

# CONNECT

CENTRAL IOWA BICYCLE AND PEDESTRIAN TRANSPORTATION ACTION PLAN 2020

AN ACTION PLAN FOR PROJECTS, PROGRAMS, AND POLICIES



# CONNECT

CENTRAL IOWA BICYCLE AND PEDESTRIAN TRANSPORTATION ACTION PLAN 2020

## AN ACTION PLAN FOR PROJECTS, PROGRAMS, AND POLICIES

---

**FINAL REPORT**

**AUGUST 2009**

Cover Photo: Walnut Street, by Zac Bitting.  
All photographs not otherwise credited are from MPO archives.

To order copies of the *CONNECT: Central Iowa Bicycle and Pedestrian Transportation Action Plan 2020*, please contact:

DES MOINES AREA METROPOLITAN PLANNING ORGANIZATION  
Merle Hay Centre | 6200 Aurora Avenue, Suite 300W | Urbandale, IA 50322  
T: 515-334-0075 | F: 515-334-0098

The *CONNECT: Central Iowa Bicycle and Pedestrian Transportation Action Plan 2020* is also posted on the MPO website: <http://www.dmampo.org>

© 2009 Des Moines Area Metropolitan Planning Organization

The Des Moines Area Metropolitan Planning Organization (MPO) prepared this plan with partial funding from the United States Department of Transportation's Federal Highway Administration and Federal Transit Administration, and in part through local matching funds provided by the Des Moines Area MPO member governments. These contents are the responsibility of the Des Moines Area MPO. The United States Government and its agencies assume no liability for the contents of this report or for the use of its contents. The Des Moines Area MPO approved this report on August 20, 2009. Please call (515) 334-0075 to obtain permission for use.

# CONNECT

## CENTRAL IOWA BICYCLE AND PEDESTRIAN TRANSPORTATION ACTION PLAN 2020

### CONNECT PROJECT STAFF

**Project Manager**

**Zac Bitting**

Des Moines Area Metropolitan Planning Organization

#### Central Iowa Bicycle and Pedestrian Roundtable Planning Subcommittee

**Lisa Hein, Chair**

Iowa Natural Heritage Foundation

**Ruth Randleman**

City of Carlisle

**Gary Scott**

City of West Des Moines

**Todd Redenius**

City of Ankeny

**Carol Williams**

Story County Conservation

**Andrea Chase**

Iowa Natural Heritage Foundation

### MPO MANAGEMENT STAFF

#### Central Iowa Bicycle and Pedestrian Roundtable

**Jim Lane, Chair**

City of Norwalk Representative

**Tom Kane, Executive Director**

Des Moines Area Metropolitan Planning Organization

#### Transportation Policy Committee

**Ted Ohmart, Chair**

City of West Des Moines Council Member

#### Transportation Technical Committee

**Kara Tragesser, Chair**

City of West Des Moines Planner

# CONNECT

## CENTRAL IOWA BICYCLE AND PEDESTRIAN TRANSPORTATION ACTION PLAN 2020

### **Central Iowa Bicycle and Pedestrian Roundtable**

**Chair Jim Lane**, City of Norwalk  
**Marco Alvarez**, City of West Des Moines  
**Richard Brown**, City of Des Moines  
**Jay Byers**, Greater Des Moines Partnership  
**Kelly Canfield**, City of Clive  
**Andrea Chase**, Iowa Natural Heritage Foundation  
**Jim Christensen**, Jasper County  
**Michael Coltrain**, United States Army Corps of Engineers  
**Dana Conn**, Transportation Management Association  
**Glen Cowan**, City of Indianola  
**Angela Dalton**, Citizen  
**Tina Mowry Hadden**, Bike to Work Week Coordinator  
**Ryan Hanser**, Central Iowa Trails Association  
**Josh Heggen**, City of Windsor Heights  
**Lisa Hein**, Iowa Natural Heritage Foundation  
**Jan Herke**, City of Urbandale  
**Mitch Holtz**, City of Grimes/Fox Engineering  
**Josh Larson**, City of Huxley  
**Tom Lovan**, Barker Lemar Engineering  
**Loren Lown**, Polk County Conservation  
**Butch Neibuhr**, City of Perry  
**Phyllis Olson**, Greater Des Moines Volkspport Association  
**Milly Ortiz**, Iowa Department of Transportation  
**Jim Priebe**, Warren County Conservation  
**Ruth Randleman**, City of Carlisle  
**Todd Redenius**, City of Ankeny  
**Neil Ruddy**, City of Carlisle  
**Gary Scott**, City of West Des Moines  
**Carl Voss**, Trails and Greenways Committee  
**Mike Wallace**, Dallas County Conservation  
**Ron Ward**, City of Johnston  
**Normal Wessel**, Greater Des Moines Volkspport Association  
**Vern Willey II**, City of Altoona  
**Carol Williams**, Story County Conservation  
**Gay Lea Wilson**, Citizen  
**Mike Zmuda**, Bartlett & West Engineering

### **DISCLAIMER**

This document does not constitute a standard, specification or regulation. It is not intended to replace existing central Iowa government/agency mandatory or advisory standards, nor the exercise of engineering judgment by licensed professionals. The document is simply a guide, which compiles information, concepts, and best practices from various agencies and organizations faced with similar bicycle and pedestrian transportation issues. The Central Iowa Bicycle-Pedestrian Roundtable acknowledges the existence of other practices and provides this document as a guide for those responsible for making professional decisions.



Merle Hay Centre  
6200 Aurora Avenue, Suite 300W  
Urbandale, IA 50322-2866  
Phone: 515.334.0075

THE

# CIRTPA

CENTRAL IOWA REGIONAL TRANSPORTATION PLANNING ALLIANCE

Greetings,

I am pleased to present to you central Iowa's first bicycle and pedestrian action plan – *CONNECT: Central Iowa Bicycle and Pedestrian Transportation Action Plan 2020 (Connect)*. This plan will guide projects, programs, and policies on bicycle and pedestrian transportation in the upcoming years.

The Des Moines Area Metropolitan Planning Organization's Central Iowa Bicycle-Pedestrian Roundtable worked on this plan and assisted staff to complete the project. Citizens around central Iowa provided additional help by offering insights, suggestions, and reactions during the development of this plan. We have been learning about your concerns for years and we think we have addressed those concerns in this plan, making it a better product because of your involvement.

*Connect* is an action plan that will guide our thinking of how we can make bicycle and pedestrian activities safe and enjoyable for individuals, groups, and families. Joining bikeways to priority destinations, such as schools, universities, employment centers, shopping destinations, and transit stops also are important connections. *Connect* also is about establishing a harmonious relation between bicycle and pedestrian activities. We believe the success of this plan will depend on strong cooperative effort with all local governments, agencies, non-profit organizations, volunteers, advocates, and citizens.

We encourage you to take a good look at this plan and take part by completing an action or two within the plan. We have completed a very important first step in developing the first central Iowa bicycle and pedestrian action plan, but over the years, we will be reviewing and amending it, as well as integrating it with other plans.

With everyone working together to accomplish the goals, objectives and actions of this plan, central Iowa will become a more healthy and vibrant place to work and live.

Stay connected,

Jim Lane, Chair  
Central Iowa Bicycle-Pedestrian Roundtable

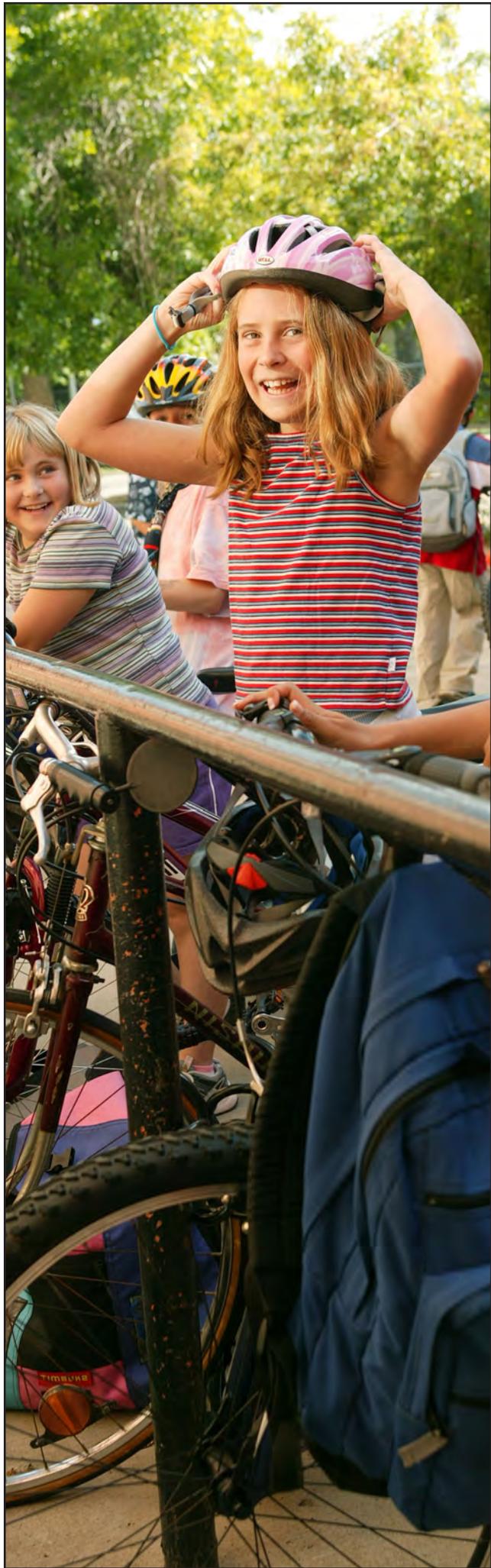
**This page left blank intentionally.**



Photo: Bikes Belong

# CONTENTS

EXECUTIVE SUMMARY .....	i
INTRODUCTION .....	1
Chapter 1: SYSTEM .....	5
Chapter 2: PEDESTRIAN.....	17
Chapter 3: BIKEWAY .....	27
Chapter 4: TRAIL .....	37
Chapter 5: SAFETY .....	45
Chapter 6: PROMOTION & ADVOCACY .....	53
Chapter 7: IMPLEMENTATION .....	61
REFERENCES .....	65
INDEX .....	69
Appendix 1: GLOSSARY .....	77
Appendix 2: SIX E'S .....	83
Appendix 3: TIMELINE .....	85
Appendix 3: FUNDING OPPORTUNITIES.....	105
Appendix 4: COMPLETE STREETS POLICY .....	117
Appendix 5: CRASH DATA .....	129
Appendix 6: LAWS AND ORDINANCES .....	135



# MAPS AND TABLES

Map 1:  
CENTRAL IOWA EXISTING AND  
PLANNED FACILITIES .....9

Map 2:  
DES MOINES METRO AREA EXISTING  
AND PLANNING FACILITIES..... 10

Map 3:  
DES MOINES AREA REGIONAL TRANSIT  
AUTHORITY BIKE & RIDE ROUTES ..... 16

Map 4:  
EXISTING SIDEWALK COVERAGE  
ALONG MAJOR CORRIDORS ..... 24

Map 5:  
PERCENTAGE OF COMMUTERS  
WALKING TO WORK, 2000 ..... 25

Map 6:  
PERCENTAGE OF COMMUTERS  
BIKING TO WORK, 2000..... 31

Map 7:  
CENTRAL IOWA STATEWIDE AND  
REGIONAL TRAILS ..... 40

Map 8:  
EXISTING BICYCLE AND  
PEDESTRIAN FACILITIES WITH  
TRANSIT CONNECTIONS ..... 56

Table 1:  
BIKE & RIDE USAGE BY MONTH ..... 15

Table 2:  
BIKE & RIDE USAGE BY ROUTE ..... 15



Photo: Iowa Natural Heritage Foundation

## EXECUTIVE SUMMARY

This plan, entitled *Connect*, serves as an action plan to make central Iowa a region that supports bicycling and walking throughout all levels of the transportation system. It provides the framework needed for central Iowans to develop a bicycle and pedestrian friendly environment. *Connect* aims at helping guide central Iowa toward transportation alternatives that are bicycle and pedestrian friendly and away from dependence on automobiles. Bicycling and walking provide an available means of transportation for people of all ages and socioeconomic levels. For a few bicycling and walking may be their only mode choice for transportation. Providing new sidewalks, bicycle lanes, signed bicycle routes, and trails could encourage more people to bicycle and walk.

Central Iowa currently has approximately 550 miles of trails, which are popular for recreational bicyclists and commuters, and includes two of Iowa's five State Significant (Level 1) trail corridors. The American Discovery Trail corridor includes the Heart of Iowa Nature Trail, the Ankeny to Woodward Trail, the Neal Smith Trail, the John Pat Dorrian Trail, the Principal Riverwalk Trail, the Meredith Trail, the Bill Riley Trail, the Walnut Creek Trail, the Colby Parkway Trail, the Clive Greenbelt Trail, and the Raccoon River Valley Trail. The Central Iowa Trail Loop

corridor includes the Heart of Iowa Nature Trail, the Ankeny to Woodward Trail, the Gay Lea Wilson Trail, and the Chichaqua Valley Trail.

Central Iowa also is home to six designated National Recreational Trails: the Des Moines River Trail (John Pat Dorrian Trail), 1990; the Neal Smith Trail, 1990; the Raccoon River Valley Trail, 2006; the Chichaqua Valley Trail, 2007; the Great Western Trail, 2008; and, the Summerset Trail, 2008.

*Connect* has the capability to:

- Facilitate the development of a regional, connected, comprehensive, safe, and convenient bicycle and pedestrian transportation system;
- Increase awareness and usage of alternative transportation modes;
- Support and promote benefits of alternative transportation modes that encourage active, healthy lifestyles;
- Encourage building a regional system of bicycle and

## EXECUTIVE SUMMARY

pedestrian facilities;

- Decrease the number of accidents and injuries by respecting the rights of bicyclists and motorists; and,
- Serve as a framework for comprehensive, coordinated, and continuing planning processes for state agencies, counties, and local governments in planning and developing bicycle and pedestrian facilities.

## GOALS AND OBJECTIVES

The Central Iowa Bicycle and Pedestrian Roundtable (Roundtable) Planning Subcommittee (Planning Subcommittee) began the process of developing *Connect* by evaluating and analyzing national best practices from existing regional and local bicycle and/or pedestrian plans. The Planning Subcommittee also listened to various themes identified through comments expressed at public meetings. From this, common goals and objectives for *Connect* materialized. While goals and objectives frequently differed in expressions, major preferences became clear immediately. Collectively, the Planning Subcommittee found goals and objectives focus primarily on safety, bicycle and pedestrian friendly land use and development, amenities, accessible destinations, security, alternative transportation, education, connectivity, accessibility, implementation, and maintenance.

The Planning Subcommittee created *Connect* to help achieve the Federal Highway Administration's (FHWA) bicycle and pedestrian policy goals. These are:

### Goal 1:

**Increase bicycle and pedestrian transportation to at least 15% of all trips nationally, and;**

### Goal 2:

**Simultaneously reduce the number of bicycle and pedestrian users killed or injured in traffic crashes by at least 10% nationally.<sup>1</sup>**

Additionally, *Connect* has seven chapters, each with a specific goal. *Connect* also phases in the FHWA's five "E's" (see Introduction) into: benchmarks to accomplish under a time-frame, actions to perform, objectives to meet, and goals to achieve.

Each chapter then identifies specific objectives to accomplish the chapter's overall goal, over the next 11 years. The Planning Subcommittee identified 111 actions, with measurable benchmarks, to implement these objectives and monitor *Connect's* progress over time. Provided below is a review of each chapter goal. Please refer to the full plan for more detailed information on objectives, actions, and benchmarks.

### System.

***Expand and improve bicycle and pedestrian friendly facilities to connect to all travel modes.***

A balanced bicycle and pedestrian friendly system is a benefit for health, transportation, economic, environmental, social equity, and quality of life issues. A balanced system connects trails, bicycle lanes, bicycle routes, and sidewalks to bus stops, retail activities, schools, neighborhoods, employment centers, and across major physical and transportation barriers. This chapter encourages planners and engineers to use the best available standards and the most progressive technology when developing the bicycle and pedestrian system.

### Pedestrian.

***Develop a cohesive, connected, and continuous walkable pedestrian environment for all users, including persons with disabilities, children, and the elderly.***

A walkable environment should have pedestrian connections, travel corridor character, and land use character. Key pedestrian connection actions include sidewalks connecting to trails, street crossings, bus stops, and accessible handicap improvements. Travel corridor character actions include incorporating planting strips between the roadway and sidewalk, adequate walking space, and pedestrian scale lighting. Land use character actions place emphasis on building pedestrian-oriented developments, direct and convenient routes, and walkability studies.

### Bikeway.

***Provide safe, accessible, and comprehensive bicycle friendly facilities throughout central Iowa.***

Encouraging bicycling begins with safe and accessible places to ride. *Connect* proposes developing a bicycle system that connects existing trails to roadways with bicycle lanes, signed bicycle routes, shared lane markings, and so forth. Bikeways to priority destinations, including schools, universities, and transit stations, are important. FHWA guidance suggests giving due consideration to bicyclists in the planning, design, construction, and maintenance of all roadways and bridges so these facilities do not become barriers to bicycling.

### Trail.

***Create a connected regional multimodal trail system offering convenience, mobility, and efficiency.***

The Central Iowa Trails System is over 500 miles long. Planning, funding, and connecting trails are the next steps toward making central Iowa the "Trails Capital of the World." Key trail actions include developing funding resources, instituting maintenance procedures, supporting efforts to include different modes, revitalizing greenway planning, and connecting gaps to make uninterrupted trail systems.

**Safety.**

*Ensure bicyclist, pedestrian, and motorist rights and safety through effective education and law enforcement.*

As the bicycle and pedestrian system grows and encourages more people to bicycle and walk, new programs will need to educate bicyclists, pedestrians, and motorists to share the road. Key safety actions include analyzing the circumstances of bicycle and pedestrian accidents to help prevent their recurrence, working with local law enforcement personnel on bicycling and pedestrian issues, raising awareness of bicyclist and pedestrian rights, and implementing a regional trail Emergency 911 system.

**Promotion and Advocacy.**

*Empower individuals to increase bicycle and pedestrian trips by promoting the benefits of bicycling and walking through concentrated education, awareness, and marketing campaigns.*

Developing safe bicycle and pedestrian skills among all transportation users is an effective way to stay safe. Marketing bicycling and walking as a healthy, fun, and convenient form of transportation would encourage use. Teaching motorists to share the road with bicyclists and pedestrians, developing maps, holding events and activities, developing wayfinding signage, and advocating for equal bicycle and pedestrian rights could also encourage use.

**Implementation.**

*Monitor and evaluate progress in creating a premier bicycle and pedestrian system in central Iowa.*

Implementing *Connect* will require all governments and agencies to include bicycle and pedestrian accommodations in future transportation and land use plans and designs, and construction projects. Improvements will need secure funding, policies, and coordination with elected officials, government/agency staffs, volunteers, advocates, and other interested parties to make this plan effective. The achievement of *Connect*, measured through statistical analysis, public input, and completed benchmarks, can ensure central Iowa's future of building an excellent bicycle and pedestrian friendly environment.

Bicycling and walking are elements of an integrated, multimodal transportation system. Constructing sidewalks, installing bicycle parking at transit locations, teaching children to ride and walk safely, installing curb cuts and ramps for wheelchairs, striping bike lanes on roadways, and building trails all contribute to national transportation goals for safety, mobility, economic growth and trade, enhancement of communities and natural environment, and national security.



Photo: Andrea Chase

**This page left blank intentionally.**



## INTRODUCTION

### **Today, bicycling and walking are becoming more accepted transportation alternatives.**

Over the past few decades, central Iowa governments and agencies focused most of their bicycle and pedestrian improvements on developing trails. In fact, central Iowa's existing trails coupled with development of planned trails in the metropolitan and regional transportation improvement program would result in two 100-mile loops, one 90-mile loop, one 70-mile loop, and one 50-mile loop, that all together, span eight counties and 36 communities across central Iowa. The longest series of paved trail in central Iowa, from the community of Jefferson, Iowa, to Big Creek State Park near Polk City, Iowa, is approximately 95 miles long.<sup>1</sup>

For 2007-2008, some bicycle and pedestrian improvements in central Iowa included:

- Development of over 25 miles of trails;
- Development of 0.5 miles of bicycle lanes and installation of a loop detector at the Martin Luther King, Jr Parkway and Cottage Grove Avenue intersection;
- Installation of over 250 bicycle parking facilities in Des Moines;
- Opening of a bicycle co-op in downtown Des Moines;
- Opening of a bicycle rental facility at the Brenton Skating Plaza in Des Moines;
- Certification of six League Cycling Instructors by the League of American Bicyclists;
- Creation of a bicycle advisory committee in the City of West Des Moines;
- Participation of over 2,000 commuters during Bike to Work Week 2008;
- Beginning the Kim West Radio Cycling Show, a call-in radio (KXNO) talk show dedicated to bicycling;
- Construction of complete streets in central Iowa cities, and,
- Use of Des Moines Area Regional Transit Authority's (DART) Bike & Ride (bus racks on buses) program by more than 54,000 riders.

These improvements, with years of earlier successes, help move central Iowa closer to becoming a bicycle and pedestrian friendly region based on the League of American Bicyclist standards. However, there are many challenges to bicycling and walking in central Iowa that remain. *Connect* is an effort to improve central Iowa's bicycle and pedestrian system.

## INTRODUCTION

### PRECEDENT PLANS

*Connect* serves to update and supersede the 1974 *Metropolitan Bike Trails* plan and the 1981 *Metropolitan Bikeway's Study*, prepared by the Central Iowa Regional Association of Local Governments. The 1974 plan, the first bicycle plan for the greater Des Moines metropolitan area, provided an overview of the need and demand for bikeways, illustrative guidelines, examples of bicycle facilities, and a general framework for the interaction of the local agencies in the development of the metropolitan bikeway system.

The 1981 study updated the 1974 plan and was similar to its predecessor. The study examined regional coordination after noting most planned bicycle facilities from the 1974 plan did not interconnect to make continuous routes through the urbanized area. Furthermore, the 1981 update was in response to concerns about energy and its consumption. Similarly, many of those same concerns exist with today's environment. Many people saw, and continue to see, bicycling as an inexpensive, non-polluting alternative to energy consumption and a viable component in a multimodal transportation system.

## BENEFITS

Bicycling and walking bring many benefits to users and non-users of central Iowa's bicycle and pedestrian system. As a mode of transportation, bicyclists and pedestrians may take advantage of these modes to avoid traffic congestion and parking, save money, and be active or recreational. In addition, bicycling and walking are important in the everyday lives of those who do not have access to a motor vehicle.

The positive benefits of bicycling and walking as active modes of transportation, or as purely recreational activities, span across many aspects of livelihood. Making trips by bicycling or walking would have some of the following specific benefits:

**Transportation Benefits.** According to the FHWA's 2001 *National Household Travel Survey*, almost 50% of all national travel trips taken are three miles or less in length and over a 25% of all national travel trips taken are less than one mile.<sup>2</sup> The Des Moines Area Metropolitan Planning Organization's (MPO) 2001 *National Household Travel Survey Add-on* data estimates over 50% of all Des Moines metropolitan area travel trips taken are three miles or less in length and over 25% of all travel trips taken are less than one mile. The transportation benefits of bicycling and walking could include the increase of overall mobility, reduction of traffic congestion, and enhancement of safety for bicyclists, pedestrians, and motorists.

**Environmental Benefits.** Bicycling and walking do little to degrade the environment people live in. These two modes create very little noise, pollution, or congestion. Motor



vehicle emissions are responsible for 30% of total carbon dioxide, 80% of carbon monoxide, and 50% of nitrogen oxides released in the United States.<sup>3</sup> Short travel trips made by bicycling and walking reduce air pollution (short auto trips produce more pollution per mile than longer trips).<sup>4</sup> Reducing auto trips can mitigate greenhouse gases, ground-level air pollution, smog, acid rain, and noise pollution.

**Quality of Life Benefits.** Bicycle and pedestrian friendly transportation systems are indicators of a community's livability. Active streets with bicyclists and pedestrians add to the ambience and security of streets, with the sense that active streets are safe and friendly places to live and visit. These factors have an impact on attracting businesses, employees, and tourism.<sup>5</sup>

**Economic Benefits.** The automobile is the second-highest household expense, after housing itself.<sup>6</sup> The cost of operating a sedan for one year is approximately \$6,217 – \$9,997 compared to an average annual cost of \$120 to maintain a bicycle.<sup>7</sup> In times of high gas prices, bicycling and walking are affordable modes of transportation.

Recent studies indicate that trails and greenways also can have a positive effect on the value of nearby properties. A study of property values in Eugene, Oregon, examined the effects of the South Ridgeline Trail on the property values of nearby homes. The study found that distance to the nearest trailhead was significant in the sale price of a home and determined that, for every foot closer the home was to a trailhead, the value of the home increased \$6.77.<sup>8</sup>

**Health Benefits.** Thirty minutes of aerobic exercise a day, such as bicycling (five-mile ride) or walking (one and a half-mile walk), can help one live longer and healthier.<sup>9</sup> One study quantified the benefits of money spent on trail development from a health standpoint, concluding that for every \$1.00 investment in trails for physical activity led to \$2.94 in direct medical benefit.<sup>10</sup> A National Park Service study, which compared people who lead sedentary lifestyles to those who exercise regularly, also demonstrated the positive benefit of recreation. The exercisers filed 14% fewer healthcare claims, spent 30% fewer days in the hospital, and had 41% fewer claims greater than \$5,000.<sup>11</sup>

**Social Justice Benefits.** Approximately one-third of Americans do not drive. This includes persons over the age of 65, all children under the age of 16, disabled persons, and those who are unable to afford the cost of owning and operating a vehicle.<sup>12</sup> By providing bicycle and pedestrian facilities, communities allow people to choose how they want to travel for work, shopping, home, or social trips. Without provisions, bicyclists and pedestrians either will find another transportation mode or engage in unsafe bicycling and walking conditions. The lack of choice in transportation may create an inconvenient and socially unreasonable barrier to mobility.

## SIX “E”s

*Connect* follows the FHWA’s integrated approach to bicycle and pedestrian transportation planning involving the five “E”s approach: engineering, enforcement, encouragement, education, and evaluation. Recent literature suggests adding a sixth ‘E’ to the approach: ‘equality.’<sup>13</sup> Therefore, *Connect* proposes the six “E”s (Education, Encouragement, Enforcement, Engineering, Evaluation, and Equality) approach to address the challenges and opportunities within the central Iowa bicycle and pedestrian system.

**Education.** The education category focuses on teaching bicyclists and pedestrians of all ages how to move safely in any area, from trails to sidewalks to congested streets, while teaching motorists how to share the road safely with all users. Education efforts may include providing available bicycling and walking education for adults and children, having League Cycling Instructors teach in the community, and distributing safety information to bicyclists, pedestrians, and motorists via maps, tip sheets, and as a part of driver’s education manuals and courses.

**Encouragement.** The encouragement facet places importance on the promotion and encouragement of bicycle and pedestrian activities in central Iowa. In fact, central Iowa governments/agencies already promote and encourage participation through the annual Des Moines Mayor’s Ride, Bike to Work Week events, Trail Daze, the Greater Des Moines Trails Map, and numerous community and charity bicycle rides. Additionally, encouragement projects could include installation of route finding signage, Safe Routes to School programs, commuter incentive programs, and local bicycling and walking clubs, such as Friends of Central Iowa Trails (FOCIT), Greater Des Moines Volkspport Association, Des Moines Cycle Club, and Central Iowa Trail Association.

**Enforcement.** The enforcement element measures the connections between the bicycling, pedestrian, and law enforcement communities. Enforcement efforts address whether or not the law enforcement community has a liaison within the bicycling and pedestrian community, whether there are bicycle divisions of the law enforcement or public safety communities, whether communities use targeted enforcement activities to encourage bicyclists and motorists

to share the road safely, and whether bicycle- or pedestrian-related laws exist.

**Engineering.** The engineering component focuses on the physical and operational improvements to the transportation system that accommodate bicycles and pedestrians. Engineering efforts address the existence and content of local bicycle master plans and pedestrian safety action plans, accommodation of pedestrians through accessible sidewalks, trails, and crosswalk signal timing, and accommodation of bicyclists on roadways through well-designed bicycle lanes, shared lane markings, and wide outside lanes. Engineering also addresses providing secure bicycle parking facilities and connecting on-street and off-street bicycle and pedestrian infrastructure.

**Evaluation.** Evaluation judges the existing bicycle and pedestrian system, existing programs and policies, and need for planning future improvements. The establishment of a bicycle and pedestrian plan is the first step. Measuring the amount of walking and bicycling taking place in the community, analyzing crash and fatality rates, and finding ways that communities work to improve these rates, all are elements of evaluating the plan.

**Equality.** The equality element involves having state and local laws treat bicyclists and pedestrians the same as other roadway users through equal laws, adequate funding, and consideration in planning and designing bicycle and pedestrian infrastructure.

## CHAPTER ORGANIZATION

As noted previously, the Planning Subcommittee developed *Connect* by gathering, analyzing, and listening to input from the public, the Roundtable, the MPO staff, and other interested parties during the planning process. Further input included the review of national best practices from other bicycle and pedestrian plans and design guidelines. Most input included topics such as complete streets, signage and wayfinding, education, bicycle lanes, trails, police enforcement, elected official involvement, and connection between facilities and amenities.

The Planning Subcommittee designed *Connect* so that anyone can use it as a one whole document or by individual chapter. Each chapter starts by identifying the challenges and opportunities expressed through previous public input meetings and discussions. Each chapter also states a goal and identifies specific objectives to accomplish the chapter’s overall goal, over the next 11 years. The Planning Subcommittee then identified 111 actions, with measurable benchmarks. Each benchmark has a deadline for implementation ranging from 2009-2020. In most cases, the actions identified in the plan will require additional analysis and stakeholder involvement to ensure proper implementation.

*Connect* also identifies partnerships and alliances to help develop and maintain the bicycle and pedestrian facilities,

## INTRODUCTION

support education of bicyclists, pedestrians, and motorists, and encourage more people to bicycle and walk for transportation purposes. These partnerships will help ensure that the actions and benchmarks are completed.

As most sidewalks, trails, and bicycle facilities are on local roads and streets, local government/agency initiative is necessary. It is likely that one community will require a different combination of actions steps and objectives than another to implement a successful bicycle and pedestrian program that achieves *Connect's* goals. Without these local efforts, the effectiveness of this plan will be limited, as the success of any effort depends on strong cooperative efforts with all local governments/agencies, nonprofit organizations, volunteers, advocates, and citizens.

*Connect* is a visionary plan! *Connect* can help guide central Iowa towards the needed steps of becoming a bicycle and pedestrian-friendly region. *Connect*, as a plan, is the first step. The second step begins with implementing the benchmarks through necessary human and financial resources. As a living document, it will be important to measure progress, refine priorities, and strive to improve the bicycle and pedestrian system as central Iowa implements *Connect*.

## MAINSTREAMING NONMOTORIZED TRANSPORTATION

In 2005, the *Safe Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users* (SAFETEA-LU) confirmed and continued the principle that all levels of government shall consider the safe accommodation of nonmotorized users during the planning, development, and construction of all Federal-aid transportation projects and programs. The intent of SAFETEA-LU is to plan, design, and construct all new and improved transportation facilities with bicyclists and pedestrians in mind:

“Bicycle transportation facilities and pedestrian walkways shall be considered, where appropriate, in conjunction with all new construction and reconstruction and transportation facilities, except where bicycle and pedestrian use are not permitted.” (23 U.S.C. 217(g)(1))

“Transportation plans and projects shall provide due consideration for safety and contiguous routes for bicyclists and pedestrians.” (23 U.S.C. 217(g)(2))

“In any case where a highway bridge deck is being replaced or rehabilitated with Federal financial participation, and bicyclists are permitted on facilities at or near each end of such bridge, and the safe accommodation of bicyclists can be provided at reasonable cost as part of such replacement or rehabilitation, then such bridge shall be so replaced or rehabilitated as to provide such safe accommodations.” (23 U.S.C. 217(e))

While these sections stop short of requiring bicycle and pedestrian accommodation in every transportation project, Congress identifies the need for bicyclists and pedestrians to have safe, convenient access to the transportation system and sees every transportation improvement as an opportunity to enhance the safety and convenience of the two modes. “Due consideration” of bicycle and pedestrian needs should include, at a minimum, a presumption that one will accommodate bicyclists and pedestrians in the design of new and improved transportation facilities. Local governments should include bicyclists and pedestrians in the planning, design, and operation of transportation facilities as a matter of routine, and the decision not to accommodate them should be the exception rather than the rule.<sup>14</sup>

### **Highway Construction and the League of American Wheelmen**

During the 1880s, interest in highways revived in the United States...The demands came from bicyclists who encountered miserable roads, and League of American Wheelmen (LAW), a bicycle riders group formed in 1880, led the first campaign for state funds for local road construction after 1888. It had little success, however, because of opposition from farmers, who feared that improvements for the “idle-rich” urban cyclists meant higher property taxes. In response to this impasse, the Wheelmen began an educational campaign on the benefits of better roads, which established the basis for the good roads movement for the next quarter century. In pamphlets, weekly bulletins, and, after 1892, the magazine *Good Roads*, the LAW claimed that good highways would raise land values, open new markets, provide access to manufactured goods, end rural poverty, increase political participation by farmers, and improve education.

Source: Seely, Bruce E. 1987. *Building the American Highway System: Engineers as Policy Makers*. Philadelphia, PA: Temple University Press, pg. 11-12.



Photo: Bikiowa.com

# Chapter 1:

# System

- Challenges and Opportunities.** A combination of public input, plan review, and infrastructure evaluation identified the need to:
- Review current trail pavement design standards, in order to optimize pavement durability;
  - Increase education for, and awareness by, transportation planners, transportation engineers, and decision makers;
  - Accommodate bicyclists and pedestrians across bridges;
  - Integrate bicycle and pedestrian accommodations at the beginning of any planning and design process;
  - Develop more integrated bicycle and pedestrian facility maintenance procedures and design standards, optimizing durability and decreasing costs;
  - Provide basic amenities along bicycle and pedestrian facilities, such as water, restrooms, bicycle parking, emergency shelter, and so forth;
  - Implement complete streets that are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists, and transit users of all ages and abilities;
  - Create a bicycle and pedestrian system that is interconnected with residential, commercial, and retail land use areas;
  - Provide adequate intersection traffic signals and crossing times for all users, including persons with disabilities, children, and elderly; and,
  - Improve planning cooperation between transit operators and bicycle and pedestrian coordinators.

Photo: Bikeiowa.com





## **GOAL:**

**Expand and improve bicycle and pedestrian friendly facilities to connect to all travel modes.**

# OBJECTIVE 1

ESTABLISH COMMUNICATION AND EDUCATE DECISION MAKERS ON THE BENEFITS OF BICYCLE AND PEDESTRIAN ACTIVITIES.

## ACTIONS:

**1.1. Build coalitions and alliances with local organizations and advocates to help support and provide resources toward common efforts.** Coalitions and alliances are groups that form for mutual benefit. Partnerships are relationships between individuals or groups characterized by cooperation and responsibility. Groups should form in central Iowa to achieve shared goals and should band together to pursue common efforts.

- 1.1.1. **Benchmark:** Identify and list existing local organizations and advocates, with the goal of coordinating efforts and encouraging involvement in local bicycle and pedestrian issues, beginning in 2009.
- 1.1.2. **Benchmark:** Send bulletin updates semiannually, beginning in 2010.

Partner: Roundtable  
Roundtable Subcommittee: Communications

**1.2. Inform elected officials about the benefits, challenges, and opportunities inherent to bicycle and pedestrian facilities.** Contact city council members and county supervisors directly, sign petitions, send letters via U.S. mail, and send messages via e-mail to ensure elected officials know the importance of bicycle and pedestrian interests. Since 2005, such activities resulted in bus bicycle racks on DART buses, led to the purchase of 200 bicycle racks for the City of Des Moines, and integrated the first bicycle lane on a collector roadway in the metropolitan area (East Walnut Street, Des Moines, Iowa).

- 1.2.1. **Benchmark:** Plan events and activities to encourage elected officials to walk with an escort that can point out challenges and potential solutions, beginning in 2009.
- 1.2.2. **Benchmark:** Compile and distribute to elected officials informational material on health, economic, quality of life, and transportation benefits of bicycling and walking, by 2010.
- 1.2.3. **Benchmark:** Present an annual report to elected officials, beginning in 2010.

Partner: Roundtable - Advocates - Volunteer Groups  
Roundtable Subcommittee: Communications

**1.3. Promote participation in educational workshops and the annual Iowa Bicycle Summit for elected officials and other policy and decision makers.** Key decision makers in each community should designate one or more decision makers to participate in bicycle and pedestrian educational programs. Participating in workshops and witnessing demonstrations make concepts more memorable and could gain decision makers endorsements of bicycling and walking.

- 1.3.1. **Benchmark:** Encourage each government/agency in central Iowa to send one participant to the annual Iowa Bicycle Summit, beginning in 2010.

Partner: Roundtable - Government/Agency - FOCIT  
Roundtable Subcommittee: Planning, Policy, and Funding - Communications

**1.2 Six points to make with an elected official regarding walking:**

- 1) walking is an excellent indicator of the quality of life in the neighborhood;
- 2) a vital, walkable downtown or neighborhood center with attractive places to walk and shop contributes to the local economy and attracts or keeps businesses in the community;
- 3) a walkable community also has a sense of place where people know and care about one another;
- 4) children, senior citizens, and people with disabilities can get around on their own;
- 5) as new housing developments and renewal projects are designed with walking in mind, as gaps in the sidewalk system are filled, and as street crossings are made safer, more short car trips can and will be made on foot;
- 6) a shift to more walking reduces air pollution, traffic congestion, and parking demands.

Source: Pedestrian Federation of America



Photo: Bikes Belong

## OBJECTIVE 2

INCREASE THE NUMBER OF CONNECTION POINTS BETWEEN JURISDICTIONS, ACTIVITY NODES, AND TRAVEL MODES.

### ACTIONS:

**2.1. Eliminate gaps in the existing bicycle and pedestrian system.** A gap is a missing section between two existing facilities. Existing facilities include on-street accommodations, trails, and pedestrian facilities where different jurisdictions may operate those facilities. A gaps study identifies barriers to bicycle and pedestrian travel and proposes strategies to connect sections on local, county, and regional levels. Future planning efforts should focus on identifying, prioritizing, and creating infrastructure to fill in known gaps.

- 2.1.1. Benchmark: Identify and map regional bicycle and pedestrian facility gaps annually, or as determined, beginning in 2009.
- 2.1.2. Benchmark: Develop an implementation schedule and a gap prioritization methodology, beginning in 2009.
- 2.1.3. Benchmark: Connect two to four priority gaps per year, beginning in 2011.

Partner: Roundtable - Government/Agency  
 Roundtable Subcommittee: Technical

**2.2. Connect trails to the on-street bicycle system.** Trail users need to be able to transition to and from the on-street bicycle system and onto the trail system safely and conveniently. Facilities that end, where the only option is to turn around, are “dead-ends.” One solution is to provide on-street accommodations where trails begin and end. (See Map 1, page 9 and Map 2, page 10, for Existing and Planned Bicycle and Pedestrian Facilities).

- 2.2.1. Benchmark: Identify “dead-end” bicycle facilities, by 2010.
- 2.2.2. Benchmark: Connect one trail to an on-street bicycle facility every year, beginning in 2010.

Partner: Government/Agency  
 Roundtable Subcommittee: Technical

**2.3** When a highway bridge deck, on which bicyclists are permitted or may operate at each end of the bridge, is being replaced or rehabilitated with Federal funds, safe accommodation of bicycles is required unless the Secretary of Transportation determines that this cannot be done at a reasonable cost.

Source: 23 USC Section 217 (e)

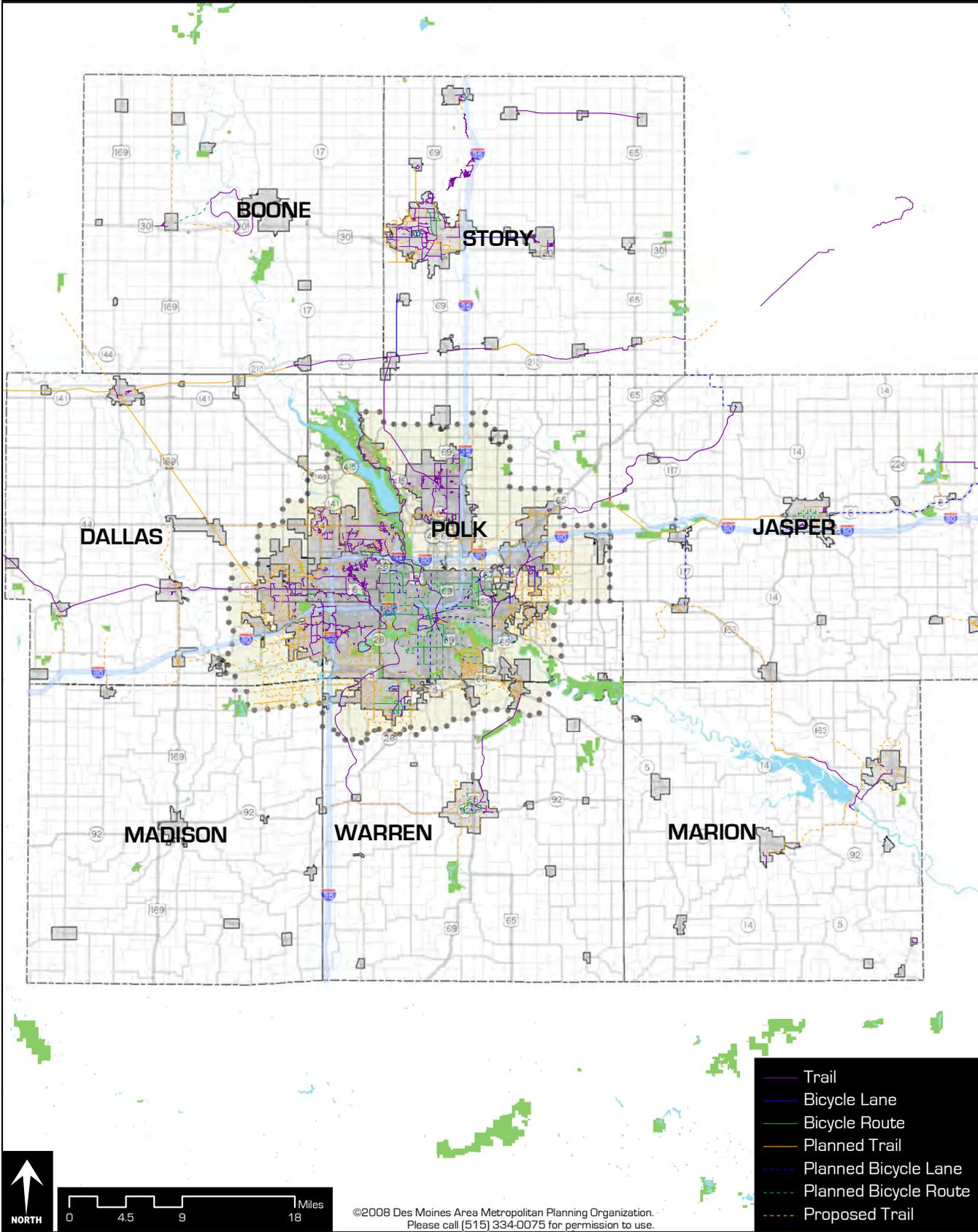
**2.3. Provide access across transportation barriers.** Central Iowa has a mixture of transportation connectivity barriers to bicycling and walking, including Interstate highways, major highways, major arterial roadways, rivers, rail lines, gravel roads, and property sites. Such barriers can force bicyclists or pedestrians to travel miles out of the way to find adequate crossings. Providing bicycle and pedestrian access across these barriers should be a standard component of roadway and bridge planning and design, regardless of a roadway’s federal functional classification.

- 2.3.1. Benchmark: Identify and prioritize all major barriers to bicyclists and pedestrians, by 2011.
- 2.3.2. Benchmark: Build three to five new crossings over major barriers, by 2016.

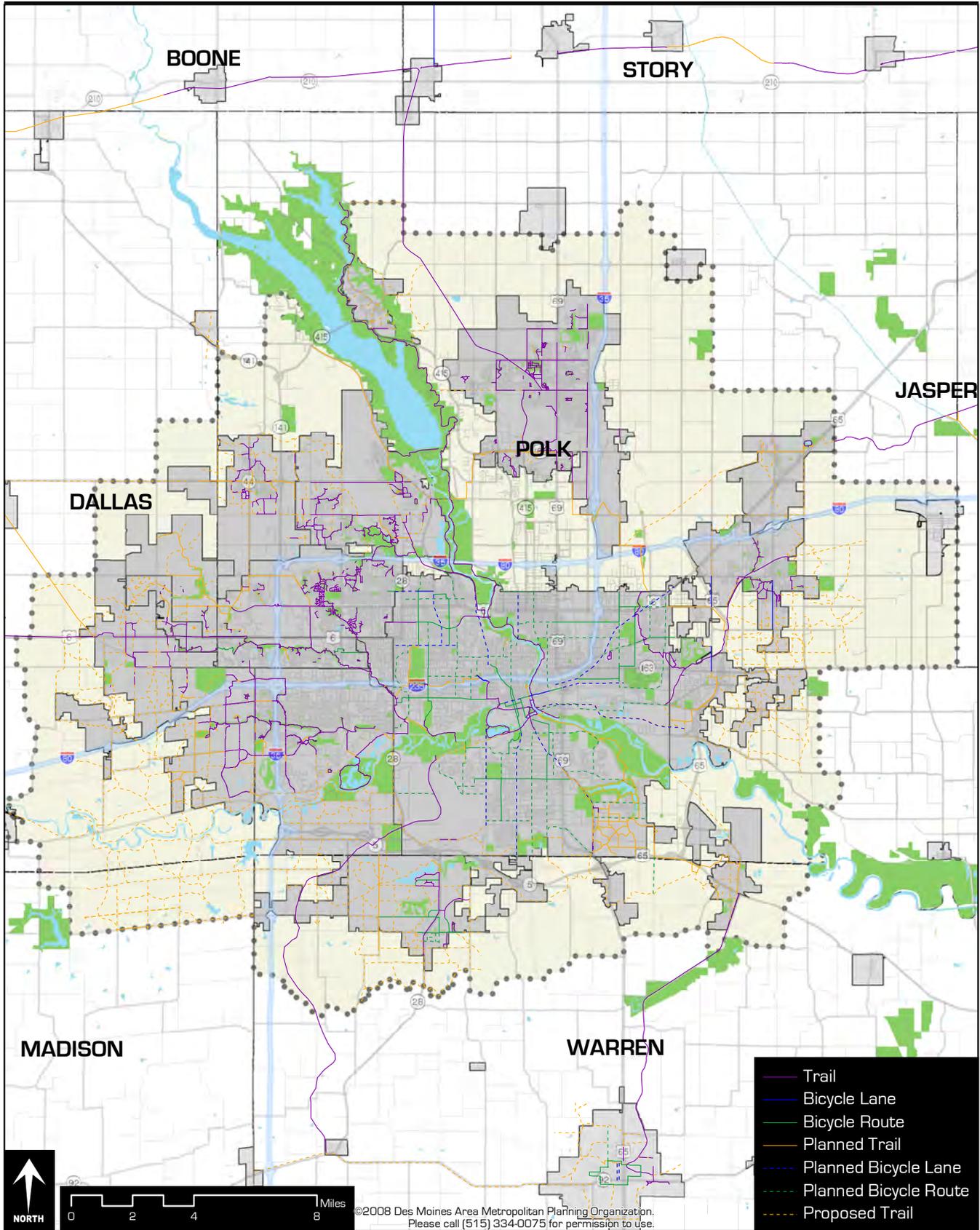
Partner: Government/Agency  
 Roundtable Subcommittee: Technical



Map 1: Central Iowa Existing and Planned Facilities



### Map 2: Des Moines Metropolitan Area Existing and Planned Facilities





## OBJECTIVE 3

LINK ACTIVITY NODES, NEIGHBORHOODS, SCHOOLS, EMPLOYMENT CENTERS, AND RECREATIONAL SITES WITH NON-AUTOMOBILE INFRASTRUCTURE.

