MONTGOMERY STUDY AREA BICYCLE AND PEDESTRIAN PLAN

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INTRODUCTION

This plan is intended to serve as a guide for improving bicycle and pedestrian activity in the Montgomery Study Area over the next five years. Today, bicycle and walking comprise a very small percentage of total trips in the area. This plan suggests education, promotion and policy projects to integrate bicycling into the existing transportation environment. Bicycling and walking are healthy, non-polluting forms of personalized transportation. They do not consume limited natural resources and do not require a costly infrastructure to support, since they can largely use the existing infrastructure if it is modified to meet their needs. Walking and bicycling are available to all segments of society, people of all ages and socioeconomic levels. Increased bicycling and walking can help to alleviate some of the negative effects of intense motorization, including traffic congestion, air pollution, excessive noise, and destruction of the environment.

Throughout the MPO Study Area there are bike trails and pedestrian facilities, but those facilities are not connected in any way. What this plan will propose to do is connect those existing facilities, create new bike routes with signage, and create more walkable walkways and bicycle routes that get people where they want to go safely, efficiently, and effectively.

The Montgomery Area Metropolitan Planning Organization is responding to the increased use of bicycles and lack of adequate facilities by developing this Bicycle and Pedestrian Plan to provide safe, convenient, and adequate new facilities to enhance and encourage safe bicycle travel. In addition, the Transportation Equity Act for the 21st Century (TEA-21) legislation requires states and metropolitan planning areas to plan for bicycling and pedestrian elements and incorporate these plans into short and long-range transportation plans. These plans shall provide for the development of transportation facilities (including pedestrian walkways and bicycle transportation facilities) which will function as an intermodal transportation system. Since bicycling has never been introduced to the Montgomery Area, safety will be the number one goal of this plan. This bicycle and pedestrian plan will seek to create a more balanced transportation system, by providing individuals with more travel options, and in the process make our communities more attractive and pleasant places for living and working.

SCOPE OF STUDY

Nearly 100 million people in the United States own bicycles. The Bicycle Federation of America estimates that fewer than five percent would qualify as experienced or highly skilled bicyclist. Since the policy goal is to accommodate existing bicyclists and encourage increased bicycle use, there will be more novice riders than advanced bicyclists using the highway system. Therefore, any roadway treatments intended to accommodate bicycle use must address the needs of both experienced and less experienced riders. One solution to this challenge is to develop the concept of a "design cyclist" and adopt a classification system for bicycle users such as the following:

- <u>Group A Advanced Bicyclists:</u> Experienced riders who can operate under most traffic conditions, they comprise the majority of the current users of collector and arterial streets and are best served by the following:
 - Direct access to destinations usually via the existing street and highway system.
 - The opportunity to operate at maximum speed with minimum delays.
 - Sufficient operating space on the roadway or shoulder to reduce the need for either the bicyclist or the motor vehicle operator to change position when passing.
- <u>Group B Basic Bicyclists:</u> These are casual or new adult and teenage riders who are less confident of their ability to operate in traffic without special provisions for bicycles. Some will develop greater skills and progress to the advanced level, but their will always be many millions of basic bicyclists. They prefer:
 - Comfortable access to destinations, preferably by a direct route; either low-speed, low traffic-volume streets or designated bicycle facilities.
 - Well defined separation of bicycles and motor vehicles on arterial and collector streets or separate bike paths.
- <u>Group C Youth Riders:</u> Young bicyclists ride very short distances but their lack of other transportation options means they often ride daily, where other types of riders may limit their bicycling to weekends. Children have all the confidence of adult riders, but lack their skill and knowledge of traffic.

- Trip lengths tend to be very short, often averaging well below 2 miles, and they ride for a variety of utilitarian purposes (nearby parks, to the convenience stores, or to friend's homes), as well as for recreation.

According to the American Association of State Highway Transportation Officials (AASHTO), bicycle safety education, training, encouraging bicycle use and the application and enforcement of the rules of the road as they pertain to bicycle use and the application and enforcement of the rules of the road as they pertain to bicyclists and motorists should be combined with facilities to form a complete comprehensive approach to bicycle use. The majority of bicycling will take place on ordinary roads with no dedicated space. Bicyclists can be expected to ride on almost all roadways, though sometimes they use sidewalks as joint bicycle and pedestrian facilities.

Most of the local streets in the city have adequate width and low traffic volumes that are not a particular problem for bicycling. However, most of the arterials and major collectors are operating at higher traffic volumes. The emphasis of this plan is placed on the design bicyclist and location of bike facilities utilizing selected collector and arterial streets. The next objective is to establish bicycle routes to serve corridors not served by streets (most commonly along creeks, canals, utility right-of-way, abandoned railroads on college campuses and between parks). Facilities are only one of several elements essential to the Montgomery Study Area overall bicycle and pedestrian plan. Bicycle safety education and training, bicycle use encouragement, and enforcement of the rules of the road are also necessary to form a comprehensive community approach to bicycle use.

METHODOLOGY

The MPO planning staff, traffic engineers, civil engineers, and the Montgomery Bicycle Club identifies bicycle and pedestrian route friendly roadways and solicits comments from the Citizens Advisory Committee, Technical Coordinating Committee (TCC), Metropolitan Planning Organization (MPO), and the general public. This procedure ensures that all interested stakeholders have a role in the formulation of the new bicycle and pedestrian plan.

Being that the MPO Study Area does not have an existing bicycle/pedestrian network, the MPO planning staff is going to take the simple approach by assigning route signs throughout the Study Area. The proposed bicycle and pedestrian routes include some planned projects to be implemented in conjunction with other transportation improvements on a particular road, as well as some individual routes.

The MPO planning staff met to discuss the strategy for the creation of the first bicycle and pedestrian plan for the MPO Study Area. Once the plan is implemented the process for updating and maintaining it will operate from the 3-C's process (Continual, Cooperative, and Comprehensive), to ensure that the plan is carried out in a progressive manner.

Routes are identified by location and trip attractors. Some of the bicycle routes are planned in conjunction with road projects in the Transportation Improvement Program. Although the proposed routes comprise a network, they can be self – contained with connections to other routes at major intersections. The feasibility of those connections should be studied further in order to assure a safe, efficient, and contiguous network. Often specific traffic control measures will be necessary to connect the routes as well as to cross the more heavily traveled arterials.

