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Complete Streets

in Delaware: A Guide for Local Governments

written by

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prepared for

Delaware Department of Transportation

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prepared by



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Preface

In today's car-dominated society, many people live in communities that lack accessibility, connectivity, well-maintained pedestrian and bicycle facilities, and accessible public transportation. To address this issue, a national movement to "complete the streets" is gaining momentum at the state and local levels. Delaware officially joined this initiative with an executive order signed by Governor Jack Markell in April 2009 to create a Complete Streets Policy. The Policy, implemented by DelDOT in December 2009, ensures that new and modified roads are routinely planned, designed, constructed, operated, and maintained to allow safe access by all users.

Delaware's Complete Streets Policy will result in a comprehensive, integrated, connected, safe, and multimodal transportation network with a variety of transportation options. While DelDOT is designing and constructing streets with all users in mind, Delaware local governments have authority for local land-use plans and policies, which may in discord with state policy. Local government officials can support Delaware's Complete Streets Policy by developing land-use plans and policies to provide more balanced transportation systems and create healthier, active communities.

As the Director of the Institute for Public Administration, I am pleased to provide this publication—*Complete Streets in Delaware: A Guide for Local Governments*. The document is intended to help Delaware towns, cities, and counties achieve complete streets by evaluating the extent to which their community vision, plans, policies, design standards, and facility maintenance practices are consistent with complete-streets principles, and:

- Create safe and inviting road networks for all users.
- Transform a vision for complete streets into plans, policies, design standards, and maintenance practices.
- Ensure that transportation facilities are constructed and maintained to ADA standards.
- Visualize how to balance the needs of all roadways users and transform existing roadways to complete streets.

I hope this resource will inspire Delaware local governments to incorporate complete-streets principles and concepts within comprehensive plans and policies—i.e., subdivision, unified development, and zoning codes. Local land-use and policy decisions, which are aligned with the state's Complete Streets Policy, will result in communities that are more accessible, livable, and multimodal for Delaware residents and visitors.

Jerome R. Lewis, Ph.D.
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The University of Delaware's Institute for Public Administration (IPA) prepared *Complete Streets in Delaware: A Guide for Local Governments*. IPA is a public service unit within the College of Arts & Sciences' School of Public Policy & Administration.

To meet the needs of local governments, IPA offers training programs, technical assistance, and resources for Delaware local government public officials. One resource is IPA's online *Toolkit for a Healthy Delaware: Bringing Communities and Health Together*. A Complete Streets section of the Toolkit was added in July 2011. This section provides an overview of complete-streets principles, benefits of complete streets, the State of Delaware's Complete Streets Policy, Delaware local government complete-streets implementation strategies, information on technical and funding assistance, and before-and-after complete-streets visualizations. This resource may be viewed online (www.ipa.udel.edu/healthyDEtoolkit/completestreets).

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Executive Summary

Walk, bike, take public transit, or drive? Unfortunately, today many Americans lack choice in transportation modes.

Automobile-oriented transportation planning, segregated land uses, and dispersed development patterns have contributed to a cycle of automobile dependency. After decades of building car-oriented roadway networks, many streets lack connectivity and do not safely accommodate pedestrians or bicyclists. In addition, mobility-constrained populations—including children, elderly, persons with disabilities, zero-car households, and low-income and minority groups—face substantial challenges and transportation inequities in such a car-dominated culture.

In recent years, there has been a growing recognition of the need to plan, design, and construct streets that meet the needs of all roadway users—that is, creating “complete streets.” The National Complete Streets Coalition has advocated for the adoption and implementation of state, regional, and local government complete streets policies. While definitions vary, “complete streets” have been described as:

Roadways designed, built, and maintained to safely accommodate travelers of all ages and abilities—motorists, pedestrians, bicyclists, and public transit users—including children, non-drivers, older adults, and persons with disabilities (AARP, 2009).

While “complete streets” is a relatively new term, Delaware has been building toward creating better pedestrian and bike accessibility for at least two decades. The Delaware Department of Transportation (DelDOT) has been using established, well-regarded federal documents, policy

statements, and guidelines to plan, design, and operate multimodal facilities, which have provided a foundation for complete streets. In addition, DelDOT has integrated complete streets concepts into its policies, master plans, and design manuals to create a comprehensive, integrated, connected, and multimodal transportation network.

Complete streets became a part of Delaware's policy agenda with Governor Jack A. Markell's issuance of an executive order on April 24, 2009. DelDOT subsequently adopted a Complete Streets Policy to "promote safe access for all users, including pedestrians, bicyclists, motorists and [transit] riders of all ages to be able to safely move along and across the streets of Delaware" (DelDOT, 2009).

DelDOT is unique among states in that it funds and has jurisdiction over 90 percent of its state's roads (DelDOT, 2009). With control of a high percentage of roads, DelDOT has the ability to incorporate complete streets within internal planning, design, and engineering practices. While DelDOT transportation planners and engineers are designing streets with all users in mind, Delaware local governments have authority for local plans and policies, which may not be consistent or compatible with the statewide Complete Streets Policy.

This resource, *Complete Streets in Delaware: A Guide for Local Governments*, is intended to help Delaware towns, cities, and counties achieve complete streets in order to provide more balance transportation systems and to create healthy, livable environments for pedestrians, bicyclists, and transit riders of all ages and abilities.

The document first explains how complete streets can address an unbalanced transportation system. Consequences of decentralized and automobile-dependent development patterns include segregated zoning uses, impacts to community livability, safety problems, issues of transportation equity, economic degradation, environmental concerns, and disconnected transportation networks. Next, benefits are cited—including evidence that complete streets can improve pedestrian safety, community health, air quality, smart growth, and transportation equity. New research indicates that there is a link between walkability and the economic vitality of a community. Walkability can help revitalize a downtown, increase private investment, bolster property values, promote tourism, and support the development of a good business climate. In addition, market demand is growing for properties located in walkable, mixed-use communities that are centrally located and transit accessible.

Complete streets are further characterized within this document as:

- **Flexible**—considering the existing and future transportation uses, existing and future land use, adjacent land uses, residential density, topographical constraints, and character of development
- **Accessible**—meeting Title II ADA requirements that state and local governments ensure accessible design, construction, and maintenance of all transportation projects
- **Multimodal**—providing transportation options that address the needs of people of all ages and abilities

- ***Vibrant Centers of Activity***—regarding streets as public places that foster mobility, economic vitality, civic engagement, and active and healthy communities.
- ***Having Common Features and Design Elements***—including speed-control strategies, traffic-control devices and signage, pedestrian infrastructure and amenities, bicycle features, transit facilities, and pedestrian-oriented lighting

A history of the complete streets movement is provided—both at the national level and at the state level in Delaware. Since the adoption of its Complete Streets Policy, Delaware reinforced its commitment to multimodal transportation through executive orders, transportation-funding investments, and “Walkable, Bikeable Delaware” legislation.

The heart of this document, chapter 9—**How Can Delaware Local Governments Implement Complete Streets?**—explains strategies that Delaware local governments can undertake to support the state’s policy to provide safe, equitable, and accessible transportation to all users and modes. The IPA Complete Streets Implementation Checklist serves as a foundation for local governments to move toward achieving complete streets by evaluating the extent to which their community vision, plans, policies, design standard, and facility maintenance practices are consistent with complete-streets principles. This section provides examples of best practice–implementation strategies, primarily at the national level. In addition, complete-streets “best practice” strategies are summarized within the *IPA Complete Streets National Best Practices Matrix* and *Delaware Local Government Complete Streets Implementation Matrix*, both of which are included in the appendix.

A large section of this document focuses on progress being made by Delaware local governments toward implementing complete streets through the comprehensive-planning process and land use–policy development. Many Delaware local governments have, in fact, begun to transform a vision for complete streets into plans, policies, design standards, and maintenance practices. This section focuses extensively on how Delaware local governments have incorporated the state’s Complete Streets Policy principles and concepts within comprehensive plans and policies—specifically subdivision, unified development, and zoning codes. Examples are cited, and an analysis is provided, of Delaware local governments that are progressing toward complete streets. In addition, information is summarized in the *Delaware Local Government Complete Streets Implementation Matrix*, included in the appendix.

The final section focuses on the use of IPA’s online ***Toolkit for a Healthy Delaware: Bringing Communities and Health Together*** as an ongoing mechanism for outreach to local government officials. A “Complete Streets” section, www.ipa.udel.edu/healthyDEtoolkit/completestreets, was added to the Toolkit in July 2011. This section provides an overview of complete-streets principles, benefits of complete streets, Delaware’s Complete Streets Policy, Delaware local government complete streets–implementation strategies, and information on technical and funding assistance. A large portion of this section is devoted to before-and-after visualizations (conceptual renderings) of ten locations in Delaware, which were devised using Google SketchUp (Google’s 3D computer-aided-design software).

1



Why

Complete Streets



1-1. Problem Statement

Prior to World War II, traditional towns were built on a human scale and pedestrian-oriented. Because traditional towns were dense and compact, residents could easily walk from homes to shops, schools, jobs, and centers of business without the need to drive in a car. Several factors contributed to the demise of walkable environments in the United States. First, suburban home ownership became more convenient with Federal Housing Administration-backed loans coupled with Veterans Administration loan guaranties for veteran's home ownership. Second, the passage of more stringent environmental regulations made development in outlying areas more expedient than urban renewal and redevelopment. Third, the financing of the interstate highway system promoted sprawling, car-oriented land use patterns. As a result, there have been fundamental changes in the way that land use is regulated, communities are designed, and the degree to which built environments are mobility-friendly and accessible.

In the past 50 years, decentralized and automobile-dependent development patterns have become the norm. While suburbia has become home for millions of Americans, it has altered land use-planning practices, the physical design of our communities, and modes of transportation. Many communities lack connectivity, non-motorized transportation choices, and walkable/bikable infrastructure. Transportation planning, policies, and investment strategies, have favored automobiles over other forms of travel. Compartmentalized, built environments have limited opportunities for active recreation, transportation options, and access to healthy foods. Inactivity and sedentary lifestyles have contributed to the rise of chronic obesity and related diseases. Strip malls and "big box" centers have diminished the economic vitality of many central business districts (CBDs), once the hub of economic activity. Sprawling development patterns have become costly and unsustainable.



1-2. Consequences of an Unbalanced Transportation System

Decades of auto-centric transportation investment, auto-oriented land-use policies, and sprawling development patterns have led to an unbalanced transportation system. Consequences of an unbalanced transportation system include segregated zoning uses, impacts to community livability, safety problems, issues of transportation equity, economic degradation, environmental concerns, and disconnected transportation networks, which are explored further in this section.

1-2-1. Continued Cycle of Automobile Dependency

Until the mid-20th century, traditional American towns and cities evolved from walkable, mixed-use neighborhoods that contained homes, stores, and places of employment. In the age of dominant suburbia, zoning regulations have become the primary strategy to regulate land use and separate residential uses from incompatible industrial and commercial land uses. This physical segregation of where people live and work, along with a preference for low-density suburban development, has created a dependency on the automobile as a primary means of travel. The below “Cycle of Automobile Dependency” illustrates this continuous pattern of increased vehicular travel, reduced travel options, and both transportation- and land-use policies that are more transportation-oriented (Victoria Transport Policy Institute [VTPI], 2010).

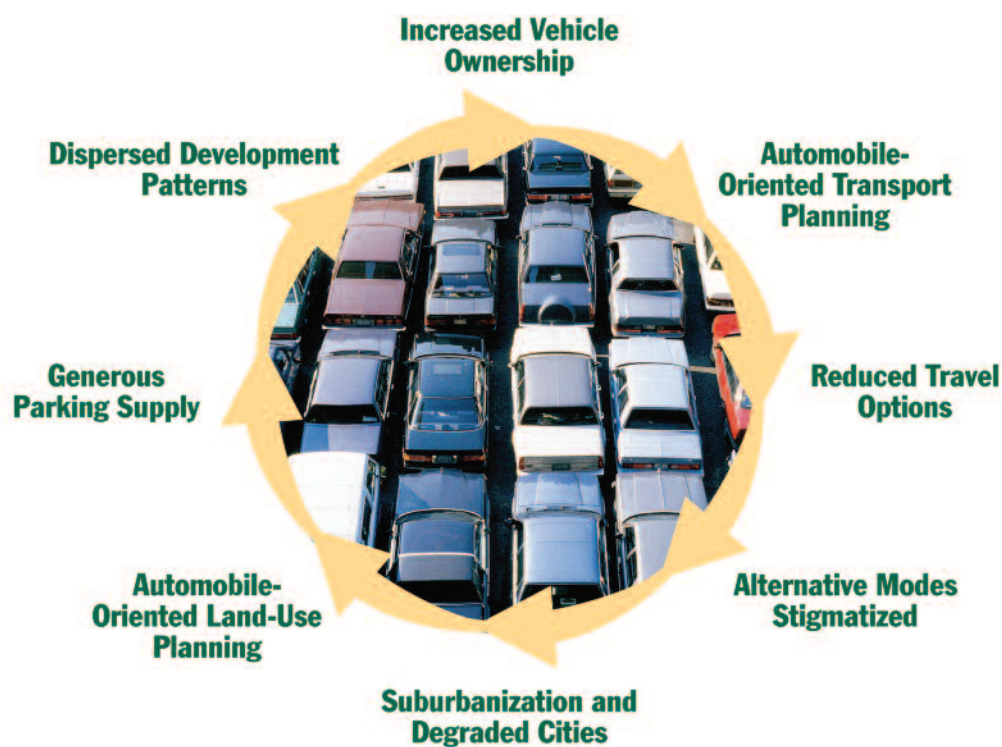


Figure 1: Cycle of Automobile Dependency

Source: Victoria Transport Policy Institute, 2010

In addition to reinforcing automobile-oriented transportation and land use planning, segregated land-use patterns place a strain on the transportation infrastructure and limit mobility options for residents. Dispersed suburban-development patterns have increased automobile ownership and reduced the use of other transportation options (VTPI, 2010). Because more people are driving to daily destinations that are no longer within walking distance, many local government land-use plans and policies have been adopted that unintentionally support an auto-based culture and sprawl. Local ordinances often favor low-density development, discourage walkability, and impede the development of transit- and pedestrian-friendly environments (Maryland Office of Smart Growth, 2005). As a result, this cycle of automobile dependence has led to a transportation system that is increasingly unbalanced, costly, and promotes inaccessible and dispersed land-use patterns.

1-2-2. Lack of Transportation Choice

Prior to auto-centric land-use patterns, people had the ability and tendency to walk. However, after decades of building car-oriented roadway networks, many streets lack connectivity and do not safely accommodate pedestrians or bicyclists. According to a 2010 Future of National Transportation survey, the vast majority of American voters polled (82 percent) would like an expanded and improved transportation system that includes access to public transportation, safe walking, and biking opportunities. In addition, nearly three-fourths of those polled (73 percent) feel that they have no choice other than driving, and 78 percent of them (57 percent of all survey respondents) would rather spend less time in a car. Finally, most survey respondents (59 percent) feel that providing more transportation options will make it easier to take public transportation, walk, and/or bike—thereby helping to reduce traffic congestion (Transportation for America, 2010). Developing a balanced transportation system, with a variety of safe and non-motorized options, can alleviate barriers to transportation choice.

1-2-3. Increasing Prevalence of Obesity

Obesity is both a nationwide issue and a problem affecting the health of the next generation of Delawareans (Rodriguez, 2009). According to the Centers for Disease Control and Prevention (CDC), over one-third of the U.S. adult population and 17 percent of American children are now obese (CDC, n.d.). According to the Delaware Division of Public Health, approximately 36 percent of Delaware adults are overweight, but combined with obesity, about 63.8 percent of Delaware adults are either overweight or obese. In addition, about 52 percent of adult Delawareans have insufficient or no physical activity (Rattay 2010, 13). Childhood obesity in Delaware is on the rise—approximately 37 of Delaware children are obese (Nemours, 2010). A neglect of community-design principles, lack of walkable or bikable infrastructure, and compartmentalized built environments have led to less active lifestyles and automobile dependency.

Lack of walking is contributing to increased risk of obesity (I-Min Lee, 2008). A recent study suggests that neighborhood socioeconomic conditions and unfavorable built environments can increase the odds of childhood obesity. Contributing factors that were cited include unsafe surroundings; poor housing; and no access to sidewalks, parks, and recreation centers (Singh et al., 2010). Yet another issue is the decline in the numbers of children walking to school—from 50 percent in 1969 to 13 percent in 2004 (Zick, 2009). Researchers now believe that efforts to improve aspects of the built environment, including transportation choice, will positively influence physical activity levels and community livability, which will lessen obesity.

1-2-3. Unsafe Roadways

The American Association of State Highway and Transportation Officials (AASHTO, 2010) published its first “Green Book” on roadway design in the late 1930s. With the growth of America’s interstate highway system, transportation engineers embraced a “bigger is better” philosophy—equating wider roads with better roadway safety. While the intent of the Green Book was to provide flexible road-design guidelines, many engineers narrowly interpreted

the document as a manual that set forth rigid national standards for all road widths, alignments and other traffic safety features (Federal Highway Administration 2004, 27-29).

The lack of safe and convenient travel choices has made roads unsafe for pedestrians and bicyclists. Developing a pedestrian- and bicycle-friendly environment underscores the need to design, engineer, operate, and maintain safe infrastructure for non-motorized transportation. According to the National Complete Streets Coalition, “Streets without safe places to walk, cross, catch a bus, or bicycle put people at risk. Over 5,000 pedestrians and bicyclists died on U.S. roads in 2008, and more than 120,000 were injured. Pedestrian crashes are more than twice as likely to occur in places without sidewalks; streets with sidewalks on both sides have the fewest crashes. While the absolute numbers of bicyclists and pedestrians killed has been in decline for the decade, experts attribute this in part to a decline in the total number of people bicycling and walking” (National Complete Streets Coalition, 2010).

According to a *Dangerous by Design 2011: Delaware* report, 171 pedestrians were killed on Delaware roadways between 2000 and 2009. Most of these fatalities occurred on roadways that are dangerous by design—engineered to move more vehicles more quickly with little regard for the safe transportation of pedestrians, bicyclists, persons with mobility impairments, or transit users (Transportation for America, 2011). In 2009 pedestrian deaths accounted for 12 percent of all traffic fatalities nationwide. Delaware ranked 15 among states for the highest percentage of pedestrian fatalities in traffic crashes in 2009—an improvement from its 8th-place ranking in 2003 (NHTSA, 2009).

Most roadways lack special on-street facilities for bicycling. In addition to conflicts with drivers, hazardous conditions for bicyclists include poor road maintenance and surface irregularities, such as drainage grates, railroad tracks, potholes, utility covers, gravel, wet leaves, and uneven pavement joints (Pedestrian and Bicycle Information Center, n.d.) Nationwide, bicyclists account for about two percent of all traffic fatalities (NHTSA, 2009). Delaware’s rate of bicyclist fatalities, unfortunately, is the highest among all 50 states, Washington, D.C., and Puerto Rico. Pedacyclist fatalities in Delaware accounted for 5.2 percent of all traffic fatalities in 2009 (NHTSA, 2009). Implementation of complete streets strategies may help to lessen the rate of pedestrian and bicyclist traffic injuries nationwide and in Delaware.

1-2-4. Lack of Transportation Equity

Nearly one-third of Americans do not drive. This includes 21 percent of Americans over 65 years old, youth under the age of 16, and individuals who do not own cars or are unable to drive. Mobility-constrained and special-needs populations—including the elderly, those with disabilities, zero-car households, low-income, minority, and low-literacy—face substantial challenges and transportation inequities in a car-dominated culture. WILMAPCO’s 2009 Transportation Equity Report notes, “Weak transit and non-motorized funding (in step with decades of highway-favorable land-use decisions) has resulted in a transportation system that all too often does not meet the needs of environmental justice residents” (WILMAPCO 2009, 10).

Sidewalk design and maintenance that is not compliant with American with Disabilities Act

of 1990 (ADA), is especially problematic for special-needs populations, including older adults and persons with disabilities. Specialized transportation options, such as paratransit, may be available but are often costly to operate and/or have service limitations due to policy constraints. Low-income-household car owners also face additional financial hardships because they pay proportionally more for car-related expenses and maintenance (Littman, 2010). Transportation-equity issues may be addressed by developing transportation policies and financing a balanced transportation system that increase investment in public transit and non-motorized-transportation options, and promote land-use practices that encourage compact, mixed-use development.



Even when multimodal transportation options are available or appropriate infrastructure exists, poorly maintained transportation infrastructure may also cause transportation-equity issues. Incomplete, inaccessible, or improperly maintained sidewalks (including curb cuts), bike lanes, and transit shelters/stops can prevent or limit use by non-motorized travelers. Overgrown vegetation, uneven surfacing, obstructions, debris, improper snow and ice removal, and lack of access in construction zones can all limit mobility by pedestrians and bicyclists.

1-2-5. Poor Air Quality

Scientific evidence points to the emissions of carbon dioxide and other greenhouse gases (GHG) from human activities as a major cause of environmental problems and global warming. In the United States alone, 28 percent of GHG emissions are attributed to motorized transportation (National Complete Streets Coalition, 2010). This number will continue to rise unless other means of transportation are viable and accessible. Among the strategies to lower transportation-related emissions is to promote the modal shift away from short, local car trips to travel by foot, bicycle, or public transit. These environmentally friendly, alternative modes of transportation could substantially decrease greenhouse gases and substantially reduce pollution.

1-2-6. Sprawling Development Patterns

Sprawling development is costly and unsustainable. Sprawl is characterized by low-density development, dispersed land-use patterns, and automobile-dependent travel. Negative consequences of sprawl include increased travel time, greater travel distances, and more traffic congestion. According to the 2010 Urban Mobility Report, traffic congestion is a problem that continues to grow. While the economic recession resulted in a slight two-year decline in overall traffic congestion, this trend was short-lived. Congestion continued to increase as the economy improved in 2009. Costs of congestion also continue to grow. In 2009 urban Americans traveled 4.8 billion hours more and wasted 3.9 billion gallons of fuel

sitting in traffic at a congestion cost of \$115 billion. Traffic congestion also cost commuters an average of \$808 and over 34 hours in traffic delays. In the Philadelphia metropolitan area (Pa.-N.J.-Del.-Md.), each commuter in 2009 experienced an average of 39 hours in traffic delays and wasted 30 gallons of fuel at a congestion cost of \$919 (Schrank and Lomax, 2010).

The report recommends several balanced and diversified approaches to reduce congestion. Among the potential congestion-reducing strategies suggested, which are compatible with the complete-streets philosophy, are providing greater transportation choices and diversifying development patterns. The report states that gains in mobility, economic activity, and quality of life can be achieved in part through “denser developments with a mix of jobs, shops and homes, so that more people can walk, bike or take transit to more, and closer, destinations (Schrank and Lomax, 2010, p. 11).

1-2-7. Disconnected Social and Transportation Networks

Healthy, active communities provide built environments that support social interaction and daily physical activity. The layout and design of streets has a major impact of the walkability of a community. Traditionally, streets were designed follow a pattern of grids and blocks with multiple points of entry and connections. Traditional grid street layouts provide short and convenient walking distances between a point of origin (A) and destination (B), as illustrated in the left side of the figure below.

The layout of contemporary streets in a typical suburban community is quite different. As illustrated in the right side of the figure below, contemporary street layouts are often curvilinear, contain single or very few points of entry, and have dead-end cul-de-sacs. Simple trips are no longer within walking distance and now require an automobile trip to travel between a point of origin (A) and destination (B) in a suburban community. The disconnected, sprawling nature of streets and communities makes walking, biking, and using public transit inconvenient, inefficient, and impractical. Research suggests that not only does better roadway connectivity improve accessibility and reduce vehicle travel distances, it also serves an important predictor of the choice to walk (VTPI, 2011). In addition, a growing body of health and policy research indicates that street connectivity, along with neighborhood density, affect walking behavior and degree of physical activity (Oakes et al., 2007).

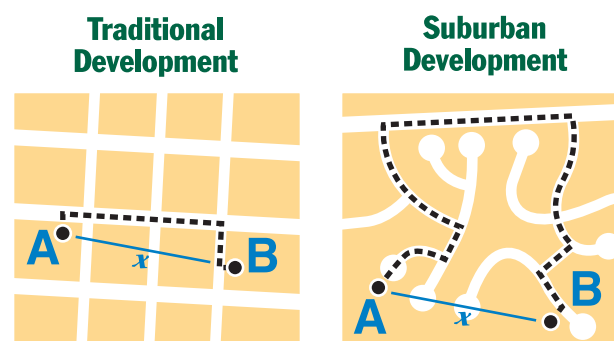


Figure 2: Traditional (Grid) vs. Suburban Street Layout

Source: Harvard Business Review

2



What are

Complete Streets

?

The focal point for most transportation systems is the automobile. Decades of auto-centric design has left streets as single-purpose transportation systems that marginalize all other forms of transportation. In recent years, there has been a growing recognition of the need to plan, design, construct, and maintain streets to meet the needs of all ages and abilities of all roadway users—that is, creating “complete streets.” In addition to balancing the transportation needs of all users, the design of complete streets must be flexible and context sensitive. Rather than an “all modes for all roads” approach, the elements of complete streets will vary based on the existing or future character of the environment—including street classification and land use (e.g., rural, suburban, or urban landscapes).

2-1. Definition of Complete Streets

What is a “complete street?” America Bikes first used the term “complete streets” in 2003 in an effort to change federal transportation law to foster the creation of streets that serve all users. However, the definition of complete streets has evolved from federal initiatives that support the “routine accommodation” of non-motorized transportation, including the Americans with Disabilities Act of 1990, the 1998 Transportation Equity Act of the 21st Century (TEA-21), and policy guidance issued by the Federal Highway Administration (FHWA) and the U.S. Department of Transportation (DOT). These laws and regulations called for all transportation agencies to routinely accommodate bicyclists, pedestrians, and persons with disabilities in all transportation planning, design, construction, operations, and maintenance activities. In March 2010, the U.S. DOT issued a new Bicycle and Pedestrian Accommodation Regulations and Recommendations policy statement, which goes beyond routine accommodation. It reaffirms the need for transportation agencies to “incorporate safe and convenient walking and bicycling facilities into transportation projects.” This includes (U.S. DOT, 2010):



Source: City of Charlotte DOT

- Considering walking and bicycling as equals with other transportation modes
- Ensuring that there are transportation choices for people of all ages and abilities, especially children
- Going beyond minimum bicycling and pedestrian design standards
- Integrating bicycle and pedestrian accommodation on new, rehabilitated, and limited-access bridges
- Collecting and analyzing trip data to optimize investments
- Setting mode-share targets for and tracking walking and bicycling over time
- Removing snow from sidewalks and pedestrian facilities

- Improving non-motorized facilities during maintenance projects

While many complete-streets definitions incorporate fundamental principles derived from federal regulations and guidance, there is not one universal definition of complete streets. The National Complete Streets Collation definition broadly states, “Complete streets are **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” (National Complete Street Coalition, 2010).

Many states and local governments have tailored their definitions of complete streets to reflect their particular vision, broader transportation goals, planning practices, policy formulation needs, and capital improvement priorities. The State of Minnesota’s Complete Streets Law emphasizes the dynamic nature of transportation-improvement initiatives, rather than a static build-it and forget-it policy. The policy states that:

Complete streets is the planning, scoping, design, implementation, operation, and maintenance of roads in order to address the safety and accessibility needs of users of all ages and abilities. Complete streets considers the needs of motorists, pedestrians, transit users and vehicles, bicyclists, and commercial and emergency vehicles moving along and across roads, intersections, and crossings in a manner that is sensitive to the local context and recognizes that the needs vary in urban, suburban, and rural settings (State of Minnesota, 2010).

AARP provides both a definition and a graphic illustration of complete streets that emphasizes the need for roads to be designed, built, and maintained for all modes of transportation as well as for all roadway users (AARP, 2008). It states that complete streets are:

...Roadways designed, built, and maintained to safely accommodate travelers of all ages and abilities—motorists, pedestrians, bicyclists, and public-transit users—including children, non-drivers, older adults, and persons with disabilities (AARP, 2008).



Figure 3: Illustration of Complete Streets

Source: AARP Bulletin

AARP recognizes that mobility-constrained populations—including children, elderly, persons with disabilities, zero-car households, and low-income and minority groups—face substantial challenges and transportation inequities in such a car-dominated culture. A recent AARP inventory found that while the goal of complete-streets policies is to be inclusive, “less than one-third of the 80 state and local complete-streets policies explicitly address the needs of older road users” (Haase and others, 2009, 3). The organization recommends the adoption of complete street policies, future road investments, and the redesign of highway design guidelines to balance the needs of all users and enhance engineering practices for older drivers and pedestrian safety.

2-2. Complete Streets as One Approach to Community Livability

The concept of complete streets is just one approach to enhancing livability of a community. Recently, the issue of community livability has come to the forefront of federal transportation policy and planning. The new vision stresses the need to link transportation and land-use planning to provide a safe, reliable, and integrated transportation system that serves people of all ages, abilities, ethnicities, and income levels. Like complete streets, there is not one consensus definition of community livability. According to the American Institute for Architects, there are ten principles for livable communities, including (AIA, 2005):

- Design on a human scale (compact, pedestrian-friendly design)
- Provide choices (in housing, shopping, recreation, transportation, employment)
- Encourage mixed-use development
- Preserve urban centers
- Vary transportation options (walking, biking, and using public transit)
- Build vibrant public spaces
- Create a neighborhood identity
- Protect environmental resources
- Conserve landscapes
- Design matters

Livable communities foster active community environments, smarter growth, and pedestrian- and transit-friendly design. The Federal Highway Administration (FHWA) also endorses similar principles through its Interagency Partnership for Sustainable Communities—a tri-agency initiative of the U.S. DOT, U.S. Environmental Protection Agency (EPA), and U.S. Department of Housing and Urban Development (FHWA, 2008). Federal livability initiatives

have focused on the need for communities to increase housing and transportation choices, enhance economic competitiveness, develop and implement revitalization strategies, and enhance the quality of life in rural, suburban, and urban areas (U.S. EPA, 2010).

While there is not one consensus definition of community livability, walking is a critical community livability factor. Most organizations, including the AARP, acknowledge that livable communities provide options for multimodal transportation, access to public transit, and opportunities for improved mobility. A balanced transportation system, good road design, and sound land use plans can form the basis of characteristics of a livable community (AARP, 2008).

In addition, AARP has developed a comprehensive framework that identifies six key components of a livable community—housing, transportation and mobility, land-use plans, cooperation and communication, public education and involvement in community planning, and leadership. The transportation and mobility element of AARP’s livable-community agenda focuses on the need to develop multimodal transportation systems that safely and equitably serve people of all ages, abilities, ethnicities, and incomes.

Complete streets can support and fulfill federal, state, and local community livability objectives. Strategies for improving community livability, which are consistent with complete-streets principles, include improving sustainability of land use and development (e.g., smart growth, transit-oriented design, new urbanism), providing non-motorized-transportation options, instituting traffic-calming measures, integrating land-use and transportation planning, and encouraging pedestrian-friendly design and mixed-use development.

3



**What Are the
Benefits of**

Complete Streets

?

Complete streets address the need for a comprehensive, integrated, connected transportation network that balances access, mobility, health, and safety needs of all roadway users. By planning, funding, designing, constructing, managing, and maintaining a complete and multimodal network, complete streets can ensure a fully integrated transportation system, achieve and sustain mobility, and safely accommodate non-motorized transportation. While difficult to quantify, there are numerous benefits of complete streets.

3-1. Safety

Complete streets can create infrastructure and a physical roadway environment that improves safety for pedestrians and bicyclists. Complete-streets principles provide for the safe accommodation of pedestrians and bicycles for a wide range of street types—from local residential streets, to neighborhood collectors, to major arterial roadways—within a variety of land-use contexts.

A review of pedestrian-safety research by the FHWA revealed that, when combined, roadway engineering, facility design, and educational programs can provide effective countermeasures to pedestrian crashes. Specific pedestrian facilities cited as effective features include (FHWA, 2004):

- Marked and illuminated crosswalks
- Alternative crossing treatments—including raised medians and pedestrian refuge islands
- Traffic-control devices, signalization, and signage
- Treatments to assist pedestrians with disabilities
- Careful bus-stop placement
- Measures to enhance safe routes to school
- Traffic-calming measures
- Provision of continuous sidewalks and walkways



Specifically designing, engineering, operating, and maintaining pedestrian facilities are tactics that are proven to produce pedestrian-friendly environments. Sidewalks provided along both sides of a roadway reduce pedestrian accidents, prevent mid-block crossing crashes, and greatly improve pedestrian mobility. Reducing road width is one traffic-calming measure that also improves roadway safety. A study in Longmont, Colo., showed that there was a 35- to 50-percent increase in injury accidents for every two-foot increase in street width (Swift, 2006). This same study revealed “the most significant casual relationships to injury and accident were found to be street width and street curvature” (Swift, 2006). Traffic-calming measures can effectively improve roadway safety by reducing vehicle speed, pedestrian crashes, and neighborhood cut-through traffic.

In addition to improving pedestrian safety, complete streets also encourage the safe design and engineering of bicycle-friendly and multimodal facilities. A recent study indicates that “on-road marked bike lanes were found to have a positive safety effect in five studies—consistently reducing injury rate, collision frequency or crash rates by about 50 percent compared to unmodified roadways” (Daniels, Brijs, Nuyts & Wets, 2009). Depending upon the land use and roadway context, the design of safe on-road bicyclist facilities may include shared lanes, marked shared lanes, paved shoulders, and/or designated bicycle lanes (AASHTO, 2010).

3-2. Health

Healthy lifestyles are becoming more important in the face of increasing obesity rates and related illnesses. Research indicates that there is a clear connection between the built environment and the health or livability of a community. A recent study published by *Medicine & Science in Sports & Exercise* concludes that “[i]f everyone in the United States began walking 30 to 60 minutes each day, the benefits would be extensive” (Powell and Blair, 1994, 851).

In order to increase physical activity and improve the health of communities, a multi-faceted approach is required. Building pedestrian- and bicycle-friendly environments alone will not stem the rising tide of obesity. Along with improvements to the built environment, public policy changes, health-promotion activities, and community support is needed to improve health outcomes (Robert Wood Johnson Foundation, 2007). In addition, eliminating built-environment barriers to walking or biking can be effective in influencing both behavior and transportation choice.

According to San Diego State University, “An 11-year study, which followed residents in Seattle as they moved, found that people shifted some trips to transit, bicycling, and walking as a result of moving into more walkable neighborhoods.”

Just as people can improve their diet with access to healthy, nutritious food, greater transportation choices can lead to a more healthy and active lifestyle. Complete streets provide improved access and opportunities for walking, biking, and physical activity. Built-environment features—including land use, recreational resources, availability of sidewalks, and community environment—are essential to opportunities for physical activity and positive health impacts.



3-3. Environment

The EPA recognizes the important relationship between an increase in greenhouse gases and the degradation of air quality. EPA released their “endangerment finding” in December 2009, which states that “...the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor-vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare” (EPA, 2009).

The transportation sector accounts for more than 30 percent of all greenhouse-gas emissions in the United States, with over 88 percent of all trips being made by car (EPA, 2011). When road design is auto-centric, more unnecessary automobile trips are made. While most short-distance trips could easily be made on foot or by bike, about 65 percent of trips of less than one mile are made by the automobile in the United States (Colia, Sharp & Giesbrecht, 2003). Switching to carbon-neutral transportation modes such as biking or walking can provide significant environmental benefits. If each person switched from automobile travel to walking or bicycling, an individual’s carbon dioxide emissions could be reduced by 4,800 pounds per year (National Complete Streets Coalition, 2010). Converting short car trips to travel by walking, biking, or public transit can decrease the carbon footprint of daily vehicle travel, minimize the generation of greenhouse gases, and improve air quality.

3-4. Smart Mobility

Complete streets support smart mobility and growth-development patterns. Communities that embrace smart-growth principles encourage compact building design, mixed-use development, walkable/bikable neighborhoods, an array of transportation choices, and a distinct sense of place.

There are economic, societal, and environmental benefits of smart growth (Litman, 2011). Compact, mixed-use development, infill redevelopment, and downtown revitalization are examples of public investment based on smart-growth principles. Substantial savings of taxpayer dollars can be realized by strategic public investment in existing downtowns and communities. Because infrastructure already exists in the core of a community, reinvestment in new infrastructure or public services is not required.

In addition, there are higher levels of social capital associated with more walkable communities. Successful public spaces are designed for people, not cars. Great places are easy to access, convenient to public transit, perceived to be safe and clean, encourage active use, and foster sociability (Project for Public Spaces, Inc., 2005).

Finally, the redevelopment of and reinvestment in compact, walkable communities protects the environment and natural resources. Focusing or redirecting development to places where infrastructure already exists conserves farmland, scenic vistas, historic resources, and natural assets.

3-5. Inclusive Physical Environments

3-5-1. Older Adults

In the United States, less than seven percent of Americans over the age of 65 make their trips on foot or bicycle (Pucher & Dijkstra, 2003). This figure is in stark contrast to many other places in the world. In Germany, 50-55 percent of people over the age of 65 make trips via foot or bicycle. This “walking gap” is likely due to auto-centric development and incomplete streets. AARP, which is part of the National Complete Streets Coalition, reports that “heavy reliance on automobile travel has contributed to making it difficult to get to places on foot in many parts of the United States and, in far too many cases, unsafe” (Haase et al., 2009). In the AARP Public Policy Institute publication, *Planning Complete Streets for an Aging America*, transportation planners and engineers are urged to consider the multimodal travel needs of older adults in roadway design. Changing the design and physical layout of transportation systems may help older adults, as both drivers and pedestrians, better navigate roadways and encourage this demographic to use other forms of transportation. The report recommends refinements to the FHWA’s *Design Handbook for Older Drivers and Pedestrians* to increase the safety of older adults. It also recommends that state and local governments adopt national Complete Streets policies that specifically address the needs of mature citizens (Haase et al., 2009).

3-5-2. Persons with Disabilities

ADA regulations require that new facilities be accessible and usable by people with disabilities. Title II of ADA also prohibits state and local governments from discriminating against persons with disabilities with respect to public accommodations and transportation (U.S. Department of Justice, 2005). In 2005 a draft of Public Rights-of-Way Accessibility Guidelines (PROWAG) was issued to provide guidance on scoping and technical requirements to ensure that access for persons with disabilities is provided wherever a pedestrian way is built or altered (United States Access Board, 2005). Equitable transportation policies, compliance with ADA, and access to transportation facilities by persons with disabilities will be furthered as complete-streets principles become more widely supported and adopted. Complete-streets practices reinforce the need for safe access and transportation equity for all—including persons with disabilities.



3-5-3. Children

According to Nemours Health and Prevention Services, approximately 40 percent of

Delaware's children and youth are either overweight or obese and at risk for long-term chronic health problems (Nemours, 2010). While there are a number of factors associated with rising obesity rates, lack of physical exercise is one factor that can be addressed with improvements to the built environment.

Nemours Health and Prevention Services is a strong public policy advocate for complete streets. Nemours points to research indicating that children are more physically active and dependent when complete streets are present, including built environment changes that improve pedestrian safety, provide safe routes to school, and remove barriers to walking and biking. In a policy brief titled "Counties and Municipalities in Delaware Can Develop Complete Streets to Combat Childhood Obesity," Nemours urges the support of Delaware's Complete Streets Policy by local governments (Nemours, 2009). It notes that local governments can update comprehensive plans, create bicycle and pedestrian master plans, and adopt zoning ordinances and public policies that support pedestrian- and bicycle-friendly built environments.

The National Complete Streets Coalition also concurs that complete streets can promote the physical activity of children. The Coalition's fact sheet "Complete Streets Helps Keep Kids Safe!" cites several benefits of designing and operating streets for all users, including children. It notes that Complete Streets can help to foster increased independence, mobility, physical activity, and safety of children. Children who live in bikeable and walkable communities have greater opportunities to be active in a safe environment (National Complete Streets Coalition, n.d.).

3-6. Walkability and Economic Vitality

There is growing evidence that walkable environments can provide positive economic benefits. Walkability can help revitalize a downtown, increase private investment, bolster property values, promote tourism, and support the development of a good business climate. A 2009 report, *Walking the Walk*, documents a positive correlation between the walkability of cities and home values.

According to the report, homes in neighborhoods that are within walking distance to destinations related to daily living can command a higher price than homes in similar neighborhoods that are automobile-dependent. A home in a more walkable community saw an increased property value premium of \$4,000 to \$34,000 dollars over homes in communities that were not very walkable (Cortright, 2009). Housing values are positively and significantly correlated with walkability in almost all metropolitan markets. Walkability was also correlated with high housing values in metropolitan areas of different sizes and in different regions of the country. Walkability was correlated with housing prices both in older,



photo courtesy of City of Newark, Del.

denser markets (i.e., Chicago, Ill.) and in faster-growing Sunbelt markets (e.g., Phoenix, Ariz., and Jacksonville, Fla.) (Cortright, 2009). In addition, the report found that homes that scored higher on a “Walk Score” algorithm, which assigns a higher point value to homes that are closer to typical consumer destinations, generally had increased home values in most markets (Cortwright, 2009).

In recent decades, there has been a renewed interest in the benefits of urban living and revitalizing downtown shopping districts and “Main Streets.” A study supported the Federal Transit Administration (FTA) and National Trust for Historic Preservation (NTHP) reveals that transit reinvestment and historic preservation, when combined, can be major forces in community revitalization. Successful revitalization strategies have focused on investing in resources that promote transit-oriented and transit-supportive development, adaptive reuse of historic structures, expansion of travel choices, intermodal hubs or centers, and the renewal of historic downtowns (Costello, 2003). Communities that reinvest in and revitalize critical public transportation links in their downtowns and surrounding neighborhoods are more likely to experience overall success in CBD-revitalization efforts (Costello, 2003). Successful initiatives capitalize on a town’s historic character, transportation enhancements, and attractive streetscapes that support a pedestrian-, transit-, and business-friendly climate.

