Linkages as short segments of State Trunk Highways that connect into communities or link county roads that were identified as bicycling connections.

Criteria for selection included current suitability for bicycling (pavement condition, traffic volumes, etc.), roadway width, and route length; the analysis also includes input from county bicycle plans, as available. This map is meant to be used as a starting point for prioritizing WisDOT improvements and for county governments to consider bicycle-related improvements on their systems as reconstruction opportunities

Identifying a Statewide Bicycling Network (Massachusetts)

The 2008 Massachusetts Bicycle Plan envisions the "Bay State Greenway" system, a cohesive network of 788 miles of facilities in seven corridors, crossing the Commonwealth, in tandem with a secondary network of feeder routes to provide connections between the corridors and other population centers, intermodal facilities, commercial districts, and major activity centers. The corridors and routes were identified through the following considerations:

- Establish a minimum of 3 north/south and 2 east/west routes, per the directive of the State legislature.
- Capitalize on prior or ongoing investments in bicycle facilities, which will build support for future implementation.
- Pursue both on-road routes and shared use pathways.
- Pursue corridors where proposed shared use path projects exist or are most likely to be implemented; consider rail corridors that may become available in the future.
- Connect and serve major cities with the greatest concentration of people.
- Serve centers of activity where development patterns are more compact, as well as intermodal connection points such as transit stations and ferry terminals.
- Recognize existing long-distance bicycle routes.
- Connect to facilities in adjacent states.

Appendices include evaluation criteria and a rating system for Bay State Greenway projects and implementation and construction cost estimates for the full system vision.

7.2 U.S. Bicycle Route System

Since 1978, AASHTO has defined a United States Bicycle Route System (USBRS). The system follows the National Corridor Plan, which was approved by AASHTO's Standing Committee on Highways and the Board of Directors in 2008. Corridors are 50-mile wide swaths where established bike routes already exist or are in the planning stage. 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.

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. State plans may establish criteria and methods for field reviews for choosing the specific route, and the proposed or 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.

7.3 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:

- **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?

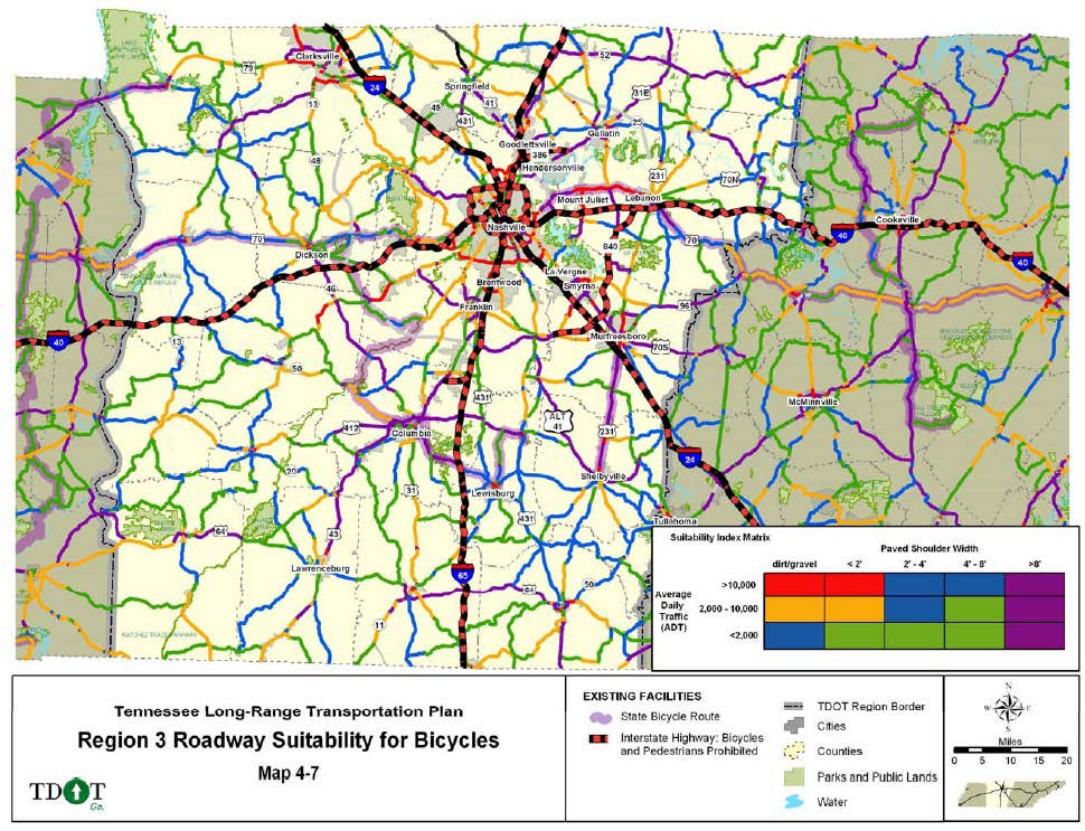
The State DOT can use the planning process to identify the bicycle network and existing facilities and gaps in the network. It can also establish expectations for pedestrian networks in the State. The extent of the State-owned network and available geospatial data may dictate the level of detail of the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

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. 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 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.

As discussed in the previous chapter, 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.

Suitability and Gap Analysis (Tennessee)

The Tennessee plan includes a thorough analysis of existing conditions and facility suitability to identify gaps in the network. Major statewide gaps include topographic features like rivers and mountains, as well as missing or poorly maintained facilities in urban areas. Gaps may also include tunnels, narrow mountain roads, narrow bridges, or interstate freeways and limited access highways that do not have bicycle and pedestrian facilities on, under, or over them. Using the Suitability and Gap Analysis, and the proposed State bicycle network, TDOT developed a project list that is separated into two categories: Proposed State Route gaps and Urban Corridor Gaps. The proposed State route gaps were identified using analyses from the suitability index; urban corridor gaps were gaps identified through the local planning process. The plan includes tables listing the projects, lengths, recommended treatments, and estimated costs.



TNDOT Roadway Suitability for Bicycles in central Tennessee.

7.4 Evaluate and Select Specific Project Locations

After identifying priority corridors, it may be appropriate to take the analysis further to evaluate specific project locations. 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 shown above for Tennessee and below for Hawaii.

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,[14] which addresses prioritization of pedestrian and bicycle improvements along existing roadways.

[14] Anticipated 2014 http://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=2955

Identifying "Areas of Concern" and Project Locations (Hawaii)

Hawaii planners used a combination of technical GIS analysis and stakeholder feedback to identify "areas of concern" for the 2013 Hawaii Pedestrian Plan. In applying criteria using a GIS analysis (connectivity, accessibility, pedestrian-oriented populations, and safety), Hawaii further refined the results by identifying overlapping areas of concern, locations that stakeholders identified as needing improvement, and opportunities that could be coordinated with other ongoing or planned efforts. The planners researched each area, further exploring existing conditions, project descriptions and analyses, and identifying potential solutions.

The project team identified several evaluation criteria to prioritize the projects to address the areas of concern: pedestrian connectivity, pedestrian safety, environment, property impacts, cost, funding availability, and pedestrian-oriented populations. The projects were scored and weighted, yielding an eventual list of 31 projects and possible solutions.

The next step for the prioritized project list is to target opportunities to integrate the projects into Hawaii DOT programs. As the projects are programmed and budgeted, they will receive a more thorough engineering and environmental analysis to determine project feasibility. During this time, the projects will evolve and may change from the initial analysis conducted in the Plan. If any of the projects, regardless of ranking, are co-located with other roadway improvement projects, they may be implemented more quickly than others that may be higher on the priority list.

Residents give input on areas of concern at a Hawaii public meeting.

