CREATING WALKABLE + BIKEABLE COMMUNITIES

A user guide to developing pedestrian and bicycle master plans

ibpi Initiative for Bicycle & Pedestrian Innovation

alta PLANNING + DESIGN

CREATING WALKABLE + BIKEABLE COMMUNITIES:
A user guide to developing pedestrian and bicycle master plans

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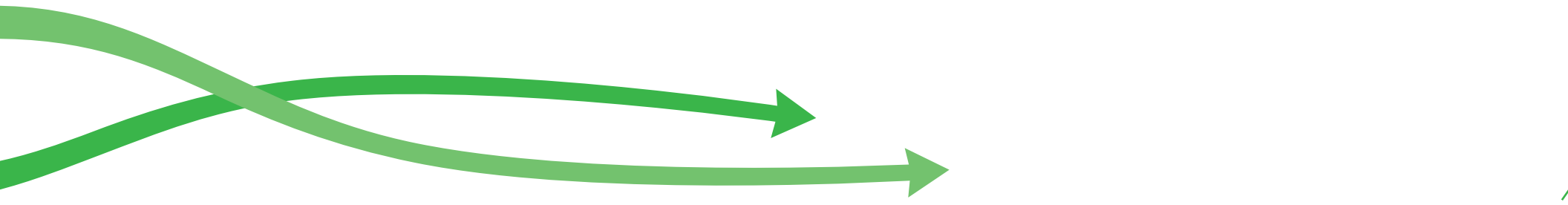
AN INTRODUCTION TO NON-MOTORIZED TRANSPORTATION MASTER PLANNING

PART ONE



1 INTRODUCTION

Bicycle and pedestrian master plans document a community's comprehensive vision and detailed work plan for increasing the attractiveness of bicycling or walking over time. And since non-motorized transportation plans leverage the benefits of active transportation for everyone, including people who choose not to walk or ride, bicycle and pedestrian master plans are key strategy documents for enhancing overall livability.

Why Plan for Pedestrians and Bicyclists?

Walking is the most fundamental of all transportation modes and part of nearly every trip we make. Planning for pedestrians, including people who travel with the aid of wheelchairs or other mobility devices, is planning for everyone. Bicycling also holds tremendous potential to increase mobility options for the relatively short trips that make up the majority of our daily travel by providing a quick and convenient way to access many destinations. In addition to increasing mobility options, walking and bicycling generate a range of health, safety, economic development, and environmental benefits.

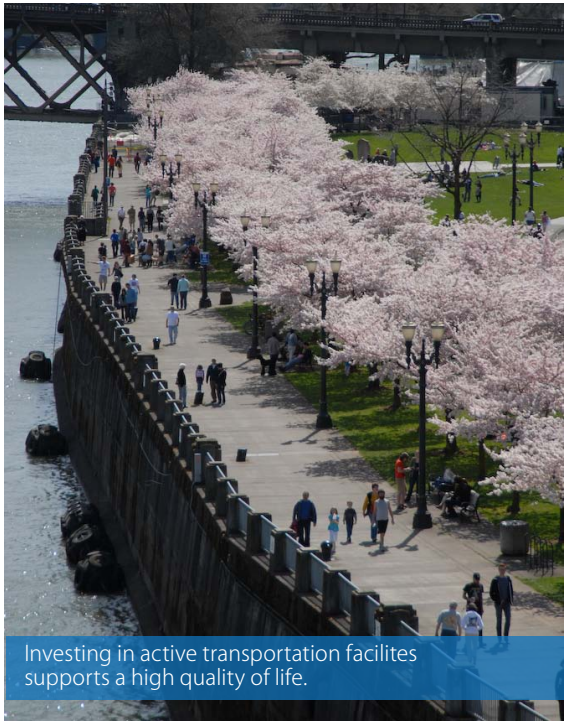
Some of the benefits of walking and bicycling accrue directly to the individuals who choose to walk or bike. Walking or bicycling for transportation and recreation:

- Improves personal health
- Increases mobility and access, particularly for youth, older adults, the financially constrained
- Saves money on transportation
- Increases opportunities for social interactions
- Provides enjoyment

At the community level, enabling people to substitute active transportation trips for automobile trips has the potential to convey multiple public benefits such as:

- Increased transportation options
- Improved safety for all road users
- Reduced traffic congestion
- Improved access to public transit
- Decreased air, water, and noise pollution
- Support of climate change emission reduction goals
- Stimulation of the local economy
- Increased opportunities for tourism
- Revitalization of urban areas
- Decreased road maintenance costs
- Avoidance of the high costs of roadway and/or transit capacity expansions

Widespread acknowledgment of these benefits has generated increased interest in and demand for better walking and bicycling conditions from a wide array of groups, including neighborhood associations, bicycle and pedestrian advocacy organizations, and public health professionals. Elected officials are also recognizing that investments in active transportation support a high quality of life and improve their public image. Considering the range of ways active transportation engages with some of the most pressing challenges of our time, support for walking and bicycling is likely to continue to increase in the future.



Investing in active transportation facilites supports a high quality of life.

Pleasant pedestrian environments cultivate vibrant neighborhoods.

Overview of Pedestrian and Bicycle Master Plans

Until recently, dominant approaches to transportation planning have overlooked and undervalued walking and bicycling as modes of transport. As a result, it takes intentional and active planning to improve the infrastructure and increase the attractiveness of walking and bicycling to a diverse group of users. Since planning for walking and bicycling are distinct but related activities, this guidebook provides an introduction to three types of active transportation master plans: bicycle master plans, pedestrian master plans, and combined bicycle and pedestrian master plans. The decision to develop separate or combined plans depends on a variety of factors that are discussed in Chapter Three.

OUTCOMES OF A TYPICAL PLANNING PROCESS

No two active transportation master plans will be exactly alike, but most plans strive to achieve some combination of the following outcomes:

- A bikeway network, bicycle parking, and/or pedestrian network
- Policies that support walking and/or bicycling
- Education of bicyclists, pedestrians, and motorists
- Encouragement programs
- Enforcement programs
- Evaluation and monitoring programs
- Design guidelines and/or engineering standards that recognize the needs of bicyclists and/or pedestrians
- Increased public and financial support for walking and/or bicycling
- Increased levels of walking and/or bicycling for transportation and recreation

The process of crafting a bicycle and/or pedestrian master plan 1) allows for a comprehensive exploration of actions to improve conditions for walking and bicycling, 2) builds support for walking and bicycling, and 3) lays the groundwork for the implementation, evaluation, and monitoring of the non-motorized transportation system.

Communities that choose to develop active transportation master plans are also rewarded with an immediate strategic advantage: superior performance in competitive grant applications for bicycle and pedestrian projects. Since a large proportion of funding for bicycle and pedestrian projects comes from state and federal grants, having a current plan rooted in a robust public involvement process becomes particularly important as a means of documenting the viability of a given project.

CASE STUDY

After the adoption of San Mateo, California's 2011 Bicycle Master Plan, the City acquired more than a million dollars for bicycle infrastructure projects in a single funding cycle. The plan's detailed priority project list was instrumental in securing these funds.

The master plan should articulate your community's vision and goals for walking and bicycling and reflect desired outcomes, such as the level of use, or mode share, for pedestrian and bicycle transportation.

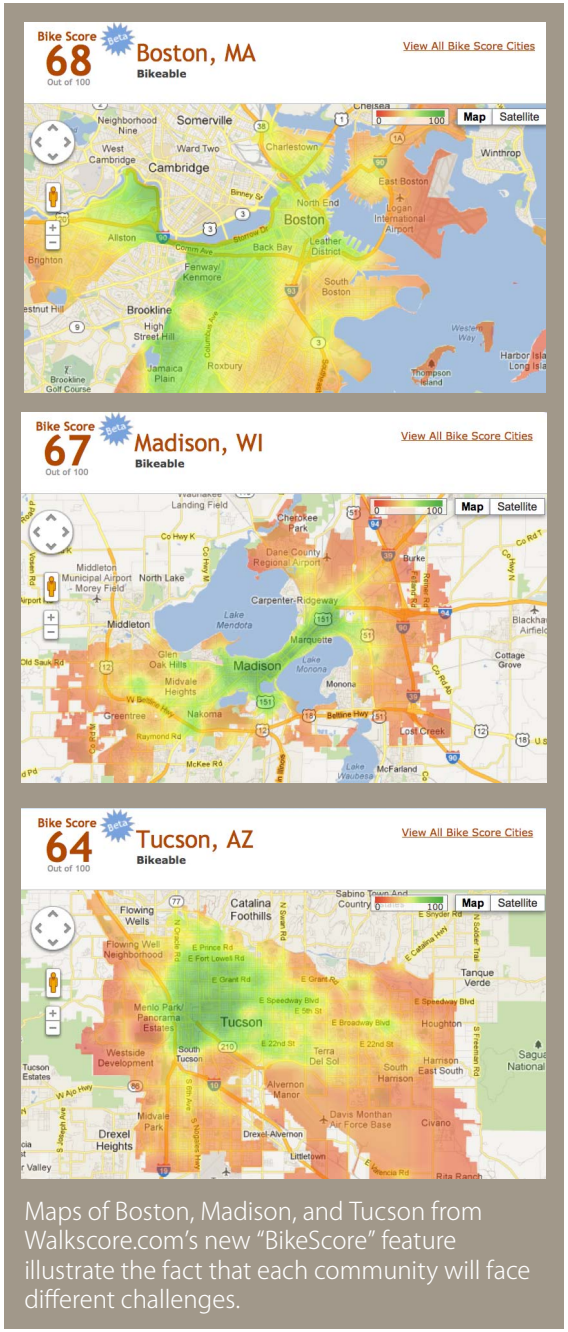
Every pedestrian and/or bicycle master plan should aspire to improve conditions for walking and/or bicycling through policy, infrastructure, and programs. The attention given to each element should reflect current conditions, level of interest and support, and funding potential to accomplish the projects and programs in the plan. If the plan fails to match the community's understanding of where it is now and where it wants to be in the future, it is unlikely to be taken seriously or implemented.

Many plans include design guidelines and/or engineering standards to increase the safety and attractiveness of the pedestrian and bicycling networks. Finally, all plans should include a detailed work plan that outlines how the vision will be achieved over time and implementation strategies for the proposed policies, infrastructure improvements, and programs.

Getting Started

As you begin the process of developing or updating your bicycle and/or pedestrian master plan, explore the following questions within your organization and community:

- Is this the first plan of its type or an update to an existing plan?
- Does your community have an existing bikeway network?
- What level of pedestrian accommodations exist in your community?
- Do your community's current policies, regulations, and road design standards consider the needs of non-motorized road users?
- Is there political support for walking and bicycling in your area? If so, to what extent and at what level?
- Do local government agencies have staff expertise in planning and designing for pedestrians and bicyclists?
- What data exist on walking and bicycling infrastructure and rates of walking and bicycling?



Maps of Boston, Madison, and Tucson from Walkscore.com's new "BikeScore" feature illustrate the fact that each community will face different challenges.

Before proceeding with an in-depth policy review or existing conditions report, think generally and strategically about the questions above. For communities just beginning to explore opportunities to improve walkability and bikeability, a non-motorized transportation plan can be as modest as identifying three to five key bikeway projects, creating a sidewalk infill initiative, and launching a Safe Routes to School program. Others may choose to tackle complex or innovative projects, expand education and encouragement programs to new audiences, or rethink existing street standards in a comprehensive fashion. Mature programs should challenge themselves and their community to break new ground with bold policy language, innovative facilities, and sophisticated programing.

Advantages of Mode-Specific Plans

It is possible to improve conditions for pedestrians and bicyclists without a mode-specific master plan. Yet nearly all communities with high rates of walking and bicycling have developed and adopted stand-alone pedestrian and bicycle plans.

Generalized plans limit the range of potential action

Some elected officials, local government staff, and/or the public may question the need for a separate non-motorized transportation master plan, believing that bicycle and pedestrian issues are already covered in other plans. The reality is that comprehensive plans, city-wide transportation system plans, and regional transportation plans typically address walking and bicycling at a very general level, if they do so at all. Municipal, county, or regional transportation system plans may contain four to five pages on non-motorized modes but generally limit the scope of the planning effort to arterial and collector streets. The framework of comprehensive or generalized transportation plans rarely allows for the inclusion of educational, enforcement, or encouragement programs, nor do they delve into the micro details necessary to capture the needs of people who desire to walk and bike.

Producing a separate bicycle and/or pedestrian master plan allows for a much deeper analysis, more flexibility, and a more specific set of recommendations. Additionally, stand-alone bicycle and/or pedestrian plans give legitimacy to the needs of these modes, similar to transit or freight-specific plans.

Mode-specific plans create a comprehensive blueprint for improving active transportation

Thinking comprehensively about active transportation generates synergies, leverages network effects, and may enable a reevaluation of existing road design standards.

Engaging in a bicycle and/or pedestrian master planning process provides a rare opportunity to explore the full spectrum of ideas for improving walking and bicycling conditions. Thinking holistically about the options allows for potential synergies to develop between infrastructure improvements, policy updates, and programmatic elements. A 2009 international review of actions to promote walking and bicycling revealed that communities with the most success in increasing the mode share of walking and bicycling consistently deploy a coordinated package of projects, policies, and programs to support active transportation.[1]

1 Pucher, Dill, and Handy. 2009. "Infrastructure, Programs, and Policies to Increase Bicycling: An International Review." Preventive Medicine. Available at: http://policy.rutgers.edu/faculty/pucher/pucher_dill_handy10.pdf

In the same way that a coordinated mix of strategies creates synergies, developing an interconnected network of bicycle and pedestrian facilities amplifies the benefits of each individual link of sidewalk, trail, and bikeway. Without a big-picture plan that connects isolated walking and bicycling facilities into an overall network, the community will lose out on the full benefits of active transportation.

CASE STUDY

Between 1992 and 2005, the City of Portland increased its bicycle network by 215%, adding 177 miles. Most of this growth occurred after the 1996 update to the City's bicycle master plan. Annual bicycle counts conducted by the City show that bicycling trips increased 210% in 13 years. The greatest increase in number of trips occurred on the corridors with improved bicycling infrastructure.

According to a report published by Mia Birk and Roger Geller in 2005, "Data collected by Portland demonstrates a strong correlation between a connected bikeway system, constructed to the highest standards, and increases in bicycle use." Without a mode-specific plan for building out this connected network, it is very unlikely that the observed growth in the bicycle mode share would have occurred.

Since roadway design significantly impacts the attractiveness of walking and bicycling, recommending updates to overall road design guidelines and/or engineering standards is increasingly a part of developing and updating active transportation plans. Engineers may be more receptive to conversations about updating engineering standards if they understand that the proposal is coming out of a comprehensive process that considered the needs of all road users.

The process may be as useful as the document

Developing a bicycle and/or pedestrian master plan provides an opportunity to achieve three important goals: establish a community vision, build support for adoption and implementation, and prioritize improvements through a systematic process.

Without a master planning process, a community vision for the future of walking and bicycling is very unlikely to emerge. The process of creating a vision provides a critical opportunity to bring people together to consider the appropriate role of active transportation in the community and to generate a preferred scenario. From this foundation, planners can proceed with a clear understanding of the needs and desires of the public.

Engaging in a good-faith effort to think comprehensively about the needs of pedestrians and bicyclists builds support for plan adoption and implementation. The planning process often catalyzes public, staff, and elected official interest in active transportation. It can also create buy-in. When people are involved in plan development from the start, they are more likely to support the final plan and take ownership of implementation.

The master planning process creates a framework for developing objective evaluation criteria or scoring methodologies for project prioritization and phasing. Ranking and prioritizing projects in a systematic way, based on the plan vision, goals, and objectives, not only results in smarter investments but also demonstrates that the improvements selected are not simply pet projects of politicians or staff. Stakeholders benefit from involvement in shaping recommendations, and staff and elected officials benefit from being able to point to a publicly informed, rational prioritization process.

Mode-specific plans facilitate implementation, monitoring, and evaluation

Done well, master plans are invaluable resources for implementing proposed improvements, tracking implementation progress, and measuring the performance of the non-motorized transportation system.

Successful bicycle and/or pedestrian master plans provide a comprehensive and easy-to-use reference guide for the policies, projects, and programs relevant to bicyclists and pedestrians. A concise, well-organized, user-friendly master plan allows staff members in multiple departments to quickly and easily understand their roles in implementing the vision for active transportation in your community.

CASE STUDY

During the development of Chicago's 2015 Bike Plan, planners made it a point to avoid producing a long, unwieldy document. Their goal was to create a clear and crisp plan in as few pages as possible. The result is a highly readable 50 page plan that is accessible to a broad range of people.

Detailed plans that specify how, when, and where improvements will be made provide a way to evaluate and measure progress. Without a master plan, it is far less likely that each department will independently identify opportunities to improve bicycle and pedestrian access, and it becomes difficult to hold departments or staff accountable for implementation of projects and programs.

Finally, these plans enable planners to monitor the overall performance of the transportation system with respect to active transportation. The development of indicators and benchmarks during

the master planning process makes assessments and adjustments possible.

Integrating the Plan into the Broader Planning System

The danger with a stand-alone master plan is that it is possible to produce a plan that is visionary and comprehensive yet completely disconnected from the regulatory framework, political reality, and financial constraints of the larger system. If the sponsoring agency is a state, regional, or county-level government, keeping a handle on all of these aspects in each jurisdiction becomes particularly challenging.

CASE STUDY

The Southern California Association of Governments (SCAG) is the nation's largest metropolitan planning organization, comprising six counties, 191 cities, and almost 20 million residents. SCAG created a regional bike plan spanning this geography, which is nearly 300 miles across at some points. SCAG coordinated and communicated its regional bikeway concepts with local governments across the state, accommodating the unique concerns and goals of each community. One municipality's mayor was adamantly opposed to bike lanes on her community's streets, so SCAG worked with her to design cycle tracks and bike paths instead.

California has worked to make it very difficult for communities to adopt conflicting plans through "internal consistency" requirements. One way to ensure integration and consistency with the planning system is to update your pedestrian and bicycle master plan concurrently with, or immediately following, your comprehensive or transportation system plan.

The policy, project, and program recommendations developed during the master planning process should be written in a way that provides a clear pathway to the processes and activities of your city, county, region, and state. Examples include comprehensive/general plans, regional transportation plans, design and engineering standards, zoning codes, neighborhood plans, traffic enforcement activities, school citing policies, and economic development plans.

Links and Resources

A Resident's Guide for Creating Safe and Walkable Communities. 2008. Federal Highway Administration (FHWA). Available at: http://safety.fhwa.dot.gov/ped_bike/ped_cmnity/ped_walkguide/index.cfm

Bikeability and Walkability Checklists:

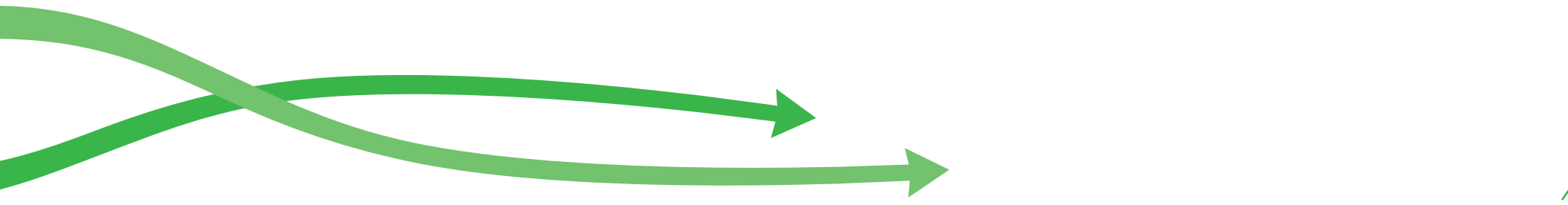
- Bikeability Checklist: http://www.bicyclinginfo.org/pdf/bikeability_checklist.pdf
- Walkability Checklist: http://katana.hsrc.unc.edu/cms/downloads/walkability_checklist.pdf

FHWA links to research on benefits of active transportation: http://www.fhwa.dot.gov/environment/bikeped/benefits_research.htm

Lagerway. 2009. **Creating a RoadMap for Producing & Implementing a Bicycle Master Plan.** The National Center for Bicycling and Walking & Active Living Resource Center. Available at: http://www.bikewalk.org/ncbw_pubs.php

Littman et al. 2012. **Pedestrian and Bicycle Planning: A guide to best practices.** Victoria Transport Policy Institute. Available at: http://www.vtpi.org/nmtguide.doc

Utah Bicycle and Pedestrian Master Plan Design Guide. 2011. Utah Department of Health. Available at: http://health.utah.gov/obesity/documents/Utah%20Bike%20Ped%20Guide.pdf



2 HISTORY AND EVOLUTION OF PEDESTRIAN AND BICYCLE MASTER PLANNING

Bicycle and pedestrian master planning has come a long way since the first wave of non-motorized transportation plans were produced in the 1970s. Federal and state policy developments, leadership at the local level, higher expectations for public involvement, more sophisticated planning methods, and new infrastructure types all have influenced comprehensive planning for walking and bicycling. This chapter presents a brief summary of these historical developments.

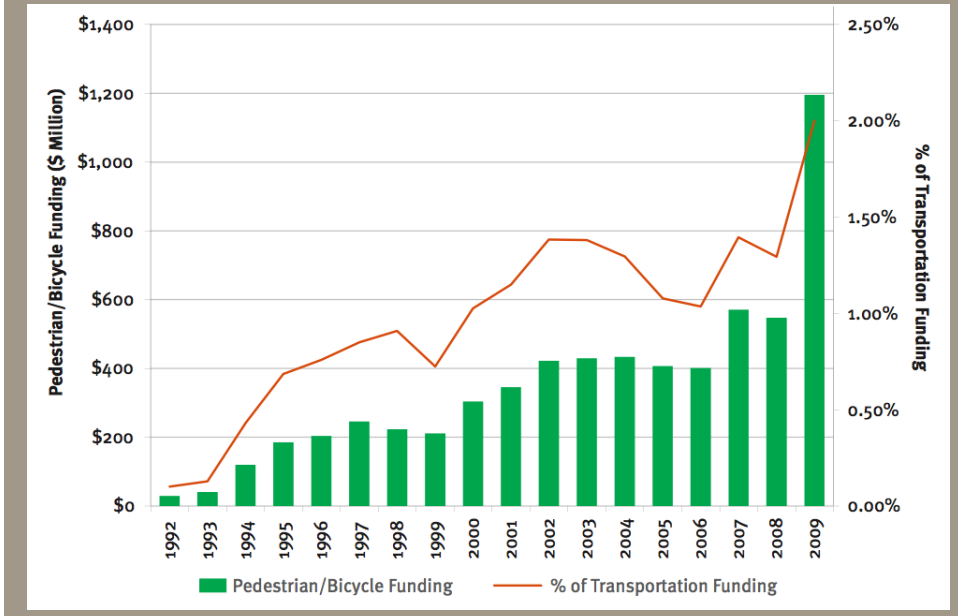
Federal Policy Evolution

The environmental movement of the 1960s sparked initial federal interest in non-motorized transportation policy. The National Environmental Policy Act (NEPA) of 1970 signaled an increasing awareness of the environmental impacts of our daily activities, including the fact that our nation's auto-dominated lifestyles were culpable in producing significant air, water, and noise pollution. In 1973, the OPEC oil crisis added to concerns about our transportation system's increasing reliance on foreign petroleum. Together, these events led officials at the federal level to rethink our focus on freeways and automobiles and reconsider the merits of walking and bicycling for transportation. A handful of communities responded by producing their first bicycle and pedestrian master plans in the mid to late 1970s.

As automobile emissions control technology improved and the threat of another oil crisis appeared less imminent, complacency returned to Washington. Then, in 1990, passage of the Americans with Disabilities Act (ADA) and Clean Air Act provided new federal guidance on planning for access and mobility. In 1991, the Intermodal Surface Transportation Efficiency Act (ISTEA) laid the foundation for a second wave of non-motorized transportation master plan production. In addition to requiring that Metropolitan Planning Organizations (MPOs) consider the needs of bicyclists and pedestrians, ISTEA provided federal funds for bicycle and pedestrian planning, projects, and programs.

In 2005 the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: a Legacy for Users (SAFETEA-LU) established national funding for Safe Routes to School and provided increased funding for projects that aimed to increase road safety, including the safety of pedestrians and bicyclists. SAFETEA-LU also increased funding for the Regional Trails Program, the Congestion Management Air Quality (CMAQ) program, and the Transportation Enhancements (TE) program. A new Federal policy statement on non-motorized transportation released

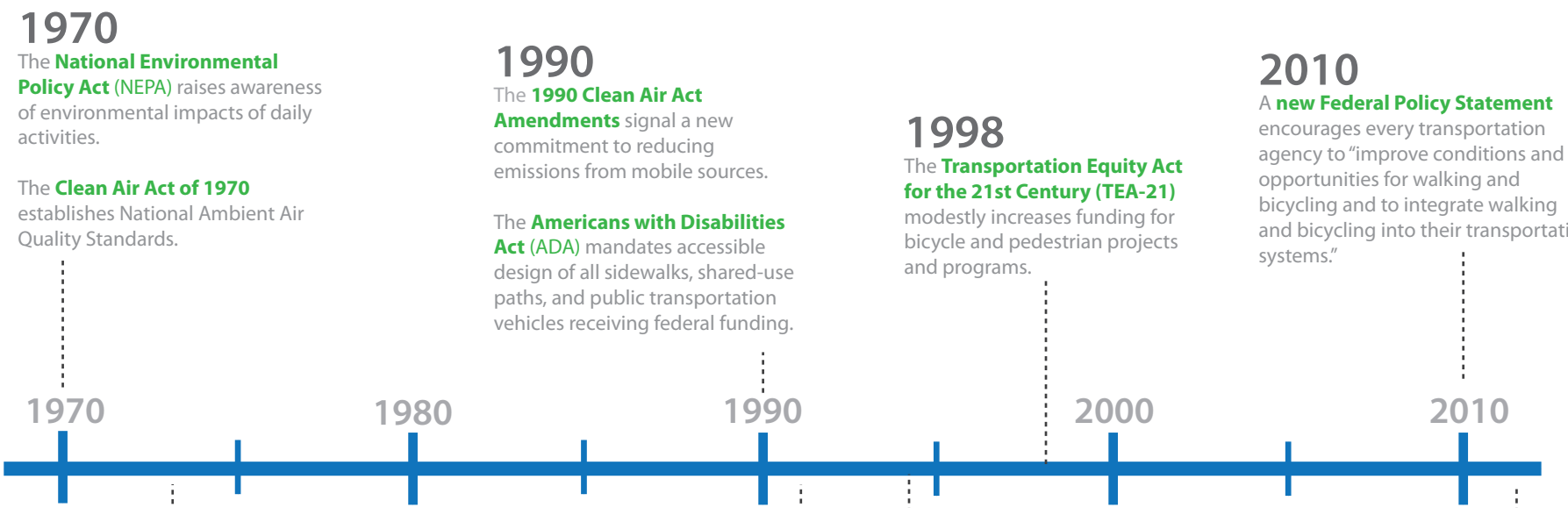
FEDERAL PEDESTRIAN AND BICYCLE FUNDING, 1992-2009



Between 1992 and 2009, Federal spending on bicycle and pedestrian projects and programs grew from less than one quarter of one percent to over two percent of total FHWA spending.

