

America Needs Complete Streets

**AN AGING POPULATION;¹
RISING FUEL COSTS;
CONGESTION, HEALTH, AND
ENVIRONMENTAL CONCERNS;
AND CHANGING CONSUMER
PREFERENCES ARE ALL
INCREASING DEMAND FOR
WALKING, CYCLING, AND
PUBLIC TRANSIT.² THESE
TRENDS INDICATE THAT AN
INTEGRATED MULTIMODAL
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TO MEET FUTURE TRAVEL
DEMANDS.**

BY DAN BURDEN AND TODD LITMAN

RESPONDING TO CHANGE

Our current transportation system provides relatively good service for motorists. It is possible to drive to most destinations with reasonable convenience, except under peak conditions. The major transportation problems facing most communities—traffic and parking congestion, excessive energy consumption and pollution emissions, the rate and severity of accidents, and inadequate mobility for non-drivers—can all be addressed by creating multimodal transportation systems that allow the best mode for each trip: walking and cycling for local trips, public transit for travel on congested corridors and for non-drivers, and automobile travel to access dispersed destinations and for carrying loads. Multimodal transportation serves both drivers and non-drivers by allowing mode choice based on the type of trip to be taken. This is the heart of the complete streets movement: Choice is fundamental to improving safety, service, comfort, and performance for all.

Between 1920 and 2000, travel by automobile became the dominant mode of transportation for most communities in the United States. During this period, significant resources were invested in roads and parking facilities in order to accommodate increasing automobile travel demands. However, per capita vehicle travel has stopped growing, and total vehicle travel is projected to be flat in most areas, except those with rapid population or industrial growth.³ Now that the roadway system is mature and growth rates have declined,

there is less incremental benefit from further expansion. (See Figure 1.)

Benefits can, however, be expected from redefining our transportation system. In the past, *transportation* meant *mobility*. When we focus on *mobility*, fast, cheap travel is the desired outcome. This focus is incorrect. The ultimate goal of transportation must be *accessibility*—our

ability to reach desired goods, services, and activities safely.⁴ Mobility affects accessibility, but so do the quality of transportation options and land development patterns. When we consider accessibility, we see how the modes affect one another. Efforts to improve automobile accessibility, for example, may involve expanding roads and parking facilities and locating activities along major highways, which reduces accessibility for all other modes. Complete streets policies are aimed at balancing access for all modes.

COMPLETE STREETS POLICY

A complete streets policy

- Includes a vision for how and why the community wants to complete its streets;
- Specifies that the term “all users” includes pedestrians, bicyclists, and transit passengers of all ages and abilities, as well as 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 both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right of way;
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions;
- Directs the use of the latest and best design 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; and
- Includes specific next steps for implementation of the policy.⁵

In a 2008 article in *ITE Journal*, John LaPlante and Barbara McCann explained how complete streets must focus on policy.⁶ In this article, they stated:

“A complete street is a road that is designed to be safe for drivers; bicyclists; transit vehicles and users; and pedestrians of all ages and abilities. The Complete Streets concept focuses not just on individual roads but on changing the decision-making and design process so that all users are routinely considered during the planning, designing, building and operating of all roadways. It is about policy and institutional change.”

Today, more than 200 communities have adopted complete streets policies. In 2010, complete streets policies went into effect in Minnesota, Michigan, and Colorado. Local city councils, regional transportation commissions and state legislatures across the nation are embracing complete streets policies. Some include supportive measures in transportation funding, development policies, and zoning codes to encourage multimodalism. These measures may include reduced parking requirements, development impact fees in multimodal locations, and targeted reductions in vehicle miles traveled.⁷ Professional organizations and transportation agencies are producing analyses, tools, and guidelines to support complete streets, such as the multimodal level-of-service standards developed by the Transportation Research Board,⁸ which are being incorporated into the new *Highway Capacity Manual*.⁹ Beginning in January 2011, new state legislation in California’s AB 1358 requires all California local jurisdictions to plan for the development of multimodal transportation networks that allow users to effectively travel by motor vehicle, foot, bicycle, and transit to access key destinations within their community and the larger region. Michigan’s state transportation budget gives funding preference to communities with complete streets policies and to projects that further the objectives of complete streets. In doing so, California and Michigan are encouraging local communities to adopt their own complete streets policies.

