

# TUCSON Regional Plan for Bicycling

Approved  
September 2009





## **Executive Summary**

### **2009 Regional Plan for Bicycling**

The development of Pima Association of Governments' (PAG) 2009 Regional Plan for Bicycling began in mid-2005 but was set aside approximately 10 months while staff and a citizens advisory committee developed the Regional Transportation Authority's (RTA) regional transportation plan, which includes \$60 million for Bicycle, Pedestrian and Shared-use Path facilities (as part of the much larger \$2.1 billion RTA plan). The RTA's goal is to increase mobility and accessibility for all travel modes throughout the region. Bicycle travel will benefit substantially as more than 550 miles of bicycle lanes (two way) and shared-use paths will be constructed over the 20-year term of the RTA Plan (July 1, 2006 - June 30, 2025).

#### **Plan Vision**

The vision for bicycling in the PAG region has long been one of providing for and facilitating more and safer bicycle travel on a region-wide basis. Achieving this vision will allow bicyclists to ride to activity areas, transit stops, schools, parks, natural resources areas, and employment areas, using a safer, continuous, and connected system of bikeways.

#### **Plan Goals**

The following goals can help achieve the plan vision:

##### **Goal 1: Education**

Educate all road users, especially bicyclists and motorists, on legal, predictable and safe behavior.

##### **Goal 2: Enforcement**

Establish and implement targeted enforcement of specific traffic laws on bicyclists and motorists, based on the documented, most frequent bicyclist-motorist crashes.

##### **Goal 3: Engineering**

Plan, design, construct and maintain bicycle facilities that meet or exceed accepted standards and guidelines.

##### **Goal 4: Encouragement**

Encourage increased use of bicycles for transportation and recreation; support organized events, which often have substantive beneficial economic impacts.



## **Plan Development**

Many positive developments for bicycling in this region have occurred during the period covered by the last 30-plus years of regional bicycle plans. In 2006 and again in 2008, the League of American Bicyclists (LAB) recognized the Tucson - Pima Eastern Region as a Gold Level "Bicycle Friendly Community," the first and only such regional designation in the United States. *Bicycling Magazine* has ranked the City of Tucson as the 2<sup>nd</sup> best bicycling city in the United States in 1995, 1999, and more recently, in 2006. The City of Tucson, Pima County, Oro Valley, and PAG all have full-time staff working on bicycle issues. There are also a variety of active, involved citizens, bike clubs and advocate groups working to support and improve cycling in this region.

This is the sixth in a 30-year series of regional plans for bicycling in the Tucson region. Plans were produced in 1975, 1977, 1981, 1993 and 2000. This latest plan documents the region's growth from eight miles of bikeways in 1971 to over 700 (centerline miles) in 2009. It also documents actions that have been taken to establish and advance bicycle safety education for both children and adults (i.e., Safe Routes to School). Even more actions are planned (including the RTA plan's robust bicycle facilities and programs) over the next 20 years to address identified bicycle system and program needs within the region.

## **Bicycle Facilities**

This plan was developed in cooperation with local jurisdictions, the public and bicycle interest groups. As part of this process, Pima Association of Governments held three public open houses in early December 2006. Public input from these meetings, along with comments from PAG's bicycle survey, is incorporated into this plan. A Plan Advisory Task Force (PATF) participated in the development of this plan. Active involvement by citizens, local governments, other interested staff and bicycle advocates within the region, has resulted in the development of this plan.

This plan focuses principally on the urban and suburban bicycle system and program elements. There are also some rural elements and connections. These elements collectively include extensive on-road facilities, and limited shared-use paths.

The plan is categorized into 1) existing facilities 2) planned facilities (which are funded) and 3) proposed facilities (which at this time do not have specific funding identified). These on and off-road facilities have been identified based on the RTA Plan, Bicycle Advisory Committee review and input, and specific PAG-member jurisdiction inputs. These jurisdiction inputs continue to include the bikeways identified in the 1999 Town of Oro Valley Bicycle and Pedestrian Plan, the Town of Sahuarita's Bicycle Routes map, the 2006 Green Valley Community Coordinating Council bicycle-pedestrian plan (endorsed by Pima County), paths in the 1996 Pima County River Parks Plan, and the connections/trailheads to off-road trails in the 1989 Eastern Pima County Trails System Master Plan.



## **Programming, Implementation and Funding**

Maintenance provisions for roadway and off-road bicycle facilities are included, since simply constructing these facilities is no guarantee of suitable maintenance in the future. Figure 1.1 (page 6) shows the Tucson Region (eastern Pima County).

PAG's funding and implementation process includes the development of bike facilities as stand-alone projects, as well as larger, more inclusive roadway and river park development and improvement projects. The use of local, state and federal funding constitutes most of the funding for these projects, with some contributions of right-of-way and facilities provided by private landowners. Local bond funds are another source.

The estimated costs to develop 421 new miles of signed bike routes, shoulders/ bike lanes, and 42 miles of new shared-use paths, by 2020, is estimated to be approximately \$100.8 million.

Through careful planning, dedication and funding allocations, the region should be able to reach the goal of developing over 463 miles of new bikeways and shared-use paths by 2020.

## **Design Guidelines/Standards**

The Design Guidelines in this Plan continue to come from the 1999 American Association of State Highway & Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, as updated in 2003. There have been a few additions from the National Committee on Uniform Traffic Control Devices (NCUTCD), as proposed, researched, tested and then recommended by the Bicycle Technical Committee. Those approved into the MUTCD by the National Committee include:

- Revised bike lane signs (Section 9B.04);
- New sign and marking for bicycle detection at signals (Section 9B.12, 9C.05);
- "Bicycle Wrong Way" and "Ride With Traffic" signs (Section 9B.06, and 8B.19); prohibition on through bike lanes to the right of right turn lanes, and within circulating roadways of roundabouts (Section 9B.04);
- New guidance on accommodating bicyclists in temporary traffic control areas (Section 6G.05);
- Cautions against placing temporary signs in bike lanes or on sidewalks (Section 6F.03);
- Cautions against multiple right turn lanes on streets with bike lanes (Section 9C.04); and
- Cautions against posts or other raised markers to separate bike lanes from other travel lanes (Section 9C.04).

## **Conclusion**

This Regional Plan for Bicycling has a bold, publicly based and supported vision. The goals and action plan contained herein provide a strong, supportive context for PAG member jurisdictions to continue and strengthen their accommodation of bicycle travel, and the economic and health benefits gained through development or an update of bicycle improvement plans, and subsequent implementation of bikeway improvements, educational and enforcement programs.

Pima Association of Governments will assist with the implementation of this plan by member jurisdictions, in full cooperation and consultation with the Tucson - Pima County Bicycle Advisory Committee.

# CHAPTER 1 - Introduction

## OVERVIEW

This is the sixth in a series of bicycle plans for the PAG region. Prior plans were produced in 1975, 1977, 1981, 1993 and 2000. This plan documents how the region has progressed from the first eight miles of bikeways in 1971 to over 700 present miles of bikeways (centerline miles). This plan sets forth actions that the region's jurisdictions can take over the next 20-plus years to address both existing and evolving needs.

The PAG region is made up of nine jurisdictions: the Cities of South Tucson and Tucson, Pima County, the Towns of Marana, Oro Valley and Sahuarita, the Pascua Yaqui Tribe, the Tohono O'odham Nation and a board member serving from the Arizona State Transportation Board. Figure 1.1 shows the extent of the Tucson metropolitan region.

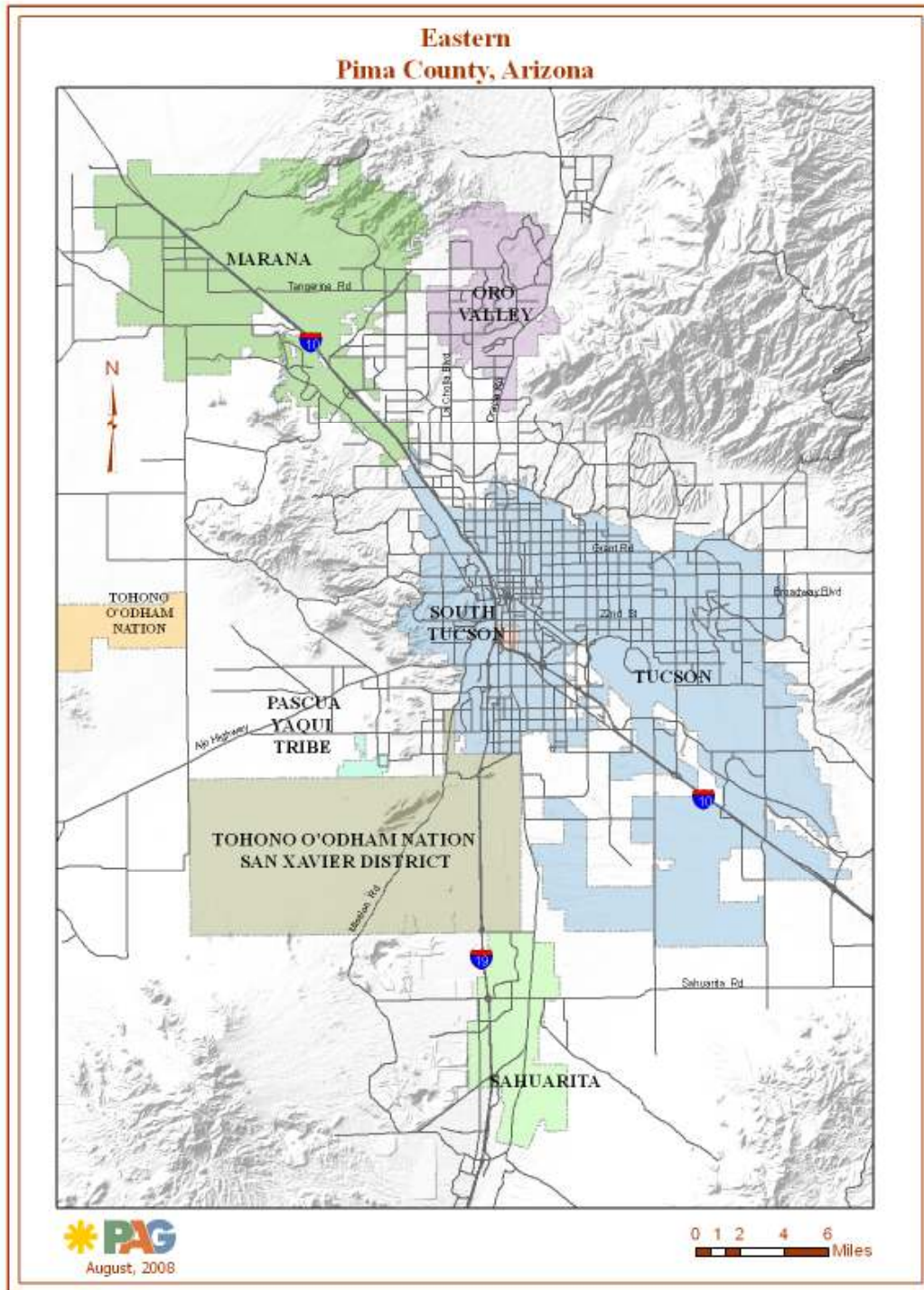
Many positive developments for bicycling in this region have occurred over the past 30 years. Most recently, in May 2008, the League of American Bicyclists (LAB) re-designated the Tucson - Pima Eastern Region as a Gold Level "Bicycle Friendly Community," the first such regional designation in the nation (and the League's 2<sup>nd</sup> highest award). *Bicycling Magazine* has ranked the City of Tucson as the 2<sup>nd</sup> best bicycling city in the United States in 1995, 1999, and more recently, in 2006. The City of Tucson, Pima County, the Town of Oro Valley, and PAG all have full-time staff working on bicycle issues.

This update of the PAG Regional Plan for Bicycling was a cooperative effort of PAG-member jurisdictions, the public and bicycle interest groups. As part of this process, PAG held three public open houses in March 2009. Public input from these meetings, along with comments from PAG's bicycle survey, is incorporated into this plan.

A Plan Advisory Task Force (PATF) and Bicycle Plan Update Project Task Force (BPUPTF) worked with staff to develop this plan and its project list. The PATF and BPUPTF represented bicycle interests in the region, and included substantive participation from members of the Tucson-Pima County Bicycle Advisory Committee, and staff from member jurisdictions of PAG, local school districts, the University of Arizona, and the Arizona Department of Transportation. Women and minorities were represented on the PATF, as were the elderly and disabled, representing a cross section of the region's ethnic diversity, gender and age groups. All of PAG's task forces, working groups and committees have an open and non-discriminatory policy toward members, and all meetings are open to the public.



**Figure 1.1 - Tucson Metropolitan Region**



## BACKGROUND AND PURPOSE

This 2009 Regional Plan for Bicycling has foundational origins in the planning process undertaken in 2003 to produce a 2030 Regional Transportation Plan (which was adopted in June 2006).

The vision statement in the 2030 Regional Transportation Plan: "...***an inclusive, people-focused plan to create an efficiently linked variety of transportation choices in a regional system that serves all people.***" is a strong statement of support for this Regional Plan for Bicycling.

Four of the 2030 Regional Transportation Plan's goals support bicycling:

- 1) "**Multi-modal Choices** - Develop a comprehensive transportation system that supports a balanced mix of travel choices ..."
- 2) "**Efficiency, Mobility and Accessibility** - Promote an efficient, linked system of rail lines, interstate freeways, major streets, public transit, bikeways, and pedestrian paths that enhance accessibility and the movement of people and goods..."
- 3) "**Safety** - "Enhance safety for bicyclists, pedestrians, transit riders, wheelchair users, children and the driving public."
- 4) "**Environment** – Enhance environmental stewardship through protection of natural and human resources and creation or preservation of aesthetic amenities and the unique identities of the region's varied communities."

This plan addresses urban, suburban, and to some extent, rural bicycle elements. These elements include roads, and in selected cases, shared-use paths. Paved and to some very minor extent unpaved facilities are included. This plan strives to consider the connections/interfaces with off-road paths. Paths from the 1996 Pima County River Parks Plan and the 1999 Town of Oro Valley Bicycle and Pedestrian Plan (updated in 2001) are incorporated by reference into this plan.

## ORGANIZATION OF THE REGIONAL PLAN FOR BICYCLING

The PAG Regional Plan for Bicycling is organized into six chapters, following the introductory chapter.