For example, North Carolina’s Outer Banks invested approximately \$6.7 million in public funds for bicycle improvements, and over 10 years saw an economic benefit of \$60 million in bicycle-related tourism (North Carolina Department of Transportation, 2010, 33). The initial investment has paled in comparison to the total economic benefit gained.

3-7. Responds to Housing Market Preferences

In the past decade, there has been a dramatic shift in housing market preferences. More Americans are seeking to reside in walkable, mixed-use neighborhoods than in sprawling suburbia. A number of factors have contributed to the change in housing market trends, including the decreasing size of American households, higher commuting expenses, and spiraling single-family home-energy costs. These factors, combined with the economic recession, recent mortgage crisis, and collapse in the housing market have increased the demand for living in places with convenient access to public transportation, places of employment, schools, retail shops and restaurants, and residential communities (Renaissance Downtowns, LLC, 2011).

According to a 2011 Consumer Preference Survey commissioned by the National Association of Realtors, Americans have a strong preference for walkable, mixed-use, and transit-accessible neighborhoods. Among those polled, 56 percent of respondents favored smart-growth communities over neighborhoods that require automobiles to drive to work, home, schools, and recreation. The survey revealed that when considering a new home purchase, 77 percent of respondents would prefer neighborhoods with sidewalks and pedestrian-friendly amenities. Investment in public-transportation improvements is favored over building new roads by 50 percent of survey respondents. The survey also showed that most Americans would sacrifice the size or square footage of a new home for the quality of a neighborhood

and a shorter commute to work (Belden, Russonello & Stewart LLC, 2011).

The National Association of Realtors also notes that demographic trends and changes in consumer behavior will have a profound influence on the housing market. Demographic research shows evidence that the future generation of home buyers prefers to live in neighborhoods in city centers or inner suburbs that are close to jobs, entertainment, retail establishments, and public transportation. Recent surveys by RCLCO, a leading real estate–advisory firm, indicate that the future generation of home owners is in tune with smart growth—including communities that offer a compact, walkable lifestyle with a range of transportation alternatives (National Association of Realtors, 2010).

Aging baby boomers also have indicated a strong preference to “age in place” in communities that are livable, safe, and transit-friendly. A 2009 AARP Survey on Community Services in Delaware revealed that while most respondents are now dependent upon automobiles, nearly half of the residents surveyed agree they would use public transportation more often if it was more convenient (AARP, 2009).

4



What Are Characteristics of Complete Streets?

4-1. Complete Streets Are Flexible

The term “complete streets” is more conceptual than definitive. The accommodation of various road users will change from place to place depending on the context of the road use and its setting. Complete streets need to incorporate flexible design and consider the existing and future transportation context (or roadway type), existing and future land use (e.g., urban, suburban, rural/natural), adjacent land uses, residential density, topographical constraints, and character of development. Depending on the roadway and land-use context, future improvements may include enhancements to or the addition of ADA-accessible pedestrian features, bicycle facilities, crosswalks, curbs, traffic-control measures, signage, transit shelters, and/or streetscaping amenities.

The City of Charlotte, N.C., is using a context-sensitive decision-making method as a new approach to street design. In applying its *Urban Street Design Guidelines*, Charlotte considers land-use context, street function, and the need to balance competing right-of-way uses in order to select the best street-design option that achieves integrated planning, increased connectivity, and increased modal choice. The city uses a six-step approach in applying the street-design guidelines, which will consider stakeholder input, weigh tradeoffs among competing design elements, and balance often conflicting needs of road users—especially with respect to retrofit or modification projects. Depending upon the circumstances, the application of a six-step street-design approach may be either prescriptive or flexible as follows (Newsome, Steinman, Ewing, 2003, 6-7):

- **Step 1 – Define the Land-Use and Design Context**—the street design should reflect the existing and expected future land-use context.
- **Step 2 – Define the Transportation Context**—the existing and expected future conditions of the overall transportation network should be considered with respect to proposed street-design project.
- **Step 3 – Identify Deficiencies**—based on the assessment of land-use and transportation contexts, gaps in connectivity and pedestrian-, bicycle-, and transit-facilities should be identified and described.
- **Step 4 – Describe Future Objectives**—an evaluation of what needs to change or remain the same will serve as the basis for the street classification and design.
- **Step 5 – Recommend Street Typology and Test Initial Cross-Section**—based on the previous steps, the plan/design team can recommend the appropriate street typology.
- **Step 6 – Describe Tradeoffs and Select Cross Section**—the plan/design team will evaluate tradeoffs are evaluated, propose design alternatives, and present the suggested design treatments for public input.

The National Complete Streets Coalition avoids the use of the term “context sensitive.” The Coalition instead stresses that complete streets are necessary but need to have flexible

application based on land-use and roadway context. The Coalition asserts that the planning, design, and implementation of complete streets for all roadway users should be compulsory and dependent upon outcomes of a public-participation process. National Complete Streets Coalition urges that complete-streets principles be distinguished from context-sensitive solutions in roadway design, as follows (National Complete Streets Coalition, 2010):

While context-sensitive solutions involve stakeholders in considering a transportation facility in its entire social, environmental and aesthetic context, complete streets policies are a reminder that providing for safe travel by users of all modes is the primary function of the corridor. Under complete streets, basic facilities for bicyclists, pedestrians, transit users, and disabled travelers are necessities, rather than optional items. Their needs must be included regardless of their presence or lack thereof at stakeholder meetings. All modes and users are important on all thoroughfares.

In some instances, there may be a need to go beyond completing a street to safely accommodate all roadway users. For example, trails and/or shared-use paths may be needed to supplement complete streets where there is a large volume of motorized traffic traveling at high rates of speed. Shared-use paths and trails can complement on-road facilities, provide shorter routes of travel, and/or make connections to public facilities such as parks, schools, tourist areas, and other popular destinations. Providing shared paths and trails, in addition to complete streets, may also benefit inexperienced bicyclists, children and older pedestrians, dog walkers, rollerbladers, and people pushing strollers.

4-2. Complete Streets Are Accessible

The Americans with Disabilities Act of 1990 (ADA) is a civic rights law that is intended to provide adequate accessibility to all persons. Title II, subtitle A, of the ADA prohibits discrimination on the basis of disability in all services, programs, and activities provided to the public by state and local governments. Therefore, complete streets must provide accessibility for people of all ages and abilities.

4-2-1. Local Government Requirements Under Title II

Under Title II of ADA, state and local governments are required to ensure accessible design, construction, and maintenance of *all* transportation projects, regardless of the funding source. The 28 Code of Federal Regulations (CFR), part 35, implements subtitle A of ADA Title II. In §35.151, part 35, of 28 CFR, *all* new construction, reconstruction, and alterations to existing state and local government pedestrian facilities meet with federal accessibility standards. Pedestrian facilities include sidewalks, shared-use paths, trails, or other public walkways. If pedestrian facilities intersect a street, the portion of the street used by pedestrians, whether marked as a crosswalk or not, is also considered part of the pedestrian facility (ada.gov).

Facilities must also be brought up to current accessibility standards if the scope of a transportation construction project includes alterations to existing pedestrian facilities. For example, curb ramps must be installed if a street-resurfacing project alters the sidewalk, curbs, or street surface in a crosswalk area. If curb ramps already exist but do not meet the

current accessibility standards, those ramps must be either reconstructed or retrofitted to meet the current accessibility standards. Other required activities, needed to meet ADA standards as part of a transportation-project alteration, may include pavement replacement, sidewalk widening, street resurfacing, traffic- or pedestrian-signal installation, and/or change in sidewalk slope or grade (ada.gov).

4-2-2. ADA Transition Plans

To ensure compliance to Title II of ADA, state and local governments must conduct a self-evaluation to assess the extent to which facilities, programs, and services must be modified or changed to meet accessibility requirements. Under 28 CFR, part 35, §35.150, public entities with more than 50 employees must develop an ADA transition plan to describe how non-compliant facilities, programs, and services will be become ADA-compliant. The plan must (ada.gov):

- Identify physical obstacles that limit the accessibility of facilities to individuals with disabilities.
- Describe the methods to be used to make the facilities accessible.
- Provide a schedule for making the access modifications.
- Designate public officials responsible for implementation of the plan.

4-2-3. ADA Maintenance Requirements

ADA requires that to the maximum extent possible, facilities must be accessible to, and usable by, individuals with disabilities. Under 28 CFR, Part 35, §23.133, all public entities must maintain “in operable working condition those features of facilities and equipment that are required to be readily accessible to and usable by persons with disabilities...” (ada.gov). A good source of information regarding state and local government public facility-accessibility requirements is the *2010 ADA Standards for Accessible Design* (ADAAG). This document comprises ADA Title II regulations and guidance within the 2004 edition of ADAAG. Key guidance in this document includes (U.S. Department of Justice, 2010):

- The requirement for state and local governments, under Title II, to address the need for accessible sidewalks, curb ramps, and street crossings
- The need to adhere to minimum design guidelines, under ADAAG, for accessible routes including sidewalk width, curb ramps, cross-slopes, detectable warnings, and passing space



4-3. Complete Streets Provide Multi-modal Transportation Options

Complete streets are the basis of a multimodal transportation system that enhances mobility and access of all users, fosters options to car travel, and provides connections among travel destinations and modes. To foster a multimodal network, complete streets must:

- Address the needs of transportation users of all ages and abilities and include facilities that accommodate pedestrians, bicyclists, transit users (including school buses), emergency vehicles, motorists, and commercial trucks.
- Recognize the needs of special populations, including households without cars, low-to-moderate-income households that depend on transit, and demographic groups that may not drive, such as children, older adults, and persons with disabilities.
- Promote viable, efficient, and functional transportation alternatives to automobile travel.
- Balance access, mobility, health, and safety needs of all roadway users.
- Gauge how a road will impact various transportation users
- Consider the functional classification of the roadway—whom it will serve and for what purposes. Additional factors to consider include adjacent-land uses, context of location, community character, social and demographic factors, and how existing roadway uses may evolve over time.

4-4. Complete Streets Are Vibrant Centers of Activity

According to the Project for Public Spaces (PPS), well-designed and -managed transportation networks can foster mobility, economic vitality, civic engagement, and active and healthy communities. Successful public spaces have four key qualities—they are accessible, active, sociable, and comfortable. Moreover, “placemaking capitalizes on a local community’s assets, inspiration, and potential, ultimately creating good public spaces that promote people’s health, happiness, and well-being” (PPS, n.d.). In order for complete streets to become vibrant centers of activity, they must:

- Encourage compact, mixed-use development.
- Improve circulation systems to connect diverse community environments and amenities.
- Instill the importance of pedestrian, bicycle, and transit facilities as essential elements of healthy communities and components of a multimodal transportation system.
- Create pedestrian-, bicycle-, and transit-friendly environments.
- Recognize that streets can serve as community gathering places and hubs of sociability, business, and livability.

4-5. Complete Streets Have Common Features and Design Elements

While there are common features and design elements, there is not a standard complete streets template for every street or environment. Again, the application of design elements must be flexible to recognize differences in future and existing land-use context, road type, and a community's vision for a transportation corridor. Common features and design elements include speed-management strategies, traffic-control devices and signage, pedestrian infrastructure and amenities, bicycle features, transit facilities, and ideally pedestrian-oriented lighting.

4-5-1. Speed-Management Strategies

Speed-management strategies are intended to provide more consistent vehicular speed and decrease the number of speeders. Research supports the effectiveness of speed management at decreasing automobile speeds, reducing vehicle crashes, moderating noise levels, and promoting better environments for non-motorized road users (Huang and Cynecki, 2000, 26-31). Speed-management strategies include but also go a step above traffic-calming measures. Traffic-calming is described by DelDOT as “changes in street alignment, installation of barriers, and other physical measures to reduce traffic speeds and/or cut-through volumes, in the interest of street safety, livability, and other public purposes” (Final Regulations, 2000, 529). While traffic-calming is site-specific and most effective on local residential streets, speed-management strategies are appropriate both on residential streets as well as higher-speed roadways—including major arterial and collector streets (Parham and Fitzpatrick, 1998, 1-3).



Speed-management strategies are both passive and active. Passive strategies include those that provide motorists with greater awareness of travel speeds via feedback (e.g., flashing speed-limit signs) or police enforcement. Active strategies include physical devices, road design and street alignment changes, and technologies that force drivers to moderate their vehicle speed (Kimley-Horn and Associates, 2009). Active speed-management strategies (ITE, 2010) include, but are not limited to:

Roadway-Narrowing Treatments

Research indicates that roadway-narrowing treatments (e.g., adding raised medians, curb extensions, road diets, bike lanes and/or converting travel lanes to parking) can increase pedestrian safety. A road diet often reduces lanes, and/or lane size, which ultimately slows

vehicular traffic and produces additional space for other roadway users—including pedestrians and bicyclists. A Longmont, Colo., report shows that “as street widths widen, per-mile per-year accidents increase exponentially, and the safest residential-street widths are the narrowest (curb face)” (Swift, Painter, Goldstein, 2006).

Intersection Design

Intersection design can provide speed management by changing a street’s physical design and narrowing its cross-section to enhance visibility of motorists and accessibility of pedestrians. Altering the design of an intersection can narrow a street’s cross-section or provide visual cues to motorists to travel more slowly while benefiting pedestrians and bicyclists through shorter crossings and higher visibility. Intersection design primarily has an impact on the speed of vehicles approaching and traveling through an intersection, and can improve pedestrian accessibility. Examples of intersection design techniques include (ITE, 2010):

- Raised intersections or crosswalks
- Curb extensions, or pedestrian bulb-outs to extend the corner of a sidewalk into the street
- Smaller curb-return radii to slow turning vehicles

Roundabouts

According to DelDOT, “a roundabout is a circular intersection that moves traffic counterclockwise around a central island. Often confused with traditional ‘traffic circles,’ one way modern roundabouts differ is that they feature traffic-calming qualities that encourage drivers to reduce their speed through the intersection. The design of a roundabout also reduces the need for direct left turns, which are a major reason for intersection crashes, thereby increasing the overall safety aspect of the intersection” (DelDOT, n.d.).



photo courtesy of Johnson, Mirmiran & Thompson

On-Street Parking

On-street parking on both sides of the street can dramatically reduce travel speeds by creating a visual illusion to drivers that the street is narrower than its actual width. Narrow streets with high-parking density tend to have the greatest effects on calming traffic and slowing car speeds. On-street parking also provides a buffer for pedestrians and vehicular traffic. The buffer created by parked cars prevents traveling vehicles from splashing pedestrians and provides a sense of comfort to sidewalk users.

4-5-2. Traffic-Control Devices and Signage

The purpose of traffic-control devices (e.g., signs, pavement markings, and signals) is to promote highway safety and efficiency by providing for the orderly movement of all road users. The *Manual on Uniform Traffic Control Devices* (MUTCD) provides eight warrants for transportation agencies to install and maintain traffic-control devices on all public streets (and private roadways open to the public), highways, and bikeways (Smith, Reed, and Baker). DelDOT's MUTCD provides additional guidance on design, placement, operation, maintenance, and uniformity of traffic-control devices in order to provide "reasonable and prudent road user[s] with the information necessary to reasonably, safely, and lawfully use the streets, highways, pedestrian facilities, and bikeways" (DelDOT, 2009, 1A-1).

Signage and Pavement Markings

Signs and pavement markings serve to regulate, warn, and guide all road users. Retro-reflectivity or nighttime visibility of signs and pavement markings provides critical information to both motorized and non-motorized travelers, helps drivers navigate the road during nighttime hours, enhances traffic flow and driver mobility, and promotes safe roadway conditions. Nighttime visibility is especially critical to the growing population of older roadway users. FHWA has adopted new traffic-sign retro-reflectivity requirements that have been incorporated into the most recent version of MUTCD. The new national retro-reflectivity standards require transportation agencies or officials to maintain minimum traffic-sign retro-reflectivity levels. January 2012 is the deadline for agencies to establish and implement a sign-assessment or management-method to meet the minimum recommended requirements (FHWA, 2010).

Traffic Signals

Traffic signals are installed to regulate traffic movement, ensure the orderly flow of traffic, and protect motorized and non-motorized travelers at busy intersections. Traffic engineers follow federal guidelines that establish the minimum conditions under which signal installation should be considered, including volume of vehicles and pedestrians, physical environment of the intersection, adjacent and future development, peak-hour traffic delays, vehicle speed, and accident data.

Pedestrian Signals

Pedestrian signals are special types of traffic-control devices that are installed at signalized intersections to create gaps in traffic flow, which allow pedestrians to cross at busy intersections. They are frequently installed at signalized intersections when engineering analysis shows that the vehicular signals cannot adequately accommodate the pedestrians using the intersection. The following pedestrian signals will be installed by DelDOT as warranted (DelDOT MUTCD, 2008).



Pedestrian-countdown signals—will be installed at all new or retrofitted signalized intersections in Delaware over the next several years. The new countdown signals will display the number of seconds that remain for a pedestrian to safely cross a street, in addition to the traditional “Walk” and “Steady/Don’t Walk” symbols.

Pedestrian-accessibility signals—audible pedestrian signals will be installed by request to assist persons with limited vision or visual impairments to safely cross a street. While accessible-pedestrian signals are installed to meet the needs of pedestrians with visual impairments, common problems often arise in the installation of ped-buttons and pedestrian signals. A technical assistance bulletin, issued by the U.S. Access Board, provides guidance on ways to address deficiencies in the location, operation, and usability of pedestrian-accessibility signals (see www.access-board.gov/research/pedestrian-signals/bulletin.htm).

Pedestrian-activated high-intensity activated crosswalk (HAWK) crossing signals—will be installed to address pedestrian crossing needs at high-volume traffic locations that do not meet the criteria for a traditional traffic signal. For example, in 2010 a HAWK was installed on State Route (SR) 72 in Newark to meet the road crossing needs of pedestrians with a minimum disruption to of the traffic flow of SR 72.

Intelligent-transportation technologies (ITS)—may be on the horizon to improve conditions for pedestrians crossing streets. Examples include in-pavement crosswalk lighting, mid-block pedestrian-actuated beacons, pedestrian-detector technologies, and advanced accessible pedestrian signals. Many ITS innovations, however, have not been included in MUTCD nor endorsed by FHWA (walkinginfo.org).

4-5-3. Pedestrian Facilities and Amenities

Accessible Sidewalks and Shared-Use Paths

Complete streets must have accessible sidewalks and/or shared-use paths to create a safe, pedestrian-friendly environment. Newly constructed or altered sidewalks, shared-use paths, curb ramps, street crossings, and other pedestrian features must meet or exceed accessible design criteria in order to comply with ADA Title II requirements for state and local governments. ADA, ADAAG, PROWAG, FHWA, and U.S. DOT are excellent resources that provide technical assistance and design guidance on pedestrian and bicycle facilities that can meet accessibility standards while achieving complete streets. Again, context sensitivity and the application of engineering judgment is recommended when designing pedestrian facilities.

Suggested treatments for residential, collector (low- to moderate-capacity), and arterial (moderate- to high-capacity) roadways include a minimum of five-foot-wide sidewalks on both sides of a street, with a planting strip two feet wide on residential and collector streets (FHWA, 2010). Sidewalks in commercial- and central-business districts should be at least ten feet wide, with a six-foot-wide obstruction-free area for pedestrians, in order to meet level-of-service criteria and AASHTO’s “Green Book” recommendations (U.S. Architectural and Transportation Barriers Compliance Board).

Generally, good sidewalk design incorporates a sidewalk-zone system. Four zones—the curb zone, furniture zone, pedestrian zone, and frontage zone—are used to determine the total width of a sidewalk and the minimum width for the pedestrian zone that is free from obstacles, obstructions, and that meets ADA guidelines (FHWA, 2010). Creating buffer zones between vehicular traffic is important so that pedestrians experience more secure and safe environment for walking. Buffers can come in multiple forms. On-street parking, landscaping, and street furniture are some of the basic options that can safely shield pedestrians. Additionally, sidewalks should be continuously connected, free of dead-ends, obstructions, and burdensome physical defects (i.e., surfaces that are uneven or in disrepair). Curb ramps and crosswalks must be installed to meet ADA requirements for accessibility. In addition, routine sidewalk maintenance—including snow removal—and repair is required.

Curb Ramps

Curb ramps are one of the most basic of ADA requirements. To meet recommendations of ADAAG (4.29.2), all curb ramps must be designed to include detectable warnings, with raised-truncated domes, to take into consideration the needs of pedestrians who have mobility or visual impairments. These minimum guidelines should be used as a starting point, not a final design requirement (U.S. Access Board, 2002).

Crosswalks

Crosswalks that have clear pavement markings are essential to separate pedestrian movement from automobile traffic. Simple pavement markings can come in the form of white striping that clearly defines a pedestrian crosswalk. In other high-traffic areas, textured or high-visibility pavement markings may help drivers anticipate pedestrians crossing busy roadways. Advance stop lines that require vehicles to stop before the crosswalk lines are also helpful in bringing visibility to pedestrians. Depending on the context of the roadway, crosswalks can be installed at frequent intervals or at busy pedestrian corridors in order to promote accessibility. Complete streets also utilize all corners of an intersection for crossing, versus making pedestrians take extra-long paths to cross a street. In environments where pedestrians need additional points of crossing, a midblock crossing may be another option to enhance pedestrian accessibility. In order to enhance the usability of transit systems, crosswalks should be placed near transit stops. Successful pedestrian- to transit-user transitions should easily facilitate accessibility.

Pedestrian Islands/Medians

Pedestrian islands can be used to promote pedestrian safety and accessibility. Pedestrian medians can also serve the purpose of providing roadway beautification and local identity,



when thoughtfully landscaped. Pedestrian islands allow a pedestrian to make one trip to the center of the road, while focusing on one direction of traffic. Before they continue their trip, pedestrians can stop, rest, and focus on the second flow of traffic separately. At signalized intersections these pedestrian islands can break up longer crosswalks, splitting the time to cross a street into more manageable pieces.

Streetscaping Amenities

The National Complete Streets Coalition recognizes the need and advocates for streetscaping improvements as an essential component of complete streets. The Coalition reports that the American Society of Landscape Architects (ASLA) are forerunners in implementing streetscape-design strategies that attractively integrate bicycle and pedestrian infrastructure, transit shelters, public places, trails, parks and recreation facilities, street furniture and amenities, and tree canopies, which all form the building blocks of complete streets. In 2010 ASLA urged federal legislators to adopt a resolution to make the fourth week in April “National Streetscaping Week.” The proposed resolution called for “promot[ing] the development of safe, attractive, and environmentally sustainable communities by urging federal, state, regional, and local policy-makers to fund and support streetscape improvement projects” (National Complete Streets Coalition, 2010).

Mixed-Use Development

Mixed-use development supports complete streets by enhancing community livability with a more pedestrian-, bicycle-, and transit-friendly environment. According to the American Planning Association (APA), mixed-use development “blends residential, commercial, cultural, institutional, and, where appropriate, industrial uses.” Mixed-use development (APA, n.d.):

- fosters more housing variety and density
- shrinks distances between housing, workplaces, retail businesses, and other destinations
- encourages more compact development
- promotes a sense of place and community identity

4-5-4. Bicycle Facilities

Safer transportation infrastructure for bicyclists can promote a greater shift to that mode from automobile travel. As bicycling is integrated into the transportation mainstream, transportation agencies are recognizing the need to provide policy and design guidelines to



construct new bicycle facilities and retrofit existing transportation infrastructure for bicycle travel. In 2008 the U.S. DOT issued a policy statement to provide bicycle and pedestrian facility–design guidance. The statement recognizes the need to balance pedestrian and bicyclist needs in all transportation projects. It also advises transportation agencies to incorporate flexibility in roadway design and apply engineering judgment in tailoring designs to specific roadway needs and uses in order to balance competing transportation needs (FHWA, 2008).

DelDOT's *Delaware Bicycle Facility Master Plan* also provides design guidance to better accommodate bicyclists on the statewide roadway network. Within the plan, a bikeway is defined under bicycle policy (PI# D-06) as “any road, street, path or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are to be shared with other transportation modes” (DelDOT, 2005, 11).

The plan establishes a continuous network with a hierarchy of bicycle routes—statewide routes, regional routes, recreational connectors, feeder routes, and undesignated bikeways. For each type of bicycle route, a series of bicycle-facility features are recommended (e.g., warning and regulatory signage). The location, placement, and design of bikeways should be context-sensitive. DelDOT guidance suggests that separate bicycle lanes may be appropriate on roadways within urban and suburban settings, while bicycle travel on shoulders is more appropriate on rural roads. In addition, amenities such as bicycle racks or storage areas are important. Placing bicycle parking near transit hubs, areas of commerce, and places of work enhances bikeability.

Bicycle Lanes

The *Delaware Bicycle Facility Master Plan* provides a description of and design guidance for bikeways that may be installed on within the hierarchy of bicycle routes. The three types of conventional bikeways described in the master plan—bike lanes, shared shoulders, or outside travel lane—are defined below (DelDOT, 2005, 11):

- **Bike lane**—is a dedicated bicycle lane of travel with minimum five-foot width that is designated by pavement striping, bike symbols, route designation, as well as warning and regulatory signage.
- **Shared shoulder**—provides a separate bicycle lane for travel within a paved shoulder of a roadway. With a minimum five-foot width, a shared shoulder includes some signage and bicycle symbols, maintains use for motorist breakdowns or emergencies, and prohibits parking.
- **Outside travel lane**—is described as a 14-foot-wide outside-travel lane to be shared by motorists and bicyclists. The lane provides warning and regulatory signage, but no pavement striping.



An *Urban Bikeway Design Guide* was recently published by the National Association of City Transportation Officials (NACTO). It describes other options to conventional bikeways, which may be considered in certain urban-roadway contexts, to provide attractive city streets that accommodate and encourage bicycling (NACTO, 2011). These urban bikeway alternatives include:

- **Buffered bike lanes**—are described as conventional bicycle lanes that are separated from an adjacent motor-vehicle travel lane and/or a parking lane by a designated, and pavement-marked buffer space.
- **Contra-flow bike lanes**—enable bicyclists to ride in the opposite direction of motor vehicle traffic by allowing two-way bike along a one-way road. Yellow center-lane striping separates contra-flow bike lanes from traffic lanes.
- **Left-side bike lanes**—allow for the placement of conventional bike lanes on the left side of one-way streets or two-way median divided streets. This is a feasible option in busy urban centers where conflicts with transit, delivery vehicles, or pull-outs by parked cars could be problematic.

Pavement Markings and Signage

Pavement markings and signage can help create awareness and identify the presence of a bicycle facility. Bicycle-route signage, regulatory signage, and warning signage all heighten awareness of cyclists and provide route navigation information. Pavement markings clearly designate bikeways and travel paths for both motorists and bicyclists. All pavement markings, symbols, and/or arrows must be retro-reflective to enhance visibility and meet recommended pavement-marking standards, two of which are described below (MUTCD, 2009).

- **Bicycle detector pavement marking**—is a pavement marking that denotes a bike lane and the direction of travel of bicyclists.
- **Sharrows**—or shared lane markings may be used as a traffic-control device on roadways with vehicular speed under 35 miles per hour. MUTCD indicates that a sharrow may be used as a pavement marking where vehicular and bicycle traffic share a travel lane that is too narrow for side-by-side travel. Sharrows can assist bicyclists with lateral positioning in urban environments with on-street parallel parking. When on-street parking is being used, it may not be possible to have designated bicycle lanes. In these situations, sharrows can direct a bicyclist to the appropriate position on a street to reduce the likelihood of a bicyclist being injured by the opening of a parked-vehicle door. Sharrows also alert motorists to the presence of bicyclists sharing a road lane, encourage safe passing of bicyclists by motorists, and minimize the occurrence of wrong-way bicycling (FHWA, 2009, p.810). DelDOT has recently provided interim policy guidance with regard to sharrows that substantially conforms to the MUTCD guidance (Weber 2010).

Bicycle Parking and Storage

Adequate bicycle parking and storage can promote biking as a viable transportation mode. Local governments may consider ordinances to address the need for bike parking in commercial areas; transit stations, park-n-ride facilities, and commuter parking areas; places of employment; public facilities; and mixed-use and/or residential buildings. The International Bicycle Fund (IBF) provides guidance for local jurisdictions that are considering regulations that govern bicycle parking as well as placement of bike racks, lockers, and storage systems (IBF, n.d.).

4-5-5. Transit Facilities

In communities served by public transportation, complete streets are needed to provide access to transit. The Journey-to-Work portion of the 2000 U.S. Census reports that the percentage of work trips made by public transit fell from 12.6 percent in 1960 to only 4.7 percent in 2000 (U.S. Census Bureau, 2000). According to a 2001 National Household Travel Survey, most Americans are located within two miles of a transit stop—potentially within walking or biking distance. Studies also show that most public transit use begins with walking. However, if streets are not designed to be pedestrian-friendly, there can be a disconnect between the availability of transit and the use of this mode.

Streets that lack connectivity, well-maintained transit shelters, adequate lighting, and pedestrian/bicycle amenities can discourage use of public transit as a transportation mode (National Complete Streets Coalition, 2010). Pedestrian- and bicycle-friendly infrastructure needs to be designed, built, and maintained to promote accessibility to and from a transit stop or shelter. Transit stops/shelters should be designed to provide a safe and secure environment for passengers waiting to board. Weather can make using public transportation an inhospitable experience. Transit facilities must be cleared of snow, ice, and debris to provide all-weather use and to meet ADA requirements. Because most people walk to a transit site, pedestrian facilities such as sidewalks, crosswalks, and curb ramps should also be snow- and ice-free. In addition, amenities such as benches, bike racks, and on-site and on-bus bike storage can promote use of transit by pedestrians and bicyclists.

4-5-6. Pedestrian-Oriented Lighting

According to Delaware's Office of Highway Safety, three of four factors that contribute to pedestrian fatalities in the state are pedestrians crossing outside of crosswalks, crossing the road at night wearing dark clothing, and walking in the roadway. Most pedestrian deaths in Delaware occur at night—82 percent of fatalities occurred between 6 p.m. and midnight in 2008 (DelDOT, 2007).



photo by Ed Rybczynski Photography

While Delaware state law establishes the “rules of the road” that focus on pedestrians’ right-of-way in crosswalks and other pedestrian-safety requirements, the fact is that motorists simply do not see pedestrians, even if weather or visibility is good. In order to enhance pedestrian safety and accessibility, illumination of pedestrian spaces is essential. Walkway illumination should be focused on the pedestrian, not just serve as a byproduct of other auto-centric, roadway lighting.

Good street lighting should be incorporated in street design to improve the visibility, comfort, and security of pedestrians. In urban areas, street lighting is recommended for intersections, pedestrian crossing areas, and areas of high pedestrian activity. The key to developing a good plan is to relate lighting to the context of the land use, evening functions of the public space, and the nighttime use of the street use by pedestrians and motorists. A better balance of pedestrian and other uses may be achieved by installing new or replacing existing standard overhead street lights with smaller-scale, pedestrian-oriented light fixtures (Cityscape Institute, 2009). To learn more about how enhanced lighting can encourage a safe and secure atmosphere for pedestrians and cyclists, please review the IPA working paper *Pedestrian Lighting Options and Roles of Responsibility Within Unincorporated Delaware Communities*, which is available on IPA’s website at www.ipa.udel.edu/publications/transportation.html.

4-6. Summary

Complete streets are roadways designed and operated to enable safe, attractive, and comfortable access and travel for all users. Pedestrians, bicyclists, motorists, and public-transportation users of all ages and abilities can benefit from improved safety, access, and mobility. Complete streets are characterized as flexible, multimodal, accessible, and vibrant centers of activity with common features and design elements. Complete streets can augment community livability to enhance the quality of life in rural, suburban, and urban areas. Complete Streets are flexible, adapting to the physical environment, adjacent land uses, and roadway context. Depending on the setting, a complete street may include common features and design elements such as speed-management strategies; traffic-control devices and signage; pedestrian-, bicycle-, and public- transit facilities; and pedestrian-oriented lighting.

5



What Is the History of

Complete Streets



5-1. National Complete Streets Movement

The National Complete Streets Coalition evolved from a task force that united behind a basic idea that streets should accommodate all users—pedestrians, bicyclists, transit users, motorists, senior citizens, children, and persons with disabilities. The group lobbied for inclusion of a complete streets policy in the 2005 federal authorization of Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Unfortunately, while the passage of SAFETEA-LU in 2005 did not include a complete streets policy, it strengthened the national movement. The National Complete Streets Coalition continues to advocate for the adoption of complete-streets policies and procedures at the federal, state, and local government levels (McCann and Rynne, 2010).



Members of the National Complete Streets Coalition include practitioners from the Institute of Transportation Engineers (ITE), the American Planning Association (APA), American Public Transportation Association, and special-interest groups such as AARP, America Walks, America Bikes, Smart Growth America, and Association of Pedestrian and Bicycle Professionals (McCann and Rynne, 2010). More recently, the public health community has garnered support for the complete streets movement. The Centers for Disease Control and Prevention (CDC), American Academy of Pediatrics, and the Robert Wood Johnson Foundation are proponents of active communities and policy strategies designed to address the nation's obesity epidemic.

In a recently released report, *Complete Streets Policy Analysis 2010: A Story of Growing Strength*, the rapid growth of state and local complete-streets policies is documented. It reports that the number of state and local complete-streets policies has doubled over the past three years. Almost half of all states (23) states, including Delaware, have adopted complete-streets policies. More surprisingly, small suburban communities with populations under 30,000 are taking the lead in policy adoption. Within 47 states, more than 200 regional and local jurisdictions have adopted complete-streets policies in the forms of resolutions, ordinances, internal policies, and planning documents. Top-scoring local government policies include county council-approved policies in Florida and the Mountain West and city ordinances and municipal-design guidelines in the Pacific Northwest and Northeast (Complete Streets Coalition, 2011).

There is no master blueprint for a complete-streets policy. However, the National Complete Streets Coalition has identified ten elements that should be part of an ideal, comprehensive complete-streets policy. A model federal, state, or local government policy (National Complete Streets Coalition, 2010):

- 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, in addition to trucks, buses and automobiles

- Encourages **street connectivity** and aims to create a comprehensive, integrated, connected network for all modes
- Is **adoptable by all agencies to cover all roads**
- Applies to **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 criteria** and guidelines 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 implementation of the policy

5-2. Federal Role in Completing the Streets

To date, the federal government has not adopted a complete-streets policy. In May 2011, the “Safe and Complete Streets Act of 2011” (HR 1780) was introduced to require state DOTs and metropolitan planning organizations (MPOs) to consider “safety and convenience” of all roadway users when planning for and developing transportation projects (*govtrack.us*). A Senate companion bill, the Complete Streets Act of 2011 (S 1056) was subsequently introduced later in May. While similar to HR 1780, the Senate bill also requires agencies to consider cyclists, pedestrians, and public transit when building roads with federal funds (*govtrack.us*). As of fall 2011, neither bill has made it out of committee review phase.

5-2-1. National and Federal Agency Publications

Although the federal government has not yet adopted a complete-streets policy, the premise to provide “routine accommodation” can be found in national and federal agency guidelines, manuals, policy statements, and publications. Many transportation documents provide a foundation for complete streets. These include, but are not limited to the following organizations’ publications:

American Association of State Highway and Transportation Officials (AASHTO)

Geometric Design of Highways and Streets (AASHTO’s Green Book)

Guide for the Planning, Design, and Operation of Pedestrian Facilities

Guide for the Development of Bicycle Facilities

Context Sensitive Design for Integrating Highway and Street Projects within the Community and Environment

Federal Highway Administration (FHWA)*Manual on Uniform Traffic Control Devices (MUTCD)**Highway Design Handbook for Older Drivers and Pedestrians**Flexibility in Highway Design Manual***Transportation Research Board (TRB)***Highway Capacity Manual**Special Report 214, Designing Safer Roads***Institute of Transportation Engineers (ITE)***Traffic Calming: State of the Practice***United States Access Board***Americans with Disabilities Act Accessibility Guidelines (ADAAG)**Revised Draft Public Rights-of-Way Accessibility Guidelines (PROWAG)***United States Department of Justice***2010 ADA Standards for Accessible Design**Revised ADA Regulations Implementing Title II and III***5-2-2. Federal Agency Policy Statements and Guidance**

During the 1990s, the federal government began to fund the development of a more balanced transportation system with passage of the Intermodal Surface Transportation Efficiency Act in 1991 and the Transportation Equity Act for the 21st Century (TEA-21) in 1998. With the passage of TEA-21, the U.S. Department of Transportation (U.S. DOT) issued a series of policy statements to support the integration of bicycling and walking into the transportation mainstream.

Accommodating Bicycle and Pedestrian Travel: A Recommended Approach – This U.S. DOT policy statement has become the basis of many initial complete-streets policies nationally. It states that bicycle and pedestrian accommodations are to be included in new construction and reconstruction projects in all urbanized areas except under three conditions—on roadways with laws prohibiting bicycles and pedestrians, where costs are excessive, and where there is an absence of need. The policy statement also calls for paved shoulders on rural roads and accessible designs so all pedestrians, including people with disabilities, can travel safely and independently (FHWA, 2008).

Policy Statement on Integrating Bicycle and Walking into Transportation Infrastructure – This policy statement was issued by FHWA in 2000 to provide guidance on accommodating bicyclists and pedestrians in the design of new and improved transportation facilities.

ADA Standards for Transportation Facilities – In 2006 the U.S. DOT adopted new standards, based on U.S. Access Board guidelines, for transportation facilities covered under ADA. The standards apply to bus stops, bus and rail stations, equivalent accommodation, accessible routes, curb ramps as well as other transportation facilities constructed or altered after 2006.

These measures are intended to improve accessibility for persons with disabilities while facilitating compliance (U.S. Access Board).

Updated Guidance on Bicycle and Pedestrian Provisions of Federal Transportation Legislation – A revised statement was made by FHWA in 2008 to reinforce the need to fully integrate bicycling and walking as travel modes into transportation planning, design, and operations. This guidance affirmed in all federally funded transportation projects and programs that non-motorized users need to be safely accommodated and considered during the planning, development, and construction phases. In addition, transportation-improvement projects should plan for the presence of bicyclists and pedestrians on all highways and transportation facilities. The guidance stressed that, “improving conditions and safety for bicycling and walking embodies the spirit and intent of federal surface transportation law and policy to create an integrated, intermodal transportation system [that] provides travelers with a real choice of transportation modes...” (FHWA, 2008).

Updated Bicycle and Pedestrian Accommodation Regulations and Recommendations – This update of the U.S. DOT policy statement was issued in March 2010. It stresses that every transportation agency has the obligation “to improve conditions and opportunities for walking and bicycling and to integrate walking and bicycling into their transportation systems.” The statement advises state DOTs to (U.S. DOT, 2010):

- Treat walking and bicycling as equals with other transportation modes.
- Ensure convenient access for people of all ages and abilities.
- Go beyond minimum design standards.
- Collect data on walking and biking trips.
- Set a mode-share target for walking and bicycling.
- Protect sidewalks and shared-use paths the same way roadways are protected.
- Improve non-motorized facilities during maintenance projects.

5-3. State Leadership Role in Complete Streets

While policy approaches differ, all states share an important role in developing policies and designing multimodal transportation systems that serve users of all ages and abilities. According to a recent report, *Complete Streets Policy Analysis 2010: A Story of Growing Strength*, states should provide leadership and guidance to local governments on complete streets. State DOTs can explain technical aspects of the need for multimodal design of complete streets. In terms of state policy leadership, several states, including Minnesota, Michigan, and California, have adopted laws that now require inclusion of complete-street principles in general (comprehensive) plan updates by local governments (National Complete Streets Coalition, 2011).

In addition to the previously mentioned federal policy statements, there are two specific federal directives that require state DOTs to address the need for non-motorized transportation. First, states are required to use a portion of federal funds to hire a state bicycle and pedestrian coordinator under Federal Statute 23 USC 217. Second, the Code of Federal Regulations (CFR) states that DOTs, in cooperation with metropolitan planning organizations (MPOs), must develop and adopt multimodal transportation plans with non-motorized and public transportation components (FHWA, 2008).

Complete-streets policies at the state level take many forms, including policy directives, resolutions, state legislation, funding appropriations, design guidelines, and/or executive orders. Effective state implementation strategies for a complete-streets policy include (McCann and LaPlante, 2009):

- Institutionalizing complete-streets policies by revising state DOT policy and procedures to serve all modes
- Using complete-streets principles as the basis for revising state DOT design manuals
- Retraining state DOT planners and engineers on how to implement complete-streets policies through implementation strategies and decision-making tools such as checklists, scoping procedures, and design directives
- Developing and implementing performance-based measures for complete-streets projects to ensure roadway networks serve all users

Educating and partnering with other state agencies, advocacy groups, MPOs, and local governments can also advance a state's complete-streets policy. State DOTs can collaborate with partner agencies and jurisdictions to actively adopt complete-streets policies, encourage local governments to develop comprehensive plans that support active and healthy community initiatives, and adopt policies and practices that contribute to smart growth and a safe environment for non-motorized transportation alternatives.

5-4. Metropolitan Planning Organizations (MPOs) and Complete Streets

As federally mandated and funded transportation-policymaking organizations, MPOs are charged with planning and coordinating the investment of federal transportation dollars. MPOs provide a federally required public forum for transportation decision-making to ensure that expenditures of federal transportation funds result from a continuing, cooperative, and comprehensive (3-C) planning process. MPOs have taken an active role in assimilating complete-streets principles when planning transportation projects and in coordinating transportation policy (FHWA, 2008). FHWA has clearly outlined the role of MPOs in implementing complete-streets principles to include (Smith, Reed, and Baker, 2010):

- Developing land-use, economic-development, and transportation (or other infrastructure) plans in a coordinated manner, with all elements supporting a common vision

- Facilitating alternative-transportation modes through land-use goals and design standards
- Connecting transportation projects and programs to public and private investments so they complement each other and support broader community goals
- Accommodating the flow of freight while avoiding or minimizing negative impacts on residential areas, city centers, and other users of the transportation system
- Considering a range of strategies, tools, and modal options to support complete streets and similar livability goals and activities

5-5. Local Governments and Complete Streets

While transportation planners and engineers are now directed to design streets with all users in mind, towns and cities have authority for local plans and policies, and they may not be totally in sync. Local jurisdictions need to incorporate complete-streets principles within comprehensive plans, regulatory policies, community-design guidelines, and facility-maintenance practices. In addition, local government policies should be consistent with state policies, address community needs and transportation-related issues, and include common policy elements recommended by the National Complete Streets Coalition. Successful local government complete-streets policies need strong political and community advocacy, partnerships among and between other agencies and organizations, local government leadership and staff support, and a demonstrated need for change in the transportation environment.

