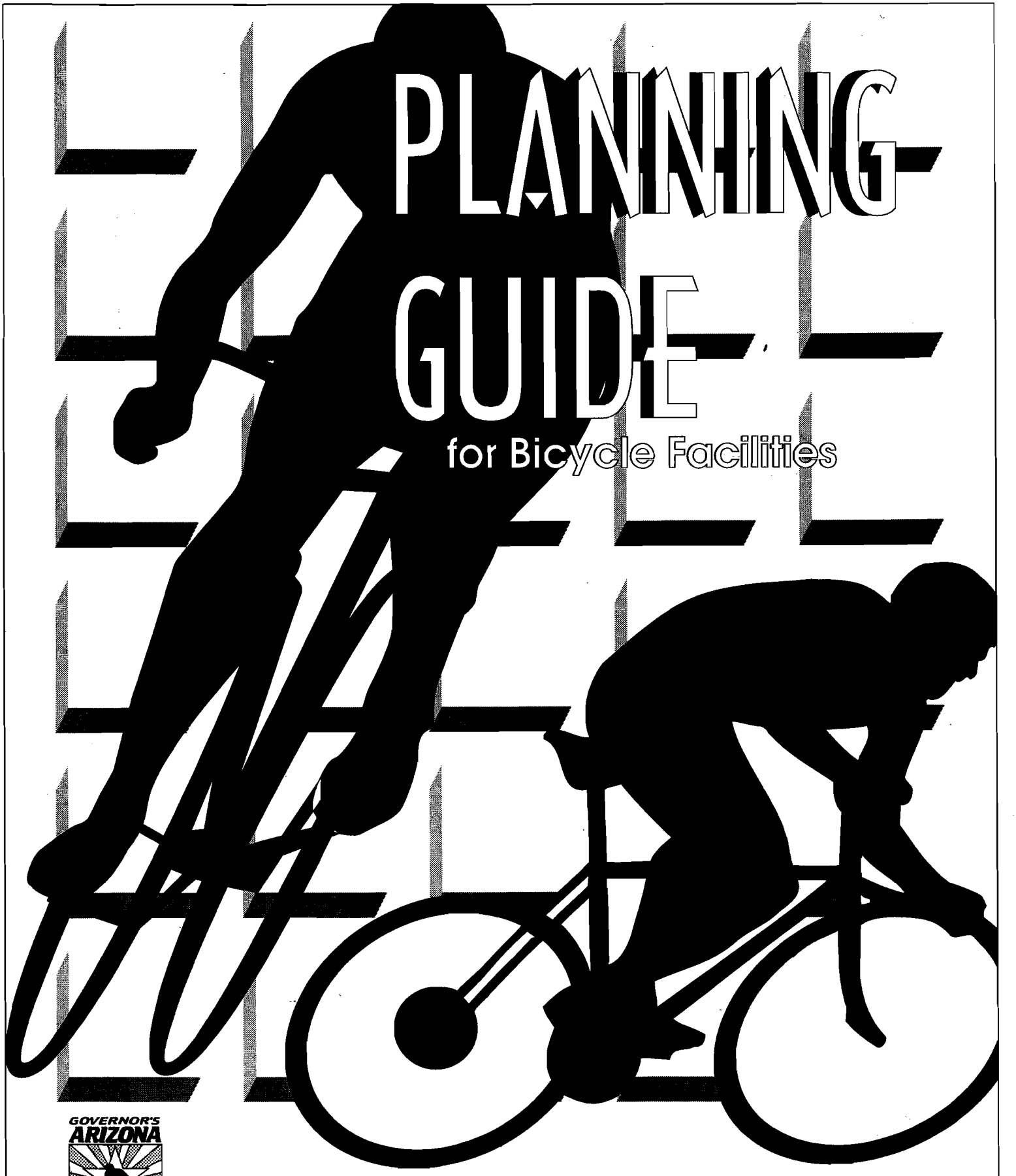
PLANNING GUIDE

for Bicycle Facilities



GOVERNOR'S ARIZONA BICYCLE TASK FORCE

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The Governor's Arizona Bicycle Task Force would like to acknowledge the following for their preparation of this guide: Florida Department of Transportation * Betty Drake, Drake & Associates * Bicycle Federation of America * Federal Highway Administration.

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INTRODUCTION

The purpose of this document is to assist local governments in developing a comprehensive bicycle facility planning program as a means to promote bicycling as a viable alternate mode of transportation. The following information will provide a step-by-step approach to the planning and implementation of bicycle facility programs in any Arizona community or jurisdiction.

BACKGROUND

Bicycling is a clean, efficient, and practical form of transportation that promotes personal health, reduces our dependency on oil, minimizes automobile traffic congestion and contributes to improved air quality and quality of life in our communities. Arizona communities can promote bicycling and its many benefits by creating a network of bicycle facilities designed with the same attention to safety and convenience that is routinely given to facilities for motorized travel. Provision of good facilities is perhaps the most important step in encouraging people to use bicycles for transportation.

By building bicycle-related improvements, policy, and programs into the comprehensive transportation planning process, land use and transportation systems will grow in ways that expand the range of choices available when people consider travel modes. It will become easy and comfortable to choose bicycling or walking for many trips. People will be able to walk or ride a bicycle to the bus stop, train station or airport and travel anywhere without using a private motor vehicle.

The end result of implementing comprehensive bicycle facility programs places bicycle transportation on a much more equal footing with other modes as a viable travel option. It removes many of the threats and penalties currently associated with bicycle use.

Bicycle facilities give bicyclists a good place to ride. They are the most important factor in encouraging people to take that critical first step of leaving the car in the garage and traveling under their own power.

DEFINING THE BICYCLIST

The Bicycle Federation of America estimates that there are close to 100 million people of all ages in the United States who own bicycles. Of this number, less than 5% qualify as "experienced" or "highly skilled" cyclists. Bicycle facilities must meet the needs of the other 95% as well.

As a general rule of thumb, a facility should be designed to accommodate the most restrictive conditions. If, for example, a facility is designed with the ample sight distances and large-radius curves associated with AASHTO-recommended design speeds (20 to 30 mph), it will be suitable for slower riders as well. It is better to have a broad, sweeping curve that anyone can ride, than a tight-radius turn that can only be negotiated by experts or at very low speeds.

Bicyclists vary far more widely than motorists in terms of age, skill levels and physical condition. It is important to understand the general types of bicyclists so their needs can be considered in development of programs and facilities. In defining bicyclist types, many factors must be taken into account: bicycling skill levels, traffic experience, knowledge of "rules of the road" and human factors such as those associated with age and disabilities. The following describes basic bicyclists types. (See Appendix A for chart)

Child Bicyclists

Children are not small grownups! Compared to adults, children have:

- A lower profile (35 to 40 inches above the ground, compared to 60-75 inches for adults, approximately).
- One-third narrower visual field.
- Difficulty detecting the source of a sound.
- Inability to judge closure speed.
- Overconfidence.
- Inability to read traffic signs (until ages eight to ten).
- A tendency to be restless (constant motion machines).
- Once in motion, children have a compulsion to complete that motion.
- A desire to copy behavior of adults (who are often poor role models).
- A basic lack of experience.
- Inability to recognize risk.
- Little perspective beyond their self-centered worlds.
- The belief that grownups will look out for them.
- Ability to focus on only one thought at a time.
- Inability to understand complex situations.
- A tendency to mix fantasy with reality.

