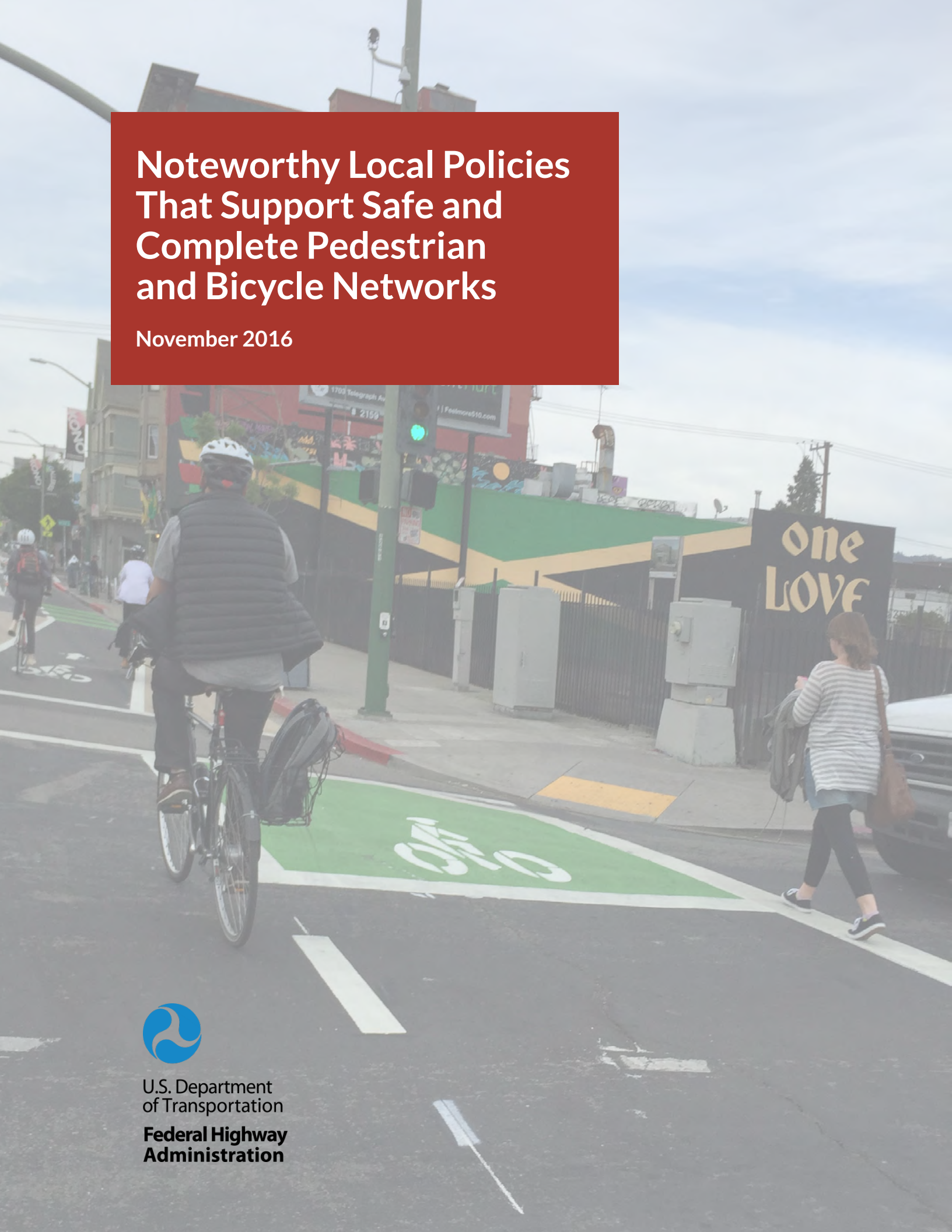

Noteworthy Local Policies That Support Safe and Complete Pedestrian and Bicycle Networks

November 2016

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16. Abstract *Noteworthy Local Policies That Support Safe and Complete Pedestrian and Bicycle Networks* provides local and state agencies with tools to develop policies that support the development of safe and complete bicycle and pedestrian networks for users of all ages and abilities. The guide is accompanied by case studies that showcase examples from across the country of how policies can support safe and complete street networks.		
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Foreword

Noteworthy Local Policies That Support Safe and Complete Pedestrian and Bicycle Networks provides local and state agencies with the tools to create a solid policy platform to support the creation of multimodal transportation networks for users of all ages and abilities. The guidebook is intended to assist local and state governmental agencies in developing and applying policies and provide evidence to support policy adoption.

The guidebook showcases opportunities to make street networks more complete, more livable, and safer for all users. The guidebook first defines a safe and complete pedestrian and bicycle network. The guidebook then identifies six key elements of a successful policy framework to achieve a complete network and provides suggestions for implementation. The accompanying case studies, organized by the six key element categories, showcase noteworthy examples from across the country of how policies can support safe and complete street networks. Sections within each case study describe the policy of note with characteristics of the municipality in which it was enacted and examples of similar case studies if they exist.

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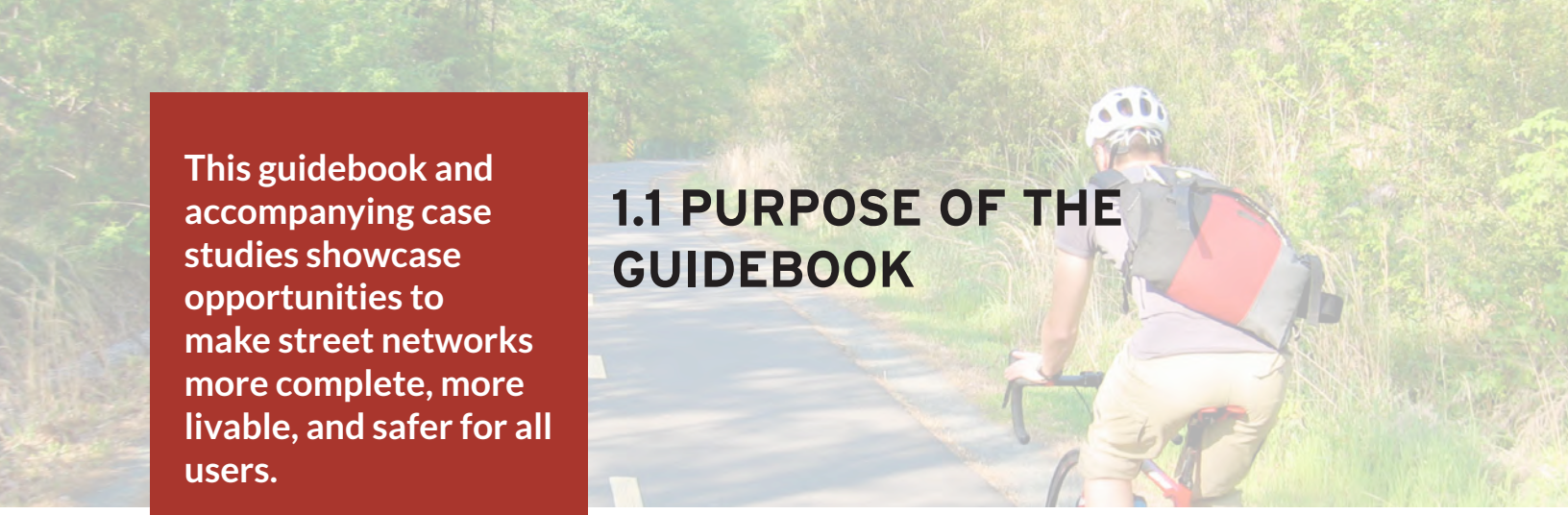
Chapter 1

INTRODUCTION

This policy guidebook provides local and state agencies with the tools to create a solid policy platform to support the creation of multimodal transportation networks for users of all ages and abilities. The accompanying case studies showcase noteworthy examples from across the country of how policies can support safe and complete street networks.

Effective policy shapes long-term planning efforts, as well as more immediate decisionmaking. It informs infrastructure planning, design, construction and maintenance and shapes decisionmaking related to investments in infrastructure and capital improvements. Policy informs and shapes an agency's work in engineering, education, enforcement, emergency response, encouragement, and evaluation efforts. This multidisciplinary approach, embodied in both required Federal safety planning and best practices in bicycle and pedestrian planning and design, is important in establishing a safe and complete pedestrian and bicycle network.

The terms bicycling, walking, bicyclist and pedestrian are used throughout this document and are intended to be inclusive of people of all ages and ability levels, including people with disabilities.



This guidebook and accompanying case studies showcase opportunities to make street networks more complete, more livable, and safer for all users.

1.1 PURPOSE OF THE GUIDEBOOK

Assist Local and State Agencies

There is a strong correlation between robust, high functioning bicycle and pedestrian networks and strong public sector leadership from elected officials and agency staff. Strong political will may be needed to redesign streets from car-exclusive thoroughfares to multimodal complete streets. This guidebook aims to present information about relevant policies and policy examples that agencies can use to institutionalize network-supportive policies in their own communities.

Provide Evidence to Support Policy Adoption

Providing case studies and evidence to support the benefits of policy adoption is critical to achieving the goal of complete and safe networks. The case studies in Appendix A were compiled based on a literature review pinpointing evidence of successful policy initiatives across the country. The literature review grounded the study by collecting examples of how communities, professional associations, research institutions, and others collect evidence about policies' effectiveness and outcomes.

Some policies selected for review have been in effect long enough that their impacts have been evaluated and measured. Newer policies that show promise have also been reviewed, even though their impact has not yet been measured.

Six Policy Elements for Creating Complete Networks

This guidebook identifies six areas for transportation agencies and stakeholders to develop effective policies to help create safe and complete bicycle and pedestrian networks.

- **Define Success**: Discusses setting visions, goals, objectives, and performance measures and how to gain stakeholder buy-in.
- **Protect Nonmotorized Travelers**: Discusses policies that help prevent crashes and maintain safe and complete networks.
- **Promote Supportive Development**: Discusses land use, site design, and zoning that encourage bike and pedestrian network development.
- **Design the Network**: Discusses the policy tools to support the design of a safe and comfortable pedestrian and bicycle network, including design guidance.
- **Make it Last**: Discusses the maintenance of safe and complete pedestrian and bicycle networks.
- **Pay for It**: Discusses strategies to pay for policy implementation through a variety of sources.

Audience

The guidebook is intended to assist local and state governmental agencies in developing and applying policies to create safe and comfortable bicycle and pedestrian networks. These policies involve a broad range of agency departments including planning, transportation, police, public works, as well as elected officials and their staff.

Advocates, grassroots/nonprofit organizations, and concerned citizens may also benefit from the guidebook's contents. Citizen advisory committees, for instance, can use the best practices discussed here to augment their experiences directing a public policy's development.

Organization of Guidebook

The guide is organized into the following chapters:

Chapter One: Introduction provides an overview of the guidebook and defines a complete network.

Chapter Two: Policy Elements of Creating A Complete Network provides policy guidance on implementing a network's main components, such as safety, supportive land uses, and design as well as providing policy guidance on how to maintain the network and how to pay for it.

Chapter Three: Implementation provides guidance on how to assess existing policy and how to create a strategy to improve policy.

Appendix A: Bicycle and Pedestrian Policy Case Studies provides case studies that are categorized according to the guidebook's main elements. Each case study represents a policy change that supports at least one of the six policy areas discussed in this guide.

The United States Department of Transportation (USDOT) 2010 *Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations* states: "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."

Previous Federal Highway Administration (FHWA) products identified solutions to help build safe and complete bicycle and pedestrian networks. *Case Studies in Delivering Safe, Comfortable, and Connected Pedestrian and Bicycle Networks* focuses on how policy can support and guide infrastructure and program recommendations. *Delivering Safe, Comfortable, and Connected Pedestrian and Bicycle Networks: A Review of International Practices* provides domestic and international best practices for developing infrastructure to create complete and safe networks.

Figure 1. Photo. FHWA guidelines aimed at building safe and complete bicycle and pedestrian networks.

To help evaluate the quality of a pedestrian and bicycle network, it is useful to examine how the network meets a variety of network principles.

1.2 WHAT IS A COMPLETE NETWORK?

By definition, a network is an interconnected or interrelated chain, group, or system. A network is made up of segments and nodes, and, in the world of transportation, these are roadways, pathways, and intersections. While the overall transportation network is typically complete for vehicular traffic, there are often gaps in bicycle and pedestrian networks. A key intersection or roadway linkage for a vehicle may be a major barrier for a bicyclist or pedestrian, especially those with disabilities.

A complete network is achieved through coordination and cooperation. Policy can institutionalize these processes by defining selection of projects for funding, interdepartmental coordination and review, and design of bicycle network or facility.

Before updating or adopting policy, it is critical to understand what makes up a complete network. FHWA has adopted six principles (listed to the right), adapted from the Dutch CROW (Centre for Research and Contract Standardization in Civil and Traffic Engineering) manual that provide a useful method and definition for assessing how well a pedestrian and bicycle network meets its intended purpose.

The remainder of this section illustrates how policies may support each of these principles.

PRINCIPLES OF A COMPLETE NETWORK[1]

The FHWA defines a network as "A pedestrian and bicycle transportation network consists of a series of interconnected facilities that allow nonmotorized road users of all ages and abilities to safely and conveniently get where they need to go."[2]

Cohesion: How connected is the network in terms of its concentration of destinations and routes?

Directness: Does the network provide direct and convenient access to destinations?

Accessibility: How well does the network accommodate travel for all users, regardless of age or ability?

Alternatives: Are there a number of different route choices available within the network?

Safety and Security: Does the network provide routes that minimize risk of injury, danger, and crime?

Comfort: Does the network appeal to a broad range of age and ability levels and is consideration given to user amenities?

1 *Network Report on Case Studies in Delivering Safe, Comfortable and Connected Pedestrian and Bicycle Networks* https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/network_report/page09.cfm#ftn4

2 http://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/network_report/network_report.pd

Figure 2. A cohesive network connects sidewalks to front walks

Cohesion

A connected, cohesive network provides continuous bicycle and pedestrian facilities between destinations. Policies that support network cohesion, such as high level policies that explicitly state support for a connected network as well as policies that guide the design of the network, ensure that facilities will operate as a transportation system rather than standalone facilities.

Policies related to design guidelines and complete streets can promote cohesion and can help prioritize filling gaps within the network and connecting facilities. When a set of projects is being evaluated and prioritized for implementation, policies should be in place to support a project that provides a linkage in a disconnected network over a stand-alone, disconnected facility.

Figure 3. Pedestrian and bicycle networks should welcome users of all ages and abilities.

Directness

A complete network minimizes the distance that pedestrians and bicyclists need to travel to reach destinations. Create and support policies that provides direct and convenient access to all destinations in the network.

Street standards and subdivision ordinances that require through streets can help ensure directness. These policies also provide a reduction in emergency response time. Policies related to design guidelines and complete streets promote directness. Providing equitable and direct access to bicycle and pedestrian facilities in all parts of a municipality is an important equity policy.

Accessibility

A complete network accommodates travel for all users, regardless of age or ability. Policies calling for universal design and complete streets create networks that are designed for all users. Policies should also provide design guidance for facility types to ensure safe and comfortable facilities for all users. Meeting accessibility requirements is not only in a community's best interest—it is also a requirement. Transportation facilities must comply with the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973. Communities can strengthen their network planning effort tie-in with their ADA Transition Plan and Self-Evaluation to ensure an integrated approach. Thinking about a transportation network's ability to serve all populations from the earliest point of planning and design can ensure that it will meet the needs of all users.

Figure 4. Adequate lighting and other amenities enhance feelings of safety and security.

Alternatives

A complete network provides route choices. Alternatives provide route options to different types of users, who may be traveling for different purposes.

Alternatives also make using multiple modes of travel possible. It is common for users to walk or ride a bike to and from a transit station, so focusing network improvements that increase access to transit hubs will increase the likelihood that a person can travel long distances without using an automobile. Policies related to design guidelines can promote alternatives.

Safety and Security

Policies that promote safety and security are important to minimize the risk of injury, danger, and crime. Pedestrians and bicyclists are some of the most vulnerable users of the road. Unsafe locations such as high speed, high traffic roadways or intersections can serve as barriers in the network for pedestrians and bicyclists. Section 2.2 Protect Nonmotorized Travelers discusses safety and security issues in further detail. Policies related to design of the network are also important for safety and security, including policies that provide design guidance for safe crossings, Crime Prevention Through Environmental Design (CPTED), and complete streets.

Comfort

A complete network appeals to a broad range of age and ability levels with consideration given to user amenities. Comfort is an important influence on a person's decision to walk or bike and is thus an important design consideration. Creating more welcoming environments, for example through streetscape improvements, landscaping and amenities such as bike parking, benches, water and seating, can improve the overall comfort of a route. Promoting human scale development and pedestrian-oriented streetscapes can transform a network so that users aren't required to traverse large parking lots to reach the front door, as discussed in more detail in Section 2.3 Promote Bicycle and Pedestrian Supportive Development. Design guides that tie bicycle facility types to user types can also help improve comfort.

HOW THE SIX POLICY ELEMENTS ADDRESS THE PRINCIPLES OF A COMPLETE NETWORK

	Cohesion	Directness	Accessibility	Alternatives	Safety and Security	Comfort
2.1 Define Success	●	●	●	●	●	●
2.2 Protect Non-motorized Travelers					●	●
2.3 Promote Support-ive Development	●	●	●		●	●
2.4 Design the Network	●	●	●	●	●	●
2.5 Make it Last			●		●	●
2.6 Pay for It	●	●	●	●	●	●

Chapter 2

POLICY ELEMENTS OF CREATING A COMPLETE NETWORK

Chapter 2 lays out the following six key elements of a successful policy framework for a safe and complete pedestrian and bicycle network:

- Defining success.
- Protecting nonmotorized travelers.
- Promoting bicycle and pedestrian supportive development.
- Designing networks.
- Maintaining the network.
- Paying for new investments and ongoing maintenance.

Although the definition of success will differ from agency to agency, defining success is a critical first step to making policy decisions.

2.1 DEFINE SUCCESS

In creating a policy framework, success must be defined in order to measure the extent to which certain policy goals and objectives are accomplished over time. Connected networks provide access to destinations and provide additional transportation options that can enable people to be more productive, save money, and be healthier. These larger economic, equity, community and environmental goals and outcomes provide a broad framework of societal benefits that motivate investment in bicycle and pedestrian networks and changes to policies, which is the focus of this guidebook.

This section mainly focuses on defining visions, goals, and performance measures related to successfully implementing policies. Agencies typically develop a policy framework that includes a vision that captures the direction they want to go, goals that describe the elements of that vision, and objectives that define the specific outcomes that the agency expects to achieve over time. These elements are defined not only in transportation plans, but also through general or comprehensive plans, and in other supporting planning efforts.

There are two levels of success to define when discussing performance measures and project outcomes. First of all, practitioners can define the outcomes of successfully implementing a given policy framework. Second, practitioners can define the shorter term steps of

Defining Vision, Goal, Objectives, and Performance Measures

The FHWA *Performance Based Planning and Programming Guidebook* (PBPP) recommends clearly defining the terms: vision, goal, and performance measure, in order to foster stakeholders' and public agencies' understanding of success, particularly related to a performance based planning initiative.

Vision. A concise expression of what the plan is expected to accomplish. A policy or planning project's vision helps establish the initiative's strategic direction. This vision often encompasses broad community factors such as quality of life, economic vitality, and environmental quality." (FHWA *Statewide Pedestrian and Bicycle Planning Handbook*)

Goal. "A broad statement that describes a desired end state....stemming from a state or region's vision, goals address key desired outcomes." (FHWA PBPP guidebook)

Objectives. "Supporting objectives (specific, measurable statements that support achievement of goals) play a key role in shaping planning priorities." (FHWA PBPP guidebook)

Performance Measures. "Performance measures support objectives and serve as a basis for comparing alternative improvement strategies (investment and policy approaches) and for tracking performance over time." (FHWA PBPP guidebook)

successfully implementing their jurisdiction's pedestrian and bicycle network. As discussed throughout this guidebook, the latter is partially a result of sound policy decisions.

MAP-21 and the FAST Act have set a new direction towards performance management that includes requirements for states and MPOs to set targets for a set of national performance measures. Targets setting provides clear definition of agency priorities, highlighting the important of understanding community or state vision, goals, and objectives.

Establishing Vision, Goals, Objectives, and Performance Measures

Creating a vision for a safe and complete bicycle and pedestrian network supplemented by goals, objectives, and performance measures is important to shape a policy platform. After defining the vision upfront, a community can lay out a logical process for achieving that vision over time, including those required for key policy reforms to ensure success.

In establishing an overall vision and the policy platform to support that vision, it is critical to collaborate with stakeholders, city staff, and elected officials. Early and continuous collaboration and communication among city staff, elected officials, and relevant city departments are critical to ensure long-term support, particularly when it comes to long term, ongoing implementation actions such as maintenance or enforcement. Additionally, as performance measures and actionable objectives are written, it will be key to have the responsible parties involved from the beginning.

Seattle Bicycle Master Plan Inclusion of Equity

The Seattle Bicycle Master Plan[3] (2014) establishes the plan's equity related initiatives by analyzing and prioritizing the bicycle network for an equitable distribution of bicycle facilities throughout the city. Relating these goals to other initiatives creates a strong policy foundation for institutionalizing these goals and objectives throughout the City's work.

3 *Seattle Bicycle Master Plan*. http://www.seattle.gov/transportation/docs/bmp/apr14/SBMP_21March_FINAL_full%20doc.pdf

Several of the case studies associated with this guidebook offer examples of effective objectives and performance measures. When carefully worded and subsequently enacted, performance measures help keep projects on track. They can also help create measurable outcomes when the time comes to evaluate a given policy. The following, ongoing activities from the FHWA PBPP guidebook support an iterative approach to evaluating performance measures:

- Monitoring: Gathering information on actual conditions.
- Evaluation: Conducting analysis to understand to what extent implemented strategies have been effective.
- Reporting: Communicating information about system performance and the effectiveness of plans and programs to policymakers, stakeholders, and the public.

Enforcing all roadway users' rights and responsibilities can help improve a network's comfort and overall performance.

2.2 PROTECT NONMOTORIZED TRAVELERS

Policies support safer networks by defining rights and responsibilities for all users and ensuring those rights and responsibilities are enforced. This can improve a network's overall comfort and performance.

Safe and comfortable nonmotorized networks encourage residents and visitors to use active transportation. There are many ways to improve the safety and comfort of pedestrian and bike networks, such as ensuring the network seamlessly connects, improving the design and location of facilities, and establishing and enforcing laws and policies to encourage safe behavior and to prevent risky behavior.

How Can Policies Help Improve Network Safety?

Safety laws and enforcement policies help improve network safety by rewarding safer roadway behaviors and discouraging risky behaviors. When people driving, walking, and bicycling follow these laws, and when they are enforced through positive interactions with the public, network safety increases.

Governmental agencies throughout the country—from the United States Department of Transportation to individual state and local jurisdictions—support mandates to reduce traffic-related injuries and deaths. Federal initiatives such as Vision Zero, Smart City Challenge, Road to Zero, and Safer People, Safer Streets call upon local leaders to enact countermeasures to reduce traffic injuries and fatalities.

Law enforcement officers play an important role in creating and maintaining safe and complete networks for people bicycling and walking. Strong relationships between law enforcement officers, policy makers, and the public can result in successful programs that create safe and comfortable pedestrian and bicycle networks.

Sample Criteria for Determining if Laws and Ordinances are Bicycle and Pedestrian Friendly

- Is the policy likely to reduce risk or harm to bicyclists and pedestrians?
- Does the policy improve efforts to promote bicycling and walking?
- Does the policy make it easier to obtain or operate a nonmotorized vehicle or to walk?
- Does the policy follow current engineering, planning, and design terminology?
- Does the policy encourage innovation and evolution?
- Is the policy especially arduous or time consuming to enforce?

This section discusses opportunities for community members, decision makers, and law enforcement agencies to create policies that work to achieve safer active transportation networks, including:

- Ensuring that policies and ordinances promote safety.
- Establishing collaborative relationships between law enforcement, policy makers, and community members.
- Supporting policy and infrastructure efforts with appropriate law enforcement.
- Designing and implementing effective law enforcement training and education.
- Defining rights and responsibilities of all users.

State Level Policy: Liability

One of the most basic ways that states shape safety through policy is by defining liability in traffic crashes. States approach liability, including for people traveling by foot or bicycle, in different ways. In some cases, liability provisions apply to bicycle users as motor vehicle drivers. In others, presumptions of fault are applied to motor vehicle drivers when crashes with vulnerable road users occur.

Active Transportation-Focused Ordinance

The City of Chicago updated the Chicago Municipal Code to include a Bicycle and Pedestrian Safety Ordinance. Among other changes, opening a motor vehicle door into the path of a person bicycling now carries a mandatory $300 fine. Dooring that results in a collision would now result in a mandatory $1,000 fine. While punitive, the fine serves to draw attention to behavior that is high risk for injury crashes.