According to the National Complete Streets Coalition's *Complete Streets Policy Analysis* report, the strongest policies address the need for (National Complete Streets Coalition, 2011):

- **A clear vision**—to create a safe- and well-balanced transportation system that promotes community livability
- **A strong statement of intent**—to articulate the goal that all street and road projects will be designed, planned, reconstructed, rehabilitated, maintained, and operated to meet the needs of all users
- **Accommodation of all users and modes**—to specify that the transportation system will fully integrate, equitably accommodate, and safely facilitate all users (i.e., ages and abilities) and modes (i.e., bicyclists, pedestrians, transit riders, motorists, emergency responders, and freight carriers).
- **A connected, integrated network**—to recognize that an integrated approach to street-network development is needed
- **Partnerships**—to ensure continuity of connected, integrated roadway networks across jurisdictional lines or boundaries

- **Phased continuation**—to integrate complete-streets planning into all future phases of road-improvement projects
- **A process that provides exceptions**—to clearly state when a policy exemption will be granted and under what circumstances
- **Guidance on design standards**—to support the design of a transportation network that is flexible and follows generally accepted or adopted design standards
- **Context sensitivity**—to recognize that complete-streets principles are flexible and consider the type of roadway and context of existing and future land use
- **Performance measures**—to evaluate the success of a complete-streets policy
- **Policy implementation**—to provide clear direction on how plans will be accomplished

6



What Is Delaware's

Complete Streets Policy



6-1. History

While “complete streets” is a relatively new term, Delaware has been building toward creating better pedestrian and bike accessibility for at least two decades. Informally, complete-streets principals have been included in DelDOT’s design manual and development process for some time. DelDOT has been using established, well-regarded federal documents and guidance on planning, designing, and operating pedestrian and bicycle facilities to provide a foundation for complete streets.

6-1-1. Building Toward a Complete-Streets Policy in Delaware

Delaware has been a proponent of non-vehicular modes of transportation and pedestrian-friendly design for decades. Delaware transportation facilities have been designed and constructed using best practices and guidance (as previously discussed) from FHWA, U.S. DOT, AASHTO, TRB, ADAAG, PROWAG, as well as DelDOT publications, manuals, and policies detailed below.

Focus on Pedestrian Needs

Sidewalk improvements have been required by the Delaware Code since 1973 (17 Del.C. §132 (f)). The Code states, “whenever [DelDOT] widens, constructs, or reconstructs any major arterial, minor arterial, collector road or proposed road in an urbanized



area of this State, the Department shall incorporate within such plans, layout, widening, construction or reconstruction the construction of sidewalks....” DelDOT is charged with the responsibility of determining the need for a sidewalk, in consultation with other state agencies and local governments, and the Code requires the cost of sidewalk construction to be included in the total capital-improvement project (17 Del.C. §132 (f)).

DelDOT issued additional guidance on sidewalk construction with a sidewalk policy in 1995 (DelDOT, 2007). Revised manuals and policies since the initial Delaware Code provision have promoted more sidewalk connectivity and construction (DelDOT, 2010) and support a Delaware livability goal to, “promote mobility for people and goods through a balanced system of transportation options” (DelDOT, 2009). Subsequent DelDOT publications, such as its 2000 *Traffic Calming Manual*, its 2004 *Road Design Manual*, and a 2006 Design Memorandum, reinforce the need to be consistent, yet context-sensitive, in the application of design guidelines; shift from an auto-centric design focus; and provide a safe, efficient, and multimodal transportation system.

DelDOT appointed its first bicycle/pedestrian coordinator in 2001 to address transportation issues of non-motorized users. In 2006 the state of Delaware formed an Advisory Council on Walkability and Pedestrian Awareness to assist DelDOT with the development of a Statewide Pedestrian Action Plan. Phase I of the *Statewide Pedestrian Action Plan* involved the research and analysis of policies, regulations, and practices at the federal, state, and local government levels. The plan assessed key issues and concerns regarding state legislation, design standards and guidelines, accessibility, and maintenance for pedestrian infrastructure. Key recommendations included promoting the concept of complete streets, conducting a Pedestrian Facility Inventory and Needs Study, and dedicating DelDOT personnel to address needs of pedestrians, bicyclists, and ADA compliance (DelDOT, 2007).

In August 2011, Governor Jack Markell approved Senate Bill 269, known as the “Vulnerable User’s Law.” The law’s intent is to protect vulnerable road users, including pedestrians, road construction or utility crews, cyclists, skateboarders, rollerbladers, as well as people riding scooters, mopeds, motorcycles, farm vehicles, and animals. According to a press release, Delaware is only the second state in the nation to adopt such a law. While roadway safety for vulnerable users is paramount, the law also imposes penalties if a motorist who kills or injures a vulnerable user is found guilty of inattentive driving (State of Delaware, 2011).

Focus on Bicyclists Needs

Bicyclist advocacy groups have been informally working towards complete-streets philosophies in Delaware since the early 1990s. In 1990 the Delaware Bicycle Council was established to “consider, review, and work on matters pertaining to bicycling, bicycle safety, bicycle safety education, and to make recommendations to various state agencies” (DelDOT, 2010). For bicyclists, the Delaware Bicycle Council accomplished improving access and safety by working on changes to the DelDOT *Road Design Manual* and other design directives. While the idea of complete streets was not mentioned for almost another decade, Delaware was already increasing access for non-motorized transportation with work by the Delaware Bicycle Council and the strong influence of other bicycle advocacy groups such as Bike Delaware.



In 1995 a Statewide Bicycle Facilities Master Plan was adopted that authorized DelDOT to plan and establish bikeways across the state for the use, enjoyment, and participation of the public in non-motorized transportation. The overall purpose of the plan was, “to recognize bicycling as an integral part of the transportation system and provide for suitable accommodations for bicycles on the statewide roadway network” (DelDOT, 2005). Implementation of a Delaware Bicycle Policy in December 2000 reinforced the state’s intent to explore

“appropriate accommodations for bicyclists...as a part of the project development and scoping process for all plans and/or projects...in order to improve the suitability of Delaware’s transportation system for bicyclists” (Delaware Bicycle Council, 2010).

6-1-2. Context-Sensitive Transportation Solutions in Delaware

In recent years, there has been greater recognition of the need for independent interpretation of AASHTO guidelines and more flexible roadway design that fits with the context of the road use and setting. Traffic-calming measures can be incorporated in roadway design or retrofitting to minimize the adverse effects of motor-vehicle use, change driver behavior, and improve conditions for users of non-motorized transportation. DelDOT’s *Traffic Calming Design Manual* provides a framework for engineers to develop and apply traffic-calming measures based on the use and classification of a roadway. Volume- and speed-control measures, roundabouts and traffic circles, narrowing streets, curb extensions, realigned intersections, and pedestrian crosswalk improvements, and signage are all cited as examples of traffic-calming measures that may be appropriate in some settings (DelDOT, 2000).

DelDOT has embraced the need for flexibility and has developed road-design guidelines that will help deliver a context-sensitive design (DelDOT, Miscellaneous Design, 2010, 10-1).



6-2. Delaware’s Complete Streets Policy

On April 24, 2009, Governor Jack A. Markell issued Executive Order No. 6 to create a Complete Streets Policy for the State of Delaware (Markell). The intent of this order is for “the Delaware Department of Transportation (DelDOT) [to] enhance its multimodal initiative by creating a Complete Streets Policy that will promote safe access for all users, including pedestrians, bicyclists, motorists and [transit] riders of all ages to be able to safely move along and across the streets of Delaware.” Governor Markell’s Executive Order is included in this document (Appendix A).

6-2-1. DelDOT's Adoption of Complete Streets Policy

DelDOT adopted a formal Complete Streets Policy on January 6, 2010, in response to Governor Markell's Executive Order (DelDOT, 2010). The purpose of the policy is to provide a "[transportation] system for all users that is comprehensive, integrated, connected, safe, and efficient—allowing users to choose among different transportation modes, both motorized and non-motorized" (DelDOT, 2010). Under the policy, DelDOT is charged with creating a formal process to implement complete-streets principles and design standards that consider all modes of transportation. The policy focuses on implementation during the development or scoping phase of a transportation project to ensure that all users are considered in planning, designing, building, operating, and maintaining Delaware roadways. The Complete Streets Policy also defines the applicability, roles and responsibilities, and an exemption and waiver process to be administered by DelDOT. Delaware's Complete Streets Policy is intended to (Aglio, 2010):

- Provide a comprehensive, integrated, and connected transportation network allowing choice.
- Accommodate non-vehicular modes of transportation.
- Consider all users in planning, designing, operating, and maintaining roadways.
- Balance user needs to ensure solutions that enhance the community.
- Apply the policy to all new and retrofit projects.
- Provide for an exemption and waiver process.
- Utilize the latest and best design standards.

6-2-2. Implementation of Delaware's Complete Streets Policy

DelDOT is utilizing a six-step process to define the correct street classification, cross-sections, and design components for vehicular and non-vehicular components. The process (DelDOT, 2010):

- Defines the existing and future land-use and landscape context (e.g., urban, suburban, rural/natural).
- Defines the existing and future transportation context or roadway type.
- Identifies the need for non-vehicular improvements and deficiencies. In other words, what generators exist?
- Describes future objectives.
- Recommends street classifications and potential cross-sections.

- Describes tradeoffs and selected cross-sections. For example, historically streets have been designed from the centerline out, but tradeoffs are needed to accommodate other modes of transportation on the same roadway.

Complete Streets Should Respect and Consider Adjacent Land Use, Landscape, and Roadway Contexts

Urban



- Bicycle lanes or share the road signage and/or markings
- Accessible sidewalks with compliant pedestrian access routes and curb ramps
- Crosswalks
- Medians and islands with pedestrian refuge areas
- Buffer between sidewalk and curb
- Streetscape amenities
- Accessible pedestrian signals with countdown clocks
- Bus pull-off areas as warranted
- Special bus lanes as warranted
- Accessible bus shelters

Suburban



- Bicycle lanes or shoulders (5- to 6-feet wide)
- Appropriate signs for bicycles
- Buffer between sidewalk and curb
- Sidewalks with compliant pedestrian access routes and curb ramps
- Crosswalks as needed and appropriate
- Bus pull-off areas as warranted
- Accessible bus shelters as warranted
- Accessible shared use pedestrian/bicycle paths or trails
- Bike storage at activity center

Rural



- Roadway shoulders should be 5- to 6-feet wide to accommodate both pedestrians and bicyclists
- Share the road signage
- Evaluate shared-used trail connections and provide where appropriate
- Buffer between sidewalk and curb or edge of road

Source: Aglio and Boyce. 2011. "DelDOT Complete Streets Policy: 2010 and Beyond."
Photos: UD Institute for Public Administration

DelDOT's complete streets implementation priorities include a focus on connectivity, access to transit stops, and execution in "Level 1" areas or urban/urbanizing growth areas as defined by the 2010 update of the Delaware *Strategies for State Policies and Spending* (DelDOT, 2010). DelDOT strives to utilize and make connections among existing multi-modal corridors, trail systems, and pedestrian infrastructure. Moreover, linking land-use and transportation planning is a critical implementation strategy. DelDOT, however, acknowledges that implementation of the Complete Streets Policy will pose several planning and engineering challenges (DelDOT, 2010). These challenges include the need to:

- Integrate often competing transportation modes.
- Address issues of less space and resources.
- Accommodate growing traffic volumes.
- Address segregated land uses.
- Consider the realities of mode travel options with respect to long travel distances.
- Deal with commercial activities in auto-dominated transportation corridors.

While DelDOT faces several Complete Streets Policy implementation challenges, it is also unique from other states, as DelDOT funds and has jurisdiction over 90 percent of roads in the state (DelDOT, 2009). With control of a high percentage of roads, DelDOT has the ability to incorporate Complete Streets within internal planning, design, and engineering practices. Governor Markell's Executive Order states that DelDOT should, "direct the use of the latest and best design standards as they apply to bicycle, pedestrian, transit and highway facilities" (Markell, 2009). DelDOT's role in implementing the Complete Streets Policy includes updating design practices, which include subdivision regulations, design manuals, design memoranda, and policies (DelDOT, 2010).

6-3. Walkable, Bikable Delaware

In April 2011, Governor Jack Markell signed Executive Order 26 to approve an update of Delaware *Strategies for State Policies and Spending* that was originally produced in 1999 and last updated in 2004. Among the list of identified state transportation spending priorities is, "link[ing] cities and towns by a network of off-alignment multi-use paths that can be used by commuters in addition to recreational pedestrians and bicyclists" (State of Delaware, 2010).

The Delaware General Assembly followed up Executive Order 26 in May 2011 by unanimously passing the "Walkable, Bikable Delaware" Resolution. This calls for Delaware to strategically invest in biking and walking connectivity—to build, maintain, and link non-motorized transportation networks

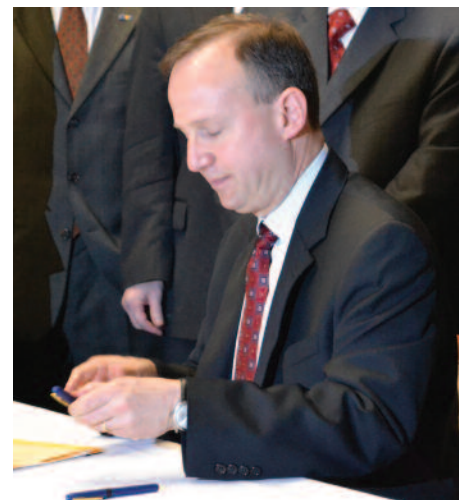


photo by Gail Rys, UD School of Education

both within and among Delaware communities. The resolution specifically directs DelDOT to expand its efforts to “create contiguous systems or networks of walkways and bikeways within and between cities and towns in Delaware in order to provide travelers with the opportunity for safe, convenient, cost-effective and healthy transportation via walking and bicycling” (Delaware General Assembly, 2011).



photo courtesy of Bike Delaware

In cooperation with local governments, MPOs, and other state agencies, DelDOT will lead the initiative to plan for and construct multi-use pathways on independent rights-of-way other than those of existing roadways. The resolution provides legislative direction for DelDOT to fund strategic investments in walkway and bikeway networks, separate from funded roadway projects. These networks will have “a special focus on connecting centers of population with destinations such as workplaces, schools, residences, businesses, recreation areas, and other community activity centers in order to provide safe, convenient, cost-effective, and healthy mobility via walking and biking” (Delaware General Assembly, 2011).

In June 2011, the Delaware General Assembly fulfilled its pledge of the “Walkable, Bikable Delaware” Resolution by passing Senate Bill 130, a bond and capital-improvements act for the state of Delaware. The Bill dedicates \$5 million in FY12 capital-improvement program (CIP) bond funding for state bicycle routes (Delaware General Assembly, 2011).

With substantial support from Delaware’s Congressional Delegation, the Wilmington Area Planning Council (WILMAPCO), Bike Delaware, New Castle County, and other stakeholders, DelDOT Secretary Shailen Bhatt submitted a request to WILMAPCO for federal funding for a bicycle greenway. In August 2011, the Council approved DelDOT’s request for \$480,000 in FY 2012 federal Congestion Mitigation and Air Quality (CMAQ) funding to complete the final portion of the Wilmington-to-New Castle Industrial Greenway. This proposed funding will close a one-mile gap to provide a continuous, non-motorized route between the Wilmington Riverfront and the city of New Castle (Bike Delaware, 2011).



photo courtesy of City of Newark, Del.

At the October 2011 Delaware Bike Summit, DelDOT Secretary Shailen Bhatt and Delaware Department of Natural Resources and Environmental Control (DNREC) Secretary Collin O’Mara signed a memorandum of agreement (MOA) to develop and execute Governor Markell’s vision for a First State Trails and Pathways Plan. The MOA indicates that the departments will collaborate to “develop a Statewide Trail and Pathway Plan that outlines a network of bicycle and pedestrian systems that will serve both recreational and alternative

transportation goals that builds on today's existing trails and pathways, and, that creates community connections" (*delaware.gov*, 2011). DelDOT subsequently submitted a Transportation Investment Generating Economic Recovery (TIGER III) grant on October 31, 2011, to fund ten bikeway projects in Delaware.

6-4. Funding Assistance for Complete Streets Projects

State DOTs, including DelDOT, are responsible for creating and providing guidance on design standards for state maintained roads. While some local governments in Delaware have established their own design guidelines for roads under local jurisdiction, most Delaware communities use DelDOT's design guidelines, manuals, and other standards. In addition to design guidance, DelDOT provides funding assistance to local governments to improve existing surface-transportation infrastructure at the local government level.

6-4-1. Federal Transportation Enhancements (TE) Program

One source of pass-through funding to DelDOT is the federal Transportation Enhancements (TE) program. The TE program provides funding for non-traditional, transportation-related projects that support development of a more balanced, multimodal approach to mobility and accessibility. Transportation Enhancements are defined as (National Transportation Enhancements Clearinghouse):

Projects that include providing bicycle and pedestrian facilities, converting abandoned railroad rights-of-way into trails, preserving historic transportation sites; acquiring scenic easements, mitigating the negative impacts of a project on a community by providing additional benefits, and other projects.

DelDOT has been providing TE funds for local governments and community surface transportation-improvement projects since FY 1992. From FY 1992 to FY 2009, DelDOT distributed over \$33 million in TE funds for pedestrian and bicycle facilities and approximately \$1.3 million in TE funds for landscaping and scenic beautification (Delaware Department of Transportation, 2009). The TE program may be ideally suited for implementing complete streets at the local level for eligible activities. Local communities can be creative in their projects, as long as requirements for activity eligibility and funding are met. Among the activities that are eligible for TE projects and can be used to create multimodal street environments are (National Transportation Enhancements Clearinghouse):

- **Pedestrian and bicycle facilities**—including installation of sidewalks, walkways, or curb ramps; bike-lane striping, wide paved shoulders, bike parking and bus racks; off-road trails; bike and pedestrian bridges and underpasses.
- **Landscaping and scenic beautification**—improvements such as street furniture, lighting, public art, and landscaping along travel corridors.
- **Acquisition of railroad rights-of-way**—including planning, design, and construction of multi-use trails and rail-with-trail projects.

Continued funding of the TE program is dependent on passage of federal transportation bills, or reauthorization of transportation funding. An explanation of how DelDOT administers the TE program is explained further on its website and in the appendix of this document (Appendix B).

6-4-2. Safe Routes to School Program

In September 2002, the Delaware General Assembly passed Senate Bill 353 to authorize DelDOT to establish and administer a “Safe Routes to School” (SRTS) program to encourage children to walk and bike to school safely. The bill directs DelDOT to “use federal funds for bicycle and pedestrian safety and traffic-calming measures” (Delaware General Assembly, 2002). It also authorizes DelDOT to provide grants on a competitive funding basis to Delaware schools and school districts that meet eligibility requirements. Applicants must demonstrate need, the potential to reduce child injuries and accidents, the potential to increase walking or biking to school, and community involvement.



Under SRTS, each participating school or school district must develop a comprehensive plan that identifies safety hazards, potential route improvements, and activities that incorporate five elements—engineering, education, enforcement, encouragement, and evaluation. SRTS grant funding may be used for either infrastructure or non-infrastructure costs. Infrastructure projects may focus on sidewalk and walking-path improvements, traffic calming and/or diversion, installation of signage and/or signals, route improvements, bicycle facilities, and crosswalk improvements. Examples of non-infrastructure improvements include developing SRTS plans, education and promotional activities, traffic and safety enforcement, and funding support to hire SRTS program coordinators (DelDOT, 2010).

6-4-3. Federal Congestion Mitigation and Air Quality Funds (CMAQ)

Each year, CMAQ funding is distributed to states for congestion mitigation projects that also provide air quality benefits. In order for a project or program to be considered for federal funding, it must be reviewed and approved by the metropolitan planning organization (MPO) that is charged with developing the long-range transportation plans and programming federal transportation funds for the region. WILMAPCO, the MPO for the New Castle, Del.–Cecil County, Md., region, recently approved its FY 2012–2015 Transportation Improvement Program (TIP).

Within its list of approved TIP projects, slated for CMAQ funding, is the DelDOT submission for a Phase III New Castle County Industrial Track bikeway project, totaling \$480,000 (WILMAPCO, 2011). WILMAPCO’s approval of this request is historic, as it is the first proposed use of CMAQ funds for a bikeway, greenway, or trail project in Delaware (Bike Delaware, 2011). It is also significant because, with the Delaware General Assembly’s 2011 passage of Senate Bill 130, it will enable the leveraging of state funds with federal CMAQ funding.

7



How Can Delaware Local Governments Implement

Complete Streets ?

Delaware local governments can support the state's Complete Streets Policy to provide safe, equitable, and accessible transportation to all users and modes. The *IPA Complete Streets Implementation Checklist* (displayed below and in Appendix C) can provide a foundation for local governments in Delaware, and elsewhere, to achieve complete streets by evaluating the extent to which their community vision, plans, policies, design standards, and facility maintenance practices are consistent with complete-streets principles. This section provides examples of best practice implementation strategies. In addition, complete-streets strategies are summarized within an IPA Complete Streets National Best Practices Matrix (Appendix D) and a Delaware Local Government Complete Streets Implementation Matrix (Appendix E).

A work product of the University of Delaware's Institute for Public Administration

May 2011

IPA Complete Streets Implementation Checklist		
Evaluate	Users	Modes
Vision		
Does the community have a vision for complete streets that includes all users and modes of transportation?		
<input type="checkbox"/> Plans <input type="checkbox"/> Policies <input type="checkbox"/> Design Standards	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Freight <input type="checkbox"/> Motorists
Planning		
Do planning documents reflect complete streets <i>principles</i> that are inclusive of <i>all</i> users and modes of transportation?		
<input type="checkbox"/> Comprehensive Plan Are goals, objectives, and comprehensive-plan elements inclusive of all users and modes of transportation?	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
<input type="checkbox"/> Official Map Does the Official Map reflect transportation networks that are inclusive of all users?	N/A	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
<input type="checkbox"/> Capital-Improvement Program Do short- and long-term capital-improvement programs include access for all modes and users of transportation networks?	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
<input type="checkbox"/> Specific Plans <ul style="list-style-type: none"> • Downtown Revitalization • Trail Studies • Circulation Plans • ADA Transition Plan 	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
Policies		
Are local government policies and regulations consistent with a state's complete streets policy?		
Do policies reflect complete streets principles that are consistent with the local government's planning documents?		
<input type="checkbox"/> Subdivision Ordinances <input type="checkbox"/> Zoning Code Ordinances <input type="checkbox"/> Unified Development Code (Subdivision and Zoning regulations)	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
<input type="checkbox"/> ADA Compliance <ul style="list-style-type: none"> • ADA Transition Plan 	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
Design Standards		
Do design standards comply with federal, state, and local government requirements?		
<input type="checkbox"/> Design Standards <ul style="list-style-type: none"> • MUTCD • AASHTO • ADAAG • PROWAG • DelDOT (for Delaware only) • Local Government Design Manuals 	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
Facility Maintenance		
Does the community meet ADA requirements for state and local governments to maintain accessible features in "operable working condition?"		
<input type="checkbox"/> Local Government Ordinances <input type="checkbox"/> Public Works Policies and Preventative Maintenance Schedules <input type="checkbox"/> Snow Removal Management Plans <input type="checkbox"/> Municipal Maintenance Agreements	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists

7-1. Community Vision

Complete streets are both a process and an outcome. The process for successful policy development at the local government level will be different for each jurisdiction, but it generally comprises the following steps (McCann and Rynne, 2010):

- Define the problem.
- Gather data to support the need for change.
- Identify stakeholders.
- Develop strategic partnerships.
- Form a task force, advisory board, or coalition to lead the initiative and advise elected officials on policy change.
- Mobilize community members and build public support to catalyze change.
- Facilitate community workshops and forums to engage and educate the public, elected officials, partners, staff members, and local leaders.
- Develop, with public input, a comprehensive complete-streets strategy that includes National Complete Streets Coalition policy elements.

City of Chicago, Ill. – In Chicago, the vision for complete streets began in 2006 with a comprehensive initiative to increase pedestrian safety. A collaboration among three city departments—Police Department, Department of Transportation, and Office of Emergency Management and Communications—established a “Safe Streets Chicago” initiative to reduce pedestrian accidents and enhance traffic-law enforcement. Other outcomes of the initiative resulted in a pedestrian-awareness campaign and established a Mayor’s Pedestrian Advisory Council. The Council has been instrumental in developing policies and design standards, including the October 2006 adoption of the City’s Complete Streets policy, which is intended to routinely design roadways for all users (Safe Streets for Chicago, 2010).

Chicago’s Pedestrian Advisory Council, with support of a nonprofit advocacy group called the Active Transportation Alliance, has developed a comprehensive process to implement the city’s Pedestrian Plan, which includes a focus on the Complete Streets Policy. The comprehensive approach includes the following steps (Active Transportation Alliance and Hernandez):

- Develop a vision statement.
- Create a pedestrian philosophy.
- Propose a system of pedestrian policies.
- Identify implementation and funding strategies.

- Create an extensive public-awareness campaign.
- Develop demonstration projects and propose streetscape improvements.

7-2. Local Government Plans

7-2-1. Comprehensive Plans

For many communities, development patterns may reflect auto-centric design. A comprehensive plan is intended to serve as a guide for local officials in their decisions concerning land use, future development and growth, expansion (or development) of community facilities, and the establishment of community-related services. Comprehensive plans should clearly reflect an overall vision and specific strategies within the document's elements (e.g., transportation) to achieve an equitable transportation network.

As the visioning and guiding document for communities, a comprehensive plan serves a vital role in shaping communities. Comprehensive planning allows a community to reflect on its past, understand current conditions in the community, and ultimately provide instructions for future development. In Delaware, comprehensive planning is required by Delaware Code in order to enable “the most appropriate uses of physical and fiscal resources of the municipality and the coordination of municipal growth, development, and infrastructure investment action with those of other municipalities, counties, and the state [...]” (Delaware Code, Title 22: §702,c). With the backing of the Delaware Code, comprehensive plans have the legal capacity to serve as a framework or blueprint for future growth and development. In addition to guiding growth and development, a carefully crafted and publicly vetted comprehensive plan serves as a foundation for all land use decisions—from broad policy formulation to specific ordinance changes and/or detailed design standards (Delaware Code, Title 22:§702, b).

NPLAN Model Comprehensive Plan Language – Communities that seek to develop inclusive transportation networks need to evaluate how well their comprehensive plan facilitates complete streets. The National Policy and Legal Analysis Network to Prevent Childhood Obesity (NPLAN) has developed Model Comprehensive Plan Language on Complete Streets, a document to assist local governments incorporate complete streets concepts into a comprehensive plan (NPLAN, 2010). For NPLAN's model comprehensive plan language, see www.nplanonline.org/sites/phlpnet.org/files/nplan/CompleteStreets_ComprehensivePlan_FINAL_20100223.pdf.

IPA's Healthy Communities Comprehensive Plan Assessment Tool – The University of Delaware's Institute for Public Administration developed a *Healthy Communities Comprehensive Plan Assessment Tool* that is geared for use specifically by Delaware local governments. The Assessment Tool is a downloadable document and checklist that is intended to guide cities and towns in Delaware to write more health-focused comprehensive plans or plan updates. It provides information about what makes communities healthier places to live and includes an easy-to-use checklist that shows officials what healthy-community principles should be included in their comprehensive plans.

The Assessment Tool stresses that while good pedestrian facilities and connectivity are basic elements of an active community, healthy communities are about more than just sidewalks and walkability. The Assessment Tool outlines strategies to promote changes in community design, public policies, and land use that cultivate active community environments within the comprehensive-planning process. The five principles of planning for a healthy community during the comprehensive-planning process are described in the next section of this document and online (www.ipa.udel.edu/healthyDEtoolkit/docs/CompPlanAssessmentTool.pdf).

7-2-2. Official Map

While the comprehensive plan guides a community's vision, goals, and objectives, an official map is a visual depiction of community's current conditions and future land-use plans. While goals and objectives can be detailed and extensive, planning map(s) can reinforce the narrative within a comprehensive-plan component by illustrating where and how future development is intended. Official maps are also an easy way to show future investment and improvements to landowners and developers.

Official maps provide the details of a community's transportation networks by showing trails, transportation plans, sidewalks, shared-used trails and other pedestrian facilities. Additionally, future facilities and infrastructure should be forecasted on the official map (Chester County Planning Commission 2007, 43).

7-2-3. Capital-Improvement Program (CIP)

Much like a comprehensive plan serves as a local government's blueprint for growth and development, a capital-improvement program (CIP) plans for a community's capital expenditures. A CIP comprises community planning, financial capacity, and physical development. A CIP consists of two parts—a capital-improvement plan and a capital budget. A capital plan forecasts major long-term capital needs for projects that are generally over a set dollar amount and useful life or project duration (e.g., over \$10,000 and a useful life/duration of over five years). The first year of the plan is considered the capital budget (Vogt, 2004). It should be noted that while not all local governments in Delaware have developed CIPs, most could incorporate capital planning and a capital budget for major transportation project expenditures within the general operating budget.

CIPs should be consistent with local government goals and policies and should guide the funding and future capital improvements, such as transportation networks. In order to end the cyclical nature of auto-centric design in infrastructure investments, CIPs should be updated to include complete streets elements in long-term transportation projects. Again, while DelDOT funds the engineering, construction, and maintenance of most state roadways, Delaware local governments can develop CIPs to finance sidewalk expansion, streetscape improvements, construction of trail systems, curb ramps, and other ADA infrastructure improvements, and upgrades to street signs and crosswalks. Capital project funds can also be used to provide a match to project funding under the Transportation Enhancements Program, which is administered by DelDOT.

Marin County, Calif. – The local Marin County Bicycle Coalition (MCBC) has inventoried all of the CIP plans in the county to see if pedestrian and bicycle elements can be added (Marin County Bicycle Coalition, n.d.). When complete-streets elements were missing, the Coalition met with local officials to plan for the financing of complete-streets components within the CIP. Local governments can take a similar initiative to evaluate their own CIPs for inclusive and multimodal projects. By making incremental changes to projects over time, local governments can facilitate a more inclusive transportation network.

City of Rockville, Md. – Complete streets do not have to be a dedicated “project” within a CIP. Instead, complete streets could be an inclusive factor of all transportation-related CIP projects. The City of Rockville has clearly identified the need for complete streets and funding of elements within roadway projects within its jurisdiction’s CIP (Rockville, 2009).

New construction and re-construction roadway projects in the City shall accommodate users of all ages and abilities including pedestrians, bicyclists, transit users, motorists and adjacent land users....

Roadway projects shall be funded through the City’s Capital Improvements Program, through developer projects and contributions, through federal and state grants, and through revenues generated through the City’s speed camera program.

Essentially, Rockville has created a complete streets ecosystem that not only delineates the complete-streets elements but also connects complete-streets concepts to other planning documents.

7-3-4. Specific Plans

In addition to a local government’s comprehensive plan, specific plans can be prepared as a comprehensive-plan amendment or a stand-alone document. These supplemental plans support long-range goals, specific community objectives, or address the need for transportation or other public facilities. Downtown revitalization and/or streetscape, bicycle, trail, and circulation master plans should clearly identify equal access for all users and modes of transportation, and support complete-streets principles.

Downtown Revitalization and Streetscape Plans

Since the decline of downtowns in the 1950s and ’60s, many communities have focused redevelopment efforts in downtown and urban areas. Many of these efforts include complete-streets principles. Incorporating streetscape elements, which reflect a community’s character and heritage but also cater to the needs of all road users, can help provide a business-friendly and inviting environment for patrons. Appealing streetscape features include street trees, sidewalk and curb improvements, pedestrian lighting, upgraded crosswalks, wayfinding signage, street furniture, gateway features, transit-friendly amenities, and public gathering places—all of which should be ADA-compliant.

According to the University of Richmond's Pew Partnership for Civic Change, "maintaining and developing genuine public spaces," as well "focusing on developing the unique qualities of downtowns" are important steps to revitalizing downtowns (University of Richmond). It further details these strategies by stating:

*Downtowns should also **improve pedestrian walkways** through installation of attractive lights, benches, and flowers in order to draw shoppers and other traffic. Careful planning through **widening sidewalks, encouraging mass transit, and landscaping** can encourage "on-street" activities such as commerce and dining and widen the public sphere, promoting community* (University of Richmond).

City of Dubuque, Iowa – The city initiated a complete-streets pilot program in conjunction with an economic-development master plan to revitalize its historic downtown (Millwork) district. The plan calls for a mixed-use redevelopment of 300,000 square feet of retail/commercial space and 700 housing units to encourage residents to live and work near the city center. This expansion is expected to result in 900 new jobs and an increase in the tax base by \$77 million. Consistent with complete-streets principles, streets will be designed to promote use by drivers, transit vehicles, pedestrians, bicyclists, older adults, children, and persons with disabilities (City of Dubuque, 2010). Combining plans for economic-development revitalization with the redesign of existing streets is the perfect opportunity to utilize both complete-streets and transit-oriented-design philosophies to build a better transportation and business environment. The city identifies complete streets as a crucial element of its revitalization plan (City of Dubuque, 2010):

A key component of the Millwork District revitalization plan is to redevelop the area street network using the Complete Streets model. The Complete Streets model will produce a more livable environment by creating an area that is easy to use for pedestrians, bicyclists, transit riders, older people and families.

Bicycle Plans

Bicycle plans can be developed as part of the transportation component of a new, or update to a, comprehensive plan or developed as a separate master plan that is consistent with local land-use plans. In all instances a bicycle plan should be part of a comprehensive, multimodal transportation system that provides connectivity and linkages to key destination points, and ensures accessible, convenient, healthy, safe, efficient, and cost-effective travel. A bicycle plan should seek to establish programs and facilities to foster a integrated, multimodal transportation system.

Town of Elkton, Md. – The Town of Elkton formed a bicycle plan advisory committee to develop a bicycle network that connects the Cecil County and East Coast Greenway, local neighborhoods, central business district, parks, and transit stations. The proposed plan seeks to enhance the existing transportation system, support economic development, and improve quality of life and the health of area residents and visitors. The plan will focus on improving the built infrastructure, signage, education, and enforcement strategies to promote bicycling as a viable transportation mode in the Elkton and Cecil County, Md., area (WILMAPCO, 2010).

Trail Feasibility Studies

Trail feasibility studies are conducted to determine what opportunities and constraints exist for constructing a facility to connect towns or destination points, which may serve both transportation and recreational purposes. Abandoned railways, utility corridors, floodplain corridors, power-line corridors and extra rights-of-way, can be utilized as trails. Trail studies can identify these available spaces and opportunities for trails in a community. In areas where trail networks are built or being considered, they should be integrated into existing transportation networks. Connecting a trail network to existing sidewalks and/or bicycle lanes allows users safe transitions to and from trail networks to traditional street networks. On high-volume/high-speed thoroughfares, trails may be an optimal alternative to sidewalks and bicycle lanes on the main road. Trails can offer an inclusive network near these streets while protecting users from the hazards of automobile movement. By using context-sensitive design, trails can be utilized as alternative-transportation corridors for pedestrians and bicyclists.

Multi-use trails can be designed to accommodate all users. The U.S. Forest Service has issued a *Forest Service Outdoor Recreation Accessibility Guide* (FSORAG) that addresses slopes, surfaces, and other considerations of making trails accessible. Local governments can use FSORAG as a guideline for developing trail systems.

Circulation Plans

In the past, many circulation plans focused strictly on traffic and the movement of vehicles. Circulation plans are now being developed by local jurisdictions and MPOs to provide an in-depth study and long-range improvements to the street network; trail system(s); vehicular, bus, pedestrian, and bicycle circulation; and on- and off-street parking. These 20- to 30-year plans provide guidance on future capital improvements as it relates to implementing a long-term vision for providing multimodal transportation.

City of Wilmington, Del. – The city recently completed a Downtown Circulation Study following extensive public outreach, data collection, and traffic analysis. The purpose of the plan was to provide recommendations for improving the transportation network in downtown Wilmington. Recommendations include plans for bus route and schedule changes; a downtown transit center; streetscape, pedestrian, and bicycle improvements; reconfiguration of traffic movement on some streets; turn-lane changes; and designation of an on-street shared bicycle route with signage, pavement markings (sharrows), and bike-parking facilities (WILMAPCO, 2010).

Grand Traverse Commons, the City of Traverse City, and Charter Township of Garfield, Mich. – These cities have made pedestrian and bicycle movement an important part of their circulation plan. The introduction to the plan states:

The Circulation Plan is a plan for pedestrian, bicycle and vehicular movement. An effective circulation system will be essential in maintaining and enhancing the overall health, safety, accessibility, and quality-of-life of the Grand Traverse Commons (City of Traverse City and Charter Township of Garfield, 2009).

Recognizing the entire circulation of a community is not just “vehicle-based” is an important step toward complete-streets principles. By making circulation plans forecast pedestrian as well as bicycle connections, these circulation plans will eventually filter down into future developments and improvements.

ADA Transition Plans

As previously discussed, state and local governments that have responsibility or authority over streets, roads, or walkways must develop a transition plan to ensure that public and transportation facilities are accessible and brought up to ADA standards. Under 28 CFR, part 35, §35.150, public entities with more than 50 employees must develop an ADA transition plan to describe how non-compliant facilities, programs, and services will be become ADA-compliant (ada.gov).

The publication, *ADA Transition Plans: A Guide to Best Management Practices*, provides a “Self-Evaluation Checklist” (see Appendix F) and outlines seven steps to compliance for state and local governments by preparing an ADA transition plan. These steps include (Jacobs Engineering Group, 2009):

- Designating an ADA Coordinator
- Providing notice to the public about ADA requirements
- Establishing a grievance procedure
- Developing internal design standards, specifications, and details
- Assigning personnel for the development and completion of a transition plan
- Adopting a schedule and budget for the transition plan
- Monitoring the progress on the plan’s implementation

7-3. Local Government Policies

While DelDOT is responsible for nearly 90 percent of roadways in the state of Delaware, local governments have responsibility for land-use policies that impact and influence transportation networks. Local policymakers have direct control over decisions that shape land-use and development patterns, street interconnectivity, multimodal transportation options, the extent to which the built environment is bike-, pedestrian-, and transit-friendly, and the degree to which a community environment is healthy and active. As previously discussed, local government policies should be consistent with those at the federal and state level, be context-sensitive, address community-identified transportation-related issues, and include common policy elements recommended by the National Complete Streets Coalition.

Title II of ADA requires state and local governments to make public facilities, programs, and services accessible to persons with disabilities. Under 28 CFR, §35.130(b)(7), which

implements ADA Title II, local governments are required to make “reasonable modifications” to policies, practices, or procedures to prevent discrimination to persons with disabilities. Reasonable modifications may include amendments to local laws, ordinances, and regulations that unintentionally, but negatively, impact people with disabilities (*ada.gov*).

7-3-2. Local Government Resolutions

In many instances, the first formal step by a local government toward complete streets is the adoption of a complete-streets resolution. The process of implementing complete streets may begin with a resolution that states a community’s desire for an inclusive and equitable roadway system.

National Policy and Legal Analysis Network to Prevent Childhood Obesity (NPLAN) – This organization has created model resolutions for use by communities, which can align a local complete-streets plan or program with a state policy. The models include an “Introduction Version” for a broad resolution, and an “Advanced Version” for a more direct approach to complete streets. These resolutions can also serve to align a community’s complete-streets initiatives with state and federal policies (NPLAN, 2010). For NPLAN’s model resolution, see www.nplanonline.org/nplan/products/model-complete-streets-laws-and-resolutions.

City of Independence, Minn. – In this jurisdiction, a complete-streets resolution directed the city’s administrative staff to draft a policy for review and approval. “...The Council directs City staff to develop a City Complete Streets policy and accompanying implementation procedures...” (City of Independence, 2010). Once adopted by city council, city staff is responsible for the development and implementation of subsequent policies that support the spirit of the resolution.

City of Las Cruces, N.M. – This community took a more direct or “advanced” complete streets–resolution approach. Elected officials adopted a resolution to include “Complete Streets Guiding Principles” (City of Las Cruces, 2009). These principles require that roadways and the maintenance of roadways comply with the complete-streets principles. Additionally, the Las Cruces resolution outlines strategies for complete-streets implementation that includes a requirement to update “city plans, manuals, rules, regulations and programs, as appropriate” (City of Las Cruces, 2009).

7-3-3. Local Government Subdivision Ordinances

Subdivision ordinances are a cornerstone to developing future multimodal and accessible transportation networks. The importance of a well-written subdivision ordinance cannot be overstated. While many complete-streets projects require incremental retrofitting, subdivision ordinances can make sure that communities’ expanding transportation networks are built to consider and address the needs of all users and modes of transportation.

Most Delaware local governments use DelDOT street-design standards that comply with federal requirements for roads. DelDOT’s 2010-adopted *Standards and Regulations for Subdivision Streets and State Highway Access* manual provides guidance and regulations that

support complete-streets principles and the state's policy. In addition, local governments can develop more stringent subdivision regulations and design standards to enhance various modes of travel, connectivity, bicycle and pedestrian circulation, and installation of sidewalks. Communities may establish enhanced design standards, which also conform to state and federal standards, to create a unique streetscape that provides a sense of place and local character (e.g., historic and cultural).

