

METRO PHOENIX

# BICYCLE COMMUTER HANDBOOK



# FOR MORE INFORMATION

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City of Apache Junction . . . . .	982-8002
Arizona Department of Transportation . . . . .	255-6736
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Town of Buckeye . . . . .	256-2488
Town of Cave Creek . . . . .	257-9011
City of Chandler . . . . .	786-2787
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Regional Public Transit Authority . . . . .	262-7242
City of Scottsdale . . . . .	994-2732
City of Tempe . . . . .	350-8860
Town of Wickenburg . . . . .	684-5451

## **Other Local Resources:**

Arizona Bicycle Task Force . . . . .	542-4174
ASU . . . . .	965-6559

## **Local Organizations:**

Arizona Bicycle Club (ABC) 1026 N. 9th Street Phoenix, AZ 85006 . . . . .	279-6674/264-5478
Greater Arizona Bicycle Association (GABA) P.O. Box 3232 Tempe, AZ 85281	

## **National Organizations:**

Bicycle Federation of America 1818 R Street, NW Washington, D.C. 20009 . . . . .	(202) 332-6986
League of American Wheelmen 6707 Whitestone Road, Suite 209 Baltimore, MD 21207 . . . . .	(301) 944-3399
National Offroad Bicycling Association, and United States Cycling Federation 1750 East Boulder Street Colorado Springs, CO 80909 . . . . .	(719) 578-4581

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## **BICYCLING . . . A COMMUTING ALTERNATIVE**

Do you want to help clean up our air and reduce traffic congestion? Would you like to get in shape and stay that way? Be good to yourself and to the environment by riding your bicycle to work, school or to the store. Even one day a week can make a difference!

It is estimated that up to 90% of local air pollutants are caused by motor vehicle use. The average distance that people travel to work is less than 10 miles, and 54% of these trips are 5 miles or less. This distance is considered ideal for bicycle commuting.

This handbook has been developed to promote bicycle commuting and to help you get started easily and safely. You will find basic information for the beginning commuter as well as tips for the more experienced rider. If you need additional information, refer to the directory on the inside front cover.

Remember . . . ride safely, be courteous, and "share the road".

## CHOOSING A BICYCLE

First, you will need a sound, dependable bicycle. If you are thinking about buying a bicycle, check with several bicycle shops and pick one that is comfortable for you. They can help you determine the correct frame size, and can suggest accessories that will make your commute safe and comfortable. When choosing your equipment, keep in mind that:



- The frame is the correct size when you can straddle the bike with 1/2" to 1" clearance between you and your bicycle.
- Handle bars should be level with or slightly below the level of the seat.
- Adjust the seat high enough so that your heel rests on the pedal with your leg fully extended while seated.
- If you plan to ride at night, a white headlight and red rear reflector are the minimum requirements of the law. A good headlight will help others to see you and you to see where you are going. Consider amber reflectors on the rear and pedals -- they are twice as bright.
- Tire repair supplies include a spare tube, patch kit, tire levers, a wrench for axle nuts, and a pump.
- Multiple gears and alloy wheels allow for easier pedaling.



- A good lock is a necessity. U-shaped locks provide the most protection. A heavy-duty cable and key lock are second best.
- You need something to carry things in, such as panniers, large seat bags, or rack packs. A rack is useful, too.



# SAFETY EQUIPMENT

Equipping yourself, like your bicycle, is important for enjoyable commuting. A helmet is a **must!**



- A helmet protects your head in case of a fall and also makes you more visible. Be sure your helmet is A.N.S.I. or Snell safety rated.
- Eye protection reduces glare and keeps bugs and rocks out of your eyes.



- Cycling gloves cushion your hands and protect against scrapes in a fall.
- Bicycle shoes (touring or cleated) provide foot support.

- Wear comfortable, high visibility clothing. Bright colors are best during the day and white or reflective clothing is best at night. Using a reflective vest increases visibility in traffic.
- Use a rearview mirror to keep track of traffic approaching from behind. A rearview mirror can be attached to your helmet, your eyeglasses or the handlebars of your bicycle.