Two common approaches to liability include:

- **Comparative negligence** allows injured parties to recover damages proportionately to their fault in the collision. This approach is used in most states.
- **Contributory negligence** prohibits a person involved in a collision from recovering damages if they are partially at fault (even 1 percent). North Carolina follows this approach.

Some states also have provisions which establish the ability for bicyclists to collect compensation for property damage as a result of a collision with a motor vehicle. Michigan's No Fault automobile law provides for property protection insurance, requiring motor vehicle owners to compensate bicyclists whose property (bicycle) is damaged as a result of a collision with that motor vehicle, regardless of fault (MCL 500.3121(1) and MCL 500.3125).

In addition, some states allow municipalities to establish liability provisions. In Washington, for example, the Seattle Municipal Code contains several provisions outlining rights of way and responsibilities for motorists, bicyclists, and pedestrians. While none currently establish strict liability in any cases, the delineations can assist with establishing duties of care for all road users.

Some European countries have national policies providing legal protections for bicyclists and pedestrians. Article 185 of the Road Law in the Netherlands assigns "strict liability" to motor vehicle drivers in crashes with bicyclists. Article 185 recognizes the vulnerable position of bicyclists in crashes with motor vehicles and provides protections for bicyclists from financial damage as a result of motor vehicle crashes, unless motor vehicle driver can prove that the cause of the collision was out of his or her control. Article 185 provides that

State Liability Law Examples

Implementation of liability policy occurs through a variety of laws that establish requirements for how different types of users must yield to others in varying contexts. The Uniform Vehicle Code (UVC), created by the nonprofit National Committee on Uniform Traffic Laws, provides a framework that many states use, in whole or in part, to standardize traffic laws throughout the United States. While many states have adopted most provisions of the UVC, the areas relevant to bicycling are adopted with far less regularity. Accordingly, the laws applicable to bicyclists as road users are far from uniform. Examples of relevant laws from the UVC and other state specific laws are provided below.

Law	State Examples
Traffic laws apply to people on bicycles and other human powered vehicles	Uniform Vehicle Code §11-1202, adopted in all states but Kentucky and South Dakota.
Additional penalties for moving violations which cause injury to vulnerable road users (including bicyclists and pedestrians)	California Vehicle Code § 42001 North Carolina General Statute §5.5.(c) 20-154
Ride as far to the right as practicable except: when passing, preparing for a left turn, avoiding hazards, if the lane is too narrow to share, or if approaching a place where a right turn is authorized	Uniform Vehicle Code §11-1205, adopted in 43 states
On a roadway with a bike lane, bicyclists traveling slower than traffic must use the bike lane except when (CA) making a left turn, passing, avoiding hazardous conditions, or approaching a place where a right turn is authorized (NY) turning left or when reasonably necessary to avoid unsafe conditions	California Vehicle Code § 21008 New York Vehicle & Traffic Law Article 34 Section 1234
Pedestrians have the right-of-way in marked or unmarked crosswalks. Although pedestrians have the right-of-way, they also must abide by the rules of the road.	California Vehicle Code §21950 North Carolina General Statute § 20-173
Every pedestrian crossing a roadway at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield the right-of-way to all vehicles upon the roadway.	North Carolina General Statute § 20-174

the motor vehicle driver is responsible for 50 percent of monetary damages even if the bicyclist is at fault in the collision.

Changing policy around liability is a significant undertaking and many states have begun to enact laws that shape the rules of the road as applied to different types of users. Even if changing the basis of liability is not possible, refining the ways in which bicyclists and pedestrians are considered within state law (or local law, where permitted) can provide protection for vulnerable road users and help in efforts to educate all road users about appropriately sharing the road. Establishing laws to redefine or clarify rules of the road is important, but it is equally important to provide education and enforcement of these laws to ensure awareness of appropriate behavior by motorists, bicyclists, and pedestrians.

Safe Passing Laws

State legislatures have shown significant interest in adopting safe passing laws, many requiring a 3 foot passing distance. These laws seek to ensure that, when passing bicycles, motor vehicles allow adequate space to avoid sideswiping bicyclists or causing them to overcorrect to avoid a vehicle. While challenging to enforce, passing laws at least create a legal framework to protect bicyclists who are hit from behind, create a less arbitrary standard and raise awareness of the importance of safe passing.

As of December 2015, twenty-six states and the District of Columbia have enacted 3 foot passing laws.(4) Two states have laws that go beyond a 3 foot passing law. In nine other states there are general laws that provide that motorists must pass at a "safe distance."

4 National Conference of State Legislatures. http://www.ncsl.org/research/transportation/safely-passing-bicyclists.aspx

Off-Peak Freight

Freight delivery in dense, urban environments is necessary to deliver goods to the people and businesses, but can cause numerous issues, including contributing to congestion, pollution, loss in revenues for businesses, and pedestrian and bicycle conflicts. About 350 pedestrians, cyclists, and motorcyclists are killed each year by large trucks in the US. Large freight trucks in urban environments often block bike lanes and pedestrian access and have significant blind spots, putting pedestrians and bicyclists particularly at risk.

New York City, with support from the FHWA in the form of grant funding, launched a pilot program to shift freight delivery and pickups to nighttime and off-peak hours.(5) Twenty participants in New York agreed to shift their delivery windows to between 7 pm and 6 am. Carriers found that their trucks could make more deliveries in the same amount of time; they saved money on fuel costs and could use a smaller fleet by balancing daytime and nighttime deliveries, and that legal parking was more readily available. Their drivers reported feeling safer and less stressed.

This off-peak delivery also has the positive benefit of reducing potential conflicts with bicyclists and pedestrians during peak travel times.

5 http://www.nyc.gov/html/dot//html/pr2010/pr10_028.shtml

Figure 5. Freight traffic can decrease comfort for bicyclists and pedestrians.

Ensure Policies and Ordinances Promote Safety

The FHWA Pedestrian and Bicycle Information Center[6] states, "For many communities, the first step for building an enforcement program lies in reviewing and modifying laws and policies affecting pedestrians and bicyclists."

Existing policies and laws should be reviewed and modified to ensure a communities' existing policies and regulations are working to protect the rights and responsibilities of all road users. Elements of ordinances needed to ensure network safety include the following:

- Reduce conflicts: Promote access management policies and regulations to prevent conflicts between motor vehicles exiting a driveway and passing bicyclists and pedestrians. Driveway spacing requirements help accomplish this goal.
- Provide appropriate space for each mode: Space for each mode includes policies that promote nonmotorized modes in infrastructure projects, such as Complete Streets ordinances, as well as laws that require safe passing distances for motor vehicles when overtaking bicyclists.
- Slow motor vehicles: Implement policies and laws that enable traffic calming techniques and speed limit reduction on roadways where the posted speed limit is not sensitive to the surrounding land use context.
- Improve real and perceived personal safety: Implement policies and laws that utilize CPTED[7] and promote the design of environments that encourage "eyes on the street."

Vision Zero Policy

Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all. First implemented in Sweden in the 1990s, Vision Zero has been implemented across much of Europe and is gaining momentum in several major American cities.

The Vision Zero philosophy says that keeping people alive and healthy ought to be the number one priority in how city roadways are designed, outranking concerns about vehicle speeds, convenience and other objectives. Vision Zero policies set a timeline and a commitment and bring stakeholders together to ensure a basic right of safety for all people as they move about their communities. Vision Zero is a significant departure from the status quo in two major ways:

- Vision Zero acknowledges that traffic deaths and severe injuries are preventable and sets the goal of eliminating both in a set time frame with clear, measurable strategies.
- Vision Zero is a multidisciplinary approach, bringing together diverse and necessary stakeholders to address this complex problem, acknowledging that there are many factors that contribute to safe mobility, including roadway design, speeds, enforcement, behaviors, technology, and policies.

US Cities that have adopted Vision Zero Policies include: Chicago, San Francisco, New York City, Boston, Los Angeles, Austin, San Mateo, Portland, Seattle, San Jose, Santa Barbara, San Diego, Washington, D.C., and Fort Lauderdale.

6 http://www.pedbikeinfo.org/programs/enforcement.cfm

7 http://www.cpted.net/

9 Components *of a* Strong Vision Zero Commitment

Based on the experiences of early-adopter cities in the United States, these nine components have proven to be an effective high-level framework for communities considering a Vision Zero commitment. While these are not the only factors to consider, they are critical aspects to ensure a strong and lasting commitment to Vision Zero.

POLITICAL COMMITMENT

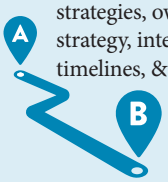
The highest-ranking local officials (Mayor, City Council, City Manager) make an official and public commitment to a Vision Zero goal to achieve zero traffic fatalities and severe injuries among all road users (including people walking, biking, using transit, and driving) within a set timeframe. This should include passage of a local policy laying out goals, timeline, stakeholders, and a commitment to community engagement, transparency, & equitable outcomes.

MULTI-DISCIPLINARY LEADERSHIP

An official city Vision Zero Taskforce (or Leadership Committee) is created and charged with leading the planning effort for Vision Zero. The Taskforce should include, at a minimum, high-ranking representatives from the Office of the Mayor, Police, Transportation (or equivalent), and Public Health. Other departments to involve include Planning, Fire, Emergency Services, Public Works, District Attorney, Office of Senior Services, Disability, and the School District.

ACTION PLAN

Vision Zero Action Plan (or Strategy) is created within 1 year of initial commitment and is implemented with clear strategies, owners of each strategy, interim targets, timelines, & performance measures.



EQUITY

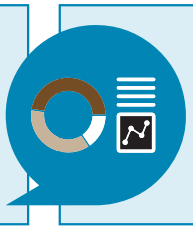
City stakeholders commit to both an equitable approach to Vision Zero by establishing inclusive and representative processes, as well as equitable outcomes by ensuring measurable benchmarks to provide safe transportation options for all road users in all parts of the city.

COOPERATION & COLLABORATION

A commitment is made to encourage meaningful cooperation and collaboration among relevant governmental agencies & community stakeholders to establish a framework for multiple stakeholders to set shared goals and focus on coordination and accountability.

SYSTEMS-BASED APPROACH

City leaders commit to and prioritize a systems-based approach to Vision Zero — focusing on the built environment, systems, and policies that influence behavior — as well as adopting messaging that emphasizes that these traffic losses are preventable.



DATA-DRIVEN

City stakeholders commit to gather, analyze, utilize, and share reliable data to understand traffic safety issues and prioritize resources based on evidence of the greatest needs and impact.

COMMUNITY ENGAGEMENT

Opportunities are created to invite meaningful community engagement, such as select community representation on the Taskforce, broader community input through public meetings or workshops, online surveys, and other feedback opportunities.

TRANSPARENCY

The city's process is transparent to city stakeholders and the community, including regular updates on the progress on the Action Plan and performance measures, and a yearly report (at minimum) to the local governing board (e.g., City Council).

For more visit the Vision Zero Network at visionzeronetwork.org.
Questions or ideas? Contact leah@visionzeronetwork.org.

VISION ZERO NETWORK

Figure 6. The Vision Zero Network has published nine components of a strong Vision Zero commitment (source: Vision Zero Network).

Establish Collaborative Relationships Between Law Enforcement, Policy Makers, and Community Members

Collaboration between civic leaders, public sector agency staff, residents, and law enforcement agencies can help improve communication and understanding of key active transportation issues between the parties and can set the stage for long-term relationships and champions.

These types of collaborations can foster programs such as pedestrian crosswalk enforcement operations (or details), Safe Routes to School programming (walk and roll to school programs, school zone speed enforcement, and others), and police department involvement in bicycle and pedestrian planning committees. Collaboration can also involve discussions of enforcement protocol and activities such as photo enforcement and fines in special interest areas with high volumes of school children or older adults.

Champions within the law enforcement community, particularly high-ranking decision makers, are needed to support all programming to improve the network. Sustaining law enforcement programs requires setting compliance targets, measuring effectiveness, and comparing before/after outcomes.

Police Officer Involvement in Bicycle and Pedestrian Network Planning

Involving officers in pedestrian and bicycle network planning gives a platform for them to provide feedback about specific areas and behaviors of concern and to share their insight of how people use the roads and what countermeasures are most effective to decrease the livelihood of crashes between motorists and bicyclists and pedestrians.

Examples of Law Enforcement Education Opportunities

The following states, cities, and counties are examples of agencies who have engaged local police departments in educational programs about bicycle and pedestrian enforcement.

- Louisiana Department of Transportation hosted a two-day workshop to review laws, common crash types, and enforcement methods. Training materials were developed and included a "Train the Trainer" module.
- North Carolina Department of Transportation created a police education program and a public-facing media campaign called Watch for Me NC. The course was also open to university police officers.
- Albany, NY, utilized a self-paced computer-based training originally produced by the NHTSA.
- Washington Area Bicyclists Association provided a webinar series to explain bicycling issues, laws, and crash reporting to police officers. The educational module started from an investigation into crash reports and misguided citations.
- San Francisco Police Department and the San Francisco Bicycle Coalition partnered on a video to educate law enforcement officers about bicycles in traffic.
- Wichita, KS, launched the Street Safety Education Initiative, which analyzed existing pedestrian and bicycle ordinances and suggested elements for a public-facing media campaign. The project included League Cycling Instruction training for Wichita citizens and City staff, including Police Department representatives.
- The State of New York is launching a pedestrian safety campaign focused on twenty areas in the state with the greatest problems. Officers at these locations will receive in-person training on NY pedestrian and bicycle laws and enforcement crosswalk operations.

Harassment of Bicyclists

Harassment of bicyclists is a real problem and can discourage people from bicycling more. It can be difficult for law enforcement officials to target bicyclist harassment without a specific law defining harassment of bicyclists. Even though offenders can be charged under a variety of existing laws, it is difficult to get convictions, and, in many cases, the penalties and burden of proof make law enforcement officers reluctant to pursue convictions.

Columbia, MO, passed an ordinance designed to specifically address bicyclist harassment and later expanded it to include pedestrians and wheelchair users. The language of the ordinance reads:

Sec. 16-145. - Harassment of a bicyclist, pedestrian or person in a wheelchair.

(a) A person commits the offense of harassment of a bicyclist, pedestrian or person in a wheelchair if the person:

(1) Knowingly throws an object at or in the direction of any person riding a bicycle, walking, running or operating a wheelchair for the purpose of frightening, disturbing or injuring that person; or

(2) Threatens any person riding a bicycle, walking, running or operating a wheelchair for the purpose of frightening or disturbing that person; or

(3) Sounds a horn, shouts or otherwise directs sound toward any person riding a bicycle, walking, running or operating a wheelchair for the purpose of frightening or disturbing that person; or

(4) Knowingly places a person riding a bicycle, walking, running or operating a wheelchair in apprehension of immediate physical injury; or

(5) Knowingly engages in conduct that creates a risk of death or serious physical injury to a person riding a bicycle, walking, running or operating a wheelchair.

The harassment is a Class A misdemeanor punishable by a fine of as much as $1,000 and/or up to a year imprisonment.

Implement Law Enforcement Countermeasures for Bicycle and Pedestrian Safety

Law enforcement countermeasures can help educate motorists, bicyclists, and pedestrians about safety issues.

Several examples of enforcement practices are described on the following page, including progressive ticketing, community collaboration with law enforcement, and police officer training. The success of these enforcement practices depends on local government policies that provide for staff resources and allocate appropriate funding.

Progressive Ticketing

Progressive ticketing uses a three-step method to issue citations for traffic infractions.[8]

Step One, Educate: Officers pull over the offenders and educate them about the infraction, sometimes using tools such as “palm card” flyers with tips and basic information about desired safe traffic safety behaviors between all road users, i.e., motorists, bicyclists, and pedestrians. Education also means positive interactions with the public. Creating policies to support and fund programs such as bicycle light distribution to nighttime riders can educate members of the public about roadway safety while encouraging positive interactions between law enforcement officers and citizens.

8 http://www.pedbikeinfo.org/programs/enforcement_enforcelaws.cfm

Step Two, Warn: Officers issue offenders warnings.

Step Three, Ticket: Officers issue offenders a written citation.

Progressive ticketing can reach up to twenty times as many noncompliant motorists, bicyclists, and pedestrians as ticketing alone. Note that progressive ticketing is typically done in waves, such that first time offenders in the "ticket" phase will still receive a ticket, even if it is a first offense.

Law enforcement agencies' prioritization of and ticketing of behaviors that are most likely to lead to severe crashes can help protect the rights and responsibilities of vulnerable roadway users.

Design and Implement Law Enforcement Officer Training and Education

Structured training for law enforcement officers is designed to increase knowledge of key issues and relevant countermeasures to help improve the network. Training can take a variety of forms:

- **Web-Based Training:** Online training provides interactive capabilities for officers to learn about common cause of crashes and associated laws from a national perspective.
- **Bulletins:** Bulletins are used by some jurisdictions as a training resource to provide a quick reference to officers about pedestrian and bicycle related laws.
- **Roll Call Videos:** Videos offer short format instruction during officer roll call, which is normally scheduled within the workday. These can be 5 to 15 minutes in length. An example video from NHTSA can be found at: http://www.nhtsa.gov/Driving-Safety/Bicycles/Enhancing-Bicycle-Safety:-Law-Enforcement's-Role

Bicycle Friendly Community Program and Law Enforcement

The League of American Bicyclists' Bicycle Friendly Communities (BFC) program, an optional certification program for communities, provides a roadmap to improve conditions for cyclists at the state and local level. The BFC program uses the following questions to evaluate communities related to enforcement:

- Do law enforcement officers receive training on the rights and responsibilities of all road users?
- Does your community have law enforcement or other public safety officers on bikes?
- Do local ordinances treat bicyclists equitably?

Figure 7. New Jersey police officers distribute these small flyers (palm cards) to drivers who fail to stop for pedestrians in marked crosswalks. These palm cards also provide relevant citation information for officers. (Image source: New Jersey Department of Transportation)

- **Classroom-Based Training:** Classroom training is best done as a officer-to-officer training, including discussion about nuances and interpretations of state and jurisdictional laws associated with pedestrian and bicycle safety targeting behaviors of motorists, pedestrians, and bicyclists. Classroom-based training for pedestrian safety should include discussion and ideally hands on-learning of setting up for a pedestrian operation. Classroom-based training for bicycle safety can include on-bicycle training to give officers a perspective and appreciation of the challenges faced with bicycling in traffic and law enforcement needs.

On-Bike Training

Several organizations offer training that officers may take to give them the hands on perspective by actually riding the bicycle.

- The League of American Bicyclists (LAB) offers League Cycling Instructor (LCI) training[9] to community members interested in teaching others about safe bicycling through the LAB Traffic Safety 101 course and beyond. Some communities send law enforcement officers and other staff members to these trainings to increase their understanding of safe bicycle riding and how to teach these skills to others in the community.
- The International Police Mountain Bike Association (IPMBA)[10] also provides on-bike training to officers, focused more on enforcement while on a bicycle.
- Cycling Savvy[11] also provides bicycle training courses, including online and in-person courses.

9 http://bikeleague.org/content/find-take-class

10 http://ipmba.org/training

11 https://register.cyclingsavvy.org/home

Federal Safety Measure Resources

The NHTSA created the resource guide *Pedestrian Safety Enforcement Operations: A How-To Guide* to provide tips and guidance on how States and communities can effectively deploy pedestrian safety enforcement operations to reduce pedestrian injuries and fatalities. The guide includes a summary of promising practices, guidance on planning and implementing an operation, a discussion of several considerations and variations, recommendations regarding the evaluation of pedestrian safety programs, and a series of case studies.

FHWA's *Countermeasures That Work* is a resource to identify appropriate evidence-based countermeasures to address a variety of common safety challenges. Chapters 8 and 9 provide countermeasures specific to bicycle and pedestrian safety concerns.

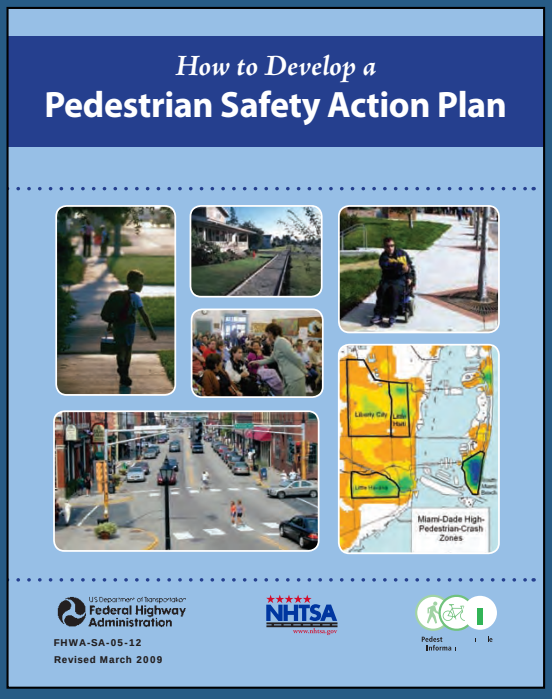


Figure 8. Cover of NHTSA Pedestrian Safety Enforcement Operations: A How-To Guide.

Effective land use policies, zoning, and other development standards can help create complete pedestrian and bike networks.

2.3 PROMOTE BICYCLE AND PEDESTRIAN SUPPORTIVE DEVELOPMENT

Land use policies, zoning regulations, and developer requirements set the stage for developing complete bicycle and pedestrian networks by establishing principles for walkable and bikeable communities, ensuring the built environment supports the network, and by creating requirements and incentives for building infrastructure. Land use policies and regulations can create bicycle and pedestrian supportive development. This section is intended to inform policy makers about the following tools that ensure private development supports larger goals for active transportation:

- Smart growth and efficient land use management.
- Mixed use zoning.
- Design standards and form-based code.
- Parking requirements.
- Other development standards.

Smart Growth

FHWA defines smart growth as "a set of policies and programs design to protect, preserve, and economically develop established communities and valuable natural and cultural resources."[12]

12 https://www.fhwa.dot.gov/planning/glossary/

Smart Growth and Efficient Land Use Management

Smart growth policies assist in the creation of complete networks by establishing development patterns designed to shorten trip distances and encourage active transportation.

There are numerous existing resources available to help communities implement smart growth policies, including the following:

- Smart Growth America: Smart Growth America is a national coalition of practitioners working to use smart growth to develop neighborhoods as vital, economically rich places. It provides research and guidance on implementing smart growth in varying contexts.
- Smart Growth Online: The Smart Growth Online Clearinghouse is a project of the Maryland Department of Planning and is funded by the U.S. EPA Office of Sustainable Communities. The office gathers resources and information about funding sources and awards from across the United States.
- Environmental Protection Agency (EPA) Smart Growth Program: In addition to webinars, videos, and podcasts, the EPA hosts resources for grants and funding, compiles a "Newsroom" with recent publications, describes the agency's technical assistance program, and more.

Commonwealth of Massachusetts

The Massachusetts Housing and Economic Development website provides Smart Growth Resources, including materials related to parking, land use, and transportation and tools for increasing synergy between these topics.(13)

13 http://www.mass.gov/hed/community/planning/smart-growth.html

- National Center for Smart Growth Research and Education is a nonpartisan center for research and leadership training on smart growth and related land use issues.

Many states host their own websites with local resources for accomplishing smart growth goals.

Mixed Use Zoning

Mixed use zoning promotes walkable and bikeable communities by creating communities that are vibrant places to live, work, and play both day and night. Mixed use zones generally allow for a higher density development and a mix of uses, making active transportation options more doable for more trips. Mixed use zoning may be applied at all levels of planning from comprehensive Unified Development Ordinances to individual zoning changes on a site-by-site basis. Resources for mixed use zoning include:

- New Designs for Growth offers a General Best Practices Guide for implementing mixed-use zoning through smart growth. The website separates resources according to best practice examples for a variety of code types.
- Municipal Research and Services Center provides numerous resources on mixed use and transit supportive development.
- The American Planning Association developed model Smart Growth Codes to guide land use decisions and cover a variety of land uses including a model Mixed Use Zoning District Ordinance.

Arlington, VA, TOD

Transit-oriented development (TOD) is a development approach that focuses land and densities around a transit station or within a transit corridor. TOD generally combines mixed-use zoning with design standards or form-based code to create pedestrian-oriented development. With a mix of uses, higher density development, bicycle and pedestrian connectivity, and reduced parking standards, TOD can decrease motor-vehicle trips, and increase walking and biking trips

When the Washington D.C. metropolitan area was building a new regional rail system in the 1960s, Arlington County officials created the General Land Use Plan to focus development around the five new transit stations. They called this the "bull's eye concept" with the center target as the densest part of the station area and less dense development on the outskirts.

Design Standards and Form-Based Codes

A building's siting and design has a significant impact on the pedestrian and bicycle network. Site design elements such as the location of building entrances, the location of parking, setbacks, walkways, and presence of bike parking all contribute to creating a connected network. Building design elements, such as window locations and transparency, can also create a more pedestrian oriented environment by encouraging "eyes on the street" and providing more engaging spaces for pedestrians and bicyclists.