**Chapter 2 - Vision & Goals** - presents the plan's vision and goals, discusses bicycle mode share and bicycle travel potential. These set the direction and specific objectives that the region can pursue to improve and expand bicycle facilities and programs. The critically important elements of education, engineering, enforcement and encouragement are covered as they relate to levels of use, and an enhanced bicycle friendly community.

**Chapter 3 - Past & Present Bicycle Facilities & Programs** - provides a summary review of past and present bicycle facilities and programs and relates how they have promoted bicycling. It also describes levels of use and a crash data analysis.

**Chapter 4 - Bicycle Facility Plan** - is the regional bicycle facility plan, which includes a summary of plans used for reference, and discusses user classification systems. The public involvement process for this plan, including a bicycle questionnaire, is described, with public input results presented. Also included are Title VI analysis results and the Downtown Tucson Bicycle Circulation Plan.

**Chapter 5 - Implementation & Funding** - provides an introduction to and description of the implementation process. This includes the development of bike facility projects, and larger, more inclusive roadway and river park development and improvement projects. Local (including local bond funding), state and federal funding that may be used for planned projects is described.

**Chapter 6 - Programmed Bicycle Facilities** - describes suggested programming for implementation of bike facilities and programs. Five- and 10-year priority recommendations from the bicycle community, especially the Tucson-Pima Bicycle Advisory Committee, as well as the five-year Regional Transportation Improvement Program (TIP), are included.

**Chapter 7 - Design Guidelines & Conclusion** - identifies first the design guidelines used in this plan as incorporated from Part 9 of the Manual on Uniform Traffic Control Devices (MUTCD), which reflects the updated content of the 1999 American Association of State Highway & Transportation Officials (AASHTO), Guide for the Development of Bicycle Facilities.

The second and final part of Chapter 7 is the plan's conclusion.



## CHAPTER 2 - Vision & Goals

This chapter describes the Regional Plan for Bicycling's vision and goals, which lays the foundation for the action plan for facilities and programs, presented in Chapter 5.

### PLAN VISION

The participants in the development of this plan have adopted the 2000 Plan's vision for bicycling in our region. This plan is a means to achieve the vision for bicycling in our region: provide for and facilitate more and safer bicycle travel on a region-wide basis. Such facilitation and provisions allow cyclists to ride easily and safely to activity areas, transit stops, schools, parks, natural resources areas, and employment centers using a safer, more continuous, and highly connected system of bikeways.

### PLAN GOALS

The following Goals can help achieve this plan's vision:

#### Goal 1: **EDUCATION**

Educate all road users, especially bicyclists and motorists, on legal, predictable and safer behavior.

#### Goal 2: **ENFORCEMENT**

Establish and implement targeted enforcement of specific traffic laws for bicyclists and motorists, based on the documented most frequent bicyclist – motorist crashes.

#### Goal 3: **ENGINEERING**

Plan, design, construct and maintain bicycle facilities that meet or exceed accepted standards and guidelines.

#### Goal 4: **ENCOURAGEMENT**

Encourage increased use of bicycles for transportation and recreation; support organized events that have substantive beneficial economic impacts.

### BICYCLE MODE SHARE

Bicycle travel offers a mode of transportation that is inexpensive to operate, friendly to the environment, beneficial exercise to the user, and requires less space on roads, paths, and parking. It offers a transportation option for a segment of the population that uses transit. This population group will usually have a higher bicycle mode split than the rest of the population, which has more transportation options available to them.

The PAG Regional Plan for Bicycling presents an approach for the inclusion of bicycle facilities in the regional transportation and paths network, from the connection and

continuity of bicycle routes to the extension of urban and suburban path corridors. This Plan is based on the goals and objectives of the 2030 Regional Transportation Plan, the recommended paths and parks in the 1996 Pima County River Parks Master Plan, and the overall objectives to increase bicycling mode share as addressed in the 1994 National Bicycling and Walking Study.

The specific action plan to guide achievement of this plan's vision and goals is presented in Chapter 5.

## **CHAPTER 3 - Past & Present Bicycle Facilities & Programs**

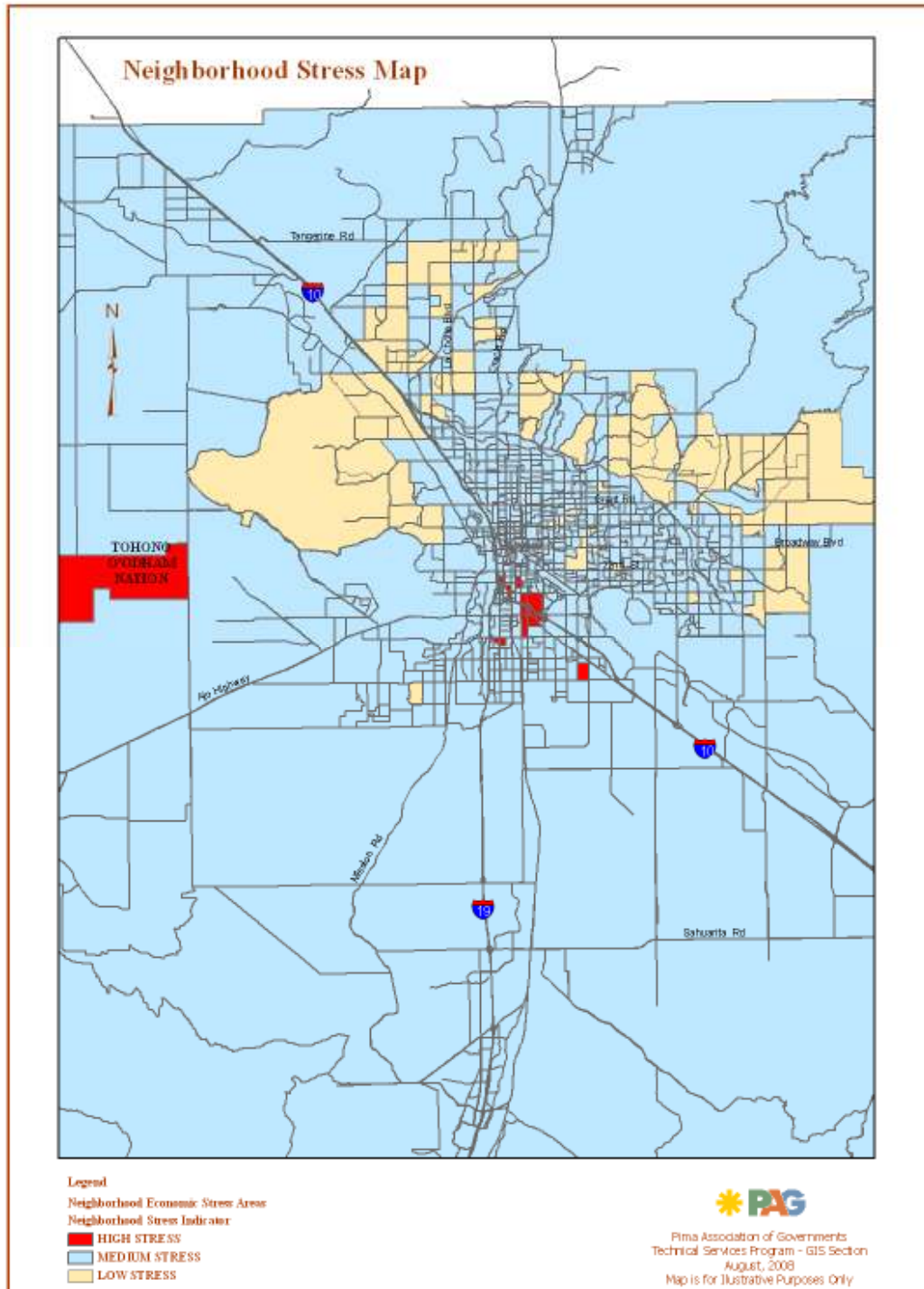
### **BICYCLE RIDERSHIP**

Bicycling in areas that have high density (greater than 4,000 persons per square mile), and are low income (persons with a median family income less than \$20,000/year), tends to be higher than in other lower density, higher income areas. Persons in households with low incomes are less likely to have a motor vehicle, in part because a greater proportion of their income is spent on shelter and food. 2000 Census data continued to indicate that bicycle usage for lower income households in the region is higher than the 1.6 percent in the general population.

Analysis of demographic data, including population density and income, in conjunction with the Pima Association of Governments' neighborhood stress map (Figure 3.1), demonstrates a continued need for connection and expansion of the street and shared-use path facilities. These are needed in the predominately Hispanic neighborhoods of the City of South Tucson, the predominately Hispanic neighborhoods of the southwestern area of the City of Tucson, and the predominately elderly population of the Green Valley area of Pima County. These areas are identified for new RTA projects within the next five years.



**Figure 3.1 - Tucson Metropolitan Region Neighborhood Stress**



## EXISTING FACILITIES

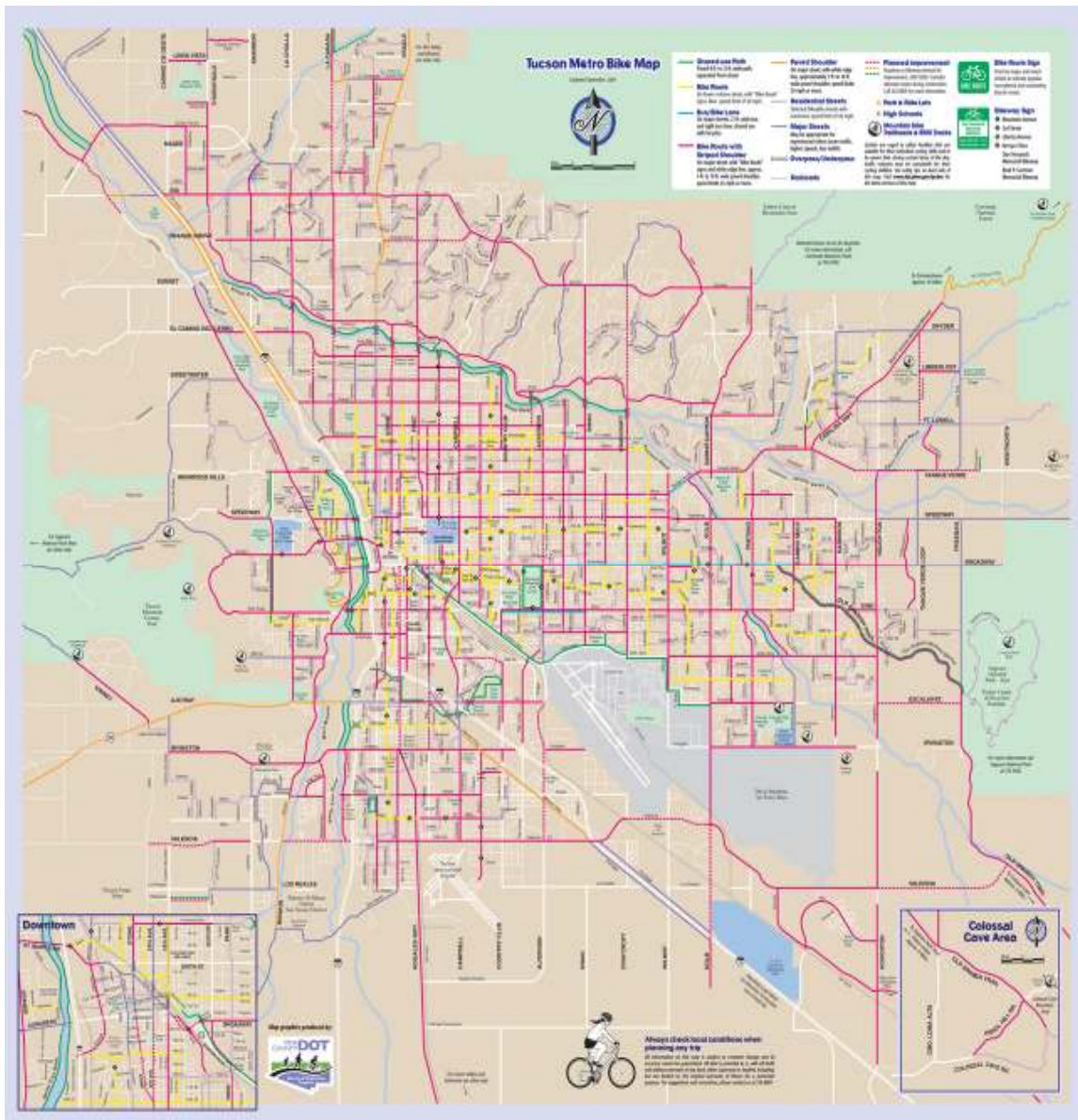
The existing regional bikeway and shared-use path system (Figure 3.2) has over 700 miles of on-street bikeways (centerline miles) and over 70 miles of urban shared-use paths.

Bicycle facilities historically have been placed in the areas of greatest demonstrated need. The first designated bicycle facilities were bikeways to the University of Arizona (3<sup>rd</sup> Street Bike Route and Mountain Avenue Bike Lanes). The placement of bike facilities to and at the University has, over the past 25 years, provided students, faculty and staff with accessible bicycle routes and parking facilities.

Crossing the region by bicycle, between southeast and southwest, and between northwest and southwest, remains challenging. Sections of roadways do not have adequate shoulders or bike lanes, and the riverpark pathway system is not complete and connected. The connection of many of these missing “links” is addressed with the RTA bike projects.

An on-road evaluation of bikeways in, around and through the Tucson metropolitan area found north-south and east-west connections that are very good recreational and commuting routes.

### Figure 3.2 - Tucson Metro Bike Map





## **BICYCLE CRASH ANALYSIS**

In spring of 2008, PAG initiated an analysis of bicycle crashes over a six-year period (2001-2006) to track crash trends and identify specific causes. The analysis covered all jurisdictions within Pima County by reviewing traffic reports submitted by local and state law enforcement agencies for that period. A summary analysis provided a detailed description of crash trends by location, time of day, and other variables.

The analysis showed that regionwide, crashes involving bicyclists are declining slightly when compared to population levels. However, there is no clear reason(s) for the decline until further analysis is conducted. Most crashes occur during daylight hours and on major arterial roadways. Crashes during darkness are not as high as previously thought. There is a strong link between alcohol and crashes resulting in incapacitating injuries and fatalities. The vast majority of bicyclists involved in crashes are males in their early to mid 30s.