Child bicyclists can be divided into two groups:

Ages 11 and under: Grade school-age kids usually stay pretty close to home on their bikes. They may ride to school or around the neighborhood, generally avoiding busy streets.

Ages 12 to 15: Teens and pre-teens often use bikes to assert their independence until that important day when they earn their drivers licenses. They range farther afield than younger children and often take greater risks in traffic.

Basic Cyclist Adults

These bicyclists can be of any age. They mostly ride for exercise and recreation but increasing numbers are "trying" a bike for transportation. Basic cyclists generally:

- Prefer well-defined separation of bicycles and motor vehicles. They will go out of their way to use low-traffic streets and off-street paths. They avoid riding on arterial and busy collector streets if at all possible, but would do so if generous painted lanes or shoulders are provided.

- Many basic bicyclists just don't feel safe on busy streets and will, instead, ride on the sidewalk. They don't always understand the hazards of sidewalk cycling and may lack the skills needed to deal with emergency situations. They may consider wrong-way riding acceptable (since pedestrians can use sidewalks for two-way travel), greatly increasing their risk.

- Basic bicyclists prefer reasonably direct access to destinations, but may go out of the way to use a low-volume street or designated bicycle facilities.

Many of these basic riders rapidly gain the experience and confidence needed to ride safely in more complex traffic situations. They develop a genuine interest in cycling and take it upon themselves to learn more. Their appreciation for hazards increases and their skill levels increase. They learn how to ride predictably and comfortably on most streets and their speed and range of travel increase. They prefer streets with painted bike lanes.

Other basic bicyclists, for various reasons, never do "move up." They are quite happy riding slowly, for pleasure, on off-street paths. They find quiet streets that take them to school, the store or other destinations by a scenic, "no-hassle" route. Many ride only occasionally or in a group with their children or friends.

Proficient Cyclists

"Proficient" cyclists have a healthy respect for motor traffic and are experienced enough to ride in all but the most adverse traffic conditions. They ride farther and travel faster than children or the basic cyclist. They generally prefer riding on streets or using on-street bicycle facilities (e.g., lanes or shoulders). These cyclists:

- Ride predictably.
- Ride responsibly, understanding and following all applicable traffic laws.
- Are adept at dealing with emergency situations.
- Can share the road effectively with motorists in almost all situations.
- Strongly prefer to use the most direct route to their destinations -- usually the existing street and highway system.
- Strongly prefer routes that allow them to operate at maximum speeds with minimum delays.
- Desire sufficient operating space on the roadway so neither motor vehicles nor bicycles need to change lanes when passing.

"Ride Anywhere" Adults

There will always be a "hard core" of avid, experienced cyclists who ride anywhere, under all conditions and live to tell the tale. Some of these are aggressive riders and feel they are not subject to the same rules and regulations as motorists. They may resist efforts to designate special facilities, considering these a restriction of their rights to use of the roadway. Included in this group are bicycle messengers, some club riders and other individuals.

Senior Adults

More and more older adults are taking up bicycling -- for exercise, socializing and basic transportation. As people age, changes take place that affect bicycling skills and safety. Although there is substantial individual variation, many older adults are limited in the following ways:

- reduced peripheral vision (by up to one-third).
- reduced head/neck rotation.
- greatly reduced night vision.
- reduced visual acuity, color range perception.
- may not be able to read all traffic signs.
- increase in time needed to focus on objects.
- reduced hearing (especially to the rear).
- slower movements.
- reduced short term memory.
- need to rest frequently.
- reduced tolerance for temperature extremes.
- increased problems with balance and stability.
- increased problems with steep grades, slopes.
- reduced ability to see contrasts.
- slow reaction times to emergency situations.
- greater risk of serious injury in crashes.

Not all these changes come at once. Aging is a gradual process and will vary greatly for each individual. If people stay physically and mentally active, many of the negative effects of aging can be reduced.

Senior adults generally prefer protected routes, away from traffic. They need reasonably direct access to key destinations (shopping, medical services, offices, recreation), since some have no other independent means of transportation. The design requirements of adult tricycles should be considered in facilities planning.

Disabled and Disadvantaged Bicyclists

The bicycle is a means for some people to achieve independence and mobility when they have few other options. The range of conditions characterizing bicyclists in this category is broad, and generally includes:

Temporarily Disabled - If a person has an illness or injury or is taking medicine that precludes driving a car, he or she may try the bicycle rather than rely exclusively on others to run errands, or provide transportation to medical appointments or to work.

Permanent or Long-Term Disabled - Some people have physical, mental or emotional disabilities that limit their ability to drive but are not sufficiently severe to make bicycling impossible. An example of this is people who cannot pass vision tests given with drivers' license exams.

Economic Disabilities - If people cannot afford a motor vehicle and the money to fuel and maintain it, the bicycle is often a good alternative.

Other Reasons - If a person's drivers license has been suspended or revoked, he or she may suddenly discover the advantages of bicycling. If a person's car is in the shop or repairs, a bicycle ride may be more appealing than a rental car. If a person's cultural or religious beliefs prohibit driving, alternative travel modes must be found.

FITTING THE FACILITIES TO THE USERS

Different types of bicyclists tend to prefer different types of facilities. There is overlap, but the following can be used as a general rule:

Proficient Cyclists

These cyclists will be best served by:

- Designing all streets and highways to accommodate shared use by bicycles and motor vehicles.
- Routinely providing striped shoulders or bicycle lanes on all urban highways, arterial and collector streets.
- Providing usable roadway shoulders on rural section roads.
- Applying motor vehicle speed limits to minimize speed differences between bicycles and motor vehicles where feasible (e.g., on collector streets).
- Implementing upgraded maintenance along streets and highways recommended for bicycle use and a systematic program of removing hazards and barriers.

Basic Cyclists, Children, Seniors and "Other" Cyclists

- Providing designated bicycle facilities (bike lanes and separate paths) that offer an alternative access to destinations otherwise served by arterial and collector streets.
- Providing roadway usable shoulders for low volume streets.
- Ensuring that residential neighborhood streets have low speed limits, effective speed controls, and good sight distance.
- Providing clear directional signage and signalized crossings at major streets.

OVERVIEW OF THE PLANNING PROCESS

Although there is no single model suitable for every community or region, a planning approach that is broad in scope taking into consideration all aspects of bicycle interest (commuting, recreational, touring etc.) is ideal.

The goal of course, is to increase bicycle use. As such, a supply-driven, as opposed to demand-driven approach, to providing bicycle facilities should be advocated. This is best described by the adage, "if you build it, they will come." The basic premise is that every street and highway on which bicycles are permitted should be "bicycle friendly" and should be designed and maintained to accommodate shared use by bicycles and motor vehicles by providing designated space for bicyclists. In order to accommodate this goal, a well defined comprehensive planning program is required.