Developing a Project Scoring Tool (Colorado)

A major focus of Colorado's 2012 Statewide Bicycle and Pedestrian Plan was the development of investment decision criteria to evaluate candidate pedestrian and bicycle projects. CDOT sought to evaluate projects alongside specific performance measures to aid project selection and help track statewide progress toward achieving plan goals. During the initial stages of their plan development, CDOT developed investment decision criteria under each of their seven goals and refined them through a collaborative process involving a formal stakeholder group, the CDOT Project Team, and the public:

- **Enhance Safety**
  - Reduce crash rate or potential threat of crashes: *Project would result in safety improvement as quantified by Crash Modification Factors*
- **Increase Bicycle and Walking Activity**
  - Improve (corridor) bicycling or walking conditions: *Quality of improvement, measured as the chance in bicycle or pedestrian LOS*
  - Expand permanent data collection infrastructure: *Project includes installation of permanent bike/ped counting device*
- **Expand Recreational Opportunities and Enhance Quality of Life**
  - Enhance Scenic Byways: *Project is located along a Scenic Byway (Yes/No)*
  - Increase access to public lands: *Project provides direct access to public lands (Yes/No)*
  - Provide multi-use pathways near populations: *Project is a multi-use pathway (Yes/No). Relative population of project area.*
  - Preserve and enhance downtown character: *Project is located in defined downtown or "Main Street" area*
- **Improve Public Health**
  - Reduce disease/obesity in children, adults, and seniors: *Mode shift and induced recreational travel. Obesity rate in project county.*
- **Improve Environmental, Air Quality, and Fossil Fuel Independence**
  - Reduce carbon-based vehicle miles traveled through increase bicycling and walking: *Mode shift*
- **Provide Transportation Equity**
  - Provide mobility options to underserved populations: *Project is located in an area of underserved population (low-income or minority)*
  - Provide safe active transportation to schools and learning centers: *Project provides direct connection to school and would likely be used by students or staff to walk or bike to school*
  - Provide pedestrian mobility for seniors and disabled populations: *Project located in an area of high >65 population*
- **Maximize Transportation Investments**
  - Complete or connect network or system: *Project connects to an existing bicycle or pedestrian facility*
  - Reduce motor vehicle traffic congestion: *Project located along or parallel to a congested roadway*
  - Enhance multimodal efficiency (expand utility of public transportation): *Project provides direct connection to transit service*
- **Improve State/Regional Economy**
  - Provide better access to jobs: *Jobs * population in vicinity*
  - Bolster tourism: *Relative level of tourism in area. Demonstrated level of tourism promotion investment in local community.*
  - Induce mode shift to bicycling, walking, and transit=more household disposable income: *Mode shift*

After initial beta testing of the scoring criteria and an associated spreadsheet-based scoring tool, CDOT refined the scoring criteria, added project readiness factors, and incorporated the scoring tool into the State's Transportation Alternatives Program. Rather than relying on each grant applicant to provide individual project data, the CDOT regions are tasked with collecting data and scoring projects uniformly.

7.5 Recreational Routes/Trails

While State DOTs focus on pedestrian and bicycle routes that serve a transportation purpose,[15] 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. Except at crossings, the rights 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.[16]

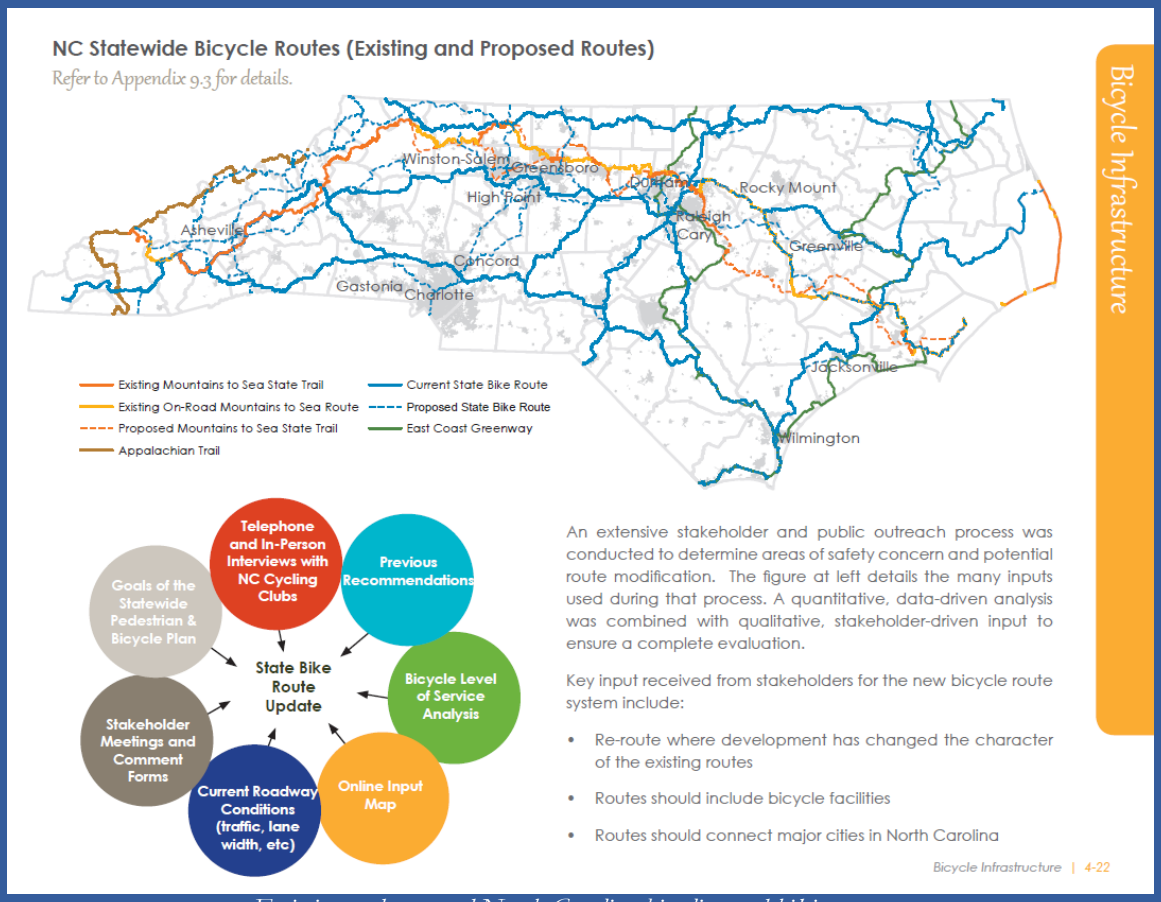
For example, State DOTs control the Recreational Trails Program (RTP), which funds recreational projects. Some projects funded by the RTP may also be eligible for other Federal-aid highway funds, and other Federal highway funds may be used to make up the matching fund requirements for RTP projects. The 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.

[15] 23 U.S.C. 217(i)
[16] More information on funding eligibility is provided here: http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/bp-guid.cfm#bp4a

Recreational Trails and Routes (North Carolina and Tennessee)

The State DOTs are not always in charge of managing and developing trail systems and signed bicycle routes. In some States, natural resource agencies manage these assets as part of providing recreation opportunities for residents and visitors. State trail plans are primarily for recreation but can also serve transportation purposes. Also, segments of State highways can often complement recreational trail systems in rural areas. Therefore, some State DOTs refer to these plans and inventory State trails. For instance, providing facilities such as wide shoulders on those segments may be a priority for the DOT. Conversely, incorporating recreational trails in a transportation plan can sometimes reveal opportunities for segments of trails to be developed as part of a transportation route and therefore as good candidates for receiving transportation funding.

As part of its statewide plan, NCDOT mapped and underscored the State's multiple regional trail initiatives. Plan actions emphasize the importance of helping coordinate these initiatives, particularly with nonprofit groups and the State Department of Natural Resources. NCDOT also reevaluated and updated its 1970s-era State bike route system as part of its 2013 plan.



Existing and proposed North Carolina bicycling and hiking routes.

TDOT also includes a reference to the State Recreation Plan, which is prepared and updated by the Tennessee Department of Environment and Conservation. The bicycle and pedestrian plan is not linked to this plan per se but it discusses the focus of the trails plan including the need for better information and resources for trail users and better accessibility for people with disabilities. In addition, it identified the need to provide better access to trail facilities throughout the State and proposes eight new bicycle routes.

8. Implementation

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:

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

8.1 Tying the Plan to Project Development

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. 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.

Incorporating All Modes in Project Scoping (Washington)

The Washington State Department of Transportation (WSDOT) includes a detailed recommendation for the State, in coordination with local agencies, to improve the project scoping and project definition stages of the development process. The plan states that WSDOT will establish procedures to formally include bicycle and pedestrian facilities as part of the project development process for all projects. In order to do this, the plan states that WSDOT will update its Design Manual, Traffic Operations Manual, and Scoping Guidance to incorporate design considerations that are specifically detailed in the plan.