Complete streets policies are central to addressing the following serious problems we face:

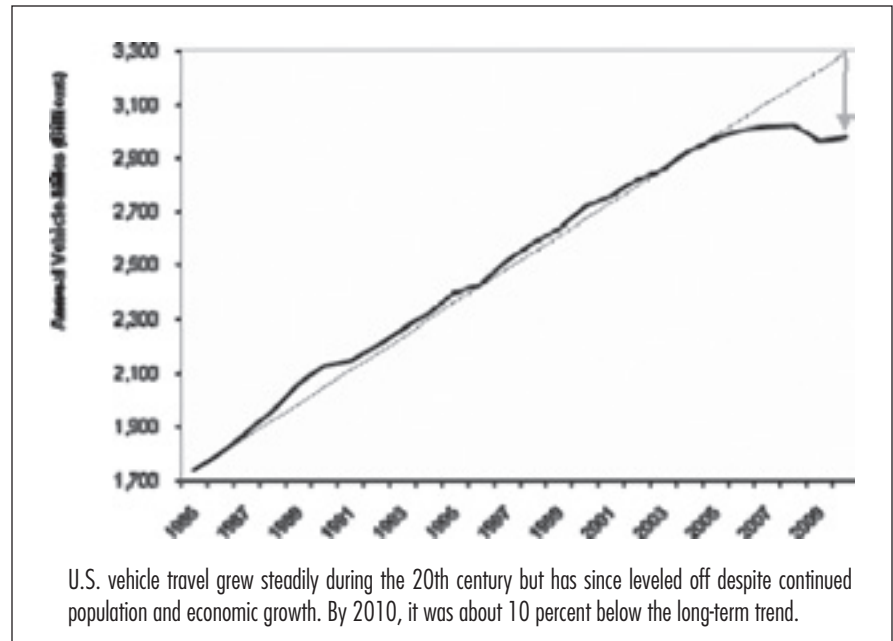


Figure 1. U.S. annual vehicles mileage trends (USDOT 2010).

- Over the past two decades, we have averaged approximately 43,000 fatal accidents annually, with approximately 2.5 million people injured on our roadways every year.¹⁰ Of the pedestrians killed in 2007 and 2008, more than 50 percent died on arterial roadways, typically designed to be wide and fast, and more than 40 percent of the pedestrian deaths that occurred were on roadways where no crosswalk was available.¹¹ Motor vehicle crashes are the leading cause of death for U.S. teens, accounting for more than one in three deaths in this age group. In 2009, about 3,000 teens in the United States aged 15 to 19 were killed, and more than 350,000 were treated in emergency departments for injuries suffered in motor vehicle crashes.¹² While the loss of life should be the most compelling reason to support complete streets, we also know that traffic crashes cost about \$164 billion annually in property damage and injuries.¹³
- Rates of individual and community health, fitness, and well-being can increase when we build complete streets. According to the American Public Health Association report *At the Intersection of Public Health and Transportation: Promoting Healthy Transportation Policy*, obesity in the

United States is the nation’s fastest-rising public health problem. According to the Centers for Disease Control and Prevention, 16 percent of children are obese, 12 million are overweight, and 66 percent of adults are overweight or obese.¹⁴ The cost of obesity and inactivity to society is enormous: In 2004, the total cost of being obese or overweight was estimated at \$117 billion, and physical inactivity’s healthcare costs are at \$76 billion per year.¹⁵ From 1969 to 2001, the percentage of students walking and bicycling to school in the United States declined from 41 percent to 13 percent. The majority of these trips have been replaced by parents driving their children to school—resulting in traffic congestion and safety issues around schools and less physical activity for children. The federal Safe Routes to School program, which was created by the 2005 SAFETEA-LU federal transportation bill, provided \$600 million between 2005 to 2009 to make it safer for children to walk and bicycle to school; yet this funding is estimated to serve only 7.5 percent of schools in the nation.¹⁶ Safe Routes to School programs allow communities to conduct bicycle and pedestrian safety education and

speed enforcement programs along with assessment for improved planning and engineering around schools. A complete streets policy at the local level can supplement the National Safe Routes to School program to improve conditions around all schools.