A successful program will involve staff leadership and active citizen participation to assist in identifying the needs, constraints, and opportunities for a community. Most importantly, a successful program should be supported by local elected officials before the planning process is initiated. A successful bicycle facilities program should include the following:

Policy Documentation

- All appropriate planning and policy documents should address bicycling as a transportation mode and as a recreational enhancement. Bicycling must be an integral part of the planning process and recognized as an important element in a community's goals.

Citizen Bicycle Advisory Committees

- A formally recognized citizen based bicycle advisory committee should be formed to identify and address local bicycling concerns, policies, and actions. A citizen supported and policy directed advisory committee will enhance a bicycle friendly community.

Design Guidelines

- Bicycling should be included in all design guideline documents and integrated into the facility design process for transportation, recreation and open space developments and for major private sector development projects. Design manuals, specifications and other reference documents should be updated to include bicycle facility design guidelines.

- Bicycle design guidelines should be consistent with the American Association of State Highway Transportation Officials (AASHTO) guidelines, the "Arizona Bicycle Facility, Planning, and Design Guidelines Manual," and the Manual of Uniform Traffic Control Devices (M.U.T.C.D.) in order to develop safe and uniformly standardized bicycle facilities.

Capital Improvement Programs (CIP)

- A bikeways program should be identified as a specific element in the local transportation CIP.

- Bicycle improvement projects must be introduced early in the planning and design process, particularly for those projects that are located within proximity to all key destinations and trail linkages.

- Roadway policies mandating striped and signed bike lanes should be included for all new roadway construction projects. Bicycle facilities should also be part of utility, mitigation, restoration and other types of public works projects.

Zoning and City Codes

- The provision of bicycle facilities (on- and off-street) and related enhancements such as showers, lockers, and bicycle parking facilities, should be included in city codes and zoning materials to guide new development. Once adopted, these types of provisions must be strictly enforced.

THE PLANNING PROCESS

The purpose of bicycle transportation planning is to integrate the bicycle as a modal choice within the overall transportation system. The plan for doing this must be appropriate to the needs of each community considering safety, convenience and efficiency for bicyclists and motorists alike. Each Arizona community should incorporate a non-motorized transportation element into its overall transportation planning process. To develop this element, seven basic steps are involved:

- Defining issues, goals and objectives related to bicycle transportation.
- Analysis of existing facilities.
- Identification of bicycle traffic generators.
- Identification of opportunities and constraints affecting proposed facilities.
- Identification of alternate corridors.
- Selection of preferred corridors; development of policy, program and physical improvement recommendations
- Implementation program development; establish a method for evaluation and plan revisions.

To achieve this process, the role of public input cannot be underestimated. A significant public participation program at all stages of the process is strongly encouraged.

Planning recommendations should address both short-range and long-range improvements. The short-range plan should be specific and include a detailed look at how implementation will be carried out. The following discusses the steps necessary to prepare a Long-Range Bicycle Facility Plan and a Short-Range Implementation Plan. Steps include:

LONG-RANGE BICYCLE FACILITY PLAN

The Long-Range Bicycle Facility Plan is developed for a 10 to 20-year period assuming periodic updates or annual amendments. The following tasks are involved in a typical long-range planning process:

1. Organize the public planning process.
2. Identify issues and needs.
3. Define goals and objectives.
4. Inventory existing conditions - data collection.
5. Identify existing and potential users.
6. Identify opportunities and constraints.
7. Identify and define future bicycle travel corridors.
8. Define alternative corridors
9. Set priorities and select recommended alternatives.
10. Develop preliminary plan and implementation strategy.
11. Review and revise plan.
12. Adopt plan.
13. Review, evaluation and revision process.

SHORT-RANGE BICYCLE IMPLEMENTATION PLAN

The Short Range Implementation Plan defines specific strategies for implementation, scheduling, and cost for proposed bicycle facilities. The following steps are:

1. Prepare specific plans, design concepts and project budgets.
2. Develop phasing/implementation recommendations, and funding sources.
3. Adopt a program plan, identifying implementation responsibilities.
4. Develop evaluation procedure.

PART I - LONG RANGE BICYCLE FACILITY PLAN

1. Organize The Public Planning Process

Citizen participation must be an important, ongoing part of the planning process, from start-up to adoption. This process should involve both a technical team including staff, consultants (if appropriate) and a citizen task force or advisory committee and the community at large. All affected property owners, special interest groups and interested individuals must be involved in a meaningful, hands-on way. They should be considered as an important part of the planning team. Individual roles and responsibilities, and the entire planning process must be clearly defined.

It is important to establish good lines of communication and a trusting relationship between the planners and the public to answer questions and address issues and concerns in a timely way. Simply offering two or three public meetings is not enough in most cases. An educational session and written materials are useful as a way of bringing all participants to a relatively common level of understanding. Whenever possible, written materials should be distributed and/or mailed to the interested public participants so those not able to attend meetings can stay in touch and a record of information, discussion and actions is established.

Although it can take a great deal of staff or consultant time, meetings and work sessions with small groups are encouraged to supplement advisory committee meetings and large public hearings. Care should be taken to advise all interested parties of all meetings and to work with the public throughout the planning process. If the public is to support the plan and feel it had an impact on its development, there must be real opportunities for participation. A pro-active approach is strongly encouraged rather than a reactive condition.

An advisory committee (or task force) of citizens can play a key role in linking the public to the planners and helping craft a practical, supportable plan. The committee should include representatives from all user groups: bike clubs, recreation cyclists, bicycle commuters, mountain bicycling and racing groups, youth, seniors, representatives of other city commissions and councils, property owner groups, as well as non-bicyclists.

2. Identify Issues And Needs

Specific issues and needs will vary from community to community. The type of bicycle use may also vary, depending on the demographics of the community. The advisory committee can assist in identifying the issues and needs of the bicycling and non-bicycling communities.

As an example, an advisory committee working on a bicycle plan in northern Colorado recently held a brain-storming session that defined the following issues:

- Facilities do not link many major destinations.
- Lack of maintenance!!!
- Overpasses and underpasses are often dangerous.
- Need to take advantage of special opportunities for facilities on all viable corridors (some recreation paths can serve commuters too).
- Facilities are not continuous.
- Hazards and unsafe road segments need to be addressed.
- Signage is not standardized. It is confusing.
- Bicycles are not routinely considered in planning and design of new developments and city street construction projects.
- There are no good regional bicycling maps.
- There is a lack of political support for bicycle transportation.

These are just examples. The issues define all the problems that the planning process will need to address. Some are probably solvable (underpass and overpass design) and others may be difficult within the scope of the planning process. It is useful to identify the broad range of issues in this planning step, for use in definition of goals and objectives. The goals and objectives point the way toward solving the issue-related problems.

3. Define Goals And Objectives

Goals and objectives need to be developed in a structured manner and used as a guide for evaluating existing conditions, generating alternative strategies for improvements, and evaluating proposed strategies. Defined goals and objectives provide a built-in control mechanism to evaluate improvements once implemented.