## SELECTING A ROUTE

Planning your trip ahead of time will minimize potential problems and help you to reach your destination in a timely manner. Below are some helpful hints on selecting a route:

**PLAN IT.** Get a bike map or street map (check your local bike shop) and choose a tentative route, which may include:



- Bike lanes (painted stripes on the right side of the roadway)
- Bike routes (look for road signs denoting these)
- Separate bike paths (usually found in recreational areas)

### **Look For Streets That:**

- Follow a reasonably straight path
- Have the least number of stops
- Are wide and have low traffic volumes and slow speed limits

### **Also Consider:**

- Number of intersecting streets and driveways
- Smoothness of road surface
- How clean the edge of the road is
- Railroad tracks, drainage grates, etc.
- On street parking

**TEST IT.** Before you commute, "test ride" the route in the evening or on the weekend.

**LOCK IT.** Protect your bicycle with a high-quality lock. The added security and peace of mind are worth the extra weight and cost.



- U-shaped locks provide the most protection. A heavy-duty cable and key lock are second best.
- Securely lock both wheels and frame to a bike rack. Do not leave slack in the cable, and keep the lock as high off the ground as possible.
- Check with your employer about using storage areas at work, or lock your bike in a high visibility area to reduce theft.



# RIGHTS AND RESPONSIBILITIES

Local ordinances governing bicycle use vary from jurisdiction to jurisdiction. Please watch for signage and consult local authorities to determine what laws apply in your area. In general, the following rules apply to all bicyclists:

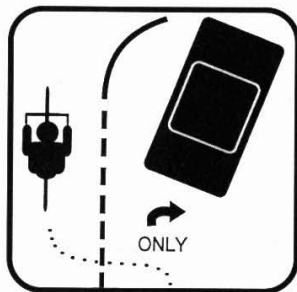
**OBEY ALL TRAFFIC LAWS.** Bicyclists have the same basic rights and responsibilities on the road as motorists. Irresponsible behavior in traffic generates hostility from motorists, sets a bad example, can cause serious accidents, and may get you a traffic citation.



**USE HAND SIGNALS.** Hand signals communicate to motorists and pedestrians what you intend to do. Signal as a matter of law, of courtesy, and of self-protection. Keep at least one hand on the handlebars at all times.

**RIDE ON THE RIGHT WITH TRAFFIC.** Riding against traffic is against the law and very hazardous. Motorists, pedestrians and bicyclists will not be looking for you on the wrong side of the road or path, and your chances of a collision increase greatly.

**FOLLOW LANE MARKINGS.** Maintain your position in the right-most lane that goes where you want to go. When making left turns or traveling through an intersection that offers a right turn only lane, you must take your place in the appropriate lane and follow traffic through the intersection. For more detail, refer to "Riding Through Intersections" on page 9.



**RIDE IN A PROPER AND SAFE LANE POSITION ON ROADWAYS.** Under normal circumstances, ride on the right about two feet from the edge of the roadway, in designated bicycle lanes, or on a paved shoulder to avoid impeding faster moving traffic. However, you may ride further out in the roadway when necessary for safety or when you do not impede traffic.



**IN MOVING TRAFFIC, PASS ON THE LEFT.** Scan the roadway, signal your intentions and merge into the next lane, returning to the right after passing.

**IF YOU PASS ON THE RIGHT.** In slow or stopped traffic, there must be sufficient space to pass on the right. Do not pass a moving vehicle signaling a right turn. Be careful not to get caught in the driver's blind spot.

**LIGHTS ARE MANDATORY AFTER DARK.** The law requires a white headlight and red rear reflector at night. Adding a tail light or amber reflector is a good idea. For extra visibility, wear light-colored clothes with reflective tape or vest. Flashing beacon lights are also available.



**YIELD TO TRAFFIC AND PEDESTRIANS WHEN ENTERING A ROADWAY.**

Lack of anticipation and concentration in and around intersections is a major cause of bicycle-related accidents. Scan the roadway and ride defensively.

**IF AN ACCIDENT HAPPENS.** All accidents involving a motor vehicle must be reported. If involved in an accident with a motorist, pedestrian or other cyclist which results in injury or property damage, the law requires that you stop immediately and aid any injured person and properly identify yourself. Bike accidents involving a pedestrian or another cyclist should also be reported.

Bicyclists can be liable for accidents. The liability coverage of your automobile policy may not cover you while riding your bicycle, but a homeowners or apartment renters policy may. Check to be sure whether you are covered.