MAJOR BICYCLE AND PEDESTRIAN GENERATORS

The vision is for the Montgomery Study Area to be a model bicycle and pedestrian community. The bicycle and pedestrian plan will feature linked, safe, appropriate, and aesthetic facilities for bicyclists and pedestrians, a community-wide program of education concerning the laws governing motorized and non-motorized travel, and the coordination of bicycle and pedestrian activities with planning and public safety officials.

A basic strategy for encouraging bicycle and pedestrian transportation is to create a bicycle network that provides safe and direct access from people's homes to places that they want to go on a daily basis. Bicyclists and pedestrians will be less inclined to ride or walk without adequate and safe corridors on which to travel. The MPO planning staff, traffic engineers, civil engineers, and the Montgomery Bicycle Club identified and located major bicycle and pedestrian generators along roadways safe enough to travel in the MPO Study Area. Five major categories were identified: schools, parks, employment centers, cultural attractions and shopping centers to serve utilitarian and recreation trips. The map on the next page gives a picture of the major bicycle generators identified in the MPO Study Area.



BICYCLE AND PEDESTRIAN PLAN GUIDELINES/PERFORMANCE CRITERIA

Performance criteria define the important qualitative and quantitative variables to be considered in determining the desirability and effectiveness of a bicycle and pedestrian facility network. These can include:

- <u>Accessibility:</u> This is measured by the distance a bicycle facility is from a specified trip origin or destination, the ease by which this distance can be traveled by bicycle, and the extent to which all likely origin and destinations are served. Some communities have adopted a criterion of having a bicycle facility within 1 mi (1.61 km) of every residence. More importantly, no residential area or high priority destination (schools, shopping centers, business centers, parks) should be denied reasonable access by bicycle.
- <u>Directness</u>: Studies have shown that most bicyclists will not use even the best bicycle facility if it greatly increases the travel distance or trip time over that provided by less desirable alternatives. Therefore even for group B/C bicyclists, routes should still be reasonably direct. The ratio of directness to comfort/perceived safety involved in this tradeoff will vary depending on the characteristics of the bicycle facility (how desirable is it?), its more direct alternatives (how unpleasant are they?), and the typical user's needs (in a hurry? Business or pleasure trip?).
- <u>Continuity:</u> The proposed network should have as few missing links as possible. If gaps exist, they should not include traffic environments that are unpleasant or threatening to group B/C riders, such as high volume or high-speed motor vehicle traffic with narrow outside lanes.
- **<u>Route Attractiveness</u>**: This can encompass such factors as separation from motor traffic, visual aesthetics, and the real or perceived threat to personal safety along the facility.
- **Low Conflict:** The route should present few conflicts between bicyclists and motor vehicle operators.
- <u>Cost:</u> This would include the cost to both establish and maintain the system.
- <u>Ease of Implementation</u>: The ease of difficulty in implementing proposed changes depends on available space and existing traffic operations and patterns.

BICYCLE ROUTE CRITERIA

Each of the bicycle routes selected was examined and evaluated by the MPO Planning Staff to assess the safety and functionality of each proposed bicycle route. In accordance to Federal Highway Administration (FHWA) publication, "Selecting Roadway Design to Accommodate Bicyclist", the following criteria were used in the evaluation process:

- <u>**Traffic Mix:**</u> The regular presence of trucks, buses and RV's traveling at more than 30 mph can increase risk and have negative impacts on comfort for bicyclists. At high speeds, the wind blast can create the risk of serious falls. Many bicyclists will choose a different route or not ride at all where there is a presence of such traffic.
- <u>On Street Parking</u>: The presence of parking causes some of the most difficult problems for the provisions of bicycle facilities. The FHWA recommendations for bicycle facilities include additional width for situations where parking exists on bicycle routes.
- <u>Average Motor Vehicle Operating Speed:</u> The average operating speed of motor vehicles may have no relation to the posted speed. Drivers typically drive at speeds that feel comfortable to them without the safety considerations of the bicyclists or pedestrians. Motor vehicle speed can have a negative impact on comfort and risk unless mitigated by special design treatments. The greater the differential between operating speeds of bicyclists and motor vehicles, the greater the danger to the bicyclists and the greater the need for additional width to accommodate both types of users.
- <u>Sight Distance</u>: Inadequate sight distance relates to situations where bicycles are being overtaken by motor vehicles and where sight distance is likely to be less than needed for a motor vehicle operator to either change lane positions or slow to bicyclists speed. Sight distance can be restricted by horizontal or vertical curves, vegetation, parked vehicles and signs.
- <u>Average Annual Daily Traffic Volume</u>: Higher motor vehicle traffic volume represent greater potential risk for the bicyclist. High traffic volumes decrease the likelihood that beginning and child bicyclists will choose to use a bicycle for transportation. Routes are chosen to minimize travel on high travel streets in preference of quieter residential streets for this group of bicyclists.
- <u>Shoulders:</u> Shoulders should be at least 4 feet wide to accommodate bicycle travel. However, where 4-foot widths cannot be achieved, any additional shoulder width should not include the width of a gutter pan, unless the pan is 4 feet or greater. Shoulder width of 5 feet is recommended from the face of the guardrail, curb or other roadside barriers.