NPLAN – This organization has developed a model subdivision ordinance that may be adapted for use by local governments, see: www.nplanonline.org/sites/phlpnet.org/files/nplan/CompleteStreets_LocalOrdinance_FINAL_20100223.pdf. This model ordinance encourages flexibility and explains on how varying ordinance language will influence the outcome of regulations. Additionally, NPLAN's model ordinances include language that keeps communities in compliance with federal and state policies. While communities should not adopt a cookie-cutter approach to complete-streets design, model ordinances provide a starting point and guidance on how to best draft subdivision ordinances that support the design of complete streets.

City of North Myrtle Beach, S.C. – This municipality adopted complete-streets principles as a minimum requirement of its subdivision ordinance. This ordinance clearly shows the intentions of “complete streets” in the development of subdivisions. The subdivision ordinance states:

All streets shall be 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” (City of North Myrtle Beach, 2009).

The city's subdivision regulations specifically address the need for pedestrian improvements in certain contexts, such as bulb-outs and median refuges. Additionally, bicyclists are clearly supported with by ordinance language that states:

(9) Bicycle accommodation: Any vaults, covers, castings, and drainage grates must be designed to accommodate bicycle travel. Bicycle lanes or separated path/trail may be required, with construction standards and width determined by street type (City of North Myrtle Beach, 2009).

Not all communities will use the term “complete streets” within subdivision ordinances. Instead, communities may adopt complete-streets principles within subdivision regulations that are inclusive of all users and modes of transportation. Requiring sidewalks, pedestrian, and bicycle amenities, as well as connected streets, are just a few ways to incorporate complete streets in a subdivision ordinance.

7-3-4. Local Government Zoning Codes

Local government zoning codes, which are consistent with a comprehensive plan, are an important regulatory tool regarding the built environment (Hoch, 2007, 343). Delaware specifically permits a zoning code “in accordance with a comprehensive plan and designed

to lessen congestion in the streets, to secure safety from fire, panic and other dangers, to promote health and the general welfare..." (Delaware Code, Title 22: §303). Pedestrian and bicycle infrastructure promote health and the general welfare, which the Delaware Code supports within municipal zoning ordinances. Local governments should evaluate zoning ordinances to see if local laws support pedestrian and bicycle infrastructure.

Traditional zoning separates land uses into residential, commercial, industrial, and agricultural uses. A new alternative to conventional zoning provides a regulatory approach that is more flexible and context sensitive. Form-based codes focuses less on land use and more on physical form—such as compact, mixed-use development and pedestrian-friendly design.

While most municipalities will not undertake a comprehensive zoning code re-write, conventional zoning codes can be amended, or new form-based codes can be adopted to add complete-streets elements. Amendments to zoning ordinances must be consistent with the visions of a community and recommendations of its comprehensive plan. Without connecting the vision of complete streets from a comprehensive plan to zoning ordinances, the harmony of these documents may be questioned.

Local government officials can make public policy decisions to support smart growth strategies and zoning for new developments that enhance walkability, use of transit, and multiple modes of transportation. Zoning ordinances can be revised to implement policies that support compact and mixed-use development, transit-oriented development, urban infill, and walkable/bikable street design. Form-based coding can be adopted as a regulatory device to change the hierarchy of traditional zoning to emphasize form over use.

City of Seattle, Wash. – The City of Seattle and the Seattle DOT have devised several plans and policy documents that address pedestrian issues. Seattle's Land Use Code (Title 23) replaces a conventional zoning code, which was retired in 1995. It conveys the city's ongoing attempts and long-term commitment to create a safe, walkable pedestrian environment that supports—and is supported by—compact and mixed-use patterns of development. The Land Use Code establishes patterns of development (rather than strict zoning districts) that strengthen pedestrian areas, promote transit, encourage infill, and protect single family land use. Land uses provide an emphasis on mixed use, pedestrian- and transit-supportive environments, which are the hallmarks of complete streets (City of Seattle, Wash.).

7-3-5. Local Government Unified Development Codes

More local governments are adopting unified development codes (UDCs), which update and combine a local government's existing zoning and subdivision regulations into one cohesive document. Many UDCs incorporate design principles and development codes to create sustainable and healthy neighborhoods, walkable communities, incentives for infill development, mixed-use districts, improved street connectivity, and innovative urban design.

New Castle County, Del. – The county has adopted a UDC with subdivision design standards that reflect complete-streets principles. Chapter 40, Article 20, "Subdivision and Land Development Design Principles," provides principles for the layout and design of subdivisions and

land developments. The intent of the design principles is to ensure that all new developments are consistent with the county's vision for planned community character. The UDC requires all subdivision plans to be reviewed against specific design standards. One of the six plan-review standards, stated within §40.20.110, highlights the need to provide for circulation patterns that are interconnected and address the needs of motorists, pedestrians, and bicyclists:

All street and circulation patterns shall provide for the safe, efficient, and convenient movement of vehicular and pedestrian traffic. Vehicular travel lanes, pedestrian movement systems, and parking should be separated. Within the context of overall community development, the internal circulation system should promote and encourage the increased use of pedestrian and bicycle movement among residential, local shopping, schools, and other areas. Road connections shall seek to avoid external automobile trips through the employment of superblocks, stub streets, connecting open space, bicycle-pedestrian ways, and other design techniques and devices (New Castle County, 2010).

City of Dubuque, Iowa – This municipality received an American Planning Association (APA) Iowa Chapter award for the development and adoption of its UDC in 2009. Dubuque's UDC incorporates into a single code all zoning, subdivision, site-development, historic-preservation, and sign regulations. The UDC updated Dubuque's subdivision and site-development regulations to promote sustainable design, require street connectivity, provide development-design guidelines, and require street-network access by pedestrians, bicyclists, and public-transit riders. A specific section on Complete Streets is to be developed and has been noted within the document as a future section of the UDC. The Land Subdivision Section of the UDC states that pedestrian infrastructure, separate bicycle paths, bicycle lanes, and/or shared-use lanes are required—based on the context of the roadway and in accordance with the city's comprehensive plan. In addition, the Subdivision Design Standards section addresses the need for street connectivity:

All streets, sidewalks, and bike/hike trails shall connect to other streets, sidewalks and bike/hike trails within the subdivision, and to the property lines, to provide for their extension to adjacent properties. Each subdivision shall connect to the existing and planned street network of the City to ensure connectivity between properties, distribution of traffic, and access for public and emergency services (City of Dubuque, 2009, p. 184).

U.S. Environmental Protection Agency (EPA) – The agency published *Essential Smart Growth Fixes for Urban and Suburban Zoning Codes* to help local governments modify or revise existing regulations to create building blocks for smart growth, complete streets, and sustainable development. Essential "fixes" include ways to modify codes to mix land uses, encourage compact development patterns, increase transit- and pedestrian-friendly development, and enact standards to modernize streets and foster walkable places (EPA 2009).

7-4. Design Standards

Most Delaware local governments use street-design standards that comply with federal and

state requirements for roads that will be dedicated to DelDOT. DelDOT's 2010-adopted *Standards and Regulations for Subdivision Streets and State Highway Access* manual also provides guidance and regulations that support complete-streets principles and the state's policy. In addition, local governments can develop more stringent subdivision regulations and design standards to enhance various modes of travel, connectivity, bicycle and pedestrian circulation, streetscapes, trails and shared-use paths, and pedestrian/bicycle features and amenities. Communities make take on the responsibility of creating their own design standards (while in compliance with DelDOT and federal standards) for creating unique identities that provide a sense of place and local character.

7-4-1. Local Government Design Standards Based on Established National Guidelines

Delaware local governments can use established guidelines to ensure complete streets and a well-planned and designed transportation system. Federal agency guidelines and manuals, DelDOT design guidelines and publications, as well as ADAAG and PROWAG can all be cited to make sure that a municipality's design standards meet recognized national design guidelines.

Prince George's County, Md. – The *Countywide Master Plan of Transportation* (MPOT) is a master plan that addresses the strategic transportation issues for all modes in Prince George's County. Within Chapter IV, "Trails, Bikeways, and Pedestrian Mobility," is a listing of ten complete-streets principles that will be integrated within master planning strategies. One of the ten principles, "Ensure Universal Accessibility," references national design standards and guidelines that will be used to accommodate all ages and groups along sidewalks and intersections. It states:

All street crossings should include ADA-compliant curb cuts and ramps, and all pedestrian signal buttons should be handicap accessible. Implementation of accessibility features should also include truncated domes for the visually impaired on access ramps and increased crossing times that are sufficient for elderly, disabled, or slower pedestrians. To the extent feasible and practical, all pedestrian connections (sidewalks, trails, plazas, etc., should comply with the U.S. Access Board's proposed Trail Accessibility Guidelines (currently under review), the ADA Accessibility Guidelines (ADAAG), and the Federal Highway Administration's Guide for Accessible Sidewalks and Trails" (Prince George's County, 2008, 31).

7-4-2. Local Government Design Guidelines

Local governments can also develop jurisdiction-specific design guidelines to convey a vision for an accessible, livable, and multimodal community. The examples below illustrate how several cities have developed street-design guidelines to incorporate complete-streets elements when roads are being planned, constructed, retrofitted, upgraded, or modified.

City of New Haven, Conn. – The Board of Aldermen directed a Complete Streets Steering Committee to guide the development of a process to implement a vision for complete streets. The process includes a policy document, design manual, public process, educational

campaign and traffic enforcement. The *City of New Haven Complete Streets Design Manual* provides guidance on building, repairing, and rehabilitating city streets to balance the needs of all users while respecting the social and economic fabric of the community. The manual formalizes a public-participation process for street re-design that incorporates engineering principles, a variety of context-sensitive design treatments, methods of evaluation, and funding strategies (City of New Haven, 2010).

City of Charlotte, N.C. – The City adopted *Urban Street Design Guidelines* (USDG) in 2007 as a supporting component of its Transportation Action Plan (TAP). The USDG include “methodologies and recommendations for implementing key aspects of the TAP—increasing the quantity and quality of streets, enhancing the integration of land-use and transportation decisions (sometimes on a block-by-block basis), and providing ‘complete’ streets for residents, property owners, and all types of travelers.” The design guidelines embrace a philosophy that assumes that the safety, convenience, and comfort of cyclists, pedestrians, transit users, motorists, and the surrounding community will all be considered equally when planning and designing streets—including street retrofits and modifications. To achieve a complete street network, guiding principles include (City of Charlotte, 2007):

- Streets are a critical component of public space.
- Streets play a major role in establishing the image and identity of a city.
- Streets provide the critical framework for current and future development.
- Charlotte’s streets will be designed to provide mobility and support livability and economic development goals.
- The safety, convenience, and comfort of motorists, cyclists, pedestrians, transit riders, and neighborhood residents will be considered when planning and designing Charlotte’s streets.
- Planning and designing streets must be a collaborative process, to ensure that a variety of perspectives are considered.

City of Tacoma, Wash. – In 2009 City Council adopted a resolution to endorse the creation and ongoing development of Complete Streets Design Guidelines. The resolution directed the city manager to prepare and implement comprehensive design guidelines for mixed-use centers and residential complete streets. The objective is to “provide a framework and cost-effective tools to support street designs that safely, comfortably, and appropriately accommodate all users and transportation modes; foster a sense of place in the public realm; and, reduce environmental impacts” (City of Tacoma, 2009).

City of Louisville, Ken. – The *Louisville Metro Complete Streets Manual* provides a comprehensive approach to advancing the Mobility and Comprehensive Form goals of its comprehensive plan. The manual addresses streetscape design in context with the existing character of the community. In addition to providing a design framework for complete streets, it recognizes the need for user-oriented transportation facilities, appropriate

complete-streets facilities based on functional classification of the roadway/thoroughfare type, and streetscape design. One section of the document is a “Streetscape Master Plan Manual,” which will be used to guide future roadway corridor future development and a plan for appropriate bicycle and pedestrian facilities, access management and connectivity, street trees, and unified streetscape amenities.

7-5. Facility Maintenance

As previously stated under 28 CFR, Part 35, §23.133 (which implements Title II of ADA), all ADA-designated public facilities and features must be maintained “in operable working condition” for use by persons with disabilities (*ada.gov*). Accessible designs are useless if public facilities are subject to maintenance practices that negatively affect safety, security, and/or mobility of persons of all ages and abilities.

7-5-1. Common Maintenance Issues

While a facility may have been constructed to ADA standards, some common maintenance issues that impact accessibility (on pedestrian, bicycle, and transit facilities) include (Carter, 2011):

- Drainage issues (e.g., ponding of water at the base of curb ramps)
- Objects protruding into an access route (e.g., trees, vegetation, banners, awnings, temporary signs, trash cans, parked vehicles)
- Access-route blockages (e.g., temporary signs)
- Poor pedestrian management in construction zones (including sidewalks)
- Pavement buckling caused by tree root intrusion
- Accumulation of snow and/or ice
- Lack of sweeping and debris removal
- Lack of routine maintenance and repairs
- Gaps in pedestrian facilities and intermodal connections

7-5-2. Maintenance Needs

Maintaining sidewalks, bikeways, multi-use paths, trail systems, transit stations and shelters facilities, and other accessible pedestrian/bicycle facilities is important to ensure the following attributes.

Safety—Protect the public welfare, minimize user conflicts, and address dangerous conditions such as cracked or loose concrete, holes, step separation, depressions, tree-root damage, vegetation overgrowth, other physical obstacles and/or the aftermath of inclement

weather (e.g., accumulation of snow and/or ice). Local governments should develop a winter maintenance plan/policy document to address responsibilities, timeframes, and priorities for clearing pedestrian/bikeway infrastructure.

Universal access—Provide accessible facilities that are maintained to ADA standards. Universal access enables all citizens to travel using public transportation facilities and is defined as “a synthesis of universal design, good engineering practices, and constitutional law” (Project Universal Access, n.d.). In addition to accessible design, transportation facilities need to be maintained in a safe and usable condition to achieve universal access, transportation equity, and mobility for users of all ages and abilities. Wherever possible, public-transportation facilities and infrastructure must be designed *and* maintained to allow safe travel by children, older adults, and persons with disabilities.

Multimodal mobility—Recognize that maintenance of sidewalks, bikeways, multi-use paths, trail systems, and transit facilities is essential to the proper functioning of the overall transportation system. The issue of maintenance on public-transportation facilities also extends to roadway components such as sidewalks, crosswalks, intersections, curb ramps, bike lanes, and bus stops/transit shelters that are used by pedestrians, bicyclists, transit users, and persons with disabilities.

A safeguard of public assets—Provide routine maintenance, regular inspections of public transportation facilities, and regularly scheduled repairs. Maintenance strategies should be incorporated in the planning and design of new public-transportation facilities. In addition, local governments should develop an overall preventive-maintenance program to protect public investment, extend the useful life, and delay repairs of public facilities.

Control of risk—Minimize hazardous conditions that may expose a local government to a potential lawsuit. In recent years, states and local governments have been exposed to civil liability and precedent-setting case law due to instances of ADA non-compliance. To reduce injuries and minimize exposure to liability, local governments must maintain accessible transportation facilities and features (e.g., sidewalks, curb ramps, crosswalks, shared-use paths, on-road bicycle facilities, bikeways, and transit stops/shelters). To prevent and/or minimize lawsuits and exposure, good maintenance practices should be adopted, such as periodic street/sidewalk sweeping, surface repairs, tree pruning, trash removal, litter pick-up, re-painting of pavement markings, and snow and ice removal. To ensure that public transportation facilities are well maintained, accessible, and safe, local governments should:

- Develop an ADA transition plan.
- Determine repair and replacement criteria for ADA-designated transportation facilities.
- Develop a preventive maintenance plan, with scheduled inspections of ADA-designated transportation facilities (including pedestrian, bicycle, and transit infrastructure).
- Implement a winter maintenance–management plan that addresses pedestrian facilities.

- Adopt a policy to establish and define responsibilities and procedures for routine maintenance, emergency repairs, and winter weather operations (i.e., snow and ice removal).
- Prioritize and budget for maintenance activities.
- Keep inspection records.
- Develop a complaint policy system to record and track problems and their respective resolution.

7-5-3. Maintenance Responsibilities

Often, confusion exists over which entity (e.g., state government, local government, public agency, transit agency, school district, employers/businesses, or private commercial or residential property owner) is responsible for the maintenance of ADA-designated transportation facilities. Delaware local governments should review “Municipal Maintenance Agreements” and establish internal policies that clarify roles and responsibilities of maintenance of accessibility-specific transportation facilities and features.

Municipal Maintenance Agreements

DelDOT is responsible for planning, designing, building, and managing Delaware’s statewide transportation system. In addition, DelDOT is responsible for maintaining about 90 percent of the over 13,500 lane miles of roads in Delaware (DelDOT, 2009). When a road constructed by DelDOT within a municipal boundary is completed, the jurisdiction and DelDOT generally enter into a “Municipal Maintenance Agreement.” Delaware local governments should be aware that there is no standard municipal maintenance agreement for a state-maintained road within a municipality. Maintenance agreements vary among municipalities, or even among state-maintained roads within a given municipality.

Local governments should review, to the extent feasible, each specific municipal maintenance agreement to determine the limits of DelDOT maintenance on a state-maintained road within the town boundaries. Generally, DelDOT will conduct “curb-to-curb” maintenance on a state-maintained road within a municipality. Accessibility-specific transportation facilities, such as pedestrian facilities that are outside a curb, will fall under the maintenance responsibility of a municipality (Carter, 2011). DelDOT will generally plow snow on all state-maintained roads within a municipality with the exception of the cities of Wilmington, Newark, and Dover (Racca and Condliffe, 2002).

Municipal Maintenance

Delaware municipalities are responsible for maintenance of all municipal roads—including all roadway pavement, curbs, sidewalks, crosswalks, signs, traffic-control devices, shoulders, lighting, and street furniture. Local governments are also responsible for snow removal on municipal roads that are not maintained by the state.

Municipal ordinances may be adopted to require property owners to maintain transportation

facilities and infrastructure that comply with ADA standards. Local ordinances can be prescriptive and specify detailed maintenance requirements (e.g., clearing snow and ice, maintaining an accessible route, prohibiting route blocking, trimming overgrown vegetation). Another option is for local ordinances to make reference to and/or adopt federal (e.g., ADAAG and PROWAG) and state standards (DelDOT) by reference. For example, a municipality can incorporate PROWAG §R209 in a sidewalk-maintenance ordinance to specify “no protruding or overhanging objects in access route.”

City of Newark, Del. – The city’s Municipal Code, Chapter 26 (Streets), Article III (Sidewalks), §26-25 states that it is the “duty of abutting [property] owner to maintain sidewalks in safe condition.” The ordinance states (Newark, Delaware Code of Ordinances):

Every property owner shall maintain any sidewalk abutting his property in a safe and useable condition including compliance with Americans with Disabilities Act (ADA) guidelines. Sidewalks which are not continuously even or which collect rain water on any part of the walking surface, or which do not meet ADA guidelines, shall not be considered safe and useable.

Snow Removal from Pedestrian Facilities

Many local government ordinances require property owners to remove snow/ice from an abutting sidewalk after a winter storm. These regulations should be incorporated or cited within a winter maintenance–management plan when delineating responsibilities of the municipality, residents, and other responsible entities. Local governments need to clearly communicate to property owners the purpose, requirements, timeframe, and enforcement of a sidewalk-snow-removal ordinance to ensure its effectiveness.

Generally, municipal public works departments also have winter emergency–operations plans, policies, and/or practices that govern roads. However, most plans focus on how an agency will implement plowing of roads in response to a major event and stress the need to keep roads clear to ensure the safety of motorists, emergency responders, and a free flow of commerce.

Still, most winter emergency–operations plans fail to address the ADA requirement to maintain accessibility-specific pedestrian facilities “in working order” once installed. Local governments need to be responsible for clearing snow and ice from these pedestrian facilities on all municipal-maintained roads within corporate boundaries. If covered under a municipal maintenance agreement with DelDOT, a local government must also remove snow and ice from ADA-related pedestrian features (such as sidewalks beyond a curb) on state-maintained roads within a municipality.

Local governments should consider the development and adoption of a winter maintenance–management plan, or amend existing winter-operations plans, to address the need to clear all transportation facilities (e.g., roads, sidewalks, bikeways, transit stops/shelters) after a major storm. The ideal plan will be developed in collaboration with multiple agencies and stakeholders, address snow and ice removal responsibilities, determine snow/ice removal



priorities, establish levels or response and response time(s), cite the legal basis for the plan, and be communicated to all stakeholders.

City of Dover, Del. – The city's *2010/2011 Public Services Emergency Plan* is an excellent example of a comprehensive plan that is devised to consider the need to ensure mobility and access by

pedestrians and transit users. The plan provides a list of operations for snow and debris removal—including Delaware Transit Corporation transit routes, bus transfer areas, crosswalks and main intersections, and sidewalks along city property (City of Dover, 2011).

8



**How Are Delaware
Local Governments
Progressing Toward**

**Complete
Streets**

?

8-1. Delaware Local Government Support of State Policy

Consistent with the state's Complete Streets Policy, Delaware local governments have the opportunity to offer safe, equitable, and accessible transportation to all users and modes of transportation on roads within their jurisdiction. In order to address both existing inadequacies with auto-centric transportation networks and create better transportation networks in the future, Delaware local governments can address transportation planning through their comprehensive-planning process and land-use policy development.

As part of the research on complete-streets implementation by Delaware local governments, IPA solicited information directly from local government officials. A flyer was developed and distributed to Delaware local governments at IPA-affiliated events over a six-month time period including the 22nd Delaware Institute for Local Government Leaders (October 22, 2010) and IPA's Delaware Planning Education training series, which included the Planning 209 session on Complete Streets (June 9, 2011). The flyer (in Appendix G) asked, "Has your organization..."

- ...passed a resolution supporting Complete Streets?
- ...included Complete Streets provisions within a comprehensive plan or plan update?
- ...included Complete Streets requirements/guidelines in ordinances, code amendments, or other regulatory tools?

Many Delaware local governments have, in fact, begun to transform a vision for complete streets into plans, policies, design standards, and maintenance practices. This section focuses extensively on how Delaware local governments have incorporated complete-streets principles and concepts within comprehensive plans and policies—specifically subdivision, unified development, and zoning codes. Examples are cited, and an analysis provided, of Delaware local governments that are progressing toward complete streets. In addition, a Delaware Local Government Complete Streets Implementation Matrix is included in Appendix E.

8-2. Delaware Local Government Comprehensive Plans and Complete Streets

8-2-1. Complete Streets as a Foundation for Complete Communities

Local government comprehensive plans, which serve as the overarching policy document at the local level, should support and enhance the goals and strategies of complete streets implementation in the municipal context. In addition to supporting multimodal transportation goals, local government comprehensive plans also address issues such as land use, housing, parks and recreation, and economic development, all of which can contribute to the development of more "complete communities."

According to Gary Pivo, professor of urban planning at the University of Arizona, the

objective of complete communities is “to use less land and reduce the separation of land uses in order to achieve a variety of values including open-space protection, community vitality, affordable housing, air quality, transit use, and more walkable places” (2005). Delaware’s Office of State Planning Coordination has cited the concepts and values of complete communities in the recent update of the Delaware *Strategies for State Policies and Spending* document. Moving forward, Delaware local governments should strive to include specific complete-streets terminology as well as more broadly defined complete streets and complete-communities principles within their comprehensive plans.

8-2-2. Complete Streets and Healthy Communities



Comprehensive plans can also be instrumental in fostering more healthy and vibrant communities through appropriately directed land-use and transportation recommendations. Five overarching principles of planning for a healthy community help guide the kinds of goals and recommendations that should be included in comprehensive plans, including (Beck, 2010):

- Bicycle and pedestrian accessibility
- Parks and open spaces
- Compact and mixed-use development
- Convenient access to healthy food
- Complete-streets principles

IPA has developed a *Healthy Communities: Comprehensive Plan Assessment Tool* to assist Delaware cities and towns to write more health-focused comprehensive plans or plan updates. To learn how a community can integrate all of these principles into a comprehensive plan and a local government’s development and regulatory agenda, please see www.ipa.udel.edu/healthyDEtoolkit/docs/CompPlanAssessmentTool.pdf. The *Comprehensive Plan Healthy-Community Checklist* is also provided in Appendix H, and illustrated on the next page:

The Comprehensive Plan Healthy-Community Checklist

Pedestrian/Bicycle Accessibility	Check	Page #
1 Community or town goal that emphasizes pedestrian and/or bicycle facilities		
2 Community or town goal to enhance children's pedestrian and bicycle safety		
3 Encouragement to start or enhance Safe Routes to School Programs		
4 Future development recommendation for increased pedestrian infrastructure		
5 Future development recommendation for increased bicycle infrastructure		
6 Recommendation for a pedestrian and/or bicycle study		
7 Inclusion of or future recommendation for a Master Pedestrian Plan		
8 Inclusion of or future recommendation for a Master Bicycle Plan		
9 Prioritization of pedestrian improvements		
10 Prioritization of bicycle improvements		
Mixed Use/Compact Development	Check	Page #
11 Future development recommendation for additional elements of a pedestrian-friendly built environment**		
12 Recommendation for a Traditional Neighborhood Development Ordinance*		

Complete Streets Principles	Check	Page #
13 Community or town goal to reduce automobile traffic throughout the town		
14 Development regulations requiring sidewalks		
15 Future development recommendation for streetscaping features		
16 Future development recommendation emphasizing pedestrian improvements in the CBD or downtown area to increase business and create a sense of place		
17 Future development recommendation for traffic-calming measures on local streets		
18 Recommendation for multi-modal infrastructure supporting transit use		
19 Recommendation to identify service gaps and deficiencies in mobility for people of all ages and abilities		
20 Recommendation to develop a prioritization plan for addressing mobility issues for people of all ages and abilities in the transportation system		
Access to Healthy Food	Check	Page #
21 Community or town goal to locate shopping facilities near residences		
22 Community or town goal emphasizing public health, including physical activity and access to healthy food		
Open Space and Recreation	Check	Page #
23 Community or town goal that emphasizes parks and recreational facilities		
24 Recommendation for open-space policies and conservation-oriented land use plans		

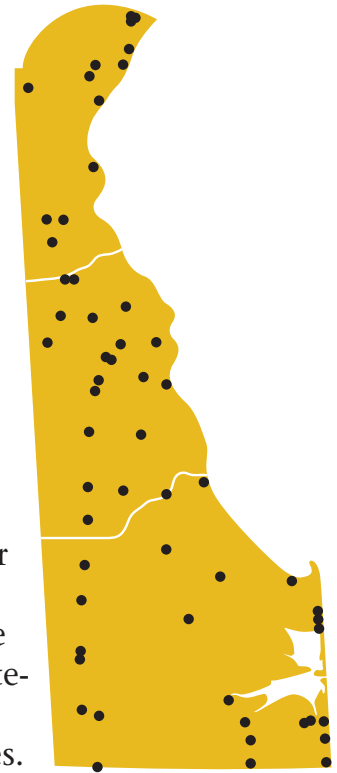
*Traditional Neighborhood Developments are neighborhoods where residential, commercial, and civic buildings are within close proximity to each other. Model TND Ordinance found at: <http://urpl.wisc.edu/people/ohm/tndord.pdf>

**Additional elements of a pedestrian-friendly built environment = mixture of uses; compact development; building setbacks; parking location; pedestrian-scaled design (buildings, signs, roads); street connectivity

8-2-3. Assessment of Complete Streets Within Delaware Comprehensive Plans

IPA conducted an assessment to determine the extent to which Delaware municipalities have integrated complete-streets concepts within comprehensive plans. Delaware has 57 municipalities and three counties. For the purpose of the assessment, IPA reviewed only existing comprehensive plans of Delaware municipalities that were accessible online. Based on this criteria, IPA staff obtained information from 47 out of 57 municipalities.

To conduct the assessment, content from each of the comprehensive plans was reviewed first to determine whether the term “complete streets” was specifically used. Next, an analysis was conducted to determine the extent to which several categories (or levels) of support for complete-streets principles were identified within each comprehensive plan. The analysis focused on whether complete-streets concepts or principles were included within the general goals and transportation sections of comprehensive plans. Finally, each of the 47 comprehensive plans reviewed was evaluated for the presence of the following complete-streets principles: complete-streets language, multi-modal goals/recommendations, inclusion of transit, inclusion of all ages and abilities.



The results of this analysis are included in the IPA Complete Streets Comprehensive Plan Assessment Matrix (Appendix I). If an element is present in a comprehensive plan, the page number of the qualifying text is provided in the matrix. If the matrix cell is empty, then that particular element is not included in the comprehensive plan. The web link to each comprehensive plan document is also included in this matrix, so that the exact wording and context of these complete-streets principles can be found within the document.

While the definition of complete streets technically includes all modes and all ages and abilities, the categories above were formed as separate matrix elements in order to capture the trends of existing Delaware comprehensive plans. As the matrix exhibits, most comprehensive plans in Delaware include goals or recommendations to increase bicycle and pedestrian infrastructure. Accommodation of special-transportation populations and increased transit service, however, are much less commonly featured in comprehensive plans. The IPA Complete Streets Comprehensive Plan Assessment Matrix illustrates the areas in which Delaware comprehensive plans need to improve in order to support complete streets. An in-depth analysis of each aspect of the assessment is provided below.

8-2-4. Complete Streets Terminology Within Comprehensive Plans

Complete streets terminology and concepts are not highly common in the comprehensive plans of Delaware local governments, perhaps due to the relative youth of the complete-streets movement. Four Delaware municipalities use the exact term “complete streets” in their comprehensive plans. The following excerpts include the sentence(s) in which complete streets is mentioned, as well as the surrounding contextual sentences if needed.

Excerpt from 2010 Town of Elsmere Comprehensive Plan

Recommendation One: Revise the Elsmere Code to require sidewalks in all new residential and nonresidential development and redevelopment. This would help enhance safe, walkable complete streets, a sense of community, and would be in line with Elsmere's vision (Town of Elsmere 2010, p. 51).

Excerpts from Rehoboth Beach 2010 Comprehensive Development Plan

Adopt a 'Complete Streets' policy consistent with the State's policy to assure that as opportunities to revamp its streets occur such streets are designed and operated to enable safe access for all users and connected in a City-wide integrated network (City of Rehoboth Beach 2010, p. 57).

Instead of focusing on how fast a large number of cars can move through a particular place (mobility), we must begin thinking about how easy it is to reach destinations (access)—by foot, by bike, by transit, and.....by car. To begin this change and to avoid conflict over the nature of new streets and sidewalks in future development and the addition or replacement of streets and sidewalks in areas of repair or revitalization, the City will devise design and engineering standards based on the "Complete Streets" program of the National Complete Streets Coalition and the recent Executive Order of Delaware's Governor regarding Complete Streets (p. 69).

Rehoboth will follow Delaware's Complete Streets policies and prepare for the implementation by identifying the City's chief travelways for pedestrians and bicyclists; discovering opportunities for integrated and separate bike lanes; determining if there are streets that can be turned over to pedestrians, bicyclists, and resident/tenant-only cars; locating new crosswalks; designing a wayfinding sign system; and locating opportunities for traffic calming... (p.69).

Excerpt from Wilmington 2003 City-Wide Plan of Land Use

Continue to expand on transportation opportunities through the Wilmington Initiatives partnership with DelDOT and WILMAPCO. The City may take into consideration participation in programs like the "Walkable Communities Initiative" and "Complete Streets" that promote multi-modal transportation that identifies ways to increase bike and pedestrian traffic (City of Wilmington 2003, p. 45).

Excerpt from 2010 Town of Wyoming Comprehensive Plan

With the adoption of its Land Use and Development Code, the town achieved several, noteworthy, regulatory goals. The code requires street and sidewalk connections to existing or proposed adjoining subdivisions. It requires five-foot-wide sidewalks (where practicable) on both sides of any new streets. Also, it requires the dedication of open space, or payment of a fee in lieu of dedication, and includes provisions requiring landscaping. This document's goals and regulations make parallel recommendations only to make sure such

accomplishments are not lost in future land-use code updates. These standards, and the goals and recommendations put forth in this document, are very much in keeping with the Complete Streets concept. The Town is aware of the State's Complete Streets policy (executive order), enacted late 2009, and has tailored its land use and development code and this plan in hopes of continuing to make strides in that direction (Town of Wyoming 2010, p. 26).

8-2-5. Analysis of Complete-Streets Concepts Within Comprehensive Plans

“Complete streets” is a term, concept, and movement that emphasizes the importance of accommodating all users of the transportation system in every road construction or maintenance project. According to the National Complete Streets Coalition, complete streets are “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” (www.completestreets.org). The term complete streets is more conceptual than definitive, as the accommodation of different road users will vary from place to place depending on the context.

Contextual considerations that will affect the specific attributes of a “complete street” include the status of the existing transportation system, adjacent land uses, residential density, topographical constraints, and the neighborhood character. Thus, complete streets cannot necessarily rely on a set of specific road standards or community-design guidelines. As the American Planning Association explains, “The complete streets movement is in some ways the simple expression of a variety of converging trends,” including traffic calming, ADA compliance, Project for Public Spaces, Smart Growth, and Safe Routes to School (McCann and Rynne, 2009, p.2). The complete-streets movement, then, is an attempt to combine the principles of several recent progressive transportation and urban development concepts into a formalized policy guiding every project undertaken by a developer, municipality, or state.

In order to develop a measure of complete-streets concepts in Delaware’s existing comprehensive plans, several categories (or levels) of support for complete-streets principles were identified. In the interest of time, only the general goals and transportation sections of comprehensive plans were reviewed for inclusion of complete-streets terminology. Each comprehensive plan was evaluated for the presence of the following complete-streets principles:

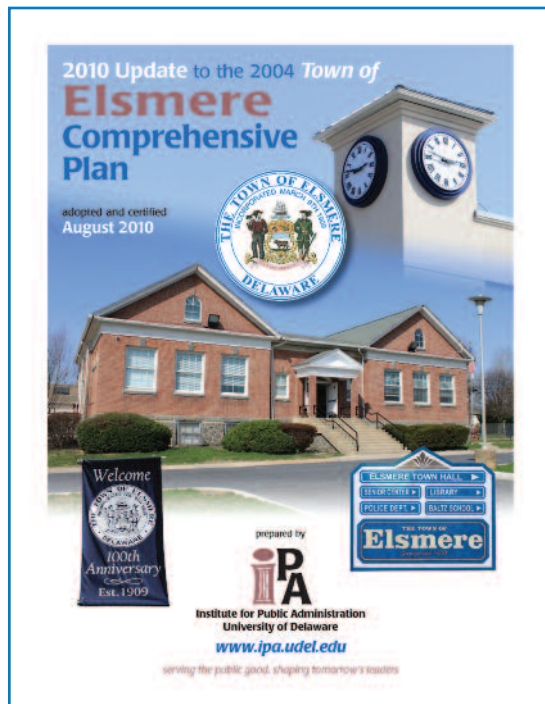
- **Complete-streets language**—defined as the presence of the term “complete streets” in the comprehensive plan
- **Mention of all modes in goals or recommendations**—defined as any goals or recommendations related to increased bicycle and pedestrian accommodation (inventory of existing facilities does not count)
- **Inclusion of transit**—defined as any goals or recommendations related to increased transit accommodation (inventory of existing services does not count)

- **Inclusion of all ages and abilities**—defined as any mention of the accommodation of special populations with regard to transportation services and facilities (mention of para-transit service does not count)

8-2-6. Complete-Streets Principles Within Comprehensive Plans

Complete-streets principles can often be present in local government documents even when explicit language is not included. The complete-streets movement is, in essence, a combination of several other progressive transportation and land-use movements, and, thus, there are several types of concepts and recommendations in comprehensive plans that can be considered supportive of complete streets principles. To demonstrate the breadth of concepts, goals, strategies, and recommendations that can be supportive of complete streets, four Delaware municipal comprehensive plans are reviewed in more detail below. These four plans are from the only municipalities identified in the above matrix that include the term “complete streets” in their comprehensive plan documents. The principles associated with “complete communities” are included in this analysis.

2010 Town of Elsmere Comprehensive Plan



The Town of Elsmere has as one of its main goals to “be known as a walkable town, including walking trails and the shopping district” (Town of Elsmere 2010, p. 4). In order to become this type of town, Elsmere addresses throughout its comprehensive plan strategies to create an identifiable and walkable “main street” area along Kirkwood Highway as well as maintaining and enhancing an interconnected system of parks and open spaces. As a small suburb of Wilmington, Elsmere’s support of complete-streets principles is largely driven by its desire to develop the town as a distinct place differentiated from Wilmington and support economic development by creating “a desirable and healthful environment in which to live and work” (p. 3). In other words, the Town of Elsmere recognizes that supporting complete streets principles and developing a complete community are necessary in order to attract and maintain residents and businesses.

Transportation Section – This section of Elsmere’s comprehensive plan starts out by noting that the town has a relatively large proportion of households without a car (11 percent) and a lower percentage of residents who commute to work by single-occupant vehicle than the rest of Delaware and the United States (p. 44). The beginning of this section also states that the concept of complete streets is interwoven throughout the analysis and recommendations in the chapter (p. 44). This is followed by an explanation of Delaware’s complete-streets

policy and its intentions. Throughout the remainder of the transportation section, particular attention is paid to the needs of pedestrians and transit riders in the town, noting that Elsmere has a relatively complete system of sidewalks and some existing pedestrian-trip generators. However, the plan notes that various barriers to mobility are present for the young, elderly, and disabled. Specific recommendations addressed in this section include ADA accessibility, sidewalk maintenance, striped crosswalks and bus shelters (pp. 45-51). This section also recommends that the Elsmere code be revised to require sidewalks in all new developments as well as redevelopment, which is an important first regulatory step towards more complete streets.

The transportation section also emphasizes “placemaking” and safety improvements regarding Kirkwood Highway, which is an important thoroughfare that bisects the town. The concept of placemaking uses a multi-faceted approach to plan and design cities that are oriented toward people (not just cars) and focuses on transforming public spaces (e.g., parks, plazas, public squares, streets, and/or sidewalks) into vibrant community places (Project for Public Spaces). Elsmere would like to encourage a pedestrian-friendly “main street” atmosphere along Kirkwood highway by reducing the speed limit to 25 miles per hour, implementing streetscaping features such as landscaping and lighting, and installing signage and gateways at the entrances to the town (p. 48). The transportation section also addresses the need to provide interconnectivity between parks and recreational facilities. This section specifically suggests the pursuit of a greenway trail along the existing rail line that would connect two of the town’s important parks, noting that this would improve the town’s walkability and possibly property values (p. 51).

Community Facilities Section – Complete-streets and complete-communities principles are supported throughout other sections of Elsmere’s comprehensive plan, including the Community Facilities section. This piece concentrates on the town’s “re-greening” efforts to maintain, enhance, and expand its existing parks and open spaces. The Town recommends creating an official re-greening program that will encourage physical activity and increase the quality of life among its residents (p. 42). These efforts include focusing on connectivity among parks, public facilities, and residential neighborhoods. This re-greening program is also mentioned in the section on land use, saying that such a program would “(1) help to differentiate Elsmere from surrounding communities, (2) make the town more visually appealing, (3) attract businesses and residents to the area, and (4) may increase property values” (p. 65). The Elsmere plan for parks and recreational facilities recognizes the impact they can have on economic development, the town’s image, and the health of residents.

Land Use Section – The concept of placemaking in the Kirkwood Highway area is addressed again outside of the transportation section. The Land Use section states that converting Elsmere’s portion of Kirkwood Highway into a main street, and making the area easily accessible by foot as well as car, is part of the town’s economic development strategy. The plan explains:

A developed Main Street will serve as a symbol of community pride, a gathering place for local residents, an incubator for new and developing businesses, and a way to increase the

tax base of the town. The town's challenge is to attain a distinct positive identity for Elsmere that separates it from the surrounding communities (p. 60).

A revamping of the bus stops and shelters along Kirkwood Highway is also encouraged in the plan, as a more pedestrian- and transit-friendly main street would encourage increased use of transit for trips in and out of the town (p. 51).

Housing Section – Three other issues are mentioned in Elsmere's plan, which are less directly related to complete streets. First, the Housing section of the plan recommends a review and revision of the town's zoning code that would foster a more complete and compact community. The plan states:

Changes to the zoning code should be considered that encourage affordable housing activities such as allowing accessory dwellings, infill developments, mixed land uses, and easing parking requirements. These changes could be directed to areas where growth is desired, such as Kirkwood Highway, which the town plans to develop into a Main Street commercial center (p. 31).

Encouraging more compact development of mixed uses in the town's core would contribute to the ability of residents and visitors to use non-automotive forms of travel for short daily utilitarian and leisure trips.

The housing section also recommends taking "steps to allow the disabled or senior citizens to continue to live in their homes" (p. 31). This is a necessary complement to building streets that accommodate users of all ages and abilities, so that these populations can safely and conveniently move in and around their own neighborhoods.

Environmental Resources Section – The issue of air quality is raised in the Environmental Resources section of Elsmere's plan. This section recommends encouragement of walking, biking, and use of public transit in order to reduce air pollution caused by combustion engines (p. 56).

In sum, Elsmere's comprehensive plan supports complete-streets principles in three major arenas—within the roadway environment (transportation projects), in the layout of the town (land use), and throughout the community (housing, recreation, and economic development).

Analysis – One way in which Elsmere's plan could be more supportive of complete streets is to more clearly enumerate how complete streets will be implemented. The plan mentions that Elsmere's development is affected by the activities of Wilmington, New Castle County, and WILMAPCO, and that town officials need to be aware of and coordinate with these activities. However, it would be beneficial for the comprehensive plan to lay out how other municipal planning documents, such as a capital improvements or parks and recreation plans, are supportive of the steps that need to be taken in order to implement the complete-streets improvements laid out in the comprehensive plan.