## RIDING TIPS



**ALWAYS WEAR A HELMET.** Nearly 75% of all bicycle related deaths are the result of head injuries. The use of helmets would prevent many of these deaths. Some tests suggest that a hard shell helmet lined with polystyrene is more effective than other types in preventing head injury. Visit your local bicycle shop for additional information.

**USE LOWER GEARS.** Select the lowest gear in which your legs can spin the crank smoothly while maintaining pressure on your peddle. This practice is better for your knees and is more efficient. Maintain a steady pace and "spin", do not "push" the pedals. Downshift before stopping so you can start up again easily.

**KEEP YOUR BODY LOOSE AND RELAXED.** Rise slightly off the saddle and grip the handlebars firmly when you have to ride over potholes, railroad tracks, or other obstacles. Let your arms and knees absorb the bumps and vibrations.

**CROSS AT RIGHT ANGLES.** Always cross railroad tracks, roadway cracks and grooves at right angles.

**FOOT POSITION AND TOE CLIPS INCREASE PEDALING EFFICIENCY.** Center the ball of your foot on pedal. For maximum pedaling efficiency use toe clips, but practice using them before riding on busy streets.



### Defensive Cycling Skills

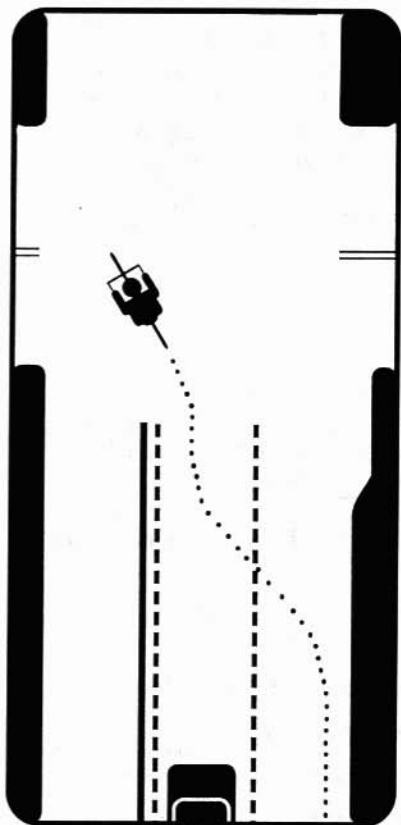
**ANTICIPATE.** Ride defensively and expect the unexpected. Watch for approaching vehicles turning into your path. This is a major cause of accidents, and can usually be avoided by an alert bicyclist.

**COMMUNICATE.** Always signal your intentions. Remember that the rules in the driver's manual also apply to bicyclists.

**BE VISIBLE.** Ride where drivers can see you and be predictable. Be aware of the vehicles around you and their potential movements. Do not assume they have noticed you.

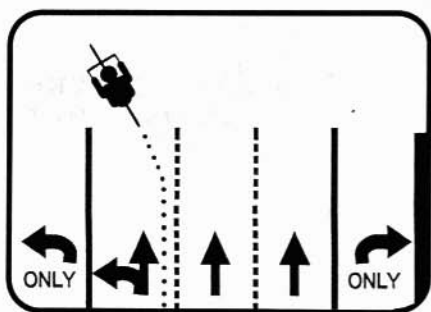
## RIDING THROUGH INTERSECTIONS

Intersections are the most difficult and complicated areas for bicyclists to ride. Most bicycle/motor vehicle accidents occur at intersections. Here are some important guidelines to remember:



- Ride in the right-most lane that goes where you want to go. In making a left turn with two designated left turn lanes, ride in the right-most lane and always obey traffic signals. If riding straight through an intersection, ride in the right-most through lane. Do not ride straight ahead in a right turn only lane.
- In approaching an intersection, it is best to move to the center of the lane of traffic where you will be visible to motorists from all directions. Be sure to look back and yield to traffic.
- When stopped or approaching an intersection, position yourself to be easily seen in order to prevent motorists from cutting in front of you. Be sure to avoid motorists' blind spots and watch for turning vehicles.

- In a multi-directional lane, ride on the side closest to the direction you are traveling. Your positioning in this lane when proceeding through the intersection depends upon the speed, positioning and direction of travel indicated by the vehicles in that lane.