The Stages of Project Development (Louisiana)

The Bicycle and Pedestrian Plan for the Louisiana Department of Transportation and Development (LaDOTD) discusses each stage of the transportation project development process, including project feasibility, environmental review/planning, funding, and final design. The plan explains how the existing development process often leaves out the needs of bicyclists and pedestrians and demonstrates ways in which these needs can be more seamlessly integrated in each stage of project development. The plan includes a recommended project development checklist that applies to all transportation projects prior to beginning the third stage of the project development process (Final Design). The plan also includes an appendix that details a recommendation for the LaDOTD to update its project development manual to better integrate bicycling and walking into the project development process.

Office of Community Transportation (Tennessee)

In 2013, the Tennessee Department of Transportation (TDOT) created the Office of Community Transportation (OCT) with a mission to "coordinate the State's transportation planning, local land use decisions, and community visions to guide the development of a safe and efficient statewide transportation system." The office strengthens partnerships with local agencies and ensures that State transportation planning efforts support municipalities' plans for future development.

The OCT has stationed transportation planners in each of 4 regions of the State to facilitate local public involvement in TDOT initiatives, and to provide resources to local partners to develop transportation goals that support their community visions. By stationing transportation planners in each district office, the Bicycle and Pedestrian Coordinator's office has been far more effective at implementing project ideas and managing the Multimodal Access Grants. Having planners working alongside district engineers has been instrumental in providing technical assistance at meetings, and helping MPOs with technical/policy issues like functional class changes, and has advanced TDOTs efforts to implement pedestrian and bicycle improvements in communities throughout the State.

One way that many States and local governments institutionalize incorporating bicyclist and pedestrian needs in project development is by adopting complete streets policies. 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, as described above, 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.

Funding Complete Streets (Washington and Tennessee)

WSDOT has adopted a Complete Streets policy and made it central to the 2008 Washington State Bicycle Facilities and Pedestrian Walkways Plan. The plan includes a discussion of the proper elements of a complete streets design policy. It also includes a thorough description of the Plan's recommendations on how WSDOT could help advance the State's policy by reforming its project development process, including routine accommodation of bicycle and pedestrian needs in all transportation projects. Since the plan was written, WSDOT has recently enacted an innovative funding program for communities to adopt complete streets policies. The grant program provides a funding source for complete streets and "Main Street" highways projects. This funding source is designed to provide assistance in making major State roads that are also local "Main Streets" safer and more accessible to multiple modes.

Similarly, Tennessee has established a Multimodal Access Grant program that set aside $30 million for grants to communities to build roadway infrastructure for pedestrians and bicycles. As part of this process, TDOT developed guidelines and criteria for local governments to follow, including the requirement of conducting a pedestrian/bicycle plan. This grant program only requires a 5 percent local match and has attracted a lot of attention to planning for pedestrians and bicycles at the local level.

Tacoma, WA illustration of a complete street.

8.2 Explicit Roles and Timelines

An effective plan includes strategies for putting the plan into action. 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). In some cases, a separate integration strategy may be necessary to institutionalize these critical relationships.

Implementation of Plan Objectives (Washington)

WSDOT established five objectives, with specific timeframes, to be followed up with performance measures. The five objectives relate to preservation, safety, mobility, environment, and stewardship. For each objective, WSDOT has listed specific implementation steps that the department will take towards realization of the objective as well as performance measures that will be used to measure its progress.

Preservation Objective: 2-5 year implementation

Preservation Objective:	***Ensure no net loss in pedestrian and bicycle safety, and mobility.***
WSDOT Implementation Steps:	WSDOT will work with local agencies, transit providers, and developers to identify additional funding for projects not yet in design or construction to develop the entire project including elements addressing bicycle and pedestrian safety. See **Appendix A-C** for a complete list of projects.
	WSDOT will implement a project development process, specifically scoping guidance for pedestrian and bicycle projects as well as roadway improvement and bridge replacement projects, to include routine consideration of bicycle and pedestrian needs in addition to roadway needs.
	Review state trail design and operations standards (as outlined in Report F: Design Guidance).
Performance Measures:	Documented use of state and local Paths and Trails expenditures (RCW 47.30).
	Addition of bicycle and pedestrian facilities to the WSDOT Maintenance and Accountability Plan.

WSDOT objective example – Preservation.

8.3 Programming 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. These projects may be more conceptual in scope, but are clear about the location and type of facility to be constructed in the system. 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).

Conceptual Project Identification (Tennessee)

TDOT's plan includes a detailed account of proposed projects and programs to be carried out partially or completely by the department. It breaks the costs into program categories (research, administration, capital projects, and operations) and estimates costs for specific types of projects and programs. It projects an annual cost for the programs and then multiplies that by 25-years to get a 25-year implementation cost estimate. TDOT recognizes that the projects and bicycle route gaps that it identifies are subject to change over time but it has a detailed list of all individual needs identified in the plan with a cost estimate for each project. The projects and needs have changed over time, but undertaking this exercise has helped the Bicycle and Pedestrian Coordinator to identify any opportunities for project development.

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. All projects identified in the plan should include projected costs with funding sources to implement them. Some State DOTs have conducted rough cost estimates for implementing a longer term plan. The Pedestrian and Bicycle Information Center conducts a survey of construction costs of various bicycle and pedestrian treatments and updates it periodically for up-to-date information. The purpose of this synthesis is to help planners, designers, and engineers scope out projects and programs. 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.

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.

Estimating Project Costs and Available Funding (Maryland)

The Maryland DOT 2002 and 2013 pedestrian and bicycle plans assign timeframes to its actions (for the 2002 plan) and objectives (for the 2013 plan). Each action/objective is identified as "ongoing," implemented in 5-10 years, or implemented in 20 years. Maryland includes overall cost estimates for each of its five plan goals around which the department can organize its work plan. MDOT has chosen not to go into detail about specific costs to projects as this plan is at a high level and makes it clear that the cost estimates by goal are not to be used for specific programming purposes.

Goal 1: Build Connected Networks

Expand walking and bicycling networks, remove barriers, and enhance connections with transit and travel destinations.

To support biking and walking, bicycle and pedestrian facilities need to form complete networks to connect people, as directly as possible, to their desired destinations. Walkers and bikers demand a safe and comfortable experience across the entire length of their journey. Due to the relatively low speed of these transportation modes, even small detours may significantly increase the amount of time required to make a trip. Planning for these modes requires careful consideration of complete networks, rather than individual facilities. For this reason, bicycle and pedestrian improvements should be targeted to fill gaps in network connectivity to have the biggest impact.

Network connectivity involves filling gaps in sidewalks and bicycle facilities along state roadways, as well as increasing attention to connections with local routes and trails. Careful attention to crossing state highways is critical, as these facilities tend to be the busiest and most uncomfortable places for walking and biking. Connectivity between biking and walking networks and transit is critical to enabling multimodal travel. While the State will continue working to improve bicycle and pedestrian conditions statewide, a community-based approach that increases focus on areas with the highest demand for walking and biking will leverage the greatest benefits.

Estimated Cost: $600 million-2.0 billion *(not for programming purposes)*

Objective 1A: Develop connected and accessible networks of bicycle and pedestrian accommodations along state roadways.

Strategies	2013-2018	Ongoing
1. Complete retrofits of existing facilities to achieve full ADA compliance of existing facilities and encourage the use of ADA best practices to maximum extent reasonable within the constraints of a specific project or program.		✔
2. Identify and eliminate short gaps in existing sidewalk and bicycle transportation systems, including pinch points where bikeable shoulders disappear.	✔	
3. Promote timely and effective coordination with utility companies (e.g., to relocate utility poles outside of sidewalk paths and encourage clear zones for possible future sidewalks).		✔
4. Develop strategies for addressing bicycle and pedestrian barriers created by limited access highways, free flow ramps, railroads, bridges and major arterials.	✔	
5. Improve bicycle facilities as part of routine maintenance and system preservation activities.		✔

Objective 1B: Improve integration of bicycle and pedestrian transportation with transit.