Site Design for Walkability

Bringing buildings to the street, rather than separating them from the street with large setbacks or parking, helps improve bicycle and pedestrian connections. An accessible building entrance facing the street provides a seamless connection to the building for nonmotorized travelers.

If on site parking is needed, placing parking in the back or sides of the development helps link new development with the street fabric. Pedestrians and bicyclists experience fewer hazards associated with curb cuts and motor vehicle ingress and egress. Creating pedestrian oriented setback and parking location standards can result in placemaking and safety benefits.

Form-Based Code

Going beyond site design requirements, form-based code can provide additional design guidance to create a desirable pedestrian and bicycle network, such as transparency requirements or the ratio between the height of the buildings and the width of the street. Form-based codes can respond to different street types, creating development standards that support the

Austin, Texas Development Standards

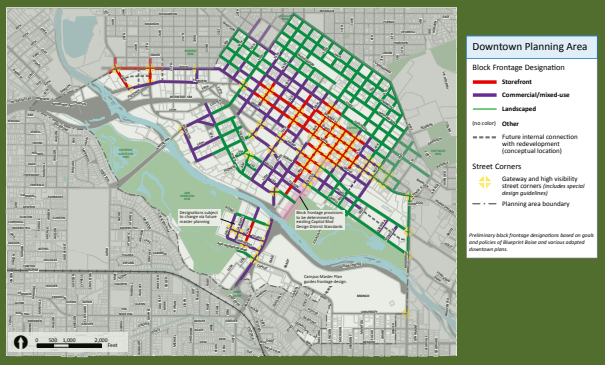
The City of Austin specifically calls for bicycle and pedestrian accommodation in the City's Site Development Standards, part of Title 25 of their Code of Ordinances. It includes standards to ensure that site design promotes efficient pedestrian, bicycle, and vehicle circulation patterns, streetscapes support a human scaled environment, and that streets support pedestrian, bicycle, and transit mobility.

https://www.municode.com/library/tx/austin/codes/code_of_ordinances?nodeId=TIT25LADE_CH25-2ZO_SUBCHAPTER_EDESTMIUS_ART2SIDEST

Boise, Idaho Design Standards

The City of Boise created downtown design standards and guidelines that encourage high quality urban design and promote compact, walkable development patterns with a focus on creating a comfortable walking environment downtown. A detailed Downtown Streetscape Standards and Specifications Manual lays out all of the streetscape improvement requirements for new development, The combination of the design standards for development and for streetscapes provides a coordinated approach to creating a pedestrian-oriented downtown.

http://pds.cityofboise.org/media/215767/downtown-design-guidelines-revised-6-23-16.pdf



A form-based code is a "regulation that fosters predictable built results and a high-quality public realm by using physical form (rather than the separation of uses) as the organizing principle for the code."[14]

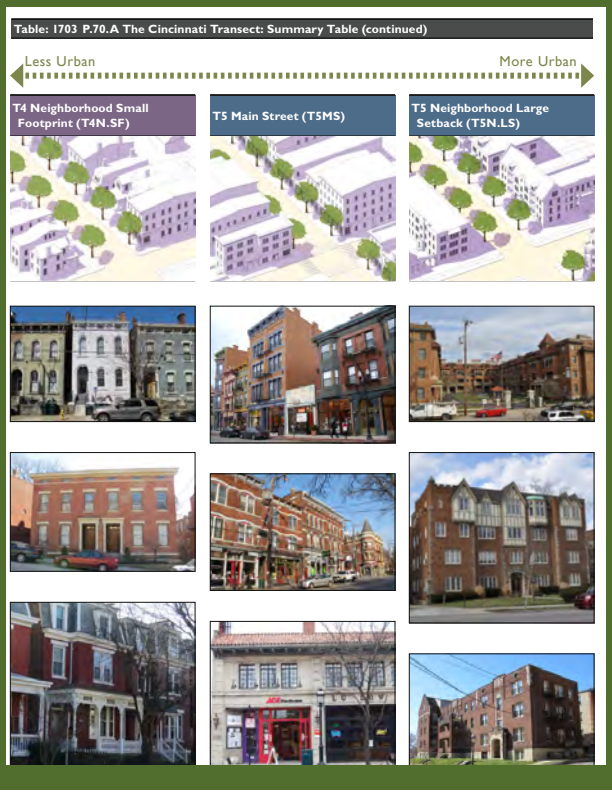
14 formbasedcodes.org

bicycle and pedestrian network. Resources for developing form-based codes include:

- Form-Based Codes Institute: The Form-Based Codes Institute maintains a library of examples form-based codes and other resources.
- Form-based Codes: A Step-by-step Guide for Communities acts as a workbook to support communities' FBC efforts, which includes policies to influence site design.
- PlannersWeb: The blog discusses typical elements of a form-based code and the difference between FBC and conventional zoning code.
- Codes that Support Smart Growth Development EPA: This website provides examples of several types of municipal codes, design guidelines, and street design standards.
- Form-Based Codes | Planetizen: Planetizen's searchable archives contain a multitude of posts related to form-based code examples from around the country.

Parking Quantity

Parking management is integral to successfully creating robust pedestrian and bicycle networks. Smart growth and mixed use developments typically demand fewer parking spaces than lower-density, single-use developments. Reducing or eliminating parking minimums and providing parking maximums across certain zoning districts or across a municipality helps support the overall pedestrian and bicycle networks. Dedicating less area for parking cars allows



Cincinnati Form-Based Code

The City of Cincinnati adopted a form-based code[15] in 2013 based on the vision laid out in its 2012 comprehensive plan called Plan Cincinnati. The form-based code works to reinforce a pattern of walkable urban neighborhoods by supporting existing walkable neighborhoods and providing a tool to retrofit those that are not walkable or have been compromised. The code also works to provide context-sensitive design of thoroughfares that will reinforce walkable urban neighborhoods. Planners developed the section of the transect shown above according to these principles.

15 http://www.cincinnati-oh.gov/planning/assets/File/CFBC_1703_FBC_FinalDraft_021513_web(1).pdf

New York City Bicycle Parking

The City of New York has implemented ordinances to mandate bicycle parking in licensed parking lots and in commercial buildings. The City's Bikes in Buildings law[16] was created to provide a process for tenants of commercial office buildings with a freight elevator to request bicycle access to their workspaces. Three indoor bicycle parking lots are provided for free for all City employees. New York City Administrative Code section 20-327.1 has created over 16,000 secure bike parking spaces since 2011.

16 http://www.nyc.gov/html/dot/html/bicyclists/bikesinbuildings.shtml

for higher density, more cohesive districts, creating a more connected pedestrian and bicycle network with fewer conflicts with driveways and surface parking lots. It can also reduce construction costs and remove barriers for redevelopment or new development.

Resources for reducing parking include:

- "Smart Growth Alternatives to Minimum Parking Requirements" by Christopher V. Forinash, et al., describes various tactics for managing parking besides minimum parking requirements.
- "Reduced Parking Footprint," Leadership in Energy and Environmental Design-Neighborhood Development (LEED-ND): One point is available toward LEED-ND accreditation for sites that reduce vehicular parking footprints.

Other Development Standards

There are many ways municipalities and developers work together to create complete network improvements such as sidewalks, pedestrian amenities, bike lanes, bicycle parking, signage, and wayfinding. Developer requirements can be included as part of design standards in zoning or other city codes, part of design guidelines and incorporated into a design review process, or part of a negotiated development agreement.

Whatever the mechanism, it is important to establish the expectations for developers and design criteria early to effectively guide the process. The following resources help municipalities establish requirements and guidance for private developers. Due to legal differences between jurisdictions, individual states, counties, and municipalities should check best practice recommendations against their own legislative setting.

- Pedestrian and Bicycle Friendly Policies, Practices, and Ordinances: The Delaware Valley Regional Planning Commission (DVRPC) reviewed practices, policies, and ordinances from communities across the country.
- Using Local Land Use Laws to Facilitate Physical Activity is a policy brief from the Bridging the Gap Program at the University of Illinois at Chicago.
- ChangeLab Solutions report "Move This Way: Making Neighborhoods More Walkable and Bikeable" identifies common local codes that can be adjusted to promote active transportation.

Policy helps shape how networks are designed and provides tools to ensure consistency for users.

2.4 DESIGN THE NETWORK

Developing a network of connected facilities occurs primarily through the application of the six principles of a complete network throughout the planning and design process. Using available analysis tools and public engagement, planners can help evaluate available bicycling and walking routes and identify and prioritize investments.

This section focuses on how policies shape and guide the planning and design process. Before reviewing relevant policies and tools, key questions to consider include:

- What existing policies and plans are in place that impact the design of the pedestrian and bicycle network?
- When was the last time these policies or plans were updated?
- How well have these policies and plans been implemented and evaluated over time?

Once the policy context is understood it can be updated and changed to advance safety, comfort, and convenience for nonmotorized travelers.

Complete Streets Policies

A municipality can adopt complete streets policies to formalize and institutionalize their intent to plan, design, implement and maintain streets that are safe for users of all ages and abilities. All users are considered, including pedestrians, bicyclists, transportation users, and motorists.

The National Complete Streets Coalition has identified critical elements of a comprehensive complete streets policy. It provides workshops and best-of examples to aid municipalities in the creation of their own policies.

As of October 2016, thirty-two state governments or agencies, 76 regional organizations, and 663 individual municipalities had adopted complete streets policies recognized by the National Complete Streets Coalition.

The Reading, Pennsylvania, complete streets policy was considered the nation's best in 2015. The city received funding from a local foundation to hold a complete streets workshop for a cross-section of the community. The outcome of the workshop was the city adopting what would become an award-winning policy.

Like Reading, many cities start their complete streets policy development with a visioning process or workshop during which community members express a shared desire to serve all types of users. Sometimes these facilities are referred to as 8-80, meaning they will work well for users aged 8 to 80 years old. This can be formalized thorough an 8-80 or complete streets policy.

Network Design

Network design happens through planning. The following steps provide a structured process for applying the principles of a connected network:

Evaluate the existing network for opportunities and constraints. Where are current facilities? How are they used?

Determine primary origins and destinations. Where can people get by biking and walking? What are the key points of interest that might attract them?

Establish a reasonably spaced network. The definition of "reasonable" spacing may vary from place to place, but it generally means making nonmotorized routes efficient and straightforward through strategies such as providing frequent and varied opportunities to safely cross major streets, rather than forcing pedestrians and bicyclists to use a handful of widely spaced intersections.

Define facility types. Defining bicycle facility types and linking them to roadway types can ensure they work for all users. Many agencies set policies to help determine the appropriate facility type.

Evaluate and Prioritize Improvements. Understanding the benefits of new bicycle and pedestrian investments is critical to help ensure that they meet user needs. Connectivity is one of several criteria, along with safety and others, that may inform investment decisions.

Implementation. Implementing new networks requires funding, but many projects can be implemented by integrating bicycle and pedestrian facilities into routine roadway resurfacing, rehabilitation, and reconstruction activities. Because many of these investments rely on signage and striping, policies to encourage this integration can help achieve network improvements at minimal additional cost.

Connectivity Policies

Policies are not only focused on the type of facilities on the roadway network, connectivity is also important. New Urbanism development practices and complete street policies also emphasize a high degree of street connectivity as important.

Connectivity standards and goals can set a maximum distance between intersections for different roadway types and determine whether cul-de-sacs or street stubs are allowed and how long they can be. Connectivity standards should also consider the quality of crossings as those are critical locations where bicyclists and pedestrians must interact with automobiles. A connected network does not disappear at the areas of greatest potential conflict between modes. The Portland Regional Transportation Plan includes specific policies to increase roadway connectivity in new developments, as well as various strategies to improve the connectivity of nonmotorized networks in existing urbanized areas.

Policy Tools to Support Complete Streets

Roadway Typologies

Roadway typologies define the purpose and intended use of different types of roads under an agency's jurisdiction. As a matter of policy, roadway typologies help determine who the primary users are. The Federal functional classification system is among the most commonly used roadway typology, providing a basic standard for roadway design and expectations, but many cities have gone further to define how the street network

Figure 10. A rendering of roadway types as they differ from an Urban Core to Rural

is used by bicyclists, pedestrians, transit vehicles, and what the preferred priority for those users is in different parts of the City.

The Great Streets and Corridors Plan and Policy for the City of El Paso, Texas, provides roadway typologies and design standards with a focus towards multimodal streets.

The Pennsylvania and New Jersey Departments of Transportation partnered on a Smart Transportation guidebook and one of their concepts promoted is that a roadway typology should not be based solely on functional classification, but also take land use and place into account. This allows for flexibility and the ability to plan for alternative transportation modes.

Design Guidelines

Design guidelines are one of the most important tools that cities and states use to determine how streets, roads, trails, and other facilities are used. Design guidelines identify the shape and function of the network for various users.

The AASHTO Green Book defines standard design guidelines for the National Highway System (NHS). States may develop their own standards for the design of non-NHS projects. There are several state design manuals as well. Typically municipalities also set their own design guidelines for their local roads to fit their local needs. The National Association of City Transportation Officials (NACTO) provide design guides for cities looking for examples and precedents from cities on emerging facility design.

The City of San Francisco adopted a policy called “Better Streets” that highlights the need for balancing the needs for all street

Figure 9. A before and after rendering of a proposed road diet and bike lane installation in Lombard, IL.

users, with a particular focus on pedestrian and public spaces. The policy was followed with a plan that provides a unified set of standards, guidelines and implementation strategies, which was followed with a one-stop website that resulted form several city agencies collaborating to simplify the process for street improvements. The City of Chicago took a similar pedestrian focused approach to its design guidelines.

Planning Checklists

A city can create a checklist to help determine whether and how bicycle and pedestrian facilities can be addressed in proposed projects. Checklists can be a simple tools, but can effectively ensure that pedestrian and bicycle needs are conservatively addressed in planning for streets and roads. They may consider elements like roadway speeds, volumes and facility types. They may be simple checks on the process: were bicycle and pedestrian advocacy groups included in the planning process? Or they may be more sophisticated tools that consider how existing and proposed roadway infrastructure may impact pedestrians and bicyclists.

Level of Service Thresholds

One of the most basic policy tools that states and cities have used to determine how roadways function is through Level of Service (LOS). LOS has evolved over many years, but at its most basic, LOS provides a simple letter grade that measures the user experience of the roads, typically from a motor vehicle driver's perspective.

More recently, the Transportation Research Board *Highway Capacity Manual* (HCM) has moved in the direction of establishing Multimodal Level of Service, providing grades for all types of facilities, including transit, bicycle and pedestrian.

For bicyclists and pedestrians, the standards or thresholds that cities set for LOS can significantly impact how the road space is used. By setting a threshold for automobile delay, cities may unintentionally limit what types of bicycle and pedestrian infrastructure can be provided. This can be especially challenging at intersections, where turn lanes and through traffic lanes often squeeze out or merge with bicycle lanes, creating potential safety risks.

Some states and cities are beginning to reevaluate the use of LOS as a guiding metric for street design, based on metrics other than vehicular throughput.

The City of Charlotte developed a methodology to evaluate how signalized intersections meet the needs of pedestrians and bicyclists and use that methodology to determine if a project should be expanded to improve bicycle or pedestrian facilities or if a roadway project will make travel

City of Chicago Complete Streets Design Guidelines

The Chicago *Complete Streets Design Guidelines* reframed the city's transportation planning, design, and engineering focus by prioritizing pedestrian needs. New projects developed since the guidelines' publication must abide by a modal hierarchy that focuses on pedestrians.

Pennsylvania DOT Bicycle and Pedestrian Checklist

The Pennsylvania DOT provides a Bicycle and Pedestrian Checklist divided into three sections for each stage of the development process: planning, scoping, and design. It also breaks the checklist into evaluating several aspects of roadway design including: pedestrian and bicycle facilities, planning and programming and right-of-way design.

worse for cyclists and pedestrians. While they utilize the term LOS, in this case, it is one that evaluates all modes.[17]

Project Prioritization

Bicycle network projects and programs must compete with other capital improvements and municipal services, as well as with one another, for limited budget. In order to maximize investment and provide the greatest benefit, a logical and systematic approach should be used to prioritize infrastructure investments for implementation. Criteria for prioritization should reflect the goals and objectives established for the approach to the network and incorporate any input from community

17 http://www.trb.org/Main/Public/Blurbs/160228.aspx

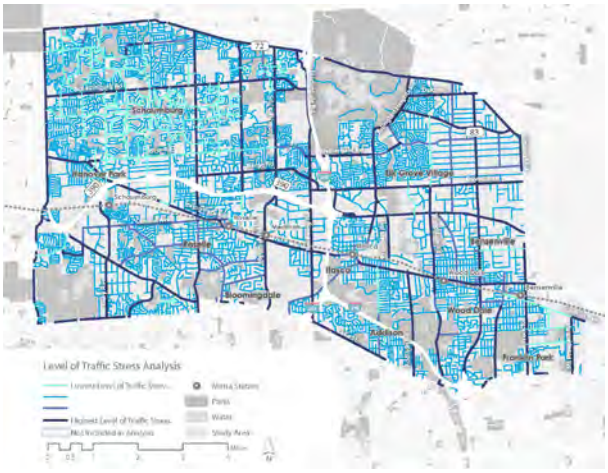


Figure 11. A level of traffic stress (LTS) analysis map for a group of western Chicago suburbs. This and other analyses assist with network design and implementation prioritization.

City of Charlotte LOS

In 2007, the City of Charlotte developed a methodology to evaluate how signalized intersections meet the needs of pedestrians and bicyclists. The results of the methodology inform the preferred design and operation features that can help achieve desired levels of service for pedestrians and bicyclists.

A multimodal Level of Service approach was intended to reflect the goals inherent in Charlotte's *Urban Street Design Guidelines* (USDG), specifically the desire to increase transportation choices by making travel by pedestrians, cyclists, and transit users safer and more convenient.

California Switch from LOS

For many years, Level of Service (LOS) has been the standard metric used to measure transportation impacts from developments and road changes through the California Environmental Quality Act (CEQA). LOS measures how many vehicles can pass through an intersection in a given time. If a project going through CEQA review reduced a road or intersection's LOS, it was considered a negative environmental impact. Defining LOS as an environmental impact limited how the state and its cities could address other competing needs, such as reducing greenhouse gas emissions, developing multimodal transportation, or promoting infill development.

In September 2013, Governor Jerry Brown signed Senate Bill 743, which removed the requirement to use LOS in CEQA review. The state is expected to establish Vehicle Miles Traveled (VMT) per capita as a replacement metric. VMT measures a project's overall impact on travel, not just the delay caused to cars at key intersections.

After planning, design, and construction of facilities, now what? Maintenance will make the project last.

2.5 MAKE IT LAST

Maintenance is the final piece in creating successful bicycle and pedestrian facilities. Maintenance programs make facilities last and allow for continued usage over time.

Because ongoing maintenance is often not included in funding of the initial project, strategic planning is required to determine future maintenance needs and to identify effective policies, programs, and budgets to address these needs. This section identities the role of policy in defining future maintenance needs and how to fund those needs.

Maintenance Needs

Internal policies and procedures must support the maintenance needs of the active transportation network. Interdepartmental coordination and communication are needed to provide maintenance to new or updated elements of the network, especially if new equipment is needed or a new approach is required. Setting the policies and priorities for maintenance at the beginning of a planning or implementation project will help ensure success over time. Below is a list of maintenance needs for both bicycles and pedestrians and policy recommendations to help jurisdictions reach their maintenance goals.

Accessibility and Sidewalk Inspection

Communities should develop and adopt sidewalk maintenance and inspection criteria. This criteria ensures that programs not only following ADA guidelines but also respond to accessibility issues when they arise. The goal of ADA is to create an accessible path of travel and this applies to sidewalks, curbs, and crosswalks. The FHWA *Guide for Maintaining Pedestrian Facilities for Enhanced Safety* describes this minimum criteria to consider, including "displacements (heaving, faults, changes in level), changes in grade, cross-slopes (including cross slopes at driveways), vertical clearances, sidewalk displacements, grade

Figure 12. The buffered bike lane pictured above would benefit from street sweeping. Operations and maintenance policies should specify that crews sweep streets from curb to curb, including bike lanes. Special equipment may be needed to adequately maintain barrier separated bike lanes.

changes, cross-slopes, vertical clearances, maximum running grades, minimum clear width and the distance protruding objects extend into the pedestrian path."

Sweeping, Litter Collection, Mowing, and Trimming

Many local governments set policies and procedures for street sweeping, litter collection, and other maintenance tasks. Trails, on-street bikeways, and sidewalks require regular maintenance. Facilities accumulate glass, leaves, sand, and trash that must be removed in order to keep them safe. Glass is a major issue for bicycles because it is a flat tire hazard. Bicyclists often avoid routes that are not maintained regularly.

Bikeways on arterial roads require special attention because of the additional traffic, increased potential for litter, and the importance of preserving key connections.

Along with sweeping, consistent trash removal makes facilities more safe and aesthetically pleasing. Accessible trash receptacles and regularly scheduled trash pick-up can reduce the impact of litter. When building new facilities, consider costs per mile associated with trash receptacles and regular pick-up activities to ensure future maintenance needs are met.

Debris from automobile crashes should be removed as soon as possible so it does not impact bike facilities. If the collision requires a towing company, the towing company is often responsible for site cleanup. If a tow truck is not involved, the municipality may need a 311 system or a similarly responsive program to ensure quick and thorough cleanup of noted roadway hazards.

Because sidewalks and trails often abut natural and landscaped areas, mowing and tree trimming are important maintenance practices that keep grass and weeds off the trail and prevent taller vegetation from creating obstructions and visibility issues. More harmful weeds are also kept from pollinating and reproducing through regular mowing making it a preventative practice as well. While keeping a sidewalk and trail clear and safe is imperative, vegetation plays a substantial role in an

Figure 13. Winter bicycling depends on high-quality maintenance programs.

City of Minneapolis Maintenance Guidelines

The City of Minneapolis uses a comprehensive Street and Sidewalk Design Guidelines document which includes a chapter on Bicycle Facility Design. This chapter has a section devoted specifically to maintenance of bicycle facilities.

The maintenance guidelines are used by the City's Public Works staff as a best practices document for their maintenance activities. Providing a thorough outline of maintenance needs in one document also helps the City better understand its maintenance needs and how to budget for them.

area's character and appearance as well as natural systems so thought should be given to the uniqueness of each area when developing a maintenance program.

Restriping, Signage and Graffiti Removal

Use, the proposed weather and maintenance activities (such as sweeping or snow removal) can degrade the surface of the facilities and signage over time. To keep pedestrian and bicycle facilities legible and safe, regular restriping and signage upkeep is needed. It is common for trails to be restriped approximately every 5 years and for signage to be replaced approximately every 10 years. On-street markings for bicycle facilities and pedestrian crosswalks are typically painted on an annual basis.

Municipalities also set standards for the removal of graffiti on public and private property, including walls, fences, and signs. Graffiti on walls and fences can be unappealing aesthetically and decrease user comfort while graffiti on signage can also threaten the safe operation of the facility. Municipalities should assess the costs of graffiti removal and create a program to successfully respond to graffiti. Code enforcement efforts can help address graffiti on private property.

Plowing and Ice Removal in Winter

Denver, CO, provides information on where and when snow plowing will occur and works to include all bike lanes in this plowing.[18] Denver also has policies related to plowing separated bike lanes (with special small plow vehicle) and trail plowing. The City provides tips on winter biking, how to avoid certain conditions, and points citizens to its 311 system when plowing has not succeeded for bicyclists.

18 http://www.denversnowplan.com/bicycling-winter

FHWA's Guide for Maintaining Pedestrian Facilities for Enhanced Safety

FHWA provides guidance[19] for maintaining pedestrian facilities to improve safety and mobility. The Guide covers pedestrian facility maintenance needs including: common maintenance issues; inspection, accessibility, and compliance; maintenance measurers; funding; and construction techniques to reduce future maintenance. The guide includes examples from jurisdictions of varying sizes and geographies to address many maintenance contexts."

The guide includes a funding chapter that discusses opportunities for cities to fund sidewalk repair and maintenance instead of charging individual property owners for repairs. Corvallis, OR, includes a sidewalk maintenance fee as part of a monthly sewer and water bill. The fee was determined by taking the average monthly cost to repair defective sidewalks divided by the number of utility customers.

19 http://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwasa13037/

Plowing and Ice Treatment

In areas that receive regular snowfall, plowing is critical, routine maintenance to ensure safe year-round bicycling and walking. Programs should provide on-street bikeways with the same level of winter maintenance as the rest of the street surface and also have smaller vehicles available for plowing separated cycle tracks and trails soon after snowfall.

Ice, even the smallest patches, poses a greater hazard for bicyclists and pedestrians and sometimes typical plowing and maintenance methods do not sufficiently remove ice. Programs that identify and address problem-areas prone to be icier due to poor drainage, shading, or other circumstances can improve safety.

Policies must also be in place to ensure private property is plowed and free of ice. Property owners need to be informed and diligent about their maintenance obligations. Sidewalks, walkways, and bike rack areas should be accessible and clear of snow and ice in the winter months to guarantee use and minimize safety concerns.