It is clear that more analysis is needed to identify specific crash causes and implement key safety measures. Local jurisdictions continue to make significant bike facility improvements in corridors where they are needed most. Education and traffic enforcement efforts are also helping but need to be sustained for there to be a lasting impact.

PAG has made this analysis available to local jurisdictions and will continue to work with local officials and others to work toward improved bicycling safety throughout the region.

## CHAPTER 4 - Bicycle Facility Plan

### SUMMARY OF OTHER PLANS REFERENCED

Several plans and studies were directly relevant to the development of the vision, goals, and action plan of this Regional Plan for Bicycling. The policies of these plans are directly related to alternate modes of transportation, to the entire regional transportation system, and as a mode choice for commuting and recreation. These included:

#### **PAG REGIONAL TRANSPORTATION PLAN**

The Pima Association of Governments' Regional Transportation Plan, or RTP, provides a 20 plus year vision for a balanced, multi-modal and sustainable transportation system. The RTP addresses transportation facilities and services in eastern Pima County, including all of the PAG member jurisdictions, the Arizona Department of Transportation (ADOT), and other governmental agencies. The Regional Transportation Plan includes a set of four goals that serve as fundamental principles for the development of the plan. It is the balancing of these primary goals that has shaped, constrained and eventually melded the features and components of the plan into an identifiable and unified metropolitan transportation system. Specific implementation policies are associated with each of the primary goals.

#### **PIMA COUNTY RIVER PARKS MASTER PLAN**

The 1996 Pima County River Parks Master Plan incorporated the recommendations of the 1989 Eastern Pima County Trails System Master Plan into one recreation river parks and path system. With the continued growth in bicycling as an alternative mode of transportation, the River Parks are well suited for providing cross-town bike linkages, while maintaining their roles as shared-use facilities. The Eastern Pima County Trails System Master Plan is currently being updated and is anticipated to be adopted in 2009.

#### **THE NATIONAL BICYCLING AND WALKING STUDY**

This 1994 report, issued by the Federal Department of Transportation, Federal Highway Administration, presented a plan of action for enhancing the travel options of bicycling and walking. This Study had the dual goals of doubling the 1994 percentage (from 7.9% to 15.8%) of total trips made by bicycling and walking, and simultaneously reducing by 10 percent the number of bicyclist and pedestrians killed or injured in traffic crashes.

A 2004 update/status report from the Federal Highway Administration used data from the Bureau of Transportation Statistics, and found that the **number** of bicycling &

walking trips had nearly doubled from 19.7 billion to 38.6 billion. The **percentage** of trips, though, had increased from 7.9 percent to 9.5 percent - nowhere near the doubling that was set as the goal.

The 2004 report revealed that the goal of **reducing crashes** by 10 percent had been exceeded. The 1993 total of bicycle and pedestrian fatalities was 6,465, while the 2003 total was 5,388, a decrease of 16 percent.

One goal was exceeded, and one was not achieved, though progress in the right direction was made.

The PAG Transportation Improvement Program (TIP) Sub-Committee has recently adopted these goals for the TIP process:

- To provide a "promise to the public" to deliver projects in a timely manner.
- To maintain project consistency with the federally mandated, long-range Regional Transportation Plan and monitor funding sources for project availability.
- To conduct air quality analysis to identify potential air quality impacts.
- To provide an opportunity for public input.
- To prioritize projects and to ensure funding is available to finish projects in a timely fashion.

The City of Tucson conducted a Livable Tucson Vision Program in 1997-1998, which is still considered valid, and is utilized by the City of Tucson. The program found that the No. 1 vision of participants was "Viable and Accessible Alternatives to Automobile Transportation." Specifically:

**Policy 4: Bicycle Facilities:** Plan for bicycle facilities throughout the region that provide for the safe and efficient means of transportation and recreation throughout the greater Tucson metropolitan area.

#### **Supporting Policies**

- 4.1 Promote bicycle travel as an alternate mode of transportation.
- 4.2 Promote a system of bicycle facilities that provide a continuous, connective, safe and accessible system.
- 4.3 Promote bicycle safety education programs to increase awareness of and adherence to laws and regulations regarding bicycle use.
- 4.4 Design bicycle facilities consistently throughout the region.

According to survey results found in the **Evaluation of the 2007 Pima County Clean Air Campaign**, an annual report generated by the Pima County Department of

Environmental Quality, 9 percent of Tucson region residents ride their bicycles to work or school at least once per week, up from 6 percent in 2006.

This plan is based on the goals and objectives of the multi-modal 2030 PAG Regional Transportation Plan, the recommended paths and parks in the 1996 Pima County River Parks Master Plan, and the overall objectives to increase bicycling safety and mode share as addressed in the 1994 National Bicycling and Walking Study, and its 2004 Ten Year Status Report.

## **PUBLIC INVOLVEMENT**

Public meetings for input into the planning process for this *Regional Plan for Bicycling* were held in March 2009. Public opinion on regional bicycle issues was key to creating a plan that would have public support and acceptance. As was done with the 2000 plan development process, a survey was developed and distributed in order to obtain the general public's opinions about the existing bicycle system and determine what bicycle plans and improvements the general public feels are needed.

At four open houses, PAG staff met with the public to discuss future plans and improvements to bicycle facilities. These open houses were held in four locations in the region.

Locations were chosen with maximum opportunity for participation, and refreshments and free bike maps were given away to help attract participants. Ideas were solicited for making the region and its jurisdictions more bicycle friendly. The plan survey questionnaire (see below) was placed on the PAG Web site. The survey also was linked from many Web sites, including the Greater Arizona Bicycling Association, the Santa Cruz Valley Bicycle Advocate Committee, and the Tucson-Pima County Bicycle Advisory Committee's (TPCBAC) site.

In addition to the public meetings, surveys were gathered at the 2007 Pima County Health Fair.

## **BICYCLE QUESTIONNAIRE SUMMARY**

### ***Total Responses = 628***

#### **WHERE DO YOU LIVE?**

91% have lived in Tucson more than 5 years

60% of the respondents live in the City of Tucson

**HOW DO YOU USUALLY TRAVEL?**

82% Travel to Work or School by car  
8% Travel to Work or School by bike  
6% Travel to Work or School by bus  
93% Travel to Shop/Personal by car  
3% Travel to Shop/Personal by bike  
2% Travel to Shop/Personal by bus

**HOW MANY TIMES PER WEEK DO YOU BICYCLE?**

58% of bike riders ride at least once per week  
46% of bike riders ride more than twice per week  
16% of bike riders ride five or more times per week

**WHY DO YOU BICYCLE?**

79% Ride a Bike for Recreation  
17% Ride a Bike for both Recreation/Commuting  
4% Ride a Bike for Commuting

**IS TUCSON BICYCLE FRIENDLY?**

Yes, 57%  
No, 24%  
Somewhat, 19%

**BIKE FRIENDLY WHY OR WHY NOT?**

50% Many bicycle facilities  
28% Bikeway facilities not safe / Lack of Maintenance  
21% Too few bicycle facilities

**WHAT WOULD ENCOURAGE YOU TO RIDE A BIKE?**

(More than 1 answer allowed)  
27% Lived closer to work  
26% Safer Streets  
17% More bike lanes and paths  
11% More bike parking  
10% More Shower / Dressing Facilities

**WHAT ENCOURAGEMENT COULD LOCAL GOVERNMENT GIVE TO BICYCLES?**

(More than 1 answer allowed)  
35% More bike lanes  
28% More bike/motorist education (Share the Road)  
23% Better bikeway connections  
17% Better traffic enforcement  
15% More shared-use paths  
17% More safe crossings

## UNDERSTANDING BICYCLE USERS

There continues to be much discussion about how to classify bicycle users. While there is no generally accepted classification scheme for bicyclists, there are some preferred parameters. These include age and demonstrated behaviors. These are key determinants in the exhibited behavior of cyclists.

Age is based on studies done under the sponsorship of the National Highway Traffic Safety Administration (NHTSA) and has three distinct groupings: **adults** (typically 16 and older); **adolescents** (typically 12 through 15); and **children** (typically 11 and younger).

Demonstrated behaviors are not as well articulated, but generally include: **bicycle drivers** (those who operate according to traffic laws); **bicycle riders** (those who mix and match their adherence to traffic laws); and **bicycle outlaws** (those who rarely adhere to traffic laws). It is possible for any age group to be in any of these behavioral categories.

The 1994 report by the Federal Highway Administration used three general categories of bicycle user types to assist highway designers in determining the impact of different facility types and roadway conditions on bicyclists. This classification system was criticized (it mixed behavioral and age characteristics), but not replaced:

**Advanced** (experienced) riders are generally using their bicycles as they would a motor vehicle. They are riding for convenience and speed and want direct access to destinations with a minimum of detour or delay.

**Basic** (less experienced) adult riders also may use their bicycles for transportation purposes (e.g., to get to the store or to visit friends). They prefer to avoid roads with fast and busy traffic unless there is ample roadway width to allow easy overtaking by faster motor vehicles.

**Children**, riding on their own, or with their parents, may not travel as fast as their adult counterparts, but still require access to key destinations, such as schools, convenience stores and recreational facilities.

While this plan does not directly utilize user classifications, they do have importance in creating a better understanding of the wide range of users that facilities and programs must try to address. The classifications based on demonstrated user behaviors have gained more acceptance.

## BICYCLE FACILITY PLAN

Bicyclists have the same mobility needs as every other user of the transportation system and use the road system as their primary means of access to jobs, services and recreational activities. The skills, confidence and preferences of bicyclists continue to vary dramatically.



## REGIONAL BIKEWAY LOCATION RANKING CRITERIA

The 2000 Plan called for development of 400 miles of new on-street bikeways, and 50 miles of new shared-use paths by 2010. Since the 2000 Plan's completion, over 150 miles of new on-street bikeways (centerline miles) have been created and 20 miles of new shared-use paths constructed. With the funding from Pima County Bonds, the RTA Regional Transportation Plan, and the solid commitment of local governments, especially the City of Tucson, a new goal (463 miles by 2020) would seem to be achievable (and is reflected in Chapter 5, Table 5.1).

To create sound priorities, solid criteria are critical. The 2000 Plan had four bikeway location criteria: access, connectivity, continuity and safety.

Working with the Tucson-Pima County Bicycle Advisory Committee, 105 RTA Bike Projects were prioritized in 2006. The criteria used for prioritization included: continuity, population served, economic benefit, ease of implementation and safety.

### 2000 Plan bikeway criteria (as updated):

- **Access.** Does the proposed bikeway provide adequate access to activity centers?
- **Connectivity.** Does the bikeway connect directly with other bikeways?
- **Continuity.** Does the bikeway directly contribute to system continuity?
- **Safety.** Does the bikeway contribute in some positive way to improved safety for cyclists?

### 2006 RTA Plan bikeway criteria:

- **Safety.** Does the bikeway contribute in some positive way to improved safety for cyclists?
- **Continuity:** How well does the project maximize system continuity?
- **Population Served:** Does the project serve a substantive population?
- **Economic Benefit:** Does the project contribute to community economic benefit - is it on a major cycling event route?
- **Ease of Implementation:** How much effort is involved in the construction of the project (i.e., structural changes such as curb or guardrail removal/relocation)?

## FUTURE BIKEWAYS

The following policy has been developed to address the various situations that may exist, and to address all possibilities, so bikeways are not forgotten or overlooked.

**Policy:** *On all principal roadways (and their corresponding intersections) in the region, there should be on-road bike lanes/shoulders:*

- *If a principal road is reconstructed, AASHTO standards shall be used to design, construct (including restriping as a part of pavement overlays) and operate a bike lane/shoulder, including at intersections.*
- *If a principal road is newly constructed, AASHTO standards shall be used to design, construct and operate a bike lane/shoulder, including at intersections.*
- *If an existing principal roadway without bike lanes/shoulders is not due to be reconstructed within five years (no more than), AASHTO standards should be used to design, construct (including restriping as a part of pavement overlays) and operate a bike lane/shoulder, including at intersections.*
- *If an existing principal roadway without bike lanes/shoulders is scheduled for major maintenance, AASHTO standards shall be used to design, construct and operate, as a part of the major maintenance, a bike lane/shoulder, including at intersections.*

*This policy shall be treated as a requirement to be met, unless the chief administrator of the applicable jurisdiction authorizes a specific exemption, with justification.*

## **TITLE VI**

Title VI of the 1964 Civil Rights Act is a federal mandate that applies to all programs receiving federal-aid dollars. Persons may not be excluded from participating, obtaining benefits, or in any other way discriminated against on the basis of their race, color, national origin, gender, age or disability. It was recognized that Title VI applies equally to planning and public participation processes. To address Title VI, planning and programming processes collect and analyze relevant data such as the distribution and effects of transportation investments in the region on different socio-economic groups. Additionally, the planning process incorporates a public involvement process that uses a variety of techniques and methods to obtain input from throughout the community.

This plan considered a variety of demographic factors, including population density, income characteristics, ethnicity, and race and age factors. Each population has unique needs that this plan strives to address. The low-income population, for example, has a greater need for bicycle facilities, whereas school-aged children need well-lit and identified crosswalks.

A comprehensive compilation of factors, including all Title VI mandated factors, is found in the City of Tucson's Indicators of Neighborhood Stress. This 2002 report analyzed 31 data items from the 2000 Census (see Appendix A – Indicators of Neighborhood Stress), which were judged the best indicators of social dependency and housing need. There is a close relationship between income, minority status, age, and density with the desire and need to bicycle or walk. This review again indicated that some of the central and southern areas of the City of Tucson, much of the area of the City of South Tucson, portions of the southern urbanized area of un-incorporated Pima County, and the entire area of the Tohono O'Odham nation have been classified as having the two highest social and housing-related "stress" rankings in the area. The residents of these areas use alternative modes, such as bicycling and transit, more than the rest of the population.

## **DOWNTOWN BICYCLE CIRCULATION PLAN**

In late 2006, the Tucson Pima County Bicycle Advisory Committee (BAC) voted to create the Downtown Bicycle Circulation Task Force. The primary goal of this Task Force was to ensure that the needs of cyclists are taken into consideration in all future plans for the downtown area, and to prevent any bike route eradications without consultation with the BAC or bicycle planning staff.

The Task Force took a comprehensive look at all public streets and bicycle routes in the downtown area. The Task Force sought to address concerns about bicycle connectivity, safety and access in downtown Tucson. The specific objectives of the Task Force were to:

1. Identify the primary routes within the downtown area and routes providing connectivity to and from downtown.
2. Address any impediments to bicycle traffic so that bicycle commuting in and around downtown can become a more viable transportation option.
3. Insert bicycle friendly concerns into the planning process so that no more bicycle unfriendly changes are made to the downtown area.