Source: The National Walking and Bicycling Study: 15 year status report

THE EVOLUTION OF FEDERAL POLICY RELATED TO WALKING AND BICYCLING



1970

The **National Environmental Policy Act** (NEPA) raises awareness of environmental impacts of daily activities.

The **Clean Air Act of 1970** establishes National Ambient Air Quality Standards.

1973

The **OPEC Crisis** illustrates the vulnerability of a transportation system that relies on foreign oil.

The **Federal Aid Highway Act of 1973** allows a share of Federal Highway money to be spent on bicycle and pedestrian infrastructure.

1990

The **1990 Clean Air Act Amendments** signal a new commitment to reducing emissions from mobile sources.

The **Americans with Disabilities Act** (ADA) mandates accessible design of all sidewalks, shared-use paths, and public transportation vehicles receiving federal funding.

1991

The **Intermodal Surface Transportation Efficiency Act** (ISTEA) opens up billions of dollars for bicycle and pedestrian facilities and programs.

1994

The **US Department of Transportation sets two national goals** : 1) Double the share of trips made by bicycling and walking, and 2) Reduce the number of bicyclists and pedestrians injuried or killed in traffic crashes by 10%.

1998

The **Transportation Equity Act for the 21st Century (TEA-21)** modestly increases funding for bicycle and pedestrian projects and programs.

2005

The **Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users** (SAFETEA-LU) authorized more than $200 billon for bicycle and pedestrian investments.

2010

A **new Federal Policy Statement** encourages every transportation agency to "improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems."

2012

Despite increasing demand for walkable and bikeable communities, **Moving Ahead for Progress in the 21st Century** (MAP-21) reduced funding for walking and bicycling in the wake of an economic recession.

2010 POLICY STATEMENT ON BICYCLE AND PEDESTRIAN ACCOMMODATION

"Every transportation agency, including [Federal] 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."

in 2010 further strengthened federal support for walking and bicycling.

In 2012, Moving Ahead for Progress (MAP-21) modestly decreased dedicated funding programs for bicycle and pedestrian activities. This change was not a result of decreased interest in active transportation, but rather a consequence of fiscal pressures at the federal level.

State Policy Evolution

While a detailed, state-by-state history of the evolution of bicycle and pedestrian policy is beyond the scope of this guidebook, this section provides a description of trends and selected state requirements related to bicycle and pedestrian master planning.

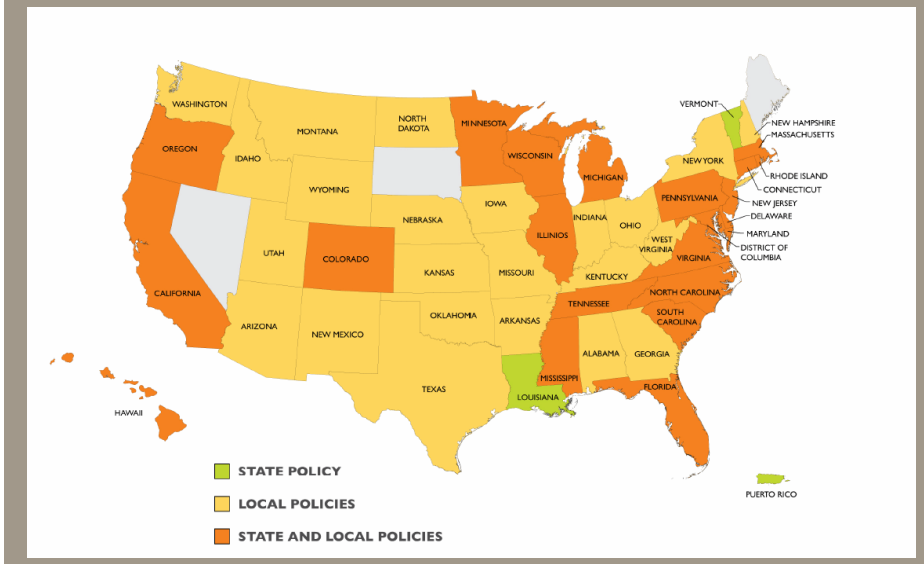
Some states specify required elements for bicycle master plans. For example, the California Bicycle Transportation Act (1994), as referenced in the California Streets and Highways Code Chapters 890 to 894.2, requires that all cities and counties choosing to adopt a bicycle master plan must include certain content such as maps, the projected increase in the number of bicycle commuters, and a description of the public involvement process. Some states also have dedicated funding sources for non-motorized transportation projects that require a current master plan. California's Bicycle Transportation Account (BTA) requires cities to update bicycle master plans every five years in order to receive funds.

Some states also require bicycle and pedestrian planning to be a component of each city's comprehensive plan. For example, Oregon's Transportation Planning Rule (TPR) requires Metropolitan Planning Organizations (MPOs), counties, and cities to adopt Transportation System Plans with specific bicycle and pedestrian components.

An increasing number of states, including New Jersey, Louisiana, Connecticut, and Minnesota, have adopted Complete Streets policies that require planning and design standards to accommodate bicyclists and pedestrians. Finally, more than 30 states have adopted climate change action plans that contain goals of reducing greenhouse gas emissions from transportation. Among them are states as diverse as Florida, Arizona, Tennessee, Colorado, Kentucky, Illinois, New York, and Hawaii.

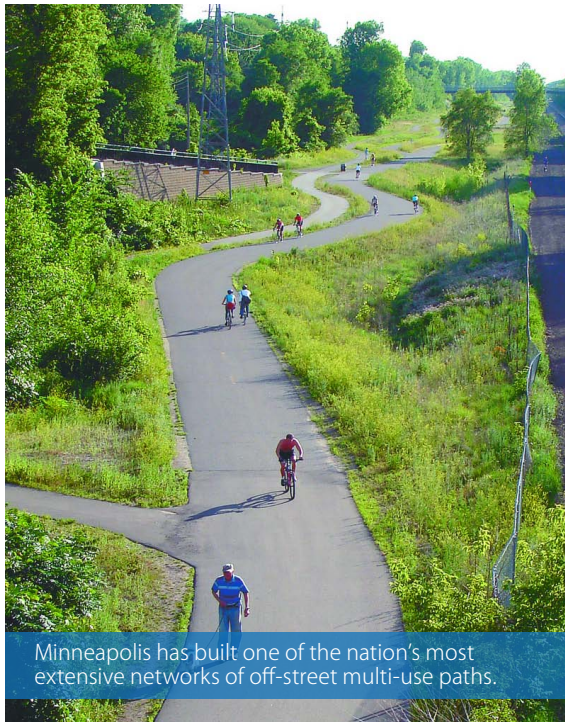
Bicycle and pedestrian coordinators within state departments of transportation are a resource for providing information about relevant statewide

COMPLETE STREETS POLICIES ACROSS THE COUNTRY



As of mid-2012, 352 regional and local jurisdictions, 26 states, the Commonwealth of Puerto Rico, and the District of Columbia have adopted policies or have made written commitment to do so.

Source: National Complete Streets Coalition.



Minneapolis has built one of the nation's most extensive networks of off-street multi-use paths.

This cycle track in NYC provides a protected space for bicyclists and a crossing refuge for pedestrians.

policies, planning requirements, and funding opportunities.

Innovation at the Local Level

While federal and state policies and funding have been essential to the growth in the number of communities that have adopted non-motorized transportation master plans, much of the action has been at the local level. In large American cities such as Chicago, Minneapolis, New York, Portland, San Francisco, Seattle, and Washington D.C., leadership and advocacy at the local level have pushed planners and engineers to develop and implement comprehensive long-range plans for pedestrians and bicyclists.

The cities mentioned above, as well as smaller communities such as Davis, California; Tucson, Arizona; Boulder, Colorado; and Chattanooga, Tennessee have been at the forefront of piloting new infrastructure such as hybrid beacons, cycle tracks, bicycle signals, and bicycle boulevards. Many of these cities have reworked their existing policies and roadway design standards to facilitate walking and bicycling and pioneered the development and implementation of education, encouragement, and enforcement programs designed to support active transportation.

Recent Developments in Process and Content

Over the past ten to 15 years, bicycle and pedestrian master planning has evolved significantly. Increased interest in active transportation has led to the production of more thoughtful master plans informed by robust data and sophisticated methodologies. A better understanding of attitudes toward walking and bicycling has motivated planners and designers to endorse and recommend infrastructure types not previously employed in the U.S. or elsewhere. And finally, increased expectations and new technologies in the realm of public involvement have increased opportunities for meaningful stakeholder and community participation.

Increased Level of Interest

After 60 years of auto-dominated transportation planning, walking and bicycling are increasingly being viewed as legitimate modes of transportation by mainstream transportation planners and engineers. Much of this is due to new research indicating that non-motorized transportation supports improved public health and safety, fuels economic development, and enhances social and environmental sustainability.

More Sophisticated Plans

Bicycle and pedestrian master plans are increasingly more than a simple list of priority projects depicted on a map, accompanied by planning-level cost estimates. While physical improvements remain an integral part of active transportation master plans, infrastructure investments are often supplemented with extensive policy, education, enforcement, and encouragement sections.

As more and more public agencies begin to collect data about walking and bicycling, it has become possible to integrate performance measures and benchmarks into non-motorized transportation plans. More extensive data collection efforts have also stimulated the development of advanced analytical tools. These tools have the ability to provide more detailed descriptions of existing conditions, generate more precise projections of current and future demand for walking and bicycling,

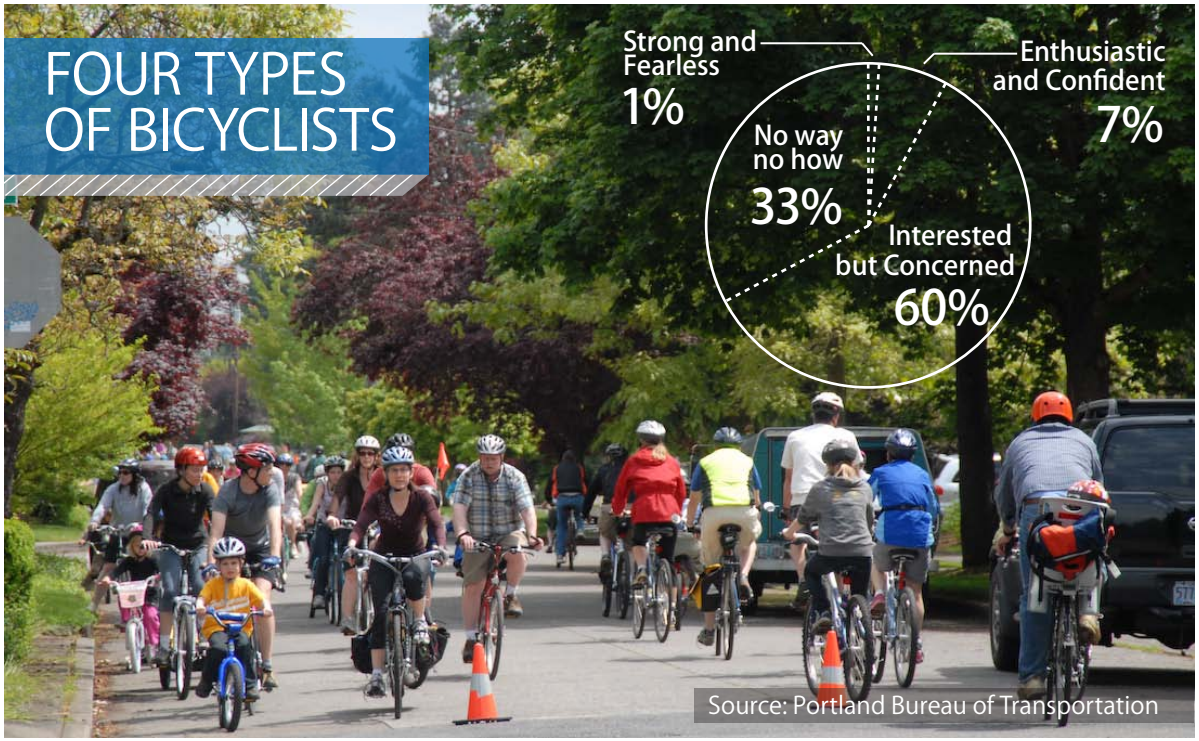
more clearly articulate the benefits of making improvements, and assist with project evaluation and prioritization (see Chapters six and seven for more on data an analytical tools).

Finally, it is becoming more common to find detailed analytical work such as project feasibility studies, health impact assessments, and environmental analyses housed within master plans. This finer grain analysis of the impact of recommended projects is symbolic of the perception that walking and bicycling are increasingly relevant in addressing community needs, and reflects local government's increasing desire for plans that include projects that are ready to go when funding becomes available.

Expanded Range of Accepted Facility Types

The realization that a large portion of the population is not comfortable bicycling in a conventional four to five foot wide bike lane has motivated planners and engineers across the country to explore new infrastructure types that better suit the needs of a so-called "interested but concerned" population.[2] This recent expansion of accepted facility types, including bicycle boulevards, buffered bike lanes, and cycle tracks has fundamentally changed the process of developing a bicycle network and creating/

2 Geller. 2005. "4 Types of Transportation Cyclists." City of Portland Bureau of Transportation. Available at: http://www.portlandonline.com/transportation/index.cfm?a=158497&c=44671



updating bicycle facility design guidelines.

Updates to the Federal Highway Administration's Manual on Uniform Traffic Control Devices (MUTCD) in 2009[3] and the American Association of State

Highway and Transportation Officials' (AASHTO) Guide to the Development of Bicycle Facilities in 2012[4] have expanded planners' and engineers' notions of what is possible. The National Association of City Transportation Officials' (NACTO) Urban Bikeway Design Guide provides practical guidance to planners wishing to implement the most innovative facility designs.

The proliferation of Complete Streets policies has also generated a renewed interest in the design features of walkable urbanism. Boston, MA; New Haven, CT; Los Angeles County; CA; Louisville, KY; and Tacoma, WA are among the local governments that have developed Complete Streets design manuals in recent years. A 2011 draft update to the United States Access Board's Public Right-of-Way Accessibility Guidelines (PROWAG)[5] also provides new guidance on planning for accessibility, including pedestrian access routes, pedestrian signals, detectable warning surfaces, roundabouts, on-street parking and passenger loading zones, transit stops and shelters, and street furniture.

Increased Expectations for the Public Involvement Effort

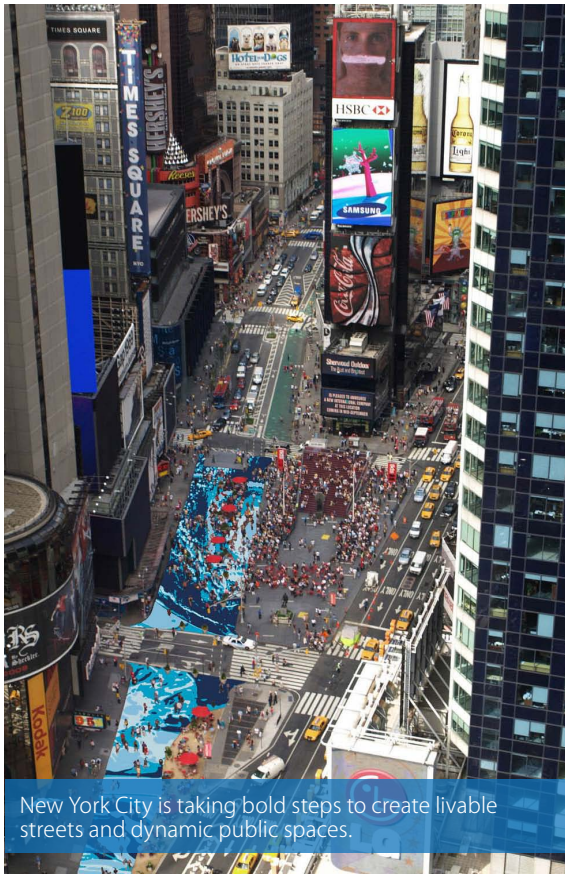
A robust public process can dramatically improve community buy-in and lead to lasting progress and support. This usually means that information collected during one or two public meetings, which

3 The 2009 MUTCD is available here: http://mutcd.fhwa.dot.gov/

4 Available here: https://bookstore.transportation.org/collection_detail.aspx?ID=116

5 Available here: http://www.access-board.gov/prowac/nprm.pdf

Neighborhood Greenways, a.k.a. Bicycle Boulevards, are creating a paradigm shift in how planners think about bicycle networks.



New York City is taking bold steps to create livable streets and dynamic public spaces.

tend to attract those already actively engaged, will not reflect a broad cross-section of the community. As a result, public agencies are becoming more conscious of who should be involved in the process of developing a bicycle and/or pedestrian master plan to ensure that a variety of perspectives are considered.

Broadening the target audience beyond hard-core bicyclists or pedestrian activists to the "interested but concerned" demographic, low-income and minority populations, older adults, youth, and other underrepresented groups is an increasingly important objective. Reaching groups that may never walk or ride a bike but nonetheless have a stake in the plan such as business, freight, or emergency response interests is also important.

Another significant and ongoing change in the public engagement realm is not limited to bicycle and pedestrian master planning. The emergence of interactive, web-based communication and feedback platforms including social media, virtual open houses, and interactive mapping have changed the way the public expects to receive information about and engage with planning processes.

Links and Resources

2010 Updated Federal Policy Statement on Walking and Bicycling: http://www.fhwa.dot.gov/environment/bikeped/policy_accom.htm

Pedestrian and Bicycle Information Center. 2010. **"The National Walking and Bicycling Study: 15 Year Status Report."** Available at: http://katana.hsrc.unc.edu/cms/downloads/15-year_report.pdf

The Initiative for Bicycle and Pedestrian Innovation's evaluation of bike boxes at signalized intersections: http://www.ibpi.usp.pdx.edu/bikebox.php

Boston, Massachusetts' Complete Streets Guidelines: http://bostoncompletestreets.org/topics/whats-new/

Los Angeles County's Model Design Manual for Living Streets: http://modelstreetdesignmanual.com/index.html

Louisville, Kentucky's Complete Streets Manual: http://www.louisvilleky.gov/BikeLouisville/Complete+Streets/

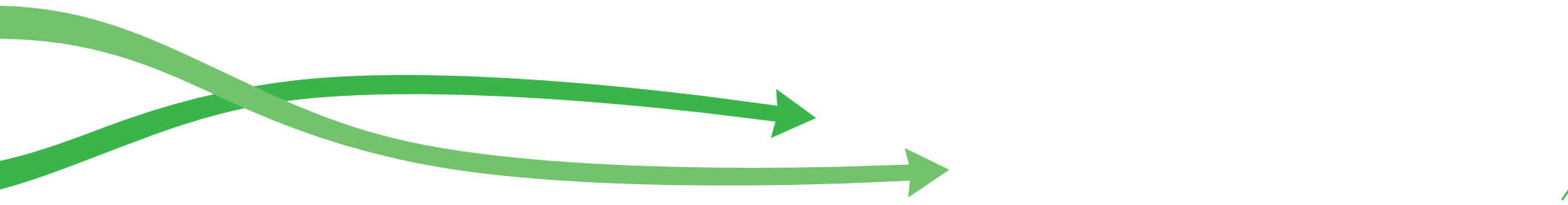
Tacoma, Washington's Complete Streets Design Guidelines: http://www.cityoftacoma.org/Page.aspx?hid=11665

Report by the City of Portland and the University of North Carolina Highway Safety Research Center on colored bicycle lanes and safety: http://www.portlandonline.com/shared/cfm/image.cfm?id=58842

Research documenting several scan tours: http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP20-68A_Prospectus.pdf.

A STEP-BY-STEP GUIDE TO THE PROCESS

PART TWO



3 PREPARING FOR THE PLANNING PROCESS

Master planning requires careful preparation. This chapter outlines the preliminary tasks necessary to ensure a successful process and create a plan that will be implemented.

Conduct Initial Background Research

The first step in creating or updating a non-motorized transportation plan is a review of existing plans. If your community already has a bicycle or pedestrian master plan, it should be evaluated to determine how much of the plan has been implemented and the factors that have impacted implementation progress. If this is your community's first plan to comprehensively address walking and or bicycling, conduct an inventory of plans and policies (at local, county, regional, and state levels) that directly or indirectly affect non-motorized transportation. This includes regional transportation, comprehensive, transportation system, corridor, neighborhood, freight, transit, climate change, and disaster response plans.

Gaining an understanding of work completed by local non-profit organizations or advocacy groups that have a stake in improved walking and bicycling conditions can improve the planning effort. An inventory of these groups' past and current activities will also help identify potential project partners. Conducting one-on-one phone interviews is one way to glean helpful information. Key groups to contact at this stage include:

- Pedestrian and bicycle advocates
- Local bicycling and walking clubs
- Public health professionals
- Environmental groups
- Transit advocates
- Disability advocates

Reviewing non-motorized plans in neighboring municipalities, or in places that share characteristics with your community (such as size, population, topography, climate, or culture), may shed light on relevant issues. Also look at communities that have accomplished what your community aspires to in terms of increased mode share, number of miles of facilities, or other goals. Interviews with planners and engineers may be valuable here as well, particularly in terms of lessons learned during the planning process.

Select Plan Type: Separate or Combined

The needs of pedestrians differ from those of bicyclists, and therefore should be considered independently. While this does not necessarily require the production of separate plans for each mode, doing so tends to produce more detailed and mode-specific recommendations.

Large cities often decide to produce separate bicycle and pedestrian master plans, while combined bicycle and pedestrians plans are common in small and medium-sized communities. This happens for two reasons. First, the public and many transportation planners/engineers tend to group walking and bicycling together because they do not fit into conventional modal categories. Second, staffing and funding constraints often force the two modes into a single planning process. While in some cases this represents a valuable opportunity, think carefully about whether or not a combined plan will best serve the needs of your community.

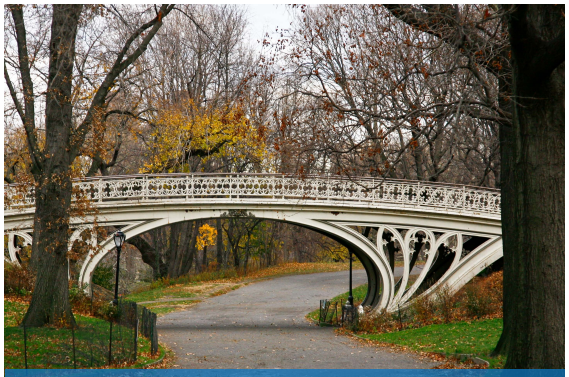
Integrated Plans: Benefits and Drawbacks

Benefits

- Some facilities, such as multi-use paths and grade separated crossings, accommodate both bicyclists and pedestrians. If off-street trails are expected to be a prominent feature of your plan, a combined bicycle and pedestrian plan may be appropriate.
- Since bicyclists and pedestrians are similarly vulnerable, both may benefit from solutions such as improved street lighting or education programs focused on interacting with heavy or high-speed traffic.
- Integrated plans may generate discussion about the need to change existing street standards, geometric design, and design guidelines. For example, wide motor vehicle travel lanes encourage higher motor vehicle speeds, reducing the safety for pedestrians and cyclists.
- There may be compelling political motivations for producing a combined plan. In places where support for walking and bicycling is nascent, a combined plan may be a pragmatic and appropriate first step. Another advantage is the potential to leverage interest for one non-motorized mode into support for the other.

Drawbacks

- The infrastructure needs of bicyclists and pedestrians do not typically overlap. Bicyclists travel primarily on the road network, while



Well-designed shared facilities such as multi-use paths, undercrossings, and bridges for non-motorized traffic accomodate pedestrians and bicyclists without conflict.

pedestrians travel on sidewalks. In most situations, crossing treatments for pedestrians will take a different form than crossing treatments for bicyclists.

- Because bicyclists tend to travel further out of their way to access streets with bicycle facilities, it makes sense to focus on strategic route planning. By contrast, pedestrians are much more likely to take the shortest route, which makes crossing treatments and urban design more relevant in a pedestrian planning process.
- Differences in range lead to planning at a different scale. Compared to pedestrians, bicyclists are willing and able to travel much longer distances. Mapping out a bicycle network at a city-wide or even regional scale is challenging but achievable, while pedestrian network planning at the same scale would overwhelm most budgets.