Preventive Maintenance

Routine maintenance prolongs the life of bicycle and pedestrian infrastructure while also making it more safe and comfortable. On-street repairs like crack sealing, pothole patching, and others can reduce asphalt wear without having to replace all of the infrastructure. Entire roadway surfaces are milled and overlaid on a regular basis to ensure a smooth surface while the existing base stays intact.

As for pedestrians, there are numerous best practices for the maintenance of sidewalks. The most frequent type of sidewalk maintenance activity is to repair uneven slabs caused by tree roots lifting a concrete slab or the settling of earth causing a slab to sink. Other issues besides slab displacement include cracks, holes and surface deterioration. Each municipality should have a program in place to address these types of common problems that impair pedestrian safety and accessibility.

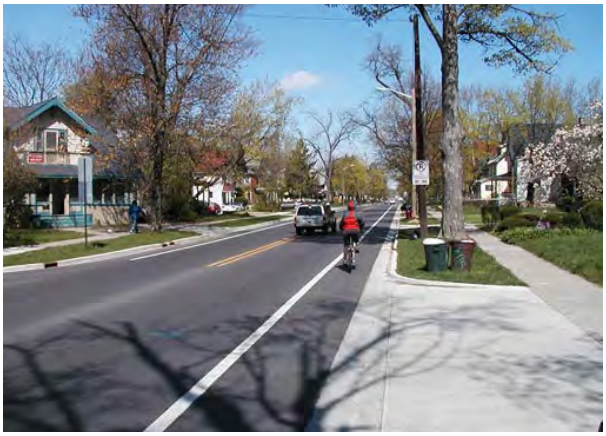


Figure 14. Ann Arbor, MI uses a voter-approved sidewalk mileage tax for sidewalk repair and replacement. Voters viewed the measure as more equitable and effective than the code requirements that made adjacent property owners responsible for sidewalk maintenance (source: http://www.a2gov.org/departments/engineering/pages/street-and-sidewalk-millage.aspx)

Funding Maintenance Activities

Policies are needed across departments that prioritize maintenance activities to support safe and complete pedestrian and bicycle networks.

Municipal General Fund

Most communities treat bicycle and pedestrian facilities as community assets for which maintenance is funded through a municipality's general fund or transportation fund. Revenues for these types of programs typically come from local property and sales taxes. Sidewalk, trail, and street maintenance of nonmotorized routes programs are often managed separately, sometimes by different departments, requiring funds to be allocated separately to each program. A best practice is to lump together sidewalk, trail, and street maintenance into one capital improvement program to ensure that one program's budget is not a lower priority than others.

Piggyback Funding

Piggyback funding refers to policies that requires that pedestrian and bicycle facilities within a certain distance of other public right-of-way improvements also receive maintenance as needed. Thus, the small costs of pedestrian and bicycle facility maintenance can be wrapped into larger projects. Many communities have found piggyback funding programs to be successful and popular.

Property Owner Assessment for Maintenance

Regarding sidewalks specifically, some municipalities require the adjacent property owner to pay for all or a portion of sidewalk maintenance costs. While an assessed cost to repair a sidewalk allows property owners to see direct benefit from payment, there are political and equity concerns in using this method for maintaining public facilities with private monies from individual households. A more equitable approach treats sidewalks as public facilities, similar to roadways. This approach distributes the financial burden among all property owners and facilitates more comprehensive, systematic maintenance.

Special Districts and Homeowners Associations

Special districts play a key role in maintenance, especially in regards to sidewalks and crosswalks.

Communities commonly set up an improvement district (such as Downtown Associations, Business Improvement Districts, Community Improvement Districts, Transportation Policy Areas) to assume some or all maintenance responsibility for pedestrian facilities and sometimes bicycle facilities.

Homeowner associations are formal legal entities that play a key role in maintaining common areas, which often include sidewalks and paths. The amount of services provided by homeowners associations generally depends on the fees assessed to property owners in a given association but pedestrian facilities are nearly always covered through these fees.

Special Communitywide Assessments, Taxes, and Bonds

Special communitywide assessments like term-limited voter-approved levies or special property tax assessments can also fund bicycle and pedestrian facilities and their maintenance.

Sales tax often indirectly funds facility maintenance because it goes towards the general fund but in many places, municipalities raise sales tax rates for specific purposes like bicycle and pedestrian facility maintenance.

Bonds allow municipalities to fund large capital expenditures by leveraging existing revenues. In doing so, they can quickly address funding gaps for a variety of capital improvements including pedestrian and bicycle facilities and their maintenance. Like assessments and sales tax increases, bonds are generally approved by residents through a referendum.

Utility Fees, Vehicle Licenses, Parking Fees, and Fines

Utility fees can be a small but consistent funding source that communities can use to fund maintenance pedestrian facilities especially. While not common, funding sources for bicycle and pedestrian facility maintenance can also come from vehicle license fees, parking fees, and revenue received from red light enforcement cameras.

Bicycle Parking Guidelines

In addition to facilities like bicycle lanes and sidewalks, end of trip facilities are an important component of any active transportation network. The Association of Bicycle and Pedestrian Professionals has published several resources on bicycle parking including a set of guidelines updated in 2010[20] and a more recent short summary titled "Essentials of Bicycle Parking" that provide guidance on bicycle parking siting and design.

20 http://www.apbp.org/resource/resmgr/Bicycle_Parking/EssentialsofBikeParking_FINA.pdf

Local agencies should remain flexible and creative to capitalize on partnerships, in-kind matches, and other non-traditional opportunities.

2.6 PAY FOR IT

Funding programs to establish safe and complete bicycle and pedestrian networks require a diverse and creative approach. While federally funded grants are critical for implementing big capital projects, local agencies should remain flexible and creative to capitalize on partnerships, in-kind matches, and other non-traditional opportunities to implement their respective visions, goals, and objectives. The following sections of this chapter provide an overview of potential funding sources enabling local, regional, and state projects for nonmotorized transportation.

USDOT Funding Sources

States and MPOs are using creative approaches to apply Federal sources to bicycle and pedestrian projects, including using Transportation Alternatives funds, as well as flexible funding from other programs, as described below. The Federal government has numerous programs and funding mechanisms to support bicycle and pedestrian projects, most of which are administered by the U.S. Department of Transportation in cooperation with state and regional entities. The following Federal programs are made available to local communities through state and regional entities, including Departments of Transportation (DOTs), local parks and wildlife departments, and regional metropolitan planning organizations (MPOs).

Fixing America's Surface Transportation (FAST) Act

Congress passed a five year transportation bill in 2015 called the Fixing America's Surface Transportation (FAST) Act. The FAST Act provides funding for eligible bicycle projects through multiple funding programs already in existence in prior Federal transportation bills.

Surface Transportation Block Grant Program

The FAST Act replaced the Transportation Alternatives Program (TAP) funding established in previous legislation with a set-aside of funds under the Surface Transportation Block Grant Program (STBG). The FHWA will refer to these funds as the TA Set-Aside.[21]

21 http://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm

Figure 15. Pennsylvania Avenue bike lanes in Washington D.C. (Photo by Elvert Barnes from pedbikeimages.org)

Congestion Mitigation and Air Quality Improvement (CMAQ)

CMAQ funds transportation projects to reduce ozone and carbon monoxide pollution and meet national ambient area air quality standards in Clean Air Act non-attainment areas. The construction of pedestrian and bicycle facilities using CMAQ funding must explicitly provide a transportation function. Nonconstruction projects such as printed materials related to safe bicycling are also eligible for CMAQ funds. These projects must be geared towards transportation rather than recreation and must be included in a plan developed by the State and each MPO.

USDOT Highway Safety Improvement Program (HSIP)

The Federal Highway Safety Improvement Program (HSIP) is intended to achieve significant reduction in traffic fatalities and serious injuries on all public roads by funding projects, strategies and activities consistent with a state's Strategic Highway Safety Plan (SHSP). The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. The specific provisions pertaining to the HSIP are defined in Section 1112 of MAP-21, which amended Section 148 of Title 23, *United States Code* (23 USC 148).

NHTSA Section 402 State and Community Highway Safety Grant Program

National Highway Traffic Safety Administration (NHTSA) Federal Section 402 funds can be used to develop education, enforcement and research programs designed to reduce traffic crashes, deaths, severity of crashes, and property damage. Examples of bicycle and pedestrian safety programs funded by Section 402 are comprehensive school-based pedestrian and bike safety education programs, helmet distribution programs, pedestrian safety programs for older adults, and community information and awareness programs.

NHTSA Section 405 National Priority Safety Programs

NHTSA Section 405 National Priority Safety Program provides funding related to laws to enhance the safety of bicyclists and pedestrians. Funding may be used to train law enforcement on associated laws, enforcement of bicycle and pedestrian safety laws, or public education of these laws. These funds are available to states where bicycle and pedestrian fatalities exceed 15 percent of traffic fatalities based on the final Fatality Analysis Reporting System numbers, for each of the five years under the FAST Act.

USDOT TIGER Discretionary Grants Program

The USDOT's Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grants Program was created as part of the American Recovery and Reinvestment Act of 2009 with the purpose of funding road, rail, transit and port projects that achieve critical national objectives, including livability, economic competitiveness, environmental sustainability, and safety. More than $500 million was made available in FY 2014. Seventy-two applications were funded, many of which focused or incorporated active transportation elements.

One grant recipient was the Razorback Regional Greenway in Northwest Arkansas. This project is a 36-mile, primarily off-road, shared-use trail that extends through several jurisdictions and links dozens of popular community destinations. While the majority of funds came from a TIGER grant and the Walton Family Foundation, local municipalities also dedicated significant resources to the project.

Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) creates and maintains high quality recreation resources through the acquisition and development of public outdoor recreation areas and facilities. The program operates on a reimbursing basis. The local sponsor matches 50 percent of the project cost prior to applying for the grant. After the project is approved, the sponsoring park and recreation board receives a reimbursement of 50 percent of the actual project costs.

U.S. Department of Housing and Urban Development Community Development Block Grant Program (CDBG)

While not traditionally viewed as a source of funding for bicycle and pedestrian projects, the CDBG program provides money for streetscape revitalization and other improvements that can enhance walking and bicycling.

U.S. Department of Defense Office (DoD) of Economic Adjustment Community Investment

The DoD Office of Economic Adjustment has a Community Investment program that provides funding for programs and projects that support public schools on military bases and the roads surrounding them.

State and Local Funding Sources

Although funding sources vary locally, this section highlights common funding sources at the state and local level. State and Federal funding sources for bicycle and pedestrian projects and programs continue to be in short supply and high demand. Local funds can often be easier to obtain for small projects and is often required as a match for external funding sources.

Parks and Recreation Grants

Most states have grant programs specifically for parks and recreation. Aside from parks, these grants can also fund trails, a key element in planning for active and connected communities.

State Constitutional Amendments

States constitutions typically outline the types of projects to which specific funding sources can go towards. Some states have passed constitutional amendments that allow for highways funds to be spent on bicycle and pedestrian projects. It is most common for states to pass amendments that set a certain percentage of state transportation funds that are to be spend on bicycle and pedestrian facilities. Other options include adding bicycle and pedestrian projects to the list of projects that existing sources of funding can go towards.

Seattle's Bridging the Gap Tax Levy

In 2006, Seattle voters approved Bridging the Gap (BTG), a proposition creating a nine-year, $365 million tax levy in order to address twenty years of deferred street and infrastructure maintenance. BTG authorized regular property taxes higher than legislated limits, allowing collection of up to $36,650,000 in additional taxes in 2007 and up to $365,000,000 over nine years. When voters approved the tax levy in 2006, they also stipulated the percentages that should be spent on selected project categories:

- Maintenance would receive no less than 67 percent of tax levy spending
- Pedestrian/Bike Safety would receive no less than 18 percent of tax levy spending
- Transit and Major Projects would receive no more than 15 percent of tax levy spending

Vehicle Tolls and Fuel Taxes

State's revenues from roadway tolls and vehicle fuel taxes can also fund bicycle and pedestrian facilities. This type of funding is typically based on policy that allocates a percentage of revenues toward active transportation projects.

Special Districts

State legislation may allow counties and municipalities to levy and collect special assessments in order to finance public infrastructure to promote economic growth and development. Seattle's approved Bridging the Gap proposition is an example of a tax levy to fund transportation improvements including bicycle and pedestrian projects.

A Public Improvement District can be established for the construction of street and sidewalk improvements; park, recreation and cultural improvements; the creation of pedestrian malls; public safety and security; landscaping and aesthetic improvements; and a host of other capital projects.

Additionally a city can create special districts called Municipal Management Districts, Tax Increment Reinvestment Zones, Parking Benefit Districts and Transportation Reinvestment Zone. Each of these districts can serve as a financing tool to support improvements through bonds, taxes, assessments, impact fees or other funds.

Another example of a special district would be the restriction on the number of single occupancy vehicle (SOV) trips that can be made to certain areas in Silicon Valley, notably in Mountain View's North Bayshore Precise Plan area. These SOV trip caps require new development to provide green transportation alternative in order to not exceed this cap. In doing so, these special districts promote greater private investments in transit, pedestrian, and bicycle facilities.

Tallahassee, FL Significant Benefits Developer Program

The Significant Benefits Program gathers funds from Tallahassee developers who "pay their proportionate fair share" to discourage the creation of new single occupancy motor vehicle trips and sprawl creation. Money is eventually spent within the Multimodal Transportation District (MMTD) of Tallahassee, where 100 percent of funds will be spent on projects to improve transit, walking, and bicycling.

http://www.walkfriendly.org/communities/community.cfm?ID=196

http://www.pedbikeinfo.org/planning/funding.cfm

Impact Fees

Local governments in certain states may adopt local ordinances imposing an impact fee on new development within their jurisdictions to fund infrastructure improvements that support development and the community at large. Although requirements vary according to state, these may include bicycle and pedestrian facilities, as well as other transportation and infrastructure needs like parks, recreational facilities, and others.

Foundations

Foundations supporting health, wellbeing, or quality of life issues are important sources of funding, especially for smaller programmatic funding which a can be harder to obtain through traditional grant funding mechanisms. Over 80,000 foundations exist throughout the United States.

Foundations and nonprofit organizations that provide support for bicycle and pedestrian networks, including planning and implementation include:

- Surdna Foundation
- Kresge Foundation
- Robert Wood Johnson Foundation
- W.K. Kellogg Foundation
- People for Bikes
- Advocacy Advance

Local community foundations can fund active transportation programs and projects. Examples include the California Endowment, the James Irvine Foundation, and the Walton Family Foundation.

Figure 16. The Razorback Regional Greenway in northwest Arkansas was funded through TIGER grants, the Walton Family Foundation, and local municipalities.

Detroit Greenways Initiative

The Detroit Greenways organization raised $10 million from Kresge Foundation, W.K. Kellogg Foundation, General Motors and the City of Detroit and leveraged $70 million in State and Federal funding for greenway development. The organization is responsible for the construction, operations, maintenance, programming and security of these popular public spaces.

Atlanta Regional Commission's Livability Initiative Awards

The Atlanta Regional Commission's Livability Centers Initiative[22] awards competitive planning grants to local governments and nonprofits to prepare and implement plans that enhance existing centers and corridors consistent with regional development policies. This approach can be useful to help focus available resources from multiple sources into a concerted planning effort that address bicycle, pedestrian, and placemaking issues.

22 http://www.atlantaregional.com/land-use/livable-centers-initiative

Chapter 3

IMPLEMENTATION

All agencies have existing policies that shape how people use the transportation system. From laws and ordinances to standard operating procedures, the policies described in the prior chapter can help improve conditions for bicyclists and pedestrians.

To determine where and how to begin implementing policy reform, evaluating the strengths, weaknesses, opportunities, and threats of an agency's existing policy framework will help prioritize implementation steps. This chapter outlines an analysis method to evaluate the policy and implementation environment of a department or whole agency and identifies considerations to better understand how a policy platform can be strengthened.

Evaluating a policy's strengths, weaknesses, opportunities, and threats will help prioritize the policy's implementation steps.

3.1 IMPLEMENTATION

Understanding the Strengths and Weaknesses of Existing Policy

Before investing time or resources into implementation, communities should first understand the strengths, weaknesses, opportunities, and threats (SWOT) of their existing policy platforms to support safe and complete pedestrian and bicycle networks.

Below are some questionsthat can help communities to assess issues and develop ideas for strengthening their policy platforms.

Education and Training

It is important to assess the level to which stakeholders are informed about the essential elements of creating, maintaining, and promoting safe and complete nonmotorized networks.

- Are policy, planning, and engineering staff trained and well-informed about active transportation? What about staff in other departments or agencies that are involved in implementation?

Figure 17. The chapter header image on this page and the photo above show projects shortly after implementation in Wichita, KS. The chapter header image shows a new bike lane and bike box on Market Street. The image above shows a diverter on Woodchuck Boulevard bicycle boulevard to allow for bicycle access. The new pedestrian hybrid beacons help people on foot cross a busy arterial street.

- Are elected officials well informed about key issues related to safe and complete pedestrian and bicycle networks?
- How well informed is the public about active transportation best practices? Is a lack of understanding among stakeholders about key issues holding back policy goals? Is a well-informed constituency helping to advance policy goals?

Coalition Building and Collaboration

It is important to have strong working relationships both internally and externally to help move the policy platform forward. Strong, supportive coalitions can help ensure the longevity and sustainability of policy goals.

- Does the department or agency have good relationships with outside organizations, stakeholders, or community members that support this work? Will these stakeholders advocate for the policy goals?
- Does the department or agency collaborate closely with other departments or agencies that have influence over the policy goals (political officials, City Manager, Capital Improvement Department, Economic Development, Information Technology, Parks and Recreation, Planning, Engineering, Police, Public Health, and Streets and Maintenance Departments)?

Political Will/Leadership

At the end of the day, support of elected officials and key community leaders is critical to the success of achieving a safe and connected network.

- Are the elected officials well informed and supportive of the network?
- Is there a champion on Council or in the Administration?

Policy Context

- What is the larger policy context the department or agency is operating in? How does state policy influence the work? Are there other agencies that have jurisdiction within the network that strengthen or weaken the work?
- Are there appropriate plans and policies in place? Can they be strengthened or better utilized? Are they being appropriately implemented?

Existing Assessment Tools

When performing a SWOT analysis, existing assessment tools and checklists can assess a community, particularly related to its existing policy platform.

Walk Friendly Communities Community Assessment Tool: This tool serves to both recognize existing walkable communities and to provide a framework for communities seeking to improve their walkability. It recognizes communities that have achieved high levels of walking and low rates of pedestrian crashes while also recognizing communities that are making progress in achieving these two goals through policies, projects and programs. Recognizing that there are many ways to achieve these outcomes, the range of questions in the tool attempts to capture the variety of factors that affect walkability.

Bicycle Friendly Community Assessment Tool: The Bicycle Friendly America program provides an assessment for local governments, provides customized feedback, and provides technical assistance. This quick assessment to see where a community stands, and the full application process can be completed in the spring or in the fall.

- Safety. Are there appropriate policies in place to support enforcement?
- Supportive development. Are there recommended land use and design policies, guidelines, and standards in place?
- Design. Are there policies in place that facilitate the design of a safe and complete pedestrian and bicycle network?
- Maintenance. Are there policies in place that ensure appropriate maintenance of the network over time?
- Funding. Are there policies that enable sustainable funding for the network?

Evaluation

- How does the department or agency evaluate success? How is this evaluation communicated?

Example SWOT Analysis

Each department or agency that performs a SWOT analysis of its policy framework will have different results and will therefore have a unique policy agenda. Below is an example of a fictional agency with strong policies in place, but not a lot of support from other departments or elected officials.

Strengths	Weaknesses
• Department staff is well informed and trained on active transportation • Department staff works well with bike and pedestrian advocacy groups • Have bike and pedestrian plan, supportive development policies, and maintenance policies	• Other departments are not as well informed about active transportation • Have never worked collaboratively with the police department • Do not have policies to support enforcement • Lacking key funding to implement plans
Opportunities	**Threats**
• Bike advocacy group leads trainings and workshops • Community stakeholders are eager to be engaged	• Elected officials are not well-informed and have not received training • Do not have elected official champion

This sample department's hypothetical policy agenda might focus on:

- Create a coalition of advocacy groups, community stakeholders, and department representatives to improve education and collaboration
- Work with elected officials, provide educational and training opportunities, and use coalition to foster political will to better support funding needs. Try to get an elected official champion,
- Improve collaboration with the police department and provide trainings to improve enforcement

Building a Policy Agenda

Once a department understands its context and issues, it can create a policy agenda to advance its priorities. The agenda should build on strengths, take advantage of opportunities, and address weaknesses and threats. To begin the agenda, the agency should understand:

- What is a logical sequencing of activities to ensure success?
- What is controlled within the department or agency, and what support/buy-in from others is needed in order to achieve?
- Who are the key stakeholders and policy makers that need to be engaged in creating and implementing this policy agenda?
- What funding or other resources exist currently to immediately initiate certain policy items? What needs additional funding support?

The policy agenda may be an internal document that is used to guide internal goals to support safe and complete pedestrian and bicycle networks, perhaps created with a stakeholder group to guide the work, or it might be a public document that informs the community about the agency's priorities for the coming years. While the content of the policy agenda will depend on its goals, each policy agenda should include:

- Workflow with a logical sequencing of activities with key milestones and objectives, including timeline, responsible parties, and identified funding sources;
- Approach for engaging key stakeholders, departments, agencies on ongoing implementation; and
- Communication plan for how the policy agenda will be communicated internally and/ or externally.

Each policy maker, department head, or community leader faces a unique set of strengths, weaknesses, opportunities, and threats related to active transportation policies. Creating a tailored policy agenda will help ensure success.

Atlanta Regional Commission

The Atlanta Regional Commission used a SWOT Assessment to guide and inform the development of recommendations and strategies for the Regional Transportation Demand Management Plan (TDM). A similar process could be followed used for active transportation. The key objectives of the SWOT assessment are:

- Document existing conditions as they relate to strengths and weaknesses in the region's TDM programs, services and policies.
- Document future and external factors that may influence threats and opportunities to the region's TDM programs, services and policies.
- Assess and evaluate the needs and gaps to improve the program and the existing strengths to leverage for success.
- Inform the development of recommendations for TDM programs.

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Detailed Case Studies

BICYCLE AND PEDESTRIAN POLICY CASE STUDIES

The guidebook showcases opportunities to make street networks more complete, more livable, and safer for all users. In addition to providing guidance to create network-supportive policies, the guidebook includes these case studies, which were compiled based on a literature review and provide evidence of successful policy initiatives across the country. The intended use of the guidebook is to provide policy ideas and contacts for policy makers to utilize as precedent and best practice examples. Sections within each case study describe the policy of note along with characteristics of the municipality in which it was enacted and examples of similar case studies if they exist.

The case studies are organized based on the guidebook's six themes of effective policies: Define Success, Protect Nonmotorized Travelers, Promote Supportive Development, Design the Network, Make It Last, and Pay for It. The table on the following pages identifies how the guidebook's case studies relate to each section of the guidebook document. Use this guide to pinpoint examples of policy work that speak to certain themes or topics of interest.

Case Study Number	Case Study Name	Page	Define Success	Protect Nonmotorized Travelers	Promote Supportive Development	Design the Network	Make It Last	Pay for It
1	Equity Analysis within a Bicycle Master Plan, Seattle, WA	A-4	X					
2	Design Standards Ordinance and Healthy Eating and Active Living, Hernando, MS	A-6	X	X			X	
3	Long-Range Transportation Plan Performance Measures, Champaign County, IL	A-8	X					
4	Multimodal Level of Service, Jacksonville, FL	A-10	X			X		
5	Senate Bill No. 743, Environmental Quality, California	A-12	X					
6	Adult Bicycle Safety Program, Huntington Beach, CA	A-14		X				
7	Crosswalk Safety Policies, Boulder, CO	A-16		X				
8	"Stop and Stay Stopped" Crosswalk Law, State of New Jersey	A-18		X				
9	Bicycle and Pedestrian Safety Ordinance, Chicago, IL	A-20		X				
10	Bicycle Parking in Garages and Parking Lots, New York, NY	A-22			X			
11	Downtown Design Standards and Guidelines, Boise, ID	A-24			X			
12	Eliminating Parking Minimums in Transit-Friendly Areas, Seattle, WA	A-26			X			
13	Form-Based Code, Cincinnati, OH	A-28			X			
14	Form-Based Code, Miami, FL	A-30			X			

Red boxes represent the primary guidebook element for the case study; grey boxes indicate another relevant guidebook element.