- <u>Lane Width:</u> Wide curb lanes for bicycles are usually preferred where shoulders are not provided, such as restrictive urban areas. On highway sections without designated bikeways, an outside curb lane wider than 12 feet can better accommodate both bicycles and motor vehicles in the same lane and thus be beneficial to bicyclist and motorists. In general, 14 feet of usable lane is the recommended use in a wide curb lane. On stretches of roadway with steep grades where bicyclists need more maneuvering space, the wide curb should be wider where practical. At least 15 feet is considered to be preferred.
- <u>**Bike Lane Width:**</u> The recommended width of a bike lane is 5 feet from the face of the curb or guardrail to the bike lane strip. For roadways with no curb and gutter, the minimum width of a bike lane should be 4 feet. Where parking is permitted but a parking stall is not being utilized the shared area should be at least 11 feet, and without curb face 12 feet adjacent to a curb face.
- <u>Grades on Bicycle Paths:</u> Grades greater than 5 percent are undesirable because the ascents are difficult for many bicyclists to climb and descents cause some bicyclists to exceed the speeds at which they are comfortable and competent. As a general guide, the following grade lengths are suggested:

5-6%	For up to 800 ft	9% For up to 200 ft
7%	For up to 400 ft	10% For up to 100 ft
8%	For up to 300 ft	11% For up to 50 ft

BICYCLE ROUTE MAINTENANCE

Many bicycle hazards are due to poor roadway maintenance. Debris that collects within a bicycle route, for example, renders the route useless for bicyclists, who must swerve into the travel lane to avoid the obstacle (and may simply continue to ride in the travel lane so as not to be suddenly faced with another hazard on the bicycle route). It is highly recommended that the responsibility for maintenance and management of a bicycle facility be planned prior to construction. The following practices are recommended for the Montgomery Area MPO Study Area:

- Maintenance programs should include the edges and shoulders of roadways. Bicyclists are greatly affected by debris along the roadside, therefore higher priority should be given to streets or routes with designated bicycle facilities. In some cases, it may be necessary to adjust maintenance schedules to provide more frequent sweeping and debris removal for bicycle lanes and bicycle routes.
- Pavement markings should be highly visible and should be replaced when they fade. Pavement markings on bicycle and pedestrian facilities should be painted with nonskid marking materials. Repainting of crosswalks and pavement symbols should be included in the standard repainting schedule.
- Maintenance should be provided on a regular basis for on-road (bike/ped) routes and sidewalks. Trail sweepings will be needed on a regular basis during autumn months, and mowing will be necessary during the growing season. In areas prone to collecting water after a hard rain, maintenance may be needed to remove silt or debris. Particularly for asphalt trails, edging will be needed in order to prevent cracking or crumbling. Potholes and pavement cracks should be repaired with patches that are even and level with the surrounding pavement. Tree and shrub clearing should provide a minimum of 8 ft vertical clearance and 3 ft horizontal clearance for on-road and off-road bicycle routes/lanes and sidewalks.
- Major repairs to bikeways and sidewalks should be programmed into the local Capital Improvements Program or the local/State Transportation Improvement Program. These facilities should be inspected by local municipality staff once per year to identify areas in need of major improvements.

TYPES OF BICYCLE AND PEDESTRIAN FACILTIES AND GUIDELINES

BICYCLE LANES

Bicycle Lanes in the Montgomery Area MPO Study Area shall conform to the standards in the American Association of State Highway Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities (1991). Bicycle lanes are an on-road facility type. They should not be separated from other motor vehicle lanes by curbs, parking lanes, or other obstructions. General standards for width, striping, and intersections are provided as follows:

Location and Use: Bicycle lanes serve the needs of basic and child cyclists in urban and suburban areas, providing them with their own travel lane. Bicycle lanes are always located on both sides of the road (except when they are constructed on one way streets). By this design cyclists are encouraged to follow the rules of the road, which require them to travel in the same direction as adjacent motor vehicle traffic. Bicycle lanes should be installed on the right-hand side of one-way streets, unless conflicts can be greatly reduced by installing the lane on the left-hand side.

<u>Width:</u> The minimum width of bike lanes should be 4 ft, exclusive of the gutter pan. Gutter pan width is not included in the usable width of the bike lane, since the seam between the pan and the street surface creates a hazard for bicyclists. On roads with parallel parking, bike lanes should be installed adjacent to the motor vehicle lanes, rather than between the parking lane and the curb. Along streets in the Montgomery Area MPO Study Area with higher traffic volumes, wider bike lanes are recommended.

Pavement Quality: Bike lane pavement and sub-base should always have the same depth and quality as the adjacent roadway. Bike lanes are not required to have curb and gutter.

Signage: The Manuel of Uniform Traffic Control Devices (MUTCD) specifies standard signage for bicycle lanes. Proper signage is appropriate to call attention to motorist so that cyclists will be recognized and so that motorist will not travel in bike lanes.

Striping: Bicycle lane stripes should be solid, 6 inch wide white lanes. Care should be taken to use pavement striping that is skid resistant. Bicycle-shaped pavement symbols and directional arrows should be placed in the bicycle lane to clarify its use. Pavement letters that spell "ONLY BIKE" are also highly recommended. Symbols should be installed at regular intervals, immediately after intersections, and at areas where bicycle lanes begin.

Intersections: Bike lane striping at intersections is challenging. Traffic has a tendency to mix at intersections: motorists who are turning right must cross paths with cyclists who wish to continue straight, and cyclists who wish to turn left must cross into left-handed

turn lanes. Several intersection striping patterns are provided by AASHTO's Guide for the Development of Bicycle Facilities (1991) and the MUTCD.

Signal Actuation: For new bike lanes, the signal actuation system should be modified to ensure the traffic light will respond to the presence of a bicyclist.

<u>General Design Issues:</u> Minimum traffic volumes: Providing bicycle lanes on very quiet residential streets may not accomplish much. To most Group B and C bicyclists, the primary benefit of bicycle lanes is to give them space where they feel a lower level of threat from passing motor vehicle traffic. If there is little such traffic, the facility may not be seen as serving a purpose.

PAVED SHOULDERS FOR BICYCLE USE

Paved roadway shoulders are not only an excellent way to accommodate bicycles; they are also beneficial to the motoring public. Paved shoulders eliminate problems caused when the pavement edge begins to deteriorate-therefore extending the life of the road surface and requiring less maintenance. Paved shoulders also provide a break-down area for motor vehicles.

State law in Alabama prohibits use of the shoulder by a vehicle. This law should be modified to allow bicycle use of shoulders. In the interim, paved shoulders can be constructed in the Montgomery Area MPO Study Area but should not be designated for bicycle use with bicycle route signage or on official bicycle maps. For more on the status of this law, contact ALDOT's State Bicycle and Pedestrian Coordinator.