RELEVANT CHARACTERISTICS OF PEDESTRIANS AND BICYCLISTS

DIMENSION	PEDESTRIANS	BICYCLISTS
PARTICIPANTS	Everyone, including youth, older adults, and people with activity limitations	At least four types: 1) Strong and Fearless, 2) Enthusiastic and Confident, and 3) Interested but Concerned, and 4) No Way No How
RANGE*	Up to 1 mile, although just over half of all walking trips in the US are less than a ½ mile.	1-5 miles, although most trips in the US are less than 3 miles.
SPEED**	1-4 mph	8-20 mph
INFRASTRUCTURE USED MOST FREQUENTLY	Sidewalks and pedestrian pathways	Roadways (including on-street bikeways)
INFRASTRUCTURE PLANNING RESPONSIBILITY	Local land use planners, transportation planners, real estate developers	Transportation engineers and planners responsible for on-road infrastructure; parks and recreation planners for off-road infrastructure
BARRIERS AND CONCERNS	Crime (actual and perceived), trip distance, poor aesthetics, conflicts with motor vehicles	Safety from motor vehicles, trip distance, lack of appropriate end-of-trip facilities (secure parking, showers)
DEGREE OF POLITICAL ORGANIZATION	Typically low	Often high
SENSITIVITY TO URBAN DESIGN DETAILS	High	Moderate

*Trip lengths depend on trip purpose; recreational walking and bicycling trips tend to be longer than utilitarian trips.
**Speed also depends on trip purpose; people tend to walk and pedal more vigorously when recreating compared to utilitarian trips.
Source: Adapted from "Walking and Cycling International Literature Review." Available here: http://katana.hsrc.unc.edu/cms/downloads/Krizek%20Walking%20and%20Cycling%20Literature%20Review%202009-1.pdf

- Bicycle advocates tend to be more organized and are likely to be vocal during the process; walking advocates are not typically as well organized. As a result, combined plans will often focus on the bicycle component at the expense of the pedestrian environment.
- In practice, the budget almost never allows for an excellent combined plan that fully addresses the needs of both pedestrians and bicyclists. In general, when plans are combined, pedestrians lose out.

Separate Plans: Benefits and Drawbacks

Benefits

- Separate plans allow analysis and alternatives to be tailored to each mode, at the appropriate scale.
  - An attractive pedestrian network requires careful attention to urban design. With a separate pedestrian plan, in-depth analysis at a neighborhood or corridor level is feasible.
  - Since bicyclists primarily travel on the road network, accommodating bicyclists requires a thorough analysis of roadway characteristics. A separate bicycle master plan can allow for in-depth exploration of the bicycle facility types suited to particular roadways and user types.
- Producing separate plans demonstrates commitment to each mode. Sometimes this symbolic gesture can make a big difference to community stakeholders and advocates.
- Engaging in a separate public process allows people who walk and people who ride bikes to be heard and participate independently, resulting in better information for planners and a better experience for participants.

COMMON ELEMENTS OF BICYCLE, PEDESTRIAN, AND COMBINED MASTER PLANS

	BIKE PLAN	PEDESTRIAN PLAN	COMBINED BICYCLE + PEDESTRIAN PLAN*
POTENTIAL POLICY ELEMENTS	• Roadway maintenance policies related to bikeways (striping and re-striping bike lanes, clearing debris, filling potholes) • Bicycle/transit integration policies • Updates to roadway performance evaluation methodology • Bikeway encroachment enforcement policies	• Maintenance policies related to sidewalks and crosswalks • Land-use planning and development regulations/ incentives that promote walkability • Crosswalk enforcement policies	• Complete Streets ordinances • Street connectivity standards • Traffic calming, road diet, and speed reduction programs • Travel demand management programs
POTENTIAL PROGRAM ELEMENTS	• Bike to work/school programs • Bicycle safety education programs • Bicycle mechanics and maintenance classes • Bike sharing	• Walk to work/school programs • Pedestrian safety education programs • Senior Strolls program	• Safe Routes to School • Ciclovia or Open Streets events
POTENTIAL PROJECT ELEMENTS	• Bikeways • Multi-use paths/Trails • Bicycle traffic signals • Bicycle boxes • Bicycle parking and end-of-trip facilities • Way-finding for bicycles	• Sidewalks and pedestrian pathways • Multi-use paths/Trails • Crosswalks and pedestrian refuge islands • Streetscape improvements • Way-finding for pedestrians	• Sidewalks and pedestrian pathways • Bikeways • Multi-use paths/Trails • Grade-separated crossings • Transit stop facilities for walkers and bicyclists

*Please note that many of the elements included in the combined Bike/Ped category also commonly appear in mode-specific plans for bicycles as well as mode-specific plans for pedestrians.

Drawbacks

- Embarking on two separate planning efforts is more expensive and more time consuming.
- Producing two new master plans may generate backlash from critics.

One way to minimize these drawbacks is to produce the plans in succession. This can provide efficiencies in some areas where the modes overlap, such as with education and encouragement programs. This also helps maintain momentum for non-motorized transportation planning overall.

Establish the Need for the Plan

After conducting initial research and deciding whether to produce separate plans or a combined plan, the next step is to demonstrate the need for a plan and generate excitement about the process. Your approach will vary depending on who is already on board, who is leading the process, and how the process was initiated. The impetus for the plan may come from an elected official, staff member, or community groups. Outreach and education oriented toward staff, elected officials, and the public is critical, but the focus and attention given to different groups will vary in their relative scope depending on the level of support each group expresses.

Staff people who can make a compelling case for non-motorized transportation in the context of broad policy goals can help build support for the plan. If high-level staff and elected officials are not convinced that developing a bicycle and/or pedestrian master plan is necessary, the effort is unlikely to get off the ground. Specifically, it is important for elected officials to understand the need for a new or updated master plan. They are likely to be supportive if there is strong interest from the public.

Develop a consistent message that clearly and concisely explains the need for the plan to a diverse group of internal staff as well as elected officials, then schedule meetings with key leaders. Make sure to tailor the content to the audience, thinking about how a non-motorized transportation plan fits into the work they are already doing. If elected officials are not yet on board, it is usually best to start with staff. Make sure to include all officials and agencies that will approve the plan or play a role in implementation.

Also be prepared to explain to skeptics with a variety of different perspectives and interests why a non-motorized master plan makes sense and how it may benefit them. This may mean coming to a meeting with studies or reports on the social, economic, or environmental benefits of investing in walking and/or bicycling; taking engineers to a nearby community with on-street bicycle facilities to show them what they will look like; or demonstrating that a bicycle master plan can reduce conflicts with large vehicles like delivery trucks, buses, and fire trucks.

Identify Sponsoring Department

Plans can be sponsored by a variety of public departments including parks, public works, transportation, planning, or economic development. The choice should be strategic, and the department should have the resources, authority, and staff expertise to coordinate both the planning and implementation process.

CASE STUDY

During a recent update to San Diego's Pedestrian Master Plan, the city seized an opportunity for interdepartmental collaboration. The planning department led the process, but actively engaged the engineering department through a series of charrettes focused on planning and the design of detailed pedestrian improvements. Through this process, the planning and engineering departments created a new way of working together.

Secure Funding for the Planning Process

Funding for bicycle and pedestrian master planning processes can come from a variety of sources. Many government entities choose to use their own transportation funds, while others seek planning grants from state-level Departments of Transportation and Metropolitan Planning Organizations. Although the landscape is always changing, federal funding sources under MAP-21 that are suitable for bicycle and pedestrian planning include: Transportation Alternatives (TA), the Recreational Trails Program (RTP), the Congestion Mitigation and Air Quality (CMAQ) program, and the Highway Safety Improvement Program (HSIP).[6] Municipalities may also seek external funding from county governments.

Each region will vary in the amount of funding (if any) they provide for bicycle and pedestrian planning and will have a different process for allocating funds. Since walking and bicycling are sometimes inappropriately

6 For more information about federal funding see: http://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/

COST ESTIMATES FOR THE PLANNING PROCESS

	SMALL CITY OR TOWN	MEDIUM-SIZED CITY OR COUNTY	LARGE CITY OR METRO REGION
BICYCLE MASTER PLAN	$30,000 - $150,000	$70,000 - $200,000	$150,000 - $500,000
PEDESTRIAN MASTER PLAN	$30,000 - $175,000	$90,000 - $300,000	$250,000 - $500,000
COMBINED BICYCLE + PEDESTRIAN MASTER PLAN	$50,000 - $200,000	$100,000 - $400,000	Not Recommended

thought of as "extras," funding for non-motorized modes may be inconsistent. The communities making the most progress in active transportation conditions are those that reallocate at least some of their existing transportation funding to walking and bicycling, reflecting an understanding that these modes are integral to the health of their community and therefore should be core expenditures.

Consult with the bicycle and pedestrian coordinator in your state for current information on available funding sources. If your state, MPO, or county does not provide funding for non-motorized planning, think strategically about ways to reallocate existing funds or generate new revenue streams at the local level. Parking fees, gas taxes, sales taxes, and property taxes are some common revenue sources for transportation planning at the local level.

The cost of developing a plan is directly related to the size of the geographic region and the size of the population. Other important factors include the extent of required data collection, scope of the public engagement process, and the availability of skilled staff resources. Expect to spend about as much on an active transportation plan as you would spend on other types of transportation plans in your area.

As a general guideline, it is very difficult to produce a non-motorized transportation plan for less than $30,000, even in a small city. On the other end of the spectrum, a bicycle or pedestrian plan in a large city or metropolitan region may cost $300,000 or more. As the table above shows, pedestrian master plans tend to be slightly more expensive. This is partially due to the fact that they require more detailed existing conditions data collection. Pedestrian master plans also have a wider range of potential costs since design guidelines for a variety of different circumstances may be part of the plan. Combined bicycle and pedestrian plans exhibit the widest variation in cost because they can take a variety of different forms and address walking and bicycling at various levels of detail. At the scale of a large city or metropolitan region, producing separate bicycle and pedestrian plans is strongly recommended.

Finally, it is extremely important to allocate enough funds, in the right proportion, to the public engagement effort. Highly successful active transportation planning processes spend roughly one third of the overall budget on outreach, education, and public participation. (Chapter Four will cover public engagement in more detail.)

Establish an Internal Review Process

Setting up an internal review system ensures that all proposed solutions (policy changes, design concepts, new programs, etc.) are fully vetted by the sponsoring agency's staff and elected officials before they are released to the public.

Internal review can take a variety of different forms

INTERNAL REVIEW

Consider inviting a senior-level staff person from all of the following agencies to participate in internal review:

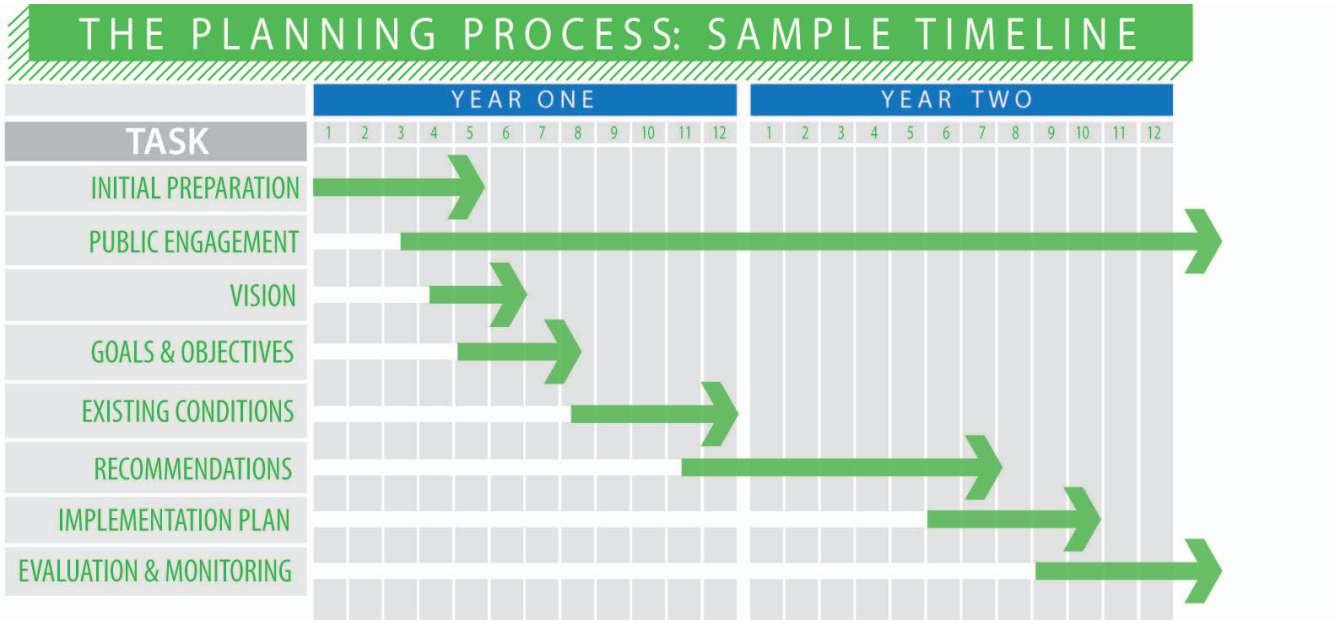
- Engineering
- Transportation
- Planning
- Public Works/Streets Maintenance
- Emergency Services
- Mayor's Office
- City Council
- Parks and Recreation
- Waste management
- Disability coordinator
- Transit Agency
- Community or Economic Development
- Housing
- Water
- Stormwater
- State DOT
- Regional planning agency (MPO)

including regularly scheduled meetings, work sessions, or commitments to review documents via e-mail. The process should allow key internal stakeholders to think through the feasibility of preliminary solutions before they are made public. This can avoid problems later if the public prefers an option that staff consider unfeasible.

Since you will likely be recruiting busy people, ensure that the review process is thorough yet efficient. Do not ask all representatives to review every section of the plan; only request that they take a look at the sections relevant to their work and/or approval process.

Define the Project Scope

The project scope defines the boundaries of the planning process, determines the primary focus of the work, and describes the final product. Since the scope will drive the planning process, it must be well defined and well supported by all key internal and external partners. During the scoping process, participants should think critically and realistically about their goals for the planning process and final plan. Is the goal to energize staff and the public about active transportation through a visioning process? Or is your community primarily concerned with increasing competitiveness in grant applications for pedestrian amenities and bikeways? Is the desired outcome a simple map of infrastructure projects, or an ambitious plan to become the most walkable community in your state? Make sure your scope is reasonable for your resources, and will produce a plan that can be implemented.



Determine How the Plan will be Integrated with Other Plans

Thinking strategically about how your plan fits with other planning efforts at different scales and levels of government helps avoid redundancies, assists with identification of barriers to implementation, and illuminates opportunities to partner with other departments and agencies. Review the following documents with an eye toward their potential impact on walking and bicycling:

- Other transportation plans at the state, regional, county, municipal, and neighborhood scales
- Land use plans and the zoning code
- Economic development plans
- Park and open space plans
- Neighborhood plans
- Design guidelines
- Air quality plans
- Climate change plans

The bicycle and/or pedestrian plan should spell out how efforts to improve conditions for walking and/or bicycling are currently a part of other planning documents, or should describe how recommendations will be incorporated into related plans in future updates. The plan must either be consistent with related plans or specifically identify recommended changes to those plans. Otherwise, the discrepancies will confuse the actors charged with implementation.

Working with Consultants: If, when, and how?

Public agencies hire consultants for bicycle and pedestrian master plans for several reasons. First,

CASE STUDY

Portland's Bicycle Plan for 2030 includes draft policy language for the next update to Portland's Transportation System Plan (TSP), suggesting several changes to policies and objectives. For example, the bicycle master plan suggests adopting a "Green Transportation Hierarchy" as well as revision of the city's parking policies to include bicycle parking language and objectives.

The central thrust of the Green Transportation Hierarchy concept lives on in the *Portland Plan*, a more recent city-wide planning document. Action item 96 directs multiple City agencies to "Establish a policy that prioritizes transportation systems that support active transportation modes – walking, use of mobiligy devices, biking and transit."

good consultants have specialized knowledge and expertise in issues related to planning for walking and bicycling, and have experience working with an array of community types. Many consultants have also developed advanced analytical tools for existing conditions analyses and project prioritization. The most common reason to enlist the help of consultants is simply the lack of staff capacity to manage a planning process on top of ongoing work.

On the flip side, there are benefits to producing the plan in house. Agency staff members know the community and stakeholders, and tend to be highly invested in the process. Public sector staff people are ultimately the ones who will implement the plan, and are more connected to funding sources for implementation. Finally, producing the plan without the assistance of a consultant may save on costs.

Other questions to ask in the process of determining the need for a consultant include:

- Where would a consultant provide the most benefits during the planning process? Do we need a consultant for the entirety of the process or only part of it?
- What kind of expertise is missing from the public agency team that a consultant could potentially provide?
- How much time could be saved by hiring a consultant compared to doing it in house?

Take stock of the resources and skills available within your agency and use them strategically. When a public agency has much of the data already in house, it is likely to be well-equipped to produce an existing conditions chapter with limited help from consultants. Clients typically get more value from consultants during advanced technical analyses and policy/infrastructure/program development.

Selecting a Consultant

If you decide to hire a consultant, draft a Request for Proposals (RFP) carefully, thinking specifically about your agency's needs and the project scope. Ask each candidate to explain how they will fill identified gaps in knowledge/expertise, skills, and services.

CASE STUDY

Tacoma, Washington recently completed its first mobility plan with the help of a consultant. One of the city's urban planners said, "When working on a plan this big and comprehensive, things will go sideways in a number of ways. I think it is the nature of it. . . . You need to expect that creating a plan like this is not an easy process. And whoever a jurisdiction hires as its consulting firm, they need to have absolute faith that those people will be there to help through the difficult situations when they happen. This is why we hire experts."

Make sure to interview each candidate, and insist on speaking with the staff members who will be assigned to your project. Judge consultants on the quality of their previous work, not their sales pitch. Speak with previous clients and look at the full breadth of projects and products that are similar to what you are requesting.

Getting the Most Value from Your Consultant

When coordinating with consultants, clear communication is essential. Ensure that the consultants understand the role of their work and how it fits into the larger process. Also make sure that both parties have a shared vision for the final product(s). Project managers on both sides should have frequent conversations about the status and quality of ongoing work. Do not allow consultants to spend large chunks of the budget developing ideas that are politically or financially infeasible. Ensure that the consultant understands the structure and nature of the decision-making at the public agency.

Do not assume that data collected remotely, including spatial information or tours in Google street view, will provide out-of-town consultants with everything they need to know. Brief them on local issues related to walking and bicycling in your area and insist that they visit your community at least once. Ideally, the consultant will be local, close by, or partnered with a local firm who knows your community well.

CASE STUDY

The City of Chicago hired an unusual consultant to help develop its Bicycle 2015 Plan. The city hired Chicago's local bicycle advocacy group, The Active Transportation Alliance, instead of a standard consulting firm because they felt the advocacy would "push the envelope" and create a vision unique to Chicago. Additionally, hiring the local advocacy group saved the City significant money and created buy-in from the bicycling community at the very beginning of the process.

Note that Chicago's Active Transportation Alliance has a long history of working with the City. on programs such as education, bicycle parking, and Streets for Cycling. Most cities may not have local or regional advocacy groups capable of taking on this role.

4 ENGAGING WITH THE PUBLIC

A thorough public participation process is essential to the success of any master plan. Expect to spend approximately one third of your budget on public outreach, education and active engagement. The best plans require extensive conversations between the public agency, the consultant (if applicable), and the public. These are not insignificant costs, but ensuring adequate attention to public involvement protects against potential backlash and may save money in the longer term.

Consulting with the public is central to the process of crafting plan recommendations, allowing planners to recommend policy updates, new facilities, and programs that accurately reflect the public's needs, concerns, and hopes for the future. The legitimacy of plan recommendations relies in large part on the robustness of information gathered during the public involvement process.

The public participation process is also a unique opportunity to build excitement and support. Each public involvement activity is a chance for two-way education; planners and other staff have much to learn from the public's local knowledge, and the public may be exposed to new information about active transportation.

Finally, providing meaningful opportunities for participation increases the likelihood that the plan will be implemented. When participants are directly involved with a planning process they are considerably more likely to insist that the actions described in the plan be carried out. And if the process moves beyond informing and consultation to collaboration, partnership development, and empowerment of the community, the public will play a direct role in implementing the plan.

The key to effective public involvement is providing a wide variety of ways that the public can participate in the process. Public input and engagement is particularly useful during these phases of plan development:

- Developing a vision for the plan and aspirations for walking and bicycling within the community
- Formulating goals and objectives
- Collecting information on existing conditions
- Discussing needs and proposed improvements

Decisions about when and how to involve the public should be guided by a clear sense of purpose. Think carefully about what you hope to gain at each step. Is the purpose to inform? To educate? To ask for opinions? To help with data collection? To solicit feedback on the draft plan? To develop partnerships? All of the above are valid reasons to invite the public's involvement; ensure each activity is designed to produce the desired results. The matrix on page 38 provides guidance on when to involve the general public as well as the advisory committees discussed in subsequent sections.

Identify the Full Range of Stakeholders

The first step in engaging the public is identifying the range of potential stakeholders. Your initial research should have yielded a basic map of the key partners and stakeholders within relevant government agencies. The next step is to identify stakeholders beyond obvious partners to produce a realistic plan and avoid a potential derailing of the process. Ensure that you include stakeholders with the power to block plan approval or delay implementation in addition to those that stand to benefit. These groups may include:

- Low-income, minority, and immigrant populations
- The business community
- Freight interests
- Emergency services
- Automobile clubs
- School district and school safety committee representatives
- Youth and older adults

CASE STUDY

Multiple cities have realized that their communities have workshop, or meeting, fatigue. Be smart and efficient about how many public meetings you hold. When planners in Nampa, Idaho realized that their residents were not attending open houses, the City took information to the people instead. By visiting existing social gathering places, staff spoke to record numbers of residents, far beyond what they estimated they could reach. The Planning Department presented their ideas to 10% of town residents and received the full support of City Council.

Assemble a Steering or Public Advisory Committee

Appointing a steering committee or public advisory committee to oversee the planning process is highly recommended. Both committee types are made up of interested citizens, although a steering

Reflect the diversity of your community in outreach and public involvement efforts.

committee possesses more authority. A steering committee collectively directs the planning process from beginning to end and is usually empowered to approve the draft plan before it goes to the final decision-making body (usually city council). A public advisory committee, on the other hand, typically provides feedback only at key moments or on key plan content.

The purpose of the steering committee or public advisory committee is to provide meaningful public involvement to representatives of all key stakeholders. Members of this group will work directly with staff to develop the draft plan. Each steering committee or public advisory member should be personally invited and asked to complete a formal application process. Hold interviews for each position, and ensure that each potential member understands the level of commitment, including requirements for attending meetings, reviewing draft documents, and providing feedback on proposed solutions.

Again, strive to reflect the diversity of non-motorized transportation users within the members of the steering committee or public advisory committee. Move beyond the usual suspects of bicycle and pedestrian clubs or advocacy groups; invite both allies and any groups or individuals that may attempt to block adoption of the plan.

Consider Forming a Technical Advisory Committee

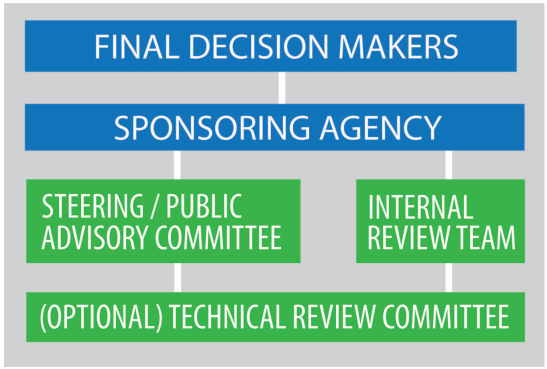
Some communities choose to form a technical advisory committee in addition to the steering committee or public advisory committee. The purpose of a technical advisory committee is to support the steering committee or public advisory committee by providing technical information and professional/expert judgment. Typically this committee is made up of a mix of local government staff and volunteer experts serving in a technical role. In some cases the internal review process may satisfy the need for technical advice and recommendations, but if there is sufficient interest and expertise from the public, consider forming this additional committee.

Define Roles, Responsibilities, and Authority of Each Committee

Clearly defining the roles, responsibilities, and authority of each committee prevents confusion, provides accountability, and enables timely decision-making. After completing this step, you should be able to answer the following questions:

- How active is each committee's role? Will the members primarily serve in a review capacity or will they be involved in data collection, analysis, and development of recommendations?
- Is the committee advisory or does it have the authority to make specific recommendations and/

SAMPLE ORGANIZATIONAL CHART FOR COMMITTEES



CASE STUDY

The number, type, and structure of commitees will vary depending on the skills and level of interest of the public. During the production of Portland, Oregon's Bicycle Plan for 2030, planners formed 11 Working Groups that focused on specific questions and issues within the Plan such as policy, health and equity, and bicycle parking. The groups were made up of members of the stakeholder advisory committee as well as members of the general public.

or approve the draft plan before it goes to the final decision-makers?

- Within each committee, what is the process for coming to an agreement? What decision-making rules will be employed?

Ensure the sponsoring agency and the consultant team (if applicable) are in agreement about each committee's role.

Consensus on major decisions is desirable although not always possible; sometimes the decision to move forward without complete consensus is necessary. However, it is best to create a process where committee members support the plan through adoption and implementation.

Communicating with the Public

Effective communication with the public is critical to the success of the planning process. Come up with an overall strategy/approach for communications and task one person with overseeing this aspect of the process. While consultants may be adept at public outreach and/or facilitation, if the public sector planners have the skills and the time, it is almost always better for them to spearhead the outreach and be the face of public engagement activities. Having public sector staff lead the process is a better message symbolically, helps build longer-term relationships, and creates continuity through implementation.