Rehoboth Beach 2010 Comprehensive Development Plan

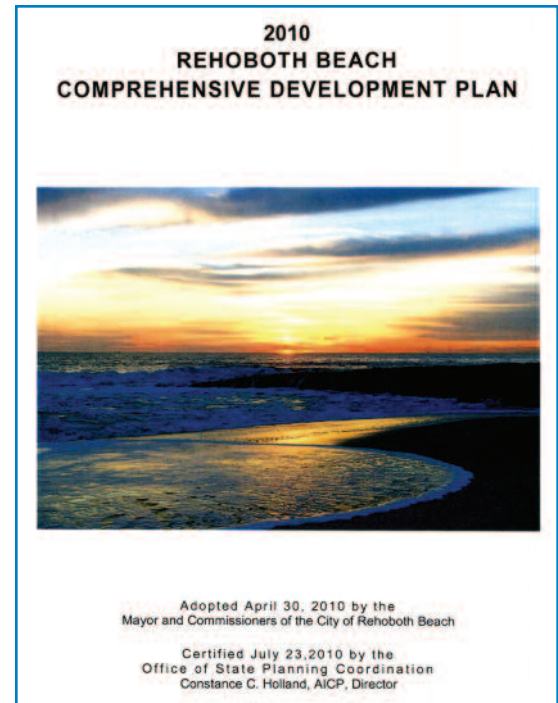
The City of Rehoboth Beach's Comprehensive Development Plan is notably visionary overall, and it is especially bold in terms of its transportation goals. From the very beginning of the plan, one of Rehoboth Beach's visions states, "The car, bus, and truck are accommodated, but the balance is 'tilted' to the pedestrian, the bicyclist, and quick, convenient non-auto access to the city" (City of Rehoboth Beach 2010, p. 30).

Vision – The City of Rehoboth Beach clearly believes that a radical change in the status quo of transportation planning and engineering can take place within the city and that this change should occur if it is to become a preeminent beach community for residents and visitors alike. This sentiment is summed up in this excerpt from the plan's Executive Summary section:

Can we develop some visionary goals regarding Rehoboth as a special place for walking and cycling in terms of its street designs, its external and internal connections, and its non-auto preferences? Can we make sure that our roads and walks take people where they actually want to go?...Yes, we can take over the streets...A walkable downtown Rehoboth and pedestrian-oriented neighborhoods will quickly become magnets for enhanced public life and economic expansion that will enrich our community in several ways at the same time (pp. 14-15).

The Rehoboth Beach Comprehensive Development Plan contains many specific goals and recommendations designed to help the City "take over the streets" and improve the liveability of the community. The majority of these goals and recommendations are contained within the Transportation and Parks and Landscapes sections of the plan.

Transportation Section – First and foremost, one of the city's priority actions listed in the Transportation Section is to adopt a complete-streets policy that is consistent with the statewide policy. While a municipal complete-streets policy may seem redundant where the state of Delaware controls the majority of roads, Rehoboth Beach realizes that it must work with DelDOT in order to develop a well-planned and integrated system of complete streets. The plan states that a municipal complete-streets policy will help "assure that as opportunities to revamp its streets occur such streets are designed and operated to enable safe access for all users and connected in a City-wide integrated network" (p. 57). Furthermore, the City plans to develop design and engineering standards for the municipality in order to ensure compliance with national complete-streets principles (p. 69). The City intends to prepare for the implementation of the state's Complete Streets Policy by identifying opportunities for



complete-streets improvements that will already be planned and agreed-upon when the proper funding situation arises. This section even mentions that a new transportation population, those using mopeds and scooters, will need to be investigated and accommodated on Rehoboth's streets (p. 69).

Besides addressing the complete streets policy directly, the Transportation section starts by listing the city's transportation goals:

Adopt a Traffic Management System [that] will reduce traffic congestion at peak periods; [r]educe conflicts between pedestrians, bicycles, and cars; [i]mprove circulation throughout the city for pedestrians and bicyclists by planning a connected system of key destinations and enhanced maintenance of sidewalks; [e]nsure that Emergency Response Plans are adopted, implemented, and the public informed (p. 56).

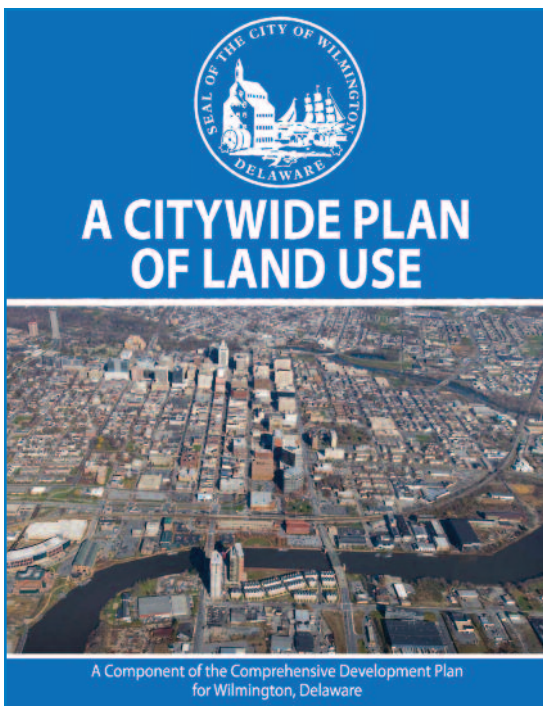
Specific actions are proposed throughout the Transportation section to implement these goals, and they include—working with DelDOT and local businesses to increase transit service (including park and ride shuttles), adoption of a city-wide “Yield to Pedestrians” policy, pursuit of the “Bicycle Friendly Community” designation from the League of American Bicyclists, extension of bikeways and greenways to create connectivity, intersection pedestrian-crossing improvements, completion and implementation of the city's ADA Transition Plan, and stronger code language to enforce sidewalk installation and maintenance. This section of Rehoboth's plan also points out that community participation is key to achieving the city's goals, explaining that improved pedestrian, bicycle, and transit facilities and connections will only be successful if the City helps to increase public knowledge and acceptance of these transportation options (p. 57).

Parks and Landscapes Section – This section of Rehoboth Beach's plan also includes recommendations that are supportive of complete streets and complete communities. The landscape, or visual appeal of the city, is very important for Rehoboth Beach because of its status as a beach resort destination. As part of the effort to create a positive image for the city, Rehoboth Beach has a goal to “plant and maintain curbside trees on all side-walked streets” (p. 45). The City also maintains a number of parks and recreational facilities that are beneficial both for residents and seasonal visitors. The Parks and Landscapes section recommends that the City prepare a long-range plan for the development, renovation, and maintenance of its park facilities. This document should help ensure that the city's parks remain attractive and useful throughout time. This section also focuses on the need to create connectivity between the city's parks and recreational facilities, noting that bicycle and pedestrian pathways between facilities can also provide opportunities for active recreation. To help plan for this type of interconnectivity, Rehoboth Beach's Comprehensive Development Plan includes a schematic drawing of a possible network scenario for better connecting the city's park facilities (p. 51).

Analysis – Rehoboth Beach's Comprehensive Development Plan does a good job recognizing that plans, actions, and decisions from other jurisdictions as well as various departments within the city play an important role in the city's development. Rehoboth Beach is

impacted by the land-use and transportation decisions that occur in Sussex County, nearby towns, and especially along the State Route 1 Corridor (pp. 22-24). In response to these outside forces, Rehoboth Beach plans to establish a cooperative planning agreement with the help of Sussex County and other beach communities (p. 93). To address the implementation of good planning practices within the limits of the city, Rehoboth Beach is also in the process of developing a capital-improvement plan (CIP). This plan is based on the recommendations included in the Comprehensive Development Plan and will detail the community priorities and financing options as they relate to these recommendations. The fact that the CIP is based on the comprehensive plan means that the city's goals and recommendations will be more easily translated into actionable steps. Rehoboth Beach's Comprehensive Development Plan sets an ambitious vision for a liveable, successful, and complete beach community. With careful implementation and oversight of the plan's goals, Rehoboth Beach will become a community built not for cars, but for all people.

Wilmington 2003 Citywide Plan of Land Use



The structure of the comprehensive plan for the City of Wilmington differs from most other municipalities in Delaware due to the size of the city and the diversity of its areas and neighborhoods. Wilmington has a Citywide Plan of Land Use, which will be addressed here, but the City also produces a number of separate plans for defined neighborhoods that include more detailed plans and strategies.

Nonetheless, issues of transportation and land-use planning that affect the city as a whole are addressed in the Citywide Plan. The Wilmington plan begins by describing its citywide planning and development initiatives, one of which addresses transportation-related infrastructure through coordination among the City, WILMAPCO, and DelDOT. The city's transportation initiatives include neighborhood and downtown circulation plans to improve the pedestrian environment, improvements to bus service, and train station renovations (City of Wilmington 2003, p. 14).

Thoroughfare and Transportation Plan – This plan tends to focus on automobile accommodation, but improvements for bicyclists, pedestrians, and transit riders are also addressed in this section. Wilmington hosts and is planning an eventual section of the East Coast Greenway, which will be a long-distance, multimodal transportation facility encouraging active transportation. The City is also in the process of developing a citywide bike network plan that will focus on intermodal connections in order to provide multimodal transportation options throughout the city (p. 25). The transportation plan includes goals that emphasize the desire to provide equitable transportation access to all citizens of the Wilmington area. These goals include, “Provide transportation opportunity and choice” and

“Promote accessibility, mobility, and transportation alternatives” (p. 30). Wilmington’s transportation goals also address economic development, pointing out that transportation investments should enhance the economic attractiveness and competitiveness of the city as well as meeting the transportation needs of visitors in cars, on bicycles, or on foot (p. 31).

Vision – Wilmington’s Citywide Plan makes references to the respective visions included in the individual neighborhood development plans. Many of these visions focus on improvements to parks and open spaces that will help revitalize neighborhoods and provide a sense of unique identity (p. 33). The neighborhood plans also address the need for traffic calming and providing pedestrian connections from neighborhoods to specific destinations such as parks, the downtown, and the Riverfront areas. Additional improvements to enhance and revitalize neighborhoods include streetscaping improvements such as lighting, tree care, façade improvement, and landscaping (pp. 33-34).

Climate Change Initiative Section – The only explicit reference to “complete streets” in Wilmington’s plan occurs in the Climate Change Initiative section. This mention comes in the form of a strategy to expand transportation opportunities through collaboration. This section states, “The City may take into consideration participation in programs like the ‘Walkable Communities Initiative’ and ‘Complete Streets’ that promote multimodal transportation that identifies ways to increase bike and pedestrian traffic” (p. 46). While this statement does not necessarily communicate definite support for complete streets, this plan was written before the adoption of Delaware’s statewide policy, and many complete-streets principles are supported in the goals and initiatives that are addressed in other sections this plan.

As part of Wilmington’s climate-change initiative, the City has created an outreach program to educate citizens about climate change and what they can do to help (p. 42). This education campaign includes suggestions that residents decrease their “carbon footprint” by engaging in more walking, biking, and mass-transit use. The climate change initiative also includes strong support for streetscaping enhancements and tree planting along public rights-of-way. Some of the strategies introduced in this climate-change section include reviewing the city codes and regulation to better encourage green design and reintroducing a city car-sharing program to reduce the demand for car ownership among residents and employees (pp. 44-46).

Analysis – Wilmington’s Citywide Plan of Land Use presents a moderate amount of support for complete-streets principles. Since this document is only one piece of Wilmington’s comprehensive-development-plan package, it is difficult to gauge the amount of complete streets support present in the totality of the city’s planning documents. It will be interesting to see, however, if future planning documents and initiatives from Wilmington address and/or expand upon the statewide Complete Streets Policy.

2010 Town of Wyoming Comprehensive Plan

The Town of Wyoming Comprehensive Plan contains many goals and recommendations supportive of complete-streets principles and, like Rehoboth Beach’s document, also makes

direct reference to Delaware's Complete Streets Policy. Throughout the plan, the town's newly adopted Land Use and Development Code is referenced. As it relates to transportation, this new municipal code succeeded in implementing more strict sidewalk and connectivity requirements as well as regulations addressing open-space dedication and landscaping.

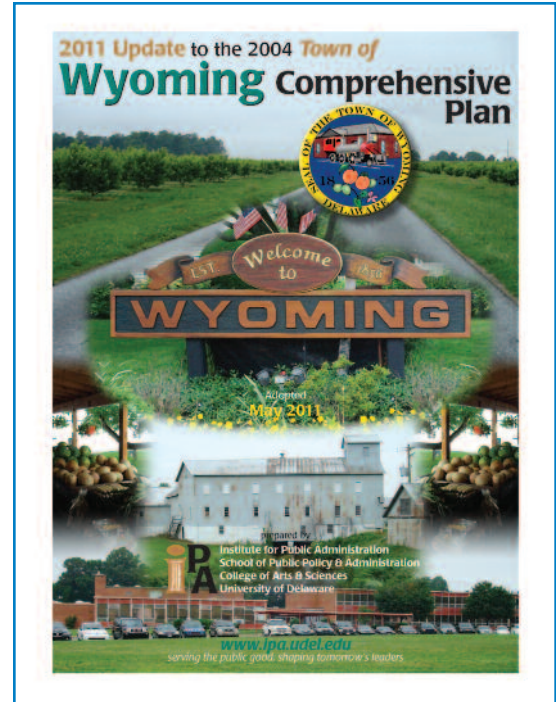
Vision – Complete streets and complete-communities concepts are mentioned and supported in a variety of sections throughout Wyoming's comprehensive plan. The plan begins by listing a number of overall goals developed through community participation. Several of these goals are related to complete streets and complete communities (pp. 10-11):

- *Preserve and encourage neighborhood commercial uses to serve the needs of the community without detracting from its architectural character.*
- *Require that any properties proposed for potential annexation provide pedestrian, auto, and bicycle connections to the adjacent transportation infrastructure and plan for and preserve similar linkages to neighboring parcels.*
- *Consider the creation of a "Waterfront District," in the event parcels bordering Wyoming Lake are annexed, to ensure adequate open space, a mix of uses, and public access to the shore.*
- *Provide safe and reliable circulation for all road users within town, including roads, sidewalks, and bike paths.*
- *Plan for and require street and sidewalk linkages between neighboring subdivisions.*
- *Work toward a network of interconnected open spaces, parks, and trails.*
- *Discourage the development of strip-commercial or isolated office/commercial parks.*

This set of goals clearly shows that Wyoming is poised to address the interconnected issues of land use, commercial and residential development, parks planning, and transportation infrastructure.

Transportation Section – Wyoming's comprehensive plan serves to reinforce and strengthen the principles in the town's code, as the Transportation section states:

This document's goals and regulations make parallel recommendations [to the Code] only to make sure such accomplishments are not lost in future land-use code updates. These standards, and the goals and recommendations put forth in this document, are very much



in keeping with the Complete Streets concept. The Town is aware of the State's Complete Streets policy (executive order), enacted late 2009, and has tailored its land use and development code and this plan in hopes of continuing to make strides in that direction (Town of Wyoming, 2010, p. 26).

In addition to supporting Delaware's Complete Streets Policy and updating the town's codes, the transportation section of Wyoming's plan addresses the current state of the town's transportation system and specific recommendations to improve it. As a result of a study for the University of Delaware's Healthy/Walkable Communities Initiative, it has been documented that the town has a decent amount of sidewalk infrastructure, desirable destinations, and connectivity. Thus, the plan recommends that this type of interconnected street-network pattern and sidewalk development be continued. This section also recommends that the town make efforts to increase non-motorized access to two of its most popular destinations, the Mill property and the orchard/farmers' market (p. 29). Additional recommendations in the transportation section include plans to retain rights-of-way that could eventually provide bicycle or pedestrian connections, collaboration with transportation agencies in order to improve bus service, improved bicycle and pedestrian facilities in certain locations, and requirements for developers to provide pedestrian and bicycle connections in subdivision plans (p. 30).

Land Use Section – Complete streets and complete-communities principles are also supported in other sections of Wyoming's plan. The Land Use section addresses the need to continue requiring development of open spaces and parklands as part of subdivisions, so that eventually an overall town-park system will be created (p. 38). This section also proposes exploring the possibility of a mixed-use district within the town in an area that could be developed as a waterfront area. This area, also discussed in the Economic Development section, is envisioned as a unique community gateway between the town and Dover that will include commercial and limited residential uses (p. 45).

Analysis – Throughout the comprehensive plan for the Town of Wyoming, complete streets and complete communities are supported through goals, recommendations, and existing policies. The fact that Wyoming's land-use and development codes are constructed in order to support the goals of the comprehensive plan bodes well for the actual implementation of the town's visions. Wyoming expresses the desire to support and emulate the state's Complete Streets Policy, and it appears that the town's planning and policy documents are already setting the stage for the coordinated development of a community with complete streets.

8-3. DelDOT Standards Provide Guidance for Local Government Complete-Streets Policies

In the state of Delaware, a large majority of roads that are built as part of residential and commercial subdivision developments will be dedicated to DelDOT. Any roads dedicated to DelDOT must conform to the agency's standards, and, thus, the established subdivision street standards are a very important part of the implementation of complete streets in new

developments. In instances where local governments maintain their own city streets or developments with private roads, the subdivision code for that municipality or county will be the primary source of street standards and guidelines that influence complete streets development. Overall, the number of streets and roads built for new developments that do not conform to DelDOT's standards and regulations will be very low. The subdivision and zoning codes of individual municipalities and counties is still important, however, as there are factors outside of the actual roadway environment that affect the accessibility and comfort level of an area to pedestrians, bicyclists, and transit users. The following sections will address each of these areas individually—DelDOT subdivision street standards, local government street standards found in subdivision codes, and additional important code elements found in zoning codes.

8-3-1. DelDOT Standards and Regulations for Subdivision Streets

DelDOT's document, *Standards and Regulations for Subdivision Streets and State Highway Access*, provides guidance and regulations that are highly supportive of complete streets principles and the state's Complete Streets Policy. This set of regulations applies to new subdivision and land development, changed or expanded subdivision and land development, any new access onto a state-maintained road, and modifications to an existing access point (DelDOT 2009, p.1-1).



As previously noted, DelDOT is currently responsible for the maintenance of over 90 percent of the roads in the state of Delaware. Thus, the majority of new road construction and modifications to existing roads in the state are subject to the regulations set forth by DelDOT. DelDOT's subdivision street standards set regulations that address street connectivity, block length, sidewalk placement and width requirements, bicycle accommodation, street width, bus-stop accommodations, and bicycle and pedestrian connections. It is important to look at these regulations in light of how well they do or do not force developers to accommodate all modes of travel.

DelDOT's regulations are fairly stringent on the requirements to accommodate bicycle and pedestrian travel within subdivision developments.

Bicycle Accommodations

Section 5.3 of DelDOT regulations states that bicycles shall be accommodated on all subdivision and higher order roads, as follows:

Suitable accommodations for bicyclists shall be required for all subdivision and commercial site plans...All new roadways, except those where bicyclists shall be legally prohibited, should be designed and constructed to encourage use of bicycles as a form of transportation (DelDOT, 2009).

Pedestrian Accommodations

DelDOT's regulations also address pedestrian accommodations by stating that sidewalks shall be installed along all arterial, collector, and local roadway frontages by the owner or applicant of the development (2009, p. 3-8). Additionally, the regulations state that developers shall install marked crosswalks at all signalized intersections, key areas where a sidewalk intersects an arterial or collector street, or between important destinations such as parks, playgrounds, or schools. Language such as this ensures that developers will accommodate bicyclists and pedestrians in their street design and construction.

There is no specific exception stated in DelDOT's regulations that would relieve developers of the responsibility to accommodate bicycles, as the standards for bicycle accommodation are contained within AASHTO's Design Guidelines for Bicycles. Regarding sidewalk installation, the DelDOT regulations require sidewalks on one or both sides of the street based on residential density and connection to transit; however, developments in rural areas are not required to install sidewalks at all (2009, p. 3-8). However, in places where DelDOT does not require sidewalk installation, the regulations stipulate that the developer/owner must provide permanent sidewalk easements to DelDOT for the possibility of future sidewalk installation. This set of sidewalk regulations effectively ensures that the majority of residential developments will be required to install sidewalks on at least one side of the road, and even in places that are exempt from this requirement, sufficient right-of-way must be set aside for future sidewalk accommodation.

Transit Accommodations

DelDOT's subdivision street regulations also set requirements for transit accommodation as well as pedestrian access to transit stops. For industrial, office, institutional, or retail-use developments larger than 150,000 square feet, DelDOT requires that the developer provide a transit stop on or adjacent to the site or a pedestrian connection to an existing transit stop in the vicinity. Furthermore, if the development is deemed a good candidate for transit service, DelDOT and the Delaware Transit Corporation (DTC) have the right to require certain improvements to the site to accommodate transit service, including passenger shelters, landing pads, and walkways (2009, p. 3-11). In residential developments involving more than 50 dwelling units, the developer is required to designate and reserve locations for transit and school bus access as directed by DelDOT and the DTC. Additionally, DelDOT suggests more intense transit accommodation within mixed-use centers and requires that transit easements be provided throughout the center as stipulated by DTC.

8-3-2. Site Street Plans

DelDOT's subdivision street regulations address additional complete-streets concepts through elements that are required within a site street plan (SSP). The objectives that must be addressed within the SSP include street connectivity that encourages bicycle and pedestrian travel, provision of bicycle and pedestrian access ways where full street connections are not feasible, narrow street design alternatives that include sidewalks with wide buffer strips, and limited use of cul-de-sac and closed street systems (2009, p. 3-5). Some elements of the SSP

include more strict requirements than others. For example, new sidewalks must be at least five feet wide, but the provision of a buffer between the sidewalk and curb is only a recommended consideration. In terms of connectivity, which is arguably a vague concept, DelDOT's regulations do set maximum street-spacing requirements as well as minimum "connectivity ratio" requirements (2009, p. 3-13). The regulations should serve to provide an adequate number of connections within and between developments for motor vehicles, but, more importantly, they ensure that pedestrians and bicyclists have adequate street connections with which to choose the shortest routes available.

8-4. Delaware Local Government Policies and Complete Streets

8-4-1. Policies as a Key Local Government Complete Streets–Implementation Practice

The American Planning Association's "Best Policy and Implementation Practices" for complete streets identifies five key points of intervention where complete-streets principles must be enacted. These areas include (McCann and Rynne, 2009, p.35):

- Long-range community visioning and goal-setting
- Plan-making
- Standards, policies, and incentives
- Development work
- Public investment

Zoning and subdivision codes fall into the category of "standards, policies, and incentives," and the APA recommends that these tools should be used to implement the goals and ideas put forward in plans (p. 39). One example of such an implementation practice would be to amend the subdivision code to require private developers to provide sidewalks and bikeways in accordance with the town's pedestrian and bikeway plan. In this way, the municipality's code can ensure that well-planned infrastructure is built in all future developments. Another code requirement that would help to implement complete streets would be the inclusion of bicycle and pedestrian facilities in the "adequate public facilities" section of the land-use code. This type of language would position bicycle and pedestrian infrastructure and support as public services that are just as important as roads are for automobiles and water and sewer are for buildings.

8-4-2. Delaware Local Government Subdivision Codes and Complete Streets

The subdivision regulation portion of municipal or county codes sets the baseline framework of requirements for any subdivision and consequent development of land. These subdivision regulations should spell out the basic requirements for street layout and road design standards for commercial or residential major and minor subdivisions. While the zoning

code will provide more detailed information regarding transportation enhancements and community-design patterns for each zone or district, the subdivision code should apply to every development throughout the county or municipality. For this reason the subdivision regulations are an important venue for ensuring the implementation of complete-streets principles throughout the entire affected jurisdiction. The subdivision regulations should, at a minimum, require that subdivision applicants must consider all modes in the design and layout of streets within their development and make it difficult to gain approval without providing sufficient multimodal facilities. Strict requirements will be especially important in areas with municipal and/or private streets that may not be subject to DelDOT's standards. To determine the extent to which Delaware local governments are establishing complete-streets policies within subdivision codes, IPA conducted an analysis of existing subdivision regulations for three municipalities—**City of Dover**, **City of Lewes**, and **Town of Ocean View**—and **New Castle County**. An in-depth evaluation for each jurisdiction is provided below and summarized in a Complete Streets Subdivision Evaluation Matrix (Appendix J).

City of Dover

Pedestrian Facilities – The City of Dover's subdivision regulations are relatively strict in their treatment of pedestrian facilities but do not mention accommodation of bicycles and transit. Regarding general street layout, Article VI of the Dover Code states:

The layout of proposed streets shall furthermore be arranged in a manner acceptable to the commission so that vehicle safety, pedestrian convenience, emergency vehicle access, and ease of traffic flow for private vehicles and public service delivery vehicles is accomplished (Dover, Delaware, Municipal Code art. VI, § A-2, 2010).

Thus, the City of Dover requires that subdivision street-layout proposals must accommodate various modes of travel, including pedestrian circulation and emergency vehicle access. The city's planning commission must also approve any street-layout proposals, perhaps further ensuring that the intentions of the subdivision code are enacted. The municipal code also mentions that minor streets should be designed so as to discourage through-traffic (Art. VI, § A-2). This can often mean the implementation of shorter block sizes and



narrower road widths, which are generally more safe and convenient for pedestrians and bicyclists. The code also discourages the use of dead-end streets and cul-de-sacs, and this prohibition can have a positive impact on street layout for non-motorized transportation.

Sidewalks – The City of Dover builds and maintains some of its own city sidewalks, and, thus, the code provides width and location regulations for these city sidewalks. The code

imposes specific width requirements for sidewalks located along specified roadways in the city (such as “no less than 6 feet wide on State Street”), but city sidewalks located anywhere other than the specified locations must be at least five feet wide. Regarding the location of sidewalks, Dover’s Code provides guidelines about the distance between the sidewalk and the curb line (a buffer area) depending on the distance available between the building line and the curb line (art. IV, § 98-131).

In terms of where sidewalk installation may or may not be required, Dover’s subdivision code is not extremely clear. It states that, in major subdivisions, sidewalks are a required improvement along with street lighting and shade trees. This section of the code does not specify what sidewalk widths are required in subdivisions, nor does it say whether sidewalks are required on one or both sides of the road (art. VI, § G-1). In many cases, though, the subdivision streets in major residential subdivisions will likely be DelDOT-dedicated roads, meaning that the sidewalk requirements in these locations will default to DelDOT’s standards.

Connectivity – With regard to street connectivity, Dover’s subdivision code is less stringent than the connectivity requirements set forth by DelDOT. The code states:

The creation of interconnected streets will be encouraged wherever the commission finds that such layout will not interfere with traffic convenience and safety. The commission shall determine the number of connections of streets in the proposed subdivision with existing streets (art. VI, § A-8).

It is interesting to note that Dover’s subdivision code does not mention interconnected streets in relation to bicycle and pedestrian circulation. Instead, this part of the code seems more focused on the convenience and safety of motorized traffic. Additionally, interconnected streets are merely “encouraged,” rather than required, giving this element of the subdivision street requirements relatively little importance.

While the street interconnectivity requirements are not specifically oriented toward non-motorized-transportation options, the Code’s block-length requirements do specifically address pedestrian accommodation. City of Dover block lengths cannot exceed 1,200 feet, or about one quarter of a mile. Additionally, the code states that block length, width, and shape should be designed with consideration for the “control, safety and convenience of pedestrians and vehicular traffic” (art. VI, § D-1 through D-3). Furthermore, this section includes a provision whereby the planning commission can require the installation of pedestrian walkways, separate from the roadway, between important pedestrian destinations such as schools, playgrounds, shopping centers, and other community facilities.

Analysis – In general, the City of Dover’s subdivision code seems to provide a medium amount of support for complete-streets principles. The accommodation of pedestrian travel is mentioned in a few locations, but bicycle and transit considerations are completely absent from the subdivision code. In order to be more supportive of complete-streets principles, Dover’s subdivision code should be revised to include the consideration and accommodation of all modes, ages, and abilities in its transportation system. Especially in locations where the

roadways and sidewalks will be under the purview of the city rather than DelDOT, Dover's code will need to be more specific in what it requires and what types of development are envisioned.

City of Lewes

Pedestrian Facilities – The City of Lewes maintains responsibility for the roads and sidewalks within its boundaries, and, therefore, the city's subdivision code addresses standards and regulations for streets and sidewalks not under the jurisdiction of DelDOT. The City of Lewes generally requires sidewalks on both sides of the street, but specific sidewalk requirements are at the discretion of the City Planning Commission (Lewes, Delaware, Municipal Code Chap. 170, Art. IV, § 21, 2010). The code further stipulates that sidewalks and curb ramps are to be constructed in accordance with applicable DelDOT manuals and the ADA handbook. The code additionally grants the Planning Commission the right to determine where crosswalks (including midblock locations) should be placed in order to ensure pedestrian safety and access to important destinations (chap. 183, art. IX, § 28.9). Thus, it appears that the Lewes Planning Commission has the power to require sidewalks and crosswalks in any locations that it deems necessary or desirable.



Subdivision Street Standards – The City of Lewes' general policy toward subdivision streets focuses on the safe and convenient accommodation of vehicular and pedestrian traffic and also stresses that these modes should be functionally separated to the extent possible. The general street standards also go on to address the overall purpose of the city's transportation networks:

Within the context of overall community development, the internal circulation should promote and encourage the increased use of pedestrian and bicycle movement among residential, local shopping, schools and other areas, through the employment of connecting open space, bicycle/pedestrian ways and other design techniques and devices. (chap. 170, art. IV, § 21, 2010).

This statement showcases Lewes's desire to reduce the number of unnecessary internal automobile trips in the city by facilitating convenient non-motorized transportation.

Lewes' code also states that residential streets should be laid out in a way that discourages their use as through-streets. The code additionally discourages the development of cul-de-sacs, saying that cul-de-sacs will not be permitted wherever a through-street would be possible. Like Dover, the Lewes code also limits block lengths to 1,200 feet or about one-quarter of a mile (chap. 170, art. III, § 18).

Analysis – All of these provisions should influence street development to be fairly connected within and between developments. However, interconnectivity is not explicitly mentioned in the Lewes code even though, as DelDOT’s regulations show, street interconnectivity is an important aspect for efficient circulation of pedestrians and bicyclists. The Lewes code also does not give sufficient consideration to the accommodation of transit riders and special transportation populations. Updates to the city’s code should focus on including all road users in order to better support complete-streets development.

Town of Ocean View

Pedestrian Accommodation – The Town of Ocean View’s subdivision code is perhaps the most lacking in complete-streets principles of the five codes reviewed. One of the only mentions of pedestrian accommodation in Ocean View’s code occurs in the introduction to the subdivision code section, which enumerates several general intentions of the regulations:

To provide the most beneficial relationship between land uses and buildings and the circulation of traffic throughout the municipality with particular attention paid to the avoidance of congestion in the streets and highways, and the pedestrian traffic movements appropriate to the various uses of land and buildings, and to provide for the proper location and width of streets, and building lines (Ocean View, Delaware, Municipal Code, chap. 190, § G, 2010).

This general land-use and transportation statement makes only an oblique reference to pedestrian accommodation while somewhat implying that pedestrians only need to be considered in certain locations. Furthermore, the “street improvements” and “street design standards” sections of the subdivision code make no mention at all of pedestrian facilities. These sections also include language that would make it relatively easy for developers to build street layouts that include cul-de-sacs and disconnected street patterns (chap. 190, art. III, § 20).



Sidewalks – Ocean View’s code does include a small section addressing sidewalks. It states that sidewalks, “when provided by the subdivider or deemed necessary by the Zoning Commission,” should be five feet wide in residential subdivisions, and the width should be from curb to property line in commercial and industrial subdivisions (chap. 190, art. III, § 25). This language suggests that the town has no specific rules regarding where sidewalk installation is required, but the Zoning Commission has the responsibility to decide where sidewalks are necessary.

Analysis – While Ocean View’s subdivision code gives little to no attention to pedestrian,

bicycle, and transit accommodation, it appears that the town's street standards defer to DelDOT's regulations. The Ocean View "street improvements" section states, "all streets shall be constructed to meet the standards and specifications of the State of Delaware Division of Highways and the Town of Ocean View" (chap. 190, art. III, § 20-O). This statement does not make it clear that entire subdivision street plans, including connectivity and transit accommodations, would be subject to DelDOT standards. If the streets themselves will be dedicated to the Town of Ocean View rather than DelDOT, then the street plans may only be subject to DelDOT street construction standards but not pedestrian, bicycle, and transit standards. Ocean View's code should make its relationship to DelDOT standards clearer and include more language in the code itself that references all possible modes of transportation throughout the town.

New Castle County

The New Castle County (NCCo) Unified Development Code (UDC), a chapter within the Code of New Castle County, combines the subdivision code, zoning codes, and other regulations for the entire county into one unified document. NCCo's UDC includes many elements that are supportive of complete-streets principles.

Subdivision Design–Review Process –

Division 40, Section 20 of NCCo's code is dedicated to guiding the layout and design of subdivisions and land developments. The overall intent of this section includes the insurance that "the street, road, and pedestrian system is created in a manner that is safe and provides the best overall layout for the community" (New Castle County, Delaware, Unified Development Code, Division 40, § 20.000, 2010). The UDC's general subdivision-design-review process calls for street layout and circulation patterns that not only provide for the safe movement of pedestrians and vehicles but also encourage pedestrian and bicycle travel. The street system is supposed to prioritize pedestrian and bicycle movement between important destinations through internal circulation systems that discourage reliance on automobile travel (Division 40, § 20.110.E).

The only specific block-size and layout provisions provided in NCCo's general subdivision code are related to the Traditional Neighborhood Districts, one of the county's urban-type zoning districts. In these districts, the code states that grid-style development is encouraged with open spaces integrated into the block design (Division 40, § 20.210.D). With regard to open space, NCCo's code requires the provision of community area open space in all residential developments and further stipulates that these open spaces should be connected to other area parks and greenways as much as possible. The code encourages the provision of pedestrian walkways and connections to these community recreation areas (Division 40, § 20.225).



Multimodal Facilities – In reference to street and sidewalk requirements, NCCo’s UDC generally defers to DelDOT’s requirements (Division 40, § 20.230). Because the majority of streets and roads in subdivisions that fall under the purview of New Castle County will be dedicated to DelDOT, these plans must conform to the street connectivity, sidewalk, bicycle, and transit accommodation regulations addressed above in the DelDOT section. The code states that private streets are only allowed in a small number of zoning districts, and the code does not lay out any particular requirements for these private streets (Division 40, § 20.230.7). The New Castle County UDC does not go much beyond DelDOT subdivision street regulations, but it does include a section that addresses school-bus access in residential developments. This section states that, in addition to bus vehicular access, “a system of safe, internal pedestrian pathways connecting homes to the designated school bus route is recommended to minimize the intrusion of the bus into the neighborhoods” (Division 40, § 21.131).

The NCCo UDC does go beyond the requirements set forth by DelDOT in reference to sidewalks. The county code states, “Subdivision and land developments shall contain sidewalks along both sides of the interior streets and accessways. Such interior sidewalks shall connect to existing or proposed sidewalks fronting their sites” (Division 40, § 21.162). The use of the word shall in this context is important in that it emphasizes the absolute requirement for installation of sidewalks. Exceptions to this requirement are allowed in locations where the sidewalks would result in adverse environmental impacts or in developments where lots are one acre or larger and also have low traffic volumes.

However, similar to the language included in Dover’s code, the NCCo code reserves the right of the county planning department to require sidewalks anywhere else where they would be necessary to facilitate access to schools and other important destinations (Division 40, § 21.162.3). The planning department also reserves the right to require additional bicycle and pedestrian pathways (other than sidewalks) where enhanced non-motorized access is deemed appropriate. Like the DelDOT subdivision requirements, NCCo requires sidewalks to be at least five feet wide in most locations, but the UDC also requires a five-foot-wide planting or landscape buffer strip between the sidewalk and road on all arterial and collector streets (Division 40, § 21.163.1). This lateral separation from motorized traffic is very important for pedestrian comfort and safety on those roadways with higher speeds and traffic volumes.

NCCo’s UDC also provides parking lot–design guidelines that affect pedestrians and bicyclists. Parking lot designs must facilitate safe and convenient pedestrian circulation to all parking spaces. The code also specifies that bicycle parking must be provided in parking facilities with ten or more spaces (at a rate of about one bicycle space per ten vehicle spaces). These bicycle parking facilities must be highly visible from the roadway or building entrance and be safely separated from vehicle traffic that may damage bicycles (Division 40, § 22.611). The UDC also provides guidance regarding the location of parking lot entrances and exits, which are specific to each transect zone (Division 40, § 25.137). In general, however, it is recommended that parking in most transects be accessed from rear alleys or lanes when possible, which would cause less disruption to pedestrian movement than parking entrances that interrupt the main roadway.

Analysis – Overall, the NCCo subdivision code lays a good foundation for the implementation of complete streets in land-development projects. The vast majority of roads and streets built under the regulations of the code will be DelDOT-dedicated, since by definition the jurisdiction of the county does not include any incorporated municipalities that may maintain their own streets. Nonetheless, the NCCo UDC makes it clear that, beyond the specific regulations set forth by DelDOT, developments within New Castle County should be designed and built with full consideration of the safety and convenience of bicycle and pedestrian circulation. The complete streets categories that are not fully addressed by NCCo’s UDC are accommodations of transit and special transportation populations. Updates to New Castle County’s subdivision code should ideally include language about the consideration of all users in land developments, including transit riders, the elderly, the disabled, and children.

8-4-3. Delaware Local Government Zoning Codes and Complete Streets

Local government zoning codes contribute to the support of complete streets principles by regulating both the character and intensity of land use. Zoning districts do not usually directly address the form of the transportation system within the district, but they do give specific guidance regarding building height, bulk, density, allowable uses, and parking requirements. The U.S. Environmental Protection Agency (EPA) published a report that suggests both major and minor modifications that can be made to zoning codes in order to support “smart growth” (EPA, 2009). While smart growth is arguably a broader concept than complete streets, a number of the recommendations from this report are applicable to the support of complete streets. These EPA recommendations provide a good framework for examining the Delaware example codes in this report. The relevant recommendations from the EPA report include (U.S. EPA, 2009):

- Allow or require mixed-use zones
- Use urban dimensions in urban places
- Fix parking requirements
- Increase density and intensity in centers
- Enact standards to foster walkable places

Zoning code provisions for the four Delaware local governments examined in this report—City of Dover, City of Lewes, Town of Ocean View, and New Castle County—were assessed to determine the extent to which each smart growth aspect is present and supports complete-streets principles. The results of the assessment are detailed below.

Allow or Require Mixed-Use Zones

As the EPA report explains, historical separation of land uses has resulted in long distances between residences, jobs, and activity centers that force automobile dependency. Allowing areas of mixed uses in a municipality or county can help drive development in a more

sustainable and pedestrian-friendly way. Mixed uses can be achieved through horizontal mixes (residential and commercial allowed in the same areas) as well as vertical mixes (residential and commercial allowed in the same building structure). As a modest adjustment, desired mixed-use areas can be identified in comprehensive plans or other official plans; for a more major adjustment, zoning codes can define districts that are mixed use “by-right” that do not require any special re-zoning or extra review actions (EPA 2009, p. 5). The zoning codes of all four jurisdictions allow mix of uses in various ways and to various extents.

Town of Ocean View – allows minor instances of mixed uses, though the zoning code’s support for this type of development is relatively weak. The code encourages a mix of residential and commercial uses within its Residential Planned Community District (Ocean View, Delaware, Municipal Code, Chap. 222, Art. VIII, § 45-A-1 (2010)). Ocean View also allows a mix of commercial and residential uses within the General Business District, though this is only allowed as a conditional use (chap. 222, art. V, § 16-E-1).

City of Lewes – strongly encourages mixed uses throughout its zoning code and clearly communicates that development in the city should allow residents to walk or bicycle to commercial and institutional services to meet their daily needs. Lewes’ zoning code includes two districts that explicitly allow and encourage a mix of commercial and residential uses: the Commercial Core/Business District and the Commercial/Residential District (Lewes, Delaware, Municipal Code, chap. 197, art. V, § 20 and 22, 2010).

City of Dover – its zoning code is notably supportive of mixed uses. Mixes of residential, commercial, and institutional uses are allowed in the following zoning districts: General Residence and Office Zone; Central Commercial Zone (including mixed uses in single structures); Limited Central Commercial Zone; and the Traditional Neighborhood Design Zone (Dover, Delaware, Municipal Code Appendix B, § 9, 13, 14, and 28, 2010). In the General Residence/Office and Traditional Neighborhood Design Zones specifically, the intent of the mixed uses is to provide convenient access to services within a mostly residential area. In the commercial zones, limited residential uses are allowed in the upper floors of commercial developments. In all of these cases, the mix of uses is allowed by-right, which allows for easy approval of mixed-use developments within Dover.

New Castle County – zoning districts within NCCo’s UDC are generally single-use oriented, but a mixture of uses is explicitly allowed in the Traditional Neighborhood and Commercial Regional districts (New Castle County, Delaware, County Code, Table 40.04.110A). However, the UDC allows for special design standards and criteria within designated hamlet and village areas. These usually occur in existing older communities, and their designation within the zoning code is intended to encourage the continued viability of these mixed-use and distinctive places (Division 40, § 25.100).

Use Urban Dimensions and Fix Parking Requirements

The EPA document also includes two zoning-code fixes directly related to dimensional standards: “use urban dimensions in urban places” and “fix parking requirements” (2009, p. 1). Using urban dimensions means writing zoning-code dimensions—such as lot sizes, floor

area ratios, and setbacks—that result in more compact development and less sprawling land-use patterns (EPA 2009, p. 7). Fixing parking requirements usually requires reforming parking supply minimums and allowing for the possibility of shared parking credits, so that the municipality or county does not end up with an over-supply of surface parking that disperses land use and creates barriers for pedestrians and bicyclists (EPA 2009, pp. 14-15). By properly regulating lot and building dimensions as well as parking requirements, jurisdictions can develop more compact and vibrant areas that are conducive to walking, biking, and transit.

City of Lewes – uses dimensional standards to achieve a pedestrian-friendly environment by requiring shallow setbacks in the Old Town Residential District (chap. 197, art. V, § 16). Lewes also allows for joint use of parking facilities in situations where businesses or institutions have differing peak demand times, such as an office and a movie theater (chap. 197, art. V, § 33).