- Air pollution is associated with significant health issues, including asthma, respiratory illness, heart disease, and cancer. Asthma is a major public health problem in the United States, with 22 million people currently diagnosed with asthma, 12 million of whom have had an asthma attack in the past year.¹⁷ Four thousand people die each year from asthma-related causes, and asthma is a contributing factor for another 7,000 deaths every year. Asthma prevalence among children has increased an average 4.3 percent per year from 1980–1996.¹⁸ Each year, asthma accounts for 14 million days of missed school days by children.¹⁹ The cost of health issues associated with poor air quality due to transportation is estimated at between \$40 billion and \$64 billion per year.²⁰ The Urban Land Institute estimates that carbon emissions from transportation will be 41 percent above today's levels in 2030 if driving is not curbed.²¹
- Nearly one-third of the U.S. population is transportation disadvantaged, which means that they cannot easily access basic needs such as healthy food choices, medical care, gainful employment, and educational opportunities.²² Research shows that half of all non-drivers age 65 and over—3.6 million Americans—stay at home on a given day because they lack transportation.²³ The economy cannot reach its maximum potential when buyers are unable to reach retail destinations. Additionally, transportation is the second-largest expense for American households, costing more than food, clothing, and healthcare. Even before the recent increase in gasoline prices, Americans spent an average of 18 cents of every dollar on transportation. The poorest fifth of U.S. families, earning less than \$13,060 per year, pay 42 percent

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of their income to own and drive a vehicle. Those families earning \$20,000 to \$50,000 spend as much as 30 percent of their budget on transportation.²⁴ The vast majority of this money, nearly 98 percent, is for the purchase, operation, and maintenance of automobiles. Drivers spent \$186 billion on fuel last year, and without improvements to fuel economy, Americans will spend an estimated \$260 billion on gasoline in 2020.²⁵

- A recent study by the Texas Transportation Institute found that congestion was responsible for an annual \$78 billion loss in fuel during traffic jams in 2007, an increase from \$57.6 billion in 2000.²⁶ The 2008 National Household Transportation Survey found 50 percent of all trips in the United States are three miles or less, and 28 percent of all trips are one mile or less—distances easily accessible by walking, biking, or taking a bus or train. Yet, 72 percent of the shortest trips are now made by automobile. In part, this is because of

incomplete streets that make it dangerous or unpleasant for other modes of travel. Complete streets can convert many of these short automobile trips to multimodal travel. Simply increasing bicycling from 1 percent to 1.5 percent of all trips in the United States would save 462 million gallons of gasoline each year. Using transit has already helped the United States save 1.4 billion gallons of fuel each year, which is a savings of 3.9 million gallons of gasoline every day.²⁷

The emphasis on multimodal transportation through complete streets is not an entirely new concept. Roadways historically were designed to accommodate all modes, but complete streets policies provide the opportunity to build the political and community will to truly operationalize multimodal planning at the street and neighborhood level. Our transportation planning priorities must evolve if we are to have a better-functioning transportation system. Transportation policies and practices must ensure that roadways are designed to safely, comfortably, and efficiently accommodate all types of users, including motorists, pedestrians, cyclists, children, disabled, the elderly, and public transit travelers.

COMPLETE STREETS BENEFITS

Complete streets can contribute to the improvement of traffic performance and provide a number of social, economic, environmental, and health benefits to communities. They respond to and support other efforts to increase transportation system efficiency, including transportation demand management, parking management, improvements to alternative modes, transit-oriented development, and smart growth land use policies. The new FHWA/FTA *Livability in Transportation Guidebook* gives us a clearer picture of the current orientation of federal agencies. The document explores how transportation planning and programs can improve community quality of life, enhance environmental performance, and increase transportation and housing choices while lowering costs and supporting economic vitality. Many of the case studies resolve capacity and operational issues through

a multimodal network and systems approach, reflecting better integration of land use with transportation. The guidebook recommends implementation of complete streets policies for both new facilities and through “re-engineering existing roadways to improve vehicle capacity; pedestrian, bike, and transit service; and requiring new facilities to be complete streets.” It also calls for creating more complete street networks by “developing a multimodal network of parallel roadways through existing underused shopping centers and strip commercial development, for local travel and to connect surrounding neighborhoods to jobs, shopping, activities, and each other.”²⁸