### ACTIONS:

**3.1. Assist central Iowa cities and counties in adopting a complete street policy in which each road improved or constructed incorporates bicycle, pedestrian, and transit facilities.** Examples across the United States show complete streets result in improved safety, encouragement of more walking and bicycling, easing of transportation woes, safer routes to school, improvement to air quality and health, and reduction of congestion/capacity.<sup>1</sup> In January 2008, the MPO hosted a complete streets workshop for MPO Transportation Technical Committee and Transportation Policy Committee representatives. The January 2008 workshop addressed physical design of complete streets, complete streets making livable communities, overcoming resistance to complete streets, and funding for complete street programs.

- 3.1.1. **Benchmark:** Provide elected officials, engineers, and planners in central Iowa with fact sheets highlighting complete street benefits for safety, children, people with disabilities, older people, health, transit, climate change, economic development, air quality, congestion, transportation investment costs, and livable communities, beginning in 2009.
- 3.1.2. **Benchmark:** Offer complete street workshops and training sessions, beginning in 2009.
- 3.1.3. **Benchmark:** Have the MPO and the Central Iowa Regional Transportation Planning Alliance (CIRTPA) adopt complete street policies, by 2011.
- 3.1.4. **Benchmark:** Have all central Iowa cities and counties adopt complete street policies, by 2012.

Partner: Roundtable

Roundtable Subcommittee: Technical - Complete Streets

**3.1** To modify the roadway and integrate bike lanes without significantly affecting the safety or operation of the roadway, the Oregon Department of Transportation considers these options in their guidelines: reduction of travel lane width; reduction of the number of travel lanes; removal, narrowing, or reconfiguration of parking; and, other design options.

Source: Oregon Bicycle and Pedestrian Plan. 1995. Oregon Department of Transportation: Salem, OR

## OBJECTIVE 4

ADOPT CONSISTENT BICYCLE AND PEDESTRIAN DESIGN AND CONSTRUCTION STANDARDS BETWEEN ALL CENTRAL IOWA GOVERNMENTS/AGENCIES.

### ACTIONS:

**4.1. Use the best available bicycle and pedestrian design standards for road planning and designing.**

Designing facilities for bicyclists and pedestrians should follow guidelines and standards commonly used, such as the American Association of State Highway and Transportation Officials' (AASHTO) *Guide for the Development of Bicycle Facilities*,<sup>2</sup> AASHTO's *A Policy on Geometric Design of Highways and Streets*,<sup>3</sup> AASHTO's *Guide for Planning, Design, and Operation of Pedestrian Facilities*,<sup>4</sup> and the Institute of Transportation Engineers *Recommended Practice Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*.<sup>5</sup>

- 4.1.1. Benchmark: Review and monitor city, county, and state road and bridge construction projects to ensure accommodation for all users, beginning in 2009.
- 4.1.2. Benchmark: Have central Iowa governments/agencies present design plans to the Central Iowa Bicycle-Pedestrian Roundtable, before and after public input, for further regional professional perspectives, beginning in 2009.

Partner: Roundtable

Roundtable Subcommittee: Technical

**4.2. Improve statewide and regionally significant trails to the best available standards.** Maintaining statewide and regionally significant trails is important to state agencies, local governments, and non-profit organizations. These trails form the backbone to many individual bicycle and pedestrian systems. State agencies, local governments, and non-profit organizations should cooperate and undertake a program to widen or improve trails not meeting today's general trail design guidelines.

- 4.2.1. Benchmark: Periodically review trail design guidelines and recommend updating the *Iowa Statewide Urban Design and Specifications*,<sup>6</sup> when necessary, beginning in 2010.
- 4.2.2. Benchmark: Identify problem areas along statewide and regionally significant trails, beginning in 2010.
- 4.2.3. Benchmark: Upgrade one existing trail to national design standards per year, beginning in 2011.

Partner: Roundtable - Government/Agency

Roundtable Subcommittee: Technical

## OBJECTIVE 5

INCREASE THE USAGE OF MODERN AND PROGRESSIVE TECHNOLOGY WHEN DEVELOPING AND IMPROVING THE BICYCLE AND PEDESTRIAN SYSTEM.

### ACTIONS:

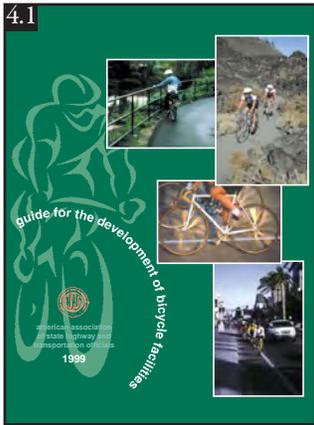
**5.1. Improve traffic signal enhancements that benefit pedestrians and bicyclists.** Traffic signals allow pedestrians to cross streets safely by creating gaps in the traffic flow. Pedestrian signal phase timing (with timing calculated with a three and a half feet per second pedestrian walk speed)<sup>7</sup> should allow for sufficient crossing time for most pedestrians. The Metropolitan Transportation Commission mentions in its *Online Safety Toolbox* that detecting bicyclists at signalized intersections improves efficiency, decreases delay, and discourages red light running by bicyclists.<sup>8</sup> The most widely used bicycle detectors are loop detectors (in pavement) and video detectors.

- 5.1.1. Benchmark: Identify, prioritize, add, and/or modify needed traffic signal improvements near schools, in central business districts, at employment centers, at major intersections, on arterial and collector roadways, and on bikeways, beginning in 2010.

Partner: Government/Agency

Roundtable Subcommittee: Technical

**5.2. Encourage compact, mixed-use development policies to create zoning and design guidelines for pedestrian- and bicycle-oriented development.** Regional travel studies have found that most compact



Source: AASHTO



development patterns produce less vehicle travel.<sup>9</sup> If bicycling and walking are to become comfortable and convenient transportation alternatives, local land use patterns must integrate these modes into local transportation systems. Past and current land use practices provided segregated, low-density developments and resulted in trip distances reflective of motorists over bicyclists. The MPO's 2001 National Household Travel Survey Add-on data estimates the average length of all MPO Planning Area trips is 8.3 miles in the Des Moines metro area, a distance a bicyclist could travel in 33.2-49.8 minutes (assumes 10-15 mph).

- 5.2.1. Benchmark: Encourage revising local government comprehensive plans to promote pedestrian-, bicycle-, and transit-oriented development, by 2012.

Partner: Elected Officials - Government/Agency  
 Roundtable Subcommittee: Planning, Policy, and Funding - Technical

**5.3. Establish policies for site and building design that support bicyclist and pedestrian activity, regardless of land use densities and intensities.** For instance, a checklist might include the evaluation of pedestrian and bicycle impacts and whether proposed facilities are in accordance with the most current design standards before approving design plans. Local ordinances might require developers to submit an internal pedestrian circulation plan, or a bicycle parking plan, as part of site designs for connections to existing facilities.

- 5.3.1. Benchmark: Review site plans; after construction, make a site visit to ensure developers build to ordinance standards, beginning in 2009.

Partner: Elected Officials - Government/Agency  
 Roundtable Subcommittee: Planning, Policy, and Funding - Technical

**5.4. Encourage transportation agencies to use a certain percentage of their funding for pedestrian and bicycle accessibility.** The MPO allocates to DART approximately 8-14% of the MPO's annual Surface Transportation Program (STP) funds for new bus purchases. DART could use a similar approach to solicit STP funds to place adequate pedestrian and bicycle facilities at their bus stops (for example, handicap accessible bus stops, standing pad repair around bus stops, bike racks at bus stops, and so forth).

- 5.4.1. Benchmark: Encourage DART to apply for regional and statewide Surface Transportation Program Transportation Enhancement (STP TE) funding to improve bicycle and pedestrian access, beginning in 2009.

Partner: Elected Officials - Government/Agency  
 Roundtable Subcommittee: Planning, Policy, and Funding - Technical

**5.5. Work with local governments to update their development regulations to include provisions for accessible transit facilities.** Efforts need to make certain new commercial and residential developments include transit access infrastructure, negating the need to have such infrastructure retrofitted later. DART member communities could include bicycle and pedestrian facilities and accessible bus stop locations in new developments, with a plan to implement similar facility improvements in existing and developed areas.

- 5.5.1. Benchmark: Modify local government comprehensive plans and zoning standards to promote transit-oriented development, by 2012.

Partner: MPO - Ames Area MPO - DART - CyRide  
 Roundtable Subcommittee: Technical

**5.6. Build a bicycle station.** A growing number of communities are supporting centrally located, secure bicycle parking garage developments that also offer bike rentals and repairs, access to public transportation, information to plan commute trips, showers and lockers, and a variety of other services. Central Iowa should build bicycle stations near major employment centers, multiple trails, and transit facilities.

- 5.6.1. Benchmark: Finalize a bicycle station feasibility study and business plan, by 2011.
- 5.6.2. Benchmark: Determine bicycle station design, by 2012.
- 5.6.3. Benchmark: Build a bicycle station, by 2014.

Partner: Roundtable - Government/Agency - MPO - FOCIT  
 Roundtable Subcommittee: Planning, Policy, and Funding

**Bicyclists are categorized into three types:**

**Experienced** - Generally use their bicycles for fitness or transportation. Speed, convenience, and directness are important factors in route selection. Although they are comfortable riding in traffic, adequate operating space is important to safe riding and avoiding confrontations with motor vehicle operators.

**Recreational** - Typically use their bicycles for recreation and fitness, less so for transportation. These riders tend to avoid busy roads with higher traffic speeds, unless there is a defined area for bicyclists, such as a wide shoulder or a designated bikeway. These riders are generally comfortable riding on local streets and busier trails.

**Youth and Children** - Tend to be slower and less confident than adults. Children use trails for recreation and getting to key destinations in the community, such as schools, convenience stores, parks and recreational facilities. Residential streets with low motor vehicle speeds are acceptable, but trails are preferred by this group.

Source: Federal Highway Administration



Photo: Bike Arlington

## OBJECTIVE 6

IMPROVE AND MAINTAIN EXISTING BICYCLE AND PEDESTRIAN FACILITIES THROUGH VARIOUS FUNDING SOURCES AND PROGRAMS.

### ACTIONS:

**6.1. Identify, create, and support funding efforts for bicycle and pedestrian facility maintenance issues.** Various municipal sources, local improvement districts, or property owners can help fund bicycle and pedestrian facility maintenance projects. Opportunities exist for identifying new and unique funding sources.

- 6.1.1. Benchmark: Develop a list of alternative funding sources for bicycle and pedestrian facility maintenance operations, by 2010.

Partner: Roundtable  
Roundtable Subcommittee: Technical

**6.2. Increase joint participation by cities, counties, and state governments in pursuing grants and other funding.** Cooperation and collaboration between and among jurisdictions can help ensure coordinated improvements and linkages for region-wide, non-motorized travel modes. When a trail crosses multiple jurisdictional boundaries, facility planning, design, and operation should be coordinated between and among jurisdictions to ensure regional connectivity and mobility for all users.

- 6.2.1. Benchmark: Coordinate local jurisdictions to pursue funding for statewide (Level 1) and regionally significant (Level 2) projects, beginning in 2009.

Partner: Elected Officials - Government/Agency  
Roundtable Subcommittee: Planning, Policy, and Funding

**6.3. Identify and eliminate practices that are major contributors to accelerated trail deterioration.** After identifying practices causing trail deterioration, one approach would be to avoid those practices that are major contributors to accelerated trail deterioration. Trails not designed with the recommended width and structural strength to withstand regular motor vehicle usage can cause pavement surface cracking and breakdown.

- 6.3.1. Benchmark: Produce a list of trail deterioration causes and develop a best practices guide on trail maintenance for local jurisdictions, by 2012.

Partner: Roundtable  
Roundtable Subcommittee: Technical



Photo: Dave McKay

## OBJECTIVE 7

IMPROVE ACCESSIBILITY AT PUBLIC TRANSIT FACILITIES.

### ACTIONS:

**7.1. Increase the number of bicycles that buses can carry.** Bike-on-bus programs can attract many passengers who would not otherwise be able to use transit for their trip, particularly to reach suburban destinations where transit coverage often is sparse.<sup>10</sup> DART and CyRide should research alternatives to the currently implemented front-mounted bicycle racks on buses. DART and CyRide should experiment with bicycle racks that could carry more than two bicycles, as well as any various types of bicycles. Another alternative is to allow bicycles on buses. Westchester County Department of Transportation (New York) adopted a permissive “welcome aboard” policy toward bicyclists and other potential users, beginning in the late 1970s.<sup>11</sup>

- 7.1.1. Benchmark: Experiment with two to four alternative transport solutions to increase bicycle capacity on DART buses, by 2011.

Partner: Roundtable - DART - CyRide  
Roundtable Subcommittee: Technical



Photo: DART

**7.2. Install bicycle racks on DART Vanpool Program vehicles.** King County Metro Transit (Seattle, Washington) provides free bicycle rack installation on vanpool vehicles at the request of vanpool riders. Bicycle racks fit on the rear of the vanpool vehicles and can hold one to four bicycles. DART's Vanpool Program has 60 full-size passenger vans and minivans, used by five to fifteen commuters per vanpool for work trips into the greater Des Moines metropolitan area..

- 7.2.1. Benchmark: Test two to four bicycle rack accommodations for DART vanpool vehicles, by 2011.

Partner: Roundtable - DART  
Roundtable Subcommittee: Planning, Policy, and Funding - Technical

**7.3. Continue to count and report "Bike & Ride" ridership.** DART should continue counting and recording Bike & Ride ridership on DART vehicles for the purpose of tracking ridership over time. DART could expand the methodology to count Bike & Ride users at their boarding and departure bus stop locations. (See "Bike & Ride" counts in Table 1 and Table 2 and see Map 3, page 16.)

- 7.3.1. Benchmark: Expand DART's Bike & Ride ridership counting methodology to include location boardings and departures, beginning in 2010.

Partner: Roundtable - DART  
Roundtable Subcommittee: Communications

**7.2 What is Vanpooling?**

- Vanpooling is a carpool with five to fifteen commuters riding together to and from work in a fully equipped passenger van.
- Vanpool members live within a few miles of one another, work in the same general area, and have similar work hours.
- Vanpool members meet at a central location, set their route and time schedule, pay one low monthly fare, and travel to and from work together.

Vanpooling offers a convenient, reliable, economical, and less stressful alternative to driving alone to work. Ridesharers help to reduce traffic delays and congestion, as well as help keep the air clean and reduce pollution in the environment.

Source: Des Moines Area Regional Transit Authority



Photo: Bikeiowa.com

**TABLE 2. BIKE & RIDE USAGE BY ROUTE**

	2005	2006	2007	2008	TOTAL
WDM/Fairgrounds	154	2,253	3,648	5,546	11,601
University/Highland-Oak Park	283	3,492	6,326	8,449	18,550
Urbandale/E. 14th	88	2,460	3,823	5,039	11,410
Clark/E. 6th & E. 9th	40	730	1,230	1,489	3,489
W. 9th/Indianola-Locona	140	1,870	3,489	3,738	9,237
Walker/Fort Des Moines	86	2,404	4,387	4,646	11,523
South Union/Havens	11	296	705	467	1,479
Pleasant Hill	--	--	--	13	13
Jordan Creek	2	98	149	143	392
Park Ave. Feeder	1	27	35	54	117
Riverpoint	0	0	0	0	0
Lincoln/McCombs	1	6	50	42	99
Link	--	--	--	457	457
MLK Shuttle	--	--	--	63	63
WDM On-call	1	0	0	26	27
Delaware Flex	--	--	4	6	10
Airport South	19	136	50	48	253
Northwest Express	1	3	34	40	78
Urbandale Express	28	273	304	333	938
Clive Express	1	9	37	44	91
Westown Express	2	28	39	89	158
Vista Express	3	26	84	103	216
EP True Express	10	281	232	97	620
Ankeny Commuter	12	337	694	589	1,632
Altoona Commuter	22	14	107	78	221
DMACC Shuttle	--	--	--	26	26
Miscellaneous	0	18	27	33	78
<b>TOTAL</b>	<b>905</b>	<b>14,761</b>	<b>25,454</b>	<b>31,568</b>	<b>71,873</b>

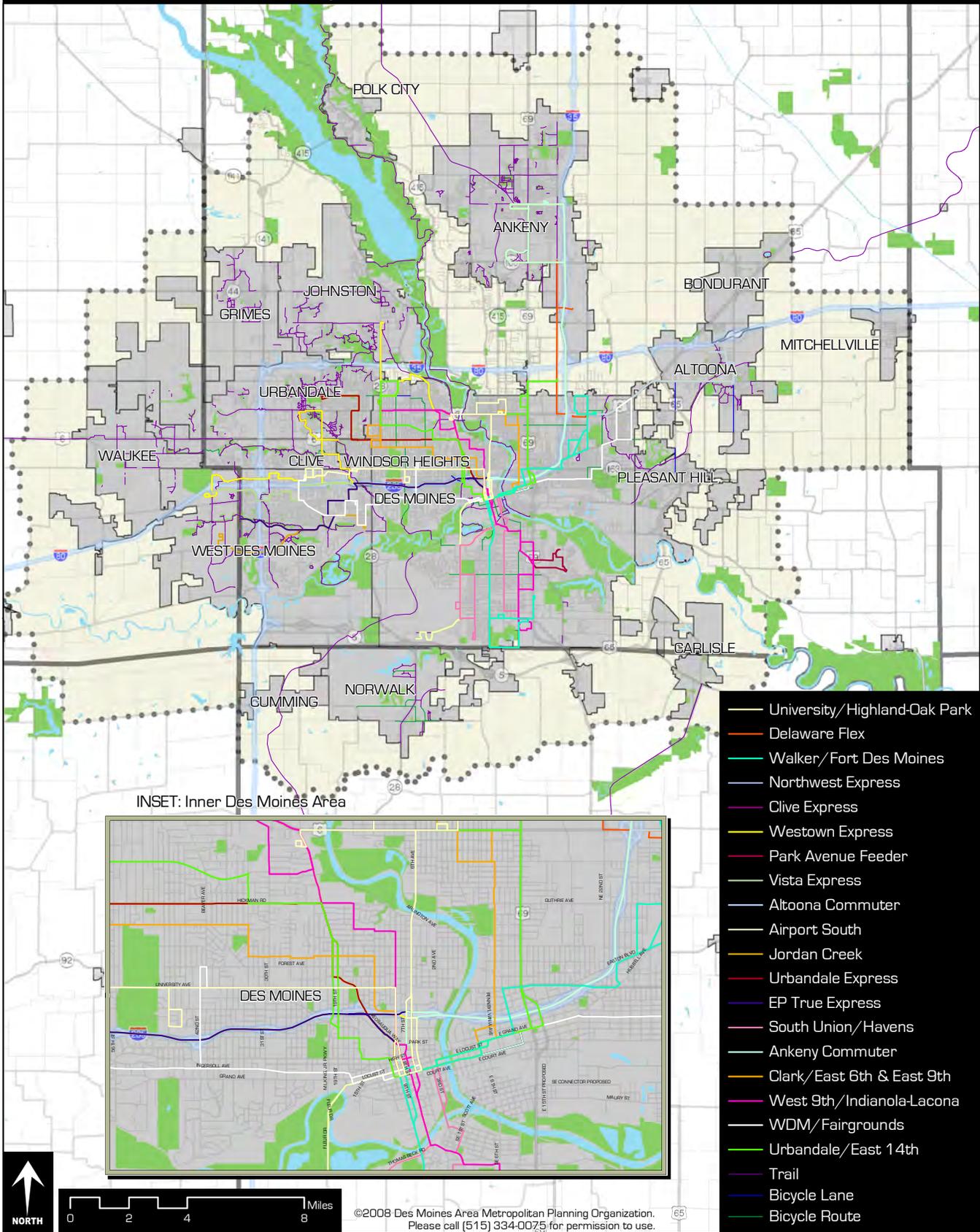
Source: Des Moines Area Regional Transit Authority

**TABLE 1. BIKE AND RIDE USAGE BY MONTH**

	2005	2006	2007	2008
JANUARY	--	334	717	718
FEBRUARY	--	425	378	623
MARCH	--	553	833	1,183
APRIL	--	771	1,256	1,904
MAY	--	1,240	1,934	2,739
JUNE	--	1,718	2,632	3,297
JULY	--	1,803	2,823	3,968
AUGUST	--	2,077	3,202	6,636
SEPTEMBER	--	1,898	2,823	3,844
OCTOBER	485	1,623	5,873	3,797
NOVEMBER	321	1,255	2,282	2,248
DECEMBER	99	1,064	701	701
<b>TOTAL</b>	<b>905</b>	<b>14,761</b>	<b>25,454</b>	<b>31,658</b>

Source: Des Moines Area Regional Transit Authority

### Map 3: Des Moines Area Regional Transit Authority Bike & Ride Routes



## Chapter 2:

# Pedestrian

**Challenges and Opportunities.** A combination of public input, plan review, and infrastructure evaluation identified the need to:

- Connect, install, and repair sidewalks;
- Build wide sidewalks in areas of high pedestrian activity;
- Improve street crossings near schools and commercial areas;
- Enforce right-of-way priority and motorist travel speeds high pedestrian volume areas;
- Review pedestrian planning procedures, particularly with regards to constructing sidewalks in new residential/commercial developments;
- Provide land use opportunities which allow people to be within walking distance of commercial and retail activity destinations;
- Improve pedestrian accessibility at and to transit facilities; and,
- Improve intersection traffic signalization and crossing times for all users, including persons with disabilities, children, and the elderly.





## **GOAL:**

**Develop a cohesive, connected, and continuous walkable pedestrian environment for all users, including persons with disabilities, children, and the elderly.**

# OBJECTIVE 1

## INTEGRATE PEDESTRIAN PLANS AND DESIGNS INTO TRANSPORTATION AND RESIDENTIAL/COMMERCIAL DEVELOPMENT PROJECTS.

### ACTIONS:

#### 1.1. Conduct a comprehensive pedestrian facilities review, evaluate walkability, and identify deficiencies.

The Roundtable suggests that local governments evaluate whether barriers and intrusions affect walkability and to what degree, and identify what steps they might take to remedy those barriers and intrusions. How walkable is a community? A neighborhood? A commercial district? Walkinginfo.org developed a “walkability audit” that local governments could use to conduct an unbiased examination of a walking environment.<sup>1</sup> The audit’s general purpose would be to identify safety, access, comfort, and convenience concerns in the walking environment for pedestrians.

- 1.1.1. Benchmark: Establish a walkability advisory group and begin to complete walkability checklists, by 2010.
- 1.1.2. Benchmark: Submit walkability checklist findings and recommendations to the appropriate local governments, by 2013.

Partner: Roundtable - MPO - CIRTPA - Greater Des Moines Volksport Association - FOCIT - Volunteers  
Roundtable Subcommittee: Technical

**1.2. Add new sidewalks, improve existing sidewalks, and improve connections to sidewalks.** Sidewalks are an important structural component necessary for pedestrian transportation. When located next to the roadway or at the roadway pavement edge, sidewalks become pedestrian thoroughfares. Research suggests sidewalks should have continuity, access on both sides of the roadway, separation from moving traffic, width to accommodate walkers side by side, and good maintenance.<sup>2</sup> Local sidewalks meeting these suggestions will depend upon the road classification, whether the roadway is new construction or a retrofit, and available funding. (See Map 4, page 24.)

**Sidewalks: Encourage installing wider sidewalks on both sides of all arterial roadways.** The width of a sidewalk depends primarily on the number of pedestrians expected to use the sidewalk at a given time — high-use sidewalks should be wider than low-use sidewalks. For two adult pedestrians to walk comfortably side-by-side, the recommended minimum sidewalk width is 1.5 m (5 ft).<sup>3</sup>

- 1.2.1. Benchmark: Add sidewalks along both sides of all central Iowa arterial roadways, by 2020.

Partner: Elected Officials - Government/Agency  
Roundtable Subcommittee: Technical

**Obstructions within Sidewalks: Ensure proper placement of street furniture.** Utility poles, signposts, parking meters, traffic signal standards, and other “street furniture” can affect a sidewalk’s clear accessible width. Other obstructions could include bushes, trees, and other landscaping that encroaches into the sidewalk. When an obstacle along a sidewalk exists, users should contact the government entity having jurisdiction at that location to provide an inspection procedure or a system of responding to sidewalk encroachment and maintenance complaints.

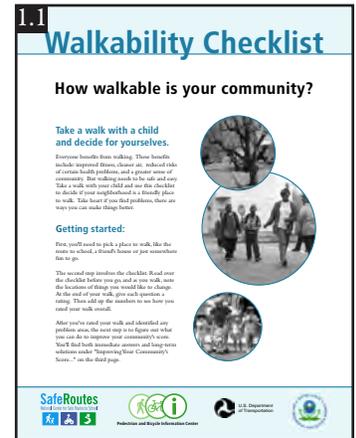
- 1.2.2. Benchmark: Remove sidewalk obstructions, determined through a walkability checklist and user complaints, beginning in 2013.

Partner: Elected Officials - Government/Agency  
Roundtable Subcommittee: Technical

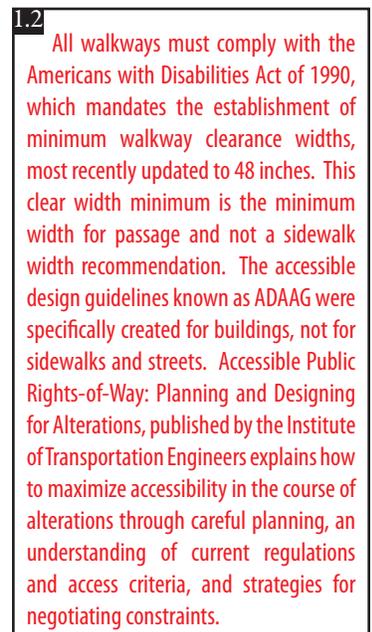
**Curb ramps: Install curb ramps in existing and developed areas.** Some older sidewalks are difficult, or impossible, for persons with disabilities and other pedestrians to traverse because of missing curb ramps or an inadequate, unobstructed walkway width. Under the American Disabilities Act, an alteration to a sidewalk or street will give rise to an additional obligation to include curb ramps in the scope of the project. From the Title II regulation 35.151(e) (2), “...newly constructed or altered streets, roads, and highways must contain curb ramps or other sloped areas at any intersection having curbs or other barriers to entry from a street level pedestrian walkway.”<sup>4</sup> Newly constructed or altered street level pedestrian walkways should contain curb ramps or other sloped areas at intersections to streets, roads, or highways.

- 1.2.3. Benchmark: Identify deficient locations for curb ramps and install curb ramps where missing from existing sidewalks, beginning in 2010.

Partner: Elected Officials - Government/Agency  
Roundtable Subcommittee: Technical



Source: www.walkableamerica.org



Source: Institute of Transportation Engineers

## PEDESTRIAN



**Planting Strips: Incorporate planting strips into design plans for pedestrian access and use.** A planting strip is the area between the constructed curb/roadway and property line, exclusive of the sidewalk area. Sidewalks separated from the roadway with a planting strip help create a pedestrian-friendly environment. Planting strips also create a buffer from the moving vehicle noise and splash. Planting strips can provide:

1. Accommodation of street furniture such as signs, utility and signal poles, mailboxes, parking meters, fire hydrants, and so forth;
2. An opportunity for aesthetic enhancements, such as landscaping and shade-producing trees that can increase roadway appeal and a pedestrian's sense of comfort; and,
3. A better environment for wheelchair users, as sidewalks can be kept at a constant grade without "dipping" at every driveway.<sup>5</sup>

- 1.2.4. **Benchmark:** Install planting strips along roadway corridors with high pedestrian usage, beginning in 2010.

Partner: Government/Agency  
Roundtable Subcommittee: Technical

**1.3. Adopt uniform bus stop accessibility policies for pedestrians.** The Roundtable suggests that local public works departments and public transportation agencies work together to adopt bus stop accessibility policies for all persons, to ensure bus stop connectivity to sidewalks, trails, and other pedestrian/bicyclist facilities. One example policy that promotes bus stop accessibility is avoiding mid-block bus stops, which may encourage jaywalking.<sup>6</sup>

- 1.3.1. **Benchmark:** Survey existing bus stop locations to determine the degree of connectivity, safety, and accessibility to other bicycle and pedestrian infrastructure and facilities, by 2011.

Partner: Government/Agency - MPO - DART - CyRide  
Roundtable Subcommittee: Planning, Policy, and Funding - Technical

**1.4. Incorporate new technologies/amenities into bus stops for all pedestrians.** Bus stops should be conducive for all pedestrian use. In areas where blind persons use buses, local governments could incorporate audio notification technology to notify blind persons of the bus schedule and approaching buses. In addition, sidewalk texture features are available to notify the visually impaired of a bus stop being nearby.

- 1.4.1. **Benchmark:** Identify three to five potential locations for audio and/or sidewalk texture improvements, by 2011.
- 1.4.2. **Benchmark:** Test two to four new technology instruments at identified potential locations, by 2013.

Partner: Government/Agency - DART  
Roundtable Subcommittee: Technical

**1.5. Take advantage of federal funding programs to solve pedestrian needs and demands.** Local governments could use existing funding opportunities to solve pedestrian needs and demands. Available grants, such as the Iowa Department of Transportation's (DOT) Iowa Clean Air Attainment Program (ICAAP) and Statewide Transportation Enhancement Program, and the MPO's STP TE program, typically fund highway-related projects, but can fund pedestrian-related projects too.

- 1.5.1. **Benchmark:** Submit four applications annually from among central Iowa governments for ICAAP, Statewide Transportation Enhancement, or MPO STP TE funds to solve pedestrian needs and demands, beginning in 2010.

Partner: Roundtable - Government/Agency - MPO - CIRTPA - DART  
Roundtable Subcommittee: Planning, Policy, and Funding

**1.6. Provide pedestrian-scale lighting along all pedestrian activity areas.** Pedestrian-scale lighting has an important role in a commercial district's overall character. In urban areas, it is important to light at least the intersections and other pedestrian crossing areas. A local government's use of pedestrian-scale lighting, such as shorter poles, can help promote walkability by illuminating transit and pedestrian routes and providing a sense of security for pedestrians around walkways, bus stops, stores, public plazas, and other pedestrian areas.<sup>7</sup> For information on desirable lighting levels for pedestrian facilities and levels of illumination for sidewalks, refer to *Time-Saver Standards for Landscape Architecture*.<sup>8</sup>

**1.6** The following are some general guidelines for lighting in public spaces included in the "Salt Lake City Street Lighting Master Plan and Policy" using Crime Prevention Through Environmental Design.

- Public spaces must be well lighted for pedestrians;
- The light type and lighting level must not hinder recognition of people; a good measure is being able to identify faces 50 feet away;
- Consistency is essential;
- Glare and shadows must be eliminated to the maximum extent possible;
- Blind spots, entrapment locations, and hidden areas need adequate lighting; and,
- In most cases, the best approach is to use more lights with lower wattage than a few lights with higher wattage.

Source: Salt Lake City Street Lighting Master Plan and Policy.

- 1.6.1. **Benchmark:** Install pedestrian scale lighting on both sides of major roadways in five to seven central Iowa commercial districts, beginning in 2010.

Partner: Government/Agency  
 Roundtable Subcommittee: Technical

## OBJECTIVE 2

INCREASE THE NUMBER OF PEDESTRIAN TRIPS.

### ACTIONS:

**2.1. Encourage area employers to undertake measures that promote walking by employees.** There are many benefits to walking to work such as transportation, economic, and health. The Downtown Community Alliance’s (DCA) Transportation Management Association (TMA) DrivetimeDesMoines.org website has information for employers and employees interested in walking to work. The website looks at transportation issues from the perspective of commuters, riders, walkers, bikers, and shoppers. (See Map 5, page 25.)

- 2.1.1. **Benchmark:** Promote the DrivetimeDesMoines.org website, beginning in 2009.
- 2.1.2. **Benchmark:** Distribute promotional materials to central Iowa businesses highlighting the benefits of commuting to work by walking, beginning in 2010.

Partner: MPO - TMA - DCA  
 Roundtable Subcommittee: Communication

**2.2. Address pedestrian behavior with children, the elderly, and persons with disabilities to promote safe and independent travel.** Over one-half of all pedestrian deaths in Iowa since 1984 have been persons under 20 or over 65 years of age. Pedestrian actions contributing to pedestrian traffic fatalities include not crossing the street at crosswalks, walking in an improper position on the roadway, running onto the roadway from between parked cars, and drinking.<sup>9</sup>

- 2.2.1. **Benchmark:** Regularly conduct pedestrian workshops that concentrate on education, enforcement, and design strategies addressing special pedestrian needs, beginning in 2010.
- 2.2.2. **Benchmark:** Identify locations where the elderly and those who have special needs for pedestrian facilities are known to reside and walk, mapping locations along with adjacent needed activities such as grocery stores, senior centers, and so forth, beginning in 2010.
- 2.2.3. **Benchmark:** Research how to accommodate and increase pedestrian travel opportunities for the elderly, children, and persons with disabilities, beginning in 2010.

Partner: Roundtable  
 Roundtable Subcommittee: Planning, Policy, and Funding - Communications

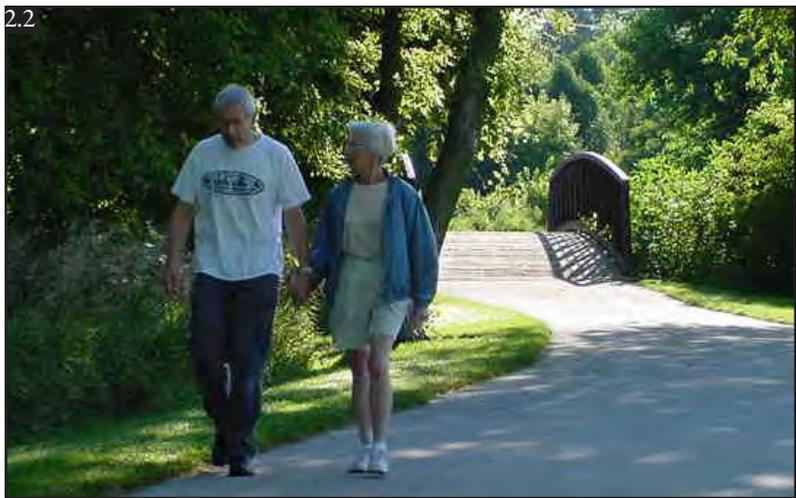


Photo: Dave Sadler

2.4

**Five Pedestrian Level of Service Measures**

- Directness** - does the network provide the shortest possible route?
- Continuity** - is the network free from gaps and barriers?
- Street Crossings** - can the pedestrian safely cross streets?
- Visual Interest and Amenities** - is the environment attractive and comfortable?
- Security** - is the environment secure and well lighted with good line of sight to see the pedestrian?

Source: Kansas City Walkability Plan

**2.3. Promote walkability with an event, such as sponsorship of a “Walk to School Day.”** The Partnership for a Walkable America sponsored the first National Walk Our Children to School Day in Chicago in 1997.<sup>10</sup> The 1997 Chicago event modeled itself after the United Kingdom’s walk to school events. In 2008, the central Iowa cities of Altoona, Ames, Boone, and Bondurant registered and participated in Walk to School Day.<sup>11</sup> Promoting such events can encourage children and families to walk to school.

- 2.3.1. **Benchmark:** Sponsor a Walk to School Day event at every central Iowa school, by 2020.

Partner: Iowa DOT - MPO - CIRTPA - Ames Area MPO - Schools  
 Roundtable Subcommittee: Planning, Policy, and Funding - Communications

**2.4. Analyze pedestrian demand and pedestrian walkability.** Measuring pedestrian demand and level of service is a function of design, in which a system of pedestrian improvements provides citizens an opportunity to walk. To determine what pedestrian improvements a local government might need to make, a local government first must identify methods for evaluating the pedestrian system and pedestrian system demand.<sup>12</sup>

- 2.4.1. **Benchmark:** Identify methods for evaluating the walkability of the pedestrian system and evaluating the pedestrian system demand, by 2012.

- 2.4.2. **Benchmark:** Produce maps and walkability analysis on the pedestrian demand and pedestrian infrastructure deficiencies, by 2013.

Partner: Government/Agency - MPO - CIRTPA  
 Roundtable Subcommittee: Technical

## OBJECTIVE 3

IMPROVE WALKABLE LAND USE PATTERNS FOR PEDESTRIAN TRAVEL.

### ACTIONS:

**3.1. Review existing zoning ordinances and adopt new zoning ordinances to improve pedestrian safety and accessibility.** Pedestrian safety and accessibility is often an afterthought in the residential/commercial development process. This afterthought results in impassable barriers to pedestrian travel, both within and between residential/commercial developments. Pedestrian-friendly zoning ordinances could mandate design requirements, such as reduced lot sizes and setbacks, in order to shrink block sizes, provide more frequent crossing opportunities, and provide more direct connections to destinations for pedestrians.

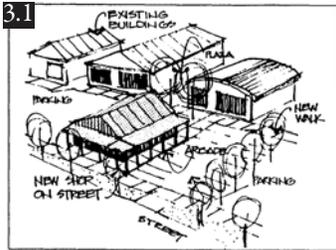
- 3.1.1. **Benchmark:** Review local government zoning ordinances and recommend appropriate changes to support and promote pedestrian safety and accessibility, by 2012.

Partner: Roundtable - MPO - CIRTPA  
 Roundtable Subcommittee: Technical

**3.2. Develop more direct and convenient pedestrian routes between residential and commercial land uses.** Land use development patterns that provide accessible routes to popular destinations can help increase local business investment and personal health. Research indicates that physical activity participation is higher in adults who live within close proximity of trails, parks, and utilitarian destinations such as businesses, shops, and recreational facilities.<sup>13</sup> Today, mixed-use developments capitalize on this concept by combining walkable routes with residential and retail/commercial development.

- 3.2.1. **Benchmark:** Begin providing direct pedestrian routes to new residential/commercial developments from nearby residential and commercial land uses, by 2015.

Partner: Roundtable - Elected Officials - Government/Agency  
 Roundtable Subcommittee: Technical



Source: Bureau of Transportation Statistics

**3.3. Consider pedestrian transportation in local land use plans.** Local community planning criteria could include encouraging compact and mixed-use development that facilitates walking, promotes school and residential siting to accommodate walking as the primary mode, and provide for continuous sidewalk connectivity. Land use plans could encourage better local land use decisions when local governments address pedestrian transportation needs.

- 3.3.1. **Benchmark:** Update local comprehensive plans and zoning ordinances to include pedestrian-oriented development goals and standards, by 2012.

Partner: Elected Officials - Government/Agency  
 Roundtable Subcommittee: Technical

**3.4. Include pedestrian transportation and other multimodal needs into transportation studies, transportation project selection processes, and other plans and studies.** The MPO, the CIRTPA, and the Ames Area MPO should address pedestrian needs within their respective Transportation Improvement Programs, long-range transportation plans, funding guidelines, and so forth. A multimodal transportation system allows people to choose to walk, bicycle, use transit, or drive according to the type of trip being made. Such a transportation system helps promote choice, ensures equitable access to transportation, and reduces societal reliance on a single mode of transportation.<sup>14</sup>

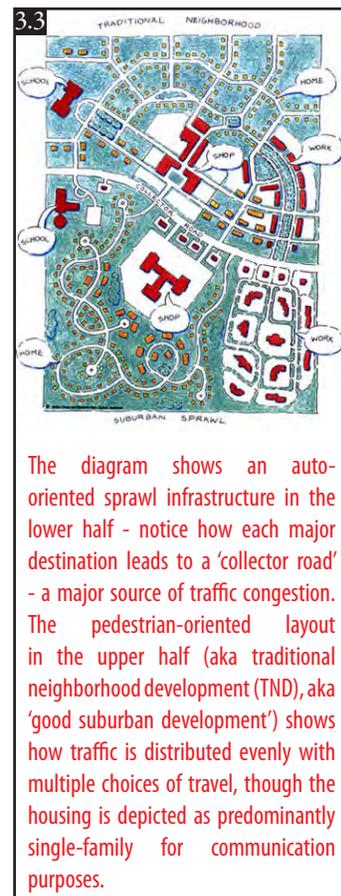
- 3.4.1. **Benchmark:** Use a weighting factor in a MPO's or RPA's project prioritization process, taking pedestrian needs into account in that process, beginning in 2010.

Partner: Roundtable - MPO - CIRTPA  
 Roundtable Subcommittee: Technical

**3.5. Encourage local school districts to include pedestrian needs in school siting decisions.** A number of factors influence determining where to build a new school; however, a rigorous planning process considering size, footprint, location, accessibility, walkability, and so forth often take a "back seat" to finding a location that is the most cost effective and that offers the least amount of obstacles prior to development (environmental, storm-water, zoning, etc).<sup>15</sup> A broad, comprehensive approach to school siting decisions can include long-term solutions, such as incorporating pedestrian needs into the platting process and into developing attendance projection maps, and short-term solutions, such as providing crossing guards, engineering solutions, and identifying unusual hazards.

- 3.5.1. **Benchmark:** Encourage local school districts to produce Safe Routes to School Plans to support new school construction and school closures, beginning in 2010.

Partner: Government/Agency - Schools  
 Roundtable Subcommittee: Technical

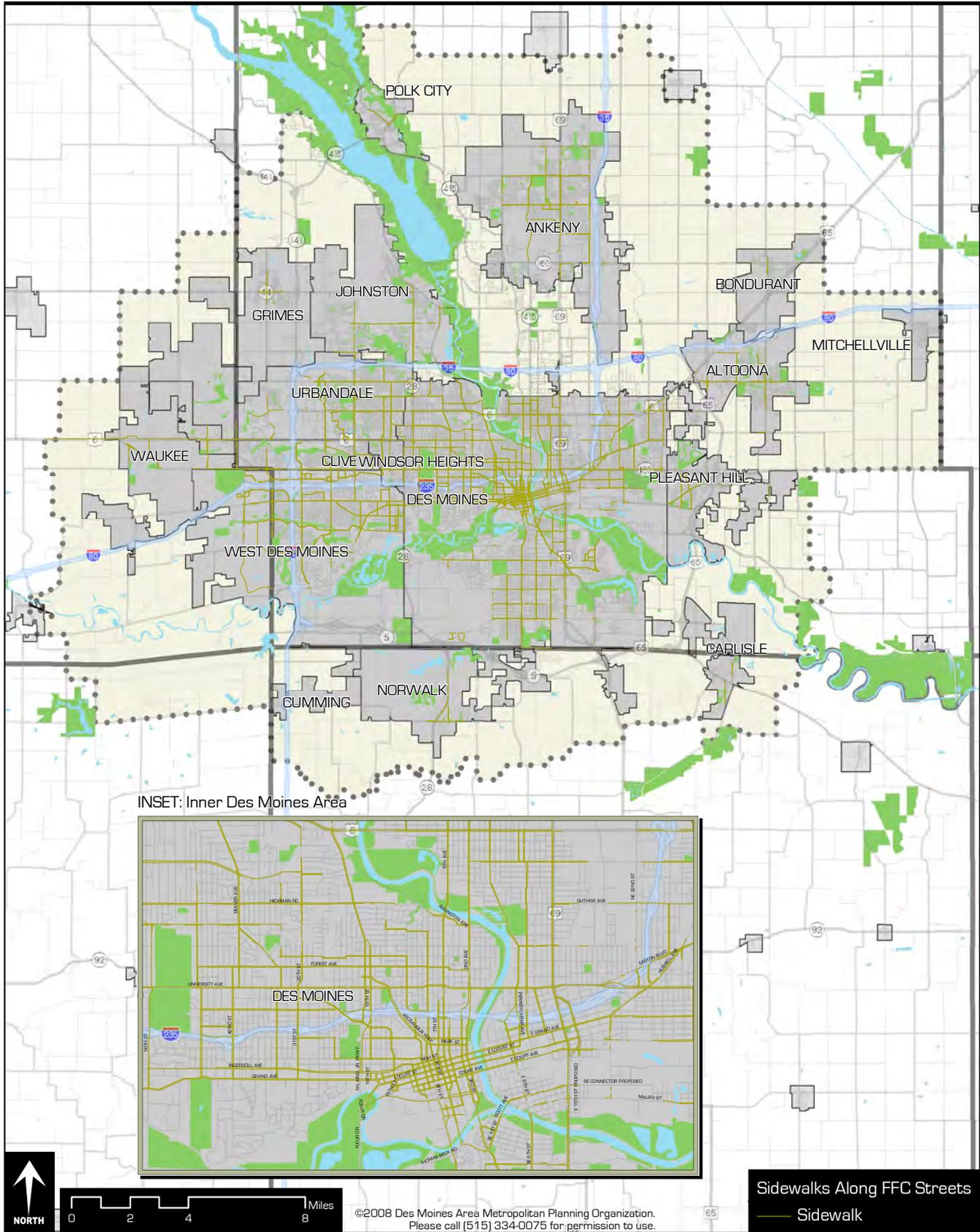


Source: Duany Plater-Zyberk & Company

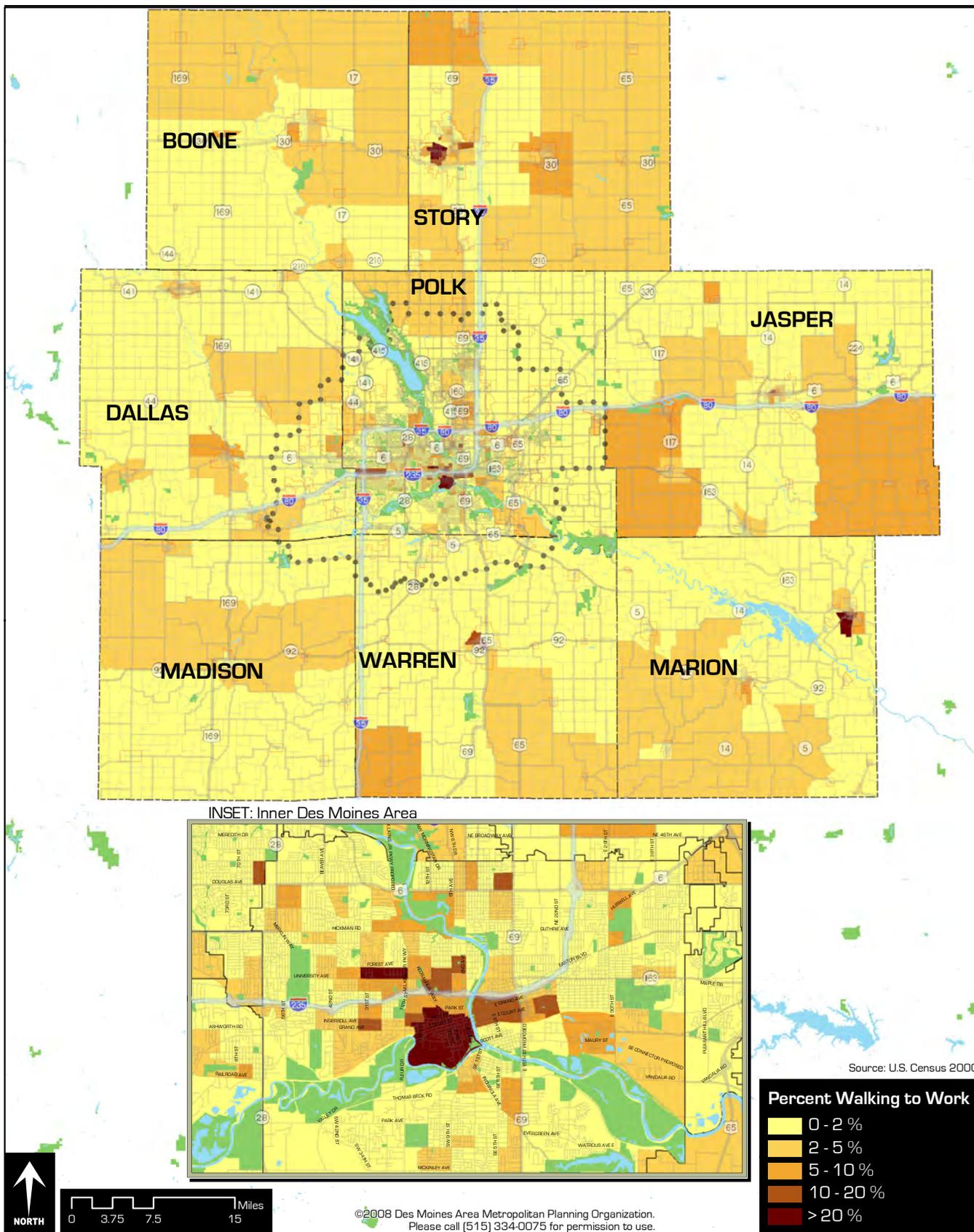


Photo: Matthew Blackett

Map 4: Existing Sidewalk Coverage Along Major Corridors



Map 5: Percentage of Commuters Walking to Work, 2000



**This page left blank intentionally.**

## Chapter 3:

# Bikeway

**Challenges and Opportunities.** A combination of public input, plan review, and infrastructure evaluation identified the need to:

- Provide training for engineers and planners;
- Locate directional and informational signage along trails, as well as lane markings, and along adjacent to roads;
- Improve roads to allow all bicyclists to ride comfortably and safely;
- Install more short-term and long-term bicycle parking facilities;
- Provide clearly defined, safe, comfortable, and accessible bicycle commuter routes;
- Provide bicycle commuter amenities such as showers, dressing rooms, parking, and so forth; and,
- Establish short- and long-term bicycle parking facilities near bus stops

Photo: QC Tag, Picasa



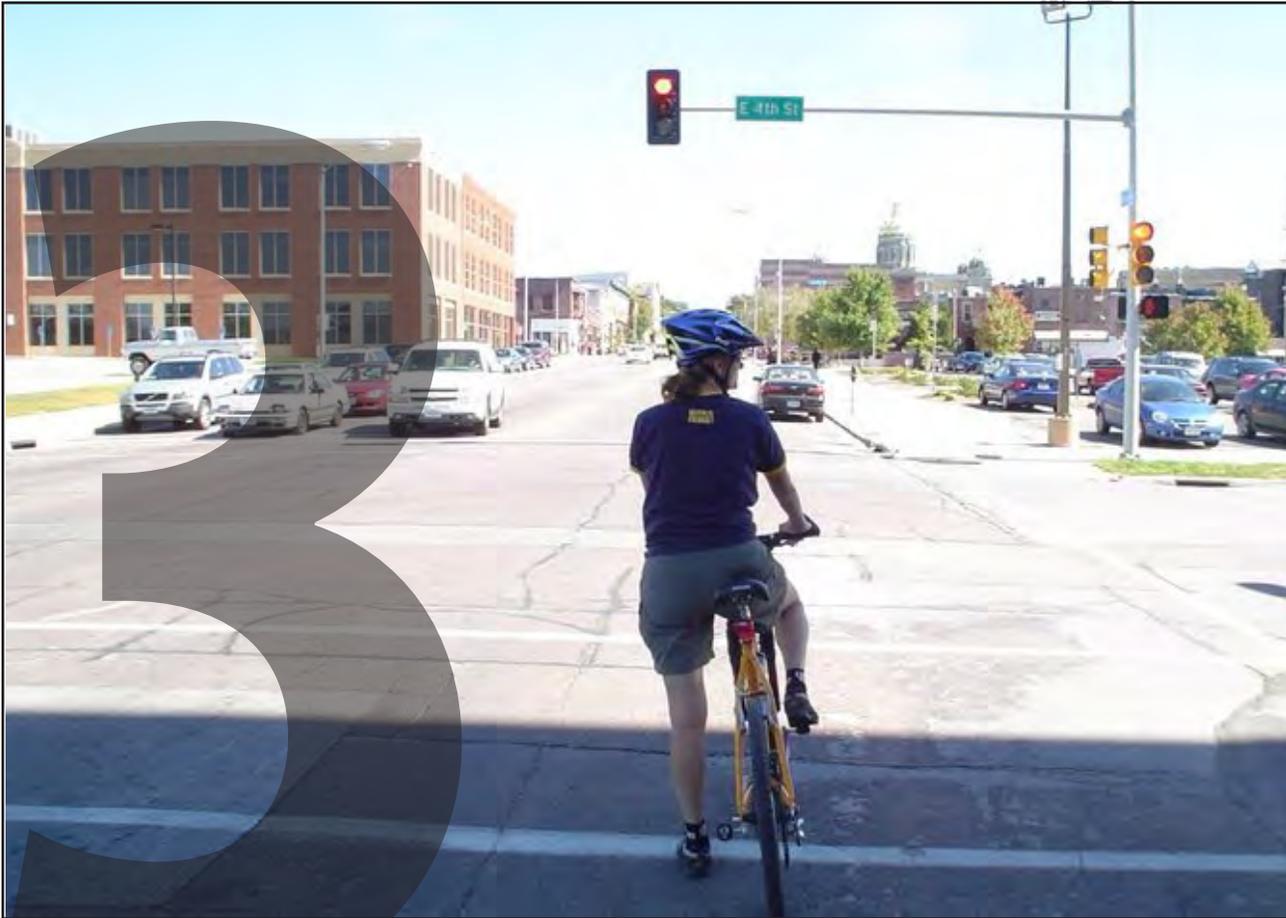


Photo: Mark Wyatt

## **GOAL:**

**Provide safe, accessible, and comprehensive bicycle friendly facilities throughout central Iowa.**

# OBJECTIVE 1

RE-EDUCATE AND RE-TRAIN CITY AND COUNTY STAFFS ON BICYCLE INFRASTRUCTURE PLANNING AND ENGINEERING.