# RIDING BETWEEN INTERSECTIONS

Mid-block riding is statistically safer than most other locations. However, just as in intersections, there are some important rules to be followed:



**RIDE ON THE RIGHT, WITH THE FLOW OF TRAFFIC.** Motorists are not looking for bicyclists on the wrong side of the road. Oncoming drivers have less time to react to a wrong way cyclist, and street signage and signals are not designed for wrong way riding. It is also against the law!

**POSITION YOURSELF.** Ride as far to the right as "practicable". This means you may ride far enough from the curb or pavement edge to avoid any risk or danger. A standard distance may be considered approximately two feet from the edge of the roadway.

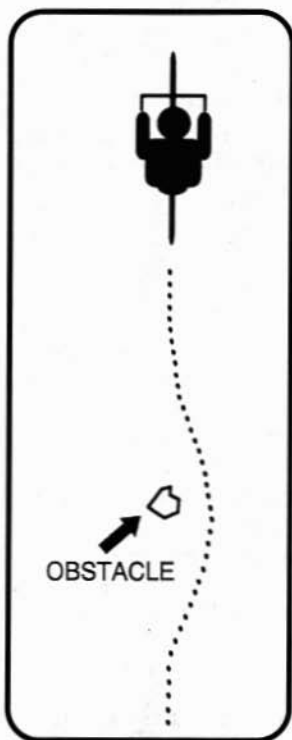
Conditions when you are allowed to ride further from the edge include:

- When a travel lane is too narrow for a motor vehicle to pass the bicyclist safely within the lane.
- When your speed is equal to or greater than the traffic flow.
- When preparing for proper turning movement.
- When avoiding debris, rough pavement, parked vehicles, etc.
- When passing vehicles, bicycles, pedestrians, or roadway obstacles.

**ALWAYS SCAN THE ROADWAY AND YIELD BEFORE MOVING RIGHT OR LEFT!**

## EMERGENCY MANEUVERS

All three of the following emergency maneuvers require practice. Find a quiet, clean parking lot and practice until you feel comfortable with each maneuver. Do not forget to wear your helmet!



**ROCK DODGE.** A wide swerve around a pothole, rock or glass can send you into the path of an over-taking vehicle. This maneuver will allow you to avoid any last minute hazards without swerving uncontrollably. Follow these steps:

- **STEP 1.** Turn your handlebar quickly a short distance to either side.
- **STEP 2.** Turn the handlebar back quickly in the opposite direction.
- **STEP 3.** Turn the handlebar to straighten out on the original line of travel.

**EMERGENCY TURNS.** If a car suddenly turns into your path, what do you do? Hopefully, you will anticipate the problem and stop in time. If you cannot stop, then turn parallel with the car until a safe stop is possible. In most cases, you will avoid the collision.

**EMERGENCY STOPS.** Stopping fast requires a harder use of the front brake than the rear brake. However, quick stops can cause you to catapult over the handlebars. To lower your center of gravity, apply both brakes hard and evenly while sliding back on the saddle into a "crouched" position. If the rear wheel starts to skid, release some pressure from the front brake.



## THINGS TO WATCH FOR

**DOGS.** Even a friendly dog can be a danger to a bicyclist by jumping at the bicycle or getting in front of the wheel. When approached by a dog, remember the following DOs and DON'Ts:

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### DOs

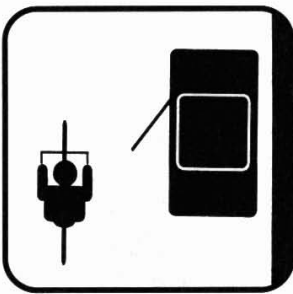
- Command the dog to "Go Home".
- Dismount with the bicycle between you and the dog and walk away slowly.
- Squirt the dog with water.
- Call the authorities and let them know about the loose dog.
- Take another route next time.

### DON'Ts

- Don't kick at the dog or hit it with your pump. You could be thrown off balance.
- Don't try to outrun the dog. The dog may chase you and cause a fall.

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**TRANSIT BUSES.** Transit buses stop and start often and will alternately pass and be passed by bicyclists. When behind a bus which is stopping, scan the roadway, signal your intentions, and when clear, merge left to pass the bus as you would any other vehicle. Once you have passed the bus, scan the roadway and signal before moving back to the right. If a bus comes up behind you, maintain a lane position which is safe for you, even if the bus must pull into the next lane to pass you. NEVER pass a bus on the right side.



