

Complete Streets:

Best Policy and Implementation Practices



Barbara McCann and Suzanne Rynne, Editors



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*Cover photo: Ninth Avenue in Manhattan, after complete streets improvements;
image courtesy New York City Department of Transportation*

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CHAPTER 1

Introduction



Complete streets serve everyone—pedestrians, bicyclists, transit riders, and drivers—and they take into account the needs of people with disabilities, older people, and children. The complete streets movement seeks to change the way transportation agencies and communities approach every street project and ensure safety, convenience, and accessibility for all. At the heart of the complete streets movement are important political, policy, and procedural changes. This best policy and implementation practices manual explores what communities across the country have learned when implementing their complete streets visions.

Figure 1.1. Navigating an incomplete street can be dangerous and unpleasant for pedestrians.



Barbara McCann

The need for transportation change has grown over the last two decades. Many years of building road networks for automobiles alone has left pedestrians without safe sidewalks and street crossings, made public transportation uninviting, and scared bicyclists off the roads altogether. Parents drive their children even short distances to school, unwilling to let them cross streets unaccompanied. People with disabilities schedule expensive and inconvenient paratransit because the sidewalk to the regular bus stop lacks curb cuts. Older adults in failing health fear that giving up their drivers' licenses means relinquishing their freedom. Traffic volume continues to grow, frustrating drivers and nondrivers alike.

The complete streets movement is in some ways the simple expression of a variety of converging trends. The Americans with Disabilities Act was passed in 1990, and transportation agencies have been tasked with implementing its requirements ever since. The traffic-calming movement demonstrated that speed control is about far more than posting a speed sign. The work of groups such as Project for Public Spaces showed that streets are places for more than just traffic. Bicycle and pedestrian planning has become a professional specialty following a 1991 federal mandate requiring a bicycle-pedestrian coordinator in every state. The dramatic increase in funds available for nonmotorized projects has helped spur the construction of trails and many on-road improvements. Bicycle advocacy groups have pushed for "routine accommodation" of bicycles in transportation planning. Parents and public health advocates created the Safe Routes to School movement and lobbied for funds to make walks to school safer. The Context Sensitive Solutions movement has shifted a number of state transportation agencies toward a planning and engineering approach that takes into account all travelers and the surrounding environment. Smart Growth advocates and new urbanists have put forth a vision of walkable communities with pedestrian-friendly, interconnected streets. Public health practitioners began to push "Active Living" as one solution to the obesity crisis and a host of related illnesses. In the last few years, "green streets" projects have allowed communities to build roadways that also provide stormwater management and urban green space.

While many of these movements have focused on developing new road designs that meet their goals, the political will to consistently create those streets was often missing. A 2008 survey of planners and engineers conducted by the Institute of Transportation Engineers identified lack of political will as one of the primary barriers to creating complete streets; technical issues were of far less concern (Lynott et al. 2009). Political support to consistently create complete streets must still be cultivated, and planning procedures must be

developed that institutionalize complete streets design so that bicycle and pedestrian facilities become more than just “special projects.”

Complete streets policies address these problems. They provide the planning and political framework for a new paradigm of routinely using transportation investments to create streets intended to serve all users. These policies, particularly those enacted as laws, ordinances, and resolutions, provide political and community backing for a new way of approaching street planning and design. They provide the impetus to examine everyday practices and devote existing transportation dollars to creating a more comprehensive transportation network.

A GROWING MOVEMENT

In late 2003, the term “complete streets” was coined by America Bikes as it developed the new policy initiative. The concept was defined thus: “A complete streets policy ensures that the entire right of way is routinely designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a complete street.” A variety of groups representing people using the transportation system, as well as practitioner organizations, were invited to join the newly created Complete Streets Task Force. The task force worked for inclusion of a complete streets policy in the federal transportation authorization. While such a provision was not included in SAFETEA-LU when it passed in 2005, it did not take long for state and local complete streets policies to appear across the country, with policy adoption accelerating in 2008 and 2009. In 2006, the task force evolved into the National Complete Streets Coalition. Founding members included the American Planning Association along with AARP, America Bikes, American Public Transportation Association, Smart Growth America, the Institute of Transportation Engineers, the Association of Pedestrian and Bicycle Professionals, America Walks, and a number of other groups. All of the coalition member organizations have made active contributions to the development of the complete streets movement and the push for adoption of complete streets policies.

As the following pages demonstrate, many communities with complete streets policies have adopted them as expressions of broader goals. For example, in Sacramento, California, attention to the need to complete the streets came first from the pressure of an ADA lawsuit—as well as pressure from



Figure 1.2. Arlington County, Virginia, has invested both in transit-oriented development and in the implementation of a complete streets transportation paradigm.

Arlington County, Virginia Master Transportation Plan

bicycle advocates—but the region’s early best practices guide for balancing the needs of different modes was inspired by growth projections that forecast a doubling of jobs and residents in the region by 2050. In Arlington, Virginia, the county’s commitment to building transit-oriented development led to a new transportation paradigm. The complete streets concept gave good transportation planning an identity and provided for greater recognition of good transportation planning practice.

COMPLETE STREETS BENEFITS

Complete streets policies meet the needs of communities because of the many benefits that they provide. Here are just a few highlights:

Safety

The fundamental impetus behind complete streets is the need to provide safe travel for all users. Close to 5,000 pedestrians and bicyclists die each year on U.S. roads, and more than 70,000 are injured. Over 40 percent of these pedestrian fatalities occur on roads that have no crosswalks (Ernst and Shoup 2009). Complete streets reduce accidents through comprehensive safety improvements. An FHWA review found that design elements including sidewalks, raised medians, better bus-stop placement, traffic calming measures, and treatments for disabled travelers improve pedestrian safety (Campbell et al. 2004). Designing streets for pedestrian travel by installing raised medians and redesigning intersections and sidewalks can reduce pedestrian risk by 28 percent (King et al. 2003).

Complete streets treatment also improves vehicle safety. Before-and-after comparisons conducted in several states show that a common complete streets technique, the road diet (see Chapter 7), reduced traffic crashes between 18 and 43 percent while also increasing bicycle and pedestrian travel (Pawlovich et al. 2006). Such safety improvements can be especially critical for older drivers and pedestrians, who are more likely to die if involved in a traffic crash.

Health

The obesity epidemic has highlighted the need for people to include more physical activity as part of their daily lives. The transportation infrastructure associated with complete streets—such as street connectivity, narrow street widths, sidewalks and bicycle lanes, street crossings, and street furniture—makes walking and bicycling more inviting. These features can contribute to improved community design—compact development, access to goods and services, and reduced traffic volumes and speeds—that fosters physical activity. These elements of the built environment directly and indirectly affect physical activity, stress, air pollution, traffic, access to food, and other risk factors for obesity and chronic disease, mental illness, respiratory illness, injury, and death. Research has “consistently found that residents of walkable communities are associated with measurably higher physical fitness levels, lower likelihoods of obesity and traffic crash risk, and fewer harmful air pollutants per capita than residents of more automobile-oriented communities” (Frank and Kavage 2008, 215).

Many studies have documented the association of bike trail and footpath access with greater levels of physical activity (Rodriguez 2009; Humpel, Owen, and Leslie 2002). One recent study spanning 11 countries found five environmental factors significantly related to residents’ levels of physical activity. Three involved complete streets: sidewalks on most streets, transit stops nearby, and presence of bicycle facilities. The more factors that were present, the higher the activity level by residents (Sallis, Bowles, et al. 2009).



Figure 1.3. Bicycle and pedestrian ways such as these in San Luis Obispo, California, have been shown to increase residents' physical-activity levels.

Health authorities such as the World Health Organization, the Institute of Medicine, and the Centers for Disease Control and Prevention (CDC) recommend environmental and policy interventions as the “most promising strategies for creating population-wide improvements in eating, physical activity, and obesity” (Sallis, Story, and Lou 2009, S72). The CDC has specifically recommended adoption of complete streets policies that include the policy elements outlined by the National Complete Streets Coalition (Khan et al. 2009). A complete streets policy can also help provide the transportation infrastructure necessary to accommodate easy access to healthy foods.

Another aspect of health and transportation is reduction of pollution from traffic. According to current land-use and travel research, transportation systems that support characteristics of a walkable community—compact development, mixed use, interconnected streets, pedestrian-friendly design, and close proximity of destinations—are consistently associated with less per-capita vehicle travel and lower levels of carbon dioxide, volatile organic compounds, and oxides of nitrogen. Traffic congestion and short motor-vehicle trips, especially cold engine starts, in urban areas contribute high per-mile emissions rates. With adequate pedestrian, bicycle, and public transportation infrastructure, these trips can often be replaced by walking or bicycling (Frank and Kavage 2008).

Climate Change

Walking, bicycling, and taking transit are no- or low-emissions options for travel. Complete streets are essential to enable Americans to drive less and get around more easily by foot, bike, and public transportation. The potential to shift trips to lower-carbon modes is undeniable. The 2001 National Household Transportation Survey found that 50 percent of all trips in metropolitan areas are three miles or less and 28 percent of all metropolitan trips are one mile or less. These are distances easily traversed by foot or bicycle, yet 65 percent of trips under one mile are now made by automobile (U.S. Bureau of Transportation Statistics 2001). Complete streets designed to make walking, bicycling, or transit safer and more enjoyable could help convert many of these short automobile trips to other transportation modes. Other studies have calculated that 5 to 10 percent of urban automobile trips

can reasonably be shifted to nonmotorized transport (Litman 2009). And by using transit instead of driving to work, a solo commuter can reduce carbon-dioxide emissions by 20 pounds per day, or more than 4,800 pounds in a year (Davis and Hale 2007).

Special Populations

Complete streets provide safe travel options for groups that have limited access to automobiles: children, older adults, people with disabilities, and low-income Americans. More children are likely to walk or bike to school when sidewalks or footpaths are present, when there are safe street crossings, and when school zones enforce a reduced vehicle speed (Ewing, Schroeder, and Greene 2004). AARP strongly recommends adoption of complete streets policies to help older adults age in place (Lynott et al. 2009). Complete streets support people who use wheelchairs or who have vision impairments; in many cases the street network is so poorly designed that those with disabilities cannot safely reach a bus stop or train station. Improving access to transit reduces dependence on costly paratransit or private transportation service alternatives. Families can reduce transportation expenses by replacing car trips with bicycling, walking, or taking public transportation if local infrastructure encourages these modes.

Figure 1.4. Access to transit in Gresham, Oregon, provides mobility options for those who use wheelchairs.



Growth and Revitalization

Creating infrastructure for nonmotorized transportation and lowering automobile speeds by changing road conditions can improve the economic situation for both business owners and residents. When Valencia Street in San Francisco's Mission District narrowed its traffic lanes to slow down cars and accommodate other users, merchants reported that the street changes enhanced the area. Nearly 40 percent of merchants reported increased sales, and 60 percent reported more area residents shopping locally due to reduced travel time and convenience (Drennan 2003).



Yet even with all these benefits, complete streets policies are not silver bullets. They cannot transform automobile-oriented land use, correct unsafe driver behavior, or solve environmental woes by themselves. They are one tool in the toolbox for creating more livable communities.

REPORT METHODOLOGY AND STRUCTURE

The findings of this report are drawn from case studies of 30 communities that have adopted and are implementing complete streets policies. Case study communities were selected using the inventory of complete streets policies created for the AARP report *Planning Complete Streets for an Aging America*. The inventory evaluated the written content of the 80 known complete streets policies passed by the end of 2008. The research team used a variety of factors in choosing case studies, including the strength of the written policy, knowledge about implementation success, and the length of time the policy has been in place. The profiles are weighted toward older policies, some of which predate the coining of the term “complete streets,” because they have a longer track record to share. Case studies were also chosen to represent geographic diversity as well as a range of population sizes, with small towns, cities, regional governing bodies, and states all represented. Planners, transportation engineers, and others generously shared their time and insights with us through extensive telephone interviews and document reviews.

The lessons learned from these complete streets pioneers should help other communities adopt and implement effective complete streets policies. Chapter 2 contains stories of successful complete streets adoption efforts. Chapter 3 outlines the elements that are important to consider in writing a complete streets policy, and it includes examples from communities with particularly innovative language. The rest of the manual tackles implementation issues, first through the lens of APA’s strategic points of intervention for planners in Chapter 4, followed by a look at transition-related issues in Chapter 5. Since costs are always a major concern, Chapter 6 details successful funding strategies used in a number of communities. While this manual’s focus is on policy and practice, Chapter 7 gives an overview of some design solutions communities are using. In conclusion, Chapter 8 distills some of the common themes and lessons learned from the many communities that participated in this effort. Case studies from all 30 communities appear throughout the manual as sidebars and examples in the text. We hope you will find their insights valuable in crafting and implementing complete streets policies in your communities.

CHAPTER 2

Adopting a Policy and Building Support



While there is no prescription for the development and adoption of a complete streets policy, the policy-making process is influenced and shaped by a variety of factors. This process is often complex and not linear; involves an array of people and interests, both inside and outside government; and varies considerably in the amount of time, support, and funding required.

THE ROLE OF PUBLIC HEALTH IN TRANSPORTATION POLICY CHANGE: PIERCE COUNTY, WASHINGTON

The Pierce County, Washington, story illustrates the power of partnership, political, and local government staff support, community outreach, and alignment with other community problems in the complete streets policy-making process.

As a result of significant concern over the rising rates of obesity, the number of overweight people, and associated chronic diseases such as diabetes and heart disease—along with a greater understanding of the central role the built environment plays in supporting or inhibiting healthy lifestyles—the Tacoma–Pierce County Board of Health (BOH) adopted the Tacoma–Pierce County BOH Obesity Prevention Resolution (no. 2005-3698) on March 2, 2005.

Pierce County Public Works and Utilities Department



Figure 2.1. Pierce County's commitment to nonmotorized transportation projects has resulted in improvements like these new sidewalks and paved shoulders on 94th Avenue East.

The resolution declared that obesity is “a serious threat to the health and well-being of Pierce County citizens” and prompted a call for “elected officials, government agencies, private businesses, the food industry, health care providers, schools, parents, and community organizations [to] immediately adopt and begin to implement recommended policies and practices to reduce the consumption of excessive calories and promote increased physical activity.” The resolution specifically called on “planners, governments and those who affect the built environment” to revise their planning practices (e.g., comprehensive plans, zoning and subdivision ordinances), improve bicycle and pedestrian infrastructure, and develop programs to increase the availability and accessibility of opportunities for physical activity in new developments, near schools, and within neighborhoods.

This resolution marked the beginning of a series of events and policies that ultimately led to the development and adoption of the Tacoma–Pierce County Board of Health Complete Streets Resolution (no. 2008-4072, adopted July 2008) and the Pierce County Council Complete Streets Resolution (no. R2008-89s, adopted August 2008).

The development and adoption of these resolutions would not have been feasible without the support and leadership of—and collaboration among—the BOH, Pierce County Council, the Tacoma–Pierce County Health Department (TPCHD), other decision makers from a variety of local government sectors (planning, transportation, parks and recreation, schools, child care, public health), state and local public interest groups, businesses, and community members. This combination of support created the ideal environment for change.

(continued on page 11)

Complete streets policies come in many forms, and the National Complete Streets Coalition has encouraged adoption of policies through many avenues. Complete streets policies and related measures discussed in this report include city council resolutions, local ordinances, and state laws; comprehensive plan updates; criteria included within funding measures; internal agency policy directives; and extensive rewrites of manuals, standards, and subdivision ordinances.

In many cases, implementation of the complete streets concept may include several of these steps. For example, in Seattle the concept of complete streets was first included in a special funding measure and then formally adopted through a subsequent ordinance that covered all funds and projects. Many communities have begun with a simple resolution that then led to a more detailed rewrite of standards and manuals.

Most policy adoption processes share common steps of policy initiation, formulation, adoption, implementation, and evaluation. The process is shaped by multiple driving forces of change, including but not limited to political support, local government staff buy-in and support, public support, individual champions of change, media advocacy, financial support, and in some cases other complementary local regulations, policies, or initiatives.

This chapter provides an overview of the initiation, formulation, and adoption policy-making steps and the driving forces of change within a complete streets policy context. These steps and forces are illustrated through policy-making stories from local governments across the country.

POLICY INITIATION AND FORMULATION

Define the Problem

Why does a community need a complete streets policy? Environmental, economic, and social problems such as traffic congestion, insufficient pedestrian and bicycle safety, poorly managed growth, decentralized development patterns, air pollution, high vehicle-miles traveled, obesity, and chronic disease have prompted many communities to reexamine their transportation decisions and policies and adopt complete streets policies. Identifying an environmental, economic, or social problem within a community and recognizing the range of stakeholders affected by it are important first steps in the complete streets policy-making process. An understanding of the historical context, current conditions, and projected conditions of the problem provides the rational basis for policy change.

In Pierce County, Washington, the public health community drove policy development through its concerns about residents' sedentary lifestyles. The Tacoma–Pierce County Board of Health initiated the process. Its complete streets resolution called for improved bicycle and pedestrian infrastructure along with programs to increase the availability and accessibility of opportunities for physical activity in new developments, near schools, and within neighborhoods (see sidebar).

A wide variety of issues have prompted development of policies in other places. In Sacramento, California, concerns over accommodating projected new job growth and residential development over the next 30 years provided the impetus to reevaluate the city's transportation network. In New York City, one of the primary problems identified by the mayor and city planners was a need for a more efficient and sustainable transportation network for the city's millions of residents. Arlington County, Virginia, and the City of Kirkland, Washington, both saw the need to formalize their commitments to complete streets principles in order to preserve and support a strong history of smart growth and transit-oriented development in the former and nonmotorized transportation in the latter.

Quantify the Problem and Gather the Evidence

Once the problem has been defined, the champions of complete streets need to gather evidence to support the need for change. Statistics provide a picture of current and future transportation-related conditions across a geographic area for different demographic groups in a jurisdiction. Important information can include:

- Pedestrian and bicycle crash data;
- Pedestrian and bicycle commuter trip data;
- Data on the number or percentage of children and adolescents walking or bicycling to school;
- Chronic disease prevalence statistics;
- Rates of obesity and percent of population that is overweight;
- Population projections and estimates; and
- Air pollution data.

In New Haven, startling statistics helped mobilize members of the community to encourage the adoption of a comprehensive complete streets policy in the fall of 2008. The data showed that many workers commuted on foot or by bike, carpool, or public transit—but they also revealed multiple bicyclist and pedestrian fatalities, as well as evidence that low-income groups suffered a disproportionately high risk of pedestrian injuries and fatalities. Such evidence can help quantify the magnitude of the problem and help educate the public and decision makers about the need for policy reform.

Measuring the public's desire for change as well as opinions on specific proposals can be useful. During the policy development process in Decatur, Georgia, the city used a statistically significant telephone survey to gather data from residents, especially those who had not traditionally attended public meetings. Developed by project staff and a private firm, the survey sought input on existing commutes, the potential effect of new

(continued from page 10)

The Pierce County Council, the BOH, and the TPCHD were instrumental in (1) educating the public about the importance of implementing a complete streets policy to help make the built environment more supportive of active transportation and healthy lifestyles; and (2) influencing jurisdictions within the county to reform their own transportation policies. Several BOH members and other Pierce County Council members were strong proponents of obesity prevention and policy change; they played significant roles in introducing and passing the complete streets resolutions. This strong political support, combined with the early efforts of organizations such as the statewide public-interest group Futurewise and the nonprofit Friends of Pierce County provided the impetus for subsequent planning, programmatic, and policy changes within the county and the many jurisdictions within its borders.

"It was a perfect storm in that a number of groups were interested in obesity prevention, the built environment, active living, and other related issues at the same time," said Leslie Carroll, a built-environment prevention specialist for the TPCHD.

Since the adoption of the BOH and Pierce County complete streets resolutions, the TPCHD has seen acceptance of the complete streets concept grow throughout the county. Further, the complete streets efforts provided momentum for the development of an obesity prevention summit in September 2008. Shortly after the summit, the TPCHD coordinated a planning process to develop the Pierce County Community Action Plan for Active Living and Healthy Eating, which provides a "blueprint for Pierce County organizations to collaboratively create environments that make it easier for residents to make healthy lifestyle choices." This planning process brought together a variety of county leaders to rank their recommendations for action. One of the top three was to create built environments that support physical activity as part of everyday life.

The recommendations for action included in the plan call upon elected officials "to adopt Complete Streets resolutions with plans for implementation"; city and county planners "to develop and adopt municipal codes and design standards that support walking, biking, and public transit"; and transportation professionals "to create incentives to promote nonmotorized travel to employment centers, commercial districts, transit stations, schools, major institutions, and recreational areas."

The Tacoma-Pierce County Board of Health Complete Streets Resolution is available at www.doh.wa.gov/cfh/Nutritionpa/publications/tpboh-streets.pdf.

The Pierce County Council Complete Streets Resolution is available at www.co.pierce.wa.us/cfapps/EDocs/ViewDocument.cfm?did=77390&dnum.

More information on Pierce County's nonmotorized transportation plans and projects can be found at www.co.pierce.wa.us/pc/abtus/ourorg/pwu/tpp/nonmotor/nmpln.htm.

or improved pedestrian and bicycling facilities on commuting and recreation, and prioritization for intersection and corridor improvements. Nearly half of all responses indicated improved pedestrian facilities would positively affect decisions to walk or bike to work or school, and 61 percent indicated a positive effect on walking or bicycling for recreation. That same majority supported a complete streets policy.

It is also important to understand how a community currently tackles transportation planning and construction. This can help further identify the nature and extent of the problem and the current strategies being used by the community to address the problem. The following methods can be used to gather this information:

- Collection, review, and assessment of existing local programs, projects, plans, and policies;
- Identification of best practices from other jurisdictions;
- Compilation and examination of current academic research and studies and reports developed by advocacy organizations and other local government departments; and
- Formal and informal conversations with political, institutional, private, and public stakeholders.

Identify the Stakeholders

The identification of the needs and interests of an array of traditional and nontraditional stakeholders is important to the successful adoption of a complete streets policy. Planners may be interested in addressing population growth, decentralized development patterns, and traffic congestion. Public health professionals may be concerned with rising obesity, chronic disease, asthma, and death and injury rates. Transportation engineers may be focused on mobility and level-of-service measures. Policy makers may be concerned with economic development and the provision of goods and services to the public. Developers and business owners may be interested in attracting consumers and revenues. Residents may be concerned with quality-of-life issues such as traffic and convenient and reliable access to goods, services, and a variety of destinations; parents and older adults may be especially worried about safety. However, these groups may not interact, and they approach transportation policy from very different perspectives. The most successful champions of complete streets have convened a variety of stakeholders to identify common goals, list mutual benefits, and develop a common understanding of the transportation needs of all users in a community.

Increasingly, communities are realizing the benefits of open communication among stakeholder groups, opting to create advisory boards or task forces of varied interest groups. Convening a multistakeholder committee or coalition can help city staff build both political and public support—two important driving forces of policy change. In Rochester, Minnesota, the Rochester-Olmstead Planning Department, Rochester Public Works, Olmstead Public Health, and the Mayo Clinic partnered to create the Active Living Rochester Steering Committee, which played a central role in the development and adoption of Rochester's complete streets policy. In Columbia, Missouri, a diverse group including local pedestrian/bicycle advocates, bicycle and pedestrian experts, city staff, a city council member, health practitioners, educators, and downtown business people came together to ensure that transportation, health, and business needs were addressed in the policy development process (see sidebar).

THE IMPORTANCE OF COMMUNITY ENGAGEMENT: COLUMBIA, MISSOURI

Columbia, Missouri, provides a good example of how street standards requiring bicycle and pedestrian accommodation can be developed and adopted in a midsized community.

The idea for an accommodation policy came from a small group of advocates, eventually known as PedNet, with a vision for a connected nonmotorized transportation system. The group's initial advocacy efforts focused on individual public hearings for new developments, but after being overwhelmed by the sheer number of hearings they decided to try to change policy instead.

Ian Thomas, executive director of PedNet, remembers that the process began with PedNet convening an unofficial study group including bike/ped experts from the traffic engineering department at the local University of Missouri; several city planning department staff and a city council member; health practitioners; educators, including an elementary school principal; and downtown business people who wanted to increase foot traffic in the downtown, among others.

As general interest in complete streets within the community grew, the city council requested that the Planning and Zoning Commission evaluate the existing street standards and provide them with a proposal for new standards. The commission appointed an official stakeholders group of about 15 to 20 people, many of whom had been part of PedNet's study group, and directed the city's planning department to research the latest and best in street standards. According to Jerry Wade, who was the head of the Planning and Zoning Commission at that time and convened the stakeholders advisory group, the two guiding criteria for the revision of the standards were (1) increasing the safety of residential streets by calming speed through reduced street widths and (2) creating city infrastructure that was compatible with bicyclists, pedestrians, and disabled people.

The stakeholder group worked for a year to develop a draft of new standards that everyone could live with, and then the planning and zoning commission held a series of public hearings to address public concerns and comments. At that point, some suburban developers began to voice opposition to the new standards and the additional regulations they represented, arguing that the proposed policy changes would be too costly. The former director of public works also came out in opposition to the new standards.

The fight over the proposed changes was beginning to undermine the new standards' chance for adoption. To compound the problem, the local paper, *The Columbia Tribune*, ran an editorial acknowledging that complete streets was an interesting idea but suggesting that the developers were right and that Columbia should maintain the status quo. In response, Thomas, the mayor, and another PedNet coalition member called on the paper's editor with a presentation on the benefits of complete streets in hand. After seeing photos of complete streets in other U.S. and European cities, as well as hearing statistics on health and quality-of-life impacts, the editor was sold on the idea. A week later, the paper published a new editorial endorsing the policy, and this media advocacy was effective in promoting the new standards. After a final public session in which both sides presented their arguments, the city council voted to adopt the new standards.

The 2004 street design standards account for bicyclists and pedestrians. The required width of residential streets was reduced from 32 to 28 feet curb-to-curb, which has the effect of slowing down traffic. The standards require all new streets to have five-foot sidewalks on both sides and to provide multiple options for bicycle accommodation for a wide range of street types, from local residential streets to neighborhood collectors to major arterials. As part of the subdivision regulations, new streets by default are now designed with bicycle and pedestrian accommodation included, while retrofits are considered on a case-by-case basis.



Figure 2.2. Pedestrian and bicycle accommodation on the streets of Columbia

Implementation of the new standards for city projects has not been a problem because the city council is now very supportive of the complete streets vision, according to Mitch Skov, senior transportation planner in Columbia. Many of Columbia's new streets are built by developers, and because multiple options for accommodation are provided for each street type, there is often a negotiation process over which option to choose. Ultimately, the city council approves all projects, which ensures that new streets will have bicycle and pedestrian accommodation. Richard Stone, a traffic engineer in Columbia's public works department, says that if developers understand and follow the basic principle behind the standard—accommodation of all three street users: pedestrians, bicyclists, and cars—their project street designs, barring other factors, should be approved. The standards make very clear what is required. Wade, who now sits on the city council, notes that council now has very little to do to ensure accommodation in development proposals; since the projects must follow the standards, routine accommodation in new projects has become accepted as the way things are done.

The city has had some difficulties on projects where the state DOT is involved. Skov says that cost is very much an issue for MoDOT—the city had to take responsibility for funding the bicycle and pedestrian components of a recent project—and, though fading, there is still some resistance to accommodation of nonmotorized users within the agency. Liability concerns over bicycle and pedestrian use of MoDOT facilities drive some of this. According to Wade, Columbia is one of the few communities in the state that pushes MoDOT on bicycle-pedestrian inclusion—“we are a unique mini-hassle for them.” The city has built a good relationship with state engineers, however, and can usually work with them to get the design results the city wants to see.

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The new standards are not perfect. Design options include the use of pedways—eight-foot-wide, separated pathways. In practice, the city soon discovered that there are major safety issues with pedways if designed specifically to accommodate bicyclists. Wherever the pedway intersects with side streets or driveways, there exists the potential for a bicycle crash, especially if cyclists assume they have the right-of-way and ride through those intersections without stopping. According to Stone, the design costs to address this can be significant, and he prefers that bicyclists be accommodated within the roadway. At the same time, however, a wider, separated pedway allows families to bike together without the stress of being in the street. Possible solutions for this problem advocated by PedNet are adding signage at pedway conflict points to require cyclists to yield to motorists and creating additional curbs at pedway intersections to slow cyclists down and alert them to possible cross traffic. The city now designs pedways as wide sidewalks primarily for pedestrian traffic, though bicycles are allowed to use them.

While the standards have been relatively easy to apply to new development, the city has run into difficulties in retrofit situations and sidewalk projects. Skov has seen significant neighbor opposition to retrofit sidewalk projects where the excavation work necessary will damage landscaping. Areas in Columbia that were built after World War II were not designed to include wide sidewalks, and the city is struggling with how to balance the inclusion of sidewalks with the tree removal that this sometimes necessitates. According to Wade, the loss of trees in front yards is the most publicly contentious issue with sidewalk retrofits. “People have a real emotional attachment to trees—not as much as to their kids, but pretty close. There’s just no good answer.”

And though many in Columbia have embraced the complete streets idea, buy-in from the general public can still be an issue. Stone notes, “It’s important to view complete streets as transportation facilities that are adding bicycle and pedestrian capacity, not as punishing cars to make bicycle and pedestrian facilities better. Some advocates want to make it harder to use cars and force people to walk or bike, but that can turn people off.” Stone also understands the resistance of some developers who are reluctant to change their ways: “It’s their money that is at risk, and it’s hard to change a successful way of doing things with no protection from that risk. You need to keep the dialogue open. Showing success with the new standards is key—it’s fine to have examples from other places, but you also have to prove it will work at home.”

The new standards have resulted in slightly increased costs for street projects, but Wade emphasizes that complete streets are worth that cost. Stone points out that for developers, the physical cost of constructing the improvements is not the issue but rather the loss of land to additional road facilities, as well as the additional upfront costs of the extra design efforts needed to accommodate all modes. As the current transportation paradigm shifts, however, bicycle and pedestrian accommodation becomes less an added hassle and more an accepted part of design and construction. Stone also notes that consistency in requiring accommodation helps—if everyone has to follow the new standards, there’s no longer an issue of one developer having to compete with another that isn’t following the standards.

Finally, as Stone points out, “It costs a lot more to have to go back and retrofit something later. It really irritates me to have to go back and retrofit an intersection—why weren’t the facilities included in the first place?” Retrofits are costly and can be complicated, especially when additional property may have to be purchased for right-of-way and construction hinders existing traffic on the route. In the long run, complete streets planning saves the public money by including bicycle and pedestrian facilities in transportation infrastructure from the outset.

The approved street standards can be found at http://gocolumbiamo.com/Council/Code_of_Ordinances_PDF/Street_Standards/Appendix_A.pdf. More information on Columbia’s complete streets can be found at the Get About Columbia website, <http://getaboutcolumbia.com>, which provides information on the federal grant-funded nonmotorized transportation pilot program administering the construction of several new bicycle and pedestrian facilities. The Bicycle and Pedestrian Commission advises the City Council on pedestrian and bicycle issues; their website can be viewed at www.gocolumbiamo.com/Planning/Commissions/BPC/index.php. Information on the process of adopting the new street design standards can also be found on PedNet’s website, www.pednet.org/advocacy/street-design-standards.asp.

POLICY ADOPTION

As noted, complete streets attract interest from a wide variety of stakeholders. Not surprisingly, the policy adoption process has been driven by different groups in different communities. In some cases, groups such as bicycle advocates have pushed elected officials to adopt policies—sometimes in opposition to transportation agencies. In others, planners that work within agencies have led the development and adoption of a policy through an internal planning process. The most successful policy adoption processes have involved community groups that ensure the policy covers all their concerns; the planning and engineering professionals that will be responsible for policy implementation; and the elected officials who can marshal political support for a new approach to road planning and design.

Building Support: Driving Forces of Policy Change

A variety of influential factors can help bring about policy change. These powerful forces include but are not limited to:

- Political support
- Local governmental staff support
- Public support
- Individual champions
- Partnerships

Building political, government staff, and especially public support often requires education, outreach, and engagement. Perceptions of transportation needs in a community may be focused on the automobile. In addition, the political leadership, government staff, or public may not completely understand the concept, the principles, and the goals of complete streets. Some may feel that a complete streets policy will destroy the character of their town or neighborhood. Conducting surveys, holding meetings and public hearings, sponsoring workshops, and

convening community forums are all strategies that a community can use to try to dispel misperceptions about complete streets and to understand community priorities. Such hands-on education and outreach processes can actively engage political leadership, staff, and the public and ultimately build support at many levels for the development and adoption of a complete streets policy.

Including a wide variety of organizations and advocacy groups in the policy development process can also help build support among nontraditional stakeholders. Health professionals, clinicians, business owners, community and youth organizations such as the YMCA and the Boys and Girls Club, Area Agencies on Aging, the PTA, and other stakeholders all bring different perspectives to the table and can help justify the need to develop a complete streets policy for various health, economic, and social reasons.

Political support. Political support of local elected and appointed government officials facilitate the policy-making process. When political leaders—such as mayors or members of city or county councils—and other appointed officials—such as members of the local board of health, planning commission, or other appointed policy-making body—understand the problem at hand and the need to address the problem through the adoption of a complete streets policy, the policy-making process proceeds at a faster rate and in a more efficient manner.

The power of progressive and innovative political and staff leadership has been demonstrated in New York City. The city's recent transportation policy shift would not have been possible without the unwavering support of Mayor Michael Bloomberg. His vision for the city, combined with city DOT commissioner Janette Sadik-Khan's leadership, enthusiasm, and clear mission for sweeping policy reform, have led to a series of swift but significant changes to how streets are designed and used throughout the city (see sidebar, p. 66).

Local government staff support and buy-in. Cultivating the support and advocacy of staff within the planning department and other local government departments—health, economic development, engineering, public works, and so on—is often an overlooked strategy for influencing policy change. The directors of these departments and their staff directly influence day-to-day operations and are intimately involved with community outreach and education opportunities; they are therefore positioned to advocate within a community for certain policy changes. Staff tends to remain in their positions longer than elected officials and will be the implementing agents of adopted complete streets policies.

When agency staff members are empowered to make change, they can—and will—take the lead. Doing so gives them ownership of the concept and pride in the results. It also allows complete streets concepts to guide the creation of a transportation system for all users, from operation and maintenance policies to long-range plans. In Rochester, Minnesota, the Planning Department and the Department of Public Works, with input and guidance from the Active Living Rochester Steering Committee, developed a first draft of a complete streets policy and worked to revise it an additional 13 times before it was presented to other stakeholders and the public (see sidebar).

Internal support can sometimes drive the policy adoption process. When planners, engineers, and others begin shifting to

A PLANNER-DRIVEN COMPLETE STREETS POLICY-MAKING PROCESS: ROCHESTER, MINNESOTA

The complete streets policy adoption process in Rochester, Minnesota, took a year and a half from start to finish, in large part due to the leadership and communication among, and involvement of, multiple city departments and a variety of stakeholder groups.

The Rochester-Olmstead Planning Department, Rochester Public Works, Olmstead Public Health, and Mayo Clinic came together to pursue a Blue Cross/BlueShield grant that would allow them to coordinate their nonmotorized transportation planning efforts. They were awarded the grant, which allowed them to form the Active Living Rochester Steering Committee and provided them with the necessary funds to staff the committee and help develop the initial complete streets policy draft.

Led by Senior Planner Mitzi Baker with input and guidance from the committee, the policy development process started in earnest with many conversations among the planning department, department of public works, and city administration. The staff felt they wanted to be in agreement on policy elements before they opened the debate to the wider community. In fact, the first draft of the policy was revised 13 times before being presented to other stakeholders and the public.

Concerns about ongoing maintenance and repaving projects and the handling of exceptions were discussed in detail. In the end, repaving was included in the policy.

Responsibility for exceptions was ultimately split. The city engineer has the expertise to review exceptions related to design limitations and safety; the city council decides exceptions that relate to disproportionate financial costs as this can have political implications; and adverse environmental impact exceptions are handled jointly by the city engineer and director of planning and zoning, as the planning department reviews other environmental issues.



Figure 2.3. Restriping projects have helped Rochester begin successfully implementing their complete streets policy.

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Rochester city staff worked closely with a variety of community stakeholders—developers, builders, consultants, the chamber of commerce, neighborhood organizations, people with disabilities, the Rotary Club, the Rochester Downtown Alliance, and other groups and individuals throughout the city—to inform and educate the community, encourage feedback, and elicit suggestions for improvement during the development and adoption process. These community outreach and engagement efforts paid off, providing strong intergovernmental and multistakeholder support for the consideration of the final draft by city council.

When the final policy was brought to the city council for a public hearing and consideration in early March 2009, the public, including bicyclists, health advocates, neighborhood groups, and organizations representing older people and people with disabilities, came out in strong support. The city council voted unanimously to adopt the policy and the zoning code amendments.

“I was so proud of the people who cared about this who spoke at the public hearing and contacted the council members in support,” said Baker. “So often at public hearings, people come out because they are against something. Only infrequently do people show up when they care about something that will have a beneficial change in the community. It was very gratifying to see that diverse representation. It was the best representation of civic engagement I’ve seen in my career.”

More information about Rochester’s policy can be found at www.co.olorado.mn.us/departments/planning/transportation_planning.asp.

complete streets principles, they may realize a larger change in policy and procedure is needed. In several communities, the same people implementing the policy are those who researched and wrote it. In others, government staff lent their support to efforts by elected officials or advocacy groups trying to change the transportation planning framework. In Colorado Springs, Colorado, the initial idea to adopt a complete streets policy came from a transportation board member, but city planning staff brought the idea to fruition. After researching the concept, they drafted a policy statement to present to the transportation board. The political clout of the transportation board and the planning staff’s hard work resulted in the adoption of the complete streets policy as an amendment to the city’s Intermodal Transportation Plan.

Even when a policy process is driven by outside advocates, an outreach and education approach that focuses on staff can be a low-cost yet effective strategy for developing new advocates within a government agency. For example, Kathy Keehan, executive director of the San Diego County Bicycle Coalition, stresses the need to develop a “behind-the-scenes” approach to reach key decision and policy makers to prompt change. Rather than focusing all outreach and education strategies on policy makers, she says, “if you can work with planners and staff and get them to understand and articulate your position, they can voice the advocates’ point of view internally.”

Public support. The support of community residents, neighborhood groups, and area advocacy organizations is essential to the adoption of a complete streets policy.

In April 2006, the Cascade Bicycle Club, a regional nonprofit based in Seattle, challenged regional and local government officials throughout the Puget Sound region to pass complete streets ordinances to “ensure consideration of pedestrian traffic and bicycle traffic as critical elements in road design.” The group published and presented a report—*Left by the Side of the Road*—outlining results from the Puget Sound Regional Bicycle Network Study, which surveyed more than 4,000 miles of potential bicycle routes within four counties and provided key recommendations for the development, maintenance, and preservation of a regional network of bicycle routes. The study recommended that Puget Sound governments adopt complete streets ordinances “to improve failing segments of the regional bicycle/pedestrian network” (Cascade Bicycle Club 2002).

Cascade’s advocacy helped drive policy adoption in several Puget Sound jurisdictions, including Seattle, Redmond, and Kirkland. In Kirkland, which has a history of political and community support for nonmotorized transportation, the recommendation was quickly referred to the department of public works and then to the transportation commission, a city council–appointed body of citizens. The proposed ordinance was revised once and then was unanimously adopted—a process that took less than six months.

Public support from a range of stakeholders representative of the city, town, or county’s population often eases the adoption process. In some communities, public support has provided the final push to convince policy makers of the need to adopt a complete streets policy. In others, public support has been the driving force needed to convince city staff and policymakers of the need for transportation policy reform. And continued public support through the entire policy development and adoption process strengthens and sustains the overall cultural acceptance of a new transportation planning paradigm.

Individual champions. Individuals—passionate public citizens, influential policy makers, motivated community organizers, or empowered staff members—are important motivators of local policy change. Such champions of change can energize, direct, and sustain political, public, and even private support of proposed policy change.

SUPPORTING BICYCLISTS AND PEDESTRIANS THROUGH PLANNING: KIRKLAND, WASHINGTON



Figure 2.4. Kirkland's innovative PedFlags program in action

The central principles of complete streets are nothing new for the City of Kirkland, Washington, a municipality of just over 47,000 people in the Seattle metropolitan area. Since the adoption of Kirkland's 1995 comprehensive plan, nonmotorized transportation has been a priority for elected officials and residents.

"Our particular geographic setting on a lake with a series of lakefront parks has encouraged Kirkland residents to be interested in walking and safety for some time," says David Godfrey, transportation engineering manager for the city's public works department.

The city council and the community value pedestrian and bicycle infrastructure and see them as integral to the transportation system. "Kirkland has an evolving history of pedestrian and bicycle accommodation. Complete streets is just one piece," explains Godfrey.

In April 2006, representatives from the Cascade Bicycle Club, a nonprofit Seattle organization that had been advocating for complete streets ordinances throughout the Puget Sound region, attended a Kirkland City Council meeting and recommended the city pass such an ordinance. Due to the history of political and community support for nonmotorized transportation in Kirkland, the recommendation was quickly acted upon, and in October 2006 the Kirkland Municipal Code was amended to include the new ordinance:

19.08.055 Bicycle and pedestrian ways along transportation facilities.

- (1) Bicycle and pedestrian ways shall be accommodated in the planning, development and construction of transportation facilities, including the incorporation of such ways into transportation plans and programs.
- (2) Notwithstanding that provision of subsection (1) of this section, bicycle and pedestrian ways are not required to be established:
 - (a) Where their establishment would be contrary to public safety;
 - (b) When the cost would be excessively disproportionate to the need or probable use;
 - (c) Where there is no identified need;

- (d) Where the establishment would violate comprehensive plan policies; or
 - (e) In instances where a documented exception is granted by the public works director.
- (Ord. 4061 § 1, 2006)

Adoption of this ordinance is only one of several important strategies the city has taken to improve its bicycle and pedestrian infrastructure and encourage residents to be more active. The 1995 comprehensive plan laid the foundation for nonmotorized transportation in the city. Innovative for its time, this plan focused on "[integrating] non-motorized transportation throughout Kirkland as an essential element of [its] transportation system, recreation system and community." With 2001, 2006, and 2009 iterations of the plan, Kirkland improved its policies to be increasingly supportive of bicycle and pedestrian travel.

In 2007, the City of Kirkland won the Environmental Protection Agency's Building Healthy Communities for Active Aging Achievement Award. This award recognized the city for its (1) commitment to more than 50 physical activity programs designed for older adults, such as the Kirkland Steppers Walk Program (free, organized group walks through downtown); (2) investment of \$6 million to improve sidewalk connections between commercial and residential developments; and (3) innovative pedestrian policies, such as PedFlag (flags placed at 63 crosswalks to remind drivers to yield to pedestrians) and the Flashing Crosswalk Program (flashing lights incorporated into the pavement of 30 crosswalks). These strategies not only improve the pedestrian environment for older adults but create an environment that is more inviting for all nonmotorists.

In that same year, the city created an Active Living Task Force composed of residents, representatives from local businesses and the health department, and two city council members, to develop and implement a variety of pedestrian and bicycle projects. The task force has developed a walking map of Kirkland, helped the Department of Public Works champion grant proposals for pedestrian and bicycle improvement projects, and spearheaded other promotional activities to incorporate activity into daily life for all residents.

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The Kirkland Police Department has also been instrumental in creating a more walkable, bikeable community. The department actively enforces crosswalk laws through “pedestrian stings.” Several times a year, police officers will dress in plain clothes and monitor drivers’ stopping behavior with the help of additional police officers on motorcycles.

On March 3, 2009, Kirkland adopted an active transportation plan—More People, More Places, More Often: A Plan for Active Transportation. This plan not only emphasizes the need to increase participation in walking and cycling as valid means of transportation but also points out the importance of paying special attention to the needs of children, older people, and people with disabilities. Goals focus on improving active transportation safety, increasing the number of facilities for pedestrians and bicyclists, and making active transportation more convenient.

While the complete streets ordinance is only one piece to Kirkland’s overall strategy to create a more walkable and bikeable city, the ordinance has made a significant impact on difficult transportation improvement decisions. For example, the ordinance provides the justification needed when deciding whether or not to purchase of right-of-way for bicycle infrastructure or allocate additional street width to pedestrians. This ordinance codifies Kirkland’s commitment to nonmotorized transportation and institutionalizes the consideration of all users in future transportation decisions.

For More Information

Kirkland’s Complete Streets Ordinance: www.ci.kirkland.wa.us/Assets/CMO/CMO+PDFs/Complete+Streets+Ordinance.pdf

Kirkland Municipal Code: http://kirklandcode.ecitygov.net/CK_KMC_Search.html

2009 Active Transportation Plan: www.ci.kirkland.wa.us/depart/Public_Works/Transportation___Streets/Active_Transportation_Plan.htm

Active Living Task Force: www.ci.kirkland.wa.us/Community/healthy/Active.htm

Environmental Protection Agency’s Building Healthy Communities for Active Aging Achievement Award: www.epa.gov/aging/press/epanews/2008/2008_0207_2.htm

Columbus, Ohio, has had no shortage of champions when it comes to complete streets. A popular mayor, a dedicated councilmember, and an engineer in the Department of Public Service have all taken up the cause; thanks to their commitment, the city has a new complete streets resolution and is dedicated to building roads that accommodate all users (see sidebar).

A high-ranking or powerful individual can have a big impact on policy change. The State of Delaware’s complete streets policy is the result of Governor Jack Markell’s interest in cycling. At the state’s first bicycle summit, he signed an executive order directing the Delaware Department of Transportation to create complete streets.

Partnerships. Formal partnerships can be a powerful tool for building political, institutional, and public support—all important factors for influencing policy change. Collaboration among nonprofit and advocacy organizations, governmental departments, businesses, and other groups brings traditional and nontraditional stakeholders together around a common goal. By pooling resources, expertise, and financial capacities and coordinating members’ actions, partnerships can facilitate the policy-making process.

As noted, the convening of formal committees and coalitions in Rochester and Columbia was instrumental in building both political and public support to develop and adopt their complete streets policies. This was also the case in Sacramento, California, where a complete streets coalition brought together a variety of stakeholders from various bicycle, pedestrian, and disability advocacy groups (Geraghty, Seifert, et al. 2009).

Influential Factors of Policy Change

While not essential for policy change, the following factors can facilitate the policy-making process:

- A single event, hallmark research study, community workshop, or presentation
- Media advocacy
- Private or public financial support
- Other initiatives, regulations, or policies

These elements work to educate the community about the environmental, economic, or social issue at hand; supply resources in the problem identification and quantification stages; and provide synergistic support for other complementary initiatives, regulations, or policies.

Events, studies, workshops, and presentations. In some cases, an event such as a community meeting, presentation, summit, festival, or benefit race can jump-start political and public enthusiasm for policy change. Such events provide an opportunity to highlight a community problem, convene a wide variety of stakeholders, and educate policy makers and the public about the various options and strategies that can bring about change.

In Rochester, the policy development process was set in motion by enthusiastic community response to a presentation by an outside expert about the complete streets concept. To follow up, planning department staff held individual meetings with the development community, advocates for people with disabilities, the Rotary Club, the Rochester Downtown Alliance, and other community groups and organizations. This multifaceted community outreach strategy led to wide public support for Rochester’s complete streets policy and zoning code amendments.

THE IMPORTANCE OF COMPLETE STREETS CHAMPIONS: COLUMBUS, OHIO

Although Columbus has been Ohio's largest city for a number of years, it grew up with a suburban development pattern. The city covers 220 square miles, and many of its roads lack sidewalks. Yet the city is also home to Ohio State University, one of the largest public universities in the country, and many residents, advocacy groups, and members of the business community have an active interest in supporting multimodal transportation.

According to Lelia Cady, a legislative aide to the Columbus City Council, the push for complete streets started with a single activist councilmember, Maryellen O'Shaughnessy. When O'Shaughnessy took office in 1997, the city didn't even have a comprehensive sidewalk construction law. During her 11-year tenure on the council, she was a vocal advocate for alternative transportation. As chair of the public service, transportation, and development committees, O'Shaughnessy made it a priority to break down the silos separating development and transportation.



Figure 2.5. Complete streets in Columbus, Ohio

In 1999, the city updated its subdivision ordinance to add sidewalk requirements for private development. Although the law was a significant improvement, it did not cover all types of new development, and where the regulations did apply some developers became adept at skirting the requirements. In response, Michael B. Coleman, the city council president at the time, successfully lobbied for establishing a sidewalk construction program. In 2000, Coleman became mayor, and now the city is spending \$1 million annually to build sidewalks to support safe routes to school.