City of Dover – the municipality’s zoning code uses building dimensions and parking requirements to promote infill development in the city’s downtown/historical areas. In certain locations, the zone bulk and parking regulations can be waived in order to accommodate appropriate development (Appendix B, § 9-14-b-vi). Parking location is additionally regulated in Dover’s Corridor Overlay Zone so that parking lots cannot be located between the right-of-way line and the building (Appendix B § 27-63-a). This restriction allows for more pedestrian-oriented development with less vehicle conflicts. The Traditional Neighborhood Design (TND) zone in Dover allows for the greatest flexibility in bulk and parking requirements because of its intent as a vibrant and pedestrian-oriented district. In this zone, the developer is charged with creating district bulk and parking requirements that fulfill the zone’s intent, and the regulations must be approved by the Planning Commission (Appendix B § 28-72). For neighborhood commercial development within the TND zone, off-street parking must be shared between adjacent uses, which will minimize the amount of surface parking in the district.

New Castle County – within its UDC, the Traditional Neighborhood District (TND) is intended to achieve more urban dimensions through minimum setback lines and reduced parking requirements (Division 40, § 02.211). Additionally, the Commercial, Neighborhood District employs dimensional requirements that avoid strip-commercial and highway-oriented development (Division 40, § 02.231). The location of parking lots and parking entrances are governed in the UDC according to transect zones (ranging from rural to urban), and these regulations encourage parking located and accessed to the rear or sides of buildings in the more urban transect zones (Division 40, § 25.137). The UDC generally uses the Smart Code approach to regulate bulk and parking standards according to transect zones, which essentially results in “urban dimensions” in areas that are intended for urban development (Table 14).

Increase Density and Intensity in Centers

The EPA report stresses that density can take many forms and should be implemented in a context-sensitive manner. Nonetheless, jurisdictions should work to identify areas, especially

activity centers, where more dense development would be appropriate and desirable (2009, p. 18). The designation of increased density districts should be carried out in comprehensive plans as well as codes, and the implementation of this density can be achieved by setting minimum instead of maximum densities in zoning codes as well as reforming district dimensional requirements, as discussed in the previous section (2009, p. 20).

The majority of areas in the four jurisdictions examined in this report are not intended to accommodate high-density, urban-type development. Nonetheless, relatively higher densities are encouraged in certain locations in some of the zoning codes examined. There are several examples where higher densities are encouraged in Delaware jurisdictions to achieve a sense of place, encourage multimodal transportation, and promote mixed-use development.

City of Lewes – within the Old Town Residential District, higher densities are allowed for and encouraged in order to have “compact, urban, residential areas with convenient commercial and public services available to many residents by walking or bicycling” (chap. 197, art. V, § 16).

City of Dover – allows increased density in the Planned Neighborhood Design Option through “density bonuses” for developers who provide superior improvements to the development (Appendix B, § 24-7). Higher residential densities are also allowed in the Traditional Neighborhood Design Zone as approved by Dover’s Planning Commission. Part of the intent of this zone is to allow residents to live closer to where they work, and higher development density is a key factor in achieving this goal (Appendix B, § 28-1).

New Castle County – allows higher densities in the Suburban Transition (ST) and Traditional Neighborhood (TN) Districts as well as designated Hamlets and Villages (Table 40.04.110). High intensity of land use is also encouraged in the Business Park (BP), Regional Office (OR) and Regional Commercial (CR) districts in New Castle County (Division 40, § 02.224-226).

Enact Standards to Foster Walkable Places

Many of the regulatory changes needed to foster more walkability provisions occur in jurisdictional subdivision regulations as well as comprehensive or neighborhood development plans. However, EPA’s report suggests that one way to create more walkable places with zoning codes is to designate one or more pedestrian districts or zoning overlays in which pedestrian comfort and safety are primary concerns (2009, p. 28).

New Castle County and the City of Dover – Both jurisdictions have taken steps in their zoning codes to designate pedestrian-priority areas. The “Traditional Neighborhood” districts in New Castle County and Dover are both intended to be pedestrian-friendly and encourage pedestrian activity (New Castle County Division 40, § 02.11 and Dover Appendix B, § 28). Additionally, areas designated as Hamlets and Villages in New Castle County are designed around “pedestrian sheds” and encourage compact, walkable neighborhoods oriented around the pedestrian mode (Division 40, § 25.100).

City of Lewes – Its Old Town Residential District is especially oriented toward accommodating

and promoting pedestrian activity (chap. 197, art. V, § 16). While none of the zoning districts in any of these jurisdictions employ a deliberate “pedestrian zone” naming scheme, there are clearly efforts underway to create zones and districts that prioritize the pedestrian.



photo courtesy of Johnson, Mirmiran & Thompson

8-4-4. Conclusion

This initial exploration of a sample of Delaware’s local government codes shows that regulatory support for complete-streets principles in Delaware is lacking. While DelDOT has a Complete Streets Policy and accompanying regulations that will shape the future development of more complete streets in Delaware, local government codes should strengthen multimodal language and tighten regulations in order to support the state policy. As the American Planning Association points out, “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” (McCann and Rynne, 2009, p. 35). DelDOT should not be alone in carrying the burden of implementing complete streets across the state. Accompanying this document is an IPA Complete Streets Subdivision Code Evaluation Matrix that represents regulatory responsibility (in subdivision codes) for complete-streets elements in the jurisdictions examined in this report (Appendix J). As the matrix illustrates, much of the responsibility falls on DelDOT only and is not supported by the municipality or county. Moving forward, the complete-streets elements supported by DelDOT, as well as the additional elements represented in this matrix, should be integrated into the subdivision and zoning codes (or unified development code) of every jurisdiction in the state of Delaware.

9



**How Can Delaware
Local Governments
Learn More About**

Complete Streets

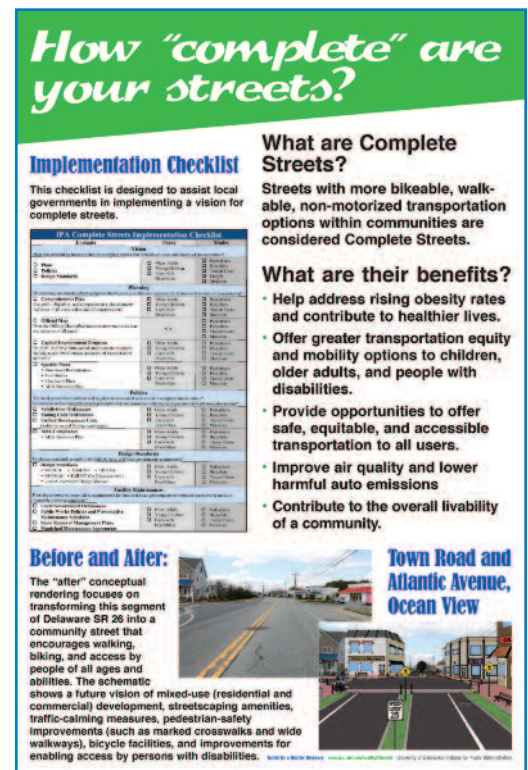
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9-1. IPA's Professional Development and Training for Local Governments

To meet the needs of local governments, the University of Delaware's Institute for Public Administration (IPA) offers several training programs for Delaware local government public officials (www.ipa.udel.edu/localgovt/training). On October 22, 2010, the 22nd Annual Delaware Institute for Local Government Leaders focused on "Building Healthy, Sustainable & Connected Communities in Delaware." Topics included:

- Economic Benefits of Walkability and IPA's Healthy-Communities Initiative (IPA)
- Toolkit for a Healthy Delaware (IPA)
- Walkability and Comprehensive Plan Assessment Tools (IPA)
- Implementing Complete Streets Policy at the Local Government Level (DelDOT)
- Showcasing Delaware's Healthy Communities: Breakthrough Strategies in Newark, Lewes, Dover, and Milford (City of Newark, Village of Five Points, City of Dover, and City of Milford)
- Transportation Project Planning: Technical Assistance Available to Delaware Municipalities (Delaware Center for Transportation's T² Center)

The Delaware Planning Education Program is a voluntary certificate program comprising an organized series of educational courses designed to meet the responsibilities of municipalities as partners in planning Delaware's future. The program is offered in partnership with the Office of State Planning Coordination and the Delaware Chapter of the American Planning Association. For example, several of the training programs (see www.ipa.udel.edu/localgovt/training/planning-ed_topics.html) provide local government officials with a basic understanding of the legal context of planning in Delaware, the comprehensive-planning process, community design, and mobility-friendly design. A session on "Planning Complete Streets in Delaware" (Planning 209) was offered on June 9, 2011, at the University of Delaware Paradee Center in Dover. Training on complete-streets concepts was provided by IPA in collaboration with Nemours Health and Prevention Services, DelDOT, and the Delaware Center for Transportation's T² Center (see Appendix K).

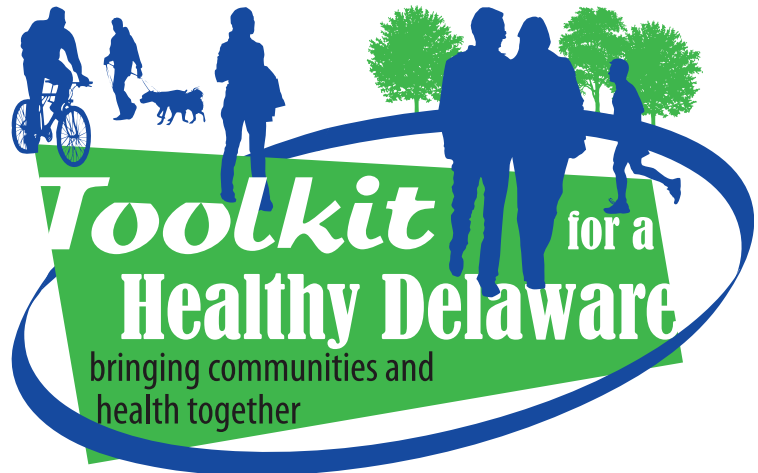


9-2. IPA's Toolkit for a Healthy Delaware

In June 2010, IPA launched the website Toolkit for a Healthy Delaware: Bringing Communities and Health Together (www.ipa.udel.edu/healthyDEtoolkit). The online healthy-

communities toolkit was created with Delaware local governments in mind. The toolkit is based on IPA's *Healthy Communities: A Resource Guide for Delaware Municipalities*, originally published both in hard copy and as an online document, and is intended to help local government officials foster a culture of wellness within their communities.

The toolkit provides Delaware local governments with easy access to information on improving the built environment, enhancing community design, and developing public policies and plans to support active-living initiatives. Several web-based assessment tools are available to help local governments evaluate community walkability, ensure that a community's comprehensive plan supports livability, and use health-impact assessment as a framework to ensure that planning and policy decisions favorably impact public health.



A “Complete Streets” section (www.ipa.udel.edu/healthyDEtoolkit/completestreets) was added to the Toolkit for a Healthy Delaware in July 2011. This section provides information, policy briefs, summaries of presentations, and links to other resources on:

- **Benefits of Complete Streets**—including transportation equity, safer streets, improved health (featuring a policy brief and presentation by Nemours Health and Prevention Services), greener environment, and community livability
- **State of Delaware Complete Streets Policy**—summarizing and providing links to Governor Markell’s Executive Order and DelDOT’s Complete Streets Policy
- **Local Government Implementation Strategies**—including a downloadable IPA Complete Streets Implementation Checklist and an overview of how local governments may use plans, policies, design standards, and facilities-maintenance practices to implement a vision for complete streets
- **Technical and Funding Assistance**—highlighting resources offered by the Delaware Center for Transportation’s T² Center, including its presentation on “Americans with Disabilities Act: Transition Plans and Complete Streets,” as well as funding opportunities under the Transportation Enhancement Program.
- **Complete Streets Before-and-After Visualizations**—showcasing ten locations in Delaware that were selected for developing initial visualizations (conceptual renderings) of complete-streets improvements using SketchUp, a 3D-modeling program marketed by Google. The visualizations are the focus of the next section of this document.

9-3. Complete Streets Section of Toolkit for a Healthy Delaware


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Complete Streets

After World War II, many communities were designed with an orientation toward automobile travel rather than pedestrian accessibility. As a result, many communities lack sidewalks, safe crossings, bike lanes, and transit amenities. Car-dominated communities have become burdened with high-speed traffic, congestion, air pollution, and less-active lifestyles.



What are Complete Streets?

At the national level, a "complete streets" movement is underway to bring greater equality to multiple forms of—multi-modal—transportation during the process of designing and engineering roadways. Under the Complete Streets initiative, transportation agencies are striving to design streets and roadways to safely accommodate travelers of all ages and abilities—automobile drivers, pedestrians, bicyclists, and public transit users. The National Complete Streets Coalition is encouraging state and local governments to adopt and implement comprehensive complete streets policies that incorporate ten essential elements.



Why are Complete Streets Important?

Complete streets offer a number of community benefits. Communities with more bikeable, walkable, and non-motorized transportation options can help address rising obesity rates and contribute to healthier lifestyles. Complete streets communities offer greater transportation equity and mobility options to special-needs populations, including children, older adults, and people with disabilities.

Ultimately, complete streets offer a more balanced transportation system, one that ensures that roads are constructed and planned to serve all users.

For more information on the benefits of complete streets, view the [National Complete Streets Coalition website](#) and [download its fact sheets](#).

- Getting Started
- Planning
- Active Communities
- Environments
- Assessment Tools
- Health-Impact Assessment (HIA)
- Complete Streets
 - Introduction
 - Benefits of Complete Streets
 - Delaware Complete Streets Policy
 - Local Gov't Implementation Strategies
 - Implementation Checklist (PDF)
 - Plans
 - Policies
 - Design Standards
 - Facilities Maintenance
 - Technical and Funding Assistance
 - Delaware T² Center
 - Transportation Enhancements Program
 - Before-and-After Visualizations
- Access to Healthy Foods

9-4. Before-and-After Visualizations

9-4-1. Introduction

An IPA research team conducted a series of field visits and took photographs of various land use, landscape, and roadway contexts throughout New Castle, Kent, and Sussex Counties in Delaware. Ten locations in Delaware were selected for developing visualizations of complete-streets improvements. Each before-and-after scenario is a conceptual rendering, which is based on an original photograph of the location and is not an actual “engineered” design. IPA graduate research assistant Brandon Rabidou utilized SketchUp, a 3D-modeling utility owned by Google, to explore complete-streets design options for nine of the locations.

The conceptual renderings for the Assawoman Canal Trail System in Ocean View, Sussex County, are courtesy of Denise Husband, R.L.A., Environmental Design LLC. In 2009 the Division of Parks and Recreation of Delaware’s Department of Natural Resources and Environmental Control (DNREC), formed a working group to determine the feasibility of a trail along the Assawoman Canal, which would serve both recreation and transportation needs. The working group’s vision for the trail’s potential recreational, bicycle, pedestrian, and water activities was conveyed in an Assawoman Canal Trail System Concept Plan in September 2011 (DNREC, 2011). If the plan is accepted by the Division and the public, the next step is to begin trail design and engineering.

9-4-2. Incorporation of Visualizations Within Toolkit for a Healthy Delaware

All ten conceptual renderings were incorporated into the Complete Streets Before-and-After Visualizations section of IPA’s online Toolkit for a Healthy Delaware (see www.ipa.udel.edu/healthyDEtoolkit/completestreets/visualizations.html). The visualizations are intended to serve several purposes.

First, it shows how the complete-streets concept can safely anticipate and accommodate the travel needs of motorists, pedestrians, bicyclists, and transit users—regardless of age or ability. The complete-streets concept recognizes that vibrant public spaces, with multimodal transportation opportunities, foster community livability.

Second, the visualizations show Delaware local government officials that there is not one design prescription for a complete street. Conceptual street designs should match the context of the surrounding (existing and planned) land uses. When incorporated into a local government’s framework of plans, policies, and design standards, complete streets can help a community move from an auto-dominated development pattern to one that is more multimodal, efficient, and sustainable.

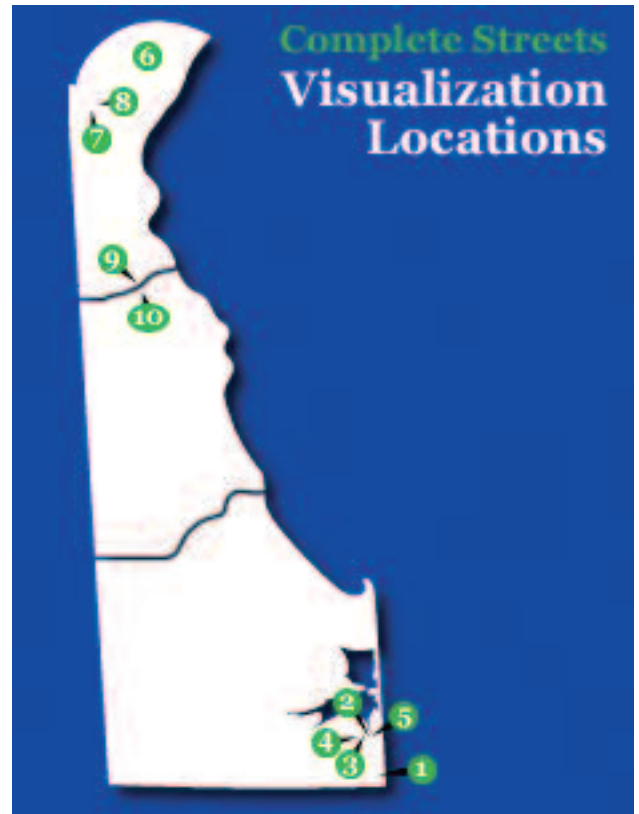
Finally, by providing visual/graphic representations, local decision-makers can learn how existing transportation infrastructure can be retrofitted to become a complete street during a future paving or reconstruction project. Depending on the roadway and land-use context, features may include sidewalks, bike lanes, accessible transit stops, enhanced crosswalks, curb improvements, traffic-control measures, and streetscaping amenities.

9-4-3. Delaware Complete Streets Visualizations

On the Delaware map at right, each green circle indicates a location for which a complete-streets before-and-after visualization was created. Each of the pages shows an image of the existing infrastructure and a visualization after adding complete-streets features. It should be noted, as stated within the Delaware Complete Streets Visualization section of the Toolkit for a Healthy Delaware, that these are conceptual renderings, not actual “engineered” designs.

Location 1: James Street & Coastal Highway, Fenwick Island, Sussex County

Walkability matters! Walkable community spaces can help keep residents physically active and healthy. In addition, better walkability can revitalize commercial areas, increase private investment, increase property values, promote tourism, and support the development of a good business climate.



The “before” photo shows a section of Coastal Highway in Fenwick Island that is a prime tourism destination yet is uninviting to pedestrians and cyclists. In addition, the wide roadway with fast-moving traffic may be perceived as unsafe and may discourage tourists and local residents from walking. The “after” visualization depicts modest changes in the design and physical roadway environment to provide for safer accommodation of pedestrians and bicyclists. The depicted changes include improved pedestrian and bicycle facilities—including the installation of sidewalks, curb ramps, pedestrian crosswalks, bike-lane striping, volume and speed-control measures, and landscaping and scenic beautification.

Location 2: Town Road & Atlantic Ave, Ocean View, Sussex County, Delaware

The term “complete streets” is more conceptual than definitive. The accommodation of various road users will change from place to place depending on the context of the road use and its setting. Complete streets need to incorporate flexible design and consider the existing and future transportation context (or roadway type), existing and future land use (e.g., urban, suburban, rural/natural), adjacent land uses, residential density, topographical constraints, and character of development.

The “before” photo shows the existing transportation/roadway and land use context for a portion of Ocean View along Delaware State Route (SR) 26 (Atlantic Avenue) that is neither pedestrian or bicycle friendly. The “after” visualization shows how local government plans, policies, and design standards may provide a foundation to shape the future transportation and land use context—specifically a vision for complete streets.



In this case, the conceptual rendering focuses on transforming this segment of Delaware SR 26 into a vibrant community place that encourages walking, biking, and access by people of all ages and abilities. The schematic shows a future vision of mixed-use (residential and commercial) development, streetscaping amenities, traffic-calming measures, pedestrian-safety improvements (such as marked crosswalks and wide walkways), bicycle facilities, and ADA improvements to improve access by persons with disabilities.

Location 3: SR 26 West of Tyler Drive, Ocean View, Sussex County, Delaware

Destination-oriented places such as retail shops, local attractions, public spaces, parks, and residential neighborhoods can generate pedestrian activity and demand for a multimodal environment.

The “before” photo shows commercial development along Delaware SR 26 that is within proximity to local destinations such as tourist attractions, recreational areas, beaches, retail establishments, and restaurants. The “after” photo shows how a complete street can promote a vibrant multimodal environment that creates appeal for walkers and cyclists, connections to destinations, linkages to transit, and attractive streetscapes.



Location 4: SR 26 just East of Road 361, Ocean View, Sussex County, Delaware

While the “before” photo shows a sidewalk along one side of Delaware SR 26, it lacks an inviting, walkable pedestrian environment. The sidewalk is in poor repair, has utility-pole obstructions, and does not accommodate pedestrians on both sides of the roadway. The “after” photo shows a complete street with modest built-environment improvements that provide accessible design, traffic-calming measures, and balances competing needs of users.



Specific improvements include a lower posted speed limit, continuous sidewalks on both sides of the roadway, a landscaped buffer with tree canopy, on-street parking that serves as an additional barrier from traffic, and the addition of a shared-lane marking or sharrow to safely integrate cycling with motorized transportation.

Location 5: Assawoman Canal Trail System Northern Trailhead, Ocean View, Sussex County, Delaware

The Assawoman Canal is a blueway, or water trail, that provides an important connection between the Indian River Bay and Little Assawoman Bay. It is also an important greenway that can provide not only additional recreational uses to encourage healthy lifestyles, but also a safe and alternative means of transportation between the communities surrounding the canal.

The plan is to create a linear multimodal trail within the existing canal greenway shown in the “before” photo of the northern trailhead. Trailheads can provide safe and convenient trail access for pedestrians and cyclists as well as water access for canoeists and kayakers. As shown in the “after” photo, amenities such as a pavilion, wayfinding kiosk, benches and other amenities enhance the trail experience for the variety of users.



The “before” photo of SR 26 (Atlantic Avenue) is located on the bridge spanning the Assawoman Canal. In order to provide safe linkage for the proposed trail system, an at-grade crossing must be designed across the roadway. The “after” photo conceptualizes how a safe crossing could be accomplished using a marked crosswalk, signage and textured ramps.

photos and visualization by Denise Husband, RLA, ASLA, courtesy of Environmental Design, LLC

Location 6: Buck Road and Ardleigh Drive, Greenville, New Castle County, Delaware

In this series of visualizations, the “before” (initial) photo shows a roadway that lacks a pedestrian- and bicycle-friendly environment. The series shows how incremental improvements could be made to the existing roadway through a lower-cost future repaving project rather than a costly reconstruction project. The series of small changes focus on traffic-calming measures such as narrower travel lanes, a new center median, and landscaped buffers. The addition of sidewalks, marked crosswalks, curb ramps, bicycle lanes, signage, and pedestrian lighting provides a safer and more attractive walking and biking environment.



Location 7: Gender Road and Breezewood Turn, New Castle County, Delaware

The “before” photo shows a two-lane residential/collector street with an auto-oriented design that decreases opportunities for walking and cycling. The “after” visualization depicts how the roadway could be retrofitted to accommodate the needs of all roadway users.



Sidewalks on both sides of the road, a marked bike lane, marked crosswalk with signage, pedestrian lighting, and textured ramps can foster active transportation and strengthen other modes with better cycling and walking connections.

Location 8: State Route (SR) East of Brownleaf Road, Newark, New Castle County, Delaware

The “before” photo depicts existing commercial strip development that is poorly designed and fails to provide a safe place for people to walk along a very busy public right-of-way. The “after” photo shows how a public right-of-way may be retrofitted in the future to integrate walking into the transportation infrastructure.



Sidewalk improvements enhance safety and mobility for pedestrians, allow continuity for walking, and provide the appropriate width to meet Americans with Disabilities Act (ADA) guidelines. A green buffer between the sidewalk and motor-vehicle traffic provides a greater level of comfort, security, and safety for pedestrians. In addition, the landscaped buffer protects pedestrians from vehicle splashes, serves as a storage area for snow cleared from sidewalks, and provides space for poles, signs, and other possible sidewalk obstructions.

Location 9: Duck Creek Road and Road 47, Smyrna, New Castle County, Delaware

Many streets, such as the one depicted in the “before” photo have been designed and engineered to maximize motor vehicle–traffic flow to the exclusion of other roadway users. Complete Streets balance out a transportation system to provide more travel options. The visualization shows how the roadway may be improved during a future rehabilitation project to retain rural character, yet provide basic multimodal facilities for other roadway users.



Accommodations for non-motorized travelers may be accomplished through a reduction in roadway width, marked crosswalks with signage, curb ramps, walkways, and restriping to accommodate bike lanes.



Location 10: West Glenwood Avenue, Smyrna, Kent County, Delaware

In the past, conventional transportation planning focused primarily on designing transportation infrastructure to facilitate automobile travel ("before" photo). A newer multimodal transportation-planning approach recognizes the need to plan, design, construct, and retrofit facilities to ensure the safety and mobility of all users of the transportation system. The enhanced photo demonstrates that well-designed transportation infrastructure considers the needs of all public right-of-way users, provides design flexibility based on land-use context, and recognizes that each roadway and surrounding area is unique.





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Appendix A. Delaware Executive Order Number Six - Creating a Complete Streets Policy

April 24, 2009

TO: Heads of All State Departments and Agencies
RE: Creating a Complete Streets Policy

WHEREAS, walking is the most fundamental mode of physical transportation; and

WHEREAS, bicycling promotes healthier lifestyles; and

WHEREAS, walking and bicycling are simple fitness activities that can prevent disease, improve physical health and assist in fostering mental well-being; and

WHEREAS, by walking and bicycling you help to reduce greenhouse gas emission by reducing the time you spend in your car; and

WHEREAS, my administration, along with the Delaware Department of Transportation, promotes the walkability and bicycle friendliness of communities through principles such as context sensitive design, mobility-friendly design, mixed-use and infill developments; and

WHEREAS, the Delaware Department of Transportation has developed user friendly design standards for pedestrian, bicycle, and transit facilities; and

WHEREAS, the Delaware Department of Transportation has the opportunity to create and improve transportation facilities for all users by implementing these principles and standards through its projects; and

WHEREAS, the Advisory Council on Pedestrian Awareness and Walkability and the Delaware Bicycle Council serve as advisors to the Delaware Department of Transportation; and

WHEREAS, a Complete Streets Policy means deliberately planning, designing, building, and maintaining streets for all modes of transportation;

NOW, THEREFORE, I, JACK A. MARKELL, by virtue of the authority vested in me as Governor of the State of Delaware, do hereby declare and order the following:

1. The Delaware Department of Transportation ("DelDOT") shall enhance its multi-modal initiative by creating a Complete Streets Policy that will promote safe access for all users, including pedestrians, bicyclists, motorists and bus riders of all ages to be able to safely move along and across the streets of Delaware;
2. The Delaware Bicycle Council, the Advisory Council on Pedestrian Awareness and Walkability, and the Elderly & Disabled Transit Advisory Council shall assist DelDOT with this endeavor;

3. A Complete Streets Policy should:

- (1) Solidify DelDOT's objective of creating a comprehensive, integrated, connected transportation network that allows users to choose between different modes of transportation;
- (2) Establish that any time DelDOT builds or maintains a roadway or bridge, the agency must whenever possible accommodate other methods of transportation.
- (3) Focus not just on individual roads, but changing the decision-making and design process so that all users are considered in planning, designing, building, operating and maintaining all roadways;
- (4) Recognize that all streets are different and user needs should be balanced in order to ensure that the solution will enhance the community;
- (5) Apply to both new and retrofit projects, including planning, design, maintenance, and operations for the entire right-of-way;
- (6) Ensure that any exemption to the Complete Streets Policy is specific and documented with supporting data that indicates the basis for the decision;
- (7) Direct the use of the latest and best design standards as they apply to bicycle, pedestrian, transit and highway facilities;

4. DelDOT, with the assistance of the advisory councils, shall create the Policy and deliver it to the Governor for consideration no later than September 30, 2009.

Appendix B. Transportation Enhancements Program

Understanding Transportation Enhancements

Legislation

The Intermodal Surface Transportation Efficiency Act (ISTEA) established the Transportation Enhancements program in 1991. ISTEA requires states to set-aside 10% of their Surface Transportation Program funds specifically for Transportation Enhancements. Subsequent federal legislation reauthorized the Transportation Enhancements program in 1998 and 2005.

Legislation Authorizing Transportation Enhancements

ISTEA – *Intermodal Surface Transportation Efficiency Act*, enacted December 18, 1991

TEA-21 – *Transportation Equity Act for the 21st Century*, enacted June 9, 1998

SAFETEA-LU – *Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users*, enacted August 10, 2005

Provisions of the Program

The Federal Highway Administration, the agency responsible for interpreting the legislation, has established specific provisions of the program. A Transportation Enhancements project must meet one or more of the designated eligible activities. A project must be related to surface transportation and provide public access. Transportation Enhancements funds may not be used for military or aviation related projects. Transportation Enhancements funds may not be used for routine maintenance or standard environmental mitigation.

As with other federal-aid funding, the Transportation Enhancements program is a reimbursement program, not a grant program. Generally, states administer Transportation Enhancements programs on a project-by-project basis.

Surface Transportation:

All elements of the intermodal transportation system, exclusive of aviation. For the purposes of TE eligibility, surface transportation includes water as surface transportation and includes as eligible activities related features such as canals, lighthouses, and docks or piers connecting to ferry operations, as long as the proposed enhancement otherwise meets the basic eligibility criteria. - source: FHWA website, <http://www.fhwa.dot.gov/environment/te/overview.htm>

Matching Funds

Since 2002, DelDOT uses a sliding scale to determine the required contribution from the project sponsor. The sliding scale method enables even small towns and organizations to afford to take advantage of the Transportation Enhancements program to improve their communities.

Project sponsors are encouraged to think creatively when raising funds for the match obligation. Sponsors can use private cash from non-profit organizations; this may include local non-profits or national foundations that offer grants. Any state funds are eligible to be applied to the match. Federal dollars, other than federal DOT funds, may be applied. Local funds, such as municipal dollars, Community Transportation Funds, and other monies available to local authorities may be utilized to meet the match obligation. Finally, services in-kind, such as inspection services supplied by the local municipality, may be counted towards the required match.

Further Resources

For further information on the Transportation Enhancements Program, please visit the National Transportation Enhancements Clearinghouse website.

Appendix C. Complete Streets Implementation Matrix

A work product of the University of Delaware's Institute for Public Administration

May 2011

IPA Complete Streets Implementation Checklist		
Evaluate	Users	Modes
Vision		
Does the community have a vision for complete streets that includes all users and modes of transportation?		
<input type="checkbox"/> Plans <input type="checkbox"/> Policies <input type="checkbox"/> Design Standards	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Freight <input type="checkbox"/> Motorists
Planning		
Do planning documents reflect complete streets <i>principles</i> that are inclusive of <i>all</i> users and modes of transportation?		
<input type="checkbox"/> Comprehensive Plan Are goals, objectives, and comprehensive-plan elements inclusive of all users and modes of transportation?	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
<input type="checkbox"/> Official Map Does the Official Map reflect transportation networks that are inclusive of all users?	N/A	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
<input type="checkbox"/> Capital-Improvement Program Do short- and long-term capital-improvement programs include access for all modes and users of transportation networks?	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
<input type="checkbox"/> Specific Plans <ul style="list-style-type: none"> Downtown Revitalization Trail Studies Circulation Plans ADA Transition Plan 	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
Policies		
Are local government policies and regulations consistent with a state's complete streets policy?		
Do policies reflect complete streets principles that are consistent with the local government's planning documents?		
<input type="checkbox"/> Subdivision Ordinances <input type="checkbox"/> Zoning Code Ordinances <input type="checkbox"/> Unified Development Code (Subdivision and Zoning regulations)	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
<input type="checkbox"/> ADA Compliance <ul style="list-style-type: none"> ADA Transition Plan 	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
Design Standards		
Do design standards comply with federal, state, and local government requirements?		
<input type="checkbox"/> Design Standards <ul style="list-style-type: none"> MUTCD • AASHTO • ADAAG PROWAG • DelDOT (for Delaware only) Local Government Design Manuals 	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists
Facility Maintenance		
Does the community meet ADA requirements for state and local governments to maintain accessible features in "operable working condition?"		
<input type="checkbox"/> Local Government Ordinances <input type="checkbox"/> Public Works Policies and Preventative Maintenance Schedules <input type="checkbox"/> Snow Removal Management Plans <input type="checkbox"/> Municipal Maintenance Agreements	<input type="checkbox"/> Older Adults <input type="checkbox"/> Young Children <input type="checkbox"/> Users with Disabilities	<input type="checkbox"/> Pedestrians <input type="checkbox"/> Bicyclists <input type="checkbox"/> Transit Users <input type="checkbox"/> Motorists

Appendix D. IPA Complete Streets National Best Practices Matrix

Planning		
Agency	Best Practice Example	Key Points
Comprehensive Plans		
Selma, Alabama Source: http://www.selma-al.gov/planning/ComprehensivePlan.pdf	Land Use & Transportation Chapter: “2. Develop a system of ‘complete streets’ a. Establish a network of major streets, including an east-west and north-south grid b. Improve street grid system to include local connections and streets interconnecting neighborhoods c. Provide for pedestrian and sidewalk connections coordinated with city-wide trail system d. Establish safe routes to schools to reinforce safety and walkability of neighborhoods e. Reinforce historic grid system in the core of the city, connect downtown to adjoining neighborhoods (especially to the east) and expand into new development.”	<ul style="list-style-type: none"> Focuses on improving the grid system and continuing grid networks into new development. Aims for better pedestrian connections and walkability improvements in neighborhoods. Embraces pre-existing transportation programs such as Safe Routes to School.
Tupelo, Mississippi Source: http://cityoftupelo.design.officelive.com/Documents/Tupelo_Adopted_Plan_12-16-08.pdf	Chapter 8 Implementation Plan: “As Tupelo’s development form changes to a more compact land use pattern, a new approach to transportation is needed. This approach should focus on creating “complete streets” throughout the community that provide opportunities for traffic-free automobile use, future public transit, bike lanes, and pedestrian facilities that can make the community more mobile and safe regardless of the mode of transportation used.”	<ul style="list-style-type: none"> Identifies opportunities for safer transportation facilities and transportation facilities for various modes of transportation. Specifically emphasizes future infrastructure, which allows the community to justify improvements.
Sherman, Illinois Source: http://www.shermanil.org/secure/reveal/min/uploads/documents/Sherman2030ComprehensivePlan.pdf	Transportation Chapter: “Goal: Provide a safe and efficient transportation system within the Village that incorporates all modes of transportation and allows for alternative transportation options.” Objectives: <ul style="list-style-type: none"> Incorporate complete street designs in all new street projects Require street, sidewalk, or trail connections between neighborhoods Construct internal trail corridors within the Village Construct or improve sidewalks in areas where they do not exist 	<ul style="list-style-type: none"> Provides a clear and comprehensive statement in regards to the expectations of their “transportation system.” Recognizes the need to improve new and old transportation systems that need improvement in the community (e.g., street, sidewalk, or trail connections) Gives flexible options that still meet the needs of pedestrians and creates connectivity within the community.
National Policy & Legal + Analysis Network to Prevent Childhood Obesity (NPLAN) Source: http://www.nplanonline.org/sites/phlpnet.org/files/nplan/CompleteStreets_ComprehensivePlan_FINAL_20100223.pdf	Provides model comprehensive plan language on complete streets.	See recommendations and guidance given by NPLAN.
Capital-Improvement Programs (CIPs)		
Tigard, Oregon Source: http://www.tigard-or.gov/city_hall/departments/finance/cip_program.asp	Street System Chapter: “The city will add sidewalks and short trail connections to fill existing gaps in the pedestrian transportation system. Projects will be selected each year based on pedestrian need, safety, benefit, mobility options, and ability to leverage other resources. Potential project locations are identified in the Transportation System Plan.”	<ul style="list-style-type: none"> Recognizes the need to fill existing gaps in pedestrian infrastructure in its CIP. Prioritizes capital improvements based on need, safety, and mobility. Connects the CIP with the transportation system plan, which is crucial to making the “complete streets machinery” work.
Sacramento, California Source: http://www.cityofsacramento.org/finance/budget/documents/P012-ApprovedSection-TransportationProgramSummary.pdf	Major Program Area Allocations: “Eight percent (\$2.3 million) of the total funding is programmed to pedestrian and bicycle projects, neighborhood street lights, and community enhancements. These projects and programs support the City’s strategic plan goals to achieve sustainability, enhance livability, and expand economic development throughout the City.”	<ul style="list-style-type: none"> Dedicates funding to complete streets enhancements as a part of the CIP. Pedestrian, bicycle, illumination, and community enhancements are a part of the CIP goals.
Downtown-Revitalization Plans		
Wichita, Kansas Source: http://www.downtownwichita.org/user/file/DowntownPlan/Project%20Downtown%20Adopted%20Plan.pdf	Transportation Plan Chapter: “Implement the Downtown Wichita Streetscape Design Guidelines on each of the street-improvement projects to install pedestrian safety and comfort features needed to improve the Downtown walking, bicycle, and transit environments. These improvements are needed to establish a walkable Downtown environment, a key to improving Downtown livability and unlocking Downtown’s redevelopment potential. Tailor pedestrian safety and comfort features to the primary transportation mode of the street and the predominant adjacent land use, as outlined in the Implementation Model of the Streetscape Design Guidelines. These features include improved sidewalks, street trees, lighting, benches, bicycle racks, trash receptacles, and bus shelters. Pedestrian crossings should use curb extensions, signage, and other traffic-calming measures and should be installed approximately every 1/8 th mile along all street corridors.”	<ul style="list-style-type: none"> Takes a holistic approach to downtown revitalization by recognizing socio-economic status, ability and modes of transportation in the revitalization plan. Connects design guidelines to the revitalization plan. “Tailor pedestrian safety” language prioritizes the pedestrian on the transportation network. Specific increments for traffic-calming measures creates a walkable and safe transportation network.
Citrus Heights, California Source: http://www.citrusheights.net/home/index.asp?page=1462	Section Three Development Standards: “The Boulevard Plan places a heavy emphasis on pedestrian comfort and safety. The Boulevard Plan calls for the expansion of the Auburn Boulevard right of way to allow for wider sidewalks, bike lanes, and planting strips.”	<ul style="list-style-type: none"> Looks to increase multi-modal transportation and amenities space in order to achieve complete streets for an area suffering from sprawl.
Biloxi, Mississippi Source: http://www.biloxi.ms.us/PDF/10.%20Downtown%20Revitalization%20Strategy.pdf	Chapter 10-3: “Develop Howard Avenue, Caillavet, Reynoir, Lameuse, and Main Streets into “Complete Streets” that accommodate all modes of transportation. Conduct a Downtown sidewalk inventory, verifying sidewalk locations, conformance to ADAAG, condition and access to parking lots.”	<ul style="list-style-type: none"> Includes all modes of transportation revitalization plan. Provides a clear standard to those using the revitalization plan in conformance to ADAAG regulations. Considers sidewalks and parking as an important area the revitalization plan.