## ACTIONS:

**1.1. Train policy makers, planners, and engineers on accommodating all users within the public right-of-way.** The United States Department of Transportation's *Design Guidance Accommodating Bicycle and Pedestrian Travel: A Recommend Approach* recommends "intensive re-tooling and re-training of transportation planners and engineers with the new information required to accommodate bicyclists and pedestrians" (Refer to Appendix 4). Training will help ensure routine accommodations in transportation projects.

- 1.1.1. **Benchmark:** Support the Iowa Bicycle Summit's annual bicycle planning and design workshop, collaborating with the Iowa Bicycle Coalition and the Iowa DOT, beginning in 2009.

Partner: Roundtable

Roundtable Subcommittee: Technical

**1.2. Encourage city and county staff to join the Iowa Bicycle Coalition, the League of American Bicyclists, and/or the Association of Pedestrian and Bicycle Professionals.** These organizations promote excellence in the professional discipline of pedestrian and bicycle transportation and can provide training opportunities in all areas and aspects, such as safety and design.

- 1.2.1. **Benchmark:** Encourage city and county staff to join a bicycle and/or pedestrian organization(s), by 2010.

Partner: Governmental/Agency

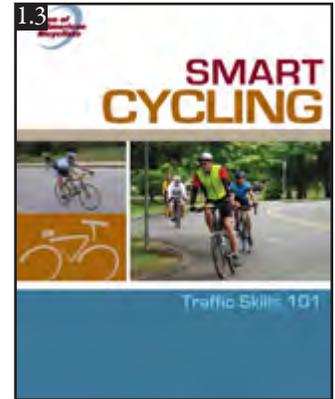
Roundtable Subcommittee: Communications

**1.3. Provide a Traffic Skills 101 course that is adapted for planners and engineers.** The League of American Bicyclists certifies individuals to become League Cycling Instructors (LCIs). LCIs teach a Traffic Skills 101 course that covers on-bike skills, crash avoidance techniques, and a full understanding of vehicular bicycling. Adapted for planners and engineers, a Traffic Skills 101 course could show the dangers of bicycling without accommodations for bicyclists.

- 1.3.1. **Benchmark:** Develop a Traffic Skills 101 course for planners and engineers, by 2012.

Partner: Iowa Bicycle Coalition - LCIs

Roundtable Subcommittee: Communications



Source: League of American Bicyclists

# OBJECTIVE 2

MAINTAIN A BICYCLE LEVEL OF SERVICE (BICYCLE LOS) SCORE OF C OR BETTER ON ROADWAYS.

## ACTIONS:

**2.1. Convert poor Bicycle LOS roadways to better Bicycle LOS roadways through stand-alone projects or as part of new construction and/or reconstruction road projects.** The Bicycle LOS Model, based on the proven research documented in Transportation Research Record 1578 published by the Transportation Research Board of the National Academy of Sciences<sup>1</sup>, evaluates a bicyclist's perceived safety and comfort with respect to motor vehicle traffic while traveling in a roadway corridor.<sup>2</sup> The statistically calibrated mathematical equation evaluates bicycling conditions in shared roadway environments and uses the same measurable traffic and roadway factors that transportation planners and engineers use for other travel modes. With statistical precision, the model reflects the effect on bicycling suitability, or "compatibility," due to factors such as roadway width, bike lane widths and striping combinations, traffic volume, pavement surface condition, motor vehicle speed and type, and on-street parking. Most cyclists feel comfortable on roadways with a Bicycle LOS score of C or better.

- 2.1.1. **Benchmark:** Convert 50 miles of the Des Moines metropolitan area roadways to a Bicycle LOS score of C or better, by 2016; 100 miles, by 2020.

Partner: Government/Agency - MPO - CIRTPA

Roundtable Subcommittee: Technical

**2.1**

**A Bicycle LOS evaluation may be useful in several ways:**

- Producing a bicycle map for the public to assist them in route selection;
- Identifying the most appropriate routes for inclusion in the community bicycle network;
- Determining "weak links" in the network, and prioritizing sites needing improvement;
- Evaluating alternate treatments for improving bike-friendliness of a roadway; and,
- Road project selection formulas can include a Bicycle LOS term to encourage implementation of bike planning goals.

Source: Landis, Bruce W. et al. 1997. "Real-Time Human Perceptions: Toward a Bicycle Level of Service." *Transportation Research Record 1578*. Transportation Research Board, Washington, DC

**3.3** Currently, there are 12.5 miles of bicycle lanes in central Iowa in which 4.5 miles are in the Des Moines metro area. The purpose of constructing bicycle lanes should be to improve conditions for bicyclists in roadways and the most effective way to reach this action is to designate dedicated space for bicyclists early on in the planning and design phase.



**3.3** Bicycle-friendly cities such as Madison, WI, Eugene, OR, Davis, CA, Gainesville, FL, and Palo Alto, CA have developed extensive bike lane networks since the 1970s and more recently large cities such as Tucson, AZ, Chicago, IL, Houston, TX, Philadelphia, PA, Portland, OR, and Seattle, WA have begun to stripe bike lanes on their arterial and collector streets as a way of encouraging bicycle use. In general, bicycle lanes should always be:

- one-way, carrying bicyclists in the same direction as the adjacent travel lane;
- on the right side of the roadway; and,
- located between the parking lane (if there is one) and the travel lane.

Source: Pedestrian and Bicycle Information Center

**2.2. Use a Bicycle LOS Model to examine the effects of road projects on bicyclists.** For all road projects, transportation planners and engineers should calculate the before-and-after Bicycle LOS to raise awareness about the impact of road projects on bicyclists.

- 2.2.1. **Benchmark:** Calculate the Bicycle LOS for all arterial and collector roadway projects in central Iowa, beginning in 2010.

Partner: Roundtable - MPO - CIRTPA  
Roundtable Subcommittee: Technical

**2.3. Add the Bicycle LOS as a factor in the STP scoring system for road projects with and without bicycle accommodations.** Adding Bicycle LOS as a factor in the STP scoring process could help the MPO, the CIRTPA, and the Ames Area MPO consider bicyclists during the planning process. By planning and designing transportation projects with a Bicycle LOS score of C or better, the MPO, the CIRTPA, and the Ames Area MPO can ensure that no projects applying for STP funding will worsen a road's Bicycle LOS.

- 2.3.1. **Benchmark:** Develop a policy that includes Bicycle LOS as a scoring criterion for STP funds, beginning with Federal Fiscal Year 2015 funds.

Partner: Roundtable - MPO  
Roundtable Subcommittee: Technical

## OBJECTIVE 3

ENCOURAGE MORE BICYCLE TRIPS IN CENTRAL IOWA WITH BETTER BICYCLE COMMUTER FACILITIES AND INFRASTRUCTURE.

### ACTIONS:

**3.1. Provide a bicycle friendly workplace.** Large employers often are more inclined to provide various forms of accommodations for employees. Employees that commute by bicycle are a benefit to the employer, having shown increased productivity and reduced health care costs.<sup>3</sup> Providing bicycle parking and a shower may encourage an employee to become a bicycle commuter. (See Map 6, page 31.)

- 3.1.1. **Benchmark:** Prepare a campaign program targeting employers that highlights the benefits received by employees who commute by bicycle, beginning in 2009.

Partner: TMA - Central Iowa Businesses  
Roundtable Subcommittee: Communications

**3.2. Establish a system of bicycle commuter corridors that connect remote areas directly to core urban areas.** Many different roadway types cross jurisdictional boundaries. Designating a few roadways as bicycle commuting corridors could help provide viable regional transportation connections to different areas for bicyclists. Designating roadways within a mile of each other would provide a balanced regional network of bicycle commuter corridors. Such corridors may consist of bicycle lanes, trails, shared lane markings, or signed bicycle routes.

- 3.2.1. **Benchmark:** Identify roadways that could act as bicycle commuting corridors and promote the system to residents, by 2011.

Partner: Roundtable Government/Agency - Advocates  
Roundtable Subcommittee: Technical

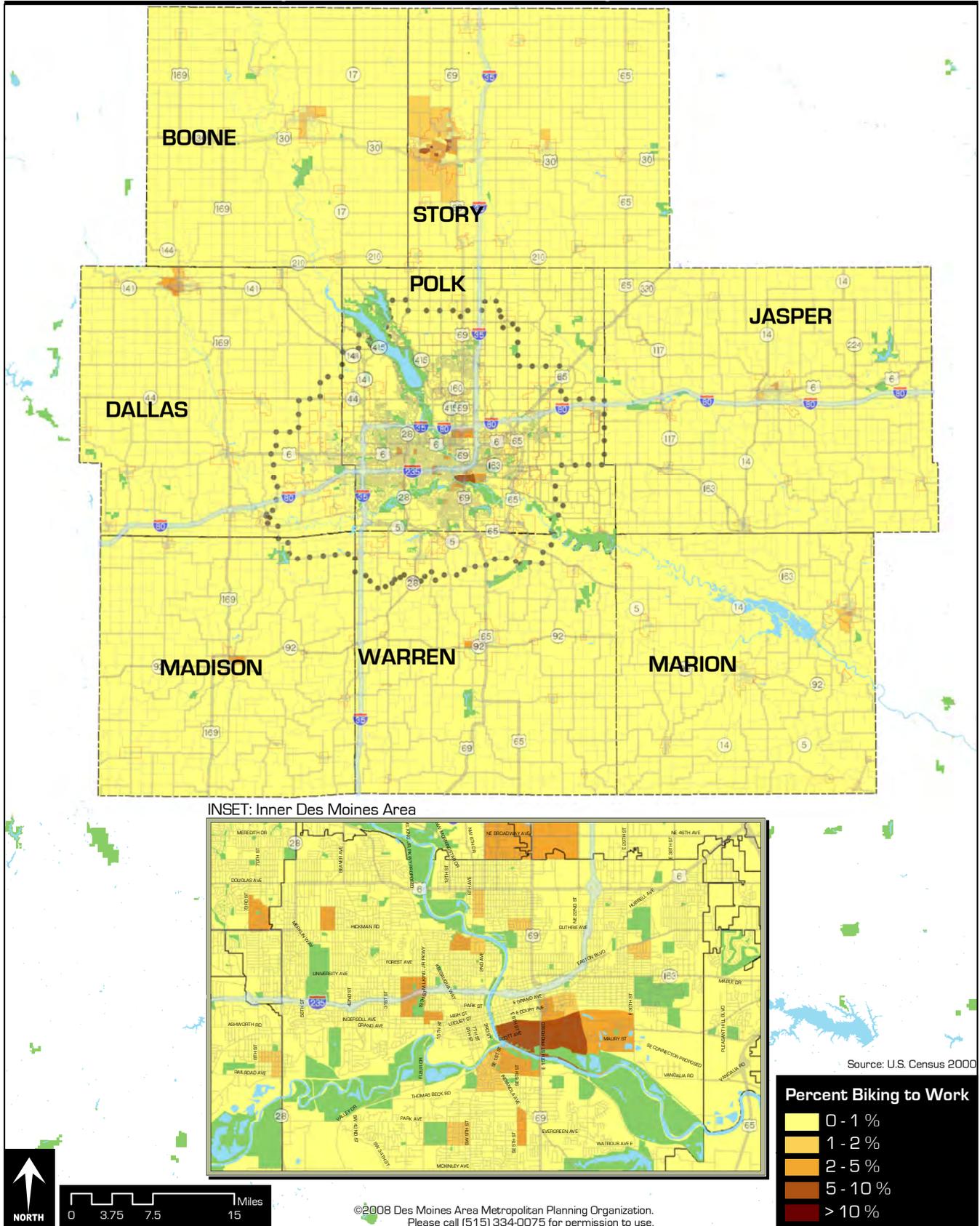
**3.3. Integrate bicycle lanes on existing and new arterial and collector roadways.** Bicycle lanes at minimum, are five-foot wide corridors exclusively for bicyclists. Bicycle lanes are appropriate particularly on collector and arterial roadways, given these roadways' high traffic volumes and because these roadways often are the only crossings of freeways, expressways, waterways, and railway lines. The MPO Planning Area contains 491 miles of arterials and 335 miles of major collectors. Currently, central Iowa has 12.5 miles of bicycle lanes, with 4.5 of those miles within the MPO Planning Area.

- 3.3.1. **Benchmark:** Identify all central Iowa arterial and major collector roadway locations suitable for bicycle lanes, by 2011.

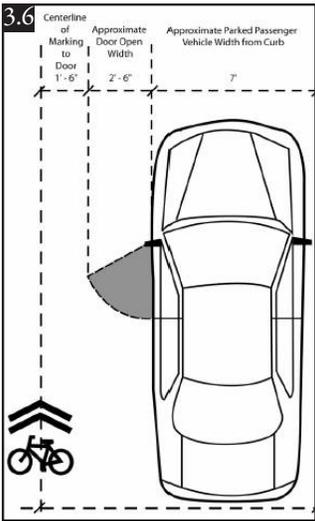
- 3.3.2. **Benchmark:** Integrate 100 miles of bicycle lanes on central Iowa's arterial and collector roads, by 2020.

Partner: Roundtable - Government/Agency - Iowa DOT - MPO  
Roundtable Subcommittee: Technical

Map 6: Percentage of Commuters Biking to Work, 2000



## BIKEWAY



Source: Association of Pedestrian and Bicycle Professionals

**3.7** The Iowa DOT Paved Shoulder Policy states,

“The designer should work with the District Office to determine if wider paved shoulders are warranted for bicycle accommodation, for example, six-foot paved shoulders on state highways within the statewide trail corridors. This evaluation should be based upon the bicycle accommodation guidance available from the Office of Systems Planning. If wider shoulders are warranted, local government funding may be required per the bicycle accommodation guidance.”

Source: Iowa Department of Transportation

**3.8** Selecting which on-street bicycle facility will best serve depends on motor vehicle traffic volumes, speeds, street width, topography, presence and use of on-street parking, and type of traffic (trucks). Guidance on methodologies to select appropriate bikeway types is provided in *Bicycle Facility Selection: A Comparison of Approaches*.

Source: National Bicycle and Pedestrian Information Clearinghouse

**3.4. Integrate wide outside lanes on existing and new arterial and collector roadways.** Wide outside lanes for bicycles are an alternative for bicycle lanes where insufficient room exists to install bicycle lanes on urban and suburban arterial and collector roadways. A roadway’s outermost lane, when wide enough (14’ or wider) can be shared safely by a bicycle and a motor vehicle at the same time.<sup>4</sup>

- 3.4.1. **Benchmark:** Identify all central Iowa arterial and collector roadway locations not suitable for bicycle lanes, by 2011.
- 3.4.2. **Benchmark:** Designate wide outside lanes on arterial and collector roadways not suitable for bicycle lanes and sign with Share the Road signage, by 2015.

Partner: Roundtable - Government/Agency - Iowa DOT - MPO  
Roundtable Subcommittee: Technical

**3.5. Establish designated and signed bicycle routes in all central Iowa communities.** Designating and signing bicycle routes allows for continuity between and among other bicycle facilities, marks a common route for bicyclists through a high demand corridor of vehicles, directs cyclists to low volume roads, and directs cyclists to particular destinations.

- 3.5.1. **Benchmark:** Designate and sign an additional 100 miles of bicycle routes in central Iowa, by 2020.
- Partner: Roundtable - Government/Agency - Iowa DOT - MPO  
Roundtable Subcommittee: Technical

**3.6. Use shared lane markings on roadways to communicate the travel path for bicyclists.** The Manual on Uniform Traffic Control Devices’ (MUTCD) Part 9, describes bicycle facility signs, highway traffic signals, and pavement markings specifically related to bicycle operation on both roadways and trails.<sup>5</sup> For example, the MUTCD defines a sharrow as a road marking identifying a travel lane’s shared-use by bicyclists and motorists, and indicating the legal and appropriate bicyclist line of travel.

- 3.6.1. **Benchmark:** Integrate 45 roadway miles of shared lane markings in central Iowa, by 2020.
- Partner: Roundtable - Government/Agency - Iowa DOT - MPO  
Roundtable Subcommittee: Technical

**3.7. Place paved shoulders on county roads to improve road safety for bicyclists.** Local governments provide paved shoulders on rural highways for a variety of safety, operational, and maintenance reasons. Rural highways have certain characteristics that are hazardous to pedestrians and bicyclists such as higher average vehicle speeds and a lack of pedestrian or bicycle infrastructure. Twenty-five percent of nationwide pedestrian and bicycle fatalities and injury accidents occur on rural highways. Paved shoulders, if adequately maintained, provide an excellent place for bicyclists to operate.<sup>6</sup>

- 3.7.1. **Benchmark:** Adopt paved shoulder policies similar to the Iowa DOT in all eight central Iowa counties, by 2011.
  - 3.7.2. **Benchmark:** Install paved shoulders on 50% of county roads where bicycle use or demand is potentially high, by 2020.
- Partner: Government/Agency  
Roundtable Subcommittee: Technical

**3.8. Establish other on-street bicycle facilities that enhance bicyclist comfort and safety.** Bicyclists and motorists share travel lanes on a roadway. Iowa law identifies every roadway, except those specifically designated otherwise, as a shared roadway. To pass a bicyclist on a roadway, a motorist usually would cross over to the left into the next travel lane. Example treatments to enhance shared roadways for cyclists are:

**Bicycle Boulevards:** Bicycle boulevards are roadways that allow all types of vehicles, but local governments modify the roadway to enhance bicycle safety and convenience. Typically, these modifications also will calm traffic and improve pedestrian safety. Bicycle boulevards typically are low-traffic neighborhood streets.<sup>7</sup>

**Contra-flow Bicycle Lanes:** Contra-flow bicycle lanes allow bicyclists to travel the opposite direction of motorists traffic on a one-way street and are delineated to identify where bicyclists are allowed to ride.<sup>8</sup>

- 3.8.1. **Benchmark:** Identify five to eight potential on-street bicycle locations for bicycle boulevards or contra-flow bicycle lanes, beginning in 2009.
- 3.8.2. **Benchmark:** Complete three to five on-street bicycle facilities, beginning in 2010.  
Partner: Government/Agency  
Roundtable Subcommittee: Technical

## OBJECTIVE 4

ESTABLISH SAFE AND CONVENIENT SHORT-TERM AND LONG-TERM BICYCLE PARKING FACILITIES THROUGHOUT CENTRAL IOWA.

### ACTIONS:

**4.1. Adopt short-term and long-term bicycle parking facility requirements in central Iowa community zoning ordinances.** Short-term (two hours or less, uncovered) and long-term (extended period of time, covered) bicycle parking facilities can be integrated with all new civic, commercial, office, and multi-family residential building developments. Local bicycle parking ordinances could detail bicycle parking requirements by designated land use or by the number of bicycle parking spaces per automobile parking spaces.

- 4.1.1. **Benchmark:** Update central Iowa community zoning ordinances to include bicycle parking requirements, by 2012.  
Partner: Elected Officials - Government/Agency  
Roundtable Subcommittee: Planning, Policy, and Funding - Technical

**4.2. Install short-term bicycle parking facilities outside retail destinations.** Shopping trips in the Des Moines metropolitan area average 5.6 miles from origin to destination.<sup>9</sup> Retail and shopping destinations in the Des Moines metropolitan area often have insufficient bicycle parking facilities. The 2006 Iowa Bike to Work Week survey found that 32% of bicyclists would like to have bicycle parking facilities installed at grocery stores, retail stores, and malls.

- 4.2.1. **Benchmark:** Install bicycle parking racks at 10-15 retail centers, by 2011; and, at an additional 10-15 retail centers by 2015.  
Partner: Government/Agency  
Roundtable Subcommittee: Planning, Policy, and Funding - Technical

**4.3. Encourage bicycle parking and storage facilities at existing multi-family residential buildings.** Multi-family residential buildings should include a bicycle parking area. City ordinances should provide routine standards. One example may be to place one bike parking space per two residential dwelling units.

- 4.3.1. **Benchmark:** Establish bicycle parking program guidelines and distribute those guidelines to developers, apartment managers, and condominium associations, by 2012.  
Partner: Government/Agency - Advocates - Volunteer Groups  
Roundtable Subcommittee: Technical

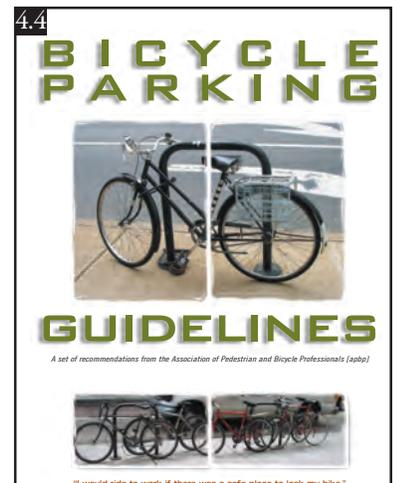
**4.4. Provide short-term bicycle parking facilities at city buildings and parks.** Short-term bicycle parking usually is defined as being two hours or less in duration. Examples of short-term parking would be the necessity to park outside of a retail store, an office building, or a government office. The Association of Pedestrian and Bicycle Professionals *Bicycle Parking Guidelines* recommend placing bicycle racks within 50 feet of a building's entrance the racks serve.<sup>10</sup>

- 4.4.1. **Benchmark:** Develop a list of recommended bicycle parking facility locations, by 2011.
- 4.4.2. **Benchmark:** Install 1,500 bicycle parking spaces (150 per year) on public property in central Iowa, by 2020.  
Partner: Elected Officials - Government/Agency - Advocates  
Roundtable Subcommittee: Planning, Policy, and Funding - Technical

**4.6** The 2006 Iowa Bike to Work Week survey found that when deciding where to ride, 5.4 percent of bicyclists have a primary concern for safe and convenient bicycle parking facilities.



Photo: Bikeiowa.com



Source: Association of Pedestrian and Bicycle Professionals

**4.5. Encourage bicycle parking facilities at existing event centers and sport facilities.** In order to make bicycle commuting feasible, bicycle parking should be available. All buildings should have a few short-term parking spaces located near the main public entrance. Larger buildings attracting a greater number of shoppers, consumers, or visitors (for example, grocery stores, government offices, recreational sites) should provide additional spaces. By monitoring bicycle parking usage, one can ensure adequate parking spaces are not at capacity. Through this monitoring, additional bicycle parking spaces can be implemented incrementally to avoid reaching capacity and turning users away.

- 4.5.1. Benchmark: Provide bicycle parking facilities at all central Iowa event centers and sport facilities, public and private, by 2015.

Partner: Elected Officials - Government/Agency  
 Roundtable Subcommittee: Planning, Policy, and Funding - Technical

**4.6. Install bicycle parking facilities inside existing parking garages.** Many parking garage structures have space that is not large enough or suitable to park cars. One parallel parking spot can provide space for up to 12 bicycles.<sup>11</sup> In addition, parking garages provide a cover from weather elements and may provide additional security with attendants or security cameras, depending on the parking garage. One parallel parking spot can provide space for up to 12 bicycles.<sup>10</sup>

- 4.6.1. Benchmark: Install bicycle parking spaces inside parking garages located near bikeways, by 2015.

Partner: Elected Officials - Government/Agency  
 Roundtable Subcommittee: Planning, Policy, and Funding - Technical

**4.7. Provide bicycle parking inside office buildings.** A 1992 Rodale Press survey, conducting the Louis Harris poll, found Americans would like to have the opportunity to bike to work instead of driving. Forty percent of the Rodale Press survey respondents indicated they would commute by bicycle if safe parking facilities were available at work for their bicycles.<sup>12</sup>

- 4.7.1. Benchmark: Provide information to tenants in central Iowa's 10 largest office complexes, encouraging bicycle parking installation at five to eight of those 10 locations, by 2011.

Partner: TMA - Central Iowa Businesses - Building Owners and Managers Association  
 Roundtable Subcommittee: Communications

Where would you like to see bike racks installed?

Rack Location	%
Grocery Stores	16%
Retail Stores/Malls	13%
Workplace	13%
Parks	13%
Restaurants	12%
Municipal buildings	10%
Public buses	9%
Parking Garages	9%
Bus Stops	5%
Other	1%

What is your primary concern when deciding where to ride?

Primary Concern	%
Comfort/personal safety in traffic	61.4%
Pleasant route/scenic value	10.5%
Good training route	10.1%
Safe/convenient bicycle parking	6.7%
Shortest route to destination	4.3%
Convenience - close to home/work	4.2%
Other	2.8%

Source: Bike to Work 2007 Survey



Photo: Bikiowa.com



Photo: Justin Bruce

**4.8. Install bicycle parking facilities near bus stops.** To encourage bicycle and transit use, transit providers might install bicycle parking facilities adjacent to bus stops, particularly sheltered bus stops. As a transit agency adds bus stops, the transit agency could implement bicycle parking facilities simultaneously.

- 4.8.1. Benchmark: Install bicycle parking at 50% of all sheltered bus stops, by 2015; and, at all sheltered bus stops, by 2020.

Partner: MPO - Ames Area MPO - DART - CyRide  
Roundtable Subcommittee: Technical

**4.9. Install bicycle parking facilities whenever Park & Ride facilities are developed or improved.** As stated in Action 4.6 of this chapter, one parallel parking spot can provide space for up to 12 bicycles. A Park & Ride facility is a place where one could park any type of vehicle and ride transit. Park & Ride facilities are an opportunity to provide bicycle parking spaces and offer bicycle-transit connections.

- 4.9.1. Benchmark: Set up bicycle parking facilities whenever Park & Ride facilities are developed or improved, beginning in 2009.

Partner: Government/Agency - DART - CyRide - HIRTA  
Roundtable Subcommittee: Planning, Policy, and Funding - Technical



Source: Des Moines Area Regional Transit Authority

**This page left blank intentionally.**

## Chapter 4:

# Trail

**Challenges and Opportunities.** A combination of public input, plan review, and infrastructure evaluation identified the need to:

- Use minimum width design standards for consistency;
- Widen out-dated and heavily congested trails;
- Integrate different mode choices into rural trails;
- Include a consistent snow removal policy on trails among jurisdictions;
- Improve implementation of directional and informational signing on trails;
- Seek out trail maintenance best practices; and,
- Seek out more private and public funding sources for trail planning, design, and construction.





Photo: Sara Ripperger

## **GOAL:**

**Create a connected regional multimodal trail system offering convenience, mobility, and efficiency.**

# OBJECTIVE 1

COMPLETE STATE SIGNIFICANT (LEVEL 1), REGIONALLY SIGNIFICANT (LEVEL 2), AND JURISDICTIONALLY SIGNIFICANT (LEVEL 3) TRAILS THROUGHOUT CENTRAL IOWA.

## ACTIONS:

**1.1. Prioritize Level 1 and Level 2 significant trails for completion.** In 2006, the MPO’s Roundtable established guidelines for classifying trail significance. These trail significance guidelines are most helpful in determining trail improvement funding priorities, and overall operations and maintenance priorities.<sup>1</sup> Level 1 and Level 2 are statewide and regionally significant trails, respectively. (See Map 7, page 40.)

- 1.1.1. **Benchmark:** Compile an active list of planned and proposed Level 1 and Level 2 trails in central Iowa, beginning in 2009.

- 1.1.2. **Benchmark:** Complete 20 Level 1 and/or Level 2 projects, by 2012, and an additional 30 projects, by 2020.

Partner: Roundtable - Government/Agency - MPO - CIRTPA  
Roundtable Subcommittee: Planning, Policy, and Funding - Technical

**1.2. Provide regional trails planning assistance and outreach.** The Roundtable should continue to serve as the regional trails planning forum to promote interagency trails planning coordination among governments and agencies in central Iowa, on behalf of the MPO and the CIRTPA. The MPO and the CIRTPA will staff the Roundtable to provide professional, long-range transportation planning experience and assistance to this regionally significant trails planning process.

- 1.2.1. **Benchmark:** Coordinate with the MPO and the CIRTPA staff in developing, preparing, and reviewing state, local, and regional bicycle/pedestrian/trail plans, beginning in 2010.

Partner: MPO - CIRTPA  
Roundtable Subcommittee: Technical

**1.3. Establish a process to update governments and agencies on new trail developments and connections to the state and regional trail system.** Building trails of state and regional and significance should involve the Roundtable’s review. The Roundtable is composed of state agencies, metropolitan planning organizations, regional planning agencies, trails organizations, and local agencies. The Roundtable’s composition will ensure that all trail information reflects current activity in central Iowa and will allow local stakeholders to track progress on connecting gaps and completing the Central Iowa Trails System.

- 1.3.1. **Benchmark:** Provide active project updates routinely to the Roundtable, beginning in 2009.

- 1.3.2. **Benchmark:** Notify the MPO and the CIRTPA of public input meetings for projects receiving regional STP TE funds, beginning in 2009.

Partner: Roundtable - Government/Agency - MPO  
Roundtable Subcommittee: Communications

# OBJECTIVE 2

ENCOURAGE COMMUNITIES TO INCLUDE MULTIMODAL TRAILS AND GREENWAYS IN LOCAL PLANS.

## ACTIONS:

**2.1. Coordinate the regional, non-motorized multimodal trails system planning through the Central Iowa Bicycle-Pedestrian Roundtable.** Central Iowa’s local jurisdictions and managing agencies should work collaboratively on trail planning, trail design, and seeking and using trail funding. Collaboration will facilitate identification of regional, non-motorized multimodal priorities.

- 2.1.1. **Benchmark:** Develop a map of central Iowa’s existing and proposed non-motorized trail types (for example, water, hiking, equestrian, bicycle, and volkspport trails), by 2011.

Partner: Roundtable - Government/Agency - FOCIT  
Roundtable Subcommittee: Communications - Technical

**1.1**

**Central Iowa  
Bicycle-Pedestrian  
Roundtable Trail Level of  
Significance Classifications**

**Level 1:  
State Significance**

Must first meet all of the criteria described in Level 2. Must span two or more counties and be recognized by the State of Iowa/Iowa Department of Transportation as a Level 1 Trail. A decisive knowledge of the trail boundaries must exist. Alternatively, must receive approval by the Central Iowa Bicycle-Pedestrian Roundtable.

**Level 2:  
Regional Significance**

Must first meet all of the criteria described in Level 3. Must exist in two or more city or county jurisdictions. Must connect places, streets or trails of significance to the central Iowa region. Alternatively, must receive approval by the Central Iowa Bicycle-Pedestrian Roundtable.

**Level 3:  
Jurisdiction Significance**

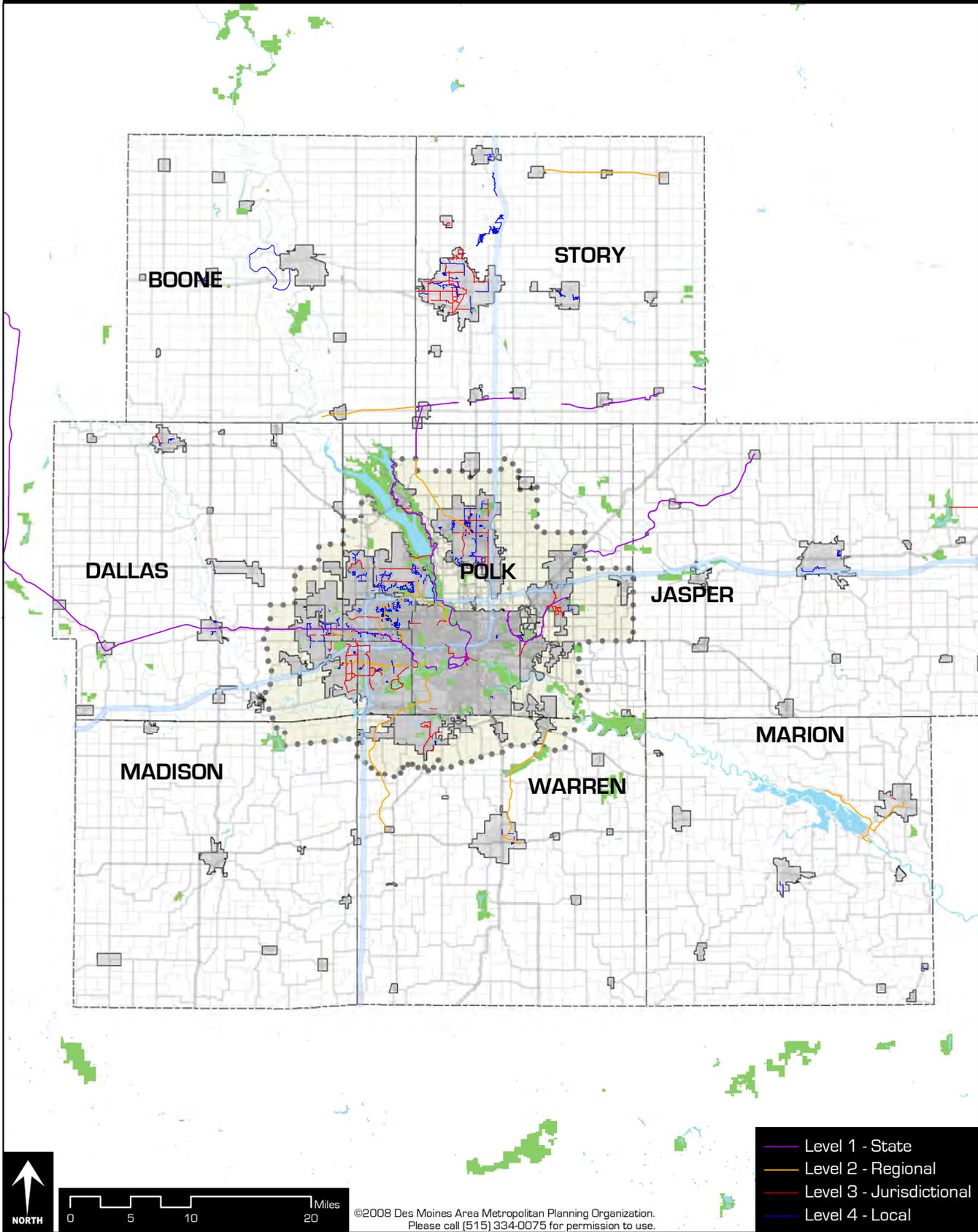
Must first meet all of the criteria described in Level 4. Must be a minimum of 8 feet in width. Must connect places, streets, or trails of jurisdictional significance. Alternatively, must receive approval by the Central Iowa Bicycle-Pedestrian Roundtable.

**Level 4:  
Local/Neighborhood Significance**

Must meet the minimum criteria to be designated as a Shared-Use Path, Bicycle Lane, or Bicycle Route, as specified in the Manual on Unified Traffic Control Devices.

Source: *Communication Master Plan for the Central Iowa Trails*

### Map 7: Central Iowa Trails System - Level of Significance



**2.2. Revitalize the Central Iowa Greenways Plan.** Central Iowa counties and local governments should revitalize their “greenway plans” as an integral part of their respective comprehensive planning and implementation efforts. Such “greenway plans” could encourage linking greenway needs with programs that address sound land use planning, community revitalization, recreational needs, and open space protection.

- 2.2.1. Benchmark: Update, complete, or adopt “greenway plans” for each of central Iowa’s eight counties, by 2016.

Partner: Elected Officials - Government/Agency - Advocates - Volunteers  
 Roundtable Subcommittee: Planning, Policy, and Funding - Communications

**2.3. Support efforts to create and/or improve water, singletrack, and equestrian trails.** The Roundtable could explore new trail-type development opportunities, where feasible. Support for creating and improving trails for different modal groups starts by forming a solid relationship among land managers, volunteers, and the communities.

- 2.3.1. Benchmark: Coordinate with the statewide water trails committee, the Central Iowa Trail Association, and the Iowa Trail Riders Association to develop a plan for off-street trail access and to improve opportunities within the communities, beginning in 2010.

Partner: Roundtable - Government/Agency - FOCIT  
 Roundtable Subcommittee: Planning, Policy, and Funding - Technical



Photo: Justin Bruce

**2.4. Connect and form uninterrupted trail systems.** The Central Iowa Trails System has developed no differently from other trail systems nationally. Development occurred in sections, piece by piece, and jurisdiction by jurisdiction to form the Central Iowa Trails System that exists today. In order to create more uninterrupted trail corridors, there needs to be more emphasis on integrated, long-range trail planning.

- 2.4.1. Benchmark: Plan and design a network of different trail types to assemble a connected trail system, by 2011.

Partner: Roundtable - Government/Agency  
 Roundtable Subcommittee: Planning, Policy, and Funding - Technical

**2.5. Establish trails along greenways, easements, and discontinued rail corridors.** Purchasing and negotiating easements is important to establishing a coordinated bicycle and pedestrian system. Additional opportunities for trails may exist along greenways, discontinued rail corridors, and when negotiating for residual and “forgotten” central Iowa land parcels, left over from highway or railroad construction.

- 2.5.1. Benchmark: Acquire all residual and “forgotten” parcels of land, by 2020.
- 2.5.2. Benchmark: Monitor the rail corridor abandonment, beginning in 2009.

Partner: Government/Agency – Iowa Natural Heritage Foundation  
 Roundtable Subcommittee: Planning, Policy, and Funding

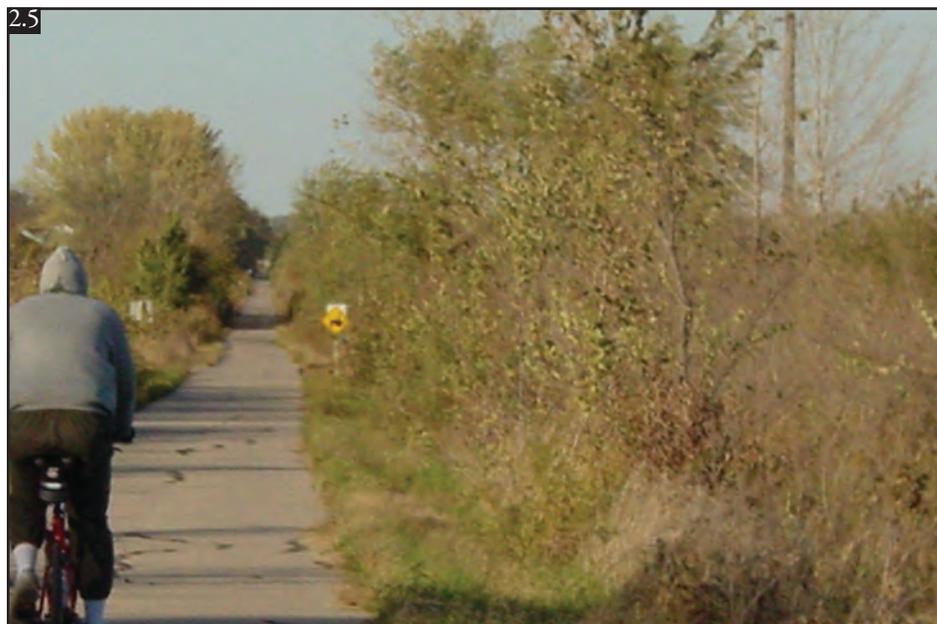


Photo: Andrea Chase

**2.5** Trails and greenways positively impact individuals and improve communities by providing not only recreation and transportation opportunities, but also by influencing economic and community development. Some of the many trails and greenways benefits include:

- Making communities better places to live by preserving and creating open spaces;
- Encouraging physical fitness and healthy lifestyles;
- Creating new opportunities for outdoor recreation and non-motorized transportation;
- Strengthening local economies;
- Protecting the environment; and,
- Preserving culturally and historically valuable areas.

Source: Rails-to-Trails

## OBJECTIVE 3

MANAGE AND IMPROVE MULTI-USE TRAILS TO MINIMIZE CONFLICTS AMONG USERS.

### ACTIONS:

**3.1. Widen or separate multi-use trail sections with severe congestion problems.** Different users often have very different needs and desires in terms of multi-use trail attributes. Walkers, joggers, runners, bicyclists, hikers, people walking dogs, and people pushing strollers do not have the same needs and desires. With multiple user types, urban trails can become congested. Efforts to alleviate congestion can include promoting the development of multi-use trails wide enough for safe passing and/or provide pullout areas. For severe problem sections, trail owners may need to provide separate trails.

- 3.1.1. Benchmark: Identify trail sections having congestion problems or points of user conflicts, beginning in 2010.
- 3.1.2. Benchmark: Modify trail sections according to issue, by 2015.

Partner: Government/Agency

Roundtable Subcommittee: Technical



**3.2. Educate trail users on proper trail behavior through signage or wayfinding.** Trail user education is a technique for boosting user enjoyment and reducing user conflicts. The better educated a user, the less instruction and less enforcement monitoring they need, creating a more successful trail in meeting user goals. Posted information about expected trail ethics, penalties for rule(s) violation(s), about the managing authority, and about how users become alert to trail problems are examples of trail education strategies.

- 3.2.1. Benchmark: Evaluate and recommend signage placement, by 2010.
- 3.2.2. Benchmark: Post trail safety and etiquette rules on all trail information boards and trailheads, by 2013.

Partner: Roundtable - Government/Agency - FOCIT

Roundtable Subcommittee: Communications

## OBJECTIVE 4

COORDINATE AND FUND THE DEVELOPMENT AND MAINTENANCE OF THE CENTRAL IOWA TRAILS SYSTEM.

### ACTIONS:

**4.1. Create new and enhance existing funding resources for trails planning, construction, and maintenance, and secure matching monies for federal and state funds received.** The Roundtable staff can work with other central Iowa organizations to identify and to promote seeking and obtaining federal, state, regional, and/or local maintenance funding. The Roundtable participants also can continue sharing information about exploring funding sources, identifying potential trail funding sources, developing partnerships, and involving interested stakeholders in trail project development.

- 4.1.1. Benchmark: Develop a list of existing and potential funding sources with contact information, by 2011.
- 4.1.2. Benchmark: Create a trail funding clearinghouse, by 2011.
- 4.1.3. Benchmark: Pursue private sector aid, such as endowments and trusts, in addition to financial support from businesses, beginning in 2011.

Partner: Roundtable - Government/Agency

Roundtable Subcommittee: Planning, Policy, and Funding

**4.2. Explore the regional trails district concept.** The Roundtable, along with the Iowa DOT's State Bicycle-Pedestrian Coordinator and with other regional trails organizations, should investigate the potential for initiating a regional trails district through the state legislature. State legislation would allow local governments to negotiate cooperation agreements and dedicate property tax revenues to trails. Each regional trail district would have an operating board appointed by the respective councils and boards. A regional trails district would have a mission of trail maintenance and trail construction funding. As unified districts, they would have better financing capability to match state and federal funding and to assure annual maintenance funds. By sharing resources, unified districts can alleviate the financial stress felt by smaller jurisdictions.

- 4.2.1. **Benchmark:** Promote state enabling legislation allowing for regional trail districts, beginning in 2010.

Partner: Roundtable - Elected Officials - Government/Agency  
 Roundtable Subcommittee: Planning, Policy, and Funding - Communications

**4.3. Establish trail maintenance and repair procedures.** Proper maintenance helps ensure adequate and comfortable facilities for bicyclists and pedestrians. Proper maintenance protects public investment and reduces liability risk. One element of proper maintenance may be an Adopt-a-Trail Maintenance Program.

- 4.3.1. **Benchmark:** Set up an Adopt-a-Trail Maintenance Program for the Central Iowa Trails System, beginning in 2009.