There are four major areas, recognized as critical in the plan process that must be addressed. They are:

- Safety provisions.
- Bicycle access.
- Developing direct, convenient and interconnecting routes.
- Quality of path or roadway surface (maintenance, drainage, landscaping factors, etc.).

In developing the goals and objectives, several points should be kept in mind:

- Goals and objectives must relate directly to the issue-related problems and needs defined earlier, reflecting local conditions for bicycling.
- The actual selection and ranking of the goals and objectives should reflect a strong bicycle-user outlook while taking into account motorists and pedestrians.
- The process should allow feedback so that changes in use patterns, existing conditions and attitudes can be reflected as the plan develops and is implemented.

4. Inventory Existing Conditions - Data Collection

A current data base is essential in developing an understanding of the physical conditions related to bicycle use in a community. A typical data base should identify and analyze existing and potential users, and identify existing bicycle corridors. Major tasks include:

Collect socioeconomic and demographic information by geographic area.

- Population - distribution and characteristics.
- Labor force - resident and non-resident.
- Location and relative size/importance of destinations such as: shopping. centers, employment centers, schools, recreational facilities, commercial and public buildings.
- Travel mode splits available from 1990 Census information; any available bicycle usage information.
- Regional impacts on adjoining communities, counties or states.

Inventory existing and planned and physical roadway characteristics.

- Roadway surface, lane width, and condition; edge conditions (curb and gutter, grates, rumble strips, dots, dirt, weeks, ravelled paving, etc.)
- Right-of-way width.
- Shoulder width and type.
- Posted speed limit/actual speed limit .
- Average daily traffic volume/peak hour volumes.
- Significant truck or bus traffic.
- Number of lanes (through lanes, turn lanes, and parking lanes).
- Parking characteristics.
- Roadway grade and geometrics.
- Functional classification (type of roadway).
- Signalized crossings of major streets.
- Utilities (overhead and underground).
- Railroad crossings/canal bank interfaces.
- Striping plans and pavement management plans.
- Bridges and underpasses.
- Lighting.
- Signage and pavement markings.
- Existing and planned land use.
- Transportation plans.
- Topographic characteristics.
- Existing and planned parks, open space and greenways.
- Growth and development trends.
- Maintenance practices.

This information may be obtained through local engineering, traffic engineering, planning and parks/recreation offices. State transportation offices will have the data on state-designated routes.

Inventory existing, committed and planned bicycle facilities by type.

The inventory should include location of facilities and general design characteristics such as width, signage, condition, etc.

- Bike lanes.
- Bike routes.
- Wide curb lanes.
- Multi-use paths (paved and unpaved).
- Support facilities, e.g. bicycle parking (racks and lockers), bike on public. transit, and shower and locker facilities at public buildings and major employer sites.
- Intermodal opportunities (bike-bus, bike-train, bike access to park & ride, etc.).

Sources of information for this task include local planning or engineering offices, field observation, bicycle advisory committee members and area bicyclists.

Identify and describe constraints/barriers and opportunities for bicycle use.

- Natural barriers and opportunities include: hills, lakes, drainage canals, rivers, streams, landscaping, floodplains and others.
- Other barriers include freeways, bridges, airports, railroad grade crossings, utility poles, culverts, structures, properties prohibiting access or bicycle use, narrow roads, and others.

Survey bicycle-related accident information.

Accident data should be collected by type, location and nature of the crash, recognizing that approximately 10% of all bicycle-related crashes, are reported. All available information should be studied to determine actions and circumstances contributing to the crash, to assist in developing physical improvements, education recommendations, risk management strategies and other countermeasures. The Arizona Department of Transportation (ADOT) maintains records of police-reported crashes available at no cost to the public.

5. Identify Existing and Potential Users

Types of bicyclists vary widely from community to community. To develop a plan that responds effectively to local needs, both existing and potential bicyclists and the issues important to them must be identified during the planning process. To identify bicyclists, issues, attitudes and use patterns, a survey is often conducted. There are a number of approaches to the design of community bicycling surveys:

- **Written questionnaire.** Questionnaires to be mailed to the City or left at drop boxes at convenient location can be distributed through City water bills, publication in newspapers, availability at convenience markets, parks and recreation facilities, bicycle clubs, and events.

  Advantages: Written questionnaires can achieve a wide distribution through water bills at very little cost. Responses are subjective but will give a good idea of major issues, use characteristics and opinions for key bicyclist groups. Useful information is gained if the survey is carefully designed. The survey builds awareness of the planning process and can be used to build your mailing list for public meetings and workshops.

  Disadvantages: This type of survey does not reach some apartment dwellers, students, children and other key groups. It should, therefore, be supplemented with special distribution through retirement areas, college campuses and public schools.

- **Interview surveys** can be conducted by telephone, using random digit dialling for a sample of the general population.

  Advantages: Representative of the overall population, a statistically valid sample can usually be completed in less time than mail-in questionnaire surveys.

  Disadvantages: Can be expensive if a valid sample is desired. Since active bicyclists represent only a very small percentage of the overall population, the chances of getting much information on issues, use patterns and attitudes important to people presently using bicycles is fairly low. Surveys of this type generally focus on heads of households, so information about children and other special populations may not be obtained.

It is important to consider the use to which the survey information will be put. If the purpose is to gain information about the population as a whole and its attitudes about bicycle-related issues, then the telephone interview survey may be the way to go. If you are looking for information about where people ride, use characteristics, bicyclist attitudes and similar subjects, then the mail-in questionnaire may be more suitable.

Other alternatives include conducting cordon counts on key bicycling routes to measure bicycle traffic volumes and conducting interviews with bicyclists at events, along streets and other locations.

Most cities do not have a history of collecting data on bicycle use and bicycle-related issues. It will probably be necessary to carry out an original survey of some sort to gain this information unless you are content to rely upon previously published surveys from other cities.

Conducting a survey can create a strong link between planners and public, providing fresh insight that is useful in many aspects of the planning process. The information generated can be valuable in determining the location of different types of bicycle facilities, in pinpointing key destinations, identifying hazards and barriers, highlighting educational needs and many other planning elements.

6. Identify Opportunities and Constraints

This step represents a synthesis of the collected data and may involve collection of additional data. It is helpful to map the following factors:

- Major destinations/bicycle traffic generators.
- Existing and planned facilities by location and type.
- Analysis of roadway suitability for bicycle facilities.
- Existing and projected demand corridors.
- Physical barriers and hazards to bicycle travel.
- Special opportunities.
- Development trends and land-use factors.
- Socio-economic factors.
- Accident locations and characteristics.

For additional details, refer to Chapter Two: "Location and Selection Criteria," in the "Arizona Bicycle Facilities Planning and Design Guidelines" available through the Arizona Department of Transportation.

7. Identify and Define Future Bicycle Travel Corridors

Major origins and destinations of bicycle trips need to be identified in order to develop future bicycle travel corridors. Travel corridors illustrate the most direct routes between two points. This step is a conceptual process and is useful for prioritizing projects in a later stage of the planning process. The ultimate goal is a complete citywide system to provide a wide range of bicycle travel options, with linkages to adjoining communities and rural areas.