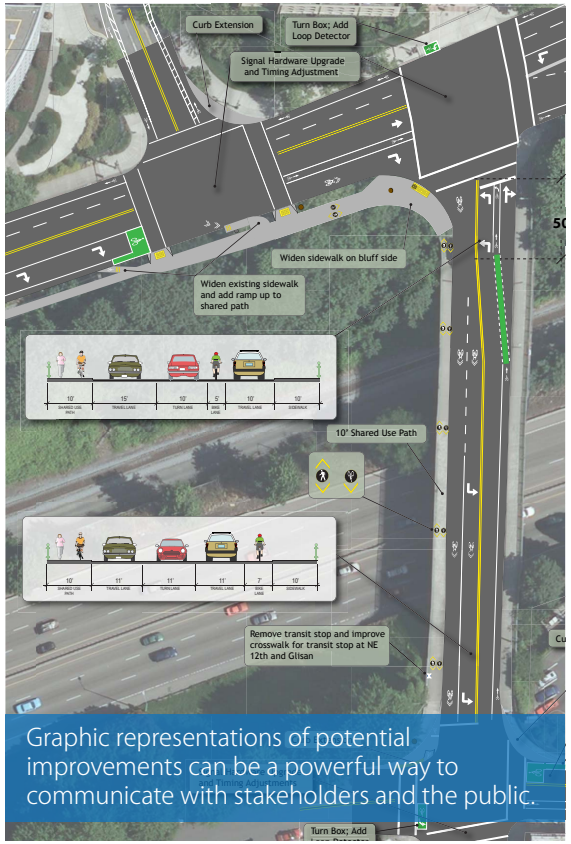
Keep it simple and consistent

Use simple language when communicating with the public. Develop a clear theme or set of themes such as health, safety, equity, transportation options, livability, etc. to keep messages consistent. Consider developing a style or "brand" for the planning effort, complete with logo, color scheme, and tag line. Also make sure your message is appropriate for those who currently may not walk or ride a bicycle. Messages can and should be tailored to specific audiences such as recreational bicyclists, commuters, the business community, income-constrained families, children, and immigrant communities.

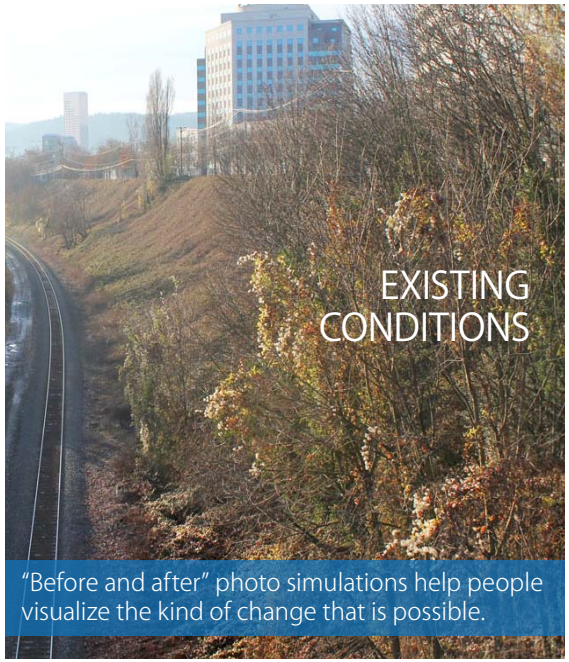
Use visual communication

Visual communication makes it possible to convey a large amount of information in a small amount of space, and is generally easier for lay people to comprehend. Graphics, photographs, and renderings of proposed transformations also draw people in and promote discussion about potential solutions. Visualizations become even more important when attempting to engage stakeholders who speak or read limited English.

One caveat to consider is that maps or graphics that appear too "polished" at an early stage of the process may convey the impression that decisions have been made before the public has had a chance to provide input or respond. Using hand-drawn maps or images that have a "sketchy" appearance can be a more effective way to communicate that proposals are still



Graphic representations of potential improvements can be a powerful way to communicate with stakeholders and the public.



"Before and after" photo simulations help people visualize the kind of change that is possible.

in the conceptual stage, with flexibility to shift course.

Make data accessible

Use data strategically to help the public understand existing conditions and the logic behind recommendations. Provide detailed technical reports on the project web site for those interested in digging deep, but avoid getting bogged down with data when communicating with the general public. Most people are not interested in sitting through a long presentation about average daily traffic, zoning codes, and budgets. Make a wide range of materials easily accessible online as well as in print, in as many languages as needed.

Clearly document all comments and feedback

Communication with the public is a two-way process. It is important to record comments in a systematic format and track their status. This demonstrates that the staff (and consultants) are listening to the input provided and have methods to incorporate the information into the process.

Reach out to non-traditional populations

Low-income, minority and immigrant populations can be difficult to engage for a variety of reasons. A history of disempowerment, language barriers, cultural barriers, and/or a lack of trust may prevent participation. Yet these populations stand to benefit from healthy, affordable transportation options.

If your agency does not have preexisting relationships with these groups, identify the community leaders, organizations, and networks that these communities trust and enlist their help with outreach and engagement. It is unrealistic to expect that you will be able to build the necessary trust during the compressed time line of a planning process, so relying on existing relationships is often the best approach to reach certain groups. When translation services are necessary, choose a trusted communicator with cultural sensitivity to the audiences. Ideally, the translator will be an individual the stakeholders already know and respect.

Focus groups tend to elicit more detailed and accurate information about the needs and desires of underrepresented, especially when compared to large gatherings that require public speaking.

Importance of continued involvement, advocacy, and leadership

Public engagement should continue after the planning process is complete. Later chapters will discuss on-going engagement methods to maintain momentum and generate support for plan implementation.

In-Person Public Involvement Strategies

Despite recent innovations in interactive electronic media, traditional pubic engagement activities remain important. In-person contact conveys benefits that web-based media cannot provide,

CASE STUDY

The City of Portland piggybacked some of the Bicycle Plan for 2030 events with the concurrent Streetcar System Concept Plan effort. These joint events reached a larger number of people, included more diverse groups, and made both projects more visible to city residents.

including the potential to build trust and connect staff with community members. In-person activities also allow for interactive exercises and the opportunity for participants to share ideas. Finally, providing a variety of ways for different personality types to engage comfortably is important; some people prefer to provide feedback in writing, while others thrive in conversations.

Stakeholder interviews

One-on-one interviews with key stakeholders are an effective, relatively efficient way to gain an in-depth understanding of the interests and concerns of a range of different groups. They also help planners and consultants quickly get up-to-speed on previous work related to walking and bicycling in the community. Stakeholder interviews will be most helpful if they are conducted early in the process.

Walking and bicycling tours

On-site walking and bicycling tours can be an excellent way to generate excitement about the planning process, illustrate how proper facilities improve the experience of walking and bicycling, or point out areas or corridors of concern. Such tours may be oriented toward the general public, staff, decision-makers, or directed at targeted groups such as the public advisory/steering committee, technical advisory committee, business owners, or professional drivers that operate large vehicles.

CASE STUDY

While preparing for the 2030 Bicycle Plan, Roger Geller, the City of Portland's Bicycle Coordinator, led monthly bicycle rides in various locations. The routes were only roughly laid out ahead of time, allowing for detours and flexibility. The group would regularly stop to ask questions and discuss issues. Post-ride focus groups at local coffee shops or pubs allowed further discussion. The rides were well attended, partially due to advertisement via city email lists, on the websites of local advocacy groups and blogs.

Focus groups

Semi-structured conversations with youth, older adults, low-income and/or minority households, immigrant communities, and other groups allow staff to collect detailed information about the needs of specific populations in an informal setting. Hold the meetings at places where your target audience typically meets, such as a school, senior or community center, church, or other facility. It is helpful to coordinate your effort with existing meetings of these organizations to increase participation rates. Create a script for focus groups to keep the discussion on track. If possible, consider using a professional facilitator to ensure that you obtain the information you need to move the process forward.

Surveys

Surveys can be extremely useful tools for gathering public opinions related to walking and bicycling.

Attitudinal surveys measure attitudes toward walking and bicycling at a general level.

Stated or visual preference surveys ask people to rate or rank walking and bicycling environments, facility types, and potential routes.

Origin/destination and route choice surveys give planners a sense of where people currently walk or bike and the routes they choose.

Web-based and paper surveys are the most common formats, although intercept surveys of pedestrians and bicyclists may also yield good results in areas where high rates of walking and bicycling are present. Some communities have had success offering doughnuts or other treats in exchange for

GET THE WORD OUT IN MULTIPLE WAYS

Information should be disseminated throughout the process in a wide array of formats. Typically these would include the following outlets. Brainstorm other opportunities unique to your process, site, and community.

- Press releases
- Flyers and posters
- Mailings
- Local newspapers
- Local magazines
- Community newsletters
- Television
- Radio
- Email lists
- Websites
- Social media
- Signs on bike routes, trails and downtown/neighborhood commercial areas that direct people to an event or website
- Outreach tables/tents at community events
- Short (5-10 minutes) presentations for neighborhood/home owners associations, churches, civic organizations, etc.

EVENT PLANNING TIPS

- Start with the purpose: What are the goals of the event? What information do you want to convey? What information do you hope to collect? How will that information be used?
- There is no one time that will work for everyone. Keep this in mind and try to schedule some meetings in the evenings, some in the mornings or afternoons, and some on the weekend.
- Consider participating in other planned events if the target audience is similar.
- Prepare a script or list of talking points to ensure consistent communication.
- Provide food or snacks appropriate for the group.
- Provide childcare and opportunities for youth engagement.

a completed intercept survey. Food can be a great motivator as well as an ice breaker.

Distribute surveys widely, tapping into established networks such as community groups, advocacy organizations, and faith-based communities whenever possible. When administering a web-based survey, distribute flyers with the survey's web address as well as a simple description of the project and contact information. Local bike shops, sporting good stores, health clubs, and other businesses may be supportive in getting the word out about the survey.

At events such as focus groups, open houses, and town hall style meetings, provide both paper surveys and flyers with a web link so participants have the option to complete the survey in the form of their choice. If space permits, offer the survey on a computer kiosk at the event.

Keep in mind that survey respondents self-select to participate. While the results may illuminate key issues and opportunities, it is important to remember that they do not represent everyone's view and should not dominate the direction of the plan.

Public open houses

Public open houses are designed to share information about the planning process and receive feedback from interested citizens. Typically the information is presented on large boards in a visually compelling fashion, and participants are invited to share comments with staff directly or on comment cards. Interactive exercises such as mapping routes, dot-voting, or re-designing street cross sections are usually well received. A drop-in format provides flexibility and accommodates busy schedules better than a set agenda.

Town hall style meetings

Town hall-style meetings have a more structured format, usually beginning with a presentation and followed by a public comment period or discussion. This type of meeting is generally most useful as a kick-off event or early in the planning process. Presentations delivered by members of the advisory or steering committee in collaboration with staff tend to be received more positively than if made by the public agency or consultant alone. Consider substituting an open comment period with facilitated small group discussions, which tend to generate more critical thinking and constructive conversation than timed, one-directional comments in front of a large group.

Both types of meetings can now be conducted "virtually" via the web, as described in the next section.

Innovative Public Involvement Strategies

Interactive web applications collectively known as "Web 2.0" include social media, blogs, wikis, and video sharing sites, all of which are now accessible through an array of mobile devices. A large percentage of the public not only expects instant access to a wide range of information, but also expects the ability to engage with this information in a well-designed, user-friendly virtual environment. Urban planners are increasingly taking advantage of these and other new technologies to engage the public, especially younger adults who are more likely to make use of the various technologies.

Opportunities to provide input and participate online must be authentic. One way to set the expectation that comments are taken seriously is to ask people for real names and a valid e-mail address. Have and follow a plan for how the feedback will be used, and to make that plan clear to the public.

Innovative methods will not generate interest in planning for walking and bicycling on their own. They must be coupled with traditional outreach and linked to real-life social networks. Some tools also require programming skills that are outside the typical skill set of planners and engineers. Also remember that not everyone has easy access to a computer, high-speed internet connection, a smart phone, or is comfortable using technology.

INNOVATIVE AND EMERGING PLANNING TOOLS

- Basic comment forms and surveys on the project website
- Web-based public input and discussion forums
- Short videos on the project website designed to educate the public on a key issue
- Virtual open houses that allow the public to view and comment on information presented at in-person open houses
- Interactive maps that allow the public to indicate problem areas and propose new facilities
- Smart phone applications that allow users to track walking and bicycling trips via GPS, report hazards, suggest bicycle parking locations, or answer survey questions as the planning process unfolds
- The use of Quick Response (QR) codes on printed materials that direct the public to a project website, event announcement, or surveys
- Real-time voting with electronic keypads at public meetings
- The use of digital kiosks and/or tablet computers for survey input
- Interactive online "gaming" exercises such as asking participants to select their top project ideas with a limited amount of money or redesign a street cross section to accommodate wider sidewalks and bicycle facilities
- 'Scenarios" exercises that illustrate the trade-offs involved with making different investments or policy decisions using "lite" versions of advanced integrated travel models
- Photo-voice projects that enable the public to document existing conditions with geotagging digital cameras
- Virtual tours and fly-throughs using 3-D mapping software
- Crowd sourcing (using social media and interactive web applications to allow the public to assist with data collection)
- Use of social media to announce events, share updates, and spark public dialog

Strengths of High-Tech Tools

Since most of the tools mentioned above allow people to participate from anywhere at any time, they provide an unprecedented level of convenience for people with busy schedules. Web-based public involvement tools also reach a key demographic; people in their 20s and 30s tend to be the most enthusiastic supporters of bicycle and pedestrian improvements of any age group, but they are often underrepresented at public meetings.

Electronic materials and/or exercises may also generate more thoughtful feedback from the public than in-person meetings. One of the limitations of in-person meeting is that participants are asked to digest and respond to a large quantity of information in a fairly limited amount of time. It is difficult, for example, to think critically about a bicycle network for an entire city or metropolitan region in a few minutes.

Walking tours can help the public understand problem areas as well as potential solutions.

Engaging interactive materials spark conversation and give the public a chance to weigh in.

PUBLIC ENGAGEMENT AND INTERNAL REVIEW: WHEN TO INVOLVE WHICH GROUPS

PLANNING PHASE/TASK	GENERAL PUBLIC	STEERING OR PUBLIC ADVISORY COMMITTEE	TECHNICAL ADVISORY COMMITTEE	INTERNAL REVIEW TEAM
SCOPING		○		○
VISIONING	●	●		○
GOALS AND OBJECTIVES	●	●		○
DATA COLLECTION	◒	◒	○	
NEEDS ANALYSIS	●	●	○	
OPPORTUNITIES AND CONSTRAINTS	◒	◒	○	◒
EVALUATION CRITERIA	◒	●	○	◒
NETWORK IDENTIFICATION	◒	◒	○	◒
FACILITY TYPES AND DESIGN GUIDELINES	◒	◒	○	●
DEVELOPING DRAFT RECOMMENDATIONS	○	◒	○	●
PRIORITIZING RECOMMENDATIONS	●	●	○	◒
PERFORMANCE MEASURES	○	◒	○	◒
PERFORMANCE STANDARDS		◒	○	◒
MONITORING AND EVALUATION	◒	●	○	○

Many of the emerging electronic feedback mechanisms allow planners to track participant demographics and locations, much like a traditional paper survey. This allows planners to target populations and neighborhoods with low rates of participation in alternative ways as the planning process unfolds. Finally, producing materials in electronic format saves paper and money.

Document the Process

Make sure to document your outreach and engagement efforts, along with the primary results, as they occur. Track the ways people were contacted, how and where meetings were announced, attendance at events (with demographic information if possible), number of completed surveys received, comments on interactive maps, etc. This documentation can be useful in helping people understand the source of specific approaches or recommendations, and also reassures elected officials, advocates, and the public that planners actively sought input from the public.

Links and Resources

Public participation resources compiled by the Environmental Protection Agency: http://www.epa.gov/international/public-participation-guide/Resources/index.html

Transportation-related public involvement resources compiled by the FHWA: http://www.fhwa.dot.gov/planning/public_involvement/resource_guide/page02.cfm

● ESSENTIAL
◒ RECOMMENDED
○ OPTIONAL

International Association for Public Participation: http://www.iap2.org/

Resources on Charettes: http://www.charretteinstitute.org/resources.html

5 DEVELOPING A VISION, GOALS, AND OBJECTIVES

The vision, goals, and objectives lay the foundation for all plan recommendations. Together, they describe the preferred future of walking and bicycling in your community and guide actions to achieve the desired outcomes.

A source of confusion here is that the use of the terms "goals" and "objectives" in urban planning is not always consistent. While there is general agreement that goals and objectives serve to flesh out the vision, "goals" in planning documents can range from very general value statements intended to provide policy direction to quantitative standards that describe a range of acceptable outcomes in the future. "Objectives" operationalize goals, demonstrating in concrete ways *how* a given goal will be achieved in practice.

There is also variation in the nomenclature planners use to describe the increasingly specific sets of statements that inform the process of developing recommendations. For example, instead of "vision, goals, and objectives," plans may use "vision, goals, policies, and implementation strategies" or "vision, goals, guiding principles, and initiatives." The terminology used is less important than the development of a hierarchy of policy statements that begins with a community vision and flows logically toward a set of specific actions intended to realize that vision.

Craft a Clear Vision

The vision should express your community's aspirations and future intentions around walking and bicycling. It should be simultaneously bold and achievable.

EXAMPLE VISIONS

MADISON, WISCONSIN

An interconnected bicycle way network with supportive development patterns will provide people with safe, convenient, and enjoyable access and mobility throughout the county. Bicycling will be encouraged and will become a common and even safer mode of transportation for everyday trips, contributing to the quality of life in Dane County communities and the health, safety, and welfare of all residents.

EUGENE, OREGON

Eugene is a place where walking and biking are integral to the community's culture, where the city's livability, sustainability, and overall quality of life are enhanced by more people walking and biking, and where these activities are safe, convenient, and practical options for everyone.

CHICAGO, ILLINOIS

The Bike 2015 Plan is the City of Chicago's vision to make bicycling an integral part of daily life in Chicago.

BELLEVUE, WASHINGTON

To plan, design, build and maintain an integrated, comprehensive network of pedestrian and bicycle facilities in collaboration with community stakeholders.

OAKLAND, CALIFORNIA

To promote a pedestrian-friendly environment; where public spaces, including streets and off-street paths, will offer a level of convenience, safety and attractiveness to the pedestrian that will encourage and reward the choice to walk.

HONOLULU, HAWAII

Honolulu is a bicycle-friendly city where bicycling is a viable and popular travel choice for residents and visitors of all ages.

KNOXVILLE, TENNESSEE REGION

We envision a convenient transportation system where people can bike safely to all destinations.

STATE OF NORTH CAROLINA

All citizens of North Carolina and visitors to the state will be able to walk and bicycle safely and conveniently to their desired destinations, with reasonable access to all roadways.

THE STATE OF WISCONSIN

To establish pedestrian travel as a viable, convenient, and safe transportation choice throughout Wisconsin.

A strong vision:

- Describes how walking and bicycling fit into your community's future in a concise, compelling fashion.
- Provides a sense of the outcomes you hope to achieve.
- Establishes a clear direction for the development of goals and objectives.

Getting the vision right requires public outreach, collaboration, and refinement. This should include an iterative process in which you receive ideas, draft potential vision statements, and circulate them for feedback and revisions. This process may repeat more than once before consensus emerges. See the callout box on page 41 for example vision statements.

Develop Plan Goals

Goals are usually fairly broad statements that reflect the achievement of the vision, make it more explicit, and help guide actions. Goals describe the end results that you want to achieve, such as:

- Increasing rates of walking and bicycling
- Increasing the safety of pedestrians and bicyclists

The number of goals in active transportation plans varies, although most plans contain between two and six. The callout box at right illustrates the diversity of potential plan goals.

Generate Plan Objectives

Objectives specify how each goal will be achieved. Each plan goal is likely to be associated with several objectives, since there are almost always multiple pathways to the attainment of a given goal. Think of objectives as a group of tasks or initiatives that, if completed, will result in (or at least move toward) the accomplishment of a particular goal.

EXAMPLE GOALS

MADISON, WISCONSIN

Provide for the safe, convenient and enjoyable travel by bicyclists in the Madison urban area and throughout the county.

EUGENE, OREGON

By the year 2031 Eugene will double the percentage of trips made on foot and by bicycle from 2011 levels.

CHICAGO, ILLINOIS

To increase bicycle use, so that 5 percent of all trips less than five miles are by bicycle.

LOS ANGELES, CALIFORNIA

Make every street a safe place to ride a bicycle.

SCARBOROUGH, MAINE

Provide pedestrian connectivity and access throughout the study area, especially to the schools.

PHILADELPHIA, PENNSYLVANIA

Promote sidewalks and streets as enjoyable public spaces.

DAVIS, CALIFORNIA

Increase the amount of bicycle trips as a percentage of all trips to 25% by 2012, a level formerly achieved in 1990.

EXAMPLE OBJECTIVES

MADISON, WISCONSIN

Create and improve continuous bicycle through routes on local connector streets that provide mobility alternatives in addition to use of arterial roadways.

EUGENE, OREGON

Create 20-minute neighborhoods by providing accessible, efficient, and convenient methods for pedestrians and bicyclists to travel to the places where they live, shop, work, and play by expanding and improving Eugene's bicycle and pedestrian network.

CHICAGO, ILLINOIS

Increase the number of bicycles that can be stored on CTA trains.

BOULDER, COLORADO

Promote and encourage the Boulder community to use their transportation options.

PUGET SOUND REGION

Provide safe and convenient bicycle and pedestrian access in all new and improved transportation projects, unless exceptional circumstances exist.

DAVIS, CALIFORNIA

Provide literature and current bicycle route maps for public use.

Example objectives include:

- Establish a cohesive network of walkways and bikeways.
- Help current and potential bicyclists choose safe and convenient routes.
- Manage vehicle speeds.
- Educate bicyclists and motorists to share the road.
- Promote the health benefits of active transportation.

While goals can be somewhat general, objectives should be more specific. Measurable objectives are best because they enable benchmarking and evaluation of progress. For example, "Decrease pedestrian fatalities" is a good objective because it clearly specifies both a unit (pedestrian fatalities) and the desired direction of change (a decrease). Based on this objective, the plan could then create a performance standard or benchmark that defined success as a 10% decrease in pedestrian fatalities over the next five years. In contrast, "Make walking fun," is problematic as an objective because it is unclear how "fun" will be measured or what level of "fun" might constitute success. Performance measures (aka indicators or metrics) and performance standards (aka targets or benchmarks) are the two basic tools generally used to evaluate progress toward achieving the vision, and are covered in more detail in Chapter Nine.

Revise Scope based on Public Input

Defining the vision, goals, and objectives will more than likely shift the scope of your effort. Once this process is complete, revisit and revise your process according to the accepted vision, goals and objectives.

EXAMPLE: MINNEAPOLIS BIKE PLAN

THE VISION

All bicyclists enjoy a welcoming environment; riding safely, efficiently, and conveniently within the City of Minneapolis year-round.

GOAL 1

Increase bicycle mode share.

EXAMPLE OBJECTIVES

- Support projects and initiatives that encourage people to bike to school, work, and other destinations.
- Increase the number of students biking to school.
- Provide education and information resources that reach diverse groups.
- Better understand bicycle flow within the city.

GOAL 2

Bicycling in Minneapolis is safe and comfortable.

EXAMPLE OBJECTIVES

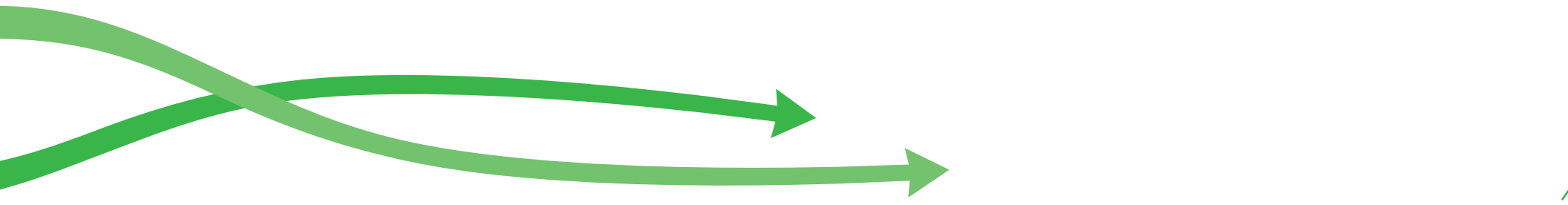
- Instill bicycling at a young age.
- Reduce crashes through improved enforcement.
- Improve bicycle safety at intersections.
- Make biking to transit a convenient transportation option.
- Consider innovative solutions when designing bicycle facilities.

GOAL 3

Destinations in Minneapolis are reasonably accessible by bicycle.

EXAMPLE OBJECTIVES

- Build and maintain a system of bikeways to increase bicycling and improve safety.
- Facilitate bicycle friendly design on all streets.
- Encourage private investment in bikeways and support facilities.
- Maximize available funding for bicycle facilities.



6 ESTABLISHING A FACT BASE

Complete and accurate information on existing conditions and projected trends provides a fact-based method to identify and prioritize improvements, creates a rational justification for specific investments in walking and/or bicycling, and establishes measures to evaluate progress.

The scope of your plan will influence your data needs. At a minimum, the following information will be needed for an adequate planning process:

- Existing plans and policies that affect walking and bicycling
- Existing bicycle and pedestrian facilities and programs
- Planned bicycle and pedestrian facilities and programs
- Activity centers and zoning maps
- Major barriers (rivers, freeways, steep slopes)
- Demographics
- Roadway characteristics (traffic speeds, traffic volumes, pavement conditions, lane widths, and right-of-way)
- Transit stop locations
- Crash data

Beyond the above, examine the goals and objectives of your plan to determine additional data needs. For example, if one of the primary goals of the plan is to improve walking and bicycling access to public transportation, acquiring transit ridership information by line and stop as well as the number of buses equipped with front-mounted bicycle racks will assist with making suggestions for infrastructure investments. If one of the primary objectives of the plan is to increase the number of youth that ride bikes to school, knowing the location, number, and quality of school bicycle parking facilities will allow for more thoughtful recommendations.

Appendix B provides a detailed list of potentially useful data. Keep in mind, however, that tracking down all the information listed there may not be vital to the success of your plan. Prioritize getting the information required to answer key questions. For example, knowing the precise location of every street tree and piece of street furniture in your region is not likely to assist with decision-making at the scale appropriate to a master planning process.

CASE STUDY

GIS-based demand models can be instrumental tools in developing pedestrian and bicycle master plans. While these models require a certain amount of baseline GIS data in order to estimate future demand for walking and bicycling, there is a tipping point where more data does not necessarily result in better forecasts. The City of San Diego realized that collecting bicycle and pedestrian counts in a set of targeted locations throughout the city allowed the model to produce the estimates they needed without overstretching their data collection budget.