Strategies	2013-2018	Ongoing
1. Support implementation of bicycle and pedestrian improvements as identified in station access and other plans.		✔
2. Provide covered bicycle parking spaces at rail transit stations and park & ride lots where demand for bicycle access exists or is likely. Provide high security bike parking at stations and lots where needed.	✔	
3. Work with local governments, regional planning agencies, developers and transit agencies to build needed facilities along prioritized pedestrian routes within 1 mile of transit stops and park & ride lots, and prioritized bicycle routes within 3 miles of transit stops and park & ride lots.	✔	
4. Support installation of bike share stations at transit hubs and other high demand locations, and incorporate siting guidelines into appropriate guidance documents.	✔	
5. Support Transit Oriented Development (TOD) that is designed to improve bicycle and pedestrian access.		✔
6. Incorporate bicycle and pedestrian access, safety and comfort in bus stop location decisions.		✔
7. Pursue the inclusion of positions for bicycles on transit vehicles for existing and planned services.	✔	

Objective 1C: Prioritize the enhancement of pedestrian and bicycle travel in areas with high potential for short trips that can be accomplished by walking and biking

Strategies	2013-2018	Ongoing
1. Refine identification of short trip opportunity areas in consultation with local jurisdictions and consistent with the 2035 MTP place types and broader State policies such as PlanMaryland and Sustainable Communities.	✔	
2. Tailor policies, design and operational guidelines to reflect multimodal context in short trip opportunity areas.	✔	
3. Increase coordination between road, transit and land development managers to enhance pedestrian and bicycle travel in short trip opportunity areas, encouraging public and private support to secure desired bicycle and pedestrian amenities.		✔
4. Designate Bicycle Pedestrian Priority Areas (BPPAs) in coordination with local governments for focused planning, funding and intervention to improve bicycle and pedestrian networks.	✔	

Objective 1D: Improve links between shared-use paths and on-road facilities and address key gaps in transportation trail systems

Strategies	2013-2018	Ongoing
1. Prioritize completion of identified missing links in state and local transportation trail networks that enhance active transportation options.		✔
2. Work with local partners to improve access between existing shared-use paths and nearby roads, activity centers and communities by encouraging private sector participation, and coordinating signage and connector facilities.		✔
3. Improve bicycle and pedestrian access to major trails and public lands.		✔
4. Investigate innovative approaches to stormwater management appropriate for non-motorized public trails and shared-use paths.	✔	
5. Engage utility companies/commissions about the use of utility corridors for shared-use paths.	✔	

Maryland DOT strategies, timeframes, and cost estimates under their "Connected Networks" goal.

8.4 Benchmarking and Performance Measurement

Structuring transportation plans around goals, objectives, and performance measures ensures that planning processes are data driven and transparent to the public. 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. 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:

- 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.

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.

9. Keys to Success

The following keys to successful statewide pedestrian and bicycle plans emerged out of the research for this handbook:

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 and the resources and 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 and bicycle needs in the project development process to ensure that each State DOT project is an opportunity to improve nonmotorized travel.

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 light 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, in order 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.

Appendix A: State Pedestrian and Bicycle Plans

The authors of this handbook reviewed the following plans and State policies to inform much of the content of this handbook. Inclusion in this review does not imply FHWA endorsement of these planning and policy documents nor does it negate the value of those not included.

Alabama Department of Transportation Bicycle and Pedestrian Plan (2010)

Caltrans Project Development Procedures Manual Chapter 31

Colorado Department of Transportation Statewide Bicycle and Pedestrian Plan (October 2012)

Connecticut Statewide Bicycle and Pedestrian Transportation Plan (2009)

Delaware Bicycle Facility Master Plan Report (October 2005)

Delaware Statewide Pedestrian Action Plan Phase 1 (July 2007)

Hawaii Statewide Pedestrian Master Plan and Pedestrian Toolbox (May 2013)

Louisiana Statewide Bicycle and Pedestrian Master Plan (2009)

Louisiana Complete Streets Work Group Final Report (2010)

Maryland Twenty-Year Bicycle & Pedestrian Master Plan (2014)

Massachusetts Bicycle Transportation Plan (2008)

Massachusetts Pedestrian Transportation Plan (1998)

Minnesota Statewide Bicycle Planning Study (March 2013)

North Carolina Statewide Pedestrian and Bicycle Plan (December 2013)

North Carolina DOT Complete Streets Planning and Design Guidelines (July 2012)

Tennessee Bicycle and Pedestrian Plan and Technical Memos (December 2005; October 2011)

Vermont Pedestrian and Bicycle Plan (January 2008)

Washington State Bicycle Facilities and Pedestrian Walkways Plan (2008)

Washington's Complete Streets & Main Street Highways Program (WA-RD 780.1) (November 2011)

Wisconsin Pedestrian Policy Plan 2020 (March 2002)

Wisconsin Bicycle Transportation Plan 2020 (December 1998)

Appendix B: Key Pedestrian and Bicycle Data Sources by Subject Area

Table B-1: Geographically Based Pedestrian and Bicycle Data Sources.

Subject Area	Data System/Type	Source	What does the data tell you?	Common Data Uses	Frequency/ Update Cycle	Granularity/ Scale	Advantages	Drawbacks
Network extent and quality	Private, online bicycle mapping services	Google	Location of bicycle routes	Mapping bicycle routes	Various	Various	Often more comprehensive	Inconsistent data quality, data not available for download and geospatial analysis
Network extent and quality	State-level mapping data	State DOTs, academic GIS clearinghouses	Facility location, often by facility type (multi-use trail, bicycle lane, route, etc.)	Mapping the nonmotorized routes (typically bicycle infrastructure)	Various	Varies, may not include local infrastructure	Data are often suitable for geospatial analysis	May not include sidewalks or all dedicated bicycle facilities, frequently will not include planned facilities

Subject Area	Data System/Type	Source	What does the data tell you?	Common Data Uses	Frequency/ Update Cycle	Granularity/ Scale	Advantages	Drawbacks
Nonmotorized Expenditures	Financial Management Information System (FMIS)	Federal Highway Administration	Federal spending on bicycle and pedestrian infrastructure	Per capita Federal spending on bicycle/ pedestrian infrastructure	Annual	States and cities	Comprehensive Federal-Aid Highway Program spending	Database only available to FHWA employees (including FHWA Division offices), does not account for local spending, may not include pedestrian/ bicycle elements of larger projects
Nonmotorized Expenditures	Transportation Alternatives Clearinghouse	Rails-to-Trails Conservancy	Federal spending on Transportation Alternatives/ Enhancements	Assessing the success and focus of individual state Transportation Alternatives programs	Annual	States	Comprehensive Transportation Alternatives funding profiles	Only accounts for this one funding source

Table B-2: Pedestrian and Bicycle Data Sources by Subject Area.

Subject Area	Data System/Type	Source	What does the data tell you?	Common Data Uses	Frequency/ Update Cycle	Granularity/ Scale	Advantages	Drawbacks
Access/Mobility and Equity	American Community Survey – Population and demographics	U.S. Census Bureau	Socio-demographic information; car ownership	Calculate population; map population densities, racial makeup, income levels	1, 3, and 5 year estimates depending on area population size	Census geographies	More current than the decennial census	Small sample size
Access/Mobility and Equity	Decennial Census - Population and demographics	U.S. Census Bureau	Socio-demographic information	Calculate population; map population densities, racial makeup, income levels	Every 10 years	Census geographies	Comprehensive data	Infrequently collected
Access/Mobility and Equity	U.S. Census Bureau	Employer and employee work and household locations	Map origins and destinations for all commute trips	Quarterly	Georeferenced locations providing detail at all scales	All documented work and household locations	Commute trips make up a fraction of all trips (16%), Does not separate out by travel mode	U.S. Census Bureau
Access/Mobility and Equity	Transit Connections	Local transit agency, city	Location of fixed route transit stops	Mapping multi-modal connections	Periodically	Georeferenced locations providing detail at all scales	Usually a complete data set	

Subject Area	Data System/Type	Source	What does the data tell you?	Common Data Uses	Frequency/ Update Cycle	Granularity/ Scale	Advantages	Drawbacks
Access/Mobility and Equity	Demographic Projections	State estimates	Project population changes in absolute and percentage terms	Focus investments and policy around areas of high growth	Periodically	State and county	Easy to use	Often inaccurate as population is highly dependent of future economic conditions
Economic	Regional Input-Output Modeling Systems II (RIMS II)	Department of Commerce	Direct, indirect, and induced impacts of nonmotorized investments	Calculate economic benefits of statewide investments	N/A	State and county	Less expensive than other approaches	Lacks precision
Economic	Location Affordability Portal	U.S. DOT, U.S. Department of Housing and Urban Development	Housing and transportation costs by location	Assess the implications of transportation investments in different areas based on the impact to household budgets	Annual	Census geographies, zip codes	Provides important perspective on equity and opportunities to reduce household transportation expenses	Is not the full picture of equity