The accompanying map (Figure 4.2) shows downtown routes of critical importance, useful routes, and routes where additional improvements are desired. Routes marked in red indicate critical routes. Critical routes are those that are either signed bicycle routes or provide connectivity to signed bicycling routes in and out of the core downtown area. Routes marked in yellow are deemed useful to cyclists but not necessarily critical for connectivity. Routes marked in blue are those with no existing bike facilities at this time. These routes are ones the BAC would like to see improvements on while preserving them as future desirable routes. It should be emphasized that all streets are potentially important bicycle routes, but those highlighted in the map are ones the bicycling community considers most important.

It should be noted that while portions of the University of Arizona were included on the map, internal campus bicycle connections were not depicted.

**Figure 4.2 – Downtown Bicycle Access Preservation**



In addition to the routes identified for preservation, the following general and specific recommendations have been identified by the Downtown Bicycle Circulation Task Force to make downtown Tucson more bicycle friendly.

**General Recommendations:**

- Include consultations with the bicycle planner and/or the BAC as standard procedure for altering or abandoning streets and alleys.
- Require “back-in” angled parking, which is much safer for bicyclists and pedestrians, on bikeways. Promote “back-in” angled parking in other areas where appropriate. Retrofit “nose-in” parking to “back-in” angled parking in areas of known bicycle use.
- Always ensure bicycle connectivity to existing routes.
- Enhance bicycle facilities whenever possible.

Specific Recommendations:

- Support the development of the El Paso Greenway and integrate it with existing routes. Seek grade-separated crossings at St. Mary's Road, Congress Street and 22<sup>nd</sup> Street. Seek a connection across the train tracks to University Avenue. Install a bike signal at University and Main once that connection is established.
- Support the development of bicycle/pedestrian connections between the west side and downtown through the interstate whenever possible.
- Enhance West Congress as a western gateway into downtown.
- Enhance St. Mary's Road as a western gateway into downtown. It is the western extension of the Third Street bikeway that connects Pima College west campus to the downtown.
- Ensure bicycle access through the Courthouse development, parallel to Grosetta and Council streets.
- Enhance and protect the crossing at 7<sup>th</sup> and 7<sup>th</sup> as a key bicycle gateway into downtown.
- Enhance 9<sup>th</sup> Avenue as a northern gateway into downtown. The crossing at 6<sup>th</sup> Street should be above grade per the Downtown Links plans.
- Make all railroad crossings more bike friendly.
- Conduct outreach and encouragement for downtown employers to increase bike usage by employees.
- Develop way-finding signage to better designate the regional bikeways and to enhance cycling downtown.
- Develop a Bike Station downtown where commuters can securely store their bikes and have access to shower and locker facilities. Bike rentals also could be used in the same space.
- Install more bicycle racks and bike lockers in various places downtown.

It is the hope of the Task Force that the map will be used as a guide by all applicable planning agencies for ensuring that the needs of cyclists are protected and that facilities are preserved or improved. In the future, we hope to see the concerns of the bicycling community, including the BAC, become a standard consideration in the planning and redevelopment processes for the downtown Tucson area.



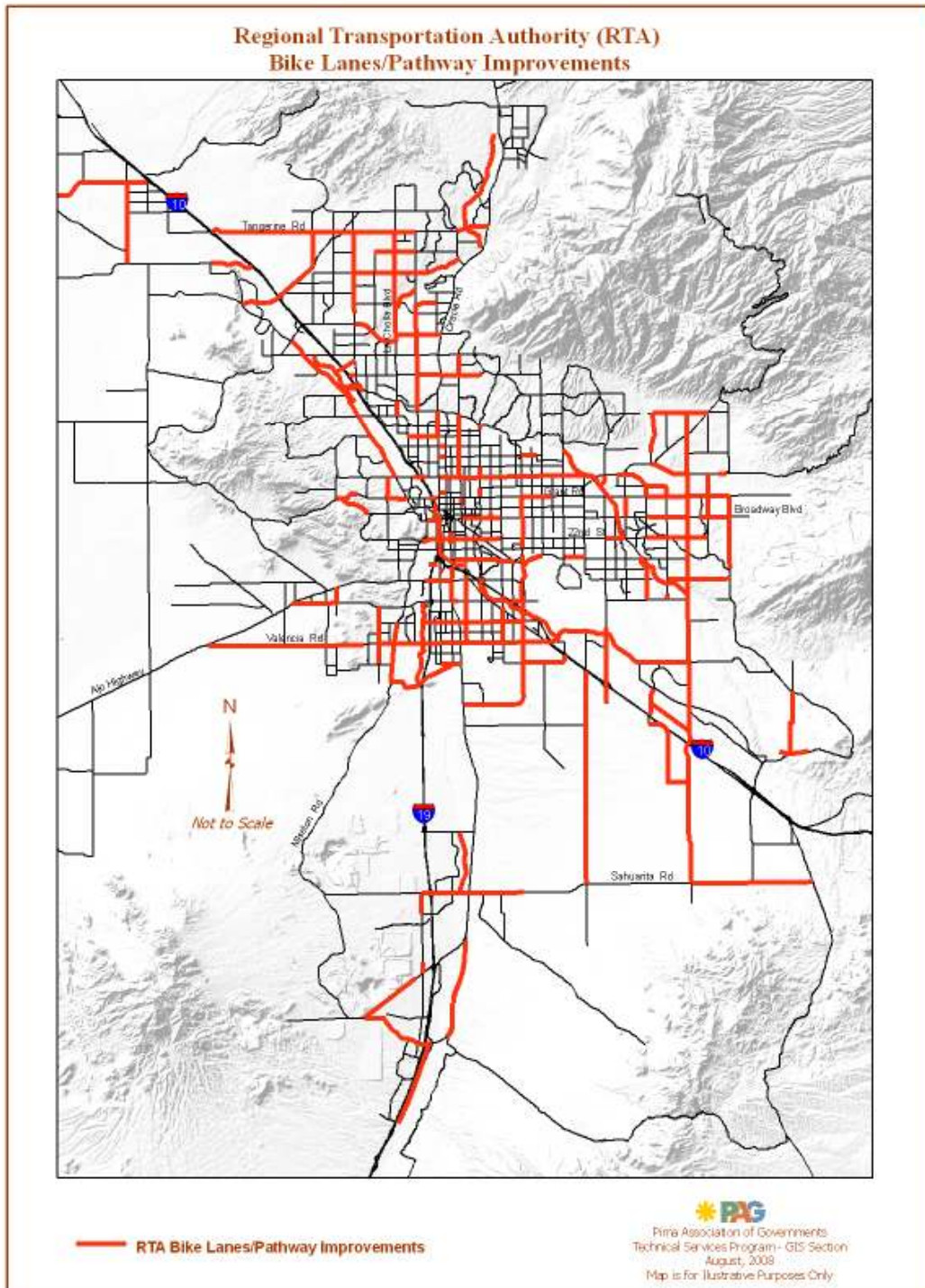
## **CHAPTER 5 - Implementation & Funding**

The Tucson region has an extensive regional bikeway system made up of bike lanes, shoulders, bike routes and shared-use paths. The system has grown considerably from its early 1970's beginnings. Local jurisdictions have developed new bicycle facilities and improved existing roadways and floodplain channels for bicycle travel. Regulations that require that bicycle facilities (including parking facilities), when applicable, be constructed on area roadways and along floodplain channels have been implemented. County Transportation and Recreation Bonds have been passed which will further increase the bike lanes, roadway shoulders, and shared-use paths that make up the Regional Bikeway System. All these facilities are provided to facilitate bicycle travel in the Tucson region.

### **RTA BICYCLE PROJECTS LIST**

Another important key to implementing more miles of bikeways in the region was the successful passage of the Regional Transportation Authority's (RTA) 20-year plan and funding package in May 2006. The RTA plan, developed through an inclusive, broad-based process, identified projects for all modes of travel in the region. The bicycle projects included bike lanes in all parts of the region, but centered on and emphasizing service to the greatest concentration of cyclists in the University and central city areas. See Figure 5.1 for planned RTA bike lane improvements.

**Figure 5.1 – RTA Planned Bike Lane / Pathway Improvements**



Following the cyclist-based process to identify priorities, jurisdictional staff worked to assess and prioritize (into the Regional Transportation Improvement Program - TIP) those projects that are “ready” in terms of preparedness to go to construction. Many factors were dealt with depending on the specific project, and included design, utilities, right-of-way, environmental concerns, drainage and others.

RTA Bike Lane projects already completed or planned for implementation in the next one to two years, include:

- 6<sup>th</sup> Avenue, 115' S of 19<sup>th</sup> St to north South Tucson limits - Tucson
- 6<sup>th</sup> Avenue, south South Tucson limits to Irvington - Tucson
- 22<sup>nd</sup> Street, Camino Seco to Harrison Road – Tucson
- Ajo Way, 16<sup>th</sup> Avenue to 6<sup>th</sup> Avenue – Tucson
- Ajo Way, through the I-10 interchange – Tucson
- Ajo Way, Santa Cruz River Bridge to 16<sup>th</sup> Avenue – Tucson
- Alvernon Way, 22<sup>nd</sup> Street to 29<sup>th</sup> Street – Tucson
- Alvernon Way, Broadway to 22<sup>nd</sup> Street – Tucson
- Alvernon Way, Golf Links to Ajo Way - Pima County
- Alvernon Way, I-10 to Valencia – Tucson
- Alvernon Way, Speedway to Broadway – Tucson
- Bear Canyon Road, Snyder to Indian Bend - Pima County
- Campbell, Elm to Speedway – Tucson
- Campbell, Glenn to Grant - Tucson
- Continental Road, Camino del Sol to La Canada - Pima County
- Country Club Road, ¼-mile south of Irvington to Valencia - Pima County
- Escalante, Houghton to Old Spanish Trail - Pima County
- Freeman Road, Broadway to Old Spanish Trail - Pima County
- Kolb Road, .4 mile north of Valencia to 1/2 mile south of I-10 - Pima County
- La Cholla Road, Tangerine Road to Lambert Lane - Pima County
- Mission Road, San Xavier to Drexel - Pima County
- Old Nogales Hwy, Nogales Hwy to Continental Road - Sahuarita
- Orange Grove Road, Oracle to Camino la Zorrela - Pima County
- Pantano Road, Speedway to Broadway – Tucson
- Park Avenue, Ajo Way to Irvington – Tucson
- Park Avenue, Benson Highway to Ajo Way – Tucson
- Speedway Boulevard, Alvernon to Rosemont – Tucson
- Tangerine, 1/4 mile east of Thornydale to Shannon - Pima County
- Tanque Verde Road, Powder Horn to Fennimore - Pima County
- Valencia Road, Alvernon to Craycroft - Pima County
- Valencia Road, Calle Santa Cruz to 12<sup>th</sup> Avenue – Tucson
- Valencia Road, Cardinal to Mission - Pima County
- Valencia Road, Craycroft to Wilmot - Pima County

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- Valencia Road, Wilmot to Kolb - Pima County
- Wrightstown Road, Tanque Verde to Harrison – Tucson

The list of RTA bikeway projects approved in the May 2006 election is included below, for both on-street bike lanes, and off-street shared-use paths.

**RTA BICYCLE PROJECTS LIST**

Project #	Ref Roadway	From St.	To St.	Jurisdiction	Miles	Est Cost
<b>Restriping Gap Closure Bike Lane Program</b>						
1	22nd St	Kolb	Pantano	Tucson	1.00	\$208,740
2	22nd St	Camino Seco	Harrison	Tucson	1.00	\$150,000
3	6th Ave	115' N of 19th St	STUC Lims	Tucson	0.60	\$38,574
4	6th Ave	STUC lims	Irvington	Tucson	1.70	\$112,155
5	Ajo	Thru I-10 interchn		ADOT/Tucson	0.40	\$36,320
6	Ajo	16th Ave	6th Ave	Tucson	0.75	\$138,049
7	Ajo	SCR Bridge	16th Ave	ADOT/Tucson	0.13	\$70,675
8	Alvernon	Speedway	Broadway	Tucson	1.00	\$114,917
9	Alvernon	Broadway	22nd St	Tucson	1.00	\$101,152
10	Alvernon	22nd St	29th St	Tucson	0.50	\$69,696
11	Alvernon Way	Ajo Way	Valencia	Tucson	3.06	\$161,375
12	Campbell	Glenn	Grant	Tucson	0.50	\$61,046
13	Campbell	Elm	Speedway	Tucson	0.50	\$11,063
14	Golf Links	Alvernon	Swan	Tucson	1.04	\$282,687
15	Irvington Rd	.1 mi W of I-10	.1 mi E of Alvernon	ADOT/Pima	0.85	\$77,180
16	Pantano Road	Speedway	Broadway	Tucson	1.40	\$102,843
17	Park	Benson	Ajo	Tucson	0.30	\$14,884
18	Park	Ajo	Irvington	Tucson	1.00	\$25,091
19	Speedway	Alvernon	Rosemont	Tucson	1.50	\$270,159
20	Valencia	Calle Santa Cruz	12th Ave	ADOT/Tucson	0.80	\$60,139
21	Valencia	Alvernon	Craycroft	Pima County	2.50	\$258,132
22	Valencia	Wilmot	Kolb	Pima County	1.00	\$62,448
23	Valencia	Craycroft	Wilmot	Tucson	1.00	\$115,315
<b>Sub-Total</b>					<b>23.53</b>	<b>\$2,542,640</b>
<b>Re-construction Gap Closure Program</b>						
24	22nd St	Houghton	Melpone	Tucson	1.00	\$150,000
25	22nd St	Santa Cruz Riv Bridge	10th Ave.	Tucson	0.80	\$120,000
26	22nd St	SPRR Overpass	Country Club Rd	Tucson	0.75	\$112,500
27	Ajo Hwy 86	8.01 mi W of Fuller	3.45 mi W of Fuller	ADOT/Tohono	4.56	\$684,000
28	Ajo Hwy 86	3.45 mi W of Fuller	Fuller Rd	ADOT/Tohono	3.45	\$517,500
29	Alvernon	Golf Links	Valencia	Pima County	4.07	\$345,950
30	Alvernon	29th St	Golf Links	Tucson	0.35	\$52,500
31	Alvernon	Valencia	Hughes Access	Pima County	3.20	\$400,000