Inventory Existing Data

Since the sponsoring agency is unlikely to have easy access to all of the data needed for the planning process, conducting an inventory of available data from relevant government departments such as the planning department, parks and recreation, transit agencies, and public works is a worthwhile exercise.

SPATIAL (GIS) DATA

- Meta-data (information about the data)
- Roads (with roadway classifications)
- Sidewalks
- Crosswalks
- Curb ramps
- Transit stops
- Existing on-street bicycle facilities
- Trails/off-street paths
- Planned improvements to bicycle and pedestrian networks
- Parks
- Rivers and water features
- Railroads
- Schools
- Traffic signals
- Zoning classifications
- Tax lots and building footprints
- Recent aerial photos with 6" or better resolution
- 1-meter Digital Elevation Model (DEM)

National data from the US Census and American Community Survey are easily downloadable from the US Census Bureau's web site: http://factfinder2.census.gov.

The following links provide additional downloadable data:

- **Current Population Survey (CPS):** A joint effort between the U.S. Census Bureau and BLS which provides labor force characteristics. http://www.census.gov/cps/
- **U.S. Bureau of Labor Statistics (BLS):** Provides data on labor market activity, working conditions, and price changes. http://www.bls.gov/
- **FedStats:** Provides statistics from over 100 government agencies. www.fedstats.gov
- **Centers for Disease Control:** Provides vital statistics. http://www.cdc.gov/nchs/Default.htm

Ensure data received from outside sources are accurate and up-to-date. Especially in the case of GIS data, verify the source and quality of the information. Additionally, ensure that any modifications or additions to GIS data made by consultants fit within the public agency's coding and data standards so that files will be usable in subsequent plan updates. This is relatively easily accomplished by having the GIS specialists at the public agency and on the consulting team work closely together.

Conduct Necessary Fieldwork

The type and quantity of information collected first-hand should be driven by the purpose of the plan and the project scope. While it is important to have adequate data, it is certainly possible to go overboard. There should be an explicit rationale behind each data collection effort and a plan for how it will be used. Field data collection should also match the level of detail in anticipated outcomes. For example, if the scope limits improvements to particular geographies or corridors, collect information only in those locations.

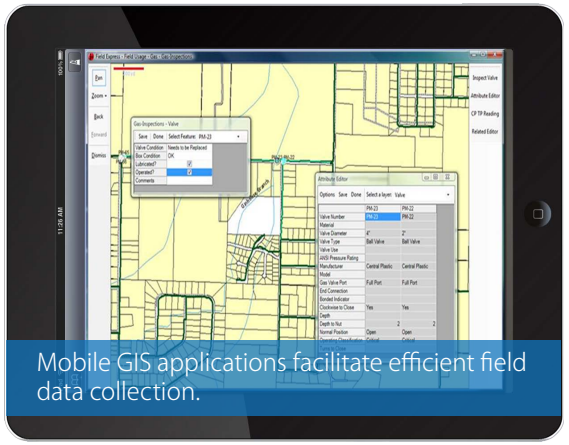
User information

Pedestrian and bicycle user counts can be informative to identify the relative importance of different routes or locations based on the number of people who currently are served by them. Additionally, if a routine counting program does not exist in your community, the planning effort is a chance to set up a program that will be repeated from year to year as a way to benchmark progress towards goals of more walking and bicycling activity. See the National Bicycle and Pedestrian Documentation project for information on how and when to conduct counts: http://bikepeddocumentation.org/.

Local advocacy groups or students in planning, engineering, or social sciences are often willing to conduct bicycle and pedestrian counts and/or intercept surveys on a volunteer basis. Be creative in terms of how the data are collected, but also be prepared to set limits on the time and energy devoted to fulfilling the complete wish list.

GPS-based smartphone applications that allow interested citizens to voluntarily share route choice information directly with local governments is an emerging technique for collecting user data on preferred walking and bicycling routes.[7] Tablet-based field questionnaire software is another innovative tool that allows participant responses to be sent directly to a database, eliminating inefficiencies associated with data entry.

Volunteers count pedestrians (above) and bicyclists (below) in Los Angeles.



Mobile GIS applications facilitate efficient field data collection.

7 San Francisco was one of the early adopters of this technology. See: http://www.sfcta.org/content/category/12/97/483/#other

Facility Quality Information

Existing facilities can be largely understood by review of GIS files and aerial maps. However, a few days of field review can set the planning team up for a better understanding of key locations of concern that have come up through surveys, public meetings, or through the steering committee. In addition to taking field measurements, the field review should document the presence or absence of facilities, observations of user behavior, and roadway dimensions. Bringing a digital camera with a built-in geo-tagging feature can streamline the process of creating materials for public meetings, the project web site, and the existing conditions report.

Where GIS files related to walking and bicycling do not yet exist, investing in mobile GIS software designed for use on a tablet or smartphone can be an effective way to quickly gather and input spatial information in the field since information collected with such software is immediately translated into GIS or other database files.

Make Sense of the Data

Transforming collected data into useful outputs requires organization and analysis. This may be as simple as putting the information in a geographic context (making a map) or comparing existing trends with your community's vision for the future. Planners and engineers have also developed a wide range of tools to assess existing rates of walking and bicycling, describe the quality of the walking and bicycling experience, and estimate future demand based on existing conditions. Some of the tools are simple, while others require specialized knowledge.

Particularly in large or complex urban areas, these tools can help paint a detailed picture of the existing conditions in various sections of the city, county, or

EXISTING CONDITIONS TOOLS

BICYCLE AND PEDESTRIAN COUNT TOOLS

Provide guidance on the systematic measurement of existing levels of walking and bicycling at specific locations. The National Bicycle and Pedestrian Documentation Project website contains instructions, count forms, and volunteer training resources: http://bikepeddocumentation.org/.

PEDESTRIAN / BICYCLE LEVEL OF SERVICE TOOLS

Evaluate the quality of existing roadway segments (with or without bicycle facilities) based on automobile volumes, automobile speeds, roadway width, and other factors. The Illinois League of Bicyclists has developed online calculators for both the Bicycle Level of Service/Bicycle Compatibility Index (http://www.bikelib.org/roads/blos/blosform.htm) and Bicycle Level of Service/Pedestrian Level of Service (http://www.bikelib.org/roads/blos/losform.htm) methodologies developed by the FHWA and incorporated in the 2010 Highway Capacity Manual.

DETAILED ZONAL ANALYSES

Assess walking and bicycling conditions by geographic zone--can be based on a variety of factors including quality and quantity of existing infrastructure, automobile volumes and speeds, roadway network density, slopes, barriers, and land use intensity/mix.

BIKEWAY QUALITY INDICIES

Evaluate the quality of existing bikeway segments based on qualitative and quantitative factors such as automobile speeds and volumes, continuity, crossings and transitions, delay, comfort, and pavement quality.

BICYCLE / PEDESTRIAN DELAY ANALYSES

Assess the amount of delay for bicyclists and/or pedestrians at intersections or along corridors.

GAP ANALYSIS

Measures the average elapsed time between passing motor vehicles (especially helpful for acquiring signal warrants).

SAFETY INDICIES

Evaluate the safety of existing streets and intersections. The Pedestrian-Bicycle Intersection Safety Index gives intersections a score based on average daily traffic, the type of traffic control device at the intersection, presence of crosswalks or bicycle lanes, crossing distance, number of driveways, crash data, and other factors. The Federal Highway Administration developed a user guide for this tool, which is available on its website: http://www.fhwa.dot.gov/publications/research/safety/pedbike/06130/06130.pdf. The University of California at Berkeley also provides a technical guide for conducting pedestrian safety assessments here: http://www.techtransfer.berkeley.edu/tse/psa_handbook.pdf.

EXISTING CONDITIONS TOOLS (CONTINUED)

BIKEWAY / SIDEWALK NETWORK GAP ANALYSIS

Highlights opportunities to improve the connectivity of bicycle and pedestrian networks by mapping gaps.

EQUITY GAP ANALYSIS

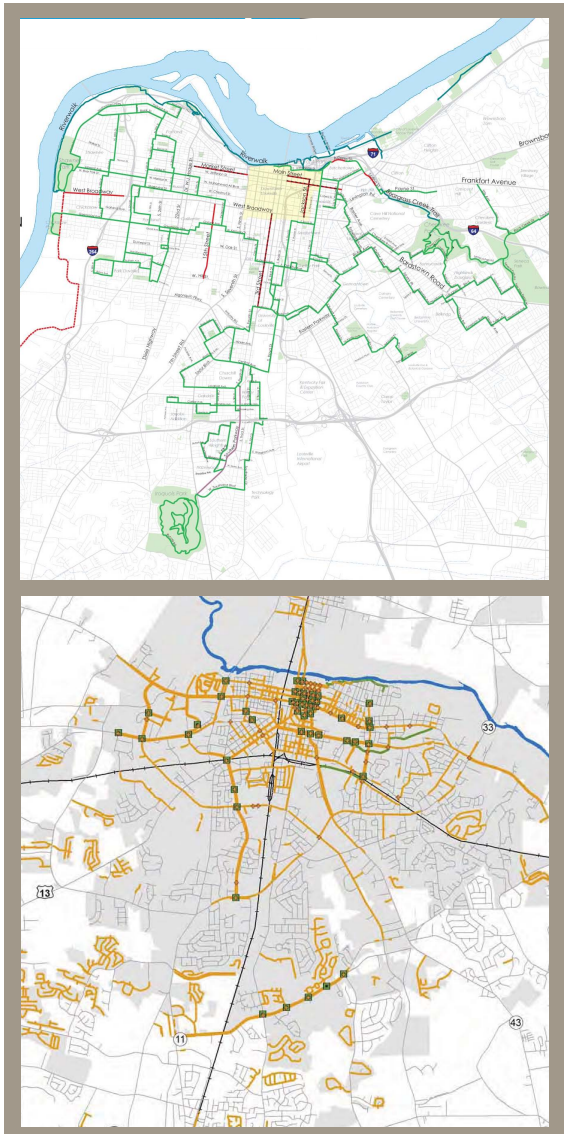
Assesses geographic equity of bicycle or pedestrian facilities with respect to disadvantaged populations. This analysis overlays gaps in the network of interest (pedestrian, bicycle, transit) with spatial data on income, race, and age in GIS.

NEIGHBORHOOD ACCESS MAPPING

Evaluates access to services such as grocery stores, neighborhood retail, schools, and transit stops within a short walk or bicycle ride. May be based on a network distance/travel time analysis or a simple concentration of services. Walkscore.com provides one way to conduct this analysis.

REGIONAL TRAVEL MODELS WITH INTEGRATED PEDESTRIAN OR BICYCLE ENVIRONMENT FACTORS

Estimate future demand for walking and bicycling at a regional level. MPOs with an interest in bicycle and pedestrian travel may be equipped with this tool.



Mapping your community's current facilities helps describe existing walking and bicycling conditions. These maps show the existing bicycle network in Louisville, Kentucky (top) and the existing pedestrian network in the Greenville, North Carolina region (bottom).

metropolitan area. Many tools also assist with the production of maps, charts, and other visual aids that communicate a wealth of information. The usefulness of such tools will ultimately be determined by the aspirations of your community and the goals and objectives of the plan.

Describe Existing Conditions

Based on the analysis completed above, describe existing conditions. Creating a clear image of where your community is now enables a comparison with where you want to be in the future, and provides clues about how to get there. Use a combination of numbers, maps, photographs, and words.

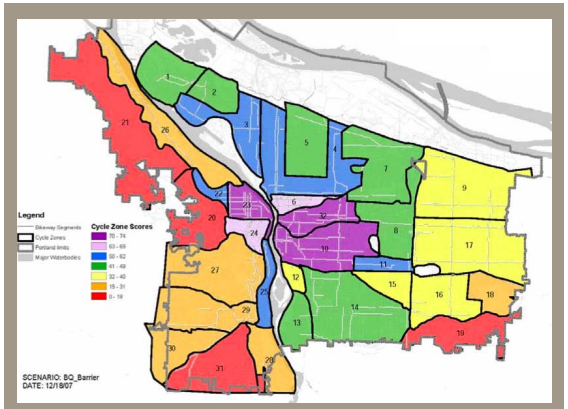
A typical existing conditions report contains:

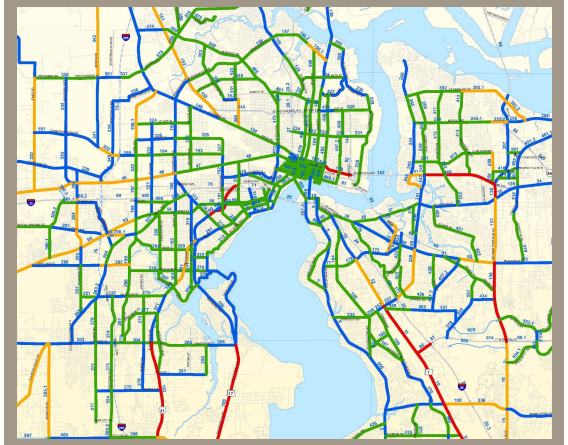
- An assessment of overall bicycle and/or pedestrian friendliness
- An analysis of bicycle and pedestrian crashes over the past 3-5 years
- Current levels of walking and bicycling
- Maps of existing facilities
- An inventory of existing programs and policies relevant to walking and bicycling

The level of detail at which existing conditions are described should be based on the project scope and negotiated with the steering or public advisory committee, consultants (if applicable), and sponsoring agency.

Assess Current and Future Needs

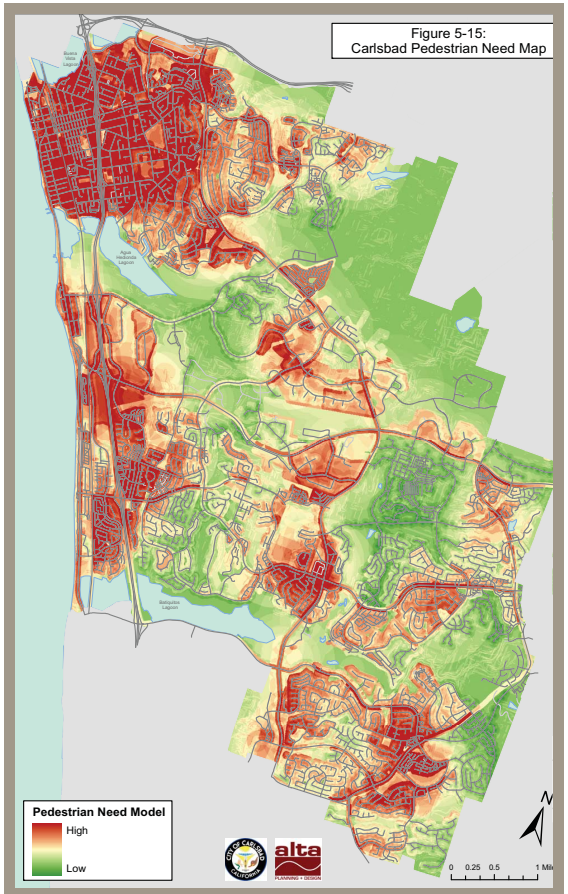
A needs assessment builds on the existing conditions report by summarizing the likely changes required in order to move towards the desired outcomes stated in the vision and goals. Since the point of identifying existing and future needs at this stage is to set





There are a variety of different ways to describe the quality or experience of walking or bicycling along different corridors or in different geographic areas. The upper map is a product of a detailed zonal analysis conducted for Portland, Oregon. Dubbed the "Cycle Zone Analysis," this effort used an index of the quality and quantity of existing bikeways, automobile volumes and speeds, roadway connectivity, slope, barriers, and land use intensity/mix to evaluate the bikeability of different sections of the city.

The lower map applies Bicycle Level of Service (BLOS) model outputs to roadway segments in Jacksonville, Florida.



This map from the Carlsbad, California Pedestrian Master Plan communicates the relative intensity of pedestrian needs in a compelling, intuitive format. The map was produced with a GIS model that considered population and employment densities; concentrations of youth, older adults, and people with activity limitations; median household income; pedestrian trip generators such as parks, beaches, schools, and regional shopping areas; transit stop locations and ridership; barriers such as steep slopes, freeways, and streets with high motor vehicle volumes and speeds; and previous pedestrian crashes.

planners up for developing more specific policy, project, and program recommendations, the way needs are articulated can be somewhat general. For example, the needs assessment may point out that many streets are not currently pleasant environments for walking or bicycling, that current policies create barriers to increased walking and bicycling activity, or that projections of current trends indicate increased demand for walking and bicycling in the future.

The content of the needs assessment will come from two main sources: 1) an analysis of existing conditions and projected trends, and 2) the results of the public engagement process. Feedback received from stakeholder interviews, surveys, focus groups, and public workshops should play a prominent role, particularly in the description of urgent needs.

Identify Opportunities and Constraints

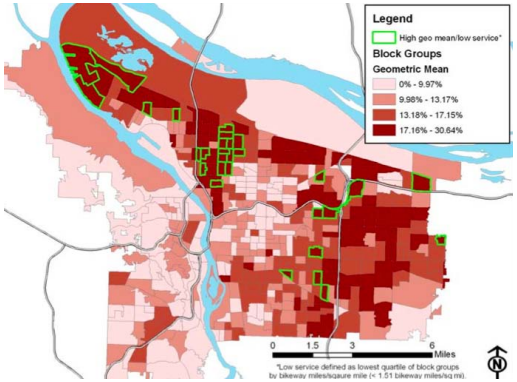
Identification of opportunities and constraints is the final piece of the bridge that spans the gap between crafting the vision and developing draft recommendations. Once the planning team understands existing conditions and community needs, getting to a set of recommended actions (policy updates, infrastructure projects, and program initiatives) is a matter of seeing the places or situations where potential for positive change exists.

Many of the analytical tools allow a direct comparison of existing conditions against the community's identified goals. The opportunities and constraints analysis takes this information one step further by explicitly linking the two. The purpose is both to recognize unfulfilled potential for walking or bicycling and to note places where further exploration of improvements is likely to be the most successful.

One example of how opportunities and constraints

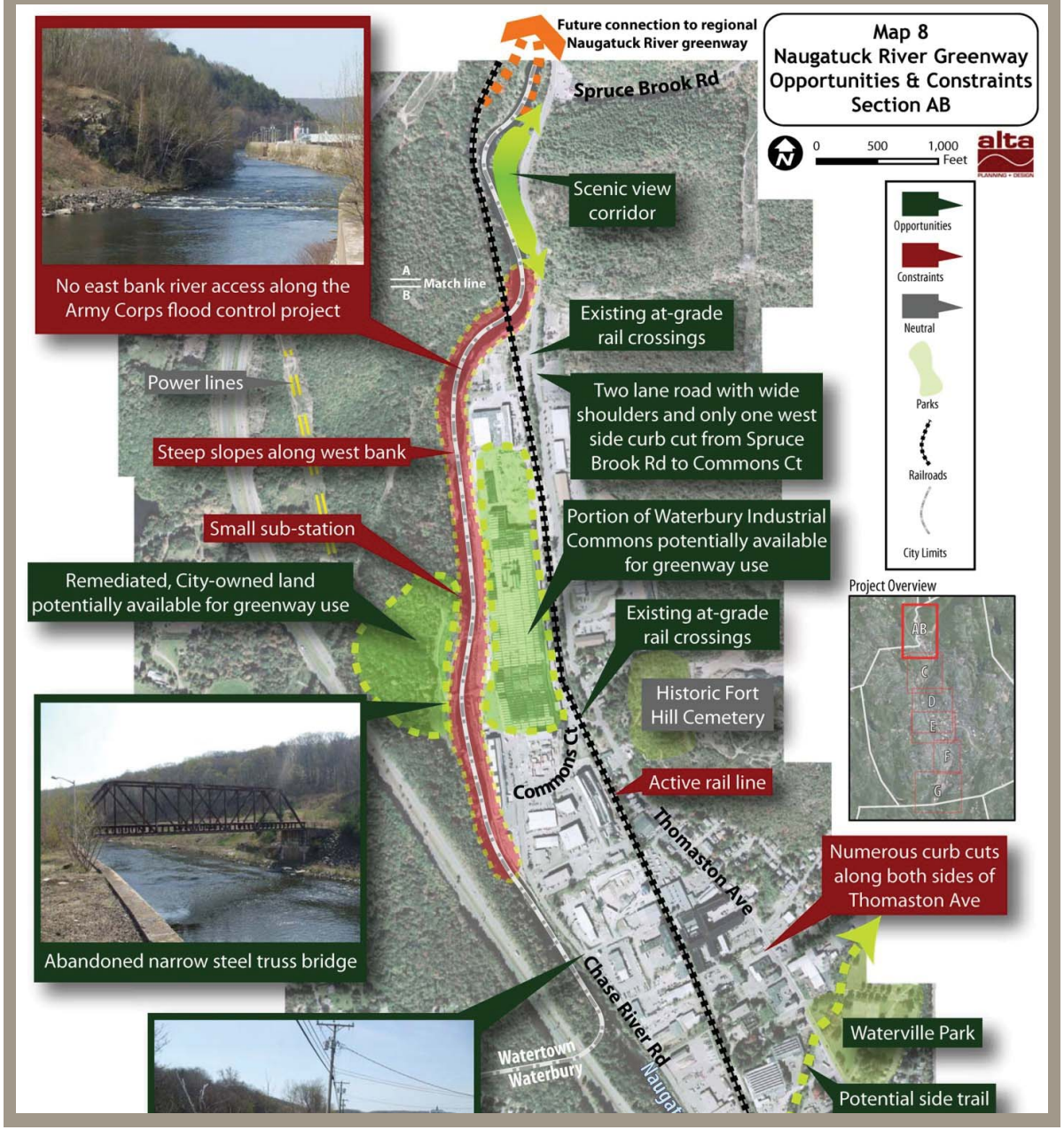
CASE STUDY

During the development of Portland, Oregon's Bicycle Plan for 2030, stakeholders with concerns about geographic inequities in the provision of bicycle facilities relative to low-income and minority populations sparked the birth of an innovative GIS-based prioritization tool. In contrast to something like a Cycle Zone Analysis (see callout on page 49), which uses a utility-maximizing framework, the tool used an equity lens to analyze variation in bikeway access for transportation for disadvantaged groups.



The Equity Gap Analysis, as it came to be called, overlaid gaps in the bikeway network with spatial data on income, race, and age. The resulting maps indicated the census block groups where concentrations of low-income, minority, youth, and older adult residences overlapped with limited access to bicycle facilities. The analysis provided an alternative way to think about how bikeways could be prioritized and/or phased based on different criteria. The full report is available here: http://www.portlandonline.com/transportation/index.cfm?a=264747&c=44597

EXAMPLE GRAPHIC FROM AN OPPORTUNITIES AND CONSTRAINTS REPORT



are "discovered" is the layering of multiple kinds of geographic information on maps. A map showing excess motor vehicle capacity along a particular corridor combined with a gap in the bikeway network reveals a key opportunity for a road diet, while the realization that a freight or emergency route overlaps with a planned bikeway might represent a constraint.

Identification of opportunities and constraints involves both art and science. It requires planners to evaluate existing conditions information, synthesize and interpret feedback from stakeholders and the public, gauge political realities in the community, and assess financial limitations simultaneously. Traditional Strengths, Weaknesses, Opportunities, and Constraints (SWOT) exercises with small groups (including the various committees) may provide a starting point for identifying initial possibilities and limitations. Asking the steering/advisory committee, technical advisory committee, and internal review team to review the existing conditions report with an eye toward opportunities and constraints can be helpful as well. Compile all identified opportunities and constraints into a table or on a map for use in developing recommendations

At the end of this stage, the planning team should have an adequate fact base to proceed with policy, project, and program recommendation development.

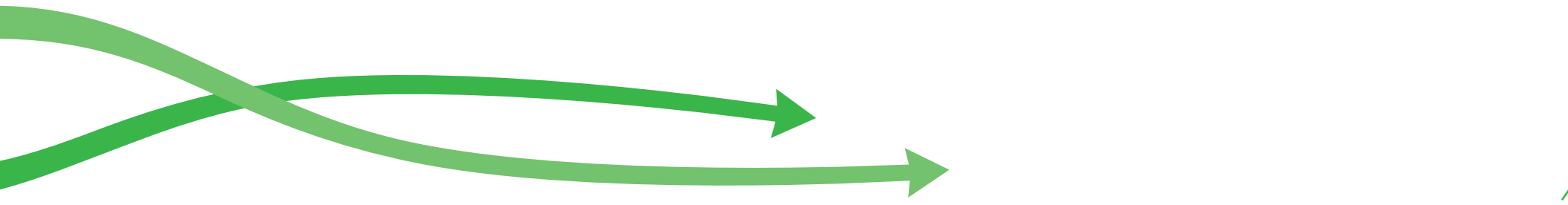
Links and Resources

The Bicycle Compatibility Index: A Level of Service Concept Implementation Manual (FHWA-RD-98-095). Available at: safety.fhwa.dot.gov/tools/docs/bci.pdf

Guidebook on Methods to Estimate Non-Motorized Travel (FHWA-RD-98-166). Available at: http://safety.fhwa.dot.gov/ped_bike/docs/guidebook1.pdf and http://safety.fhwa.dot.gov/ped_bike/docs/guidebook2.pdf

League of Illinois Bicyclists Bike/Ped Level of Service Measures and Calculators: http://www.bikelib.org/bike-planning/bicycle-level-of-service/

Real-Time Human Perceptions: Toward a Bicycle Level of Service. Available at: http://trb.metapress.com/content/n118452647112qg6/



7 DEVELOPING, SELECTING, AND PRIORITIZING PLAN RECOMMENDATIONS

This chapter provides guidance on crafting recommendations for policy changes, new bicycle and/or pedestrian infrastructure, and support programs. The process of generating and evaluating alternatives, then prioritizing final recommendations, can take a variety of different forms. Your approach will depend on previously identified needs, opportunities and constraints, the size and complexity of the geographic area, and your budget. In all cases, the vision, goals, and objectives should drive the process.