Location and Use: Paved shoulders for bicycles serve the needs of all types of cyclists in rural areas. In urban areas, paved shoulders may be preferable for Group A (advanced) cyclists on arterial roadways with high speeds (over 50 mph). Paved shoulders in rural areas have the additional benefit of providing an area for pedestrian use.

Width: Shoulders should be a minimum of 4 ft wide to accommodate cyclists, depending upon the speed and volume of motor vehicle traffic. Paved shoulders for bicycles can be designated according to the roadway cross sections for bicycle lanes, with the exception that no pavement decals or bicycle lane signage is used for paved shoulders.

Although 4 ft width is preferable, certainly any additional shoulder width is preferable to none at all. Shoulders that are 2-3 ft wide can improve conditions and are recommended in cases where 4 ft widths cannot be achieved. However, shoulders less than 4 ft wide should not be designated as bicycle facilities with signage or on official bicycle route maps. "Share the Road" signs would be acceptable in these locations, as they would serve to warn motorists of the likely presence of bicyclists.

<u>Pavement Quality and Maintenance</u>: As with bicycle lanes, paved shoulders should have the same pavement thickness and subbase as the adjacent roadway, and should be regularly swept and kept free of potholes.

Signage: Paved shoulders can be designated as bikeways by erecting standard bicycle route signs, if so desired (upon amendment of Alabama's conflicting motor vehicle code that prohibits shoulder use by vehicles). As described above, "Share the Road" signs may be installed on roads with paved shoulders that are less than 4ft in width.

OTHER ROADWAY IMPROVEMENTS

It is possible to marginally improve some roadways for bicyclists—particularly Group A riders—by providing as little as 2 ft (0.6 m) of usable riding surface to the right of the edge stripe. While this will not meet the design specifications necessary for a designated bicycle facility, it can provide an improved operating environment for both bicyclists and motor vehicles and will reduce the impact of bicycles on highway capacity.

This and other marginal roadway improvements should be considered when the opportunity arises and there is no other option—such as wider shoulder, a bike lane or wide curb lane—because of lack of space.

BICYCLE ROUTES

A bicycle route is a "suggested way" for a cyclist to get from on point of origin to a destination. Bike routes do not necessarily require physical improvements in order to accommodate bicyclists, given that they meet minimum safety criteria in their present condition (see below). Bike routes can be preferable for bicycling for a number of reasons including directness, scenery, less congestion and lower speed limits.

Location and Use: Bicycle routes may be used by all types of cyclists. In urban areas they are most often designated on residential streets with low traffic volumes, and are typically used to direct cyclists to a destination within the community, or to provide a through-route for bicyclists. In rural areas, bike routes are most often designated on roadways that are popular touring routes for recreational cyclists, or long-distance commuting routes for Group A cyclists.

Safety Criteria: A street does not necessarily have to be physically widened in order to be designated as a bicycle route. A road with standard 12 ft wide lanes (or less) can be designated as a bike route with the appropriate signage, given that each condition below is met:

• In its present state (or with planned improvements), the roadway sufficiently accommodates cyclists. The evaluation should take into account roadway width and traffic volumes. Candidate bike routes should have good sight distances and adequate pavement conditions. In addition, traffic should not regularly exceed posted speed limits.

- All bicycle hazards have been removed from the roadway or otherwise remedied, including unsafe drainage grates and angled rail-road crossings.
- The bicycle route is designated as one segment within an interconnected system of bicycle facilities.

Signage: Bicycle route signage should be used according to the standards in the MUTCD, which provides several choices in styles. Bicycle route signs should be placed at all areas where new traffic enters the roadway. The distance between signs should not be greater than two miles. In urban areas, it is helpful to include directional arrows and captions that indicate nearby destinations, particularly at intersections.

Bike Routes in Transitional Areas: Local governments will, in many circumstances, be faced with bike lane or paved shoulder facilities that terminate before they reach certain destination points. If conditions at these termini do not meet safety standards listed above, bike route signs are not recommended. A more appropriate solution would be to install "Share the Road" warning signs along the connecting routes, as warning to motorists that bicyclists are likely to use these streets.

PEDESTRIAN SIDEWALKS

Sidewalks are a critical need throughout the MPO Study Area. They not only encourage walking, but they also improve the safety of pedestrians. The safety benefits of sidewalks are well-documented: one study found that streets without sidewalks had 2.6 times more pedestrian/automobile collisions than expected on the basis of exposure, while streets with sidewalks on only one side had 1.2 times more pedestrian crashes. (Source: FHWA-RD-88-038,Knoblauch).

<u>Pedestrian Environments</u>: An individual's decision to walk is as much a factor of convenience as it is the perceived quality of the experience. Pedestrian facilities should be designed with the following factors in mind:

• Sufficient width

Sidewalks should accommodate anticipated volumes based on adjacent land uses, and should at a minimum allow for two adults to walk abreast.

• Protection from traffic

High volume and/or high speed (>35 mph) motor vehicle traffic creates dangerous and uncomfortable conditions for pedestrians. Physical (and perceptual) separation can be achieved through a combination of methods: a grassy planting strip with trees, a raised planter, bicycle lanes, on-street parallel parking, and others.

• Street trees

Street trees are an essential element in a high quality pedestrian environment. Not only do they provide shade, they also give a sense of enclosure to the sidewalk environment which enhances the pedestrian's sense of a protected environment.

• Pedestrian-scaled design

Large highway-scale signage reinforces the general notion that pedestrians are out of place. Signage should be seen by the pedestrian. Street lighting should likewise be scaled to the level of the pedestrian, instead of providing light poles that are more appropriate on high-speed freeways.

• Continuity

Pedestrian facilities are often discontinuous, particularly when private developers are not encouraged to link on-site pedestrian facilities to adjacent developments and nearby sidewalks or street corners. New development should be designed to encourage pedestrian access from nearby streets. Existing gaps in the system should be placed on a prioritized list for new sidewalk construction.

• Clearances

Vertical clearance above sidewalks for landscaping, trees, signs and similar obstructions should be at least 8 ft. In commercial areas and the Central Business District (Center of the City), the vertical clearance for awnings should be 9 ft. The vertical clearance for building overhangs which cover the majority of the sidewalk should be 12 ft.