Case Study Number	Case Study Name	Page	Define Success	Protect Nonmotorized Travelers	Promote Supportive Development	Design the Network	Make It Last	Pay for It
15	Model Ordinances for the Enhancement of Bicycle and Pedestrian Access to Transportation Facilities, State of Maryland	A-32		X	X	X		
16	Multimodal Development and Parking Minimum Elimination, Fargo, ND	A-34		X	X	X		
17	Transit-Oriented Development, Arlington, VA	A-36			X	X		
18	Bicycle and Pedestrian Checklist, Commonwealth of Pennsylvania	A-38				X		
19	Complete Streets Design Guidelines, Chicago, IL	A-40	X			X		
20	Downtown Urban Design Guidelines, Boulder, CO	A-42		X		X		
21	Healthy Design Ordinance, Los Angeles, CA	A-44		X		X		
22	Pedestrian and Bicycle LOS, Charlotte, NC	A-46	X			X		
23	Memphis Sidewalk Ordinances, Memphis, TN	A-48		X			X	
24	Bicycle Facility Maintenance Guidelines, Minneapolis, MN	A-50		X			X	
25	Bridging the Gap, Seattle, WA	A-52						X
26	Precise Plan Caps on Single Occupant Vehicle (SOV) Trips, Mountain View, CA	A-54			X			X

CASE STUDY 1

EQUITY ANALYSIS WITHIN A BICYCLE MASTER PLAN

Seattle, WA

The map shows areas with high concentrations of equity indicator demographics and low bicycle service. THE IMAGE SOURCE: SEATTLE.GOV

Define Success

Protect Nonmotorized Travelers

Promote Supportive Development

Design the Network

Make It Last

Pay for It

Project Partners

- City Commissions and Advisory Boards (i.e., the Freight Advisory Board, the Seattle Bicycle Advisory Board, the Pedestrian Advisory Board, Planning Commission, Design Commission, and the Bridging the Gap Oversight Committee).

Key Elements

The Seattle Bicycle Master Plan (2014) defines "equity" as follows: "Provide equal bicycling access for all; through public engagement, program delivery, and capital investment." The plan helps decision makers situate the document within a larger governmental equity initiative and provides policy analysis tools to support analysis of equity concerns. The Racial Equity Toolkit to Assess Policies, Initiatives, Programs, and Budget Issues is part of the interagency Race and Social Justice Initiative, which aims to end individual, institutional, and structural racism. The Initiative's toolkit "lays out a process and a set of questions to guide the development, implementation and evaluation of policies, initiatives, programs, and budget issues to address the impacts on racial equity" (Racial Equity Toolkit, 1).

Seattle makes the case for investing in bicycle infrastructure by stating, "Policies that increase the number of people walking and biking appear to be an effective route to improving the safety of all roadway users. Greater safety for all road users may result from reaching a threshold of bicyclist volumes that compels motorists to drive more carefully." By carefully investigating the distribution of infrastructure options across the city, the City's policies further support the safety of all roadway users.

The bicycle master plan's policy chapter establishes the plan's relation to policy initiatives from previously published reports. Accompanying documents conceived after the citywide plan's 2014 publication, including the Seattle Bike Master Plan: 2016-2020 Implementation Plan fall within the same policy context as Seattle's Vision Zero initiative and the tax levy, Move Seattle.

The City's Equity Analysis identified service gaps within the city's existing bicycle network. The maps identified the availability of bicycle facilities per Census tract as well as the percentage of households without a private car available for daily use. The maps also show concentrations of indicator demographics related to racial equity. The map included above shows a composite of the indicator demographics analyzed and highlights areas with low bicycle service.

EQUITY ANALYSIS WITHIN A BICYCLE MASTER PLAN
CONTINUED

Key Elements (continued)

The plan's inclusion of geographic equity goals follows the City's and King County's pilot policies, programs, and strategic plans to foster racial equity and social justice. The plan shows the confluence of policy initiatives, evidence-based research, strong political leadership, and infrastructure planning, design, and implementation.

Additionally, the Seattle Bike Plan emphasizes stakeholder and public engagement to accomplish equity-based objectives.

The Seattle Bike Master Plan equity analysis was featured in the Advocacy Advance report, Active Transportation Equity: A Scan of Existing Master Plans (2015). The report researched a variety of master plans to understand current definitions, analyses, and policy/planning initiatives related to geographic and/or racial equity. Practitioners can use the report as a touchstone when understanding tools, outreach efforts, performance measure creation, and other elements to incorporate within master planning and policy creation or amendment initiatives.

Data

Location	Seattle, WA
Population	608,660 (2010 Census)
Area	83.87 sq mi

Density	7,969 residents/sq mi
Geography	Western U.S.
Climate	Temperate marine

Similar Case Studies

Name and Year	Location	Agency	Page
Bridging the Gap, 2006 to 2015	Seattle, WA	Seattle Department of Transportation	A-52

More information

- Seattle Bicycle Master Plan: http://www.seattle.gov/transportation/docs/bmp/apr14/SBMP_21March_FINAL_full%20doc.pdf
- 2015 Bicycle Master Plan Progress Report: http://www.seattle.gov/transportation/docs/2015BMPProgressReport.pdf
- Active Transportation Equity: A Scan of Existing Master Plans: http://www.advocacyadvance.org/docs/ActiveTransportationEquityScan.pdf
- King County: Building Equity and Opportunity: http://www.kingcounty.gov/elected/executive/~/media/B102A4C8AAE440F1A79BCE76986E80F5.ashx?la=en

CASE STUDY 2

DESIGN STANDARDS ORDINANCE AND HEALTHY EATING AND LIVING PROGRAM

Hernando, MS

THE IMAGE SOURCE: HOTTYTODDY.COM

- ✓ Define Success
- ✓ Protect Nonmotorized Travelers
- Promote Supportive Development
- Design the Network
- ✓ Make It Last
- Pay for It

Project Partners

- Mayor of Hernando
- Hernando City Parks Department

Key Elements

When Hernando, Mississippi Mayor Chip Johnson took office in 2005, he sought to create a city that could defy Mississippi's status as the State with the highest obesity rate in the nation. Mayor Johnson led a multi-pronged policy approach to create healthy environments for the city's residents. The City of Hernando's health initiatives included a smoking ban ordinance, a youth helmet ordinance, a new farmers market, a community garden, and city employee wellness program. Complementing these activities, the City placed a strong emphasis on developing policies to help people include physical activity into everyday routines. Under the umbrella of the City's health initiative, policies to promote more walking and bicycling (e.g., Complete Streets) became more appealing to the community.

To increase the number of people walking, the City amended its design standards to require sidewalks with all new development and redevelopment projects. As the City focused its public dollars on repairing downtown sidewalks that were in poor condition, the new design standards facilitated the development of miles of new sidewalks in suburban developments that were previously disconnected from their surroundings. Today, City staff collaborate with the local Community Foundation to train local planning and elected officials in healthy eating and active living policy development.

In 2006, the Mayor helped create a new City Parks Department to refurbish existing city parks and to encourage more residents of all ages to play outside. In 2010, the City passed their first Complete Streets policy, which requires the City to consider the needs of bicyclists and pedestrians on roadway projects. The Complete Streets Policy has led to miles of new bike lanes, sidewalks and trails. The Complete Streets Policy was marketed to appeal to the City's businesses and residents. Aldermen concerned with economic development played a key role in promoting the policy by explaining its potential to help the City attract new residents and businesses by creating a safer and more pleasant street environment.

The City has received more than $800,000 in funding to promote activity and healthy eating and in 2010, Hernando was name the "Healthiest Hometown in Mississippi" by the Blue Cross & Blue Shield of Mississippi Foundation for its ongoing health and wellness efforts.

DESIGN STANDARDS ORDINANCE AND HEALTHY EATING AND LIVING PROGRAM

CONTINUED

Data

Location	Hernando, MS
Population	14,090 (2010 Census)
Area	25.8 sq mi

Density	548 residents/sq mi
Geography	Southern U.S.
Climate	Humid subtropical

Similar Case Studies

Name and Year	Location	Agency	Page
Healthy Design Ordinance, 2013	Los Angeles County, California	Los Angeles County	A-44

More information

- http://healthyamericans.org/assets/files/Hernando%20Miss%202.pdf
- http://cityofhernando.org/wp-content/uploads/2011/06/Healthy-hometown-flyer.pdf
- http://cityofhernando.org/wp-content/uploads/2013/05/Design-Standards-Ordinance.pdf
- http://www.smartgrowthamerica.org/2010/04/14/mississippi-on-the-map/

CASE STUDY 3

LONG-RANGE TRANSPORTATION PLAN PERFORMANCE MEASURES

Champaign County, IL

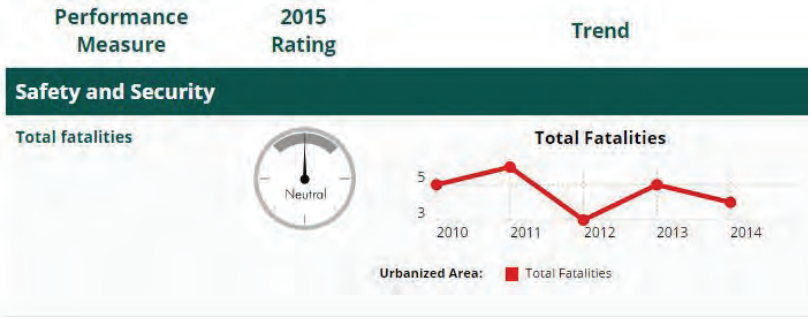

IMAGE SOURCE: LRTP.CUUATS.ORG/

Define Success

- Protect Nonmotorized Travelers
- Promote Supportive Development
- Design the Network
- Make It Last
- Pay for It

Project Partners

- Champaign County Regional Planning Commission
- Champaign County Economic Development Corporation
- Champaign Park District
- Village of Rantoul

Key Elements

The Champaign-Urbana Area Transportation Study (CUUATS) *Long Range Transportation Plan* included specific performance measures "to help CUUATS staff track the progress of each objective during the five year period between LRTP updates according to relevant and obtainable data" (2040 LRTP, page 5). CUUATS tracks the plan's progress through annual reports in which each Measure of Effectiveness (MOE) is scored with a good, neutral or negative rating. This process helps staff to consider specific concerns associated with each MOE, as well as overall "strengths, weaknesses, and difficulties in achieving LRTP goals and planning for the future" (2).

MOEs within the Multimodal Connectivity "planning pillar" include the following:

- Miles of existing non-ADA compliant sidewalks
- Miles of trail infrastructure
- Miles of bike infrastructure
- Urbanized area contained inside the Metropolitan Transportation District (MTD) service area
- Percent increase in enplanements at Willard Airport
- Number of new rural transit connections and number of rural transit trips
- Number of new partners identified
- Number of public events with materials available

The public can easily access each of the plan's performance measures via the *Sustainable Choices 2040: Long Range Transportation Plan Report Card* website (www.reportcard.cuuats.org). Each MOE's respective web page contains detailed information about what the MOE is designed to measure. Each page also includes information about the agency's work over time to assess historical trends.

LONG-RANGE TRANSPORTATION PLAN PERFORMANCE MEASURES

CONTINUED

Data

Location	Champaign County, IL
Population	204,897 (2013 Census)
Area	998 sq mi

Density	202 residents/sq mi
Geography	Midwestern U.S.
Climate	Humid continental

Similar Case Studies

Name and Year	Location	Agency	Page
Design Standards Ordinance and Healthy Eating and Active Living, 2005 to 2010	Hernando, MS	City of Hernando, MS	A-6
Complete Streets Design Guidelines, 2013	Chicago, IL	Chicago Department of Transportation	A-40
Pedestrian and Bicycle LOS, 2007	Charlotte, NC	City of Charlotte	A-46

More information

- CUUATS online report card: http://reportcard.cuuats.org/summary/
- CUUATS LRTP Full Document: http://lrtp.cuuats.org/documents/
- CUUATS LRTP Chapter 9: http://lrtp.cuuats.org/lrtp-main_011615_reduced_9-goals-etc/

CASE STUDY 4

MULTIMODAL LEVEL OF SERVICE (MMLOS)

Jacksonville, FL

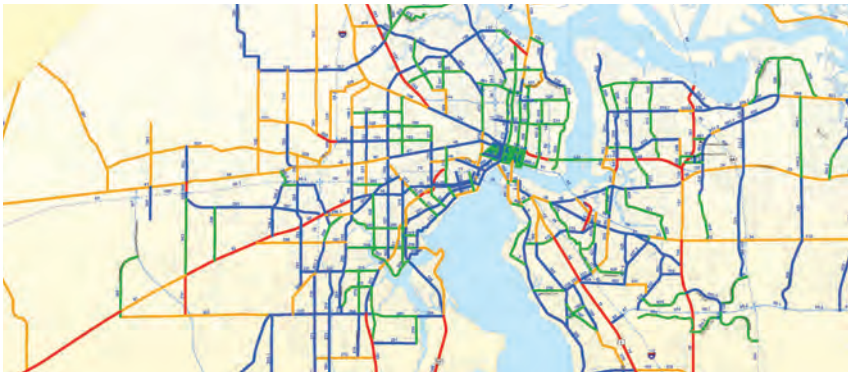

IMAGE SOURCE: METROJACKSONVILLE.COM / CITY OF JACKSONVILLE

✓ Define Success

Protect Nonmotorized Travelers

Promote Supportive Development

✓ Design the Network

Make It Last

Pay for It

Project Partners

- City of Jacksonville Planning and Development Department

Key Elements

The City of Jacksonville first used multimodal level of service (MMLOS) analysis during the City's 2030 Mobility Plan development. The local project evolved from the Florida Department of Transportation's (FDOT) 2009 MMLOS tool, which was developed to support transportation planning, cost estimation, project design, and engineering.

FDOT developed the MMLOS evaluation method based on the 2000 *Highway Capacity Manual* (HCM), *Transit Capacity and Quality of Service Manual* (TCQSM), and the 1997 Landis Bicycle and Pedestrian level of service (LOS) models. FDOT's MMLOS calculations are designed to function in a variety of land use settings, from rural to urban environments.

MMLOS standards are used to review regionally significant FDOT projects. Therefore, the City of Jacksonville may be distinguishing itself from peer cities by incorporating MMLOS analyses in local projects. Jacksonville's Mobility Plan used pedestrian and bicycling LOS ratings to prioritize recommended walking and bicycling improvements. The plan shows pedestrian and bicycle networks before and after the plan's proposed improvements.

MMLOS produces LOS scores for each mode based, primarily, on the available space for that mode relative to its use. Like Auto LOS, bicycle and pedestrian LOS consider elements like bicycle lane presence, sidewalk width, and other factors to determine the quality of the network. One general challenge with the MMLOS analysis is the comparability of LOS grades by mode. While these are generally intended to convey the same concept, the uniqueness of each mode makes a one-to-one relationship challenging to implement.

MULTIMODAL LEVEL OF SERVICE (MMLOS)

CONTINUED

Data

Location	Jacksonville, FL
Population	821,784 (2010 Census)
Area	885 sq mi

Density	928.6 residents/sq mi
Geography	Southeastern U.S.
Climate	Humid subtropical

Similar Case Studies

Name and Year	Location	Agency	Page
Pedestrian and Bicycle LOS, 2007	Charlotte, NC	City of Charlotte	A-46
Senate Bill No. 743, Environmental Quality, 2013	California	California State Legislature	A-12

More Information

- 2030 Mobility Plan: http://www.coj.net/departments/planning-and-development/transportation-planning/mobility-plan
- 2030 Mobility Plan Presentation: http://www.coj.net/departments/planning-and-development/docs/community-planning-division/2030-mobility-plan-presentation-4-15-10.aspx
- Fehr and Peers Multimodal Level of Service Toolkit: Florida DOT MMLOS: http://asap.fehrandpeers.net/wp-content/uploads/2012/05/MMLOS-Tool-Florida-DOT-MMLOS.pdf
- Multimodal Level of Service Goes Mainstream: Chickens can Finally Cross Roads: http://www.planetizen.com/node/46112

CASE STUDY 5

SENATE BILL NO. 743, ENVIRONMENTAL QUALITY

State of California

IMAGE SOURCE: ALTA PLANNING + DESIGN

Project Partners

- California Governor's Office
- California Office of Planning and Research (OPR)

Define Success

Protect Nonmotorized Travelers

Promote Supportive Development

Design the Network

Make It Last

Pay for It

Key Elements

Level of Service (LOS) was the standard metric used to measure transportation impacts from developments and road changes through the California Environmental Quality Act (CEQA). LOS measures how many vehicles can pass through an intersection in a given time. If a project going through CEQA review reduced a road or intersection's LOS, it was considered a negative impact. This measurement favored automobile travel over other modes of travel and conflicted with other state goals—such as reducing greenhouse gas emissions, developing multimodal transportation, and promoting infill development. In September 2013, Governor Brown signed Senate Bill 743 (SB743), which removed the LOS element from CEQA review and required the Governor's Office of Planning and Research (OPR) to amend the CEQA Guidelines with an alternative method for evaluating transportation impacts. Particularly within areas served by transit, SB743 called for alternative criteria that would "promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses." (New Public Resources Code Section 21099(b)(1).)

Vehicle Miles Traveled (VMT) is one of the alternative metrics supported. VMT measures a project's overall impact on travel demand, rather than congestion measures such as intersection delay. Projects that offer the potential to decrease VMT by providing access to transit or by altering networks and land uses in ways that decrease trip distances will automatically be considered to have a "less than significant" impact under CEQA. Projects that have the potential to increase VMT score less favorably, but the negative effect can be offset by mitigation strategies such as improving pedestrian and bike facilities, funding transit service, or improving overall access to multimodal transportation options. All of these mitigation options help to support other state environmental and public health goals.

In highly urbanized areas, new development is less likely to impact transportation, which could result in the loss of potential impact fees. Local governments can compensate for this loss by revising the purpose and application of transportation impact fees, including funding multimodal improvements. Local governments will have to update several types of plans and

SENATE BILL NO. 743, ENVIRONMENTAL QUALITY

CONTINUED

Key Elements (continued)

policies in order to apply VMT to CEQA analyses, including general plans, climate action plans, VMT thresholds, and transportation plans.

The California Office of Planning and Research (OPR) released a draft proposal for implementing SB 743 on January 20, 2016, with the intention of publishing a final rule by early 2017. In the meantime, a few local governments have begun to move forward with applying the new metrics to their plans and projects. For example, San Francisco began using the VMT threshold for all CEQA environmental determinations as of March 2016.

Data

Location	State of California
Population	37.25 million (2010 Census)
Area	163,696 sq mi

Density	251.30 residents/sq mi
Geography	Western U.S.
Climate	Mediterranean, continental, and semi-arid

Similar Case Studies

Name and Year	Location	Agency	Page
Pedestrian and Bicycle Level of Service (LOS), 2007	Charlotte, NC	City of Charlotte	A-46
Multimodal Level of Service (MMLOS), 2009	Jacksonville, FL	City of Jacksonville, Florida Department of Transportation (FDOT)	A-10

More information

- California Legislative Information. Full-text of Senate Bill No. 743: http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB743
- "Revised Proposal on Updates to the CEQA Guidelines on Evaluating Transportation Impacts in CEQA": https://www.opr.ca.gov/docs/Revised_VMT_CEQA_Guidelines_Proposal_January_20_2016.pdf
- SB 743 Implementation: https://www.sandiego.gov/sites/default/files/pc-mobility-workshop-part2.pdf
- "California Has Officially Ditched Car-Centric 'Level of Service'," Streetsblog LA: http://la.streetsblog.org/2014/08/07/california-has-officially-ditched-car-centric-level-of-service/

CASE STUDY 6

ADULT BICYCLE SAFETY PROGRAM

Huntington Beach, CA

IMAGE SOURCE: LA.STREETSBLOG.ORG

- Define Success
- ✓ **Protect Nonmotorized Travelers**
- Promote Supportive Development
- Design the Network
- Make It Last
- Pay for It

Project Partners

- Huntington Beach Police Department
- The Superior Court of California: County of Orange

Key Elements

On May 20, 2011, an Adult Bicycle Safety Program was instituted in Huntington Beach to provide a traffic school alternative for bicyclists caught breaking traffic rules rather than having offenders go to court or pay high fines. Because state law treats drivers and bicyclists the same when they break the law, each could both receive a $233 fine for not stopping at a stop sign. Under the new program, the offending bicyclist could opt to enroll in the two hour long Adult Bicycle Safety Program for $50 (to cover costs of the class) instead.

This program was created after a study conducted in Huntington Beach between 2008 and 2010 showed bicyclists to be at fault in two-thirds of traffic crashes between bicyclists and motor vehicles. Rather than simply fining people, the program provides a way of educating bicyclists to increase safety. The Huntington Beach Police Department has praised the program as providing a solution that is more likely to change bicyclist behaviors than ticketing alone.

Since the 1970s, Huntington Beach Police Department had been using an educational diversion program for minors caught breaking traffic laws. Parents of the children had to attend these meetings, so it was not difficult for the City to extend services to adults as well. Facilities and educators were already in place. The City posted messages on the city website and on Facebook to educate the city about the change.

Cooperation between the police department and the court system is an important factor in successful implementation of a diversion program. In Huntington Beach's case, officers would still issue regular citations to offending bicyclists and so it would be up to the courts to ensure those cited are informed of the diversion program option rather than pay.

While the Huntington Beach program was immediately popular among police and residents, it did not initially conform to California State Vehicle Code. The Huntington Beach program had to be shut due to restrictions on diversion

ADULT BICYCLE SAFETY PROGRAM

CONTINUED

Key Elements (continued)

programs in the code. A state amendment to address the vehicle code issue was passed on September 21, 2015, to allow Adult Bicycle Safety Programs to be used as diversion programs by any jurisdiction in California who choose to institute them.

Huntington Beach resumed its original program in early 2016. There is not yet data available regarding the impact of the program, but both residents and the Police Department support the program.

Data

Location	Huntington Beach, CA
Population	189,992 (2010 Census)
Area	31.90 sq mi

Density	6,000 residents/sq mi
Geography	Western U.S.
Climate	Semi-arid, Mediterranean

Similar Case Studies

Name and Year	Location	Agency	Page
"Stop and Stay Stopped" Crosswalk Law, 2010	New Jersey	New Jersey Division of Highway Traffic Safety	A-18

More information

- "City Debuts Traffic School for Bike Violations," Los Angeles Times: http://www.latimes.com/tn-hbi-0602-biking-20110601-story.html
- "Huntington Beach Offers Traffic School for Bicycle Lawbreakers," Los Angeles Times: http://articles.latimes.com/2011/jun/03/local/la-me-0603-bike-etiquette-20110603
- "California Assembly: Bill Would Allow "Traffic School for Bicycle Violations," Streetsblog Chicago: http://la.streetsblog.org/2015/03/30/bill-would-allow-traffic-school-for-bicycle-violations/
- Huntington Beach Ticket Diversion Program: http://gohumansocal.org/Documents/Tools/CaseStudy_HuntingtonBeach.pdf

CASE STUDY 7

CROSSWALK SAFETY POLICIES

Boulder, CO

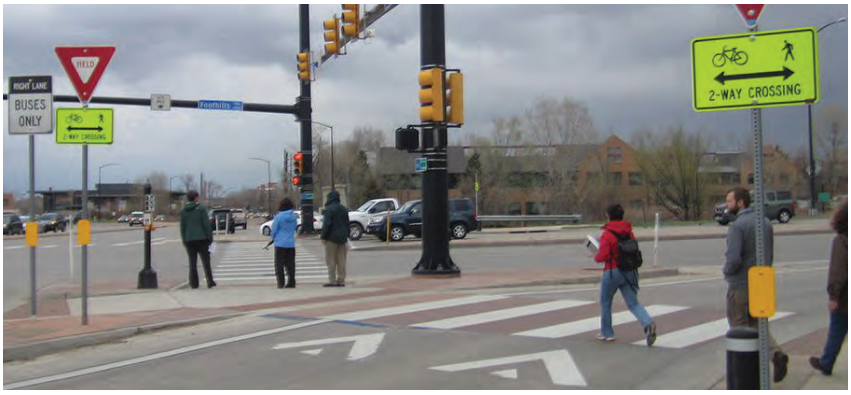

IMAGE SOURCE: NACTO.ORG

- Define Success
- ✓ **Protect Nonmotorized Travelers**
- Promote Supportive Development
- Design the Network
- Make It Last
- Pay for It

Project Partners

- City of Boulder Transportation Division
- City of Boulder Police Department
- University of Colorado Boulder

Key Elements

In 2012, Boulder passed three new traffic ordinances aimed at pedestrian safety. These laws were passed in response to a comprehensive 3-year traffic collision study (2012 *Safe Streets Boulder Report*) completed by the City of Boulder Transportation Division. Based on the collision data, the City determined that intersections were the most dangerous areas for automobiles, while crosswalks were the most dangerous for pedestrians and bicyclists. To better protect nonmotorized travelers, the City enacted three new laws:

- **Stop at crosswalk required**: When one vehicle stops for a person in a crosswalk, another vehicle cannot overtake and pass that vehicle ($125 fine for violation).
- **8 mph speed limit**: Speed limit established for bicyclists during the immediate approach, entry and traversal of any crosswalk ($50 fine for violation).
- **Pedestrians obey traffic signals**: A person entering a flashing crosswalk must activate the warning signal ($50 fine for violation).