A few years after the subdivision ordinance update, O'Shaughnessy first approached Mayor Coleman's administration to discuss the complete streets concept. Before becoming mayor, Coleman had worked with O'Shaughnessy on the city council to push for dedicated funding for sidewalks and other pedestrian safety programs. He has made pedestrian-friendly neighborhoods a priority from day one of his administration and subsequently led the development of the Bicentennial Bikeways Plan. In response to tough economic times, Coleman has pushed a pay-as-you-grow

agenda for new development, placing responsibility on developers to include sidewalks in new developments.

The concept started gaining more traction in 2007 when the department of public service in concert with the city council took a stand by placing a moratorium on sidewalk waivers. This gave the department an opportunity to clarify how the requirements should apply to private development.

Around the same time as the sidewalk waiver, Mayor Coleman hired a new director of public service, Mark Kelsey, to reorganize the department by creating a new Division of Mobility Options out of the former Transportation Division. Behind the scenes, O'Shaughnessy had been pushing for a reorganization of the Department of Public Service to create a special division for nonautomotive transportation. According to newly appointed administrator Randall Bowman, the Division of Mobility Options is committed to "getting people out of their cars through the four

Es: enforcement, engagement, education, and engineering."

In Bowman's view, the primary mission of his division is to work on improving the city's sidewalk and on-street bicycle networks and encouraging other nonautomotive travel modes. Even before the reorganization in 2009, Bowman and his colleagues had been at work since 2007 with Alta Planning + Design of Portland, Oregon, on a comprehensive bikeways plan.

Early incarnations of the plan did not have a complete streets policy statement, but starting in late 2007 the city held a series of public hearings to discuss the concept. With help from O'Shaughnessy and her allies in the local bicycle advocacy community, Coleman embraced the importance of having a complete bicycle network. According to Cady,

gaining the mayor's support was a crucial step on the path to complete streets.

In the summer of 2008, the city council adopted the Columbus Bicentennial Bikeways Plan by ordinance. The plan included a model complete streets policy statement and recommended that the city adopt an official policy. The plan also outlined a detailed strategy for completing the bicycle network. It called for not only introducing new land-use regulations but also updating local traffic laws to recognize bike lanes.

"The bikeways plan gives us a roadmap to provide well-planned on-street bikeway facilities for the future," says Bowman.

Parallel to the bikeway plan, the city is taking a more aggressive stance regarding the sidewalk network. According to Bowman, "in 2001 no one could tell me how many miles of sidewalk we had or don't have." Since then, the city has assessed the amount of missing sidewalks and set up a prioritization schedule for implementation through the mayor's Operation SAFEWALKS program.

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In response to the bikeways plan's call for an official complete streets policy, O'Shaughnessy and her aide Cady drafted a complete streets resolution, which was approved by the city council in July 2008. While the council resolution lacks the force of law, it has become an important advocacy tool.

Because the city council reviews every road construction proposal, councilmembers have a chance to weigh how the policy applies to each project. All legislation that spends capital transportation dollars must address how complete streets will be advanced with the project.

"Now, 'complete streets' is part of the city jargon, whereas it wouldn't have been without the resolution. It's made a big difference psychologically," says Cady.

According to Bowman, his division worked closely with the city's planning division on both the plan and the resolution. The resolution was the result of an open dialogue with numerous stakeholders including the city attorney, police, biking and health advocates, and legislative analysts.

So far the city's collaborative planning process has been a major success. "Reaching out, having meetings, and using the web is so important to garner support and build confidence," says Bowman. Without an open dialogue, the city might have lost some of the community's support for its efforts.

Since the adoption of the complete streets policy, the city has amended its subdivision ordinance to include a requirement that private developers build sidewalks and bikeways in accordance with the Bicentennial Bikeways Plan (City Code Title 31, Section 3123.17). The ordinance also authorizes an in-lieu fee program modeled after the city's parkland dedication fund. If a particular development cannot provide site-adjacent bicycle or pedestrian improvements due to site constraints, the developer can pay a fee, and the improvements will be built offsite but within the same community planning area at a later date.

Complete streets implementation has not been limited to private development. In Columbus's current Capital Improvement Program, the city has committed \$55 million over five years for the mayor's sidewalk improvement initiative and \$10 million for on-street bikeway improvements. Additionally, in November 2008 voters authorized a bond package to help implement the bikeways plan.

While the economic downturn in 2009 put a halt to the city's immediate plans to issue bonds, Bowman points out that the slowdown has given the city an opportunity to conduct some training. Planning staff are currently working on a code update to reduce the city's off-street parking requirements and to introduce bike parking minimums. Meanwhile, Bowman's division is working on formalizing scoping procedures and conducting training.

The Division of Mobility Options has already conducted a training session for zoning staff to help them consider the complete streets policy in site-plan review. In addition, Bowman's team has offered training to public utilities to help them understand the city's expectations when they dig up roads. Finally, Bowman says his division has also held training sessions for contractors, consultants, and developers to ensure that private development understands the land-use regulations.

"The good news is that complete streets is not a new concept to the city," says Bowman. "We believe complete streets is wonderful at repackaging common sense into 'a-ha!' terms."

To learn more about the city's complete streets implementation or to review the Bicentennial Bikeways Plan, visit the Columbus Department of Public Service's Transportation page at <http://pubserv.ci.columbus.oh.us/transportation/Index.htm>.

The East-West Gateway Council of Governments, the metropolitan planning organization (MPO) in the St. Louis area, engaged many stakeholders through a variety of workshops and forums as it developed its "Great Streets Initiative." The council kicked off the initiative in 2006 with a symposium on the principles behind great streets, to which local planners, policymakers, and engineers in the region were invited (see sidebar).

Media advocacy. Media advocacy is also a powerful tool. Advocates and planners have successfully used the media (both new and old) to communicate and build support for complete streets policies. In Columbia, Missouri, proposed complete streets standards were threatened when suburban developers and even the director of public works began to question them in public hearings. After an editorial in the local paper sided with the naysayers, advocates called on the paper's editor to present the benefits of complete streets, too. The editor was sold on the idea and a week later endorsed the policy in a new editorial. The small-town paper's advocacy was effective, and the city council ultimately voted to adopt the new standards (see sidebar, p. 13).

Other communities have also used advocacy effectively. In Hawaii, the One Voices for Livable Islands coalition generated numerous stories in the newspapers and on local TV and radio, framing the complete streets issue primarily as one of pedestrian safety for older Hawaiians.

Financial support. Financial support during the policy development and adoption process can assist community advocacy groups and city staff in building public and political backing. Both Rochester, Minnesota, and Pierce County, Washington, received financial support in the form of Active Living Grants from the Robert Wood Johnson Foundation. MPOs can offer financial and technical support as well. Rockville, Maryland, funded the creation of its complete streets policy with money from the National Capital Region Transportation Planning Board's Transportation/Land Use Connection Program. These grants provided the initial impetus for convening city departments and engaging the public in the policy development process.

The Tacoma-Pierce County Health Department (TPCHD) received a five-year grant from the Centers for Disease Control and Prevention through the Washington State Department of Health in partnership with the Washington State departments of Transportation and Community, Trade, and Economic Development to conduct an assessment of Tacoma's plans, regulations,

CREATING “GREAT STREETS”: EAST–WEST GATEWAY COUNCIL OF GOVERNMENTS, MISSOURI

The East-West Gateway Council of Governments, a metropolitan planning organization (MPO) in the St. Louis, Missouri, area, outlines its “Great Streets Initiative” in its long-range transportation plan, Legacy 2035. This initiative has the ultimate goal of centering communities around vibrant streets that provide transportation options for all roadway users. It goes beyond the implementation of complete streets to focus on “great

Road, a large arterial roadway connecting a handful of cities in St. Louis County; (3) Natural Bridge Road, an underused high-capacity road near the University of Missouri–St. Louis; and (4) South Grand, a growing commercial and residential district in the city of St. Louis.

The strength of the Great Streets Initiative lies in its ability to transcend simply mandating complete streets principles.



Figure 2.6. A detail from the South Grand Boulevard Great Streets Initiative Streetscape Plan

streets” that foster lively neighborhoods with a strong sense of community. The initiative grew out of the council’s desire to emphasize the relationship between road design and the larger context of land use within which roads exist. Further, they wanted communities within the region to begin to think beyond street beautification and to consider more deeply the types of communities they wanted to create.

As a part of the initiative, the Council of Governments conducted a Great Streets Symposium in 2006. Local planners, policy makers, and engineers within the region were invited in order to learn about the principles behind great streets. The next step was to create a web-based design guide available to anyone interested in helping to implement great streets. Finally, the council solicited proposals for demonstration projects incorporating great streets principles. After receiving nearly 40 applications, they chose four projects to fund in order to serve as models for other localities within the region. These demonstration projects are: (1) Labadie, Missouri, a small, unincorporated town in Franklin County; (2) Manchester

Instead, it utilizes the council’s resources to convince local jurisdictions that it is in their best interests to incorporate Great Streets principles into their projects. The council has held symposiums and workshops in order to encourage planners and engineers at the local level to consider how Great Streets can work within their communities and what these principles have to offer to their local economies. According to Terry Freeland, the manager of the Transportation Corridor Improvement Group at the council, these communities are “beginning to need the workshops less and less because the training is allowing them to start considering these things themselves.” The Great Streets Initiative is an outstanding example of how stakeholders are more likely to accept change if they are invited to participate in the process as opposed to being told what to do at the end of the decision-making process.

For more information on the Great Streets Demonstration Projects, see www.ewgateway.org/GreatStreets/greatstreets.htm. For more information on the Digital Design Guide, see www.greatstreets-stl.org.

and programs on active transportation. The assessment identified many policy and programmatic strengths but also some challenges. As a result, the TPCHD created the Tacoma in Motion Program to provide the city with assistance in the development of policies that reduce barriers to nonmotorized transportation.

Alignment with other community issues and problems. In some cases, the development and adoption of a complete streets policy is one strategy used to address a much larger social problem, such as obesity prevention or improved air quality. The alignment of complete streets principles with other initiatives and policies can strengthen the case for developing and adopting a complete streets policy.

Strong public support for transit, pedestrian, and bicycle-oriented development, as well as a legacy of transit-oriented development and managed growth, paved the way for the development and adoption of a complete streets policy in Arlington County, Virginia. The revision of the master transportation plan and the adoption of the complete streets policy was a result of a community planning process, which included the county board, elected officials, a plenary group, two dozen citizens representing various committees and advisory groups from across the county, and transportation planning staff.

The Power of Multiple Driving Forces of Change

Individual, political, government staff, and public support, as well as media advocacy, partnerships, financial support, champions of change, and alignment with other community initiatives are influential driving factors of change. The combination of several of these factors can create the ideal setting for a successful complete streets policy development and adoption process.

CONCLUSION

As indicated by the case studies, the policy adoption process is one that involves a wide variety of groups and people playing many different roles. Ultimately, the process can be one that helps everyone in the community gain a common understanding of a shift in transportation investment priorities. Much of that common understanding is gained through the process of putting the policy concept into words. The next chapter delves into the elements that make a successful complete streets policy.

CHAPTER 3

Elements of a Complete Streets Policy



Complete streets policies come in many shapes and sizes. City councils have quickly passed simple resolutions directing their transportation agencies to consider the needs of all users. State departments of transportation have gone through extensive public input processes to rewrite their design manuals. Planning departments have worked with community members to include complete streets goals in comprehensive plans. Directors of transportation agencies have written internal memorandums outlining policy changes and implementation steps. And policy makers at both the state and local levels have passed complete streets laws and ordinances.

Some policies have been developed very quickly, often using the resources of the National Complete Streets Coalition or the U.S. DOT Guidance on Accommodating Bicycle and Pedestrian Travel. In other cases, communities have engaged in an extensive development process (see Rochester, Minnesota, sidebar, p. 15).

In many cases, policy development may involve many steps beyond the initial adoption of a resolution or vision statement. For example, in Massachusetts, a two-sentence law eventually led the state highway department to create an award-winning new design manual that firmly entrenches complete streets into project development and design (see sidebar, p. 83). In Seattle, the initial inclusion of a complete streets requirement in a bond measure led to a well-crafted ordinance, followed by the formation of a steering committee to further define what the ordinance means. Such gradual processes allow communities to create policies that work in their particular contexts.

Taking into consideration all of these permutations, the National Complete Streets Coalition has identified 10 elements that should appear in a comprehensive complete streets policy document. A good complete streets policy:

- Includes a vision for how and why the community wants to complete its streets.
- Specifies that “all users” includes pedestrians, bicyclists, and transit passengers of all ages and abilities, as well as automobile drivers and transit-vehicle operators.
- Encourages street connectivity and aims to create a comprehensive, integrated, connected network for all modes.
- Is adoptable by all relevant agencies to cover all roads.
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right-of-way.
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Directs the use of the latest and best design standards while recognizing the need for flexibility in balancing user needs.
- Directs that complete streets solutions will complement the context of the community.
- Establishes performance standards with measurable outcomes.
- Includes specific next steps for implementing the policy.

SET A VISION

A strong vision statement can keep a community focused on its purpose in calling for complete streets—and that purpose can vary considerably. Some communities, especially those that pass resolutions, may list many reasons for complete streets policy adoption, but it is helpful to be clear about the primary purpose. For example, Rochester, Minnesota, included no less than four “whereas” clauses clearly designating “active living” as the primary reason behind its policy adoption. In all cases, the vision statement can help guide the inevitable difficult choices that must be made in striking a balance that provides for the needs of a variety of users along a single right-of-way. For more information about developing a complete streets vision, see Chapter 4.

INCLUDE ALL USERS

The complete streets movement initially arose within the bicycle advocacy community as a response to the absence of space for bicyclists and pedestrians along too many roads. But a sidewalk without curb ramps is useless to someone who uses a wheelchair (and is difficult to use for parents with strollers and travelers with suitcases). An awkwardly placed bus stop that does not provide a safe and convenient way to cross the street can endanger transit riders. A true complete streets policy does not simply call for the addition of bicycle and pedestrian facilities but rather inspires a careful consideration of the needs of all travelers. Is there a senior center along the road? A school? A heavily used bus route? The consideration of such features and facilities can help identify the transportation needs of road users and the design elements that will be most useful to complete those streets.

The Massachusetts Project Development and Design Guide gives an almost comprehensive list, going beyond pedestrians and bicyclists to specify “people requiring mobility aids, drivers and passengers of transit vehicles, trucks, automobiles and motorcycles.” However, it leaves out concern for age. This is a common omission, but it is particularly important to consider the mobility needs of older adults and children. These populations are more likely to be killed or injured in a crash, and children and many older people do not have the option to drive.

The Community Transportation Plan of Decatur, Georgia, does make specific mention of age, stating that the complete streets policy “is especially beneficial to the City’s most vulnerable populations such as low income households, children and older adults, all of who experience differing physical, mental and financial challenges to mobility.” The plan goes on to discuss complete streets in the context of Universal Design principles—the idea that homes and other places should be designed for “universal” use, not just for able-bodied people. The AARP

SHAPING COMPLETE STREETS THROUGH A COMMUNITY TRANSPORTATION PLAN: DECATUR, GEORGIA

The City of Decatur, Georgia, has long been interested in providing travel choices, especially for pedestrians. Inspired by recent studies demonstrating the link between the built environment and health, Decatur has committed itself to active living by increasing opportunities for nonmotorized modes of transportation for people of all ages and abilities. The city’s interest in promoting active living through good transportation design is embodied in the 2008 Community Transportation Plan (CTP).

Community input shaped the CTP’s goals, setting a clear vision and ensuring that the plan would be widely supported. Over a period of eight months, the project team held two general public meetings; four group meetings for audiences including older adults, local institutions, and low-income populations; and four workshops on topics such as traffic calming and health. A telephone survey developed by project staff, and a private firm was used to seek public input on a variety of transportation issues and gauge support for a complete streets policy. The survey findings showed that 61 percent of respondents supported a complete streets policy.



Figure 3.1. A midblock crossing in downtown Decatur

Throughout the planning process, more than 700 public comments were collected through formal meetings and via letter or email. These comments emphasized the importance of walking and bicycling and the need to accommodate all users, especially vulnerable groups such as older adults and those with disabilities.

To help identify the transportation networks for various travel modes, the city conducted four technical studies: latent demand score (LDS), level of service (LOS), street typology, and policy and regulatory audits. The LDS predicted citywide bicyclist and pedestrian demand if facilities for those users existed near destinations, such as schools, public transportation stops, and employment centers. The results will allow decision makers to better prioritize projects based on the demand for bike and pedestrian trips, as well as have a better understanding of the types of facilities necessary.

Decatur used traditional measures to evaluate LOS for automobiles but also based its approach on National Cooperative Highway Research Program Report 616 (TRB NCHRP 2008), which will be included in the 2010 edition of the Highway Capacity Manual. This method measures the quality of travel for pedestrians and bicyclists, accounting for comfort, sense of safety, and adjacent land use, rather than throughput and speed.

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The street typology study used a new classification system that added land-use relationships to typical functional classifications. With this system, future roadway designs can better match the uses of the street. Each new type caters to different levels of need for various travelers, by foot, bike, or car. The typology can better guide investment decisions when balancing the needs of all users in construction and reconstruction projects.

Last, Decatur's existing plans, policies, codes, and practices were audited to identify potential challenges when implementing the CTP. Recommendations included updating city codes and landscaping ordinances to incorporate more specific details and designs for complete streets, as well as adding standards for minimum and maximum parking requirements.

Given the largely supportive community and a history of investment in multiple modes of transportation, city staff had few barriers to overcome. In addition to extensive public support, elected officials have stood solidly behind the CTP.

A built-out community, Decatur did not look to acquire or construct new rights-of-way but instead focused on real-locating existing roadways more efficiently. Most important, following the clear community goal meant changing the planning approach: taking a comprehensive look at all users of the road rather than focusing on moving automobiles. The project team was able to create a comprehensive package of designs and recommendations that promote health, safety, mobility, and access.

Following adoption of the CTP, Planning Director Amanda Thompson reports that Decatur is thinking beyond pedestrians and automobiles. Before, the city always thought about building sidewalks and adding street trees but gave little consideration to bike lanes or bike racks. Despite having solid public transportation within the city, staff did not always consider how better bus stops or improving access to train stations could improve the street environment. "We truly cover all modes now," she says.

The CTP includes detailed plans for five intersections and seven corridors, chosen for their key locations, the public's input, and their impact on health. These designs involve a variety of approaches, including narrowed and reduced travel lanes, widened sidewalks, and improved crossings. They also include ideas on how to make room for public transportation users and vehicles on the right-of-way. The broad definition of complete streets allows them to remain adaptable to the local context.

By first establishing networks, the project team had considerable flexibility in street design. Each of the selected areas is given a section in the CTP where opportunities, needs, and challenges are addressed. Conceptual drawings of the specific recommendations accompany each intersection and new cross-sections are shown for each corridor. Such details allow the city to better envision its transportation goals and ensure that all future projects, regardless of size or scope, contribute to the visions specified by the CTP. Thus, the complete streets goal can be implemented in phases and as funding allows.

Decatur has taken the CTP's implementation steps to heart. The city's recreation department now has a full-time staff dedicated to administering the Safe Routes to School program and

an Active Living Advisory Board. Some front-yard parking for downtown businesses has been replaced with pedestrian seating. Nearby businesses initially resisted the loss of parking but now see the improved street life. Several of the plan's projects have been funded, including two intersection improvements, a bicycle lane, and streetscape improvements. The city also adopted a bicycle parking ordinance.

Decatur does face several hurdles in implementing the CTP. This small city does not directly conduct any transportation work beyond regular maintenance and repair; it uses Georgia Department of Transportation (GDOT) grant funding for all larger projects. Decatur's complete streets vision is in conflict with GDOT standards, and therefore every project, from street tree to bike lane, requires variances. GDOT also controls the main routes connecting the city to the surrounding Atlanta region, and because GDOT rarely considers context Decatur's main roads are addressed in the same manner as roads through any other community. Decatur works through this situation by submitting variances and working to educate GDOT staff on Decatur's vision and reasoning. City staff also try to influence state policy by working with elected officials. Despite these challenges, Thompson firmly believes their approach is great for small governments often at the mercy of larger agencies. The CTP is "a communication tool to build what the community wants."

Final design of the CTP's concepts can also be troublesome. Working within existing rights-of-way constrains Decatur's ability to provide all the facilities it might. But by depending on the bicycle and pedestrian networks established through the planning process, staff is better able to balance needs across the system. They can determine the type of facility that is most important in each location and ensure its inclusion, then discuss additional features. Determining the right type of facility is also a challenge. This is especially true for bicycle facilities, where deciding among bike lanes, off-street paths, and "share the road" markings can be difficult.

Transportation project cost is often a barrier. Decatur's transportation funding has not increased appreciably since adopting the CTP, and so plan implementation is a reflection of what the city can afford each year. To make the most of those funds, the city tries to be creative in pursuing low-cost options and prioritizes projects to reflect the network needs established in the CTP. "The general feeling in Decatur," says Thompson, "is that investing public funds into sustainable transportation, rather than the status quo, is a better investment of those funds." To aid in addressing these issues, the city held a complete streets workshop in April 2008. Nationally known experts spent a day with elected officials, planners, and engineers, building a base of support for the CTP as well as determining how best to tackle its goals. The community, city commissioners, and city employees agree that Decatur has much reason to be proud of CTP implementation and progress toward complete streets.

The CTP is at www.decaturga.com/cgs_citysvcs_dev_transportationplan.aspx.

report *Planning Complete Streets for an Aging America* is a good source of strategies to integrate the needs of older adults into street planning.

Automobile drivers are also an important part of the equation. Maintaining acceptable vehicle movement will be a primary concern of many of those charged with implementing complete streets policies, and traffic volume will influence what treatments are used for other transportation modes. For example, a major debate during the development of Seattle's complete streets ordinance concerned the treatment of freight. The final policy reads, "Because freight is important to the basic economy of the City and has unique right-of-way needs to support that role, freight will be the major priority on streets classified as Major Truck Streets. Complete Street improvements that are consistent with freight mobility but also support other modes may be considered on these streets." Pedestrian and bicycle advocates are still not happy with the clause, but the city felt such language was necessary to gain the support of the freight community.

When preparing to undertake street design changes to better accommodate other modes, planners need to measure the impact on drivers, decide what to do, and communicate the change. In some communities, the vision for complete streets deemphasizes automobility, so explaining to the public the changes and new mobility options available is important. In other cases, the changes may actually improve traffic flow, but this may often be counterintuitive and should be communicated clearly. See Chapter 5 for a discussion of balancing the needs of automobiles with other users.

CREATE A NETWORK

The ultimate intent of a complete streets policy is to ensure that roadways provide complete transportation networks for all modes. Often the fastest way to make progress is to focus on opportunities to close gaps: filling in missing sidewalk segments or finding a good way for bicyclists to negotiate a narrow bottleneck. The connectivity of the roadway network is an especially important feature for pedestrians, who are much more reluctant to take indirect routes. The transportation plan of Champaign, Illinois, contains a succinct phrasing of this objective: "Provide a dense, interconnected network of local and collector streets that supports walking, bicycling, and transit use, while avoiding excessive traffic in residential neighborhoods."

A network orientation is also helpful in balancing transportation needs. Trying to accommodate every traveler on every street is a feat that physical constraints can make nearly impossible. Instead, planners and engineers can provide high-quality access for everyone through the creation of interwoven networks in which certain streets emphasize different modes. For example, "bicycle boulevards" in Portland, Oregon, allow bicyclists to travel along lower-traffic streets, avoiding arterials designed primarily for cars. In its new Urban Street Design Guidelines, Charlotte, North Carolina, has created a street classification system in which "parkways" are designed primarily for cars, "main streets" emphasize business uses, and "avenues" serve diverse needs. See Chapter 7 for more information on design approaches. In such systems, it is still important to provide a basic level of safe access on all streets, and no users should be required to take long detours.

COVER ALL ROADS

Creating networks of complete streets is difficult because streets are not controlled by a single agency. Roads are built and maintained by a patchwork of state, county, and city agencies, with private developers often responsible for building roads in new developments. Typically, complete streets policies cover a single jurisdiction; examples include an internal policy adopted by a state DOT or a goal or policy in a city's comprehensive plan. One notable

PAVING THE WAY FOR A COMPREHENSIVE COMPLETE STREETS NETWORK: OREGON

When the Oregon State Legislature passed the “bike bill” (ORS 366.514) in 1971, no one was using the phrase “complete streets.” Now, after nearly four decades on the books, this trailblazing state law is acknowledged as a primary inspiration for the complete streets movement.

Section 366.514 of the Oregon State Statutes requires that all roadway construction and reconstruction must include bicycle and pedestrian facilities. Additionally, at least 1 percent of all state funding received by local governments must be spent on bicycle and pedestrian improvements.

The bike bill became law around the same time that Oregon’s innovative land-use planning laws were taking shape. Don Stathos, a conservative legislator from southern Oregon, secured approval for the measure by a single vote, using the argument that bicycle and pedestrian facilities were necessary to ensure that schoolchildren had safe routes to school.



Figure 3.2.
Oregon state law mandates bicycle and pedestrian accommodation, as evidenced by this Portland intersection.

According to Michael Ronkin, former pedestrian and bicycle program manager for Oregon’s Department of Transportation, for the first 20 years local transportation departments applied the law unevenly. Although there was nothing in the measure that specifically limited the requirement to ODOT roads, the bill had been codified in a chapter dealing with highway funds. As a consequence, many local governments simply ignored the requirements.

The real turning point for the bike bill came when advocates from the Bicycle Transportation Alliance sued the City of Portland for noncompliance in 1992. The court’s decision upheld Stathos’s original idea that the law applied to all road projects. Ronkin and his colleagues wrote an official interpretation of the bike bill, clarifying that all construction and reconstruction must accommodate bicyclists and pedestrians.

Although opponents of the law often pointed to cost as a barrier for compliance, Ronkin contends that the battle over cost was more hype than substance. The bike bill does not say how road builders should pay for bicycle and pedestrian facilities. Instead, the measure assumes that transportation authorities and developers will plan for necessary improvements upfront and pay for them out of the same pots of money used for all surface transportation facilities.

Adding the required improvements up front is much cheaper than a retrofit. Ronkin explains that just as people understand that insulation is a necessary component of any housing project, transportation authorities and developers in Oregon understand that the up-front costs of compliance with the bike bill are just a normal part of the road building process.

For additional information about Oregon’s Bicycle and Pedestrian Program and to read the text of ODOT’s bike bill interpretation, see www.oregon.gov/odot/hwy/bikeped.

exception is Oregon’s state law, which states that “footpaths and bicycle trails ... shall be provided wherever a highway, road or street is being constructed, reconstructed, or relocated.” In 1992, the Oregon Court of Appeals ruled that this law applied to all roads in public use, and therefore state and municipal governments, as well as private entities building roads in new developments, are subject to its provisions (see sidebar). Complete streets elements should ideally extend to subdivision regulations governing streets built by private developers. See Chapter 4 for more information on this.

INCLUDE ALL PROJECTS

For many years in most communities, multimodal streets have been treated as special projects requiring extra planning, funding, and effort. The complete streets approach is different. It is perhaps best stated in the updated policy adopted by Caltrans, California’s DOT: “The Department views all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in California and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system.” Under this approach, even repaving projects can be an opportunity to make small adjustments to better accommodate all travelers, such as shifting stripes to provide more room for bicyclists. A strong complete streets policy will integrate complete streets planning into all phases of all types of projects, including new construction, reconstruction, rehabilitation, repair, and maintenance. See Chapters 5 and 6 for suggestions on integration of complete streets into all projects.

SPECIFY EXCEPTIONS

An important element of practical policy implementation is the creation of a process for handling exceptions to requirements that all

modes be accommodated in all projects. The FHWA guidance on accommodating bicycle and pedestrian travel, issued in 2000, listed three exceptions, which have become commonly used in complete streets policies. The first states that accommodation is not necessary on corridors where nonmotorized use is prohibited, such as a freeway.

The second exception involves project cost. The FHWA Guidance recommends that exceptions be allowed “when the cost of accommodation ... is excessively disproportionate to the need or probable use.” The FHWA Guidance includes a set percentage threshold for disproportionate cost, but some communities have discarded this as arbitrary and make decisions on a case-by-case basis. See Chapter 6 for discussion of this provision.

The third exception is a documented absence of need—now and in the future. The future clause is important. Many corridors are unfriendly to pedestrian travel because past development has discouraged walking, but redevelopment under new standards could change that. Also, the increasing mobility of people with disabilities means that people who use wheelchairs or have visual impairments will need more street networks conducive to their safe travel.

Many communities have included additional exceptions. One of the most common excepts ordinary maintenance and repairs, which reassures planners and engineers that basic maintenance work will not trigger a full reconstruction. A few policies, such as the law passed by the Illinois legislature in 2007, make exceptions for repaving projects. But the law also includes a clause to help agencies take advantage of repaving opportunities when appropriate: “Bicycle and pedestrian ways may be included in pavement resurfacing projects when local support is evident or bicycling and walking accommodations can be added within the overall scope of the original roadwork.”

Another relatively common exception is for safety. This should be defined very carefully. A common reaction to an unsafe environment for nonmotorized users is to prohibit bicycling or walking along the corridor. But paths beaten into the grass along arterials show that pedestrian travel is often not optional. High-speed, high-traffic roads that present the greatest danger to nonmotorized users may be the roads that most desperately need facilities.



Figure 3.3. Beaten paths are often indicators of routes that pedestrians find convenient to use despite their lack of safety.

CHANGING BUSINESS AS USUAL: VIRGINIA DEPARTMENT OF TRANSPORTATION

Since 2004, Virginia's Department of Transportation (VDOT) has had a policy for routine consideration of the need for accommodating bicyclists and pedestrians in all state- and federally funded transportation projects. The policy represents a major sea change in the commonwealth, and its impacts are most profound in VDOT's day-to-day operations.

In most of the commonwealth, counties are the default unit of local government. Because only two counties in Virginia operate and maintain their own roads, VDOT maintains the third most miles of road of any state in the country. Consequently, it is the single most important entity for implementing complete streets in rural and suburban areas statewide.

Changing the course of an agency as large as VDOT has not been easy. For years, VDOT was slow to react to changing development patterns. The agency had traditionally focused on building roads to carry vehicular traffic at high speeds over long distances, but as previously rural parts of the commonwealth became more urbanized, communities across Virginia as well as voices within the transportation agency itself called for reform.

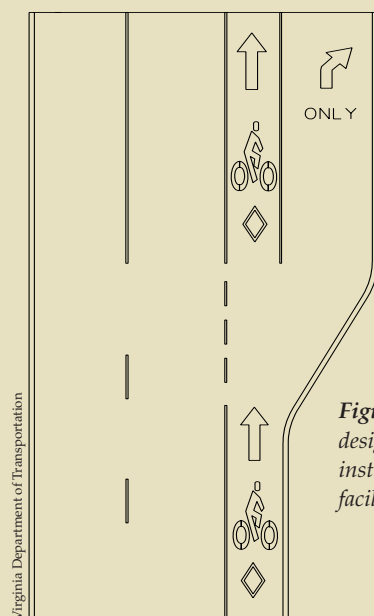


Figure 3.4. VDOT's design manuals include instruction for bicycle facilities.

In 2004, the Commonwealth Transportation Board, which oversees transportation policies in Virginia, promulgated the "Policy for Integrating Bicycle and Pedestrian Accommodations." This internal policy statement outlines a basic decision-making process to ensure that appropriate accommodations are considered for all VDOT projects. The policy requires all state- and federally funded projects to accommodate pedestrians and bicyclists except when bikes and pedestrians are not allowed by law, when there is a scarcity of population, when there are environmental or social impacts that discourage accommodation, when the total cost of accommodation is disproportionate to the benefit, or when the project purpose is in conflict with accommodation.

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Many policies make the head of the transportation department responsible for approving exceptions, while others require approval by an elected body, such as the city council. In Rochester, Minnesota, the final responsibility for deciding exceptions is divided among the city council and the heads of the planning and public works departments, depending on the type of exception. Because an exceptions process can be complex, another strategy is to use broad exceptions language in the policy and then allow the transportation agency to design an exceptions approval process as part of the implementation plan. See Chapter 5 for more information about creating an effective exceptions process.

ADDRESS DESIGN STANDARDS

When the subject of complete streets comes up, the conversation often heads straight to design standards. Engineers in particular are likely to view the creation of streets for all users as primarily an issue of modifying standards; they assume that a complete streets policy will include such specific modifications. However, design specifics are often less important at first than the political will to choose different priorities in transportation planning and the leadership and confidence to move away from rigid adherence to doing things "by the book."

Some communities have specified new design standards, such as Louisville, Kentucky, or Fort Collins, Colorado. Another approach is to make reference within the policy to existing design guidance while emphasizing flexibility. This is the case with the State of Virginia's policy: "The accommodations will be designed and built, or installed, using guidance from VDOT and AASHTO publications, the MUTCD, and the *Americans with Disabilities Act Accessibility Guidelines (ADAAG)*. Methods for providing flexibility within safe design parameters, such as context sensitive solutions and design, will be considered."

COMPLEMENT CONTEXT

Sensitivity to the community context is essential to an effective complete streets policy. Being clear about this in the initial policy statement can allay common fears that a complete streets policy will require inappropriately wide roads in quiet neighborhoods or miles of little-used sidewalks in rural areas. The Context Sensitive Solutions movement has been moving highway design in this direction for well over a decade. A strong statement about context can also help bridge the traditional divide between transportation and land-use planning.

The best examples of context statements can be found in transportation master plans. Charlotte's plan states, "The City will promote context-sensitive streets (i.e., by designing transportation projects within the context of adjacent land uses to improve safety and neighborhood livability, promote transportation choices and meet land use objectives), consistent with the City's Urban Street Design Guidelines." The guidelines include a six-step process for designing complete streets—and the first step is determining the land-use context. Arlington County, Virginia, sets out three components of a complete street, and the first is context (see sidebar on p. 32). The streets element of the master transportation plan includes this definition:

The context of a street includes the buildings and sites adjacent to the street, or right-of-way. This area is described in terms of land use—residential, commercial, and industrial. It is also described in terms of physical form—such as office buildings, single-family detached homes, and townhouses. Intensity (low-, medium- or high-density development) also affects how an area is described. A street's surroundings are the major factors that define the character of the corridor.

ESTABLISH PERFORMANCE MEASURES

The traditional performance measure for transportation planning has been vehicular level of service—a measure

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Perhaps the most important tools for battling business as usual at VDOT have been the agency's new project scoping forms and decision tree. In 2006, VDOT added a new section to its scoping forms for new construction and maintenance activities to ensure that the state's accommodation policy was considered for each project. According to Jakob Helmboldt, AICP, VDOT's bicycle and pedestrian program coordinator, the scoping forms follow the Federal Highway Administration approach of mainstreaming the accommodation policy. Ensuring that each project contains appropriate bicycle and pedestrian facilities has become a routine element to check off in the scoping process. To supplement the forms, VDOT has also created a simple flowchart that helps individuals in charge of scoping see whether or not each project is exempted for any of the reasons outlined in the policy statement.

Helmboldt says that mainstreaming the policy has kept VDOT from getting too caught up in budgeting for bicycle and pedestrian improvements. The policy has a built-in safety valve in the form of a "cost disproportionate to the need" exemption. If the cost of accommodation is more than 10 percent of the total project and if the project is not on a designated bike/ped plan, the project is exempt from compliance. If the project is on a plan, the cost threshold for exemption goes up to 20 percent.

In Helmboldt's view, project costs can be a red herring. "Overengineering leads to cost problems," he says. Sometimes costs balloon when someone wants to make changes that may represent the gold standard in accommodation but ignores other lower-cost alternatives.

Aside from new projects, VDOT's nine highway construction districts each have a goal of using 2 percent of maintenance funds for shoulder paving in rural areas to improve bicycling conditions. Because paved shoulders stabilize the pavement edge and reduce crashes, adding the extra pavement has not faced much resistance in areas not traditionally thought of as bike friendly.

Cross-jurisdictional cooperation in Virginia took a major leap forward in 2006 with the enactment of new legislation that requires more VDOT involvement in local land-use decisions. Section 15.2-2222.1 requires VDOT to review all new or amended local comprehensive plans and traffic impact statements for activities that will substantially affect transportation on state roads. The legislation ensures that VDOT is aware of new plans for bicycle and pedestrian improvements.

Recognizing that private developers have a major impact on road networks in Virginia, the commonwealth adopted new secondary-street acceptance requirements in 2009. According to Nick Donohue, Virginia's assistant secretary of transportation, the new requirements were an outgrowth of the governor's initiative to improve the coordination of transportation and land use. Prior to that policy, VDOT accepted streets for perpetual public maintenance without considering the overall public benefit the new roads provided. Developers built the roads, and the state accepted maintenance responsibilities as long as the roads were built to adequate geometric standards.

"Travel distance, which is influenced by street connectivity, has a big impact on whether you decide to walk or not," says Donohue. For that reason, the new acceptance requirements require greater connectivity of the street network along with sidewalks or other pedestrian features and narrower streets to help reduce vehicle speeds. In Donohue's view, the requirements work hand-in-glove with VDOT's accommodation policy. While the latter applies to all VDOT projects (new roads, road expansion, or maintenance) as well as any locally administered project using state or federal money, the new acceptance standards deal exclusively with local streets built by private developers.

VDOT's "Bicycling and Walking in Virginia" page, available at www.virginiadot.org/programs/bk-default.asp, contains links to the accommodation policy, the project scoping forms, and the decision tree. For Virginia's Secondary Street Acceptance Requirements, see www.virginiadot.org/projects/ssar/default.asp.

TYING TOGETHER A LEGACY OF INNOVATIVE PLANNING POLICIES: ARLINGTON COUNTY, VIRGINIA

Though Arlington County, Virginia, has only recently adopted an official complete streets policy, these principles are nothing new. For more than 30 years, this municipality of nearly 210,000 people and 26 square miles in the metropolitan Washington, D.C., area has been a leader in smart growth, transit-oriented development (TOD), and innovative pedestrian, bicycle, and transit policies.

"[Complete streets] had been the policy, before it had officially been adopted. Over the past 10 years we've been moving towards complete streets without calling it that," says Richard Viola, county planning supervisor for transportation planning.

Implementation of complete streets was called out as one of the most important guiding themes for Arlington County in the 2007 update to its Master Transportation Plan. During the revision process, a group of local cutting-edge transportation-planning leaders met and decided to draft a complete streets policy that would formalize 10 years of pedestrian, bicycle, and transit planning efforts in the county.

The complete streets concept gives good transportation planning an identity. While Arlington County has received a lot of attention for TOD, the complete streets policy solidifies and formalizes the county's multimodal commitment and brings attention to its many bicycle and pedestrian improvements, campaigns, and other promotional activities. Furthermore, the complete streets policy provides the county with a more systematic approach to transportation and development projects. It requires any development project that has an impact on transportation infrastructure to consider all necessary transportation modes needed to accommodate all users.

The revision of the Master Transportation Plan and the adoption of its complete streets policy was a result of a community planning process which included the county board, elected officials, a plenary group, two dozen citizens representing various committees and advisory groups from across the county, and transportation planning staff. According to Viola, the county board and the community have been very supportive of the complete streets policy, largely because of Arlington County's legacy of TOD and managed growth.

Despite this legacy, a car-dominated infrastructure is still present in much of the county. But since the official adoption of the policy in November 2007, limited retrofits to existing streets are occurring as financial and staff resources permit, and complete streets principles are being addressed more systematically in the conception or initial design of a development project rather than during later review stages. The policy has contributed to more cost-effective investment of public funds.

Some challenges faced by the county include community parking demand and state design controls. In some neighborhoods, the demand for on-street parking can present a significant barrier to implementing innovative uses of limited rights-of-way on arterial and neighborhood streets. "Residents are



Figure 3.5. Pedestrian safety is emphasized in Arlington County's Master Transportation Plan.

reluctant to give up their free curbside parking. This translates into fewer trees, fewer bike lanes, etc., and ultimately limits choices," says David Patton, bicycle and pedestrian planner for the county. In addition, changes to many arterial streets in the county require explicit approval from the Virginia Department of Transportation (VDOT). VDOT design standards have often prioritized the needs of the automobile, above the needs of other street users, and have frustrated county intentions for greater multimodalism. However, as VDOT works to better implement its own bicycle and pedestrian accommodation policy (see p. 30), such conflicts should ease.

On July 1, 2008, the county implemented a 0.12 percent property tax on commercial property for transportation improvements. This extra revenue has allowed the county to update streetscapes and transit stations and purchase new buses, among other things. Arlington County is a model example of how transportation planners can use the complete streets concept to highlight synergies among multiple planning efforts and outcomes, including TOD, smart growth, bicycle and pedestrian improvements, improved property values, and more transportation options.

For more information about the county's complete streets policy, visit www.arlingtonva.us/Departments/EnvironmentalServices/dot/planning/mplan/mtp/MTP_Draft.aspx.

For more information about the transportation planning in the county, visit www.arlingtonva.us/Departments/EnvironmentalServices/dot/planning/EnvironmentalServicesPlanning.aspx.

of automobile congestion. Complete streets planning requires taking a broader look at how the system is serving all users. Some communities, such as Louisville, Kentucky, have gone so far as to create their own metrics that measure transportation performance in terms of bicycle or pedestrian friendliness.

Few policies have established performance measures within the original policy document; in most cases, performance measures are dealt with as a later implementation step. An exception is Roanoke, Virginia, which lists a series of simple performance measures as part of its three-page complete streets policy:

- Total miles of on-street bicycle routes defined by streets with clearly marked or signed bicycle accommodation
- Linear feet of new pedestrian accommodation
- Number of new curb ramps installed along city streets
- Number of new street trees planted along city streets

Such simple quantitative performance measures can be a powerful way to communicate the intent of the new policy to the community, but in the workshops offered by the National Complete Streets Coalition it has become clear that people want to also measure qualitative outcomes. Health, safety, the economy, and user satisfaction are mentioned most often.

The performance measures developed by a community may also refer back to the vision statement included in the policy document. For more information on performance measures, see Chapter 5.

CREATING COMPLETE STREETS THROUGH NEW STREET DESIGN GUIDELINES: ROANOKE, VIRGINIA

Thanks to new street design guidelines and a collaborative approach to project scoping, Roanoke, Virginia, is putting its recent commitment to complete streets into action. In 2001—seven years before the city adopted a formal complete streets policy—Roanoke’s comprehensive plan set a goal of creating an integrated, multimodal transportation system for automobiles, bicycles, pedestrians, and transit. The plan called for new street design guidelines based on a classification system that would balance the purpose of the roadway with the impacts on surrounding areas.

To implement this directive, the city formed an interdisciplinary team to draft the guidelines. Participants included staff from the city’s planning, engineering, and transportation departments, as well as an urban forester, a park planner, and a representative from the local MPO. Eventually, after many drafts and multiple reviews, the city planning commission adopted new street design guidelines in 2007 as an internal guidance document.

According to Cristina Finch, the manager of the project team, the guidelines take a different approach to street design. In Virginia, every area has a street classification system determined by the state DOT. Finch and her colleagues took this preexisting street hierarchy and then simplified it. Instead of being classified as major or minor, roads were simply arterials, collectors, or local streets. The bulk of the guidelines look at how these street types relate to different character districts. For example, Finch says her team looked at what a collector street would look like as it went through a suburban neighborhood versus in a traditional neighborhood versus in a downtown.

The guidelines present examples of cross-sections for various street types based on the character of the area they are in. The illustrations depict different widths and facilities for seven distinct roadway zones (travel, parking, gutter/drainage, curb, planter/utilities, pedestrian, and right-of-way edge), depending on where the local or collector street section is located.

The city council issued a formal endorsement of the street design guidelines with its Complete Streets Resolution in 2008. This resolution recommends that the guidelines developed by Finch’s team be used in the planning, funding, design, operation, and maintenance of new and modified streets. The new policy also requires a written explanation to the city manager if accommodations cannot be made.

To help implement the new complete streets policy, Roanoke formed a street design team



Ian Shaw, City of Roanoke

Figure 3.6. Roanoke’s street design guidelines call for bicycle accommodation.

to make sure that new projects contain the appropriate pedestrian, bicycle, and transit accommodations. The interdepartmental team has representatives from the departments of planning, building, and development, parks and recreation, and neighborhood services, as well as from the transportation and engineering divisions of the public works department.

“I think that the complete streets policy has helped unify the city in terms of visioning and its communication about streets,” says Finch. “With the street design team we now have folks regularly talking about our streets, whereas before, for example, the Transportation Division would previously work with the state DOT, but other divisions weren’t necessarily being coordinated with to give input.”

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Having a street design team ensures that repaving and restriping projects are now routinely considered as a method for providing accommodations. Because Roanoke is a built-out city where major street projects are rare, this design input into routine maintenance activities is important. Redesign of existing streets (such as reallocation of existing pavement with striping) is where Roanoke has the most impact on accommodating all street users.

According to Senior Planner Ian Shaw, his department has also brought the complete streets approach into the neighborhood planning process. Shaw and his colleagues have developed a scoring system for major streets in each neighborhood. The system looks first at safety and then at connectivity and design. The scoring also considers whether or not the available right-of-way can accommodate a complete street, the ability to locate street trees within the right-of-way, and the potential for stormwater and drainage issues. So far, the city has scored 30 streets and hopes to have all major streets scored with each neighborhood plan update.

Roanoke's Street Design Guidelines and the city's complete streets policy are both available at www.roanokeva.gov.

PROVIDE IMPLEMENTATION STEPS

Taking a complete streets policy from paper to practice is not easy, but providing some specific implementation steps can help build momentum. For example, Seattle's complete streets ordinance made clear that a systematic review of the city's practices was in order. Section 2 states: "SDOT will incorporate Complete Streets principles into: the Department's Transportation Strategic Plan; Seattle Transit Plan; Pedestrian and Bicycle Master Plans; Intelligent Transportation System Strategic Plan; and other SDOT plans, manuals, rules, regulations and programs as appropriate."

The internal policy updated by Caltrans in 2008 takes a different approach. It specifies the responsibilities of each position in the agency in implementing the plan—from the chief deputy director down to the division chiefs and general employees. Other communities have established task forces or commissions to work toward policy implementation. For more information, see Chapter 5.

Integration and Institutionalization: The Strategic Points of Intervention



STRATEGIC POINTS OF INTERVENTION

- Long-Range Community Visioning and Goal Setting
- Plan Making
- Standards, Policies, and Incentives
- Development Work
- Public Investment

For complete streets policies to yield successful results, they must be integrated into the plans, regulations, and standards that communities use in the planning and development process. There are five important areas where planners, engineers, and transportation and public works staff can integrate complete streets principles into the documents, processes, and programs that guide the future of communities. This chapter discusses these strategic points of intervention and provides examples of how planners have used them to further complete streets goals in their communities.

A NEW VISION FOR COMPLETE STREETS: UNIVERSITY PLACE, WASHINGTON

University Place, Washington, is a small community outside of Tacoma that embraced a vision of complete streets during its initial incorporation in 1995. The town has been able to realize that vision through both distinctive projects and small-scale changes.

During an initial visioning process for the creation of the town's first master plan in 1996, the community decided it wanted its streets to include "street lighting, sidewalks, curbs/gutters and bicycle lanes on all arterial streets [and to] have improved safety and created better connections between residential and business areas." This was a very different vision for the rural roads the community had inherited from Pierce County, which had plenty of asphalt for automobiles, gravel shoulders, and not much else.



Figure 4.1. One of University Place's roundabouts

The newly incorporated town was able to levy taxes to help implement its vision, and the first big project was Bridgeport Way, a five-lane arterial through a commercial area that had seen 300 crashes in just three years. The town hired planning consultant Dan Burden to help them redesign the road through an energetic four-day charrette process. The new Bridgeport Way features a landscaped median, four auto travel lanes, bike lanes, trees, sidewalks, marked crossings, and bus shelters. (Pierce County has since added a bus-priority system to the roadway.) The elimination of the center turn lane has reduced crashes and made the road more comfortable for everyone. "People from outside University Place comment about how much they love driving down Bridgeport Way," says Steve Sugg, deputy city manager. "There is a sense of calm." Sugg notes that when Trader Joe's was looking for a place to locate a store in the Tacoma region, it picked a site on Bridgeport Way, perhaps because of the extensive street improvements.

The next signature project was a roundabout on Grandview Avenue, an improvement again decided through a charrette process. As this was the first roundabout in Washington State, the design required a waiver from the state DOT. Instead of working through the usual variance process, the city went straight to the assistant secretary of transportation to lay out the evidence on the safety advantages of roundabouts, which greatly reduce conflict points and eliminate the possibility of the deadly "T-bone" crash. It was granted the variance. The first roundabout was such a success that four more were installed along the avenue.