Subject Area	Data System/Type	Source	What does the data tell you?	Common Data Uses	Frequency/ Update Cycle	Granularity/ Scale	Advantages	Drawbacks
Environment and Energy	National Register of Historic Places	National Park Service's official list of cultural resources worthy of protection	Location of historic districts, sites, buildings, structures, and objects significant to American history	Determine points of interest for infrastructure facilities to access, identify potential need to avoid/mitigate impacts	Continuous	Georeferenced locations providing detail at all scales	Complete inventory	Site-level archaeological evaluation may be necessary
Health	Behavioral Risk Factor Surveillance System (BRFSS)	Centers for Disease Control	Rates of physical activity, diabetes, arthritis, disability, cancer, heart disease, depression, asthma, and other prevalent health conditions	Report public health indicators	Continuous	States, counties, and cities		
Health	Health Impact Assessments	Local and State public health agencies	Potential public health effects of policies, plans, and projects	Make policy and project decisions	Variable	State, County, City	Improves decisionmaking	New practice, can be expensive

Subject Area	Data System/Type	Source	What does the data tell you?	Common Data Uses	Frequency/ Update Cycle	Granularity/ Scale	Advantages	Drawbacks
Safety	Fatality Analysis Reporting System (FARS)	National Highway Traffic Safety Administration	Count of roadway fatalities by mode	Bicycle and pedestrian fatality trends over time, victim demographics	Annual	Georeferenced locations providing detail at all scales	Complete census of roadway fatalities	Does not include fatalities occurring off public roadways and/or not involving a motor vehicle
Safety	General Estimates System	National Highway Traffic Safety Administration	Estimate of roadway injuries by mode	Pedestrian and bicycle injuries trends over time	Annual	State	Consistent national survey methodology	Likely undercounts injuries
Safety	State and local accident reports	State and local police agencies	Count of reported roadway injuries and fatalities by mode, factors contributing to crashes	Bicycle and pedestrian fatalities and injuries trends over time	Annual, sometimes daily	State, local, sometimes georeferenced to locations	Fine-grained data on injuries not provided at the Federal-level	Does not include unreported incidents, fatalities and injuries occurring off public roadways and/or not involving a motor vehicle

Subject Area	Data System/Type	Source	What does the data tell you?	Common Data Uses	Frequency/ Update Cycle	Granularity/ Scale	Advantages	Drawbacks
Safety	State and local public health records	State and local health and emergency management agencies	Count of reported roadway injuries and fatalities by mode requiring hospitalization and/or Emergency Medical Services	Assessing injury severity	Annual, sometimes daily	State, local, sometime georeferenced to locations	Captures accidents not reported to the police or improperly reported	Does not capture non-serious injuries
Safety	Web-Based Injury Statistics Query and Reporting System (WISQARS)	Centers for Disease Control	Fatal and nonfatal injury data at the State level, cost of injury estimates, demographics	Report cost of injuries, safety demographics	Annual	State and County	Includes fatalities and injuries both involving and not involving traffic	
Usage/Mode Share	Journey to Work	U.S. Census Bureau	Commute mode share by mode (including bicycle and pedestrian)	Mapping commute mode share	1, 3, 5, and 10 years	Census geographies	Fine-grained information during peak commute travel periods	Commute trips make up a fraction of all trips (16%)
Usage/Mode Share	National Household Travel Survey (NHTS)	Federal Highway Administration	Trip purpose, mode, travel time, and time of travel	Quantify travel behavior, changes in travel characteristics over time, and travel demographics	Approximately every 6-7 years	Census geographies	All trip purposes, large sample size	Conducted infrequently

Appendix C: Key Pedestrian and Bicycle Resources and Tools

Federal Resources

FHWA Office of Planning
http://www.fhwa.dot.gov/planning/

FHWA Bicycle and Pedestrian Program
http://www.fhwa.dot.gov/environment/bicycle_pedestrian/

FHWA Livability Initiative
https://www.fhwa.dot.gov/livability/

FHWA Safety Program
http://safety.fhwa.dot.gov/

FHWA Office of Transportation Performance Management
http://www.fhwa.dot.gov/tpm/

FHWA Traffic Monitoring Guide
http://www.fhwa.dot.gov/policyinformation/tmguide/

Nonprofit Advocacy, Research, and Professional Organizations

Pedestrian and Bicycle Information Center
http://www.pedbikeinfo.org/

America Walks
http://americawalks.org/

American Trails
http://www.americantrails.org/

Association of Pedestrian and Bicycle Professionals
http://www.apbp.org/

National Center for Safe Routes to School
http://www.saferoutesinfo.org/

National Complete Streets Coalition
http://www.smartgrowthamerica.org/complete-streets

Transportation Alternatives Data Exchange (TrADE)
http://trade.railstotrails.org/
Safe Routes to School National Partnership

http://saferoutespartnership.org/

Tools

Pedestrian Safety Guide and Countermeasure Selection System (PEDSAFE)
http://www.pedbikesafe.org/PEDSAFE/

Bicycle Countermeasure Selection System (BIKESAFE)
http://www.pedbikesafe.org/BIKESAFE/

Pedestrian and Bicycle Crash Analysis Tool (PBCAT)
http://www.walkinginfo.org/facts/pbcat/

Research Reports

Advocacy Advance (2014). Lifting the Veil on Bicycle and Pedestrian Spending: An Analysis of Problems & Priorities in Transportation Planning and What to Do About It.
http://www.advocacyadvance.org/MAP21/LiftingTheVeil/

Alliance for Biking and Walking (2014). Bicycling and Walking in the United States: 2014 Benchmarking Report. https://www.bikewalkalliance.org/resources/benchmarking/

University of North Carolina Highway Safety Research Center (2013). Cost for Pedestrian and Bicyclist Infrastructure Improvements. http://www.pedbikeinfo.org/data/library/details.cfm?id=4876/

Transportation Research Board (2008). National Cooperative Highway Research Program (NCHRP) Report 500 Vol. 18, Guidance for Implementation of the AASTO Strategic Highway Plan: A Guide for Reducing Collisions Involving Bicycles.
http://www.trb.org/Publications/Public/Blurbs/A_Guide_for_Reducing_Collisions_Involving_Bicycles_156839.aspx

Transportation Research Board (2008). NCHRP Report 500 Vol. 20, Guidance for Implementation of the AASTO Strategic Highway Plan: A Guide for Reducing Collisions Involving Pedestrians.
http://www.trb.org/Publications/Public/Blurbs/A_Guide_for_Reducing_Collisions_Involving_Pedestri_154863.aspx

Transportation Research Board (2012) Transit Cooperative Research Program (TCRP) Report 95: Traveler Response to Transportation System Changes Handbook, Third Edition; Chapter 16, Pedestrian and Bicycle Facilities. http://www.trb.org/Publications/Blurbs/167122.aspx

Appendix D: Examples from State Plans

This appendix includes several sections from selected plans that illustrate many of the concepts addressed in the handbook.

1. Prioritizing Criteria: Colorado

Table B-3: Goals, Criteria, and Project-Level Performance Measures.

Goals and Investment Decision Criteria	Project-Level Performance Measures
Enhance Safety: ▪ Reduce crash rate or potential threat of crashes.	▪ Project would result in safety improvements as quantified by Crash Modification Factors.[17]
Increase Bicycling and Walking Activity: ▪ Improve (corridor) bicycling or walking conditions.	▪ Quality of improvement, measured as the change in bicycle or pedestrian LOS (primary benefit evaluation component).
▪ Expand permanent data collection infrastructure.	▪ Project includes installation of permanent bike/ped counting device.
Expand Recreational Opportunities and Enhance Quality of Life: ▪ Enhance Scenic Byways.	▪ Project is located along a Scenic Byway (Yes/No).
▪ Create access to public lands.	▪ Project provides direct access to public lands (Yes/No).
▪ Provide multi-use pathways near populations.	▪ Project is a multi-use pathway (Yes/No). ▪ Relative population of project area.
▪ Preserve and enhance downtown character.	▪ Project is located in defined downtown or "Main Street" area.
Improve Public Health: ▪ Reduce disease/obesity in children, adults, and seniors.	▪ Mode shift and induced recreational travel. ▪ Obesity rate in project county.
Improve Environment, Air Quality, and Fossil Fuel Independence: ▪ Reduce carbon-based vehicle miles traveled through increased bicycling and walking.	▪ Mode shift.

[17] Crash Modification Factors are defined by FHWA; http://www.cmfclearinghouse.org/index.cfm.