Appendix D. (continued)

Trail Plans		
State of Ohio Source: http://www.ohiodnr.com/Portals/0/trailsplan.pdf	Trails for Ohioans, Chapter 4, Connecting Trails: “The key to a viable trails system is connecting people and destinations (e.g., communities, parks, natural areas, historic and cultural sites, places of employment, shopping and other amenities).” “Properly designed trail systems can minimize isolation of neighborhoods and connect people to business areas, schools, recreation areas and other community.”	<ul style="list-style-type: none"> Recognizes that trail systems provide both transportation and recreation opportunities. Recommends that trails be developed to link community resources as well as transportation systems.
Chester County, Pennsylvania http://www.chesco.org/planning/lib/planning/documents/trailpath/trailguidechap2.pdf	Trail and Path Planning: A Guide for Municipalities “In terms of trail and path planning, a network is a combinations of trails, paths, sidewalks, and other linear facilities use for pedestrian and non-motorized transportation [that connect and provide linkages] to destinations.” “Trails and paths should be planned as a municipal-wide network, including multi-use trails, single use paths, roadway or road shoulder bicycle routes, and destinations.” Complete streets principles and the development of trail networks can supported in a variety of sections within a comprehensive plan, including goals and objectives, transportation, parks and recreation, and community facilities.	<ul style="list-style-type: none"> Recommends that municipalities either 1) complete a trails master plan before amending a comprehensive plan, or 2) update a comprehensive plan to address network planning of a trail and path planning. Suggests options for addressing trail planning and policy elements within sections of a comprehensive plan, an official map, and municipal ordinances.
Flagstaff, Arizona http://www.flagstaff.az.gov/DocumentView.aspx?DID=366	Flagstaff Area Regional Land Use and Transportation Plan, Transportation Element “The Flagstaff Urban Trail System (FUTS) [was conceived in] 1989 as a combination recreation and alternative transportation system both within the city and connecting to surrounding national forest areas.” “[The] development strategy for FUTS has emphasized linking various parts of the city via primary trail corridors.”	<ul style="list-style-type: none"> Incorporates the FUTS Master Plan as a component of the Flagstaff Area Regional Land Use and Transportation Plan. Connects FUTS with neighborhoods, schools, parks, the central business district, future development, the Arizona Trail (a cross-state multiple-use trail) and U.S. Forest Trail system).
Circulation Plans		
Morgan Hill, California Source: http://www.morgan-hill.ca.gov/DocumentView.aspx?DID=3370	Level of Service Section: “Policies 1c. Provide a balanced transportation system which assures access to all, and which integrates all appropriate modes of transportation into an effectively functioning system, including such modes as auto, ride sharing, public rail and bus transit, bicycling and walking. (SCJAP 11.00 & 11.01) 1d. Ensure compatibility of the transportation system with existing and proposed land uses, promoting environmental objectives such as safe and uncongested neighborhoods, a pedestrian-friendly vibrant downtown that emphasizes non-auto transportation modes, energy conservation, reduction of air and noise pollution, and the integrity of scenic and/or hillside areas. (SCJAP 11.02) 1e. Implement strategies to ensure safe and appropriate operation of all components of the transportation system, such as programs to lower crash rates and reduce the number of transportation-related injuries in the city through education, enforcement, engineering strategies, physical improvements, and operational systems. Prioritize strategies that improve safety for students, pedestrians and bicyclists.”	<ul style="list-style-type: none"> Integrates all “appropriate” (context sensitive design) modes of transportation in the circulation plan. Compatible transportation systems with existing and proposed land uses address the status quo and future needs. Clearly states need for access to all users. Safe operation of all components of the transportation system is important to accessibility. Prioritizes safety for non-motorized travel.
Twentynine Palms, California Source: http://www.ci.twentynine-palms.ca.us/fileadmin/user_upload/pdf/GeneralPlan-CirculationElement-01272009.pdf	Section XX, Circulation Plan Element: “G. Goal #6 The Circulation Plan will sustain mobility while fostering economic development, enhancing the environment, reducing energy consumption, promoting transportation-friendly development patterns, and encouraging fair and equitable access to all citizens. Purpose: The purpose of Goal #6 is to provide a means of evaluating circulation systems in relation, and in support of, the core objectives contained in Southern California Associated Government’s Regional Transportation Plan. Policy 6.1: Transportation systems must meet the public need for improved access, and for safe, comfortable, convenient, fast and economical movements of people and goods. Program 6.1.1: Systems shall be designed to ensure that the meet or exceed standards established in the Regional Transportation Plan, with regard to mobility, accessibility, environment, reliability, safety, equity/environmental justice and cost effectiveness.”	<ul style="list-style-type: none"> Connects with the Regional Transportation Plan and references standards in the Regional Transportation Plan. Provides a policy for access, safety, speed and economical movements.
El Cerrito, California Source: http://www.el-cerrito.org/public_works/pdf/CirculationPlan_adopded.pdf	Executive Summary: “The overall purpose of the Circulation Plan is to: • Identify and address the transportation needs of El Cerrito residents and visitors while taking into account the diverse population and other social, economic, and environmental factors. • Outline a comprehensive Circulation Plan that reflects local and regional policies, projects, and priorities. • Establish short and long-term priorities that will guide future investments and improvements for bicyclists, pedestrians, and disabled.”	<ul style="list-style-type: none"> Focuses on meeting the needs of a diverse population including those with varied socio-economic factors. Provides a short-term and long-term investment plan that connections local and regional policy. Recognizes a wide range of users, including bicyclists, pedestrians, and those who have disabilities.
Douglas County, Colorado Source: http://www.douglas.co.us/traffic/document/s/2030Chapter1.pdf	Introduction Chapter: “Design: The transportation network must include “Complete Streets,” which have bike lanes and sidewalks that are direct, continuous, have easy street crossings, are visually interesting, and are safe and secure.”	<ul style="list-style-type: none"> Recognizes complete streets system is a foundation of the transportation network. Requires continuous sidewalks and bike lanes. Identifies the importance of “visually interesting” amenities space and/or unique materials the design of the transportation network.

Appendix D. (continued)

ADA Compliance–Transition Plans		
Stockton, California Source: http://www.stocktongov.com/disabilities/documents/ADAExSummary.pdf	<p>"It is the goal of the City to continue its efforts to improve pedestrian accessibility. To achieve this goal, the City plans to utilize the following criteria to guide its sidewalk and curb ramp program:</p> <ul style="list-style-type: none"> • <i>Provide access to state or local facilities or offices</i>—Since ADA requires that funding priority be given to "walkways serving local and state government offices and facilities," these conditions receive the highest priority. • <i>Provide access to places of public accommodation</i>—Locations that provide access to "public, commercial, medical, professional, educational, or recreational services" are high priorities for curb ramps sites. • <i>Provide access to public transit</i>—A goal of the curb ramp program is to improve access to bus stops along heavily used bus routes. • <i>Enhance safety at pedestrian crossings</i>—High priority is given to curb ramps that will allow for safe crossings at controlled or marked intersections. • <i>Create connected systems of accessible pathway</i>—Based on opportunities to complete a partially accessible intersection or pathway and to expand an existing pathway system." 	<ul style="list-style-type: none"> • Follows ADA mandates while connecting them to the city's internal processes. • Recognizes need for bus stop-access improvements to reduce the need for door-to-door paratransit services. • Looks to complete partially accessible intersections and pathways.
Bellevue, Washington Source: http://www.ci.bellevue.wa.us/pdf/Transportation/ADA_sidewalk_curb_ramp_article.pdf	<ul style="list-style-type: none"> • <i>"New Development"</i>—New development or redevelopment projects must include sidewalks and curb ramps. • <i>Citizen Request Program</i>—Citizens submit requests to have a new curb ramp installed or have an existing curb ramp repaired at any location within the City. • <i>Annual Installation, Repair, and Maintenance Program</i>—The City's Transportation Department repairs sidewalks and installs new curb ramps annually as part of routine maintenance. • <i>Street-Related Capital Improvement Projects</i>—Sidewalks and/or curb ramps are installed and/or repaired in all street-related capital improvement projects (e.g., street widening or other street upgrades). • <i>Overlay Construction Projects</i>—The City includes the installation of curb ramps as part of street overlay projects. • <i>Sidewalk Maintenance and Repair Program</i>—Streets Division personnel clear vegetation and debris from sidewalks adjacent to arterial streets, inspect sidewalks for damage, and when needed, repair walkways." 	<ul style="list-style-type: none"> • Includes stipulations for new development and redevelopment necessary in order to create an accessible transportation network. • Connects capital-improvement projects with sidewalk and curb-ramp installation. • Includes curb-ramp installation within overlay construction projects. • Designates a department and specific responsibilities to keep an accessible transportation system.
Clark County, Washington Source: http://www.co.clark.wa.us/ada/documents/transition/Sidewalk-ADA%20Transition%20Plan%202010.pdf	<p>The Sidewalk Ongoing Program (OGP) establishes Sidewalk Ranking Criteria for projects not associated with new development or capital road projects. Ranking criteria is partially based on the 2010 Bicycle and Pedestrian Master Plan.</p>	<p>Sidewalk Ranking Criteria is as follows:</p> <ul style="list-style-type: none"> • Safety and Comfort (up to 25 pts) • Access and Land Use (up to 10 pts) • Multimodal (up to 14 pts) • Implementation (up to 15 pts) • Community Benefit (up to 10 pts) • Health Outcomes (up to 20 pts) • Closes Gaps (up to 6 pts)
Policies		
Subdivision Ordinances		
Hailey, Idaho Source: http://haileycityhall.org/planning/AgendaStaff%20Reports%202010/090710/Ord%20-%20Sub%20Definitions%20PZ%20090710.pdf	<p>"a) Streets, whether public or private, shall provide an interconnected system and shall be adequate to accommodate anticipated vehicular and pedestrian traffic. b) Non-vehicular circulation routes shall provide safe pedestrian and bicycle ways and provide an interconnected system to streets, parks and green space, public lands, or other destinations."</p>	<ul style="list-style-type: none"> • Provides policies for public and private accommodations for vehicle and pedestrian traffic. • Values non-vehicular travel in the subdivision ordinance, and the ordinance connects other public facilities.
Metropolitan Government of Nashville & Davidson County, Tennessee Source: http://www.nashville.gov/pw/pdfs/divisions/SubdivisionSpecs.pdf	<p>3.5.6. Non-Standard Cross Sections "Non-standard cross sections are not to be used in routine subdivision designs. Complete Streets principles shall apply, with considerations given to all potential users of the streets."</p>	<ul style="list-style-type: none"> • This subdivision ordinance applies complete streets principles and considers all users.
Zoning Code Ordinances		
Seattle, Washington Source: http://www.seattle.gov/transportation/pedestrian_masterplan/pedestrian_toolbox/tools_pluz.htm	<p>Pedestrian Master Plan "Toolbox" – Section on Planning, Land Use, Zoning: The City of Seattle and SDOT have devised several plans and policy documents that address pedestrian issues. The City's old zoning code was retired in 1995 and was replaced by Seattle's Land Use Code (Title 23). The Land Use Code establishes patterns of development (rather than zoning districts) that strengthen pedestrian areas, promote transit, encourage infill, and protect single family land use. Land uses provide an emphasis on mixed use, pedestrian- and transit-supportive environments, which are the hallmarks of complete streets.</p>	<p>Seattle's Land Use Code replaces a conventional zoning code. It conveys the City's ongoing attempts and long-term commitment to create a safe, walkable pedestrian environment that supports—and is supported by—compact and mixed-use patterns of development.</p>
National Policy & Legal Analysis Network to Prevent Childhood Obesity (NPLAN) Source: http://www.nplanonline.org/sites/pblpnet.org/files/nplan/CompleteStreets_LocalOrdinance_FINAL_20100223.pdf	<p>Provides model zoning ordinance language on complete streets.</p>	<ul style="list-style-type: none"> • See recommendations and guidance given by NPLAN.
Unified Development Codes (UDC)		
Las Vegas, Nevada Source: http://www.lasvegasnevada.gov/files/UDC_19_04.pdf	<p>"Complete Streets" chapter: Provides visual and textual examples</p>	<ul style="list-style-type: none"> • Provides a connectivity point system and explains how it requires connectivity. • Provide examples of cross-sections for non-motorized transportation. • Allows context sensitive design with stipulations for mitigation requirements in the UDC.

Appendix D. (continued)

San Antonio, Texas Source: http://library.municode.com/index.aspx?cliEntId=14228&stateId=43&stateName=Texas	Article V. <ul style="list-style-type: none"> • “Urban Design, Policy 5i: Develop a safe and convenient pedestrian travel network with sidewalks, walkways and trails integrated into the transportation system and neighborhood centers. • Urban Design, Policy 5i: Ensure that all new sidewalks comply with city codes, and are designed to be functional and unobstructed, linking neighborhoods, residential areas and neighborhood centers together. • Urban Design, Policy 5i: Provide incentives for developers to exceed minimum standards for the pedestrian infrastructure. • Urban Design, Policy 5i: Promote safety on the pedestrian networks by eliminating physical barriers for the movement impaired maximizing visual contact between the network and surrounding areas modifying zoning to promote high activity uses adjacent to the network providing buffers from vehicular traffic, and enhancing signage for pedestrians. • Urban Design, Policy 5j: Urban design as an integral part of all new construction and improvement of transit centers, streets, and pathways in the city. • Urban Design, Policy 5k: Accommodate the specific needs of disabled individuals in all transportation modes. • Urban Design, Policy 5h: Consider bicycling in the design and construction of public streets.” 	<ul style="list-style-type: none"> • Allows for multiple forms of pedestrian travel that include sidewalks and trails. • Encourages incentives for exceeding minimum pedestrian standards are encouraged. • Considers accommodation of bicycles is considered. • Emphasizes safety through visual cues and signage. • Plans for the improvement of transit centers.
New Castle County, Delaware www.nccde.org/czo/	Chapter 40, Article 20, “Subdivision and Land Development Design Principles,” ensures that all new developments are consistent with the County’s vision for planned community character. The UDC requires all subdivision plans to be reviewed against specific design standards. One of the six plan-review standards, stated within §40.20.110, highlights the need to provide for circulation patterns that are interconnected and address the needs of motorists, pedestrians, and bicyclists.	“Subdivision and Land Development Design Principles,” provides principles for the layout and design of subdivisions and land developments.
City of Dubuque, Iowa http://www.cityofdubuque.org/index.aspx?NID=1209	The Land Subdivision Section of the UDC states that pedestrian infrastructure, separate bicycle paths, bicycle lanes, and/or shared use lanes are required—based on the context of the roadway and in accordance with the city’s comprehensive plan. In addition, the Subdivision Design Standards section addresses the need for street connectivity. A specific section on Complete Streets is to be developed and has been noted within the document as a future section of the UDC.	The UDC updated Dubuque’s subdivision and site development regulations to promote sustainable design, require street connectivity, provide development design guidelines, and require street network access by pedestrians, bicyclists, and public transit riders.
Design Guidelines		
Local Government Design Manuals		
Tacoma, Washington Source: http://cms.cityoftacoma.org/Planning/CompleteStreets/MUC_CS_Final.pdf http://www.cityoftacoma.org/Page.aspx?hid=10811	2.2 Complete Street Design Objectives: <ul style="list-style-type: none"> • Provide an unobstructed, continuous, and safe circulation system • Provide convenient access to local land uses, urban parks/open spaces, transit • Provide a buffer for pedestrians and adjacent properties from the traffic and noise • Provide visual interest and support community interaction • Safely accommodate people of all ages and abilities, including persons with disabilities. Tacoma Mixed-Use Centers (MUC) Complete Streets Design Guidelines: The Complete Street guidelines primarily focus on designated Pedestrian Streets within Mixed-use Centers. The guidelines articulate a vision of how different street types can be retrofitted in accordance with the Comprehensive Plan and other city policies. The guidelines: <ul style="list-style-type: none"> • Provide a set of principles and design guidelines to ensure that future development of public rights-of-way in Tacoma’s Mixed-use Centers meets the city’s vision for vibrant, healthy urban neighborhoods • Ensure that Pedestrian Streets meet the spatial and functional needs of all transportation modes, • Introduce a toolkit of strategies for improving street performance 	<ul style="list-style-type: none"> • “Serves the same destinations as are served by the road system” shows the importance of the entire transportation system, not just automobiles. • An “amenity zone” provides a buffer between vehicular and non-motorized transportation. • The design manual clearly shows complete streets philosophy with “all ages and abilities” being mentioned. • The MUC design guideline document provides specific guidance for adopting Complete Street policies and practices for Mixed-use Centers within the City of Tacoma
Charlotte, North Carolina Source: http://www.charmeck.org/city/charlotte/Transportation/PlansProjects/Documents/RevUSDGChapter2KH023.pdf	Urban Street Design Guidelines (USDG) was adopted in 2007 as a supporting component of its Transportation Action Plan (TAP). The USDG include “methodologies and recommendations for implementing key aspects of the TAP—increasing the quantity and quality of streets, enhancing the integration of land use and transportation decisions (sometimes on a block-by-block basis), and providing “complete” streets for residents, property owners, and all types of travelers.”	USDG provide comprehensive design guidelines to be applied to all new and modified streets. The design guidelines provide for all travel modes, while explicitly considering land use context, street function, and a balance of competing uses. Design guidelines are provided for five street types.
City of New Haven, Connecticut www.cityofnewhaven.com/TrafficParking/.../CS-Manual-04-05-10	City of New Haven Complete Streets Design Manual – provides guidance on building, repairing, and rehabilitating city streets to balance the needs of all users while respecting the social and economic fabric of the community. The manual formalizes a public-participation process for street re-design that incorporates engineering principles, a variety of context-sensitive design treatments, methods of evaluation, and funding strategies	<ul style="list-style-type: none"> • Design manual guides the development of a process to implement a vision for complete streets. The process includes a policy document, design manual, public process, educational campaign and traffic enforcement.
City of Louisville, Kentucky http://services.louisvilleky.gov/media/completestreets/completestreetsmanual.pdf	Louisville Metro Complete Streets Manual – addresses streetscape design in context with the existing character of the community. It recognizes the need for user-oriented transportation facilities, appropriate complete street facilities based on functional classification of the roadway/thoroughfare type, and streetscape design.	<ul style="list-style-type: none"> • Provides a comprehensive approach to advancing the Mobility and Comprehensive Form goals of its comprehensive plan.

Appendix D. (continued)

Facility Maintenance		
Bozeman, Montana http://www.mdt.mt.gov/publications/docs/brochures/bozeman_tranplan_study_chap6.pdf	Greater Bozeman Area Transportation Plan, 6.1 –Complete Streets Guidelines: “Maintenance activities do present some opportunities that can improve the environment for other roadway users...Facilities such as improved crosswalks, or bike lanes, or a shoulder stripe may be included in a routine re-stripe of a roadway if adequate space exists and the facility is designed to have such facilities in the transportation plan.” Complete Streets principles will be applied in street construction, retrofit, reconstruction, and maintenance projects over time.” 6.6 Non-Motorized Maintenance Considerations: “Any roadway maintenance activities to be undertaken should be seen as an opportunity to make some simple changes that can enhance conditions usually at a minimal, or no cost [to the local government and/or transportation agency]. “Roadway surfacing projects [and resurfacing activities] create an opportunity to make improvements for bicyclists or pedestrians at a minimal cost.”	<ul style="list-style-type: none"> • Suggests that viable complete streets improvements can be incorporated in routine roadway maintenance projects such as overlay/resurfacing projects. • Advises that the government/transportation agency consider maintenance activities, which may positively or negatively impact pedestrians or bicyclists: <ol style="list-style-type: none"> 1. Widen shoulders on uncurbed rural roads. 2. Reconfigure lanes after paving (if there's adequate width) to provide non-motorized facilities. 3. Avoid use of chip seals as a maintenance tool. 4. Properly fill utility cuts to minimize rough transitions for cyclists. 5. Address sidewalk and bike lane snow removal needs to prevent obstructions during the winter. 6. Provide access to pedestrians and bicyclist when maintenance activities provide temporary closures of bikeways and sidewalks.
Seattle, Washington http://clerk.ci.seattle.wa.us/~scripts/nph-brs.exe?sl=complete+streets&s2=&s3=&s4=&s5=&Sect4=and&l=20&Sect2=THESON&Sect3=PLURON&Sect5=CBOR1&Sect6=HITOFF&d=CBOR&p=1&u=%2F%7Epublic%2Fcbor1.htm&r=1&f=G	Seattle's Complete Streets Policy: “Seattle Department of Transportation (SDOT) will implement policies and procedures with the construction, reconstruction or other changes of transportation facilities on arterial streets to support the creation of Complete Streets including capital improvements, re-channelization projects and major maintenance, recognizing that all streets are different and in each case user needs must be balanced.” “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.”	<ul style="list-style-type: none"> • Ensures that there is a consistent approach to improving and maintaining the right-of-way for all users. • Requires all modes to be considered for a transportation-improvement project. • Infuses complete streets principles into all transportation-planning documents, master plans, daily operations, route maintenance, and capital-improvement program (CIP) planning process.
Town of Crested Butte, Colorado http://www.crestedbutte-co.gov/vertical/Sites/%7B6058FFBB-CB06-4864-B42F-B476F794BE07%7D/uploads/%7BCBD8A15C-176A-4860-8F75-50B422769941%7D.PDF	Town of Crested Butte Snow/Ice Control Operations Plan, 2010-2011 “This snow and ice control plan identifies the streets, sidewalks, and public facilities that the Town will maintain during a snow event. Property and business owners also have certain responsibilities that include clearing their own driveways and maintain adjacent sidewalks, clearing areas for wildlife resistant containers and dumpsters, removing snow from sidewalks and public parking areas resulting from roof and overhang shedding, and remove ice dams created from heated sidewalks.”	<ul style="list-style-type: none"> • Engages stakeholders during “annual snow summit” to inform annual updates. • Outlines municipal responsibilities and procedures for controlling snow and ice accumulation on streets and sidewalks. • Assigns responsibility for clearing sidewalks and pedestrian areas to Parks & Recreation's Maintenance Division. • Uses a Snow Removal Map to illustrate sidewalk and pedestrian snow-removal priorities.

Appendix E. Delaware Local Government Complete Streets Implementation Matrix

Vision		
Jurisdiction	Best Practice Example	Key Points
Comprehensive Plans		
Elsmere, Delaware <i>2010 Update to the Town of Elsmere Comprehensive Plan</i> Source: http://www.ipa.udel.edu/localgovt/municipalities/elsmere/	Town Goals and Vision (pp. 3 - 4): <ul style="list-style-type: none"> • Be known as a walkable town, including walking trails and the shopping district • Create a desirable and healthful environment in which to live and work • Create connectivity between parks and open space 	<ul style="list-style-type: none"> • Recognizes that supporting complete street principles and developing a complete community are necessary in order to attract and retain residents. • Addresses the need to provide interconnectivity between parks and recreational facilities
Newark, Delaware <i>City of Newark Comprehensive Development Plan IV (2008)</i> Source: http://cityofnewarkde.us/DocumentView.aspx?DID=770	Community's goals for land development (pp. 84 - 85): <ul style="list-style-type: none"> • To improve all local modes of transportation; including to encourage improved pedestrian and bicycle access • To provide open space and recreational opportunities • To limit...unattractive sprawl development that unnecessarily disperses services and utilities and increases traffic congestion 	<ul style="list-style-type: none"> • Provides a vision for a multi-modal transportation system that addresses the needs of pedestrians and bicyclists • Recognizes the value of open space and recreation in community • Strives for smart land use and transportation patterns
Planning		
Jurisdiction	Best Practice Example	Key Points
Comprehensive Plans		
Elsmere, Delaware <i>2010 Update to the Town of Elsmere Comprehensive Plan</i> Source: http://www.ipa.udel.edu/localgovt/municipalities/elsmere/	Transportation Section (p. 51): <ul style="list-style-type: none"> • Change "Kirkwood Highway" to "Main Street" and enter into a "Main Street Affiliate." Ensuring that Kirkwood Highway in Elsmere is a small-town Main Street will benefit the town's image, economy, and its bikeability and walkability. Community Facilities Section (p. 42): <ul style="list-style-type: none"> • Includes goal to "create a re-greening of Elsmere program" and "promote Elsmere as a town with greenway trails." Environmental Resources Section (p. 56): <ul style="list-style-type: none"> • Includes goal to "encourage alternate forms of transportation." Land Use Section (p.60): <ul style="list-style-type: none"> • Includes goal to "provide a coordinated pattern of land use that prevents the indiscriminant mixture of land uses and that provides for a concentration and clustering of uses." • Suggests conversion of the Kirkwood Highway into a Main Street by allowing for mixed land uses through code changes. • Suggests changes in traffic patterns that encourage pedestrian safety and are more compatible with a Main Street environment. 	<ul style="list-style-type: none"> • Integrates the concept of "Complete Streets" into the analysis and recommendations for transportation planning • Acknowledges the economic benefits of walkability and "placemaking." • Recognizes the need to address barriers to mobility of the young, elderly, and disabled. • Desires a revamping of Kirkwood Highway bus stops/shelters. • Recognizes the need for land use planning to include walkability and connectivity • Recommends interconnecting greenway trails among parks, public and cultural facilities, and residential neighborhoods. • Recommends incorporating mobility-friendly design elements into the zoning code to increase pedestrian travel.
Wyoming, Delaware <i>Draft 2011 Update to the Town of Wyoming Comprehensive Plan</i> Source: http://www.ipa.udel.edu/localgovt/municipalities/wyoming/wyoming_updatePLU/Sdr.aft.pdf	Overall goals related to Complete Streets include (pp. 10 – 11): <ul style="list-style-type: none"> • Require that properties proposed for potential annexation provide pedestrian, auto, and bicycle connections and neighborhood linkages Transportation Section (p. 30): <ul style="list-style-type: none"> • Plan goals are to: <ul style="list-style-type: none"> - "Provide safe and reliable circulation for all road users within town, including roads, sidewalks, and bike paths. - Improve transportation links to areas outside of town. - Plan for and require street and sidewalk linkages between neighboring subdivisions. - Work toward a network of interconnected open spaces, parks, and trails." • Plan recommendations are to (p.31): <ul style="list-style-type: none"> - Retain public rights-of-way that later could serve as pedestrian paths, bicycle links, or access to infill development - Require subdivision plans to include pedestrian and bike 	<ul style="list-style-type: none"> • Makes a direct reference to Delaware's Complete Streets policy. • References the Town's newly adopted Land Use and Development Code, which succeeds in requiring more strict sidewalk and connectivity requirements. • Lists goals that support complete streets and complete communities. • Addresses the current state of the Town's transportation system and recommends an improved street network pattern and sidewalks.
Downtown Circulation Plan		
Wilmington, Delaware <i>Downtown Wilmington Circulation Study</i> Source: http://www.wilmapco.org/downtownwilmington/	<ul style="list-style-type: none"> • Provides recommendations for improving the transportation network in downtown Wilmington. 	<ul style="list-style-type: none"> • Recommendations include plans for bus route and schedule changes; a downtown transit center; streetscape, pedestrian, and bicycle improvements; reconfiguration of traffic movement on some streets; turn lane changes; and designation of an on-street shared bicycle route with signage, pavement markings (sharrows), and bike parking facilities.
Bicycle and Pedestrian Master Plan		
Milford, Delaware <i>Draft Bicycle & Pedestrian Master Plan</i> Source: http://www.cityofmilford.com/DocumentView.aspx?DID=683	Purpose (p. 3) <ul style="list-style-type: none"> • Implements the Vision of the City of Milford's 2008 Comprehensive Plan, which "speaks the desire for creating a more livable community through walking and biking." • "Provides a strong planning tool to facilitate the continued and orderly development of bicycle and pedestrian facilities and implementation strategies that encourage their use." • "Plans for pedestrian and bicycle facilities to address the needs of all ability, age and skill levels, goals and objectives, an implementation plan, and suggested approaches to bicycling and pedestrian safety education." 	Plans for pedestrian and bicycle facility improvements based on the following planning concepts: <ul style="list-style-type: none"> • Providing access to and among centers of population and activity • Creating linkages for bicyclist or a pedestrian to get to/from destinations without undue conflict with motorists. • Addressing transportation needs of various user groups and abilities. • Improving facilities based on established bicycle and pedestrian facility design guidelines.

Appendix E. (continued)

Transportation Plan		
Delaware City, Delaware Delaware City Transportation Plan Source: http://www.wilmapco.org/DelawareCity/DelawareCityTransportation.pdf	<ul style="list-style-type: none"> Explores issues transportation issues and opportunities within the local and regional context. Addresses the need for improvements related to roadway safety and circulation, parking, pedestrian and bicycle facilities, public transit, and mobility friendly design. 	<ul style="list-style-type: none"> Recommends mobility friendly design improvements to preserve and enhance Delaware City as a walkable, healthy, livable community (p. 32) The plan addresses the issues raised in the Delaware City Comprehensive Plan, include needs to (p. 4): <ul style="list-style-type: none"> - Develop a coordinated plan to make Delaware City more bicycle and pedestrian-friendly - Explore public transit service and connection options - Plan for traffic-calming improvements - Encourage pedestrian and bicycle interconnections, and the presence of sidewalks and bike-paths, mobility friendly design standards, and developer-provided pedestrian and bicycle infrastructure
ADA Transition Plan		
Dover, Delaware City of Dover, Delaware ADA Self-Evaluation and Transition Plan Source: http://www.cityofdover.com/media/documents/study-ADA_Plan.pdf	Self-Evaluation Results (p. 5): <ul style="list-style-type: none"> Includes and evaluation of city facilities (buildings, parks, sidewalks) to ensure that the city is complying with ADA Title II requirements. Transition Plan (p. 7): <ul style="list-style-type: none"> Provides a statement of funding and priorities to make improvements as recommended by the City's ADA Committee 	<ul style="list-style-type: none"> Prioritizes facility access improvements to: <ul style="list-style-type: none"> - parking, ramps, sidewalks, walkways, and exterior doors; - access within facilities' interior doorways, hallways, desk and counter heights; - public restrooms; - water fountains and employee restrooms. Establishes 5-year Capital Improvement Plan for priority facility improvements
Trail Plan		
Lewes, Delaware Lewes Greenways and Trails Committee Master Plan Source: https://imageserv5.team-logic.com/media.library/54/GWT_MasterPlan.pdf	<ul style="list-style-type: none"> Goal is to "provide strategies to maintain, enhance and perpetuate open space and greenways within the City of Lewes and surrounding areas (p.1)." Trail network "provides opportunities for recreation, transportation, and interpretation (p. 1)." Protects open space (p. 3). Promotes non-motorized transportation (p. 4). 	<ul style="list-style-type: none"> Visualizes a network of greenways and trails in and around the Lewes area. Promotes connections to parks, cultural/recreational features, scenic vistas, and linkages to external greenway and trail systems.
Policies		
Subdivision Ordinances		
Dover, Delaware Municipal Code - Subdivision Ordinance Source: http://library.municode.com/index.aspx?cliEntID=13910&stateID=8&stateName=Delaware	Municipal Code, Art. VI, § A-2: <ul style="list-style-type: none"> The layout of proposed streets shall furthermore be arranged in a manner acceptable to the commission so that vehicle safety, pedestrian convenience, emergency vehicle access, and ease of traffic flow for private vehicles and public service delivery vehicles is accomplished. Requires design of minor streets to discourage through-traffic. Discourages the use of dead-end streets and cul-de-sacs. Municipal Code, Art. VI, § D-1 through D-3: <ul style="list-style-type: none"> States that block length, width, and shape should be designed with consideration for the "control, safety and convenience of pedestrians and vehicular traffic." Includes a provision whereby the planning commission can require the installation of pedestrian walkways, separate from the roadway, between important pedestrian destinations such as schools, playgrounds, shopping centers, and other community facilities. Provides provides sidewalk width and location regulations. 	<ul style="list-style-type: none"> Requires that subdivision street layout proposals must accommodate various modes of travel, including pedestrian circulation and emergency vehicle access. Requires planning commission approval of any street layout proposals Code's block length requirements specifically address pedestrian accommodation Subdivision ordinance supports accommodation of pedestrian travel.
Lewes, Delaware Municipal Code – Subdivision Ordinance Source: http://ecode360.com/?custid=LE0715	Municipal Code, Chap.170, Art. IV, § 21: <ul style="list-style-type: none"> Addresses standards and regulations for streets and sidewalks not under the jurisdiction of DelDOT. Requires sidewalks on both sides of the street, but specific sidewalk requirements are at the discretion of the City Planning Commission Stipulates that sidewalks and wheelchair ramps are to be constructed in accordance with applicable DelDOT manuals and the ADA handbook Addresses the overall purpose of a transportation network by stating, "Within the context of overall community development, the internal circulation should promote and encourage the increased use of pedestrian and bicycle movement among residential, local shopping, schools and other areas, through the employment of connecting open space, bicycle/pedestrian ways and other design techniques and devices." 	<ul style="list-style-type: none"> Grants the Planning Commission the authority to require sidewalks, crosswalks, and/or mid-block crossings in any locations that it deems necessary or desirable Focuses on the safe and convenient accommodation of vehicular and pedestrian traffic. Stresses that these modes should be functionally separated to the extent possible.
Zoning Code Ordinance		
Newark, Delaware Downtown Newark Economic Enhancement Strategy (1997;2007); and City of Newark, Delaware Comprehensive Development Plan IV Source: http://www.cityofnewarkde.us/DocumentView.aspx?DID=770 Newark Summary of District-by-District Permitted Uses in the City of Newark Zoning Code Source: http://www.cityofnewarkde.us/DocumentView.aspx?DID=59	<ul style="list-style-type: none"> The City's <i>Economic Development Strategy</i> recommends a downtown central business district Newark "Development Framework," within six specific development districts. The Mixed-Use Redevelopment District (District 3), encompasses the northeast corner of the Downtown Development Framework, plus the old and now replaced "Delchapel" brownfield site. This a prime location for mixed use redevelopment integrating convenience retail, services, offices and residential uses (both student and non-student housing affordable and market rate housing)." District BB is a commercial and related retail zone that permits, with a Council granted Special Use Permit - Apartments, except on ground floor locations, with special requirements. 	<ul style="list-style-type: none"> The Zoning Code underscores the Newark community's Comprehensive Plan and <i>Economic Development Strategy</i> goal to "commit to downtown redevelopment as the key ingredient in Newark's commercial growth."

A work product of the University of Delaware's Institute for Public Administration

Appendix E. (continued)

Unified Development Code (UDC)		
New Castle County, Delaware New Castle County Unified Development Code Source: http://library.municode.com/HTML/11287/level3/STLARETA_CH40UNDECO_AR_T20SULADEDEPR.html	Article 20 – Subdivision and Land Development Design Principles: Purpose (40.20.000): The street, road, and pedestrian system is created in a manner that is safe and provides the best overall layout for the community, as well as the individual development. General Plan Review Standards (40.20.110 - E): <ul style="list-style-type: none"> All street and circulation patterns shall provide for the safe, efficient, and convenient movement of vehicular and pedestrian traffic. Vehicular travel lanes, pedestrian movement systems, and parking should be separated. Within the context of overall community development, the internal circulation system should promote and encourage the increased use of pedestrian and bicycle movement among residential, local shopping, schools, and other areas. Road connections shall seek to avoid external automobile trips through the employment of superblocks, stub streets, connecting open space, bicycle-pedestrian ways, and other design techniques and devices. 	<ul style="list-style-type: none"> Subdivision design standards reflect complete street principles. Requires all subdivision plans to be reviewed against specific design standards. Highlights the need to provide for circulation patterns that are interconnected and address the needs of motorists, pedestrians, and bicyclists (one of the six plan review standards).
Design Guidelines		
Local Government Design Manuals		
City of Dover, Delaware Source: http://www.planning.org/greatplaces/space/2009/index.htm http://library.municode.com/index.aspx?cli=13910&stateId=8&stateName=Delaware	Design Standards and Guidelines for the City of Dover Historic District Zone have been established and are set forth in Part II of the Code, Appendix B – Zoning, Article 5 – Supplementary Regulations. In addition, the following have fostered historic preservation and walkable public space initiatives in Dover: <ul style="list-style-type: none"> The Dover Green Historic District was established in 1961 – an ordinance created a local historic district and established a zoning overlay for the historic area The District was added to National Register of Historic Places in 1977; today it is part of Dover's downtown business improvement district and is surrounded by a mix of uses The City's 2008 comprehensive plan recognizes the need for different approaches to preservation and rehabilitation activities involving the park compared with other areas of the historic district. The American Planning Association (APA) named The Green in Dover, Delaware as a 2009 Great Places in America in the Public Spaces category. 	<ul style="list-style-type: none"> Dover's intent is to capitalize on its historic assets by focusing on the design of buildings and their architectural characteristics in the historic district, planning to preserve historic resources, and creating a walkable, mixed-use environment that attracts pedestrians and reflects the area's historic character.
Delaware Office of State Planning Coordination Source: http://stateplanning.delaware.gov/delawarebydesign/neighbor.shtml	Delaware by Design: <ul style="list-style-type: none"> Explains how Traditional Neighborhood Design (TND), New Urbanism, and Smart Growth are viewed as sustainable and livable alternatives to suburban development patterns Lists 14 good neighborhood design characteristics, as noted by the Smart Growth Network and the Congress for New Urbanism Advocates TNDs that are laid out in a compact manner, on an interconnected grid pattern to allow for walking and other transportation alternatives to the automobile 	<ul style="list-style-type: none"> Supports town and neighborhood design using compact, sustainable planning practices that maximize community and minimize sprawl.
City of Rehoboth Beach, Delaware Source: http://deldot.gov/information/pubs_forms/ctp04-09/final/pdf/sc_locals_pgs_5-80_thru_5-95.pdf	Rehoboth Beach Streetscape Project: <ul style="list-style-type: none"> The three-phase, six-year streetscape project totaled \$33M Transformed Rehoboth Avenue into a pedestrian and bicycle-friendly public space and a year-round "Main Street" business environment that strengthens the City's social, cultural, aesthetic, and environmental value of the existing transportation system. Streetscape improvements provide ADA accessibility; sidewalk upgrades; pedestrian amenities and lighting; bicycle facilities; transit facilities; landscaping; traffic calming elements; traffic operation enhancements; and parking reconfigurations. Named 2009 Great American Main Street Award Winner 	Planned with substantial public input and cooperation from the business community. The goal of the project was to re-orient public spaces to embrace a pedestrian and bicycle-oriented environment, while maintaining traffic operations.
Facility Maintenance		
City of Newark, Delaware Source: http://library.municode.com/index.aspx?clientID=10128&stateID=8&statename=Delaware	Ordinances Requiring Sidewalk Maintenance <ul style="list-style-type: none"> Chapter 26, Sidewalks, Article 3, Section 26- 25. Every property owner shall maintain any sidewalk abutting his property in a safe and useable condition including compliance with Americans with Disabilities Act (ADA) guidelines Chapter 26, Streets, Article 1, Section 26 - 2. Residents are required to keep sidewalks abutting their property obstruction free. Chapter 26, Streets, Article 1, Section 26 – 3. Residents are required to remove all snow or ice from the abutting sidewalk within 24 hours after a snow fall. Property owners of multiple businesses are responsible for snow and ice removal on sidewalks abutting those properties. Pathways must at least five feet in width in business and commercial districts and three feet in width in residential districts. The ordinance restricts residents from shoveling snow or ice into the gutter or street; fines for each day of offense and assessments for contracted removal. 	<ul style="list-style-type: none"> Demonstrates a commitment to making all sidewalks accessible to all pedestrians, including those with disabilities. These ordinance provisions focus on ensuring that sidewalks are free from snow, ice, and other obstructions.
City of Newark, Delaware Source: http://www.cityofnewarkde.us/DocumentView.aspx?DID=1641	ADA Sidewalk, Curb, and Ramp Transition Plan <ul style="list-style-type: none"> States how the City plans to comply with ADA, Title II, which requires any public agency with more than 50 employees to make a transition plan setting forth the steps necessary to make its facilities accessible to persons with disabilities. 28 CFR §35.150(d). Describes how the City will address inaccessible curb ramps and sidewalks. Describes "good faith" compliance efforts through City programs, budget allocations, and curb ramp installation prioritization. States that codes will be revised to comply with and include ADA criteria (the City has updated Chapter 26, Streets, Article III, Sidewalks of the Code to incorporate ADA standards for sidewalks and clarify responsibilities of the municipality and property owners. 	<ul style="list-style-type: none"> Affirms the City's continued commitment to reach and maintain ADA compliance with regard to accessibility.

Appendix E. *(continued)*

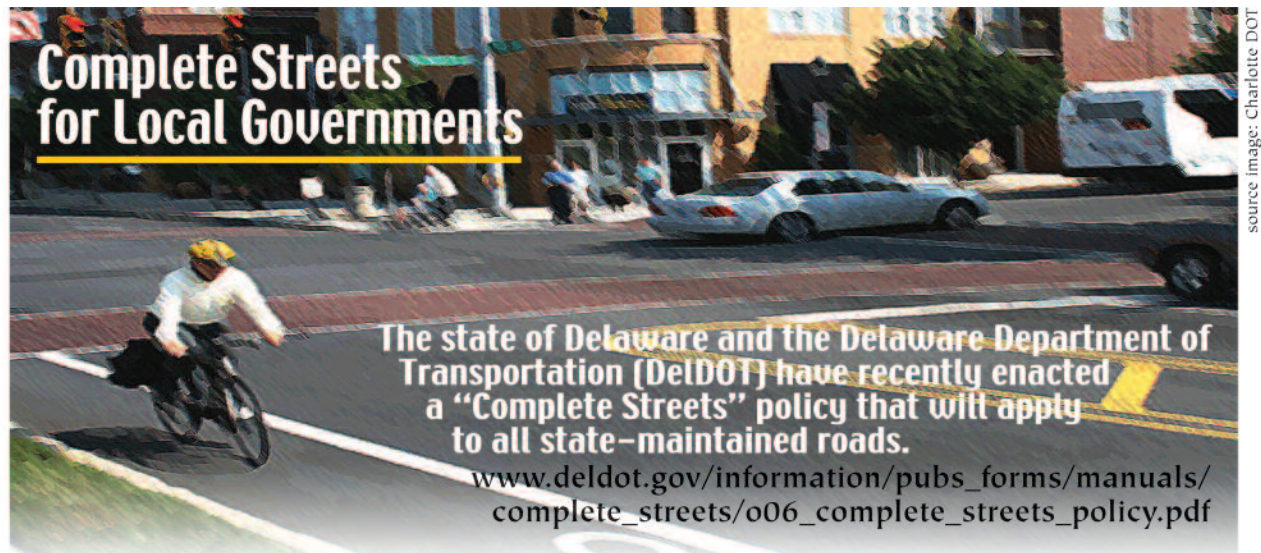
City of Dover, Delaware	2010/2011 Public Services Emergency Plan <ul style="list-style-type: none">• Describes basic procedures to maintain operations during severe weather conditions or other emergencies• Provides a priority list of operations for snow and debris removal – including Delaware Transit Corporation transit routes, bus transfer area, crosswalks and main intersections, and sidewalks along City property.• Designates property maintenance inspectors with responsibility to: “proactively review maps for areas where there is consistent pedestrian traffic to include school areas and facilities” and once the storm event has ended, “proactively approach residential and business entities...to insure that the sidewalk snow removal ordinance is enforced in a proactive manner.”	<ul style="list-style-type: none">• Establishes basic procedures to maintain operations, which provisions to remove ice and snow to ensure mobility and access by pedestrians and transit users.
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Appendix F. ADA Transition Plan Self-Evaluation Checklist

ADA TRANSITION PLAN SELF-EVALUATION CHECKLIST	
ISSUE	Possible Barriers
Sidewalk and Pathway Clear Width	Narrow, Below Guidelines
Sidewalk and Pathway Cross Slope	Steepness, Irregularity, Variability, Warping
Landings Along Sidewalks and Pathways	Less Than 4 feet by 4 feet
Sidewalk and Pathway Grade	Steepness, Angle Points
Materials and Finishes	Deterioration of Surfaces, Deterioration of Markings, Appropriateness of material (ex. Cobblestones)
Gratings	Grating Type, Grate Opening Orientation
Discontinuities	Missing Sections, Gaps, Drops, Steps
Detectable Warning System	Missing, Inappropriate Materials, Inadequate Size, Wrong Location
Obstructions	Signs, Mail Boxes, Fire Hydrants, Benches, Telephones, Traffic Signal Poles, Traffic Signal Controller Boxes, Newspaper Boxes, Drainage Structures, Tree Grates, Pole Mounted Objects, Standing Water, Snow or Ice
Traffic Signal Systems	Lack of Provision for the Visually Impaired such as APS, Inadequate Time Allowed, Inoperable Buttons, Inaccessible Buttons
Curb Ramp	Missing, Doesn't Fall within Marked Crosswalk, Doesn't Conform to Guidelines
Curb Ramp Flares	Missing Where Required, Too Steep

Source: National Academy of Sciences and National Cooperative Highway Research Program, 2009

Appendix G. Complete Streets for Delaware Local Governments Flyer



According to the National Complete Streets Coalition, “Complete streets are 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.”