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LONG-RANGE COMMUNITY VISIONING AND GOAL SETTING

Communities often conduct visioning exercises that produce long-term goals and objectives to guide their futures. Community visioning is often done as the first step to a comprehensive plan or other plan-making process. Whether part of a planning process or on its own, visioning is an important first chance to identify new opportunities and priorities related to complete streets. Often, community members might identify the desire for their community to be walkable or bikeable, and through further discussions this may lead to a more comprehensive approach to creating complete streets.

For example, in University Place, Washington, during an initial visioning process for the creation of the town's first master plan in 1996, the community decided it wanted to include sidewalks, bicycle lanes, and other improvements to the rural-style asphalt streets with gravel shoulders typical of the area.

In 2008, Decatur, Georgia, involved the community in the development of its Community Transportation Plan (CTP). The vision, as explored in the CTP process, emphasized health, improved choice in safe transportation options, and creation of an integrated network of transportation opportunities. Using complete streets terminology helped the community better express its vision. "The concept of complete streets is inclusive and personally significant," says Amanda Thompson, Decatur's planning director. "Every resident can give reasons to support the complete streets policy—knowing that it makes their kids healthier or will help out a neighbor, for example."

During the CTP's development, the project team engaged the community in various ways: meetings with the general public, meetings with targeted audiences (such as older adults, those with disabilities,

resident boards, local institutions and universities, low-income populations, and even children), and workshops with specific topics (such as traffic calming and health). For example, the public meeting targeted at children featured presentations on active living and a scavenger hunt exercise; the children were encouraged to share what they had learned with their parents and family members at home.

As seen in these two examples, a vision for complete streets may arise during a comprehensive visioning and planning process or during a more specific transportation or other planning process. Planners and others leading these processes should take advantage of these opportunities to identify goals and priorities related to complete streets. This can serve as an important foundation to establishing a complete streets policy and including these principles in plans and ordinances.

PLAN MAKING

Planning departments prepare plans of all kinds that recommend actions involving infrastructure and facilities, land-use patterns, open space, transportation options, housing choice and affordability, and much more. It is important to examine comprehensive plans, neighborhood plans, corridor plans, and other planning documents to see how complete streets can be addressed and integrated into them.

Comprehensive Plans

The comprehensive plan is a guiding document for the future of an entire community. It describes existing conditions, identifies goals and priorities, and lays out action steps for meeting those goals. As the plan is one of the most important foundational documents for a community and its future, the importance of integrating complete streets concepts into the comprehensive plan should not be overlooked.

By including complete streets principles in a comprehensive plan, a community can encourage the integration of these practices in planning, policy, and design decisions. Planners and those responsible for implementing the comprehensive plan should review the transportation or circulation element to see how street design, alternative transportation modes, and other related elements are addressed.

A number of communities have used the comprehensive plan to establish their commitment to complete streets. For example, the City of Santa Barbara's General Plan Circulation Element provides a framework and guidance for the development of complete streets. The Circulation Element, adopted by City Council in 1997 and certified by the California Coastal Commission in 1998, was drafted by a consensus group composed of 22 community members representing diverse interests. The group wrote a comprehensive goal and vision statement for the element that includes the following statement: "Santa Barbara should be a city in which alternative forms of transportation and mobility are so available and so attractive that use of an automobile is a choice, not a necessity." Sixteen goals provide further direction for creating a multimodal transportation system in Santa Barbara (see sidebar, p. 38).

In the City of Sacramento, the city had taken a clear stand on complete streets by the time its new general plan was adopted in March 2009. The mobility element of the new plan makes several references to complete streets, including Goal M4.2: "Provide complete streets that balance the diverse needs of users of the public right-of-way." Six specific implementation policies follow, calling for the provision of adequate rights-of-way, pedestrian- and bicycle-friendly streets and bridges, adequate street tree canopy, multimodal corridors, and network gap identification.

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University Place has used every opportunity to make improvements, both big and small. When it is time to repave a major road, it will consider a road diet: taking a five-lane road down to three lanes with bike lanes, for example. More often, the city has simply realigned striping to provide bicycle lanes. The city also now has 23 new miles of sidewalks. In 2004, the city amended its zoning codes to require complete streets construction during private development.

The city's quick and confident implementation of its vision was driven by the strong support of the city's longtime leadership and staff. That commitment has been nurtured by the charrette process, which the community has used for every large road project. University Place believes that process-oriented approach yields better results than consulting a design manual. "If you just put it in print, it becomes a dusty document, and it takes so much energy to put it into a policy and standard," says Sugg. "When we hold a charrette, we don't allow policies or standards anywhere in the room. We want fresh, new, original thinking." Their guiding document remains the broadly written comprehensive plan, supplemented by the flexibility available in the AASHTO Green Book.

View their comprehensive plan here: www.cityofup.com/Planning/2004ComprehensivePlan.pdf.

COMPLETE STREETS IN THE GENERAL PLAN: SANTA BARBARA, CALIFORNIA

The City of Santa Barbara's General Plan Circulation Element provides the framework and guidance for complete streets within the city. Sixteen goals, each supported by a number of policies and implementation strategies, provide further direction for creating a multimodal transportation system. Below is a sampling of these goals:

- ▶ Goal 2: Strive to Achieve Equality of Choice Among Modes
- ▶ Goal 3: Increase the Availability and Use of Transit
- ▶ Goal 4: Increase Bicycling as a Transportation Mode
- ▶ Goal 5: Increase Walking and Other Paths of Travel
- ▶ Goal 6: Reduce the Use of the Automobile for Drive-Along Trips
- ▶ Goal 10: Develop a Mobility System That Will Carry All Modes of Transportation, from Automobiles to Pedestrians
- ▶ Goal 13: Apply Land Use and Planning Tools and Strategies That Support the City's Mobility Goals

Drusilla van Hengel, supervising transportation engineer, attributes the success of the policy to its grassroots origin. "It wouldn't have been as effective if it had come from staff," she says. According to van Hengel, the city council refers to the circulation element in making decisions, which has allowed councilmembers to support controversial complete streets projects because they are soundly based in policy. Van Hengel also notes that the policy language is strong but still provides flexibility, important in project development and finding ways to meet project goals. Additionally, the city sets aside 10 percent of local transportation sales-tax dollars for alternative modes of transportation. This helps fund projects and programs related to the circulation element, such as a sidewalk infill program.

The city is currently working on a strategic plan for implementation of the circulation element. This is anticipated to include recommendations regarding continuing staff education, design standards, and performance measures—three areas in which van Hengel acknowledges there is room for improvement. But she feels the city and the community have made great progress from where they were 10 years ago, and she points to the circulation element as the guiding document to that success.

Information about the City of Santa Barbara's Alternative Transportation program is available at www.santabarbaraca.gov/Government/Departments/PW/alttran_main.htm.



Figure 4.2. Santa Barbara's general plan emphasizes bicycling and walking.

Given the high level of interest in complete streets in the city, it should come as no surprise that this is not the only plan in the area to reference the concept. The latest draft of Sacramento County's general plan update also includes specific references to complete streets, along with many policies to ensure that county roadways balance the needs of all users.

Neighborhood and Corridor Plans

While the comprehensive plan provides a broad framework for the entire community, neighborhood and corridor plans provide an opportunity to include more specific details on complete streets elements in a particular area of a community. These plans should be consistent with the comprehensive plan but can offer more guidance on street design, local street networks, and design features for a specific neighborhood or corridor.

For example, the City of Sacramento's Railyards Specific Plan—for the redevelopment of a 241-acre brownfield site just north of the city's central business district—includes street design standards that show pedestrian accommodations on all streets and a complete network of bicycle facilities throughout the development. One street in the project has been designated as a light-rail corridor. The plan articulates a vision of a mixed use transit- and pedestrian-friendly development that extends the urban fabric of downtown to new parts of the city.

Transportation Plans

Many communities have a transportation master plan or related plans, such as bike plans, pedestrian plans, or transit plans. Just like the comprehensive plan, these plans are critical documents that guide the future of communities' transportation systems.

Making sure complete streets are addressed in the transportation plan is an important step to implementing complete streets goals.

In November 2007, the county board in Arlington County, Virginia, approved and adopted a master transportation plan update. Implementation of complete streets policies was called out as one of the most important guiding objectives for the county. Since the official adoption of the plan, complete streets principles are being addressed more systematically from the initial stages of a development project, rather than during the review of an already conceptualized or designed project.

As another example, in Boulder, Colorado, the 1996 transportation master plan update set clear, ambitious goals for the city's future: designation of pedestrian travel as the primary mode, an increase in bicycle mode share of at least 4 percent by 2020, a reduction in trips made in single-occupancy vehicles to 25 percent of all travel, and maintaining vehicle-miles traveled (VMT) at their 1994 levels. Reaching those goals meant providing more travel choices. "Converting trips from automobile-only," says Mike Sweeney, transportation planning and operations coordinator, "means completing all other systems—bicycle, pedestrian, and public transportation." Ten corridors (covering 42 corridor segments), carrying the majority of travel in Boulder, were planned to accommodate all modes. And in Washtenaw County, Michigan, a nonmotorized transportation plan has had a beneficial impact on funding. Adopted in 2006 by the Washtenaw Area Transportation Study, a multijurisdictional transportation agency, the plan challenges communities in the region to apply for more funding for nonmotorized facilities in concert with an agency pledge to spend 10 percent of all its federal Surface Transportation Program (STP) funds for bicycle and pedestrian improvements.

STANDARDS, POLICIES, AND INCENTIVES

Planners and engineers write and amend standards, policies, and incentives that have an important influence on what, where, and how things get built and what, where, and how land and buildings get preserved. These documents may include zoning codes, subdivision codes, design guidelines and manuals, and other regulations and ordinances. They should be consistent with community plans and should be used as tools for implementing the goals, policies, and ideas in the plans. Communities should review these elements to consider how they can better address, accommodate, and remove barriers to the creation of complete streets.

Columbus, Ohio, updated its subdivision ordinance in 1999 to add sidewalk requirements for private development. Since the adoption of the complete streets policy in 2008, the city has further amended its subdivision ordinance to include a requirement that private developers build sidewalks and bikeways in accordance with the city's Bicentennial Bikeways Plan. The ordinance also authorizes a fee-in-lieu program modeled after the city's parkland dedication fund. If a particular development cannot provide site-adjacent bicycle or pedestrian improvements due to site constraints, the developer can pay a fee, and the improvements will be built off-site (but within the same community planning area) at a later date.

In Rochester, Minnesota, city planners instigated a complete streets policy development process that included a revision of the comprehensive plan and amendments to the city's zoning ordinance.



PLANNING FOR REGIONAL COMPLETE STREETS FUNDING: WASHTENAW COUNTY, MICHIGAN

The Washtenaw Area Transportation Study (WATS) is putting its money where its mouth is when it comes to complete streets. After the agency adopted a new nonmotorized transportation plan in 2006, it pledged to spend 10 percent of all its allocated federal Surface Transportation Program (STP) funds for bicycle and pedestrian improvements.

This multijurisdictional transportation agency, headquartered in Scio Township, Michigan, is responsible for distributing federal and state transportation money in Washtenaw County. Each year, the agency oversees the distribution of nearly \$5 million in STP funds. According to WATS executive director Teri Blackmore, the area has had a long-standing interest in nonmotorized transportation due in large part to the presence of major universities in the cities of Ann Arbor and Ypsilanti. Because of this interest in supporting on- and off-street bicycle and pedestrian facilities, the agency has had a 4 percent STP funding target since the mid-1970s.

In between federally required planning efforts, WATS does what it calls visionary plans. The Non-Motorized Plan for Washtenaw County was one of these planning efforts. In addition to a call for routine accommodation for pedestrians and bicyclists, the plan also contained an extensive inventory of possible future nonmotorized system improvements and challenged its constituent jurisdictions to apply for more bicycle and pedestrian project funding.

While the urban portion of Washtenaw County has a land-use pattern that is conducive to bicycle and pedestrian travel, the rural areas did not engage in much nonmotorized planning before the WATS initiative. The plan recognized the importance of inspiring bicycle and pedestrian planning in these rural areas if the county was ever going to have a functional network of nonmotorized facilities.

Since the plan's adoption in 2006, Blackmore has seen an increase in funding requests for bicycle and pedestrian improvements, and she estimates that her agency is coming close to meeting its 10 percent goal. Currently, WATS is in the process of assessing which local jurisdictions have adopted the Non-Motorized Plan by reference or incorporated its policies into their own comprehensive or system plans.

View the Washtenaw County Non-Motorized Plan at www.completestreets.org/webdocs/policy/cs-mi-washtenaw-plan.pdf.



MOVING BEYOND THE PLAN: FORT COLLINS, COLORADO

When Fort Collins completed its transportation master plan and other related plans that provide its framework for complete streets, it didn't stop there. The city also updated its standards and requirements to make sure the plans were implemented. This integration "is very important to make sure complete streets continue to happen," according to Kathleen Bracke, transportation planning and special projects director.

Other regulations supporting complete streets implementation in Fort Collins include pedestrian and bicycle level of service standards, as well as a provision in the adequate public facilities section of the land-use code that ensures new development is adequately served by bicycle and pedestrian facilities.



Figure 4.3. Bike lanes and transit support mobility choices in Fort Collins.

The capital improvement plan for street, transit, pedestrian, and bicycle projects is included as an appendix to the transportation master plan and lists projects by mode. "Having a policy in place allows the [budget] allocation process to reflect all modes of transportation," says Bracke. And, she adds, the city also leverages local funding to apply for matching grants. In addition to increasing the funding available for projects, this has helped community members and elected officials further value the work they do.

While many of the multimodal policies and initiatives in Fort Collins began with community input and were supported by elected officials, getting staff on board has been more difficult. To address this issue, the city created a transportation coordination group of planning, engineering, and transportation staff that meets regularly to discuss issues, and it has adjusted standards when they don't work as well as anticipated.

According to Transportation Planner Matt Wempe, the city is willing to accept a lower level of service in the congestion management plan for automobiles on streets, particularly in the core of the community, since people have options for getting around town. Wempe notes that there are often more bikes at an intersection than cars in Fort Collins, adding that this is supported by not only the infrastructure but also the culture. "I'm really happy that I live in a city where I have a choice of how I get to work—or anywhere," he adds.

Information about transportation planning in Fort Collins is available at www.fcgov.com/transportationplanning.

The process involved reaching out to the development community, which was concerned about the potential added costs of the policy. City staff analyzed some recently submitted plans to show developers what impact the new amendments would have and found that only modest changes would be required. This helped promote acceptance of the new policy within the development community.

And in Fort Collins, Colorado, the complete streets policies laid out in the city's transportation master plan and other related plans set the stage for an update of standards and requirements to make sure that the plans were implemented (see sidebar).

DEVELOPMENT WORK

Planners and engineers play important roles in shaping future development in their communities. They review project applications for consistency with applicable plans and regulations and may be involved in public-private partnerships to develop new projects. While goals and standards for complete streets should be addressed in plans and regulations, making sure these goals and standards are met (or encouraging them to be exceeded) in the development process is important.

Project Review

In reviewing development projects, planners assess whether applicable standards have been met. To assist with implementation of complete streets principles and designs, communities should consider creating a checklist of relevant standards or goals for new projects.

For example, Seattle uses an internal complete streets checklist. Under constant revision and review, the checklist covers a multitude of details about street planning and design. It prompts city staff to consider opportunities for natural drainage, improvement of transit access and efficiency through new shelters and consolidation or addition of stops, the feasibility of undertaking a "road diet" (a reduction in travel lanes), and improvement of routes to neighborhood schools, among other elements. The project managers conduct a field visit, consult planning documents, review traffic volume and other data, and ensure that any immediate issues (such as potholes) are addressed in the meantime.

Much of the checklist relies heavily on existing planning documents and the data and projects lists contained within those plans. While some plans, like the Pedestrian Master Plan,

have been recently updated, others are several years old and may no longer reflect current conditions. To ensure that the checklist considers up-to-date transportation needs, project managers always “ground truth” the information and consult with others throughout the department. They also meet with staff in other city departments, including the water, sewer, and drainage utility, the parks department, and the building construction and planning department.

The City of Sacramento is also taking steps to ensure that private developers do their part in providing complete streets. According to Senior Planner Sparky Harris, planners review the city’s bike and pedestrian master plans with developers during the development review process to help them understand what improvements must be provided with each project to help complete bicycle and pedestrian networks.

Public-Private Partnerships

Planners and other city staff may serve as leading team members on public-private partnerships. In such capacities, they have important roles to play in making sure complete streets are included in these developments. In addition to monitoring compliance with applicable plans, policies, and ordinances, staff should consider design features (see Chapter 7) that may make the streets safer and more accommodating for various travel modes.

PUBLIC INVESTMENT

Towns, cities, and counties undertake major investments in infrastructure and community facilities. It is important for planners and transportation staff to be involved in the decisions for these public investments, as they can substantially affect the design and location of transit, streets, sidewalks, bikeways, and other public infrastructure and facilities.

PLANNING FOR GROWTH THROUGH COMPLETE STREETS: SACRAMENTO, CALIFORNIA

In Sacramento, California, complete streets has become both a rallying cry and a guiding principle to help the city cope with the new job growth and residential development projected for the region over the next 30 years. Policies at the municipal, county, and regional levels are helping to create a multimodal road network that accommodates pedestrians of all ages and abilities as well as bicycles, transit, and automobiles.

The origins of the complete streets movement in Sacramento can be traced back to *Barden, et al. v. City of Sacramento, et al.* This landmark court case established the idea that Part II of the Americans with Disabilities Act (ADA) of 1992 requires ADA-compliant sidewalks and curb ramps along all public streets. In 1999, Joan Barden and seven other Sacramento residents with mobility or vision impairments brought suit against the city and its director of public works for failing to add sidewalks and ramps when the city performed street overlays.



Figure 4.4. Policies at multiple levels have helped create complete streets infrastructure in the Sacramento region.

In 2002, the U.S. Court of Appeals for the Ninth Circuit ruled in favor of Barden and established the precedent that all sidewalks installed and maintained by local governments must be ADA compliant. The following year, the city reached a settlement with the defendants that committed the city to spending 20 percent of its annual transportation funds over the next 30 years on sidewalk, ramp, and crosswalk improvements.

The Sacramento area is home to many bicycle, pedestrian, and disability advocacy groups. Spearheaded by WALKSacramento, some of these key groups have formed a local complete streets coalition. According to Walt Seifert, executive director of the Sacramento Area Bicycle Advocates, the advocacy community brought the complete streets concept to the attention of city and county officials, and after the ADA lawsuit former Sacramento mayor Heather Fargo became a major champion for initiatives to improve safety and access for all users of the city’s streets.

Beyond its commitment to sidewalk improvements, the city set its sights on revising the street standards found in its Design and Procedures Manual. Residents had long complained that the existing standards led to high residential-traffic volumes and speeds, while developers felt the standards were too rigid.

In response, City Engineer Jesse Gothan drafted new street sections that required sidewalks separated by landscaped strips for all street types and dedicated bike lanes for collector and arterial roads. The city amended its general plan by resolution in 2004 to include the new pedestrian-friendly street standards and subsequently updated its city code to include Gothan’s right-of-way dimensions (Section 18.04.190).

By the time the city adopted its new general plan in March of 2009, the city was taking a clear stand on complete streets. The mobility element of the new plan makes several explicit references to complete streets including a list of six specific implementation policies (Section M 4, Goal M 4.2).

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According to Senior Planner Sparky Harris, regional planning has also had a major influence on the city's movement toward complete streets. In 2004, the Sacramento Area Council of Governments (SACOG) completed the Blueprint Transportation and Land Use Study, which projected a doubling of jobs and residents in the region by 2050.

The SACOG Blueprint made it clear that the projected growth could not be accommodated through the existing low-density, auto-dependent development pattern. In Harris's words, being proactive about getting more people out of their cars was the only way the transportation system could accommodate the new level of intensity. Complete streets offered local governments in the region a new vision for mitigating transportation impacts by retrofitting existing streets and ensuring that new roads considered multiple modes up front.

Concurrent with SACOG's Blueprint process, representatives from 11 public agencies initiated a workgroup to help the region deal with congestion and air pollution problems in the county. From 2001 through 2005, the Sacramento Transportation and Air Quality Collaborative brought together a diverse group of 100 citizens—representing businesses, the environment, public agencies, community groups, underserved populations, and local neighborhood areas—to discuss regional strategies for improving transportation and air quality.

In 2005, the collaborative produced an advisory report titled *Best Practices for Complete Streets*. The report is one of the first in the country to discuss the design challenges of balancing the needs of bicycle, pedestrian, transit, and motor vehicle use. It outlines a context-sensitive approach to designing streets that accommodate multiple types of users, and it describes an alternative framework for thinking about LOS requirements.

Apart from planning, Sacramento has also seen significant changes on the ground. Over the past several years, the city has undertaken an aggressive campaign of road dieting on many downtown streets. Consequently, a number of the city's three-lane one-way streets have been converted to two-way, two-lane streets with bicycle lanes.

The city's capital improvement program (CIP) reflects its commitment to ADA compliance and to complete streets. The transportation section of the CIP contains a number of specific bike and pedestrian improvement programs that will receive funding in the coming years.

To help meet these commitments, Sacramento and other municipalities in the county can tap into a variety of special sources to help implement complete streets. Perhaps most significantly, Sacramento County's Measure A establishes a dedicated funding stream for transit, pedestrian, and bicycle improvements using local sales taxes. Under this program, an 0.5 percent tax on retail transactions goes toward transportation, planning, design, construction, operation, and maintenance. Moreover, 5 percent of revenues collected in this way must fund nonmotorized bicycle and pedestrian safety improvements. The ordinance establishing this tax includes the simple statement that "routine accommodation of bicycles and pedestrians shall be included in all transportation projects" (Ordinance No. STA 04-01).

In addition, SACOG's community-design funding program offers successful city and county applicants \$2 million to \$7

million for complete streets projects. According to Seifert, several applications in the region have been approved, and at least one, in West Sacramento, is under construction. This pot is separate from SACOG's bike/ped funding program. Last, SACOG's adopted budget for 2009–2010 includes funding for complete streets technical assistance. The program helps local governments plan for transportation systems that cater to the diverse needs of all roadway users.

Apart from programmed improvements, the City of Sacramento is also doing more to ensure that private developers do their share to promote complete streets. According to Harris, during the development review process planners review the city's bike and pedestrian master plans with developers to help them understand what improvements must be provided with each project to help complete the bicycle and pedestrian networks.

According to Harris, the city is even considering a new transportation development impact fee. If the city council approves, all developers would pay into a citywide pot to support mobility, instead of simply paying for mitigation and improvements immediately adjacent to their project sites.

To comply with the California Environmental Quality Act (CEQA), public agencies must study the potential environmental impacts of all new development proposals. In many situations, communities require developers to add vehicular capacity to adjacent roadways if a project is found to have a significant negative impact due to traffic.

In Sacramento, city staff are taking a different approach by bringing complete streets ideas into CEQA reviews. "There are some areas that we can't fix with road widening and some we don't want to fix with road widening," says Harris. His colleagues have identified an extensive list of streets throughout the city that should not be widened to offset development impacts. Instead, projects along these streets can provide bike lanes, transit facilities, or pedestrian improvements to meet CEQA requirements.

Thanks to the city's new general plan, developers are no longer hamstrung by inflexible level-of-service (LOS) requirements. Citywide, the LOS standard dropped from C to D, and near transit the minimum LOS is now E.

Perhaps no other project illustrates the city's commitment to complete streets more than the Sacramento Railyards. The city recently gave the green light to an ambitious redevelopment plan for a 241-acre brownfield site just north of the city's central business district. The Railyards Specific Plan's vision of mixed use, transit- and pedestrian-friendly development gives the city an opportunity to move away from the sprawling development of the past and extends the urban fabric of downtown to new parts of the city. The street design standards incorporated in the plan include pedestrian accommodations for all streets and a complete network of bicycle facilities throughout the development. One street in the project has been designated a light-rail corridor.

The Railyards Specific Plan is available on the city's website along with the recently updated General Plan and the city's Pedestrian Friendly Street Standards. Visit www.cityofsacramento.org to review these documents and to read more about Sacramento's dedication to complete streets.

Capital Improvement Programs

Capital improvement programs typically lay out public improvements and associated costs over a five-year period. Planners, engineers, and transportation staff should take an active role in their city's capital improvement program (CIP) to make sure that public investments reflect a commitment to complete streets ideals. It is also important to look at the criteria used to prioritize projects for funding. Ideally, complete streets concepts should be embedded in these criteria.

For example, in Boulder, where the transportation master plan and the CIP were once not connected, the plan's call for multimodal corridors now influences the CIP process. Each CIP is planned with the funding to improve a certain number of corridor segments. An action plan identifies the next round of improvements. In Fort Collins, the CIP for street, transit, pedestrian, and bike projects is included as an appendix to the transportation master plan and lists projects by mode.

The inclusion of complete streets projects in the CIP can ensure that funding for these plans is not forgotten. In the current CIP of Columbus, Ohio, the city has committed \$55 million over five years for the mayor's sidewalk improvement initiative and \$10 million for on-street bikeway improvements.

Utility Upgrades

An important opportunity for making complete streets improvements comes when utility work is being done, such as undergrounding overhead power lines or upgrading sewer or water lines. If streets and intersections are being torn up for this work, additional changes, such as installation of sidewalks and crosswalks, can be made at the same time.

In University Place, Washington, Steve Sugg, the city's traffic engineer at the time the community made a commitment to complete streets, faced the task of showing results quickly. Sugg, now deputy city manager, remembers putting the city's first sidewalks in with almost no funding by piggybacking on the gas company's plans to systematically upgrade gas mains. The city directed the gas company to install sidewalks instead of gravel as it repaired the streets, and the city paid the marginal cost of the sidewalk installation.

Street Resurfacing

Similar to utility work, another opportunity to incorporate complete streets design exists when streets are being resurfaced.

In Colorado Springs, Colorado, for example, much of the city's progress in implementing complete streets policies has come through low-cost projects. The city looks at street resurfacing projects as an opportunity for reconfiguring existing roadways. "When we overlay a street we have a blank canvas to work with," says Craig Blewitt, comprehensive planning manager. "It's an opportunity to do things differently." The city now routinely considers road diets and other street-striping modifications for resurfacing projects.

Blewitt and Kristen Bennett, senior transportation planner, both cite one project in particular that has had a major impact without requiring additional roadway width. South Tejon Street at the south end of downtown was a four-lane street with diagonal parking and no continuous turn lane. According to Blewitt, the travel lanes were dysfunctional, and the diagonal spaces lacked a reasonable buffer between the travel lanes and parked cars. Approximately 85 percent of all accidents in this stretch could be attributed to the street layout.

After looking at the traffic data, Bennett and her colleagues suggested restriping the street with only one travel lane in each direction and adding

a dedicated turn lane as well as bicycle lanes. No on-street parking was removed; in fact, several spaces were added. The city completed the project in 2006, following a street resurfacing project, and so far it has been well received by the adjacent property owners. Perhaps more important, the number of severe accidents is down. Now South Tejon connects to another street that also underwent a road diet, and bicyclists have a seven-mile continuous corridor connecting the southwestern neighborhoods of the city to downtown.

As these examples demonstrate, communities should consider public investments as important opportunities for meeting complete streets goals. Chapter 6 provides more information on costs and funding opportunities for complete streets.

INTEGRATION AND CHANGE

As this chapter has discussed and demonstrated through examples, integrating complete streets principles into the guiding documents, programs, and processes of a community is important to ensure that needed planning and design changes actually happen. The next chapter discusses other important considerations and changes that communities may need to make in transitioning to a complete streets approach.

CHAPTER 5

Making the Transition: Planning for Change and Addressing Problems



It should be clear that complete streets policies can and should lead to changes in transportation planning, design, and construction processes. But how do communities make the transition from traditional, automobile-based transportation planning to a more inclusive and multimodal process? What are the biggest issues they must resolve? And how do they measure the success of their new way of doing business?

SAFETY AND COMFORT FOR ALL STREET USERS: NEW HAVEN, CONNECTICUT

In the city of New Haven, Connecticut, a variety of local factors mobilized members of the community to encourage the adoption of a complete streets policy in the fall of 2008. These factors included (1) a very high proportion of workers commuting on foot or by bike, carpool, or public transit; (2) two high-profile pedestrian fatalities; (3) data indicating a disproportionate rate of pediatric injury; and (4) the elevation of local streets as public places that define quality of life and the overall image of the city. Activists in the area made it a priority to rally public support for a comprehensive policy to make the streets of New Haven safer and more comfortable for all users.

Activists, city officials, and aldermen worked together to draft and adopt a set of goals and develop an implementation program. The resulting policy explicitly outlines comprehensive steps to make sure that complete streets implementation will be a community effort. A steering committee has been tasked with developing a design manual, ensuring that engineers—key players in implementation—are not left out of the process. Further, the committee must develop a process to involve the general public in the planning and design of complete streets in their neighborhoods.

Although the city does not have the public funds available to support projects solely dedicated to completing the streets, a tremendous amount of private investment is available to the city despite the challenging economic times. Thus, the city has been using funds from private investors to develop its bikeway system and enhance bicycle and pedestrian access to transit hubs.



Ethan Hutchings, City of New Haven

Figure 5.1.
Concerns for
pedestrian safety
have helped fuel
New Haven's
complete streets
movement.

Bureaucratic procedures have stood in the way of complete streets implementation in New Haven; however, the policy addresses this issue. According to Mike Piscitelli, AICP, city transportation director, "This policy was more about how to organize ourselves for the longer term. How do we create a lasting system?" City officials have found that the policy has created a more comprehensive and systematic approach as it coordinates the efforts of staff, who previously had worked in unrelated silos, to promote similar goals. The policy focuses on changing the way the administration does business so as to provide a sustainable, reliable transportation system for all roadway users well into the future.

Finally, the policy emphasizes the importance of public education campaigns to promote complete streets principles. One campaign that stands out is the award-winning "Street Smarts," in which drivers take a pledge to be cognizant and respectful of other roadway users. In New Haven, citizens can receive training to become a "Smart Driver"; all city and school bus drivers go through this program. The city has emphasized the relation of the Street Smarts campaign to the complete streets legislation.

According to Piscitelli, "Instead of focusing solely on regulations, we are addressing human behavior as the central focus of the safety campaign and then complementing education with physical improvements." This is one unique and, according to Piscitelli, successful aspect of the systematic change taking place in New Haven.

The New Haven Street Smarts program website can be found at www.cityofnewhaven.com/streetsmarts/index.asp. Read about the New Haven Safe Streets Coalition's local advocacy at www.newhavensafeststreets.org.

This chapter addresses these issues. It explores implementation planning, training, performance measures, and exception procedures. It also examines how some jurisdictions have shifted their transportation priorities and what that has meant for their relationships with other agencies that control roads in their community.

IMPLEMENTATION PLANNING

It is too easy to adopt a strongly worded complete streets resolution or even a law—and then let it sit, unimplemented. Many communities have taken years to move their policies from paper into practice, with fits and starts along the way. For example, Oregon's 1971 bike bill was ignored by many local governments until a 1992 lawsuit led to a court decision confirming that the law must be applied to all road projects. (See sidebar, p. 28.)

In Massachusetts, the 1996 bicycle and pedestrian accommodation law calls for "reasonable provisions" for bicyclists and pedestrians, but the Massachusetts Highway Department struggled to understand what that meant substantively, and transportation modes other than automobiles remained an afterthought. A full complete streets implementation process was not born in the state until the state highway design manual was rewritten in 2006.

One way to get things moving is to create an implementation plan—or to charge a committee with doing so. An implementation plan can identify documents and processes that need to be changed, assign responsibility for who will be making such changes, and name specific documents or processes that should be created as part of complete streets implementation. This was the case in New Haven, Connecticut. In order to back

up its complete streets policy with action, the city established a steering committee to focus on policy development, establish a complete streets design manual, encourage community involvement, spearhead an educational campaign, and work with city police officers to ensure that traffic enforcement is in alignment with the policy goals.

Seattle and Chicago have focused on a systematic review of all documents that need to be updated to implement the policy. Seattle also established an internal complete streets steering committee to help clarify and define the daily operational practices that the Department of Transportation would take to implement the policy.

The California DOT, Caltrans, adopted a limited policy in 2001 and expanded it in 2008 to include transit and apply to seniors and people with disabilities. Following the update, Caltrans decided to create an implementation plan, overseen by a high-level steering committee, that engaged all 12 of the department's districts and created specific next steps. Among other items, the plan called for a review of all relevant transportation documents and for reports on specific topics such as work-zone issues and how to incorporate changes into repaving and maintenance projects.

Such formal implementation plans are the exception rather than the rule. The places that have moved beyond the initial policy statement have usually done so by creating a more detailed transportation plan, design manual, or design standards, often while working to apply complete streets principles to specific projects. Other places have been content to take a more ad hoc approach, learning from the experience of pilot projects, with the intent to codify new standards and procedures later.

CHANGING EVERYDAY TRANSPORTATION PLANNING PROCESSES

Traditionally, engineers and planners in transportation agencies and public works departments have made their day-to-day decisions on the basis of the demands for roadway capacity expansion and repair. One of the biggest challenges for complete streets advocates is changing business as usual. New planning processes can help guide planners and engineers through new procedures and ways of thinking.

One of the most systematic changes to date has occurred in Charlotte, North Carolina. Prior

COMPLETE STREETS TRAINING AND IMPLEMENTATION IN CHICAGO



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Figure 5.2. Cars share the streets with bicyclists in downtown Chicago.

The City of Chicago adopted a complete streets policy in October 2006. The policy states, “The safety and convenience of all users of the transportation system including pedestrians, bicyclists, transit users, freight, and motor vehicle drivers shall be accommodated and balanced in all types of transportation and development projects and through all phases of a project so that even the most vulnerable—children, elderly, and persons with disabilities—can operate safely within the public right of way.”

In order to help staff understand and implement

the policy, the Chicago Department of Transportation worked with the Chicago Metropolitan Agency for Planning to sponsor a series of training sessions for city planners, engineers, and project managers. Several hundred people participated in four two-day workshops. The workshops resulted in a greater awareness of complete streets issues and helped to increase understanding of potential design considerations.

While the city has taken steps over the last few years to implement the policy, it is now comprehensively assessing the status of complete streets implementation and how it can be improved. According to Kiersten Grove, pedestrian program coordinator, the project “aims to identify opportunities and challenges in existing city policies and practices and to create a series of recommendations to address these.” Grove anticipates that in addition to the recommendations, a project checklist will be developed to assess the degree to which complete streets are realized in project development.

The city hopes to operationalize complete streets in all phases of a project including planning, design, construction, and maintenance. The implementation project is engaging a diverse set of stakeholders—including multiple city departments, state agencies, and representatives from the local advocacy community—in order to include a broad range of disciplines in creating solutions and building awareness.

Information about Chicago’s complete streets policy and its broader Safe Streets for Chicago initiative is available at www.cityofchicago.org/webportal/COCWebPortal/COC_EDITORIAL/SafeStreetsforChicago_programsheets.pdf.

PLANNING AND DESIGNING FOR COMPLETE STREETS: CHARLOTTE, NORTH CAROLINA

After decades of rapid growth, Charlotte, North Carolina, was becoming dependent on thoroughfares and cul-de-sacs; the city had no bicycling routes and an incomplete sidewalk network. In the early 2000s, however, planners and engineers at the Charlotte Department of Transportation (CDOT) began to create a street network designed and operated for people, whether in cars or buses, on bikes, or on foot. Today, armed with new guidelines and a new approach to street design, Charlotte is completing its streets.

The 2006 Transportation Action Plan (TAP), the city's first comprehensive transportation plan, has played a major role in achieving Charlotte's goal to integrate land-use and transportation choices. The TAP describes policies, projects, and programs that support continued growth while making the best use of existing infrastructure and transportation resources and preserving a high quality of life. Among its goals is the promotion of a "balanced, multi-modal transportation system that serves the mobility needs of all segments of the population, accommodates all travel modes, and promotes community economic development needs." It also aims for context-based street design, expanded public transportation service, improved safety for all users, and improved connectivity of the transportation network.

Many of these goals are being implemented through Charlotte's Urban Street Design Guidelines (USDG), adopted in October 2007. To create the USDG, developers, interest groups, city staff, and residents were interviewed to ensure their concerns were addressed. While consultants were hired for some tasks, staff remained at the forefront, ensuring true ownership of the results.

The USDG focuses on providing the best possible streets to accommodate growth, create transportation choices, and maintain Charlotte's livability. Transportation choices are created both through providing more connections across the network and by building complete streets that make other modes viable. By providing a better street network, Charlotte hopes to increase its overall transportation capacity and improve air quality, while supporting the land-use decisions needed for Charlotte's future growth, including more compact development. Streets identified as favorites by residents in surveys tend to be found in older neighborhoods, are closer to the city's core, and feature street-tree canopies and pedestrian amenities. The city aims to build more streets that have these characteristics.

To meet these goals, a new street classification system was developed as an overlay to standard federal classifications. Staff believed that the best way to balance modal needs was to develop a process for designing streets wherein the varying interests and needs of all users—and various land uses—were considered and the design trade-offs were examined. Five new street types emerged, falling along a continuum ranging from most pedestrian friendly to most auto oriented. There is an explicit understanding that all street types along this range will be designed with all potential users in mind. Once a street or portion of a street is classified, both street design and future land-use decisions will reflect that classification.

The emerging street network is also context based. Preferred and maximum block lengths based on land use are specified for new public or private development projects, encouraging

a dense, well-connected network of streets. "Intentionally and inherently, street design is tied to intensity and density of development," says Norm Steinman, planning and design division manager. "We made it very clear that where there will be more density, we expect more streets and more blocks."

Typical cross sections for each street type were developed to encourage planners and engineers to think about each project and fully consider its

context and use—both now and in the future. There is no one-size-fits-all approach; Charlotte deliberately chose not to include dimensions on many cross sections, which would be too prescriptive. The exception is for local streets, where a stricter approach is preferred. Even there, however, several options are provided to ensure a good match between each street and the adjacent land uses. For nonprescriptive (thoroughfare) street types, the cross-section design is intended to be the final step of a more comprehensive sequence of fact-finding and decision making.

As part of the USDG, CDOT created new methodologies for determining multimodal levels-of-service (LOS). The new methods look similar to automotive LOS, allowing a comparison for evaluating trade-offs and helping to convince engineers that complete streets design can be based on analysis. LOS measures for pedestrians and cyclists are applied in conjunction with traditional vehicular LOS. The new measures identify and evaluate roadway features that influence the safety and comfort of pedestrians and bicyclists, such as crossing distance, crosswalks, bike lanes, corner radii, and traffic-signal timing and placement.

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Figure 5.3. New urban street-design guidelines are improving local streetscapes in Charlotte.

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CDOT added to this innovation by using a two-hour peak congestion analysis, rather than the traditional one-hour look. When using the standard 60-minute interval, engineers might be more likely to add additional turn lanes at intersections. “This is logical for 30 or 45 minutes,” says Transportation Planner Tracy Newsome, “but what about the rest of the day?” Pedestrians would face longer crossing distances all day to accommodate a potentially brief period of vehicular congestion. The duration of congestion is crucial in determining the need for roadway changes.

All of this does not mean that CDOT is unconcerned about congestion and travel delays. On road diet projects, for example, CDOT undertakes careful analyses to ensure that vehicular flow has not been worsened. A range of measures are used, including crashes, speeds, and volumes at peak periods, both before and after the conversion.

The extra analysis now used throughout CDOT is credited by Newsome and Steinman as a key reason the USDG works and is supported by staff. “We’re not eliminating analysis but instead doing more of it,” says Steinman. The results, once thought counterintuitive, are proven through logic and methodology. As a result, engineers are more likely to be on board.

At first, some design engineers wondered how the new analytical processes would work, says Newsome, because they did not seem like traditional traffic analyses. However, after working through the new method and using a six-step process, former skeptics have become advocates for the changes. They appreciate the additional technical analysis, which is blended with meaningful public participation to identify logical options and to create better streets.

Engineers were not the only ones with doubts—the public had to see the process work as well. CDOT has been incremental in its approach, applying the new designs on their own projects. This has created real-world examples of how the process and street designs look and function. CDOT uses these projects to demonstrate how all the elements work together. This makes communicating the many benefits of complete streets to the community far easier.

Charlotte is now working to integrate the USDG into zoning and subdivision codes, which would require developers to follow the guidelines. Because private developers construct the vast majority of new streets in the city, the updated codes will assure an integrated, connected system of complete streets necessary for mobility and growth. Over the past few years, CDOT has been informally applying the USDG process when reviewing conditional rezoning applications. During these reviews, CDOT has asked for conditions or modifications that reflect their street design goals, like planting strips and bike lanes. Several recent large-scale developments have agreed to follow the USDG, including the planned redevelopment of the 90-acre site of the old Charlotte Coliseum. Eight recent area plans have applied USDG guidance as well.

Charlotte, unlike many jurisdictions in North Carolina, is responsible for maintaining most of its local roads and many of its thoroughfares. However, the North Carolina Department of Transportation controls several major thoroughfares and the city’s extraterritorial jurisdiction (ETJ), unincorporated areas

within Charlotte’s growth boundary. All roads in the ETJ are constructed to the standards of NCDOT, which are quite different from, and sometimes contradictory to, the USDG used within the city. According to Steinman and Newsome, this has sometimes been an issue. Many of their negotiations have been over lane width; where Charlotte would allow, 11- or 10-foot lanes, NCDOT requires 12-foot lanes. Other elements—turn lanes, curb radii, bike lanes, on-street parking—have also been contentious. However, a complete streets policy adopted by the NCDOT in mid-2009, which drew on the experience in Charlotte, is expected to help the two agencies align their visions.

Charlotte’s TAP also addresses the costs of maintaining a good quality of life and mobility. Some costs have increased, as CDOT is installing more sidewalks, planting strips, and bike lanes; sometimes this can mean increased costs in acquiring right-of-way. However, after going through the six-step process, the city has concluded that the costs in widening the right-of-way for sidewalks and bike lanes will pay off in future mobility. With some intersection projects, CDOT saves by not adding as many lanes as they would have under a different process.

Other changes to the streets to make them more functional for all users have little to do with construction and cost very little. For example, Charlotte has changed its operations approach, especially in prioritization and style of crossings. They have added countdown pedestrian signals, increased the visibility crosswalk markings, and reduced most traffic signal cycles to no more than two minutes to minimize the time pedestrians spend waiting to cross.

Overall, Charlotte is on a steady path to implementing its policy. As of the end of 2009, the city had completed 16 projects to create complete streets, and 18 more are in the works. Eleven intersections have been modified, with 10 more projects planned. Fifteen projects have added new sidewalks, and 40 more are planned. The city now has more than 50 miles of bikes lanes, up from almost zero 10 years ago.

In some ways, Charlotte’s guiding vision is not really new. As Steinman puts it, “We’re going back to what has worked in the past, and trying to create the type of community that has sustained itself for decades.” The six-step process is simply a good planning process that is well defined, and “new” street designs reflect those built in the early 20th century that have stood the test of time. “We’re only innovative in that we are forcing ourselves to think,” says Newsome. “Is the additional left-turn lane really needed to relieve congestion that exists for just 45 minutes at the expense of pedestrians and bicyclists using that street all day?” Armed with strong policies, good design standards, and a context-sensitive outlook, CDOT planners and engineers fully own their vision and take pride in their work, allowing them to create better streets not just for motorists but for pedestrians, bicyclists, and others working and living in Charlotte.

Charlotte’s Urban Street Design Guidelines, along with policy summary and implementation process documents, can be accessed at www.charmeck.org/Departments/Transportation/Urban+Street+Design+Guidelines.htm.

MOVING TOWARD COMPLETE STREETS: PENNSYLVANIA DEPARTMENT OF TRANSPORTATION

PennDOT is working to change its traditional automobile-oriented approach. It has emphasized context-sensitive solutions since 2001, and the agency's compliance with federal ADA requirements has been key in revising design guidelines for accommodating pedestrian access. The 2008 Smart Transportation Guide, developed in partnership with the New Jersey DOT, has further enabled PennDOT to consider the needs of all users and integrate all modes of transportation. Finally, the state's secretary of transportation, Allen Biehler, has been a leader in thinking about a complete transportation system encompassing multiple roads, rather than just focusing on highways.

One of the most helpful tools PennDOT uses to take a proactive approach to complete streets is its Bicycle and Pedestrian Checklist. The checklist is used throughout PennDOT's project planning and programming, scoping, and final design processes, and it ensures that bike and pedestrian accommodations are considered from the very beginning of a project. According to Danielle Spila, director of PennDOT's Policy Office, the checklist is just one of various complete streets-type policies in place throughout PennDOT under the umbrella of its Smart Transportation policy.



Figures 5.4–5.5.
(Above) Annville Township's Main Street before and (below) after traffic-calming streetscape improvements, leveraged with PennDOT assistance

In 2007, PennDOT policy was revised to mandate that highway and bridge projects must evaluate access and mobility needs of pedestrians and bicyclists. As a result, the checklist, which had been in existence for several years, was officially made part of PennDOT's project development process. In the initial planning and programming phase of that process, the checklist is used to ensure consistency with existing bicycle and pedestrian planning documents; evaluate current and future usage by bicyclists and pedestrians; consider safety needs; and take into account community development and land-use patterns as well as the availability of transit. In the second phase, scoping, the checklist provides design specifications to determine what pedestrian and bicycle features will be necessary based on Phase 1 findings and guides field-checking to note any site constraints. In the final design phase, the checklist provides a "cookbook-style" matrix of various bicycle and pedestrian design elements to assist in creating project plans.

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decision making had focused on meeting automobile level-of-service standards, but the development of the new Urban Street Design Guidelines has led to a transportation planning process that is flexible, inclusive, well-documented, and clear. The Charlotte Department of Transportation's six-step process focuses on project context and has fostered creative solutions to transportation questions.

1. Define the existing and future land use and urban design context.
2. Define the existing and future transportation context.
3. Identify deficiencies.
4. Describe future objectives.
5. Recommend street classification and test initial cross-section.
6. Describe trade-offs and select cross-section.

The process ensures that planners understand the project and the area that surrounds it, and is applied to all plans, programs, and projects that could affect existing streets or result in new streets. This includes area plans, streetscape plans, neighborhood improvement plans, development proposal reviews, and preparation of capital improvement plans. Area planning, in particular, benefits from the process, as it provides the framework necessary for integration of land use and transportation on a larger scale.

Other places are using checklists as a way to ensure early consideration of the needs of all users. PennDOT uses a bicycle and pedestrian checklist throughout its project planning and programming, scoping, and final design processes to ensure that bicycle and pedestrian accommodations are considered from the very beginning of a project. On a regional scale, the Metropolitan Transportation Commission (MTC), the San Francisco Bay Area's MPO, adopted a routine

accommodation checklist in 2008 for those projects applying for funding through the American Recovery and Reinvestment Act (see MTC sidebar, p. 53).

FROM THE PENNDOT BICYCLE AND PEDESTRIAN CHECKLIST

1. Consistency with Bicycle/Pedestrian Planning Documents

- Is the transportation facility included in or related to bicycle and pedestrian facilities identified in a master plan?
 - MPO/LDD bike/ped plan
 - Local planning documents
 - BicyclePA Routes
 - Statewide Bicycle and Pedestrian Master Plan

2. Existing and Future Usage

- Do bicycle/pedestrian groups regularly use the transportation facility?
 - Bike clubs
 - Bicycle commuters
 - Hiking, walking, or running clubs
 - Skateboarding or rollerblading groups
 - Bicycle touring groups
 - General tourism/sightseeing
- Does the existing transportation facility provide the only convenient transportation connection/linkage between land uses in the local area or region?

3. Safety

- Would the transportation facility (and all users) benefit from widened or improved shoulders or improved markings (shoulders, crosswalks)?

4. Community and Land Use

- Are sidewalks needed in the area?
 - Presence of worn paths along the facility
 - Adjacent land uses generate pedestrian traffic
 - Possible linkages/continuity with other pedestrian facilities
- Is the transportation facility in close proximity to hospitals, elderly care facilities, or the residences or businesses of persons with disabilities?

5. Transit

- Is the transportation facility on a transit route?

6. Traffic Calming

- Is the community considering traffic calming as a possible solution to speeding and cut-through traffic?

Since 2004, the Virginia Department of Transportation has been working to counter its traditional transportation mind-set with a routine accommodation policy. In 2006, VDOT added a new section to its scoping forms for new construction and maintenance activities to ensure that multimodal accommodation is considered for each project. To supplement the forms, VDOT also created a simple decision tree that helps determine whether or not a project is exempted for any of the reasons outlined in the policy statement. These have been important tools for working to change the status quo. (See Figure 5.6, p. 52)

(continued from page 50)

The checklist is important because it acts as a data-gathering piece, pulling together all of the necessary information early in the planning process so that proper funding can be applied to ensure the inclusion of bicycle and pedestrian facilities. According to Ben DeVore, a civil engineer and PennDOT bike/ped coordinator, mandatory use of the checklist has had a positive impact on provision of accommodation. Most accommodation needs are now identified early in the process, and design solutions can be engineered in from the start. The checklist also enables PennDOT to include local communities and transportation users; relationships are established through having one-on-one conversations with these stakeholders to determine their needs. However, DeVore's experience has shown him that the effectiveness of the checklist to a large extent depends on who uses it. Project managers are officially responsible for completing checklists, but DeVore completes the checklists for all projects in his district to ensure that adequate attention is paid to this step.