Goals and Investment Decision Criteria	Project-Level Performance Measures
Provide Transportation Equity: ▪ Provide mobility options to underserved populations.	▪ Project is located in an area of underserved population (low-income or minority).
▪ Provide safe active transportation to schools and learning centers.	▪ Project provides direct connection to school and would likely be used by students or staff to walk or bike to school.
▪ Provide pedestrian mobility for seniors and disabled populations.	▪ Project located in an area of high > 65 population.
Maximize Transportation Investments: ▪ Complete or connect network or system.	▪ Project connects to an existing bicycle or pedestrian facility.
▪ Reduce motor vehicle traffic congestion.	▪ Project located along or parallel to a congested roadway.
▪ Enhance multimodal efficiency (expand utility of public transportation).	▪ Project provides direct connection to transit service.
Improve State/Regional Economy: ▪ Provide better access to jobs.	▪ Jobs population in vicinity.
▪ Bolster tourism.	▪ Relative level of tourism in area. ▪ Demonstrated level of tourism promotion investment in local community.
▪ Induce mode shift to bicycling, walking, and transit = more household disposable income.	▪ Mode shift.

Table B-4: Bicycle and Pedestrian Candidate Projects Evaluation Calculator.

Input information (use drop-down for assistance)

Variable/Characteristics	Input Type	Input
Bicycling/Walking Conditions Before Project (B/P LOS)	LOS value	3.62
Bicycling/Walking Conclusions 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
Concentrated Tourism Investment	Yes/No	Yes
Facility Constructive Cost	$	$120,000

Table B-5: Evaluation Results: Advancement toward Statewide Goals.

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

4. Areas of Concern

This chapter describes the areas of concern along the state highway system that have been prioritized for pedestrian improvements. The areas of concern were used to determine the locations of key project recommendations for the development of a prioritized pedestrian project list.

The areas of concern (AOCs) were identified through a technical analysis of existing conditions, input from the TAC and CAC, and validation from the general public. This chapter begins by describing the methodology for identifying the areas of concern and describes those areas of concern within each county. The areas of concern described in this chapter form the basis for the solution development and project and program recommendations in Chapter 5.

What Are Areas of Concern?

Areas of concern are locations along the state highway system where pedestrian improvements are recommended. These areas have the following characteristics:

- Safety concerns (pedestrian hot spots)
- Gaps in the existing sidewalk system
- Located near pedestrian-intensive land uses and pedestrian attractors
- High concentrations of pedestrian-oriented populations

4.1 Methodology

The development process used to identify the areas of concern was based on specific technical factors. The project team worked closely with the TAC, CAC, and members of the public to ensure that the areas of concern identified met both technical factors and represented community concerns. Figure 4.1 illustrates the overall development process for the areas of concern and the development of the prioritized project list.

To identify the need for pedestrian improvements, factors were defined at the beginning of the area of concern development process. They were based on technical knowledge of best practices and reflect the information gathered as part of the inventory of existing conditions.

DEFINITIONS

Pedestrian Attractors: locations that attract a lot of pedestrians, such as parks, schools, tourist attractions, transit centers, etc.

Pedestrian Hot Spot: locations where multiple pedestrian crashes have occurred.

Figure 4.1

Area of Concern Development Process.

These factors were established to ensure a transparent and unbiased evaluation process that could easily be explained to and validated by the public and stakeholders. The factors were endorsed by the TAC and CAC and validated by the public via a series of public meetings. The four key factors that were developed to indicate the need for pedestrian improvements were:

- **Connectivity** (areas with sidewalk system gaps)
- **Accessibility** (areas located near pedestrian-intensive land uses)
- **Pedestrian-Oriented Populations** (these include the elderly, youth, low-income populations, and households that have no access to vehicles)
- **Safety** (locations prone to safety concerns, such as pedestrian hot spots)

The project team overlaid these key factors with each other using a GIS analysis based on the existing conditions data. The locations with the highest density of factors were identified as potential areas of concern. Figure 4-2 shows the results of the GIS analysis in Honolulu. This map information was discussed with the TAC and CAC. This technical exercise was used as a tool for the TAC and CAC to determine areas of concern. Table 4-1 defines each factor and how it was measured in the GIS analysis. Further details on the GIS data used and technical methods are provided in Appendix D, Methodology for the Areas of Concern.

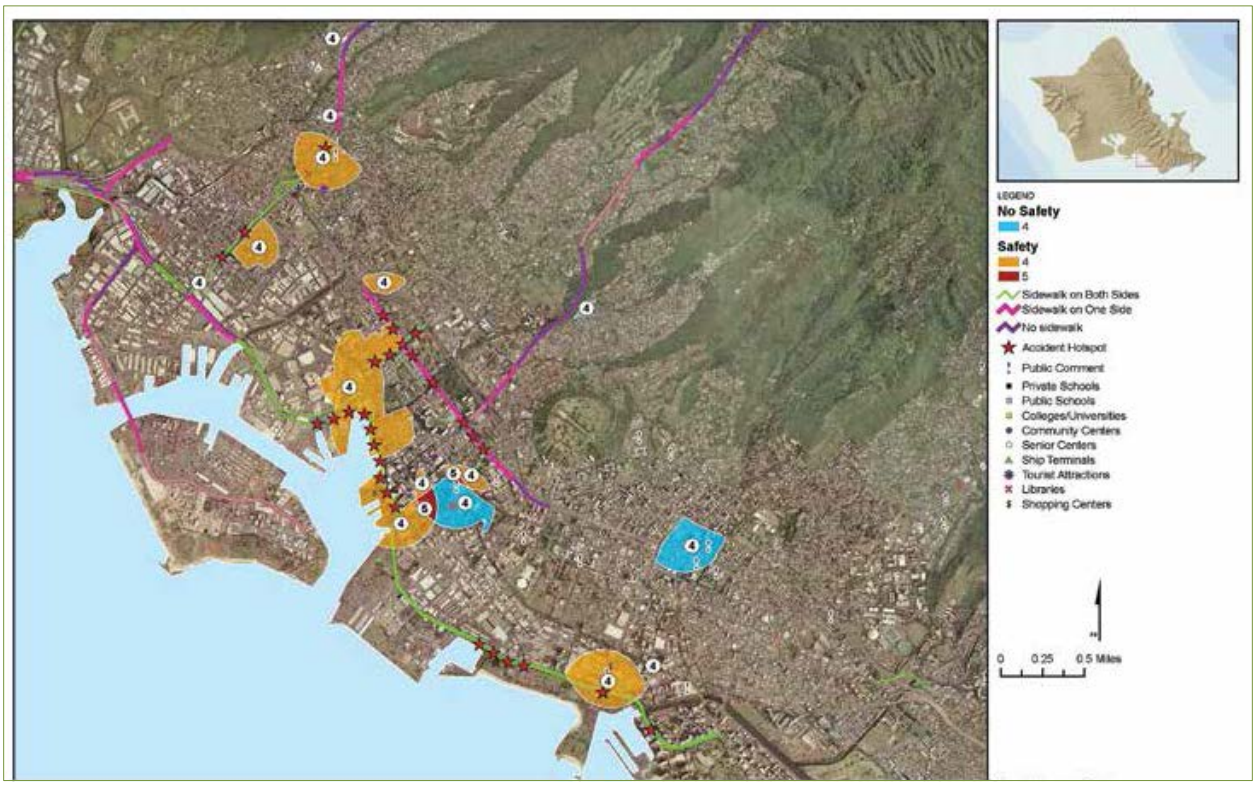


Figure 4.2

A GIS analysis helped to determine locations of areas of concern.

Table 4.1

Technical Definition of Factors.

Factor	Description	Measurement
Connectivity	A well-connected sidewalk system can help improve pedestrian travel, protect pedestrians from vehicle conflicts, and improve pedestrian access to and from the transit network and other needed services. Locations with gaps in the sidewalk system, especially in urban or rural town areas, can create undesirable walking conditions. It should be noted that while pedestrians may use roadway shoulders, many communities prefer sidewalks over shoulders when possible. This is particularly true on the state highway system, where vehicle traffic levels are generally higher than on other roadways.	Locations in need of connectivity improvements are defined as those where: • Sidewalks are missing on both sides of the highway for 1/8 mile or less in urban areas • Sidewalks are missing on both sides of the highway for ¼ mile or less in rural areas • Specific for Kauai (per Kauai TAC) - Sidewalks are missing for 1 mile or less These measurements were designed to identify places where there is a small gap in existing pedestrian infrastructure.
Accessibility	Accessibility is defined for this Plan as the ability of the greatest number of people to access the pedestrian system. Certain land uses generate high levels of pedestrian activity. Areas with close proximity to pedestrian-intensive land uses are a factor for establishing the areas of concern.	Key land uses that need to be served by the pedestrian system include schools, tourist destinations, harbors, stadiums, state and county beaches, state and county parks, transit centers and major bus stops on Oahu, future rail stations on Oahu, hotels, libraries, medical facilities, police stations, government service buildings, high-density residential districts, and commercial districts. These land uses were mapped using GIS. Then, a 1/4 mile was drawn around each land use, reflecting the typical distance pedestrians would be willing to walk to each destination. Schools were given a 1 mile buffer, and future rail stations were given a 1/2 mile buffer. Pedestrian access to schools was very important to the project stakeholders, therefore, access to schools was counted separately.