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32	Anklam	Speedway	Player's Club Drive	Pima County	1.75	\$218,750
33	Avra Valley Rd	Airline Rd	I-10	Marana	2.06	\$257,500
34	Bear Cyn	Snyder	Indian Bend	Pima County	2.30	\$241,500
35	Broadway	Ridgeside	Freeman	Tucson / Pima	1.30	\$136,500
36	Calle Concordia	La Canada	Buena Vista	Oro Valley	1.03	\$128,750
36	Campbell	Rillito Brdg/approaches		Tucson	0.20	\$500,000
38	Cardinal	Irvington	Los Reales Rd	Pima County	3.04	\$258,400
39	Cmo de Oeste	Ajo Hwy	Irvington	Pima County	0.75	\$63,750
40	Cmo Loma Alta	Old Spanish Trail	Colossal Cave Rd	Pima County	3.05	\$259,250
41	Cmo Seco	Golf Links	Irvington	Tucson	2.06	\$475,000
42	Cmo Seco	Wrightstown Rd	Speedway	Tucson	0.53	\$79,500
43	Colossal Cave	Cienega HS	Pistol Hill	Pima County	2.20	\$187,000
44	Congress	Grande	I-10	Tucson	0.44	\$66,000
45	Continental	at I-19		ADOT/Pima	0.10	\$20,000
46	Continental Rd	Duval Mine Rd	Cmo Del Sol	Pima County	2.61	\$221,850
47	Continental Rd	Cmo del Sol	La Canada	Pima County	0.47	\$39,950
48	Country Club	Michigan	Irvington	Tucson	0.51	\$76,500
49	Country Club	1/4 mi S Irvington	Valencia	Pima County	0.65	\$55,250
50	Craycroft Rd	I-10	Los Reales	Pima County	0.31	\$26,350
51	Drachman St	Oracle Rd	Stone Ave	Tucson	0.35	\$52,500
52	Drexel Rd	Tucson Blvd	Alvernon	Pima County	1.47	\$124,950
53	Duval Mine Rd	Continental Rd	Rio Altar	Pima County	2.60	\$221,000
54	Duval Mine Rd	Rio Altar	La Canada	Pima County	0.95	\$80,750
55	Escalante	Harrison	Houghton	Tucson	1.00	\$150,000
56	Escalante	Houghton	Spanish Trail	Pima County	2.03	\$213,150
57	Euclid Ave	Speedway Blvd	University Blvd	Tucson	0.30	\$90,000
58	Freeman Rd	Speedway	Spanish Trail	Pima County	3.62	\$307,700
59	Ft Lowell	Alvernon	Camp Lowell	Tucson	1.00	\$150,000
60	Ft Lowell	Oracle	Stone	Tucson	0.35	\$52,500
61	Golf Links Rd	Craycroft	Wilmot	Tucson	0.98	\$147,000
62	Grant	Swan	Tanque Verde	Tucson	2.59	\$388,500
63	Grant Rd	SCR Bridge	Flow Wells Rd	Tucson	0.45	\$67,500
64	Greasewood	Grant	Speedway	Tucson	1.02	\$153,000
65	Harrison	1/4 mi N of Irvington	Irvington	Tucson	0.25	\$37,500
66	Harrison	Wrightstown Rd	Speedway	Tucson	0.45	\$67,500
67	Houghton	I-10	Sahuarita Rd	Pima County	4.00	\$420,000
68	Houghton	Snyder	Catalina Hwy	Pima County	1.15	\$97,750
69	Houghton	Catalina Hwy	Tanque Verde Rd	Pima County	1.90	\$161,500
70	Hughes Access	Nogales Hwy	Alvernon	Tucson/Pima	2.97	\$311,850
71	Irvington	Mesquite Ranch Rd	Houghton	Tucson	0.33	\$49,500
72	Irvington	6th Ave	Annapolis	Tucson	0.27	\$40,500
73	Kolb Rd	.4 mi N of Valencia	1/2 mi S of I-10	Pima County	3.50	\$1,050,000
74	Lambert Lane	Shannon	1st Ave	Oro Valley	4.30	\$365,000
75	Lambert Lane	Thornydale	Shannon	Pima County	1.00	\$150,000
76	Los Reales	Alvernon	Craycroft	Pima County	2.00	\$500,000

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77	Los Reales	12th Ave	Nogales Hwy	Tucson	1.00	\$150,000
78	Mission Rd	San Xavier Rd	Drexel	Pima/Tohono	2.90	\$246,500
79	Old Nog. Hwy	Nog. Hwy	Continental	Sahuarita	5.24	\$442,000
80	Oracle Rd	River Rd	Roger Rd	Tucson	1.27	\$190,500
81	Orange Grove	I-10	Thorneydale	Marana	0.33	\$49,500
82	Orange Grove	La Canada	Oracle	Pima County	1.20	\$102,000
83	Orange Grove	Oracle Rd	Skyline	Pima County	1.34	\$113,900
84	Park	Irvington	Valencia	Tucson	2.00	\$600,000
85	Prince Rd	Oracle Rd	Stone Ave	Tucson	0.35	\$52,500
86	Rita Rd	Old Vail	I-10	Tucson	1.30	\$195,000
87	Roger Rd	Romero Rd	Oracle Rd	Tucson	1.45	\$217,500
88	Sahuarita	Houghton	SR 83	Pima County	5.89	\$500,650
89	San Xavier Rd	Mission Rd	Los Reales Rd	Pima/Tohono	3.60	\$306,000
90	Sanders Rd	Trico-Marana Rd	Avra Valley Rd	Marana	3.99	\$425,000
91	Snyder	Bear Canyon	Catalina Hwy	Pima County	2.69	\$228,650
92	Speedway	Greasewood	Silverbell	Tucson	1.00	\$150,000
93	Speedway	Cam. De Oeste	Painted Hills	Pima County	1.60	\$136,000
94	Speedway	Harrison	Houghton	Tucson	1.00	\$150,000
95	Speedway	Houghton	Freeman	Tucson/Pima	2.04	\$214,200
96	Tangerine	I-10	Breakers	Marana	1.53	\$150,000
97	Tangerine	1/4 mi E of Thornydale	Shannon	Pima County	0.75	\$63,750
98	Tangerine	Shannon	La Canada	Oro Valley	2.00	\$300,000
99	Tanque Verde	Powderhorn	Fennimore	Pima County	1.40	\$119,000
100	Tanque Verde Loop Rd	Tanque Verde	Broadway	Tucson/Pima	2.08	\$218,400
101	Thornydale	Tangerine	Linda Vista	Pima County	2.93	\$249,050
102	Tucson Blvd	8th St	Broadway	Tucson	0.25	\$75,000
103	Trico-Marana Rd	Trico Rd	Sandario Rd	Marana	5.38	\$538,000
104	Valencia	Cardinal	I-19	Pima County	0.75	\$78,750
105	Wrightstown Rd	Tanque Verde	Harrison	Tucson	2.40	\$360,000

**Reconstruction Projects Total: \$17,765,750**

**Reconstruction Mileage: 144.03**

**Grand Total Mileage: 167.56**

**Grand Total Cost: \$20,308,390**

**RTA SHARED-USE PATHS PROJECTS LIST**

Rank	Project Description	Jurisdiction	Miles	Estimated Cost
1	Rillito River Park, Santa Cruz River to Camino De La Tierra	Pima County	1.23	\$1,000,000
2	Santa Cruz River Park, Ina Road to Curtis Road	Marana	3.30	\$3,827,760
3	Santa Cruz River Park, Irvington Road to Valencia Road	Tucson	1.87	\$1,216,200



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	Santa Cruz River Park, Valencia Road to Tucson		\$1,427,400
4	I-19	2.37	
	Santa Cruz River Park, Pima Mine Road Sahuarita		\$1,780,000
5	to Sahuarita Road	3.03	
	Pantano River Park, Craycroft Road to Tucson		\$1,972,400
6	Gateway Circle	4.08	
	Pantano River Park, Broadway Tucson		\$227,200
7	Boulevard to Kenyon Road	0.54	
	El Paso and Southwestern Greenway, Tucson/S Tucson		\$3,262,000
8	15th Avenue to the Julian Wash	4.79	
	Pantano River Park, Creek Street Tucson		\$1,218,000
9	Alignment to Houghton Road	2.29	
	Julian Wash River Park, Kino to Tucson/Pima		\$1,270,000
10	Valencia	4.83	
	Julian Wash River Park, Santa Cruz Tucson		\$124,000
11	River to I-19	0.59	
	Cañada Del Oro River Park, Santa Cruz Marana		\$1,171,040
12	River to Thornydale Road	1.11	
	Cañada Del Oro River Park, La Cholla Pima County		\$500,000
13	Road to La Cañada Drive	1.33	
	Big Wash River Park, Cañada Del Oro Oro Valley/Pima		\$2,600,000
14	River Park to Rancho Vistoso	3.78	
	Tangerine Greenway, First Avenue to Oro Valley		\$344,000
15	Oracle Road (one side)	1.63	
	Columbus Blvd, south end to Barraza- Tucson		\$560,000
16	Aviation Bikeway	0.12	

<b>Total</b>	<b>36.89</b>	<b>\$22,500,000</b>
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## RECOMMENDATIONS

The following recommendations will supplement the vision of providing for and facilitating bicycle travel in the Tucson Region.

### Facility Recommendations

The Tucson region has grown to over 700 miles of roadway bikeways, including over 70 miles of shared-use paths. The region's local governments, using RTA funding, development exactions, area roadway construction, the Pima County Recreation and Transportation bonds, and City of Tucson bonds, should substantially increase bikeway mileage in the next 11 years (from over 700 miles in 2009 to over 1100 miles in 2020).

Beginning in fall of 2008, the Bicycle Plan Update Project Task Force (BPUPTF) was formed to compile a list of bicycle related projects and programs covering the next 30 years. The BPUPTF created a prioritized list of approximately 250 identified needs totaling \$467 million. Projects were divided into 10, 20, and 30-year funding periods based on priority. See Appendix Item B for the complete project list.

### Bikeways Expansion

This plan recommends that bikeway expansion continue at an increased level as the region has passed a population level of 1 million. Table 5.3 below summarizes existing and planned miles of bikeway facilities.

**Table 5.1 Existing & Planned Bicycle Facilities (in Miles)**

<b>Type of Facility</b>	<b>Year 2009</b>	<b>Total by 2020</b>	<b>Year 2030 Total</b>
Shoulder/Lane	523	650	741
Route	100	300	500
Bus/Bike*	7.5	22	50
Shared-Use Path	72	114	124
Bike Boulevards	0	80	166
<b>Totals:</b>	<b>702.5</b>	<b>1165</b>	<b>1581</b>

\* Note: Bus/Bike lanes are lanes that accommodate buses, right turns and bicycles.

## ACTION PLAN

In order to effectuate the vision and goals of this plan, more specific steps are needed. Actions are listed below each Goal.

**Goal 1: EDUCATION** - Educate all road users, especially bicyclists and motorists, on legal, predictable and safe behavior. Continue and expand implementation of both adult and child bicycle driving and traffic education programs. Coordinate with all area school districts and with the state and local Safe Routes to School Programs.

Action 1. Support and expand the Safe Routes to School Bike-Ed Program in schools in the Tucson region.

Action 2. Continue development and use of video and audio PSAs, short instructional safety videos to promote proper and legal cyclist behavior, and other educational materials such as bus bench and shelter signs, as well as posters in bike shops, community centers, libraries, and other public and semi-public locations.

Action 3. Educate the public on traffic laws, and the legal status of bicyclists, especially the three feet minimum passing distance law (ARS 28-735).

Action 4. Support and expand the adult bicycle education program; utilize periodic safety, commuter and defensive driver classes, PSAs, wrong-way signing and marking, open houses and other marketing methods.

Action 5. Continue the Bicycle Educator staff position in the Pima County Bicycle Program; establish a comparable position at the City of Tucson, and work to establish part-time bicycle educator positions at other PAG jurisdictions.

Action 6. Continue and expand local Police Bicycle Patrol Units, and dedicate a percentage of the officers' time to educational efforts on proper bicycling behavior.

Action 7. Develop and implement a bike offender diversion program (i.e., community service program) to complement the above enforcement efforts.

Action 8. Promote head injury awareness and helmet usage through PSAs, educational brochures, and low-cost helmet distribution.

Action 9. Maintain and improve the League of American Bicyclists "Bicycle Friendly Communities" gold designation, as well as Bicycling Magazine's "Top Ten Best Cities for Cycling" award for the region.

Action 10. Expand inclusion of bicycling-related questions in motor vehicle driving license tests as a means to raise awareness of bicyclists' rights and responsibilities. Work to include standardized modules on proper and legal cyclist-motorist interactions and safety in drivers' education courses.

Action 11. Continue to work cooperatively to update and distribute an improved, user-friendly bicycle map of the Tucson Region

Action 12. Work cooperatively to develop, publish and distribute a user-friendly Tucson Regional Bicycle Commuter Handbook.

Action 13. Continue to work cooperatively to update and distribute the Share the Road Guide.

Action 14. Periodically review, and update as needed, national "best practices" in cyclist and motorist education.

**Goal 2: ENFORCEMENT** - Establish and implement targeted enforcement of specific traffic laws on bicyclists and motorists, based on the documented most frequent bicyclist – motorist crashes.

Action 1. Update or develop materials for use by law enforcement personnel to support their education and enforcement efforts.

Action 2. Work with law enforcement to acquire or develop training materials for officers, to increase their understanding of and attention to legal and illegal bicycling and motorist behaviors.

Action 3. Commit a defined portion of law enforcement time (both police bicycle patrols and motor vehicle patrols) to target specific research-based bicyclist and motorist offenses for focused enforcement.

Action 4. Develop and implement a consistent, year-round traffic law education program for law enforcement personnel which focuses on teaching police officers a balanced education and enforcement program for improving motorist and bicyclist compliance with traffic laws.

Action 5. Periodically review, and update as needed, national “best practices” in cyclist and motorist enforcement.

**Goal 3: ENGINEERING** - Plan, design, construct and maintain bicycle facilities that meet or exceed accepted standards and guidelines.

Action 1. Provide dedicated local funding sources for the construction and maintenance of bikeways.

Action 2. Incorporate bicycle-friendly roadway design practices and standards through consistent, routine training of ADOT and all PAG member jurisdiction staff on bicycle transportation planning and design practices.