• Conformance with national standards

Sidewalk design should be consistent with American with Disabilities Act (ADA) and/or American National Standards Institute (ANSI) requirements. Specific guidance is provided by the Architectural and Transportation Barriers Compliance Board's American's with Disabilities Act Accessibility Guidelines and by the Southern Building Code.

Traffic Calming: Still relatively new to the United States, widespread neighborhood traffic calming aims to reduce the dominance and speed of motor vehicles. Measures employed to achieve this include physical alterations to the horizontal and vertical alignment of the road and changes in priority. For example, speed humps, speed lumps, traffic tables, diverters, traffic islands, traffic circles, and sidewalk extensions have all been utilized to calm or tame traffic. In some areas of the City of Montgomery speed humps and lumps have been installed and also the Police department has purchased speed monitors that remind motorists of there speed when passing on roadways.

Traffic Calming was started as a means to reduce the impact of traffic in residential neighborhoods and around schools. During the 1980's the principles of traffic calming have been extended and are now being applied to major roads in urban areas.

Four key benefits have been attributed to traffic calming:

- An average one-third reduction in road accidents.
- A greater feeling of security, particular among vulnerable road users such as bicyclists and pedestrians.
- Reclamation of roadway space for non-traffic activities such as play and social interaction.
- Environmental improvements through landscaping and reduction in the intrusive presence of motor vehicles.

Much of the pioneering work in this field has been in Europe, particularly Germany and the Netherlands. In areas of traffic calming in both countries it is rare to see special facilities for bicyclists since many of the benefits of traffic calming-slower vehicle speeds, better driver discipline, less traffic, environmental improvement-directly benefit bicyclists, especially group B/C riders. The City of Mobile in South Alabama has installed many of these traffic calming devices throughout the City and have seen considerable improvements to the safety of bicyclist and pedestrians and continue to get requests for more of the traffic calming devices from citizens in the city.

Nevertheless, according to the Cyclists Touring Club in the United Kingdom:

Designed traffic calming schemes can inconvenience or even endanger cyclists. Balanced on two wheels and without the benefit of suspension, cyclists are particularly susceptible to changes in surface height and texture or may be put at risk by poorly considered road narrowing.

Careful design of traffic calming schemes can overcome these potential pitfalls and ensure that the benefits of such work encourage bicycling and make the activity safer.

BICYCLE AND PEDESTRIAN SAFETY EDUCATION

Safety is an essential element of bicycle planning. Nationally, around 800 bicyclists die annually. Almost all serious injuries involve motor vehicle collisions. In a study of emergency room treatments for bicycle related injuries, over 85% resulted from motor vehicle collisions.

GOALS, OBJECTIVES, AND PERFORMANCE MEASURES

Goal 1. To develop bicycle and pedestrian education programs Objectives

- A. Create youth education programs to include the schools in the MPO Study Area.
- B. Develop and distribute educational brochures about bike and pedestrian activities.
- C. Modify current drivers education courses to include bicycle and pedestrian aspects.

Performance Measures

- A. Number of new education programs in tri-county schools.
- B. Number of new education programs.
- C. Number of new brochures.
- D. Modification of driver education courses.

Goal 2. To increase local support for bicycle and pedestrian activities Objectives

- A. Maintain and expand youth and adult education programs.
- B. Develop additional bicycle and pedestrian community activities.
- C. Aid in establishing and maintaining bike and pedestrian organizations.

Performance Measures

- A. Number of education programs.
- B. Number of related community activities.
- C. Number of new related organizations.

Goal 3. To increase the number of bicycle and pedestrian trips Objectives

- A. Increase the number of bicycle and pedestrian facilities.
- B. Improve the quality of existing facilities.
- C. Educate bicyclists, pedestrians, and motorists of the laws governing all modes of transportation.
- D. Increase multi-modal linkages.

Performance Measures

- A. Number of new bicycle and pedestrian trips.
- B. New facilities (kilometers).
- C. Improvements to existing facilities.

D. Number of new multi-modal links.

Goal 4. To decrease the number of bicycle and pedestrian accidents Objectives

- A. Increase the number of bicycle and pedestrian facilities.
- B. Improve the quality of existing facilities.
- C. Educate bicyclists, pedestrians, and motorists of the laws governing all modes of transportation.
- D. Develop a system to report bicycle and pedestrian hazards.

Performance Measures

- A. Number of accidents.
- B. New facilities (kilometers and numbers).
- C. Improvements to existing facilities (kilometers and numbers).
- D. Existence of hazard reporting system.

Goal 5. To promote the change of local government policy so that consideration is given to non-motorized transportation in the development of the community.

Objectives

- A. Increase the support for bicycling and walking.
- B. Increase the community's awareness of the benefits of this type of development.
- C. Promote bicycle and pedestrian scale development.

Performance Measures

- A. Number of new bicycle and pedestrian trips.
- B. Number of new bicycle and pedestrian scale developments (% of total new development).

Goal 6. To promote the change of MPO policies so that bicycle and pedestrian projects are considered in the development of transportation projects. Objectives

A. Maintain a workable bicycle and pedestrian plan.

Performance Measures

A. Plan update at least every five years.

HEALTH BENEFITS OF BICYCLE AND PEDESTRIAN ACTIVITY

Bicycling and walking are two of the most popular forms of recreational activity in the United States. Though bicycling and walking are alternative modes of transportation, they too are healthy options as well. The health benefits of bicycling and walking include:

- Improves immune system function
- Improves psychological functioning
- Improves self-image
- Helps you lose weight
- Improves circulation
- Helps you manage stress
- Increases energy level
- Helps you fall asleep faster and sleep more soundly

Increased levels of bicycling and walking transportation would result in significant benefits in terms of health and physical fitness, the environment, and transportation related effects. Research has shown that even low to moderate levels of exercise, such as regular bicycling or walking, can reduce the risk of coronary heart disease, stroke, diabetes and other chronic diseases; help reduce healthcare costs; contribute to greater functional independence in later years of life; and improve quality of life at every stage of life.

Bicycling and walking are easily accessible means of outdoor recreation and are alternative modes of transportation available to and appropriate for all segments of society. They offer significant health benefits while accommodating commuting, utilitarian, social, and recreational trip purposes.