While travel impacts taken individually may seem modest, typically affecting just a few percent of total vehicle travel, the effects are cumulative and synergistic.^{29, 30} An integrated complete streets program can reduce per capita vehicle travel by 10 to 30 percent or more compared with data from more auto-dependent communities.³¹

Complete streets policies provide a variety of benefits:³²

- When automobile travel declines, numerous impacts can occur, including congestion reductions, road and parking cost savings, consumer savings, accident reductions, energy conservation, and emission reductions.
- The community can benefit from investments that improve walking, cycling, and public transit. Such projects, when combined with new land use patterns, support local economies by leveraging public investments and often include a revival in retail activity, private investment, social capital, and tourism. Investments typically increase retail sales by an average of 30 percent and land value from 70 to 300 percent.³³ North Carolina DOT studies (USA) have linked added tourism to the inclusion of bike trails in popular mountain, beach, and city destinations, for example.³⁴
- *Livability* refers to the environmental and social quality of an area as perceived by residents, employees, customers, and visitors. This includes safety, health and well-being, economic opportunity, social equity,

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the local environmental quality, and preservation of valued cultural and environmental resources. Complete streets improve livability.³⁵ Parents allow their children to walk to school; the elderly and disabled regain their independence; and residents and visitors have access to transportation, housing, shopping, and recreational activities. U.S. Transportation Secretary Ray LaHood said it best: “Livability means being able to take your kids to school, go to work, see a doctor, drop by the grocery or post office, go out to dinner and a movie, and play with your kids at the park—all without having to get in your car.”³⁶

- Sidewalks and trails are an important component of the public realm because they are the places where the community can interact. Improving walkability tends to increase community cohesion through positive interactions among neighbors, which in turn tends to improve public safety and security.³⁷
- Improving walking, cycling, and

public transit tends to increase affordability and economic opportunity to disadvantaged people, helping to achieve social equity goals.

Conventional roadway evaluation metrics tend to overlook or undervalue many of the benefits of complete streets.³⁸ In a white paper titled *Evaluating Active Travel: Decision-Making for the Sustainable City*, British researchers point out that current planning practices fail to account for the health benefits that result from more active transportation, resulting in underinvestment in walking and cycling improvements. The researchers go on to state, “Given the need to ensure high-quality decision-making in the transportation sector, it is paramount that contemporary evaluation practices keep pace with the shifting nature of policies that explicitly encourage uptake of walking and cycling.”³⁹

Overall, conventional evaluation tends to overlook many ways that improving walking, cycling, and public transit travel can help solve traditional traffic engineering problems such as traffic and parking congestion.⁴⁰ Nonmotorized travel improvements can reduce local congestion problems by reducing short trips generated when poor walking and cycling conditions cause people to drive just to travel a few blocks. These short trips can create significant congestion since they often involve merging and turning maneuvers that cause traffic friction.

CASE STUDIES

Hillsborough Street, Raleigh, NC, USA: In 1999, a group of more than 500 citizens and other stakeholders mobilized in Raleigh, North Carolina, around Hillsborough Street, the N.C. State University “town/gown” connector, which was then listed as the state’s most dangerous street for pedestrians. At that time, the street was run down and home to a few businesses that appeared to be hanging on by a thread. Through a charrette-driven process, the community learned how street making is integral to their development. By the time the first major phase of the street remake was finished in October 2010, four roundabouts had been installed, a road diet was in place, and streetscape improvements included new medians, more parking,

wider sidewalks, and ample crosswalks. Today, the street is complete and alive. Nina Szlosberg-Landis, a former TV documentary producer and the “mother” of the Hillsborough Partnership, noted that more than \$200 million in new mixed-use development investments are coming to the street, traffic is flowing well, and students and motorists are safer and more comfortable. A hearty business environment is in place and growing. Even Raleigh’s own city councilors have been amazed at how the complete streets movement has affected the entire social and political processes. Russ Stevenson, at-large city councilor, and Mayor Charles Meeker (who is now tied as Raleigh’s longest-serving Mayor) attribute their success in politics, as well as their interest in walkability and transit, to the Hillsborough Street remake. These leaders consider themselves well versed in how transportation investments can be leveraged to build a sustainable future and a more enjoyable present for the community.