Action 3. Increase regional bikeway miles to 1165 by 2020 and 1,581 by 2030.

Action 4. Develop an interconnected network of bikeways on and between 1) local and collector streets, 2) major arterial roadways, and 3) shared-use paths in linear parks, primarily along waterways. Concentrate bicycle improvements in a three-mile radius (“hub and spoke”) around major employment centers, schools and activity centers.

Action 5. Plan, program and implement special provisions for mid-block bicycle/pedestrian crossings of high-volume streets, at selected locations.

Action 6. Locate new schools, especially elementary and middle schools, on collector streets, where roadway volumes and speeds are lower, providing safer non-motorized access opportunities for school children.

Action 7. Provide periodic news releases for bicycle planning and bicycle system development and actively solicit public input.

Action 8. Develop land use policies, including zoning and subdivision regulations, which will accommodate and promote bicycle use in and to activity centers, neighborhoods, schools and parks.

Action 9. Require short and long-term bicycle parking for all commercial and business uses, and for multi-family housing.

Action 10. Revise codes to require motor vehicle parking on the side or rear of the developed lot, not in the front (street-side), to reduce potential for pedestrian and bicycle conflict (where the potential is highest).

Action 11. Monitor the implementation of elements within this Regional Plan for Bicycling and update the plan at approximate five-year intervals.

Action 12. Periodically conduct community-wide public opinion surveys to assist programs that could improve bicycling in the Tucson region.

Action 13. Continue and expand a PAG bicycle traffic counting program to identify usage levels and help determine progress toward achieving future bicycle mode split goals.

Action 14. Develop and implement a cooperative bikeway inventory system as part of the Regional Bike Map updating process.

Action 15. Develop a regional bicycle crash database to assist in educational and roadway improvement efforts.

Action 16. Prioritize implementation of bicycle facilities that connect key linkages to the roadway and river path systems, including interim roadway and path improvements where needed, and spot safety improvements on existing routes and paths.

Action 17. Re-stripe all principal roadways to provide maximum outside lane width, based on recommended widths in this plan.

Action 18. Provide and maintain a striped shoulder of at least four feet on uncurbed roadways (measured from white edge stripe to edge of shoulder), or bike/shoulder lane of at least five feet on curbed roadways (measured from white edge stripe to gutter face with at least four feet between the edge stripe and the edge of the gutter pan) on all new, rehabilitated, or reconstructed arterial and collector roadways.

Action 19. Modify existing traffic signal detection equipment or install new equipment, such as loop detectors, video detectors, or safely accessible push-button actuators to make all traffic signals bicyclist-responsive.



Action 20. Provide a multi-use auxiliary lane of at least eight feet on all new or reconstructed bridges, underpasses and overpasses.

Action 21. Plan and design for bicycle travel with all intersection capacity improvements, based on AASHTO Guidelines.

Action 22. Develop smaller radius corners on streets with bikeways to slow right turning traffic.

Action 23. Continue and expand street sweeping programs on designated bike routes, sweeping all bike lanes/shoulders and bike routes at least every other week.

Action 24. Maintain street surfaces on designated bikeways and key shared-use path linkages to a high standard, including elimination of potholes, and maintenance of bicycle-safe railroad crossings, drain grates and cattle guards. Avoid use of chip sealing on high-volume bikeways whenever practicable.

Action 25. Continue to routinely maintain and sweep street surfaces on arterials and collectors not designated as bicycle routes to reduce hazards (e.g., potholes, debris) for bicyclists that must use these roadways.

Action 26. Continue or establish strong jurisdictional responsiveness to maintenance requests from citizens through the use of on line or telephone reporting systems for citizens to report problems. Continue or establish a goal of five working days to address these problems.

Action 27. Seek and support a bottle deposit program in order to reduce littering of roadways, parks and bikeway facilities with hazardous broken glass.

Action 28. Provide and maintain bikeway detours through construction zones, and maximize outside (curb) lane widths (provide lane widths of at least 15 feet) through construction zones on roadways that do not have bike lanes/shoulders. Where this is not feasible, provide appropriate bicycle-friendly detours and detour signing.

Action 29. Provide bicycle coordinator or planning staff positions in PAG and PAG member jurisdictions and the Tucson Regional Office of the Arizona Department of Transportation (ADOT).

Action 30. Periodically review, and update, as needed, national "best practices" in cyclist engineering practices.

*For other design and traffic control questions, refer to the 1999 American Association of State Highway & Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities or Guidelines and Chapter 9 on Bicycle Traffic Control Devices in the Manual on Uniform Traffic Control Devices (MUTCD).*

**Goal 4: ENCOURAGEMENT** - Encourage increased use of bicycles for transportation and recreation; support organized events, especially those that have substantive beneficial economic impacts. Promote the Tucson region's ideal climate and facilities for year-round bicycling to visitors.

Action 1. Increase the Region-wide bicycle commute mode share by 2020, and again by 2030.

Action 2. Continue the interface between bikes and buses, including such features bicycle racks (upgrade all future bus bike racks to hold three bikes) and lockers, park-and-ride lots, and low-floor buses and signal preemption for buses at signalized intersections.

Action 3. Encourage wide-spread support of and participation in bicycle awareness programs by bicycle shops, bicycle clubs, the Tucson-Pima County Bicycle Advisory Committee, and other bicycle interest groups in efforts to promote public awareness of bicycling.

Action 4. Continue and expand marketing efforts to promote bicycling as an alternate mode of transportation, especially through cooperative efforts with PAG's Regional Travel Reduction and Rideshare Programs.

Action 5. Develop and implement specific incentives to encourage existing businesses and other entities to provide support facilities for bicycling, such as racks and bicycle lockers, showers and clothes lockers, parking cash allowances and guaranteed ride home programs.

Action 6. Provide outreach and personal travel cost information that shows how bicycle transportation can be financially beneficial to the low-income workforce and students.

Action 7. Construct bicycle facilities where needed, including roadway and parking improvements, in low-income areas.

Action 8. Promote the quantifiable air quality benefits of bicycling through public outreach efforts to major public and private sector employers.

Action 9. Develop and promote local bicycle parking ordinances where they do not currently exist, and monitor and assist improvement of existing local bicycle parking ordinances, based in part on bicyclist and business feedback and recommendations.

Action 10. Provide adequate bicycle parking facilities at schools, parks, libraries and other locations.

Action 11. Promote organized bicycle events as a means of increasing public awareness of the potentials of bicycling and as a viable sport for public viewing and participation.

Action 12. Support the efforts of the Tucson-Pima County Bicycle Advisory Committee (TPCBAC) to promote bicycling and improve bicycle safety through effective responses to TPCBAC concerns.

Action 13. Periodically review and update, as needed, national “best practices” in cyclist encouragement.

Action 14. Promote the Bicycle Commuter Act.

Action 15. Promote and support Bicycle to Work Month and Bike Fest.

## **2030 RTP BICYCLE PROJECTS**

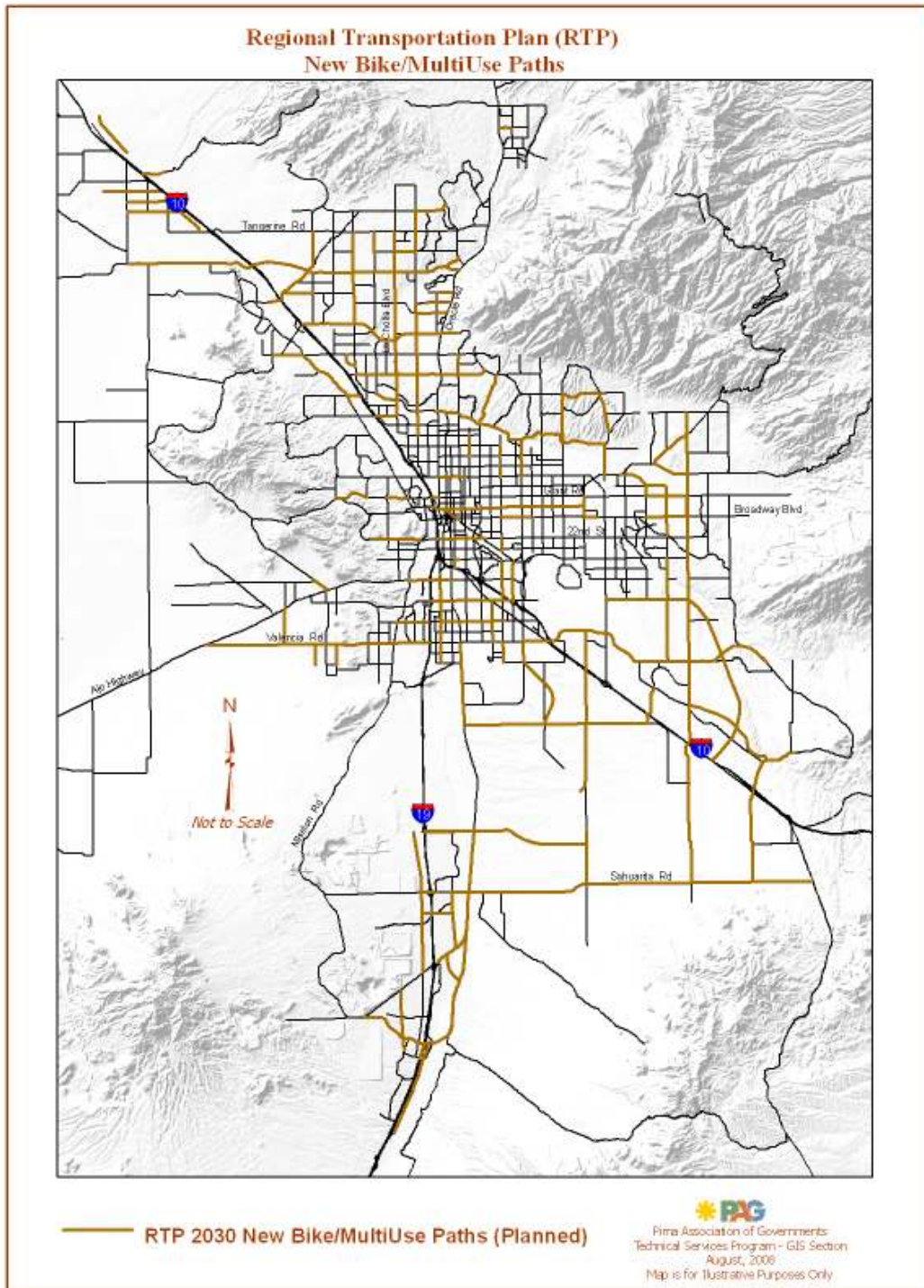
Bicycle improvements are made consistently and regularly, both as a part of the “normal” road development process (through the Regional Transportation Plan - RTP), and as a part of special provisions (such as the Regional Transportation Authority - RTA bicycle projects).

The most recently adopted PAG 2030 Regional Transportation Plan (RTP) includes Bike and Roadway projects (which explicitly include bike lanes) (see Figure 5.2). Bicycle-specific projects are listed below.

- Plan ID # 662.03, Continental Rd. #1, Duval Mine Rd. to I-19, Construct bike lanes – Pima County
- Plan ID # 663.03, Continental Rd. #4, White House Canyon to Nogales Hwy., Construct bike lanes – Pima County
- Plan ID # 198.03, La Canada Drive #1 / Flowing Wells Rd., Roger to River – Pima County
- Plan ID # 9.02, Mountain Ave. #3, Ft. Lowell to Roger – Tucson
- Plan ID # 269.98, Program - Bicycle parking and other amenities (\$200k/yr), various locations – Tucson
- Plan ID # 251.98, Program - Bicycle/Safety Improvements – Pima County
- Plan ID # 279.98, Program - Bike Lanes & Shared-Use Bike Paths, various locations – Tucson
- Plan ID # 125.98, Program - Bike Oro Valley Pedestrian & Bikeway Program – Oro Valley
- Plan ID # 353.03, Program – Bikeways Continuity and Maint., regionwide – PAG
- Plan ID # 71.00, Program – Traffic Safety Education Program, regionwide – Tucson
- Plan ID # 193.03, Sahuarita Rd. #8, Houghton to SR 83 – Pima County

- Plan ID # 669.03, Speedway #1.1, Camino de Oeste to Painted Hills – Pima County
- Plan ID # 670.03, Speedway #1.2, Greasewood to Silverbell – Tucson
- Plan ID # 196.03, Wentworth Road, Sahuarita Road to I-10 – Pima County

**Figure 5.2 – Regional Transportation Plan Bicycle / Multiuse Path Projects**



## **CHAPTER 6 - Programmed Bicycle Facilities**

### **FACILITY AND PROGRAM IMPLEMENTATION**

Implementation of bicycle facility planning and programming is dependent upon funding from federal, state or local resources. These resources have been used to construct bikeways on new and rebuilt roadways, provide safe crossings of major roadways, build shared-use paths along river and wash channels, and provide exclusive shoulders and bikeways on existing roadways. This Chapter sets out in more detail the funding sources for bicycle and path facilities in Pima County.

Bicycle facilities can be built using local and federal funds, and can take advantage of the land use development process. Developers, in constructing commercial and industrial properties, provide roadway improvements and new construction, including bicycle facilities, lockers and racks for employees and customers. Facility and program implementation strategies and responsibilities are identified in the Table 6.1.



**Table 6.1 - Bicycle Improvement Resources**

TYPE	IMPROVEMENT OPPORTUNITIES
Bicycle Lane or Shoulder	<ul style="list-style-type: none"> <li>• Land Use Development Dedication – local land use development process based on local government land use development policies and transportation standards</li> <li>• Revenue Bonds issued by local jurisdictions</li> <li>• General Obligation bonds issued by local jurisdictions</li> <li>• As part of STP roadway construction project on federally functionally classified streets</li> <li>• Highway User Revenue Funds (HURF) (if project is within street right of way)</li> <li>• Roadway Overlay Program – (local jurisdictions)</li> <li>• Transportation Enhancements – Regional and state process with federal SAFETEA-LU funds</li> <li>• RTA funds</li> <li>• Public/Private Grants</li> </ul>
Shared-use Pathway	<ul style="list-style-type: none"> <li>• Revenue Bonds issued by local jurisdictions</li> <li>• General Obligation bonds</li> <li>• Federal Rails to Trails funding authorized through SAFETEA-LU</li> <li>• Highway User Revenue Funds (HURF) (if project is within street right of way)</li> <li>• As part of a floodplain improvement project administered by the Army Corp of Engineers (local match for federal funds).</li> <li>• Transportation Enhancements – Regional and state process using federal SAFETEA-LU funds</li> <li>• RTA funds</li> <li>• Public/Private Grants</li> </ul>
Bicycle Planning and Education Programs	<ul style="list-style-type: none"> <li>• Local funds</li> <li>• Safe Routes to School funds</li> <li>• Transportation Enhancements – Regional and state process using federal SAFETEA-LU funds</li> <li>• Public/Private Grants</li> </ul>

## **PAG TIP PROGRAMMED BICYCLE PROJECTS**

Non-RTA bike lane projects (Regional Transportation Plan) programmed (in the current adopted TIP, FY 2009 -2013) for near future implementation are listed below and depicted in Figure 6.1.