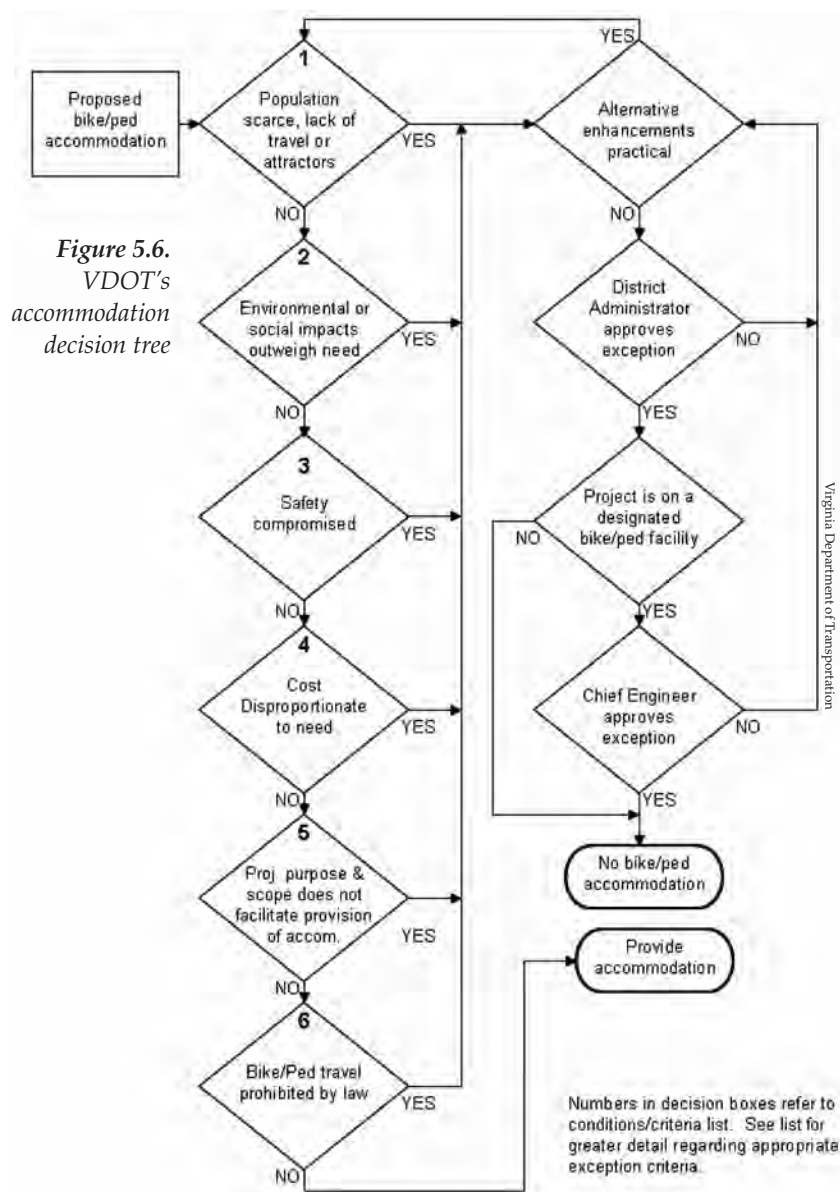
Other challenges to successful implementation remain. Patrick Roberts, a former PennDOT planner who now works as principal transportation planner for the City of Pittsburgh, asserts that local planners must work with PennDOT to ensure that accommodation needs are met on projects in their communities. While PennDOT's jurisdiction in urban areas is minor—Roberts estimates that PennDOT is involved with about 5 percent of the roads within Pittsburgh—the roads it does work on are vital for connectivity throughout the city.

Cost is always an issue, according to DeVore. ADA accommodation is absolutely required, so sometimes a project must be scaled back to incorporate all the required improvements. When multimodal needs are considered very early in the process, the costs are incorporated into PennDOT's project budget from the beginning and are not as much of an obstacle. If bike/ped improvements are added to an active project, however, the local municipality may be asked to come up with the additional funds, and that can be a problem.

Sidewalks can be another sticking point. In Pennsylvania, responsibility for sidewalk maintenance has been delegated to municipalities, so while PennDOT will build sidewalks if they are incorporated into the project design early in the process, the municipality must still sign a maintenance agreement. Local politics can play a role as well. In more rural areas where the car is king, politicians don't see a need for complete streets and are often against reducing lane capacity to accommodate other modes of transportation.

Through its Smart Transportation policy, the driving force of which is consideration of all modes, PennDOT is moving toward a complete streets perspective. The bicycle and pedestrian checklist is an important tool to make sure that accommodation issues are considered very early in the process, so that these facilities can be planned and designed into a project from the start.

For more information on PennDOT's Smart Transportation initiative, see www.smart-transportation.com. The Smart Transportation Guidebook can be downloaded at www.smart-transportation.com/guidebook.html. The Bicycle and Pedestrian Checklist, Appendix J in PennDOT's Design Manual 1A, can be found at ftp.dot.state.pa.us/public/Bureaus/design/PUB10A/Appendix/Append-J.pdf.



Another common innovation is the use of planning teams and early project meetings. In Roanoke, Virginia; Columbus, Ohio; and Seattle, project development starts with broad team meetings that bring all relevant departments together to coordinate everything from utilities to transit stops along a corridor.

TRAINING

A common complaint is that transportation planners and engineers have not received the technical training needed to effectively serve all transportation system users. Many learned very little in their formal education about planning and designing facilities for bicyclists, pedestrians, or transit and were taught even less about how to balance the needs of different modes. Some places with complete streets policies have conducted extensive design training on pedestrian and bicyclist facilities or ADA requirement compliance. This training is sometimes provided through traditional continuing-education forums or at state conferences, and such courses are widely available. But some planners and engineers involved in complete streets are cautious about the value of an

emphasis on technical training. They believe this may create the impression that the design of such facilities requires specialized knowledge when this should be part of routine planning and design.

Some communities have instead emphasized procedural training. This approach focuses on the meaning of a complete streets policy and the avenues to its implementation. The intent of any procedural training program is to ensure that agency staff charged with implementation of the policy are aware of the new procedures that apply to their field of work. In Columbus, Ohio, the Mobility Division conducted a training session for zoning staff to help them consider the complete streets policy in site plan review. In addition, the implementation team has offered training to public utilities to help them understand the city's expectations when they dig up roads. The division has also held training sessions for contractors, consultants, and developers to ensure that the private development community understands complete streets provisions within the land-use regulations.

Both Charlotte and the Commonwealth of Massachusetts upended their former project development processes when they moved to a complete streets approach. In Charlotte, when the Urban Street Design Guidelines (USDG) document was first adopted, staff participated in extensive discussion, review, and training sessions on applying the new six-step planning process. Eventually, the USDG methodologies will be incorporated into all land development review processes. As Charlotte moves ahead with updating its land development standards to further integrate the complete streets approach, more trainings and reviews are planned.

SUPPORTING COMPLETE STREETS AT THE REGIONAL LEVEL: METROPOLITAN TRANSPORTATION COMMISSION, CALIFORNIA

During the summer of 2006, the Metropolitan Transportation Commission (MTC), the metropolitan planning organization for the San Francisco Bay Area, adopted Resolution 3765. This document requires local jurisdictions to consider the needs of bicyclists, pedestrians, and transit riders when applying for federal or regional transportation funds, which MTC controls, for any new road project or road renovation project. The policy supports the agency's commitment to bicycle and pedestrian safety and travel, and provides a routine accommodation implementation policy for the region.

Following the adoption of Resolution 3765, MTC adopted a routine accommodation checklist in 2008 to help ensure that local jurisdictions were indeed considering complete streets principles. Though not required to include routine accommodation as part of every project, each jurisdiction applying for project funding through MTC is required to fill out the checklist for every project.



Figure 5.7.
MTC's new
project checklist
will encourage
pedestrian
and bicycle
accommodation
throughout the San
Francisco region,
including along the
Embarcadero.

The checklist asks whether bicycle and pedestrian infrastructure is included as part of the proposed project. If such provisions are not part of the project, the checklist asks for information regarding the nearest bicycle and pedestrian infrastructure that provides all users with right-of-way access. Local jurisdictions are required to complete these checklists and make them available to the public through county congestion management agency websites. They are also required to furnish their county's bicycle and pedestrian advocacy committee with copies of these checklists.

The checklist requirement is designed to encourage multimodal considerations by requiring transparency. Project sponsors may have to deal with complaints by advocates if bicycle and pedestrian provisions are not included in the project design, so inclusion of bicycle, pedestrian, and transit infrastructure in new projects is one way to help prevent potential political uproar.

In promoting complete streets principles throughout the region, MTC purposefully chose the checklist approach to help avoid conflict with county-level governments. According to Sean Co, a transportation planner with MTC, many of the region's counties typically see requirements imposed by MTC as barriers standing in the way of funding. From the county government perspective, a checklist that is just one more piece of the funding application process is preferable to a mandate that requires the inclusion of bicycle and pedestrian infrastructure in order to receive funds. This makes the resolution more politically palatable.

The routine accommodation checklist was first used for projects applying for funding through the American Recovery and Reinvestment Act. Since the implementation of the requirement, all applicants have filled out the checklist, with few complaints. This suggests that local jurisdictions are taking complete streets principles seriously, though not all of them are adopting local policies of their own.

Links to the checklists provided by the counties' congestion management agencies can be found at www.mtc.ca.gov/planning/bicyclespedestrians/routine_accommodations.htm. A copy of the checklist as it appears to those applying for funding can be found at www.mtc.ca.gov/planning/bicyclespedestrians/Routine_Accommodation_checklist.pdf.

CREATING NEW COMPLETE STREET STANDARDS AND INDICATORS: REDMOND, WASHINGTON

In September 2007, Redmond became the third community in the Puget Sound region to adopt a complete streets ordinance. The city had taken note of its neighbors' actions, and when approached by local advocates in the Cascade Bicycle Club and Transportation Choices Coalition, it saw adoption of an ordinance as a natural progression. The ordinance codified the steps Redmond had already taken in its comprehensive plan and transportation master plan (TMP) to create a balanced, multimodal transportation network.



Figure 5.8. A supportive pedestrian environment in Redmond

This traditional suburban-style community has undergone a number of incremental changes in its outlook and approach to planning and design. "It's another piece of the puzzle that reaffirms our commitment to moving in a different direction than Redmond was in the last 30 years," says Principal Planner Joel Pfundt. The idea of complete streets, especially its potential application in placemaking, helped build support among constituents and elected officials. While city staff felt they were already moving in this direction, the process of passing the ordinance was helpful. The city council affirmed their belief in creating streets that work for all users, which granted them ownership of the concept.

The city has a unique approach to Washington State's Growth Management Act (GMA), which requires concurrency between development and transportation. Under the GMA, local governments set a level-of-service (LOS) standard; any proposed development that causes the transportation system to drop below this threshold must be denied until transportation improvements are made to accommodate that development. Communities, including Redmond, have typically used vehicle-based LOS standards to monitor concurrency at the intersection or corridor level. This can lead to an emphasis on building wider streets to maximize vehicular throughput and causing projects to become auto-dependent even when this is inconsistent with GMA and local comprehensive plan policy.

(continued on page 55)

Massachusetts has also taken a learn-by-doing approach. When the new Project Development and Design Guide was adopted in 2006, training was offered to MassHighway (now part of MassDOT) staff as well as superintendents, town staff, and consultants working in the state. Since then, training opportunities have not been widespread; instead, staff are expected to become familiar with the guide's principles through implementation. Advocates and agency staff are supportive of more training, especially to help move away from the one-size-fits-all engineering that dominated in the past. Helping staff understand the range of acceptable approaches and partake in a more iterative approach has been a challenge, according to some.

PERFORMANCE MEASUREMENT

Performance measurement is an important tool in the implementation of complete streets policies, yet it remains a challenging area. Performance measures provide a quantitative (and sometimes qualitative) indicator of actual or potential performance of a specific street, a section of the street network, or of the street system as a whole. Communities must consider both how to use performance measures and how to measure performance.

Using Performance Measures

Performance measures may be used in several different ways to facilitate the implementation of complete streets policies (Table 5.1, p. 56).

First, performance measures can be used for needs assessment: to identify problems in the system and to assess their relative severity. In this case, performance measures are applied systemwide (e.g., to all arterial streets), usually as part of the planning process. In Roanoke, planners have developed a scoring system for major streets that takes into account safety, connectivity, and design, as well as the presence of street trees, stormwater and drainage issues, and the availability of sufficient right-of-way to accommodate all modes.

A related approach is to classify all streets in the system as to their appropriateness for complete streets treatments, in effect evaluating them for their potential performance as complete streets. Decatur, Georgia, modified the traditional street typology to account for the relationship of the street to land use, so that each new street type caters to different levels of need for various travelers, by foot, bike, or car.

Redmond, Washington, laid out a comprehensive monitoring system in its transportation master plan. The Mobility Report Card measures over 15 indicators for multimodal transportation each year; results are posted on the Internet. The report cards show the baseline value, the current year's observed value, and the target (objective) value for each indicator. This allows the city to spot trends and track progress toward goals (see sidebar).

Second, performance measures can be used to rank projects for funding in the programming process, as described in chapter 4. The methods used here may be similar to those used for needs assessment.

Third, performance measures can be used in impact assessments. In this application, the probable impact of a proposed development project on the performance of the street system is projected, and the result is used as the basis for impact fees or other exactions, such as requirements to provide bicycle and pedestrian facilities. For example, in Sacramento, traditional level-of-service (LOS) standards for the impact of development on vehicle traffic have been relaxed to accommodate development that may improve conditions for other modes. In Redmond, where the state requires concurrency for developments, the city is developing a new plan-based system that will let them measure impact on a network basis rather than through corridor LOS measures.

Fourth, performance measures can be used to evaluate the effects of a policy or project on the performance of the system and to assess whether it achieved its goal. These before-and-after studies are important for building a base of evidence for the effectiveness of the complete streets approach and can be instrumental in justifying further investments in complete streets projects. Although it has been common to measure changes in vehicle traffic before and after implementation of traffic-calming programs, impacts on other modes are rarely measured. When operating under a complete streets framework, jurisdictions can measure traffic volume of all modes, note any modal shifts, and track the number of crashes and injuries incurred by all roadway users. (See Table 5.1, p. 56.)

Measuring Performance

These uses of performance measures are standard, but for complete streets some of the metrics being used are new. In all four applications, it is standard practice to use vehicular LOS, which focuses on the automobile alone. In using performance measures to implement complete streets policies, communities are expanding the range of measures used to account for multiple modes and to achieve a broader range of objectives.

In developing appropriate methods of performance measurement, communities must consider three interrelated concepts. First, performance can be measured as inputs, outputs, or outcomes. Inputs are the initial actions taken by the community to achieve the desired goal. For complete streets, inputs could include adoption of complete streets policies or dollars spent on complete streets projects. Outputs are the direct result of these actions and could include the number of projects completed, the extent of the bicycle or pedestrian network, or the characteristics of that network. For example, Seattle has set goals with respect to numbers of sidewalks, crosswalks, and street trees. Charlotte measures crossing distances, bike lanes, and corner radii. Outcomes, in contrast, reflect the impacts on the users of the system, and include counts of users, mode shares, and crashes, as well as subjective assessments such as perceived safety and user satisfaction. Most before-and-after studies focus on outcomes; however, because outcomes tend to be harder to measure, they are less often used in needs assessments and other applications.

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Redmond is replacing its vehicle-based intersection LOS standard with plan-based concurrency, which allows for a transportation system that can accommodate the network of complete streets envisioned by the community. In this way, the implementation of the transportation plan will explicitly support achievement of the comprehensive plan's visions and policies.

The plan-based approach is also intended to be simple and predictable. The city used its transportation model to calculate "mobility units," or person-miles of travel, provided by existing streets and public transportation service to offer a quantifiable moving capacity. Each development proposal is analyzed to estimate the number of mobility units it will generate. This is compared to the available mobility units within the city's Six-Year Transportation Improvement Program/Capital Improvement Program. The city's land-use growth target and 2022 transportation facility plan (TFP) set the total allowed amount of person-miles traveled. As long as the land-use growth target and the development of the transportation system remain proportionate, the LOS standard, and therefore the concurrency requirement, is met.

In the TMP, Redmond created a mobility report card measuring a variety of indicators: concurrency; completion of the 2022 TFP; a.m. mode share; school bus ridership; public transportation travel time and service frequency; average weekday boardings on public transportation; service hour targets for local public transportation; p.m. peak-hour VMT; changes in traffic volume across key screenlines; average traffic growth by transportation management district; roadway volume-to-capacity ratios along selected screenlines; percentage of pedestrian environment designed to "supportive" standards; completion of the bicycle network; number of vehicle, pedestrian, and bicyclist collisions; and status of the Three-Year Priority Action Plan. This information supplements the concurrency management system and is used to evaluate the performance of each mode.

Annual mobility report cards are available to download from <http://redmond.gov/connectingredmond/policiesplans/tmpprojectdocs.asp>.

TABLE 5.1. PERFORMANCE MEASURE ROLES AND EXAMPLES

	Description	Examples
Needs Assessment	Systemwide assessment of multimodal conditions and identification of problem spots in planning process	Roanoke: Scoring system for major streets that takes into account safety, connectivity, and design, plus right-of-way availability, street trees, stormwater and drainage issues Louisville: Bike-friendly index calculated for collectors and arterials, for use in bicycle master plan Decatur: Modified typology of street types to take into account relationship to land use Redmond: Annual mobility report card
Project Prioritization	Comparison of proposed projects with respect to severity of problem and potential impacts	Seattle: Prioritization of projects that have the most impact on network completion.
Impact Assessment	Forecast of potential impacts of proposed project, often as basis for impact fees or exactions	Sacramento: Relaxation of traditional vehicle LOS standard from C to D or E near transit in assessing development impacts Charlotte: New LOS for bicyclists and pedestrians at intersections Redmond: new plan-based concurrency system
Project Evaluation	Measurement of multimodal conditions before and after implementation of project	Seattle: Before and after evaluations of mode shift, volumes, crashes Charlotte: Before and after evaluations of volumes, speeds, crashes New York: Sustainable Streets goals and measures

Second, to be effective, performance measures must be closely tied to planning goals: each must measure a relevant aspect of system performance. If the goal is to increase walking and bicycling or to improve safety for these modes, then performance measures should measure these outcomes. In developing performance measures, communities should thus take the goals of their complete streets policy as their starting points. Note that inputs and outputs tend to be less directly related to goals than are outcomes.

There are two important corollaries to this concept: (1) If performance measures do not match goals, they will bring confusion to planning and programming processes. Decisions based on those performance measures are likely to lead the community in unrelated directions. (2) Goals should have performance measures. Goals without performance measures are likely to get less attention in the planning process because it is harder to document problems and evaluate solutions.

New York City has developed an extensive process for matching goals and measures. The Sustainable Streets strategic plan sets a number of goals for the transportation department. Each is accompanied by a number of benchmarks for measuring success—including improved safety and mobility, good maintenance of infrastructure, well-developed placemaking policies, and the incorporation of sustainability objectives into projects, among others—that are to be measured annually. As the agency works through the plan, it will update and add new goals on a continual basis. The department expects to

hold staff retreats every year or two, where employees will discuss what has been achieved and what new goals they should set.

One challenge is measuring a complete streets network's outcomes related to long-term community goals that reach far beyond the immediate transportation realm, such as goals to increase the physical activity of residents or decrease the emission of greenhouse gases. In the first instance, the public health community has been exploring ways to measure the effectiveness of transportation investments in altering behavior, mainly through the development of health impact assessment tools.

Third, all four uses of performance measures may require the establishment of standards by which performance can be judged. These standards should, of course, be tied to the goals of the community and can be viewed as the quantification of those goals. However, standards may be constrained by practical limitations. For example, while it might be the goal of the community to eliminate all crashes, physical and financial constraints may make this standard unachievable. Still, standards can be used to judge the severity of an existing problem (how far below the standard an existing situation is) or the effectiveness of a proposed or implemented solution (whether or not the solution achieves the standard). Redmond's mobility report card is a good example of the use of standards, or targets, to evaluate progress toward goals.

Level of Service

The traditional performance measure for street design is level of service as calculated based on the current version of the Highway Capacity Manual (HCM) published by the Transportation Research Board. This measure, in all its forms, is a function of the ratio of the number of cars on a road to the road's carrying capacity, and it is expressed by assumed delay for each vehicle. Historically, it has been used to calculate how much road capacity is needed to serve a given volume of vehicles, and it is directly tied to the goal of reducing congestion and delay; in most common use, LOS A represents free-flowing automobile traffic, and E or F represent complete congestion. Although it has the advantage of being highly standardized and widely used, traditional vehicular LOS is not a relevant measure for the complete street goal of providing a safe and convenient environment for all users.

Efforts to develop bicycle and pedestrian LOS measures go back at least to the early 1990s, following passage of the federal Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991. A forthcoming revised version of the Highway Capacity Manual should include methods for measuring the quality of travel for bicyclists and pedestrians, including comfort and sense of safety. (A preliminary description of this methodology is in TRB NCHRP 2008.)

In the meantime, communities have been developing their own methods for measuring bicycle, pedestrian, and transit LOS. For example, Louisville developed a metric that factors in speed limits and traffic volumes to create a rating that captures bike friendliness. Seattle is developing a new LOS approach, while Decatur is using the preliminary new HCM approach.

Although there are many benefits to standardization of measures across communities, appropriate measures may also vary, depending on a community's goals. In general, bicycle, pedestrian, and transit LOS measures tend to be more complex than vehicle LOS; they attempt to measure the quality of the travel experience rather than just throughput. Some communities are not pursuing new LOS measures, instead choosing more qualitative measures of success.

In practice, communities have been using these new measures in addition to the traditional vehicle LOS measure, not in place of it. They have both expanded their measures of vehicle standards (e.g., to include crashes), and they have added measures of LOS for other modes. In Massachusetts, vehicle LOS is one of many “measures of effectiveness,” and designers are directed to calculate and provide a “reasonable LOS for all users.” The state’s new Project Development and Design Guide offers tools to do so, including guidance on balancing LOS measures for different users at intersections, where automobiles and nonmotorized users so often come into conflict.

It may be important to continue to measure traditional vehicle LOS in order to provide a balanced assessment across all modes and to alleviate potential concerns about negative impacts on vehicles. Modifying rather than rejecting the traditional performance-measurement approach seems to have smoothed the way for many complete streets projects. For example, the added analysis now used by the Charlotte DOT is credited by lead planners as a key reason their complete streets policy works and is supported by staff. “We’re not changing our analysis but instead doing more of it,” says Norm Steinman, planning and design division manager. Staff engineers in particular appreciate the use of logic and analysis to justify complete streets design.

SETTING UP AN EXCEPTIONS PROCESS

Creating a clear exceptions process has been a central issue in many jurisdictions transitioning to the complete streets approach. During the policy adoption process, exceptions are often hotly debated and can make or break political support for the policy.

Once a complete streets policy is in place, a clear and fair exception process can enhance credibility, ease fears of both opponents and proponents of change, and provide a guide for planners. Redmond’s ordinance is short and to the point, outlining three exceptions to its policy: where accommodating all users would be contrary to public safety; where there is no identified long-term need; and where the public works director allows a documented exception in specific situations. The exceptions process forces staff to be systematic and to consider all options.

In Massachusetts, eliminating discrepancies in the existing exceptions process was a top priority for the new project guide. Now, any exceptions to the guide’s standards are handled each month by a review committee of senior-level engineers from across the state, according to a standard, documented procedure. (See sidebar, p. 83.)

As noted, the Virginia DOT has created a new project scoping form, decision tree, and guidance document to assist in determining exceptions to its policy. In Seattle, a checklist process is used, but the approval of an exception is not the end of the story. If complete streets improvements were identified in the process but were unable to be included in the final scope, one of the city’s transportation divisions is required to include that need in its list of projects, regardless of funding. In this way, user needs are not lost or written off.

Cost Exceptions

The worry that complete streets policies will break the bank is very common and has spurred many communities to provide for cost exceptions. While worries about cost are sometimes overstated (see Chapter 6), many places have accepted the FHWA’s 2000 guidance defining “excessively disproportionate” as costs above 20 percent of total project costs. But the guidance also uses this phrase from the Oregon law: “if the cost of establishing such paths and trails would be excessively disproportionate to the need or probable use.” In Oregon, accordingly, a project in a high-use area for bicycling and walking has no ceiling.

BRIDGING THE GAP: SEATTLE

Seattle has been swift and methodical in its implementation of complete streets. With the adoption of its nine-year “Bridging the Gap” transportation funding levy, Seattle pledged not only to reduce its backlog of transportation maintenance, make seismic upgrades to bridges, and increase public transportation speed and reliability but also to allocate funds to creating complete streets. Six months later, the city council adopted an ordinance so that all transportation projects, not just those funded through Bridging the Gap, would improve travel for all users. Barbara Gray, transportation system design and planning manager in the Policy and Planning Division at the Seattle Department of Transportation (SDOT), credits both policies for providing SDOT with “a consistent and formal approach to improving the right-of-way for all users.”

Gray indicated that SDOT had been moving toward a more integrated approach to delivering complete streets under the lead-

shared-lane pavement markings (sharrows); painted green bike lanes; established bioswales; planted trees; improved signage; and added new curb extensions at bus stops (bus bulbs). Bicycle parking has replaced auto parking in some parallel parking spaces (bike corrals). Many streets have been rechannelized (i.e., road diets have been implemented), converting four-lane streets into three-lane streets (two travel lanes and a center turn lane) with bike lanes. These projects have given pedestrians a leg up as well, as the city is more inclined to install unsignalized crosswalks across three lanes but not four.

On Rainier Avenue South, bus bulbs help buses save time by allowing them to pick up passengers without moving in and out of the parking lane. Buses also have priority signals so green lights stay green longer and red lights switch faster when buses approach. On Second Avenue and Fourth Avenue downtown,

Figures 5.9–5.10.
*Before-and-after
shots of pedestrian
improvements on
Sixth Avenue in
Seattle*



ership of Director Grace Crunican, but the ordinance provided the legislative authority to ensure that decisions about project design did not happen unless the needs of all modes were considered. The first big step to break down silos within the transportation department had been to allow the SDOT bicycle and pedestrian program team to review repaving and channelization projects for opportunities to improve rights-of-way for bicycle and pedestrians. Upon adoption of the ordinance, this process expanded significantly.

Today, SDOT policy requires all capital major-maintenance projects (such as repaving) to have a thorough complete streets review, and staff are directed to look for ways to make each project consistent with the complete streets ordinance. An internal complete streets steering committee was formed to help clarify and define the daily operational practices that SDOT would take to implement complete streets. This group also provides design oversight to the team of project managers and planners responsible for project design. A citizen oversight committee meets quarterly to review project completion and ensure consistency with the goals of the Bridging the Gap levy, including the complete streets mandate.

An energized SDOT soon began to roll out projects. Seattle has added sidewalks, crosswalks, and curb extensions; installed

new street designs include bus bulbs, green bike lanes at potential vehicle/bicycle conflict points, advanced stop bars, sharrows, and bus-priority signals. A pilot project along Aurora Avenue (Highway 99) will include closing one of the entry points from a residential street that feeds onto Aurora, creating a “street end plaza” and expanded waiting area at this heavily used bus stop location. If successful, this project is very likely to be replicated in another location where sidewalks are narrow and bus ridership is high. This new plaza will convert car space to pedestrian space in order to give more room for bus shelters and waiting passengers without significant impacts on local businesses or residents.

Part of SDOT’s success lies in infusing complete streets principles into all guiding documents—the transportation strategic plan, the transit plan, and the pedestrian and bicycle master plans, among others—as defined in the ordinance. Such integration helps expand complete streets policies into daily operations, making it standard for all staff. It will also eventually influence the capital improvement program (CIP) planning process, when all CIP projects (with the exception of very small projects or those that are considered to be routine maintenance) will be subject to the internal complete streets checklist.

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Seattle's CIP involves a wide range of projects, from bridge repair and construction to trail extensions and roadway repaving. Although the CIP is a six-year plan, SDOT has a nine-year paving plan. This look ahead at paving projects has been instrumental in complete streets implementation, and SDOT has leveraged these projects to implement complete streets in every case since 2007, when the Bridging the Gap levy was passed. As the city updates its planning documents with the complete streets outlook and looks at new data, priority projects will emerge and be slated for implementation, either through the CIP or through one of SDOT's annual funding programs. The 2009 update to Seattle's pedestrian master plan used a variety of GIS indicators, such as income, pedestrian generators, and density, to locate priority areas for pedestrian improvement. From this, planners look for what's missing in the system, prioritizing projects that will have the most impact and help create a complete network for pedestrians, especially those who are most dependent on walking and transit.

Three to four years out, those priority projects found through the planning process will be put through a complete streets checklist. This allows SDOT time to work with different divisions to link needed improvements and to secure funding. After this, the project goes to design. At the design reviews conducted 30, 60, and 90 percent of the way through the process, all involved city stakeholders will ensure that the designs follow the input communicated through the checklist. When complete, the checklist is signed by each key member of the SDOT project team, then by the SDOT director. If complete streets improvements are identified in the process but not included in the final scope, one of SDOT's divisions is required to include that need in its list of projects, to ensure that user needs are not lost simply because current funding is not available.

In 2005, Seattle made major revisions to its Right-of-Way Improvements Manual, a design standards manual that is used primarily by private developers. While the document has routine accommodation language, SDOT felt it did not fully express the complete streets policies set forth in 2007 and 2008. Seattle depends on private developers' work for smaller sections of corridors and encourages all projects in the right-of-way to be consistent with complete streets policies. The ordinance officially applies only to SDOT-funded projects, so private developers are not required to comply. However, many see the benefit of improving pedestrian, bicycle, and public transportation quality and have made commitments to such improvements as key pieces of their projects—another demonstration that complete streets can also be good for business.

The Right-of-Way Improvements Manual and related roadway design standards are scheduled to be updated in 2010 through 2011 and will contain a stronger focus and message about complete streets. Until that time, SDOT will continue to use state-of-the-practice designs and encourage others to do the same. "Our new designs just create new internal standards," says Strategic Advisor Darby Watson. "Our design has not changed a whole lot; it's more our willingness to look at streets in a new way." Innovative designs for road diets, longer street tree pits, bike boulevards, pervious sidewalks, bio-swales, and green bike lanes have been integrated into internal design standards so they become regular practice. If a pilot program shows results, it is added to the list as well. "The more we can add to the standards, the fewer prolonged debates often resulting from 'new' or 'nonstandard' design details are needed. The constant debate about the details can really slow a project down," says Gray, so standardizing innovative approaches improves efficiency and makes a difference on the ground quickly.

Seattle has been measuring its success as well. The Bridging the Gap initiative sets clear goals for SDOT, such as building 117 blocks of new sidewalks, restriping 5,000 crosswalks, planting 8,000 new street trees, and developing a pedestrian master plan. SDOT has also begun to examine how best to use LOS indicators for different modes; a new LOS measure for Seattle is being considered for the near future, Gray says. On a case-by-case basis, SDOT conducts before-and-after evaluations to measure mode shift, volumes, and crash data. For every road diet project, an "after" study is done one year after installation. In the broader sense, though, Gray feels that it will be harder to measure performance as time goes on because complete streets will be "just standard practice." Seattle is investigating a way to overcome that barrier but has yet to find the answer.

Seattle has not been blocked by the costs in developing complete streets. While some complete streets work is funded by the Bridging the Gap tax levy, many are funded through traditional means. Here, making good plans steeped in complete streets principles helps tremendously. "With good planning and information shared across departments several years out, we can leverage the dollars much more effectively," notes Gray. "Planning in advance makes complete streets much easier to accomplish." Projects can also be done incrementally to help manage costs and expectations.

Seattle employs a number of low-cost methods to improve its transportation system. When repaving a street, staff will consider a new configuration in the existing right-of-way that creates space for bicyclists or improves traffic flow for automobiles. They may flag the location as needing further study later on, when more funding can be attached. Painting and signing stop bars greatly improves the pedestrian environment and can be done for the low cost of paint when repaving or intersection redesign work is occurring. When moving signal detectors, SDOT will install bike loop detectors so cyclists can activate the signal without needing to wait for a vehicle. Installing bike corrals is another low-cost technique that signals bicyclists are welcome in the area.

Many times, it is best for SDOT to do all the improvements at once, benefiting from the economies of scale and lessening inconveniences on travelers by closing portions of the street only once. Furthermore, priorities among the divisions can be aligned so that all modes can benefit from a project. If a road is due for sidewalk improvements and will already be rechannelized after a repaving, SDOT will try to pair up the projects. On bridge projects, where adding a nonmotorized trail is far too costly, SDOT takes a "do no harm" approach. So long as the design does not preclude inclusion of that trail in the future, SDOT can plan to do it when funding can be secured.

Gray strongly believes complete streets policies have been valuable "from elected officials on down, at every level of the city" and in engaging with the public. "It's just our system now." Each project brings debate, but SDOT has good support and policies to reinforce its efforts. For Seattle, it is not about convincing people; it is about getting the systems in place to ensure complete streets is standard operating procedure. The policies have caused them to consider each project as a part of the whole city. "I'm hopeful that the work we are doing lays the groundwork for other cities—that would be an incredible measure of success," concludes Gray.

Seattle's complete streets ordinance (ordinance no. 122386) can be accessed at <http://clerk.ci.seattle.wa.us/~public/CBOR1.htm>. Read more about the Bridging the Gap initiative at www.seattle.gov/Transportation/BridgingtheGap.htm.

Other communities have also rejected specific ceilings. Seattle initially capped complete streets elements when they added 20 percent or more to total project cost, but city planners later decided that every project should be evaluated individually. If the costs add 21 percent but the benefits outweigh the costs, the project is just as valid as one where the complete streets elements add 19 percent to the cost.

When creating guidance for the TransNet tax extension, San Diego's regional agency, the San Diego Association of Governments (SANDAG), decided not to set a percentage threshold over which costs would be deemed excessive, instead allowing policy makers to make these decisions on a case-by-case basis. If an agency decides that costs would be excessively disproportionate to the need or probable use, the agency must provide documentation and justification for its decision, go through a public hearing, and have the exemption approved by SANDAG.

Some communities are placing less emphasis on an exceptions process aimed at individual streets and more emphasis on creating a variety of street cross-sections, new street typologies, or network plans that clarify what facilities will be placed in what contexts. Smaller communities, such as Boulder, Colorado, and Decatur, Georgia, are thus able to identify future improvements across the entire street network, if not on every street.

THE BALANCING ACT: MEETING THE NEEDS OF VARIOUS USERS

To successfully balance user needs, planners must first change the way in which automobile traffic congestion is viewed. But the dominance of the automobile paradigm is not easy to displace. Patrick Roberts, a former PennDOT planner who now works as principal transportation planner for the City of Pittsburgh, laments the lack of state or national policies mandating equity for the needs of all transportation modes. AASHTO and other standards are still focused on planning for cars, and ensuring capacity for automobiles puts pedestrian and bicycle facilities at a disadvantage when funding or right-of-way is limited. He would like to see policies that allow for a reduction in automobile capacity in order to provide accommodation for other modes.

Such a change is an especially tall order for state DOTs, with their primary missions of supporting long-distance travel. But at the municipal level, some of the most successful policies have directly addressed the way that complete streets affect automobile traffic. Santa Barbara, California, and Seattle have embraced complete streets as a way to increase the capacity of the transportation network, but communication and education are essential for acceptance. For example, Seattle has launched a public awareness campaign and "Commuter Toolkit" with information about the city's efforts to be more walkable, bikeable, and transit-friendly, tips on reducing automobile dependence, and a poster illustrating the space 200 people take up if they are in cars, on light rail, on a bus, or riding bicycles.

Once the rights of other modes to share the streets are recognized, the balancing act has just begun. Many projects need creative solutions so improvements for one mode do not overly burden others. The recently completed project on Stone Way North in Seattle is a poster child for this kind of balance. Stone Way is a low-traffic freight corridor with strong pedestrian and bicycle usage: the perfect candidate for a road diet. "In the design phase, there was a lot of fear," says Darby Watson, the strategic advisor in SDOT's policy and planning division. Local bicyclists wanted bike lanes on both sides of the roadway, but freight users worried about reduced access to light industrial areas. SDOT brokered a compromise, installing bike lanes along the street's uphill side, where cyclists would be moving more slowly, and shared lane pavement markings, or "sharrows," along the other, where the grade would allow them to move close to the



SIDEWALKS

It is very common across the United States for sidewalk construction and maintenance to be considered a separate responsibility from road building. In many cases, adjacent landowners are responsible for construction, maintenance, and snow removal. The practice stems from English common law and has proved a significant barrier to complete streets implementation in some places. At the local level, aside from residents who want to maintain a “rural feel,” other residents are resistant to sidewalks because they do not want to have to repair them or shovel snow off them.

The New Jersey DOT and the Alan M. Voorhees Center issued a report on sidewalk construction and maintenance in New Jersey (VTC and Carmalt 2006), which includes a national assessment and overview. It states, “As a result of the complicated and multi-layered responsibility for sidewalk siting, construction and maintenance, varied municipal ordinances, and varied perceptions among decision makers about the need for sidewalks, the current sidewalk network in New Jersey is fragmentary and incomplete. This network has less utility than a complete network because potential pedestrians may forgo walking trips if they cannot rely on the presence of a safe facility all the way to their destinations.” The report recommends that laws should be changed so jurisdictions responsible for the road should also be responsible for the sidewalk.

Some communities with complete streets policies, such as Colorado Springs, Colorado, are addressing this issue by taking back responsibility for sidewalk construction and maintenance. Several communities have launched sidewalk retrofit programs, including Charlotte, in which the city installs new sidewalks based on where they are most needed, as well as residents’ requests (see www.charmeck.org/Departments/Transportation/About+Us/Sidewalk+Program+FAQ.htm).

speed of traffic. The sharrows allow bicyclists to blend with traffic, easing the freight users’ concerns. The route has seen an increase in bicycle traffic with no lessening of freight use, and Watson notes that the project actually improved accessibility for freight users. Here, being creative and listening to all parties was essential for successful implementation.

While bicyclists and pedestrians tend to get the most attention, a true complete streets policy is more inclusive. ADA requirements have pushed a few policies toward implementation. The origins of the complete streets movement in Sacramento can be traced back to a 2002 court decision requiring ADA-compliant sidewalks and curb ramps along all public streets. (See sidebar, p. 41.) In Pennsylvania, PennDOT compliance with federal ADA requirements has been key in revising agency design guidelines for accommodating pedestrian access.

The needs of older Americans have driven policy adoption in some places, most notably in Hawaii. But a recent AARP study found that a majority of policies do not adequately address the needs of older adults. In response, AARP issued the report *Planning Complete Streets for an Aging America*, which includes three design principles that make streets safer for older drivers, pedestrians, bicyclists, or transit users: (1) reduce vehicle speeds for safety and improved reaction time; (2) make the physical layout easy to navigate; and (3) simplify the visual environment to make it easier to interpret visual cues.

Transit is also an important component of complete streets. Pedestrians and bicyclists need access to transit vehicles, and finding ways to speed transit vehicles can improve transit performance and attract ridership. In Boulder, accommodating and encouraging public transportation use has been a major tool in achieving transportation master plan goals. The city’s Community Transit Network features bus routes with well-designed and conveniently sited stops on several major corridors.

Oftentimes, simply bringing transit agencies to the table is an important first step for complete streets implementation. “Transit agencies don’t know what to ask for, and engineers don’t know what to design for,” says Ron Kilcoyne, general manager of the Greater Bridgeport Transit Authority in Connecticut and a longtime proponent of transit agency involvement in street planning. In Roanoke and Seattle, the transit agency is involved in street design review from the very first meetings. Louisville’s transit agency participated actively in the rewrite of the city’s street manual. The transit agency in Colorado Springs is part of the city government and works closely with the planning and engineering departments to ensure that project designs support transit. Once transit agencies are part of the process, they can advocate for better bus-stop placement, space in the streetscape for shelters, and consistent provision of crossings.

Another important complete streets constituency is lower-income residents who rely more heavily on transit, bicycling, and walking for transportation yet often don’t have the time or resources to fight for better facilities on a project-by-project basis. According to Mike Piscitelli, transportation director for New Haven, Connecticut, the city’s complete streets policy has “been a way to create an identity around something that’s been around the city for a while as an important priority. Creating a system for it has allowed us to move beyond the advocacy groups in higher-income neighborhoods. We spend a lot of time on the social justice side of it.”

RELATIONSHIPS WITH OTHER JURISDICTIONS

A survey of planners and engineers conducted by the Institute of Transportation Engineers found that the most commonly cited barriers to multimodal planning are the conflicts that arise between jurisdictions: between local governments and state DOTs, between MPOs and local governments, and between MPOs and states. Most jurisdictions do not control all of the roads

within their boundaries; roads can be built and maintained by states, counties, cities, townships, or private developers. Conflicting goals and design standards can result in an abrupt character change along a roadway or a stalled project that never gets off the ground at all. These issues were reported widely during our case study interviews. (See the Decatur case study, p. 25, and the Charlotte case study, p. 48.)

For example, Louisville Metro's complete streets policies have helped the municipality communicate its complete streets vision to Kentucky's DOT, which controls many roadways in the rural part of the metro area. And while the policy in Rochester, Minnesota, is quite new, it has already been used in negotiations with the state. When the Minnesota DOT recently sent the city its plans to refurbish a highway through the city, the city council noted the new complete streets policy and requested that inclusion of bike lanes be considered.

On the other side of the equation, state DOTs with complete streets policies report challenges in working with local communities and developers that do not necessarily share their vision. In Massachusetts, land-use and subsequent transportation decisions are entirely within the jurisdiction of municipalities, which are exempted from following the state's Project Development and Design Guide. According to Rosalie Anders, a member of the state's bicycle and pedestrian advisory board, "there needs to be a lot of education on the local level." A former planner at PennDOT struck the same note on the need for local planners to educate the public and build support. PennDOT focuses on designing projects and maintaining facilities, not planning, so the agency is heavily reliant on the efforts of local planners and municipal staff as well as existing bicycle or pedestrian plans that document facility needs.

Smaller communities lament their inability to provide a more complete network beyond their borders. The relationship with its MPO—and meeting funding criteria—has been a challenge for Boulder, Colorado, as detailed in Chapter 6. University Place, Washington, controls all the roads within its borders, which has allowed this community to make dramatic on-the-ground changes. However, no adjacent jurisdictions have extended any of the town's bike lanes—though a new countywide complete streets policy may change that. In contrast, the Sacramento region enjoys an interlocking web of jurisdictions with complete streets policies. Policies are in existence at the state, MPO, county, and city levels.

CONCLUSION

The transition from traditional automobile-centered transportation planning to complete streets is almost always a long one. Staff must learn not only new design techniques but new procedures and new ways of thinking through problems. A clear commitment to a complete streets approach, with the support of the community's leadership, is the best compass to guide planners and engineers through the transition.

CHAPTER 6

Handling Costs



Paying for transportation projects is always a challenge, regardless of jurisdiction or project design. Most often, successful implementation of complete streets policies is achieved by integrating multimodal facilities into general project design. This folds the costs for these facilities into the costs for the overall project.

COMPLETE STREETS LIKE NO OTHERS: NEW YORK CITY

America's largest city, New York City has unique challenges and opportunities and often acts as a trendsetter. The million people who left the city in the 1960s and 1970s have returned in even greater numbers, and the city must now accommodate future growth and modernize infrastructure while striving to become one of the greenest cities in the world. In the spring of 2007, Mayor Michael Bloomberg released PlaNYC 2030, a comprehensive plan aimed at ensuring continued growth and improved quality of life.

Shortly after the plan's release, the mayor appointed a new transportation commissioner, Janette Sadik-Khan. Sadik-Khan was charged with interpreting PlaNYC for the DOT. She filled leadership roles with strong advocates for livability, sustainability, and multimodalism, and she tasked the entire staff to change the way streets were designed and used citywide. Jon Orcutt, director of policy for the DOT, says the agency as a whole responded overwhelmingly, enthusiastic to be charged with a clear, positive, and easily communicated mission.



Figure 6.1. Striping bike lanes is a low-cost strategy New York City is using to implement complete streets.

The Sustainable Streets Strategic Plan, released in fall 2008, is an extension of PlaNYC's themes. The plan sets a number of impressive goals for the DOT, each accompanied by a number of benchmarks for measuring success. Building upon long-standing interest in providing good infrastructure and continued safety improvements, it re-envisioned streets as a major public amenity that can do more than move vehicles from one place to another. "We're treating the streets like places we care about," declares Orcutt.

Sadik-Khan has motivated her department to move quickly and thoroughly in achieving these goals. The city's ability to embrace this kind of transportation policy demonstrates the unquestionable value of strong leadership. "Without someone at the top who knows where they want to go, it's difficult to do this sort of thing," Orcutt says. Projects—from hundreds of miles of bike lanes, to innovative bus-only lanes and bus rapid transit, to new pedestrian plazas across all the boroughs—are rapidly rolled out, changing streets in front of residents' eyes and creating places people use and, for the most part, like.

Many projects use temporary materials, like paint, signs, and plantings. Capital projects may take years, but changes to the street surface can be done in months or even weeks. The DOT implements such projects across the boroughs, giving all neighborhoods opportunities to benefit.

Such momentum has helped build public support, too. "You need to have momentum and show results if you want to create change," notes Orcutt. "You don't demonstrate seriousness if you have hundreds of miles of roadway and you're only doing two miles a year in improvements." Key to the success of physical change is explaining the new approach to residents and establishing support. The business community has gotten behind the street improvements championed by the DOT. "They get that the better it looks, the more people are attracted to the space, and the better the real estate market does," Orcutt says.

(continued on page 67)

In many of the case-study communities, concerns over expenses for complete streets elements faded as the agency moved to implement the policy. Communities see additional benefits: an improved environment, public health gains, new economic opportunities, and an increased capacity of the transportation network. Implementing a strong complete streets vision provides ample opportunity for better planning, better processes, and better results—all of which have the added bonus of streamlining budgets.

Changing project priorities, as discussed in Chapter 5, is essential in order to move forward with implementation: the implementing agency must align its investments with its written complete streets vision. For example, upon adopting its Transportation Action Plan, Charlotte, North Carolina, changed the way it viewed its transportation expenses to emphasize those complete streets elements necessary to maintain a high quality of life and improved mobility. In New York City, where innovative practices are constantly rolled out, a multitude of complete streets projects have been built. The Department of Transportation, however, has seen no budget increase; it is simply spending funds differently than in the past.

EARLY INCLUSION OF ALL MODES

Complete streets policies ensure early multimodal scoping, saving money by avoiding costly project delays and expensive retrofits. Without a policy, bicycle, pedestrian, and public transportation accommodations are often debated too late in the design process and are considered disruptions rather than necessary and beneficial project features. This leads to expensive design revisions and delays and can erode public support.

Good complete streets planning processes include early consultation with stakeholders to address

(continued from page 66)

Speed and scale have been key in implementing the vision, and not just for the public. Bolstered by fairly extensive data collection and monitoring, the DOT's pilot projects allow planners and engineers to learn through practice. The temporary nature of many of the materials makes problems easy to correct. While some negotiations are to be expected, Sadik-Khan remains firm in her mission. According to Orcutt, most staff members enjoy the additional creative opportunities available and respond positively to the directive, understanding the rationale behind it. "One great thing about engineers," he says, "is that they like to solve problems. We're just posing them in a different way."

An increased focus on pedestrian safety in DOT projects has benefited those traveling by other modes as well. As Orcutt puts it, "A lot of pedestrian improvements create more space for anyone who is a vulnerable street user." This is especially important for the large population of older adults living in New York. Compliance with ADA regulations is widespread and ongoing.

Another mode receiving increased emphasis is public transportation. The DOT is treating more streets as bus priority corridors, especially in places not covered well by the subway system. Many projects have created more pedestrian space around busy subway stations, added bike parking where there is substantial bike-and-ride activity, and improved pedestrian access to bus stops. The department works closely with the local transit agency to coordinate its efforts with improving public transportation options. Orcutt offers, "It wouldn't make sense for us to create bus signal priority, bus-only lanes, and other transit-supportive things, if the MTA didn't treat buses differently, too."