**PARKED CARS.** Some accidents are the result of a motorist opening the door of a parked car in front of an overtaking bike. This is illegal and a collision is the motorist's fault. To prevent this from happening ride no closer than three feet to a parked car. Also, be sure to watch for signs that the motorist wants to move into traffic. Be prepared to take evasive action if necessary.

**GRATES.** Be cautious when approaching sewer and drainage grates. Watch for cracks and gaps. Scan for traffic and move further into the lane if necessary to go around such hazards. Grates are particularly slippery when wet.



## BICYCLE MAINTENANCE

Bicycles need regular maintenance. You can do basic maintenance on your own bicycle or, if you do not care to do the work, take your bicycle to a bicycle shop. If you are interested in doing your own maintenance, check with your local bicycle shop or club for course offerings or repair manuals.



**TIRES.** Check tire pressure weekly, using a pressure gauge. Bicycle tires lose pressure quickly and "soft tires" are inefficient. Be cautious when using service station air pumps. Inflate tire with short bursts of air to prevent over-inflation and possible blowouts.

**GEARS.** If the chain comes off when shifting gears, adjust screws. Consult a repair manual or bicycle shop for more information.

**CHAINS.** Clean chain with light spray lubricant. Lubricate the pivot pins with one drop of oil per link. Wipe off excess oil with clean rag.



**BRAKES.** Brake pads should be close to rim without touching, not brittle, and aligned for full contact with rim. Brake cables should not be frayed or rusted. All nuts and screws should be tight.



**WHEELS.** Spin front tire and check for wheel alignment. Wheels should not wobble. Spoke or rim damage could cause this problem. Consult a repair manual or bicycle shop for more information.

**BOTTOM BRACKET ADJUSTMENT.** Holding both pedals, try to wiggle the crank arms. Lift back tire and spin pedals. Check for free spinning cranks. If the crank set is loose, an adjustment is necessary. Consult a repair manual or go to a bicycle shop.



# FLAT TIRES

Getting a flat tire is never fun. There are, however, some things you can do to prevent "flats" from happening too often.

## Prevention

- Ride at least two feet from the pavement edge.
- Watch for and avoid the broken glass and debris that collect at the edge of the roadway.
- Install "tire savers" -- metal and plastic devices that skim the tire surface knocking off thorns or glass before it has time to penetrate.
- Install tire liners between the tube and the tire. These are puncture resistant "belts" of tough plastic.
- Install tires that have special belts built into the tread. These are light and strong and tend to wear longer than regular tires.
- Install thicker, heavier tires and/or tubes -- these are harder to pedal, but offer more puncture resistance.
- Maintain tire pressure at the highest recommended level, as indicated on the tire.

## Repair

No matter what you do, sooner or later you will get a flat tire! You will not need cab fare if you know how to change a tire. So practice, be prepared and have the proper tools -- pump, tire levers (aluminum or plastic levers are recommended), patch kit and spare tube. If you do not have quick release hubs, you will need a wrench to loosen the wheel nuts.



- **STEP 1.** Remove wheel from bike. If flat is on rear wheel, shift chain onto smallest cog before removing wheel. Lay bike on the side opposite derailleurs or turn it upside down to remove rear wheel.





- **STEP 2.** Starting about 6" from the valve stem, insert one tire lever between the edge of the tire and rim. Work the tire edge over the rim and hook the other end of the lever on a spoke.

Insert a second tire lever 4" from the first and continue to work tire over the rim. Insert a third lever 4" from the second, and pry the tire over the rim. Remove the first lever and use it to pry the tire, and so on, until one side of the tire is completely off the rim.

- **STEP 3.** Remove tube from tire and check tube damage. Either replace the tube with your spare or locate and patch the puncture. Inspect inside of the tire for cause of flat.

Replace the tube by inserting the valve stem first. Continue to work the tube into the tire.



- **STEP 4.** Work tire onto rim by using both hands. Continue around rim until 6-8" remains, then use a tire lever to complete the process. Do not pinch tube with lever and be sure valve stem is perpendicular to rim. Push valve stem into tire, check seating of tire, then pull stem back out.