Develop Evaluation Criteria

Evaluation criteria allow planners and engineers to systematically assess potential policies, projects, and programs based on their respective likelihood of achieving a particular goal or objective. By creating a direct link between plan goals and objectives and potential actions, evaluation criteria provide a rational explanation by which to judge recommendations. Developing evaluation criteria before discussions of individual plan recommendations promotes efficient exploration of potential options and helps focus the process of creating, selecting, and prioritizing recommendations.

Establishing evaluation criteria also increases the legitimacy of recommendations by providing a non-biased methodology for project selection and phasing, allowing planners and elected officials to stand on solid ground in the face of criticism. A perception of bias or inequity during development of the priority project list can ignite political controversy, and if planners are unable to point to a systematic method embedded in the process, this can undermine public support of the plan.

Evaluation criteria may include:

- Overcoming barriers (physical or psychological)
- Current or future demand for walking and/or bicycling
- Attracting "interested but concerned" bicyclists
- Increasing safety and comfort
- Filling existing gaps
- Improving aesthetics
- Improving health
- Increasing social equity
- Reduce vehicle miles traveled/air

EXAMPLE EVALUATION CRITERIA: NORMAL, CALIFORNIA BIKE/PED MASTER PLAN

CRITERION	MEASUREMENT
OVERCOMES BARRIERS	How well does the project overcome a barrier in the current bicycle and/or pedestrian network?
SYSTEM CONNECTIVITY	To what extent does the project fill a missing gap in the bicycle and/or pedestrian system?
COMMUNITY SUPPORT	To what degree do residents desire the proposed project? This criterion takes into account oral and written feedback received at the community workshops, questionnaires, as well as previously proposed bike/ped projects.
USER GENERATOR	To what degree will the project likely generate transportation or recreational usage based on population, corridor aesthetics, etc.?
LAND USES	How many user generators does the project connect to within reasonable walking or bicycling distance, such as schools, parks, employment centers, etc.?
SAFETY AND COMFORT	Can the project potentially improve bicycling and walking at locations with perceived or documented safety issues? This criterion takes into account available crash data as well as feedback from all committees and the public.
REGIONAL BENEFIT	To what degree does the project offer potential benefits to the wider regional community by offering opportunities for increased connectivity to surrounding communities, other regional walkways/bikeways, etc.?
COST	What financial resources are needed to implement the project? Is the project cost prohibitive, or can it be implemented through grant funding or other opportunities?
EASE OF IMPLEMENTATION	How difficult will it be to implement the project? This criterion takes into account constraints like topography, existing development, presence or lack of available right-of-way, and environmental and political issues.

pollution/greenhouse gas emissions
- Cost or cost-effectiveness
- Political feasibility
- Technical feasibility

The criteria should be specific enough to provide clear guidance, but flexible enough to allow for professional interpretation and enable dialogue about core community values.

Brainstorm Policy Changes

Policy recommendations are intended to guide future actions. Policies may apply to the sponsoring agency, to other government departments or agencies, or to private sector actors such as building owners, developers, schools, and companies. Each policy recommendation should be inspired by the vision and work toward the achievement of a specific goal. It is not uncommon for plans to include multiple objectives or strategies aimed at increasing the pedestrian and bicycle friendliness of policy in specific areas such as road maintenance, transportation planning/engineering, land use planning, and law enforcement.

Since there are a multitude of factors that affect the appeal of walking and bicycling, there are a wide variety of possibilities. Be pragmatic, particularly with respect to political and financial feasibility. For example, developing a policy that mandates striping bicycle lanes during regularly scheduled street re-paving is a strategic, low-cost way to begin building out a bikeway network. See the call-out box to the right and continued on page 55 for policy ideas that support walking and bicycling.

EXAMPLE POLICIES

MAINTENANCE

- Stripe bicycle lanes on all arterial and collector streets during routine roadway repaving
- Create a regular schedule for restriping bicycle lanes, restenciling shared-lane markings, and replacing bicycle and pedestrian way-finding signs
- Create a regular schedule for clearing debris (including snow and leaves) from sidewalks, bike lanes and roadway shoulders
- Establish a system that allows the public to report potholes, debris, or other hazards and enables the Public Works Department to respond in a timely fashion
- Conduct regular audits of sidewalks, bikeways, trails, and bicycle parking, ensuring that each facility is in good condition
- Accommodate pedestrians and bicyclists during road construction

TRANSPORTATION PLANNING AND ENGINEERING

- Develop a Complete Streets ordinance that requires all transportation projects to accommodate the needs of all road users
- Establish a sidewalk infill program
- Apply high-visibility pedestrian crosswalks on all collector and arterial streets
- Improve the quality of transit service and/or institute a Transit First policy
- Work with transit agencies to install bicycle racks on buses and bicycle hooks on trains
- Discourage or prohibit the construction of cul-de-sacs and adopt street connectivity standards
- Create a program or system that identifies candidates for road diets or traffic calming treatments
- Collect data on walking and bicycling, including regular counts
- Collect motor vehicle speed data along bicycle and pedestrian corridors
- Reduce speed limits and/or install traffic calming features on all corridors identified as priority bicycle and pedestrian routes
- Reexamine auto/roadway performance standards such as level of service or volume / capacity ratios
- Collaborate with regional, state and federal partners to develop transportation models and forecasting tools to accurately predict bicycle travel demand generated by capital and programmatic improvements and to model system performance that includes bicycling and walking
- Institute a travel demand management strategy that may include road pricing and/or increased parking fees

EXAMPLE POLICIES (CONTINUED)

LAND USE PLANNING AND DEVELOPMENT REGULATIONS/ INCENTIVES

- Require the provision of sidewalks in all new developments
- Require bicycle parking and secure bicycle storage for multifamily and commercial developments
- Update the zoning code to encourage a fine-grained mix of land uses
- Include bicycle and pedestrian analyses in traffic impact studies
- Require that bicycle and pedestrian coordinator(s) review development proposals
- Discourage or prohibit physical barriers such as fences or walls between developments
- Reduce or eliminate minimum motor vehicle parking requirements
- Create a Transit Oriented Development (TOD) program

LAW ENFORCEMENT

- Work with law enforcement to ensure policies and procedures ensure safety for all roadway users
- Partner with law enforcement to implement programs for safe driving around pedestrians and bicyclists
- Include law enforcement officials in the planning, design, construction, and operation of pedestrian and bicycle facilities
- Train law enforcement officers to enforce traffic laws that protect the safety of pedestrians and bicyclists

Identify High Priority Networks

Identifying a set of streets as priority pedestrian and bicycle routes improves your community's capacity for multi-modal transportation. As a result of an historic focus on automobile accessibility throughout the US, many streets in your community will not currently be well-suited to walking or bicycling. Although making all streets walkable and bikeable is a good long-term goal, in the short term it makes sense to focus improvements on a connected network of priority bikeways and walkways.

Bikeway network planning principles

- Create an interconnected network that takes people from where they are to where they want to go, and serves key destinations and transit lines. The whole is greater than the sum of the parts.
- Plan for a diverse range of users. Consider variations in physical abilities, perceptions of safety, trip types, and trip purposes of different

This street network analysis of San Jose, California demonstrates the importance of a connected network of bicycle-friendly streets. The study, conducted by researchers Maaza Mekuria, Peter Furth, and Hilary Nixon, used the "4 Types of Transportation Cyclists" framework, applying each category of bicyclist to a street typology. The green lines represent streets that "interested but concerned" bicyclists are likely to feel comfortable using, and the blue lines represent streets that "enthusiastic and confident" bicyclists are likely to use.

Note that while these streets make up a large portion of the overall road system in San Jose, higher-traffic streets interrupt the network, creating disconnected islands for all but the 1% of bicyclists that are willing to travel along busy roadways with no bicycling facilities.

Read the full report here: www.axumcorp.com/SanJose_Bike_Connectivity_final_report.pdf

users.

- Think about the bikeway network as a hierarchy of facility types that serve different functions and appeal to different types of users.
- Balance existing and future demand. Improve conditions where people already ride but also consider areas where people might potentially ride if it were more pleasant.
- Minimize out-of-direction travel.
- Prioritize safety.
- Provide a grid or mesh of bikeways roughly every half mile (at a minimum).

Pedestrian network planning principles

- Create an interconnected network of sidewalks, paths, and public spaces that serves key destinations and districts including neighborhoods, commercial/retail areas, and schools.
- Create convenient, accessible connections to other modes, especially public transportation.
- Plan for all ages and abilities including youth, older adults, and people with disabilities.
- Balance existing and future demand. Improve conditions where people already walk but also consider areas where people might potentially walk if it were more pleasant.
- Prioritize safety, particularly at intersections.
- Consider producing an appendix or separate document to address design details such as standard sidewalk widths, curb radii, curb ramp slopes, street tree types and placement, street lamp designs, building façades, and landscaping.

Planning a pedestrian network at scales larger than individual neighborhoods can be challenging. Unlike bicyclists, who may be willing to travel several blocks out of their way to access a street with bicycle facilities, most pedestrians have a very low tolerance for out-of-direction travel. This means that every segment of every street should be considered part of the pedestrian circulation system. And since pedestrians travel at a slower speed relative to other modes, urban design details are more important. Finally, relative to most on-street bicycle infrastructure, the cost of building sidewalks is high.

Due to the factors above, a common approach to enhancing the pedestrian network is to focus on smaller opportunity areas within a city, county, or region.

Examples of focusing on opportunity areas include:

- Corridors or intersections with identified pedestrian safety issues
- Areas where existing or potential demand for walking trips is high, such as downtowns and neighborhood centers
- Areas within a half-mile of schools, transit stops, parks, and libraries

Another approach is to focus on arterial and collector streets, the backbone of the overall transportation network, where conflicts with motor vehicles are most likely. The steering or public advisory committee can be useful in establishing the number of corridors to be studied, or the types of streets to be studied, so as to keep the project moving along on budget.

Generate a List of Potential Projects

Once the high priority network(s) have been identified, generate a list of potential projects to improve safety, convenience and comfort of users.

Bikeways, sidewalks, and multi-use paths (trails) make up the three basic components of active transportation infrastructure. Assembling these discrete elements into a coherent spatial pattern and thinking about how the bicycle and pedestrian networks will evolve over time are some of the most complex decisions of the planning process.

General guidelines for project selection

- Projects must make sense to elected officials, staff, and the general public. They should be consistent with the vision, goals, objectives, and evaluation criteria.
- Mix cost-effective, low-hanging-fruit-type projects with some bold ideas. Tension between bold and visionary projects and cost-effective projects is inevitable, so navigating the trade-offs requires thoughtful deliberation.
- Avoid the urge to get too specific about the details of each project. Master plans are about the big picture.
- Be intentional about who you are planning for and the type of trips you seek to accommodate. Consider the needs of youth, older adults, and beginning bicyclists as well as commute trips, neighborhood utilitarian trips, and recreational trips.
- Projects should be grouped in some logical fashion. Most frequently they are grouped by corridor, neighborhood, or other geographic sub-area.
- Include planning-level cost estimates for all priority projects, preferably in a table linked to a map. Projects may also be grouped by access to specific destination types such as parks, schools, or retail/employment centers.
- Even if funding has yet to be identified, the plan is an opportunity to envision a different future and look for supplemental funding. At the same

BICYCLE INFRASTRUCTURE

BIKE LANES

- Conventional bike lanes
- Buffered bike lanes
- Contra-flow bike lanes
- Left-side bike lanes

CYCLE TRACKS / PROTECTED BIKE LANES

- One-way cycle tracks
- Two-way cycle tracks
- Raised cycle tracks

NEIGHBORHOOD GREENWAYS / BICYCLE BOULEVARDS

BIKEWAY SIGNING AND MARKING

- Colored bike lane markings
- Shared lane markings
- Bike route way-finding markings and signage

TRAILS AND MULTI-USE PATHS

INTERSECTION TREATMENTS

- Bike boxes
- Bicycle signals and detection
- Active warning beacons at unsignalized intersections
- Intersection crossing markings
- Two-stage turn queue boxes
- Median refuge islands
- Combined bike/turn lanes

BICYCLE PARKING AND END-OF-TRIP FACILITIES

GRADE-SEPARATED CROSSINGS

time, consider producing a fiscally constrained list focused on the projects that the implementing agency expects to have money to build.

Selecting appropriate bikeway facilities

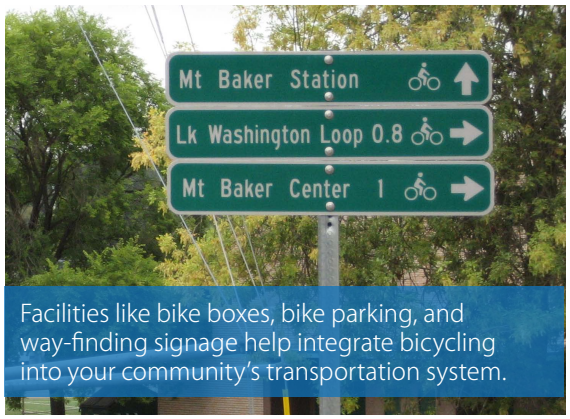
Through the early to mid-2000s, planners and engineers in the US overwhelmingly limited themselves to just two types of bikeways: conventional bicycle lanes and off-street pathways or trails. However, inspiration from European roadway design and domestic innovations in a handful of pioneering cities has expanded the range of accepted bikeway facilities. Knowledge of the diversity of facility types and their applications as put forth in The National Association of City Transportation Officials' (NACTO) Urban Bikeway Design Guide will assist planners and engineers apply appropriate treatments. For more information on bicycle facility design, please see http://nacto.org/cities-for-cycling/design-guide/.

Selecting appropriate bikeway facilities depends on context. The American Association of State Highway and Transportation Officials' (AASHTO) *Guide to the Development of Bikeway Facilities (4th Edition)*[8] recommends that bikeway facility selection consider:

- Road function (arterial, local, etc.)
- Traffic volume
- Speed
- Traffic mix (e.g. truck %)
- Expected users (e.g. is one type of user expected to dominate, such as children bicycling to school)
- Road conditions (lane widths, total roadway width, conditions at intersections and parking demand)
- Frequency of driveways and access points
- Topography
- Existing and proposed adjacent land uses
- Cost

8 Available for purchase here: https://bookstore.transportation.org/collection_detail.aspx?ID=116

Intersection treatments such as two-stage turn queue boxes and bicycle signals allow bicyclists to cross high-traffic streets.



Facilities like bike boxes, bike parking, and way-finding signage help integrate bicycling into your community's transportation system.

In the context of a bicycle master plan, think about the mix of facility types in relation to expected users. Consider the spacing of each facility type and appropriate corridors for the application of each type of infrastructure. Conducting detailed engineering feasibility studies of all potential bicycle corridors, however, may not be feasible during the master planning process.

CASE STUDY

One way to deal with the constraint of an incomplete understanding of specific corridors is to create categories of bikeways similar to roadway classifications commonly used when planning for motor vehicles. For example, Portland's Bicycle Plan for 2030 defines and identifies the locations of City Bikeways, Major City Bikeways, and Local Service Bikeways. Depending on the context, a City Bikeway may be built as a neighborhood greenway/bicycle boulevard, conventional bike lane, or buffered bike lane. Similarly, a Major City Bikeway may be designed as a raised cycle track, two-way cycle track, or off-street multi-use path.

In response to the expanded range of available bicycle facility types, some communities have developed detailed facility selection guides for use during plan implementation. Such guides assist planners and engineers choose the most appropriate facility based on traffic volumes and speeds, surrounding land uses, expected users, roadway and lane widths, the frequency of driveways, and other factors. A graphic from one such guide, illustrating the range of on-street marked bikeways, is shown on page 59.

Street Evaluation Models are another set of tools that assist planners and engineers with making grounded recommendations about the types of bikeways

Protected cycle tracks (top) and neighborhood greenways (center) can provide a trail-like experience in an urban context.

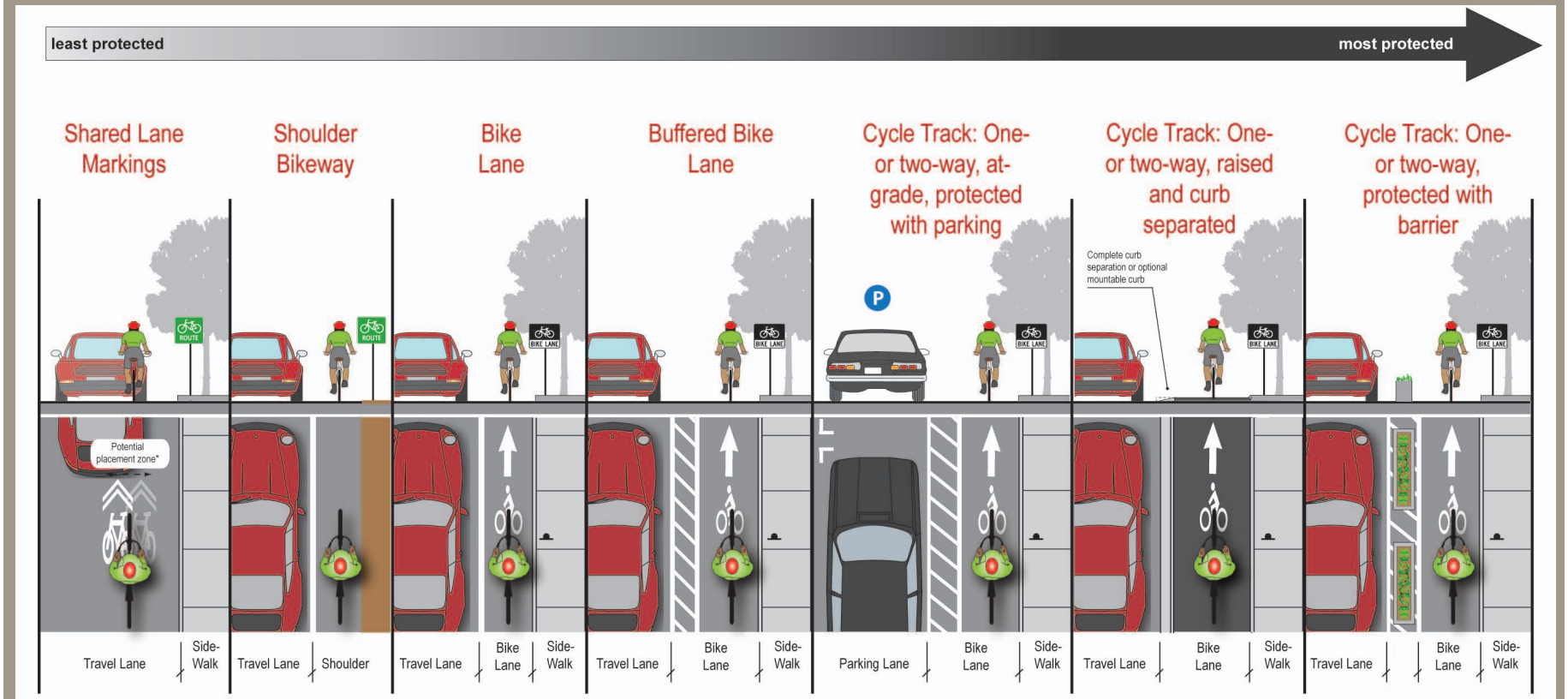
suited to particular roadways. These GIS-based models use built-in algorithms to determine the feasibility of installing bicycle lanes, cycle tracks, or shoulder bikeways along corridors based on the number of motor vehicle and turn lanes, roadway and travel lane widths, average daily traffic, and presence/utilization of on-street parking. The model displays each potential implementation strategy on a map using a color ramp, creating a visual planning tool that describes bikeway classification area-wide.

Selecting Appropriate Pedestrian Infrastructure

Pedestrian infrastructure improves pedestrian safety and comfort by buffering people walking from high-speed motor vehicle traffic, increasing pedestrian visibility at crossings, providing key connections, and creating a pleasant walking environment. Physically accessible pedestrian infrastructure makes walking or rolling with strollers, walkers, and wheelchairs convenient for people of all ages and abilities.

Infrastructure projects along previously identified priority networks should be guided by the purpose of the plan. For example, if economic development is the primary goal, investing in streetscape improvements such as street trees, textured paving, pedestrian-scale-lighting, pedestrian way-finding systems, and chairs or benches in commercial centers can spur economic activity. If improving pedestrian safety in neighborhoods tops the list of plan priorities, installing traffic calming features such as speed humps or chicanes will be more appropriate. If increasing access to transit emerged as the most important aspect of the plan, transit stop infrastructure and high-visibility crosswalks on transit

CONTINUUM OF ON-STREET MARKED BIKEWAYS



PEDESTRIAN INFRASTRUCTURE

SIDEWALK INFILL AND WIDENING

INTERSECTION TREATMENTS

- Crosswalks
- Curb extensions
- Curb ramps
- Pedestrian signal upgrades
- Pedestrian refuge islands
- Active warning beacons at unsignalized crossings

STREETSCAPE IMPROVEMENT PROJECTS

- Street trees and landscaping
- Street furniture
- Pedestrian-scale lighting
- Textured paving

TRAFFIC CALMING

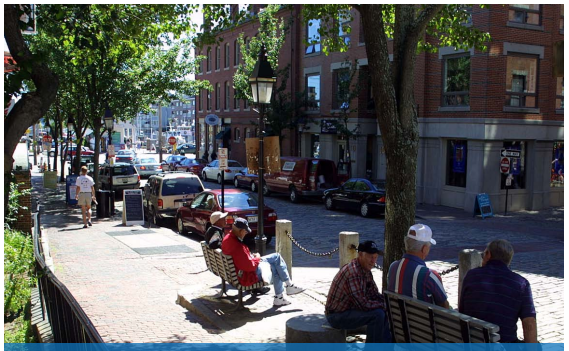
- Speed humps and speed tables
- Chicanes
- Mini traffic circles
- Shared streets

WAY-FINDING SIGNAGE AND SYSTEMS

TRANSIT-STOP FACILITIES

TRAILS AND MULTI-USE PATHS

GRADE-SEPARATED CROSSINGS



Streetscape projects combine multiple pedestrian infrastructure improvements to create livable streets.

corridors will stand out as critical improvements.

Determining the right kinds of pedestrian improvements also depends on surrounding land uses, the extent and condition of existing pedestrian infrastructure, roadway dimensions, pedestrian barriers, the presence or absence of public transit, and the overall feel of the pedestrian environment. The Federal Highway Administration developed a tool called the Pedestrian Safety Guide and Countermeasure Selection System that may help planners and engineers identify appropriate treatments based on context and plan objectives. The tool can be accessed here: http://www.walkinginfo.org/pedsafe/

For more information on pedestrian facility design and engineering, visit: http://www.walkinginfo.org/engineering/.

Consider Updating Design Guidelines

Design guidelines can shape the form and function of streets, the public spaces adjacent to them, and the buildings along them in ways that most policies and projects cannot. Design guidelines relevant to bicycle and pedestrian planning come in two main forms:

1) Stand-alone documents that articulate roadway design/engineering standards, describe bicycle and pedestrian infrastructure, and/or provide recommendations for application, and

2) Requirements or recommendations associated with the zoning code, design overlay zones, or special districts that aim to improve pedestrian and bicycle friendliness when new buildings or projects are constructed.

Roadway/bikeway/pedestrian facility design guidelines

Bicycle facility selection tools and NACTO's *Urban Bikeway Design Guide* are examples of the first type of design guide document. Creating or updating guidelines tailored to the unique context of your community can be an extremely useful exercise. Some communities choose to include customized bikeway or pedestrian facility design guidelines as an appendix to their bicycle and/or pedestrian master plan while others reference national, state, regional, or other design guidelines.

Roadway and facility design guidelines should:

- **Provide clear direction.** The characteristics, recommended dimensions, and range of applications of each facility type must be spelled out clearly. Supplement descriptions with diagrams and photographs. When facility selection or facility elements are context-sensitive, describe appropriate applications. For example, a bicycle boulevard does not have one standard cross-section, but is made up of a collection of elements that may be employed in various situations.
- **Reassure staff that good solutions are possible and allowable.** Engineers put their professional reputation on the line every time they stamp construction documents. For this reason it is important to provide documentation that clearly spells out the status of innovative treatments compared with the more conventional standards. Differentiate between legal requirements and suggested best practices to allow for professional engineering judgment.
- **Appeal to multiple audiences.** Elected officials and the public tend to respond positively to 3-D graphics and fly-through animations, but these visualizations are not a substitute for technical

SAMPLE PAGE FROM A BIKEWAY FACILITY DESIGN GUIDELINES DOCUMENT

Separated Bikeways

Buffered Bike Lane

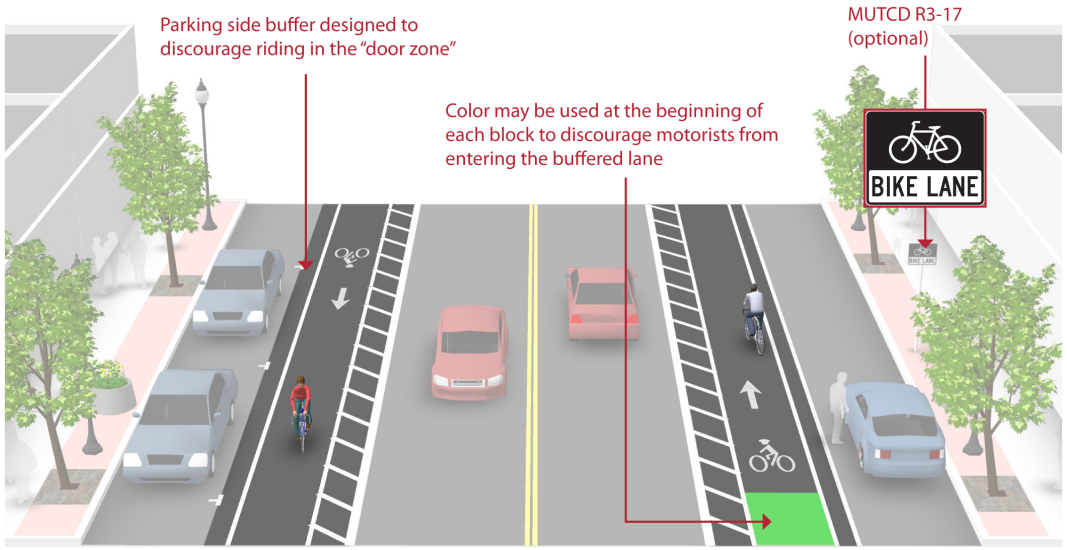
Guidance

- Where bicyclist volumes are high or where bicyclist speed differentials are significant, the desired bicycle travel area width is 7 feet.
- Buffers should be at least 2 feet wide. If 3 feet or wider, mark with diagonal or chevron hatching. For clarity at driveways or minor street crossings, consider a dotted line for the inside buffer boundary where cars are expected to cross.