The City of Boulder complemented the policy changes with education and enforcement campaigns, including a well-publicized, planned week during which police would ramp up efforts to ticket violators. During this week, officers focused on the fifteen most dangerous intersections identified in the *Safe Streets Report*. The report is now updated regularly, followed by repeated enforcement campaigns during which law enforcement rolls out patrols specifically targeting the city's most dangerous intersections for pedestrian/motorist interaction.

Recently, the City of Boulder approved a *Vision Zero* program that emphasizes education and enforcement to support these relatively new laws. In 2015, the City created a campaign called *Heads Up Boulder* that sponsors collaborative events such as week-long programs during which officers and volunteers hand out education material, coupons, and small gifts to reinforce the campaign's safety messages.

During the three years following the program's 2012 onset, crashes involving bicycles declined

Key Elements (continued)

slightly while crashes involving pedestrians remained about the same. Over those same three years, there was only one fatality involving a pedestrian or bicyclist, compared to an average of two fatalities per year previously.

Consistently evaluating traffic data over many years is an important tool for cities to use to create safety programs and eventually demonstrate their successes. A majority of pedestrian and bicycle crashes occur at crosswalks so cities should focus on those areas for improving safety. At the same time, automobile only crashes make up the vast majority of crashes, so enforcement of laws directed at pedestrian and bicyclist safety takes additional effort and funding prioritization.

Data

Location	Boulder, CO
Population	97,385 (2010 Census)
Area	24.7 sq mi

Density	3,943 residents/sq mi
Geography	Western U.S.
Climate	Semi-arid

Similar Case Studies

Name and Year	Location	Agency	Page
Bicycle and Pedestrian Safety Ordinance, 2013	Chicago, IL	City of Chicago	A-20

More Information

- City of Boulder, Safe Streets Boulder: https://bouldercolorado.gov/transportation/safe-streets-boulder
- "Boulder study sheds light on bicycle, pedestrian accidents," Heath Urie, Boulder Daily Camera, February 4, 2012: http://www.dailycamera.com/ci_19895363?source=pkg
- "Boulder steps up crosswalk enforcement to ensure awareness of new laws," Jennifer Kleinman, Boulder Daily Camera, April 6, 2012: http://www.dailycamera.com/ci_20343982/boulder-steps-up-crosswalk-enforcement-ensure-awareness-new

CASE STUDY 8

"STOP AND STAY STOPPED" CROSSWALK LAW

State of New Jersey

IMAGE SOURCE: NJSAFEROADS.COM

- Define Success
- ✓ **Protect Nonmotorized Travelers**
- Promote Supportive Development
- Design the Network
- Make It Last
- Pay for It

Project Partners

- New Jersey Division of Highway Traffic Safety
- North Jersey Transportation Planning Authority

Key Elements

New Jersey's "Stop and Stay Stopped" law (April 1, 2010) requires that "the driver of a vehicle must stop and stay stopped for a pedestrian crossing the roadway within any marked crosswalk, but shall yield the right-of-way to a pedestrian crossing the roadway within an unmarked crosswalk at an intersection…" Prior to this legislative change, motorists were simply required to yield to pedestrians in the crosswalk. Motorists who violate the law are subject to a $200 fine, court costs, two points on their driver's license, 15 days of community service, and insurance surcharges.

Pedestrians are required by the law to obey pedestrian signals and use crosswalks at signalized intersections and to yield to traffic if they are not crossing within a crosswalk or at an intersection. Pedestrians who violate the law are subject to a $54 fine, plus court costs.

Half of the motorist fine ($100) goes into the Pedestrian Safety, Enforcement and Education Fund, a revolving fund administered by the Office of Highway Traffic Safety. Municipalities and counties may apply for grants for pedestrian safety initiatives.

To educate motorists about the law change, the Division of Traffic Safety developed an oversized palm card, similar in size to a traffic ticket that outlines the law and penalties for failing to comply. The card was distributed to all police departments in the state, and made available to high school driver education teachers and defensive driving program providers.

A pedestrian decoy safety program called "Cops in Crosswalks" was implemented in thirteen municipalities. Law enforcement officers in plainclothes walked in crosswalks and observed behavior of drivers, pedestrians, and bicyclists at selected locations. Observing officers noted violations and called ahead to waiting officers who would stop and warn or ticket all offenders, regardless of mode. Because the intent of the program was to educate and improve behavior, initially, enforcement officers provided the education palm card to educate drivers and pedestrians about the changes to the crosswalk law and issued citations only when another violation also occurred. However, they began to enforce the law more strictly over time.

"STOP AND STAY STOPPED" CROSSWALK LAW"
CONTINUED

Key Elements (continued)

Cops in Crosswalks was also part of Street Smart NJ, a public education, awareness, and behavioral change campaign that piloted in 2013 in four cities (Newark, Hackettstown, Jersey City, Woodbridge). Street Smart NJ is managed by the North Jersey Transportation Planning Authority, and funded through the Highway Safety Improvement Program (HSIP) and Pedestrian Safety Education and Enforcement Fund.

Five pilot locations were chosen for the first year of the campaign. Locations represented a mix of varying roadway characteristics and pedestrian and motor vehicle traffic volumes. The pilot locations also represented varying land uses: Woodridge (suburban), Jersey City and Newark (urban), Hackettstown (rural), and Long Beach Island (shore).

During the first year of the program, New Jersey saw a 19 percent decrease in pedestrian fatalities between 2009 and 2010, exceeding the state goal of 1 percent. A 2013 pre- and post-program evaluation of Street Smart NJ shows that overall, the campaign was successful in changing pedestrian and motorist behaviors and raising awareness of pedestrian safety messages. Observational analysis showed a statistically significant reduction in the rate of pedestrians walking outside of a marked crosswalk or unmarked crosswalk (intersection) and crossing against the pedestrian signal in two of the five pilot areas: Woodbridge (26 percent decrease) and Jersey City (8 percent decrease). Statewide, pre- and post-program surveys showed an 18 percent increase in awareness of the campaign and/or pedestrian safety, and a 10 percent increase in awareness of educational and enforcement initiatives.

Data

Location	State of New Jersey
Population	8,791,894 (2010 Census)
Area	8,722.58 sq mi
Density	1,210.1 residents/sq mi
Geography	Eastern U.S.
Climate	Humid subtropical and humid continental

Similar Case Studies

Name and Year	Location	Agency	Page
Adult Bicycle Safety Program, 2011	Huntington Beach, CA	Huntington Beach Police Department	A-14

More information

- State of New Jersey Office of the Attorney General Division of Highway Traffic Safety: Pedestrian safety laws modified April 2010: http://www.nj.gov/oag/hts/pedestrian.html
- Pedestrian and Bicycle Information Center: 'Cops in Crosswalks': Pedestrian Decoy Enforcement in New Jersey: http://www.pedbikeinfo.org/data/library/details.cfm?id=4649
- "Motorists Must Stop—and Stay Stopped—for Pedestrians in Crosswalks," State of New Jersey Office of the Attorney General Division of Highway Traffic Safety: http://www.nj.gov/oag/newsreleases10/pr20100331a.html
- Street Smart NJ Report and Campaign Results: http://www.njtpa.org/getmedia/2dc31a68-d1ce-43f2-bfbf-88ee096ca5a3/Final-Street-Smart-NJ-Report.pdf.aspx

CASE STUDY 9

BICYCLE AND PEDESTRIAN SAFETY ORDINANCE

Chicago, IL

IMAGE SOURCE: ALTA PLANNING + DESIGN

- Define Success
- ✓ **Protect Nonmotorized Travelers**
- Promote Supportive Development
- Design the Network
- Make It Last
- Pay for It

Project Partners

- Chicago Department of Transportation
- Streets for Cycling Community Advisory Groups (CAGs)
- Mayor's Bicycle Advisory Council (MBAC)

Key Elements

In 2013, the City of Chicago updated its Municipal Code to include a Bicycle and Pedestrian Safety Ordinance. The Ordinance updates the traffic code to comply with state laws, increases reckless driving fines, and helps to prevent "dooring" crashes that occur when bicyclists cannot safely avoid a door opening from a parked car.

Among other changes, updated elements include:

- Dooring that interferes with a bicycle carries a mandatory fine of $300, causing a collision would result in a mandatory fine of $1,000. Previously, the ordinance included lower fines.
- Language was added to clarify the rules about driving, standing, or parking in bike lanes, and to define rights of way between buses and bicyclists.
- Fines are increased for bicyclists who violate the Chicago Municipal Code.
- Language related to bicycle riding on sidewalks is updated.
- Bicycle lane placement and yielding right-of-way language is updated to elaborate the meaning of riding as "near as is practicable AND safe to the right side" as a bicycle user.

Chicago joined the Vision Zero Network in 2016, which may lead to additional policy items regarding active transportation promotion and safety.

Although bicycle crash data exists since 2013, the short time frame and lack of exposure data limits an immediate assessment of the ordinance changes' impacts. However, the State of Illinois maintains a crash data file. Chicagocrashes.org, routinely publishes crash data to the public via an online, interactive map as it becomes available. The City continues to collect bicycle and pedestrian data to understand roadway users' exposure data over time.

BICYCLE AND PEDESTRIAN SAFETY ORDINANCE

CONTINUED

Data

Location	Chicago, IL
Population	2.72 million (2014 Census)
Area	227.80 sq mi

Density	11,952.60 residents/sq mi
Geography	Central U.S.
Climate	Humid continental

Similar Case Studies

Name and Year	Location	Agency	Page
Equity Analysis within a Bicycle Master Plan, 2014	Seattle, WA	Seattle Department of Transportation (SDOT)	A-4
Healthy Design Ordinance, 2013	Los Angeles County, CA	Los Angeles County Department of Public Health	A-44

More information

- Chicago Complete Streets: http://chicagocompletestreets.org/
- Chicago Complete Streets: Enforcement: http://chicagocompletestreets.org/your-safety/enforcement-laws/

CASE STUDY 10

BICYCLE PARKING IN GARAGES AND PARKING LOTS

New York, NY

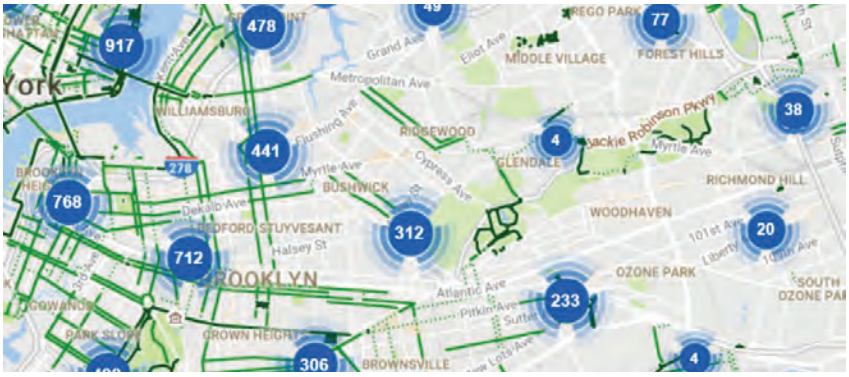

IMAGE SOURCE: NYDOT, MAP DATA (C) 2016 GOOGLE

Project Partners

- NYC Department of Transportation
- New York City Council

Define Success

Protect Nonmotorized Travelers

✓ **Promote Supportive Development**

Design the Network

Make It Last

Pay for It

Key Elements

With an increasing rate of bicycle commuting, investments in bicycle facilities throughout the city, adverse weather conditions, and issues with bicycle theft, secure indoor bicycle parking spaces are needed to maintain bicycling as viable transportation alternative for New Yorkers. The Bicycle Access to Garages Law and the Bicycle Access to Buildings Law are two policy examples that address these potential barriers.

Local Law 51 (2009), Bicycle Access to Garages, requires all licensed parking lots or garages with capacity for 51 or more vehicles to create and maintain parking spaces for bicycles. For every ten vehicle parking spaces, at least one bicycle parking space is required, up to 200 motor vehicle parking spaces. After this mark, one bicycle parking space is required for every additional 100 automobile parking spaces.

The law requires bicycle storage units to accommodate a volume of at least 2 by 3 by 6 feet in volume for each bicycle. Parking garages that permit car owners to access their vehicles must also provide such access to bicycle owners. Local Law 51 requires operators to provide secure and locked parking for all bicycles, unless the spaces are located in an area not accessible to the public. The law has created over 16,000 secure parking spaces as of 2011. New York has since amended the law to increase flexibility in how the spaces are designed and provided.

There is no regulation on the amount parking garage operators can charge for bicycle parking. With some parking garages charging prices nearly equal amounts for bicycle and vehicle parking spaces, the benefits and incentives for bicycling may be diminished.

The City's Bikes in Buildings law was created to provide a process for tenants of commercial office buildings with a freight elevator to request bicycle access to their work spaces. Additionally, access to three indoor bicycle parking lots is provided for free to all City employees. Five months after the law took effect, 176 buildings across Manhattan and Brooklyn had created bicycle access plans. An additional 300 tenants filed requests within this period. During the same time frame, the City Council estimated that over 1,700 bicycle commuters gained end-of-trip storage for the work commute.

BICYCLE PARKING IN GARAGES AND PARKING LOTS

CONTINUED

Data

Location	New York, NY
Population	8.17 million (2010 Census)
Area	304.80 sq mi

Density	28,052.50 residents/sq mi
Geography	Eastern U.S.
Climate	Warm temperate

Similar Case Studies

Name and Year	Location	Agency	Page
Model Ordinances for the Enhancement of Bicycle and Pedestrian Access to Transportation Facilities, 2014	Maryland	Maryland Department of Transportation	A-32

More information

- New York City Bicycle Parking Information: http://www.nyc.gov/html/dot/html/bicyclists/bicycleparking.shtml#indoor
- "For a Reasonable Price on Bike Parking, Try Brooklyn," Streetsblog NYC: http://www.streetsblog.org/2010/07/01/for-a-reasonable-price-on-bike-parking-try-brooklyn/
- Five Months On, Bike Access to Buildings Law Showing Results," Streetsblog NYC: http://www.streetsblog.org/2010/05/20/five-months-on-bike-access-to-buildings-law-showing-results/

CASE STUDY 11
DOWNTOWN DESIGN STANDARDS AND GUIDELINES
Boise, ID

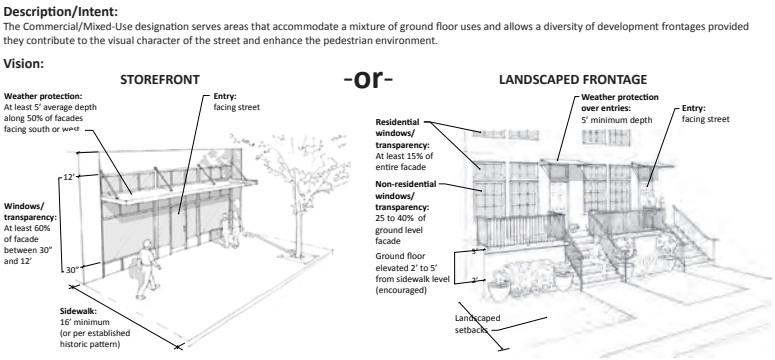

IMAGE SOURCE: BOISE DOWNTOWN DESIGN STANDARDS AND GUIDELINES

- Define Success
- Protect Nonmotorized Travelers
- ✓ **Promote Supportive Development**
- Design the Network
- Make It Last
- Pay for It

Project Partners

- City of Boise
- Capital City Development Corporation

Key Elements

The City of Boise created design standards and guidelines for its downtown that encourage high-quality urban design and promote compact, walkable development patterns. Site design standards are provided that promote a pedestrian-oriented environment, including standards for nonmotorized circulation and connections. A detailed *Downtown Streetscape Standards and Specifications Manual* lays out the streetscape improvement requirements for new development. Specific requirements include specifications for sidewalk width and material, landscaping, green stormwater infrastructure, street lighting, and pedestrian furniture including bike racks, bike corrals, benches, and litter receptacles.

All new nonresidential and multifamily development proposals, building additions, and remodels in the Downtown Planning Area must comply with the design standards and guidelines related to building location and orientation, internal circulation, site design elements, and building design. Projects must also comply with the streetscape standards and specifications.

The downtown design standards followed the completion of *Blueprint Boise*, the city's comprehensive plan in coordination with a citywide land use code update. Features include:

- Integration of form-based code elements, including block frontage standards and maps covering downtown
- Downtown provisions including distinct building character, materials, details, and massing standards and guidelines to enhance the skyline, identity, and downtown livability
- Design approach for infill in historic areas
- A design review approach that emphasizes design objectives, clear minimum standards, a toolbox of options, and departure provisions that allow for flexibility

The streetscape standards are being implemented gradually, as the City relies upon on private property owners to update piece of the street network during redevelopment projects. The City has streamlined the streetscape review and approval processes, but costs to property owners are still a deterrent to a faster, more comprehensive implementation of the overall vision.

DOWNTOWN DESIGN STANDARDS AND GUIDELINES
CONTINUED

Data

Location	Downtown Boise, ID
Population	205,671; downtown: 6,364 (2010 Census)
Area	80.5 sq mi

Density	3,978 residents/sq mi
Geography	Western U.S.
Climate	Temperate

Similar Case Studies

Name and Year	Location	Agency	Page
Multimodal Development and Parking Minimum Elimination, 1999	Fargo, ND	City of Fargo	A-34
Design Standards Ordinance and Healthy Eating and Active Living, 2006 to 2010	Hernando, MS	City of Hernando	A-6
Complete Streets Design Guidelines, 2013	Chicago, IL	Chicago Department of Transportation (CDOT)	A-40

More information

- Boise Downtown Design Standards and Guidelines: http://pds.cityofboise.org/media/215767/downtown-design-guidelines-revised-6-23-16.pdf

CASE STUDY 12

ELIMINATING PARKING MINIMUMS IN TRANSIT-FRIENDLY AREAS

Seattle, WA

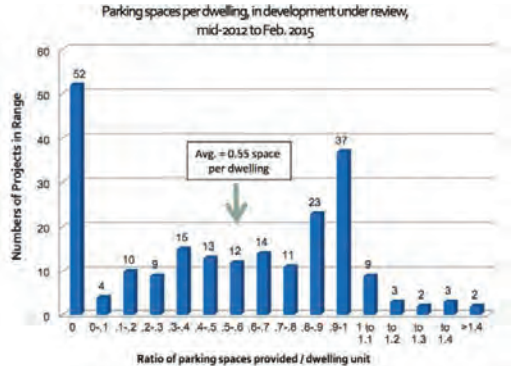

IMAGE SOURCE: SEATTLE.GOV/DPD

- Define Success
- Protect Nonmotorized Travelers
- ✓ **Promote Supportive Development**
- Design the Network
- Make It Last
- Pay for It

Project Partners

- Seattle Department of Planning and Development
- Seattle Department of Transportation

Key Elements

In early 2012, the City of Seattle's Department of Planning and Development (DPD) eliminated motor vehicle parking requirements for all new development within a 1/4 mile of frequent transit service including Seattle's urban centers, light rail station areas, and most of its Urban Villages.

Frequent transit service is defined as at least 15-minute service for at least 12 hours per day and at least 30-minute service 18 hours per day. DPD determined that requiring developers to provide parking in places that are well-served by transit is inconsistent with single-occupant vehicle (SOV) trip reduction goals set by the City. The policy enabled developers to spend less money on constructing parking spaces (saving $10,000 to as much as $50,000 per space), and provided opportunities for them to add elements that made their sites more accessible to transit, bicycling, and walking options.

A DPD assessment of development projects over the three years prior to 2015 indicated nearly 25 percent of residential developments were built with no off-street parking, while nine percent provided more than one space per unit.

Total average spaces provided for residential developments during this three-year period was 0.55 spaces per unit, which was less than the levels reported in previous years.

After a program review conducted by DPD in 2015, the policy was found to be successful and that the elimination of parking minimums would remain. DPD used several guiding principles when considering whether to recommend the program's continuation. These principles are consistent with other City policies. Guiding principles related to the program's success are paraphrased from the DPD report as follows: encouraging residential and employment growth within Urban Centers and Villages, retaining and enhancing Seattle neighborhoods' walkable and livable urban qualities, prioritizing housing affordability, ensuring the consideration of racial and socio-economic equity, ensuring integrated and accessible transportation options, managing on- and off-street parking more efficiently, achieving better quality bicycle storage facilities, aiding availability of bicycling options, achieving local and regional environmental objectives.

ELIMINATING PARKING MINIMUMS IN TRANSIT-FRIENDLY AREAS

CONTINUED

Key Elements (continued)

To increase the policy's effectiveness, the DPD study recommended that developers provide transportation demand management measures to lessen the potential impact on parking demand. Programs could include providing transit passes to residents and providing other mobility options such as on site car share services.

In addition, the DPD proposed updating the City's parking codes to allow more flexibility with shared parking spaces. By cutting the red tape involved in code compliance, Seattle could increase the influence of the parking reduction program.

Data

Location	Seattle, WA
Population	608,660 (2010 Census)
Area	142.5 sq mi

Density	8,161 residents/sq mi
Geography	Western U.S.
Climate	Temperate marine

Similar Case Studies

Name and Year	Location	Agency	Page
Multimodal Development and Parking Minimum Elimination, 1999	Fargo, ND	City of Fargo	A-34

More information

- City of Seattle Parking Review: Report to Council plus Committee: http://www.seattle.gov/dpd/cityplanning/2015parkingreport.pdf
- "Seattle to Buildings: Give Tenants Transit Passes, Not Parking Spots," City Lab from the Atlantic: http://www.citylab.com/cityfixer/2015/05/seattle-to-buildings-give-tenants-transit-passes-not-parking-spots/392756/
- "The Flexibility at the Local Level," Seattle Met: http://www.seattlemet.com/articles/2012/2/29/the-flexibility-at-the-local-level

CASE STUDY 13

FORM-BASED CODE

Cincinnati, OH

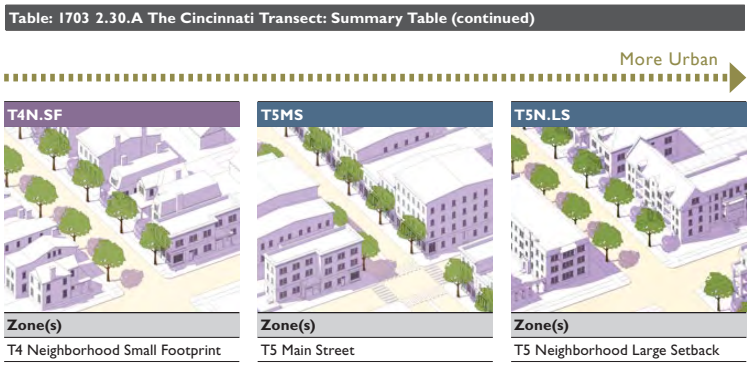

IMAGE SOURCE: CINCINNATI FORM BASED CODE

- Define Success
- Protect Nonmotorized Travelers
- ✓ **Promote Supportive Development**
- Design the Network
- Make It Last
- Pay for It

Project Partners

- Cincinnati City Planning Department
- Consultant: Opticos Design, Inc.

Key Elements

The City of Cincinnati adopted a form-based code in 2013 based on the vision laid out in *Plan Cincinnati*, its 2012 comprehensive plan. Form-based codes set requirements based on the physical form of buildings rather than usage. The form-based code works to reinforce a pattern of walkable urban neighborhoods by supporting existing walkable neighborhoods and providing a tool to retrofit those that are not walkable or have been compromised. The code also provides context-sensitive design guidance for thoroughfares that connect walkable urban neighborhoods.

One of the major contributions of the code is the walkable neighborhood standards that span a spectrum of transects (geographical cross sections of distinct natural and built environments) and that specify allocation of transect zones, pedestrian sheds, neighborhood centers, thoroughfare connectivity, open space, and civic space standards.

In parallel, the City developed a *Complete Streets Manual* that takes a context driven approach to designing and planning thoroughfares. The Manual designates places as a starting point for thoroughfare design. It uses the rural-to-urban transect zones as the organizing principal that further define how the intensity and character of the built environment influences decisions related to street design.

The *Complete Streets Manual* is intended to help revitalize formerly walkable areas that have been compromised by automobile-centric thoroughfare design. Developing high quality, multimodal thoroughfares will help improve the quality, character, and economic viability of these neighborhoods, and in particular their main streets.

The form-based code allowed neighborhoods to opt in through a neighborhood planning process. This allows for a community-informed approach to designing the code, but has also slowed implementation. The process of customizing the code for each neighborhood has also been hampered by changes in City staff and leadership that reduced the resources available to complete the required neighborhood planning efforts. As of 2016, only four neighborhoods in Cincinnati had adopted the new code.