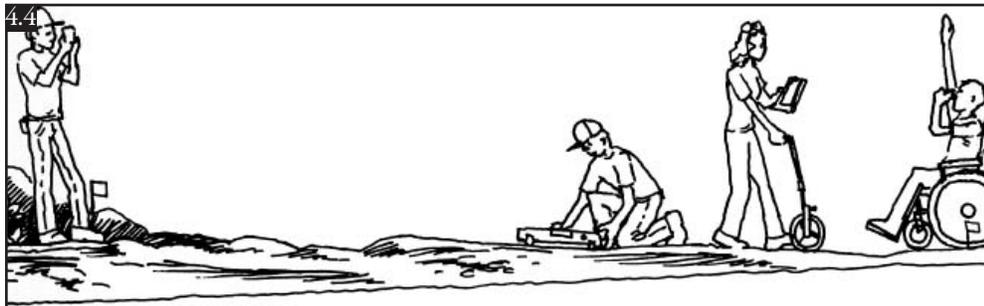
Partner: Roundtable - Government/Agency - FOCIT  
 Roundtable Subcommittee: Communications

**4.4. Encourage using standardized trail assessment methodology in conducting trail condition assessments and in encouraging determination of short-term and long-term trail maintenance needs.** Standardized methods can help trail owners identify trail conditions and maintenance needs uniformly and regionally. The Roundtable recommends using the standard and accepted trail assessment methodology, the Universal Trail Assessment Process (UTAP).<sup>2</sup> UTAP is an inventory tool, recording a trail’s accessibility and maintenance information. Trail maintenance plans help document a trail section’s condition and catalog specific maintenance tasks needed for that trail section.

- 4.4.1. **Benchmark:** Obtain and distribute UTAP information to central Iowa governments and agencies, beginning in 2009.

- 4.4.2. **Benchmark:** Encourage central Iowa governments and agencies to agree to use a standardized trail assessment methodology, by 2012.

Partner: Government/Agency  
 Roundtable Subcommittee: Technical - Communications



The Universal Trail Assessment Process can be completed by a team of volunteers under the leadership of a trail assessment coordinator.  
 Source: Federal Highway Administration, <http://www.fhwa.dot.gov/environment/sidewalk2/sidewalks213.htm>

**4.4** The Universal Trail Assessment Process (UTAP) is used to collect data that can be used to provide objective information to users about the conditions of trails. The primary accessibility information recorded for trails includes:

- Trail length;
- Maximum and average cross slopes;
- Maximum and average grades;
- Surface type and firmness;
- Minimum clear width; and,
- Average tread width.

The primary maintenance information recorded about a trail includes:

- Tread condition;
- Obstacle locations and magnitude;
- Vegetation within the trail corridor;
- Condition of drainage structures;
- Presence of downed trees;
- Washed out sections of the trail;
- Condition of signage; and,
- Condition of benches, tables, and other amenities, as well as whether or not these are accessible designs.

Source: UTAP

**The AASHTO Guide for the Development of Bicycle Facilities have extensive information on how to design trails. Some states also have their own design manuals that match or exceed these guidelines. Some of the most critical design considerations include the following:**

1. Trails should be at least 10 feet (12 feet is often preferred) with two feet of clear space on both sides of the trail.
2. Assume pedestrians and bicyclists will use the trail — design for both.
3. Most urban trails have an asphalt surface which accommodates more user types (e.g. inline skaters); many rural trails have crushed limestone, which is cheaper but may require more maintenance.
4. The AASHTO guide provides detailed information on horizontal alignment, curve radii, grade, structures, and other design elements affecting trail alignment.
5. Give special attention to intersections since they are where crashes between trail users and motorists are most likely to occur. In addition to following AASHTO, follow the MUTCD to determine the type of traffic control device to use.
6. Trails immediately adjacent to roadways (sidepaths) are generally discouraged. However, they can be made safe if they are separated from the roadway by at least five feet. Again, AASHTO provides excellent guidance on when and where this type of facility is appropriate.

**This page left blank intentionally.**

## Chapter 5:

# Safety

**Challenges and Opportunities.** A combination of public input, plan review, and infrastructure evaluation identified the need to:

- Improve reporting of bicycle and pedestrian accidents to identify problem areas and relevant solutions;
- Register bicycles for identification, theft recovery, owner identification, facility planning, and educational planning;
- Address safety needs of trail users and motorists when designing trail intersections;
- Address deficiencies in bike safety education programs at all educational levels;
- Promote Safe Routes to School to increase safety for children, decrease obesity among children, and decrease morning congestion near school facilities;
- Educate parents of school-aged children on bicycle accident facts and resultant behavior solutions;
- Educate the community on the local laws that address rights and responsibilities of central Iowa bicyclists and pedestrians;
- Improve on-street bicycling knowledge through skills courses, basic Share the Road orientation, and bicycle maintenance information;
- Include stronger laws and penalties for those responsible in modal accidents and fatalities;
- Educate drivers about the need to share the road with bicyclists in drivers education courses;
- Implement a regional Emergency 911 signage system on trails;
- Promote safe and lawful bicycling behavior among bicyclists;
- Include adequate intersection traffic signals and crossing times for all users, including persons with disabilities, children, and the elderly;
- Discourage aggressive motorist behavior towards bicyclists through increased enforcement; and,
- Promote efficient Share the Road signage and education.

Photo: Bikes Belong





Photo: Mark Wyatt

## **GOAL:**

**Ensure bicyclist, pedestrian, and motorist rights and safety through education and law enforcement.**

# OBJECTIVE 1

DECREASE THE NUMBER OF MODAL COLLISIONS WITH IMPROVED BICYCLE AND PEDESTRIAN INFRASTRUCTURE.

## ACTIONS:

**1.1. Annually identify bicyclist and pedestrian high accident/conflict locations.** Promoting bicycle and pedestrian safety and designing safer facilities where bicyclists, pedestrians, and motorists interact is contingent on bicycle and pedestrian planning professionals being able to generate data identifying unsafe sites. Identifying high accident/conflict locations allows for undertaking countermeasures to affect specific bicyclist and pedestrian accident types linked to a location. (See Appendix: Crash Data for accident locations)

- 1.1.1. **Benchmark:** Collect, monitor, and report annual bicyclist and pedestrian accident/conflict locations in central Iowa, beginning in 2009.

- 1.1.2. **Benchmark:** Identify and analyze high accident/conflict locations in central Iowa, by 2011.

Partner: Government/Agency - MPO - CIRTPA

Roundtable Subcommittee: Technical - Communications

**1.2. Take countermeasures to remedy bicycle and pedestrian accident/conflict locations, such as traffic calming, signal timing, or other traffic safety improvements.** Some of the most frequently occurring types include dart-out first half (i.e., the pedestrian is struck in the first half of the street being crossed) (24%), intersection dash (13%), dart-out second half (10%), midblock dart (8%), and turning-vehicle crashes (5%).<sup>1</sup> Traffic calming devices help control traffic speeds as well as discourage through trips by motorists and improved signal timing can help users cross the street safer. Traffic controls limit potential conflicts between motorists and bicyclists by giving priority to safe bicycle and motor vehicle movement.

- 1.2.1. **Benchmark:** Develop recommended improvement plans for central Iowa's 10 most frequent bicycle and pedestrian accident/conflict locations, by 2011.

Partner: Roundtable - MPO - CIRTPA

Roundtable Subcommittee: Technical

**1.3. Evaluate existing and planned sidepaths to minimize user/vehicle conflicts.** Sidepaths are shared-use trails paralleling roadways (Martin Luther King, Jr. Trail in Des Moines and Raccoon River Valley Trail in Waukee/Urbandale). However, three decades of national crash data indicate that sidepaths have higher overall crash and conflict rates than other trail types, especially where sidepaths meet intersections.<sup>2</sup> Both public agencies and a large number of bicyclists prefer sidepaths, perceiving sidepaths to be safer than on-street bicycle facilities.<sup>3</sup> In almost all cases, AASHTO recommends on-street bicycle facilities over sidepaths.

- 1.3.1. **Benchmark:** Install standard bicycle lanes and sidewalks, rather than sidepaths, in urban and suburban settings, beginning in 2009.

Partner: Elected Officials - Government/Agency - MPO - CIRTPA

Roundtable Subcommittee: Technical

**1.4. Evaluate pedestrian and bicycle facility deficiencies using vehicular collision statistics.** Crash data analysis informs local governments, bicyclists, pedestrians, and motorists of unsafe locations. Communities may opt to obtain further information through surveys, investigations, and studies where such efforts could assist a community in identifying a specific problem or a group of problems. Once identified, the unsafe locations could help local governments choose locations for bicycle and pedestrian safety solutions.

- 1.4.1. **Benchmark:** Identify central Iowa's bicycle and pedestrian facility deficiency problem areas biennially, beginning in 2009.

- 1.4.2. **Benchmark:** Employ countermeasures at five to ten problem areas annually, by 2012.

Partner: MPO - CIRTPA

Roundtable Subcommittee: Technical

1.3

### **Sidewalks are not suited for bicycling for several reasons:**

1. Bicyclists face conflicts with pedestrians.
2. There may be conflicts with utility poles, signposts, benches, etc.
3. Bicyclists face conflicts at driveways, alleys, and intersections: A bicyclist on a sidewalk is generally not visible to motorists and may emerge unexpectedly. This is especially true of bicyclists who ride opposing adjacent motor vehicles.
4. Bicyclists are put into awkward situations at intersections where they cannot safely act like a vehicle, but are not in the pedestrian flow either, which create confusion for other road users.

Source: Federal Highway Administration

1.4

### **Using the accident statistics, measure the:**

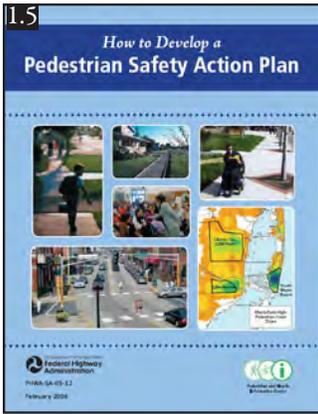
**Who** - (patterns in the demographics of victims and offenders)

**What** - (patterns in the types of collisions)

**When** - (patterns to the conditions under which pedestrian and bicyclist-involved collisions occur)

**Where** - (patterns to the locations where pedestrian and bicyclist-involved collisions occur)

Source: Metropolitan Transportation Commission



Source: Federal Highway Administration

**1.6** Traffic signal enhancements can include pedestrian detectors, providing left turn phasing separate from pedestrian walk interval, timing signals in sequence to encourage desired vehicle speeds, countdown signals to provide pedestrians with information about the amount of time remaining in a crossing interval, providing larger traffic signals heads to ensure visibility, and placing signal heads so that motorists waiting at a red light cannot see the other signals and anticipate the green.

Source: *Pedestrian Facilities Users Guide: Providing Safety and Mobility.*

**1.5. Develop a Pedestrian Safety Action Plan.** A Pedestrian Safety Action Plan guides pedestrian safety improvements through street redesign and engineering countermeasures, planning and policy changes, and other safety-related treatments and programs. The Pedestrian and Bicycle Information Center developed the guide *How to Develop a Pedestrian Safety Action Plan*<sup>4</sup> that may assist local transportation professionals responsible for pedestrian safety improvements.

- 1.5.1. Benchmark: Have 25% of all central Iowa governments develop a Pedestrian Safety Action Plan by 2011; 75% by 2013; and, 100% by 2014.

Partner: Roundtable - Government/Agency - MPO - CIRTPA - FOCIT  
 Subcommittee: Planning, Policy, and Funding - Technical - Communications

**1.6. Assess pedestrian signal timing and crosswalk visibility.** Older pedestrians may not see as well or walk as quickly as the general public. One resource local governments could use to ensure that the needs of all users are being met is the *Highway Design Handbook for Older Drivers and Pedestrians*.<sup>5</sup> An intersection may need a leading pedestrian interval signal timer, which gives pedestrians an advance walk signal before the motorists get a green light and which gives the pedestrian several seconds to start in the crosswalk where there is a concurrent signal. Effective street lighting may illuminate roadways and sidewalks to offer visibility to the public right-of-way users for safe and comfortable interaction among drivers, bicyclists, and pedestrians.

- 1.6.1. Benchmark: Identify intersections needing lighting and signage improvements, by 2011.
- 1.6.2. Benchmark: Modify signal timing and crosswalk visibility at three to five identified intersections on busy, higher speed roads, beginning in 2011.

Partner: Government/Agency  
 Roundtable Subcommittee: Technical

**1.7. Reduce motorist travel speeds through traffic calming measures.** The Institute of Traffic Engineers defines traffic calming as the combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users. Research in the United States supports traffic calming as effective techniques for decreasing automobile speeds, reducing the number and severity of crashes, and reducing noise levels for specific contexts.<sup>6</sup> Traffic calming measures can include:

**Vertical Deflections:** Two types are speed humps and speed tables. Both types can help reduce vehicle speeds and enhance the pedestrian environment at pedestrian crossings. Raised measures tend to have the most predictable speed reduction impacts.

**Closures:** Closures reduce cut-through traffic by obstructing traffic movements in one or more directions. A partial street closure can help prevent turns from an arterial street onto a residential street, reduce cut-through traffic, or restrict access to a street without creating one-way streets.

**Lane Reduction:** Reducing the number of lanes on a multi-lane roadway may reduce crossing distances for pedestrians and may slow vehicle speeds. A traffic analysis should be done to determine whether the number of lanes on a roadway (many of which were built without such an analysis) is appropriate.

**Chokers:** Chokers are curb extensions that narrow a street, effectively creating a pinch point along the street. The purpose of a choker is to slow vehicles at a mid-point along the street, create a clear transition between a commercial and a residential area, and narrow overly wide intersections and midblock areas of streets.

**Medians:** Located in the center of the street at intersections or midblock locations, medians help protect pedestrians from motor vehicles. Medians may reduce vehicle speeds approaching pedestrian crossings by managing motor vehicle traffic and providing comfortable left-hand turning pockets with fewer or narrower lanes.

**Gateway:** A gateway is a physical or geometric landmark that indicates a change in environment from a higher speed roadway to a lower speed roadway. Gateways may be a combination of street narrowing, medians, signing, archways, roundabouts, or other identifiable features and can send a clear message to motorists that they have reached a specific place and must reduce speeds.

**Traffic Circle:** Traffic circles are in the center of intersections and reduce vehicle speeds by forcing motorists to maneuver around them. A short curb radius may complement this treatment to discourage fast right-turn maneuvers by vehicles and traffic circles with cuts in the islands make crossing easier for pedestrians, especially wheelchair users.

**Right-turn-on-red:** Local governments may consider prohibiting right-turn-on-red where and/or when there are high pedestrian volumes, or where there is a proven problem with motorists conflicting with pedestrians. For areas where a right-turn-on-red restriction is needed during certain times, time-of-day restrictions may be appropriate.

- 1.7.1. Benchmark: Identify roadways needing traffic calming measures, beginning in 2010.
- 1.7.2. Benchmark: Install two to four traffic calming measures per year, beginning in 2011.

Partner: Government/Agency  
 Roundtable Subcommittee: Technical

## OBJECTIVE 2

EDUCATE AND RAISE AWARENESS FOR THE RIGHTS AND RESPONSIBILITIES OF BICYCLISTS, MOTORISTS, AND PEDESTRIANS ON RULES OF THE ROAD AND THE TRAIL.

### ACTIONS:

**2.1. Educate bicyclists on riding safely while avoiding injury.** Bicyclists riding unsafely and disregarding traffic laws endanger everyone. Education programs need to be focused on everyone - adults, children, commuters, parents, and motorists.

**League Cycling Instructors (LCIs):** LCIs are bicycle education and safety experts, certified through the American League of Bicyclists. LCIs are certified, insured, and equipped to teach all aspects of bicycle safety, basic bicycle riding skills to college level courses; such as Road I, Road II, Commuting, Motorist Ed, Kids I, and Kids II.<sup>7</sup>

**Iowa Kids on the Move:** The Iowa DOT's *Iowa Kids on the Move*<sup>8</sup> is a bicycle safety program designed for kindergarten through sixth grade students. The program teaches children to master different skills and provides them the knowledge to make positive choices about their personal safety and well-being when bicycle riding.

- 2.1.1. Benchmark: Hold five or more LCI training courses for teens and adults, and implement an *Iowa Kids on the Move* programs in every central Iowa elementary school, beginning in 2010.
- 2.1.2. Benchmark: Develop a webpage describing the various training courses and the course schedule for central Iowa classes, by 2011.

Partner: Iowa DOT - Iowa Bicycle Coalition - LCIs  
 Roundtable Subcommittee: Communications

**2.2. Initiate a "Share the Road" public awareness campaign for bicyclists and motorists.** Sharing transportation facilities with others requires education of all the users about their rights and responsibilities, as well as how to behave courteously, safely, and visibly. "Share the Road" campaigns promote the principle of "Same roads, same rules, same rights" for bicyclists and for motorists. A Share the Road campaign can demonstrate a commitment to making the roadways and communities safer for all drivers and road users.

- 2.2.1. Benchmark: Expand bicyclist and motorist "Share the Road" education and encouragement programs using newly created informational handouts/brochures and through local activities, such as tax renewal, drivers licensing and testing, or utility bill inserts, beginning in 2010.

Partner: Roundtable - Elected officials - Police Departments  
 Roundtable Subcommittee: Communications

**2.3. Develop a Bicycle Ambassadors program to elevate public awareness of bicyclists' rights and responsibilities.** Cities such as Chicago, Illinois; Seattle, Washington; and, Boulder, Colorado have created programs aimed at educating bicyclists, motorists, and pedestrians, along with other trail and roadway users, on exercising their individual transportation options safely. Central Iowa's Bicycle Ambassador Program goal could be educating community citizenry on bicycling rights and responsibilities, reaching new groups of cyclists, and as answering citizen questions.

- 2.3.1. Benchmark: Establish a Central Iowa Bicycle Ambassadors Program; begin attending central Iowa bicycling events; and produce handouts informing the public of this program, by 2010.

Partner: Roundtable - FOCIT - Advocates - Volunteers  
 Roundtable Subcommittee: Planning, Policy, and Funding - Communications



Photo: Des Moines Register

**2.2**

**Bicyclist behaviors that should be targeted include:**

- Ignoring traffic control (particularly traffic signals)
- Riding the wrong way on a street.
- Riding with no lights at night.
- Riding without helmets.
- Riding recklessly near pedestrians on sidewalks.

**Motorist behaviors that should be targeted include:**

- Turning left and right in front of a bicyclists.
- Passing too close to bicyclists.
- Parking in bicycle lanes.
- Opening doors of parked vehicles in front of bicyclists.
- Rolling through stop signs or disobeying traffic signals.
- Harassment or assault of bicyclists.

Source: Seattle Bicycle Master Plan

**2.4. Support the Iowa DOT's efforts to include bicycle and pedestrian safety education within driver education classes.** In April 2006, then Iowa Governor Tom Vilsack signed a bill into law providing for share the road instruction to be included in Iowa's driver education courses. Motorists are probably the most difficult group to reach with bicycle education because programs are once every several years.

- 2.4.1. Benchmark: Work with the Iowa DOT to instruct and prepare the cyclists or LCI trainers, beginning in 2009.
- 2.4.2. Benchmark: Encourage cyclists, or LCIs, to teach the bicyclist safety education classes, beginning in 2010.
- 2.4.3. Benchmark: Encourage central Iowa's high schools to use the "Bicycle Safety in Driver Education Curriculum," developed by the Iowa DOT and the Iowa Bicycle Coalition, beginning in 2010.

Partner: Iowa DOT - Iowa Bicycle Coalition - Schools  
 Roundtable Subcommittee: Communications

**2.5. Encourage communities to develop a "Safe Routes to School Plan."** The National Highway Traffic Safety Administration developed a "Safe Routes to School" toolkit as an aid to help individual communities develop a Safe Routes to School Plan. A Safe Routes to School Plan's intent is to minimize the number of streets that schoolchildren cross when traveling to and from school and to maximize school crossing safety.

- 2.5.1. Benchmark: Create a Safe Routes to School Plan for each central Iowa school district, by 2020.

Partner: Government/Agency - Iowa DOT - Iowa Bicycle Coalition - Advocates - Health organizations - Schools  
 Roundtable Subcommittee: Planning, Policy, and Funding - Communications



Source: Federal Highway Administration

## OBJECTIVE 3

REVIEW AND STRENGTHEN LAWS/POLICIES CONCERNING BICYCLE, PEDESTRIAN, AND TRAIL SAFETY.

### ACTIONS:

**3.1. Encourage law enforcement to use targeted enforcement strategies for encouraging motorists and bicyclists to "Share the Road."** A law enforcement "Share the Road" target strategy for motorists could be an educational brochure or tip sheet outlining a motorist's and a bicyclist's respective rights and responsibilities. A comparable "Share the Road" target strategy for bicyclists could be a required training class resulting from a ticketed safety violation and providing the class attendees safe and lawful bicycle riding techniques information.

- 3.1.1. Benchmark: Encourage local law enforcement agencies to implement "Share the Road" targeted enforcement strategies toward bicyclists and motorists, beginning in 2010.
- 3.1.2. Benchmark: Organize an *Enhancing Bicycle Safety: Law Enforcement's Role*<sup>9</sup> seminar for central Iowa law enforcement officers, beginning in 2010.

Partner: Roundtable - Government/Agency - Police Departments  
 Roundtable Subcommittee: Planning, Policy, and Funding – Communications

**3.2. Identify and modify local government ordinances that are counter intuitive to bicyclists and pedestrian rights and safety.** Many studies have demonstrated that cyclists riding on the roadway resulted in lower overall crash risk than cyclists riding on sidepaths or sidewalks.<sup>10</sup> Hence, mandatory sidepath laws can increase the danger of bicyclists. One local city ordinance states, regarding bicycles and its traffic code, that:

"Whenever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use such path and shall not use the roadway."

- 3.2.1. Benchmark: Identify and modify local government ordinances that are outdated and that do not reflect all the rights of bicyclists and pedestrians, beginning in 2009.

Partner: Roundtable - Government/Agency - Iowa Bicycle Coalition  
 Roundtable Subcommittee: Planning, Policy, and Funding - Technical



# IOWA RULES OF THE ROAD FOR BICYCLISTS

## KNOW AND OBEY IOWA'S TRAFFIC LAWS

A person riding a bicycle on the street or highway has all the rights, and is required to know and obey all traffic laws and rules of the road, applicable to the driver of a motor vehicle.

## RIDE ON THE RIGHT AND WITH TRAFFIC

Bicyclists must ride with the flow of traffic on the right side of the roadway, except: when overtaking and passing another vehicle; when preparing for a left turn; when avoiding parked vehicles; drain grates, or debris; or when avoiding any other road conditions that may affect the operation of bicycles. Bicyclists may also ride on the shoulder or a designated bike lane. Bicyclists operating on a roadway at less than a normal speed of traffic shall ride as close to the right curb or edge of the roadway as is safe and practical.

## USE HAND AND ARM SIGNALS

Bicyclists must signal their intentions to turn or stop. The proper signals are made with the left arm. To make a left-turn signal, extend hand and arm horizontally; to make a right-turn signal, extend hand and arm upward; and to stop or decrease speed, extend hand and arm downward. The keys to safe bicycling include being predictable, visible, and communicating your intentions to motorists.

## USE A LIGHT AT NIGHT

A bicycle operated between sunset and sunrise must be equipped with a white light on the front, and red light or reflection on the rear, both visible for a distance of at least 300 feet.

## FOLLOW LANE MARKINGS

Street and roadway lanes are sometimes marked to direct traffic to make certain movements - right turn, straight through or left turn. Bicyclists must follow these lane markings and select the appropriate lane for their intended direction of travel.

## RIDE ONLY WHERE PERMITTED

Bicyclists are allowed on almost all Iowa roads with the exception of interstates, certain other controlled-access highways with posted minimum speed limits, and streets where bicyclists are prohibited by local ordinance.

## LIMIT RIDERS TO THOSE YOUR BICYCLE IS EQUIPPED TO CARRY

Bicyclists must not carry more people on their bicycle than it is designed and equipped to carry, except for adult bicyclists carrying a child securely attached to the bicycle in a seat or trailer designed to carry children.

## PASS ON THE LEFT

Bicyclists may overtake and pass another vehicle when it is safe to do so. Bicyclists should always pass on the left. To pass a motor vehicle, the bicyclist must first move to the left lane. After overtaking the motor vehicle, the bicyclist must return to the right lane once reaching a safe and clear distance in front of the vehicle.

## REPORT CRASHES

Bicyclists must stop and exchange information when they have been involved in a crash.

## NEVER RIDE AGAINST TRAFFIC

Motorists and other cyclists are not looking for a bicyclist on the wrong side of the roadway. Riding on the wrong side increases the likelihood and severity of head-on collisions.

## BICYCLES AND TRAFFIC VIOLATIONS

Bicyclists who violate traffic laws are subject to the same fines as motor vehicle drivers.

## BE PREPARED TO STOP FOR SCHOOL BUSES

Bicyclists who come upon a school bus with flashing signal lights and a "STOP" swing-arm out must give the stop hand signal and come to a complete stop; then may proceed when the "STOP" swing-arm retracts and flashing signals stop<sup>7</sup>.

Source: Iowa Department of Transportation

**3.3. Enforce laws and increase penalties for motorists committing traffic violations that endanger bicyclists and pedestrians.** Stronger laws might reduce deaths and/or serious injury from motorists/bicyclist/pedestrian collisions. For example, the City of Chicago, Illinois, Bicycle Safety Ordinance seeks to increase traffic violation fines related to offenses that endanger bicyclists, clarify when bicyclists have the right-of-way, and align Chicago's vehicle traffic laws with Illinois' vehicle traffic laws. Rules violations result in a minimum \$150 fine. A rule violation resulting in a bicycle's crash mandates a minimum \$500 fine. The ordinance results in police being able to issue tickets more easily and in allowing prosecutors to charge a motorist for striking a bicyclist.

- 3.3.1. Benchmark: Encourage the Iowa Legislature, county boards, and city councils to address the operations and safety of bicyclists and pedestrians on streets and highways, beginning in 2009.
- 3.3.2. Benchmark: Encourage legislation and city ordinances that create additional penalties for certain traffic offenses which result in serious injury or deaths to bicyclists and pedestrians, beginning in 2009.

Partner: Government/Agency

Roundtable Subcommittee: Planning, Policy, and Funding - Technical

## OBJECTIVE 4

IMPLEMENT A REGIONAL EMERGENCY 911 (E911) SIGNAGE SYSTEM ON TRAILS.

### ACTIONS:

**4.1. Implement E911 signage.** Putting E911 signage on the most heavily used urban trail sections and on the more significantly used rural trail sections would assist local emergency personnel when responding to an accident on a trail. Local governments could place E911 signage along trails and instructions at trailheads. Bicycle shops also could carry and distribute informational E911 cards.

- 4.1.1. Benchmark: Educate trail users on using the E911 signage system, beginning in 2010.
- 4.1.2. Benchmark: Complete the Central Iowa Trails System E911 signage, by 2015.

Partner: Government/Agency

Roundtable Subcommittee: Planning, Policy, and Funding - Communications



Photo: Bikiowa.com

## Chapter 6:

# Promotion & Advocacy

**Challenges and Opportunities.** A combination of public input, plan review, and infrastructure evaluation identified the need to:

- Improve the implementation of directional and informational trail signage;
- Increase bicycle trips among adults and children;
- Increase bicycling by adult bicyclists who have bicycled in the last six months, but are not regular bicyclists;
- Increase bicycling for short trip purposes;
- Communicate incentives and benefits of bicycling and walking;
- Market the Central Iowa Trails System as a tourism destination and as an economic development stimulus;
- Create a strong, unified voice for all trail users;
- Create a Central Iowa Trails System website;
- Create effective public service announcements to target groups most receptive to trail activities;
- Create volunteer bicycle programs;
- Involve additional activists, support groups, and community-wide support in bicycling and pedestrian topics;
- Develop maps that show bus stops, bicycle facilities, and pedestrian facilities; and,
- Provide additional promotion of DART's Bike & Ride commuting options.

Photo: Mark Wyatt





Photo: Des Moines Register

## **GOAL:**

**Empower individuals to increase bicycle and pedestrian trips by promoting the benefits of bicycling and walking through concentrated education, awareness, and marketing campaigns.**

# OBJECTIVE 1

## CREATE AND DISTRIBUTE BICYCLE AND PEDESTRIAN PROMOTIONAL PUBLICATIONS.

### ACTIONS:

**1.1. Develop a Bike & Ride map that links transit routes with bicycle connections.** Bicycles and transit, two alternative forms of transportation, work well together when connected. Bicyclists want to cross over rivers, major highways and principal arterial roadways, whereas many bus routes already do. Mapping bicycle connections and transit routes together with instructions for bringing bicycles on buses, where to park bicycles, and the best routes near bus stops, could help commuters reach desired destinations. (See Map 8, page 56.)

- 1.1.1. **Benchmark:** Publish a Bike & Ride Map with information about nearby trails and bicycle routes at or near bus stops and information about transit service along trails, by 2011.
- 1.1.2. **Benchmark:** Distribute maps and brochures promoting bicycle and transit use at trailheads, bus stops, and on buses, beginning in 2011.

Partner: MPO - DART - CyRide

Roundtable Subcommittee: Communications

**1.2. Update and distribute the Greater Des Moines Trails Map.** The Greater Des Moines Trails Map, published by the City of Des Moines, is the only map distributed that displays bicycle and pedestrian facilities in the greater Des Moines region. This map is a cost-effective way to encourage bicyclists, pedestrians, and other users to select and use regional trail routes, and to promote proper trail etiquette when using those regional trail routes.

- 1.2.1. **Benchmark:** Reprint an updated Greater Des Moines Trails Map every two years, beginning in 2009.

Partner: Government/Agency - MPO - CIRTPA

Roundtable Subcommittee: Planning, Policy, and Funding - Technical

**1.3. Produce bicycle and pedestrian informational and educational publications.** Bicycle-friendly cities produce a series of informational publications on topics related to children, safety, streets, and bicycle parking. For example, the Chicago Department of Transportation [Illinois] produces publications entitled: *Chicago Bike Map*, *Safe Bicycling in Chicago*, *Kids on Bikes in Chicago*, *Student Cycling in Chicago*, and *Bike Parking for Your Business*. Publication like these could help make bicycling safer in central Iowa.

- 1.3.1. **Benchmark:** Identify needed publications to create, beginning in 2009.
- 1.3.2. **Benchmark:** Develop needed publications, beginning in 2010.

Partner: Roundtable

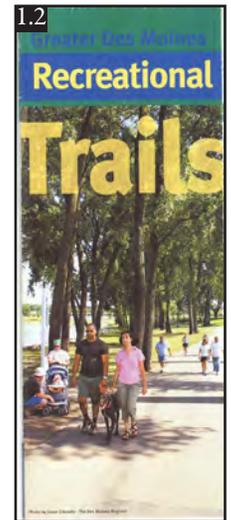
Roundtable Subcommittee: Communications

**1.4. Develop television, radio, website, and newspaper public service announcements (PSAs).** Utilizing digital and analog media may help bicycle and pedestrian advocates and educators reach a large audience with a common message and theme. Animated features, television spots, and newspaper advertisements, for example, can target specific groups to promote and inform the public about bicycle and pedestrian issues.

- 1.4.1. **Benchmark:** Use various PSAs in various media formats promoting and educating targeted groups, beginning in 2010.

Partner: Iowa DOT - Iowa Bicycle Coalition

Roundtable Subcommittee: Communications

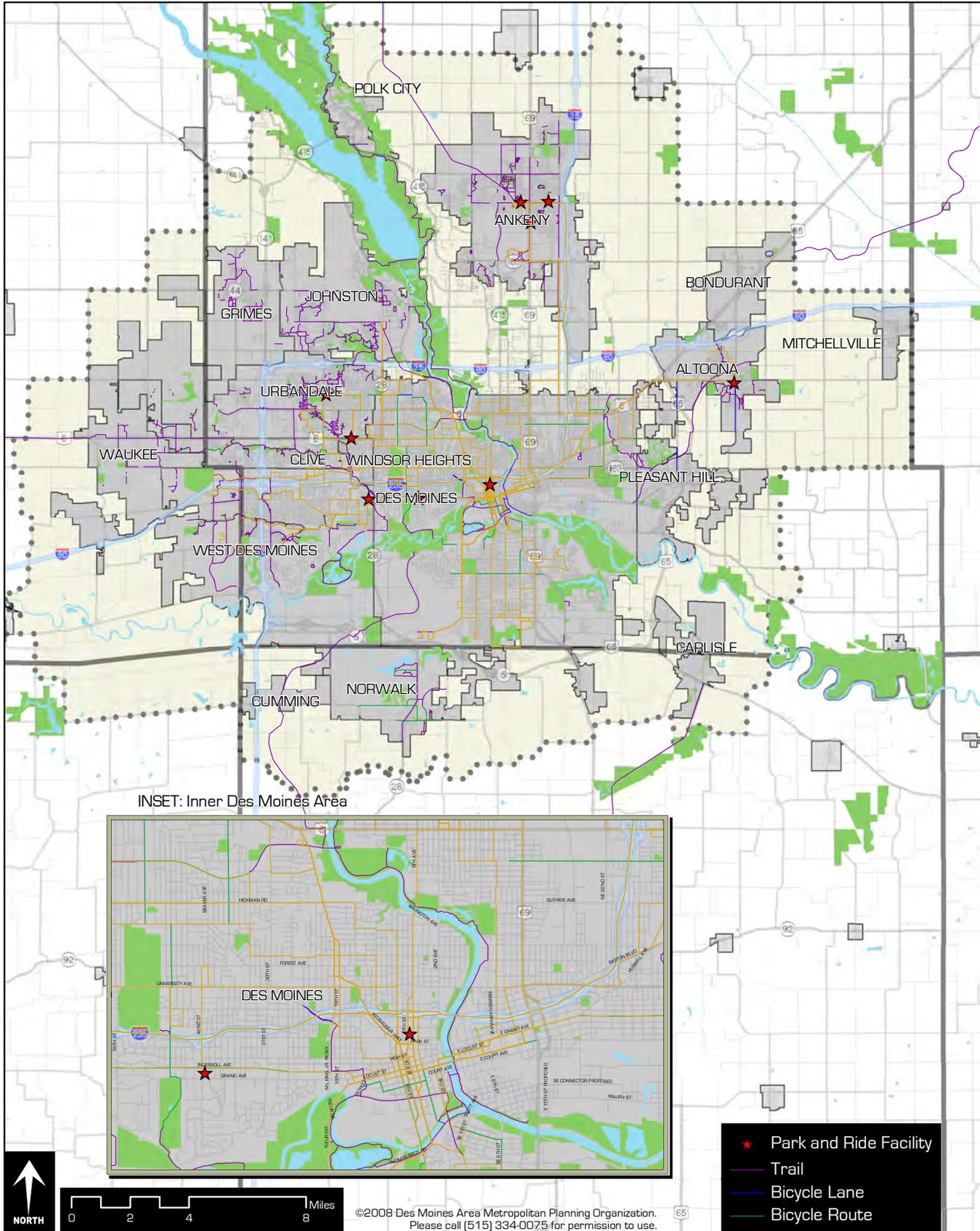


Source: City of Des Moines



Source: Iowa Department of Transportation

### Map 8: Existing Bicycle and Pedestrian Facilities and Transit Connections



## OBJECTIVE 2

PROMOTE, IMPROVE, AND EXPAND BICYCLE AND PEDESTRIAN EVENTS AND ACTIVITIES.

### ACTIONS:

**2.1. Encourage and promote bicycle and pedestrian events and activities.** Walking and bicycling promotion is appropriate in almost any geographic area, and may be particularly effective in areas with pedestrian and bicycle friendly environments. Possible community sponsorship partners could be city officials, hospitals, corporations, bike shops, neighborhood associations, health food and grocery stores, colleges and universities, health clubs, and health professionals. Bicycle and pedestrian events can spur participants to participate in other events or provide incentives for people to take up walking and bicycling as an integral part of their everyday lifestyle. A few events central Iowa should annually consider are the following:

**Bike to Work Week.** May is National Bike Month. The League of American Bicyclists promotes a week in May for Bike to Work Week. Central Iowa could hold special events during the entire month of May.

**World Carfree Day.** This event encourages participants to try to get around their communities without using their automobiles. Car free days first organized during the oil crisis of the 1970s. Several European cities organized car free days during the early 1990s. In 2000, Car Busters issued an open call for a "World Carfree Day" to coincide with Europe's car free day on September 22. As a result, on September 22, people around the world organize events of all sizes to highlight transportation alternatives to the automobile.<sup>1</sup>

**National Trails Day.** National Trails Day is a celebration of trails to increase awareness of community trails and to help volunteer trail clubs. The first Saturday of June is National Trails Day and is America's largest celebration of trails and the outdoors.<sup>2</sup>

**Mayor's Annual Ride for Trails.** Every year, the City of Des Moines hosts the Mayor's Annual Ride for Trails. The city uses all the proceeds from this event to support Des Moines' recreational trails. Every community in central Iowa could hold their own mayor's ride to support recreational trails.

- 2.1.1. **Benchmark:** Hold 5-10 bicycle and pedestrian events and activities sponsored by different companies, organizations, clubs, and agencies, beginning in 2009.

Partner: Government/Agency - Central Iowa Businesses

Roundtable Subcommittee: Planning, Policy, and Funding - Communications

### 2.2. Encourage employer and employee incentives to promote bicycle commuting to the workplace.

Some programs or groups provide sessions at the workplace for potential bicycle commuters. Such programs may consist of brief educational clinics that cover important commuting topics. Modeled after the federal vanpool and transit commuter tax benefit, Congress passed the Bicycle Commuter Act that allows employers to give employees who commute by bike a monthly tax-free stipend of \$20 or less.<sup>3</sup>

- 2.2.1. **Benchmark:** Set up informational meetings with major employers to educate employers and employees on the Bicycle Commuter Act, beginning in 2009.

Partner: Roundtable - TMA - LCIs - Local Health Organizations

Roundtable Subcommittee: Communications



Source: Bikeiowa.com



Photo: Bikeiowa.com

# OBJECTIVE 3

IMPLEMENT THE *COMMUNICATION MASTER PLAN FOR THE CENTRAL IOWA TRAILS*



**ACTIONS:**

**3.1. Gather trail signage implementation support from the MPO, the CIRTPA, and all participating jurisdictions.** The *Communication Master Plan for the Central Iowa Trails* is the reference guide for connecting trail users with the trail resources of central Iowa. This plan is a guide to assist local governments with communication on trails that will help lead to an improved trail experience for users and an improved quality of life for Iowans and Iowa's visitors.

- 3.1.1. **Benchmark:** Encourage communities and agencies to adopt the *Communication Master Plan for the Central Iowa Trails* guidelines, beginning in 2009.

Partner: Roundtable  
Roundtable Subcommittee: Communications

**3.2. Actively promote funding support and develop annual appropriations within each community.** Securing funds for the regional implementation of the recommended communication components on the Central Iowa Trails System is a necessary factor for developing and maintaining signage. Funding options may include seeking out financial support from federal agencies, local option sales tax revenue, and private sources.

- 3.2.1. **Benchmark:** Set aside funding in each community and agency budget to install Central Iowa Trails signage, beginning in 2009.

Partner: Government/Agency  
Roundtable Subcommittee: Planning, Policy, and Funding - Communications

**3.3 Prioritize a phasing schedule for trail signage implementation by using the trails Level of Significance.** Each jurisdiction could implement the Central Iowa Trails wayfinding signage in the order of state, regional, jurisdictional, and local significance of their trails. Prioritizing will help each community and agency set their budget to a prioritized list.

- 3.3.1. **Benchmark:** Develop list of trail signage manufacturers, beginning in 2009.
- 3.3.2. **Benchmark:** Implement trail wayfinding signage according to state, regional, jurisdictional, on-street, and local significance, beginning in 2009.

Partner: Roundtable - Government/Agency  
Roundtable Subcommittee: Communications



Photo: Bikeiowa.com

# OBJECTIVE 4

EVALUATE, IMPROVE, AND ADVOCATE BICYCLING AND PEDESTRIAN LEGISLATIVE EFFORTS.

**ACTIONS:**

**4.1. Encourage state legislation that maximizes bicyclist and pedestrian rights.** In the late nineteenth century, the State of New York courts brought bicycles into the legal system by granting them the same common-law legal rights to the streets that other vehicles enjoyed.<sup>4</sup> Iowa, like every other state, has its own vehicle code, adopted by the legislature, that defines the rights of its bicyclists, pedestrians, and motorists. In addition to encouraging rights, opportunities may arise for the need to discourage legislation that minimizes a bicyclist or pedestrian right. As recent as 2008, a bill was introduced to the Iowa Legislature requiring all bicyclists, adults and children, who ride on primary or secondary roads to have a bicycle license.

- 4.1.1. **Benchmark:** Advocate and lobby for basic bicyclist and pedestrian rights, beginning in 2009.

Partner: Advocates  
Roundtable Subcommittee: Communications

**4.2. Amend existing state legislation that defines trails as a form of private development.** Iowa legislation enacted in 1999 (Iowa Code, 99 Acts, Ch 171, Sec 1 6A.21) provided that the terms “public use” and “public purpose” do not include the authority to condemn agricultural land for private development purposes unless the owner of the agricultural land consents to the condemnation. The Iowa Code defines “private development purposes” as “construction of, or improvement related to, recreational trails, recreational development paid for primarily with private funds, housing and residential development, or commercial or industrial enterprise development.” Trail connections remain incomplete due to the wording.

- 4.2.1. Benchmark: Support the removal of “recreational trails” from the Iowa Code definition of “private development purposes,” by 2012.

Partner: Advocates

Roundtable Subcommittee: Planning, Policy, and Funding - Communications

**4.3. Continue to campaign for trail project funding as part of the Greater Des Moines Partnership’s annual Washington, D.C., trip.** Annually, the Greater Des Moines Partnership leads a contingent of central Iowa business and civic leaders to Washington, D.C., to advocate for regional priorities seeking federal funding assistance. The annual trip has proven successful in helping to convince Iowa’s Congressional delegation to fund multiple regional transportation infrastructure, quality of life, education, and other economic development projects in central Iowa.

- 4.3.1. Benchmark: Continue to submit regional trail project funding requests annually through the MPO to be a part of Greater Des Moines Partnership’s trip to Washington, D.C., beginning in 2009.

Partner: Roundtable

Roundtable Subcommittee: Planning, Policy, and Funding

**4.4. Conduct economic and tourism studies to document trails’ impact on the central Iowa economy.**

Across the United States, trails and greenways are stimulating tourism- and recreation-related spending.<sup>5</sup> To estimate the economic impact reliably, one must have some understanding of a trail user’s demographic profile. Trail users average approximately 48 years of age, are more likely to be male, have completed college, and have annual household incomes between \$35,000 and \$75,000.<sup>6</sup> Studying local trails and their users may help attract more users and identify opportunities for economic growth.

- 4.4.1. Benchmark: Select three major trails for economic impact studies related to the central Iowa economy, by 2015.

Partner: Government/Agency - Tourism - Schools

Roundtable Subcommittee: Communications



Photo: BikeIowa.com

## OBJECTIVE 5

ENCOURAGE BICYCLING AND WALKING TRIPS BY INCREASING PUBLIC AWARENESS OF THE FACILITIES, PROGRAMS, AND BENEFITS OF USING PUBLIC TRANSIT.

### ACTIONS:

**5.1. Evaluate, improve, and expand the DART Bike & Ride program.** DART counts Bike & Ride users monthly. A survey of Bike & Ride users to identify challenges and barriers to Bike & Ride access would be beneficial. Other techniques to encourage more users of the Bike & Ride program would be to produce brochures, flyers, signs, and other PSAs about DART's Bike & Ride program as a transportation alternative.

- 5.1.1. **Benchmark:** Survey the DART Bike & Ride program impact annually, beginning in 2010.
- 5.1.2. **Benchmark:** Issue one to two press releases publicizing the DART Bike & Ride program per year, beginning in 2010.

Partner: Roundtable - DART  
Roundtable Subcommittee: Technical - Communications

**5.2. Increase public education and public awareness of transit access facilities, programs, and benefits.** Marketing techniques to increase public awareness about bicycle and transit services could include brochures, transit agency websites, state or regional websites providing links to local transit agency bicycle service information, information in transit rider guides and other standard transit publications, posters (on buses and trains, at stations and stops, and in other public places), newspaper and magazine advertisements, demonstrations of how to load bus bike racks at public events, bicycle services promotion in informational videos and advertisements, and kickoff events with free fares, water bottles, and so forth.

- 5.2.1. **Benchmark:** Promote alternative transportation choices that links bicyclists and pedestrians with transit using the marketing techniques, beginning in 2010.

Partner: Roundtable - DART  
Roundtable Subcommittee: Communications



## Chapter 7:

# Implementation

Photo: Justin Bruce





Photo: [www.a2wtrail.org](http://www.a2wtrail.org)

## **GOAL:**

**Monitor and evaluate progress in creating a premier bicycle and pedestrian system in central Iowa.**

## OBJECTIVE 1

ADOPT THE ACTION PLAN.

### ACTIONS:

**1.1. Promote *CONNECT*'s goals, objectives, actions, and benchmarks to the MPO, the CIRTPA, the Iowa DOT, local government staffs, agency staffs, and other groups.** Implementing *CONNECT*'s course of actions requires key local government and agency staff input and support, particularly at the MPO, the CIRTPA, the Iowa DOT, and local government and agency departments.

- 1.1.1. Benchmark: Present and recommend adoption of *CONNECT* to all governments and agencies, beginning in 2009.

Partner: Roundtable

Roundtable Subcommittee: Planning, Policy, and Funding - Communications

**1.2. Develop a plan update.** Using the developed benchmarks, the Roundtable should regularly determine progress in reaching the identified goals and objectives and make appropriate changes to goals, objectives, actions, and benchmarks, as needed. To be in accordance with the MPO's long-range transportation plan, the Roundtable should review and update *CONNECT* at least every five years to confirm its validity and its consistency with current and forecasted transportation and land use conditions and trends and to extend the forecast period.

- 1.2.1. Benchmark: Update *CONNECT* in 2015 and 2020.

Partner: Roundtable

Roundtable Subcommittee: Planning, Policy, and Funding - Technical - Communications

## OBJECTIVE 2

USE THIS PLAN TO DEVELOP ANNUAL BICYCLE AND PEDESTRIAN PROJECT AND PROJECT FUNDING PRIORITIES.

### ACTIONS:

**2.1. Require project sponsors to consider bicycle and pedestrian accommodations in STP funding applications.** One way to encourage local jurisdictions to consider bicycle and pedestrian infrastructure into transportation projects may be to award extra points to those projects including bicycle and pedestrian infrastructure.

- 2.1.1. Benchmark: Amend the MPO's STP Guidelines scoring criteria to award extra points for projects that include bicycle and pedestrian accommodations, by Federal Fiscal Year 2015.

Partner: Roundtable

Roundtable Subcommittee: Planning, Policy, and Funding - Technical

## OBJECTIVE 3

RESEARCH MEASUREMENTS, TRENDS, PROJECTS, AND ISSUES ASSOCIATED WITH THIS PLAN'S BENCHMARKS.

### ACTIONS:

**3.1. Collect data to measure the impact of *CONNECT* actions and benchmarks.** Data needs include bicycle counts on roadways, on-street facilities, and trails, pre- and post-facility construction counts, and facility type and usages surveys.

- 3.1.1. Benchmark: Administer bicycle counts and user survey's annually, beginning in 2009.

Partner: Government/Agency - MPO

Roundtable Subcommittee: Technical

**3.2. Seek public opinion of *CONNECT*'s success.** The Roundtable should be able to measure the plan's success from the impact the plan brings to central Iowa infrastructure and residents. The Roundtable will measure *CONNECT*'s success through completed benchmarks and using periodic input from public opinion surveys and focus groups.

- 3.2.1. Benchmark: Hold public input meetings and focus groups to measure the public's opinion on *CONNECT*'s impact to central Iowa's bicycle and pedestrian infrastructure, in 2014 and in 2019.

Partner: Roundtable  
Roundtable Subcommittee: Communications

**3.3. Develop a *CONNECT* annual report.** The annual report will discuss, at a minimum, the six "E's", survey results, bicycle and pedestrian travel trip information, projects completed, funding dedicated for bicycle and pedestrian accommodation, and percentage of benchmarks reached.

- 3.3.1. Benchmark: Produce a *CONNECT* annual report on progress made in completing projects, implementing policies, and instituting programs, beginning in 2010.