### **ADOT**

- TIP # 36.05, SR 77, Roger Rd to River Rd - Sidewalk, Bike Lanes, and Landscaping – ADOT
- TIP # 33.06, Continental Rd. /I-19 Bike & Ped. Enhancement - ADOT

### **Marana**

- TIP # 106.08, Santa Cruz River Shared Use Path Phase 3, Lon Adams Rd alignment to Airline Rd - Marana

### **Oro Valley**

- TIP # 111, Hardy Rd, Northern Ave\Calle Buena Vista to Oracle Rd - Oro Valley
- TIP # 156.08, La Cholla Bike Improvements, Tangerine to Lambert Ln - Oro Valley

### **Pima County**

- TIP # 52.03, Safe School Route Bike/Ped Education Program - Pima County
- TIP # 38.05, Hohokam Middle School Bicycle & Pedestrian Project - Pima County
- TIP # 30.06, Homer Davis School Bike/Ped Enhancement - Pima County
- TIP # 31.06, Continental School Safe Routes to School - Pima County
- TIP # 36.06, Bike/Pedestrian & Transit Improvements - FY11 - Pima County
- TIP # 71.07, Picture Rocks & Desert Winds Safe Routes to School - Pima County
- TIP # 144.07, RTA Bicycle Lane Restriping and Gap Closure - Pima County
- TIP # 102.08, Rillito River divided urban pathway, Mountain Ave to First Ave - Pima County
- TIP # 119.08, Colossal Cave Road Bike Lanes, Cienega High School to Pistol Hill Rd - Pima County
- TIP # 153.08, Homer Davis Safe Routes to School - Pima County
- TIP # 154.08, Pantano River Park Supplemental Funding, Michael Perry Park to Kenyon Rd. Alignment - Pima County

### **Sahuarita**

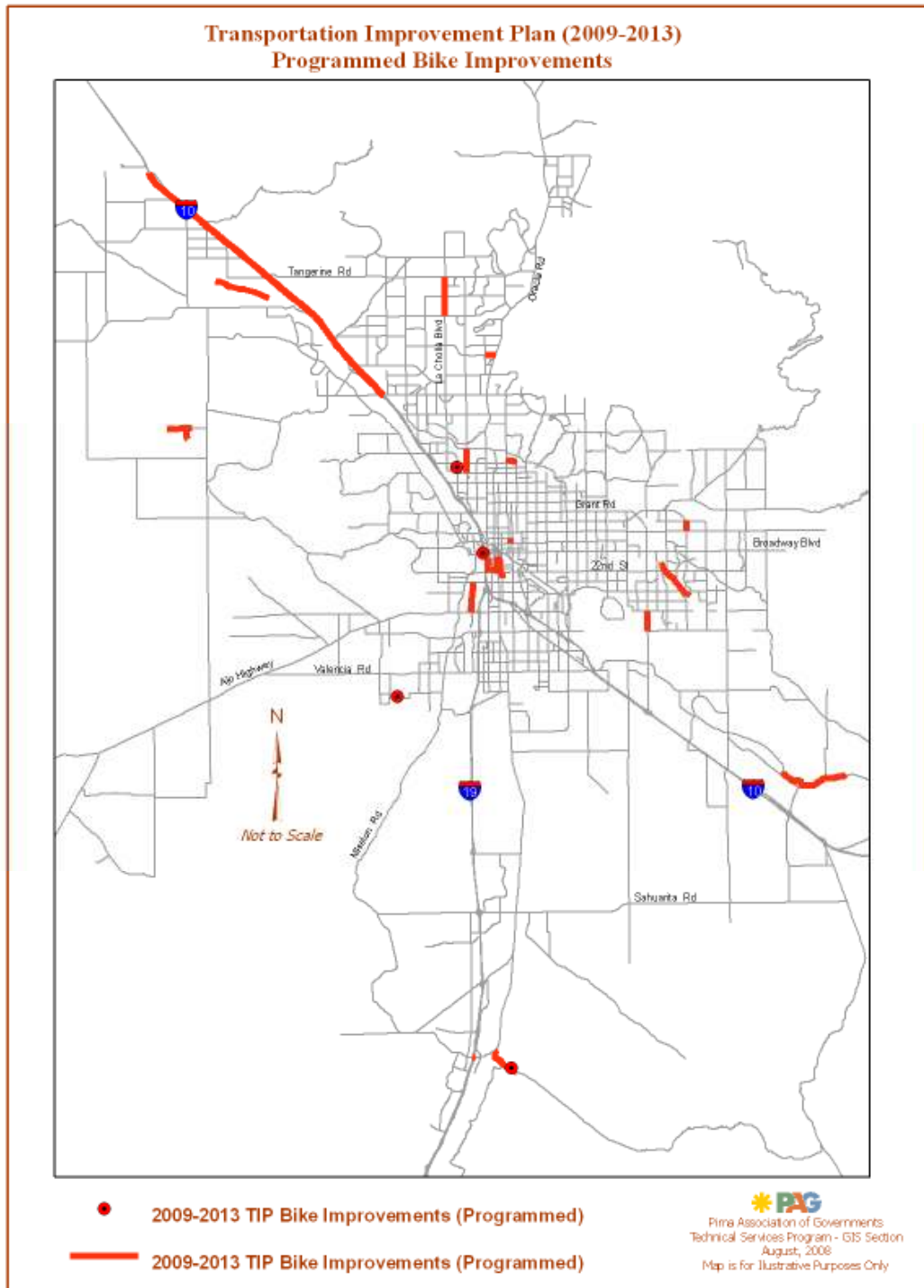
- TIP # 8.04, Bike/Pedestrian Neighborhood Path Program - Sahuarita

### **Tucson**

- TIP # 9.01, Bicycle Parking Improvements - Tucson
- TIP # 663, South 10th Ave Bicycle & Pedestrian Enhancement, 19th St to 22nd St - Tucson
- TIP # 10.01, Bikeway Project II - Phase B: Ajo to Silver Lake - Tucson

- TIP # 11.01, Bikeway Project II - Phase B: Congress St Congress St @ Santa Cruz River - Tucson
- TIP # 445, Tyndall Ave Enhancements, 6th St. to University Ave - Tucson
- TIP # 105.01, South 4th Ave Streetscape Enhancement Project, 22nd to 26th Streets - Tucson
- TIP # 107.02, Alternate Mode Improvements - FY06 - Tucson
- TIP # 134.02, Alternate Mode Improvements - FY10 - Tucson
- TIP # 72.07, El Paso & Southwestern Greenway, 22nd to Cushing - Tucson
- TIP # 142.07, RTA Bicycle Lane Restriping Package #1 - Tucson
- TIP # 120.08, Bike Lane Package 2 – Design - Tucson
- TIP # 850, Tucson - Traffic Safety Education Program OWP - Tucson

**Figure 6.1 – 2009 – 2013 TIP Bike Improvements**



## PRIORITIZED RTA BICYCLE PROJECTS

In 2006, PAG, Pima County Department of Transportation, Tucson Department of Transportation, the TPCBAC, other PAG-region jurisdictions and other cyclists developed a recommended ranking of RTA bike lane projects. After a preliminary listing based on the criteria established in Chapter 4, the list below was adopted as the recommended priority list of the TPCBAC at its October 2006 regular meeting.

**BAC Recommended RTA Bike Lanes**      **By Rank Order**      Revised 10-12-06

Proj Ref #							Project Rank
	Roadway	From St.	To St.	Juris	Dist (miles)	Est Cost	
Gap Closure Bike Lane Program							
73	Kolb Rd -Phase I	.4 mi N of Valencia	1/2 mi S of I-10	Pima County	3.50	\$250,000	1
12	Campbell	Glenn	Grant	Tucson	0.50	\$61,046	2
13	Campbell	Elm	Speedway	Tucson	0.50	\$11,063	3
79	Old Nog. Hwy	Nog. Hwy	Continental	Sahuarita	5.24	\$442,000	4
3	6th Ave	115' N of 19th St	STUC Lims	Tucson	0.60	\$38,574	5
4	6th Ave	STUC lims	Irvington	Tucson	1.70	\$112,155	6
102	Tucson Blvd	8th St	Broadway	Tucson	0.25	\$75,000	7
33	Avra Valley Rd	Airline Rd	I-10	Marana	2.06	\$257,500	8
47	Continental Rd	Cmo del Sol	La Canada	Pima County	0.47	\$39,950	9
80	Oracle Rd	River Rd	Roger Rd	Tucson	1.27	\$190,500	10
8	Alvernon	Speedway	Broadway	Tucson	1.00	\$114,917	11
57	Euclid Ave	Speedway Blvd	University Blvd	Tucson	0.30	\$90,000	12
19	Speedway	Alvernon	Rosemont	Tucson	1.50	\$270,159	13
99	Tanque Verde	Powderhorn	Fennimore	Pima County	1.40	\$119,000	14
70	Hughes Access	Nogales Hwy	Alvernon	Tucson - Pima County	2.97	\$311,850	15
31	Alvernon	Valencia	Hughes Access	Pima County	3.20	\$400,000	16
6	Ajo	16th Ave	6th Ave	Tucson	0.75	\$138,049	17
7	Ajo	SCR Bridge	16th Ave	ADOT/Tucson	0.13	\$70,675	18
43	Colossal Cave	Cienega HS	Pistol Hill	Pima County	2.20	\$187,000	19
97	Tangerine	1/4 mi E of Thornydale	Shannon	Pima County	0.75	\$63,750	20
98	Tangerine	Shannon	La Canada	Oro Valley	2.00	\$300,000	21
29	Alvernon	Golf Links	Ajo	Pima County	1.01	\$85,850	22
58	Freeman Rd	Speedway	Spanish Trail	Pima County	3.62	\$307,700	23
78	Mission Rd	San Xavier Rd	Drexel	Pima County/Tohono Oodham	2.90	\$246,500	24
2	22nd St	Camino Seco	Harrison	Tucson	1.00	\$150,000	25
36	Calle Concordia	La Canada	Buena Vista	Oro Valley	1.03	\$128,750	26
5	Ajo	Through I-10 interchange		ADOT/Tucson	0.40	\$36,320	27
30	Alvernon	29th St	Golf Links	Tucson	0.35	\$52,500	28

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81	Orange Grove	I-10	Thorneydale	Marana	0.33	\$49,500	29
28	Ajo Hwy 86	3.45 mi W of Fuller	Fuller Rd	ADOT/Tohono O'Odham	3.45	\$517,500	30
11	Alvernon	Ajo Way	Valencia	Tucson	3.06	\$161,375	31
50	Craycroft Rd	I-10	Los Reales	Pima County	0.31	\$26,350	32
63	Grant Rd	SCR Bridge	Flow Wells Rd	Tucson	0.45	\$67,500	33
48	Country Club	Michigan	Irvington	Tucson	0.51	\$76,500	34
72	Irvington	6th Ave	Annapolis	Tucson	0.27	\$40,500	35
96	Tangerine	I-10	Breakers	Marana	1.53	\$150,000	36
44	Congress	Grande	I-10	Tucson	0.44	\$66,000	37
14	Golf Links	Alvernon	Swan	Tucson	1.04	\$282,687	38
17	Park	Benson	Ajo	Tucson	0.30	\$14,884	39
18	Park	Ajo	Irvington	Tucson	1.00	\$25,091	40
21	Valencia	Alvernon	Craycroft	Pima County	2.50	\$258,132	41
61	Golf Links Rd	Craycroft	Wilmot	Tucson	0.98	\$147,000	42
84	Park	Irvington	Valencia	Tucson	2.00	\$600,000	43
104	Valencia	Cardinal	I-19	Pima County	0.75	\$78,750	44
51	Drachman St	Oracle Rd	Stone Ave	Tucson	0.35	\$52,500	45
49	Country Club	1/4 mi S Irvington	Valencia	Pima County	0.65	\$55,250	46
27	Ajo Hwy 86	8.01 mi W of Fuller	3.45 mi W of Fuller	ADOT/Tohono O'Odham	4.56	\$684,000	47
87	Roger Rd	Romero Rd	Oracle Rd	Tucson	1.45	\$217,500	48
32	Anklam	Speedway	Player's Club Drive	Pima County	1.75	\$218,750	49
60	Ft Lowell	Oracle	Stone	Tucson	0.35	\$52,500	50
85	Prince Rd	Oracle Rd	Stone Ave	Tucson	0.35	\$52,500	51
86	Rita Rd	Old Vail	I-10	Tucson	1.30	\$195,000	52
90	Sanders Rd	Trico-Marana Rd	Avra Valley Rd	Marana	3.99	\$425,000	53
62	Grant	Swan	Tanque Verde	Tucson	2.59	\$388,500	54
92	Speedway	Greasewood	Silverbell	Tucson	1.00	\$150,000	55
34	Bear Cyn	Snyder	Indian Bend	Pima County	2.30	\$241,500	56
103	Trico-Marana Rd	Trico Rd	Sandario Rd	Marana	5.38	\$538,000	57
20	Valencia	Calle Santa Cruz	12th Ave	ADOT/Tucson	0.80	\$60,139	58
Sub-Total miles:					88.34		



## CHAPTER 7 - Design Guidelines & Conclusion

### DESIGN GUIDELINES

#### AASHTO Guidelines for the Development of Bicycle Facilities

The Bikeway Design Guidelines of the PAG *Regional Plan for Bicycling* are based on the standards in the 1999 American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities*. The guidelines in the AASHTO Guide are incorporated into the Manual of Uniform Traffic Control Devices (MUTCD), and the latest version of the MUTCD is 2003 (see:

<http://mutcd.fhwa.dot.gov/>). There are several important additions that the 2003 MUTCD incorporates, which are not in the 1999 AASHTO Guide. These are:

- Revised bike lane signs (Section 9B.04);
- New sign & marking for bicycle detection at signals (Section 9B.12, 9C.05);
- “Bicycle Wrong Way” and “Ride With Traffic” signs (Section 9B.06, and 8B.19); prohibition on through bike lanes to the right of right turn lanes, and within circulating roadways of roundabouts (Section 9B.04);
- New guidance on accommodating bicyclists in temporary traffic control areas (Section 6G.05);
- Cautions against placing temporary signs in bike lanes or on sidewalks (Section 6F.03);
- Cautions against multiple right turn lanes on streets with bike lanes (Section 9C.04); and
- Cautions against posts or other raised markers to separate bike lanes from other travel lanes (Section 9C.04).