- **STEP 5.** Inflate tire slightly to check tire seal. Continue inflating to the pressure indicated on sidewall, remount wheel on the bike, and tighten the axle nuts or quick release lever.



# ARIZONA CLIMATE

Arizona's climate is ideal for bicycling. However, certain weather conditions can be a deterrent to bicycling. If you look at them as challenges and are properly prepared, you may even begin to enjoy them.

## Hot Weather

Knowing how to live and ride in hot weather is essential to regular bicycle use in Arizona. There are several key points to consider when cycling in hot weather.



**DRESS LIGHTLY.** Use cotton or high cotton content clothing. Wear shorts and a t-shirt when possible. Cycling shoes help ventilate and cool your feet. Do not forget the sun screen!

**WEAR A HELMET.** White or lighter colored helmets will keep your head cooler.

**DRINK PLENTY OF FLUIDS.** If you have more than five miles to go, carry a water bottle. Consider carrying extra water to spray on your head and body.

**RIDE WHEN IT IS COOLER.** When possible, bicycle to work earlier and avoid riding from noon to 3:00 p.m.

## Wind

Riding against the wind can be a real challenge. There are things you can do to minimize wind resistance.



**LOWER YOUR PROFILE.** Ride with your hands on the dropped part of the handlebars and keep a low upper body profile.

**GEAR DOWN.** Use the lower gears and pedal at a brisk pace (80-90 rpm).

## Rain and the Monsoon Season

Visibility is a major concern in overcast or rainy weather. Take extra steps to be seen by using light or reflective rain gear or a vest. To keep reasonably dry, you can use an inexpensive plastic rain suit or a cyclists' poncho and rain pants. Some bicyclists carry a 30 gallon plastic garbage sack for use as an "emergency" rain cover. Dress accordingly to maintain your body temperature in the rain.



**LIGHTNING.** Lightning plays a major role in our monsoon season. Cyclists are especially vulnerable, and should take NO chances. When lightning threatens, stop and take shelter in or next to a building until the threat has passed. Stay away from trees and power poles!

**WET BRAKES.** Allow for additional time and distance for stopping in wet conditions. Wet brakes do not work as well as dry brakes, and roadway surfaces are more slippery when wet. Painted lines on the road are especially slippery and should not be ridden on when wet.



## DRESSING FOR SUCCESS

If you use your bicycle to commute to work, a change of clothing may be necessary. Here are some helpful hints on becoming a well groomed bicycle commuter.



- When riding in hot weather, dress lightly in cotton or high cotton content clothing. Plan on a complete change of clothing for work.
- When riding in cold weather, layer your clothing so that heavier garments can be removed as your body warms up.
- As you approach your work site, slow down to help you cool off.

- After you arrive, if you do not have a shower available, use a towel to blot perspiration off quickly. Then, use a portable hair dryer to help you finish drying off. Be sure not to put on your work clothes until you are completely dry. Keep extra deodorant in your locker or desk. If you have a shower available, use it and thank your employer.
- Carry your work clothes with you each day (roll them rather than fold them -- they'll wrinkle less!)



## **CONCLUSION**

Bicycle commuting has been experiencing a noticeable increase in popularity among men and women for years. You can become a bicycle commuter, enjoying the health and fitness benefits, while improving our community's air quality and living environment.

Like any other new activity, start gradually and allow yourself time to learn and adjust. If you have any questions, or need more information, call one of the numbers listed on the inside front cover.

**THANK YOU FOR YOUR INTEREST IN BICYCLING  
AS A COMMUTING ALTERNATIVE**



# CREDITS

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY  
MARICOPA ASSOCIATION OF GOVERNMENTS  
MAG REGIONAL BICYCLE TASK FORCE  
CITY OF TUCSON, DEPARTMENT OF TRANSPORTATION  
CITY OF TUCSON, COMMUNITY RELATIONS DEPARTMENT  
TUCSON-PIMA COUNTY BICYCLE ADVISORY COMMITTEE



Printed on recycled paper.

This handbook has been produced  
under the direction of the  
MAG Regional Bicycle Task Force.

Funding was provided by the  
Arizona Department of Environmental Quality  
through the Air Quality Fund.

Published in January, 1992.



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