Partner: Roundtable  
Roundtable Subcommittee: Communications

**3.4. Develop case studies that highlight well-designed and managed regional trail systems planning and development.** A case study can be an experiment or survey and can involve an in-depth examination of a single instance or an event. A case study allows a researcher to investigate and understand why the instance happened as it did and what topics/issues might become important to monitor in the future based on the case study's finding(s).

- 3.4.1. Benchmark: Publish three case studies on projects, programs, or polices developed using *CONNECT*, by 2020.

Partner: Roundtable  
Roundtable Subcommittee: Planning, Policy, and Funding



Photo: Bikeiowa.com

# References

## EXECUTIVE SUMMARY

<sup>1</sup> *National Bicycling and Walking Study Ten Year Status Report*, FHWA, October 2004, <http://www.fhwa.dot.gov/environment/bikeped/study/index.htm#nbwftn1>

## INTRODUCTION

<sup>1</sup> Includes: Raccoon River Valley Trail; Clive Greenbelt Trail; Colby Trail; Walnut Creek Trail; Bill Riley Trail; Gray's Lake Trail; Meredith Trail; John Pat Dorrian Trail; and the Neal Smith Trail.

<sup>2</sup> Turner, Shawn, et al. 2006. *Federal Highway Administration University Course on Bicycle and Pedestrian Transportation*, 2nd ed. Publication No. FHWA-HRT-05-133. <http://www.pedbikeinfo.org/collateral/lessons/Lessons1-24.pdf>

<sup>3</sup> *The Green Commuter*, A Publication of the Clean Air Council. Obtained at <http://www.cleanair.org/Transportation/greenCommute.html>

<sup>4</sup> Komanoff, Charles and Roelofs, Cora. 1993. "The Environmental Benefits of Bicycling and Walking." *National Bicycling and Walking Case Study No. 15*, United States Department of Transportation. January. FHWA-PD-93-015.

<sup>5</sup> Turner, Shawn, et al. 2006. *Federal Highway Administration University Course on Bicycle and Pedestrian Transportation*, 2nd ed. Publication No. FHWA-HRT-05-133. <http://www.pedbikeinfo.org/collateral/lessons/Lessons1-24.pdf>

<sup>6</sup> *The Affordability Index: A New Tool for Measuring the True Affordability of a Housing Choice*. 2006. Center for Transit-Oriented Development and Center for Neighborhood Technology. The Brookings Institution, Washington, D.C.

<sup>7</sup> AAA Association Communication. *Your Driving Costs*, 2007 ed. Obtained at <http://www.aaaexchange.com/Assets/Files/20073261133460.YourDrivingCosts2007.pdf>.

<sup>8</sup> Jensen, D., and J. Durham. 2003. *The Property Value Effects on the South Ridgeline Trail*. University of Oregon Economics. Department of Undergraduate Honor Papers.

<sup>9</sup> Eyre, Harmon, et al. 2004. "Preventing Cancer, Cardiovascular Disease, and Diabetes: A Common Agenda for the American Cancer Society, the American Diabetes Association, and the American Heart Association." *Journal of the American Heart Association*. Dallas, TX 35:199-2010.

<sup>10</sup> Wang, Guijing, et al. "A Cost-Benefit Analysis of Physical Activity Using Bike/Pedestrian Trail". *Health Promotion Practice*. 2005. Volume 6, Issue 2: 174-179.

<sup>11</sup> American Hiking Society. February 2006. *The Economic Benefits of Trails*. <http://www.americantrails.org/pdf/econAHS.pdf>

<sup>12</sup> National Center for Bicycling and Walking. 2006. *Active Facts: Complete Streets for Active Communities*. [www.acticelivingresources.org](http://www.acticelivingresources.org)

<sup>13</sup> League of American Bicyclists. "Equality for Cyclists: Why We Need a Sixth E." *American Bicyclist*. November-December 2007.

<sup>14</sup> Federal Highway Administration. 2007. Federal Highway Guidance - (Updated April 4, 2007) *Bicycle and Pedestrian Provisions of Federal Transportation Legislation*. Obtained at <http://www.fhwa.dot.gov/environment/bikeped/BP-Guid.htm>

## CHAPTER 1: SYSTEM

<sup>1</sup> Complete Streets website. [www.completestreets.org](http://www.completestreets.org).

<sup>2</sup> American Association of State Highway and Transportation Officials. 1999. *Guide for the Development of Bicycle Facilities*, 3rd ed. Washington, D.C.

<sup>3</sup> American Association of State Highway and Transportation Officials. 2004. *A Policy on Geometric Design of Highways and Streets*, 5th ed. Washington, D.C.

<sup>4</sup> American Association of State Highway and Transportation Officials. 2004. *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, 1st ed. Washington, D.C.

<sup>5</sup> Institute of Transportation Engineers. 2006. *An ITE Proposed Recommended Practice, Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities*. Washington, D.C.

<sup>6</sup> *Iowa Statewide Urban Design and Specifications*. 2008. Center for Transportation Research and Education. Iowa State University: Ames, IA. Obtained at <http://www.iowasudas.org/>

<sup>7</sup> United States Access Board. *Building a True Community: Accessible Public Rights-of-Way*. 2001.

<sup>8</sup> Metropolitan Transportation Commission.

<sup>9</sup> United States Environmental Protection Agency. 2001. EPA 231-R-01-002. *Our Built and Natural Environments: A Technical Review of the Interactions between Land Use, Transportation, and Environmental Quality*.

<sup>10</sup> Turner, Shawn, et al. 2006. *Federal Highway Administration University Course on Bicycle and Pedestrian Transportation*, 2nd ed. Publication No. FHWA-HRT-05-133. <http://www.pedbikeinfo.org/collateral/lessons/Lessons1-24.pdf>

<sup>11</sup> Reference 10.

## CHAPTER 2: PEDESTRIANS

<sup>1</sup> Pedestrian and Bicycle Information Center. *Walkability Checklist*. <http://www.walkinginfo.org/library/details.cfm?id=12>

<sup>2</sup> Wilkinson, W.C., et al. *Increasing Physical Activity Through Community Design: A Guide for Public Health Practitioners*. 2002. National Center for Bicycling and Walking. Washington, D.C. Obtained at [http://www.bikewalk.org/pdfs/IPA\\_Chap1.pdf](http://www.bikewalk.org/pdfs/IPA_Chap1.pdf)

<sup>3</sup> Pedestrian Safety Guide and Countermeasure Selection System. *Recommended Guidelines/Priorities for Sidewalks and Walkways*. Obtained at [http://www.walkinginfo.org/pedsafe/moreinfo\\_sidewalks.cfm](http://www.walkinginfo.org/pedsafe/moreinfo_sidewalks.cfm)

<sup>4</sup> *American with Disabilities Act of 1990 – ADA – 42 U.S. Code Chapter 126*. Obtained at [http://finduslaw.com/americans\\_with\\_disabilities\\_act\\_of\\_1990\\_ada\\_42\\_u\\_s\\_code\\_chapter\\_126](http://finduslaw.com/americans_with_disabilities_act_of_1990_ada_42_u_s_code_chapter_126)

<sup>5</sup> *Oregon Bicycle and Pedestrian Plan*, Oregon Department of Transportation, Salem, OR, 2007. Obtained at <http://www.oregon.gov/ODOT/HWY/BIKEPED/planproc.shtml>

<sup>6</sup> Nabors, Dan, et al. *Pedestrian Safety Guide for Transit Agencies*. Federal Highway Administration Office of Safety. Report No. FHWA-SA-07-017. Washington, D.C. Obtained at [http://safety.fhwa.dot.gov/PED\\_BIKE/ped/ped\\_transguide/](http://safety.fhwa.dot.gov/PED_BIKE/ped/ped_transguide/)

<sup>7</sup> Pedestrian Safety Guide and Countermeasure Selection System. *Recommended Guidelines/Priorities for Sidewalks and Walkways*. Obtained at [http://www.walkinginfo.org/pedsafe/moreinfo\\_sidewalks.cfm](http://www.walkinginfo.org/pedsafe/moreinfo_sidewalks.cfm)

<sup>8</sup> Harris, Charles Ward, et al. 1998. *Time-Saver Standards for Landscape Architecture: Design and Construction Data*, ed. 2. McGraw-Hill Professional.

# References

- <sup>9</sup> Governor's Traffic Safety Bureau. 2008. *Pedestrian/Bicycle Fact Sheet*. Iowa Department of Public Safety. Des Moines, IA. Obtained at <http://www.dps.state.ia.us/commis/gtsb/fact-6pedestrianbicycle.pdf>
- <sup>10</sup> International Walk to School in the USA website. Obtained at <http://www.walktoschool.org/media/index.cfm>.
- <sup>11</sup> International Walk to School in the USA website. Obtained at <http://www.walktoschool.org/who/seestate-lastyear.cfm?st=IA>
- <sup>12</sup> *Kansas City Walkability Plan*. City of Kansas City, Missouri City Planning and Development. 2003. Obtained at <http://www.kcmo.org/planning.nsf/plnpres/walkability>
- <sup>13</sup> McCormack, Gavin, R., et al. "Correlates of distances traveled to use recreational facilities for physical activity behaviors." *International Journal of Behavioral Nutrition and Physical Activity*. 2006; 3: 18. Obtained at <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1557534>
- <sup>14</sup> Axelson, Peter W., et al. *Designing Sidewalks and Trails for Access: Review of Existing Guidelines and Practices*. 1999. Federal Highway Administration. Obtained at <http://www.fhwa.dot.gov/environment/sidewalks/index.htm>
- <sup>15</sup> *School Siting Report*. Chicago Metropolitan Agency for Planning. 2008. Obtained at [http://www.goto2040.org/uploadedFiles/RCP/Go\\_to\\_2040\\_Plaza/School\\_siting.pdf](http://www.goto2040.org/uploadedFiles/RCP/Go_to_2040_Plaza/School_siting.pdf)

## CHAPTER 3: BIKEWAYS

- <sup>1</sup> Landis, Bruce W. et al. 1997. "Real-Time Human Perceptions: Toward a Bicycle Level of Service." *Transportation Research Record 1578*. Transportation Research Board, Washington, DC
- <sup>2</sup> Carter, Daniel L., et al. 2006. *Pedestrian and Bicyclist Intersection Safety Indices Final Report*. Pedestrian and Bicycle Information Center. Publication No. FHWA-HRT-06-125. Chapel Hill, NC
- <sup>3</sup> Chicagoland Bicycle Federation. 2002. *Bike to Work Guide*. Chicago, IL. Obtained at <http://www.biketraffic.org>  
[http://safety.fhwa.dot.gov/PED\\_BIKE/ped/ped\\_transguide/](http://safety.fhwa.dot.gov/PED_BIKE/ped/ped_transguide/)
- <sup>4</sup> Turner, Shawn, et al. 2006. *Federal Highway Administration University Course on Bicycle and Pedestrian Transportation*, 2nd ed. Publication No. FHWA-HRT-05-133. <http://www.pedbikeinfo.org/collateral/lessons/Lessons1-24.pdf>
- <sup>5</sup> Federal Highway Administration. 2003. *Manual on Uniform Traffic Control Devices for Streets and Highways*. Washington, D.C. Obtained at [http://mutcd.fhwa.dot.gov/kno\\_2003r1r2.htm](http://mutcd.fhwa.dot.gov/kno_2003r1r2.htm)
- <sup>6</sup> Turner, Shawn, et al. 2006. *Federal Highway Administration University Course on Bicycle and Pedestrian Transportation*, 2nd ed. Publication No. FHWA-HRT-05-133. <http://www.pedbikeinfo.org/collateral/lessons/Lessons1-24.pdf>
- <sup>7</sup> Raborn, Craig, et al. 2008. *Guidance for Implementation of the AASHTO Strategic Highway Safety Plan: A Guide for Reducing Collisions Involving Bicycles*. NCHRP Report 500, Volume 18. Transportation Research Board: Washington, D.C. Obtained at [http://onlinepubs.trb.org/Onlinepubs/nchrp/nchrp\\_rpt\\_500v18.pdf](http://onlinepubs.trb.org/Onlinepubs/nchrp/nchrp_rpt_500v18.pdf)
- <sup>8</sup> Reference 4.
- <sup>9</sup> Des Moines Area Metropolitan Planning Organization.
- <sup>10</sup> Association of Pedestrian and Bicycle Professionals. 2002. *Bicycle Parking Guidelines*. Cedarburg, WI. Obtained at [http://www.apbp.org/website/index.php?option=com\\_content&task=view&id=5&Itemid=6](http://www.apbp.org/website/index.php?option=com_content&task=view&id=5&Itemid=6)
- <sup>11</sup> *Oregon Bicycle and Pedestrian Plan*, Oregon Department of Transportation, Salem, OR, 2007. Obtained at <http://www.oregon.gov/ODOT/HWY/BIKEPED/planproc.shtml>
- <sup>12</sup> Rodale Press, Inc. 1992. *Louis Harris Poll: Pathways for People*. Emmaus, PA.

## CHAPTER 4: TRAIL

- <sup>1</sup> Dahlquist, David L., et al. 2006. *Communication Master Plan for the Central Iowa Trails*. Shive Hattery, Inc: West Des Moines, IA
- <sup>2</sup> Beneficial Designs, Inc. Obtained at <http://www.beneficialdesigns.com/trails/utap.html>

## CHAPTER 5: SAFETY

- <sup>1</sup> Pedestrian Safety Guide and Countermeasure Selection System. *Crash Analysis: Pedestrian Crash Typing*. Obtained at [http://www.walkinginfo.org/pedsafe/pedsafe\\_ca\\_typing.cfm](http://www.walkinginfo.org/pedsafe/pedsafe_ca_typing.cfm)
- <sup>2</sup> Turner, Shawn, et al. 2006. *Federal Highway Administration University Course on Bicycle and Pedestrian Transportation*, 2nd ed. Publication No. FHWA-HRT-05-133. <http://www.pedbikeinfo.org/collateral/lessons/Lessons1-24.pdf>
- <sup>3</sup> Barsotti, Ed and Gin Kilgore. 2001. *The Road Network is the Bicycle Network: Bicycle Suitability Measures for Roadways and Sidepaths*. 2001 Transport Chicago conference. Obtained at <http://www.bikelib.org/roads/roadnet.htm>
- <sup>4</sup> Zegeer, Charles, et al. 2006. *How to Develop a Pedestrian Safety Action Plan*. Pedestrian and Bicycle Information Center: Chapel Hill, NC. Obtained at <http://drusilla.hsrc.unc.edu/cms/downloads/howtoguide2006.pdf>
- <sup>5</sup> Staplin, L., K. Lococo, S. Byington, and D. Harkey. 2001. *Highway Design Handbook for Older Drivers and Pedestrians*, Report No. FHWA-RD-01-103, Federal Highway Administration, Washington, D.C.
- <sup>6</sup> Zegeer, Charles, et al. 2002. *Pedestrian Facilities Users Guide: Providing Safety and Mobility*. Highway Safety Research Center, Chapel Hill, NC: Report Number FHWA-RD-01-102. Obtained at [http://drusilla.hsrc.unc.edu/cms/downloads/PedFacility\\_UserGuide2002.pdf](http://drusilla.hsrc.unc.edu/cms/downloads/PedFacility_UserGuide2002.pdf)
- <sup>7</sup> League of American Bicyclists website. Obtained at <http://www.bikeleague.org/resources/teach/>
- <sup>8</sup> Iowa Bicycle Coalition. 2008. *Iowa Kids on the Move*. Iowa Department of Transportation: Ames, IA. Obtained at <http://www.iowasaferoutes.org/kidsonthemove/>
- <sup>9</sup> National Highway Traffic Safety Administration. *Enhancing Bicycle Safety: Law Enforcement's Role*. Obtained at <http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.b667872a33dbc6bbbf30811060008a0c/>
- <sup>10</sup> Petritsch, Theodore A., et al. 2006. *Sidepath Safety Model – Bicycle Sidepath Design Factors Affecting Crash Rates*. Sprinkle Consulting, Incorporated. Transportation Research

# References

---

Board 2006 Annual Meeting.

## CHAPTER 6: PROMOTION AND ADVOCACY

- <sup>1</sup> World Carfree Network. Obtained at [www.worldcarfree.net/](http://www.worldcarfree.net/)
- <sup>2</sup> National Trails Day. American Hiking Society. Obtained at <http://www.americanhiking.org/NTD.aspx>
- <sup>3</sup> League of American Bicyclists website. Obtained at <http://www.bikeleague.org/>
- <sup>4</sup> Mionske, Bob. 2007. *Bicycling and the Law*. Velo Press: Boulder, CO.
- <sup>5</sup> Rails-to-Trails Conservancy. *Economic Benefits of Trails and Greenways*. [http://www.railstotrails.org/resources/documents/resource\\_docs/tgc\\_economic.pdf](http://www.railstotrails.org/resources/documents/resource_docs/tgc_economic.pdf)
- <sup>6</sup> American Trails. *The Economic and Social Benefit of Trails*. <http://www.americantrails.org/resources/economics/MNecon.html>

## CHAPTER 7: IMPLEMENTATION

**This page left blank intentionally.**

# Index

## A

AASHTO, 12, 43, 47  
 A Policy on Geometric Design of Highways and Streets, 12  
 Guide for Planning, Design, and Operation of Pedestrian Facilities, 12  
 Guide for the Development of Bicycle Facilities, 12, 43  
 abandonment, 41  
 accident, ii, iii, 32, 45, 47, 52  
 adopt-a-trail, 43  
 advocate, iii, 4, 7, 30, 33, 41, 49-50, 55, 58-59  
 agricultural land, 59  
 air pollution, 2, 7  
 alliances, 3, 7  
 American Association of State Highway and Transportation Official. See AASHTO  
 American Disabilities Act, 19  
 Ames Area Metropolitan Planning Organization, 13, 22, 23, 30, 35  
 annual appropriation, 58  
 annual report, 7, 64  
 arterial, 8, 12, 19, 30, 32, 48, 55  
 Association of Pedestrian and Bicycle Professionals, 29, 33

## B

barrier, ii, 3, 8, 19, 22, 60  
 benefits, i-iii, 2, 4, 7, 11-12, 21, 30, 41, 53-54, 57, 60  
 bicycle  
 bicycle accommodation, 30, 32  
 bicycle ambassador, 49  
 bicycle boulevard, 32  
 bicycle count, 63  
 bicycle facilities, 2-3, 8, 12-13, 32-33, 43, 47, 53,  
 bicycle level of service, 29-30  
 bicycle lane, i-ii, 1, 3, 7, 30, 32, 39, 47, 49  
 bicycle-oriented development, 12  
 bicycle parking, iii, 1, 3, 5, 13, 27, 30, 33-35, 55  
 bicycle plan, 2, 33  
 bicycle racks, 7, 14-15, 33  
 bicycle route, i-ii, 12, 30, 32, 39, 55,  
 bicycle safety, 32, 49-50, 52,  
 bicycle station, 13  
 bicycle and pedestrian accommodations, iii, 5, 63  
 bicycle and pedestrian facilities, ii, 3, 5, 7-8, 13-14, 55  
 bicycle and pedestrian system, ii-iii, 2-5, 8, 12, 41, 62  
 Bike to Work Week, 1, 3, 33, 57  
 bikeway, ii, 2, 13, 32, 34  
 BLOS. See bicycle level of service  
 bridge, ii, 4-5, 8, 12  
 bus stop, ii, 13, 15, 20, 27, 35, 53, 55

## C

central business district, 12  
 Central Iowa Bicycle-Pedestrian Roundtable. See Roundtable  
 central Iowa businesses, 21, 30, 34, 57  
 Central Iowa Greenways Plan, 41  
 Central Iowa Regional Transportation Planning Alliance, 11, 19-20, 22-23, 29-30, 39, 47-48, 55, 58, 63  
 Central Iowa Trail Association, 3, 41  
 Central Iowa Trails System, ii, 39, 41-43, 52-53, 58  
 Chichaqua Valley Trail, i  
 children, ii-iii, 3, 5, 7, 11, 13, 17-18, 21-22, 45, 49-51, 53, 55, 58  
 choker, 48  
 CIRTPA. See Central Iowa Regional Transportation Planning Alliance  
 Clive Greenbelt Trail, i  
 closures, 48  
 collector, 7, 12, 23, 30, 32,

# Index

collisions, 47, 51-52  
 Communication Master Plan for the Central Iowa Trails, 58  
 commuter, i, 1, 3, 15, 21, 27, 30, 49, 55, 57  
 complete street, 1, 3, 5, 11  
 comprehensive plan, 13, 23, 41  
 conflict, 42, 47, 49  
 congestion, 2, 7, 11, 15, 23, 42, 45  
 connect, i-iii, 3, 5-6, 8, 13-14, 17-20, 22-23, 30, 35, 38-39, 41, 55, 58, 59  
 CONNECT, i-iii, 1-4, 63-64  
 Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities, 12  
 contra-flow bicycle lane, 32  
 crash, ii, 3, 29, 43, 47-48, 50-52  
 crosswalk, 3, 21, 48  
 curb ramp, 19

## D

DART. See Des Moines Area Regional Transit Authority  
 Des Moines Area Metropolitan Planning Organization, 2, 3, 11, 13, 19-23, 29-30, 32, 35, 39, 47-48, 55, 58-59, 63-64  
 Des Moines Area Regional Transit Authority, 1, 7, 13-15, 20, 35, 47, 53, 55, 60  
     Bike & Ride, 1, 15, 53, 55, 60  
 driver's education, 3, 50  
 DrivetimeDesMoines.org, 21

## E

E911, 52  
 economic, ii-iii, 2, 7, 11, 15, 21, 41, 53, 59  
 economy, 7, 59  
 education, ii-iii, 3-5, 7, 21, 42, 45-46, 49-50, 54-55, 57, 59-60  
 elderly, ii, 5, 17, 18, 21, 45  
 elected official, iii, 3, 7, 11, 13-14, 19, 22-23, 33-34, 41, 43, 47, 49  
 employee, 2, 21, 30, 57  
 employer, 21, 30, 57  
 enforcement, iii, 3, 21, 42, 45, 46, 50  
 engineer, ii, 3, 5, 11, 19, 23, 27, 29-30, 48  
 expressway, 30

## F

fatalities, 3, 21, 32, 45  
 Federal Highway Administration, ii, 2-3  
 FOCIT. See Friends of Central Iowa Trails  
 Friends of Central Iowa Trails, 3, 7, 13, 19, 39, 41-43, 48-49  
 funding, ii, iii, 3, 11, 13-14, 19, 20, 23, 32, 37, 39, 42, 58-59, 63-64

## G

gap, ii, 7-8, 12, 22, 39  
 gateway, 48  
 Gay Lea Wilson Trail, i  
 goals, ii, 3-4, 7, 23, 29, 42, 49, 63  
 Great Western Trail, i  
 Greater Des Moines Partnership, 59  
 Greater Des Moines Trails Map, 3, 55  
 Greater Des Moines Volkspport Association, 3, 19  
 greenway, ii, 2, 39, 41, 59  
 grocery store, 21, 33-34, 57

## H

health, i, ii, iii, 2, 7, 11, 21-22, 30, 41, 50, 57  
 health organizations, 50, 57  
 Heart of Iowa Nature Trail, i

# Index

## I

incentive, 3, 53, 57  
 injury, 32, 49, 52  
 intersection, 1, 5, 12, 17, 19-20, 43, 45, 47-48  
 Iowa Bicycle Coalition, 29, 49-50  
 Iowa Bicycle Summit, 7, 29  
 Iowa Clean Air Attainment Program, 20  
 Iowa Department of Transportation, 20, 22, 29-30, 32, 39, 42, 49-50, 55, 63  
 Iowa Trail Riders Association, 41  
 Iowa Statewide Urban Design and Specifications, 12

## J

John Pat Dorrian Trail, i

## L

land use, ii-iii, 5, 13, 17, 22-23, 33, 41, 63  
 laws, 3, 45, 49-52  
 law enforcement, iii, 3, 46, 50  
 LCI. See League Cycling Instructor  
 League Cycling Instructor, 1, 3, 29, 49-50, 57  
 League of American Bicyclists, 1, 29, 57  
 League of American Wheelmen, 4  
 legislation, 42, 43, 52, 58-59  
 Level of Significance, 39, 58  
     Level 1, i, 14, 39  
     Level 2, 14, 39  
     Level 3, 39  
     Level 4, 39  
 lighting, ii, 20-21, 48  
 loop detector, 1, 12

## M

maintenance, ii, 5, 14, 19, 32, 37, 39, 42-43, 45  
 Manual on Uniform Traffic Control Devices, 32  
 Mayor's Annual Ride for Trails, 57  
 median, 48  
 mixed-use development, 12, 22-23  
 motorist, ii-iii, 2-3, 5, 13, 17, 32, 43, 45-52, 58,  
 MPO. See Des Moines Area Metropolitan Planning Organization  
 multimodal, ii-iii, 23, 38-39

## N

National Household Travel Survey, 2, 13  
 National Recreational Trails, i  
 National Trails Day, 57  
 National Walk Our Children to School Day, 22  
 Neal Smith Trail, i

## O

on-street, 3, 8, 29, 32-33, 45, 47, 58, 63

## P

Park & Ride, 35  
 Partnership for a Walkable America, 22  
 paved shoulder, 32  
 Pedestrian and Bicycle Information Center, 48  
 pedestrian safety action plan, 3, 48  
 pedestrian-scale lighting, 20  
 planner, ii, 5, 11, 27, 29-30  
 planning, ii, 3-5, 7-8, 12-14, 17, 19, 23, 29, 30, 32, 37, 39, 41-42, 45, 47-48, 64  
 planting strips, ii, 20

# Index

police departments, 49-50  
 private development, 59  
 public service announcement, 53, 55

## R

Raccoon River Valley Trail, i, 47  
 rail corridor, 41  
 railroad, 41  
 recreational, i, 2, 11, 13, 22, 34, 41, 57, 59  
 retail, ii, 5, 17, 22, 33,  
 right-of-way, 17, 19, 29, 48, 52  
 rights, ii-iii, 45-46, 49-51, 58,  
 right-turn-on-red, 49  
 Roundtable, ii, 3, 7, 8, 11, 12-15, 19-23, 29-30, 32-35, 39, 41-43, 47-50, 52, 55, 57-60, 63, 64  
 rules of the road, 49, 51

## S

Safe Routes to School, 3, 23, 45, 50  
 SAFETEA-LU, 4  
 school, ii, 11-13, 17, 22, 23, 43, 49-51  
 share the road, iii, 3, 32, 45, 49-50  
 shared lane marking, ii, 3, 30  
 shared roadway, 29, 32  
 shared-use path, 39  
 sharrow, 32  
 shower, 13, 27, 30  
 sidepath, 43, 47, 50  
 sidewalk, i-iii, 3, 7, 17, 19-20, 23, 47-50  
 signage, iii, 3, 27, 32, 42-43, 45, 48, 52-53, 58  
 signal timing, 3, 47, 48  
 site design, 13  
 standards, ii  
     bicycle and pedestrian design, 5, 12, 13  
     bicycle parking, 33  
     pedestrian-scale lighting, 20  
     trail, 5, 12, 37  
 state government, 14  
 subcommittee  
     Communications, 7, 15, 21-22, 29-30, 34, 39, 42-43, 47-50, 52, 55, 57-60, 63-64  
     Complete Streets, 11  
     Planning, Policy, and Funding, 7, 13-15, 20-22, 33-35, 39, 41-43, 48-50, 52, 55, 57-59, 63-64  
     Technical, 8, 11-15, 19-23, 29-30, 32-35, 39, 41-43, 47-50, 52, 55, 60, 63  
 street furniture, 19-20  
 Summerset Trail, i  
 Surface Transportation Program, 13, 20, 30, 39, 63  
 Surface Transportation Program Transportation Enhancement, 13, 20, 39

## T

tourism, 2, 53, 59  
 traffic calming, 47-49  
 traffic circle, 48  
 traffic law, 49, 51-52  
 traffic signal, 5, 12, 17, 19, 32, 45, 49  
 Traffic Skills 101, 29  
 trailhead, 2, 42, 52, 55  
 trails, i-iii, 1-3, 5, 7-8, 12-14, 20, 22, 27, 30, 32, 37-39, 41-43, 45, 47, 49-53, 55, 57-59, 63-64  
 transit, ii, 5, 8, 11, 13-15, 17, 20, 23, 35, 48, 55, 57, 60  
 transit-oriented development, 13  
 Transportation Management Association, 21, 30, 34, 57  
 travel lane, 11, 30, 32

# Index

---

## U

Universal Trail Assessment Process, 43

## V

Vanpool, 15, 57

vertical deflections, 48

volksport, 3, 19, 39

volunteer, iii, 4, 7, 19, 33, 41, 49, 53, 57

## W

walkability, ii, 19-20, 22-23

walkable, ii, 7, 12, 18-19, 22

walking, i-iii, 1-3, 7-8, 11, 13, 17, 19-21, 23, 42, 53-54, 57, 60

wayfinding, iii, 3, 46, 58

wide outside lane, 3, 32

## Z

zoning, 12-13

zoning ordinance, 22-23, 33

**This page left blank intentionally.**

# CONNECT

CENTRAL IOWA BICYCLE AND PEDESTRIAN TRANSPORTATION ACTION PLAN 2020

AN ACTION PLAN FOR PROJECTS, PROGRAMS, AND POLICIES

---

# Appendices

**This page left blank intentionally.**

# Appendix 1: Glossary

## A

### ACCESS MANAGEMENT

The principles, laws, and techniques used to control access to a highway.

### AVERAGE DAILY TRAFFIC (ADT)

The measurement of the average number of vehicles passing a certain point each day on a highway, road, or street.

### AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)

AASHTO is a nonprofit, nonpartisan association representing highway and transportation departments in the 50 states, the District of Columbia, and Puerto Rico. AASHTO represents all five transportation modes: air, highways, public transportation, rail, and water. AASHTO's primary goal is to foster the development, operation, and maintenance of an integrated national transportation system.

### AMERICAN WITH DISABILITIES ACT OF 1990 (ADA)

The ADA gives civil rights protections to individuals with disabilities similar to those provided to individuals on the basis of race, color, sex, national origin, age, and religion. ADA guarantees equal opportunity for individuals with disabilities in public accommodations, employment, transportation, State and local government services, and telecommunications.

### ADA ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES (ADAAG)

This document contains scoping and technical requirements for accessibility to buildings and facilities by individuals with disabilities under the Americans with Disabilities Act (ADA) of 1990. These scoping and technical requirements are to be applied during the design, construction, and alteration of buildings and facilities covered by titles II and III of the ADA to the extent required by regulations issued by Federal agencies, including the Department of Justice and the Department of Transportation, under the ADA.

### ARTERIAL STREET

A street designated to carry traffic, mostly uninterrupted, through an urban area, or to different neighborhoods within an urban area.

## B

### BICYCLE

A pedal-powered vehicle upon which the human OPERATOR sits.

### BICYCLE FACILITIES

A general term denoting improvements and provisions made by public agencies to accommodate or encourage bicycling, including parking and storage facilities, and shared roadways not specifically designated for bicycle use.

### BICYCLE LANE

A portion of a roadway, which has been designated by signing and pavement markings for the preferential or exclusive use by bicyclists.

### BICYCLE LEVEL OF SERVICE (BLOS)

The BLOS is the statistically reliable method of evaluating the bicycling conditions of shared roadway environments. With statistical precision, the BLOS clearly reflects the effect on bicycling suitability or "compatibility" due to factors such as roadway width, bike lane widths and striping combinations, traffic volume, pavement surface conditions, motor vehicles' speed and type, and on-street parking.

### BICYCLE ROUTE

A system of bikeways designated by the jurisdiction having authority with appropriate directional and information route markers, with or without specific bicycle route numbers. Bike routes should establish a continuous routing, but may be a combination of any and all types of bikeways.

### BIKEWAY

A generic term for a any road, street, path, or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are

designated for the exclusive use of bicycles or are to be shared with other transportation modes.

## C

### **CENTRAL BUSINESS DISTRICT (CBD)**

A traditional downtown area usually characterized by established businesses fronting the street, sidewalks, slow traffic speeds, on-street parking and a compact grid street system.

### **CENTRAL IOWA REGIONAL TRANSPORTATION PLANNING ALLIANCE (CIRTPA)**

The CIRTPA, organized in May 1994, carries out transportation planning for the eight counties in central Iowa. The CIRTPA serves as the designated regional transportation planning agency for the Iowa Department of Transportation's (Iowa DOT) Region 11 for coordinating planning and programming efforts in the region and fostering new partnerships with state and local officials.

### **COLLECTOR STREET**

A street designated to carry traffic between local streets and arterials, or from local street to local street.

### **COMMUTER/UTILITY CYCLIST**

An individual who uses a bicycle primarily to reach a particular destination for practical purposes, such as to purchase or deliver goods and services, or to travel to and from work or school.

### **CROSSWALK**

(A) That part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks on opposite sides of the highway measured from the curbs or in the absence of curbs, from the edges of the traversable roadway, and in the absence of a sidewalk on one side of the roadway, the part of a roadway included within the extension of the lateral lines of the sidewalk at right angles to the centerline; or, (B) any portion of a roadway at an intersection or elsewhere distinctly indicated as a pedestrian crossing by lines on the surface, which may be supplemented by contrasting pavement texture, style, or color.

### **CROSSWALK LINES**

White pavement marking lines that identify a crosswalk.

### **CENSUS TRANSPORTATION PLANNING PACKAGE (CTPP)**

CTPP 2000 is a set of special tabulations from the decennial census designed for transportation planners. The data are tabulated from answers to the Census 2000 long form questionnaire, mailed to one in six U.S. households. Because of the large sample size, the data are reliable and accurate.

### **CURB RADIUS**

A measure of the sharpness of the corner formed by two intersecting streets.

### **CURB RAMP**

A combined ramp and landing within a public sidewalk to accomplish a change of level at a curbed street crossing.

## D

### **DES MOINES AREA METROPOLITAN PLANNING ORGANIZATION (MPO)**

The MPO focuses on establishing a comprehensive, coordinated, and continuing transportation planning process for the Des Moines metropolitan area. The MPO provides a regional forum to assure that transportation planning issues, and implementation of projects are identified and coordinated by local, state, and federal agencies, and the public. In that role, the MPO works with local, state, and federal agencies, and the public to prepare transportation plans and programs. The MPO is responsible for both long and short-range roadway and transportation plans, selects and approves projects for federal funding based on regional priorities, and develops ways to reduce traffic congestion.

## E

### **EXPRESSWAY**

A divided highway with partial control of access.

## L

### **LANE LINE MARKINGS**

White pavement marking lines that delineate the separation of traffic lanes that have the same direction of travel on a roadway.

## M

### **MAJOR STREET**

The street normally carrying the higher volume of vehicular traffic.

### **MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)**

The MUTCD defines the standards used by road managers nationwide to install and maintain traffic control devices on all streets and highways. The MUTCD is published by the Federal Highway Administration (FHWA) under 23 Code of Federal Regulations (CFR), Part 655, Subpart F. The MUTCD audience includes the insurance industry, law enforcement agencies, academic institutions, private industry, and construction and engineering concerns.

### **MEDIAN**

The area between two roadways of a divided highway measured from edge of traveled way to edge of traveled way. The median excludes turn lanes. The median width might be different between intersections, interchanges, and at opposite approaches of the same intersection.

### **MINOR STREET**

The street normally carrying the lower volume of vehicular traffic.

### **MOTOR VEHICLE**

A vehicle that is self-propelled or designed for self-propulsion.

## N

### **NATIONAL HOUSEHOLD TRAVEL SURVEY (NHTS)**

The NHTS is the nation's inventory of daily and long-distance travel. The survey includes demographic characteristics of households, people, vehicles, and detailed information on daily and longer-distance travel for all purposes by all modes. The 2001 NHTS data can be used to investigate topics in transportation safety, congestion, mobility of various population groups, the relationship of personal travel to economic productivity, the impact of travel on the human and natural environment, and other important subjects. These data provide planners and decision makers with up-to-date information to assist them with effectively improving the mobility, safety, and security of the Nation's transportation systems.

## P

### **PAVED**

A bituminous surface treatment, mixed bituminous concrete, or Portland cement concrete roadway surface that has both a structural (weight bearing) and a sealing purpose for the roadway.

### **PAVED SHOULDER**

A type of bikeway where bicyclists travel on a paved shoulder.

**PAVEMENT MARKINGS**

Painted or applied lines or symbols placed on a roadway surface for regulating, guiding or warning traffic.

**PEDESTRIAN**

A person afoot, in a wheelchair, on skates, or on a skateboard.

**PEDESTRIAN FACILITIES**

A general term denoting improvements and provisions made to accommodate or encourage walking.

**PEDESTRIAN SIGNAL**

The signal head that indicates the walk/don't walk phase of a traffic signal.

**PUBLIC ROAD**

Any road or street under the jurisdiction of and maintained by a public agency and open to public travel.

**R**

**RIGHT-OF-WAY**

A general term denoting publicly owned land, property, or interest therein, usually in a strip acquired for or devoted to transportation purposes.

**RIGHT OF WAY**

The right of one vehicle or pedestrian to proceed in a lawful manner in preference to another vehicle or pedestrian.

**ROADWAY**

That portion of a highway improved, designed, or ordinarily used for vehicular travel and parking lanes, but exclusive of the sidewalk, berm, or shoulder even though such sidewalk, berm, or shoulder is used by persons riding bicycles or other human-powered vehicles. In the event a highway includes two or more separate roadways, the term roadway as used herein shall refer to any such roadway separately, but not to all such roadways collectively.

**ROADWAY NETWORK**

A geographical arrangement of intersecting roadways.

**ROAD USER**

A vehicle operator, bicyclist, or pedestrian within the highway, including persons with disabilities.

**RUMBLE STRIP**

A series of intermittent, narrow, transverse areas of rough-textured, slightly raised, or depressed road surface that is installed to alert road users to unusual traffic conditions.

**RURAL HIGHWAY**

A type of roadway normally characterized by lower volumes, higher speeds, fewer turning conflicts, and less conflict with pedestrians.

**S**

**SAFE, ACCOUNTABLE, FLEXIBLE, EFFICIENT TRANSPORTATION EQUITY ACT: A LEGACY FOR USERS (SAFETEA-LU)**

SAFETEA-LU addresses the many challenges facing the transportation system today – challenges such as improving safety, reducing traffic congestion, improving efficiency in freight movement, increasing intermodal connectivity, and protecting the environment – as well as laying the groundwork for addressing future challenges. SAFETEA-LU promotes more efficient and effective Federal surface transportation programs by focusing on transportation issues of national significance, while giving State and local transportation decision makers more flexibility for solving transportation problems in their communities.

**SHARED ROADWAY**

A roadway that is officially designated and marked as a bicycle route, but which is open to motor vehicle travel and upon which no bicycle lane is designated.

**SHARED-USE PATH (TRAIL)**

A bikeway outside the traveled way and physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent alignment. Shared-use paths are also used by pedestrians (including skaters, users of manual and motorized wheelchairs, and joggers) and other authorized motorized and non-motorized users.

**SHOULDER**

The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use and for lateral support of sub-base, base and surface courses. When paved and of sufficient width, shoulders provide space for bicycle and pedestrian travel. A shoulder is usually separated from the travel lane by striping, and may be signed as a bike lane under moderate traffic conditions.

**SIDEPATH**

A two-way shared use path located immediately adjacent to a roadway, like an extra wide sidewalk. Not recommended in most application due to space limitations, operational problems, and safety hazards at intersection.

**SIDEWALK**

That portion of a street between the curb line, or the lateral line of a roadway, and the adjacent property line or on easements of private property that is paved or improved and intended for use by pedestrians.

**T****TRAFFIC**

Pedestrians, bicyclists, ridden or herded animals, vehicles, streetcars, and other conveyances either singularly or together while using any highway for purposes of travel.

**TRAFFIC CONTROL DEVICES**

Signs, signals, or other fixtures, whether permanent or temporary, placed on or adjacent to a travel way by authority of a public body having jurisdiction to regulate, warn, or guide traffic.

**TRAFFIC VOLUME**

The given number of vehicles that pass a given point for a given amount of time (hour, day, year). See ADT.

**TRAIL****U****URBAN AREA**

The area immediately surrounding an incorporated city or rural community that is urban in character, regardless of size.

**V****VEHICLE**

Any device in, upon or by which any person or property is or may be transported or drawn upon a highway, including vehicles that are self-propelled or powered by any means.

**This page left blank intentionally.**

# Appendix 2: Six E's

CONNECT proposes the 6'E (Education, Encouragement, Enforcement, Engineering, Evaluation, and Equality) approach to address the challenges and opportunities to the central Iowa bicycle and pedestrian system. Below, listed by chapter and objective, is each action and which of the 6 E's it addresses.

## **Education.**

Educating both cyclists and motorist is important to creating a safe and accommodating transportation system. Teaching cyclists of all ages how to behave like a vehicle on the road, safe cycling methods, and how to ride safely on all types of facilities (from shared-use paths to busy city streets) are essential educational activities. In addition motorists need to learn how to share the road safely with cyclists. Offering "League Cycling Instructors" classes, distribution of safety information, tip sheets, and driver's education manuals and courses are additional examples.

## **Encouragement.**

Promotion and encouragement activities in Central Iowa already include the annual Des Moines Mayor's Ride, Bike to Work Week events, and the Metro Bike maps. Additional projects should include the installation of route finding signage and Safe Routes to School programs. The Friends of Central Iowa Trails is an example of local groups that have formed to encourage trail development, maintenance and promotion.

## **Enforcement.**

The enforcement element measures the connections between the cycling and law enforcement communities. Law enforcement community should have a liaison with the cycling community and targeted enforcement activities should occur to encourage cyclists and motorists to share the road safely. The bicycle is a vehicle and riders need to act like a vehicle on the road. The thought that cyclists are just fast moving pedestrians can prevent them from following basic traffic laws, such as stopping for red traffic lights.

Policies, laws and ordinances such as those requiring bicycle parking at new developments, or the mandatory the use of sidepaths (which can be up to 25 times more dangerous than bicycling in the street), will have a positive or negative impact on creating a safe walking and bicycling environment.

## **Engineering.**

The physical and operational improvements to the transportation system are essential to the accommodation of bicycles and pedestrians. Well-designed streets that treat bicycles as vehicles and provide share the road arrows, properly designed bike lanes (out of the door zone) or simply a wider right lane; providing secure bike parking facilities, bike sensitive intersection loop detectors, appropriate signal timing for bicyclist and pedestrians, and the connectivity of both the off-road and on-road network are examples of engineering and infrastructure necessary for a safe and integrated system.

## **Evaluation.**

Establishment of a bicycle or pedestrian plan is the first step to evaluate current programs and plan for future improvements. Knowing how much walking and bicycling is taking place in the community, the crash and fatality rates, and ways that the community works to improve these numbers are all elements of this aspect to the plan.

## **Equality.**

Inequitable laws, funding, and attention is directed towards providing and improving automobile transportation. This has caused our publicly owned rights-of-way and communities to be designed for the automobile which isolates 30% of the population. The consistent, unbiased treatment of bicyclists, pedestrians, and other road users under the law would make the other 5'E's more significant and improve the overall movement of people and goods throughout the region.