Factor	Description	Measurement
Pedestrian-Oriented Populations	This factor addresses the needs of populations that may have limited access to transportation options. Youth, elderly, low-income populations, and households that have no access to vehicles are more reliant on the pedestrian system because they may not be able to drive or afford a safe and reliable vehicle. Areas where these types of populations are concentrated can be considered to have "high pedestrian potential." This factor will help to ensure that the transportation needs of disadvantaged populations are taken into consideration when establishing the areas of concern.	Locations of high concentrations of elderly, youth, low-income, and households with no access to vehicle populations were mapped using GIS. • Low-income is defined as households living at or below the poverty level. • Elderly is defined as 65 years of age or older. • Youth is defined as 17 years of age or younger. High concentrations are those where the percentage of the population exceeds the average percentage for each county. Locations were mapped using 2000 US Census block groups.
Safety	Reducing the number of crashes involving pedestrians is one of the key components of this Plan. This factor was used to identify those locations with a high concentration of pedestrian crashes or safety-related complaints.	Areas were identified for safety concerns in three ways: 1. Pedestrian crash hot spots. Locations in urban areas with five or more pedestrian crashes or two pedestrian fatalities within the study period, and locations in rural areas with three or more pedestrian crashes or two pedestrian fatalities within the study period. Locations are defined as +/- 0.1 mile in either direction. 2. High-complaint areas. The TAC provided a list of locations where their agencies or departments receive high numbers of pedestrian safety-related complaints and high complaint areas from the public. 3. TAC recommendations. The TAC identified any key areas that they believed need to be addressed through the areas of concern exercise.

4.2 County of Hawaii Areas of Concern

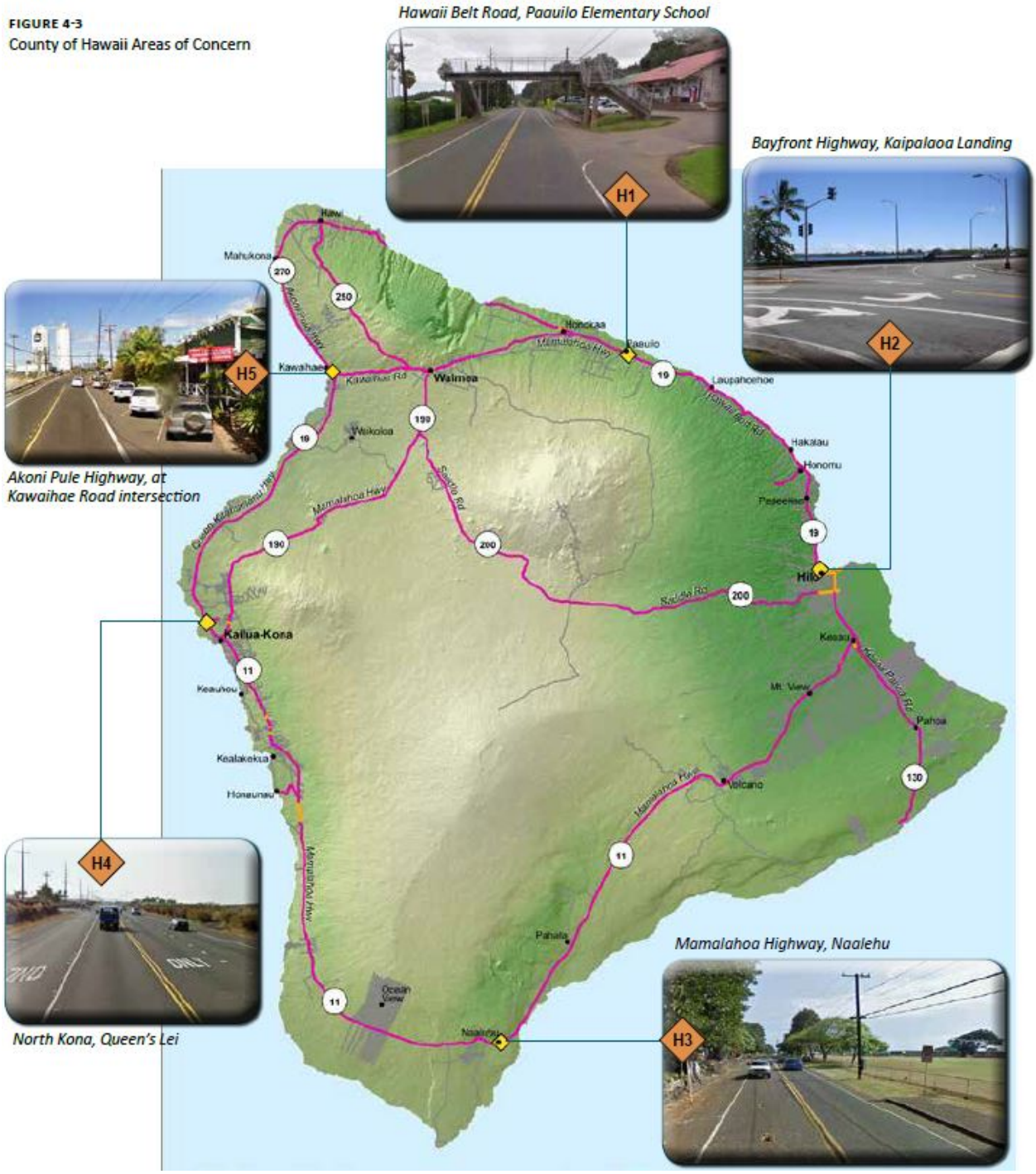
Five Areas of Concern were identified within the County of Hawaii. One was identified through the technical analysis, and four were identified based on feedback from the TAC, CAC, or the general public. These are described further on Table 4-2 and shown on Figure 4-3.

Table 4.2

County of Hawaii Areas of Concern.

Id No.	Areas of Concern	Factor Overlay Analysis	Stakeholder Input	Connectivity	Accessibility	POP	Safety	Description
H1	Hawaii Belt Road, Paauilo Elementary School	▪		▪	▪	▪		Students lack a dedicated and intuitive way to walk or bike between school and the pedestrian bridge. Currently there are no signs indicating to motorists that a school is nearby.
H2	Bayfront Highway, Kaipalaoa Landing		Public	▪	▪			There is a need to accommodate pedestrians that cross the Bayfront Highway. Pedestrians cross where Waianuenue Avenue intersects with the highway. Existing sidewalks from downtown lead towards this intersection, so it is understandable that pedestrians looking to access the waterfront would choose to cross in this location.
H3	Mamalahoa Highway, Naalehu		TAC	▪	▪			The mauka side of Mamalahoa Highway lacks adequate pedestrian facilities in Naalehu. Although the makai side has a sidewalk in good condition, it doesn't continue west through the town center. The site would benefit from additional sidewalks to enhance pedestrian connectivity from the park, school, and services.
H4	North Kona, Queen's Lei		CAC	▪	▪			The Kailua-Kona area lacks multi-modal connectivity options. Queen's Lei is a 16.75-mile circulation loop for bicyclists and pedestrians. It would provide for the needs of a variety of pedestrians and bicyclists, including commuters, school children, neighborhood residents, and recreational users.
H5	Akoni Pule Highway, at Kawaihae Road intersection		Public	▪	▪			There is a need to accommodate pedestrian crossings at the intersection of Akoni Pule Highway and Kawaihae Harbor Road. There is currently no crosswalk nor signage to warn motorists to be aware of pedestrian crossings.

FIGURE 4-3
County of Hawaii Areas of Concern



3. Inserting Nonmotorized Consideration Into the Project Development Process: Louisiana

Louisiana's plan included an explicit recommendation to include a checklist that each highway project manager would need to complete before a project advanced to the next phase of the project development process.