Washington DC, Region, USA: We sometimes assume that there is an inherent conflict between economic, social, and environmental objectives, but this is not necessarily true. By helping to create a more diverse and resource-efficient transportation system, complete streets tend to enhance economic development as well as provide social and environmental benefits. Complete streets can provide the policy and grassroots support to assist in this change by building streets that people want to live on or nearby.

In a recent presentation, Chris Leinberger, an urban land use strategist and visiting fellow with the Brookings Institute, discussed the challenges of translating complete streets policies into successful on-the-ground projects. Leinberger focused on two areas of Washington, DC’s Metro Orange Line. Twenty years ago, there were only two neighborhoods in the DC region that could truly be described as walkable urban areas: Georgetown and Old Town in Alexandria, Virginia. The expansion of the Metro system in the 1980s and 1990s, along with enlightened local public sector leadership and an innovative private real estate industry, led to a walkable urban development boom. Now there are 39 walkable urban areas in the region, including areas within the DC

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limits such as Dupont Circle, downtown, the Capitol Waterfront, and those in the suburbs such as Reston Town Center (Reston, VA), Arlington, Virginia, and downtown Silver Spring in Maryland.

Today, the Orange Line is the single-most instructive metro line in the country. It is on this line that Arlington and Fairfax Counties chose fundamentally different approaches. Fairfax County elected to take the cheapest option available: running the new line down the undevelopable center of the existing I-66 highway. Arlington County chose, at its own expense, the harder placement, inserting transit into the center of a declining corridor, pulling the line from the highway and running it through its then-unwalkable and rapidly decaying commercial areas. Over the following decades, development in Arlington’s section exploded, with the price per square foot of real estate increasing 200 to 300 percent, which translated into 10 percent of the county’s land mass providing 50 percent of the tax revenues. Just over the county border in Fairfax, the metro line went down the middle of Route 66. Looking at aerial photos of the two areas is telling: one is densely devel-

oped; the other is empty save for a sea of park & ride lots. These parking lots may condemn the areas around the stations to perpetual underdevelopment without massive subsidies to deck the parking to free up land (though this land is 100 yards from the mid-highway stations) or even more expensive subsidies to put a buildable lid over the highway.

Complete streets are not simply about street design but rather about combining proper land development patterns and proper street designs that fit together. Street connections, block form, and other patterns matter. Land use development and transportation planning decisions cannot be made in isolation from one another. The standard practice should be toward improvement of accessibility and safety and to build sustainable, economically viable communities.

PERCEIVED OBSTACLES AND RISKS

A balanced transportation system resulting from multimodal transportation planning is often the most effective way to improve the driving experience while ensuring access to vital resources and reducing the problems drivers face such as traffic and parking congestion, accident risk, and chauffeuring burdens.

A major obstacle to complete streets implementation is that many current transportation policies and planning practices favor mobility over accessibility and automobile travel over alternative modes.⁴¹ For example, a major share of transportation funding is dedicated to roads and parking facilities and cannot be shifted to support other modes or mobility-management strategies, even if they are the most cost-effective transportation system improvement options. The way we traditionally evaluate transportation system performance only considers delays to motor vehicle traffic; the delays that motor vehicle traffic imposes on pedestrians and cyclists (called *the barrier effect* or *severance*) is not generally measured in economic or planning analyses. Generous minimum-parking requirements and other zoning practices force developers to build sprawl rather than compact, mixed-use communities.^{42, 43}

Additionally, conventional travel statistics tend to undercount nonmotorized

travel activity, which leads to undervaluation and underinvestment in walking and cycling facilities. Travel surveys also undercount nonmotorized travel because they ignore short trips, non-work travel, travel by children, recreational travel, and the nonmotorized links on trips that involve motorized travel. For example, a bike-transit-walk trip is often coded simply as a transit trip, and a trip that includes walking several blocks from a parked vehicle to a destination is often coded simply as an auto trip. Nonmotorized travel is usually three to six times greater than surveys indicate.⁴⁴ The 2009 National Household Travel Survey indicates that walking, cycling, and public transportation represent approximately 15 percent of all travel and often two or three times more on major urban corridors. Inadequate walking and cycling facilities force people to drive for even short trips—sometimes to cross a busy road or to travel a single block—which significantly increases traffic congestion. We need much more investment in pedestrian and cycling improvements on our streets.⁴⁵