Description

Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. Buffered bike lanes are allowed as per MUTCD guidelines for buffered preferential lanes (section 3D-01).

Buffered bike lanes are designed to increase the space between the bike lane and the travel lane or parked cars. This treatment is appropriate for bike lanes on roadways with high motor vehicle traffic volumes and speed, adjacent to parking lanes, or a high volume of truck or oversized vehicle traffic.



Discussion

Frequency of right turns by motor vehicles at major intersections should determine whether continuous or truncated buffer striping should be used approaching the intersection. Commonly configured as a buffer between the bicycle lane and motor vehicle travel lane, a parking side buffer may also be provided to help bicyclists avoid the 'door zone' of parked cars.

documents, including plan views and cross sections. The latter provide the detail necessary to produce construction and field documents.

Urban design guidelines

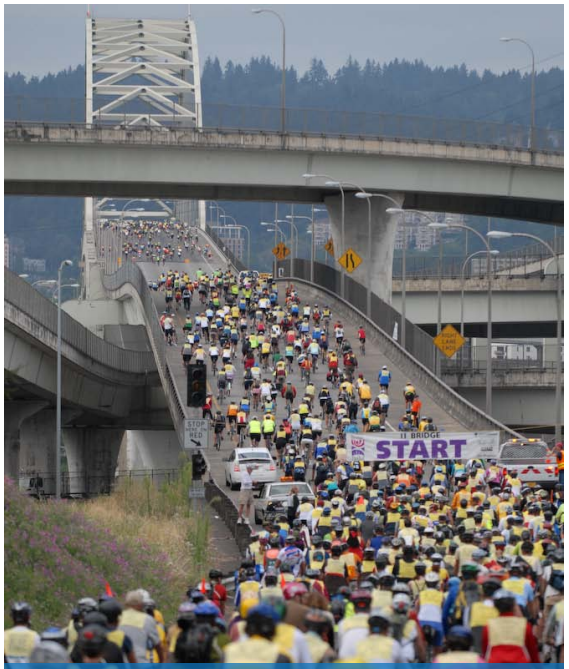
Urban design guidelines are an example of the second type of design guide document. They are typically housed within the city zoning code. These guidelines are particularly relevant to pedestrian planning, since they spell out requirements and specifications for details like awnings, ground floor windows and retail, street trees, sidewalk widths, and other pedestrian amenities. While urban design guidelines may not be updated on the same time line as a pedestrian master plan, consider recommending changes to the zoning code and/or developing draft language for the planning commission or city council during the master planning process. These changes may take the form of specific zone or overlay recommendations.

Identify Potential Programs

Several recent studies strongly suggest that investing in infrastructure without encouragement and education is unlikely to produce a significant mode shift toward walking and bicycling.[9,10] The European and American cities with the highest non-motorized mode shares not only have well connected sidewalk and bikeway infrastructure and supportive policies, but have also funded extensive educational, encouragement, and enforcement programs. Safe Routes to School is a good example of a program that includes all three of these elements and is almost universally well-received because of its focus on supporting the health and safety of children.

Education programs should prompt people to reconsider their travel behavior. Encouragement

Safe Routes to School programs equip kids with the knowledge and skills they need to be safe and have fun on thier feet and on two wheels.



Ciclovia or Open Streets events are a great way to attract new bicyclists. During "Bridge Pedal," an annual event in Portland, OR, officials close all 11 Wilamette River bridges to motor vehicle traffic, giving bicyclists free reign.

EXAMPLE PROGRAMS

EDUCATION AND ENCOURAGEMENT PROGRAMS

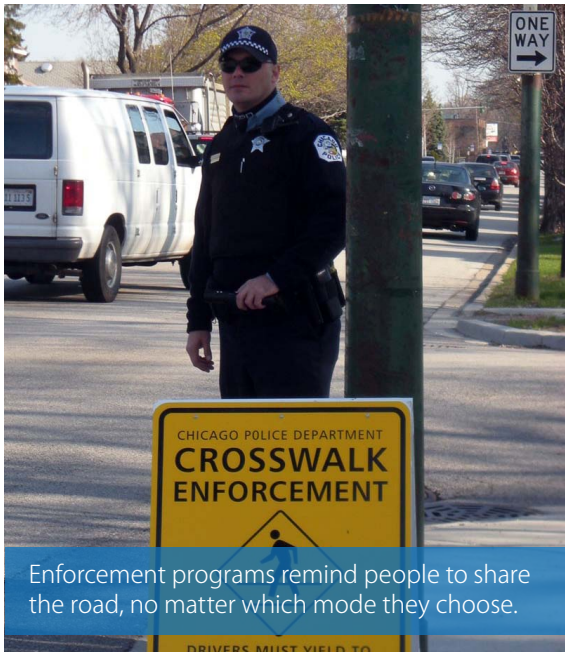
- Safe Routes to School programs
- Bicycling events and contests
- Ciclovia or Open Streets events
- Bike/Walk to Work week/month
- Free breakfasts for bicycle commuters
- Individualized marketing programs
- Bike sharing
- Safety trainings
- Bicycle Ambassador programs

ENFORCEMENT PROGRAMS

- Crosswalk enforcement actions
- Targeted enforcement of bicycle lane encroachment by motor vehicles
- Targeted bicycle lighting enforcement actions where police officers distribute bike lights instead of issuing citations
- Make citation waivers available to motorists, bicyclists, and pedestrians in exchange for attending a bicycle and pedestrian traffic safety course
- Educating all road users about innovative facility types such as bike boxes, colored bike lanes, and bicycle signals

9 Douma and Cleaveland. 2008. "The Impact of Bicycling Facilities on Commute Mode Share." Minnesota Department of Transportation. Available at: http://www.hhh.umn.edu/centers/slp/pdf/bicycling_facilities.pdf

10 Pucher and Buehler. 2011. "Analysis of Bicycling Trends and Policies in Large North American Cities: Lessons for New York." Region Two University Transportation Research Center. Available at: http://policy.rutgers.edu/faculty/pucher/UTRC_29Mar2011.pdf



Enforcement programs remind people to share the road, no matter which mode they choose.

The master planning process is a great time to think about initiating a bike share program.

programs market the positive aspects of walking and bicycling. Enforcement programs remind motorists, bicyclists, and pedestrians of the rules that promote peaceful multi-modal coexistence.

While local government staff members are familiar with the construction and maintenance of roadways and sidewalks, not every local government has the institutional support or staff experience to implement educational or encouragement programs. It is also more difficult to find operational funding for programs compared to capital funding for infrastructure. Think about who might manage proposed programs and how they might be funded, including potential partnerships with other government agencies, non-profit groups, and/or the private sector. Overcoming these potential barriers to program implementation is likely to yield cost-effective mode share increases in walking and bicycling if a basic active transportation network exists.

Select and Prioritize Draft Policy, Project, and Program Recommendations

Generating draft recommendations requires synthesizing all the analysis conducted so far, including the existing conditions report, needs assessment, summary of opportunities and constraints, and an analysis of the costs and benefits of potential solutions. Each recommendation should flow logically from previous work conducted by the planning team, and work toward achieving the vision.

Once you have a comprehensive list of potential policies, projects, and programs, it is time to make some difficult decisions. Since there will always be more good ideas than money and political will to implement them, you must be strategic when selecting and prioritizing draft recommendations.

EXAMPLE PROJECT SCORING MATIX BASED ON EVALUATION CRITERIA

Pedestrian Priority Corridors

Project	Overcomes Barriers	System Connectivity	Community Support	User Generator	Land Uses	Safety/ Comfort	Cost	Regional Benefit	Ease of Implementation
College Avenue/ Mulberry Street - School Street to Hershey Road	●	●	●	◑	●	●	◑	●	○
Main Street/ Kingsley Street - south town limits to Raab Road	●	●	●	●	●	●	○	●	○
Towanda Avenue - Jersey Avenue to Raab Road	●	●	○	○	○	◑	●	●	○
Willow Street/ Fort Jesse Road - Beech Street to Northpointe Drive	●	●	◑	◑	●	◑	◑	◑	○
Linden Street - south town limits to Northtown Road	◑	◑	○	◑	◑	●	○	◑	◑
Hershey Road - Fort Jesse Road to Raab Road	○	◑	◑	◑	●	○	●	○	○
Airport Road - Fort Jesse Road to Raab Road	○	◑	◑	◑	◑	○	●	◑	◑
Raab Road - Parkside Road to Towanda Avenue	○	●	○	○	○	◑	◑	●	◑
Shepard Road - Hershey Road to Airport Road	○	◑	○	◑	●	○	●	◑	○
Veterans Parkway - Vernon Avenue to Shepard Road	◑	◑	◑	◑	○	◑	○	◑	◑

Start by using the previously established evaluation criteria to gauge the merit of potential actions. Scoring matrices such as the one shown on page 63 can help with the selection and prioritization of draft recommendations. (Note that the dimensions in the example scoring matrix line up directly with the example evaluation criteria on page 53). By assigning a numeric value or "score" to each recommendation based on its potential to satisfy various criteria, it becomes easier to compare proposed policies, projects, and programs. While there will always be some level of discretion when making scoring decisions, using this methodology promotes a more objective consideration of potential actions.

Also consider developing a scoring system in collaboration with the steering and/or advisory committees that weights individual criterion differently. For example, increasing safety or attracting interested but concerned bicyclists may be given a higher weight than a filling gap in network or overcoming a barrier, depending on plan goals and objectives. It may be necessary to create separate scoring matrices for policies, projects, and programs.

Comparing the relative merit of infrastructure projects, policy changes, and programs can be difficult. The costs and benefits of each depend on the current state of walking and bicycling in your community, including existing infrastructure and political support. Taking action in each category simultaneously is likely to produce the best outcomes, although many communities focus on infrastructure and policy first, choosing to develop programs after a basic network of walkways and bikeways is in place. Ultimately, the policies, projects, and programs that rise to the top should be:

- Consistent with plan goals
- Expected to have a high impact
- Well-supported by stakeholders and the public
- Technically feasible, and
- Cost-effective

Prioritization Tools

Consultants and local governments use a variety of sophisticated tools to assist with the prioritization and phasing of bicycle and pedestrian improvements and programs. Forecasting tools, GIS-based models, and cost-benefit analysis techniques can also help determine the best mix of policies, projects, and programs contained in your master plan by:

- Revealing geographic areas that require immediate attention relative to others
- Comparing the costs and benefits of proposed projects and programs
- Providing a quantitative check on qualitative analyses; and
- Establishing a clear methodology for project selection and phasing

PRIORITIZATION TOOLS

GIS-BASED LATENT DEMAND ANALYSES

Assess potential demand for walking and/or bicycling by geographic zones, based on a variety of objective factors such as % of streets with dedicated infrastructure, average daily traffic, and roadway width. Each zone receives a score that in turn allows planners to maximize benefits of investments by targeting improvements in the areas where people are most likely to use new facilities.

DISCRETE CHOICE MODELS

Estimate potential for behavior change based on policy changes or infrastructure improvements in particular areas. Includes mode choice and route choice models.

BENEFIT COST AND RETURN ON INVESTMENT TOOLS

Compare the recreation, mobility, air quality, and health benefits of bicycle and pedestrian projects to investments in other modes of transportation. The National Cooperative Highway Research Program (NCHRP) and Bicyclinginfo.org developed an online tool that allows planners to calculate the benefits of proposed bikeways in monetary terms: http://www.bicyclinginfo.org/bikecost/

The Victoria Transport Policy Institute published a report in 2011 called "Evaluating Non-Motorized Travel Benefits and Costs," which is available at: http://www.vtpi.org/nmt-tdm.pdf

HEALTH IMPACT ASSESSMENTS (HIAs)

Estimate the potential health impact of proposed infrastructure improvements, policies, and programs. Find examples of completed HIAs here: http://www.healthimpactproject.org/hia

UCLA's Clearinghouse also has information, methods, and data on completing an HIA: http://www.hiaguide.org/methods-resources/methods

Finally, Planning for Healthy Places with Health Impact Assessments is an online how-to course for conducting HIAs developed by the American Planning Association and the National Association of County and City Health Officials: http://professional.captus.com/Planning/hia/default.aspx

As with the existing conditions tools described in Chapter Six, many of these tools require access to extensive data and can be time consuming to perform. The decision to use them should be based on available resources, expertise, and the specific needs of your community. In general, the benefits of using these tools tend to grow with city size and complexity.

Balancing Technical Considerations and Public Input

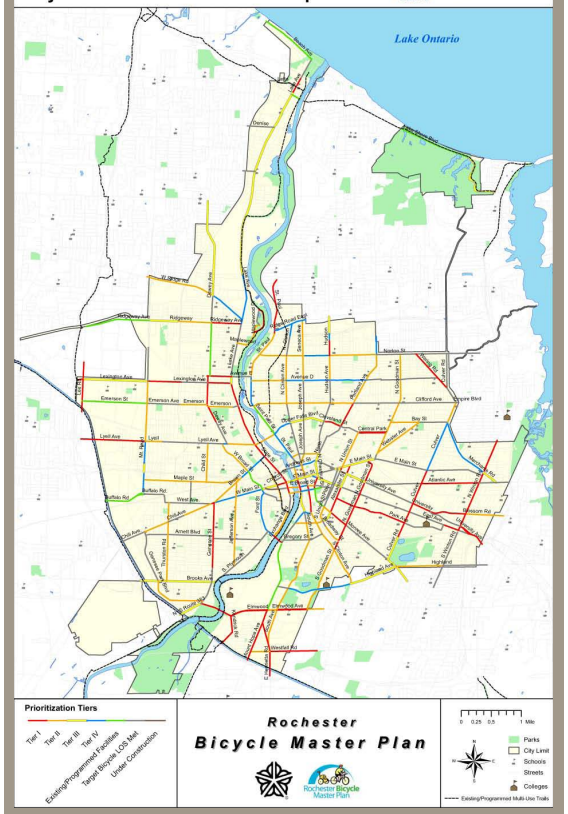
However you decide to select and prioritize draft recommendations, ensure that all committees, the internal review team, and the public are invited to participate in meaningful ways. At this stage in the process it is possible to get lost in the technical details of analyzing recommendations, as the most intense phase of public engagement is likely to be complete. While the prioritization tools described in the call-out box on page 64 can provide helpful guidance, keep in mind that the conclusions they produce may not always reflect the views of all stakeholders. Dot voting or other ranking exercises with the internal review team, steering or public advisory committee, and technical advisory committee can help planners gauge the overall appeal of particular recommendations. Finding the right balance between technical aspects and public opinion can be tricky, as each planning effort takes place in a unique political and geographic context. Ultimately, it is a matter of professional judgement.

Presenting Draft Recommendations

At the end of this process you should have a report containing a draft list of high, medium, and low priority recommended actions. They may be grouped by policies, projects, and programs. Infrastructure projects should be represented on at least one map, preferably linked to a table with more information (see example on page 66). The length of each facility, cost estimates, priority tier, and major destinations along the route are particularly helpful to include.

Be sure to include a description of the methodologies used in the production of the priority list(s). Also note potential actions that were removed from consideration and provide a rationale for excluding them from the draft recommendations.

Figure 6
Bicycle Facilities Prioritization Map



This map from the Rochester, New York Bicycle Master Plan displays four tiers of priority bikeway corridors in addition to existing facilities and roadway segments that met a previously established Bicycle Level of Service target.

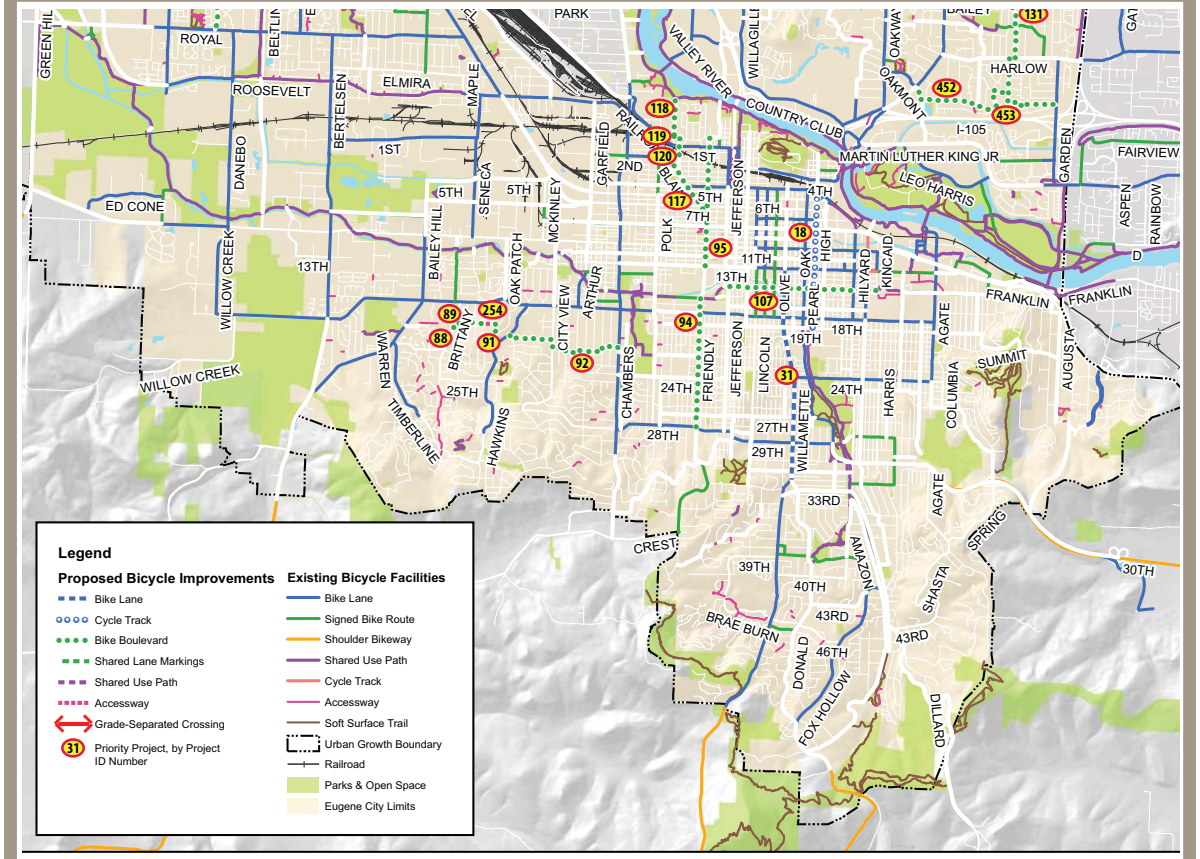
This type of map is particularly helpful for stakeholders and the public during plan development, as it clearly shows where improvements are proposed and the relative priority of each potential project. After the plan is adopted, it becomes a critical reference for implementation.

Finalize Recommendations

Distribute a concise summary of the draft recommendations to a broad audience, and ask key staff people to pay close attention to the details of the full report. Make both documents available on the agency website. Consider developing a survey oriented toward the general public that focuses on prioritizing draft recommendations.

After a review of comments and another round of robust discussions with the steering/public advisory committee, technical advisory committee, and internal review team, prepare the final set of prioritized policy, project, and program recommendations. Employ the previously agreed upon decision rules (i.e. the draft recommendations will be forwarded to City Council if a 2/3^{rds} majority of each committee supports them) to finalize recommendations. If controversy persists at this stage, additional dialogue and a rethinking of selection and prioritization methodologies may be necessary. Retaining the support of all key stakeholders through the adoption process is important, since elected officials are likely to be wary of supporting a plan they perceive as controversial.

EXAMPLE PRIORITY PROJECT MAP WITH LINKED TABLE: EUGENE, OR



Map 11: Priority Bikeway Network

City of Eugene
Eugene Pedestrian and Bicycle Master Plan
Source: Data obtained from ODOT, LCOG, City of Eugene

Table A-6: Buffered Bike Lanes

Project ID	Name/Location	Extent	Length (miles)	Cost	Priority Tier
527	18th Avenue	Polk Street to Friendly Street	0.35	$111,000	20-Year
528	28th Avenue	Washington Street to Lincoln Street	0.15	$58,000	20-Year
484	Coburg Road	Oakmont Way to Oakway Road	0.30	$93,000	20-Year
26	E Amazon Drive	Hilyard Street to Snell Street	1.28	$322,000	20-Year
23	Harlow Road	Coburg Road to I-5	1.08	$270,000	20-Year
526	River Road	Northwest Expressway to Silver Lane	2.13	$535,000	20-Year
46	W Amazon Drive	Hilyard Street to Snell Street	1.21	$304,000	20-Year

Links and Resources

Facilities and Infrastructure

AASHTO Guide for the Development of Bicycle Facilities, 4th Edition (2012): https://bookstore.transportation.org/collection_detail.aspx?ID=116

AASHTO Guidelines for Bicycle Facility Design Americans with Disabilities Act (ADA) Standards for Accessible Design: http://www.ada.gov/2010ADAStandards_index.htm

Audible pedestrian signals information: http://www.walkinginfo.org/aps

Bicycle Boulevard Planning and Design Guidebook: http://www.ibpi.usp.pdx.edu/guidebook.php

Curb extensions and bicycle parking: http://www.walkinginfo.org/pedsafe/casestudy.cfm?CS_NUM=51

Designing Sidewalks and Trails for Access:

- Part I of II: Review of Existing Guidelines and Practices http://www.fhwa.dot.gov/environment/sidewalks/index.htm
- Part II of II: Best Practices Design Guide http://www.fhwa.dot.gov/environment/sidewalk2/contents.htm

Fitzpatrick, Kay, et al. 2006. Improving Pedestrian Safety at Uncontrolled Crossings. Transit Cooperative Research Program Report 112/ NCHRP Report 562. Available at: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_562.pdf

Guidelines for Analysis of Investments in Bicycle Facilities: http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_552.pdf

Portland's Facility Improvement Request Form:

http://www.portlandonline.com/transportation/index.

cfm?action=UpdateItem&category_id=297&c=40884

Selecting Pedestrian Facility Locations: http://www.walkinginfo.org

Selecting Bicycle Facility Locations: http://www.bicyclinginfo.org/bikesafe/selection.cfm

Street furniture and sidewalk zones: http://www.fhwa.dot.gov/environment/sidewalk2/sidewalks204.htm (street furniture planning)

Policy

An introduction to form-based codes: http://www.formbasedcodes.org

Complete Streets Policy:

- National Complete Streets Coalition: http://www.completestreets.org/
- Complete Streets Laws and Ordinances Summary: http://www.walkinginfo.org/library/details.cfm?id=3968
- City of Seattle Complete Streets Policy: http://clerk.ci.seattle.wa.us/~scripts/nph-brs.exe?d=CBOR&s1=115861.cbn.&Sect6=HITOFF&l=20&p=1&u=/~public/cbor2.htm&r=1&f=G

Littman. 2011. "Economic Value of Walkability." Victoria Transportation Policy Institute. Available at: http://www.vtpi.org/walkability.pdf

"Public Policies for Pedestrian and Bicyclists, Safety and Mobility Review." http://katana.hsrc.unc.edu/cms/downloads/PBSPolicyReview.Pdf

Transit-Oriented Development Policy:

- Federal Transit Administration's (FTA) Transit-Oriented and Joint Development Program: http://fta.dot.gov/publications/publications_11007.html
- Reconnecting America's Center for Transit-Oriented Development: http://www.reconnectingamerica.org/public/tod

Travel and Environmental Implications of School Siting: http://www.epa.gov/smartgrowth/pdf/school_travel.pdf

Programs

An Organizer's Guide to Bicycle Rodeos: http://www.bike.cornell.edu/pdfs/Bike_Rodeo_404.2.pdf

Bicycle Safety Town: Peoria, IL http://www.peoriaparks.org/bicycle-safety-town

Bike Buddies and Mentors: http://www.bicyclinginfo.org/bikemore/support.cfm

Centers for Disease Control and Prevention (CDC), Kids Walk-to-School http://www.cdc.gov/nccdphp/dnpa/kidswalk/

Chicago's Bicycling Ambassadors: http://www.bicyclingambassadors.org/

League of American Bicyclists Bicycle Education: http://www.bikeleague.org/programs/education/

League of American Bicyclists Bike to Work Week: http://www.bikeleague.org/programs/bikemonth/

Los Angeles' CicLAvia: http://ciclavia.wordpress.com/

Portland's Car Free Days: http://www.portlandcarfreeday.org/

Portland's Senior Strolls: http://www.portlandonline.com/transportation/index.cfm?c=41541&

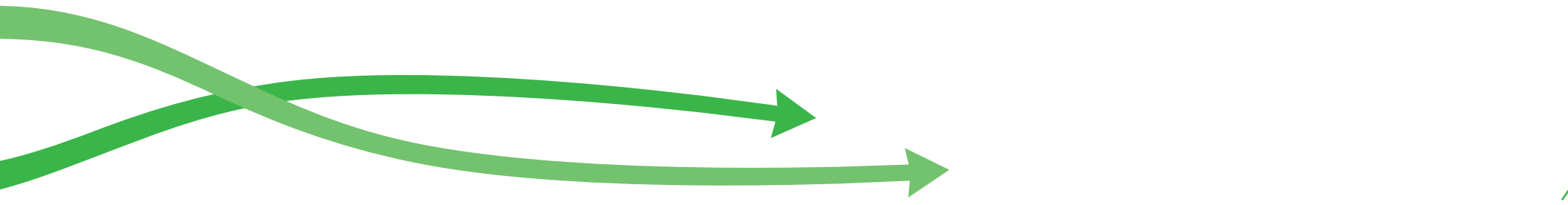
Portland's Women on Bikes: http://www.portlandonline.com/transportation/index.cfm?c=44100

Safe Routes to School (SR2S): http://www.saferoutesinfo.org/

Safe Routes to School Curriculum: http://www.saferoutespartnership.org/state/bestpractices/curriculum

Walk to School Day: http://www.walktoschool.org/

The Walking School Bus: http://health.utah.gov/vipp/pdf/PedestrianSafety/walkingschoolbus.pdf



8 IMPLEMENTING PLAN RECOMMENDATIONS

A successful plan can and will be implemented. It is possible, however, to produce an innovative plan that contains aggressive policy recommendations, proposes a dense and interconnected network of bicycle/pedestrian facilities, features beautiful graphics and visualizations, and is also unimplementable. Aside from inspiration, such a plan provides little value to the community.