The major tasks in identifying origins and destinations are to:

- Identify trip producers (resident labor force, retirement areas, student population and trip attractors (places of employment, schools, universities, shopping areas, parks). The basic data associated with this task will have been collected in Step 6: Identify Opportunities and Constraints.
- Illustrate connections by drawing lines between bicycle trip producers and trip destinations, referred to as "travel corridors". Travel corridors identified can be non- roadway specific at first. In fact, they may cover several roads and are intended to represent broad travel movements.

It should be noted that quantitative demand forecasts for bicycle facility use are appropriate only where a bicycle facility will involve a substantial implementation cost, or where Environmental Impact Statements (EIS) or federal grant applications require an Alternative Analysis to qualify for funding assistance. Qualitative demand forecasts for bicycle facilities should be performed only for sensitive situations, because the cost of developing in-depth demand forecasts often exceeds the cost of signing or striping the roadway.

8. Define Alternatives Within Each Corridor

In order to analyze and prioritize proposed facilities, a series of alternatives should be defined within each general corridor. Within some corridors, there may not be more than one alternative; however, in others, several possible alternatives may be defined for further study.

As part of this step, criteria should be developed, along with a methodology for establishing priorities. These criteria should show how the alternatives do or do not meet the objectives established for the overall plan. See Appendix B for Bikeway Evaluation Sheet. The total number of miles per alternative should be tabulated to obtain a measure of the extent and service provided.

Cost is often a key criterion in evaluation, so the alternatives should be specific enough at this stage of the planning process to allow calculation of "order of magnitude" or relative costs, for comparison purposes. If this is not possible, general cost categories can be assigned, so alternatives can be ranked as involving "high", "intermediate" or "low" cost ranges. These ranges are defined according to improvement type, as follows:

Low Cost Improvements

- Signing and striping of bike routes; signing and marking other bicycle improvements and route characteristics.
- Restriping as a modification for bike routes.
- Signing of bike routes must consider issues such as: roadway width, traffic volume, speed, type of traffic, parking conditions, grade and sight distances.

Intermediate Cost Improvements

- Resurface streets and repaint stripes to create designated space for bicycles. A striped bicycle lane should be five (5) feet minimum width from curb and four (4) feet minimum width from the edge of the gutter pan. Edgeline striping, minimum 3 feet usable surface, is helpful to cyclists but should not be considered as designated space for bicyclists.
- Pave shoulders on each side of rural-type roadway.
- Construct ten-foot asphalt bicycle path with a two-foot clear distance.
- Provide bicycle parking improvements.
- Provide bicycle-sensitive signal loop detectors.
- Make bicycle-related improvements at railroad track crossings.
- Replace or retrofit parallel-slat storm drain grates.
- Make drainage and landscaping improvements along bicycle facilities.
- Increase maintenance and repairs.

High Cost Improvements

- Remove on-street parking and replace with off street parking.
- Widen roadway pavement and relocation of curb, gutter and sidewalk if present.
- Construction of separate paved bicycle path if beyond existing right-of-way.
- Build or retrofit bridges to accommodate bicycles
- Provide grade-separated crossings at major cross-streets or barriers.
- Make major drainage and sight distance improvements.

At this point, supplemental recommendations that support the proposed bicycle facilities can be drafted in preliminary form. Recommendations may include bicycle parking ordinances and design standards, facility design standards, engineering standards amendments, general plan amendments, policy and other responses to issues raised during the planning process.

9. Set Priorities and Select Recommended Alternatives

This step involves evaluation of the alternatives, using the criteria established in Step 8. It is important that the evaluation be systematic, explicit and well-documented. If the criteria and method of setting priorities are approved by the advisory committee and the evaluation process is open for review and discussion, planning recommendations are generally seen to be logical and based on reasonably objective analysis.

Based on this evaluation, a recommended alternative or set of alternatives can be defined. A summary of the priority-setting evaluation should outline the strong and weak points of the various alternatives and the reasons for the recommended selection.

10. Develop A Preliminary Plan and Implementation Strategy

This step focuses on determining which roadways, or rights-of-way, will become part of the identified bicycle system, or types of facilities to be built and general design approaches. Virtually all roadways should be available for bicycle use; however, some roads may need special treatment to improve conditions for bicycling.

The Preliminary Plan will summarize the analysis and information gathered to this point in the planning process. It will summarize key background data, goals and objectives, issues, corridors, alternatives, evaluation criteria, setting of priorities and recommended alternatives, improvements and program elements. The method used to arrive at the recommendations should be discussed, along with contributions made through public involvement.

In addition to recommending routes and physical improvements, the Preliminary Plan should address other elements of a comprehensive program dealing with education, encouraging people to ride bikes, enforcement and associated standards and policy direction. Recommended ordinance amendments, general and specific/area plan amendments, design standards and other "non-construction" plan elements should be documented and included in the recommended action plan.

An important part of the Preliminary Plan is a draft implementation strategy. Often neglected, this strategy is essential to making the leap from plan adoption to active implementation. Although elements of the strategy will vary to meet local needs, they may include:

- **Recommended Action Plan**

  This is a phased, shopping list of all planning recommendations: facilities, other physical improvements, policy, ordinance and plan revisions, education and enforcement program recommendations, advocacy and encouragement items -- all aspects of the comprehensive bicycle plan. It provides an overview of plan recommendations.

- **Recommended Expenditures**

  By phase, the costs of improvements and programs must be specified. Costs include not only capital improvements (design and construction) but also manpower, maintenance, operations and other elements.

- **Identification and Analysis of Funding Sources**

  The Plan should present a funding strategy that takes into account all possible public and private-sector resources. It should look at possible public/private partnerships. It should include potential application for grants, ISTEA funds and other monies, showing how the proposed projects fit criteria for funding. The structure of the plan should be reviewed in the context of funding options to make sure it addresses all required elements. Based on this analysis, a funding strategy should be recommended.

- **Coordination and Responsibilities**

  For each element of the Action Plan, the agency, department or other party responsible for carrying out the action should be designated. A specific framework for ongoing coordination should be recommended. Successful implementation of a bicycle plan involves many departments and agencies. Having a central coordinator with responsibility for implementation is essential.

- **Implementation Schedule**

  This schedule will be more detailed for early-phase projects than for long-range recommendations. It is useful to set a timeframe so annual reviews can assess progress and set goals for ongoing implementation efforts.

- **Plan Evaluation and Amendment**

  A schedule and method should be proposed for periodic updating of the plan and evaluation of plan implementation. Annual reports to the City Council or Board of Supervisors may be required, along with evaluation of facilities from risk management and user satisfaction perspectives.

11. Review and Revise The Plan

Once the plan has been prepared and reviewed by staff, appropriate department heads and the advisory committee, a series of public meetings should be scheduled for formal input and review. It is not nice to surprise the public at these meetings with unexpected recommendations and changes. By the time the plan gets to these formal hearings, all interested parties from bike clubs, affected properties, special interests and the public-at-large should know what's in the plan and have had ample opportunity to provide information and input.

