



# 2035 Statewide Transportation Plan

## Bicycles and Pedestrians

### TECHNICAL REPORT

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## Introduction

Bicycling and walking are integral components of Colorado's multi-modal transportation system. The Colorado Department of Transportation recognizes the benefits of non-motorized transportation and the role of bicycling and walking for commuting, running errands, traveling to and from school, and recreation. In addition to being cost-effective and energy-efficient forms of transportation, bicycling and walking provide other benefits as well, such as improved health, less stress and reductions in air pollution, traffic congestion and energy consumption. Whereas walking is practical for trips of two miles or less, bicycling offers the opportunity to travel efficiently for trips of up to 10 miles, and either mode can be combined with transit or automobiles for longer trips. It should be recognized that some portion of every trip by any mode includes walking.

## State of the System

Like most other users of Colorado's transportation system, bicyclists and pedestrians utilize both state and local facilities. Bicyclists normally use travel lanes, road and street shoulders, dedicated bike lanes and off-road paths and trails. However, many bicyclists are forced to ride in the travel lanes simply because many roads do not have shoulders. Pedestrians use sidewalks and shoulders as well as off-road trails. Bicycles are allowed on all federal, state and county highways except urban interstates, special cases on I-70 and I-25 where alternate routes exist, and U.S. Highway 6 in Clear Creek Canyon.

The conditions of these facilities vary widely and often are viewed differently by users. User preferences also vary, with safety and time being leading components of route and facility selection. For example, some bicyclists prefer separated, off-street paths, others prefer to ride on shoulders and bike lanes, while still others prefer unpaved off-street paths.

A CDOT-commissioned survey completed in 2000<sup>1</sup> indicates that 69 percent of Colorado households own at least one bicycle, with an average of 2.7 bicycles in those households. There are approximately 3 million bicycles in Colorado. Approximately 2 percent of Colorado citizens travel to work by bicycle and 3 percent by walking. Of those traveling to school, 6 percent bicycle and 8 percent walk. The factors that prevent more people from bicycling and walking include: time of day, distance, weather, traffic safety on the street, lack of off-street bicycle paths and sidewalks, lack of shoulders, poor road maintenance, lack of bike parking, lack of showers at their destination and discourteous motorists.

Between 2000 and 2004 (last year that detailed statistics are available), bicycle crashes totaled 6,107, with 5,993 of those involving two or more vehicles (bicycle & motor vehicle). Of those, there were 4,756 injury accidents and 43 fatalities. Almost 90 percent of those crashes occurred in an urban area, with the vast majority (4,006) on city streets. An additional 8 fatalities involving bicyclists occurred in 2005 and 10 in 2006.

Bicycling plays an important economic development role. The 2000 study, "Bicycling and Walking in Colorado: The Economic Impact and Household Survey Results," found that the total economic benefit from bicycling in Colorado is more than \$1 billion annually. Among bicycle-related manufacturing, retail, tourism and special events, bicycling employs more than 10,000 Coloradans with an annual payroll of more than \$95 million.

Colorado is one of the top bicycling tourist destinations in the United States. In 1998, 13 of Colorado's ski areas reported 1.38 million summer visitors. They indicated that 699,000 of these visitors bicycled on their vacation, generating approximately \$193 million in revenue. Surveys conducted by Winter Park found that 25 percent of its visitors came to bicycle, while Aspen reported that 20 percent of its visitors indicated bicycling was very important. When the actual numbers submitted by the ski areas are combined with the surveys, it is estimated that at least 276,400 visitors came primarily to bicycle. If these visitors altered their vacation destination due to the lack of bicycling opportunities, it would result in the loss of nearly \$76 million in revenue.

CDOT's Bicycle/Pedestrian Program serves as a resource for current developments, standards and practices in facility design, planning and engineering. The program is responding to citizen concerns expressed in the bicycling and walking research study about the lack of education of motorists, bicyclists and pedestrians regarding their rights and responsibilities when sharing the road. The program also is charged with motivating and encouraging bicycling and walking, and is responsible for educating pedestrians, bicyclists, and motorists of all ages regarding the rules of the road and trail, appropriate traffic behaviors, and how to share the road safely and cooperatively with other modes of transportation.

The bicycling community frequently requests that CDOT add shoulders and bike lanes to roads when they are overlaid or reconstructed. CDOT's policy is to incorporate shoulder improvements on state highways "whenever an upgrade of the roadways and structures is being implemented and is technically feasible and economically reasonable."<sup>3</sup>

Bicyclists have expressed concerns with CDOT's placement of shoulder rumble strips. These strips can play a safety role by warning inattentive or intoxicated drivers who errantly drift off a highway, but they can be a safety hazard for bicyclists, particularly if they are poorly located. In response, CDOT conducted research, in cooperation with the bicycle community, on the best location and design of the strips. CDOT agreed on a new bicycle-friendly design and placement of rumble strips and stated that rumble strips would be installed on shoulders that are 4 feet or narrower only in extreme cases where there is a history of run-off-the-road crashes consistent with a system-wide evaluation.

Similarly, bicyclists have expressed concerns regarding centerline rumble strips. While these strips warn drivers who inadvertently drift across lanes, the sound often inhibits motorists from crossing them when they pass bicyclists; this forces bicyclists to ride even farther to the right of the shoulder's condition. However, when a motorist does cross a centerline rumble strip in order to pass a bicyclist, the motorist will generally give a wider berth to the cyclist. Because the bicycling community has differing views on centerline rumble strips, CDOT continues to install them when road studies indicate they would provide a probable safety benefit.