FORM-BASED CODE
CONTINUED

Data

Location	Cincinnati, OH
Population	296,943 (2010 Census)
Area	79.54 sq mi

Density	3,810 residents/sq mi
Geography	Midwestern U.S.
Climate	Temperate

Similar Case Studies

Name and Year	Location	Agency	Page
Form-Based Code, 2010	Miami, FL	City of Miami Planning and Zoning Department	A-30

More information

- City of Cincinnati Form-based Code: http://www.cincinnati-oh.gov/planning/assets/File/CFBC%20Full%20Document%20Amended%202-10-14.pdf

CASE STUDY 14

FORM-BASED CODE

Miami, FL

IMAGE SOURCE: PLUSURBIA.COM

- Define Success
- Protect Nonmotorized Travelers
- ✓ **Promote Supportive Development**
- Design the Network
- Make It Last
- Pay for It

Project Partners

- City of Miami
- Planning Advisory Board
- City of Miami Planning Commission

Miami 21, the City of Miami's form-based code (FBC), went into effect in May 2010, making Miami the nation's first large city to adopt this type of zoning policy. Form-based codes set requirements based on the physical form of buildings rather than usage. The City of Miami received the American Planning Association 2011 National Planning Excellence Award for Best Practice.

During the ten years prior to adopting Miami 21, the city had experienced rapid growth. City leaders were concerned about issues such as sprawl, automobile-dependency, and a lack of compact, mixed-use communities. The new zoning code focused on context-sensitive development, walkable streets, and sustainable building practices. Miami 21 created a holistic tool for the City of Miami to manage zoning, economic development, transportation, historic preservation, parks, and open space.

Miami's form-based code is built upon dividing the city into transects, a term used in environmental sciences to describe geographical cross sections that have distinct natural environments. Various features are regulated within each transect zone, including:

- **Function and intensity**: the level to which various types of uses are permitted throughout the area and within the buildings of each district.
- **Parking standards:** Required minimum or maximum parking spaces per unit.
- **Integration of private and public realms**: standards regarding elements such as pedestrian orientation, landscape standards, parking liners, and building frontages.
- **Succession**: design treatments that ensure sequential, smooth transitions between each transect zone.

Calle Ocho, a major commercial corridor in Miami, provides an example of the form-based code in action. Miami 21 requires active ground floor uses with regularly spaced doors and windows in order to activate streets and create interesting places to walk. The former code lacked design criteria, which resulted in blank walls along many of Miami's main corridors. The picture at the top of this page shows the transit, pedestrian, and bicycle potential of a Calle Ocho redesign.

FORM-BASED CODE
CONTINUED

Key Elements (continued)

Unlike other cities, such as Cincinnati and Nashville, that have adopted form-based codes neighborhood by neighborhood, Miami's new zoning code applies to the entire city. The two main reasons for this decision were the city's status as a regional municipality and to avoid the lengthy amount of time that would have been required to approve individual neighborhood codes.

Though the development of Miami 21 involved extensive planning and stakeholder and public engagement, the final adoption was stalled in 2009 during the transition to a new mayor and two newly elected commissioners, all of whom opposed the new code. Despite this opposition, additional public and elected official input led to the new code being adopted in May 2010. One key to achieving adoption was to build an understanding that Miami 21 is a living document that will be updated over time. The most recent amendment came in May 2015.

Data

Location	Miami, FL
Population	399,457 (2010 Census)
Area	35.68 sq mi

Density	11,135.90 residents/sq mi
Geography	Southeastern U.S.
Climate	Humid subtropical

Similar Case Studies

Name and Year	Location	Agency	Page
Form-Based Code, 2013	Cincinnati, OH	City of Cincinnati	A-28
Healthy Design Ordinance, 2013	Los Angeles County, CA	Los Angeles County	A-44

More information

- City of Miami project website: http://www.miami21.org/
- Form-based Code: Miami 21 Case Study by Duany-Plater-Zyberk & Co.: http://montgomeryplanningboard.org/planning_board_live/excellence_series/khoury.pdf
- "Miami 21 Implementation Delayed," South Florida Business Journal: http://www.miami21.org/Media_Headlines/BizJournal121809.pdf
- "Miami 21: The Blueprint for Miami's Future," Florida Chapter of the American Planning Association: http://www.miami21.org/Media_Headlines/FloridaPlanning-Jan2010.pdf

CASE STUDY 15

MODEL ORDINANCES FOR THE ENHANCEMENT OF BICYCLE AND PEDESTRIAN ACCESS TO TRANSPORTATION FACILITIES

State of Maryland

IMAGE SOURCE: BALTIMOREMAGAZINE.NET

- Define Success
- Protect Nonmotorized Travelers
- ✓ **Promote Supportive Development**
- Design the Network
- Make It Last
- Pay for It

Project Partners

- Maryland Department of Transportation (MDOT)
- Various State departments contributing to land use management powers
- Maryland communities

Key Elements

In 2002, MDOT developed a technical memorandum of model ordinances that require or encourage local development of bicycle and pedestrian facilities. The memo did not provide an exhaustive list of design treatments, but rather illustrated ways in which local land use regulations can encourage development proposals to include bicycle and pedestrian access in site design. The land use regulations cited within the model ordinances are based around Maryland's smart growth program, which is focused on developing mixed-use, pedestrian-scaled environments.

The model ordinance guide presents a bulleted list of broad guidelines to help municipalities to revise and update regulations that provide for more robust bicycle- and pedestrian-supportive developments. Key guidelines include:

- "Provide for higher density residential development and mixed-use zones to create new village centers and foster neighborhoods"
- "Discourage gated access and perimeter walls around subdivisions"
- "Require that sidewalks and bicycle lanes or paths be incorporated into new residential and commercial subdivisions."

Zoning guidelines make up the majority of the examples in the document. MDOT encourages localities to cross-reference bicycle and pedestrian plans and policies as well as other planning or community development documents, in order to ensure consistency among community policies and programs.

The guide includes an "Other Considerations and Issues" section with planning and regulatory considerations. Several of the challenges relate to conditions such as the separation of existing land uses and the different demand for bicycle facilities in rural, suburban, and urban areas.

MODEL ORDINANCES FOR THE ENHANCEMENT OF BICYCLE AND PEDESTRIAN ACCESS TO TRANSPORTATION FACILITIES

CONTINUED

Data

Location	State of Maryland
Population	5,773,552 (2010 Census)
Area	12,407 sq mi

Density	465.35 residents/sq mi
Geography	Eastern U.S.
Climate	Humid subtropical

Similar Case Studies

Name and Year	Location	Agency	Page
Multimodal Development and Parking Minimum Elimination, 1999	Fargo, ND	City of Fargo	A-34
Bicycle Parking in Garages and Parking Lots, 2009	New York, NY	New York City	A-22

More information

- Model Ordinances for the Enhancement of Bicycle and Pedestrian Access to Transportation Facilities: http://www.remlinedigital.com/M5144%20MDOT%20Bicycle%20and%20Pedestrian%20Master%20Plan/links/Model%20Ordinance%20Report.pdf

CASE STUDY 16

MULTIMODAL DEVELOPMENT AND PARKING MINIMUM ELIMINATION

Fargo, ND

IMAGE SOURCE: PBIC IMAGE LIBRARY/ DAN BURDEN

Define Success

✓ **Protect Nonmotorized Travelers**

✓ **Promote Supportive Development**

✓ **Design the Network**

Make It Last

Pay for It

Project Partners

- Fargo Renaissance Zone Authority
- City of Fargo Planning Department
- City of Moorhead, Minnesota
- North Dakota Division of Community Services (DCS)
- North Dakota State University (NDSU)
- Metro Area Transit (MATbus)

Key Elements

After the City of Fargo eliminated parking minimums from the city's downtown district, the region thrived with new development and multimodal investments. Fargo realized that parking requirements were discouraging developers from building downtown. Parking minimums were eliminated in a new zoning district for the downtown area, known as the Renaissance Zone. The City's Legislative Assembly approved the Renaissance Zone Development Plan in 1999. Updates were completed in 2001 and 2003.

Since the change, North Dakota State University (NDSU), home to over 4,000 students and faculty, moved downtown. Former surface parking lots were repurposed as housing, including new, mixed-use building, with 104 housing units. New development allowed Fargo's local bus service, Metro Area Transit (MATbus) to increase service along a circulator route between downtown Fargo and NDSU. Between 2004 and 2013, MATbus ridership increased from 700,000 riders to two million riders, with over 50 percent of riders in college. Other supporting elements included:

- Classifying a section of Broadway, a downtown street, as a Bicycle and Pedestrian Safety Zone and prioritizing bicycle and pedestrian investment in that corridor
- Developing a hierarchy downtown streetscape elements to "define pedestrian-friendly linkages among all districts, parks, landmarks, and neighborhoods" through the Downtown Fargo Redevelopment Framework Plan (2002).
- Launching a bike share program in March 2015.

In 1993, the assessed value within the Renaissance Zone was $190 million. Twenty years after the change to the parking code, a 2014 study quantified the value of new development at $600 million. The American Planning Association recognized the area as one of "10 Neighborhoods for 2009."

MULTIMODAL DEVELOPMENT AND PARKING MINIMUM ELIMINATION

CONTINUED

Key Elements (continued)

Successful elements of the policy changes include:

- Substantial increases in bus ridership has reduced the need for the City and University to mitigate increased traffic to and from the NDSU residential facility.
- Partnerships within the City of Fargo government, including the police department and maintenance district. The Renaissance Zone program was established through a Memorandum of Understanding with the North Dakota Division of Community Services and City of Fargo.
- Consideration of historic buildings, including the creation of a historic district. The district includes opportunities to use a variety of state and Federal funding sources for rehabilitation of certified historic structures, allowing the City to reuse existing buildings that conform to walkability guidelines instead of relying entirely on developers to construct new structures.
- A Storefront Rehabilitation program that has worked with 46 business owners and has totaled $1.2 million, with 50 percent matching grants originating from federal funding through the Community Development Block Grant program.
- Constructing a sidewalk-grade, shared-use path for bicyclists and pedestrians required changing a City ordinance that prohibited bicyclists from riding on sidewalks. State legislators later removed the ordinance from statewide legislation.
- New ordinances were added to the municipal code to enable outdoor dining and various uses for sidewalks including street performance space and sidewalk marketing.

Data

Location	Fargo, ND
Population	31,771 (2014 Census)
Area	14.44 sq mi

Density	1,789.9 residents/sq mi
Geography	Northern U.S.
Climate	Humid continental

Similar Case Studies

Name and Year	Location	Agency	Page
Transit-Oriented Development, 1960s to present	Arlington, VA	Arlington County	A-36

More information

- http://files.cityoffargo.com/content/b0fa4675ebc5ab19e7ef75e861c944615843edea/FINAL%202014%20RZ%20Plan_Approved%2012.8.14.pdf
- http://www.strongtowns.org/journal/2015/11/18/a-map-of-cities-that-got-rid-of-parking-minimums http://www.strongtowns.org/journal/2015/11/23/robust-growth-and-development-without-mandating-parking
- https://www.fhwa.dot.gov/livability/case_studies/guidebook/appendix/app08.cfm
- https://www.planning.org/greatplaces/neighborhoods/2009/downtownfargo.htm

CASE STUDY 17

TRANSIT-ORIENTED DEVELOPMENT

Arlington, VA

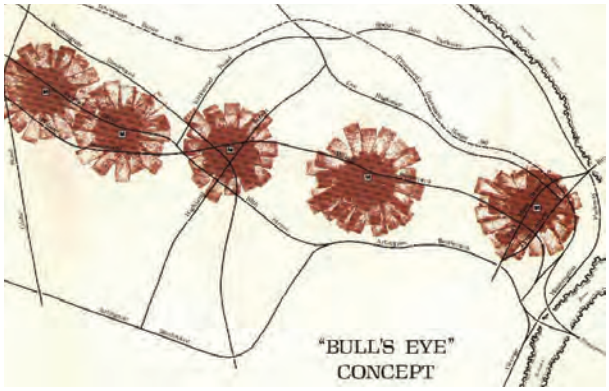

IMAGE SOURCE: ARLINGTON, VA

Define Success

Protect Nonmotorized Travelers

✓ **Promote Supportive Development**

✓ **Design the Network**

Make It Last

Pay for It

Project Partners

- National Capital Transportation Agency
- Washington, Metropolitan Transit Authority

Key Elements

Transit-oriented development (TOD) is a development approach that focuses land and densities around a transit station or within a transit corridor. Featuring a mix of uses, higher density development, bicycle and pedestrian connectivity, and reduced parking standards, a TOD can decrease driving trips, and increase walking and biking trips. When the Washington, D.C., metropolitan area was building a new regional rail system in the 1960s, Arlington County officials created the General Land Use Plan (GLUP) to focus development around the five new transit stations. They called this the "bulls-eye approach" with the center target as the densest part of the station area and less dense development on the outskirts. Each station had an Individual Sector Plan that guided streetscape standards, open space guidelines, and zoning. The corridor has thrived and has become known as the Rosslyn-Ballston Corridor.

The Metro line was originally planned to run above ground along the median of Interstate 66. County officials and planners recognized that highway stations would be less appealing to users, and pushed for the Metro stations to be located in more attractive locations. The early investment paid off.

Today, the corridor has 26 million square feet of retail and office space, 32,000 housing units, and 3,700 hotel rooms.[1] Forty-four percent of Arlington County's growth from 1990-2010 was within a quarter-mile radius of the Rosslyn-Ballston metro stations. Ninety percent of new development in the County has been located near a Metro station. As a result, 41 percent of residents within the Rosslyn-Ballston corridor commute to work by public transit,[2] and most (77 percent) of the riders on the five stations in the corridor access the station by walking.[3]

1 Arlington County, CPHD, Planning Division, Center for Urban Design and Research
2 American Community Survey 2006-2010 Tabulated by the Arlington County Department of Community Planning
3 WMATA May 2005 weekday Metrorail ridership and access data

TRANSIT ORIENTED DEVELOPMENT
CONTINUED

Key Elements (continued)

The County's chief motivation for developing the Rosslyn-Ballston corridor was to stimulate economic growth. As such, the increase in walking and biking generated by the TOD design was an additional benefit but not necessarily a planned one. After the initial phases of development, the TOD plans were successful from a development perspective but not always from a "place making" perspective of creating walkable, pedestrian scaled communities. To improve this element, the County then focused efforts on updating sector plans and urban design guidelines to improve the pedestrian environment of the station areas. The sector plan updates focused more on the built form than on density, yielding more attractive and functional pedestrian environments.

Data

Location	Arlington, VA
Population	207,627 (2010 Census)
Area	26 sq mi

Density	8,048 residents/sq mi
Geography	Southeastern U.S.
Climate	Humid subtropical

Similar Case Studies

Name and Year	Location	Agency	Page
None			

More information

- http://projects.arlingtonva.us/planning/smart-growth/rosslyn-ballston-corridor/
- http://www.fairfaxcounty.gov/dpz/tysonscorner/nofind/arlingdoc.pdf
- http://planitmetro.com/wp-content/uploads/2010/12/Metrorail-Bicycle-Pedestrian-Access-Improvements-Study-_Final.pdf
- http://ww2.cityofpasadena.net/councilagendas/2007%20agendas/Feb_26_07/Appendix_A_Case%20Studies%2012-1-2006%20DRAFT.PDF
- http://ccap.org/assets/CCAP-Booklet_USArlington.pdf
- http://www.fairfaxcounty.gov/mason/seven_corners_special_working_group/arlington_countys_40_years_of_smart_growth_presentation.pdf

CASE STUDY 18

BICYCLE AND PEDESTRIAN CHECKLIST

Pennsylvania Department of Transportation

IMAGE SOURCE: BICYCLECOALITION.ORG

- Define Success
- ✓ **Protect Nonmotorized Travelers**
- Promote Supportive Development
- ✓ **Design the Network**
- Make It Last
- Pay for It

Project Partners

- PennDOT Bureau of Highway Safety and Traffic Engineering
- PennDOT Bureau of Design

Key Elements

As part of its Smart Transportation policy, the Pennsylvania Department of Transportation (PennDOT) developed a Bicycle and Pedestrian Checklist to ensure bicycle and pedestrian accommodations are considered from the beginning stages of a project. In 2007, PennDOT mandated the evaluation of pedestrian and bicycle access and mobility for every highway and bridge project. The Checklist was created as an official part of PennDOT's project development process.

In the Planning and Programming phase, the checklist is divided into three sections for each stage of the development process: the planning, scoping, and design.

In the Planning and Programming phase, the checklist is used to ensure consistency with existing bicycle and pedestrian planning documents, to evaluate current and future usage by bicyclists and pedestrians, to consider safety needs, and to take into account community development and land-use patterns as well as the availability of transit. PennDOT suggests that the District Bicycle and Pedestrian Coordinator and the District Planning and Programming Manager complete this section of the checklist collaboratively.

In the Scoping phase, the checklist provides design specifications to determine what pedestrian and bicycle features will be necessary based on Planning and Programming findings and guides field-checking to note any site constraints. PennDOT suggests that the Project Manager complete this section, in coordination with the District Bicycle and Pedestrian Coordinator, the MPO/RPO, the project sponsor, and other agencies or organizations who participate in the field view.

In the Final Design phase, the checklist provides a "cookbook-style" matrix of various bicycle and pedestrian design elements to assist in creating project plans. This section applies throughout the Preliminary Engineering and the Final Design Engineering phases of a project. The Project Manager is responsible for the completion of this section.

BICYCLE AND PEDESTRIAN CHECKLIST
CONTINUED

Key Elements (continued)

Mandatory use of the checklist has had a positive impact. Bicycle and pedestrian accommodation needs are now identified early in the development process, and design solutions can be engineered from the beginning of a project. The checklist also enables PennDOT to include local communities and transportation users in the process, which helps the agency to build relationships and to better understand their needs. That said, the effectiveness of the Checklist can vary depending upon the relevant skills, knowledge, and interest of the DOT project managers responsible for applying it. Limited agency resources and oversight mean the thoroughness of the Checklist can go unchecked.

The checklist acts as a data-gathering tool, helping staff to pull together all of the necessary information early in the planning process so that proper design treatments can be applied to ensure the inclusion of bicycle and pedestrian facilities as well as full compliance with the Americans with Disabilities Act (ADA). When multimodal needs are considered early in the process, the costs are incorporated into PennDOT's project budget from the beginning and are not as much of an obstacle. However, if bicycle and pedestrian improvements are added to a project already in progress, the local municipality may be asked to contribute funding, which may present challenges.

Sidewalks can be another challenge. In Pennsylvania, responsibility for sidewalk maintenance is delegated to municipalities, so while PennDOT will build sidewalks if they are incorporated into the project design early in the process, the municipality must sign a maintenance agreement. Local political will and support for complete streets improvements may vary by municipality.

Data

Location	Commonwealth of Pennsylvania
Population	12,702,379 (2010 Census)
Area	46,055 sq mi

Density	284 residents/sq mi
Geography	Eastern U.S.
Climate	Humid continental

Similar Case Studies

Name and Year	Location	Agency	Page
None			

More information

- PennDOT Design Manual Part 10X: http://www.dot.state.pa.us/public/PubsForms/Publications/PUB%2010/Pub10X_Cover.pdf
- Complete Streets: Best Policy and Implementation Practices: http://www.smartgrowthamerica.org/documents/cs/resources/cs-bestpractices-chapter5.pdf

CASE STUDY 19

COMPLETE STREETS DESIGN GUIDELINES

Chicago, IL

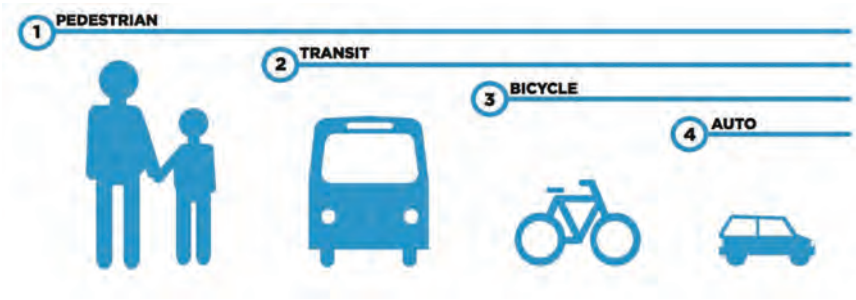

IMAGE SOURCE: PBIC IMAGE LIBRARY/ DAN BURDEN

✓ Define Success

Protect Nonmotorized Travelers

Promote Supportive Development

✓ Design the Network

Make It Last

Pay for It

Project Partners

- Chicago Department of Transportation

Key Elements

The Chicago *Complete Streets Design Guidelines* reframed the City's transportation planning, design, and engineering focus by prioritizing pedestrian needs.

The document provides four policy tools to help develop connected bicycle and pedestrian networks:

- Modal Hierarchy: "Transportation projects and programs will favor pedestrians first, then transit riders, cyclists, and automobiles" (figure above).
- Typology: Streets are classified by function and land use context. Intersections and crossings are included within these typologies, as are overlays such as the existing Historic Boulevard System.
- Design Values: The guide's design trees help City staff weigh street design options, street typology, and available right-of-way.
- Procedures: Internal project delivery processes identify the policies and procedures the department will use to reduce bicycle and pedestrian injuries by 50 percent by 2017 and to eliminate all traffic fatalities by 2022.

The recommendations are grounded in assessments of crashes, existing traffic volumes, vehicle speeds, intersection survey, community engagement, and direct observation.

The Chicago *Complete Streets Design Guidelines* are part of a suite of documents intended to implement the City's bicycle and pedestrian planning initiatives. Other documents within the series include *People Spots Design Guidelines* and *Sustainable Urban Infrastructure: Policies and Guidelines (Volume 1)*.

Data collection and analysis have proven important aspects of the agency's policy implementation. The agency began collecting quarterly pedestrian counts in high-crash locations after the legislation's adoption. The quarterly counts help estimate travel volumes near key intersections and help with prioritization of elements.

The guidelines call for the following performance measures to evaluate success over time:

COMPLETE STREETS DESIGN GUIDELINES
CONTINUED

Key Elements (continued)

- Eliminate all pedestrian, bicycle, and overall traffic crash fatalities within 10 years.
- Reduce pedestrian and bicycle crash injuries, each by 50 percent within 5 years.
- Reduce total roadway crashes and injuries from all roadway crashes, each by 10 percent every year.
- Increase the share of people bicycling, walking, and taking transit to work and working from home to 50 percent by 2040.
- Increase the share of all trips under five miles made by cycling to at least 5 percent.

The City is discussing how to better incorporate equity goals and strategies within the department's work. The *Complete Streets Design Guidelines* discuss the following in relation to the document's "pedestrian-first" policy: "This inversion of the dominant, auto-based paradigm will allow the city's transportation network to grow safely, sustainably, and equitably into the 21st Century." The City's advocacy groups, including Slow Roll Chicago, which focuses on the city's underserved neighborhoods and neighborhoods whose residents are predominately people of color, have helped expand this dialogue.

Data

Location	Chicago, IL
Population	2,722,407 (2014 Census)
Area	227.8 sq mi

Density	11,952.6 residents/sq mi
Geography	Midwestern U.S.
Climate	Humid continental

Similar Case Studies

Name and Year	Location	Agency	Page
Pedestrian and Bicycle LOS, 2007	Charlotte, NC	City of Charlotte	A-46
Bicycle and Pedestrian Checklist, 2007	Pennsylvania	Pennsylvania Department of Transportation	A-38
Downtown Urban Design Guidelines, 2016	Boulder, CO	City and County of Boulder	A-42

More information

- http://www.cityofchicago.org/content/dam/city/depts/cdot/Complete%20Streets/CompleteStreetsGuidelines.pdf
- http://www.citylab.com/commute/2013/04/chicago-commits-put-pedestrians-first-transportation-planning/5256/
- http://chi.streetsblog.org/2013/04/11/cdots-new-complete-streets-guidelines-put-people-first-not-cars/

CASE STUDY 20

DOWNTOWN URBAN DESIGN GUIDELINES

Boulder, CO

IMAGE SOURCE: CITY OF BOULDER

Define Success

✓ **Protect Nonmotorized Travelers**

Promote Supportive Development

✓ **Design the Network**

Make It Last

Pay for It

Project Partners

- City of Boulder
- Boulder Planning Board, Design Advisory Boards, Landmarks Board
- Downtown Management Commission

Key Elements

The City of Boulder updated its *Downtown Design Guidelines* in 2016 after a year-long outreach process. The City worked with members of the city's Planning Board, Design Advisory Board, Landmarks Board, Downtown Management Commission, and the community to produce a document that is easy to use but detailed enough to generate desired outcomes.

There are three sections of the guidelines: The Historic District, The Non-Historic & Interface Areas, and The Public Realm. The first two sections focus on how private development shapes the look and feel of the city. It also pays special attention to preserving the historic character that is important to many community members.

Many communities have adopted guidelines related to buildings and historic character, but relatively few have also defined their goals for the public realm of streets and civic space. Boulder's Public Realm guidelines stress the importance of designing downtown corridors for pedestrians rather than just for automobiles. The street hierarchy in the guidelines does call for two major thoroughfares to be more oriented to moving automobiles, but the other streets in the guideline area are considered "Pedestrian Connectors" or "General Pedestrian Oriented Streets." Alleyways and walkways are also shown in the street hierarchy as potential pedestrian connections.