BICYCLE PLAN IMPLEMENTATION PROCESS

<u>Recommendations</u>: In the past, bicyclist's needs were not adequately considered. Most planning and construction efforts, parks and roadways were often built without the simple considerations that would allow bicycles access and parking, causing bicycles to be excluded or hindered. To accommodate bicycles after construction often requires costly retrofitting, sometimes resulting in a non-standard and inferior design solution.

Since bicycles are legal vehicles that have economic, environmental, economical and societal benefits, all arterials and collectors are part of the bicycle transportation network. Therefore it is important to slowly institutionalize bicycle transportation into all roadway, transportation design, planning, construction manuals and recreation facilities by considering the following recommendations:

- All roadways not legally prohibited to bicycles should be considered for bike lanes.
- Establish a "check-off for bikes" procedure for all design and construction planning of roadways, subdivisions, parks and greenways, with review by the MPO Planning Staff for bicycle access and travel continuity as part of construction projects in the Montgomery Area Long Range Transportation Plan and the Transportation Improvement Program.
- Design and construction standards codes for roadways for the Montgomery MPO Area should be revised to accommodate bicycle use.
- Consider that all transit buses install bike racks on buses to accommodate bicyclists and to increase bicyclist mobility. Currently the City of Montgomery has on order 7 new 30 foot low floor transit buses that will have bicycle racks on them that will accommodate two (2) bicycles per bus making multimodalism possible.
- Require that all public facilities and events have bike racks installed for parking.
- Encourage that bicycle racks be installed at all major retail shopping centers.

Studies have shown that new developments will benefit from well-designed transportation facilities that include bicycles and pedestrian facilities. A 1998 national survey of 2,300 recent or potential buyers found that 93% want quite, low traffic conditions, 77% want ample open space, and 74% want walking and biking paths. Developers could be provided incentives to provide bicycle facilities.

FEDERAL FUNDING SOURCES

- **A.** Surface Transportation Program. This program allows funds to be used on bicycle and pedestrian transportation projects if State and MPO approval is given. A subcategory of this program is the Enhancement Grant funds. All local governments are eligible for the program but must submit a grant application that will compete with others from around the state. The grants are limited to projects that are related to transportation.
- **B.** National Highway System Program. This program allows funds to be used on bicycle and pedestrian transportation projects if State and MPO approval is given.
- **C.** Federal Transit Administration. These funds could possibly be obtained to provide bicycle and pedestrian safety programs.
- **D.** Community Development Block Grants. Municipalities and County governments within the MPO Study Area would have to prepare a grant application for a specific bicycle or pedestrian project and then compete with other governments for funding. The City of Montgomery and the City of Prattville, as entitlement cities, receives a set amount of these funds every year. The two cities have the option to use CDBG funds for bicycle or pedestrian projects.

LOCAL FUNDING SOURCES

- **A.** The Montgomery Bicycle Club has identified itself as a funding source for bicycle route signage projects.
- **B.** Bikeways and walkways can be funded utilizing existing financial resources within MPO member jurisdiction's Capital Improvement Plans/Programs.
- **C.** In addition, certain bikeway improvements may be acquired through donations, dedications, or easements from private sources.

STRATEGY

This section of the plan contains projects. These projects, if implemented, should achieve the objectives, goals, and vision of the plan.

Project Area One

BICYCLE ROUTE PROJECT SUMMARY

The following pages list the proposed bicycle projects for the development of bicycle facilities for use by bicyclists. The cost estimates listed in the spread sheets are for signed bicycle routes. However, the plan can be amended to include bicycle lanes, paved shoulders, or a combination of all three. Each project is identified by route number and color and shows up on map two (2) following the bicycle route summary spread sheets.

Table 1. Bicycle Route Project Summary

Suggested Estimated Route # **Road or Area Segment** Starting Point Ending Point Improvement Mileage Cost \$1,127 A-1 County Road 10 State Highway 14 US Highway 82 Signs 6.44 Signs A-2 County Road 10 US Highway 82 County Road 57 4.58 \$802 County Road 10 A-3 County Road 57 County Road 57 Signs 6.43 \$1,125 Signs \$1,388 A-4 County Highway 40 County Road 57 County Road 85 7.93 A-5 County Road 59 County Highway 40 State Road 206 Sians 7.94 \$1.390 A-6 Signs 3.45 County Highway 85 County Highway 59 US Highway 31 \$604 A-7 \$718 **Cromer Drive** US Highway 31 County Highway 40 Signs 4.10 A-8 County Road 85 County Highway 40 State Highway 14 Sians 3.44 \$602 A-9 County Highway 47 State Highway 14 4.70 \$823 County Highway 47 Signs A-10 \$382 County Highway 86 County Highway 47 US Highway 82 Signs 2.18 State Highway 14 A-11 Main Street County Line on SH-14 Signs 3.01 \$527 County Line on Main A-12 Main Street State Highway 14 Street Signs 2.23 \$390 A-13 McQueen Smith Road Main Street State Highway 14 Signs 1.35 \$236 E-1 Deatsville Road State Highway 14 County Line from SH-14 Signs 2.92 \$511 E-2 Deatsville Highway State Highway 14 County Highway 40 Signs 5.60 \$980 E-3 State Highway 14 \$599 County Road 3 Deatsville Highway Signs 3.42 State Highway 143 County Highway 7 State Highway 14 Signs \$1,295 E-4 7.40 E-5 State Highway 111 4.05 \$709 County Road 259 State Highway 143 Signs CR-23 from MPO E-6 County Road 23 Boundary State Highway 111 Signs 1.34 \$235 E-7 County Road 23 State Highway 111 State Highway 143 Signs 5.37 \$940 E-8 \$623 County Road 239 County Road 23 State Highway 14 Signs 3.56 E-9 US Highway 231 Signs State Highway 111 County Highway 259 13.16 \$2,303 E-10 County Road 228/088 State Highway 111 State Highway 111 Signs 7.35 \$1,286 E-11 Local Fort Toulose Road 2.62 \$459 Fort Toulose Road State Highway 111 Sians US Highway 231 M.C. \$868 E-12 State Highway 111 Signs 4.96 Jasmine Hill Road Line