SYSTEMS	PEDESTRIAN	BIKEWAY	TRAIL	SAFETY	PROMOTION & ADVOCACY	IMPLEMENTATION
<u>OBJECTIVE 1</u>	<u>OBJECTIVE 1</u>					
1.1 Encouragement	1.1 Evaluation	1.1 Education	1.1 Evaluation	1.1 Evaluation	1.1 Encouragement	1.1 Encouragement
1.2 Education	1.2 Engineering	1.2 Encouragement	1.2 Evaluation	1.2 Evaluation	1.2 Encouragement	1.2 Evaluation
1.3 Encouragement	1.3 Equality	1.3 Education	1.3 Evaluation	1.3 Evaluation	1.3 Encouragement	
	1.4 Equality			1.4 Evaluation	1.4 Encouragement	<u>OBJECTIVE 2</u>
<u>OBJECTIVE 2</u>	1.5 Enforcement	<u>OBJECTIVE 2</u>	<u>OBJECTIVE 2</u>	1.5 Evaluation		2.1 Engineering
2.1 Engineering	1.6 Engineering	2.1 Engineering	2.1 Evaluation	1.6 Encouragement	<u>OBJECTIVE 2</u>	
2.2 Engineering		2.2 Evaluation	2.2 Evaluation	1.7 Evaluation	2.1 Encouragement	<u>OBJECTIVE 3</u>
2.3 Engineering	<u>OBJECTIVE 2</u>	2.3 Evaluation	2.3 Encouragement	1.8 Evaluation	2.2 Encouragement	3.1 Evaluation
	2.1 Encouragement		2.4 Evaluation			3.2 Evaluation
<u>OBJECTIVE 3</u>	2.2 Equality	<u>OBJECTIVE 3</u>	2.5 Evaluation	<u>OBJECTIVE 2</u>	<u>OBJECTIVE 3</u>	3.3 Evaluation
3.1 Enforcement	2.3 Encouragement	3.1 Encouragement		2.1 Enforcement	3.1 Education	3.4 Evaluation
	2.4 Evaluation	3.2 Evaluation	<u>OBJECTIVE 3</u>	2.2 Enforcement	3.2 Education	
<u>OBJECTIVE 4</u>		3.3 Engineering	3.1 Enforcement	2.3 Encouragement	3.3 Encouragement	
4.1 Engineering	<u>OBJECTIVE 3</u>	3.4 Engineering	3.2 Education	2.4 Education		
4.2 Evaluation	3.1 Engineering	3.5 Engineering		2.5 Encouragement	<u>OBJECTIVE 4</u>	
	3.2 Enforcement	3.6 Engineering	<u>OBJECTIVE 4</u>		4.1 Enforcement	
<u>OBJECTIVE 5</u>	3.3 Evaluation	3.7 Engineering	4.1 Enforcement	<u>OBJECTIVE 3</u>	4.2 Enforcement	
5.1 Engineering	3.4 Evaluation	3.8 Evaluation	4.2 Enforcement	3.1 Education	4.3 Enforcement	
5.2 Engineering	3.5 Encouragement		4.3 Evaluation	3.2 Education	4.4 Evaluation	
5.3 Enforcement		<u>OBJECTIVE 4</u>	4.4 Evaluation	3.3 Enforcement		
5.4 Enforcement		4.1 Enforcement			<u>OBJECTIVE 5</u>	
5.5 Equality		4.2 Engineering		<u>OBJECTIVE 4</u>	5.1 Evaluation	
5.6 Encouragement		4.3 Engineering		4.1 Enforcement	5.2 Evaluation	
		4.4 Engineering				
<u>OBJECTIVE 6</u>		4.5 Engineering				
6.1 Enforcement		4.6 Engineering				
6.2 Enforcement		4.7 Engineering				
6.3 Evaluation		4.8 Engineering				
		4.9 Engineering				
<u>OBJECTIVE 7</u>						
7.1 Encouragement						
7.2 Encouragement						
7.3 Evaluation						

# Appendix 3: Timeline

## SYSTEM

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>1. Establish communication and educate decision makers on the benefits of bicycle and pedestrian activities.</b>													
1.1 Build coalitions and alliances with local organizations and advocates that will help support and provide resources toward common efforts.	Identify and list existing local organizations and advocates with the goal of coordinating efforts and encouraging involvement in local bicycle and pedestrian issues, beginning in 2009.	R, F											
	Send bulletin updates semiannually, beginning in 2010.		R, F										
1.2 Inform elected leaders about the benefits, challenges, opportunities inherent to bicycle and pedestrian facilities.	Plan events and activities that encourage elected officials to walk with an escort that can point out challenges and potential solutions, beginning in 2009.	R, A, V											
	Compile and distribute to elected officials informational material on health, economic, quality of life, and transportation benefits of bicycling and walking, by 2010.		R, A, V										
	Present an annual report to elected officials, beginning in 2010.		R, A, V										
1.3 Promote participation in educational workshops and the annual Iowa Bicycle Summit for elected officials and other policy and decision makers.	Encourage each government/agency in central Iowa to send one participant to the annual Iowa Bicycle Summit, beginning in 2010.		R, G, F										
<b>2. Increase the number of connection points between jurisdictions, activity nodes, and travel modes.</b>													
2.1 Eliminate gaps in the existing bicycle and pedestrian system.	Identify and map regional bicycle and pedestrian facility gaps annually, or as determined, beginning in 2009.	R, G											
	Develop an implementation schedule and a gap prioritization methodology, beginning in 2009.	R, G											
	Connect two to four priority gaps per year, beginning in 2011.			R, G									
2.2 Connect trails to the on-street bicycle system.	Identify "dead end" bicycle facilities, by 2010.		G										
	Connect one trail to an on-street bicycle facility, every year, beginning in 2010.		G										
2.3 Provide access across transportation barriers.	Identify and prioritize all major barriers to bicyclists and pedestrians, by 2011.			G									
	Build three to five new crossings over major barriers, by 2016.								G				

# SYSTEM

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>3. Link activity nodes, neighborhoods, schools, employment centers, and recreational sites with non-automobile infrastructure.</b>													
3.1 Assist central Iowa cities and counties in adopting a complete street policy in which each road improved or constructed incorporates bicycle, pedestrian, and transit facilities.	Provide elected officials, engineers, and planners in central Iowa with fact sheets highlighting complete street benefits for safety, children, people with disabilities, older people, health, transit, climate change, the economic development, air quality, congestion, transportation investment costs, and livable communities, by 2009.	R											
	Offer complete street workshops and training sessions, beginning in 2009.	R											
	Have the MPO and the CIRTPA adopt complete street policies, by 2011.			R									
	Have all central Iowa cities and counties adopt complete street policies, by 2012.				R								
<b>4. Adopt consistent bicycle and pedestrian facility construction standards between all central Iowa governments/agencies.</b>													
4.1 Use the best available bicycle and pedestrian design standards for road planning and designing.	Review and monitor city, county, and state road and bridge construction projects to ensure accommodation for all users, beginning in 2009.	R											
	Have central Iowa governments/agencies present design plans to the Central Iowa Bicycle-Pedestrian Roundtable before and after public input, for further regional professional perspectives, beginning in 2009.	R											
4.2 Improve statewide and regionally significant trails to the best available standards.	Periodically review trail design guidelines and recommend updating the <i>Iowa Statewide Urban Design and Specifications</i> , when necessary, beginning in 2010.		R, G										
	Identify problem areas along statewide and regionally significant trails, beginning in 2010.		R, G										
	Upgrade one existing trail to national industry standards per year, beginning in 2011.			R, G									

# SYSTEM

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>5. Increase the usage of modern and progressive technology when developing and improving the bicycle and pedestrian system.</b>													
5.1 Improve traffic signal enhancements that benefit pedestrians and bicyclists.	Identify, prioritize, add, and/or modify needed traffic signal improvements near schools, in central business districts, at employment centers, at major intersections, on arterial and collector roadways, and on bikeways, beginning in 2010.		G										
5.2 Encourage compact, mixed-use development policies to create zoning and design guidelines for pedestrian- and bicycle-oriented development.	Encourage revising local government comprehensive plans to promote pedestrian-, bicycle-, and transit-oriented development, by 2012.			EO, G									
5.3 Establish policies for site and building design that support bicyclist and pedestrian activity, regardless of land use densities and intensities.	Review site plans; after construction, make site visits to ensure developers build to ordinance standards, beginning in 2009.	EO, G											
5.4 Encourage transportation agencies to use a certain percentage of their funding for pedestrian and bicycle accessibility.	Encourage DART to apply for regional and statewide STP TE funding to improve bicycle and pedestrian access, beginning in 2009.	EO, G											
5.5 Work with local governments to update their development regulations to include provisions for accessible transit facilities.	Modify local government comprehensive plans and zoning standards to promote transit-oriented facilities development, by 2012.				M, AA, D, CY								
5.6 Build a bicycle station.	Finalize a bicycle station feasibility study and business plan, by 2011.			R, G, M, F									
	Determine bicycle station design, by 2012.				R, G, M, F								
	Build a bicycle station, by 2014.						R, G, M, F						
<b>6. Improve and maintain existing bicycle and pedestrian facilities through various funding sources and programs.</b>													
6.1 Identify, create, and support funding efforts for bicycle and pedestrian facility maintenance issues.	Develop a list of alternative funding sources for bicycle and pedestrian facility maintenance operations, by 2010.		R										
6.2 Increase joint participation by cities, counties, and state governments in pursuing grants and other funding.	Coordinate local jurisdictions to pursue funding for statewide (Level 1) and regionally significant (Level 2) projects, beginning in 2009.	EO, G											
6.3 Identify and eliminate practices that are major contributors to accelerated trail deterioration.	Produce a list of causes of trail deterioration causes and develop a best practices guide on trail maintenance for local jurisdictions, by 2012.				R								

# SYSTEM

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>7. Improve accessibility at public transportation facilities</b>													
7.1 Increase the number of bicycles that buses can carry.	Experiment with two to four alternative transport solutions to increase bicycle capacity on DART buses, by 2011.			R, D, CY									
7.2 Install bicycle racks on DART Vanpool Program vehicles.	Test two to four bicycle rack accommodations for DART vanpool vehicles, by 2011.			R, D									
7.3 Continue to count and report "Bike & Ride" ridership.	Expand DART's Bike & Ride ridership counting methodology to include location boardings and departures, beginning in 2010.		R, D										

R = Central Iowa Bicycle-Pedestrian Roundtable  
 EO = Elected Officials  
 G = Government/Agency  
 I = Iowa Department of Transportation  
 M = Des Moines Area MPO  
 C = Central Iowa Regional Transportation Planning Alliance  
 AA = Ames Area MPO  
 D = Des Moines Area Regional Transit Authority (DART)  
 CY = CyRide  
 IBC = Iowa Bicycle Coalition  
 INHF = Iowa Natural Heritage Foundation  
 VA = Greater Des Moines Volkspport Association

TMA = Transportation Management Association  
 DCA = Downtown Community Alliance  
 T = Tourism  
 F = Friends of Central Iowa Trails  
 LCI = League Certified Instructors  
 A = Advocates  
 V = Volunteer Groups  
 PD = Police Departments  
 HO = Local Health Organizations  
 BU = Central Iowa Businesses  
 S = Schools (Public and Private/Universities/Colleges)  
 BOMA = Building Owners and Managers Association

# PEDESTRIAN

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>1. Integrate pedestrian plans and designs into transportation and residential/commercial development projects.</b>													
1.1 Conduct a comprehensive pedestrian facilities review, evaluate walkability, and identify deficiencies.	Establish a walkability advisory group and begin to complete walkability checklists, by 2010.		R, M, C, VA, F, V										
	Submit walkability checklist findings and recommendations to the appropriate local governments, by 2013.					R, M, C, VA, F, V							
1.2 Add new sidewalks, improve existing sidewalks, and improve connections to sidewalks.	Add sidewalks along both sides of all central Iowa arterial roadways, by 2020.												EO, G
	Remove sidewalk obstructions, determined through the walkability checklist and user complaints, beginning in 2013.						EO, G						
	Identify deficient locations for curb ramps and install curb ramps where missing from existing sidewalks, beginning in 2010.		EO, G										
	Install planting strips along roadway corridors with high pedestrian usage, beginning in 2010.		G										
1.3 Adopt uniform bus stop accessibility policies for pedestrians.	Survey existing bus stop locations to determine the degree of connectivity, safety, and accessibility to other bicycle and pedestrian infrastructure and facilities, by 2010.			G, M, D, CY									
1.4 Incorporate new technologies/amenities into bus stops for all pedestrians.	Identify three to five potential locations for audio and/or sidewalk texture improvements, by 2011.			G, D									
	Test two to four new technology instruments at identified potential locations, by 2013.					G, D							
1.5 Take advantage of federal funding programs to solve pedestrian needs and demands.	Submit four applications annually from among central Iowa governments for ICAAP, Statewide TE, or MPO STP TE funds to solve pedestrian needs and demands, beginning in 2010.		R, G, M, C, D										
1.6 Provide pedestrian-scale lighting along all pedestrian activity areas.	Install pedestrian scale lighting on both sides of major roadways in five to seven central Iowa commercial districts, beginning in 2010.		G										

# PEDESTRIAN

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>2. Increase the number of pedestrian trips.</b>													
2.1 Encourage area employers to undertake measures that promote walking by employees.	Promote the DrivetimeDesMoines.org website, beginning in 2009.	M, TMA, DCA											
	Distribute promotional materials to central Iowa businesses highlighting the benefits of commuting to work by walking, beginning in 2010.		M, TMA, DCA										
2.2 Address pedestrian behavior with children, the elderly, and persons with disabilities to promote safe and independent travel.	Regularly conduct pedestrian workshops that concentrate on education, enforcement, and design strategies addressing special pedestrian needs, beginning in 2010.		R										
	Identify locations where the elderly and those who have special needs for pedestrian facilities are known to reside and walk, mapping locations along with adjacent needed activities such as grocery stores, senior centers, and so forth, beginning in 2010.		R										
	Research how to accommodate and increase pedestrian travel opportunities for the elderly, children, and persons with disabilities, beginning in 2010.		R										
2.3 Promote walkability with an event, such as sponsorship of a "Walk to School Day."	Sponsor a Walk to School Day event at every central Iowa school by 2020.												I, M, C, AA, S
2.4 Analyze pedestrian demand and pedestrian walkability.	Identify methods for evaluating the walkability of the pedestrian system and				G, M, C								
	Produce maps and walkability analysis on the pedestrian demand and pedestrian infrastructure deficiencies, by 2013.					G, M, C							
<b>3. Improve walkable land use patterns for pedestrian travel.</b>													
3.1 Review existing zoning ordinances and adopt new zoning ordinances to improve pedestrian safety and accessibility.	Review local government zoning ordinances and recommend appropriate changes to support and promote pedestrian safety and accessibility, by 2012.				R, M, C								
3.2. Develop more direct and convenient pedestrian routes between residential and commercial land uses.	Begin providing direct pedestrian routes to new residential/commercial developments from nearby residential and commercial land uses, by 2015.							R, EO, G					

# PEDESTRIAN

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
3.3 Consider pedestrian transportation in local land use plans.	Update local comprehensive plans and zoning ordinances to include pedestrian-oriented development goals and standards, by 2012.				EO, G								
3.4 Include pedestrian transportation and other multimodal needs into transportation studies, transportation project selections processes, and other plans and studies.	Use a weighting factor in an MPO's or RPA's project prioritization process, taking pedestrian needs into account in that process, beginning in 2010.		R, M, C										
3.5 Encourage local school districts to include pedestrian needs in school siting decisions.	Encourage local school districts to produce Safe Routes to School Plans to support new school construction and school closures, beginning in 2010.		G, S										

R = Central Iowa Bicycle-Pedestrian Roundtable

EO = Elected Officials

G = Government/Agency

I = Iowa Department of Transportation

M = Des Moines Area MPO

C = Central Iowa Regional Transportation Planning Alliance

AA = Ames Area MPO

D = Des Moines Area Regional Transit Authority (DART)

CY = CyRide

IBC = Iowa Bicycle Coalition

INHF = Iowa Natural Heritage Foundation

VA = Greater Des Moines Volkspport Association

TMA = Transportation Management Association

DCA = Downtown Community Alliance

T = Tourism

F = Friends of Central Iowa Trails

LCI = League Certified Instructors

A = Advocates

V = Volunteer Groups

PD = Police Departments

HO = Local Health Organizations

BU = Central Iowa Businesses

S = Schools (Public and Private/Universities/Colleges)

BOMA = Building Owners and Managers Association

# BIKEWAY

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>1. Re-educate and re-train city and county staffs on bicycle infrastructure planning and engineering.</b>													
1.1 Train policy makers, planners, and engineers on accommodating all users within the public right-of-way.	Support the Iowa Bicycle Summit's annual bicycle planning and design workshop, collaborating with Iowa Bicycle Coalition and Iowa DOT, beginning in 2009.	R											
1.2 Encourage city and county staff to join the Iowa Bicycle Coalition, the League of American Bicyclists, or the Association of Pedestrian and Bicycle Professionals.	Encourage city and county staff to join a bicycle and/or pedestrian organization(s), by 2010.		G										
1.3 Provide a Traffic Skills 101 course that is adapted for planners and engineers.	Develop a Traffic Skills 101 course for planners and engineers, by 2012.				IBC, LCI								
<b>2. Maintain a Bicycle Level of Service (BLOS) score of C or better on roadways</b>													
2.1 Convert poor Bicycle LOS roadways to better Bicycle LOS roadways through stand-alone projects or as part of new construction and/or reconstruction road projects.	Convert 50 miles of the Des Moines metropolitan area roadways to a Bicycle LOS score of C or better, by 2016; 100 miles, by 2020.								G, M, C				G, M, C
2.2 Use a Bicycle LOS Model to examine the effects of road projects on bicyclists.	Calculate the Bicycle LOS for all principal arterial, minor arterial, and collector roadway projects in central Iowa, beginning in 2010.		R, M, C										
2.3 Add the Bicycle LOS as a factor in the STP scoring system for road projects with and without bicycle accommodations.	Develop a policy that includes Bicycle LOS as a scoring criterion for STP funds, beginning with Federal Fiscal Year 2015 funds.				R, M								
<b>3. Encourage more bicycle trips in central Iowa with better commuter facilities and infrastructure</b>													
3.1 Provide a bicycle friendly workplace.	Prepare a campaign program targeting employers that highlights the benefits received by employees who commute by bicycle, beginning in 2009.	TMA, BU											
3.2 Establish a system of bicycle commuter corridors that connect remote areas directly to core urban areas.	Identify roadways that could act as bicycle commuting corridors and promote the system to residents, by 2011.			R, G, A									
3.3 Integrate bicycle lanes on existing and new arterial and collector roadways.	Identify all central Iowa arterial and collector roadway locations suitable for bicycle lanes, by 2011.			R, G, I, M									
	Integrate 100 miles of bicycle lanes on central Iowa's arterial and collector roads, by 2020.												R, G, I, M
3.4 Integrate wide outside lanes on existing and new arterial and collector roadways.	Identify all central Iowa arterial and collector roadway locations not suitable for bicycle lanes, by 2011.			R, G, I, M									

# BIKEWAY

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
	Designate wide outside lanes on arterial and collector roadways not suitable for bicycle lanes with Share the Road signage, by 2015.							R, G, I, M					
3.5 Establish designated and signed bicycle routes in all central Iowa communities.	Designate and sign an additional 100 miles of bicycle routes in central Iowa, by 2020.												R, G, I, M
3.6 Use shared lane markings on roadways to communicate the travel path for bicyclists.	Integrate 45 roadway miles of shared lane markings in central Iowa, by 2015.												R, G, I, M
3.7 Place paved shoulders on county roads to improve road safety for bicyclists.	Adopt paved shoulder policies similar to the Iowa DOT's policy in all eight central Iowa counties, by 2011.			G									
	Install paved shoulders on 50% of county roads where bicycle use or demand is potentially high, by 2020.												G
3.8 Establish other on-street bicycle facilities that enhance bicyclist comfort and safety.	Identify five to eight potential on-street bicycle locations, beginning in 2009.	G											
	Complete three to five on-street bicycle facilities, beginning in 2010.		G										
<b>4. Establish safe and convenient short-term and long-term bicycle parking facilities throughout central Iowa.</b>													
4.1 Adopt short-term and long-term bicycle parking facility requirements in central Iowa community zoning ordinances.	Update central Iowa community zoning ordinances to include bicycle parking requirements, by 2011.			EO, G									
4.2 Install short-term bicycle parking facilities outside retail destinations.	Install bicycle parking racks at 10-15 retail centers, by 2011; and, at an additional 10-15 retail centers by 2015.		EO, G					EO, G					
4.3 Encourage bicycle parking and storage facilities at existing multi-family residential buildings.	Establish bicycle parking program guidelines and distribute those guidelines to developers, apartment managers, and condominium associations, by 2012.				G, A, V								
4.4 Provide short-term bicycle parking facilities at city buildings and parks.	Develop a list of recommended bicycle parking facility locations, by 2011.			EO, G, A									
	Install 1,500 bicycle parking spaces (150 per year) on public property in central Iowa, by 2020.												EO, G, A
4.5 Encourage bicycle parking facilities at existing event centers and sport facilities.	Provide bicycle parking facilities at all central Iowa event centers and sport facilities, public and private, by 2015.							EO, G					

## BIKEWAY

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
4.6 Install bicycle parking facilities inside existing parking garages	Install bicycle parking spaces inside parking garages located near bikeways, by 2015.							EO, G					
4.7 Provide bicycle parking inside office buildings.	Provide information to tenants in central Iowa's 10 largest office complexes, encouraging bicycle parking installation at five to eight of those 10 locations, by 2011.			TMA, BU, BOM A									
4.8 Install bicycle parking facilities near bus stops.	Install bicycle parking at 50% of all sheltered bus stops, by 2015; and, at all sheltered bus stops, by 2020.		M, AA, D, CY	M, AA, D, CY			M, AA, D, CY		M, AA, D, CY				
4.9 Install bicycle parking facilities whenever Park & Ride facilities are improved or developed.	Set up bicycle parking facilities whenever Park & Ride facilities are improved or developed.	G, D, CY											

R = Central Iowa Bicycle-Pedestrian Roundtable  
 EO = Elected Officials  
 G = Government/Agency  
 I = Iowa Department of Transportation  
 M = Des Moines Area MPO  
 C = Central Iowa Regional Transportation Planning Alliance  
 AA = Ames Area MPO  
 D = Des Moines Area Regional Transit Authority (DART)  
 CY = CyRide  
 IBC = Iowa Bicycle Coalition  
 INHF = Iowa Natural Heritage Foundation  
 VA = Greater Des Moines Volkspport Association

TMA = Transportation Management Association  
 DCA = Downtown Community Alliance  
 T = Tourism  
 F = Friends of Central Iowa Trails  
 LCI = League Certified Instructors  
 A = Advocates  
 V = Volunteer Groups  
 PD = Police Departments  
 HO = Local Health Organizations  
 BU = Central Iowa Businesses  
 S = Schools (Public and Private/Universities/Colleges)  
 BOMA = Building Owners and Managers Association

# TRAIL

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>1. Complete state significant (Level 1), regionally significant (Level 2), and jurisdictionally (Level 3) trails throughout central Iowa</b>													
1.1 Prioritize Level 1 and Level 2 significant trails for completion.	Compile an active list of planned and proposed Level 1 and Level 2 trails in Central Iowa, beginning in 2009.	R, G, M, C											
	Complete 20 Level 1 and/or Level 2 projects by 2012, and an additional 30 projects, by 2020.				R, G, M, C								R, G, M, C
1.2 Provide regional trails planning technical assistance and outreach.	Coordinate with MPO and the CIRTPA staff in developing, preparing, and reviewing state and regional bicycle/pedestrian/trail plans, beginning in 2010.		M, C										
1.3 Establish a process to update governments and agencies on new trail developments and connections to the state and regional trail system.	Provide active project updates routinely to the Roundtable, beginning in 2009.	R, G, M											
	Notify the MPO and the CIRTPA of public input meetings for projects receiving regional STP TE funds, beginning in 2009.	R, G, M											
<b>2. Encourage communities to include multimodal trails and greenways in local plans.</b>													
2.1 Coordinate the regional, non-motorized multimodal trails system planning through the Central Iowa Bicycle-Pedestrian Roundtable.	Develop a map of central Iowa's existing and proposed non-motorized trail types (for example water, hiking, equestrian, bicycle, and volkspport trails), by 2011.			R, G, F									
2.2 Revitalize the Central Iowa Greenways Plan.	Update, complete, or adopt a "greenways plan" for each of central Iowa's eight counties, by 2016.							EO, G, A, V					
2.3 Support efforts to create and/or improve water, singletrack, and equestrian trails.	Coordinate with the statewide water trails committee, the Central Iowa Trails Association, and the Iowa Trail Riders Association to develop a plan for off-street access and to improve opportunities within the communities, beginning in 2010.		R, G, F										
2.4 Connect and form uninterrupted trail systems.	Plan and design a network of different trail types to assemble a connected trail system, by 2011.			R, G									
2.5 Establish trails along greenways, easements, and discontinued rail corridors.	Acquire all residual and "forgotten" parcels of land, by 2020.												G, INHF
	Monitor the rail corridor abandonment, beginning in 2009.	G, INHF											

# TRAIL

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>3. Manage and improve multi-use trails to minimize conflicts among users.</b>													
3.1 Widen or separate multi-use trail sections with severe congestion problems.	Identify trail sections having congestion problems or points of user conflicts, beginning in 2010.		G										
	Modify trail sections according to issue, by 2015.					G							
3.2 Educate trail users on proper trail behavior through signage or wayfinding.	Evaluate and recommend signage placement, by 2010.	R, G, F											
	Post trail safety and etiquette rules on all trail information boards and trailheads, by 2013.					R, G, F							
<b>4. Coordinate and fund the development and maintenance of the Central Iowa Trails System.</b>													
4.1 Create new and enhance existing funding resources for trails planning, construction, and maintenance and secure matching monies for federal and state funds received.	Develop list of existing and potential funding sources with contact information, by 2011.			R, G									
	Create a trail funding clearinghouse, by 2011.			R, G									
	Pursue private sector aid, such as endowments and trusts, in addition to financial support from businesses, by 2011.			R, G									
4.2 Explore the regional trails district concept.	Promote state enabling legislation allowing for a regional trail districts, beginning in 2010.			R, EO, G									
4.3 Establish trail maintenance and repair procedures.	Set up an Adopt-a-Trail Maintenance Program for the Central Iowa Trail System, beginning in 2009.	R, G, F											
4.4 Encourage using standardized trail assessment methodology in conducting trail condition assessments and encouraging determination of short-term and long-term trail maintenance needs.	Obtain and distribute UTAP information to central Iowa governments and agencies, beginning in 2009.	G											
	Encourage central Iowa governments and agencies to agree to use a standardized trail assessment methodology, by 2012.					G							

R = Central Iowa Bicycle-Pedestrian Roundtable  
 EO = Elected Officials  
 G = Government/Agency  
 I = Iowa Department of Transportation  
 M = Des Moines Area MPO  
 C = Central Iowa Regional Transportation Planning Alliance  
 AA = Ames Area MPO  
 D = Des Moines Area Regional Transit Authority (DART)  
 CY = CyRide  
 IBC = Iowa Bicycle Coalition  
 INHF = Iowa Natural Heritage Foundation  
 VA = Greater Des Moines Volkssport Association

TMA = Transportation Management Association  
 DCA = Downtown Community Alliance  
 T = Tourism  
 F = Friends of Central Iowa Trails  
 LCI = League Certified Instructors  
 A = Advocates  
 V = Volunteer Groups  
 PD = Police Departments  
 HO = Local Health Organizations  
 BU = Central Iowa Businesses  
 S = Schools (Public and Private/Universities/Colleges)  
 BOMA = Building Owners and Managers Association

# SAFETY

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>1. Decrease the number of modal collisions with improved bicycle and pedestrian infrastructure</b>													
1.1 Annually identify bicyclist and pedestrian high accident/conflict locations.	Collect, monitor, and report annual bicyclist and pedestrian accident/conflict locations in central Iowa, beginning in 2009.	G, M, C											
	Identify and analyze high accident/conflict locations in central Iowa, by 2011.			G, M, C									
1.2 Take countermeasures to remedy bicycle and pedestrian accident/conflict locations, such as traffic calming, signal timing, or other traffic safety improvements.	Develop recommended improvements plans for central Iowa's 10 most frequent bicycle and pedestrian accident/conflict locations, by 2011.			R, M, C									
1.3 Evaluate existing and planned sidepaths to minimize user/vehicle conflicts.	Install standard bicycle lanes and sidewalks, rather than sidepaths, in urban and suburban settings, beginning in 2009.	EO, G, M, C											
1.4 Evaluate pedestrian and bicycle facility deficiencies using vehicular collision statistics.	Identify central Iowa's bicycle and pedestrian facility deficiency problem areas biennially, beginning in 2009.	M, C											
	Employ countermeasures at five to ten problem areas annually, beginning in 2009.				M, C								
1.5 Develop a Pedestrian Safety Action Plan.	Have 25% of all central Iowa governments develop a pedestrian safety action plan by 2011, 75% by 2013, 100% by 2014.			R, G, M, C, F		R, G, M, C, F	R, G, M, C, F						
1.6 Assess pedestrian signal timing and crosswalk visibility.	Identify intersections needing lighting and signage improvements, by 2011.		G										
	Modify signal timing and crosswalk visibility at three to five identified intersections on busy, higher speed roads, beginning in 2011.		G										
1.7 Reduce motorist travel speeds through traffic calming measures.	Identify roadways needing traffic calming measures, beginning in 2010.		G										
	Install two to four traffic calming measures per year, beginning in 2011.				G								

# SAFETY

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>1. Decrease the number of modal collisions with improved bicycle and pedestrian infrastructure</b>													
1.1 Annually identify bicyclist and pedestrian high accident/conflict locations.	Collect, monitor, and report annual bicyclist and pedestrian accident/conflict locations in central Iowa, beginning in 2009.	G, M, C											
	Identify and analyze high accident/conflict locations in central Iowa, by 2011.			G, M, C									
1.2 Take countermeasures to remedy bicycle and pedestrian accident/conflict locations, such as traffic calming, signal timing, or other traffic safety improvements.	Develop recommended improvements plans for central Iowa's 10 most frequent bicycle and pedestrian accident/conflict locations, by 2011.			R, M, C									
1.3 Evaluate existing and planned sidepaths to minimize user/vehicle conflicts.	Install standard bicycle lanes and sidewalks, rather than sidepaths, in urban and suburban settings, beginning in 2009.	EO, G, M, C											
1.4 Evaluate pedestrian and bicycle facility deficiencies using vehicular collision statistics.	Identify central Iowa's bicycle and pedestrian facility deficiency problem areas biennially, beginning in 2009.	M, C											
	Employ countermeasures at five to ten problem areas annually, beginning in 2009.				M, C								
1.5 Develop a Pedestrian Safety Action Plan.	Have 25% of all central Iowa governments develop a pedestrian safety action plan by 2011, 75% by 2013, 100% by 2014.			R, G, M, C, F		R, G, M, C, F	R, G, M, C, F						
1.6 Assess pedestrian signal timing and crosswalk visibility.	Identify intersections needing lighting and signage improvements, by 2011.		G										
	Modify signal timing and crosswalk visibility at three to five identified intersections on busy, higher speed roads, beginning in 2011.		G										
1.7 Reduce motorist travel speeds through traffic calming measures.	Identify roadways needing traffic calming measures, beginning in 2010.		G										
	Install two to four traffic calming measures per year, beginning in 2011.				G								

# SAFETY

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>2. Educate and raise awareness for the rights and responsibilities of bicyclists, motorists, and pedestrians on the rules of the road and trail</b>													
2.1 Educate bicyclists on riding safely whole avoiding injury.	Hold five or more LCI training courses for teens and adults, and implement <i>Iowa Kids on the Move</i> programs in every central Iowa elementary school, beginning in 2010.		I, IBC, LCI										
	Develop a webpage describing the various training courses and the course schedule for central Iowa classes, by 2011.			I, IBC, LCI									
2.2 Initiate a "Share the Road" public awareness campaign for both bicyclists and motorists.	Expand bicyclist and motorist "Share the Road" education and encouragement programs using newly created informational handouts/brochures and through local activities, such as tax renewal, drivers licensing and testing, or utility bill inserts, beginning in 2010.		R, EO, PD										
2.3 Develop a Bicycle Ambassadors program to elevate public awareness of bicyclists' rights and responsibilities.	Establish a Central Iowa Bicycle Ambassadors program; begin attending central Iowa bicycling events; and produce handouts informing the public of this program, by 2010.		R, F, A, V										
2.4 Support Iowa DOT's efforts to include bicycle and pedestrian safety education within drivers education classes.	Work with the Iowa DOT to instruct and prepare the cyclists or LCI trainers, beginning in 2009.		I, IBC, S										
	Encourage central Iowa's high schools to use the "Bicycle Safety in Driver Education Curriculum," developed by the Iowa DOT and Iowa Bicycle Coalition, beginning in 2009.		I, IBC, S										
	Encourage cyclists, or LCIs, to the teach the bicyclist safety education classes, by 2010.		I, IBC, S										
2.5 Encourage communities to develop a "Safe Routes to School Plan."	Create a Safe Routes to School Plan for each central Iowa school district, by 2020.												G, I, IBC, A, HO, S

# SAFETY

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>3. Review and strengthen laws/policies concerning bicycle, pedestrian, and trail safety.</b>													
3.1 Encourage law enforcement to use targeted enforcement strategies for encouraging motorists and bicyclists to "Share the Road".	Encourage local law enforcement agencies to implement "Share the Road" targeted enforcement strategies toward bicyclists and motorists, beginning in 2010.		R, G, PD										
	Organize an <i>Enhancing Bicycle Safety: Law Enforcement's Role</i> seminar for central Iowa enforcement officers, beginning in 2010.		R, G, PD										
3.2 Identify and modify local government ordinances that are counter intuitive to bicyclists and pedestrian rights and safety.	Identify and modify local government ordinances that are outdated and that do not reflect all the rights of bicyclists and pedestrians, beginning in 2009.		R, G, IBC										
3.3 Enforce laws and increase penalties for motorists committing traffic violations that endanger bicyclists and pedestrians.	Encourage the Iowa legislature, county boards, and city councils to address the operations and safety of bicyclists and pedestrians on streets and highways, beginning in 2009.		G										
	Encourage legislation and city ordinances that create additional penalties for certain traffic offenses which result in serious injury or deaths to bicyclists and pedestrians, beginning in 2009.		G										
<b>4. Implement a regional Emergency 911 signage system on trails.</b>													
4.1 Implement E911 signage.	Educate trail users on using the E911 signage system, beginning in 2009.		G										
	Complete the Central Iowa Trails System E911 signage, by 2012.							G					

R = Central Iowa Bicycle-Pedestrian Roundtable  
 EO = Elected Officials  
 G = Government/Agency  
 I = Iowa Department of Transportation  
 M = Des Moines Area MPO  
 C = Central Iowa Regional Transportation Planning Alliance  
 AA = Ames Area MPO  
 D = Des Moines Area Regional Transit Authority (DART)  
 CY = CyRide  
 IBC = Iowa Bicycle Coalition  
 INHF = Iowa Natural Heritage Foundation  
 VA = Greater Des Moines Volkspport Association

TMA = Transportation Management Association  
 DCA = Downtown Community Alliance  
 T = Tourism  
 F = Friends of Central Iowa Trails  
 LCI = League Certified Instructors  
 A = Advocates  
 V = Volunteer Groups  
 PD = Police Departments  
 HO = Local Health Organizations  
 BU = Central Iowa Businesses  
 S = Schools (Public and Private/Universities/Colleges)  
 BOMA = Building Owners and Managers Association

# PROMOTION AND ADVOCACY

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>1. Create and distribute bicycle and pedestrian promotional publications</b>													
1.1 Develop a Bike & Ride map that links transit routes with bicycle connections.	Publish a Bike & Ride Map with information about nearby trails and bicycle routes at or near bus stops and information about transit service along trails, by 2011.		M, D, CY										
	Distribute maps and brochures promoting bicycle and transit use at trailheads, bus stops, and on buses, beginning in 2011.			M, D, CY									
1.2 Update and distribute the Greater Des Moines Trails Map.	Reprint an updated Greater Des Moines Trails Map every two years, beginning in 2009.	G, M, C											
1.3 Produce bicycle and pedestrian informational and educational publications.	Identify needed publications to create, beginning in 2009.	R											
	Develop needed publications, beginning in 2010.		R										
1.4 Develop television, radio, website, and newspaper public service announcements (PSAs).	Use various PSAs in various media formats promoting and educating targeted groups, beginning in 2010.		I, IBC										
<b>2. Promote, improve, and expand bicycle and pedestrian events and activities</b>													
2.1 Encourage and promote bicycle and pedestrian events and activities.	Hold 5-10 bicycle and pedestrian events and activities sponsored by different companies, organizations, clubs, and agencies, beginning in 2009.	G, BU											
2.2 Encourage employer and employee incentives to promote bicycle commuting at the workplace.	Set up informational meetings with major employers to educate employers and employees on the Bicycle Commuter Act, beginning in 2009.	R, TMA, LCI, HO											
<b>3. Implement the Communication Master Plan for the Central Iowa Trails.</b>													
3.1 Gather trail signage implementation support from the MPO, CI RTPA, and all participating jurisdictions.	Encourage communities and agencies to adopt the <i>Communication Master Plan for the Central Iowa Trails</i> , beginning in 2009.	R											
3.2 Actively promote funding support and develop annual appropriations within each community.	Set aside funding in each community and agency budget to install Central Iowa Trails signage, beginning in 2009.	G											
3.3 Prioritize a phasing schedule for trail signage implementation by using the trails Level of Significance.	Develop list of trail signage manufacturers, beginning in 2009.	G, R											
	Implement trail wayfinding signage according to state, regional, jurisdictional, on-street, and local significance, beginning in 2009.	G, R											

## PROMOTION AND ADVOCACY

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>4. Evaluate, improve, and advocate bicycling and pedestrian legislative efforts</b>													
4.1 Encourage state legislation that maximizes bicyclist and pedestrian rights.	Advocate and lobby for basic bicyclist and pedestrian rights, beginning in 2009.	A											
4.2 Amend existing state legislation that defines trails as a form of private development.	Support the removal of "recreational trails" from the Iowa Code definition of "private development purposes," by 2012.				A								
4.3 Continue to campaign for trail funding as part of the Greater Des Moines Partnership's annual Washington, D.C. trip.	Continue to submit regional trail funding requests annually through the MPO to be a part of the Greater Des Moines Partnership's trip to Washington, D.C., beginning in 2009.	R											
4.4 Conduct economic and tourism studies to document trails' impact on the central Iowa economy.	Select three major trails for economic impact studies related to the central Iowa economy, by 2015.							G, T, S					
<b>5. Encourage bicycling and walking trips by increasing public awareness on the facilities, programs, and benefits of using public transit</b>													
5.1 Evaluate, improve, and expand the DART Bike & Ride program.	Survey the DART Bike & Ride program impact annually, beginning in 2010.		R, D										
	Issue one to two press releases publicizing the DART Bike & Ride program per year, beginning in 2010.		R, D										
5.2 Increase public education and public awareness on transit access facilities, programs, and benefits.	Promote alternative transportation choices that link bicyclists and pedestrians with transit using the marketing techniques, beginning in 2009.		R, D										

R = Central Iowa Bicycle-Pedestrian Roundtable  
 EO = Elected Officials  
 G = Government/Agency  
 I = Iowa Department of Transportation  
 M = Des Moines Area MPO  
 C = Central Iowa Regional Transportation Planning Alliance  
 AA = Ames Area MPO  
 D = Des Moines Area Regional Transit Authority (DART)  
 CY = CyRide  
 IBC = Iowa Bicycle Coalition  
 INHF = Iowa Natural Heritage Foundation  
 VA = Greater Des Moines Volkspport Association

TMA = Transportation Management Association  
 DCA = Downtown Community Alliance  
 T = Tourism  
 F = Friends of Central Iowa Trails  
 LCI = League Certified Instructors  
 A = Advocates  
 V = Volunteer Groups  
 PD = Police Departments  
 HO = Local Health Organizations  
 BU = Central Iowa Businesses  
 S = Schools (Public and Private/Universities/Colleges)  
 BOMA = Building Owners and Managers Association

# IMPLEMENTATION

Objective		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Action	Benchmark												
<b>1. Adopt the action plan.</b>													
1.1 Promote <i>CONNECT</i> 's goals, objectives, actions, and benchmarks to the MPO, the CIRTPA, the Iowa DOT, local government staffs, agency staffs, and other groups.	Present and recommend adoption of <i>CONNECT</i> to all governments and agencies, beginning in 2009.	R											
1.2 Develop a plan update.	Update <i>CONNECT</i> in 2015 and 2020							R					R
<b>2. Use this plan to develop annual bicycle and pedestrian projects and project funding priorities</b>													
2.1 Require project sponsors to consider bicycle and pedestrian accommodations in STP funding applications.	Amend the MPO's STP Guidelines scoring criteria to award extra points for projects that include bicycle and pedestrian accommodations, by Federal Fiscal Year 2015.			R									
<b>3. Research measurements, trends, projects, and issues associated with the plan's benchmarks.</b>													
3.1 Collect data to measure the impact of <i>CONNECT</i> actions and benchmarks.	Administer bicycle counts and user survey's annually, beginning in 2009.	G, M											
3.2 Seek public opinion of <i>CONNECT</i> 's success.	Hold public input meetings and focus groups to measure the public's opinion on <i>CONNECT</i> 's impact to central Iowa's bicycle and pedestrian infrastructure, beginning in 2009.			R							R		
3.3 Develop a <i>CONNECT</i> annual report.	Produce a <i>CONNECT</i> annual report on progress made in completing projects, implementing policies, and instituting programs, beginning in 2010.		R										
3.4 Develop case studies that highlight well-designed and managed regional trail systems planning and development.	Publish three case studies on projects, programs, or polices developed using <i>CONNECT</i> , by 2020.												R

R = Central Iowa Bicycle-Pedestrian Roundtable  
 EO = Elected Officials  
 G = Government/Agency  
 I = Iowa Department of Transportation  
 M = Des Moines Area MPO  
 C = Central Iowa Regional Transportation Planning Alliance  
 AA = Ames Area MPO  
 D = Des Moines Area Regional Transit Authority (DART)  
 CY = CyRide  
 IBC = Iowa Bicycle Coalition  
 INHF = Iowa Natural Heritage Foundation  
 VA = Greater Des Moines Volkspport Association

TMA = Transportation Management Association  
 DCA = Downtown Community Alliance  
 T = Tourism  
 F = Friends of Central Iowa Trails  
 LCI = League Certified Instructors  
 A = Advocates  
 V = Volunteer Groups  
 PD = Police Departments  
 HO = Local Health Organizations  
 BU = Central Iowa Businesses  
 S = Schools (Public and Private/Universities/Colleges)  
 BOMA = Building Owners and Managers Association

**This page left blank intentionally.**

# Appendix 3: Funding Opportunities

## FEDERAL FUNDING SOURCES

### Access to Jobs

The Access to Jobs Program provides competitive grants to local governments and non-profit organizations to develop transportation services to connect welfare recipients and low-income persons to employment and support services. Programs, which must be approved by a transit agency, may include activities that encourage bicycling. Project selection is made by States in communities under 200,000 and MPOs in urban areas with more than 200,000 population. The Federal share for Access to Jobs projects is 50 percent.

**Contact-** Pamela Lee, Office of Public Transit, Iowa Department of Transportation, 800 Lincoln Way, Ames, Iowa, 50010, 515-233-7983, pamella.lee@dot.iowa.gov

### Bridge Program

The Highway Bridge Replacement and Rehabilitation Program enables States to replace or rehabilitate highway bridges over waterways, other topographical barriers, other highways, or railroads when those bridges are unsafe.

**Eligibility-** Highway bridges, located on any public road, that are either “functionally obsolete” or “structurally deficient” are eligible for replacement or rehabilitation using Bridge Program funds (23 U.S.C. Section 144).

In any case where a highway bridge deck is being replaced or rehabilitated with Federal financial participation, and bicyclists are permitted to operate at each end of such bridge, and the safe accommodation of bicyclists can be provided at reasonable cost as part of such replacement or rehabilitation, then such bridge shall be so replaced or rehabilitated as to provide such safe accommodations (23 U.S.C. Section 217).

**Matching funds-** 80 percent Federal, 20 percent State.

**Transferability-** A State may transfer up to 50 percent of its Bridge program funds to the Interstate Maintenance, National Highway System, Surface Transportation Program (STP), and/or Congestion Mitigation and Air Quality Improvement program.

**Discussion-** Bicyclists and pedestrians are impacted greatly by diversions and obstacles which add even relatively short distances to a trip - the average walking trip is just half a mile - so the lack of access or safe facilities on a bridge can mean trips are not made or short trips are made by car instead. The safety and convenience of bridge crossings of rivers, Interstates, major highways, railway lines, and other corridors are critical for bicyclist and pedestrian mobility as there are often limited opportunities to overcome these obstacles. Bicycle and pedestrian improvements on bridges are usually carried out as an incidental part of a larger replacement or rehabilitation project and funds can be used to provide a range of on-street, sidewalk, and trail facilities depending on the appropriate design for the bridge and the location.

### Metropolitan Planning funds

**Eligibility-** One percent of the funds authorized for the IM, NHS, STP, CMAQ, and Bridge programs are available only for metropolitan transportation planning. The funds are allocated to each State based on the population of urbanized areas in each State. Funds may be used for bicycle- and pedestrian-related plans that are part of the metropolitan transportation planning process.

**Matching funds-** Federal share is 80 percent, but this may be increased by the Secretary of Transportation.

**Transferability-** The funds may not be transferred to other programs.

**Discussion-** Metropolitan Planning Organizations are encouraged to use PL funds to develop the nonmotorized element of the Long Range Transportation Plan, either as a separate planning document or as an integral part of the overall plan.

### National Highway System

The National Highway System (NHS) is composed of 163,000 miles of urban and rural roads serving major population centers, major travel destinations, international border crossings, and intermodal transportation facilities. The Interstate System is part of the National Highway System.

**Eligibility-** Bicycle and pedestrian facilities within NHS corridors are eligible activities for NHS funds, including projects within Interstate rights-of-way.

**Matching funds-** 80 percent Federal, 20 percent State.

**Transferability-** A State may transfer up to 50 percent of its NHS funds to the Interstate Maintenance, Surface Transportation Program (STP), Congestion Mitigation and Air Quality Improvement Program, Bridge Replacement and Rehabilitation (Bridge) Program, and/or the Recreational Trails Program. If approved by the Secretary of Transportation, and if sufficient notice and opportunity for public comment is given, 100 percent of NHS funds may be transferred to the STP.

**Discussion-** Shared use paths along Interstate corridors are eligible for the use of NHS funds, as are bike lane, shoulder and sidewalk improvements on major arterial roads that are part of the NHS, and bicycle and/or pedestrian bridges and tunnels that cross NHS facilities. Examples of paths alongside Interstate facilities include I-90 in Seattle, WA; I-70 in Glenwood Canyon, CO; and I-66 in Arlington, VA.

Each State has designated its segments of the National Highway System. A map of the NHS is available on-line at [www.fhwa.dot.gov/hep10/nhs/index.html](http://www.fhwa.dot.gov/hep10/nhs/index.html), or may be obtained from the FHWA Division Office in each State or the State Department of Transportation.

**Contact-** Pamella Lee, Office of Public Transit, Iowa Department of Transportation, 800 Lincoln Way, Ames, Iowa, 50010, 515-233-7983, [pamella.lee@dot.iowa.gov](mailto:pamella.lee@dot.iowa.gov)

### Federal Recreational Trails Program

The Recreational Trails Program provides funds to States to develop and maintain recreational trails and trail-related facilities for both nonmotorized and motorized recreational trail uses. Each State administers its own program - usually through a State resource or park agency - and develops its own application and project selection process. Each State has a Recreational Trail Advisory Committee to assist with the program.

**Eligibility-** Recreational Trails Program (RTP) funds may be used for:

- maintenance and restoration of existing trails;
- development and rehabilitation of trailside and trailhead facilities and trail linkages;
- purchase and lease of trail construction and maintenance equipment;
- construction of new trails (with restrictions for new trails on Federal lands);
- acquisition of easements or property for trails;
- State administrative costs related to the program (up to 7 percent of a State's funds); and,
- operation of educational programs to promote safety and environmental protection related to trails (up to 5 percent of a State's funds).

States must use 30 percent of their funds for motorized trail uses, 30 percent for nonmotorized trail uses and 40 percent for diverse trail uses. The RTP is intended to fund recreational trails and may not be used to improve roads for general passenger vehicle use or to provide shoulders or sidewalks along roads.

**Matching funds-** In general, the maximum Federal share for each project is 80 percent; however:

- a Federal agency project sponsor may provide additional Federal funds provided the total Federal share does not exceed 95 percent;
- the non-Federal match may include funds from other appropriate Federal programs;
- individual projects may exceed the 80 percent Federal match provided the program overall in the State achieves an 80/20 ratio;
- in-kind contributions (funds, services, materials, or new right-of-way from any project sponsor) may be credited towards the project match; and,
- although project payment normally takes place on a reimbursement basis, working capital advances may be permitted on a case-by-case basis.

**Transferability-** Up to 50 percent of RTP funds may be transferred to NHS, IM, CMAQ, STP, and/or Bridge programs. Transfers in States where the program is administered by a non-DOT agency will require the concurrence of the administering agency.

**Project sponsors-** States may make grants to private organizations, or to any government entity.

**Discussion-** The RTP is unusual among TEA-21 programs in providing funds for projects that are primarily for recreational rather than transportation purposes. Also, in most States the RTP is administered by a State resource agency rather than the State DOT. However, projects funded by the Recreational Trails Program are not necessarily ineligible for other Federal-aid highway funds (for example for a second or subsequent phase of a project) and other Federal-aid highway funds may be used to make up the matching fund requirements for RTP projects.

**Contact-** Steve Bowman, Iowa Department of Transportation, Office of Systems Planning, 800 Lincoln Way, Ames, IA, 50010, 515-239-1337, steven.bowman@dot.iowa.gov

### Land and Water Conservation Fund (LWCF)

LWCF is a federally funded grant program that provides match funds of 50% for outdoor recreation area development and acquisition.

**Eligibility-** The grant applicant must have physical control of the project site by fee title in order for the project to be eligible. Land being acquired by contract purchase will not be eligible for development assistance until the fee title has been obtained. Eligible projects include:

- Observation and sight-seeing facilities: including hiking, biking, equestrian, cycle, snowmobile, and nature trails; and,
- Renovation or redevelopment of existing facilities which have deteriorated or become outdated.

**Matching funds-** 50 percent

**Contact-** Sandra Sampson, Iowa Department of Natural Resources, Wallace State Office Building, 502 East Ninth Street, Des Moines, Iowa, 50319-0034, 515-281-8004, sandra.sampson@dnr.iowa.gov

### National Scenic Byways Program

The National Scenic Byways Program recognizes roads having outstanding scenic, historic, cultural, natural, recreational and archaeological qualities by designating them as National Scenic Byways or All-American Roads.

**Eligibility-** Funds may be spent on a variety of activities including “construction along a scenic byway of a facility for pedestrians and bicyclists, rest area, turnout, highway shoulder improvement passing lane, overlook, or interpretive facility.” Projects must be either associated with a National Scenic Byway, All-American Road, or a State Scenic Byway.

**Matching funds-** The Federal share is 80 percent.

**Transferability-** No funds are transferable to other programs.

**Discussion-** Bicyclists and pedestrians are likely to be drawn to and use roads designated as Scenic Byways because the very qualities (natural, scenic, cultural, historic, recreational and archaeological) that support their designation are appealing to nonmotorized travelers. Improvements for bicyclists and pedestrians might include the provision of paved shoulders, striped bike lanes, bicycle and pedestrian information signing, parallel shared-use paths, crosswalks and sidewalks, rest stops, and bicycle parking - provided that such facilities do not destroy the qualities inherent in the Scenic Byway and are consistent with the Corridor Management Plan required for such routes.

**Contact-** Troy Siefert, Iowa Department of Transportation, Office of Systems Planning, Ames, Iowa, 515-239-1369, troy.siefert@dot.iowa.gov

### Safe Routes to School

The Safe Routes to School Program was created to empower communities to make walking and bicycling to school a safe and routine activity. In accordance to a specified formula, the State of Iowa received \$6,090,671 for five years.

**Eligibility-** The SRTS legislation identifies eligible funding recipients, which may include nontraditional partners of State DOTs. Many projects may be grassroots driven and project sponsors may be schools, State, local, and regional agencies, including nonprofit organizations or community based groups.

Eligible infrastructure-related projects include sidewalk improvements, traffic calming, and speed reduction improvements, pedestrian and bicycle crossing improvements, on-street bicycle facilities, off-street bicycle and pedestrian facilities, secure bicycle parking facilities, and traffic diversion improvements in the vicinity of schools. Eligible noninfrastructure activities include public awareness campaigns and outreach to press and community leaders, traffic education and enforcement in the vicinity of schools, student sessions on bicycle and pedestrian safety, health, and environment, and funding for training, volunteers, and managers of safe routes to school programs.

**Matching funds-** The Federal share is 100 percent.

**Discussion-** The SRTS Program is funded at \$612 million and provides Federal-aid highway funds to State Departments of Transportation (DOTs) over five Federal fiscal years (FY2005-2009), in accordance with a formula specified in the legislation. These funds are available for infrastructure and noninfrastructure projects, and to administer State Safe Routes to School programs that benefit elementary and middle school children in grades K-8.