APPENDIX 2: PEDESTRIAN & BICYCLE ACCOMODATION CHECKLIST

The following checklist has been developed to help ensure appropriate accommodations are made for pedestrians and bicycles. This checklist should be completed at the beginning of Stage 3 of all Department projects. Additional sheets may be attached as necessary.

Have the following pedestrian & bicycle friendly strategies been employed?	Y/N	Comments
Minimize travel lane widths on urban and suburban arterials and collectors, where appropriate.		
Minimize design speed on urban and suburban arterials and collectors, where appropriate.		
Minimize intersection curb radii on urban and suburban arterials and collectors, where appropriate.		

Have the following bicycle accommodations been provided?	Y/N	Comments
Bike Lanes?		
Paved Shoulders?		
Multi-use path?		
Bicycle-compatible drainage grates?		
Bicycle-compatible rumble strips?		
Bicycle-compatible expansion joints?		
Appropriate signage?		

Have the following pedestrian accommodations been provided?	Y/N	Comments
Sidewalks?		
Appropriate width buffer?		
Pedestrian countdown signal heads?		
Marked crosswalks?		
Transit stop access?		
Crossing islands?		
High-visibility crosswalks?		
ADA compliant ramps?		

Have guidance from the appropriate sections of the following been followed	Y/N	Comments
LDOTD Pedestrian & Bicycle Policy?		
Guide for the Development of Bicycle Facilities, AASHTO?		
Guide for the Planning, Design and Operation of Pedestrian Facilities, AASHTO		
Manual on Uniform Traffic Control Devices, FHWA?		
Public Rights of Way Accessibility Guidelines (PROWAG)		

Have guidance from the appropriate sections of the following been followed	Y/N	Comments
Maintenance of traffic plans that accommodate bicycles and pedestrians?		
Maintenance Agreement?		

4. Funding Local Complete Streets Projects: Washington

The Washington State Department of Transportation developed the Complete Streets and Main Street Highways Program to both encourage local government agencies to adopt Complete Streets policies and to fund improvements for nonmotorized travel identified by those communities along State highways that passed through them.

COMPLETE STREETS & MAIN STREET HIGHWAYS

Grant Program

48

How attainable are the means?

The purpose of this program is to encourage street designs that safely meet the needs of all users, including bicyclists, pedestrians, motorists, and public transportation users while protecting and preserving community environment and character. Recognizing that improvements to these city streets and Main Street Highways are critical to community development in cities and towns across the state, this program provides funding for transportation improvements that support infill and redevelopment, intensify land uses, and connect housing and employment in order to improve the health and safety of Washington residents.

The scope of every project is informed by context-specific circumstances. Some rely on pedestrian features while others may focus on cyclist safety.

Size

Cost might seem daunting for a Complete Streets overlay, but not all projects will be multimillion dollar operations. A simple move might be all that is needed to increase safety and accessibility.

Scope

Complete Streets aim to extend accessibility to all users, but that accessibility might not be made equally available to pedestrians, bicycle, transit user, cars, and trucks. While one project might aims to create a more complete bike network, freight traffic might be the driving catalyst in another project. The goal is to achieve accessibility for all users while dealing with the primary needs specific to each context.

"Federal principles of livability"

Providing more transportation choices

Promoting equitable, affordable housing

Enhancing economic competitiveness

Supporting existing communities

Coordinating policies and leverage investment

Valuing communities and neighborhood

EPA-HUD-DOT Partnership

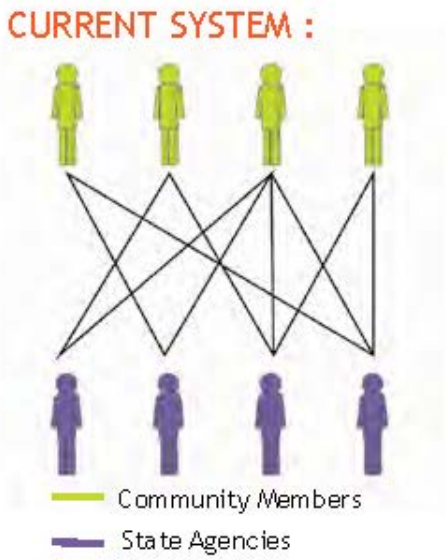
Systems

Projects could feature elements such as:

- Crossing and intersection treatments or roundabouts
- Signage, striping, markings
- Streetscape, gateway treatments
- Sidewalks
- Bio-retention features
- Lighting
- Americans with Disabilities Act (ADA) accommodations
- Bicycle lanes, boulevards, and cycle tracks
- Urban trails and crossings
- Bicycle parking and stations
- Traffic calming measures
- Freight accommodation
- Transit accommodation
- Electric vehicle charging stations
- Furnishings
- Frontage improvements
- Roadway construction
- Information technology services (ITS)

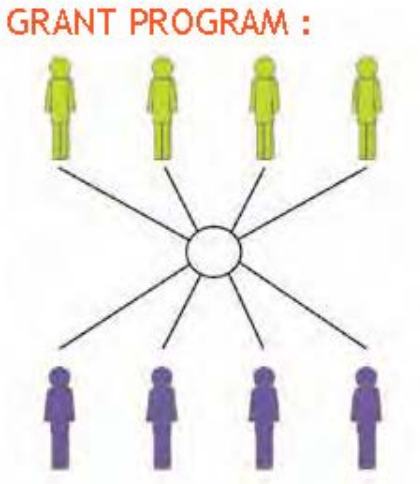
How does a project receive grant funding?

Public agencies must have adopted a Complete Streets ordinance or equivalent and have integrated it into a community plan in order to apply for grant funding. All projects will be evaluated by an advisory board based on the following criteria, found in Engrossed Substitute House Bill 1071:



"In Grandview, we worked with 10 or 11 different funding sources, which each had their own reporting format and methods."

-Brad Smith, Grandview Chamber of Commerce



Mobility

The ordinance promotes healthy communities by encouraging walking, bicycling and using public transportation. The project should improve connections and/or establish safer and fully accessible crossings, sidewalks, trails, bike facilities, and transit connections consistent with AASHTO, ITE or other peer reviewed, context sensitive solutions guides.

Sustainability

The ordinance protects the environment and reduces congestion by providing safe alternatives to single occupancy driving. In order to make alternatives to single occupancy driving safe and viable, proximity and connections are needed between and among existing housing, centers of employment, education, retail and recreation. The project should support infill, encourage redevelopment and reuse of existing building stock, intensify land uses, and connect housing and employment.

Safety

The ordinance protects the environment and reduces congestion by providing safe alternatives to single occupancy driving. In order to make alternatives to single occupancy driving safe and viable, proximity and connections are needed between and among existing housing, centers of employment, education, retail and recreation. The project should support infill, encourage redevelopment and reuse of existing building stock, intensify land uses, and connect housing and employment.

Community

The ordinance preserves community character by involving local citizens and stakeholders to participate in planning and design. Transportation projects on urban arterials and Main Street Highways have a greater likelihood of scope, schedule and budget changes that often result in additional costs. Research has shown that more and better up front coordination and communication with the community during the design process can reduce the potential for project delay or cost over-runs.

Rating System

5 pts: Substantial long-term impact or improvement
3 pts: Moderate impact or improvement
1 pt: Little to no impact or improvement

The first steps towards a complete street….

Outcome of an Ordinance

Seattle's Complete Streets ordinance 122386, passed in 2007, is a local example of how enacting an ordinance is the key step to achieving results. This was possible because of a citywide Bicycle Master Plan, a Transportation Strategic Plan, and a Complete Streets policy already in place.

Set in the busy International District, 6th Avenue South gained a wide paved sidewalk in 2008. Seattle's 2007 Complete Streets Ordinance made this possible.

The Complete Street Continues

The Complete Street and Main Street Highways program requires a city ordinance to grant money to a community. Community projects would be more feasible if the city would enact a Complete Streets ordinance. Many communities are already working on pedestrian accessibility, bike paths and lanes, efficient transit and traffic systems, and streetscape reactivation. Working with the community, creating a master plan, and proposing an ordinance, community could enact an ordinance, and gain access to the funds of the Grant Program, taking the first step towards completing the street.

Wenatchee already has existing bike paths, pedestrian walkways, and current construction projects implementing Complete Street concepts.

If Wenatchee were to enact a Complete Streets Ordinance, they might gain access to funding from the Grant Program, enabling projects like this to come to fruition.

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