A focus on complete streets policy and projects may appear risky because it requires the entire community to set the vision, but it is actually riskier for communities to continue with current planning practices that undervalue and underinvest in all modes and fail to prepare for aging populations, rising fuel prices, climbing obesity rates, and increasing interest in less auto-dependent lifestyles. Americans drove almost three trillion miles in 2008, and many of those trips were very short—yet a vast majority of these trips were by automobile. Congestion is not solely an urban issue. Regions of all sizes have experienced increased congestion, costing the economy \$87.2 billion in hours lost to traffic jams and wasted fuel in 2007 alone. An evaluation of auto-dependent transportation systems found that their per capita congestion costs are significantly higher than systems that provide alternatives to driving.⁴⁶

Complete streets can be considered tools for building communities. One issue that can arise when considering complete streets is insufficient integration with other transportation and land development policies. Adding bicycle lanes on one roadway by itself will do little to increase cycling activity; it must be part of an integrated

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bicycle program that includes a network of trails and bicycle lanes, bicycle parking and changing facilities, and appropriate education and encouragement programs. Similarly, public transit facilities will provide little benefit unless implemented with other efforts to improve public transit service and encourage transit ridership. However, when properly implemented, an integrated program will provide substantial benefits, providing a high economic return on investment. This is why the emphasis must be on a complete streets policy as opposed to any project-specific undertaking. Communities can spend years battling about one street-improvement project, and when that is complete, they begin the cycle all over again. A complete streets policy, crafted by the community, ensures that the

vision is set by the community and that all street-improvement projects align with the vision the community has set for itself.

According to a new report by the Political Economy Research Institute at the University of Massachusetts–Amherst, building bike lanes, pedestrian projects, and bike boulevards creates more jobs per million dollars spent than road repairs and road resurfacing projects.⁴⁷ American Recovery and Reinvestment Act investments in public transportation created almost twice as many jobs per billion dollars invested as highway projects—16,419 versus 8,781 job months. Additionally, a \$100 million investment in Portland’s streetcars helped attract \$3.5 billion in private investment.⁴⁸ We cannot afford to squander our transportation investments. The benefits of complete streets can be vast. Complete streets can improve safety. Complete streets can target obesity rates by encouraging walking and bicycling for transportation and health. Complete streets can lower transportation costs for families. Complete streets can reduce oil dependence and carbon emissions. Complete streets can foster strong communities and build social capital. Complete streets can offer all people access to goods, facilities and community resources. Syndicated columnist Neal Pierce said it best in a recent column: “The old formula—easy mortgages, pro-sprawl land patterns, almost total automobile dependency—was overturned by the Great Recession. The excessive resources aren’t there to go back to.”⁴⁹

CONCLUSION

Jane Jacobs, author of *The Death and Life of Great American Cities*, stated that we were overbuilding our cities for our cars, stretching our cities out, making vehicles required for travel. She wrote:

“Automobiles are often conveniently tagged as the villains responsible for the ills of cities and the disappointments and futilities of city planning. But the destructive effects of automobiles are much less a cause than a symptom of our incompetence at city building.”

The simple needs of automobiles are more easily understood and satisfied than the complex needs of cities, and a growing number of planners and designers have come to believe that if they can only solve the problems of traffic, they will thereby have solved the

major problems of cities.

Cities have much more intricate economic and social concerns than automobile traffic. How can you know what to try with traffic until you know how the city itself works, and what else it needs to do with its streets? You can't."

This was 1961. Today, a significant portion of our transportation dollars continue to go to roads designed for a single use, exacerbating the problems associated with sprawl and contributing to the health and economic problems we face as a nation. The good news is that communities are starting to realize that transportation must address accessibility rather than mobility and they are looking for solutions to improve their transportation networks. A complete streets policy can help direct those dollars toward streets that support a broader range of social, environmental, and community-building goals while improving accessibility for all. ■

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