Despite so much happening on the ground, there have been no budget increases in the department. Inexpensive materials and new geometric designs have supported low-cost implementation measures. Larger projects have marginal costs over repaving and restriping, but Orcutt puts them into perspective: The total budget for their surface projects is less than 1 percent of what is spent on a bridge project.

As its designs succeed, the DOT has written them into policy. The benchmarks in Sustainable Streets and the data collected for each pilot project contribute to a new framework guiding the DOT's decisions. Ensuring that complete streets, safety for all, and smart infrastructure maintenance and improvement are part of written documentation means that all levels of project development reflect the grander visions. Policies, plans, and design guidance are long lasting and infuse the policies into the DOT's everyday work, regardless of administration.

In the spring of 2009, New York unveiled its latest commitment to complete streets: a new Street Design Manual. Developed by an interagency task force over the course of a year, the manual reflects the many design considerations necessary in a city of any size, such as accommodating public transportation, ensuring that freight and delivery trucks are able to navigate commercial areas, maintaining the character of neighborhood streets, and ensuring that bicyclists and pedestrians of all ages can travel to and from their destinations safely and easily. Intended to supplement existing standards and requirements, it provides direction but remains flexible and nonprescriptive. Project designs can thus be customized to local conditions and land use. A design checklist defines context, sets project goals, and encourages full consideration of the many users affected by the work.

The manual incorporates new designs proven in local pilot projects and from around the world into the list of standard techniques, street designs, materials, and lighting. Project managers no longer have to apply for variances to use bus bulbs, resin-bound gravel, green infrastructure, and other innovations. It also reins in the types of treatments private developers use around their projects, giving them flexibility in choice but preventing the use of materials that are hard to maintain and replace.

PlaNYC can be accessed online at www.nyc.gov/html/planyc2030/html/home/home.shtml.

The Sustainable Streets Strategic Plan is available at www.nyc.gov/html/dot/html/about/stratplan.shtml.

The Street Design Manual can be accessed at www.nyc.gov/html/dot/html/about/streetdesignmanual.shtml.

any issues at the outset of a project's design—when it is far less expensive to modify the facilities. By the time the much costlier construction phase is reached, concerns over design are rare, so delays and change orders are infrequent as well. "Time is money, and the process saves time," asserts Tom DePaolo, an engineer at MassDOT, where such delays were one impetus for design manual revision. At the Pennsylvania DOT, the consideration of multimodal needs very early in the process ensures that the costs for these facilities are incorporated into a project budget from the beginning. However, if those elements are added later, when a project is past the conceptual and design phases, the local municipality must pay for the additions.

The process helps with long-term projects as well. Marsha Mason, former project manager for complete streets implementation at Caltrans, notes, "The earlier it's in the system planning documents, the earlier it's in the plan for the system, corridor, and project."

As the transportation paradigm shifts away from vehicle-oriented design to complete streets, accommodating all users becomes less of an afterthought and more of an accepted step in design, budgeting, and construction. People rethink the ways streets should be designed.

In Charlotte, projects outcomes are approached with an open perspective; the complete streets planning process determines the complete final designs and costs. For example, if additional travel lanes are determined to be the best solution to the specific context and needs of a segment, features to make the street safer and more inviting to those traveling by foot, bike, or public transportation will also be included. A widened road can accommodate new pedestrian refuge islands and improved planting strips. These features are added in the initial planning process, not tacked on at the end. In Florida, the state DOT's generic cost-per-mile

LOW-COST IDEAS TO IMPLEMENT COMPLETE STREETS

Many of the most effective complete streets measures can be accomplished with little or no extra costs. Here are a few examples from John LaPlante, director of traffic engineering for T. Y. Lin International.

Perhaps the most important element in creating a safe and comfortable environment for pedestrians and bicyclists is slowing the traffic down to a more reasonable urban speed. And the best and lowest-cost way of accomplishing this is by timing the traffic signals along an arterial roadway for a desired target speed (such as 30 mph). The only capital cost associated with this solution is that of interconnecting the traffic signals. This provides other traffic movement and safety benefits as well.

For pedestrian street crossings, changing the signal timing to the new 3.5 feet-per-second walking-speed standard (as in the 2009 MUTCD) adds nothing to the cost of a signal, and adding pedestrian countdown clocks can be done for as little as \$2,000 per intersection. Adding curb bulbs where on-street parking occurs reduces the time pedestrians need to cross the street, which also allows more time for automobile movement. This is another relatively low-cost way of improving both pedestrian and automobile access.

When bicycle lanes are considered for arterial streets, a common response is that adding these lanes will require widening the roadway or even acquiring additional right-of-way. However, travel lanes along most suburban (and many urban) arterials are 12 feet wide. Since there is no significant crash difference between 10-, 11-, and 12-foot lanes on urban arterials with posted speeds of 45 mph and under (Harwood et al. 2007), the additional width for bicycle lanes can usually be achieved by narrowing the adjacent travel lanes.

Another low-cost alternative in more urbanized areas is using a road diet to reduce a four-lane cross section (two lanes in each direction) to two through-travel lanes, a two-way left-turn lane and two bike lanes. This can be done for only the cost of restriping and can be effective with traffic volumes as high as 20,000 ADT (average daily traffic). In addition, a road diet can reduce vehicle crashes as much as 50 percent—another incentive.

If a roadway is already being reconstructed, rebuilding it with 10-foot lanes and timing the traffic signals for 30 mph can actually result in a reduction in costs on account of a narrower overall roadway structure width. This can be particularly cost-effective in bridge construction.

Finally, in those areas where a suburban roadway is transitioning from open to closed drainage, the loss of the shoulder will result in the elimination of the only viable walkway. This is the time that a sidewalk should be installed. Such a sidewalk installation, if done at the time of the drainage improvements, would be a small percentage of the overall costs of new curb-and-gutter, drainage pipes, and stormwater inlets.

models automatically assume provision of space for non-motorized users. Planners and engineers operate under the basic assumption that all users will be present and should be accounted for in their budget estimates.

Just as including all modes in the initial scope of transportation projects saves money, the failure to accommodate certain user groups at the onset can trigger expensive retrofit projects later. When a community must retrofit a street, the cost is far above inclusion of those features in the initial project scope. Michael Ronkin, former bicycle and pedestrian coordinator for the Oregon DOT, tells of one of his very first projects where the project manager did not include sidewalks or bike lanes in the initial project. “We’ve spent ten to thirty times in cost to do retrofits” on that street, he says. Oregon learned its lesson: Staff now understand the cost savings inherent in doing projects the right way the first time. Furthermore, as Richard Stone, traffic engineer for Columbia, Missouri, notes, not only are retrofits costly, they are also complicated. Additional property may have to be purchased for right-of-way, and construction disrupts existing traffic on the route.

Neglecting to anticipate the needs of all users can also bring about costly lawsuits. In 2007, a 17-year-old bicyclist was killed trying to cross the only bridge across the Fox River near Cary, Illinois. His parents filed a successful wrongful-death lawsuit, forcing the Illinois DOT to retrofit the bridge with a side path for bicyclists and pedestrians for \$882,000. This was much more than it would have cost to include nonmotorized-user facilities in the bridge’s initial design (Pugliese 2008).

INEXPENSIVE MEASURES, BIG RESULTS

The careful planning encouraged by complete streets helps communities identify many effective measures that can be accomplished at little or no extra cost. “Many complete streets projects can be small and inexpensive,” says Bill Floyd, mayor of Decatur, Georgia. For many communities, shifting to a complete streets perspective and being creative with design can go a long way.

Paint costs very little, but it can have a transformative effect. For example, painting advance stop bars at intersections greatly improves the pedestrian environment. In New York City, many of the most visible complete streets projects took little more than time, paint, signs, rocks, and planters.

Communities can take advantage of new standards in retroreflectivity (which affects the ability of signs to be read in nighttime and low-light conditions) to replace old and aging markings with those of better design. Boise, Idaho, Portland, Oregon, and Seattle have all installed bike corrals—bicycle parking in the space where a car might normally parallel park. Simple measures make it apparent that all modes are not only expected but also welcomed.

Changing the operating approach—including the prioritization and style of pedestrian crossings, installation of bike-only traffic lights, and use of bus priority signals—is an important aspect of complete streets. It is also often budget-neutral because the same number of people will work the same number of hours to do these things. However, their

goals and techniques have shifted to be more conducive to walkable, bike-friendly streets.

TAKING ADVANTAGE OF OPPORTUNITIES

An important way to manage costs is to take advantage of opportunities as they present themselves and look at projects incrementally. When signal detectors are moved in Seattle, the city also installs bike loop detectors to allow cyclists to activate the signal. When sidewalks are installed, it may be possible to improve the public transportation accommodations through better shelters, bus bulbs, or a change in the frequency of bus stops.

Repaving projects provide a particular opportunity to reconfigure the right-of-way. Road diets often make room for bike lanes. Narrowing inner travel lanes to widen the outer lanes creates more space for bicyclists and motor vehicles alike. When a street is up for repaving, a number of jurisdictions—Chicago; Colorado Springs, Colorado; and Seattle among them—use the opportunity to reconfigure the right-of-way to better accommodate all users. In Colorado Springs, 7 to 10 percent of the street network is repaved every year, and this is the primary avenue the city is using to retrofit its streets. As discussed in Chapter 4, University Place, Washington, took advantage of a utilities project to install its first sidewalks, paying only the marginal cost of the sidewalk installation.

In Seattle, divisions reprioritize their project lists so they better align; in this way, the city can benefit from improved economies of scale, and all modes can benefit from a project. For example, if a segment is identified for sidewalk improvements and the adjacent roadway is listed to undergo a road diet, the city may coordinate the two projects, saving money by doing so.

An incremental approach means a community can focus on filling in the gaps of its transportation

SEIZING THE DAY: COLORADO SPRINGS, COLORADO

When new road projects are few and far between, opportunism takes on added importance. Colorado Springs, Colorado, understands this idea and is working hard to implement complete streets.

Due to its location in the eastern foothills of the Rockies, the city has long been popular with outdoor enthusiasts, and its residents have had a long-standing interest in supporting nonmotorized transportation. Although the city had been working on improving on- and off-street bicycle and pedestrian networks for many years, it has only recently adopted the complete streets framework. The idea for adopting a complete streets policy came from a member of the city's Citizens Transportation Advisory Board (CTAB) who suggested that the city should make a formal commitment to accommodating all roadway users.

According to Comprehensive Planning Manager Craig Blewitt, city staff took the board member's suggestion to heart and began researching the complete streets concept. Blewitt and his colleagues drafted a policy statement and took it to CTAB for discussion. When representatives from the local housing and building association requested changes to the draft policy, the board added a definition of complete streets that clarified the intent of the policy and how it would apply to new development. The addition addressed the concerns of the association. In 2005, the city council adopted the complete streets policy as an amendment to the city's Intermodal Transportation Plan.



Figure 6.2. Colorado Springs has added over 40 miles of new bike lanes over the past four years.

Although CTAB was still relatively new, it already had a reputation for being knowledgeable and competent. Therefore, the board's recommendations carried a lot of political weight. Blewitt suggests that if the push for complete streets had come from staff, it might have faced some resistance from the community.

Before the complete streets policy, the board had already identified \$444 million in transportation improvements and had recommended a 1 percent sales tax to pay for them. Since 1997, Colorado state law has authorized local governments to enter into intergovernmental agreements (after obtaining voter approval) to create special transportation authorities to plan, build, and maintain regional transportation systems. With CTAB's recommendation, Colorado Springs initiated the creation of the Pikes Peak Rural Transportation Authority (PPRTA). Voters in Colorado Springs, the adjacent jurisdictions of Manitou Springs and Green Mountain Falls, and El Paso County approved the new authority and the sales tax in November 2004.

PPRTA tax revenue is divided into three categories: 55 percent for capital improvements, 35 percent for maintenance, and 10 percent for transit. Since the adoption of a complete streets policy and the creation of a dedicated funding stream for transportation improvements, the city has had many examples of locally funded projects that support its complete streets policy.

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Unlike as in many places, Colorado Springs's transit service, Mountain Metro Transit, is an arm of the city government. According to Kristen Bennett, senior transportation planner, planning and engineering staff work closely with Mountain Metro to make sure that projects include transit pads and other pedestrian improvements. The transit staff brings its capital projects through the city's standard review process, and Mountain Metro has a representative who participates in development review to make sure that private projects enhance access to transit.

Much of the city's progress in implementing complete streets has come through low-cost projects. The city now looks at street resurfacing projects as opportunities for reconfiguring existing roadways.

"When we overlay a street we have a blank canvas to work with," says Blewitt. "It's an opportunity to do things differently." The city now routinely considers road diets and other street-striping modifications for resurfacing projects.

The city has also been using PPRTA money to take care of spot issues related to safety and access. According to Bennett, the Street Department is fixing curb ramps and correcting sidewalk issues, and she suggests that the city's commitment to complete streets has been a major motivating factor.

Apart from the PPRTA funds, Colorado Springs has another revenue source. Since 1988, a \$4 excise tax has been levied on every new bicycle sold in the city. In 2006 alone, riders purchased more than 31,000 bikes and generated more than \$111,000 in revenue to help fund bicycle improvements. According to Blewitt, "this is an impressive statistic to share with elected officials."

On the private side, developers are also helping to make complete streets a reality in Colorado Springs. The city's subdivision ordinance requires sidewalks for all city streets, and streets designated as bicycle routes by the city's Bicycle Plan must include bicycle lanes or wide curb lanes (City Code Section 7.7.704).

After adopting the complete streets amendment in 2005, the city began a substantial update of its Street Design Standards. These new standards are in draft format.

Bennett says the city has added more than 40 miles of new bike lanes over the past four years, and she thinks that the complete streets philosophy has been a major contributor to this change. In Bennett's words, "Complete streets is a more public-friendly way of explaining why we do what we do. It's easier to explain to public officials, a reporter, or the general public than eight different policies from our comprehensive plan or from our design standards."

To read more about Colorado Springs's ongoing complete streets implementation, see www.springsgov.com.

network, a cost-effective way to ensure complete networks. For example, a roadway slated to have paved shoulders for nonmotorized travel may be constructed in shorter segments to ensure those shoulders are covered in the costs. Seattle's ordinance specifically allows planners and engineers to view projects in an incremental way. "It's a powerful tool in both managing costs and expectations," says Barbara Gray, transportation system design and planning manager for the Seattle DOT. However, communities using this approach must have a clear system to achieve the needed improvements and should not simply put off improvements to the indefinite future.

COST-SAVING PROJECTS

Some complete streets projects have been less expensive than they would have been under old standards. The Massachusetts Project Development and Design Guide emphasizes a nonprescriptive approach to street design, accepting that communities do not need or want wide, expansive roadways everywhere. Narrower roads save money by reducing or eliminating the need for additional right-of-way, trimming the amount of expensive pavement used and lowering future maintenance costs.

Often, using maximum standards in street design and planning for peak congestion creates roadways that are wider—and more expensive—than necessary. When this is the case, the "extra" costs to implement complete streets are unfairly placed on the provision of bicycle and pedestrian infrastructure. The expansive space provided for automobile travel eats up funds that could have been used for sidewalks, bike lanes, and bus bulbs. As Dan Burden, a former pedestrian and bicycle coordinator in Florida, says, "If we truly want to complete the street, we don't have to spend more. We just have to design it according to what we value. We can look at design differently."

COSTS ARE SMALL PORTION OF OVERALL BUDGET

All told, the cost of accommodating pedestrians and bicyclists, including the provision of better access to (and for) public transportation, represents a small percentage of the overall transportation budget. Even when project costs under a complete streets policy are greater than they may be when operating under vehicle-oriented transportation policies, the combined costs are minor compared to the costs in right-of-way acquisition for travel lanes and the installation or relocation of drainage systems. Full implementation of a complete streets policy, which can take decades, may actually cost less than a single bridge project or a handful of highway interchanges. The 1996 Bicycle Master Plan for Portland, Oregon, estimated that full build-out of a comprehensive bicycle network would cost \$150 million over 20 years. Between 1993 and 2008, Portland actually spent about \$100 million in building its bike system. Yet, during this time, the city spent \$143 million on just one freeway interchange (Mapes 2009). Between 2000 and 2007, the Portland Office of Transportation has spent only 0.7 percent of its capital budget on bicycle facilities (Cassin et al. 2007).

FUNDING COMPLETE STREETS

By definition, complete streets should be implemented through use of mainstream transportation funding programs and, as dis-

COMPLETE STREETS IN THE SUNSHINE STATE: FLORIDA

In the early 1980s, Florida governor Bob Graham, interested in promoting bicycling as a major tourist activity and mode of short-distance transportation, appointed a bicycle advisory council and the nation's first state-level bicycle/pedestrian coordinator. At the time, Florida law referred only to bicycle "trails" and pedestrian ways; the Florida Department of Transportation (FDOT) interpreted this to mean off-road facilities only. However, Graham and his administration felt bicycles should share the roadways, where legally permitted, with motor vehicles. Grassroots action supported this view; in 1979, for example, two 75-year-old men had ridden hundreds of miles to deliver a request for more bicycle accommodations to the capitol.

In 1984, the state legislature amended Chapter 335 of Title XXVI to state that "bicycle and pedestrian ways shall be given full consideration in the planning and development of transportation facilities" and are not required where contrary to public safety, when costs were excessively disproportionate to need or probable use, and where other factors indicated absence of need. The language, according to former state bicycle and pedestrian coordinator Dan Burden, was very carefully considered, giving him and others the power to effect change.

In the 25 years since then, FDOT has folded bicycle and pedestrian accommodations into almost all road construction and reconstruction projects, adding hundreds upon hundreds of miles of nonmotorized accommodations across the state. Dwight Kingsbury, the state's assistant pedestrian and bicycle coordinator, is proud of the way cities have been transformed through implementation of the law. "Tallahassee," Kingsbury offers, "was very hard to get around in on bicycle 15 years ago. But now, there are so many bike lanes. It's much easier to get around."

The law has helped simplify the planning process, Kingsbury reports. Without it, FDOT would have to demonstrate the need for accommodating bicyclists and pedestrians for every construction or reconstruction project. In fact, it is rare that any such project is exempted based on need. "There's no expectation that any mode will be excluded—they'll be present one way or another," says Kingsbury. This helps FDOT focus on how to balance those needs given the project's scope and context, rather than argue for the obvious need. Over time, transit planning has been integrated into pedestrian and bicycle planning. Standards have become friendlier to those not traveling by car, and the department's Plans Preparations Manual (PPM) contains an entire chapter on planning and designing transportation for livable communities, covering topics such as design speed, lane widths, medians, lighting, landscaping, curb extensions, and linkage of modal facilities.

However, the culture change hasn't completely permeated FDOT. Because the law is silent on the specific types of accommodations to be established for bicyclists and pedestrians, there has been inconsistent implementation. As a result, the larger vision for routine accommodation was compromised on some projects. Advocates recognized this and have pushed for a more consistently expansive interpretation of the law. In a 2008 decision, the First District Court of Appeal agreed with advocates' interpretation of the statute and ruled that FDOT's discretion



Florida Department of Transportation Pedestrian/Bicycle Safety Section

Figure 6.3. FDOT policies require consideration of bicycle accommodation, such as this bike lane on Route A1A in Fort Lauderdale.

was limited by "unambiguous" language (*Rosenzweig v. D.O.T.*, 979 So.2d 1051 [Fla. 1st DCA 2008]). In response to this ruling, the 2009 edition of FDOT's PPM clarified how the agency would comply with the law, listing specific design criteria depending on context and type of work.

On rural state highways, it is FDOT policy to install paved shoulders of four to five feet for bicyclists' use. These shoulders are standard in all new construction projects, and it is FDOT policy to include them in resurfacing, restoration, or rehabilitation projects where not already existing. Bike lanes are generally undesignated outside urban areas, though some are marked where need and use demand it. In more suburban (or urban fringe) areas, FDOT evaluates need and expected use, considers crash history and other problems, and selects the improvements most likely to benefit the majority of users.

In urban areas, FDOT employs a wide variety of treatments to accommodate pedestrians, bicycle riders, and transit users, making these downtowns much more livable for all. This can include adding curbs and gutters and streetlights; creating a more continuous landscaped median; widening the roadway for bike lanes; creating bus bays for local public transportation service; and consolidating curb cuts into a small number of distinct driveways. Such treatments significantly improve the pedestrian environment and make the roads safer and more comfortable for pedestrians and drivers.

Perhaps the biggest challenge in implementing complete streets in Florida is that this law and the changes it has entailed apply only to transportation projects undertaken by FDOT. While MPOs must apply the state law to any state- or federally funded projects on state roads, adoption (and consistent enforcement) of complete streets policies at the local level is limited. Counties and cities are subject to minimum state design requirements for all public roads, and those standards mention but do not require pedestrian and bicyclist accommodation.

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Inconsistencies in application are further exacerbated by land-use policies that have allowed auto-dependent developments to multiply across the state. “We can have practice and policy in place on the transportation end, but we need to have a handle on land use,” asserts Burden. “People will not use the bicycling, walking, or transit facilities if we don’t.” Without consistent ties between land use and transportation, both local communities and FDOT have worked under the assumption that the best way to accommodate future growth is to improve vehicular level-of-service and build large, expansive roads. While these six-lane highways may be “complete” in terms of providing bike lanes, sidewalks, or wide shoulders, few will feel comfortable travelling by foot or bike due to high vehicle speeds and crossings that are too wide and too infrequent. This disconnect has made modal shift somewhat imperceptible in Florida, despite the thousands of miles of accommodations.

FDOT’s bicycle and pedestrian facilities planning and design handbooks can be accessed at www.dot.state.fl.us/safety/ped_bike/ped_bike_standards.shtm, and FDOT research reports on pedestrian and bicycle issues are available at www.dot.state.fl.us/Safety/ped_bike/ped_bike_reports.shtm.

cussed in Chapter 5, proper implementation often requires the reworking of program criteria to ensure full inclusion of all modes.

One challenge is that funds have traditionally been allocated according to mode. As a result, projects are thought of in modal terms, which complicates the funding of multimodal projects. This is illustrated at the federal level, where highway and transit programs have completely different funding structures. While nonmotorized projects are eligible for funding through a number of federal highway programs, the majority of them have been funded through a single program, the Transportation Enhancements program. (The Safe Routes to School program was created in 2005, but its current funding stream is tiny by federal standards.)

Places with complete streets policies are demonstrating that it is possible to escape these modal silos when using federal funds. A number of communities following complete streets principles, including Seattle, Portland, and Charlotte, have used more than 10 federal programs to fund transportation improvements. Some of the programs used include: the Congestion Mitigation and Air Quality (CMAQ) program, Surface Transportation Program (STP), High Priority Projects, TCSP Program, Minimum Allocation, and National Highway System. (More information about these programs can be found at www.fhwa.dot.gov/safetealu/factsheets.htm.)

Similarly, the Sacramento Area Council of Governments (SACOG) has used 10 different federal programs to fund such projects since 1991 (Handy et al. 2009). SACOG redistributes funds from federal programs into its own programs based on its planning goals. Its program dedicated to bicycle and pedestrian projects primarily uses federal funds from the CMAQ program. Its Community Design program, which funds complete streets, draws from federal CMAQ funds, STP funds, and others. Its Transportation Demand Management and Local and Regional Scale programs also use these federal programs and include bicycle and pedestrian components in projects (Handy et al. 2009, table B-10). Additionally, SACOG’s 2009–2010 budget includes funding for complete streets technical assistance.

California suballocates such federal funds regionally to a greater degree than any other state, which gives SACOG the ability to mold this funding to fit its needs. In many other states, regional and local governments are affected by the allocation of federal dollars by the state DOT and MPOs. When the state or MPO focuses its allocation criteria on bettering vehicular travel, jurisdictions looking to build facilities that improve mobility for other modes—sidewalks, bike lanes, and the like—may have more difficulty competing or qualifying for these federal funds. For example, the Denver Regional Council of Governments (DRCOG) represents a wide variety of communities, from the fully built-out (like Boulder) to those still looking to expand outward; as a result, achieving progressive transportation policy is challenging. Funding criteria focus on VMT, not person-trips, so Boulder is rarely rewarded for improving other modes besides vehicular travel. However, the city has worked hard to gain influence at DRCOG and has started to influence funding policies. Other communities, such as Fort Collins, Colorado, have leveraged local funding to apply for matching grants.

A handful of cities and counties have tied new transportation funding sources approved by voters to accommodation of all users. Such funding streams guarantee that complete streets projects will move forward and offer important leverage for other funds. San Diego’s 2004 TransNet Tax Extension renewed a half-cent sales tax first adopted in 1987 with a clause that all projects receiving TransNet funds must accommodate nonmotorized transportation. An additional benefit of the TransNet ordinance has been the relief of some pressure on bicycle- and pedestrian-specific

STRONG POLICIES BRING REAL RESULTS: BOULDER, COLORADO

Based on the community's own vision, the actions of the City of Boulder, Colorado (which sits on the National Complete Streets Coalition Steering Committee), have created a transportation network that is welcoming to all users.

The city had long been a leader in land use, working closely with Boulder County to focus growth within the city. The city's new transportation vision coalesced in the late 1980s, when the first Transportation Master Plan (TMP) was adopted by the city council. City leaders felt progressive transportation needed to be part of that larger community picture. "It probably all begins back at asking 'What does the future look like?'" says Mike Sweeney, transportation planning and operations coordinator. "Our vision was for all modes to work in an integrated way."

By 1994, the impacts of traffic on the community became much more apparent, evidenced by surveys. Residents had been alerted to the problems of auto-oriented design a few years earlier when a proposed road widening would have eliminated 26 homes. "This was a real wake-up call for people," notes Sweeney. "From the transportation engineering viewpoint, the project was justified, but the community felt the stakes were too high." In 1996, the question had centered on how to hold traffic to 1994 levels citywide, and planning scenarios tested different strategies. Adding roadways produced less-than-satisfying results, according to Tracy Winfree, director of transportation for public works; minimally improved congestion that reverted to the same levels after a few years had significant and unacceptable community impacts. Boulder was much more interested in long-term sustained transportation results that matched the city's quality-of-life goals.

The 1996 update to the TMP set clear, ambitious goals and objectives for Boulder's future: designate pedestrian travel as the primary mode; increase the bicycle mode share of all trips by at least 4 percent by 2020; reduce trips made in single-occupancy vehicles to 25 percent of all travel; and keep vehicle-miles traveled (VMT) at their 1994 levels. Reaching those goals meant providing more travel choices. "Converting trips from automobile-only," says Sweeney, "means completing all other systems—bicycle, pedestrian, and public transportation." Ten corridors (covering 42 corridor segments) carrying the majority of travel in Boulder were planned to accommodate all modes. Regular research and data collection was included in the TMP so the city could better understand how and why members of the community travel.

The TMP also ended internal battles among various modal interests. A new policy was created: no improvements to one mode could be made to the detriment of others. "It took a while to figure out what it all meant," says Randall Rutsch, senior transportation planner. "It's a balancing act, and you're looking for the best solution that serves all, rather than serving just one." In designing for all modes at once, no mode is seen as an afterthought.

In 1996, these goals were controversial. "People thought it was unrealistic," says Winfree. However, as projects and programs were implemented and tangible results and improvements were realized, opinions began to shift. People voted with their feet by boarding transit and riding or walking on new connections. Furthermore, the clear goals set by the TMP in all its revisions—1989, 1996, 2003, and 2008—enable the city to act on its vision to create a transportation network for everyone. People can see the change and be excited

about it—and the metrics Boulder uses (including employee surveys, travel diaries, estimates of VMT, and traffic counts) have shown positive change in the way people travel within the city.

The most recent TMP updates have the strongest complete street vision to date and set up a new strategy to prioritize the movement of people, not just cars. Boulder's Transportation Demand Management (TDM) policy emphasizes more efficient modes of travel—walking, biking, public transportation, and car- or vanpooling—especially during peak congestion. This ensures that the roadways are used at a greater capacity than if they were dominated by single-occupancy vehicles.

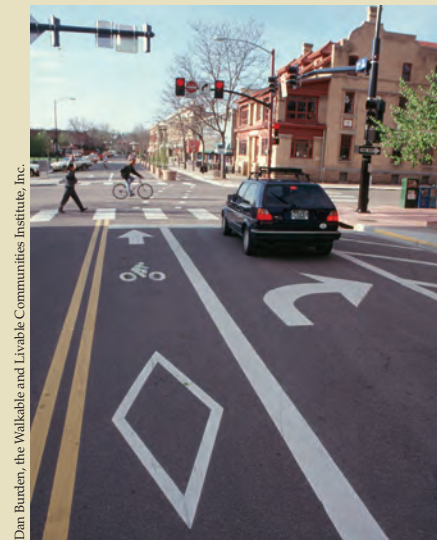


Figure 6.4.
Complete
streets in
Boulder

Boulder plans to codify TDM in land-use codes that would incorporate trip-generation allowances for new and existing developments. By setting the number of vehicle trips per development, the city can reduce congestion and maximize the benefits of existing and planned multimodal projects. Higher densities will be supported as long as TDM is used to mitigate the increased VMT typically associated with additional development. Additionally, the new program will help the city achieve its climate action plan goals.

Boulder continues to strengthen the connection between land use and transportation. "Over time, we've been getting better with land use and urban design that supports multimodal transportation and multimodal transportation that supports appropriate land use," says Martha Roskowski, program manager of GO Boulder, a city program promoting innovative solutions to traffic congestion. Despite Boulder's relatively small size, development patterns are wildly different from one side of the city to the other. In the western half, a traditional street grid prevails, while typical post-1950s suburban development dominates the eastern half. The city, through zoning changes and improvements to street connectivity in larger redevelopment projects, has been working to make the latter half more pedestrian friendly. During the development review process, staff ask for better connections for nonmotorized users. The city is striving to turn Boulder's "tale of two cities" into a tale of one city with a comprehensive set of travel choices supporting a sustainable mix of land uses and urban design.

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Area plans have accompanying transportation plans, and the recent Transit Village Area Plan has taken the next step by simultaneously planning both land use and transportation. This area plan includes design standards, a fully envisioned transportation system, an ongoing TDM program, dedicated funding streams, and continued monitoring of results. Rutsch points to it as an example of where Boulder is headed in the coming years.

Accommodating and encouraging public transportation use has been a major tool in achieving TMP goals. Boulder understood that expanding its travel options meant the city would need to support high-frequency public transportation service. Its Community Transit Network (including routes named HOP, SK!P, JUMP, and BOUND) features buses on several major corridors running with 10-minute headways. The Eco Pass and CU Student Pass programs allow unlimited use of the bus lines and the larger regional transit system. Well-designed and well-sited bus stops promote use of public transportation; shelters and seating make waits comfortable, and an integrated approach to street design makes the walk or bike ride to and from the bus easy. Transit passes are distributed through employers, schools, and neighborhood groups. Boulder works closely with the regional transit agency as well, encouraging direct routing and appealing buses and stops.

In Boulder, every project is steeped in policy and is chosen and scoped with extensive community involvement. Project managers who do not include all modes in their designs, says Rutsch, face a lot of community pushback. Because designs are so responsive to community input, planners and engineers have not focused on integrating policy into formal design standards. “We prioritize working on the work over working on the standards,” says Rutsch. Roskowski adds, “We use standards and codes to ensure our outcome is legal and reasonable, but with a strong focus on achieving the desired outcomes.”

Internally, practices have changed as the TMP is realized. Standard widths for sidewalks have increased. Pilot projects like midblock crossings have become common practice, and innovations like raised crossings on free right-turn lanes are routine. Project managers are constantly tweaking standards and understand that one design will not fit all situations. This is partly due to Boulder’s incremental implementation. With an explicit acknowledgment that all possible improvements need not be simultaneously executed, planners and engineers have been able to learn as they go. They are able to work within the constraints given and use a variety of facilities to create a complete network. “We don’t expect to get there overnight,” asserts Winfree, “but we need to go ahead and get started.”

Engineers have been key players in the process. “Engineers love to solve problems, so we give them the right problem to solve,” Winfree explains. The clarity of the TMP redefined transportation efforts to emphasize accommodating pedestrians, bicyclists, buses, and their riders, and then it institutionalized this mind-set. Boulder’s engineers are equipped to do the analysis needed to support complete streets designs, even if many had never previously focused on designing for bicyclists and pedestrians; thus, they are able to routinely design effective and often innovative complete streets projects. The strength of

Boulder’s analysis often means that proposed designs for state highways in Boulder—including narrowed lanes and more inventive treatments—are approved by the Colorado Department of Transportation.

Many projects can still be controversial in the community, especially when balancing all user needs within a limited right-of-way. Sometimes this can mean scaling the project back or identifying additional funding so the project can be accomplished incrementally. Perhaps most important is the ongoing support of city council, which usually takes the lead in moving projects forward. That elected officials have become champions of complete streets has allowed sustained support for the TMP vision.

Elected officials also play a role in regional allocation of transportation dollars. Boulder leverages its local dollars with private development funds and federal money, though federal guidance for funding programs is not always supportive of what the city would like to build. Projects can draw from federal Surface Transportation Program funds and from federal programs like Congestion Mitigation and Air Quality (CMAQ) and Transportation Enhancements. Nearly half of Boulder’s transportation budget is devoted to complete streets and TDM, though the exact numbers vary each year depending on the projects included in the city’s Action Plan. As the number of capacity projects on Boulder’s priority list diminishes, the percentage of transportation funds used for complete streets is expected to grow.

That is not to say that handling costs has not been difficult. However, Winfree says, “Everyone is challenged by money,” regardless of what projects are funded. Once the city decided to invest in all modes and in complete streets, it prioritized corridors for investment. Where the TMP and the Capital Improvement Program (CIP) were once disconnected, the TMP’s goal of multimodal corridors now directs the CIP process. Each CIP is planned with the funding to improve a certain number of corridor segments. The Action Plan identifies the next round of improvements, and the Vision Plan calls for the completion of all corridors for all modes.

Overall, people who live, work, and visit Boulder are satisfied with the realization of the TMP. Physical changes to the transportation network are evident throughout Boulder. Cyclists enjoy 300 miles of on-street bike facilities, including bike lanes, signed routes, and paved shoulders. Regular community surveys and evaluation of Boulder’s efforts allows the city to discuss progress and adjust approaches where necessary. The city’s Mode Shift Report shows that trips made in single-occupancy vehicles accounted for 38.4 percent of all trips in 2006, down from 44.2 percent in 1990. Bicycling, walking, and public transportation use are up, and 13 percent of residents’ trips are made by bicycle. Continued support for the TMP’s clear goals from city council, staff, and the community have allowed Boulder to experience success in complete streets.

Boulder’s Transportation Master Plan can be accessed at www.bouldercolorado.gov/index.php?option=com_content&task=view&id=331&Itemid=1201.

The Modal Shift Report is available at www.bouldercolorado.gov/index.php?option=com_content&task=view&id=467&Itemid=1657.

TYING TRANSPORTATION FUNDING TO ACCOMMODATION: SAN DIEGO COUNTY, CALIFORNIA

San Diego County's major complete streets innovation lies in its success in tying transportation project funding to the accommodation of bicyclists and pedestrians through Section 4.E.3 of the TransNet Tax Extension, passed in 2004. Administered by San Diego's regional planning agency (San Diego Association of Governments, or SANDAG), the TransNet 20-year half-cent sales tax to fund transportation projects throughout the county was first approved by voters in 1987. An ordinance extending the program to 2048 was passed by voters in 2004 and is expected to generate about \$17 billion for transportation improvements—all of which, thanks to Section 4.E.3, will require pedestrian and bicycle accommodation.

Setting the stage for inclusion of routine accommodation in the extension was a general evolution of thought about bicycle and pedestrian accommodation within San Diego County over the last few decades. In the boom years of the 1980s and 1990s, several forward-thinking municipalities began requiring developers to include sidewalks, bike lanes, and landscaping within their projects. The region also has a strong history of bicycle/pedestrian advocacy, and it hosts a large community of bicyclists, both recreational and professional.

The larger picture of smart growth planning in the region has also supported complete streets thinking. Adopted as part of the general plan in 2002, the City of San Diego's "City of Villages" vision and strategy focuses on the smart growth principle of directing growth to mixed use, pedestrian-friendly activity centers linked through a multimodal transportation system. In addition, the plan's Mobility Element includes toolboxes for pedestrian improvements and traffic calming, along with the stated purpose "to improve mobility through development of a balanced, multi-modal transportation network."

At the same time, the county's regional long-range transportation plan, MOBILITY 2030, had been evolving to increasingly address multimodal approaches. The 2003 iteration of the plan directed SANDAG to "develop guidelines to ensure that all regionally-funded transportation projects preserve or enhance existing non-motorized access, and provide for appropriate access where such facilities are planned" (Chapter 6, Action Item 31). The TransNet tax extension provided SANDAG's first opportunity to do so.



Figure 6.5. San Diego's smart growth vision emphasizes walkable urban village centers.

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project funding. San Diego sets aside about \$7.5 million per year for bike/ped facilities but typically receives applications for about \$20 million in projects. Because using TransNet funds requires that communities accommodate bicyclists and pedestrians as part of their regular transportation projects, these local funds can go farther. Seattle, in adopting its nine-year Bridging the Gap initiative, made similar commitments. (See sidebar, p. 59.)

Other communities have raised funds specifically for complete-streets type improvements. Sacramento County's Measure A, passed in 2004, established a half-percent sales tax to fund planning, design, construction, operation, and maintenance of public transportation, pedestrian, and bicycle improvements. Moreover, 5 percent of revenues collected must fund safety improvements for bicyclists and pedestrians. Arlington County, Virginia, implemented a 0.12 percent property tax on non-residential commercial property. This extra revenue has allowed the county to update streetscapes and transit stations and purchase new buses, among other things. In these communities, such funding programs have helped speed or inspire implementation of complete streets.

A COMMUNITY INVESTMENT

Complete streets provide benefits to the community in many ways, from promoting public health, sustainability, and economic development to increasing capacity and improving mobility for all. Bicycling-related economic activity in Portland generates \$63 million per year and accounts for an estimated 600 to 800 jobs (Alta Planning + Design 2006). States such as Wisconsin and Colorado, home to large-scale bicycle-related manufacturers and tremendous bicycle tourist activity, report larger numbers. In Wisconsin, bicycling-related economic

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Getting the accommodation clause in place was the easy part. Section 4.E.3 was added to the extension ordinance, requiring that “all new projects, or major reconstruction projects, funded by revenues provided under this Ordinance shall accommodate travel by pedestrians and bicyclists,” except when cost became disproportionate. Moreover, facilities must be “designed to the best currently available standards and guidelines.” The clause, along with the rest of the ordinance, was passed “without a whole lot of scrutiny,” according to Stephan Vance, senior regional planner at SANDAG, who has been instrumental in bicycle/pedestrian planning efforts. The real work came in hammering out an implementation policy.

The goal for the implementation policy was to develop standards that would be reasonable but still effective. The draft policy was reviewed by SANDAG’s Bicycle-Pedestrian Working Group, followed by three additional working groups of planning directors, public works directors, and traffic engineers. Concerns were addressed as they were raised, and at the end of the process, the policy passed unanimously. It defines “adequate accommodation” for pedestrian and bicycle travel, provides a matrix of appropriate facilities for different road types, and, rather than setting a percentage threshold over which costs are deemed “excessive,” allows policy makers to make that decision on a case-by-case basis. Thus far, only one project has applied for and received a cost exemption.

Another example of complete streets–influenced local regulation is the City of San Diego’s Street Design Manual, which Vance characterizes as a *de facto* complete streets policy. The manual was updated in 2002 in concert with the City of Villages General Plan update and the shift toward smart growth policies, including multimodal transportation, that the new vision represented. According to Senior Traffic Engineer Samir Hajjiri, who oversaw the manual’s update, “The focus needed to shift from seeing streets as simply moving cars from point A to point B to seeing streets as serving all users of the public right-of-way. There was then a need to update all design standards to address this new vision.”

To revise the manual, a large working group was convened with representatives from all conceivable stakeholder groups involved in street development and design: urban designers, architects, planners, landscape architects, traffic engineers, civil engineers, utility engineers, and developers. A mission and vision statement emphasizing the need of streets to serve all users shaped and guided the process. The group worked together to create language that met the needs of all, rather than trying to implement preexisting language that might not fit the local context.

The new guidelines emphasize the pedestrian environment and walkability. Bicycle facilities are required on all classified streets; all roadways must be ADA compliant; sidewalk design was changed to better accommodate pedestrians; lane widths were adjusted for traffic calming; and various traffic-calming techniques were introduced. An entire chapter on pedestrian design was added. The standards also address the varying levels of pedestrian-streetscape interaction associated with different land-use types.

All new development must conform to the new standards. Project plans are reviewed by the city’s development services department to ensure that the standards are met, and city staff are available for consultations. The city created an explanatory brochure for the development community, and the private engineering firms that developers typically use have begun to adopt and endorse the new standards.

A benefit of these approaches is that including multimodal accommodation from a project’s beginning becomes the planning default, making people rethink the way streets should be designed. Vance points out that tying a complete streets policy to funding eligibility is a very successful way to enforce multimodal accommodation. Otherwise, it is very easy to value-engineer such facilities out at any stage of the process—and the process is often a very long one.

From an advocacy point of view, the results have been stunning. Kathy Keehan, executive director of the San Diego County Bicycle Coalition, remembers that before the TransNet ordinance, advocates had to “bird-dog” every project to lobby tirelessly for bike lanes—and often found out about a project only when they saw crews out paving, at which point it was too late for any discussion. According to Keehan, the policy has given advocacy groups a huge amount of leverage and has changed the conversation.

More information on the TransNet program, along with the Regional Transportation Plan, can be found on the SANDAG website, www.sandag.org.

The City of San Diego’s Street Design Manual and the General Plan, including the City of Villages Strategic Framework Section and the Mobility Element, can be accessed through the Planning Department’s website, www.sandiego.gov/planning/index.shtml.

activity generates more than \$556 million annually and employs more than 3,400 people (Bicycle Federation of Wisconsin 2005). Every year, the bicycle economy in Colorado generates more than \$1 billion (Center for Research on Economic and Social Policy 2000).

Communities that express clear desires for complete streets accept that some projects will be more expensive. However, the costs are tempered by the communities’ visions and goals. In Charlotte, surveys showed that residents preferred the look and function of the city’s more complete streets, with sidewalks and trees. In response, the city has put more money into projects that achieve those preferences—installing more sidewalks, planting strips, and bike lanes—even if it means increased costs in right-of-way acquisitions. In fact, one of the few things holding back a more aggressive approach in Charlotte is that staff is limited to each year’s budget. Larger-scale projects in New York City do have marginal costs beyond repaving and restriping, but staff and, importantly, the community see them in the context of the total transportation picture. In Columbia, Missouri, the new standards have resulted in slightly increased costs for street projects. Jerry Wade, former head of the planning and zoning commission, emphasizes that complete streets are worth that cost—not just because they are friendly to all modes of transportation but also because “they look better—they give the community a better visual framing.”

In California, where more than 20 percent of morning

traffic congestion comes from parents driving their children to school (in large part because they cannot walk or bike there), and more than 30 percent of children are overweight or obese, complete streets are an important tool to improving health and quality of life. “I always say good design doesn’t cost, it pays. And that’s the case here too,” asserts Marsha Mason, former Caltrans complete streets implementation project manager. “The costs are too great not to make the improvements.”

Perhaps Michael Ronkin puts it best: “That’s the whole beauty of the complete streets movement: it becomes normal. It’s like adding insulation to a house; people understand that it’s an upfront cost, but that it is absolutely necessary.”

CHAPTER 7

Creating Complete Streets: Design Principles and Features



In developing a complete streets policy, creating new design standards should be secondary to making a deliberate shift from vehicle-oriented transportation planning priorities to a truly multi-modal approach. Therefore, it is usually best to leave specific design and engineering details to the implementation phase. But once the policy shift has been made, staff will need to begin to implement new standards. This chapter includes a catalog of specific design treatments. Planners should remember, however, that changing the overall approach to design is of greatest importance.

CHANGING DESIGN POLICY

Design standards, procedures, and manuals guide project development teams, designers, and other decision makers in balancing modal interests. While complete streets guidelines should be applicable to most situations, they should provide flexibility so that facilities fit a physical setting and community. There is no single way a complete street should be built, and the elements that make one street “complete” may not be practical on another. Every design must consider the land-use context and transportation needs for all users. All designs must comply with the Americans with Disabilities Act (ADA) and should consider using the draft Public Rights-of-Way Accessibility Guidelines (PROWAG), a set of street guidelines issued by the U.S. Access Board. Designs should account for the needs and mobility limitations of older adults as well. Design standards for complete streets, therefore, are best when they promote thoughtful responses to a community’s needs and provide a menu of options that can be considered for each street.

Implementation of a complete streets policy should include a thorough review of the existing design policies, manuals, and practices used by roadway designers when making decisions on how to allocate the right-of-way. Many of the most successful design reviews and subsequent revisions have been collaborations between the transportation department, other city or state departments that may be involved in infrastructure planning and design, local and regional transit agencies, and advocacy groups for bicyclists, pedestrians, and transit users of all ages and abilities. For example, when the Massachusetts Highway Department formed a committee to rewrite its design manual, representatives from the agency were greatly outnumbered by those from other departments, local and regional representatives, and advocacy groups. Similarly, when the City of San Diego created its Street Design Manual in 2002, representatives from all conceivable stakeholder groups involved in street development and design were involved.

Armed with a real understanding of where they have been, communities can then work to realign practice with the complete streets vision. Sometimes this means augmenting national guidelines with local approaches, developing new street design standards, or completely overhauling existing manuals. Regardless of approach, the end result should be the standardization of complete streets practices. The U.S. Department of Transportation policy statement on integrating walking and bicycling into transportation infrastructure specifically endorses these kinds of activities.

Augment National Guidelines with Local Approaches

Almost every agency has some internal design standards or practices unique to its jurisdiction. A common approach is to use these documents in combination with existing national guidance, such as AASHTO’s *Guide for the Development of Bicycle Facilities*; *Guide for the Planning, Design, and Operation of Pedestrian Facilities*; and *A Policy on Geometric Design of Highways and Streets* (the “Green Book”), as well as the ITE Recommended Practice *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*. These guides are supportive of complete streets designs and provide flexibility in application.

National guidance can be used by large and small jurisdictions alike to avoid the time-consuming task of writing specific local standards. In Maryland, where a state law requires inclusion of pedestrian and bicyclist needs during all phases of transportation planning, the State Highway Administration (SHA) found that its own design manual was too rigid to accommodate the new requirement. SHA chose to rely only on national design guidance rather than update its own manuals. And in University Place, Washington, the community’s process-oriented approach encourages

creativity in balancing the needs of all users and relies heavily on community design charrettes. The final results are generally thought to be better than those lifted from a design manual, so the community has decided not to create design standards. The comprehensive plan, supplemented by the flexibility available in the AASHTO Green Book, provides the basic guidance for street design.

Set New Standards

In some cases, developing new cross sections and specific dimensions may be the best way for agencies to build complete streets. This process can be less time-consuming than a total rewrite of a design manual and can provide local ownership of the results, ensuring they meet community needs in ways that national guidelines may not. Furthermore, if codified, they can be of great help in guaranteeing cooperation from developers.

In Sacramento, California, residents were weary of the high levels of fast-moving traffic on residential streets resulting from previous street standards. Developers also found existing standards too rigid. In response, the city engineer drafted new street sections that required sidewalks separated by landscaped strips for all street types and dedicated bike lanes for collector and arterial roads. The new standards, which set new minimums for sidewalk widths (five feet rather than four in most cases) and narrowed most travel lanes, were codified in 2004. Fort Collins, Colorado, in close collaboration with Larimer County, developed 13 specific street standards for use in the city, dependent on land use, type of roadway, and expected traffic. These standards are attuned to the city's needs, setting higher standards for multimodalism than those applied to the roads in more rural county areas. Sidewalks are now required on all streets, with a minimum width of 4.5 to 5 feet, depending on context. Arterials and major collectors in Fort Collins feature 8-foot bike lanes and 8- to 10-foot landscaped parkways; minor collectors have 6-foot bike lanes and landscaped parkways.

However, overly prescriptive design standards can backfire. Minimum standards offer little incentive for doing more, and communities can be left with facilities that do not adequately meet user needs along key segments. A 1996 Massachusetts law to include bicycle and pedestrian accommodations in state transportation projects resulted in a MassHighway response that many viewed as too prescriptive and inattentive to context, leaving no incentive to look for more creative solutions. This frustrated communities and created a strong desire for more flexible and context-sensitive design. Dirk Gowin, executive administrator of public works and assets in Louisville, Kentucky, expressed frustration with set minimums, which may be followed too closely by developers. Instead, he recommends a maximum or middle figure. "Developers will always provide the minimum," he says. "If you state a maximum or middle figure, you can make the discretionary call about what is needed on a particular project."