Transit services can provide a great benefit to bicyclists by extending trip length beyond the distance a bicyclist may want to pedal. There has been much success in getting transit agencies to place bike racks on buses; unfortunately, the popularity of the racks on buses often results in bicyclists being unable to use them due to capacity constraints. Most racks hold only two bikes; once full, other bicyclists must be turned away. Bikes are allowed in light rail cars, but are asked not to board when trains are full. Again, this lack of accessibility for bicyclists makes it difficult to rely on transit as a commuting choice. The lack of safe and adequate bicycle parking remains an issue in some areas. Businesses and transit facilities are being encouraged to add more bike parking for their employees as well as customers.

Obesity has become a major health issue in the nation. While Colorado is generally considered healthier than other states, obesity is nonetheless a problem here too (nearly 18% of the population in Colorado is obese). The encouragement of increased physical activity and exercise, including bicycling and walking, is an inexpensive and easy way of addressing this health problem.

## Revenue

Most local governments in Colorado recognize the benefits of bicycling and the need for safe bicycle facilities. Local government revenues fund many of the state's bicycle and pedestrian facilities.

Bicycle and pedestrian projects may compete through the regional planning process for Regional Priority Program funding. However, as demands for transportation system improvements have skyrocketed and revenues have declined, bicycle and pedestrian improvements have been incorporated within highway projects rather than as independent bicycle or pedestrian projects.

Independent bicycle and pedestrian projects are primarily constructed with funds dedicated to that purpose. At the state level, federal Transportation Enhancement Funds are the most frequently used source of funds for specific bicycle and pedestrian projects. These funds are allocated to the three large Metropolitan Planning Organizations and the CDOT region offices and awarded through the regional planning process. The funds can be used for a variety of transportation enhancement projects, so bicycle and pedestrian projects must compete with other worthy projects for this very limited resource. Federal Congestion Mitigation and Air Quality (CMAQ), Hazard Elimination, and 402 Safety grants also may be used for bicycle and pedestrian projects.

More than half of the 2000 survey respondents indicated they would like to see transportation funds reallocated to include bicycle and pedestrian facilities.

In 2004, the Colorado legislature passed a bill creating a statewide Safe Routes to School program. This program is designed to encourage and promote walking and biking to school for children K-8. Projects focus on the five E's: engineering, education, enforcement, encouragement and evaluation. Both infrastructure projects and educational programs are eligible. While the law suggested using funds from the Hazard Elimination program, it did not require CDOT to allocate funding for the program. Not until the transportation bill, SAFETEA-LU, passed in 2005 did the program receive funding from FHWA. At this writing, it does not receive funding from the state.

CDOT administers the statewide program and is presented with new challenges and opportunities in terms of working more closely with school systems and on routes that may often be off-system. Funding for the program is also an issue as project requests outnumber funds by nearly 3 to 1.

## Objectives, Goals and Strategies

The objectives of the CDOT Bicycle/Pedestrian Program are improving accommodation for bicyclists and pedestrians through education, technical assistance, outreach, and partnerships; better integration of planning and regional networks of CDOT to allow more people to provide input into the bicycle and pedestrian needs of the state.

The goals of the CDOT Bicycle/Pedestrian Program include:

- Development of bicycle and pedestrian specific policies that respond to local issues such as use of Right of Way; integration and connectivity of all modes; design requirements; funding opportunities.
- Reflection of the Statewide Transportation Operating Principles in policies and designs that promote partnerships, accessibility and modal choices.
- Continue development of partnerships with other organizations and agencies to integrate bicycling and walking in plans, policies and funding.
- Emphasize the goals of a 1999 Transportation Commission resolution regarding shoulders and rumble strips, which are :

Including shoulder improvements in all new alignment, major reconstruction, bridge replacements, reconstruction or rehabilitation, and minor widening.

Retaining existing shoulders in resurfacing projects where needed.

Paving shoulders at least 6 feet wide to accommodate bicycle travel and rumble strips along high priority bicycle corridors.

The challenges are identifying cost-efficient ways to incorporate bike and pedestrian friendly design into major transportation projects and recognizing bicycling and walking as part of the overall transportation system instead of an unnecessary luxury

## Conclusion

Bicycling and walking are an integral component of the local, regional and state transportation system for access to jobs, services, schools and recreational activities. Planning for existing and potential bicycle and pedestrian use will continue to be integrated into the planning process. Proposed bicycle and pedestrian projects need to be consistent with local and regional transportation plans and integrated into highway and transit projects.

Economic indicators show the impact of bicycling in our state. Whether users are local commuters, recreational users or out-of-state tourists, bicycling and walking provide jobs and income to thousands of individuals and businesses.

Bicycling and walking are important factors in the fight against obesity, traffic congestion and air pollution. By providing biking and walking facilities, current and future health and traffic problems can be lessened.

Continuing the development of a comprehensive, statewide bicycle and pedestrian transportation system will include the 5 E's of planning – Engineering, Education, Enforcement, Encouragement and Evaluation. Facility development coupled with continued bicycle safety education and training, encouragement and promotion of walking and bicycling, and the enforcement of the rules of the road will help to achieve an integrated transportation system.

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## Endnotes

<sup>1</sup> *Bicycling and Walking in Colorado: Economic Impact and Household Survey Results*, prepared for the Colorado Department of Transportation, Bicycle/Pedestrian Program, by the Center for Research on Economic and Social Policy, University of Colorado at Denver, 2000.

<sup>2</sup> Statewide Accident Data Management, 2003, Colorado Department of Transportation, Safety and Traffic Engineering.

<sup>3</sup> Colorado Department of Transportation, June 1999. Transportation Commission Shoulder Policy (902.0) and Resolution (TC-747).