If serious and substantive differences of opinion exist on plan recommendations, it is sometimes best to delay bringing the plan forward for decision unless consensus cannot be reached. In this case, the staff should present the plan in a form that represents the best possible solution and document dissenting opinions and alternatives in a supplementary report. Modifications to the plan can be made up to the final presentation to the City Council or appropriate governing body, but it is hoped that any final points-at-issue can be discussed in the public meetings and that the plan can be forwarded for final approval with the strong endorsement of staff, advisory committee and the public.

12. Adopt Plan

In order for potential bicycle improvement projects to qualify for federal funding assistance, they must be part of an adopted state and regional plan. Most regional plans use a composite of adopted, local general or comprehensive plan transportation elements. The local planning process is a critical "building block" for the regional plan and, therefore, for maximizing funding opportunities, facilitation implementation and political support.

13. Review, Evaluation, and Plan Revisions

All planning requires periodic evaluation and updates to ensure that policies and plan direction are consistent with a community's evolving development process. A bicycle facility plan is no different. Periodic review and evaluation help measure the plan's effectiveness and identify need for revisions. A plan should be updated every five years, with annual reports presented on implementation progress to the City Council.

PART II - SHORT-RANGE IMPLEMENTATION PLAN

A short-term implementation plan recommending actions over a five-year period is an important step in the planning and implementation process. This plan should be revised each year in conjunction with preparation of annual budgets and capital improvement programs (CIP).

1. Prepare Specific Plans, Design Concepts and Project Budgets

Based on recommendations in the Long-Range Plan, high-priority projects should be selected for more detailed planning and design. Specific routes, design specifications and other improvements should be developed, along with project budgets. It is a good idea to include ongoing public involvement during this step in the planning process. At this stage, the actual alignment, dimensions and design of the facility or other improvement take shape. People can really start to visualize the project and form opinions about it. Working through the advisory committee and key property owners and other interested citizens, the process can generally proceed smoothly.

2. Develop Phasing/Implementation Recommendations, Including Funding Sources

At this step, the person or department responsible for coordinating plan implementation, often within the Transportation (Public Works) Department must develop a detailed project phasing and implementation plan for integration into the Capital Improvements Program (CIP) and other city budget elements.

The Capital Improvements Program (CIP)

In the CIP, bicycle program projects are essentially treated like any other infrastructure element, such as lighting, drainage and street improvements. A CIP is typically developed for a five-year period and updated every year consistent with the budget fiscal period of the jurisdiction.

Bicycle projects within a CIP must include the following:

- A project scope or description.
- A schedule for improvements, identifying planning, design and construction start dates.
- A cost estimate.
- A funding source.

Three important points to keep in mind while developing strategies for implementation are:

- By including a bikeway program as part of the existing roadway capital improvement program, bikeway facilities then become recognized as an integral part of the transportation system and are more likely be implemented.

- Bikeway projects, such as shoulder improvements or bike lane construction, that are included as a part of major road improvement programs, road widening, or construction of new streets are excellent ways of developing or expanding a bikeway system. The fact is that, capital improvement projects are often shifted from one fiscal year to another, or eliminated all together, depending on the budget constraints, so it is important to identify priority bikeway projects and work in context with the CIP program.

- A prioritized list of bikeway projects should be developed as part of the recommendations developed during the bicycle planning process and refined as implementation programs proceed. An effective strategy is to have bikeway projects designed in advance, either in-house or with consultant services, so as to be able to take advantage of new funding sources or contingencies as they become available.

Other Implementation Strategies for Bicycle Facilities

Bicycle facility improvements can be implemented and funded using several avenues in addition to the CIP.

Bicycle improvements as part of other street projects: One effective method, with minimum cost, is to provide additional bicycle lanes as part of routine street resurfacing and restriping programs using funds through existing maintenance programs. Street improvement projects that require more extensive design and construction considerations may be funded with federal funds or other assistance. Projects using federal or state funding will often require coordination with the local or regional transportation improvement programs in order to be funded.

The bicycle advisory committee as a resource: Working with a local bicycle advisory committee on an ongoing basis can be a very effective way to assist in carrying out plan implementation and review. The advisory committee can form the basis for a constituency that will support the plan over the long term, helping gain political support, providing ideas and implementation resources and a sounding board when issues arise.

Adopting bicycle-related policy: A key to an effective bicycle implementation program is adoption of policy direction that addresses bicycle transportation as an integral part in the overall transportation system. With the appropriate policy direction there is a greater assurance that bicycle improvements will be included when roadway paving, widening, new developments, greenbelts and other improvement projects as they are being planned. If bikeway improvements are included early in these planning processes, overall costs can be minimized.

For example, the City of Tucson, "Major Streets and Routes Plan" is an adopted policy document with specific design policies requiring all new collector and arterial streets to include a minimum 17-foot wide outside curb lane.

The policy document indicates that the outside five feet are to be striped and signed for exclusive bicycle travel. This policy was established in 1986 and has contributed significantly to an extensive on-street network of bicycle facilities in the City of Tucson.

Other examples of policy recommendations include amendment of zoning ordinances to require bicycle parking provision, general and specific plan policy to encourage traffic-calming on neighborhood streets, mention of bicycle transportation requirements in subdivision ordinances and development processing documents; and incorporation of bicycle-related design guidelines into design review standards.

Private-sector involvement potential: The private sector can make significant contributions to a bicycle program, supplementing public investments. As a part of the plan review process, for example, developers can be required to provide public street improvements such as; bike lanes, sidewalks, bicycle parking and street lighting. Major employers can be encouraged to offer incentives for bicycle commuters such as bicycle parking, showers & lockers, subsidies and relaxed dress code. Private sector participation should be linked to adopted plans, policies and design standards for bicycle programs.

Explore all possible funding sources: There are a wide range of possible funding sources available, provided you know where to look. Appendix C provides an annotated summary of potential funding sources to assist in the development of bicycle facilities within a jurisdiction. Additional information can be obtained through local, state or federal transportation offices.

3. Adopt the Program Plan, Identifying Implementation Responsibilities

The plan must be accepted and adopted as the official guide for bicycle facility development on a local level. The plan should exist as an element in the overall transportation plan so that all regional and state planning will integrate their projects with it. Acceptance usually requires approval by the city council, planning commission, metropolitan planning organization and other appropriate appointed or elected officials. The plan must have the commitment of those responsible for its implementation. Each affected department or agency must have a clear understanding of its role and responsibilities and be willing to commit to the manpower, time, funds, facilities, equipment and resources needed to fulfill its part of the program.

4. Develop Evaluation Procedure

The need for periodic evaluation of the bicycle plan was documented in Step 12 of the Long-Range Plan. An evaluation procedure will help "fine tune" the program with feedback and modifications if necessary. The primary measures of success relate to:

- Level of use.
- Safety.
- Appropriateness of design and maintenance.
- User and community acceptance.
- Air quality benefit.
- Adequacy of traffic control features.

Data collection by bicycle traffic counts represents the most widely used component on any evaluation procedure. However, it is the historical trend rather than the single count which will be more reliable.