Section 1404(b) of the legislation describes the purposes for which the SRTS Program was created:

(b) PURPOSES.--The purposes of the program shall be--

1. to enable and encourage children, including those with disabilities, to walk and bicycle to school;
2. to make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and,
3. to facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools.

These stated purposes describe the overall intent of the SRTS Program. Different locations are likely to develop different initiatives and projects that address one or more of the purposes, but the overall SRTS Program within a State must meet all of these stated purposes.

**Contact-** Kathy Ridnour, Office of Systems Planning, Iowa Department of Transportation, 800 Lincoln Way, Ames, Iowa, 50010, 515-233-1713, [kathy.ridnour@dot.iowa.gov](mailto:kathy.ridnour@dot.iowa.gov)

### Safety Set-aside

Ten percent of each State's STP apportionment is set aside for infrastructure safety activities. Funding is channeled into two programs: the Hazard Elimination Program (HEP) and the Railway-Highway Crossing Program.

**Eligibility-** Under the HEP, States must "conduct and systematically maintain an engineering survey of all public roads to identify hazardous locations... which may constitute a danger to motorists, bicyclists, and pedestrians," and implement a prioritized program of improvements to those hazardous locations. Funds may be used for improvements on any public highway, public transportation facility, and any public bicycle or pedestrian pathway or trail. Traffic calming projects are also specifically mentioned as eligible activities.

Under the Railway-Highway Crossing program, States must now consider bicycle safety in carrying out projects.

**Matching funds-** The Federal share for HEP projects is 90 percent.

The Federal share for Railway-Highway Crossing Program projects is 90 percent, except that the Federal share may be 100 percent for signing, pavement markings, active warning devices, and crossing closures.

**Transferability-** States may not transfer HEP or Railway Highway Crossing Program funds below the level of funding for these two programs in FY 1991 -- only the "optional" funds above the minimum level of funding are subject to transferability. Of those optional funds, up to 25 percent of the difference between the fiscal year in question and the comparable amount in FY 1997 may be transferred to IM, CMAQ, NHS, and/or the Bridge

program.

**Discussion-** States should review the operation of their HEP and Railway-Highway Safety Crossing Programs to reflect the newly eligible activities and priorities identified by TEA-21, and describe proposed program modifications in their annual progress report submitted to FHWA Division offices. In particular, States are encouraged to develop methods for identifying and treating hazardous conditions for bicyclists and pedestrians that may occur in dispersed locations and yet still account for a significant percentage of overall traffic fatalities (14 percent, nationwide).

In determining hazardous locations States should consider that research has shown that crashes involving bicyclists and pedestrians do not usually happen in well-defined clusters or common locations; and that both bicyclists and pedestrians will often avoid locations they consider hazardous by either choosing another route, choosing another mode, or not making the trip at all. As a consequence, the traditional method of allocating HEP funds based on high crash locations may not adequately address the bicycle and pedestrian safety problem that exists.

The closure of at-grade crossings should take into account possible negative impacts on bicyclists and pedestrians, as required by both 23 U.S.C. Sections 109(n) and 130. As an example, by reducing the number crossings and focusing all crossing activities on a smaller number of major crossings, agencies may significantly reduce access for nonmotorized travelers and channel all traffic onto crossings that do not adequately provide space or facilities for pedestrians and bicyclists.

### Surface Transportation Program

The Surface Transportation Program (STP) provides States with flexible funds which may be used for a wide variety of projects on any Federal-aid Highway including the NHS, bridges on any public road, and transit facilities.

**Eligibility-** Bicycle and pedestrian improvements are eligible activities under the STP. This covers a wide variety of projects such as on-road facilities, off-road trails, sidewalks, crosswalks, bicycle and pedestrian signals, parking, and other ancillary facilities. TEA-21 also specifically clarifies that the modification of sidewalks to comply with the requirements of the Americans with Disabilities Act is an eligible activity.

As an exception to the general rule described above, STP-funded bicycle and pedestrian facilities may be located on local and collector roads which are not part of the Federal-aid Highway System. In addition, bicycle-related non-construction projects, such as maps, coordinator positions, and encouragement programs, are eligible for STP funds.

**Matching funds-** 80 percent Federal, 20 percent local.

**Transferability-** Funds transferred into the STP from the Interstate Maintenance, National Highway System, Congestion Mitigation and Air Quality Improvement, and Bridge programs are not subject to the 10 percent set-asides for the Enhancements and Safety programs. Funds that are sub-allocated to metropolitan areas may not be transferred.

**Discussion-** STP funds are eligible to be spent on a wide variety of improvements for bicycling and walking including, but not limited to, on- and off-road facilities, bicycle parking, planning studies, State and local bicycle and pedestrian coordinator positions, spot improvement programs, sidewalks, crosswalks, and traffic calming projects. As the category of funding with probably the broadest eligibility, the STP should be considered by States and MPOs as a primary source of funds for both independent and incidental bicycle and pedestrian projects, as well as non-construction projects.

**Contact-** Adam Noelting, Des Moines Area Metropolitan Planning Organization, Merle Hay Centre, 6200 Aurora Avenue, Urbandale, Iowa, 50312, 515-334-0075, aknoelting@dmampo.org

### Transit Enhancements

Ten percent of the Urbanized Area Formula Grants apportioned to urban areas of at least 200,000 population are set aside for a new category of transit enhancements. This program is distinct from the Transportation Enhancement Program.

**Eligibility-** The list of nine eligible activities under the Transit Enhancement Program includes pedestrian access and walkways, and bicycle access, including bicycle storage facilities and installing equipment transporting bicycles on mass transportation vehicles.

**Matching funds-** Federal share for bicycle-related transit enhancements is 95 percent. Federal share for all other transit enhancements is 80

percent.

**Transferability-** One percent of Urbanized Area Formula Grant funds remaining after any transfer of those funds to other sources (see above) must be spent on transit enhancement activities.

**Discussion-** MPOs, in collaboration with transit operators, have the responsibility to determine how the funds in this new category will be allocated to transit projects, and to ensure that one percent of the urbanized area's apportionment (as opposed to one percent of each transit agency's funds) is expended on projects and project elements that qualify as enhancements. The one percent figure is not a maximum or cap on the amount of funding that can be spent on enhancement activities, except for those activities (in particular operating costs for historic facilities) that are only eligible as enhancement activities.

Recipients of transit enhancement funding must submit a report to the relevant FTA Regional Office listing the projects or elements of projects carried out during the previous fiscal year, together with the amount expended.

**Contact-** Pamella Lee, Office of Public Transit, Iowa Department of Transportation, 800 Lincoln Way, Ames, Iowa, 50010, 515-233-7983, pamella.lee@dot.iowa.gov

### Transportation and Community and System Preservation (TCSP) Pilot Program

The TCSP is a competitive grant program designed to support exemplary or innovative projects that show how transportation projects and plans, community development, and preservation activities can be integrated to create communities with a higher quality of life. The annual grant program is administered by the FHWA, in partnership with the FTA and Environmental Protection Agency, and may be used to fund State, MPO, or local government agencies. Bicycling, walking, and traffic calming projects are eligible activities and may well feature as an integral part of many proposed projects that address larger land use and transportation issues.

### Transportation Enhancements (Regional and State)

Ten percent of a State's STP apportionment must be set-aside to fund activities that enhance the transportation system in ways that have not traditionally been included in the design and construction of the transportation system.

**Eligibility-** The list of 12 eligible activities includes three which relate specifically to bicycle and pedestrian transportation:

1. provision of facilities for bicyclists and pedestrians;
2. provision of safety and educational activities for pedestrians and bicyclists; and,
3. preservation of abandoned railroad corridors (including the conversion and use thereof for pedestrian or bicycle trails)

The category of "safety and educational activities for pedestrians and bicyclists", was added by TEA-21 even though non-construction bicycle and pedestrian projects were already eligible activities under this program by virtue of their inclusion in the overall STP. It is not intended to replace or duplicate existing funding opportunities for bicycle and pedestrian safety training and other educational activities currently available from the National Highway Traffic Safety Administration. Activities such as bicycle safety training for children, pedestrian safety publicity campaigns, and enforcement activities related to bicycle and pedestrian safety are still more appropriately funded under the Section 402 State and Community Traffic Safety Program. However, project sponsors under the Transportation Enhancement Program are encouraged to integrate safety messages and educational opportunities for bicyclists and pedestrians into enhancement projects through the development of maps, brochures, and other interpretive devices. States may also consider funding stand-alone projects that, through safety messages and educational opportunities, enhance the traveling experience of bicyclists and pedestrians. Examples might include route marking, maps, and interpretive materials.

As with all bicycle and pedestrian activities under the STP, projects using Enhancement funds need not be located on the Federal-aid Highway System and may be non-construction activities. However, enhancement projects should "relate to surface transportation" and have typically been limited by States to construction projects, planning activities, and related publications rather than salaries and administrative costs.

**Matching funds-** States have the flexibility to allow Federal funds to be used for all or any part of a project under the Transportation Enhancement program provided that the State program as a whole achieves an 80 percent Federal/20 percent State funding balance (subject to the sliding scale for States with significant Federal lands holdings).

States may also, with FHWA approval, allow in-kind contributions such as volunteer labor, land donations and in-kind services to count towards State matching funds, provided that a cash-value can be attributed to the donated time, resource, or product.

**Discussion-** As more than 80 percent of bicycle and pedestrian improvements under ISTEA were funded from this source, the range of exemplary projects is wide. Among the most commonly funded activities have been rail-trails, bike lanes, sidewalks, crosswalks, streetscaping, the renovation of train depots to become transportation centers with bike parking and pedestrian access improvements, and bike route signing.

Despite the popularity of the Transportation Enhancement Program for bicycle and pedestrian projects, States and MPOs are encouraged to consider other, perhaps more appropriate, sources of funding for these activities. The Enhancement Program is clearly intended to support activities that are not, or have not been, part of the routine design of streets and highways. Many bicycle and pedestrian facilities funded under this program should be part of the routine design of streets and highways and would therefore be more appropriately funded as part of STP, NHS or other projects. Enhancement program funds should be reserved for projects that retrofit poorly designed facilities which were completed before the ISTEA/TEA-21 era and for projects that go above and beyond traditional highway designs and projects.

**Contact-** State: Nancy Anania, Iowa Department of Transportation, Office of Systems Planning, 800 Lincoln Way, Ames, IA, 50010, 515-239-1621, nancy.anania@dot.iowa.gov

Regional: (Regional Planning Affiliation or Metropolitan Planning Organization) Zac Bitting, Des Moines Area Metropolitan Planning Organization, Merle Hay Centre, 6200 Aurora Avenue, Suite 300W, Urbandale, IA, 50322, 515-334-0075, zbitting@dmampo.org

### Urbanized Area Formula Grants (transit)

The Urbanized Area Formula Grants program provides transit capital and operating assistance to urbanized areas with populations of more than 50,000.

**Eligibility-** Capital projects are defined as including “pedestrian and bicycle access to a mass transportation facility.”

**Matching funds-** Federal share is typically 80 percent. However, bicycle projects may be funded at up to a 90 percent Federal share.

**Transferability-** Urbanized Area Formula funds apportioned to Transportation Management Areas (over 200,000 population) which cannot be used for the payment of transit operating expenses may be made available for highway projects if a) such use is approved by the MPO, b) funds are not needed for capital transit investments required by the Americans with Disabilities Act, and c) State and local matching funds are also eligible to be used for either highway or transit projects.

**Discussion** -Urban areas with between 50,000 and 200,000 population may use their allocation of Urbanized Area Formula Grants for capital or operating costs. Urban areas with more than 200,000 may not spend these funds on operating costs but can cover the costs of preventive maintenance as well as other capital costs. These funds may be spent to provide stand-alone bicycle and pedestrian improvements such as bicycle parking and pedestrian access to transit stations, and on larger projects that include bicycle and pedestrian elements, such as the purchase of new buses with bicycle racks.

At least one percent of Urbanized Area Formula funds appropriated to areas with more than 200,000 population must be used for transit enhancement activities, as described below.

## STATE FUNDING SOURCES

### Community Attraction and Tourism Program (CAT)

The CAT Program supports projects that promote recreational, cultural, educational, or entertainment attractions that are available to the general public.

**Eligibility-** City, county, public organization, or school district in cooperation with a city or county. Community attraction projects may include but are not limited to the following: museums, theme parks, cultural and recreational centers, recreational trails, heritage attractions, sports arenas and other attractions. A tourism facility draws people into the community from at least 50 miles (one way) from home. Applicants just show:

- Local Support: Evidence of broad-based community support for a project, both philosophical and financial, is needed to fulfill this requirement. CAT

funding may not constitute more than 50 percent of the total project costs. Up to 25 percent of local match may be in the form of in-kind or non-financial contributions, which may include but are not limited to the value of labor and services.

- **Demonstrated Need:** A need for CAT funding must be shown after other financial resources have been committed for the proposed project.
- **Vertical Infrastructure:** The project must be primarily a vertical infrastructure project with demonstrated substantial regional or statewide economic impact.
- **Benefits:** An applicant must agree to provide and pay at least 50% of the cost of a standard medical insurance plan for all full-time employees working at the project after its completion.

**Matching funds-** 50 percent

**Contact-** Alaina Santizo, Vision Iowa Program Manger, Iowa Department of Economic Development, 200 East Grand Avenue, Des Moines, Iowa, 50309-1819, 515-242-4827

### **Congestion Mitigation and Air Quality Improvement Program (Iowa Clean Air Attainment Program (ICAAP))**

The Congestion Mitigation and Air Quality Improvement (CMAQ) Program was created by ISTEA to assist areas designated as nonattainment or maintenance under the Clean Air Act Amendments of 1990 to achieve and maintain healthful levels of air quality by funding transportation projects and programs.

**Eligibility-** Projects funded under the CMAQ program must be located in areas that were designated as a non-attainment area Section 107(d) of the Clean Air Act and classified pursuant to Sections 181(a), 186(a), or 188(a) or (b) of the Clean Air Act.

Projects must be likely to contribute to the attainment of national ambient air quality standards (or the maintenance of such standards where this status has been reached) based on an emissions analysis. Eligible activities include:

1. Transportation Control Measures published pursuant to Section 108(f) of the Clean Air Act, which includes “limiting portions of the road surface or sections of a metropolitan area to the use of nonmotorized vehicles”; “employer participation in programs to encourage bicycling”; and “programs for secure bicycle storage facilities and other facilities, including bicycle lanes, for the convenience and protection of bicyclists in both public and private places.”;
2. Projects in an approved State Implementation Plan and which will have air quality benefits;
3. A determination by the Secretary of Transportation, in consultation with the EPA Administrator, that the project or program is likely to contribute to the attainment of a national ambient air quality standard, whether through reductions in vehicle miles traveled, fuel consumption, or through other factors;
4. A determination that a traffic monitoring, management, and control facility or program is likely to contribute to the attainment of a national ambient air quality standard
5. FHWA’s 1996 Guidance on the CMAQ program, which identifies:
  - construction of bicycle and pedestrian facilities;
  - nonconstruction projects related to safe bicycle use; and,
  - establishment and funding of State bicycle/pedestrian coordinator positions, as established by ISTEA, for the promoting and facilitating the increased use of nonmotorized modes of transportation. This includes public education, promotional, and safety programs for using such facilities.
6. The 1996 Guidance also identifies a variety of “Newly Eligible Activities” for the CMAQ program that includes outreach activities (with no limit on the number of years for which support may be given), fare and fee subsidy programs and innovative financing mechanisms. Each of these may have direct application to potential bicycle and pedestrian-related activities.

TEA-21 allows States to allocate CMAQ funds to private and non-profit entities, under public-private partnership agreements with public agencies, for land, facilities, vehicles, and other expenses.

**Matching funds-** The Federal share for most eligible activities and projects is 80 percent; or 90 percent if used on certain activities on the Interstate System; or up to 100 percent for certain identified activities such as traffic control signalization and carpooling projects.

**Transferability-** Up to 50 percent of the amount by which a State’s CMAQ apportionment for the fiscal year exceeds the amount that would have

been apportioned for that fiscal year if the CMAQ program had been funded at an annual level of \$1.35 billion may be transferred to the STP, NHS, IM, and/or the Bridge programs. Transferred funds may only be used in nonattainment and maintenance areas.

**Discussion-** the CMAQ program has funded numerous bicycle and pedestrian improvements including bikeway networks in cities such as Philadelphia, Houston, and New York City, pedestrian and bicycle spot improvement programs, bicycle parking, bicycle racks on buses, sidewalks, trails, and promotional programs such as bike-to-work events. CMAQ funds have also been used to fund bicycle and pedestrian coordinator positions at the State and local level.

**Contact-** Wendele Maysent, Office of Systems Planning, Iowa Department of Transportation, 800 Lincoln Way, Ames, Iowa, 50010, 515-233-1681, wendele.maysent@dot.iowa.gov

### Iowa Federal Recreational Trails Program

The Iowa Federal Recreational Trails Program provides funds to establish recreational trails in Iowa for the use, enjoyment and participation of the public. The Iowa Department of Transportation shall administer the recreational trails fund as a statewide program.

**Eligibility-** The recreational trails program is restricted to the acquisition, construction, or improvement of recreational trails open for public use or trails which will be dedicated to public use upon completion. Iowa Federal Recreational Trails Program (RTP) funds may be used for:

- maintenance and restoration of existing trails;
- construction of new trails;
- acquisition of easements or property for trails.

**Matching funds-** In general, the maximum Federal share for each project is 80 percent; however the project shall include a contribution of at least 25 percent matching funds - matching funds shall be from sources other than the recreational trails program:

**Transferability-** Up to 50 percent of RTP funds may be transferred to NHS, IM, CMAQ, STP, and/or Bridge programs. Transfers in States where the program is administered by a non-DOT agency will require the concurrence of the administering agency.

**Project sponsors-** A state or local government agency, a municipal corporation, a county or a nonprofit organization is eligible to apply for and receive funds from the recreational trails program. A private business or developer is not eligible to apply directly for funds from the recreational trails program.

**Discussion-** Eligible project costs:

- Land acquisition costs including, but not limited to, appraisal costs, negotiation costs and the required cultural resources survey pursuant to Iowa Code chapter 263B are eligible project costs;
- Trail surfacing, resurfacing, rehabilitation, modernization, upgrading and reconstruction, including pavement repairs and overlays and shoulder widening and stabilization; or initial trail construction including grading, drainage, paving and erosion control;
- Bridge and culvert repair, modernization, replacement or initial construction;
- Roadway intersection and interchange improvements, including warranted traffic signalization that is an integral part of the project;
- Construction or improvement of rest areas, information centers, waysides, permanent interpretive displays, lighting and rest rooms, including the costs of utility connections that are an integral part of the project;
- Design engineering and construction inspection costs directly associated with the project;
- Storm drainage and storm sewer costs to the extent needed for draining the trail;
- Utility relocation costs necessary for trail construction or improvement if the utility is not located on public right-of-way; and,
- Trail signs, fencing, landscaping, parking areas, and walkways.

**Contact-** Steve Bowman, Iowa Department of Transportation, Office of Systems Planning, 800 Lincoln Way, Ames, IA, 50010, 515-239-1337, steven.bowman@dot.iowa.gov

### Resource Enhancement and Protection (REAP)

REAP is a program that invests in the enhancement and protection of the state's natural and cultural resources and is funded from the state's Environment First Fund (Iowa gaming receipts) and from the sale of the natural resource license plate.

**Matching funds-** City Parks and Open Space - no match required. County Conservation - no match required.

**Contact-** Ross Harrison, Iowa Department of Natural Resources, Wallace State Office Building, 502 East Grand Avenue, Des Moines, Iowa, 50319-0034, 515-281-5973, ross.harrison@dnr.iowa.gov

### State and Community Highway Safety Grant Program (Section 402)

The State and Community Highway Safety Grant Program supports State highway safety programs designed to reduce traffic crashes and resulting deaths, injuries, and property damage.

**Eligibility-** States are eligible for these funds (known as "Section 402 funds") by submitting a Performance Plan, with goals and performance measures, and a Highway Safety Plan describing actions to achieve the Performance Plan. Grant funds are provided to States, the Indian Nations, and Territories each year according to a statutory formula based on population and road mileage.

Funds may be used for a wide variety of highway safety activities and programs including those that improve pedestrian and bicycle safety. States are to consider highly effective programs (previously known as National Priority Program Areas), including bicycle and pedestrian safety, when developing their programs, but are not limited to this list of activities.

**Matching funds-** Federal share is 80 percent.

**Transferability-** Funds are not transferable to other programs.

**Discussion-** TEA-21 has provided greater flexibility to States in determining the kinds of activities on which they may spend these funds. However, States are encouraged to consider bicycle and pedestrian safety initiatives as these are areas of national concern where effective countermeasures have been identified.

States have funded a wide variety of enforcement and educational activities with Section 402 funds including safety brochures; "Share the Road" materials; bicycle training courses for children, adults, and police departments; training courses for traffic engineers; helmet promotions; and safety-related events.

### Vision Iowa Grant

The Vision Iowa program is designed to assist communities in the development and creation of major tourism facilities (minimum \$20 million in scope) for permanent cultural, recreational, entertainment and educational attractions available to the general public.

**Eligibility-** Eligible applicants include a city, county, or public organization, or combination of these entities forming a 28E agreement pursuant to Iowa Code; or a school district in cooperation with a city or county. When a school is a joint applicant, the application must show both applicants intend to use the facility upon completion. Schools funded through this program are ineligible for funding from the Vision Iowa School Infrastructure program administered by the Iowa Department of Education. Community attraction projects may include but are not limited to the following: museums, theme parks, cultural and recreational centers, recreational trails, heritage attractions, sports arenas and other attractions. A tourism facility draws people into the community from at least 50 miles (one way) from home. Applicants must show:

- **Minimum \$20 Million Cost:** The total cost for a project must be at least \$20 million.
- **Local Support:** Evidence of broad-based community support for a project, both philosophical and financial, is needed to fulfill this requirement. CAT funding may not constitute more than 50 percent of the total project costs. Up to 25 percent of local match may be in the form of in-kind or non-financial contributions, which may include but are not limited to the value of labor and services.
- **Demonstrated Need:** A need for CAT funding must be shown after other financial resources have been committed for the proposed project.
- **Vertical Infrastructure:** The project must be primarily a vertical infrastructure project with demonstrated substantial regional or statewide economic impact.

- **Benefits:** An applicant must agree to provide and pay at least 50% of the cost of a standard medical insurance plan for all full-time employees working at the project after its completion.
- **Aligned with Other Projects:** The project must support or be strategically aligned with other existing regional or statewide cultural, recreational, entertainment, or educational activities.
- **Regional or National Draw:** The project must benefit persons living outside the county in which the project is located

**Matching funds-** 50 percent

**Contact-** Alaina Santizo, Vision Iowa Program Manger, Iowa Department of Economic Development, 200 East Grand Avenue, Des Moines, Iowa, 50309-1819, 515-242-4827

## LOCAL FUNDING SOURCES

There are many examples of local communities creating revenue streams to improve conditions for bicycling and walking. Three common approaches include: special bond issues, dedications of a portion of local sales taxes or a voter-approved sales tax increase, and use of the annual capital improvement budgets. Some examples follow:

### Local Option Sales Tax

A Local Option Sales Tax is a special-purpose tax implemented and levied at the city or county level. A local option sales tax is often used as a means of raising funds for specific local or area projects, such as improving area streets and roads, or refurbishing a community's downtown area.

- Pinellas County, Florida built much of the Pinellas Trail system with a portion of a one cent sales tax increase voted for by county residents;
- Seattle, Washington approved a nine year levy (property tax) in the fall of 2006 that provides five million dollars a year for pedestrian and bicycle projects;
- Eagle County, Colorado (which includes Vail) voters passed a transportation tax that earmarks 10 percent for trails, about \$300,000 a year; and,
- In Colorado Springs, Colorado, 20 percent of the new open space sales tax is designated for trail acquisition and development; about \$5–6 million per year.

### Impact Fees

Impact fees, regulated by county and city subdivision policies, charge developers to offset the public costs required to accommodate new development with public infrastructure and/or funds for developing public improvements like open space and trails. Impact fees may be allocated to a particular trail from land development projects in all areas of a county or city if the fund is a dedicated set-aside account established to help develop a county- or city-wide system of trail projects. Project examples:

- The City of Chico adopted Class I bike path developer fees. The Chico Urban Area 20-Year Transportation Improvement Plan states that:

“The projected residential, commercial and industrial development, which is anticipated to occur during the planning period, will generate significant additional bicycle traffic and the need to improve and expand the City’s bikeways system. This fee will be used to finance such improvements and additions. The additional miles of this type of bikeway will be needed in order to maintain existing levels of service.”

### Special Bond Issues

Municipal bonds are issued by states, cities, and counties, or their agencies (the municipal issuer) to raise funds. Project examples:

- The City of Albuquerque, New Mexico, and Bernalillo County, have a 5 percent set-aside of street bond funds which go to trails and bikeways. For the City, this has amounted to approximately \$1.2 million every two years. City voters last year passed a 1/4 cent gross receipts tax for transportation which includes approximately \$1 million per year for the next ten years for trail development. Many on-street facilities are developed as a part of other road projects.
- Denver, Colorado invested \$5 million in its emerging trail network with a bond issue, which also funded the city’s bike planner for a number of years.

SAFETEA-LU Bicycle/Pedestrian Funding Opportunities

	402	BRI	CMAQ	FTA	HEP	JOBS	NHS	PLA	RHC	RTP	STP	TCSP	TE	TEA
Bicycle and pedestrian plan			•					•			•	•		•
Bicycle lanes on roadway		•	•	•	•		•		•		•		•	•
Bicycle parking facilities			•	•							•		•	•
Bicycle racks on buses				•							•		•	•
Bicycle storage/service center			•	•		•					•	•	•	•
Coordinator position			•								•	•		
Crosswalks, new or retrofit			•	•	•		•		•		•		•	•
Curb cuts and ramps			•		•		•		•		•			•
Helmet promotion	•										•			•
Maps	•		•								•			
Paved shoulders		•	•		•		•		•		•			•
Police patrol	•										•			
Safety brochure/book	•		•							•	•			•
Safety/education position	•		•								•			
Shared-use path/trail		•	•				•			•	•			•
Sidewalks, new or retrofit		•	•	•	•		•		•		•		•	•
Signal improvements			•		•		•		•		•			•
Signed bike route			•				•				•			•
Single track hike/bike trail										•				
Spot improvement program			•		•						•			•
Traffic calming			•		•				•		•	•		
Trail/highway intersection			•		•		•			•	•			•
Training	•		•							•	•			•

Key

402 - State and Community Traffic Safety Program  
 BRI - Bridge Program  
 CMAQ - Congestion Mitigation/Air Quality Program  
 FTA - Urbanized Area Formula Grants  
 HEP - Hazard Elimination Program  
 JOBS - Access to Jobs

NHS - National Highway System  
 PLA - State/Metropolitan Planning Funds  
 RHC - Railway-Highway Crossing Program  
 RTP - Recreational Trails Program  
 STP - Surface Transportation Program  
 TCSP - Transportation and Community and System

Preservation Pilot Program  
 TE - Transit Enhancements  
 TEA - Transportation Enhancement Activities

# Appendix 4: Complete Streets Policy

---

## Design Guidance Accommodating Bicycle and Pedestrian Travel: A Recommended Approach

A US DOT Policy Statement  
Integrating Bicycling and Walking into Transportation Infrastructure

### PURPOSE

*Accommodating Bicycle and Pedestrian Travel: A Recommended Approach* is a policy statement adopted by the United States Department of Transportation (USDOT). USDOT hopes that public agencies, professional associations, advocacy groups, and others adopt this approach as a way of committing themselves to integrating bicycling and walking into the transportation mainstream.

The Design Guidance incorporates three key principles:

- a. a policy statement that **bicycling and walking facilities will be incorporated into all transportation projects** unless exceptional circumstances exist;
- b. an approach to achieving this policy that has already worked in State and local agencies; and,
- c. a series of action items that a public agency, professional association, or advocacy group can take to achieve the overriding goal of improving conditions for bicycling and walking.

The Policy Statement was drafted by the U.S. Department of Transportation in response to Section 1202 (b) of the Transportation Equity Act for the 21st Century (TEA-21) with the input and assistance of public agencies, professional associations and advocacy groups.

### INTRODUCTION

Bicycling and walking issues have grown in significance throughout the 1990s. As the new millennium dawns public agencies and public interest groups alike are striving to define the most appropriate way in which to accommodate the two modes within the overall transportation system so that those who walk or ride bicycles can safely, conveniently, and comfortably access every destination within a community.

Public support and advocacy for improved conditions for bicycling and walking has created a widespread acceptance that more should be done to enhance the safety, comfort, and convenience of the nonmotorized traveler. Public opinion surveys throughout the 1990s have demonstrated strong support for increased planning, funding and implementation of shared use paths, sidewalks and on-street facilities.

At the same time, public agencies have become considerably better equipped to respond to this demand. Research and practical experience in designing facilities for bicyclists and pedestrians have generated numerous national, State and local design manuals and resources. An increasing number of professional planners and engineers are familiar with this material and are applying this knowledge in towns and cities across the country.

The 1990 Americans with Disabilities Act, building on an earlier law requiring curb ramps in new, altered, and existing sidewalks, added impetus to improving conditions for sidewalk users. People with disabilities rely on the pedestrian and transit infrastructure, and the links between them, for access and mobility.

Congress and many State legislatures have made it considerably easier in recent years to fund nonmotorized projects and programs (for example, the Intermodal Surface Transportation Efficiency Act and the Transportation Equity Act for the 21st Century), and a number of laws and regulations now mandate certain planning activities and design standards to guarantee the inclusion of bicyclists and pedestrians.

Despite these many advances, injury and fatality numbers for bicyclists and pedestrians remain stubbornly high, levels of bicycling and walking remain frustratingly low, and most communities continue to grow in ways that make travel by means other than the private automobile quite challenging. Failure to provide an accessible pedestrian network for people with disabilities often requires the provision of costly paratransit service. Ongoing investment in the Nation's transportation infrastructure is still more likely to overlook rather than integrate bicyclists and pedestrians.

#### SEC. 1202. BICYCLE TRANSPORTATION AND PEDESTRIAN WALKWAYS.

##### (b) Design Guidance.-

(1) In general.-In implementing section 217(g) of title 23, United States Code, the Secretary, in cooperation with the American Association of State Highway and Transportation Officials, the Institute of Transportation Engineers, and other interested organizations, shall develop guidance on the various approaches to

accommodating bicycles and pedestrian travel.

(2) Issues to be addressed. -The guidance shall address issues such as the level and nature of the demand, volume, and speed of motor vehicle traffic, safety, terrain, cost, and sight distance.

(3) Recommendations. -The guidance shall include recommendations on amending and updating the policies of the American Association of State Highway and Transportation Officials relating to highway and street design standards to accommodate bicyclists and pedestrians.

(4) Time period for development. -The guidance shall be developed within 18 months after the date of enactment of this Act.

In response to demands from user groups that every transportation project include a bicycle and pedestrian element, Congress asked the Federal Highway Administration (FHWA) to study various approaches to accommodating the two modes. The Transportation Equity Act for the 21st Century (TEA-21) instructs the Secretary to work with professional groups such as AASHTO, ITE, and other interested parties to recommend policies and standards that might achieve the overall goal of fully integrating bicyclists and pedestrians into the transportation system.

TEA-21 also says that, "Bicycle transportation facilities and pedestrian walkways shall be considered, where appropriate, in conjunction with all new construction and reconstruction of transportation projects, except where bicycle and pedestrian use are not permitted." (Section 1202)

In August 1998, FHWA convened a Task Force comprising representatives from FHWA, AASHTO, ITE, bicycle and pedestrian user groups, State and local agencies, the U.S. Access Board and representatives of disability organizations to seek advice on how to proceed with developing this guidance. The Task Force reviewed existing and proposed information on the planning and technical design of facilities for bicyclists and pedestrians and concluded that these made creation of another design manual unnecessary. For example, AASHTO published a bicycle design manual in 1999 and is working on a pedestrian facility manual.

The area where information and guidance was most lacking was in determining when to include designated or special facilities for bicyclists and pedestrians in transportation projects. There can also be uncertainty about the type of facility to provide, and the design elements that are required to ensure accessibility.

For example, when a new suburban arterial road is planned and designed, what facilities for bicyclists and pedestrians should be provided? The task force felt that once the decision to provide a particular facility was made, the specific information on designing that facility is generally available. However, the decision on whether to provide sidewalks on neither, one or both sides of the road, or a shoulder, striped bike lane, wide outside lane or separate trail for bicyclists is usually made with little guidance or help.

After a second meeting with the Task Force in January 1999, FHWA agreed to develop a Policy Statement on Accommodating Bicyclists and Pedestrians in Transportation Projects to guide State and local agencies in answering these questions. Task Force members recommended against trying to create specific warrants for different facilities (warrants leave little room for engineering judgment and have often been used to avoid providing facilities for bicycling and walking). Instead, the purpose of the Policy Statement is to provide a recommended approach to the accommodation of bicyclists and pedestrians that can be adopted by State and local agencies (as well as professional societies and associations, advocacy groups, and Federal agencies) as a commitment to developing a transportation infrastructure that is safe, convenient, accessible, and attractive to motorized AND nonmotorized users alike. The Policy Statement has four elements:

- a. an acknowledgment of the issues associated with balancing the competing interests of motorized and nonmotorized users;
- b. a recommended policy approach to accommodating bicyclists and pedestrians (including people with disabilities) that can be adopted by an agency or organizations as a statement of policy to be implemented or a target to be reached in the future;
- c. a list of recommended actions that can be taken to implement the solutions and approaches described above; and,
- d. further information and resources on the planning, design, operation, and maintenance of facilities for bicyclists and pedestrians.

## THE CHALLENGE: BALANCING COMPETING INTERESTS

For most of the second half of the 20th Century, the transportation, traffic engineering, and highway professions in the United States were synonymous. They shared a singular purpose: building a transportation system that promoted the safety, convenience, and comfort of motor vehicles. The post-war boom in car and home ownership, the growth of suburban America, the challenge of completing the Interstate System, and the continued availability of cheap gasoline

all fueled the development of a transportation infrastructure focused almost exclusively on the private motor car and commercial truck.

Initially, there were few constraints on the traffic engineer and highway designer. Starting at the centerline, highways were developed according to the number of motor vehicle travel lanes that were needed well into the future, as well as providing space for breakdowns. Beyond that, facilities for bicyclists and pedestrians, environmental mitigation, accessibility, community preservation, and aesthetics were at best an afterthought, often simply overlooked, and, at worst, rejected as unnecessary, costly, and regressive. Many States passed laws preventing the use of State gas tax funds on anything other than motor vehicle lanes and facilities. The resulting highway environment discourages bicycling and walking and has made the two modes more dangerous. Further, the ability of pedestrians with disabilities to travel independently and safely has been compromised, especially for those with vision impairments.

Over time, the task of designing and building highways has become more complex and challenging. Traffic engineers now have to integrate accessibility, utilities, landscaping, community preservation, wetland mitigation, historic preservation, and a host of other concerns into their plans and designs - and yet they often have less space and resources within which to operate and traffic volumes continue to grow.

The additional “burden” of having to find space for pedestrians and bicyclists was rejected as impossible in many communities because of space and funding constraints and a perceived lack of demand. There was also anxiety about encouraging an activity that many felt to be dangerous and fraught with liability issues. Designers continued to design from the centerline out and often simply ran out of space before bike lanes, paved shoulders, sidewalks and other “amenities” could be included.

By contrast, bicycle and pedestrian user groups argue the roadway designer should design highways from the right-of-way limits in, rather than the centerline out. They advocate beginning the design of a highway with the sidewalk and/or trail, including a buffer before the paved shoulder or bike lane, and then allocating the remaining space for motor vehicles. Through this approach, walking and bicycling are positively encouraged, made safer, and included as a critical element in every transportation project rather than as an afterthought in a handful of unconnected and arbitrary locations within a community.

Retrofitting the built environment often provides even more challenges than building new roads and communities: space is at a premium and there is a perception that providing better conditions for bicyclists and pedestrians will necessarily take away space or convenience from motor vehicles.

During the 1990s, Congress spearheaded a movement towards a transportation system that favors people and goods over motor vehicles with passage of the Intermodal Surface Transportation Efficiency Act (1991) and the Transportation Equity Act for the 21st Century (1998). The call for more walkable, liveable, and accessible communities, has seen bicycling and walking emerge as an “indicator species” for the health and well-being of a community. People want to live and work in places where they can safely and conveniently walk and/or bicycle and not always have to deal with worsening traffic congestion, road rage and the fight for a parking space. Vice President Gore launched a Livability Initiative in 1999 with the ironic statement that “a gallon of gas can be used up just driving to get a gallon of milk.”

The challenge for transportation planners, highway engineers and bicycle and pedestrian user groups, therefore, is to balance their competing interest in a limited amount of right-of-way, and to develop a transportation infrastructure that provides access for all, a real choice of modes, and safety in equal measure for each mode of travel.

This task is made more challenging by the widely divergent character of our nation’s highways and byways. Traffic speeds and volumes, topography, land use, the mix of road users, and many other factors mean that a four-lane highway in rural North Carolina cannot be designed in the same way as a four-lane highway in New York City, a dirt road in Utah or an Interstate highway in Southern California. In addition, many different agencies are responsible for the development, management, and operation of the transportation system.

In a recent memorandum transmitting Program Guidance on bicycle and pedestrian issues to FHWA Division Offices, the Federal Highway Administrator wrote that “We expect every transportation agency to make accommodation for bicycling and walking a routine part of their planning, design, construction, operations, and maintenance activities.” The Program Guidance itself makes a number of clear statements of intent:

- Congress clearly intends for bicyclists and pedestrians to have safe, convenient access to the transportation system and sees every transportation improvement as an opportunity to enhance the safety and convenience of the two modes;
- “Due consideration” of bicycle and pedestrian needs should include, at a minimum, a presumption that bicyclists and pedestrians will be accommodated in the design of new and improved transportation facilities;

- To varying extents, bicyclists and pedestrians will be present on all highways and transportation facilities where they are permitted and it is clearly the intent of TEA-21 that all new and improved transportation facilities be planned, designed, and constructed with this fact in mind; and,
- The decision not to accommodate [bicyclists and pedestrians] should be the exception rather than the rule. There must be exceptional circumstances for denying bicycle and pedestrian access either by prohibition or by designing highways that are incompatible with safe, convenient walking, and bicycling.

The Program Guidance defers a suggested definition of what constitutes “exceptional circumstances” until this Policy Statement is completed. However, it does offer interim guidance that includes controlled access highways and projects where the cost of accommodating bicyclists and pedestrians is high in relation to the overall project costs and likely level of use by nonmotorized travelers.

Providing access for people with disabilities is a civil rights mandate that is not subject to limitation by project costs, levels of use, or “exceptional circumstances.” While the Americans with Disabilities Act doesn’t require pedestrian facilities in the absence of a pedestrian route, it does require that pedestrian facilities, when newly constructed or altered, be accessible.

## POLICY STATEMENT

1. Bicycle and pedestrian ways shall be established in new construction and reconstruction projects in all urbanized areas unless one or more of three conditions are met:
  - bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, a greater effort may be necessary to accommodate bicyclists and pedestrians elsewhere within the right of way or within the same transportation corridor;
  - the cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. Excessively disproportionate is defined as exceeding twenty percent of the cost of the larger transportation project; and,
  - where sparsity of population or other factors indicate an absence of need. For example, the Portland Pedestrian Guide requires “all construction of new public streets” to include sidewalk improvements on both sides, unless the street is a cul-de-sac with four or fewer dwellings or the street has severe topographic or natural resource constraints.
2. In rural areas, paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day, as in States such as Wisconsin. Paved shoulders have safety and operational advantages for all road users in addition to providing a place for bicyclists and pedestrians to operate. Rumble strips are not recommended where shoulders are used by bicyclists unless there is a minimum clear path of four feet in which a bicycle may safely operate.
3. Sidewalks, shared use paths, street crossings (including over- and undercrossings), pedestrian signals, signs, street furniture, transit stops and facilities, and all connecting pathways shall be designed, constructed, operated and maintained so that all pedestrians, including people with disabilities, can travel safely and independently.
4. The design and development of the transportation infrastructure shall improve conditions for bicycling and walking through the following additional steps:
  - planning projects for the long-term. Transportation facilities are long-term investments that remain in place for many years. The design and construction of new facilities that meet the criteria in item 1) above should anticipate likely future demand for bicycling and walking facilities and not preclude the provision of future improvements. For example, a bridge that is likely to remain in place for 50 years, might be built with sufficient width for safe bicycle and pedestrian use in anticipation that facilities will be available at either end of the bridge even if that is not currently the case;
  - addressing the need for bicyclists and pedestrians to cross corridors as well as travel along them. Even where bicyclists and pedestrians may not commonly use a particular travel corridor that is being improved or constructed, they will likely need to be able to cross that corridor safely and conveniently. Therefore, the design of intersections and interchanges shall accommodate bicyclists and pedestrians in a manner that is safe, accessible, and convenient;
  - getting exceptions approved at a senior level. Exceptions for the non-inclusion of bikeways and walkways shall be approved by a senior manager and be documented with supporting data that indicates the basis for the decision; and,
  - designing facilities to the best currently available standards and guidelines. The design of facilities for bicyclists and pedestrians should follow design guidelines and standards that are commonly used, such as the AASHTO Guide for the Development of Bicycle Facilities, AASHTO’s A Policy on Geometric Design of Highways and Streets, and the ITE Recommended Practice “Design and Safety of Pedestrian Facilities.”

### POLICY APPROACH

#### “Rewrite the Manuals” Approach

Manuals that are commonly used by highway designers covering roadway geometrics, roadside safety, and bridges should incorporate design information that integrates safe and convenient facilities for bicyclists and pedestrians -- including people with disabilities - into all new highway construction and reconstruction projects.

In addition to incorporating detailed design information - such as the installation of safe and accessible crossing facilities for pedestrians, or intersections that are safe and convenient for bicyclists - these manuals should also be amended to provide flexibility to the highway designer to develop facilities that are in keeping with transportation needs, accessibility, community values, and aesthetics. For example, the Portland Pedestrian Design Guide (June 1998) applies to every project that is designed and built in the city, but the Guide also notes that:

- “Site conditions and circumstances often make applying a specific solution difficult. The Pedestrian Design Guide should reduce the need for ad hoc decision by providing a published set of guidelines that are applicable to most situations. Throughout the guidelines, however, care has been taken to provide flexibility to the designer so she or he can tailor the standards to unique circumstances. Even when the specific guideline cannot be met, the designer should attempt to find the solution that best meets the pedestrian design principles described [on the previous page]”

In the interim, these manuals may be supplemented by stand-alone bicycle and pedestrian facility manuals that provide detailed design information addressing on-street bicycle facilities, fully accessible sidewalks, crosswalks, and shared use paths, and other improvements. Examples: Florida DOT has integrated bicycle and pedestrian facility design information into its standard highway design manuals and New Jersey DOT is in the process of doing so. Many States and localities have developed their own bicycle and pedestrian facility design manuals, some of which are listed in the final section of this document.

### APPLYING ENGINEERING JUDGMENT TO ROADWAY DESIGN

In rewriting manuals and developing standards for the accommodation of bicyclists and pedestrians, there is a temptation to adopt “typical sections” that are applied to roadways without regard to travel speeds, lane widths, vehicle mix, adjacent land uses, traffic volumes, and other critical factors. This approach can lead to inadequate provision on major roads (e.g. a four foot bike lane or four foot sidewalk on a six lane high-speed urban arterial) and the over-design of local and neighborhood streets (e.g. striping bike lanes on low volume residential roads), and leaves little room for engineering judgment.

After adopting the policy that bicyclists and pedestrians (including people with disabilities) will be fully integrated into the transportation system, State and local governments should encourage engineering judgment in the application of the range of available treatments. For example:

- Collector and arterial streets shall typically have a minimum of a four foot wide striped bicycle lane, however wider lanes are often necessary in locations with parking, curb and gutter, heavier and/or faster traffic;
- Collector and arterial streets shall typically have a minimum of a five foot sidewalk on both sides of the street, however wider sidewalks and landscaped buffers are necessary in locations with higher pedestrian or traffic volumes, and/or higher vehicle speeds. At intersections, sidewalks may need to be wider to accommodate accessible curb ramps;
- Rural arterials shall typically have a minimum of a four foot paved shoulder, however wider shoulders (or marked bike lanes) and accessible sidewalks and crosswalks are necessary within rural communities and where traffic volumes and speeds increase.

This approach also allows the highway engineer to achieve the performance goal of providing safe, convenient, and comfortable travel for bicyclists and pedestrians by other means. For example, if it would be inappropriate to add width to an existing roadway to stripe a bike lane or widen a sidewalk, traffic calming measures can be employed to reduce motor vehicle speeds to levels more compatible with bicycling and walking.

## ACTIONS

The United States Department of Transportation encourages States, local governments, professional associations, other government agencies, and community organizations to adopt this Policy Statement as an indication of their commitment to accommodating bicyclists and pedestrians as an integral element of the transportation system. By so doing, the organization or agency should explicitly adopt one, all, or a combination of the various approaches described above AND should be committed to taking some or all of the actions listed below as appropriate for their situation.

- a. Define the exceptional circumstances in which facilities for bicyclists and pedestrians will NOT be required in all transportation projects;
- b. Adopt new manuals, or amend existing manuals, covering the geometric design of streets, the development of roadside safety facilities, and design of bridges and their approaches so that they comprehensively address the development of bicycle and pedestrian facilities as an integral element of the design of all new and reconstructed roadways;
- c. Adopt stand-alone bicycle and pedestrian facility design manuals as an interim step towards the adoption of new typical sections or manuals covering the design of streets and highways;
- d. Initiate an intensive re-tooling and re-education of transportation planners and engineers to make them conversant with the new information required to accommodate bicyclists and pedestrians. Training should be made available for, if not required of, agency traffic engineers and consultants who perform work in this field.

## CONCLUSION

There is no question that conditions for bicycling and walking need to be improved in every community in the United States; it is no longer acceptable that 6,000 bicyclists and pedestrians are killed in traffic every year, that people with disabilities cannot travel without encountering barriers, and that two desirable and efficient modes of travel have been made difficult and uncomfortable.

Every transportation agency has the responsibility and the opportunity to make a difference to the bicycle-friendliness and walkability of our communities. The design information to accommodate bicyclists and pedestrians is available, as is the funding. The United States Department of Transportation is committed to doing all it can to improve conditions for bicycling and walking and to make them safer ways to travel.

## FURTHER INFORMATION AND RESOURCES

### General Design Resources

*A Policy on Geometric Design of Highways and Streets*, 1994 (The Green Book). American Association of State Highway and Transportation Officials (AASHTO), P.O. Box 96716, Washington, DC, 20090-6716, Phone: (888) 227-4860.

*Highway Capacity Manual, Special Report 209*, 1994. Transportation Research Board, Box 289, Washington, DC 20055, Phone: (202) 334-3214. Next Edition: FHWA Research Program project has identified changes to HCM related to bicycle and pedestrian design.

*Manual on Uniform Traffic Control Devices*, 1988. Federal Highway Administration (FHWA), Superintendent of Documents. P.O. Box 371954, Pittsburgh, PA 15250-7954. Next Edition: 2000, will incorporate changes to Part IX that will soon be subject of Notice of Proposed Rulemaking.

*Flexibility in Highway Design*, 1997. FHWA. HEP 30, 400 Seventh Street SW, Washington, DC 20590.

### Pedestrian Facility Design Resources

*Design and Safety of Pedestrian Facilities, A Recommended Practice*, 1998. Institute of Transportation Engineers, 525 School Street, S.W, Suite 410, Washington, DC 20024-2729, Phone: (202) 554-8050.

*Pedestrian Compatible Roadways-Planning and Design Guidelines*, 1995. Bicycle / Pedestrian Transportation Master Plan, Bicycle and Pedestrian Advocate, New Jersey Department of Transportation, 1035 Parkway Avenue, Trenton, NJ 08625, Phone: (609) 530-4578.

*Improving Pedestrian Access to Transit: An Advocacy Handbook*, 1998. Federal Transit Administration / WalkBoston. NTIS, 5285 Port Royal Road, Springfield,

VA 22161.