As part of its healthy communities initiative, the University of Delaware’s Institute for Public Administration (IPA) would like to know what your local government or organization is doing to support the implementation of Complete Streets. Even if the term “Complete Streets” is not used, an organization can support it by including all modes and all users in policies and documents.

The implementation of Complete Streets is extremely important to the health and safety of our state’s residents. Even though Delaware now has a statewide policy, our counties and municipalities still have an important role to play in ensuring that Complete Streets become commonplace throughout Delaware.

Has your organization:

- *Passed a resolution supporting Complete Streets?*
- *Included Complete Streets provisions within a comprehensive plan or plan update?*
- *Included Complete Streets requirements/guidelines in ordinances, code amendments, or other regulatory tools?*

If you could answer “yes” to any of the above questions, may an IPA staff person contact you about your Complete Street initiatives?

☐ Yes ☐ No

Thank you for your feedback!

NAME _____ TITLE _____

ORGANIZATION _____

E-MAIL ADDRESS _____ PHONE NUMBER _____

If you would like to talk with an IPA staff person about your policies or have questions, comments, etc., please contact:

- BJ DeCoursey, IPA Policy Specialist (Planning Services), decourse@udel.edu / 302-831-4925
- Marcia Scott, IPA Associate Policy Scientist (Local Government Specialist), msscott@udel.edu / 302-831-0581
- Claire Beck, IPA Research Assistant (Planning Services), cbeck@udel.edu / 302-831-6372

For more information about IPA’s healthy communities initiative, visit: www.ipa.udel.edu/healthyDEtoolkit

Appendix H. The Comprehensive Plan Healthy-Community Checklist

Pedestrian/Bicycle Accessibility	Check	Page #
1 Community or town goal that emphasizes pedestrian and/or bicycle facilities		
2 Community or town goal to enhance children's pedestrian and bicycle safety		
3 Encouragement to start or enhance Safe Routes to School Programs		
4 Future development recommendation for increased pedestrian infrastructure		
5 Future development recommendation for increased bicycle infrastructure		
6 Recommendation for a pedestrian and/or bicycle study		
7 Inclusion of or future recommendation for a Master Pedestrian Plan		
8 Inclusion of or future recommendation for a Master Bicycle Plan		
9 Prioritization of pedestrian improvements		
10 Prioritization of bicycle improvements		
Mixed Use/Compact Development	Check	Page #
11 Future development recommendation for additional elements of a pedestrian-friendly built environment**		
12 Recommendation for a Traditional Neighborhood Development Ordinance*		

Complete Streets Principles	Check	Page #
13 Community or town goal to reduce automobile traffic throughout the town		
14 Development regulations requiring sidewalks		
15 Future development recommendation for streetscaping features		
16 Future development recommendation emphasizing pedestrian improvements in the CBD or downtown area to increase business and create a sense of place		
17 Future development recommendation for traffic-calming measures on local streets		
18 Recommendation for multi-modal infrastructure supporting transit use		
19 Recommendation to identify service gaps and deficiencies in mobility for people of all ages and abilities		
20 Recommendation to develop a prioritization plan for addressing mobility issues for people of all ages and abilities in the transportation system		
Access to Healthy Food	Check	Page #
21 Community or town goal to locate shopping facilities near residences		
22 Community or town goal emphasizing public health, including physical activity and access to healthy food		
Open Space and Recreation	Check	Page #
23 Community or town goal that emphasizes parks and recreational facilities		
24 Recommendation for open-space policies and conservation-oriented land use plans		

*Traditional Neighborhood Developments are neighborhoods where residential, commercial, and civic buildings are within close proximity to each other. Model TND Ordinance found at: <http://urpl.wisc.edu/people/ohm/tndord.pdf>

**Additional elements of a pedestrian-friendly built environment = mix of uses; compact development; building setbacks; parking location; pedestrian-scaled design (buildings, signs, roads); street connectivity

Appendix I. IPA Complete Streets Comprehensive Plan Assessment

IPA Complete Streets Comprehensive Plan Assessment					
Municipality	Complete Streets Language	Mention of all modes in goals or recommendations	Inclusion of transit	Inclusion of all ages and abilities	Online location
Bellefonte		p. 58	p. 58		http://stateplanning.delaware.gov/comp_plans/bellefonte_plan_master_certificate.pdf
Bethany Beach		pp. 8, 41-42	p. 41		http://www.ipa.udel.edu/localgovt/municipalities/bethanybeach/
Blades		pp. 26, 50-51	p. 51		http://www.ipa.udel.edu/localgovt/municipalities/blades/
Bridgeville		pp. 82-84	p. 84		http://stateplanning.delaware.gov/comp_plans/bridgeville_comp_plan_2006.pdf
Camden		pp. 69-70			http://www.townofcamden.com/index.cfm?fuseaction=forms.compplan
Cheswold					http://stateplanning.delaware.gov/comp_plans/2006_update_cheswold_comp_plan.pdf
Clayton		p. 54			http://www.ipa.udel.edu/localgovt/municipalities/clayton/
Dagsboro		pp. 6, 27	p. 27	p. 27	http://www.townofdagsboro.com/MiscPDFfiles/Dagsboro_Comp_Plan_2009.pdf
Delaware City		pp. 5, 31	p. 31		http://www.ipa.udel.edu/localgovt/municipalities/delawarecity/
Delmar		pp. 37-38	p. 37		http://www.townofdelmar.us/index.cfm?ref=34051
Dewey Beach		pp. 25-26			http://www.townofdeweybeach.com/index.cfm?fuseaction=trees.pageDetails&pageID=260&treeID=18&assignmentID=353
Dover		pp. 107-108	p. 107		http://www.cityofdover.com/?c=/departments/planning/compplan
Elsmere	p. 50		pp. 50-51	pp. 50-51	http://www.ipa.udel.edu/localgovt/municipalities/elsmere/
Farmington					http://stateplanning.delaware.gov/comp_plans/farmington_comp_plan_200411.pdf
Felton		p. 45	p. 45		http://stateplanning.delaware.gov/comp_plans/felton_comp_plan_2008.pdf
Fenwick Island		P. 3-23			http://stateplanning.delaware.gov/comp_plans/fenwick_island_comprehensive_plan_november_2007.pdf
Frankford		p. 8			http://www.ipa.udel.edu/localgovt/municipalities/frankford/
Frederica		pp. 5-6, 37	pp. 6 and 37	p. 36	http://www.ipa.udel.edu/localgovt/municipalities/frederica/
Georgetown		p. 5, 51-53	p. 51		http://www.georgetowndel.com/media.cfm?departmentID=10&mediaID=3311
Greenwood		p. 6, 64			http://stateplanning.delaware.gov/comp_plans/greenwood_comprehensive_plan_2008.pdf
Harrington			pp. 49 and 86	p. 49	http://stateplanning.delaware.gov/comp_plans/harrington_comp_plan_2004.pdf
Henlopen Acres					http://www.ipa.udel.edu/localgovt/municipalities/henlopenacres/
Houston					http://stateplanning.delaware.gov/comp_plans/houston_comp_plan_20070626.pdf
Laurel		p. 138			http://www.townoflaurel.net/main.cfm?ref=14410
Leipsic					http://stateplanning.delaware.gov/comp_plans/leipsic_comp_plan_2006.pdf
Lewes		pp. 12, 32, and 35			http://www.ipa.udel.edu/localgovt/municipalities/lewes/
Little Creek					http://stateplanning.delaware.gov/comp_plans/LC_AdoptComp_0706.pdf
Magnolia		pp. 41-42			http://www.ipa.udel.edu/localgovt/municipalities/magnolia/
Middletown		pp. 4 and 37			http://www.ipa.udel.edu/localgovt/municipalities/middletown/
Milford		p. 58			http://www.cityofmilford.com/index.aspx?nid=81
Millsboro		pp. 51-57	p. 55		http://stateplanning.delaware.gov/comp_plans/millsboro_comp_plan_june_2009.pdf
Millville		pp. 17, 38-39	p. 38		http://millville.delaware.gov/comprehensive-plan-update-2008/
Milton		p. 53	p. 53		http://www.ci.milton.de.us/media/COMPREHENSIVE_PLAN.pdf
New Castle		pp. 32-33			http://www.ci.new-castle.de.us/pdf/comprehensive_plan_2009_update.pdf
Newark		pp. 19, 65, and 84	p. 19		http://cityofnewarkde.us/DocumentView.aspx?DID=770
Newport		pp. 28-30			http://newport.delaware.gov/files/pdfs/newport_comp_plan.pdf
Ocean View		pp. 5, 15, and 16			http://stateplanning.delaware.gov/comp_plans/ocean_view_comp_plan_2004.pdf
Odessa	pp. 57 and 69	pp. 5, 26	p. 26	pp. 69 and 71	http://www.ipa.udel.edu/localgovt/municipalities/odessa/
Rehoboth Beach		pp. 30, 56-71	p. 62		https://imageserv2.team-logic.com/mediaLibrary/8/Scan_74.PDF
Seaford		p. 21	p. 20		http://www.seafordde.com/pdfs/Comprehensive_Plan_2008_-_STATE_APPROVED.pdf
Selbyville		pp. 21 and 34			http://stateplanning.delaware.gov/comp_plans/selbyville_plan_final.pdf
Smyrna		p. 60	p. 60		http://stateplanning.delaware.gov/comp_plans/smyrna_comp_plan_certified_2006.pdf
South Bethany		p. 54			http://stateplanning.delaware.gov/comp_plans/south_bethany_comp_plan_draft.pdf
Townsend		pp. 43-45	p. 48	p. 48	http://www.ipa.udel.edu/localgovt/municipalities/townsend/
Viola					http://www.violade.com/comp-plan.htm
Wilmington	p. 45	pp. 25 and 30	pp. 25 and 30		http://76.12.60.78/Planning/Citywide-Plan-of-Land-Use.pdf
Wyoming	p. 26	pp. 10 and 30	p. 30		http://www.ipa.udel.edu/localgovt/municipalities/wyoming/

Appendix J. Complete Streets Subdivision Evaluation Matrix

[illegible]

Appendix K. Planning Complete Streets in Delaware (Planning 209) Workshop Flyer

Planning Complete Streets in Delaware

a workshop facilitated by the
University of Delaware's Institute for Public Administration (IPA)
 with funding support from the Delaware Department of Transportation



What are “Complete Streets?”

At the national level, a “complete streets” movement is underway to bring greater equality to multiple forms of—multi-modal—transportation during the process of designing and engineering roadways. Complete streets are roadways designed, built, and maintained to safely accommodate travelers of all ages and abilities—automobile drivers, pedestrians, bicyclists, and public transit users—including children, families, older adults, and persons with disabilities.

Does Delaware have a Complete Streets policy?

Yes, Delaware Governor Jack A. Markell issued Executive Order No. 6 in April 2009 to create a **Complete Streets policy** for the state of Delaware. DelDOT subsequently adopted a Complete Streets policy on January 6, 2010. Under the policy, DelDOT is charged with creating a formal process to implement complete streets principles and design standards that consider all modes of transportation.

How can local governments support Delaware's Complete Streets policy?

Local governments can develop, adopt, and implement complete streets principles and practices, within plans and policies, to ensure that roadways meet the multi-modal needs of all users.

Want to learn more?

Register to attend the “Planning Complete Streets” (Planning 209) workshop via IPA's event page: www.ipa.udel.edu/events.html

Thursday, June 9, 2011, from 9:00 a.m. to 12:00 noon
 University of Delaware Parade Center
 69 Transportation Circle
 Dover, Delaware

Registration fee: \$45.00 / Registration deadline: June 2, 2011

Appendix L. Citations

- AARP. 2009. "The Road Ahead: AARP Survey on Community Services in Delaware." Accessed 8/12/2011. http://assets.aarp.org/rgcenter/il/de_hcbs_09.pdf.
- AASHTO. February 2010. DRAFT: *AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities*. Accessed 7/21/11. <http://design.transportation.org/Documents/DraftBikeGuideFeb2010.pdf>.
- AASHTO, FHWA. "Context Sensitive Solutions Strategic Planning Process Summary Report." AASHTO/FHWA. Accessed 10/10/2010. http://contextsensitivesolutions.org/content/topics/what_is_css/
- Active Transportation Alliance and Hernandez, A. "Chicago Complete Streets." Accessed 12/20/2010. www.reversechildhoodobesity.org/sites/default/files/files-wfm/Adolfo-Hernandez-10-07-10.pdf.
- ADA.gov. "28 CFR Part 35: Nondiscrimination on the Basis of Disability in State and Local Government Services." Accessed 5/14/2011. www.ada.gov/reg2.html.
- Aglio, Anthony. "DelDOT Complete Streets Policy: 2010 and Beyond." Accessed 12/20/2010. www.ipa.udel.edu/localgovt/training/dilgl/22nd_content/DelDOTCompleteStreets_web.pdf.
- American Planning Association. (n.d.) "Mixed-Use Development." Accessed 8/31/2011. www.planning.org/nationalcenters/health/mixedusedevelopment.htm.
- American Society of Planning Officials. 1959. *Central Business District Goals*. Chicago: American Society of Planning Officials, 1959.
- Andrew Nusca. "Are Cul-De-Sacs to Blame for Stifling Urban Communities?" Accessed 11/15/2010. www.smartplanet.com/blog/smart-takes/are-cul-de-sacs-to-blame-for-stifling-urban-communities/6706.
- Beck, C. M. 2010. *Healthy Communities: The Comprehensive Plan Assessment Tool*. Newark, Delaware: Institute for Public Administration.
- Belden Russonello & Stewart LLC. 2011. *The 2011 Community Preference Survey*. Accessed 8/31/2011. www.realtor.org/wps/wcm/connect/a0806b00465fb7babfd0bfce195c5fb4/smart_growth_comm_survey_results_2011.pdf?MOD=AJPERES.
- Bike Delaware. 2011. "1st Ever CMAQ-Funded Bike Project in Delaware History." Accessed 10/12/2011. www.bikedelaware.org/2011/09/11/1st-ever-cmaq-funded-bike-project-in-delaware-history.
- Bicyclinginfo.org. "BIKESAFE: Case Studies." Accessed 10/10/2010. www.bicyclinginfo.org/bikesafe/case_studies.cfm.
- Carter, Matheu. (2011). "Americans with Disabilities Act: Transition Plans and Complete Streets." Delaware Center for Transportation. Presented at IPA Planning 209 Workshop on Complete Streets. June 9, 2011.
- Centers for Disease Control and Prevention. n.d. *U.S. Obesity Trends*. Accessed 3/11/2011. www.cdc.gov/obesity/data/trends.html.
- Chester County Planning Commission. 2007. "Trail & Path Planning: A Guide for Municipalities." : 43.
- City of Dallas. "Request for Proposals for the City of Dallas Complete Streets Initiative." Accessed 11/15/2010. www.scribd.com/doc/39603294/1-RFP-BPZ1100-Complete-Street-Policy-Initiative.
- City of Dover, Delaware. 2011. *2010/2011 Public Services Emergency Plan*.
- City of Dover Municipal Code. 2010. Accessed: 10/11/2010. http://library5.municode.com/default-now/home.htm?infobase=13910&doc_action=whatsnew.
- City of Dubuque. "Dubuque, IA - Official Website - Complete Streets Pilot Program." Accessed 10/18/2010. www.cityofdubuque.org/index.aspx?NID=1264.

- City of Independence. "Resolution No. 10-0413-03 Complete Streets." Accessed 12/13/2010. <http://independence.govoffice.com/vertical/Sites/{C7D7213B-EE9A-4B42-8A07-C723AF50920C}/uploads/{FBESFAD0-8252-4E85-A8F6-51BA4AD8F738}.PDF>.
- City of Las Cruces. "Complete Streets Resolution." Accessed 12/13/2010. <http://lcmpoweb.las-cruces.org/Complete%20Streets/City%20of%20Las%20Cruces%20Complete%20Streets%20Resolution.pdf>.
- City of Lewes Municipal Code. 2010. Accessed 10/11/2010. <http://ecode360.com/?custId=LE0715>.
- City of Modesto. "Non-Motorized Plan." Accessed 11/17/2010. www.modestogov.com/prnd/recreation/docs/Non_Motorized_Plan.pdf.
- City of North Myrtle Beach. "Staff Report to Planning Commission – December 16, 2008." Accessed 12/14/2010. www.completestreets.org/webdocs/policy/cs-sc-northmyrtlebeach-ordinance.pdf.
- City of Raleigh. "Comprehensive Plan." Accessed 1/6/2011. http://raleigh-consult.limehouse.com/portal/planning/comprehensive_plan/comp_plan-final_version?pointId=1218500103159#section-1218500103159.
- City of Rehoboth Beach. 2010. "Rehoboth Beach Comprehensive Development Plan." Rehoboth Beach, Delaware.
- City of Traverse City and Charter Township of Garfield. "Circulation Plan." Accessed 11/18/2010. www.ci.traverse-city.mi.us/CommonsMasterPlan/5_Circulation_Plan.pdf.
- City of Wilmington. 2003. "A City-wide Plan of Use." A Component of the Comprehensive Development Plan. Wilmington, Delaware.
- Cityscape Institute. "Lighting use & Design Project for Public Spaces." Accessed 10/15/2010. www.pps.org/articles/streetlights.
- Colia, Demetra V., Joy Sharp, and Lee Giesbrecht. 2003. "The 2001 National Household Travel Survey: A Look into the Travel Patterns of Older Americans." *Journal of Safety Research* 34 (4): 461-470.
- Cortright. Walking the Walk: CEOs for Cities. 2009. http://blog.walkscore.com/wp-content/uploads/2009/08/WalkingTheWalk_CEOsforCities.pdf.
- Costello, Dan. 2003. "The Returning City: Historic Preservation and Transit in the Age of Civic Revival PART A." Federal Transit Administration and National Trust for Historic Preservation. Accessed 12/20/2010. www.planning.dot.gov/documents/casestudy/cities/returning_city.htm.
- Daniels, S., T. Brijs, E. Nuyts, and G. Wets. 2009. "Injury Crashes with Bicyclists at Roundabouts: Influence of some Location Characteristics and the Design of Cycle Facilities." *J Safety Res* 40: 141-148.
- Delaware Bicycle Council. "Promoting and Enhancing Bicycling in Delaware." Accessed 12/20/2010. www.deldot.gov/information/community_programs_and_services/bike/biking_in_delaware/deldot_policy.shtml.
- Delaware Department of Transportation.
- "Delaware Bicycle Facility Master Plan: Executive Summary." Accessed 12/20/2010. www.deldot.gov/information/projects/bike_and_ped/bike_facilities/pdfs/pdf-oct-05/executive_summary-oct2005.pdf.
- (2005). Delaware Bicycle Facility Master Plan. Accessed 12/21/2010. www.deldot.gov/information/projects/bike_and_ped/bike_facilities/pdfs/pdf-oct-05/full_report-oct2005_rev.pdf.
- "Delaware Bicycle Council - Promoting and Enhancing Bicycling in Delaware." Accessed 11/3/2010. www.deldot.gov/information/community_programs_and_services/bike/about/history.shtml.
- "Delaware Department of Transportation - Community Programs and Services." Accessed 10/28/2010. www.deldot.gov/information/community_programs_and_services/te/understanding.shtml.
- "Delaware Department of Transportation – Secretary." Accessed 10/26/2010. www.deldot.gov/home/secretary.
- Delaware Statewide Pedestrian Action Plan Phase I: Policy Analysis. 2007.

"DelDOT Complete Streets Policy: 2010 and Beyond." Accessed 1/10/11.
www.ipa.udel.edu/localgovt/training/dilgl/22nd_content/DelDOTCompleteStreets_web.pdf.

"DelDOT Road Design Manual." Accessed 10/10/2010.
www.deldot.gov/information/pubs_forms/manuals/road_design/pdf/10_misc_design.pdf.

Delaware Transportation Facts 2009. 2009.

"Final Regulations." 2000. Accessed 10/15/2010.
www.deldot.gov/information/pubs_forms/manuals/traffic_calming/pdf/deldotfinal.pdf.

"Standards and Regulations for Subdivision Streets and State Highway Access." Accessed 11/4/2010.
www.deldot.gov/information/pubs_forms/manuals/subdivisions/pdf/Subdivision_Manual_Revision_1_proposed_060110.pdf.

"Livable Delaware Activity: Sidewalk Policy." Accessed 11/3/2010.
www.deldot.gov/information/pubs_forms/manuals/livable_delaware/pdf/sidewalk_policy.pdf.

(2008). "Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways." Accessed 10/10/2010. <http://regulations.delaware.gov/register/july2008/final/MUTCD.pdf>.

"Safe Routes to School Program." Accessed 5/12/11.
www.deldot.gov/information/community_programs_and_services/srts/pdf/safe_routes_to_school_guidelines_072010.pdf.

"Sidewalk Policy: Livable Delaware." Accessed 11/3/2010.
www.deldot.gov/information/pubs_forms/manuals/livable_delaware/pdf/sidewalk_policy.pdf.

"Update to the 2004 Delaware Strategies for State Policies and Spending." Accessed 10/22/2010.
http://stateplanning.delaware.gov/strategies/state_strategies_update.pdf.

Delaware General Assembly. "141st General Assembly, Senate Bill 353." Accessed 5/12/11.
www.legis.delaware.gov/LIS/LIS141.NSF/fsword/?openframeset&docnum=4981410394.

Delaware General Assembly. "146th General Assembly, Senate Concurrent Resolution #13." Accessed 5/26/11/.
<http://legis.delaware.gov/LIS/lis146.nsf/2bede841c6272c888025698400433a04/d07a381a5cd8b9d7852578150058ef57?OpenDocument>.

Delaware General Assembly. "146th General Assembly, Senate Bill 130." Accessed 8/30/11.
<http://legis.delaware.gov/LIS/LIS146.NSF/93487d394bc01014882569a4007a4cb7/a8660565cc609dce852578a2006dbecd?OpenDocument>.

Delaware.gov. 2011. "A Memorandum of Agreement between the Delaware Department of Transportation (DelDOT) and the Delaware Department of Natural Resources and Environmental Control (DNREC), Accessed 10/15/11. <http://governor.delaware.gov/information/moudotdnrec.shtml>.

Delaware Health and Social Services. "Obesity among Delaware Adults Continues to Increase." Accessed 12/22/2010. <http://dhss.delaware.gov/dhss/dph/dpc/obesity02.html>.

Delaware Office of Highway Safety. "Pedestrian Safety Facts and Tips." Accessed 10/13/2010.
http://ohs.delaware.gov/Pedestrian_safety_2009/dyk_Pedestrian_Safety_Facts_and_Tips.pdf.

Department of Justice (DOJ). 2010. *2010 ADA Standards for Accessible Design*. Accessed 5/14/2010.
www.ada.gov/regs2010/2010ADASTandards/2010ADASTandards.pdf.

Disabilities Rights and Defense Fund. "History of the ADA." Accessed 11/24/2010.
www.dredf.org/publications/ada_history.shtml.

EPA. April 2011. "Emissions." Accessed 5/21/2011. <http://epa.gov/climatechange/fq/emissions.html>.

Federal Highway Administration.

A Review of Pedestrian Safety Research in the United States and Abroad. January 2004. Publication No. FHWA-RD-03-042. Accessed 5/11/11. http://katana.hsrrc.unc.edu/cms/downloads/Pedestrian_Synthesis_Report2004.pdf.

"Bicycle and Pedestrian Design Guidance." Accessed 12/16/2010. www.fhwa.dot.gov/environment/bikeped/design.htm#d10a.

"Bicycle and Pedestrian Provisions of Federal Transportation Legislation." Accessed 12/16/2010. www.fhwa.dot.gov/environment/bikeped/bp-guid.htm.

"Design Guidance. Accommodating Bicycle and Pedestrian Travel: A Recommended Approach." Accessed 12/10/2011. www.fhwa.dot.gov/environment/bikeped/design.htm#d1.

"Designing Sidewalks and Trails for Access." Accessed 12/16/2010. www.fhwa.dot.gov/environment/sidewalk2/sidewalks204.htm.

"FHWA Guidance: Bicycle and Pedestrian Provisions of Federal Transportation Legislation." Accessed 7/27/2011. www.fhwa.dot.gov/environment/bikeped/bp-guid.htm.

"Flexibility in Highway Design." Accessed 12/16/2010. http://contextsensitivesolutions.org/content/reading/flexibility/resources/flex_full/

"Metropolitan Planning." Accessed 12/16/2010. www.fhwa.dot.gov/planning/metro/index.htm.

(2009). "MUTCD: Part Nine." Accessed 10/15/2010. <http://mutcd.fhwa.dot.gov/pdfs/2009/part9.pdf>.

"Proposed Pavement Marking Retroreflectivity MUTCD Text." Accessed 10/10/2010. <http://mutcd.fhwa.dot.gov/knowledge/proposed09mutcdrev1/propmretromutcdtxt.pdf>.

"Street Design: Part 1—Complete Streets - Vol. 74 · no. 1 - Public Roads." Accessed 12/15/2010. www.fhwa.dot.gov/publications/publicroads/10julaug/03.cfm.

Frank, Lawrence D., Martin A. Andresen, and Thomas L. Schmid. 2004. "Obesity Relationships with Community Design, Physical Activity, and Time Spent in Cars." *American Journal of Preventive Medicine* 27 (2): 87-96.

Frank, Lawrence D., Peter O. Engelke, and Thomas L. Schmid. 2003. *Health and Community Design: The Impact of the Built Environment on Physical Activity*. Washington, DC: Island Press.

Haase, J., A. Kristin Nelson, A. Taylor, and B. McCann. 2009. *Planning Complete Streets for an Aging America*. Washington D.C: AARP Public Policy Institute.

Huang, Herman and Michael Cynecki. 2000. "Effects of Traffic Calming Measures on Pedestrian and Motorist Behavior." *Transportation Research Record: Journal of the Transportation Research Board* 1705 (-1): 26-31.

I-Min and Buchner. 2008. "The Importance of Walking to Public Health." *Medicine & Science in Sports & Exercise* 40: S512-S518.

International Bicycle Fund. (n.d.). "Bicycle Parking Planning Criteria: Bike Racks, Bicycle Lockers, Cycle Stands & Bike Storage Systems." Accessed 9/23/11. www.ibike.org/engineering/parking.htm.

ITE. 2010. *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*. Chapter 7, "Design Controls." Accessed 8/30/2011. www.ite.org/css/online/DWUT07.html.

Jacobs Engineering Group. 2009. *ADA Transition Plans: A Guide to Best Management Practices*. National Academy of Sciences and National Cooperative Highway Research Program, PROJECT NUMBER 20-7 (232). <http://katana.hsrrc.unc.edu/cms/downloads/ADA%20Transition%20Plans%20Report,%20May%202009.pdf>.

Kimley-Horn and Associates. 2009. *Final Report: Best Practices in Arterial Speed Management* (prepared for City of Pasadena, Calif.). Accessed 9/6/2011. ww2.cityofpasadena.net/trans/TAC%20REPORTS/110509/ITEM_4B_110509_TAC.pdf.

- Kockelman, Kara, Yong Zhao, and Chessie Blanchard-Zimmerman. 2001. "Meeting the Intent of ADA in Sidewalk Cross-Slope Design." *Journal of Rehabilitation Research & Development* 38 (1): 101-110.
- Litman, Todd. (June 2011). *Evaluating Non-Motorized Transportation Benefits and Costs*. Victoria Transport Policy Institute. Accessed 7/21/2011. www.vtpi.org/nmt-tdm.pdf.
- Marin County Bicycle Coalition. "MCBC - Complete Streets." Accessed 11/15/2010. www.marinbike.org/Campaigns/CompleteStreets.
- Markell, Jack. "Executive Order Number Six - Creating a Complete Streets Policy." Accessed 10/25/2010. http://governor.delaware.gov/orders/exec_order_6.shtml.
- Maryland Office of Smart Growth. 2005. "Driving Urban Environments: Smart Growth Parking Best Practices." Accessed 11/15/2010. http://contextsensitivesolutions.org/content/reading/parking_md/resources/parking_paper_md/.
- McCann, B. and LaPlante, John. "Complete Streets in the United States." Accessed 10/10/2010. www.sacog.org/complete-streets/toolkit/files/docs/LaPlante_McCann_Complete%20Streets%20in%20the%20United%20States.pdf.
- McCann, B. and Rynne, S., ed. 2010. "Complete Streets: Best Policy and Implementation Practices." American Planning Association.
- McCann, B. "Public Health Community Lines Up Behind Complete Streets." Accessed 12/16/2010. www.completestreets.org/news/public-health-community-lines-up-behind-complete-streets.
- McCann, B. and Suzanne Rynne. *Complete Streets: Best Policy and Implementation Practices*. Chicago, IL: American Planning Association. 2010.
- Minnesota Complete Streets Law, (2010): 351. doi:S.F.No. 2540. www.mncompletestreets.org/gfx/MNCompleteStreetsLaw.pdf.
- National Association of Realtors. 2010. On Common Ground. "Generation Y: The Future Generation of Homeowners." Retrieved 9/14/2011. www.realtor.org/wps/wcm/connect/e778b28042b1fa8681dfb5d4db880d7c/cpa_smartgrowth_ocg_summer2010_all.pdf?MOD=AJPERES.
- National Center for Safe Routes to School. "Safe Routes to School Guide: Sidewalks." Accessed 10/1/2010. www.saferoutesinfo.org/guide/engineering/sidewalks.cfm.
- National Complete Streets Coalition.
- "Complete Streets-Complete Streets Atlas." Accessed 10/20/2010. www.completestreets.org/complete-streets-fundamentals/complete-streets-atlas.
- "Complete Streets Help Keep Kids Safe!" Accessed 5/12/2011. www.completestreets.org/webdocs/factsheets/cs-children.pdf.
2011. *Complete Streets Policy Analysis 2010: A Story of Growing Strength*. Accessed 5/24/11. www.completestreets.org/webdocs/resources/cs-policyanalysis.pdf.
- "Complete Streets Policy Elements." Accessed 10/20/2010. www.completestreets.org/changing-policy/policy-elements.
- "Complete Streets: Safety." Accessed 10/1/2010. www.completestreets.org/complete-streets-fundamentals/factsheets/safety.
- "Implementation FAQs." Accessed 5/3/2011. www.completestreets.org/changing-policy/implementation-faq/#css.
- "Public Transportation." Accessed 12/20/2010. www.completestreets.org/complete-streets-fundamentals/factsheets/public-transportation.
2010. "Streetscape Improvements Help Make Streets Complete!" Accessed 5/15/2011. www.completestreets.org/resources/streetscape-improvements-help-make-streets-complete.

- "Sustainable Complete Streets." Accessed 09/18/2010.
www.completestreets.org/complete-streets-fundamentals/factsheets/green-streets.
- National Highway Traffic Safety Administration. 2009. "Traffic Safety Facts: 2009 Data." Accessed 11/1/2010.
www-nrd.nhtsa.dot.gov/Pubs/811394.pdf and www-nrd.nhtsa.dot.gov/Pubs/811386.pdf.
- National Policy and Legal Analysis Network (NPLAN) to Prevent Childhood Obesity.
2010. Model Comprehensive Language on Complete Streets. Accessed 4/1/2011.
www.nplanonline.org/nplan/products/model-comprehensive-plan-language-complete-streets.
2010. Model Laws and Resolutions: Complete Streets. Accessed 4/1/2010.
www.nplanonline.org/nplan/products/model-complete-streets-laws-and-resolutions.
- National Transportation Enhancements Clearinghouse. "Relating to Surface Transportation." Accessed 11/1/2010. www.enhancements.org/relate_stp.asp.
- Nemours Health and Prevention Services. "Childhood Obesity in Delaware." Accessed 12/20/2010.
www.nemours.org/service/preventive/nhps/campaign/obesity.html.
- Nemours Health and Prevention Services. 2009. "Counties and Municipalities can Develop Complete Streets to Combat Childhood Obesity." Accessed 5/22/2011. www.nemours.org/content/dam/nemours/www/filebox/service/preventive/nhps/campaign/obesityfactsv2.pdf.
- Newark, Delaware Code of Ordinances. (n.d.). Chapter 26 (Streets), Article III (Sidewalks), §26-25.
<http://library.municode.com/index.aspx?clientID=10128&stateID=8&statename=Delaware>.
- New Castle County Unified Development Code 2010. Chapter 40, Article 20. "Subdivision and Land Development Design Principles." Accessed: 10/11/2010. www.nccde.org/czo.
- Newsome, Steinman, & Ewing. (2003). "Charlotte's Urban Street Design Guidelines: A Context-Sensitive Decision-Making Method." Accessed 10/10/2011. www.urbanstreet.info/2nd_sym_proceedings/Volume%202/Newsome.pdf.
- North Carolina Department of Transportation. "NCDOT: Research & Reports." Accessed 10/10/2010.
www.ncdot.gov/bikeped/researchreports.
- Oakes et al. 2007. The Effects of Neighborhood Density and Street Connectivity on Walking Behavior: the Twin Cities Walking Study. Accessed 4/4/2011. www.ncbi.nlm.nih.gov/pmc/articles/PMC2228289.
- Parham and Fitzpatrick. 1998. *Handbook of Speed Management Techniques*. Texas Transportation Institute. Accessed 7/13/11. <http://tti.tamu.edu/documents/1770-2.pdf>.
- Pedestrian and Bicycle Information Center. n.d. "On-Street Facilities." Accessed 7/27/11.
www.bicyclinginfo.org/engineering/facilities.cfm.
- Peter Swift, P. E., Dan Painter, AICP, Matthew Goldstein. 2006. "Residential Street Typology and Injury Accident Frequency." www.newurbanengineering.com.
- Pivo, G. 2005. "Creating Compact and Complete Communities: Seven Propositions for Success." *Practicing Planner*, AICP.
- Powell, K. E. and S. N. Blair. 1994. "The Public Health Burdens of Sedentary Living Habits: Theoretical but Realistic Estimates." *Medicine & Science in Sports & Exercise* 26 (7): 851.
- Project for Public Spaces. 2005. *How to Turn a Place Around: Handbook for Creating Successful Public Spaces*. New York, New York.
- Project for Public Spaces. (n.d.). "What is Placemaking?" Accessed 04/27/2011.
www.pps.org/articles/what_is_placemaking.
- Project Universal Access (n.d.). "What is Universal Access?" Accessed 6/25/2011.

www.humantransport.org/universalaccess/page3.html.

Pucher, John and Lewis Dijkstra. 2003. "Promoting Safe Walking and Cycling to Improve Public Health: Lessons from the Netherlands and Germany." Vol. 93 American Public Health Association.

Rattay. 2010. *Joint Finance Committee Hearing Fiscal Year 2011*. Department of Health and Social Services Division of Public Health.

Renaissance Downtowns, LLC. 2011. "Downtowns and Walkable Neighborhoods: America's New Housing Paradigm. Accessed 4/5/2011. www.scribd.com/doc/51073668/RD-Market-for-Downtowns-and-Walkable-Neighborhoods-2011-2.

Robert Wood Johnson Foundation. "Policy Brief Number 11." Accessed 12/16/2010. www.rwjf.org/files/research/no11policybrief.pdf.

"The Synthesis Project." Accessed 12/16/2010. www.rwjf.org/files/research/no11policybrief.pdf.

Rockville, Maryland. "Complete Streets Policy." Accessed 11/16/2010. [http://rockmail.rockvillemd.gov/clerk/egenda.nsf/d5c6a20307650f4a852572f9004d38b8/57d5f1b1ebff19f9852575b400425dbf/\\$FILE/Attachment_A_CompleteStreetsPolicy.pdf](http://rockmail.rockvillemd.gov/clerk/egenda.nsf/d5c6a20307650f4a852572f9004d38b8/57d5f1b1ebff19f9852575b400425dbf/$FILE/Attachment_A_CompleteStreetsPolicy.pdf).

Rodriguez, Ariel and Christine A. Vogt. 2009. "Demographic, Environmental, Access, and Attitude Factors that Influence Walking to School by Elementary School-Aged Children." *Journal of School Health* 79 (6): 255-261.

Saelens, Brian E., James F. Sallis, and Lawrence D. Frank. 2003. "Environmental Correlates of Walking and Cycling: Findings from the Transportation, Urban Design, and Planning Literatures." *Annals of Behavioral Medicine* 25 (2): 80.

Safe Streets for Chicago. "Targeted Speeding Enforcement, New Technologies Part of Effort to Increase Safety." Accessed 12/20/2010. www.safestreetsforchicago.org.

Shrank and Lomax. December 2011. 2010 Urban Mobility Report. Texas Transportation Institute. Accessed 7/27/2011. http://tti.tamu.edu/documents/mobility_report_2010.pdf.

Singh, Gopal K., Mohammad Siahpush, and Michael D. Kogan. 2010. "Neighborhood Socioeconomic Conditions, Built Environments, and Childhood Obesity." *Health Affairs* 29 (3): 503-512.

Smith, Reed, and Baker. 2010. "Street Design: Part 1—Complete Streets." *Public Roads*. Vol. 74, No. 1. Accessed 1/11/12. www.fhwa.dot.gov/publications/publicroads/10julaug/03.cfm.

State of Delaware.

2010. *Delaware Strategies for State Policies and Spending*. Accessed 8/15/11. http://stateplanning.delaware.gov/strategies/2010_state_strategies.pdf.

2009. "Executive Order Number Six - Creating a Complete Streets Policy." Accessed 10/25/2010. http://governor.delaware.gov/orders/exec_order_6.shtml.

2010. "Governor Signs Vulnerable Users Law." Accessed 5/13/2011. <http://governor.delaware.gov/news/2010/1008august/20100812-law.shtml>.

The Maryland-National Capital Park and Planning Commission. "Countywide Parks Trail Plan." Accessed 11/17/2010. www.montgomeryparks.org/PPSD/ParkPlanning/documents/cwptp_sept08_web.pdf.

Town of Ocean View Municipal Code. 2010. www.ecode360.com/?custId=OC1962.

Transportation for America. 2011. *Dangerous by Design 2011: Delaware*. Retrieved 6/29/11. <http://t4america.org/docs/dbd2011/de-dangerous-by-design.pdf>.

Transportation for America. 2010. *Future of Transportation National Survey*. Retrieved 6/29/11. <http://t4america.org/resources/2010survey>.

Transportation Research Board. "Does the Built Environment Influence Physical Activity?" 2005. Washington D.C.: Transportation Research Board.

University of Delaware Institute for Public Administration. 2010. "2010 Update to the 2004 Town of Wyoming Comprehensive Plan."

U.S. Architectural and Transportation Barriers Compliance Board. "Accessible Sidewalks and Street Crossings: A Design Guide." Accessed 12/16/2010. www.access-board.gov/prowac/guide/PROWguide.pdf.

U.S. Census Bureau. "Journey to Work 2000." Accessed 10/15/2010. www.census.gov/prod/2004pubs/c2kbr-33.pdf.

U.S. Department of Justice. "A Guide to Disability Rights Laws." Accessed 12/16/2010. www.ada.gov/cguide.htm#anchor62335.

U.S. DOT. March 2010. "Policy Statement on Bicycle and Pedestrian Accommodation Regulations and Recommendations." Accessed 12/16/2010. www.dot.gov/affairs/2010/bicycle-ped.html.

U.S. Environmental Protection Agency.

"Endangerment and Cause Or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act | Regulatory Initiatives | Climate Change | U.S. EPA." Accessed 10/14/2010. www.epa.gov/climatechange/endangerment.html.

"Partnership for Sustainable Communities-Smart Growth." Accessed 10/10/2010. www.epa.gov/smartgrowth/partnership.

2009. "Essential Smart Growth Fixes for Urban and Suburban Zoning Codes."

United States Access Board. 2002. "ADA Accessibility Guidelines." Accessed 12/16/2010. www.access-board.gov/adaag/html/adaag.htm#4.29.

United States Access Board. "Revised Draft Guidelines for Accessible Public Rights-of-Way." Accessed 12/16/2010. www.access-board.gov/prowac/draft.htm.

University of Richmond. "Downtown Revitalization." Accessed 11/17/2010. www.solutionsforamerica.org/viablecon/downtown-revitalization.html.

Victoria Transport Policy Institute. "Automobile Dependency Transportation and Land Use Patterns that Cause High Levels of Automobile use and Reduced Transport Options." Accessed 10/2/2010. www.vtpi.org/tdm/tdm100.htm.

Victoria Transport Policy Institute. 2011. "Roadway Connectivity: Creating More Connected Roadway and Pathway Networks. Accessed 4/8/2011. www.vtpi.org/tdm/tdm116.htm.

Vogt, A. J. 2004. *Capital Budgeting and Finance: A Guide for Local Governments*. International City/County Management Association.

Walkinginfo.org. "Intelligent Transportation Systems: Devices." Accessed 10/10/2010. www.walkinginfo.org/pedsmart/devcmain.htm.

Weber, Donald. 2010. "Interim Guidance Shared Lane Marking." www.deldot.gov/information/pubs_forms/manuals/de_mutcd/pdf/InterimGuidance092410.pdf, ed. Vol. 2010.

WILMAPCO. "2009 Transportation Equity Report." Accessed 12/20/2010, 2010, www.wilmapco.org/EJ/2002%20EJ%20Report.pdf.

Zeeger. 1998. *Design and Safety of Pedestrian Facilities*. Washington, DC: Institute of Transportation Engineers.

Zick, Cathleen D., Ken R. Smith, Jessie X. Fan, Barbara B. Brown, Ikuho Yamada, and Lori Kowaleski-Jones. 2009. "Running to the Store? The Relationship between Neighborhood Environments and the Risk of Obesity." *Social Science & Medicine* 69 (10): 1493-1500.



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