In the beginning of this document we spoke about the philosophy "build it and they will come." This holds very true for bicycle facilities. The easier it is for people to use their bicycles for errands, or the library, work socializing, shopping, visiting, exercise, family activity or recreation, the more they will choose to bicycle. Designated bicycle lanes, routes and paths create a "livable city."

APPENDIX A
Types of Bicyclists

	Destination	Range	Routes	Speed	Level of Confidence	Attitude Toward Traffic	Knowledge of Vehicle Code	Traffic Hazard Perception
Grade School Age	School Neighborhood	Up to 1 Mile	Sidewalks Residential Streets Dirt Trails Alleys	6-10 mph (Slow)	Low	Extreme Avoidance	Adequate	Poor
Middle School Age	School Neighborhood Shopping Recreation	Up to 2 Miles Some Night Riding	Sidewalks Residential Streets If No Sidewalks Will Use Collectors Sidewalks on Arterial	6-12 mph (Moderate)	Moderate	Moderate Avoidance	Adequate	Fair
Basic Cyclist Adult	Neighborhood Shopping Recreation Work	Up to 3 Miles Night Riding	Neighborhood Streets On and Off Sidewalks On Collectors Arterial	8-15 mph (Moderate)	Moderate	Some Avoidance	Good	Good
Proficient Cyclist	Same Destinations As Novice Adult	Over 6 Miles Night Riding	Collectors and Arterial Off Sidewalks	18-22 mph (Fast)	High	Little Avoidance	Good	Excellent
Seniors	Neighborhood Shopping	Up to 2 Miles	Neighborhood Streets Sidewalks on Arterial and Collectors	6-9 mph (Slow)	Moderate	Extreme Avoidance	Adequate	Poor
"Other"	Anywhere	Over 10 Miles	Main Roads at All Times	18-30 mph (Fast)	Extreme	Get Outta My Way	Good	Fair to Good

APPENDIX B
BIKEWAY EVALUATION WORKSHEET

Roadway Segment_____ Functional Classification_____

Existing Bikeway Designation_____

ROADWAY CHARACTERISTICS	COMMENTS
Speed	
Volume (ADT)	
Trucks/Buses	
Lane Width	
Pavement Width	
Number of Through Lanes	
Turning Lane Width	
Parking Characteristics	
Shoulder Width and Type	
Percent Grade	
Existing Sidewalks	
Existing Utility R/W	

LOCATION CRITERIA	RECOMMENDED	OPTIONAL	POTENTIAL	
FACILITY TYPE				COMMENTS
Bike Lane				
Paved Shoulder				
Edge-line Striped Lane				
Wide Curb Lane				
Bike Path				
Bicycle Route				

SERVICE DEMAND PRIORITY ___ (HIGH) ___(LOW)

CONTINUITY TO INTERCONNECTING SYSTEM ___(HIGH) ___(LOW)

RECOMMENDATIONS

APPENDIX C
Summary of Potential Funding Sources

FEDERAL

ISTEA - The Intermodal Surface Transportation Efficiency Act of 1991

ISTEA represents a significant opportunity for improved State and local bicycle and pedestrian programs. Each State is required, under ISTEA, to develop transportation plans and programs that provide for inclusion of pedestrian walkways and bicycle transportation facilities as part of an intermodal State transportation system. Each metropolitan planning organization (MPO) is similarly required to develop transportation plans that include pedestrians and bicyclists as users within an intermodal system. When highway bridges are being replaced or rehabilitated with Federal funds on a highway where bicycles are permitted, then the bridge must provide accommodation for bicycles if determined that costs are reasonable. Funding is available through the following ISTEA programs:

- **Section 1006(d)(i)(10) National Highway System (NHS) Funds.** These funds can be used to construct bicycle and pedestrian facilities on land adjacent to any highway in the National Highway System (other than the Interstate System). The facilities must be principally for transportation uses and must be located and designed in accordance with a plan developed by the State and metropolitan planning organization. Contact the Federal Highway Administration, 234 N. Central Ave., Suite 330, Phoenix, AZ 85004. Phone (602) 379-3646.

- **Section 1007(a)(1)(b)(3) Surface Transportation Program (STP) Funds.** These funds can be used for both bicycle transportation facilities and pedestrian walkways and for projects such as route maps, brochures and public service announcements. Again, these projects must be transportation-oriented and tied to a plan adopted by State and MPO. Ten percent of each State's annual STP funds are available only for "Transportation Enhancement Activities" (TEAs). Ten types of TEAs are defined, including: "provision of facilities for bicyclists and pedestrians" and "preservation of abandoned railway corridors, including the use thereof for pedestrian and bicycle trails". Contact FHWA, see NHS above for address and phone.

- **Section 1008 Congestion Mitigation and Air Quality Improvement (CMAQ) Program Funds.** These funds may be used for either construction of bicycle transportation facilities and pedestrian walkways or for nonconstruction projects related to safe bicycle use (maps, brochures, etc.). The projects must be transportation-oriented, and tied to a plan adopted by State and MPO. Contact FHWA, see above NHS for address and phone. Also contact Maricopa Association of Governments (MAG), 1820 W. Washington, Phoenix, AZ 85007. Phone (602) 254-6308.

- **Section 1032 Federal Lands Highway Funds.** These may be used to build bicycle transportation facilities and pedestrian walkways in conjunction with roads, highways and parkways at the discretion of the department charged with administration of these funds. The projects must be for transportation use and tied to a plan adopted by State and MPO. Contact FHWA see above NHS for address and phone.

- **Section 1047 National Scenic Byways Program Funds.** These funds can be used to construct facilities along designated scenic byways for pedestrians and bicyclists. Contact FHWA, see above NHS for address and phone.

  NOTE FOR NHS, STP, CMAQ, AND SCENIC BYWAYS, THE FEDERAL SHARE OF ELIGIBLE PROJECT COST IN ARIZONA IS APPROXIMATELY 94 PERCENT WITH A 6 PERCENT STATE OR LOCAL MATCH. FEDERAL LANDS PROJECTS ARE 100 PERCENT FEDERALLY FUNDED.

- **Section 2001 Highway Safety Funds.** Under the operation of Section 402, bicycle and pedestrian safety remain priority areas for highway safety program funding. ISTEA addresses State and community highway safety grant program funding. The Governor's Office of Highway Safety (GOHS) administers funding for safety related programs from ISTEA funds in Arizona. Grants are in the form of reimbursable contracts and are made on the basis of a 10% local match. Contact the Governor's Office of Highway Safety (GOHS) for information and assistance at 3010 North 2nd Street, Suite 105, Phoenix, AZ 85012. Phone (602) 255-3216.

- **Federal Transit Act.** Title III, Section 25 of ISTEA continues to allow transit funds to be used for bicycle and pedestrian access to transit facilities, to provide bicycle parking and shelter facilities and to install racks or other equipment for transporting bicycles on transit vehicles. The Federal share for such projects is 90 percent and the remaining 10 percent must come from sources other than Federal funds or fare box revenues. Contact FTA, Region 8, Columbine Place, 216 16th St., Ste. 650, Denver, CO 80202-5120. Phone (303) 844-3243.