*Planning and Implementing Pedestrian Facilities in Suburban and Developing Rural Areas, Report No. 294A*, Transportation Research Board, Box 289, Washington, DC 20055, Phone: (202) 334-3214.

*Pedestrian Facilities Guidebook*, 1997. Washington State Department of Transportation, Bicycle and Pedestrian Program, P.O. Box 47393, Olympia, WA 98504.

*Portland Pedestrian Design Guide*, 1998. Portland Pedestrian Program, 1120 SW Fifth Ave, Room 802; Portland, OR 97210. (503) 823-7004.

\* *Implementing Pedestrian Improvements at the Local Level*, 1999. FHWA, HSR 20, 6300 Georgetown Pike, McLean, VA .

\* *AASHTO Guide to the Development of Pedestrian Facilities*, 2000. AASHTO. (currently under discussion)

### **Bicycle Facility Design Resources**

*Guide for the Development of Bicycle Facilities*, 1999., American Association of State Highway and Transportation Officials (AASHTO), P.O. Box 96716, Washington, DC, 20090-6716, Phone: (888) 227-4860.

*Implementing Bicycle Improvements at the Local Level*, (1998), FHWA, HSR 20, 6300 Georgetown Pike, McLean, VA .

*Bicycle Facility Design Standards*, 1998. City of Philadelphia Streets Department, 1401 JFK Boulevard, Philadelphia, PA 19103.

*Selecting Roadway Design Treatments to Accommodate Bicyclists*, 1993. FHWA, R&T Report Center, 9701 Philadelphia Ct, Unit Q; Lanham, MD 20706. (301) 577-1421 (fax only)

*North Carolina Bicycle Facilities Planning and Design Guidelines*, 1994. North Carolina DOT, P.O. Box 25201, Raleigh, NC 27611. (919) 733-2804.

*Bicycle Facility Planning*, 1995. Pinosof & Musser. American Planning Association, Planning Advisory Service Report # 459. American Planning Association, 122 S. Michigan Ave, Suite 1600; Chicago, IL 60603.

*Florida Bicycle Facilities Planning and Design Manual*, 1994. Florida DOT, Pedestrian and Bicycle Safety Office, 605 Suwannee Street, Tallahassee, FL 32399.

*Evaluation of Shared-use Facilities for Bicycles and Motor Vehicles*, 1996. Florida DOT, Pedestrian and Bicycle Safety Office, 605 Suwannee Street, Tallahassee, FL 32399.

### **Bicycle and Pedestrian Design Resources**

*Oregon Bicycle and Pedestrian Plan*, 1995. Oregon Department of Transportation, Bicycle and Pedestrian Program, Room 210, Transportation Building, Salem, OR 97310, Phone: (503) 986-3555

*Improving Conditions for Bicyclists and Pedestrians, A Best Practices Report*, 1998. FHWA, HEP 10, 400 Seventh Street SW, Washington, DC 20590.

### **Traffic Calming Design Resources**

*Traffic Calming: State of the Practice*. 1999. Institute of Transportation Engineers, 525 School Street, SW, Suite 410; Washington, DC 20024.

*Florida Department of Transportation's Roundabout Guide*. Florida Department of Transportation, 605 Suwannee St., MS-82, Tallahassee, FL 32399-0450.

*National Bicycling and Walking Study. Case Study # 19, Traffic Calming and Auto-Restricted Zones and other Traffic Management Techniques-Their Effects on*

*Bicycling and Pedestrians*, Federal Highway Administration (FHWA).

*Traffic Calming* (1995), American Planning Association, 122 South Michigan Avenue, Chicago, IL 60603

*Traditional Neighborhood Development Street Design Guidelines*, 1997. Proposed Recommended Practice, Institute of Transportation Engineers, 525 School Street, SW, Suite 410; Washington, DC 20024.

*Making Streets that Work*, City of Seattle, 600 Fourth Ave., 12th Floor, Seattle, WA 98104-1873, Phone: (206) 684-4000, Fax: (206) 684-5360.

*Traffic Control Manual for In-Street Work*, 1994. Seattle Engineering Department, City of Seattle, 600 4th Avenue, Seattle, WA 98104-6967, Phone: (206) 684-5108.

### **ADA-related Design Resources**

*Accessible Pedestrian Signals*, 1998. U.S. Access Board 1331 F Street NW, Suite 1000; Washington, DC 20004. (800) 872-2253.

*Accessible Rights of Way: A Design Manual*, 1999. U.S. Access Board, 1331 F Street NW, Suite 1000; Washington, DC 20004. (800) 872-2253.

*Designing Sidewalks and Trails for Access, Part One*. 1999. FHWA, HEPH-30, 400 Seventh Street SW, Washington, DC 20590.

*ADA Accessibility Guidelines for Buildings and Facilities*, 1998 (ADAAG). U.S. Access Board, 1331 F Street NW, Suite 1000; Washington, DC 20004. (800) 872-2253.

*Uniform Federal Accessibility Standards*, 1984 (UFAS), available from the U.S. Access Board, 1331 F Street NW, Suite 1000; Washington, DC 20004. (800) 872-2253

*Universal Access to Outdoor Recreation: A Design Guide*, 1993. PLAE, Inc, MIG Communications, 1802 Fifth Street, Berkeley, CA 94710. (510) 845-0953.

*Recommended Street Design Guidelines for People Who Are Blind or Visually Impaired*. American Council of the Blind, 1155 15th Street NW, Suite 720; Washington, DC 20005. (202) 467-5081.

### **Trail Design Resources**

*Trails for the 21st Century*, 1993. Rails to Trails Conservancy, 1100 17th Street NW, 10th Floor, Washington DC 20036. (202) 331-9696.

*Greenways: A Guide to Planning, Design, and Development*, 1993. The Conservation Fund. Island Press, 1718 Connecticut Ave NW, Suite 300; Washington, DC 20009.

*Trail Intersection Design Guidelines*, 1996. Florida Department of Transportation, 605 Suwannee St., MS-82, Tallahassee, FL 23299-0450.

\* Indicates publication not yet available

# Des Moines Area Metropolitan Planning Organization Complete Streets Policy (Example)

## PREFACE

Sponsor governments must accommodate bicycle, pedestrian, and transit facilities in the planning and the design of a proposed transportation project using the Des Moines Area Metropolitan Planning Organization's (MPO) federal Surface Transportation Program (STP) funds to implement that improvement.

Sidewalks, shared use paths, bike lanes, paved shoulders, street crossings (including over and under crossings), pedestrian signals, signs, street furniture, transit stops and facilities, and all connecting pathways must be designed, be constructed, be operated, be maintained, and be accommodated in all transportation projects using MPO STP funds to accomplish that project. Such accommodations must be for all modal projects, including pedestrians, with pedestrians defined as including children, elderly and people with disabilities, can travel safely and independently.

Sponsor governments using other federal, state, or local funds also are strongly encouraged to accommodate bicycle, pedestrian, and transit in the planning and the design of proposed transportation projects.

## EXCLUSIONS

1. Bicycle and pedestrian ways must be established in new road and bridge construction and road and bridge reconstruction projects within the MPO's Planning Area boundary unless one or more of the following three conditions are met:

- 1.1 When bicyclists and pedestrians are prohibited, by law, from using the roadway. In this instance, a greater effort may be necessary to accommodate all users (bicyclists, motorists, transit vehicles and users, and pedestrians of all ages and abilities) elsewhere within the right-of-way or within the same transportation corridor.

- 1.2 When the cost of establishing bikeways and walkways would be excessively disproportionate to the need or probable use, or would exceed budget costs (ex. resurfacing). Excessively disproportionate is defined as exceeding twenty percent of the cost of the larger transportation project to include bikeways and walkways. In such a case, the project sponsor may propose an alternate design or spend twenty percent of the project cost of the larger project to improve accommodations for all users.

- 1.3 Where population is sparse or where other factors indicate an absence of future need. This condition's definition would be streets developed as a cul-de-sac with four or fewer dwellings or if the street has severe topographic or natural resource constraints. Also, an indication of absence of need would be average daily traffic (ADT) projections being less than 500 vehicles per day over the life of this project.

2. Design and development of the transportation infrastructure must improve conditions for transit users, motorists, bicyclists and pedestrians through the subsequent steps:

- 2.1 Plan for projects being long-term. Transportation improvements are long-term investments remaining in place for many years. Design and construction of new facilities should anticipate likely future demand for transit, bicycling, and walking facilities and not preclude the provision of future improvements.

- 2.2 Address bicyclists and pedestrians having a need to cross-corridors as well as travel along those corridors. Even where bicyclists and pedestrians may not commonly use a particular corridor being improved or constructed, they will likely need to be able to cross that corridor safely and conveniently. Therefore, the design of intersections and interchanges shall accommodate bicyclist and pedestrians in a manner that is safe, accessible, and convenient.

- 2.3 Exceptions for the non-inclusion of bikeways and walkways shall be granted only by a recommendation from the MPO's Surface Transportation Program (STP) Funding Committee, be documented with supporting data that indicates the basis for the decision, and that the MPO approves the STP Funding Subcommittee's recommendation.

2.4 Design facilities to the best currently available standards and guidelines. The design of facilities for bicyclists and pedestrians should follow design guidelines and standards commonly used, such as:

- 2.4.1 *SUDAS: Iowa Statewide Urban Design and Specifications Manual;*
- 2.4.2 *American Association of State Highway and Transportation Officials' (AASHTO) Guide for the Development of Bicycle Facilities;*
- 2.4.3 *AASHTO's A Policy on Geometric Design of Highways and Streets;*
- 2.4.4 *AASHTO's Guide for the Planning, Design, and Operation of Pedestrian Facilities;*
- 2.4.5 *Federal Highway Administration's Manual on Uniform Traffic Control Devices for Streets and Highways; and,*
- 2.4.6 *Institute of Transportation Engineer's (ITE) Recommended Practice - Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities.*

**This page left blank intentionally.**

# Appendix 5: Crash Data

One of the most frequently cited reasons for not bicycling or walking is fear for safety in traffic. Given the existing travel environment found in many urban and suburban areas, such as narrow travel lanes, lack of bicycle lanes, excessive motorist speeds, congestion, lack of sidewalks, lack of motorist education, and lack of proper bicycle and pedestrian facilities, many individuals who could meet their transportation needs by bicycling or walking can not.

## National Statistics<sup>1</sup>

In 2006, 773 cyclists were killed and an additional 44,000 were injured in traffic crashes in the United States. This represents 2 percent of all traffic fatalities, and 2 percent of all the people injured in traffic crashes during the year in the United States. Additionally in 2006, 4,784 pedestrians were killed and an additional 61,000 were injured in traffic crashes in the United States. On average, a pedestrian is killed in a traffic crash every 110 minutes and injured in a traffic crash every 9 minutes.

### 1997-2006 National, State, and Central Iowa Fatalities Involving Bicyclists or Pedestrians

	Nation		Iowa		Central Iowa*	
	Bicyclist	Pedestrian	Bicyclist	Pedestrian	Bicyclist	Pedestrian
1997	814	5,321	6	27	3	10
1998	760	5,228	7	25	0	5
1999	754	4,939	6	17	2	6
2000	693	4,763	3	25	0	5
2001	732	4,901	3	19	2	0
2002	665	4,851	4	19	1	4
2003	629	4,774	3	18	0	3
2004	727	4,675	7	24	2	6
2005	786	4,892	11	24	2	6
2006	772	4,795	5	25	3	7
<b>Total</b>	<b>7,332</b>	<b>53,793</b>	<b>55</b>	<b>246</b>	<b>15</b>	<b>52</b>

\*Boone, Dallas, Jasper, Madison, Marion, Polk, Story, and Warren Counties

Source: Center for Transportation Research and Education

## Central Iowa Statistics

The Iowa Department of Transportation (DOT) and the Center for Transportation Research and Education (CTRE) of Iowa State University supplied data on 2,526 reported pedestrian or bicyclist involved crashes in the central Iowa region from 1997-2006. Not including unreported crashes, there were 1,099 bicyclist-involved and 1,427 pedestrian-involved crashes. As local governments plan their bicycle and pedestrian projects, they can use crash data to identify areas for improvement. Safety, for bicyclists and pedestrians, is an important issue due to their likelihood of a serious injury or fatality resulting from a crash with a motor vehicle.

Nationally, pedestrians and bicyclists account for 14 to 15 percent of all traffic fatalities. In urban areas, this figure is even higher. From 1997-2006, 67 of the 2,526 total pedestrian and bicycle crashes were fatalities. Polk County has the highest total number of crashes and highest total number of fatalities.

<sup>1</sup> National Traffic Highway System. 2009. *Traffic Safety Facts, 2006 Data Data*. DOT HS 810 986.

**Central Iowa\* Accidents Involving Pedestrians and Bicyclists, 1997-2006**

	<b>Pedestrians</b>	<b>Bicyclists</b>	<b>Total</b>
1997	169	129	298
1998	199	120	319
1999	166	110	276
2000	172	117	289
2001	106	87	193
2002	142	106	248
2003	120	97	217
2004	116	101	217
2005	109	101	210
2006	128	131	259
<b>Total</b>	<b>1,427</b>	<b>1,099</b>	<b>2,526</b>

\*Boone, Story, Dallas, Polk, Jasper, Madison, Warren, and Marion Counties

**Reported Number of Crashes Involving Pedestrians and Bicyclists, 1997-2006**

<b>County</b>	<b>Pedestrians</b>		<b>Bicyclists</b>		<b>Total</b>
	<b>Reported Accidents</b>	<b>Fatalities</b>	<b>Reported Accidents</b>	<b>Fatalities</b>	
Boone	35	1	51	4	86
Dallas	28	4	44	3	72
Jasper	61	6	42	2	103
Madison	16	1	12	0	28
Marion	56	1	56	0	112
Polk	1,060	32	700	5	1,760
Story	145	4	164	1	309
Warren	26	3	30	0	56
<b>Total</b>	<b>1,427</b>	<b>52</b>	<b>1,099</b>	<b>15</b>	<b>2,526</b>

The bicycling crashes are generally more dispersed throughout the region than the pedestrian crashes and occur on local streets as well as the regional roadway system. Although the table does not show a field for intersections, intersections are typically the most common location of crashes for both pedestrians and bicyclists.

**Accidents by Location in Roadway, 1997-2006**

	<b>Pedestrians</b>	<b>Bicyclists</b>	<b>Total</b>
On Roadway	1,274	999	2,273
Shoulder	38	14	52
Median	2	1	3
Roadside/Ditch	27	16	43
Outside Right of Way	58	48	106
Unknown	20	11	31
Not Reported	8	10	18
<b>Total</b>	<b>1,427</b>	<b>1,099</b>	<b>2,526</b>

\*Boone, Story, Dallas, Polk, Jasper, Madison, Warren, and Marion Counties

Staff took some extra time to analyze the crash locations near intersections to develop a top 10 list for the accident locations at intersections. Identifying the intersections that consistently see accident occurrences over the past 10 years may suggest those intersection locations need a more in depth look to determine the cause of all the accidents and if a solution is possible.

#### Top bicyclist/motorist accident locations in central Iowa, 1997-2006

	City	County	Intersection	# of Crashes
1	Ames	Story	Lincoln Way and Beach Avenue	8
2	Ames	Story	6th Street and Elwood Drive	6
3	Knoxville	Marion	Robinson Street and Lincoln Street	5
4	Des Moines	Polk	College Avenue and Oakland Avenue	5
5	Ankeny	Polk	Southeast 3rd Street and South Ankeny Boulevard	5
6	Knoxville	Marion	Pleasant Street and Lincoln Street	4
7	Pella	Marion	Washington Street and Broadway Street	4
8	Des Moines	Polk	Arlington Avenue and 6th Avenue	4
9	Des Moines	Polk	East Army Post Road and Southeast 3rd Street	4
10	Des Moines	Polk	Forest Avenue and MLK, Jr Parkway	4

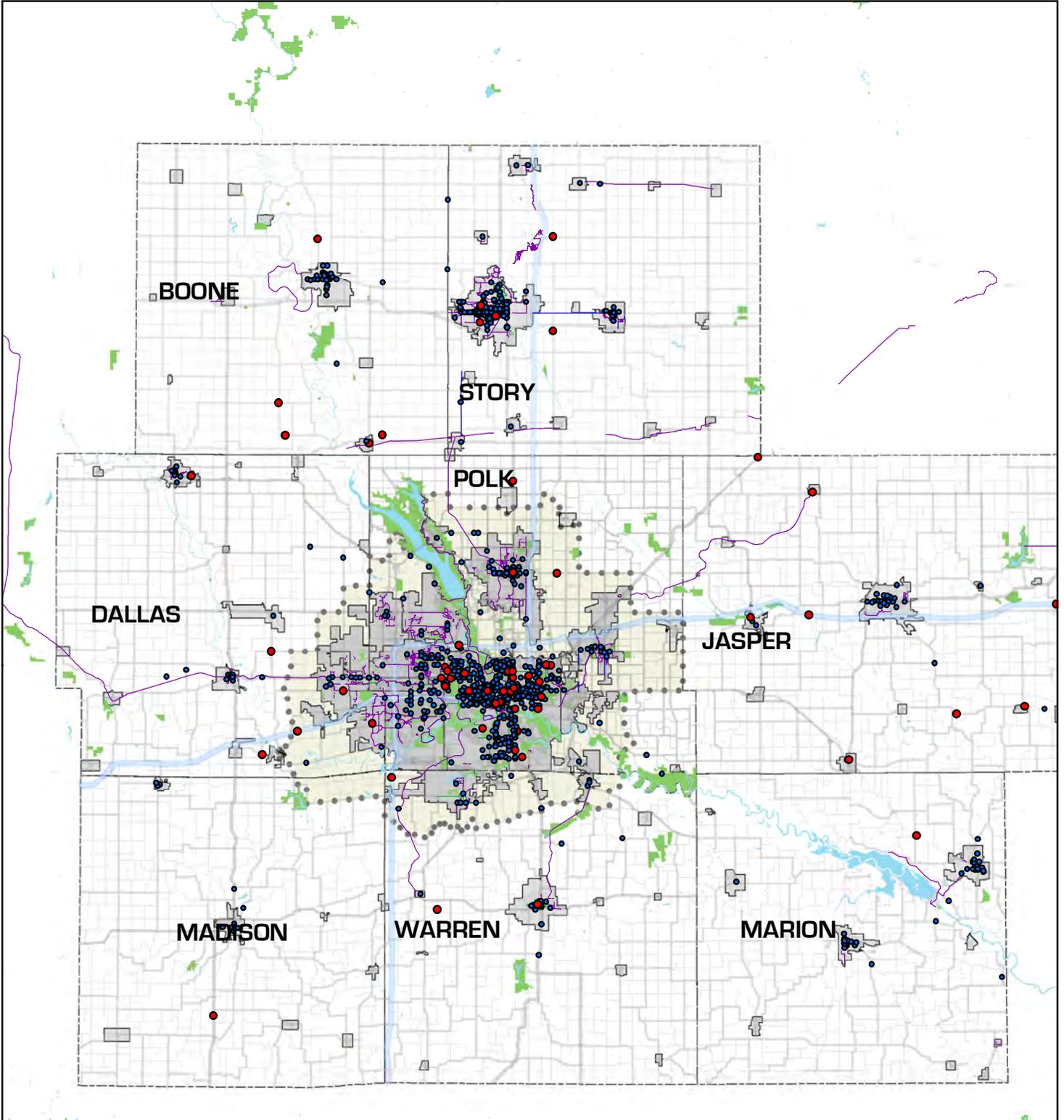
#### Top pedestrian/motorist accident locations in central Iowa, 1997-2006

	City	County	Intersection	# of Crashes
1	Ames	Story	Lincoln Way and Welch Avenue	8
2	Des Moines	Polk	Hickman Road and MLK, Jr Parkway	7
3	Des Moines	Polk	Court Avenue and 2nd Avenue	7
4	Ames	Story	Lincoln Way and Ash Avenue	5
5	Ankeny	Polk	West 1st Street and Southwest School Street	5
6	Des Moines	Polk	Loomis Avenue and Southwest 9th Street	5
7	Des Moines	Polk	East University Avenue and East 30th Street	5
8	Des Moines	Polk	East University Avenue and East 14th Street	5
9	Des Moines	Polk	Euclid Avenue and 6th Avenue	5
10	Des Moines	Polk	East University Avenue and 6th Avenue	5

Crash files from the Iowa DOT and CTRE often provide data that includes where pedestrian and bicyclist crashes occur, such as the city, street, type of street, or intersection; when crashes occur, such as the time of day or day of the week; and the characteristics of the victims, such as their age, gender, and severity of injuries. These data can lead to many general assumptions about the causes of crashes, however, do not provide enough detail to determine the sequence of events that lead up to and cause crashes. Many assumptions point to a user fault but the fault may be the design of the facility or the roadway. Through further research, the MPO and CIRTPA are able to use software to analyze the data, produce reports, and select countermeasures to address the problems identified by the software. If you are interested, please contact staff at 515-334-0075.

Immediately following, are maps that depict the various locations of bicycle and pedestrian accident and fatality locations. If one would like a map depicting the location of accidents and/or fatalities of a particular location or community, please contact staff at 515-334-0075.

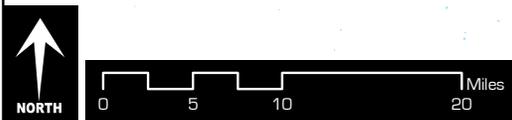
# Central Iowa Automobile-Bicycle Collisions, 1997-2006



Source: Iowa DOT, CTRE

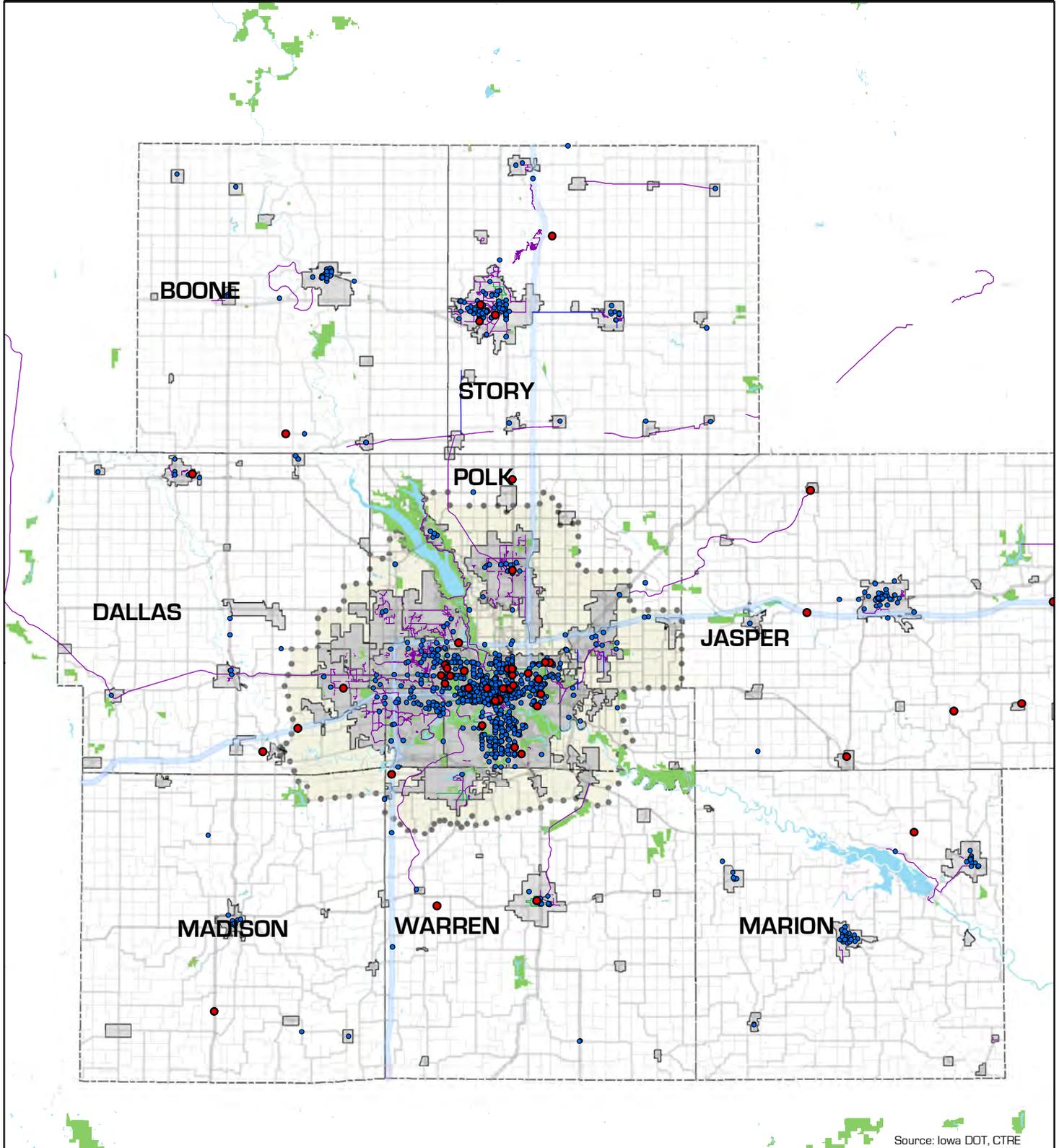
### Vehicle-Bicycle Collisions

- Fatality
- Injury
- Trail
- Bicycle Lane
- Bicycle Route



©2008 Des Moines Area Metropolitan Planning Organization.  
Please call (515) 334-0075 for permission to use.

# Central Iowa Automobile-Pedestrian Collisions, 1997-2006



Source: Iowa DOT, CTRE

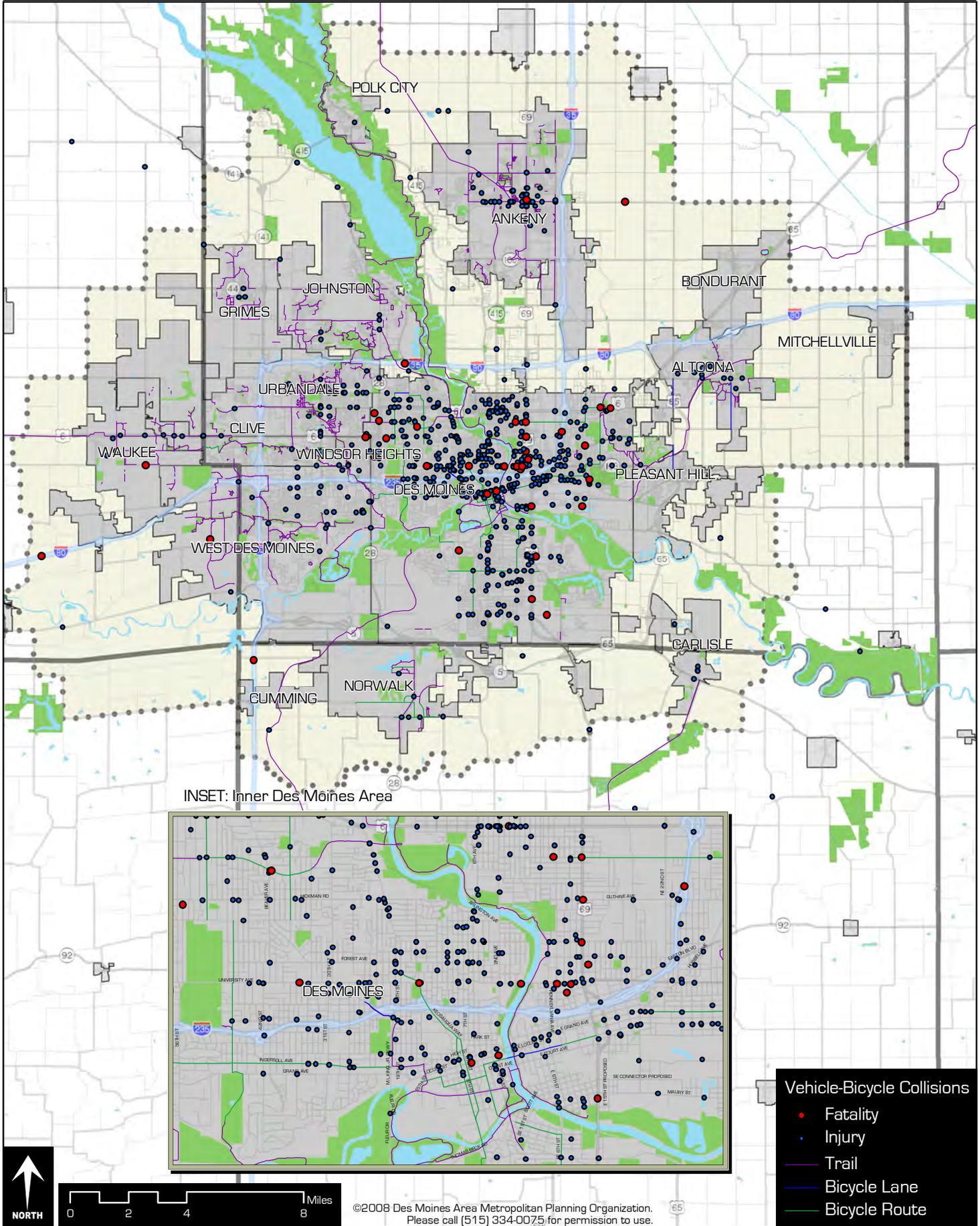
### Vehicle-Pedestrian Collisions

- Fatality
- Injury
- Trail
- Bicycle Lane
- Bicycle Route



©2008 Des Moines Area Metropolitan Planning Organization.  
Please call (515) 334-0075 for permission to use.

# Des Moines Area Automobile-Bicycle Collisions, 1997-2006



# Appendix 6: Laws and Ordinances

2007 MERGED IOWA CODE AND SUPPLEMENT  
TITLE VIII TRANSPORTATION  
SUBTITLE 2 VEHICLES  
CHAPTER 321 MOTOR VEHICLES AND LAW OF THE ROAD  
(RELATED TO BICYCLES AND PEDESTRIANS)

The Iowa Legislature General Assembly. Iowa Law. <http://www.legis.state.ia.us/IowaLaw.html> (accessed July 21, 2008).

## **321.1 Definitions of words and phrases**

40c. "Bicycle" means either of the following:

1. A device having two wheels and having at least one saddle or seat for the use of a rider which is propelled by human power.
2. A device having two or three wheels with fully operable pedals and an electric motor of less than seven hundred fifty watts (one horsepower), whose maximum speed on a paved level surface, when powered solely by such a motor while ridden, is less than twenty miles per hour.

51. "Pedestrian" means any person afoot.

## **321.178 Driver education - restricted license - reciprocity.**

1. Approved course.

- a. An approved driver education course as programmed by the department shall consist of at least thirty clock hours of classroom instruction, of which no more than one hundred eighty minutes shall be provided to a student in a single day, and six or more clock hours of laboratory instruction of which at least three clock hours shall consist of street or highway driving. Classroom instruction shall include all of the following:
  1. A minimum of four hours of instruction concerning substance abuse.
  2. A minimum of twenty minutes of instruction concerning railroad crossing safety.
  3. Instruction relating to becoming an organ donor under the revised uniform anatomical gift Act as provided in chapter 142C.
  4. Instruction providing an awareness about sharing the road with bicycles and motorcycles. The instruction course shall be first approved by the state department of transportation. Instructional materials creating an awareness about sharing the road with bicycles and motorcycles shall also be distributed during the course of instruction.

## **321.231 Authorized emergency vehicles and police bicycles.**

1. The driver of an authorized emergency vehicle, when responding to an emergency call or when in the pursuit of an actual or suspected perpetrator of a felony or in response to an incident dangerous to the public or when responding to but not upon returning from a fire alarm, may exercise the privileges set forth in this section.
2. The driver of any authorized emergency vehicle, may:
  - a. Park or stand an authorized emergency vehicle, irrespective of the provisions of this chapter.
  - b. Disregard laws or regulations governing direction of movement for the minimum distance necessary before an alternative route that conforms to the traffic laws and regulations is available.
3. The driver of a fire department vehicle, police vehicle, or ambulance, or a peace officer riding a police bicycle in the line of duty may do any of the following:
  - d. Proceed past a red or stop signal or stop sign, but only after slowing down as may be necessary for safe operation.
  - e. Exceed the maximum speed limits so long as the driver does not endanger life or property.
4. The exemptions granted to an authorized emergency vehicle under subsection 2 and for a fire department vehicle, police vehicle, or ambulance as provided in subsection 3 shall apply only when such vehicle is making use of an audible signaling device meeting the requirements of section 321.433 or a visual signaling device, except that use of an audible or visual signaling device shall not be required when exercising the exemption granted under subsection 3, paragraph "b" of this section when the vehicle is operated by a peace officer, pursuing a suspected violator of the speed restrictions imposed by or pursuant to this chapter, for the purpose of determining the speed of travel of such suspected violator.
5. The foregoing provisions shall not relieve the driver of an authorized emergency vehicle or the rider of a police bicycle from the duty to drive or ride with due regard for the safety of all persons, nor shall such provisions protect the driver or rider from the consequences of the driver's or rider's reckless disregard for the safety of others.

[C39, § 5017.04, 5017.05, 5023.12; C46, 50, 54, 58, 62, 66, 71, 73, 75, §321.231, 321.232, 321.296; C77, 79, 81, §321.231]  
97 Acts, ch 71, §1 ; 98 Acts, ch 1080, §2 ; 98 Acts, ch 1100, §46

For applicable scheduled fines, see § 805.8A , subsection 11, paragraph a

**321.234 Bicycles, animals, or animal-drawn vehicles.**

1. A person riding an animal or driving an animal drawing a vehicle upon a roadway is subject to the provisions of this chapter applicable to the driver of a vehicle, except those provisions of this chapter which by their nature can have no application.
2. A person, including a peace officer, riding a bicycle on the highway is subject to the provisions of this chapter and has all the rights and duties under this chapter applicable to the driver of a vehicle, except those provisions of this chapter which by their nature can have no application or those provisions for which specific exceptions have been set forth regarding police bicycles.
3. A person propelling a bicycle on the highway shall not ride other than upon or astride a permanent and regular seat attached to the bicycle.
4. A person shall not use a bicycle on the highway to carry more persons at one time than the number of persons for which the bicycle is designed and equipped.
5. This section does not apply to the use of a bicycle in a parade authorized by proper permit from local authorities.

[C39, § 5017.07; C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.234]  
85 Acts, ch 40, §2; 97 Acts, ch 71, §2

For applicable scheduled fines, see § 805.8A , subsection 9

**321.235A Electric personal assistive mobility devices.**

An electric personal assistive mobility device, which is a two-wheeled device as defined in section 321.1 , subsection 20B, may be operated by a person at least sixteen years of age on sidewalks and bikeways in accordance with this section.

1. None of the following are required for operation of an electric personal assistive mobility device:
  - a. Licensure or registration of the electric personal assistive mobility device under this chapter.
  - b. Possession of a driver's license or permit by the operator of the electric personal assistive mobility device.
  - c. Proof of financial responsibility.
2. A person operating an electric personal assistive mobility device on a sidewalk or bikeway shall do all of the following:
  - a. Yield the right-of-way to pedestrians and human-powered devices.
  - b. Give an audible signal before overtaking and passing a pedestrian or human-powered device.
3. A person shall not operate an electric personal assistive mobility device at the times specified in section 321.384 unless the person or the electric personal assistive mobility device is equipped with a headlight visible from the front of the electric personal assistive mobility device and at least one red reflector visible from the rear of the electric personal assistive mobility device.
4. Violations of this section are punishable as a scheduled violation under section 805.8A , subsection 9A.

2002 Acts, ch 1063, §30 ; 2004 Acts, ch 1013, §29 , 35 ; 2004 Acts, ch 1175, §397 , 400

**321.236 Powers of local authorities.**

Local authorities shall have no power to enact, enforce, or maintain any ordinance, rule or regulation in any way in conflict with, contrary to or inconsistent with the provisions of this chapter, and no such ordinance, rule or regulation of said local authorities heretofore or hereafter enacted shall have any force or effect, however the provisions of this chapter shall not be deemed to prevent local authorities with respect to streets and highways under their jurisdiction and within the reasonable exercise of the police power from:

10. Regulating the operation of bicycles and requiring the registration and licensing of the same, including the requirement of a registration fee. However, the regulations shall not conflict with the provisions of section 321.234 .

[S13, §1571-m18, -m20; C24, 27, 31, 35, §4992, 4995, 4997; C39, § 5018.01; C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.236;  
82 Acts, ch 1111, §1]

85 Acts, ch 40, §3; 86 Acts, ch 1056, §2; 86 Acts, ch 1238, §14; 90 Acts, ch 1102, §1; 90 Acts, ch 1151, §2; 90 Acts, ch 1170, §2, 3; 92 Acts, ch 1122, §1; 95 Acts, ch 169, §2 ; 97 Acts, ch 108, §13 ; 97 Acts, ch 147, §1 ; 2002 Acts, ch 1063, §31 ; 2003 Acts, ch 178, §14 ; 2005 Acts, ch 54, §3 , 4 , 12

**321.257 Official traffic control signal.**

1. For the purposes of this section “stop at the official traffic control signal” means stopping at the first opportunity at either the clearly marked stop line or before entering the crosswalk or before entering the intersection.
2. Official traffic control signals consisting of colored lights or colored lighted arrows shall regulate vehicle and pedestrian traffic in the following manner:
  - a. A “steady circular red” light means vehicular traffic shall stop. Vehicular traffic shall remain standing until a signal to proceed is shown or vehicular traffic, unless prohibited by a sign, may cautiously enter the intersection to make a right turn from the right lane of traffic or a left turn from a one-way street to a one-way street from the left lane of traffic on a one-way street onto the left most lane of traffic on a one-way street. Turns made under this paragraph shall be made in a manner that does not interfere with other vehicular or pedestrian traffic lawfully

- using the intersection. Pedestrian traffic facing a steady circular red light shall not enter the roadway unless the pedestrian can safely cross the roadway without interfering with any vehicular traffic.
- b. A “steady circular yellow” or “steady yellow arrow” light means vehicular traffic is warned that the related green movement is being terminated and vehicular traffic shall no longer proceed into the intersection and shall stop. If the stop cannot be made in safety, a vehicle may be driven cautiously through the intersection. Pedestrian traffic is warned that there is insufficient time to cross the intersection and any pedestrian starting to cross the roadway shall yield the right of way to all vehicles.
  - c. A “steady circular green” light means vehicular traffic may proceed straight, turn right or turn left through the intersection unless otherwise specifically prohibited. Vehicular traffic shall yield the right of way to other vehicular and pedestrian traffic lawfully within the intersection.
  - d. A “steady green arrow” light shown alone or with another official traffic control signal means vehicular traffic may cautiously enter the intersection and proceed in the direction indicated by the arrow. Vehicular traffic shall yield the right of way to other vehicles and pedestrians lawfully within the intersection.
  - e. A “flashing circular red” light means vehicular traffic shall stop and after stopping may proceed cautiously through the intersection yielding to all vehicles not required to stop or yield which are within the intersection or approaching so closely as to constitute a hazard, but then may proceed.
  - f. A “flashing yellow” light means vehicular traffic shall proceed through the intersection or past such signal with caution.
  - g. A “don’t walk” light is a pedestrian signal which means that pedestrian traffic facing the illuminated pedestrian signal shall not start to cross the roadway in the direction of the pedestrian signal, and pedestrian traffic in the crossing shall proceed to a safety zone.
  - h. A “walk” light is a pedestrian signal which means that pedestrian traffic facing the illuminated pedestrian signal may proceed to cross the roadway in the direction of the pedestrian signal and shall be given the right of way by drivers of all vehicles.

[C39, § 5019.06, 5019.07; C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, §321.257, 321.258; C79, 81, §321.257]

### **321.318 Method of giving hand and arm signals.**

All signals herein required which may be given by hand and arm shall when so given be given from the left side of the vehicle and the following manner and interpretation thereof is suggested:

1. Left turn - Hand and arm extended horizontally.
2. Right turn - Hand and arm extended upward.
3. Stop or decrease of speed - Hand and arm extended downward.

[C39, § 5025.08; C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.318]

For applicable scheduled fine, see § 805.8A , subsection 6, paragraph b

### **321.325 Pedestrians subject to signals.**

Pedestrians shall be subject to traffic-control signals at intersections as heretofore declared in this chapter, but at all other places pedestrians shall be accorded the privileges and shall be subject to the restrictions stated in sections 321.327 to 321.331.

[C39, § 5027.01; C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.325]

For applicable scheduled fine, see § 805.8A , subsection 9

### **321.326 Pedestrians on left.**

Pedestrians shall at all times when walking on or along a highway, walk on the left side of such highway.

[C39, § 5027.02; C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.326]

For applicable scheduled fine, see § 805.8A , subsection 9

### **321.327 Pedestrians’ right-of-way.**

Where traffic-control signals are not in place or in operation the driver of a vehicle shall yield the right-of-way, slowing down or stopping if need be to so yield, to a pedestrian crossing the roadway within any marked crosswalk or within any unmarked crosswalk at an intersection, except as otherwise provided in this chapter.

A person convicted of a violation of this section is guilty of a simple misdemeanor punishable as a scheduled violation under section 805.8A , subsection 7, paragraph “b”.

[C39, § 5027.03; C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.327]

2000 Acts, ch 1203, §13 ; 2001 Acts, ch 137, §5

Additional penalties for violations causing serious injury or death, see § 321.482A

**321.328 Crossing at other than crosswalk.**

1. Every pedestrian crossing a roadway at any point other than within a marked crosswalk or within an unmarked crosswalk at an intersection shall yield the right-of-way to all vehicles upon the roadway except that cities may restrict such a crossing by ordinance.
2. Any pedestrian crossing a roadway at a point where a pedestrian tunnel or overhead pedestrian crossing has been provided shall yield the right-of-way to all vehicles upon the roadway.
3. Where traffic-control signals are in operation at any place not an intersection pedestrians shall not cross at any place except in a marked crosswalk.

[C39, § 5027.04; C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.328]

For applicable scheduled fines, see § 805.8A , subsection 9

**321.329 Duty of driver - pedestrians crossing or working on highways.**

1. Notwithstanding the provisions of section 321.328 every driver of a vehicle shall exercise due care to avoid colliding with any pedestrian upon any roadway and shall give warning by sounding the horn when necessary and shall exercise due care upon observing any child or any confused or incapacitated person upon a roadway.
2. Every driver of a vehicle shall yield the right-of-way to pedestrian workers engaged in maintenance or construction work on a highway whenever the driver is notified of the presence of such workers by a flagman or a warning sign.

[C39, § 5027.05; C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.329]

For applicable scheduled fine, see § 805.8A , subsection 7, paragraph b

Additional penalties for violations causing serious injury or death, see § 321.482A

**321.330 Use of crosswalks.**

Pedestrians shall move, whenever practicable, upon the right half of crosswalks.

[C39, § 5027.06; C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.330]

**321.331 Pedestrians soliciting rides.**

1. No person shall stand in a roadway for the purpose of soliciting a ride from the driver of any private vehicle.
2. Nothing in this section or this chapter shall be construed so as to prevent any pedestrian from standing on that portion of the highway or roadway, not ordinarily used for vehicular traffic, for the purpose of soliciting a ride from the driver of any vehicle.

[C39, § 5027.07; C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.331]

For applicable scheduled fines, see § 805.8A , subsection 9

**321.332 White canes restricted to blind persons.**

For the purpose of guarding against accidents in traffic on the public thoroughfares, it shall be unlawful for any person except persons wholly or partially blind to carry or use on the streets, highways, and public places of the state any white canes or walking sticks which are white in color or white tipped with red.

[C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.332]

For applicable scheduled fine, see § 805.8A , subsection 9

**321.333 Duty of drivers.**

Any driver of a vehicle or operator of a motor-driven vehicle who approaches or comes in contact with a person wholly or partially blind carrying a cane or walking stick white in color or white tipped with red, or being led by a guide dog wearing a harness and walking on either side of or slightly in front of said blind person, shall immediately come to a complete stop, and take such precautions as may be necessary to avoid accident or injury to the person carrying a cane or walking stick white in color or white tipped with red or being led by a guide dog.

[C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.333]

For applicable scheduled fine, see § 805.8A , subsection 7, paragraph b

Additional penalties for violations causing serious injury or death, see § 321.482A

**321.334 Penalties.**

Any person who shall carry a cane or walking stick such as prescribed in section 321.332 contrary to the provisions hereof, or who shall fail to heed the approach of a person lawfully so carrying a cane or walking stick white in color or white tipped with red, or being led by a guide dog, or who shall fail to immediately come to a complete stop, and take such precautions against accident or injury to such person, shall be fined not less than one dollar nor more than one hundred dollars for each offense.

[C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.334]

**321.353 Stop before crossing sidewalk - right-of-way.**

1. The driver of a vehicle emerging from a private roadway, alley, driveway, or building shall stop such vehicle immediately prior to driving onto the sidewalk area and thereafter the driver shall proceed into the sidewalk area only when the driver can do so without danger to pedestrian traffic and the driver shall yield the right-of-way to any vehicular traffic on the street into which the driver's vehicle is entering.
2. The driver of a vehicle about to enter or cross a highway from a private road or driveway shall stop such vehicle immediately prior to driving on said highway and shall yield the right-of-way to all vehicles approaching on said highway.

[S13, §1571-m18; C24, 27, 31, 35, §5035; C39, § 5026.05, 5029.13; C46, §321.323, 321.353; C50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.353]

For applicable scheduled fine, see § 805.8A , subsection 6, paragraph c

**321.397 Lamps on bicycles.**

Every bicycle shall be equipped with a lamp on the front exhibiting a white light, at the times specified in section 321.384 , visible from a distance of at least three hundred feet to the front and with a lamp on the rear exhibiting a red light visible from a distance of three hundred feet to the rear; except that a red reflector may be used in lieu of a rear light. A peace officer riding a police bicycle is not required to use either front or rear lamps if duty so requires.

[C31, 35, §5045-d1; C39, § 5034.06; C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.397]

97 Acts, ch 71, §3; 97 Acts, ch 108, §21

For applicable scheduled fine, see § 805.8A , subsection 9

**321.434 Bicycle sirens or whistles.**

A bicycle shall not be equipped with and a person shall not use upon a bicycle any siren or whistle. This section shall not apply to bicycles ridden by peace officers in the line of duty.

[C39, § 5034.43; C46, 50, 54, 58, 62, 66, 71, 73, 75, 77, 79, 81, §321.434]

97 Acts, ch 71, §4

For applicable scheduled fine, see § 805.8A , subsection 9

---

**LOCAL GOVERNMENT ORDINANCES THAT CAN BE COUNTER-INTUITIVE TO  
BICYCLISTS RIGHTS AND SAFETY**

**CITY CODE AND ORDINANCES  
CHAPTER 76  
BICYCLE REGULATIONS**

(City of Altoona, City of Bondurant, City of Clive, City of Grimes, City of Johnston, City of Mitchellville, City of Pleasant Hill, City of Urbandale, and City of Polk City)

**76.05 BICYCLE PATHS.** Whenever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use such path and shall not use the roadway.

(Code of Iowa, Sec. 321.236 [10])

**CITY OF WEST DES MOINES CITY CODE AND ORDINANCES  
CHAPTER 11  
BICYCLES**

**6-11-4: OPERATION OF BICYCLES:**

B. Use Of Bicycle Paths: Whenever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use such path and shall not use the roadway.

(1985 Code §2.1-5.0105)

\*\*The Central Iowa Bicycle-Pedestrian Roundtable cite these examples because existing research publications and design guidelines suggest that riding on such paths may be more dangerous than riding on the roadway. Sidepaths are shared-use paths paralleling roadways (Martin Luther King, Jr. Trail in Des Moines and Raccoon River Valley Trail in Waukee/Urbandale). However, three decades of national crash data indicate that sidepaths have higher overall crash and conflict rates than other trail types, especially where sidepaths meet intersections.<sup>2</sup> Both public agencies and a large number of bicyclists prefer sidepaths, perceiving sidepaths to be safer than on-street bicycle facilities.<sup>3</sup> In almost all cases, AASHTO recommends on-street bicycle facilities (bike lanes, wide outside lanes, shared lane markings/sharrows) over sidepaths.

**This page left blank intentionally.**

# CONNECT

**DES MOINES AREA METROPOLITAN PLANNING ORGANIZATION**

Merle Hay Centre | 6200 Aurora Avenue, Suite 300W | Urbandale, IA 50322

T: 515-334-0075 | F: 515-334-0098

[dmampo@dmampo.org](mailto:dmampo@dmampo.org)