Keep in mind that lack of political and public support is the most common barrier to plan implementation,; a lack of funding and momentum tend to be the key manifestations.

Create an Implementation Plan

Creating an implementation plan is a critical but often overlooked step. It should be detailed, yet easy to use. At a minimum, the implementation plan should include:

- A prioritized list of actions, categorized in a logical way
- An annual work plan specifying when each policy, project, and program contained in the plan will be implemented, and the agency or party responsible for its realization
- A budget for implementation and evaluation

Phase Actions and Develop an Annual Work Plan

Good bicycle and/or pedestrian master plans identify immediate as well as longer-term opportunities for improving conditions, and consider how early actions and investments lay a foundation for future improvements. A phasing plan outlines how recommended actions will be implemented over time. Often this is done by categorizing actions as short, medium, or long term priorities. Employ your evaluation criteria when making these types of phasing decisions. Also consider how economic, demographic, and other big-picture trends might affect the sequence of plan implementation.

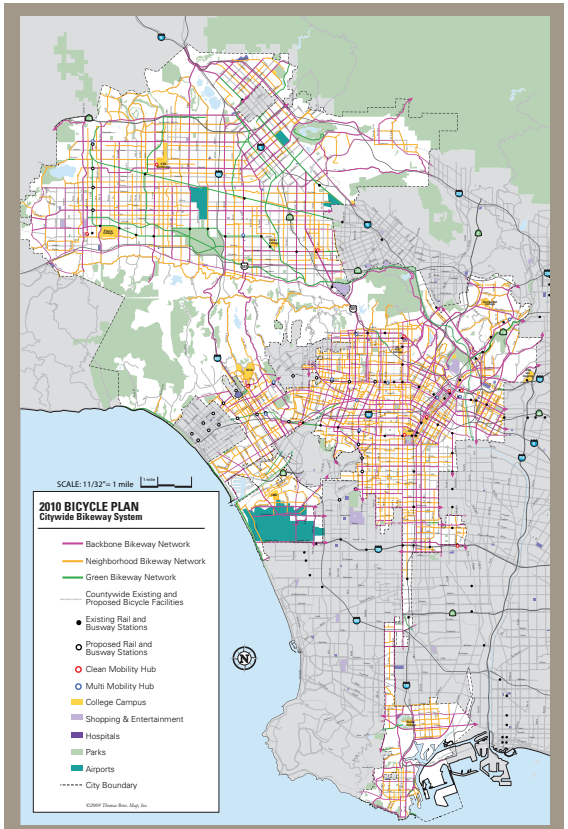
Transforming your general phasing plan into a detailed annual work plan benefits the implementing agency by providing clear direction and also enables monitoring of progress by interested parties.

Develop a Budget

An understanding of the cost of proposed projects and programs relative to existing and future revenue sources is essential. The budget should be itemized and agreement should be made about how these projects compete with other projects funded through the community's Capital Improvement Program. Going through this process may prompt a re-calibration of priorities.

Since a large percentage of state and federal funds for bicycle and pedestrian projects and programs come from competitive grants it is often necessary to include projects and programs for which the implementing agency has not yet secured funds.

Bicycle and pedestrian master plans aspire to be comprehensive and describe improvements over the specified time frame of the plan. As a result, the total cost of improvements may surprise some groups. Releasing the total dollar amount of all proposed improvements to the public can open a door to



All master plans should provide clear guidance to the agencies and partner organizations charged with carrying out improvements. The implementation plan should spell out when, where, and how to take action.

The importance of implementation plans grows with the size and complexity of urban areas. imagine trying to implement Los Angeles' ambitious Citywide Bikeway System (above) without a detailed annual work plan.

Minneapolis' 2011 Bicycle Master Plan update includes a robust set of implementation matrices. Each matrix illustrates how specific strategies relate to plan goals, lists the initiatives, benchmarks (a.k.a performance standards), and performance measures associated with each objective, and notes the party responsible for implementation.

Assembling all this information into one digestable table makes it easy for each agency to understand its responsibilities and fosters accountability.

Goal #2 - Bicycling in Minneapolis is safe and comfortable

6.3.7 Strategy #5 – (Education) - Disseminate information and support comprehensive education for bicyclists, motorists, professional motor vehicle operators, city engineers, elected officials, and the general public.

Above: Nice Ride Kiosk.

Table 6.5 – Education Objectives (Goal #2)

Objective		Selected Initiative	Benchmark	Performance Measure	Responsible Party
5-1	Instill bicycling at a young age.	Expand and maintain bicycle education curriculum in Minneapolis K-12 schools as part of the Safe Routes to School Program. (ED-3)	By 2020, all public and private schools will have a basic bicycle curriculum.	Number of Schools.	**Primary:** MPS Charter and private schools **Secondary:** DPW
5-2	Facilitate community education opportunities.	Establish and maintain a community bicycle education course available at no cost to participants. (ED-4)	By 2020, increase by 25% the number of community bicycle education courses taught.	Number of community bicycle education courses taught.	**Primary:** Non-Profit Groups **Secondary:** DPW
5-3	Focus on staff development to improve the quality of infrastructure	City of Minneapolis and MPRB planners and transportation engineers receive opportunities for professional development on planning and design for bicycle facilities. (ED-5)	1 voluntary class offered each year by 2015, and 2 voluntary classes offered per year by 2020.	Percent of planners and engineers receiving professional development.	**Primary:** DPW MPRB

critics, especially those who are sensitive to spending. The media may not take the time to explain that most of those proposed improvements have yet to be funded, so it is worth thinking carefully about how to present that information. One way is to describe planning level cost estimates for only the highest priority projects. Another approach is to create clear categories that differentiate funded projects from unfunded aspirational projects.

Common funding sources for active transportation programs and projects include:

- State and Federal grants
- General fund
- Bonds
- Property taxes
- Sales taxes
- Special assessment or taxing districts such as a transportation development districts
- Impact and utility fees
- Parking fees

Preparing alternative scenarios or packages of projects and programs based on a range of funding levels is good practice due to the capricious and uncertain future of active transportation funding.

Get the Plan Adopted

Plan adoption should follow a process outlined at the start of the planning process. Any committees identified as having review authority prior to adoption should be consulted and offered the opportunity to provide comment and recommendation for the city council, county council or MPO board authorized to adopt the plan.

The support of steering or public advisory committee and key community members at the public hearings can lend credibility to the process, and make the adoption process go smoothly. There may be ministerial or editorial changes made

in response to comments heard at the adoption hearing.

Consider whether a recommendation for funding of high priority projects should accompany the recommendation for adoption. This is one way to ensure quick implementation of the plan and early evidence of its success.

Continue Public Outreach During Implementation

As the master planning process comes to a close, prepare materials that describe the effort from beginning to end. Demonstrate the thoroughness of your outreach and public involvement process by documenting the number of people who participated and explaining the ways your agency engaged them. This helps catch people up on what occurred during the production of the master plan and prevents future critics from claiming a particular project has not been well thought out.

Outline how the public will be engaged in implementation, project refinement, and future plan updates, and invite the public to weigh in on the project design, when the time comes.

If your community has a bicycle and pedestrian coordinator, he or she should be responsible for continued outreach and serve as the contact for questions about the plan. If there is no bicycle or pedestrian coordinator, another appropriate staff member should be assigned this role.

Brief Staff on How the Plan Should Be Used

Plans are not implemented by one person, but rather by many individuals working in an array of departments and functions. Everyone in your agency who may have some role in the plan's implementation should receive a briefing on the plan content and implementation strategy, with special attention to departmental or individual responsibilities.

In the briefings, explain that the master plan will not provide answers to every question about the future of walking and bicycling in your community. Further work is likely to be required since master plans do not provide detailed construction documents. In terms of policy changes, you may need further analysis to educate the appropriate decision-makers about the suggested polices or procedures.

Retain Flexibility

Sometimes opportunities to implement actions that are either not mentioned in the plan or are considered low priority may arise unexpectedly. Do not let the fact that such unforeseen situations are not part of an annual work plan keep you from acting. Be open to these surprises and seize these opportunities, as long as they are consistent with the overall vision and goals of the plan.

Priorities for project and program implementation are likely to shift between adoption and the next plan update. This could be due to changes in

The new Kinzie Street protected bike lane in Chicago attracts a wide range of bicyclists.

CASE STUDY

Chicago's Bicycle 2015 Plan has 150 strategies in it. However, bike sharing was not one of them because it was not on the scene when the city developed the plan. Despite this, Chicago plans to launch one of the largest bike sharing systems in the country in 2012.

The city's plan also does not mention protected bike lanes, but there is a new directive from the mayor to establish 100 miles of these innovative bikeways within the city limits by 2015.

available funding as discussed above, new research findings, or a shift in the political climate. Flexibility in project implementation may be achieved by re-ranking priority projects when new conditions arise, or allowing some projects to be passed over when funding uniquely suited for a lower ranking project emerges.

Early Success

After plan adoption, keep the momentum going by implementing at least one project from the plan immediately. It could be a simple and non-controversial improvement or a more high-profile project that symbolizes the community's commitment to walking and/or bicycling. The first few projects built after plan adoption should be home runs. They should clearly improve the community and have widespread public support.

CASE STUDY

Nampa Idaho secured implementation funds before plan was adopted. The week after plan approval staff implemented the city's first bicycle boulevard to positive media attention.

Links and Resources

Federal funding sources for bicycle and pedestrian projects: http://www.fhwa.dot.gov/environment/bikeped/.

Transportation Enhancement Program Funds: http://www.enhancements.org/

Information on the reauthorization and bicycle and pedestrian funding changes can be found at: http://transportation.house.gov/

Community Transformation Grants (CTGs): http://www.cdc.gov/communitytransformation.

Carol White Physical Education Program Grant: http://www2.ed.gov/programs/whitephysed/index.html.

The Bikes Belong Foundation: http://www.bikesbelong.org/grants/

The city of Pasadena, California has had success utilizing parking meters as a funding source for improving specific districts (http://shoup.bol.ucla.edu/SmallChange.pdf).

9 MONITORING AND EVALUATING PROGRESS

Monitoring and evaluation can take many forms, such as tracking plan implementation, providing support to an ongoing bicycle and/or pedestrian advisory committee, measuring progress against benchmarks, or updating analytical maps. A thorough evaluation:

- Investigates the achievement of objectives using quantifiable measures
- Reviews the effectiveness of particular interventions and policies
- Monitors public opinion
- Reassesses the overall strategies and approaches of the plan
- Looks for unintended consequences of implemented actions

CASE STUDY

Chicago learned from its experience with previous plans not to underestimate the amount of time needed to achieve a plan's goals. For instance, in the Chicago 2015 bicycle plan, planners added at least two to three years to every performance measure. As the city's Bicycle Program Coordinator said, "It's better to under promise and then over perform."

Establish Performance Measures

Performance measures (also sometimes called performance indicators or metrics) are a way to evaluate progress. They provide a quantitative indicator of success, stagnation, or failure to meet plan goals and objectives. Depending on the goal

EXAMPLE PERFORMANCE MEASURES

INFRASTRUCTURE

- Total miles of bikeways
- Miles of bikeways catering to each type of bicyclist (i.e. Strong and Fearless, Enthusiastic and Confident, and Interested but Concerned)
- Percent of households within one quarter mile of a bicycle facility
- Percent of buses equipped with bicycle racks
- Percent of transit stops with bicycle parking or secure bicycle parking
- Percent of new developments that include secure bicycle parking or other end-of-trip facilities
- Number of bicycle parking spaces
- Percent of roadways with sidewalks
- Number of miles of sidewalk infill per year
- Percent of intersections up to current ADA standards
- Number of transit stops with pedestrian amenities
- Percent of new developments meeting pedestrian standards
- Number of bridges with dedicated bicycle and pedestrian facilities
- Number of miles of trails/multi-use paths

PROGRAMS

- Percent of schools served by Safe Routes to Schools program
- Number of safety trainings offered per year
- Number of enforcement efforts per year
- Attendance at Ciclovia or Open Streets events
- Number of households participating in individualized marketing programs
- Mode shift resulting from individualized marketing programs

USE AND SAFETY

- Mode share for work trips
- Mode share for all trips
- Number of walking and bicycling trips per day along key corridors
- Bicycle and pedestrian crash rates
- Percent of bicyclists that are women, youth, or seniors
- Average trip distance across all modes
- Number of trips made by bike share

PUBLIC OPINION

- Percent of residents satisfied with the safety and comfort of existing bicycle and/or pedestrian facilities
- Percent of residents interested in walking and bicycling more frequently

EXAMPLE PERFORMANCE MEASURES (CONTINUED)

FUNDING

- Total spending on active transportation
- Percent of transportation funding spent on bicycle or pedestrian infrastructure
- Grant application success rate
- Proportion of priority projects and programs with secure funding

or objective, the measure may be general (i.e. mode share) or specific (i.e. percent of youth receiving bicycle safety education).

In addition to performance measures, many of the existing conditions tools mentioned in Chapter Six and selection and prioritization tools mentioned in Chapter Seven also have the potential to be used for detailed monitoring and performance evaluation. Repeating the analyses conducted during the master planning process 3-5 years after plan adoption and comparing the results will likely provide interesting insights into the effectiveness of particular strategies.

Also consider recommending an update of the overall transportation performance measures for the city, county, or region. Conventional Level of Service (LOS) standards tend to work against creating comfortable conditions for walking and bicycling. If your community uses conventional LOS for evaluation of its transportation system, consider proposing the Highway Capacity Manual's 2010 multi-modal LOS as a way to supplement that analysis with measures specific to bicycle and pedestrian levels of service.

Agree on Performance Standards

Performance measures are the unit of analysis, while performance standards or benchmarks are the targets. For example, if the performance measure is pedestrian mode share, the performance standard or benchmark associated with that performance measure might be a 3% increase in the share of walking trips by 2020. Both the measure and the standard should be linked to a specific objective outlined in the plan. Arranging these items in a table with the responsible agency and implementation deadline makes it easy to track implementation progress and monitor overall outcomes.

Each performance standard should be directly related to one or more specific goals or objectives, and be:

Specific
Measurable
Achievable
Relevant
Time-based

EXAMPLE PERFORMANCE STANDARDS

INFRASTRUCTURE

- Complete an average of five percent of the bicycle network per year
- Build 50 miles of cycle tracks by 2015
- Ensure 80% of all sidewalks are up to current ADA standards by 2020
- Increase the number of street trees on collector and arterial streets by 50%
- Install 200 bicycle parking spaces per year through 2025
- Ensure that 90% of residents are within a half mile of a bicycle facility by 2030

PROGRAMS

- Increase the number of children reaching school on foot or by bicycle by 25%
- Expand individualized marketing programs to every neighborhood in the city by 2015
- Carry out 6 targeted enforcement actions per year through 2035

FUNDING

- Secure funding for 75% of all short and medium term priority projects and programs by 2020
- Improve grant application success rate by 20% over the next five years

USE AND SAFETY

- Increase bicycle mode share by 5 percent over the next ten years
- Increase the number of walking trips by 50 percent by 2030
- Decrease non-motorized crashes by 30 percent over the next fifteen years

PUBLIC OPINION

- Increase the number of survey respondents who say they feel safe walking or bicycling in their community by 25%

THE VISION

articulates community aspirations.

GOALS

make the vision explicit by describing desired outcomes.

OBJECTIVES

describe how each goal will be achieved.

EVALUATION CRITERIA

assess potential policy, project, and program recommendations based on their liklihood of achieving particular outcomes.

PERFORMANCE MEASURES

evaluate progress toward meeting plan goals and objectives.

PERFORMANCE STANDARDS

establish benchmarks or targets for success.

EXAMPLE: SEATTLE PEDESTRIAN MASTER PLAN

THE VISION

Make Seattle the most walkable city in the nation.

EXAMPLE GOAL

Goal 1- Safety: Reduce the number and severity of crashes involving pedestrians.

EXAMPLE OBJECTIVE ("STRATEGY")

Strategy 3.2: Improve crossing conditions, especially in areas with high pedestrian demand.

EXAMPLE EVALUATION CRITERION

Improvement is likely to increase safety in high demand/high needs locations.

EXAMPLE PERFORMANCE MEASURE

Rate of crashes involving pedestrians.

EXAMPLE PERFORMANCE STANDARD ("TARGET")

Decreasing rate of crashes involving pedestrians.

It is important to consider the relevant performance standard as goals and objectives are being developed, so as to gain early agreement on who will collect and evaluate the data required to evaluate progress toward meeting the objectives.

Build Accountability into the Plan

Accountability helps staff and elected officials stay on track to meet performance standards or benchmarks. Appoint an accountability committee to monitor implementation progress and produce annual report cards or studies that compare current performance to agreed-upon targets. Rolling the steering/advisory committee into an ongoing oversight group has been effective in many communities. Specify within the plan that if progress towards particular plan goals is lackluster, a report that identifies barriers to implementation and an action plan to overcome them must be produced.

Plan updates and revisions

Think of your plan as a living document - revise and update it as conditions change or if particular strategies do not produce the desired results. The "Plan, Do, Check, Act." (PDCA) model commonly used in business provides a helpful framework for thinking about the iterative nature of planning, implementation, monitoring and evaluation, and plan revisions necessary to improve walking and bicycling conditions.

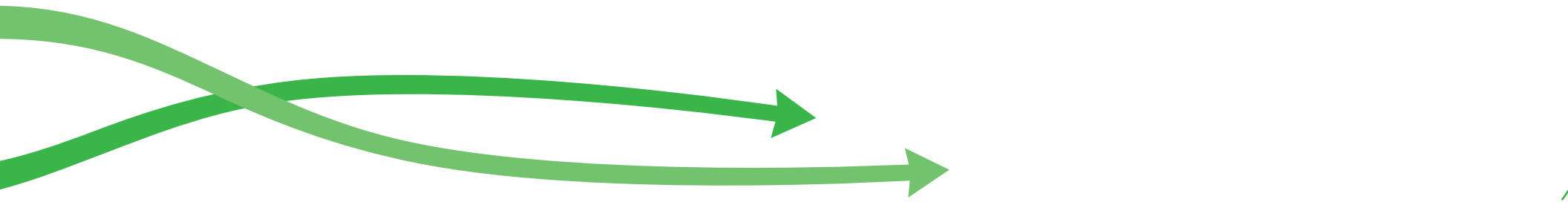
There are many reasons to measure progress and update your plan, including:

- Conditions on the ground change
- New priorities emerge
- Innovative approaches become available/acceptable
- Evaluative information now provides new directions for the plan
- The projects in the plan have been completed

In California, communities must update their Bicycle Master Plans every five years in order to qualify for Caltrans Bicycle Transportation Account funds.

CASE STUDY

Every year the city of Portland conducts annual bicycle counts at more than 150 locations. The city selects many locations throughout the city and has volunteers count the number of riders they see during peak bike commute hours. This information helps the city understand where people prefer to ride, as well as numbers on gender and helmet use.



APPENDIX A:
EXAMPLE PLAN OUTLINE

Executive Summary

1. Introduction and Background
- Plan purpose
- Why now?
- Benefits of active transportation

2. Vision, Goals, and Objectives
- Community aspirations
- Desired outcomes

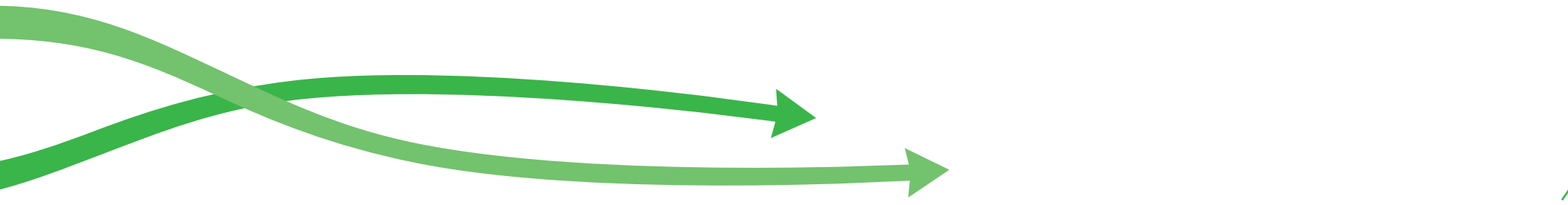
3. Existing Conditions
- Current levels of walking and bicycling
- Maps of existing facilities
- Inventory of existing programs and policies
- 3-5 year crash analysis
- Overall assessment of current bicycle and/or pedestrian friendliness
- Description of current and future needs
- Opportunities and constraints

4. Recommendations
- Policy updates
- Infrastructure projects (on a map)
- Programs

5. Implementation
- Annual work plan
- Budget

6. Evaluation and Monitoring
- Performance measures
- Performance standards
- Accountability plan

Optional Appendices:
- Design guidelines
- Glossary of terms with photographs and/or diagrams
- History of bicycle and pedestrian planning in your community (particularly helpful if it is a plan update)
- Description of the public involvement process
- Additional thematic or analytical maps
- Prioritization and phasing methodologies, including evaluation criteria or scoring matrices
- Project fact sheets for top 10 projects



APPENDIX B:

ADDITIONAL HELPFUL DATA

The detailed list below enumerates a variety of potentially useful data for bicycle and pedestrian master plans. Advanced existing conditions analyses may require not only the quantity and location of facilities but also a sense of the quality of existing sidewalks, bikeways, and off-street trails along several different dimensions (for example, sidewalk width, pedestrian amenities, street trees, presence of on-street parking, slope, etc.). The details of existing programs and content of current policies are also crucial in advanced analyses of current programs and policies.

EXISTING AND PLANNED FACILITIES

- Sidewalks (presence and quality)
- Crosswalks
- ADA-compliant crossings (including curb ramps and high-visibility tactile warning strips)
- Bicycle lanes
- Bicycle boulevards
- Way-finding signs for pedestrians and/or bicyclists
- Multi-use trails/off-street paths
- Bicycle parking and other end-of-trip facilities
- Lighting (standard street lights and pedestrian-scale lighting)
- Type of signal hardware (countdown, pedestrian lead phases, auditory signals, bicycle signals)

EXISTING PROGRAMS

- Safe Routes to School program
- Bicycling events and contests
  - Ciclovia or Open Streets events
  - Bike/walk to work/school challenges
- Individualized marketing programs
- Bike sharing
- Positive enforcement efforts
  - Safety education option in lieu of citation
  - Light giveaways
- Safety trainings
- Free food for bicycle commuters
- Partnerships with other organizations
- Bicycle or pedestrian ambassadors programs
- Hotline or web site for reporting unsafe walking and bicycling conditions (i.e. sewer grates, potholes, slippery surfaces, signal timing and detection issues, etc.)

EXISTING POLICIES

- Complete streets policies
- Maintenance policies
  - Roadway re-striping and re-stenciling
  - Street sweeping
  - Snow plowing
- Parking policies
- Current design guidelines
- Enforcement policies
- Traffic calming policies
- Crosswalks policies
- Inclusion of bicycle and pedestrian analysis in traffic impact studies
- Ordinances requiring pedestrian amenities such as newspaper racks, street furniture, street trees, or bicycle parking
- Inclusion of law enforcement and emergency responders in the planning, design, construction, and operation of pedestrian and bicycle facilities
- Policy for pedestrian crossings at railroads, freeways, light rail tracks, streams, and canal crossings
- Policies on collecting speed data and reviewing speed limits
- Street connectivity standards
- Access management policies
- Transit first policies
- Travel demand management policies

CURRENT AND FUTURE DEMAND FOR ACTIVE TRANSPORTATION

- Pedestrian and bicycle volumes
- Pedestrian and bicyclist travel survey data
- Transit ridership information (by line and stop if available)
- Number of bicycles currently carried on transit and planned transit capacity
- Mode split (ideally for all trips, not just commute trips)
- Future demand for walking and bicycling

OTHER TRANSPORTATION DATA

- Informal pathways and/or pedestrian opportunity areas
- Documented pedestrian or utility easements
- Freight and emergency routes
- Scheduled road reconstruction projects
- Any other planned transportation improvements (e.g. new roadway connections, transit, etc.) that will potentially affect the existing or proposed bikeway network
- Review of transportation plans in neighboring cities
- Pavement quality
  - Vehicle classification data
  - Speed limits and 85th % speeds

PUBLIC OPINION, DEMOGRAPHICS, AND HEALTH

- Public opinion data on walking and bicycling
- Current demographics
  - General
  - Populations likely to walk and bike
  - Communities where social, environmental, and economic justice are a concern
- Demographic projections
- Health indicators, at the finest geographic resolution possible
  - Physical activity levels
  - Obesity rates
  - Disease and chronic conditions rates
  - Body mass index data

STAFF, FUNDING, AND COSTS

- Recently completed bicycle and pedestrian projects
- Summary of expenditures on bicycle and pedestrian facilities and programs in the previous 5 years
- Previous grant applications for bicycle and pedestrian facilities and success rate
- Funding sources for completed projects
- Bicycle and pedestrian staff (ex. Bike/ped coordinator)
- Institutional barriers to improving bicycle and pedestrian environments
- Unit costs (per mile or foot) for constructing, striping, signing, and maintaining bicycle facilities (City Engineer's estimate)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