E-13	County Road 8	US Highway 231	County Road 59	Signs	5.76	\$1,008
			County Road 4 MPO			
E-14	County Road 4	County Road 8	Boun	Signs	6.47	\$1,132
E-15	County Road 59	County Road 4	County Road 8	Signs	8.49	\$1,486
E-16	County Road 59	County Road 8	State Highway 14	Signs	3.62	\$634
E-17	State Highway 14	County Road 59	State Highway 111	Signs	3.63	\$635
E-18	State Highway 170	State Highway 14	County Highway 66	Signs	6.53	\$1,143
E-19	County Road 66	State Highway 170	County Road 209	Signs	4.38	\$767
E-20	County Road 209	County Road 66	County Road 211	Signs	3.83	\$670
E-21	County Road 211	County Road 209	US Highway 231	Signs	1.09	\$191
E-22	US Highway 231	County Road 211	State Highway 14	Signs	2.85	\$499
E-23	Coosada Road	State Highway 14	Coosada Parkway	Signs	4.45	\$779
E-24	Coosada Parkway	Alabama River Parkway	Coosada Road	Signs	3.24	\$567
E-25	Alabama River Parkway	State Highway 143	Montgomery County Line	Signs	2.97	\$520
E-26	Cobbs Ford Road	Elmore County Line	State Highway 143	Signs	3.09	\$541
E-27	Edgewood Dr	Cobbs Ford Road	State Highway 143	Signs	1.94	\$340
E-28	Coosada Road	State Highway 143	Coosada Parkway	Signs	2.50	\$438
E-29	Airport Road	Coosada Road	State Highway 14	Signs	3.01	\$527
E-30	Chapman Road	State Highway 143	Airport Road	Signs	0.98	\$172
E-31	Coosada Road	Airport Road	Coosada Parkway	Signs	1.24	\$217
E-32	Kennedy Ave	County Road 17	Coosada Road	Signs	1.11	\$194
E-33	State Highway 14	County Road 3	State Highway 143	Signs	3.30	\$578
M-1	Bell Street	Washington Ferry Road	Oak Street	Signs	0.89	\$350
M-2	Terminal Road	Air Base Blvd	Mobile Road	Signs	0.89	\$350
M-3	Fairview Ave	Air Base Blvd	Oak Street	Signs	1.01	\$398
M-4	Rosa L. Parks Ave	Edgemont Ave	Patton Ave	Signs	0.71	\$280
M-5	Rosa L. Parks Ave	Fairview Ave	West Jeff Davis Ave	Signs	1.33	\$524
M-6	Cloverdale Road	Edgemont Ave	Felder Ave	Signs	1.06	\$417
M-7	Fairview Ave	Norman Bridge Road	Narrow Lane Road	Signs	0.98	\$386
M-8	Felder Ave	Carter Hill Road	Perry Street	Signs	0.59	\$232
M-9	Perry Street	Felder Ave	High Street	Signs	1.00	\$394
M-10	High Street/Highland Ave	Perry Street	Lincoln Road	Signs	2.40	\$945

M-11	Lincoln Road	Highland Ave	Harrison Road	Signs	0.36	\$142
M-12	Harrison Road	Lincoln Road	Perry Hill Road	Signs	1.25	\$492
M-13	Decatur Street	High Street	Columbus Street	Signs	0.69	\$272
	Columbus St, Upper Wet Rd, Fg.					
M-14	Rd	Decatur Street	Vandiver Blvd	Signs	3.59	\$1,414
M-15	Vandiver Boulevard	Fairground Road	Lower Wetumpka Road	Signs	0.65	\$256
M-16	Cong. WL Dickinson Dr.	Biltmore Ave	Montgomery County Line	Signs	6.45	\$2,540
M-17	Biltmore Ave and Dalraida Pkwy	Federal Drive	Dalraida Road	Signs	1.58	\$622
M-18	Dalraida Road	Dalraida Parkway	Wares Ferry Road	Signs	0.44	\$173
M-19	Wares Ferry Road	Dalraida Road	Burbank Drive	Signs	2.78	\$1,095
M-20	Wares Ferry Road	Burbank Drive	Dozier Road	Signs	4.31	\$1,697
M-21	Wares Ferry Road	Dozier Road	Interstate 85	Signs	4.22	\$1,662
M-22	Old Pike Road	Interstate 85	Meriwether Road	Signs	6.26	\$2,465
M-23	Ray Thorington Road	Vaughn Road	Old Pike Road	Signs	4.37	\$1,721
M-24	Dozier Road	Wares Ferry Road	Montgomery County Line	Signs	0.76	\$299
M-25	Marlar Road	US Highway 80	Vaughn Road	Signs	4.45	\$1,752
M-26	State Highway 110	County Road 84	County Road 37	Signs	2.45	\$965
M-27	County Highway 2	County Road 37	Montgomery County Line	Signs	3.15	\$1,240
M-28	County Road 37	County Highway 2	County Road 40	Signs	3.52	\$1,386
M-29	County Road 40	County Road 37	County Highway 101	Signs	3.49	\$1,374
M-30	County Road 40	County Road 85	County Highway 101	Signs	4.51	\$1,776
M-31	County Road 85	County Highway 40	US Highway 231	Signs	7.00	\$2,756
M-32	County Road 101	County Road 40	US Highway 82	Signs	7.08	\$2,788
M-33	County Road 36	US Highway 82	Montgomery County Line	Signs	5.88	\$2,315
M-34	US Highway 82	County Road 101	US Highway 231	Signs	7.77	\$3,059
M-35	County Road 70	US Highway 231	County Road 61	Signs	8.35	\$3,288
M-36	Woodley Road	Mount Zion Road	County Road 70	Signs	5.85	\$2,303
M-37	County Road 39	Woodley Road	County Road 70	Signs	6.35	\$2,500
M-38	County Road 22	County Road 39	US Highway 231	Signs	2.61	\$1,028
M-39	US 231	County Road 22	County Highway 40	Signs	1.52	\$599
M-40	County Highway 40	US Highway 231	County Road 85	Signs	4.71	\$1,855
M-41	County Road 84	County Road 84	State Highway 110	Signs	4.55	\$1,792