Rewrite the Book

Full modal integration in transportation design can be achieved through the creation of a new design manual or a careful revision of an existing one. Manuals require more effort to write because they must convey underlying theory and principles. Their advantage is that they set up new procedures and can provide more guidance on elements like pavers, lighting, bus shelter design, and planters. This helps create a cohesive look and lowers maintenance problems that can arise with nonstandard materials. The invested time and effort can pay off in major ways, as such documents can build better understanding among agencies, communicate the complete streets vision more effectively, and inspire engineers and planners to move beyond standard methods.

A NEW COMPLETE STREETS MANUAL: LOUISVILLE, KENTUCKY

Louisville, Kentucky, developed with a suburban pattern that created a high level of auto-dependency. When the city consolidated with Jefferson County in 2003, the new metro government saw opportunities to reverse this trend and to promote smart growth by focusing development in nodes while improving transit options. To this end, Louisville Metro's Complete Streets Manual is an impressive articulation of procedural and technical guidelines to help ensure that the area's street system safely and effectively accommodates all users.

The manual uses four character districts to subclassify the familiar palette of street types: arterial, collector, local, and alley/lane. The cross sections and plan-view diagrams contained within the manual illustrate preferred roadway designs for streets in rural, suburban, traditional, and downtown character districts. Now, local road builders can select cross sections that fit the context of the surrounding area.

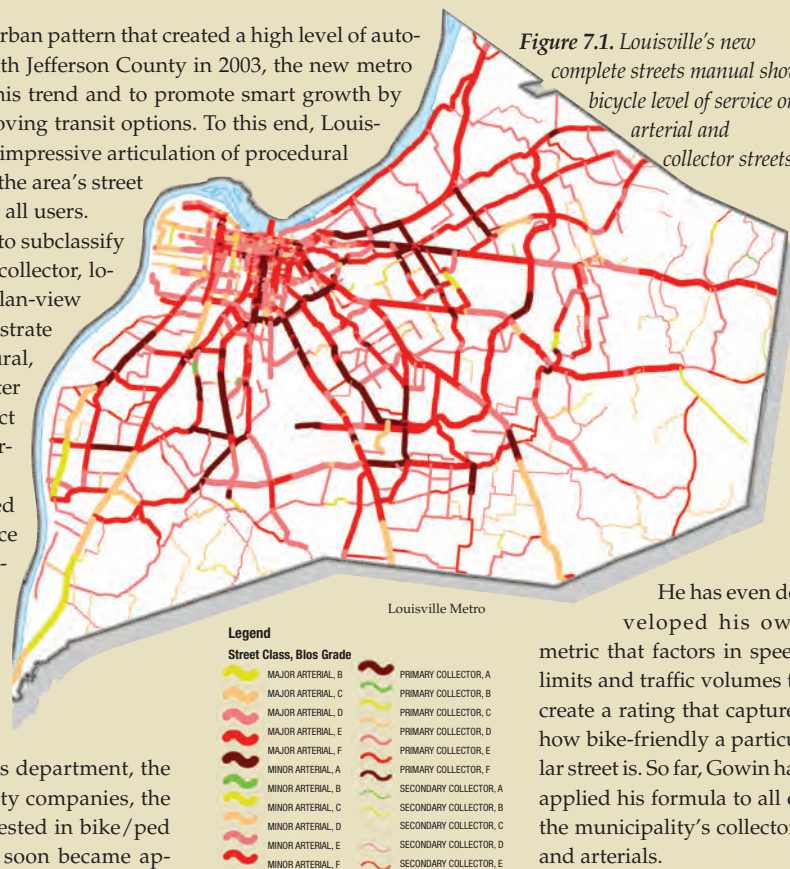
In 2005, Mayor Jerry Abramson launched the Healthy Hometown initiative to reduce barriers to active living. A year later, Louisville Metro convened a new streetscape enhancement advisory group led by consultants from Gresham Smith along with members of Metro's planning staff. The group also included representation from a wide array of stakeholder agencies and interests such as the local public works department, the Kentucky DOT, the area MPO, several utility companies, the transit authority, and citizen activists interested in bike/ped issues and ADA compliance. However, it soon became apparent to the members of the group that the streetscape was inextricably linked to street design, so they began to focus on how Louisville Metro could promote multimodal roadways through context-sensitive design.

After the planning commission adopted the Complete Streets Manual in October 2007, the group drafted a complete streets policy amendment to Louisville's Cornerstone 2020 comprehensive plan. Both the manual and the plan amendment state that transportation improvements must balance the needs of all users, but neither document outlines a clear path for implementation. According to Planning Coordinator Chris French, the complete streets plan amendment was left vague for a reason. Because city staff did not know what would work in practice, they wanted to avoid specific recommendations. "You need to be open to let experience dictate what needs to happen to implement the change," says French.

Although city staff admits that complete streets implementation has been slow so far, Louisville has made some important incremental changes. In rural areas, Louisville Metro has started adding paved shoulders to new road projects. According to Public Works and Assets executive administrator Dirk Gowin, this "stops the bleeding" of building roads unfriendly to nonmotorized uses and leaves the door open for future improvements such as bike lanes.

Gowin has also started looking at different performance measures to rate the bicycle environment for different roadways.

Figure 7.1. Louisville's new complete streets manual shows bicycle level of service on arterial and collector streets.



He has even developed his own metric that factors in speed limits and traffic volumes to create a rating that captures how bike-friendly a particular street is. So far, Gowin has applied his formula to all of the municipality's collectors and arterials.

While the municipality figures out which code and procedural changes will be necessary to make complete streets a reality, the manual and the plan amendment have in the meantime become important communication tools. "From a long-range planning standpoint, it's easier for the public to understand complete streets rather than multimodal transportation planning," says French. "The term is easier to grasp."

Both French and Gowin contend that Louisville Metro's complete streets policies have also helped the municipality communicate its desires for area roads being built by the state DOT, which controls many roadways in the rural part of Jefferson County. Before the Complete Streets Manual, the municipality's rural cross-section had no curbs and gutters and no sidewalks. Now, Louisville Metro has a framework to explain what design features it would like to see in state roadway projects. According to French, "the manual has helped the state understand what the Metro wants." In French's words, before the complete streets idea came along, most people in Louisville saw the problem exclusively as a lack of sidewalks. Now, people have a better understanding of the importance of multiple modes of transportation.

To review the Complete Streets Manual or to read the complete streets plan amendment, visit the complete streets page on Louisville Metro's website, www.louisvilleky.gov/BikeLouisville/Complete+Streets.

Strong interest from high-level officials coupled with grassroots advocacy led MassHighway to a new approach to transportation. The Project Development and Design Guide, developed over three years and formally adopted by the agency in 2006, moves beyond typical sections defined by mode and instead uses conceptual sections that reflect a range of potential dimensions. Designers must account for various design controls that influence width, function, and accommodation for different users, from roadway context and users to transportation demand (including volume and mix of users). Then, cross sections are selected that fit the physical context and can provide access and safety for all users. Conceptual sections include separate accommodation for all users; partial sharing for bicycle and motor vehicle; shared bicycle/motor vehicle accommodation; shared bicycle/pedestrian accommodation; and shared accommodation for all users. The guide also supplies examples of design elements, including those specific to transit vehicles and users, to be used in those conceptual sections.

The Urban Street Design Guidelines for Charlotte, North Carolina, include dimensionless cross sections. Roadways identified as “local” include preferred dimensions, but on nonlocal roads—main streets, avenues, boulevards, and parkways—the cross sections lack any dimensions. Instead, various “zones” found in each street type—development (buildings), pedestrian, green, parking, bicycle, vehicular—are discussed, and a menu of design options is provided. Charlotte’s staff agrees that adding dimensions would be too prescriptive, even if they were ideal dimensions. “We deliberately want people to think about the street,” says Transportation Planner Tracy Newsome. “It’s not a one-size-fits-all approach.” The Urban Street Design Guidelines emphasize how to work through the six-step process that helps identify and prioritize the needs of all users.



RETHINKING STATE STANDARDS FROM A COMPLETE STREETS PERSPECTIVE: MASSACHUSETTS DOT

Massachusetts is one of the first states to pass a state law requiring its department of transportation (formerly known as the Massachusetts Highway Department, or MassHighway) to build every transportation project with all users in mind.

Former state representative Anne Paulsen is widely recognized as the law’s patron, fighting for its passage in several legislative sessions. Her work paid off in 1996 when her bill became Section 2A of Chapter 90E of the General Laws of Massachusetts. MassHighway was initially resistant to her efforts, anticipating difficulties in designing all facilities for all users and liability issues for facilities that did not comply with the new law. Some fears were certainly alleviated by the existence of other state laws—particularly Oregon’s. Various concessions were made during the 1996 legislative session, but the ultimate product still required “all reasonable provisions for the accommodation of bicycle and pedestrian traffic in the planning, design, and construction, reconstruction or maintenance of any project undertaken by the department.”

However, MassHighway struggled with implementation. What did “reasonable provisions” mean? The following July, Engineering Directive E-97-004 set benchmarks for pedestrian and bicycle accommodation, required documentation of nonconformance, and identified an exemption process.

The directive laid out very specific methods of accommodation with little regard to context or need. Though several later documents—an update to 1994’s *Building Better Bicycling*, the development of the *Community Walking Resource Guide*, and the creation of statewide bicycle and pedestrian plans—provided further guidance, there remained a strong desire for more flexible design that responded better to community needs. Furthermore, accommodation of pedestrians and bicyclists on projects was still inconsistent, and it was often an afterthought to the planning and design process.

In 2003, Governor Mitt Romney announced his Communities First policy initiative, aimed at providing communities more flexibility and input in their transportation projects. The initiative prioritized the review and revision of MassHighway’s Design Manual, last updated in 1997. In April of that year, Romney formed the Highway Design Manual Task Force. Comprising representatives from municipalities, MPOs, advocacy groups, professional organizations, state agencies, and a handful of MassHighway employees, the task force brought everyone to the table.

The group began by working through existing problems in MassHighway’s procedures, policies, and guidance. The work soon turned toward the development of a new design guide, and a consultant was hired to guide the process and write the final document. Though Romney had requested a final version by October 1, 2003, the magnitude of the project delayed its release until January 2006. Thomas DiPaolo, assistant chief engineer for MassDOT, found the process key to the final document’s success. “It was a context-sensitive process for writing context-sensitive guidance,” he said. “Though [it was] challenging, the new guidance is universally accepted because everyone who cared had a seat at the table and a role in developing it. There was not full satisfaction for everyone, including MassHighway, but the process was fair and balanced, and compromises were made where necessary to achieve common goals.” He noted that the process helped bring together groups that formerly regarded one another as opponents and helped promote greater understanding of everyone’s concerns and issues.

Three guiding principles emerged in the process: multimodal consideration, context-sensitive design, and a clear project development process. These goals helped to shape the final document, the Project Development and Design Guide. The general philosophy behind the 1996 law is present—all users must be accommodated—but MassHighway’s interpretation became much less prescriptive. By folding in the various existing documents and procedures with the prototypes and issues they addressed, the guide became more unified and flexible.

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Applied in all cases where MassDOT's Highway Division is responsible for funding a project or where it controls the infrastructure, the guide is the most prominent tool for creating complete streets. Throughout, it takes the approach that nonmotorized modes are fundamental to the transportation network, and all modes—bicyclists, pedestrians, public transportation, and motorists—are integrated in every aspect of design.



Figure 7.2. MassDOT guidelines encourage multimodal facility integration in all projects.

The guide has allowed MassDOT to step away from its former focus on vehicular level-of-service (LOS). Though LOS is still measured according to 2000's Highway Capacity Manual, the guide directs designers to calculate and provide a reasonable LOS for all users. Condition of facilities, safety and comfort, mode choice, and network connectivity are discussed as additional ways to determine the effectiveness of a project. The guide also notes several "contextual" measures, including environmental protection, community aesthetics, economic development, environmental justice, impact mitigation, and accessibility. Such a range of inputs gives MassDOT, and the communities with which it works, better opportunity to frame each project so that it best fits the physical and natural context of the area and meets the proponent's goals.

Design speed is approached differently now. Designers must consider roadway context, implications for pedestrian and bicyclist safety and comfort, and implications for regional mobility, and they have more flexibility in determining final speeds. The guide's standards tend to lower vehicular design speeds, by as much as 15 mph in some cases. Pedestrian and bicycle design speeds are also incorporated into design. Project selection criteria have changed as well. MassDOT now scores and ranks projects, noting whether the project helps, hurts, or is neutral to multimodal goals.

Any exceptions to the design criteria are addressed monthly by a design exceptions review committee—comprising the pedestrian and bicycle accommodation engineer, representatives from the chief engineer's office, and staff from other branches of MassDOT including project management, environmental,

traffic, planning, and right-of-way—according to a standard procedure. A project design engineer is charged with documenting the problems, possible solutions, and a preferred solution to a project for which an exception is sought. The district project development engineer then reviews it for technical merit, and the design exceptions committee ensures that all issues are properly addressed in a consistent fashion. The chief engineer gives the final approval. All supporting documentation is kept in a permanent project file.

With so many reviewers, MassDOT is better able to ensure uniformity in its decisions to exempt a project from the guide's standards. The process anticipates design exceptions in the early planning stages, helping to eliminate costs that could occur if exceptions were sought later. It also minimizes surprises to a community, which may have expected different results if the project had progressed further. In general, DiPaolo reports, the flexibility of the new guide's standards has led to fewer design exceptions than requested under the previous design manual, resulting in fewer conflicts and delays.

A challenge to MassDOT's approach, shared by most other states, is how to ensure connectivity of networks and accommodations among jurisdictions and private developers. If MassDOT reviews private development projects, it tries to ensure adherence to as many of the guide's multimodal aspects as possible. Ultimately, though, ensuring connectivity is hard to control. Land-use and subsequent transportation decisions are within the jurisdiction of municipalities, which are exempted from following the guide. Furthermore, says Rosalie Anders, a member of the state's bicycle and pedestrian advisory board, "there needs to be a lot of education on the local level. Most municipalities don't have paid staff attending to bicycle and pedestrian issues, so the knowledge gap is gigantic."

Anders and DiPaolo agree that cost should not be an issue in implementing the guide's complete streets elements. "The processes that we are going through now in project development should lead to fewer changes in construction by addressing the issues upfront. If you are properly going through the project development process, you should have lower costs, fewer change orders, and fewer delays because people are not coming out during the construction phase to demand changes," says DiPaolo. The process also leads to faster implementation, as projects accepted in the preliminary design phase will move more smoothly through final design. In the end, DiPaolo finds building a project that better serves the community to be a better investment of public funds.

Despite the many awards bestowed upon the guide and the internal successes, there is some reluctance to call it innovative. "We just verbalized it better. We didn't invent anything new here," says DiPaolo. Both he and Josh Lehman, the state's bicycle-pedestrian program manager, agree that bringing everyone to the table in the development process was challenging but key to their continued success. "It's not just what came out of the process but what went into it," concludes Lehman.

The Massachusetts Project Development and Design Guide can be found at www.mhd.state.ma.us/default.asp?pgid=content/designGuide&sid=about.

Previous street design guidelines in San Diego emphasized motorized vehicular traffic, with few provisions for any other mode. As the community embraced smart growth policies, the city's Street Design Manual was updated in 2002 by a comprehensive group of stakeholders to accommodate all modes in street design. Bicycle facilities are required on all classified streets; all roadways must be ADA compliant; sidewalk design was changed from contiguous to noncontiguous design to better accommodate pedestrians; lane widths were adjusted for traffic calming; and various traffic-calming techniques were introduced. All new developments, reconstructions, and rehabilitation projects apply these standards, and the private engineering firms that developers typically use have begun to adopt and endorse the new guidelines.

Integrate New Techniques into Practice

New design manuals and standards take time and effort. Several communities have rolled out implementation of their policies while simultaneously updating internal standards and rewriting design manuals. By amending older practices to incorporate new ideas, communities can quickly have standards that reflect the true state of the practice in design. Thus, if a pilot project shows results, it can rapidly become standard practice for community-wide implementation. Planners, engineers, and designers can learn as they go, by seeing both which designs work and how the community reacts.

Boulder, Colorado, was an early adopter of complete streets, and both its community and its transportation staff are proponents of the vision. While planners consult national guidance on projects, they also utilize internal policies that are constantly reviewed and tweaked. As the city implements its transportation master plan incrementally, it has changed some approaches and created new practices. Standard widths for sidewalks are larger, pilot projects like midblock crossings have become common practice, and innovations such as raised crossings on right-turn lanes are routine. Recognizing the futility of a one-size-fits-all approach, Boulder emphasizes creating street designs that match the topography, the context, and the current and expected street users.

Operating under a complete streets ordinance, Seattle is seeing its streets in a new light. Street-type definitions were updated based on adjacent land uses. While implementing the 2007 Bicycle Master Plan and the 2009 Pedestrian Master Plan, the city has been able to add new practices and standards for facilities like sharrows, bicycle boulevards, green bike lanes, porous pavements, and bioswales. These ideas truly represent the cutting edge; folding them into standard practice improves the DOT's efficiency, quickly making a difference on the ground.

In New York City, the speed and scale of changes to the transportation network have been rapid. The city has rolled out pilot projects with temporary materials. Bike lanes separated from travel lanes by parked cars have appeared along some street sections. The city is also installing bus-only lanes, painted a distinctive red. Working with temporary materials has allowed staff to see what works and what does not; they can both quickly fix problems and quickly fold successes into written standards. The Street Design Manual, intended to supplement existing standards and requirements, provides direction but remains flexible and nonprescriptive. Resulting designs can thus be customized to local conditions and land use. A design review checklist is used to describe the project and encourage full consideration of the many users affected by the work. It also broadens the list of standard techniques, street designs, materials, and lighting to incorporate the innovative designs proven in pilot projects. Importantly, New York has also chosen to use the policy section of the manual to express clearly the city's intent to prioritize pedestrian, bicycle, and public transportation.

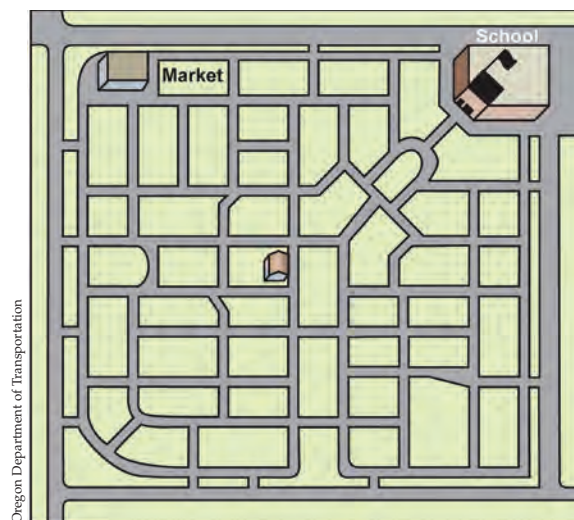


Figure 7.3. Connected streets reduce travel distances.

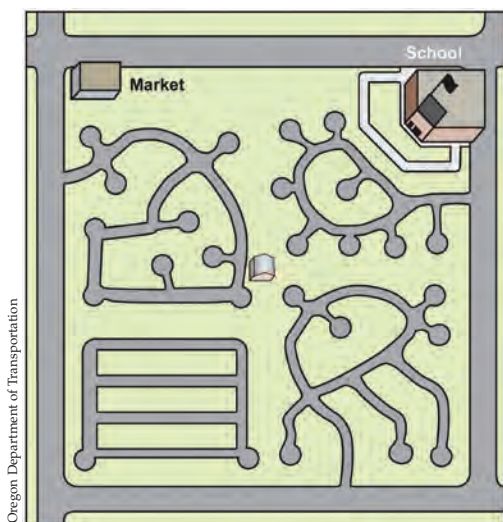


Figure 7.4. Disconnected streets increase travel distances

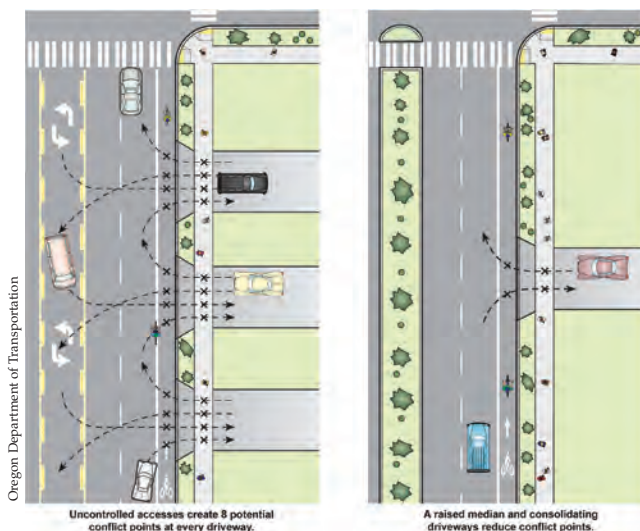


Figure 7.5. Benefits of access management

DESIGN TECHNIQUES

Many practitioners have a keen interest in learning about design features that can create a more balanced street network. The following section gives an overview of some of these design features. The appendix contains details on additional resources.

Related Planning Issues

Four important planning issues influence the feasibility of complete streets and consequently have effects on the design elements that need to be incorporated into a street project. These issues are interrelated and cannot be examined in isolation relative to a street's design.

- **Encouraging mixed land use.** A mix of land uses ensures that common destinations are close to a trip's origin, making shorter walking and bicycling trips more feasible.
- **Ensuring street connectivity.** Street connectivity provides direct, and therefore shorter, routes for bicyclists and pedestrians and better access to public transportation. (See Figures 7.3 and 7.4.)
- **Attending to access management.** Access management limits the number of driveway approaches to a roadway, which interfere with walking, bicycling, and transit. (See Figure 7.5.)
- **Reexamining the primacy of motor vehicle level-of-service (LOS) standards.** Motor vehicle LOS standards are focused primarily on intersection performance. This often results in large intersections designed to accommodate conflicting users and turning movements, especially when the goal is to maintain a high LOS for motor vehicles. An intersection designed for a high vehicular LOS can be intimidating and is often a barrier for pedestrians, bicyclists, and transit users, as these intersections are usually characterized by multiple lanes, exclusive turn lanes, and high speeds around crosswalks or pedestrian signals. (See Chapter 5 for more on alternative performance measures.)

Principles of Complete Streets

Two principles are critical to achieving the primary goal of complete streets: reducing street width and managing vehicle speeds. These two principles work together to improve the roadway for all users.

Reducing street width. Wide roads make it more difficult to provide for the needs of walkers, bicyclists, and transit users traveling along the road, crossing the street, or navigating complex intersections. They consume much of the right-of-way, leaving less space for these modes, and make crossing the street more difficult. Reducing the width or number of travel lanes ("road diets") has safety and operational benefits for

drivers, too, and should be one of the first options considered when balancing the needs of all travelers. (See Figure 7.6.)

Vehicle speed management. Speed management is an overarching concern for complete streets design. Lower traffic speeds make roads safer in two ways: Drivers are more able to avoid a crash, and in the case of a crash the resulting injuries are less serious. Slower vehicle speeds make the street safer and more pleasant for nonmotorized users. (See Figure 7.7.)

Another advantage of lower speeds is that most design manuals require higher design standards for high-speed roadways, which are incompatible with pedestrian, bicyclist, and transit use. A lower design speed allows designs that are more favorable to nonmotorized users. This creates a virtuous cycle because the design features that are allowed at lower speeds actually encourage lower operating speeds. Virtually all of the elements of good complete streets design help slow traffic: narrow travel lanes, medians and pedestrian islands, on-street parking, sidewalks, and street trees. (See Figure 7.8.)

BEFORE:



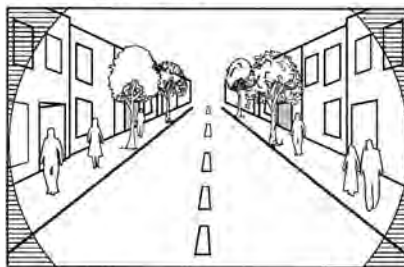
Oregon Department of Transportation

AFTER:

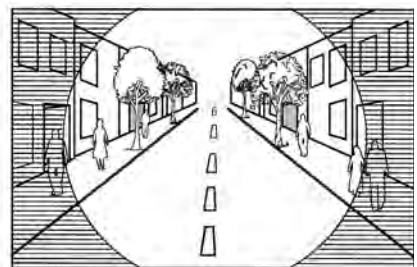


Figure 7.6. This road diet shows four lanes reduced to two lanes, a center turn lane, and two bike lanes.

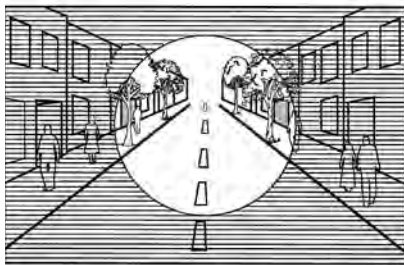
FIELDS OF VISION



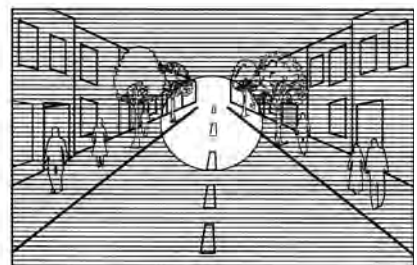
15 mph



20 mph



25 mph



30 mph

Oregon Department of Transportation

Figure 7.7. Faster speeds tend to narrow drivers' fields of vision.

Figure 7.8. A visualization of a complete street design



AARP Bulletin

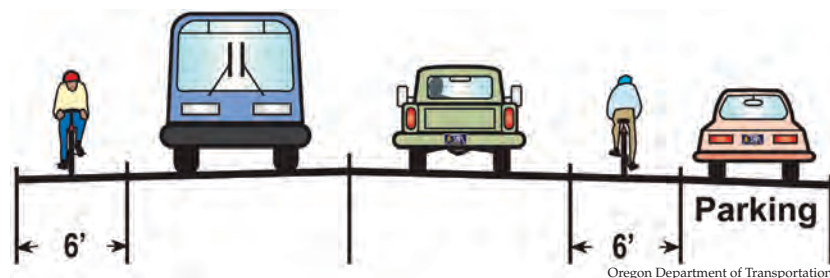
Primary Design Elements of Complete Streets

A variety of design elements contribute to a complete street. These elements are meant not to be prescriptive but rather to provide a set of options to consider when designing a complete street. The primary complete streets design elements within the right-of-way can be divided into three main categories: accommodating users along the road; crossing the road; and intersection design.

Accommodating users along the road. Complete streets allocate space to each mode: motor vehicles, bicycles, and pedestrians. Ideally, each mode has its own dedicated area, including motor vehicle travel lanes, bicycle lanes, sidewalks, and, under heavy traffic conditions, bus lanes. Wide streets may appear to be ideal because they have enough space to accommodate all user needs without compromise. However, wide streets are often less desirable because they can promote higher vehicle speeds, make it more difficult to cross the street, and increase the complexity of intersections for all users. To better balance the needs of all modes on the roadway, especially when space is tight, a first option to consider is reducing the width or the number of vehicle travel lanes.

Bicyclists. The preferred facility for bicyclists on a busy, high-speed road is a bike lane. Bike lanes should be provided on each side of a two-way street and on one side of a one-way street. On very busy high-speed streets, a shared-use path for bicyclists and pedestrians may be appropriate, as long as there are few intersecting driveways and streets, since most crashes occur at these locations. It should be noted that the definition of “busy” or “high-speed” may vary depending on the context. (See Figure 7.9.)

Figure 7.9. Bike lane standards



On quieter, low-speed streets, bicyclists can be accommodated in a shared roadway. In this case, shared lane markings (sharrows) may be used to indicate to drivers that bicyclists may be using the roadway. Sharrows also show bicyclists where to ride safely: in the middle of a narrow travel lane, especially where there is on-street parking. (See Figure 7.10.)

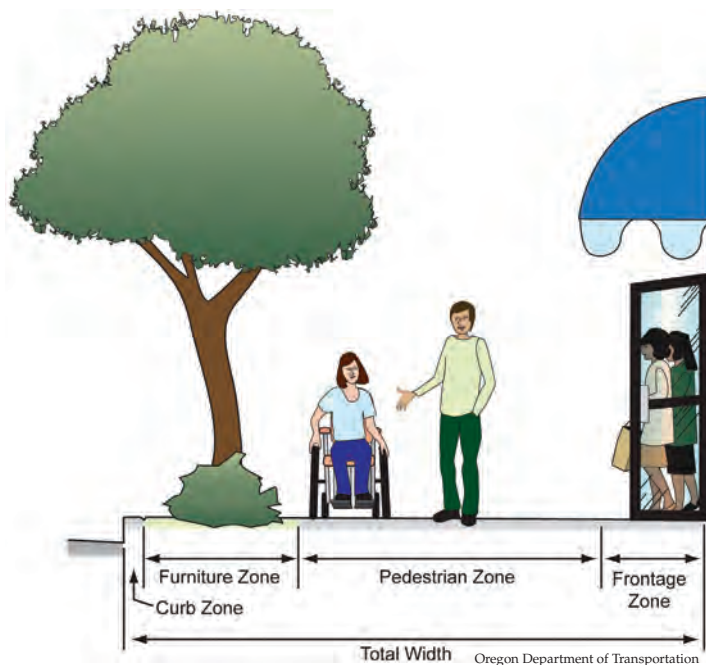
Figure 7.10. Shared lane markings



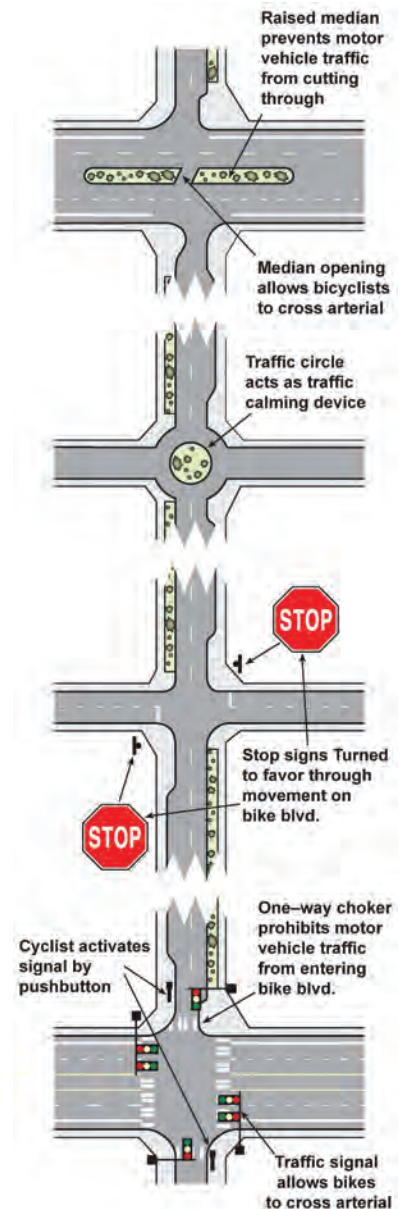
Another option to accommodate bicyclists, especially when space is limited on a busy street, is to develop a “bicycle boulevard” on a parallel, lower-speed local street. Bicycle boulevards are shared-roadway local streets modified to function as through streets for bicyclists. Local access for automobiles is maintained, but traffic-calming and traffic-control devices reduce motor vehicle speeds and the volume of cut-through automobile trips. This helps limit conflicts between motorists and bicyclists and gives priority to through bicyclist movement. (See Figure 7.11.)

Pedestrians. The preferred facility for pedestrians is a sidewalk. The only exception would be a very quiet, low-speed street with little vehicle traffic, where the street functions as a shared space. Sidewalks should be separated from traffic by a buffer or planting strip where possible. This gives pedestrians a greater perception of safety and in wet weather reduces splashing from traffic. Buffers help create a comfortable and pleasant walking environment, and they provide places for street furniture, utilities, and snow storage in colder climates. The separation also helps ensure a level sidewalk at driveway crossings and makes it easier to line up sidewalks, ramps, and crosswalks at intersections. The sidewalk zone system provides a good way to create uncluttered but interesting sidewalks. Each zone (Figure 7.12) has its own designated area, each with its own function:

- **The curb zone** prevents water from splashing onto the sidewalk and prevents motor vehicle encroachment.
- **The furniture zone** provides space for street furniture, trees and landscaping, utility poles, signs, and other elements that are found in the right-of-way.
- **The walking, pedestrian, or “through” zone** is the area kept clear of obstructions for pedestrians.
- **The frontage zone** is next to the building, fence, or property line and provides an area for property owners to display items or locate a sidewalk café without interfering with the walking zone. It is also where pedestrians access their destinations.



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Figure 7.11. Elements of a bicycle boulevard

Figure 7.12. The sidewalk corridor/zone system

Transit. Transit generally operates well in shared travel lanes. (See Figure 7.13.) Under certain circumstances, such as heavy traffic on routes with frequent headways, dedicated bus lanes may be desirable. Bus pull-outs are favored by traffic engineers, who view buses stopped in traffic as an impediment to the flow of single-occupancy vehicles. However, pullouts may create a disservice to transit riders because they can cause delays while bus drivers attempt to re-enter the traffic stream. Note the section below that provides more detail on providing access to transit.

Figure 7.13. Transit lanes



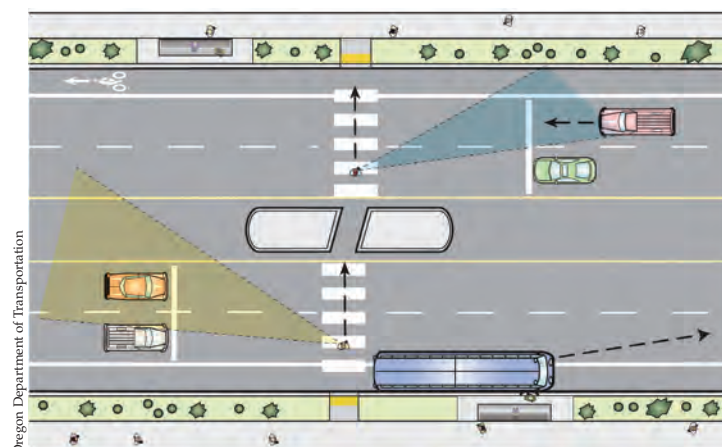
Michael Ronkin

Motor vehicles. Reducing the number or width of travel lanes can have many benefits. On streets with high transit or truck use, however, it may be necessary to maintain one lane in each direction wide enough for the anticipated vehicle types.

Crossing the road. While most pedestrians and cyclists cross roads at intersections, many choose to cross at a midblock location when it is convenient or an intersection is too far away. Even at intersections, it is often difficult for pedestrians to cross safely. Most of the crossing treatments described here are intended for pedestrian crossings, although some may be adapted to bicycle crossings as well. Well-designed treatments can improve crossings at signalized and unsignalized intersections as well as midblock locations.

Medians and pedestrian refuge islands. Medians are the most effective way to help people cross a busy street because they allow pedestrians to cross in two phases. It can be much easier to find two short gaps than one long gap when crossing a busy multilane highway. (See Figure 7.14.)

Figure 7.14. A pedestrian refuge island and crossing that serve bus stops in both directions.



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Marked crosswalks. Crosswalks are marked to indicate to pedestrians where to cross and to alert drivers to expect pedestrians to cross at that location. At midblock locations, they establish where drivers must yield to pedestrians. In all cases, crosswalks should be marked with high-visibility patterns: wide longitudinal stripes, spaced to avoid the wheel tracks so as to decrease wear and tear and long-term maintenance cost. There has been much debate over whether marked crosswalks provide a safety benefit absent other safety infrastructure. The most recent known study (Zegeer et al. 2002) concluded that on two-lane roads or on multilane roads with moderate traffic volumes, marked crosswalks provide no decrease in safety. But it found on high-volume multilane highways, marked crosswalks alone are not a sufficient treatment. In those cases, additional measures, such as medians or signals, must be considered. (See Figure 7.15.)

Advance stop lines. The advance stop line is a stop or yield line in the travel lane on a multilane road, about 30 feet prior to the crosswalk, accompanied by a “STOP [or YIELD] HERE TO PEDS” sign. The driver in the curb lane stops there, opening up visibility for pedestrians, and the pedestrian waits before continuing to cross. Advance stop lines should be included on all nonsignalized marked crosswalks on a multilane road. They reduce the potential for injury or fatal crashes by indicating that drivers in all lanes must stop for crossing pedestrians and improving the ability of pedestrians to see oncoming vehicles in all lanes. (See Figure 7.16.)

Signals. Traffic signals can help pedestrians cross a street by providing positive control. Many traffic engineers are hesitant to place them on busy roads because they can introduce other problems, such as an increase in rear-end crashes and interruptions to the traffic stream. These concerns can be addressed by synchronizing new signals with existing ones or by providing a crossing with a median island that reduces the impact on traffic by interrupting only one direction at a time. (See Figure 7.17.)

The “pedestrian hybrid beacon” is a new type of pedestrian signal that has been approved by the Manual for Uniform

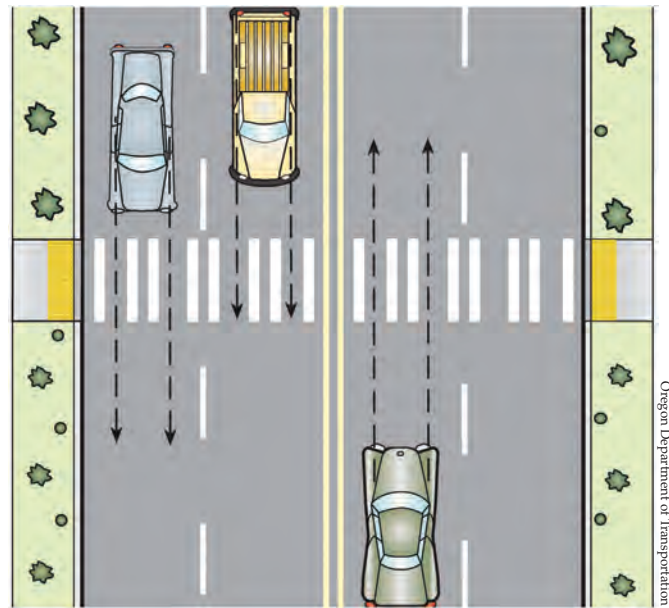


Figure 7.15. Staggered longitudinal crosswalk markings

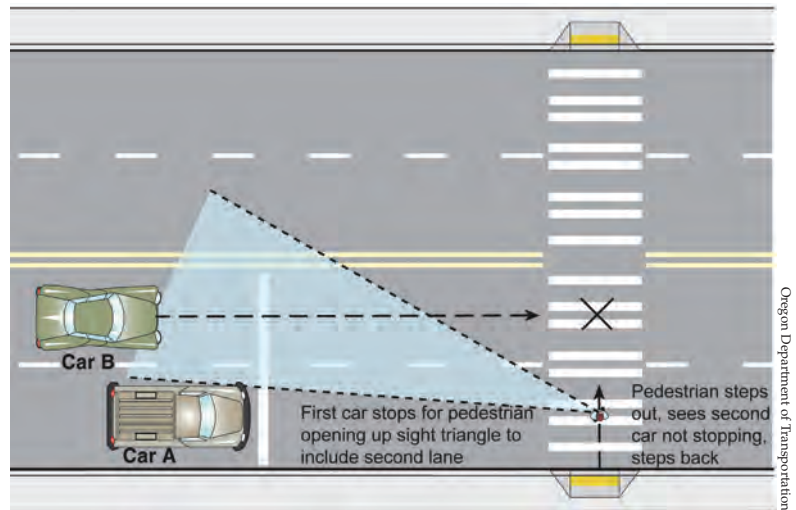


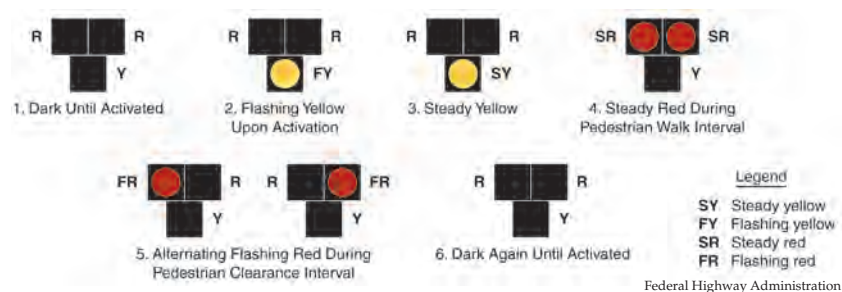
Figure 7.16. Advance stop lines allow pedestrians to see a second car.



Figure 7.17. A pedestrian waits for the walk signal.

Traffic Control Devices (MUTCD). It combines elements of a conventional traffic light with a flashing beacon and helps reduce the effects of pedestrian crossings on traffic flow. For both signal types, the MUTCD is modifying its pedestrian volume warrant, which will make justification of pedestrian signal use easier under high traffic/low pedestrian volume conditions and more difficult under low traffic-volume conditions. (See Figure 7.18.)

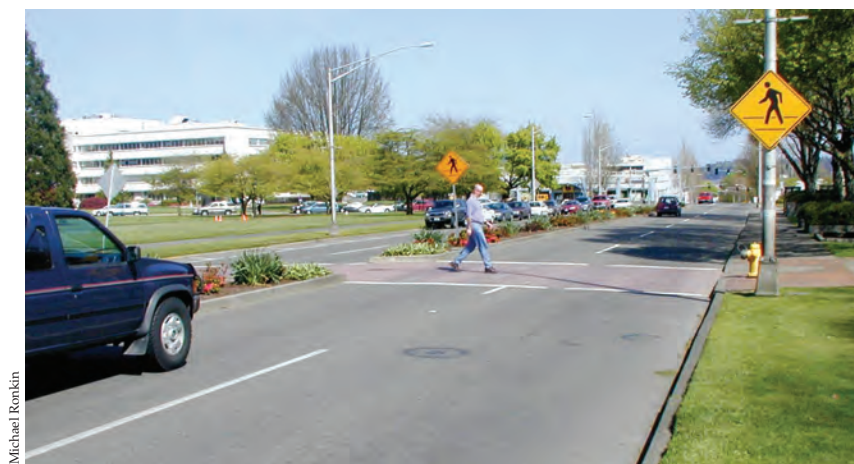
Figure 7.18. Sequence for a pedestrian hybrid beacon



Over- and undercrossings. These appear to provide absolute safety for pedestrians by separating them from traffic. In reality, they are used rarely because they add horizontal and vertical out-of-direction travel. Many, if not most, pedestrians end up crossing at grade, increasing the danger if no crosswalks are provided. Such crossings are very expensive to construct and often difficult to place where people want to cross. They can be useful when connecting buildings together or for providing crossings of limited-access freeways.

Midblock crossings. Planners and designers must take midblock crossings into account. They are legal in all states, with some exceptions, such as between two adjacent signalized intersections. People cross midblock when the perceived safety of intersection controls is not worth the extra walking distance. Many midblock crossings are associated with transit stops. (See Figure 7.19.)

Figure 7.19. A midblock crossing



Intersection design. Most crashes occur at intersections because that is where modes come together and cross paths. Large, complex multilane intersections are major barriers to walking and bicycling because of the number of potential conflicts as well as the distance and the time it takes to cross. They also complicate transit operations.

Several principles apply when designing safe and convenient intersections as part of complete streets:

- **Avoid unusual and unexpected conflicts.** Drivers, bicyclists, and pedestrians should know where to expect others to come from and where they will be going.

- Design compact intersections that intersect at right angles.** This makes it easier for drivers, bicyclists, and pedestrians to see one another and be seen. Skewed and multilegged intersections should be reconfigured to simpler, right-angle crossings where possible, or they could be replaced with roundabouts. (See Figure 7.20.)
- Avoid free-flowing turn movements.** Drivers should be aware of potential pedestrian and bicyclist conflicts when they turn from one street to another. (See Figure 7.21.)



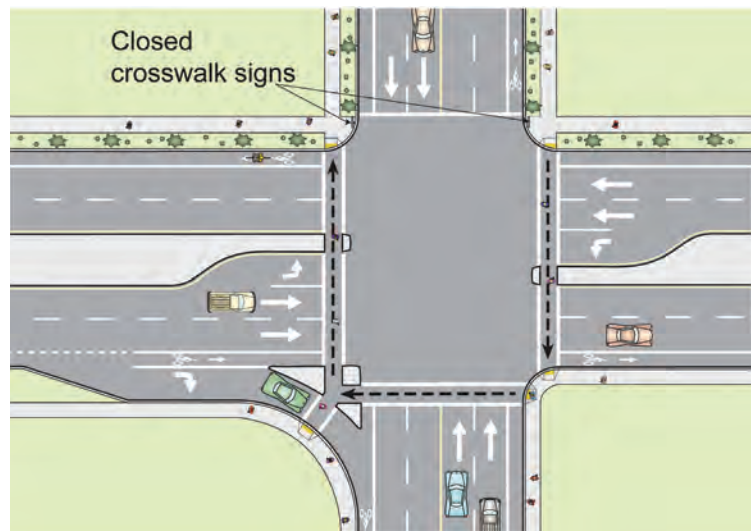
Figure 7.20. A compact intersection

Figure 7.21. Free-flowing turn lanes can create pedestrian hazards.



- Open all crossings for pedestrians.** Closing a crosswalk to improve motor vehicle capacity jeopardizes pedestrian safety and forces pedestrians to walk a long way around the intersection simply to cross the street. (See Figure 7.22.)

Figure 7.22. A closed crosswalk can force pedestrians to cross three streets instead of one.



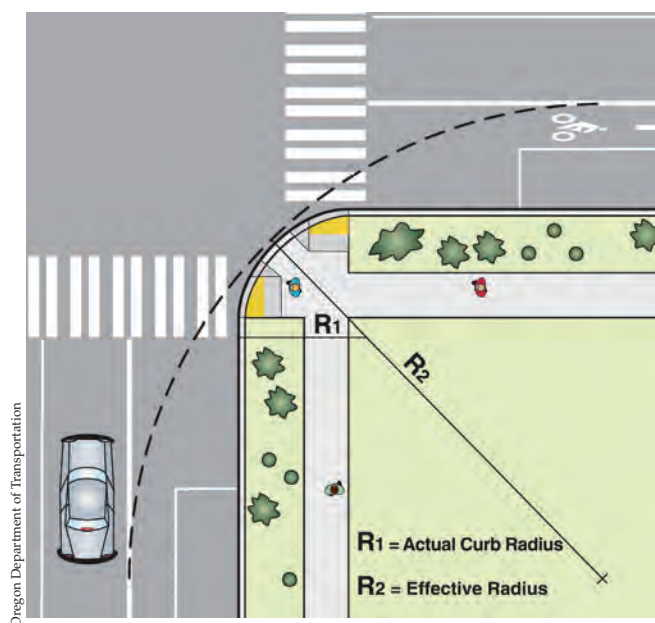


Figure 7.23. The diagram shows the difference between actual and effective corner radii.

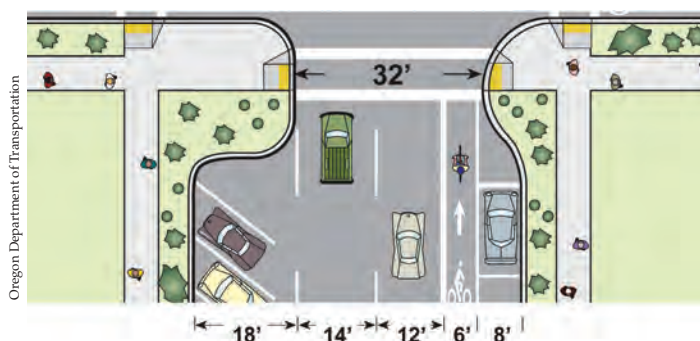


Figure 7.24. Curb extensions reduce crosswalk lengths.

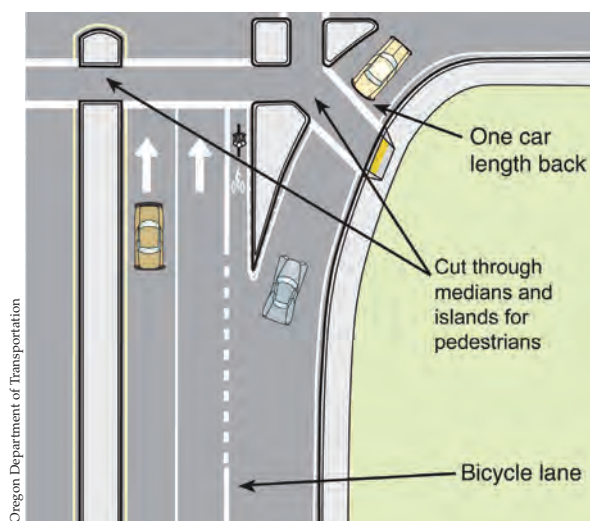


Figure 7.25. Note the pedestrian-refuge island in the right-turn lane.