- **The Federal Transit Administration (Section 9).** Section 9 administer grants for transit and intermodal related projects. Section 9 FTA funding could include bicycle lockers, showers, bike racks on buses and other innovative projects that link transit with other forms of transportation. Contact FTA.

Other Federal Funding Sources

- **Land and Water Conservation Fund (L&WCF)**
  The Land and Water Conservation Fund provides financial assistance for the acquisition and development of public outdoor recreation areas and facilities. Eligible activities include, but are not limited to, park development (e.g., playground equipment, lighting, picnic facilities, ballfields, ramadas, and other facilities deemed appropriate or eligible, and land acquisition to serve future outdoor recreation purposes. Contact Arizona State Parks, 800 W. Washington, Ste. 415, Phoenix, AZ 85007. Phone (602) 542-4174.

- **National Recreational Trails Fund (Symms Act).**
  These funds can be used for recreational trails programs to benefit both motorized and nonmotorized trail users. These funds are subject to annual Congressional Appropriations Committee review and approval. Projects must be consistent with the Statewide Comprehensive Outdoor Recreation Plan (SCORP) required by the Land and Water Conservation Fund Act. Each state's Governor designates the agency responsible for administering these funds within the state. Half of the annual appropriate is distributed equally among the states. The other half is distributed based on the amount of non-highway recreational fuel used in each State. Within each State, 30 percent of the funds are allocated for nonmotorized uses; another 30 for motorized uses and the remaining 40 percent among trail users at the discretion of the State. No State match required for the first three years. Thereafter, the State will be required to use a reasonable estimation of its tax revenue from fuel used for off-highway recreational purposes. For additional information, call the Arizona State Parks Board, Off Highway Vehicle Coordinator or the State Trails Coordinator at (602) 542-4662. See L&WCF.

****NOTE**** - THE FHWA FUNDING SOURCES ARE ADMINISTERED BY ADOT. FHWA HAS AN OVERSIGHT ROLE. TO USE THE FUNDS, YOU NEED TO GO THROUGH ADOT, YOUR COG, OR YOUR LOCAL GOVERNMENT AGENCY.

STATE

Arizona Department of Transportation (ADOT)

Air quality has become a major issue relating to transportation in the State of Arizona. The Arizona Legislature addressed this issue in 1987 by passing Senate Bill 1360, the Omnibus Air Quality Act. A key provision of the bill authorized ADOT to explore a range of public transportation alternatives which could improve air quality.

Projects are reviewed for the following major criteria: transit impact, air quality impact, innovative characteristics, technical feasibility, cost effectiveness, transferability, intergovernmental cooperation and local commitment. This yearly funding program has specific application process and projects receiving dollars must be completed within the guidelines. The application process takes place in late spring/early summer annually. For further information contact the ADOT, 206 South 17th Avenue, 340B, Phoenix, AZ 85007. Phone (602) 255-8246.

Highway User Revenue Funds (HURF)

The State of Arizona cannot utilize HURF monies for bicycle projects. Article 9, Section 14 of the Arizona State Constitution restricts the use of the HURF only to those activities that contribute to the Fund, e.g., gasoline taxes, registration fees, license fees, etc. Some local governments, such as Maricopa County, do allow the expenditure of HURF monies for bicycle projects if the project is primarily for transportation rather than recreation, and if the project is needed in the interest of traffic safety for both bicyclists and motorists. Check with your local government for the possible use of HURF monies for bicycle projects.

Arizona Department of Environmental Quality (ADEQ)

The Arizona Department of Environmental Quality administers air quality grants for programs which positively impact on air quality. Projects previously funded include lockers and showers to support employer trip reduction programs at specific locations, bicycle commuter publications, and bicycle inventory analysis studies. For further information contact ADEQ, 3033 North Central Avenue, Phoenix, AZ. 85012. Phone (602) 207-2300.

Scenic Byways Program

Arizona State Parks administers grants for recreational projects through its Scenic Byways Program. Amenities of all types that are recreation-based are included.
For further information contact Arizona State Parks, 800 West Washington Street, Phoenix, AZ. Phone (602) 542-4174.

Heritage Fund (Local, Regional, and State Parks (LRSP)

- **Recreation Grants:** The Arizona State Parks Board Heritage Fund provides funding for local, regional, and state recreational improvements throughout Arizona. Local, regional, and state parks grants are awarded on a 50/50 matching basis. Eligible activities include, but are not limited to: park development (e.g., playground equipment, lighting, picnic facilities, ball fields, ramadas, and land acquisition to serve outdoor recreational purposes. For further information, contact the Arizona State Parks, Grants Program Officer at (602) 542-1996.

- **Trails Heritage Fund Grants:** The Arizona State Parks Board Heritage Fund grants provide funding for recreational trail improvements. Trails must be nominated to the State Trails System to be eligible for grants under this program. Eligible projects include, but are not limited to, acquisition of future trail alignments, design and engineering when included with trail development, development and renovation activities, and trails support facilities. Trail grants are awarded on a 50/50 matching basis. Matching funds can be in the form of cash or in-kind contributions such as: donated land, materials or services, cost of in-house labor and equipment, local appropriations or bond monies, or monetary contributions from outside sources. For more information, contact the Arizona State Parks, Heritage Fund Program Officer at (602) 542-1996.

OTHER FUNDING SOURCES

Improvement Districts often include street widening, sidewalks, lighting, and other improvements within a neighborhood or district. Awareness of these projects and their scope is important for the inclusion of bicycle facilities.

Park Development and improvement plans can include bicycle amenities and facilities to make them more user-friendly.

Bond Programs vary depending on the purpose of the bond program. Generally, in a bond program, taxes may be assessed to provide revenues to pay for bonds for specific projects that are completed through a local Capital Improvement Program (C.I.P). Since bond issues are determined by the political election process, what is to be included in specific projects should be clearly defined but this is not always the case. Bicycle-related improvements can be considered in a local bond program.

Development Review Processes determine whether proposed development proposals are in compliance with local plans and zoning codes. Designating a staff coordinator responsible for bicycle facilities, bicycle access points and other bicycle program elements can help ensure that bicycles are considered in the initial planning of private development projects. Access issues are especially important where private development projects are located adjacent to public recreational lands or established trail and bicycle routes.

Local Jurisdictions can also recommend that state highway officials provide bicycle facilities as a part of state routes through local municipalities. Knowing when state routes are to be improved is important if bicycle facilities are to be considered at early planning and design stages.

Data collection, surveys, crash data and field observation form the basis of the evaluation procedure. In order to evaluate the operation of the system properly, it is necessary to collect data before, during, and after improvements. The availability of these data becomes increasingly important means of supporting bicycle program budgets if they are challenged over the years as conditions change and implementation proceeds.

Private Sponsorship can involve bicycle facility and program development as a positive step toward a bicycle-friendly community. Funding plans can promote marketing for bicycle riding and racing festivals, adopting a roadway or median with bike lanes in specific areas, helmet education and many more.

Special Taxation Districts, sometimes named Benefit Assessment Districts, are community motivated improvements that often enhance specific areas such as downtowns or historical districts. To include user-friendly bicycle improvements in these projects is a positive addition to these areas.