The Public Realm section of the guidelines is also unique in that it clearly identifies pedestrian zones for both sidewalks and corner/intersection areas. The design guidelines feature two graphics that denote the various zones to consider when designing a good public realm. For sidewalks, one must consider the frontage zone, the pedestrian zone, and the curb zone. Intersections include corner zones, corner amenity areas, crosswalks, intersection squares, pedestrian zones, and curb zones. The detailed definition of these areas gives planners, stakeholders, and the general public a better understanding of what makes a great public realm and how a street should function for pedestrians.

Providing agency staff and private developers with clear guidance for creating a safe, comfortable, engaging pedestrian experience is essential to creating a successful downtown.

DOWNTOWN URBAN DESIGN GUIDELINES

CONTINUED

Data

Location	Boulder, CO
Population	97,385 (2010 Census)
Area	24.7 sq. mi

Density	3,943 residents/sq mi
Geography	Western U.S.
Climate	Semi-arid

Similar Case Studies

Name and Year	Location	Agency	Page
Healthy Design Ordinance, 2013	Los Angeles, CA	Los Angeles County	A-44

More Information

- City of Boulder Downtown Urban Design Guidelines Update Process: https://bouldercolorado.gov/planning/downtown-urban-design-guidelines-update
- City of Boulder Downtown Urban Design Guidelines: https://www-static.bouldercolorado.gov/docs/2016_Downtown_Design_Guidelines_Book_26May2016-1-201606061634.pdf

CASE STUDY 21

HEALTHY DESIGN ORDINANCE

Los Angeles County, CA

IMAGE SOURCE: ALTA PLANNING + DESIGN

Define Success

✓ **Protect Nonmotorized Travelers**

Promote Supportive Development

✓ **Design the Network**

Make It Last

Pay for It

Project Partners

- Renew Los Angeles County
- Department of Health and Human Services through the Los Angeles County Department of Public Health
- Los Angeles County Department of Regional Planning

Key Elements

The *Los Angeles Healthy Design Ordinance* (HDO) was adopted February 5, 2013. The goal of the ordinance is to, "improve public health through changes in the built environment." Los Angeles amended sections of the County Code to follow the Healthy Design Principles of "Safety, Convenience, and Pleasantness," while providing better walking environments, encouraging more bicycling, improving access to healthy foods, and enhancing project review requirements.

Several policy revisions aim to accomplish HDO goals by creating safer and more complete multimodal networks throughout the county. Specific pedestrian and bicycle revisions included:

- Increase minimum public sidewalk width from 4 to 5 feet.
- When applicable, require shade trees in new development projects.
- Require front yard trees next to the sidewalk and at more regular intervals.
- Allow an exemption from more stringent drought-tolerant landscaping requirements to provide better shade trees in areas with people walking and bicycling.
- Add pedestrian paths to cul-de-sacs that connect residential areas to destinations.
- Require bicycle parking (short- and long-term) in easily-accessible locations.
- Allow an automatic 5 percent car parking reduction to development projects that include bike parking and are located near public transit or along a County bike master plan route.
- Require detailed street sections on tentative plans in order to depict healthy design features such as landscaping, lighting, street furniture, and bike parking spots.

HEALTHY DESIGN ORDINANCE

CONTINUED

Key Elements (continued)

- Require higher justification when sidewalk and bicycle facilities are proposed to be reduced or waived.
- Create standardized block designs and maximum perimeter lengths, including small blocks, streets at more frequent intervals, rear alleys for vehicle access to urban block designs, minimal curb cuts on street.
- Use traffic calming devices where appropriate.

The Los Angeles County Healthy Design Workgroup (HDW) was formed as a result of the HDO. The group works to implement the HDO by bringing together high-level representatives from County departments to improve interdepartmental coordination. Since 2013, the HDW has received fourteen grants worth a total of $16.4 million to support their initiatives. In 2015, the HDW Grants Committee was recognized with LA County's highest award for departmental productivity and quality improvement. HDO implementation achievements include the publication of new documents, including "Bicycle Parking Guidelines for County Facilities," "Soil and Water Testing Considerations for Home and Community Gardens," and the inclusion of healthy design elements within the Community Development Commission's Notice of Funding Availability (NOFA) for affordable multi-family housing.

Data

Location	Los Angeles, CA
Population	10.02 million (2010 Census)
Area	4,057.88 sq mi

Density	2,506.31 residents/sq mi
Geography	Western U.S.
Climate	Mediterranean, subtropical

Similar Case Studies

Name and Year	Location	Agency	Page
Senate Bill No. 743, Environmental Quality, 2013	California	State of California	A-12
Design Standards Ordinance and Healthy Eating and Active Living, 2005 to 2010	Hernando, MS	City of Hernando, MS	A-6

More Information

- Los Angeles County Department of Regional Planning: http://planning.lacounty.gov/hdo
- HDO: http://planning.lacounty.gov/assets/upl/data/ord_healthy-design_guidelines.pdf
- HDO Summary: http://planning.lacounty.gov/assets/upl/data/hdo_two-minute-summary20111121.pdf
- "Zoning a Healthier Los Angeles?," Mark Vallianatos, Streetsblog LA, February 22, 2013: http://la.streetsblog.org/2013/02/22/zoning-a-healthier-los-angeles/
- Model Street Design Manual: http://www.modelstreetdesignmanual.com/

CASE STUDY 22

PEDESTRIAN AND BICYCLE LEVEL OF SERVICE (LOS)

CHARLOTTE, NC

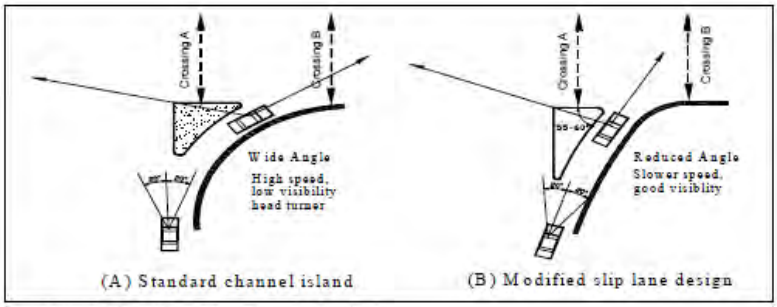

IMAGE SOURCE: CHARLOTTE DEPARTMENT OF TRANSPORTATION

Define Success

Protect Nonmotorized Travelers

Promote Supportive Development

Design the Network

Make It Last

Pay for It

Project Partners

- City of Charlotte

Key Elements

In 2007, as part of the City's Urban Street Design Guidelines (USDG), Charlotte developed a methodology to evaluate how signalized intersections meet the needs of pedestrians and bicyclists. The results of the evaluation inform the preferred design and operation features of proposed intersection investments. A multimodal Level of Service (LOS) approach was intended to reflect the goals of the USDG, specifically the desire to increase transportation choices by making travel by walking, bicycling, and transit safer and more convenient. The methodology evaluates key features of intersections according to their influence on the comfort and safety of pedestrians and bicyclists.

A major difference from the previous LOS method is that thresholds for auto volume to capacity (V/C) ratios are higher and are measured for two hours, rather than the peak hour, which could result in overestimation of needed capacity. This approach makes it less likely that intersections will need improvements for automobile travel, which could create opportunities to improve conditions for bicyclists and pedestrians. The LOS methodology can also be used to improve the design for bicyclists and pedestrians when capacity for motorists needs to be improved.

LOS for pedestrians and bicyclists is calculated based on a point system established in Charlotte's USDG and assesses the intersection features shown in the table below.

The LOS is determined by the sum of points accumulated for each mode. The relative expectations for each mode's LOS varies

Bicycle and Pedestrian LOS Features

Pedestrian LOS	Bicycle LOS
Crossing distance	Width of bicycle travel way
Signal phasing and timing	Speed of adjacent traffic
Corner radius	Signal features (left turn phasing, stop bar location)
Right turns on red	Right turn traffic conflict
Crosswalk treatment	Right turns on red
Adjustment for one-way street crossings	Crossing distance

PEDESTRIAN AND BICYCLE LEVEL OF SERVICE (LOS)
CONTINUED

Key Elements (continued)

according to the planned function and context of each intersection. LOS thresholds and the point system are described in the appendices of the USDG.

The City calculates bicycle and pedestrian LOS for intersections where auto improvements have been identified, focused on arterials and collectors, not local or main street corridors, where it is reasonable for users to share space. If two or more nearby intersections are identified for possible changes, the scope of the analysis is broadened to include the appropriate corridor or area.

The LOS assessment method has some limitations recognized by local staff, including:

- The multimodal assessment does not address transit LOS.
- The process only considers travel at intersections, not along roadways.
- The methodology focuses on the functionality, not the quality of the environment. Elements that make an area more inviting and attractive to pedestrians and bicyclists, such as visual stimuli, convenience, security and noise are not considered.
- The process does not consider other features that affect the comfort and safety of pedestrians and bicyclists, including: sight lines, street lighting, pavement condition, signing, pedestrian and bike detection, curb extensions, and ADA features.

Data

Location	Charlotte, NC
Population	731,424 (2010 Census)
Area	297.7 sq mi

Density	2,720.7 residents/sq mi
Geography	Southeastern U.S.
Climate	Humid subtropical

Similar Case Studies

Name and Year	Location	Agency	Page
Multimodal Level of Service Toolkit, 2009	Jacksonville, FL	Florida Department of Transportation	A-10
Crosswalk Safety Policies, 2012	Boulder, CO	Boulder Transportation Division	A-16

More information

- http://asap.fehrandpeers.com/wp-content/uploads/2014/08/MMLOS-Tool-Charlotte.pdf
- http://charmeck.org/city/charlotte/Transportation/PlansProjects/Documents/ALOSStandardsAppendixApril05.pdf
- http://charmeck.org/city/charlotte/Transportation/PlansProjects/Documents/RevUSDGChapter5KHO23.pdf

CASE STUDY 23

MEMPHIS SIDEWALK ORDINANCE

Memphis, TN

IMAGE SOURCE: MEMPHISFLYER.COM

Define Success

✓ **Protect Nonmotorized Travelers**

Promote Supportive Development

Design the Network

✓ **Make It Last**

Pay for It

Project Partners

- City of Memphis, Division of Engineering
- Property Owners
- Memphis Pedestrian and School Safety Action Plan Technical Advisory Committee

Key Elements

The *Memphis Sidewalk Ordinances* (2013) represent a proactive approach to sidewalk maintenance. A 1967 city law makes property owners, including businesses and homeowners, responsible for maintenance and repair of sidewalks adjacent to their property. Many of the city's sidewalks are in poor condition after 50 to 60 years of wear and tear, creating unsafe conditions for those who use them. The City determined that nearly all of the sidewalks in its 3,400 mile network require repair, with one third of the system demanding immediate attention. The City also found that an additional 13 percent of sidewalks, or 446 miles, are less than the standard width allowed for proper wheelchair access. The City estimates that it would cost $19 million per year to properly maintain sidewalks. At that rate, it would take over 24 years to fix just the 30 percent of sidewalks in need of urgent repair.

Based on the research and planning process, the City has applied a number of strategies to implement the Safety Action plan, as shown in the table on the next page.

The staff conducted a review of sidewalk maintenance practices in peer cities (Atlanta, Austin, Charlotte, Nashville, and New Orleans), and identified the following creative strategies for improving sidewalks with limited public resources:

- Multiple models exist for increasing public investment in, and responsibility for, sidewalk maintenance. There is precedent for a complete shift to public responsibility of walkways in the public right-of-way, but cost-sharing models and strategic public investments in the sidewalk network allow for property owners and local government agencies to share maintenance costs.
- Packaging flexible funds for new sidewalk construction in conjunction with other infrastructure investments, such as sewer construction, can lead to significant cost savings. Clayton, MO, for instance, has developed a program with dedicated flexible funding.

MEMPHIS SIDEWALK ORDINANCES

CONTINUED

Key Elements (continued)

- Equitable policies to assist low-income property owners with sidewalk maintenance may be politically challenging to implement if some residents feel that others are receiving preferential treatment.

The first three recommendations are currently being implemented, while the final recommendation is under consideration.

Recommendations
Develop a sidewalk maintenance program to ensure that the City's efforts to enhance the sidewalk network do not place an unfair burden on disadvantaged property owners.
Develop a property owner's guide to sidewalk maintenance that explains property owner responsibilities in simple language and informs property owners of special programs available to assist with fulfilling their obligations, such as cost sharing incentives and financial hardship programs.
Provide financial incentives to encourage property owners to repair adjacent sidewalks in disrepair. These incentives commonly include providing low- or no-interest loans, or an offer by the city to match property owner funds put toward sidewalk repair and replacement.
Develop a Fast Fix Sidewalk Repair program. This is a proposed (not implemented) program that would provide property owners with a list of insured, City-approved contractors that provide prompt, low-cost sidewalk repair services. After the repair is completed, the City inspects the work and a one-year warranty is issued by the contractor if the repair passes the inspection. Contractor are pre-approved and receive training on Memphis's sidewalk standards, eliminating the need for a building permit. This recommendation is largely based on the Dallas, TX, Fast Fix Program.

Data

Location	Memphis, TN
Population	646,889 (2010 Census)
Area	315.10 sq mi

Density	2,000 residents/sq mi
Geography	Southeastern U.S.
Climate	Humid subtropical

Similar Case Studies

Name and Year	Location	Agency	Page
None			

More information

- City of Memphis Sidewalks page within the Engineering Division: http://www.memphistn.gov/Government/EngineeringDivision/Sidewalks.aspx
- Memphis Pedestrian and School Safety Action Plan: https://bikepedmemphis.files.wordpress.com/2015/06/mpss_action_plan_final_optimized.pdf
- "Can the Bid for Walkability Make More Cities Take Responsibility for Sidewalks?," Next City: https://nextcity.org/daily/entry/walkability-cities-sidewalk-upkeep-homeowner-responsibility
- "Sidewalk Struggle," Memphis Flyer: http://www.memphisflyer.com/memphis/sidewalk-struggle/Content?oid=3685284
- "Property Owner's Guide to Sidewalk Maintenance and Repair," City of Memphis http://memphistn.gov/Portals/0/pdf_forms/SidewalkRepairGuide.pdf

CASE STUDY 24

BICYCLE FACILITY MAINTENANCE GUIDELINES

Minneapolis, MN

IMAGE SOURCE: STARTRIBUNE.COM

Project Partners

- City of Minneapolis Public Works Department

Key Elements

In May, 2010, the City of Minneapolis published a Bicycle Facility Manual, which was subsequently incorporated into the City's Street and Sidewalk Design Guidelines. Chapter 8 of the Bicycle Facility Design section contains design guidelines for bicycle facility maintenance. While many cities have bicycle plan and design guidelines, Minneapolis is unique in that it gives specific direction on the maintenance of bicycle facilities. These guidelines are comprehensive and discuss basic levels of service that should be provided through routine maintenance as well as additional levels of services that can be added as needed.

The guidelines outline a number of maintenance practices, including:

- Mowing and vegetation
- Plowing
- Preventative maintenance (i.e., patching and sealing)
- Signage and striping
- Sweeping, graffiti, and trash removal
- Snow and ice removal

The *Minneapolis Bicycle Facility Design Guidelines* maintenance chapter contains recommended practices and precise policies. Example policies include:

- Bikeways need to be plowed once by the end of the next business day after a snow fall.
- On street facilities receive the same level of winter maintenance as the rest of the street surface.
- Trails will be mowed regularly to maintain a clear zone, with mowing taking place at least twice a year.

Because the guidelines set levels of service, they can help the City to evaluate the costs of each maintenance program and set priorities as needed.

Maintenance programs targeted at bicycle and pedestrian facilities require coordination among city staff (public works, transportation, and parks/rec) and with a variety of stakeholders including community groups and advocacy organizations. Maintenance issues can be unique to each city, as well as each facility, so an ideal maintenance

BICYCLE FACILITY MAINTENANCE GUIDELINES

CONTINUED

Key Elements (continued)

program is one that is tailored to each setting. Additionally, bicycle and pedestrian facility maintenance can require specific vehicles for various activities (i.e. trail and bike lane sweeping or plowing).

Data

Location	Minneapolis, MN
Population	382,599 (2010 Census)
Area	53.97 sq mi

Density	7,088.30 residents/sq mi
Geography	Midwestern U.S.
Climate	Humid continental

Similar Case Studies

Name and Year	Location	Agency	Page
None			

More information

- City of Minneapolis Street and Sidewalk Design Guidelines: http://www.minneapolismn.gov/publicworks/transplan/comp/public-works_trans-plan_designguidelines
- City of Minneapolis Public Works Bicycle Facility Design Guidelines: http://www.minneapolismn.gov/www/groups/public/@publicworks/documents/webcontent/convert_261656.pdf
- City of Minneapolis Bicycle Master Plan: http://www.minneapolismn.gov/www/groups/public/@publicworks/documents/webcontent/convert_275983.pdf

CASE STUDY 25

BRIDGING THE GAP

Seattle, WA

Key BTG 9-Year Goals and Status – 2014

Maintenance	
Resurface or replace 200 lane-miles of arterial streets	225 lane-miles completed
Rehabilitate or replace 5 bridges and seismically retrofit 5 additional bridges	6 bridges rehabilitated, 7 bridges retrofitted
Replace over 50,000 small, faded street and regulatory signs	90,230 signs replaced
Rehabilitate 40 stairways	40 stairways completed
Prune 25,000 street trees to prevent safety and security hazards	26,226 trees pruned
Replace street name signs at all 12,300 arterial intersections	11,1137 intersections have new street name signs
Pedestrian/Bike/Safety	
Create "safe routes to schools" near 30 elementary	48 Safe Routes Projects completed

IMAGE SOURCE: PBIC IMAGE LIBRARY/ DAN BURDEN

Define Success

Protect Nonmotorized Travelers

Promote Supportive Development

Design the Network

Make It Last

✓ **Pay for It**

Project Partners

- Seattle Department of Transportation (SDOT)
- Bridging the Gap (BTG) Oversight Committee (appointed)

Key Elements

Bridging the Gap (BTG) was a nine-year, $365 million levy from 2006 to 2015 that addressed twenty years of deferred street and infrastructure maintenance. The proposition that was passed in 2006, authorized regular property taxes higher than legislated limits, allowing collection of up to $36,650,000 in additional taxes in 2007 and up to $365,000,000 over nine years. The 2007 total regular tax limit would be $3.69/$1,000 assessed value, including approximately $0.36 additional taxes generated by the levy. When voters approved the tax levy in 2006, they also stipulated the percentages SDOT should spend on selected project categories:

- Maintenance would receive no less than 67 percent of tax levy spending
- Pedestrian and bicycle safety would receive no less than 18 percent of tax levy spending
- Transit and major projects would receive no more than 15 percent of tax levy spending

The tax levy supported safe bicycle and pedestrian networks by financing a variety of physical infrastructure projects. SDOT developed an annual Work Plan with a list of projects to complete over the coming year. The bicycle and pedestrian projects were pulled from the Bicycle Master Plan and the Pedestrian Master Plan. An annual End of Year Accomplishments list was created to track the proposed projects, quarterly spending and year-end results.

The 2006 tax levy was the largest in the City's history and the importance of accountability was paramount. Throughout the length of the tax levy period, an Oversight Committee composed of citizens and transportation professionals met quarterly to monitor spending and project progress. The Oversight Committee also reviewed SDOT's work plan and made recommendations to the Mayor and the City Council regarding levy expenditures. The Oversight Committee was made up of 15 individuals, who were appointed by the following authorities:

BRIDGING THE GAP

CONTINUED

Key Elements (continued)

- Five appointed by Mayor
- Five appointed by City Council
- One Bicycle Advisory Board Representative
- One Pedestrian Advisory Board Representative
- One Freight Mobility Advisory Board Representative
- One City Council member
- The City Budget Director

In May, 2015, the Oversight Committee drafted a letter to the Mayor of Seattle and the Seattle City Council President stating that, in their opinion, the City of Seattle met the Bridging the Gap legislation's requirements for success through, "project implementation; ability to manage and control costs; and the ability to identify alternative revenue sources and leverage levy funds." The image above illustrates program goals and the status as of 2014. A new tax levy, Move Seattle, was passed in 2015.

Data

Location	Seattle, WA
Population	608,660 (2010 Census)
Area	83.87 sq mi

Density	7,969 residents/sq mi
Geography	Western U.S.
Climate	Temperate marine

Similar Case Studies

Name and Year	Location	Agency	Page
Complete Streets Design Guidelines, 2013	Chicago, IL	Chicago Department of Transportation	A-40

More information

- http://www.seattle.gov/transportation/BridgingtheGap.htm
- http://www.seattle.gov/transportation/btg_accomplishments.htm
- http://www.seattle.gov/transportation/docs/btg/BTGAnnualReport2014.pdf
- http://www.washingtonpolicy.org/library/docLib/Pishue-Bridging-the-Gap-Levy-failed-to-reduce-city-street-backlog.pdf

CASE STUDY 26

PRECISE PLAN CAPS ON SINGLE-OCCUPANT VEHICLE (SOV) TRIPS

North Bayshore, Mountain View, CA

IMAGE SOURCE: MOUNTAINVIEW.GOV

- Define Success
- Protect Nonmotorized Travelers
- ✓ **Promote Supportive Development**
- Design the Network
- Make It Last
- ✓ **Pay for It**

Project Partners

- Mountain View, CA
- Similar programs in several cities in the San Francisco Bay Area
- Private employers

Key Elements

In 2014, the City of Mountain View adopted the North Bayshore Precise Plan to create the potential for additional office and housing growth in Mountain View's North Bayshore area (currently home to technology companies including Google and LinkedIn). Given the current automobile congestion and limited infrastructure capacity available, it was determined that any growth in this area would have to be controlled in some way. While there are urban design guidelines that regulate floor area ratios, the Plan does not set growth limits. Instead, it sets a cap on the number of new net single-occupancy vehicle (SOV) trips a development can generate with a maximum of 45 percent, and may be as low as 30 percent for more dense employment development. Employers could face a $100,000 fine for each 1 percent over the cap.

Because only three roads access the North Bayshore area, the City devised a system of trip counting to enforce a maximum number of SOV trips that enter the Plan area each day. Capital improvements to increase the network's capacity to serve SOV trips beyond the capped amount would be provided solely by North Bayshore private developers. In lieu of funding expanded infrastructure, every new development proposal would have to provide a transportation demand management (TDM) program that details how it will meet the trip cap. After the plan was approved, over 7 million square feet of development permits were filed with the City. North Bayshore companies have made significant investments in active transportation programs, bus transport, and other TDM measures to meet the Plan's targets.

SOV trip plans are not new to Silicon Valley. In 1989, Santa Clara County issued a permit to Stanford University allowing the campus to grow by 2 million square feet with a condition that the expansion would not generate a net increase in automobile commute trips. Stanford bolstered alternative transportation options while making driving alone less convenient by charging parking fees. The fees collected from parking went directly into green commute programs. Stanford currently has a SOV commute rate of 48 percent and calculates that $107 million dollars have been saved by not building additional parking structures.

PRECISE PLAN CAPS ON SINGLE-OCCUPANT VEHICLE (SOV) TRIPS

CONTINUED

Key Elements (continued)

Other communities across Silicon Valley have incorporated trip caps into specific plans to minimize the impact of new development in congested job centers, including:

- Sunnyvale's Central and Wolfe Transportation Demand Management (TDM) area has a trip cap of 50 percent SOV, which represents a 25 percent reduction from the existing rates at the time of program commencement.
- Menlo Park's East of 101 Plan (the location of Facebook) has a trip cap of 56 percent SOV, which, like Sunnyvale, also represents a 25 percent reduction. Penalties under this plan are a $50 fine per additional trip per day.
- Cupertino approved a new campus development for Apple with a trip cap of 66 percent SOV, down from the current cap of 72 percent.

Silicon Valley trip caps require businesses to either pay large fines or invest in alternative transportation modes. Most companies have chosen the route of investing in green commuting options (including active transportation, shuttles, ferries, and others).

Investments in TDM programs alone are not always enough to meet the trip cap threshold, potentially requiring new infrastructure; sometimes infrastructure must also be expanded. Determining who pays for what adds complexity to the development process. Mountain View's North Bayshore Plan's regional trip cap means that companies like Google and LinkedIn must work together to reduce SOV commuting. If the cap is exceeded, they have to agree on who funds infrastructure improvements. Trip caps may be easier to implement for specific new developments than they are at the regional level.

Data

Location	Mountain View, CA
Population	74,066 (2010 Census)
Area	12.30 sq mi

Density	6,000 residents/sq mi
Geography	Western U.S.
Climate	Mediterranean

Similar Case Studies

Name and Year	Location	Agency	Page
None			

More information

- North Bayshore Transportation Demand Management (TDM) Plan Guidelines: http://www.mountainview.gov/civicax/filebank/blobdload.aspx?BlobID=15164
- Comprehensive Plan Transportation Element Public Comment, Cities21: http://www.cities21.org/cms/PA_Transp_Elem_C21.pdf
- "Going Nowhere Fast: Traffic Issues Could Stall Tech Growth," Silicon Valley Business Journal: http://www.bizjournals.com/sanjose/print-edition/2015/11/13/going-nowhere-fast-traffic-issues-could-stall-tech.html

For More Information Visit:
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