The following techniques can be used to improve the geometry of intersections:

Reduce turning radius. Reducing the curb radius has many benefits for pedestrians and bicyclists: It shortens the crossing distance, brings crosswalks closer to the intersection, increases visibility of the pedestrian, and slows right-turning vehicles. Slower speeds at intersections make it easier for users to observe one another and react appropriately. Tight radii also benefit bicyclists because they slow the speed of a turning vehicle and reduce the risk of a driver turning right across the path of a cyclist proceeding straight through the intersection. (See Figure 7.23.)

The appropriate radius must be calculated for each corner of an intersection based on the type of vehicle expected to use the intersection. It is acceptable to make turns difficult for the occasional event, such as a large moving truck turning onto a local street. Transit vehicles on routes that provide less-frequent service (every half hour or greater) can accept tighter radii at corners where they make a right turn if many pedestrians cross there regularly.

Add curb extensions. Curb extensions reduce the total crossing distance and increase visibility. They allow pedestrians to see approaching traffic, and waiting pedestrians are more visible to approaching drivers since they are not obscured by parked cars. Curb extensions also slow right-turning vehicles by reducing the curb radius. They are generally recommended for streets with on-street parking but also can be used without on-street parking where a lane is dropped or added at an intersection. In these cases, the curb extensions should be the full width of the dropped or added travel lane. (See Figure 7.24.)

Design "pork-chop" islands for right-turn lanes. Where an exclusive right-turn lane is provided, a raised island between the right-turn lane and the through lane(s) enables pedestrians and drivers to negotiate the one conflict separately from the others. The island reduces the crossing distance across the through-travel lanes, resulting in less pedestrian exposure and improved signal timing. A properly designed island has the longer tail pointing upstream to the approaching right-turn driver, thus the descriptive name "pork chop." This design orients the approaching driver at close to a 90-degree angle to cross traffic, so the driver is looking forward at the crosswalk. The crosswalk is placed one car length back from the intersecting street. (See Figure 7.25.)

Provide illumination. Pedestrian crashes occur disproportionately at dusk and at night. Illuminated crossings greatly increase a driver's ability to see a pedestrian crossing the road. Increased light-

ing should be provided at primary crossing points. Double-sided pedestrian-scale lighting should be provided along wide streets. (See Figure 7.26.)

Improve signalized intersections. The design and function of signals at intersections can either aid or hinder pedestrian and bicycle movements across the roadway. The following features and techniques are recommended at intersections to facilitate pedestrian and bicyclist movement and safety.

- Pedestrian indicators/signal heads.** These ensure pedestrians know when the signal phasing allows them to cross. (See Figure 7.27.) Signal heads placed high over the intersection are often not visible to pedestrians, and the green light does not provide adequate information about the time left to cross the street. The WALK signal phase should be long enough to get pedestrians started and the clearance interval long enough to ensure that a pedestrian can fully cross the street. Pedestrian countdown signals tell pedestrians the amount of time remaining to cross and are showing safety benefits (FHWA 2009).
- Push buttons.** These must be placed where a pedestrian using a wheelchair (or one who is visually impaired) can easily reach them, and they must clearly indicate which crosswalk the button regulates. Push buttons are not needed in downtown or central business districts and other areas of high pedestrian use where the pedestrian phase should occur every signal cycle. (See Figure 7.28.)
- Signal timing.** Signal timing can help reduce the incidence of crashes that occur as the pedestrian crosses with the WALK signal. Techniques that can assist safe pedestrian crossings with the signal include:
 - All-red phase.** A short all-red interval can help prevent a deadly crash resulting from a red light–running driver hitting pedestrians who have begun crossing with the WALK signal.
 - Protected left turn phase.** This prevents drivers from turning left across the crosswalk by giving the left turn its own signal phase and prohibiting left turns when pedestrians cross. This allows pedestrians to cross without interference from left-turning drivers.
 - Lead pedestrian interval (LPI).** The LPI releases the pedestrian WALK phase a few seconds prior to the green light for vehicles, enabling pedestrians to occupy the crosswalk before drivers begin to turn. This can help reduce conflicts between turning vehicles and pedestrians when vehicles encroach onto the crosswalk before pedestrians leave the curb.

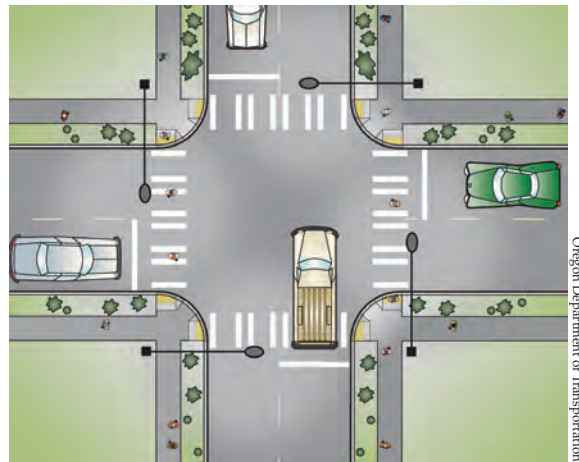


Figure 7.26. Illumination makes crosswalks more visible.



Figure 7.27. Signal heads can provide more guidance to pedestrians.

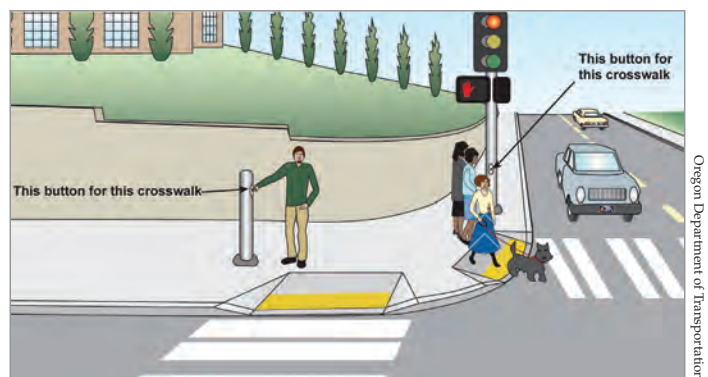


Figure 7.28. Separate accessible push buttons are pedestrian conveniences.

- *All-pedestrian phase (a.k.a. Barnes dance or scramble phase).* This phase stops all vehicular movements to allow pedestrians to cross in all directions (including diagonally) to reduce conflicts between pedestrians and turning vehicles. Pedestrians are not allowed to cross during the motor vehicle phases, so drivers can turn without yielding to pedestrians. They are appropriate for crossing locations with very high pedestrian traffic, relatively low vehicle volumes, and a high number of turning conflicts. Because the added phase increases delay for drivers and pedestrians, it has been removed from many intersections where users did not tolerate the extra delay.
- *Bicycle detection.* Traffic signals can also be frustrating to cyclists if their bicycles do not have enough metal to trigger the light via the loop detectors placed in the pavement. The following techniques can help bicyclists trigger the light:
 - Placing loop detectors in bike lanes;
 - Increasing the sensitivity of existing loop detectors;
 - Painting stencils to indicate to cyclists the most sensitive area of the loop; and
 - Providing bicycle signal heads where bicyclists' movements are separate from others.

Additional Design Elements for Complete Streets

Several other design elements affect the way travelers use the road, access transit and destinations along the roadway, and perceive the attractiveness and safety of the environment. These design elements enhance the right-of-way for purposes other than transportation along the roadway. This section highlights some of these features as they contribute to a complete streets environment.

Access to transit. Access to transit is an important feature in areas where transit is present because it combines the three primary elements of complete streets: the accommodation of users along the road, street crossings, and intersection design. Other improvements include transit shelters and bicycle parking facilities.

- **Walking along the road.** Sidewalks must be provided on both sides of the road from all transit stops to the nearest intersection or completed section of sidewalk.
- **Crossing the street.** Transit users must cross the street at one leg of their journey. At midblock locations, one crosswalk should be provided for both stops. It should be located so patrons cross behind the bus to prevent potential conflicts with the departing bus. (See Figure 7.29.)

Figure 7.29. A transit street crossing



Michael Runkin

- Intersection design.** Since many transit stops are located at intersections, all the techniques described above will benefit transit riders at intersections. The presence of transit presents the issue of stop placement at the intersection. The far side of the intersection is generally preferred because the driver can pull across the intersection before the light turns red and it ensures that pedestrians cross behind the bus. A nearside stop may be preferred for passenger convenience, bus queuing, or an immediate right turn after the stop. However, nearside stops can also delay transit service by requiring an extra cycle to clear the intersection.
- Transit shelters and seating.** Transit shelters and seating should be provided for the comfort of waiting transit riders, and seating is particularly important for older or disabled riders. Transit stops should include information about stops, routes, and schedules and should provide trash cans.
- Bicycle facilities.** Features that enhance bicyclist access to transit include covered, secure bicycle parking at urban/suburban fringe transit stops and policies that allow bikes on buses (usually on front racks) and on other transit vehicles (usually a dedicated area in light-rail and subway cars).

Site design. Site design is important to complete streets because the location and design of the buildings bordering the street have a substantial impact on the users. Buildings adjacent to sidewalks with direct access make walking pleasant and convenient for short trips. Buildings set far back from the street or separated from sidewalks with large parking lots increase walking distances and add additional obstacles to pedestrian and bicyclist convenience and safety.

Principles of site design can be incorporated into complete streets policies or design standards to result in a truly complete street where the adjacent uses and building design support an inviting environment for all users. Two such principles are described here.

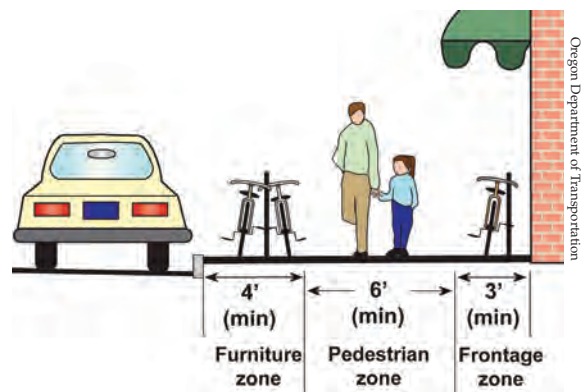
- Do not place cars between people and buildings.** This ensures that destinations are easily accessible on foot, by bicycle, or for transit users because pedestrians and cyclists will not need to navigate across parking lots or drive-through lines to access buildings. This type of site design can be mandated for new development. However, in places where most streets are already built out, the easiest retrofit solution is to require pathways between or through parking areas directly to building entrances. (See Figure 7.30.)
- Provide bicycle parking.** Bicycle parking should be provided on sidewalks in the furniture or frontage zones in commercial districts where buildings are at the back of the walk or as close as possible to the main entrance of a building set back from the sidewalk. (See Figure 7.31.)

On-street parking. On-street parking has benefits for pedestrians, cyclists, and adjacent business owners that far outweigh the potential negative effects on motor vehicle capacity. They separate pedestrians from traffic, slow motor vehicle speeds, and usually result in fewer driveways and accesses to off-street



Michael Ronkin

Figure 7.30. Pathways through parking lots can increase pedestrian access to isolated buildings.



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Figure 7.31. Bicycle parking on a sidewalk

parking. But the overriding benefit of on-street parking is the incentive to orient businesses toward the street, creating a walkable environment with direct access to destinations. Simply put, street parking increases activity on the street. (See Figure 7.32.)

On-street parking does present a safety issue for bicyclists that face the possibility of drivers opening car doors into their paths. This is a very real concern and can lead to a serious injury. Sharrows (shared-lane markings) can be used to mitigate this hazard by indicating that cyclists should ride away from the door zone. On-street parking can interfere with transit operation if buses must pull over from the travel lane to the curb and back again, but this can be mitigated with transit-oriented curb extensions.

Figure 7.32. On-street parking



Michael Ronkin

Landscaping. Landscaping softens any streetscape to create a more inviting and visually interesting pedestrian experience. Large street trees provide shade in the summer and contribute to traffic calming by providing vertical elements that visually narrow the roadway. Landscaping is traditionally placed in the furniture zone (also known as the planter strip) and medians. Islands and curb extensions also offer opportunities for low plantings if they do not interfere with pedestrian visibility. Where on-street parking is provided, trees also can be planted in tree wells in small curb extensions between parking spaces.

Drainage. Drainage facilities are essential elements of urban street design, but they can affect pedestrians and bicyclists in various ways. Puddles in the roadway caused by poorly maintained or nonexistent drainage facilities cause difficulties for pedestrians and create hazards for cyclists, who hesitate to ride through a puddle if they can't see what's below the water. Drainage grates can pose a hazard for cyclists when the surfacing around the grates is rough or if the grated openings are too large or parallel to the travelway. (See Figure 7.33.)

Figure 7.33. A drainage grate



Michael Ronkin

Green Streets. This term commonly refers to streets designed to minimize environmental impacts through reducing impervious surfaces. Most of the time, the goals for green streets and complete streets are mutually compatible, and features such as planting strips can promote the needs of both. (See Figure 7.34.) Other features, such as bioswales and pervious surfaces, can work well on a complete street if pedestrian and bicyclist access and safety are carefully considered. However, eliminating bikeways or walkways to reduce the overall width of impervious surfaces is contrary to complete streets goals. Reducing the width of the motor vehicle way, as described earlier, is a better approach. See the National Complete Streets Coalition webpage for a fact sheet on compatibility between green streets and complete streets.



Figure 7.34. A green street

CONCLUSION

There is no single design solution for complete streets, and this list of potential design elements only scratches the surface. Each roadway is unique and will require a thoughtful design that is specific to its context and users. The principles and design elements outlined here provide a foundation for designing a safe and pleasant street for all users.

CHAPTER 8

Lessons Learned from the Case Studies



This report drew heavily upon extensive research and interviews with 30 case-study communities that have seen success in adopting and implementing complete streets policies. Their individual stories have been told throughout this report—but what overarching lessons can be learned from their experiences? This chapter identifies some of the themes that came up repeatedly during conversations with planners, engineers, officials, and advocates. It begins with some general observations and then moves to lessons that provide more specific recommendations for communities as they adopt and implement complete streets policies.

(1) Complete streets policies are valuable tools in changing transportation priorities, establishing a new ideal for street function, and communicating with the public. Over and over again, interviewees talked about how their complete streets policy development processes provided new frameworks for discussing transportation needs in their communities. The complete streets concept often sparked creation or confirmation of a simple and clear vision for future progress—one that included addressing the needs of all road users. Clarity about what a community wants can also be helpful in communicating with other agencies that control roads within the jurisdiction.

(2) Complete streets policies are most often one part of a broader move to change transportation and land-use planning. While a complete streets movement has been a primary catalyst in some communities, it is more common for jurisdictions to conclude that complete streets are important only after they have created bicycle and pedestrian plans, explored smart growth planning, or engaged in community visioning processes. A complete streets policy is not a silver bullet but rather one tool among many to create livable communities.

(3) The policy development process should include a wide variety of stakeholders to ensure that all needs are addressed. Three distinct groups need to be involved in the process of crafting complete streets policies: community members, for whom road networks are intended; elected officials, who champion community needs; and agencies with a role in street design or construction, which implement the policies. The policy development process provides opportunities to bring these groups together to discuss needs, challenges, and opportunities and to dispel myths. When the policy is finalized, everyone involved will feel ownership of the vision; this is especially important for the agency personnel who will be implementing the policy.

Within these three broad groups, diversity is important. Community stakeholders should include not only bicycle and pedestrian advocates but also representatives of older-adult groups, disability groups, and business interests, as well as developers, parents, and proponents of active transportation. The agencies involved should include not only the planning and public works departments but also the transit agency and other departments including utilities, public health, public safety, schools, and parks. Including elected officials from a variety of governmental levels can help smooth potential conflict between jurisdictions. When a policy is too one-dimensional in development, subsequent conflicts among users, planners, engineers, and elected officials can cause delays in implementation. These policies are more likely to languish.

(4) Linking achievement of complete streets to funding eligibility helps institutionalize complete streets practices. In many communities, complete streets implementation is occurring through changes in the spending criteria for existing funds. In addition, funding requirements attached to new sources of money, such as mainstream transportation bond measures, have jump-started complete streets implementation in several communities; control of a funding stream and a clear intent to create a multimodal network helps create visible on-the-ground projects that build community support. Specialized pots of money can also help speed complete streets retrofits in areas with extensive deficits. But if an attitude persists that such funding and projects must be separate from traditional highway funding programs, selection criteria, and project standards, the balancing act necessary to create a complete streets network will not take place. Nonmotorized and transit accommodations are likely to remain underfunded and opportunities to create a multimodal network will be missed.

(5) Successful policies affect the practices of all the entities responsible for road building in the jurisdiction. When writing and implementing a complete streets policy, it is important to keep in mind which actors or agencies will actually be building or rebuilding the roads and to plan implementation accordingly. There are at least three distinct road-building entities that affect the implementation of local complete streets policies: local transportation departments, private developers, and state transportation departments.

In many built-out cities, local governments build and maintain most public roads. For these communities, revised street design manuals and project scoping procedures often play an integral role in policy implementation. Engaging and empowering staff is also vital to success. If the local road-building agency still holds traditional transportation-engineering ideas about moving high volumes of vehicular traffic as quickly as possible, a complete streets policy runs the risk of being just a piece of paper.

Alternatively, in places with extensive greenfield development or large-scale redevelopment, road building often falls primarily to private developers. For these jurisdictions, connectivity and multimodal accommodation requirements in land-development regulations are vital tools to ensure that new streets balance the needs of all users.

Because most communities contain some, if not many, roads that are under the control of the state DOT, a regional or local complete streets policy is important in helping a local government explain to the state transportation agency the value of breaking with the status quo. However, without state-level buy-in, implementation will suffer as local agencies spend time and energy asking for design variances.

State DOTs with complete streets policies can also find implementation hampered when local communities do not understand complete streets visions or do not have the expertise to engage new paradigms. State DOTs also face the challenge of educating large, dispersed departments about new policies. It is critical to be sure that awareness of the policy spreads throughout the agency so that those who are charged with implementation understand the new procedures.

While a few MPOs have adopted complete streets policies, they face a different challenge because they do not have direct control over road building. The most successful strategy at this level is to tie funding criteria to complete streets goals. MPOs can also be critical in fostering intergovernmental cooperation and coordination among local governments.

(6) Policies work best when they exist across all governmental levels. Many roads cross jurisdictional boundaries, and no transportation network operates in total isolation. When intercity travel fails to accommodate all users, or when sidewalks and bicycle lanes end abruptly at city limits, safe travel environments can become hostile. Continuity in approach among jurisdictions within a region is important to ensure that all are able to travel comfortably to their destinations, no matter which agency controls the roadways used. Two areas where complete networks are possible include Oregon—where state law requires bicycle and pedestrian accommodations on all roads regardless of jurisdiction—and Sacramento, California, where the state DOT, the MPO, the county, and the city all have complete streets policies. These places have been able to avoid interagency conflict, a major barrier to complete streets policy development. Federal leadership in this area could help bring more communities into alignment with the complete streets vision.

(7) Successful implementation reaches beyond the initial policy document to include changes to zoning codes, plans, standards, manuals, and procedures. Complete streets implementation is successful only if an initial policy statement is followed by changes throughout the transportation planning process. An initial resolution may be followed by adoption of an

ordinance, revision of zoning codes, inclusion in mode-specific plans, and in some cases the creation of a new design manual. While a few communities with strong internal advocates have pushed complete streets forward without much documentation, they risk losing momentum when key people move on.

(8) Advocates inside the agency can make or break policy implementation, especially during the early stages. A number of case-study interviewees noted that their complete streets policies were adopted and implemented in large part due to individuals' commitments to complete streets ideas. Such champions make sure complete streets needs are addressed during project review and educate others about the content of complete streets policies. Formal implementation plans have been relatively rare, so this informal process becomes even more critical. In contrast, policies in some jurisdictions have never gone beyond the paper they were written on because of the lack of champions or plans.

(9) Successful implementation at the local level is often marked by empowering planners and engineers to approach each project creatively, continually collecting data, and evaluating progress to confirm success. Many places with complete streets policies have political and organizational cultures that help planners and engineers feel confident in trying out new ideas as they aim for multimodal goals. They discourage traditional design approaches that rely heavily on implementing standardized designs contained in manuals and that frown on innovation. Instead, they may encourage the use of more general guidelines or cross sections without specific width requirements. This experiential approach is most often accompanied by close monitoring of projects to see if they meet the expected results for traffic flow, safety, and community acceptance. This attitude is easiest to cultivate at the city level, where a jurisdiction has broad control of its street network and the workforce is usually relatively small and focused. Success at state DOTs has been reliant on more formal processes, manuals, and trainings. However, in both cases, having a complete streets policy that originated or is supported at the highest level is essential for giving implementation staff the confidence to move forward.

(10) Early consideration of the needs of all road users helps avoid potential implementation problems, saves money, and encourages a paradigm shift in thinking about street design. The most effective and efficient way to ensure that the needs of all road users are addressed in road design and construction is to plan for multimodal accommodation from the very beginning of all projects. Costs can be minimized when bicycle and pedestrian facilities are included in the initial street design; trying to re-engineer plans at later project stages or add facilities once construction has begun is difficult and costly. Considering the needs of all potential users of the corridor in the earliest planning stages of a project will help shift the paradigm from streets as conduits for fast automobile travel to streets as meeting the mobility and access needs of all community members.

Checklists can help ensure that the needs of nonmotorized users are considered in initial project stages and that costs of needed improvements are built into the project proposal. Some cities have instigated early project-development meetings that bring all parties to the table from the outset. And tying transportation funding to accommodation helps make bicycle and pedestrian

facility inclusion from a project's beginning the de facto way that new roadways are planned and built.

(11) Using every opportunity to improve multimodal accommodation speeds creation of a complete network and saves money. Communities with a successful complete streets policy no longer think of nonmotorized and transit accommodation as special large-scale projects for single signature corridors but rather see them as part of all upcoming projects. This allows progress to occur incrementally, as crews use a sidewalk repair project to rebuild a curb ramp according to new public right-of-way guidelines, turn a repaving project into a road diet, or take advantage of utility work to close gaps



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in the nonmotorized network. A number of places have made such maintenance projects centerpieces of their implementation plans, easing the push for “special” money to retrofit the street network. It should be noted that in communities with many “incomplete” streets, planners must accept that this is an incremental process. Adoption of a policy is almost always seen as a commitment to steady long-term improvement rather than the launch of a major new project.

(12) The first projects are often the hardest. Many communities with policies reported that the first projects that incorporated full multimodal consideration sparked intense community discussions.

This is particularly the case with innovative treatments such as road diets, which citizens perceive as reducing automobile capacity. However, most of these communities also reported that once the projects were installed they were welcomed, easing the way for continued implementation of the policy and gradually but fundamentally changing the way roads and streets serve the needs of residents and visitors.



Adopting and implementing a complete streets policy takes persistence, patience, and creativity. The communities that have done so report rewards ranging from safety improvements to creation of projects of more lasting value. By engaging elected officials, practitioners, and citizens, complete streets policies provide an avenue for all members of a community to be a part of creating livable streets that welcome everyone.



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Recent Legislation

State Law

National Complete Streets Coalition. 2010. *Model State Law: An Outline of Options*. Available at www.completestreets.org/changing-policy/model-policy.

Federal Law

H.R. 1443: *Complete Streets Act of 2009*. Information available at www.govtrack.us/congress/bill.xpd?bill=h111-1443.

S. 584: *Complete Streets Act of 2009*. Information available at www.govtrack.us/congress/bill.xpd?bill=s111-584.

Web Links to Project Partners

American Planning Association

Green Communities Research Center: www.planning.org/nationalcenters/green/index.htm

Planning and Community Health Research Center: www.planning.org/nationalcenters/health/index.htm

National Complete Streets Coalition: www.completestreets.org

National Policy and Legal Analysis Network to Prevent Childhood Obesity (NPLAN): www.nplanonline.org

Additional Web Links

AARP Public Policy Institute Livable Communities resources: www.aarp.org/research/ppi/liv-com

Active Living Research: www.activelivingresearch.org

Active Living Resource Center: www.activelivingresources.org

Alliance for Biking and Walking (formerly Thunderhead Alliance for Biking and Walking): www.peoplepoweredmovement.org/site

American Association of State Highway and Transportation Officials (AASHTO): www.transportation.org

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

Center for Livable Communities: www.lgc.org/center

Complete Streets Coalition of Sacramento: www.sacactive.org

Institute of Transportation Engineers: www.ite.org

Moving Communities Forward, American Institute of Architects: www.movingcommunitiesforward.org

Pedestrian and Bicycle Information Center: www.walkinginfo.org and www.bicyclinginfo.org

Public Health Institute, Public Health Law and Policy Project, Planning for Healthy Places program: www.phlpnet.org/healthy-planning

Safe Routes to School National Partnership: www.saferoutespartnership.org

U.S. Access Board (a federal agency committed to accessible design): www.access-board.gov

Appendix B

Model Complete Streets Policies

The following model policies were developed by the National Policy and Legal Analysis Network to Prevent Childhood Obesity (NPLAN) with funding from the Robert Wood Johnson Foundation. NPLAN drew on existing complete streets policies, lessons learned from the communities highlighted in this report, and input and feedback from the report project team. In the development and review of these policies, NPLAN also consulted experts from around the country, including transportation planners and engineers, city attorneys, and researchers who specialize in transportation issues. As evidenced by the variety and number of complete streets policies adopted over the past several years, the field is dynamic and evolving. Therefore, the model policies will also be posted online on NPLAN's website, in order to provide updates and more guidance as needed over time. NPLAN staff is also available to speak with staff from local communities who have questions about the model policies.

Communities approach their decision to implement complete streets in a variety of ways. Some have started with simple overarching statements or internal policies expressing their intent to create complete streets. Several communities that have taken this approach have emphasized its usefulness in getting community members, staff, elected officials, and stakeholders acclimated to the idea. Others have adopted resolutions or ordinances that provide more guidance and detail regarding how the community will pursue complete streets. This approach may be more feasible as an initial option in places that already have other multimodal initiatives in place. Some communities that have started with simple policy statements eventually codify that intent to provide more structure for integration of complete streets into local procedures and to ensure implementation. The approach that works best for a particular community depends largely on local context, as well as applicable state statutes.

The model policies provided below are intended as a starting point for communities looking for guidance. They include a model local resolution, which expresses a community's general intent to implement complete streets and provides broad guidance on how that should be done; a model local ordinance, which amends the local municipal code and provides more specific details on how complete streets will be implemented in the community; model comprehensive plan policies, which communities can draw upon when updating or revising their comprehensive plans; and a model regional or state resolution, which, similar in structure to the local resolution, expresses a regional or state agency's general commitment to complete streets. Also included are model findings (or whereas clauses), which are a customary part of laws and resolutions and provide factual and legal support for the need to adopt a resolution or ordinance.

Each model policy provides general, introductory guidance on its intended use. Each model also includes a number of comment boxes, which are intended not to be adopted with the policy but rather to provide more information on the appropriate use of specific clauses and sections of the policy. Communities should modify the model policy or policies to fit their local context and needs—adding, deleting, or modifying clauses as appropriate. Similarly, communities should also make changes to the policies to ensure consistency with other applicable local, regional, or state laws and policies. The information provided below is for informational purposes only and does not constitute legal advice. Communities should consult local counsel to assist in understanding and adapting these model policies.

RESOLUTION SETTING FORTH [MUNICIPALITY]'S COMMITMENT TO COMPLETE STREETS

PREAMBLE/WHEREAS CLAUSES

See Findings section, below

A draft resolution based on this model should include a preamble that contains “findings” of fact (“whereas” clauses) that support the need for the municipality to pass the resolution. The preamble contains factual information supporting the need for the resolution—in this case, documenting the need for complete streets. A list of findings supporting this model resolution appears in Section 5. Findings from that list may be inserted here, along with additional findings addressing the need for the resolution in the particular community.

THE RESOLUTION: INTRODUCTORY VERSION

The introductory version of the model local complete streets resolution provides a substantive but streamlined approach for jurisdictions that are ready to take initial steps toward implementing complete streets. The introductory version recognizes the importance of complete streets, requires that complete streets practices be integrated into the daily work of local agencies, provides for training of personnel and evaluation of efforts, and establishes a committee to explore further steps to implement complete streets in the community.

NOW, THEREFORE, LET IT BE RESOLVED that [Municipality/Adopting body] hereby recognizes the importance of creating complete streets that enable safe travel by all users, including pedestrians, bicyclists, public transportation riders and drivers, motor-vehicle drivers, [insert other significant local users if desired, e.g., drivers of agricultural vehicles, emergency vehicles, freight, etc.] and people of all ages and abilities, including children, youth, families, older adults, and individuals with disabilities.

BE IT FURTHER RESOLVED that [insert appropriate agencies, such as Department of Transportation, Department of Public Works, Department of Planning] should make complete streets practices a routine part of everyday operations, should approach every transportation project and program as an opportunity to improve public [and private] streets and the transportation network for all users, and should work in coordination with other departments, agencies, and jurisdictions to achieve complete streets.

COMMENT: By looking at every transportation project as an opportunity to make the streets safe for travel by all users, municipalities can move in a measured and incremental way toward achieving complete streets.

BE IT FURTHER RESOLVED that [insert appropriate agency] should evaluate how well the streets and transportation network of [Municipality] are serving each category of users.

COMMENT: Municipalities should look at collision statistics, bicycle and pedestrian injuries and fatalities, existing levels of service for different modes of transport and users, latent demand, and so on. Such evaluations can be very thorough or more succinct.

BE IT FURTHER RESOLVED that trainings in how to integrate, accommodate, and balance the needs of all users should be provided for planners, civil and traffic engineers, project managers, plan reviewers, inspectors, and other personnel responsible for the design and construction of streets, bridges, and other portions of the transportation network.

COMMENT: Such trainings may cover a range of topics: a basic introduction to the concept of complete streets, an exploration of advanced implementation questions, or an overview of how to apply new systems, policies, and requirements put in place by the jurisdiction to implement complete streets.

BE IT FURTHER RESOLVED that the head of each affected agency or department should report back to the [Adopting body] [annually / within one year of the date of passage of this resolution] regarding: the steps taken to implement this Resolution; additional steps planned; and any desired actions that would need to be taken by [Adopting body] or other agencies or departments to implement the steps taken or planned.

COMMENT: Municipalities are encouraged to tailor this clause to direct agencies to carry out additional specific implementation tasks as appropriate.

BE IT FURTHER RESOLVED that a committee is hereby created, to be composed of *[insert desired committee composition]* and appointed by *[the mayor/president of adopting body/other]*, to recommend short-term and long-term steps, planning, and policy adoption necessary to create a comprehensive and integrated transportation network serving the needs of all users; to assess potential obstacles to implementing complete streets in *[Municipality]*; and to develop proposed revisions to all appropriate plans, zoning and subdivision codes, laws, procedures, rules, regulations, guidelines, programs, templates, and design manuals, including *[insert name of Municipality's comprehensive plan equivalent as well as all other key documents by name]*, to integrate, accommodate, and balance the needs of all users in all projects.

COMMENT: While local considerations will dictate committee composition, municipalities should consider including representatives of key departments or agencies, such as the transit agency, public works department, planning department, public health department, and others, as well as the city manager, advocacy groups, and a representative from the school district.

BE IT FURTHER RESOLVED that the committee should consider requiring incorporation of complete streets modifications and infrastructure in the planning, design, approval, and implementation processes for any construction, reconstruction, retrofit, maintenance, alteration, or repair of streets, bridges, or other portions of the transportation network; enacting performance standards with measurable benchmarks reflecting the ability of users to travel in safety and comfort; and requiring all initial planning and design studies, health impact assessments, environmental reviews, and other project reviews for projects requiring funding or approval by *[Municipality]* to: (1) evaluate the effect of the proposed project on safe travel by all users and (2) identify measures to mitigate any adverse impacts on such travel that are identified.

BE IT FURTHER RESOLVED that the committee should report on the matters within its purview to the *[Adopting body]* within one year following the date of adoption of this Resolution, and upon receipt of this report the *[Adopting body]* will hold a hearing to determine further implementation steps.

THE RESOLUTION: ADVANCED VERSION

The advanced version of the model local complete streets resolution enables a local jurisdiction to take the necessary steps to integrate complete streets practices into the transportation network. It includes the provisions in the introductory version and also calls for regularly incorporating the needs of all users into street repair and construction projects, sets out more detailed performance standards, and requires that initial studies, health impact assessments, and environmental reviews consider impacts on safe travel by all users.

NOW, THEREFORE, LET IT BE RESOLVED that *[Municipality/Adopting body]* hereby recognizes the importance of creating complete streets that enable safe travel by all users, including pedestrians, bicyclists, public transportation riders and drivers, motor-vehicle drivers, *[insert other significant local users if desired, e.g., drivers of agricultural vehicles, emergency vehicles, freight, etc.]* and people of all ages and abilities, including children, youth, families, older adults, and individuals with disabilities.

BE IT FURTHER RESOLVED that *[Municipality/Adopting body]* affirms that complete streets infrastructure addressing the needs of all users should be incorporated into all planning, design, approval, and implementation processes for any construction, reconstruction, retrofit, maintenance, alteration, or repair of streets, bridges, or other portions of the transportation network, including pavement resurfacing, restriping, and signalization operations if the safety and convenience of users can be improved within the scope of the work; provided, however, that such infrastructure may be excluded upon written approval by *[insert senior manager, such as the city manager or the head of an appropriate agency]*, where documentation and data indicate that:

COMMENT: This provision, which requires that street projects on new or existing streets create complete streets, is a fundamental component of a commitment to complete streets. This clause provides crucial accountability in the exceptions process by requiring documentation, a transparent decision-making process, and written approval by a specified official.

- (1) Use by nonmotorized users is prohibited by law;
- (2) The cost would be excessively disproportionate to the need or probable future use over the long term;
- (3) There is an absence of current or future need; or

COMMENT: Data showing an absence of future need might include projections demonstrating low likelihood of pedestrian or bicycling activity in an area.

- (4) Inclusion of such infrastructure would be unreasonable or inappropriate in light of the scope of the project.

COMMENT: By including this fourth exception, a jurisdiction gains considerable flexibility, but at the cost of potentially implementing complete streets practices less thoroughly. Jurisdictions should consider this trade-off in determining whether to include this exception.

Other exceptions can also be included in this list, for example: “Significant adverse environmental impacts outweigh the positive effects of the infrastructure.”

BE IT FURTHER RESOLVED that *[insert appropriate agency]* should evaluate how well the streets and transportation network of *[Municipality]* are serving each category of users, and *[insert appropriate agencies]* should establish performance standards with measurable benchmarks reflecting the ability of users to travel in safety and comfort.

COMMENT: To evaluate service, municipalities may wish to look at collision statistics, bicycle and pedestrian injuries and fatalities, existing levels of service for different modes of transport and users, latent demand, and so on.

Specific performance standards, with clear benchmarks and timeframes, greatly increase accountability and the ability to assess progress toward a goal. Communities that are just beginning to move toward complete streets may wish to establish limited benchmarks, whereas those seeking rapid and substantial impact will want to specify detailed performance standards. In establishing performance standards, municipalities should look at areas such as transportation mode shift, miles of new bicycle lanes and sidewalks, percentage of streets with tree canopy and low design speeds, public participation rates, and so on.

BE IT FURTHER RESOLVED that *[insert appropriate agencies, such as Department of Transportation, Department of Public Works, Department of Planning]* should review and either revise or develop proposed revisions to all appropriate plans, zoning and subdivision codes, laws, procedures, rules, regulations, guidelines, programs, templates, and design manuals, including *[insert name of Municipality's comprehensive plan equivalent as well as all other key documents by name]*, to integrate, accommodate, and balance the needs of all users in all projects.

BE IT FURTHER RESOLVED that *[insert appropriate agencies, such as Department of Transportation, Department of Public Works, Department of Planning]* should make complete streets practices a routine part of everyday operations, should approach every transportation project and program as an opportunity to improve public *[and private]* streets and the transportation network for all users, and should work in coordination with other departments, agencies, and jurisdictions to achieve complete streets.

COMMENT: By looking at every transportation project as an opportunity to make the streets safe for travel by all users, municipalities can move in a measured and incremental way toward achieving complete streets.

BE IT FURTHER RESOLVED that trainings in how to integrate, accommodate, and balance the needs of all users should be provided for planners, civil and traffic engineers, project managers, plan reviewers, inspectors, and other personnel responsible for the design and construction of streets, bridges, and other portions of the transportation network.

COMMENT: Such trainings may cover a range of topics: a basic introduction to the concept of complete streets, an exploration of advanced implementation questions, or an overview of how to apply new systems, policies, and requirements put in place by the jurisdiction to implement complete streets.

BE IT FURTHER RESOLVED that procedures should be established to allow increased public participation in policy decisions and transparency in individual determinations concerning the design and use of streets.

COMMENT: A jurisdiction may exclude this provision if existing law provides for a high level of public participation and transparency in such determinations.

BE IT FURTHER RESOLVED that all initial planning and design studies, health impact assessments, environmental reviews, and other project reviews for projects requiring funding or approval by [Municipality] should: (1) evaluate the effect of the proposed project on safe travel by all users, and (2) identify measures to mitigate any adverse impacts on such travel that are identified.

COMMENT: This clause provides for public accountability and improved outcomes by enabling written evaluation of the effects of certain projects on safe travel as a routine consideration factoring into decision-making processes.

However, some communities may need to build momentum prior to adopting this provision. Such communities may omit this provision.

BE IT FURTHER RESOLVED that the head of each affected agency or department should report back to the [Adopting body] [annually / within one year of the date of passage of this resolution] regarding: the steps taken to implement this Resolution; additional steps planned; and any desired actions that would need to be taken by [Adopting body] or other agencies or departments to implement the steps taken or planned.

COMMENT: Municipalities are encouraged to tailor this clause to direct agencies to carry out additional specific implementation tasks as appropriate.

BE IT FURTHER RESOLVED that a committee is hereby created, to be composed of [insert desired committee composition] and appointed by [the mayor / president of adopting body / other], to recommend short-term and long-term steps, planning, and policy adoption necessary to create a comprehensive and integrated transportation network serving the needs of all users; to assess potential obstacles to implementing complete streets in [Municipality]; and to suggest revisions to the [insert name of Municipality's comprehensive plan equivalent], zoning code, subdivision code, and other applicable law.

COMMENT: While local considerations will dictate committee composition, municipalities should consider including representatives of key departments or agencies, such as the transit agency, public works department, planning department, public health department, and others, as well as the city manager, advocacy groups, and a representative from the school district.

BE IT FURTHER RESOLVED that the committee should report on the matters within its purview to the [Adopting body] within one year following the date of passage of this Resolution, and upon receipt of this report the [Adopting body] will hold a hearing to determine further implementation steps.

AN ORDINANCE OF THE [MUNICIPALITY (e.g. City of ____)]
PROVIDING FOR COMPLETE STREETS
AND AMENDING THE [MUNICIPALITY] MUNICIPAL CODE

The [Adopting body] does ordain as follows:

SECTION I. FINDINGS. The [Adopting body] hereby finds and declares as follows:

See Findings section, below

A draft ordinance based on this model should include “findings” of fact (“whereas” clauses) that support the need for the municipality to adopt the ordinance. The findings section is part of the ordinance, but it usually does not become codified in the local government code. The findings contain factual information supporting the need for the law—in this case, documenting the need for complete streets. A list of findings supporting this model ordinance appears below (pages 000–00). Municipalities may select findings from that list to insert here, along with additional findings addressing the need for the ordinance in the particular community.

NOW THEREFORE, it is the intent of the [Adopting body (e.g., city council)] in enacting this ordinance to encourage healthy, active living, reduce traffic congestion and fossil fuel use, and improve the safety and quality of life of residents of [Municipality] by providing safe, convenient, and comfortable routes for walking, bicycling, and public transportation.

SECTION II. [Article/Chapter] of the [Municipality] Municipal Code is hereby amended to read as follows:

Sec. [____ (*1)]. PURPOSE. The purpose of this [article/chapter] is to enable the streets of [Municipality] to provide safe, convenient, and comfortable routes for walking, bicycling, and public transportation that encourage increased use of these modes of transportation, enable convenient travel as part of daily activities, improve the public welfare by addressing a wide array of health and environmental problems, and meet the needs of all users of the streets, including children, older adults, and people with disabilities.

COMMENT: Municipalities may add additional reasons to this purpose clause as appropriate or desired.

Sec. [____ (*2)]. DEFINITIONS. The following words and phrases, whenever used in this [article / chapter], shall have the meanings defined in this section unless the context clearly requires otherwise:

COMMENT: Municipal codes contain many definitions; municipalities should ensure that the definitions from this ordinance appear in the correct section and that modifications occur as needed.

(a) “Complete streets infrastructure” means design features that contribute to a safe, convenient, or comfortable travel experience for users, including but not limited to features such as sidewalks; shared-use paths; bicycle lanes; automobile lanes; paved shoulders; street trees and landscaping; planting strips; curbs; accessible curb ramps; bulbouts; crosswalks; refuge islands; pedestrian and traffic signals, including countdown and accessible signals; signage; street furniture; bicycle parking facilities; public transportation stops and facilities; transit priority signalization; traffic-calming devices such as rotary circles, traffic bumps, and surface treatments such as paving blocks, textured asphalt, and concrete; narrow vehicle lanes; raised medians; and dedicated transit lanes [insert other accommodations if desired] [, and those features identified in (Municipality)’s Pedestrian/Bicycle Master Plan, if it exists].

COMMENT: Although features such as street trees and landscaping have traditionally not been included in transportation infrastructure, these features are crucial for pedestrian comfort and safety. They are incorporated into this definition to ensure that complete streets infrastructure addresses the needs of all users.

(b) “Street” means any right-of-way, public or private, including arterials, connectors, alleys, ways, lanes, and roadways by any other designation, as well as bridges, tunnels, and any other portions of the transportation network.

COMMENT: This definition of “street” includes both public and private streets and is broader than similar definitions contained in most municipal codes. The

effect is to make many provisions of this ordinance applicable or potentially applicable to private streets.

(c) “Street project” means the construction, reconstruction, retrofit, maintenance, alteration, or repair of any street, including the planning, design, approval, and implementation processes [, *except that “street project” does not include minor routine upkeep such as cleaning, sweeping, mowing, spot repair, or interim measures on detour routes*] [*and does not include projects with a total cost of less than \$[_____]*].

COMMENT: In defining “street project,” a municipality can use the following clause to reference and include the terms and definitions that are used to describe local street projects (e.g., capital project, major maintenance project, annual maintenance projects): “as well as [*insert local project terms*].”

(d) “Users” means individuals that use streets, including pedestrians, bicyclists, motor - vehicle drivers, public transportation riders and drivers, [*insert other significant local users if desired, e.g., drivers of agricultural vehicles, emergency vehicles, or freight*] and people of all ages and abilities, including children, youth, families, older adults, and individuals with disabilities.

Sec. [____] (*3). REQUIREMENT OF INFRASTRUCTURE ENSURING SAFE TRAVEL.

(a) [*Insert appropriate agencies, such as Department of Transportation, Department of Public Works, Department of Planning*] shall make complete streets practices a routine part of everyday operations, shall approach every transportation project and program as an opportunity to improve public [*and private*] streets and the transportation network for all users and shall work in coordination with other departments, agencies, and jurisdictions to achieve complete streets.

COMMENT: This provision, like many of the following provisions, allows municipalities to choose whether to apply the requirement to private streets in addition to public streets. Generally, it will expand the effectiveness of the ordinance to apply it to private streets. However, such a requirement may be more practical in certain jurisdictions than in others. For example, the requirement might be very important in a jurisdiction where there are many private streets in central locations.

(b) Every street project on public [*or private*] streets shall incorporate complete streets infrastructure sufficient to enable reasonably safe travel along and across the right-of-way for each category of users; provided, however, that such infrastructure may be excluded upon written approval by [*insert senior manager, such as city manager or the head of an appropriate agency*], where documentation and data indicate that:

COMMENT: This provision, which requires that street projects on new or existing streets create complete streets, is a fundamental component of a commitment to complete streets. This clause provides crucial accountability in the exceptions process by requiring documentation, a transparent decision-making process, and written approval by a specified official.

- (1) Use by nonmotorized users is prohibited by law;
- (2) The cost would be excessively disproportionate to the need or probable future use over the long term;
- (3) There is an absence of current or future need; or

COMMENT: Data showing an absence of future need might include projections demonstrating low likelihood of pedestrian or bicycling activity in an area. Such projections should be based on demographic, school, employment, and public transportation route data, not on extrapolations from current low mode use.

- (4) Inclusion of such infrastructure would be unreasonable or inappropriate in light of the scope of the project.

COMMENT: By including this fourth exception, a municipality gains considerable flexibility, but at the cost of potentially implementing complete streets practices less thoroughly. Municipalities should consider this trade-off in determining whether to include this exception.

Other exceptions can also be included in this list, for example: “Significant adverse environmental impacts outweigh the positive effects of the infrastructure.”

(c) As feasible, [Municipality] shall incorporate complete streets infrastructure into existing public [and private] streets to improve the safety and convenience of users, construct and enhance the transportation network for each category of users, and create employment.

COMMENT: This provision sets forth the municipality's desire and intent to retrofit existing streets to increase safety for all users, but the words "as feasible" leave the municipality great flexibility to do only what it determines to be a priority.

(d) If the safety and convenience of users can be improved within the scope of pavement resurfacing, restriping, or signalization operations on public [or private] streets, such projects shall implement complete streets infrastructure to increase safety for users.

COMMENT: This provision is intended to encourage new bicycle lanes and reductions in the number of vehicle lanes where feasible, as part of the restriping of pavement lines and markings during resurfacing, and to encourage improvements for pedestrians, particularly people with disabilities and older adults, as part of signalization projects.

(e) [Insert appropriate agencies, such as Department of Transportation, Department of Public Works, Department of Planning] shall review and either revise or develop proposed revisions to all appropriate plans, zoning and subdivision codes, laws, procedures, rules, regulations, guidelines, programs, templates, and design manuals, including [insert name of Municipality's comprehensive plan equivalent as well as all other key documents by name], to integrate, accommodate, and balance the needs of all users in all street projects on public [and private] streets.

(f) In design guidelines, [insert appropriate agencies] shall coordinate templates with street classifications and revise them to include complete streets infrastructure, such as bicycle lanes, sidewalks, street crossings, and planting strips.

(g) Trainings in how to integrate, accommodate, and balance the needs of each category of users shall be provided for planners, civil and traffic engineers, project managers, plan reviewers, inspectors, and other personnel responsible for the design and construction of streets.

COMMENT: Such trainings may cover a range of topics: a basic introduction to the concept of complete streets, an exploration of advanced implementation questions, or an overview of how to apply new systems, policies, and requirements put in place by the jurisdiction to implement complete streets.

Sec. [____] (*4). DATA COLLECTION, STANDARDS, AND PUBLIC INPUT.

(a) [Insert appropriate agency or agencies] shall collect data measuring how well the streets of [Municipality] are serving each category of users.

COMMENT: Municipalities should look at latent demand, existing levels of service for different modes of transport and users, collision statistics, bicycle and pedestrian injuries and fatalities, and so on.

(b) [Insert appropriate agency or agencies] shall put into place performance standards with measurable benchmarks reflecting the ability of users to travel in safety and comfort.

COMMENT: Specific performance standards with clear benchmarks and timeframes greatly increase accountability and the ability to assess progress toward a goal. Communities that are just beginning to move toward complete streets may wish to establish limited benchmarks, whereas those seeking rapid and substantial impact will want to specify detailed performance standards. In establishing performance standards, municipalities should look at areas such as transportation mode shift, miles of new bicycle lanes and sidewalks, percentage of streets with tree canopy and low design speeds, public participation rates, and so on.

(c) [Insert appropriate agency or agencies] shall establish procedures to allow full public participation in policy decisions and transparency in individual determinations concerning the design and use of streets.

COMMENT: A municipality may exclude this provision if existing law provides for a high level of public participation and transparency in such determinations.

(d) *[Insert appropriate agency, agencies, or official]* shall implement, administer, and enforce this *[article/chapter]*. *[Agency]* is hereby authorized to issue all rules and regulations consistent with this *[article/chapter]* and shall have all necessary powers to carry out the purpose of and enforce this *[article/chapter]*.

COMMENT: This provision designates an agency or official to implement this ordinance and also bestows rule-making and other powers on the agency. If existing law in a municipality provides such rule-making authority, this provision or the second sentence of the provision may be omitted.