Totals		oppor rrotampha rtoad	00 201	Cigito	356.13	\$112.749
M-59	Ripley St, Lower Wet. Rd, Ander.	Upper Wetumpka Road	US-231	Signs	8 92	\$3 512
M-58	Perry Street	Delano Ave	Felder Ave	Signs	1.36	\$536
M-57	Alabama River Parkway	North Boulevard	Montgomery County Line	Signs	3.66	\$1,441
M-56	County Road 27	County Road 23	US Highway 31	Signs	3.18	\$1,252
M-55	County Road 24	County Road 23	Montgomery County Line	Signs	6.37	\$2,508
M-54	County Road 23	County Road 24	US Highway 331	Signs	5.72	\$2,252
M-53	County Road 24	County Road 61	County Road 23	Signs	4.74	\$1,866
M-52	County Road 61	US Highway 331	County Road 65	Signs	9.27	\$3,650
M-51	County Road 18	Rd.	County Road 61	Signs	5.31	\$2,091
M-50	Burbank Drive	Atlanta Highway	Wares Ferry Road	Signs	0.75	\$295
M-49	Carmichael Road	East Boulevard	Woodmere Boulevard	Signs	0.75	\$295
M-48	Woodmere Boulevard	East Boulevard	Carmichael Road	Signs	1.23	\$484
M-47	Sagewood Dr	Old Creek Road	Woodmere Boulevard	Signs	0.27	\$106
M-46	Old Creek Road	Bell Road	Sagewood Drive	Signs	0.49	\$193
M-45	Narrow Lane Road	South Boulevard	Woodley Rd/County Rd 39	Signs	4.78	\$1,882
M-44	Woodley Road	Virginia Loop Road	Fairview Ave	Signs	5.07	\$1,996
M-43	Virginia Loop Road	US Highway 231	County Road 39	Signs	1.95	\$768
M-42	County Road 39	Virginia Loop Road	County Road 22	Signs	4.49	\$1,768

A = Autauga County E = Elmore County

M = Montgomery County



PEDESTRIAN PROJECT SUMMARY

This section of the plan contains projects. These projects, if implemented, should achieve the objectives, goals, and vision of the plan.

PEDESTRIAN PROJECT SUMMARY

The summary below list the proposed pedestrian projects for development to be used by pedestrians. The following projects are listed and shown on each individual map. All pedestrian projects are also shown by each individual municipality.

Map Number Three (3)

- Combined Sidewalk Project on Chapman Road and Main Street.
- Sidewalk Project on Grandview Road from Main Street to Sandtown Rd.
- Two Pedestrian Crosswalk Projects on Main Street.

Map Number Four (4)

- Wetumpka Riverwalk along Coosa River from Tuskeena Street to SR-14
- Sidewalk Project on Old Montgomery Highway from Fort Toulouse Rd to rear entrance of Wal-Mart Super Center.

Map Number Five (5)

• Upgrade Pedestrian Walk Don't Walk Signal Upgrades to Light Emitting Diodes (LED) with visible timer for crossing street.

Map Number Six (6)

- Montgomery Riverwalk along Alabama River from Powder Magazine Park to the
- Selma to Montgomery Historic Trail from the State Capitol on Dexter Ave to Montgomery Street to Mobile Street to Holt Street to West Jeff Davis Ave to Oak Street to Fairview Ave to U.S. Highway 31 to U.S. Highway 80 to the Montgomery MPO Study Area Boundary.
- Sidewalk Project on Bell Street from Molton Street to Overlook Park.
- Sidewalk Project on Narrow Lane Rd from Woodley Road to Fairview Ave









Sources Consulted For The Plan:

- 1. City of Huntsville Bikeway Plan, Huntsville, Alabama, September 2001
- 2. <u>Birmingham Area, Bicycle, Pedestrian, and Greenway Plan</u>, Birmingham, Alabama, October 1995
- 3. <u>Bicycle and Pedestrian Plan Element</u>, Mobile Area Transportation Study, Mobile, Alabama, May 2001
- 4. <u>Tuscaloosa Area Bicycle and Pedestrian Plan</u>, Tuscaloosa Area Metropolitan Planning Organization (MPO) FY 2002
- 5. <u>The National Bicycling and Walking Study</u>, Publication No. FHWA-PD-94-023, Federal Highway Administration, Washington, D.C., 1994
- W.C. Wilkinson, A Clark, B. Epperson, & R. Knobloch, <u>Selecting</u> <u>Roadway Design to Accommodate Bicycles</u>, Federal Highway Administration, Washington, D.C., 1994
- 7. <u>City of Mobile, Traffic Engineering Department</u>, Neighborhood Traffic Calming Program, 852 Gayle Street, Mobile, AL 36604
- 8. <u>Montgomery Bicycle Club</u>, PO Box 231116, Montgomery, AL 36123 Web Site Address: mgmbikeclub.org
- State of Alabama Department of Public Health, Division of Chronic Disease Prevention, The RSA Tower, 201 Monroe Street Suite 964 Montgomery, AL 36104
- 10. <u>City of Montgomery, Traffic Engineering Department</u>, 934 North Ripley Street, Montgomery, AL 36104
- 11. <u>Congestion Management Committee of the Montgomery Area</u> <u>Metropolitan Planning Organization</u>
- 12. <u>A Master Plan For The Elmore County Trail of Legends</u>, Elmore County, Alabama, November 1997

Montgomery Area MPO Resolution

To Adopt the Montgomery Study Area Bicycle and Pedestrian Plan

WHEREAS, the MPO planning staff prepared a Draft Montgomery Study Area Bicycle and Pedestrian Plan that was advertised in papers of area-wide circulation and draft copies were provided at various locations for 2-week public review (April 17-May 16, 2003);

WHEREAS, public comments and Advisory Committee comments were considered and incorporated into a revised Draft Montgomery Study Area Bicycle and Pedestrian *Plan*;

NOW THEREFORE BE IT RESOLVED that the Montgomery Area MPO adopts this *Plan* as submitted.

ADOPTED THIS THE 24th DAY OF SEPTEMBER, 2003.

Bobby N. Bright, Chairman

RES-05-2003