(e) All initial planning and design studies, health impact assessments, environmental reviews, and other project reviews for projects requiring funding or approval by *[Municipality]* shall: (1) evaluate the effect of the proposed project on safe travel by all users and (2) identify measures to mitigate any adverse impacts on such travel that are identified.

COMMENT: This clause provides for public accountability and improved outcomes by enabling written evaluation of the effects of certain projects on safe travel as a routine consideration factoring into decision-making processes.

However, some communities may need to build momentum prior to adopting this provision. Such communities may omit this provision and substitute the alternative provision available in subsection *[5(c)]*.

Sec. *[]* (*5). FURTHER STEPS.

(a) The head of each affected agency or department shall report back to the *[Adopting body]* *[annually / within one year of the date of passage of this Ordinance]* regarding: the steps taken to implement this Ordinance; additional steps planned; and any desired actions that would need to be taken by *[Adopting body]* or other agencies or departments to implement the steps taken or planned.

COMMENT: Municipalities are encouraged to tailor this clause to direct agencies to carry out additional specific implementation tasks as appropriate.

(b) A committee is hereby created, to be composed of *[insert desired committee composition]* and appointed by *[the mayor / president of adopting body / other]*, to forward *[Municipality]*'s implementation of complete streets practices by: (1) addressing short-term and long-term steps and planning necessary to create a comprehensive and integrated transportation network serving the needs of all users; (2) assessing potential obstacles to implementing complete streets practices in *[Municipality]*; (3) if useful, recommending adoption of an *[ordinance / internal policy / other document]* containing additional steps; and (4) proposing revisions to the *[insert name of Municipality's comprehensive plan equivalent]*, zoning and subdivision codes, and other applicable law to integrate, accommodate, and balance the needs of all users in all street projects. The committee shall report on the matters within its purview to the *[Adopting body]* within one year following the date of passage of this Ordinance.

COMMENT: Establishing a committee is one option for implementing a local complete streets law; however, just as with other provisions of this ordinance, a jurisdiction can omit this provision if it is not desirable. While local considerations will dictate committee composition, municipalities should consider including representatives of key departments or agencies, such as the transit agency, public works department, planning department, public health department, and others, as well as the city manager, advocacy groups, and a representative from the school district.

[(c) The committee shall also consider requiring incorporation of complete streets modifications and complete streets infrastructure in street projects, as well as requiring all initial planning and design studies, health impact assessments, environmental reviews, and other project reviews for infrastructure projects requiring funding or approval by [Municipality] to: (1) evaluate the effect of the proposed project on safe travel by all users, and (2) identify measures to mitigate any adverse impacts on such travel that are identified.]

COMMENT: For communities that are just beginning this process, a more exploratory approach to complete streets would involve inserting this subsection and deleting subsections *[3(b) and 4(e)]*.

SECTION III. STATUTORY CONSTRUCTION AND SEVERABILITY.

(a) This Ordinance shall be construed so as not to conflict with applicable federal or state laws, rules, or regulations. Nothing in this Ordinance authorizes any city agency to impose any duties or obligations in conflict with limitations on municipal authority established by federal or state law at the time such agency action is taken.

In the event that a court or agency of competent jurisdiction holds that a federal or state law, rule, or regulation invalidates any clause, sentence, paragraph, or section of this Ordinance or the application thereof to any person or circumstances, it is the intent of the Ordinance that the court or agency sever such clause, sentence, paragraph, or section so that the remainder of this Ordinance remains in effect.

(b) In undertaking the enforcement of this Ordinance, [*Municipality*] is assuming only an undertaking to promote the general welfare. It is not assuming, nor is it imposing on its officers and employees, an obligation through which it might incur liability in monetary damages to any person who claims that a breach proximately caused injury.

COMMENT: This provision provides that no new basis for tort liability is established by the enactment of this ordinance. Municipal attorneys in a given jurisdiction can assess whether this language provides adequate protection under state law and substitute alternative language if desirable.

Model Comprehensive Plan Language Providing for Complete Streets

Good planning practice requires that communities establish long-range comprehensive plans for future physical development. A comprehensive plan provides a vision of how residents and stakeholders wish to see their community evolve, and it acts as a policy guide for decision making regarding future development. In different states, comprehensive plans are known by a variety of names, including community plans, master plans, and general plans. In some states, these plans are required; in others, they are optional. The plan's effect from a legal perspective also varies widely, and some states require that comprehensive plans address specific topics and undergo regular updates.

By including “complete streets” language in a comprehensive plan, a community can promote street design and land-use policies that allow people to get around safely on foot, bicycle, or public transportation. Integrating complete streets practices into planning and policy decisions can help encourage safe and active transportation, decrease pollution, and reduce the incidence of childhood obesity, social isolation, diabetes, and heart disease.

This document is divided into three sections:

Section I suggests language for a transportation vision statement that sets out a vision of streets that are safe for travel by pedestrians, bicyclists, and public transportation riders of all ages and abilities.

Section II sets out a complete streets policy package, designed to be included in the comprehensive plan's transportation or streets chapter.

Section III provides additional language on complete streets tailored for other chapters of a comprehensive plan, in order to integrate the idea of complete streets into different arenas and encourage interagency planning.

Comprehensive plans are generally organized into an overarching *vision* with related *goals*, *objectives*, and *policy* or *action* steps. This model uses these terms, which are easily translated into the language of a given plan.

SECTION I. VISION STATEMENT

The vision statement of a comprehensive plan describes the community's general vision of how the community should function. This vision statement may be included in a chapter focusing entirely on the community's vision, or it may appear at the beginning of the transportation chapter. A vision statement is generally developed through a consensus-driven, collaborative community engagement process. This model language is provided not to prescribe what a community's vision should be but to offer an example of a detailed vision and demonstrate the range of goals that can be considered in setting out a vision statement.

Transportation Vision Statement: The community of [Jurisdiction] envisions a transportation system that encourages healthy, active living; promotes transportation options and independent mobility; increases community safety and access to healthy food; reduces environmental impact; mitigates climate change; and supports greater social interaction and community identity by providing safe and convenient travel along and across streets through a comprehensive, integrated transportation network for pedestrians, bicyclists, public transportation riders and drivers, motor-vehicle drivers, [insert other significant local users if desired, e.g., drivers of agricultural vehicles, emergency vehicles, freight, etc.] and people of all ages and abilities, including children, youth, families, older adults, and individuals with disabilities.

COMMENT: A community may add new language to capture another vision and may delete any of the concepts that do not represent the community's vision.

SECTION II. COMPLETE STREETS POLICY PACKAGE: TRANSPORTATION CHAPTER

Communities may include this entire complete streets policy in the comprehensive plan as a complete policy package, or they may selectively adopt specific objectives or policies. Communities are encouraged to tailor the policy and action items to local needs, concerns, and conditions and to identify the agency or department responsible for implementation. This section fits naturally in the comprehensive plan's transportation chapter or element

(which may also be known as the circulation, roadways, or streets chapter). If such a chapter does not exist, the section might be included in the land-use chapter.

Complete Streets Policy

Goal T1: Provide safe and comfortable routes for walking, bicycling, and public transportation to increase use of these modes of transportation, enable convenient and active travel as part of daily activities, reduce pollution, and meet the needs of all users of the streets, including children, families, older adults, and people with disabilities.

Objective T1.1: Integrate complete streets infrastructure and design features into street design and construction to create safe and inviting environments for all users to walk, bicycle, and use public transportation.

T1.1.1. In planning, designing, and constructing complete streets:

- Include infrastructure that promotes a safe means of travel for all users along the right-of-way, such as sidewalks, shared-use paths, bicycle lanes, and paved shoulders.
- Include infrastructure that facilitates safe crossing of the right-of-way, such as accessible curb ramps, crosswalks, refuge islands, and pedestrian signals; such infrastructure must meet the needs of people with different types of disabilities and people of all ages.
- Ensure that sidewalks, crosswalks, public transportation stops and facilities, and other aspects of the transportation right-of-way are compliant with the Americans with Disabilities Act and meet the needs of people with different types of disabilities, including mobility impairments, vision impairments, hearing impairments, and others. Ensure that the ADA Transition Plan includes a prioritization method for enhancements and revise if necessary.

COMMENT: Many types of accommodations for people with disabilities are mandated by federal law under the Americans with Disabilities Act.

- Prioritize incorporation of street design features and techniques that promote safe and comfortable travel by pedestrians, bicyclists, and public transportation riders, such as traffic-calming circles, additional traffic-calming mechanisms, narrow vehicle lanes, raised medians, dedicated transit lanes, transit priority signalization, transit bulbouts, road diets, high street connectivity, and physical buffers and separations between vehicular traffic and other users.

COMMENT: A road diet is a transportation technique in which the number or width of lanes dedicated to motor-vehicle traffic is decreased, often by combining the two central lanes into a single two-way turn lane, in order to create additional space within the right-of-way for features such as bicycle lanes, sidewalks, or buffer zones.

Connectivity describes the directness of routes and density of connections in a street network. A street network with high connectivity has many short links, numerous intersections, and few dead-end streets. As connectivity increases, travel distances decrease and route options increase, allowing more direct travel between destinations.

- Ensure use of additional features that improve the comfort and safety of users:
 - Provide pedestrian-oriented signs, pedestrian-scale lighting, benches and other street furniture, bicycle parking facilities, and comfortable and attractive public transportation stops and facilities.
 - Encourage street trees, landscaping, and planting strips, including native plants where possible, in order to buffer traffic noise and protect and shade pedestrians and bicyclists.
 - Reduce surface water runoff by reducing the amount of impervious surfaces on the streets.

T1.1.2. In all street projects, include infrastructure that improves transportation options for pedestrians, bicyclists, and public transportation riders of all ages and abilities.

COMMENT: This provision, which requires that all street projects on new or existing streets create complete streets, is a fundamental component of a commitment to complete streets.

- Ensure that this infrastructure is included in planning, design, approval, construction, operations, and maintenance phases of street projects.

- Incorporate this infrastructure into all construction, reconstruction, retrofit, maintenance, alteration, and repair of streets, bridges, and other portions of the transportation network.
- Incorporate multimodal improvements into pavement resurfacing, restriping, and signalization operations where the safety and convenience of users can be improved within the scope of the work.
- Develop systems to implement and monitor incorporation of such infrastructure into construction and reconstruction of private streets.
- Allow exclusion of such infrastructure from street projects only upon approval by *[the city manager or a senior manager of an appropriate agency, such as the Department of Transportation]* and only where documentation and supporting data indicate one of the following bases for the exemption: (a) use by nonmotorized users is prohibited by law; (b) the cost would be excessively disproportionate to the need or probable future use over the long term; (c) there is an absence of current and future need; or (d) inclusion of such infrastructure would be unreasonable or inappropriate in light of the scope of the project.

COMMENT: This provision provides crucial accountability in the exceptions process by requiring documentation, a transparent decision-making process, and written approval by a specified official.

By including exception (d), a jurisdiction gains considerable flexibility but at the cost of potentially implementing complete streets practices less thoroughly. Jurisdictions should consider this trade-off in determining whether to include this exception.

Other exceptions can also be included in this list, for example: “Significant adverse environmental impacts outweigh the positive effects of the infrastructure.”

In evaluating whether the conditions of (b) and (c) are met, a jurisdiction may need to conduct latent demand studies, which measure the potential level of use by bicyclists, pedestrians, and others, should appropriate infrastructure be provided.

T1.1.3. Develop policies and tools to improve *[Jurisdiction]*’s complete streets practices:

- Develop a pedestrian crossings policy, addressing matters such as where to place crosswalks and when to use enhanced crossing treatments.
- Develop policies to improve the safety of crossings and travel in the vicinity of schools and parks.
- Consider developing a transportation demand management/commuter benefits ordinance to encourage residents and employees to walk, bicycle, use public transportation, or carpool.
- Develop a checklist for *[Jurisdiction]*’s development and redevelopment projects, to ensure the inclusion of infrastructure providing for safe travel for all users and enhance project outcomes and community impact.

T1.1.4. Encourage transit-oriented development that provides public transportation in close proximity to employment, housing, schools, retailers, and other services and amenities.

T1.1.5. Change transportation investment criteria to ensure that existing transportation funds are available for complete streets infrastructure.

T1.1.6. Identify additional funding streams and implementation strategies to retrofit existing streets to include complete streets infrastructure.

Objective T1.2: Make complete streets practices a routine part of *[Jurisdiction]*’s everyday operations.

T1.2.1. As necessary, restructure and revise the zoning and subdivision codes and other plans, laws, procedures, rules, regulations, guidelines, programs, templates, and design manuals, including *[insert all other key documents by name]*, in order to integrate, accommodate, and balance the needs of all users in all street projects on public *[and private]* streets.

COMMENT: By opting to apply the requirement to private streets in addition to public streets, a jurisdiction will generally expand the effectiveness of the complete streets policy. However, such a requirement may be more practical in certain jurisdictions than in others. For example, the requirement might be very important in a jurisdiction where there are many private streets in central locations.

T1.2.2. Develop or revise street standards and design manuals, including cross-section templates and design treatment details, to ensure that standards support and do not impede complete streets; coordinate with related policy documents [*such as Pedestrian/Bicycle Plans, insert other relevant documents*].

- Assess current requirements with regard to road width and turning radii in order to determine the narrowest vehicle lane width and tightest corner radii that safely balance other needs; adjust design guidelines and templates to reflect ideal widths and radii.

T1.2.3. Make training available to planning and public works personnel and consulting firms on the importance of complete streets and on implementation and integration of multimodal infrastructure and techniques.

T1.2.4. Encourage coordination among agencies and departments to develop joint prioritization, capital planning and programming, and implementation of street improvement projects and programs.

T1.2.5. Encourage targeted outreach and public participation in community decisions concerning street design and use.

T1.2.6. Establish performance standards with measurable outcomes to assess safety, functionality, and actual use by each category of users; include goals such as:

- By [2020], facilitate a transportation mode shift so that [20]% of trips occur by bicycling or walking.
- By [2015], reduce the number of injuries and fatalities to bicyclists and pedestrians by [__] %.
- Reduce per capita vehicle miles traveled by [__] % by [insert year].
- Provide a high proportion of streets ([__] %) with sidewalks, low design speeds, tree canopy, and street furnishings.
- Increase the miles of bicycle lanes and other bikeways by [__] % by [insert year].
- Increase the miles of sidewalks by [__] % by [insert year].

COMMENT: Other standards could include user satisfaction, percentage reductions in greenhouse gas emissions, and reduction in gaps in the sidewalk network.

T1.2.7. Replace automobile level of service as a dominant determinant with multimodal level-of-service assessment criteria.

T1.2.8. Collect baseline data and regularly gather follow-up data in order to assess impact of policies.

- Collect data regarding the safety, functionality, and actual use by each category of users of the neighborhoods and areas within [Jurisdiction].
- Track public transportation ridership numbers.
- Track performance standards and goals.
- Track other performance measures such as number of new curb ramps and new street trees or plantings.
- Require major employers to monitor how employees commute to work.

Objective T1.3: Plan and develop a comprehensive and convenient bicycle and pedestrian transportation network.

COMMENT: Jurisdictions with existing bicycle or pedestrian plans may have already addressed the policy/action items under this objective. In such jurisdictions, it is not necessary to restate these policy and action items verbatim. Such plans should be reviewed, and, if necessary, revised to complement the complete streets approach. If existing plans address this objective sufficiently, a jurisdiction may incorporate its bicycle and pedestrian plans with language such as: "The provisions set forth in the [Pedestrian/Bicycle Plan] are incorporated into this plan."

For jurisdictions that have not developed a detailed bicycle or pedestrian plan, the policies and actions in this section provide a good way to begin addressing those needs in an integrated fashion.

T1.3.1. Develop a long-term plan for a bicycle and pedestrian network that meets the needs of users, including pedestrians, bicyclists, public transportation riders, [*insert other appropriate users if desired*] and people of all ages and abilities, including children, youth, families, older adults, and individuals with disabilities.

- Conduct a demand analysis for each category of user, mapping locations that are already oriented to each mode of travel and type of user and those for which there is latent demand.
- For each category of user, map out a preferred transportation network with routes that will enable safe, interconnected, direct, continuous, and efficient travel from each major origination area to each major destination area.
- Encourage public participation in community decisions concerning the demand analysis, preferred route network, and street design and use to ensure that such decisions (a) result in streets that meet the needs of all users and (b) are responsive to needs of individuals and groups that traditionally have not participated in public infrastructure design. Include pedestrians, bicyclists, individuals with disabilities, children and youth, families, older adults, public transportation riders, low-income communities, communities of color, other distinct social groups, and their advocates. Establish ongoing advisory committees and public feedback mechanisms.
- Identify and prioritize necessary changes in order to implement the preferred network; prioritize neighborhoods with the greatest need and projects that significantly alleviate economic, social, racial, or ethnic inequities.
- Ensure that the networks provide ready access to healthy sources of nutrition.
- Explore the use of nonstandard locations and connections for bicycle, pedestrian, and public transportation facilities, such as easements, restored stream corridors, and railroad rights-of way.

T1.3.2. Evaluate timeline and funding of the plan.

- Assess the degree to which implementation of the plan can be coordinated with planned reconstruction of streets, development projects, utility projects, and other existing funding streams.
- Develop funding strategies for addressing additional needs; actively pursue funding from state, federal, and other sources.
- Explore imposing development impact fees and dedication requirements on new development to create paths and other complete streets infrastructure.

T1.3.3. In collaboration with *[appropriate local and regional agencies]*, integrate bicycle, pedestrian, and public transportation facility planning into regional and local transportation planning programs and agencies to encourage connectivity between jurisdictions.

T1.3.4. Develop programs to encourage bicycle use, such as enacting indoor bicycle-parking policies to encourage bicycle commuting or testing innovative bicycle-facility design.

Objective T1.4: Promote bicycle, pedestrian, and public transportation rider safety.

COMMENT: As noted for the previous objective, jurisdictions with existing bicycle or pedestrian plans may also choose to omit these items if already addressed in those plans and instead reference those plans.

T1.4.1. Identify physical improvements that would make bicycle and pedestrian travel safer along current major bicycling and walking routes and the proposed future network, prioritizing routes to and from schools.

T1.4.2. Identify safety improvements to pedestrian and bicycle routes used to access public transportation stops; collaborate with *[local transit agency]* to relocate stops where advisable.

T1.4.3. Identify intersections and other locations where collisions have occurred or that present safety challenges for pedestrians, bicyclists, or other users; consider gathering additional data through methods such as walkability/bikeability audits; analyze data; and develop solutions to safety issues.

T1.4.4. Prioritize modifications to the identified locations and identify funding streams and implementation strategies, including which features can be constructed as part of routine street projects.

T1.4.5. Collaborate with schools, senior centers, advocacy groups, and public safety departments *[insert additional specific departments as appropriate]* to provide community education about safe travel for pedestrians, bicyclists, public transportation riders, and others.

T1.4.6. Use crime prevention through environmental design strategies to increase safety for pedestrians, bicyclists, and other users.

COMMENT: Crime prevention through environmental design (CPTED) involves designing the built environment to deter criminal behavior. CPTED aims to

create environments that discourage the commission of crimes by influencing offenders to not commit a contemplated crime, usually due to increased fear of detection.

T1.4.7. As necessary, public safety departments should engage in additional enforcement actions in strategic locations.

Objective T1.5: Make public transportation an interconnected part of the transportation network.

- **T1.5.1.** Partner with [local transit agency] to enhance and expand public transportation services and infrastructure throughout [jurisdiction] and the surrounding region; encourage the development of a public transportation system that increases personal mobility and travel choices, conserves energy resources, preserves air quality, and fosters economic growth.
- **T1.5.2.** Work jointly with [local transit agency] to provide destinations and activities that can be reached by public transportation and are of interest to public transportation-dependent populations, including youth, older adults, and people with disabilities.
- **T1.5.3.** Collaborate with [local transit agency] to incorporate infrastructure to assist users in employing multiple means of transportation in a single trip in order to increase transportation access and flexibility; examples include, but are not limited to, provisions for bicycle access on public transportation, secure bicycle racks at transit stops, access via public transportation to trails and recreational locations, and so on.
- **T1.5.4.** Ensure safe and accessible pedestrian routes to public transportation stops; relocate stops if safe routes are not feasible at current location.
- **T1.5.5.** Work with [local transit agency] to ensure that public transportation facilities and vehicles are fully accessible to people with disabilities.
- **T1.5.6.** Explore working with [local transit agency] to provide travel training programs for older adults and people with disabilities, as well as awareness training for vehicle operators.
- **T1.5.7.** Explore creation of public transportation priority lanes to improve travel time.
- **T1.5.8.** Partner with [local transit agency] to collect data and establish performance standards related to these steps.

SECTION III. COMPLETE STREETS CONCEPTS FOR INCLUSION WITHIN OTHER CHAPTERS/ELEMENTS/SECTIONS OF THE PLAN.

Communities may also find it beneficial to include complete streets concepts in other chapters of their plans to increase the integration of the plan as a whole.

Land Use Chapter

Goal LU1: Ensure that land-use patterns and decisions encourage walking, bicycling, and public transportation use and make these transportation options a safe and convenient choice.

Objective LU1.1: Plan, design, and create complete and well-structured neighborhoods whose physical layout and land-use mix promote walking, bicycling, and public transportation use as a means of accessing services, food, retail, employment, education, child care, recreation, and other destinations.

- **LU1.1.1.** Encourage mixed use development to allow siting of residential, retail, office, recreational, and educational facilities within close proximity to one another to encourage walking and bicycling as a routine part of everyday life.
 - Maximize the proportion of residences within [¼] mile of uses like parks, schools, grocers, retailers, service providers, employment, public transportation, and other desirable community features.
- **LU1.1.2.** Encourage transit-oriented development by developing public transportation in downtown areas and encouraging dense infill development near public transportation facilities.
- **LU1.1.3.** Promote infill development and redevelopment; new construction should occur in a compact form in developed locations whenever feasible.
- **LU1.1.4.** Encourage the creation of high-quality community plazas, squares, greens, commons, community and neighborhood parks, and rooftop gardens; explore creation of shared streets.

- **LU1.1.5.** Require safe and convenient walking, bicycling, and public transportation features in new or renovated development.
- **LU1.1.6.** Require transportation demand management strategies in development plans.
- **LU1.1.7.** Explore imposing development impact fees, use fees, and dedication requirements on new development to fund multimodal transportation.
- **LU1.1.8.** Consider conducting health impact assessments when designing streets or undertaking policy making with regard to public infrastructure and development, in order to understand and address public health implications of actions in this realm.

Objective LU1.2: Require street design that creates public space that is safe and welcoming for pedestrians.

- **LU1.2.1.** Encourage street-oriented buildings; locate parking lots, if provided, in rear of retail and business centers.
- **LU1.2.2.** Provide pedestrian-scale lighting.
- **LU1.2.3.** Encourage a high proportion of streets where building façades have abundant windows and entrances facing the street and create a human-scaled wall near the lot line.
- **LU1.2.4.** Encourage ground-level business uses that support pedestrian activity, such as retail, restaurants, and services.
- **LU1.2.5.** Reduce the proportion of street frontages and rights-of-way lined by parking lots, blank walls, or empty lots.
- **LU1.2.6.** Where parking lots are located between commercial buildings and streets, require or encourage creation of a pedestrian path from the street to the entrance.
- **LU1.2.7.** Increase street connectivity.

Schools/Public Facilities Chapter

Goal S1: Increase children’s physical activity to benefit their short- and long-term health and improve their ability to learn.

Objective S1.1: Provide children with safe and appealing opportunities for walking and bicycling to school in order to decrease rush-hour traffic and fossil fuel consumption, encourage exercise and healthy living habits in children, and reduce the risk of injury to children through traffic collisions near schools.

- **S1.1.1.** Support Safe Routes to Schools programs.
 - Work with [School District(s)] to pursue encouragement programs such as Walk and Bike to School Days, as well as “Walking School Bus”/“Bike Train” programs at elementary schools, where parents take turns accompanying a group of children to school on foot or via bicycle.
 - Gather baseline data on attitudes about and levels of walking and bicycling to school through student tallies and parent surveys; gather additional data each spring and fall to measure progress.
 - Work with [School District(s)] and advocates to obtain Safe Routes to School funding to implement educational programs.
 - Work with [School District(s)] to encourage educational programs that teach students safe walking and bicycling behaviors, and educate parents and drivers in the community about the importance of safe driving.
 - Work with law enforcement to enforce speed limits and traffic laws, assist in ensuring safe crossings, and promote safe travel behavior within the schools.
 - Encourage parents to get children to school through active travel such as walking or bicycling.
- **S1.1.2.** Prioritize safety and roadway improvements around schools.
 - Conduct walkability and bikeability audits along routes to schools to identify opportunities and needs for infrastructure improvements.
 - Ensure that speed limits in areas within [1,000 feet] of schools are no greater than 15 to 25 miles per hour.
 - Assess traffic speeds, volumes, and vehicle types around schools; implement traffic calming in areas immediately around schools where indicated by speed and volume; consider closing streets to through traffic during school hours if other methods cannot reduce threat to safety.

- Pursue Safe Routes to School funding to implement infrastructure improvements.
- **S1.1.3.** Work with [*School District(s)*] to improve transportation safety around schools, including drop-off and pickup zones, as well as locations where interactions occur between pedestrians, bicyclists, automobiles, and buses.
- **S1.1.4.** Work with [*School District(s)*] to locate and design new and remodeled schools to be easily accessible by foot or bicycle for the largest number of students possible by taking steps such as locating new schools in or near neighborhoods where students live, providing safe and secure bicycle parking within school facilities, and allowing convenient access to schools from public streets.
- **S1.1.5.** Locate sports fields near schools or pursue joint use agreements with [*School District(s)*] to allow school fields to be available for public use outside of school hours.

Parks/Recreation Chapter

Goal P1: Increase use of parks and open space for physical activity and encourage residents to access parks by walking, bicycling, or public transportation.

Objective P1.1: Create safe routes to parks and open space.

- **P1.1.1.** Encourage the development of parks and open space with a network of safe and convenient walking and bicycle routes, including routes that access other popular destinations, such as schools.
- **P1.1.2.** Implement traffic-calming measures near parks where advisable due to vehicle speeds and volumes.
- **P1.1.3.** Improve intersections at access points to parks to create greater visibility for all users and provide accessible curb ramps and additional time to cross the street.
- **P1.1.4.** Improve public transportation connections to trails, parks, and other recreational locations.
- **P1.1.5.** Ensure that all parks and open space can be reached through safe routes for bicycling, walking, and public transportation.
- **P1.1.6.** Ensure that trails, parks, and open spaces have secure bicycle parking facilities.

Community Health Chapter

Goal H1: Improve health, safety, and mental well-being of residents by creating convenient and safe opportunities for physical activity.

Objective H1.1: Ensure that residents of all ages and income levels can walk and bicycle to meet their daily needs.

- **H1.1.1.** Improve bicycle, pedestrian, and public transportation access to residential areas, educational and child-care facilities, employment centers, grocery stores, retail centers, recreational areas, historic sites, hospitals and clinics, and other destination points.

Objective H1.2: Reduce asthma levels, social isolation, violent street crime incidents, and the severity and number of pedestrian and bicycling collisions by decreasing vehicular traffic and increasing pedestrian activity.

- **H1.2.1.** Provide comfortable environments and destinations for walking and bicycling to integrate physical activity into daily routines.

RESOLUTION SETTING FORTH [STATE / REGIONAL BODY]'S COMMITMENT TO COMPLETE STREETS

PREAMBLE/WHEREAS CLAUSES

See Findings section, below

A draft resolution based on this model should include a preamble that contains “findings” of fact (“whereas” clauses) that support the need for the state or regional body to pass the resolution. The preamble contains factual information supporting the need for the resolution—in this case, documenting the need for complete streets. A list of findings supporting this model resolution appears below (pages 000–00). Findings from that list may be inserted here, along with additional findings addressing the need for the resolution in the particular state or region.

THE RESOLUTION: INTRODUCTORY VERSION

The introductory version of the model state and regional complete streets resolution is streamlined for jurisdictions that are ready to express support of complete streets but are still exploring how to implement that support. It recognizes the importance of complete streets and urges their adoption and execution in a very general way.

NOW, THEREFORE, LET IT BE RESOLVED that [State / Regional body / Adopting body] hereby recognizes the importance of creating complete streets that enable safe travel by all users, including pedestrians, bicyclists, public transportation riders and drivers, motor-vehicle drivers, [insert other significant local users if desired, e.g., drivers of agricultural vehicles, emergency vehicles, freight, etc.] and people of all ages and abilities, including children, youth, families, older adults, and individuals with disabilities.

BE IT FURTHER RESOLVED that [State / Regional body / Adopting body] [expects / requires] all transportation projects receiving state [or, where applicable, federal] funding to incorporate complete streets infrastructure addressing the needs of all users into all planning, design, approval, and implementation processes for any construction, reconstruction, retrofit, maintenance, alteration, or repair of streets, bridges, or other portions of the transportation network, including pavement resurfacing, restriping, and signalization operations if the safety and convenience of users can be improved within the scope of the work; provided, however, that such infrastructure may be excluded upon written approval by [insert appropriate senior manager, such as the head of the state department of transportation or other appropriate agency], where documentation and data indicate that:

COMMENT: This provision, which requires that street projects on new or existing streets create complete streets, is a fundamental component of a commitment to complete streets. This clause provides crucial accountability in the exceptions process by requiring documentation, a transparent decision-making process, and written approval by a specified official.

- (1) Use by nonmotorized users is prohibited by law;
- (2) The cost would be excessively disproportionate to the need or probable future use over the long term;
- (3) There is an absence of current or future need; or

COMMENT: Data showing an absence of future need might include projections demonstrating low likelihood of pedestrian or bicycling activity in an area.

- (4) Inclusion of such infrastructure would be unreasonable or inappropriate in light of the scope of the project.

COMMENT: By including this fourth exception, a jurisdiction gains considerable flexibility, but at the cost of potentially implementing complete streets practices less thoroughly. Jurisdictions should consider this trade-off in determining whether to include this exception.

Other exceptions can also be included in this list, for example: “Significant adverse environmental impacts outweigh the positive effects of the infrastructure.”

[BE IT FURTHER RESOLVED] that *[State/Adopting body]* requires the *[insert name of state department of transportation]* to make complete streets practices a routine part of its every-day operations, to approach every transportation project and program as an opportunity to improve public *[and private]* streets and the transportation network for all users, and to work in coordination with other departments, agencies, and jurisdictions to achieve complete streets.]

COMMENT: This provision is intended for states adopting this resolution and is not applicable to bodies that do not have jurisdiction over the state department of transportation.

BE IT FURTHER RESOLVED that *[insert appropriate agency]* should evaluate how well the streets and transportation network of *[State/Region]* are serving each category of users, and *[insert appropriate agencies]* should establish performance standards with measurable benchmarks reflecting the ability of users to travel in safety and comfort.

COMMENT: To evaluate service, jurisdictions may wish to look at latent demand, existing levels of service for different modes of transport and users, collision statistics, bicycle and pedestrian injuries and fatalities, and so on.

Specific performance standards with clear benchmarks and timeframes greatly increase accountability and the ability to assess progress toward a goal. Jurisdictions that are just beginning to move toward complete streets may wish to establish more limited benchmarks, whereas those seeking rapid and substantial impact will want to specify detailed performance standards. In establishing performance standards, jurisdictions should look at areas such as transportation mode shift, miles of new bicycle lanes and sidewalks, percentage of streets with tree canopy and low design speeds, public participation rates, and so on.

BE IT FURTHER RESOLVED that *[State/Regional body/Adopting body]* urges all *[regional bodies,]* local jurisdictions and appropriate agencies in *[State/Region]* to adopt complete streets policies, implement complete streets practices, and incorporate the needs of all users into *[insert name of state's comprehensive plan equivalent]* to ensure that the transportation network serves all users.

[BE IT FURTHER RESOLVED] that *[State/Regional body/Adopting body]* calls upon federal *[and state]* legislators to provide additional funding and other incentives for local and state governments to adopt complete streets policies and implement complete streets practices in order to serve all users.]

COMMENT: Although complete streets practices can be incorporated into street design and construction without the need for any additional funding, particularly when these practices are regularly integrated into the earliest stages of planning, additional funds can assist in retrofitting existing streets and ensuring an integrated and connected network in a shorter time period.

THE RESOLUTION: ADVANCED VERSION

The advanced version of the model state and regional complete streets resolution is intended for jurisdictions that are ready to commit to a few additional steps to increase the effectiveness of the resolution. Including and building upon the provisions in the introductory version, this version calls for training of planners and other personnel, increased public participation, evaluation of proposed projects' impacts upon safe travel, reports by departmental heads on implementation of the policy, and creation of a committee to explore and recommend further steps.

NOW, THEREFORE, LET IT BE RESOLVED that *[State/Regional body/Adopting body]* hereby recognizes the importance of creating complete streets that enable safe travel by all users, including pedestrians, bicyclists, public transportation riders and drivers, motor-vehicle drivers, *[insert other significant local users if desired, e.g., drivers of agricultural vehicles, emergency vehicles, freight, etc.]* and people of all ages and abilities, including children, youth, families, older adults, and individuals with disabilities.

BE IT FURTHER RESOLVED that [State/Regional body/Adopting body] [expects / requires] all transportation projects receiving state [or, where applicable, federal] funding to incorporate complete streets infrastructure addressing the needs of all users into all planning, design, approval, and implementation processes for any construction, reconstruction, retrofit, maintenance, alteration, or repair of streets, bridges, or other portions of the transportation network, including pavement resurfacing, restriping, and signalization operations if the safety and convenience of users can be improved within the scope of the work; provided, however, that such infrastructure may be excluded upon written approval by [insert appropriate senior manager, such as the head of the state department of transportation or other appropriate agency], where documentation and data indicate that:

COMMENT: This provision, which requires that street projects on new or existing streets create complete streets, is a fundamental component of a commitment to complete streets. This clause provides crucial accountability in the exceptions process by requiring documentation, a transparent decision-making process, and written approval by a specified official.

- (1) Use by nonmotorized users is prohibited by law;
- (2) The cost would be excessively disproportionate to the need or probable future use over the long term;
- (3) There is an absence of current or future need; or

COMMENT: Data showing an absence of future need might include projections demonstrating low likelihood of pedestrian or bicycling activity in an area.

- (4) Inclusion of such infrastructure would be unreasonable or inappropriate in light of the scope of the project.

COMMENT: By including this fourth exception, a jurisdiction gains considerable flexibility, but at the cost of potentially implementing complete streets practices less thoroughly. Jurisdictions should consider this trade-off in determining whether to include this exception.

Other exceptions can also be included in this list, for example: “Significant adverse environmental impacts outweigh the positive effects of the infrastructure.”

[BE IT FURTHER RESOLVED that [State/Adopting body] requires the [insert name of state department of transportation] to make complete streets practices a routine part of its everyday operations, to approach every transportation project and program as an opportunity to improve public [and private] streets and the transportation network for all users, and to work in coordination with other departments, agencies, and jurisdictions to achieve complete streets.]

COMMENT: This provision is intended for states adopting this resolution and is not applicable to bodies that do not have jurisdiction over the state department of transportation.

BE IT FURTHER RESOLVED that [insert appropriate agency] should evaluate how well the streets and transportation network of [State/Region] are serving each category of users, and [insert appropriate agencies] should establish performance standards with measurable benchmarks reflecting the ability of users to travel in safety and comfort.

COMMENT: To evaluate service, jurisdictions may wish to look at collision statistics, bicycle and pedestrian injuries and fatalities, existing levels of service for different modes of transport and users, latent demand, and so on.

Specific performance standards with clear benchmarks and timeframes greatly increase accountability and the ability to assess progress toward a goal. Jurisdictions that are just beginning to move toward complete streets may wish to establish more limited benchmarks, whereas those seeking rapid and substantial impact will want to specify detailed performance standards. In establishing performance standards, jurisdictions should look at areas such as transportation mode shift, miles of new bicycle lanes and sidewalks, percentage of streets with tree canopy and low design speeds, public participation rates, and so on.

BE IT FURTHER RESOLVED that trainings in how to integrate, accommodate, and balance the needs of all users should be provided for planners, civil and traffic engineers, project managers, plan reviewers, inspectors, and other personnel responsible for the design and construction of streets, bridges, and other portions of the transportation network.

COMMENT: Such trainings may cover a range of topics: a basic introduction to the concept of complete streets, an exploration of advanced implementation questions, or an overview of how to apply new systems, policies, and requirements put in place to implement complete streets.

BE IT FURTHER RESOLVED that procedures should be established to allow increased public participation in policy decisions and transparency in individual determinations concerning the design and use of streets.

COMMENT: A jurisdiction may exclude this provision if existing law provides for a high level of public participation and transparency in such determinations.

BE IT FURTHER RESOLVED that all initial planning and design studies, health impact assessments, environmental reviews, and other project reviews for projects *[within / requiring funding or approval by] [State / Region]* should: (1) evaluate the effect of the proposed project on safe travel by all users and (2) identify measures to mitigate any adverse impacts on such travel that are identified.

COMMENT: This clause provides for public accountability and improved outcomes by enabling written evaluation of the effects of certain projects on safe travel as a routine consideration factoring into decision-making processes.

However, some states and regions may need to build momentum prior to adopting this provision. Such states and regions may omit this provision.

BE IT FURTHER RESOLVED that the head of each affected agency or department should report back to the *[Adopting body]* *[annually / within one year of the date of passage of this resolution]* regarding: the steps taken to implement this Resolution; additional steps planned; and any desired actions that would need to be taken by *[Adopting body]* or other agencies or departments to implement the steps taken or planned.

COMMENT: States and regional bodies are encouraged to tailor this clause to direct agencies to carry out additional specific implementation tasks as appropriate.

BE IT FURTHER RESOLVED that a committee is hereby created, to be composed of *[insert desired committee composition]* and appointed by *[specify who should appoint the members of the committee]*, to recommend short-term and long-term steps, planning, and policy adoption necessary to create a comprehensive and integrated transportation network serving the needs of all users; to assess potential obstacles to implementing complete streets in *[State / Region]*; and to work with local jurisdictions on implementing complete streets; the committee will report on the matters within its purview to the *[Adopting body]* within one year following the date of passage of this Resolution.

COMMENT: While various considerations will dictate committee composition, states and regional bodies may find it helpful to include representatives of key departments or agencies, including the state department of education, and advocacy groups.

BE IT FURTHER RESOLVED that *[State / Regional body / Adopting body]* urges all *[regional bodies,]* local jurisdictions and appropriate agencies in *[State / Region]* to adopt complete streets policies, implement complete streets practices, and revise all appropriate plans, zoning and subdivision codes, laws, procedures, rules, regulations, guidelines, programs, templates, and design manuals, including *[insert name of State's comprehensive plan equivalent as well as all other key documents by name]*, to integrate, accommodate, and balance the needs of all users in all projects.

[BE IT FURTHER RESOLVED] that *[State / Regional body / Adopting body]* calls upon federal *[and state]* legislators to provide additional funding, appropriate funding criteria, and other incentives for local and state governments to adopt complete streets policies and practices.]

COMMENT: Although complete streets practices can be incorporated into street design and construction without the need for any additional funding, particularly when these practices are regularly integrated into the earliest stages of planning, additional funds can assist in retrofitting existing streets and ensuring an integrated and connected network in a shorter time period.

FINDINGS AND PREAMBULATORY LANGUAGE

This document supplies a variety of evidence-backed factual conclusions that support a jurisdiction's decision to enact a complete streets policy. An adopting body should select those findings it views as most significant for its jurisdiction and add findings related to local conditions or concerns. All policies should include the first finding, which defines complete streets.

The Findings

WHEREAS, the term “complete streets” describes a comprehensive, integrated transportation network with infrastructure and design that allows safe and convenient travel along and across streets for all users, including pedestrians, bicyclists, motor-vehicle drivers, public transportation riders and drivers, *[insert other significant local users if desired, e.g., drivers of agricultural vehicles, emergency vehicles, or freight]* and people of all ages and abilities, including children, youth, families, older adults, and individuals with disabilities;

COMMENT: This clause introduces and defines the concept of complete streets. This finding should appear as the first finding in every policy and should not be omitted.

WHEREAS, streets that are not designed to provide safe transport for all users present a danger to pedestrians, bicyclists, and public transportation riders, particularly children, older adults, and people with disabilities;¹ more than 110,000 pedestrians and bicyclists are injured each year on roads in the United States,² with children and older adults at greatest risk and disproportionately affected;³ many of these injuries and fatalities are preventable, and the severity of these injuries could readily be decreased by implementing complete streets approaches;⁴ and *[Municipality/State/Regional body]* wishes to ensure greater safety for those traveling its streets;

WHEREAS, *[Municipality/State/Regional body]* wishes to encourage walking, bicycling, and public transportation use as safe, convenient, environmentally friendly, and economical modes of transportation that promote health and independence for all people;

WHEREAS, *[Municipality/State/Regional body]* acknowledges the benefits and value for the public health and welfare of *[reducing vehicle-miles traveled and]* increasing transportation by walking, bicycling, and public transportation in order to address a wide variety of societal challenges, including pollution, climate change, traffic congestion, social isolation, obesity, physical inactivity, limited recreational opportunities, sprawl, population growth, safety, and excessive expenses;⁵

COMMENT: This clause describes the greater social and environmental benefits of encouraging nonvehicular travel.

WHEREAS, sedentary lifestyles and limited opportunities to integrate exercise into daily activities are factors contributing to increased obesity among adults and children and numerous correlated adverse health consequences, such as diabetes, heart disease, stroke, high blood pressure, high cholesterol, certain cancers, asthma, low self-esteem, depression, and other debilitating diseases;⁶

COMMENT: This clause and the following two clauses set out various additional problems that complete streets solve or alleviate.

COMMENT: See <http://healthyamericans.org/state> and <http://apps.nccd.cdc.gov/brfss/Trends/TrendData.asp> for state-specific information.

WHEREAS, *[Municipality/State/Regional body]* recognizes that the careful planning and coordinated development of complete streets infrastructure offers long-term cost savings for local and state government, benefits public health, and provides financial benefits to property owners, businesses, and investors, while yielding a safe, convenient, and integrated transportation network for all users;⁷ in contrast, streets that are not conducive to travel by all impose significant costs on government and individuals, including the cost of obesity, which may amount to \$147 billion in direct medical expenses each year, not including indirect costs;⁸

[WHEREAS, in light of the numerous statewide benefits of complete streets for public and environmental health, including the ability to travel freely throughout the state for people with disabilities or those traveling by foot, bicycle, or public transportation, *[State]*

wishes to establish minimum statewide standards, while not reducing the ability of local jurisdictions to establish additional requirements;]

COMMENT: This finding is designed to be included in policies adopted by states, as it helps demonstrate that this topic is an appropriate subject for state regulation while clarifying that the policy is not intended to preempt local efforts that provide for additional requirements.

WHEREAS, streets are a key public space, shape the experience of residents of and visitors to [Municipality/State/Region], directly affect public health and welfare, and provide the framework for current and future development;⁹

COMMENT: Where streets are a significant portion of the land in a particular municipality—particularly likely in the case of a larger city—a municipality may wish to describe the percentage of area occupied by streets. This may be done by inserting a reference such as “that account for __ % of [Municipality]’s land area” following the phrase “streets are a key public space.”

WHEREAS, the one-third of Americans who do not drive include a disproportionate number of older adults, low-income people, people of color, people with disabilities, and children,¹⁰ and the inequitable distribution of safe alternative means of travel adversely affects their daily lives;

WHEREAS, the dramatic increase in the population of older and very old adults that will be seen by 2020 and 2030, with the concomitant decrease in driving, requires that changes begin to occur now to street design and transportation planning;¹¹

WHEREAS, numerous states, counties, cities, and agencies have adopted complete streets policies and legislation in order to further the health, safety, welfare, economic vitality, and environmental well-being of their communities;¹²

COMMENT: This clause establishes that there is considerable precedent for policies of this type.

WHEREAS, [Municipality/State/Regional body] wishes to build upon its existing policies that recognize the importance of addressing the transportation needs of pedestrians, bicyclists, and public transportation riders, such as [insert references to and brief descriptions of existing policies that incorporate any elements of the multimodal/nonmotorized travel concepts in complete streets];

COMMENT: This clause affirms the existing efforts of the jurisdiction and establishes that although the complete streets policy involves a new commitment to making the streets safe for all users, the adopting body is not necessarily departing from its current practices but building upon and improving them.

COMMENT: If a state or regional body does not have applicable policies, but bodies within it do, it may reference those by adopting this alternative language: “WHEREAS, [State/Regional body] wishes to build upon existing policies in [State/Region] that recognize the importance of complete streets, such as [insert relevant language];”

WHEREAS, [Municipality/State/Regional body] wishes to encourage public participation in community decisions concerning street design and use to ensure that such decisions: (a) result in streets that meet the needs of all users, and (b) are responsive to needs of individuals and groups that traditionally are not incorporated in public infrastructure design;

WHEREAS, [Municipality/State/Regional body] recognizes the importance of complete streets infrastructure and modifications that enable safe, convenient, and comfortable travel for all users, such as sidewalks; shared-use paths; bicycle lanes; automobile lanes; paved shoulders; street trees and landscaping; planting strips; curbs; accessible curb ramps; bulbouts; crosswalks; refuge islands; pedestrian and traffic signals, including countdown and accessible signals; signage; street furniture; bicycle parking facilities; public transportation stops and facilities; transit priority signalization; traffic-calming devices such as rotary circles, traffic bumps, and surface treatments such as paving blocks, textured asphalt, and concrete; narrow vehicle lanes; raised medians; and dedicated transit lanes [insert other accommodations if desired] [, and those features identified in [Municipality Pedestrian/Bicycle Master Plan if it exists]]; and

COMMENT: Although features such as street trees and landscaping have traditionally not been included in transportation infrastructure, these features are crucial for pedestrian comfort and safety; they are included here to ensure that complete streets infrastructure addresses the needs of all users.

WHEREAS, [Municipality/State/Regional body] therefore, in light of the foregoing benefits and considerations, wishes to [initiate a/expand upon its] complete streets program and desires that its streets form a comprehensive and integrated transportation network promoting safe, equitable, and convenient travel for all users while preserving flexibility, recognizing community context, and using the latest and best design guidelines and standards;

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of special interest



Planning for Street Connectivity

PAS 515. Susan Handy, Robert G. Patterson, and Kent Butler. 2003. 95 pp. \$48.

The authors provide an overview of efforts by communities across the U.S. to increase street connectivity. They look at the motivation behind such efforts, the wide variety of issues these efforts have raised, and the different approaches that communities have taken to resolve them. Planners, decision makers, and residents will gain a better understanding of the concept of connectivity as well as ideas on how best to address the goal of connectivity in their own communities.

Integrating Planning and Public Health

PAS 539/540. Marya Morris, ed. 2006. 132 pp. \$60.

Is the form of American cities to blame for the shape of Americans? With obesity rates climbing ever higher, planners are reconsidering how the built environment affects public health—not only obesity, but also asthma, cardiovascular disease, water quality, air pollution, pedestrian safety, and mental health. This report examines collaborations between planners and public-health professionals committed to building healthy communities. It outlines the five strategic points of intervention at which planners and public-health professionals can coordinate their efforts: visioning and goal setting, plans and planning, implementation tools, site design and development, and public facility siting and capital spending. Case studies illustrate the specific tools—including health impact assessments—used in such collaborations. It also examines the role of universal design in creating healthy communities.



The Transportation/Land Use Connection

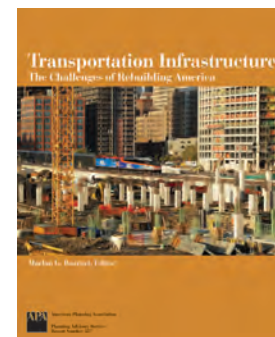
PAS 546/547. Terry Moore and Paul Thorsnes, with Bruce Appleyard. 2007. 376 pp. \$60.

Communities that integrate transportation and land-use policies are better able to manage growth, improve the efficiency of travel, and contain infrastructure costs. Highways have shaped America's growth, but they have a big problem: congestion. Building more roads doesn't solve this problem for long, but changes in the way we approach transportation and land-use planning might. This report examines the need for public-sector investment in land-use and transportation development and presents the tools and techniques planners can use to integrate transportation and land use.

Transportation Infrastructure

PAS 557. Marlon G. Boarnet, ed. 2009. 128 pp. \$60.

Transportation infrastructure is one of the most pressing issues for planners and communities today. In the short term, stimulus funding is being used to create jobs and fix critical systems; in the long run, communities are struggling to determine how best to restructure transport networks to encourage better land use and to foster reductions in greenhouse gas emissions. This report was compiled with an eye to the urgency and severity of the challenges that we now face. Some of the leading researchers, scholars, and practitioners in transportation planning put forth fresh best practices and visionary ideas.





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