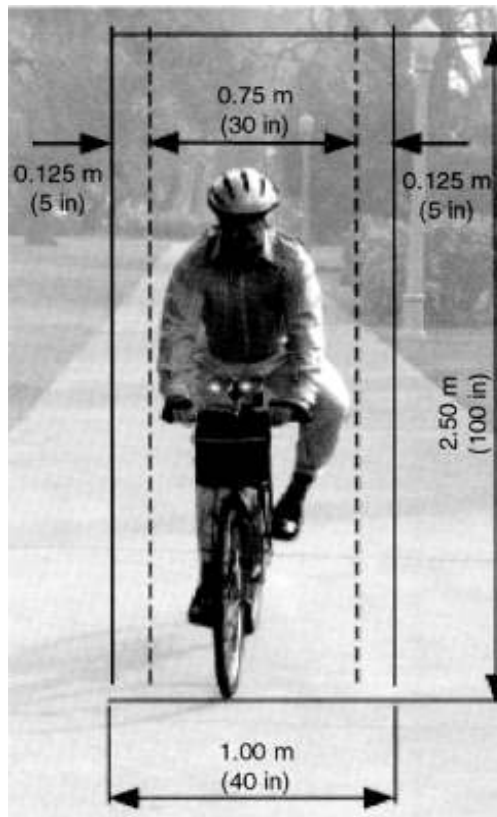
The AASHTO Guide (as updated by the MUTCD) is the only design guideline document for this plan, as these in concert represent the latest in nationally agreed upon bicycle facility design guidelines for urban and suburban roadway and shared-use path facilities.

#### General Provisions and Definitions

For safe and proper operation, bicyclists require at least 1.0 meter or 40 inches of operating space based upon their riding profile (See Figure 7.1). An operating space of 1.2 meters, or 4 feet, is the minimum width for any one-way facility designed for exclusive use for bicyclists. Where motor vehicle traffic volumes, motor vehicle or bicyclist speed, or the mix of truck and bus traffic increases, a more comfortable operating space of 1.5 meters or at least five feet, is desirable. Please note that the metric to English conversions used in this plan come from national sources, and are all

approximate. For example, 5 feet is actually 1.52 meters, and 4 feet is actually 1.22 meters.

**Figure 7.1 - Bicyclist Riding Profile**



Bicycle travel facilities include four classifications of bikeways:

**Shared Roadways** - all roads where bicycle travel is permitted. Width is the most critical variable affecting the ability of a roadway to safely accommodate bicycle traffic.

**Signed Shared Roadways** - all roads that have been identified by signage as preferred bike routes.

**Bike Lanes** - incorporated into a roadway when it is desirable to delineate available road space for preferential use by bicyclists and motorists, and to help provide for more predictable movements by each.

**Shared-Use Paths** - facilities on exclusive right-of-way and with very minimal or no cross flow of motor vehicles. In our region, predominant use is by pedestrians.

**Other Design Considerations** include: railroad-highway grade crossings, which should be at right angles (or close) to the rails; bicycles on freeways (bicycles are prohibited on I-10 north of Wilmot Road and on I-19 north of Duval Mine Road); bicycles at modern traffic circles; bicycle traffic through signalized intersections; roadway obstruction markings; and bicycle parking facilities.

### **Sample AASHTO Design Guidelines:**

#### **Signed Shared Roadway**

Design features that can make roadways more compatible with bicycle traffic include bicycle-safe drainage grates and bridge expansion joints, improved railroad crossings, smooth pavements, adequate sight distances, signal timing and detection systems that respond to bicycles. Width is the most critical variable affecting the ability of a roadway to accommodate bicycle traffic with the least potential conflict. Suitable width can be achieved by providing wide outside lanes or paved shoulders.

**Wide outside lanes** for bicycle use are usually preferred where shoulders are not provided. On street sections without designated bikeways, an outside or curb lane 14 feet or wider (with continuous pavement surface) can better accommodate both bicyclists and motor vehicles in the same lane, and is beneficial to both bicycles and motorists. In general, no less than 14 feet of **usable** (minimal or no surface defects, such as gutter-pavement joints, gravel, glass, or holes) lane width is recommended for shared-use. On steep grades, where bicyclists need more maneuvering space, the curb lane should be increased to 16 feet.

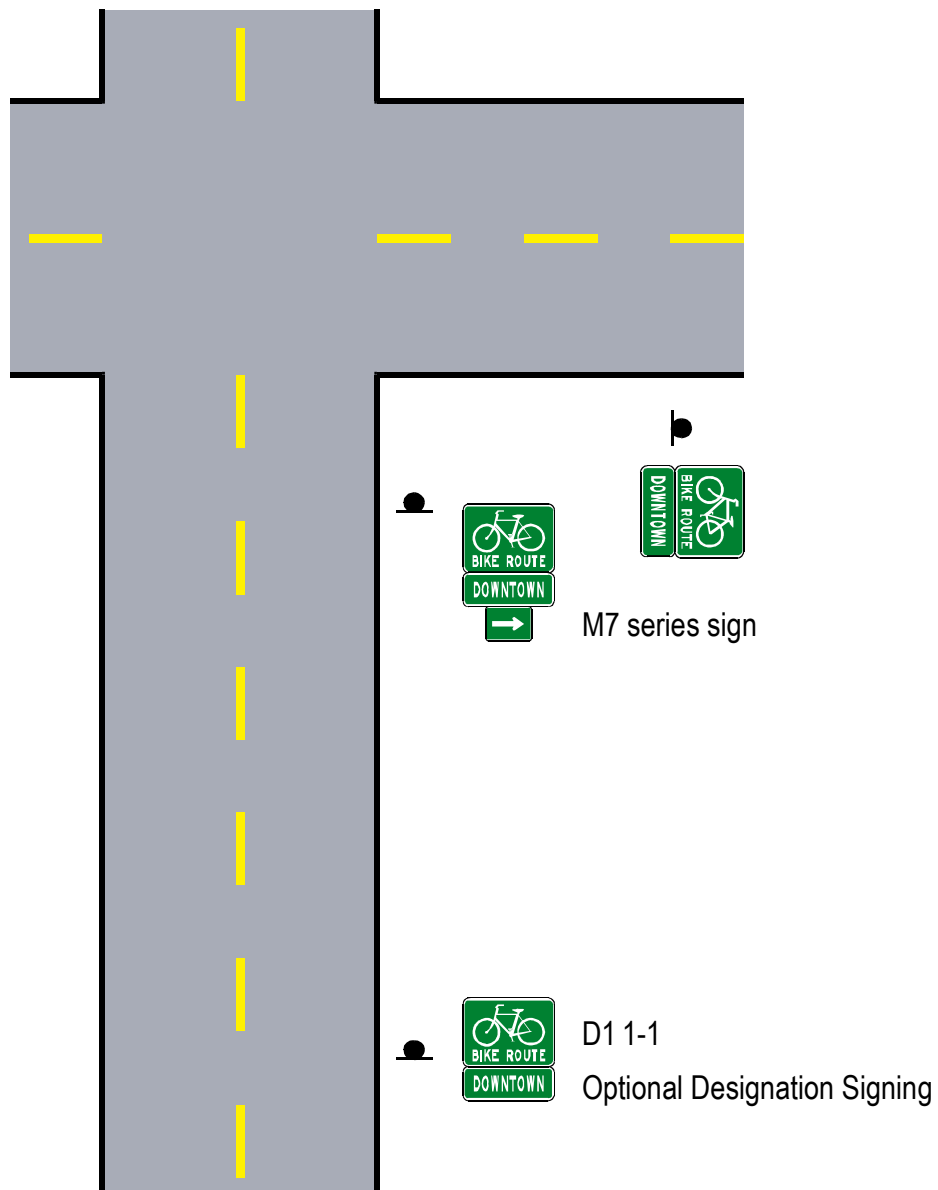
**Paved shoulders** should be at least four feet wide to accommodate bicycle travel when there is no curb, guardrail, or other roadside structure. A shoulder width of five feet is recommended from the face of any guardrail, curb or roadside barrier. It is desirable to increase the width (six feet or more) of the shoulder where higher bicycle usage is expected. Additional shoulder width is also desirable if motor vehicle speeds exceed 45 mph, or the percentage of trucks, buses and recreational vehicles is higher than 10 percent.

**Rumble strips** are raised or recessed pavement texturings, installed to discourage or warn motorists they are driving onto the shoulder. They are not recommended where shoulders will be used by bicyclists, unless there is a minimum of four feet from the rumble strip to the outside edge of paved shoulder or five feet to adjacent guardrail, curb or other roadside structure.

## Signed Shared Roadways

Signed shared roadways are those that have been identified with signing as preferred bike routes.

**Figure 7.2 - Typical Bike Route Destination Signs**



In urban areas, signs typically should be placed every 500 m (approx. 1/4 mile), at every turn, and at all signalized intersections.

There are several reasons for designating signed bike routes.

- The route provides continuity to other bicycle facilities such as bike lanes and shared-use paths.
- The route is a common way for bicyclists through a high-demand corridor.
- The route is preferred for bicycling by all users due to low motor vehicle traffic volume or paved shoulder availability.
- The route extends along neighborhood streets and local collectors that lead to an internal neighborhood destination, such as a park, school or a commercial district.
- The route provides connectivity to other bikeways and shared-use paths, access to major destinations, and safety and security from roadway obstacles.

Bike route signs also may be used on streets with shoulders. Regardless of the type of facility, where they are used, it is recommended that bike route signs include destination information as shown in Figure 7.2 on the previous page.

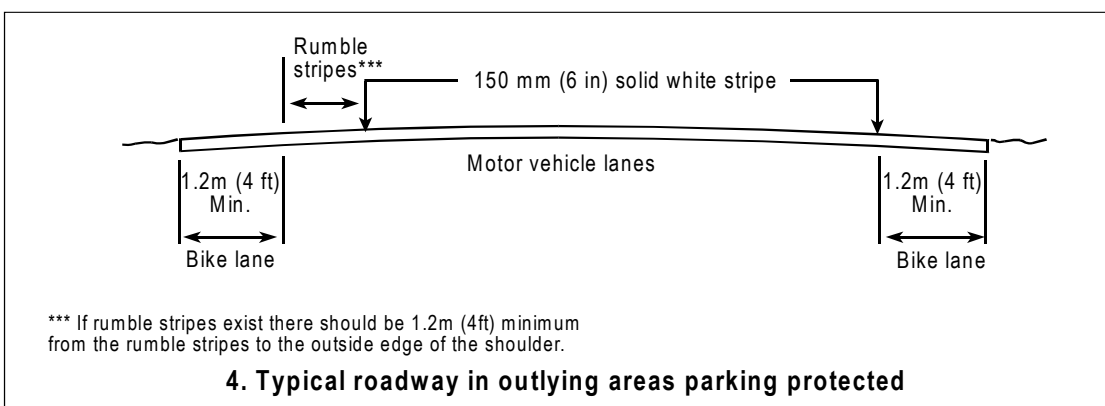
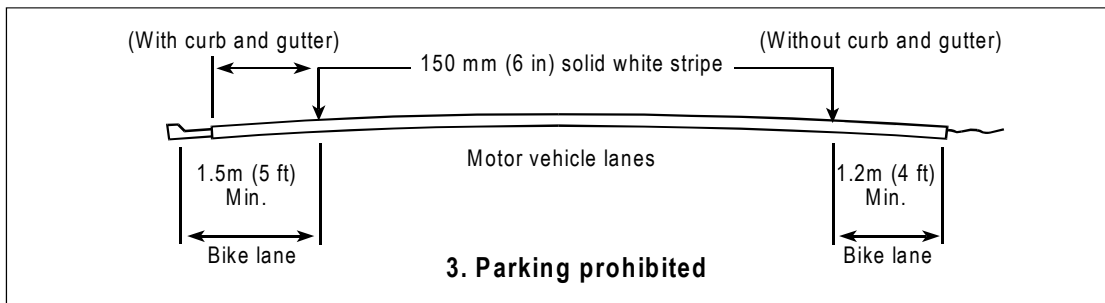
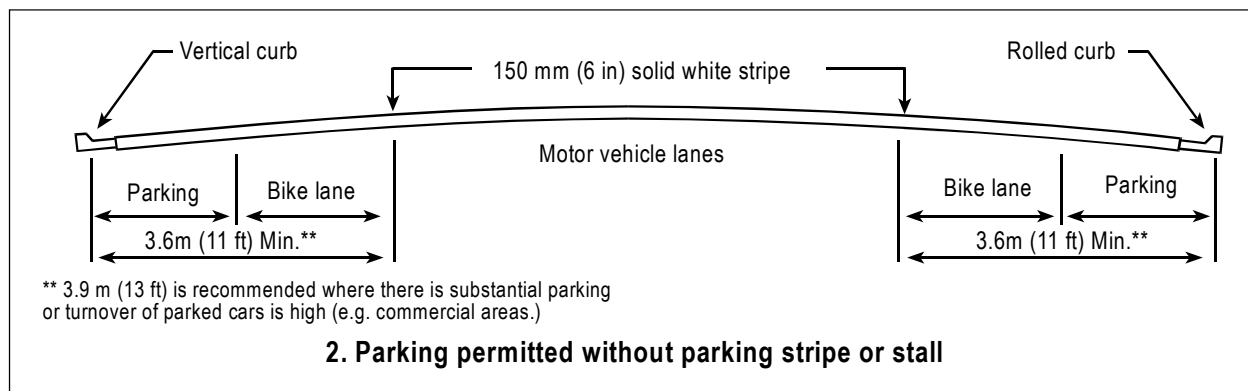
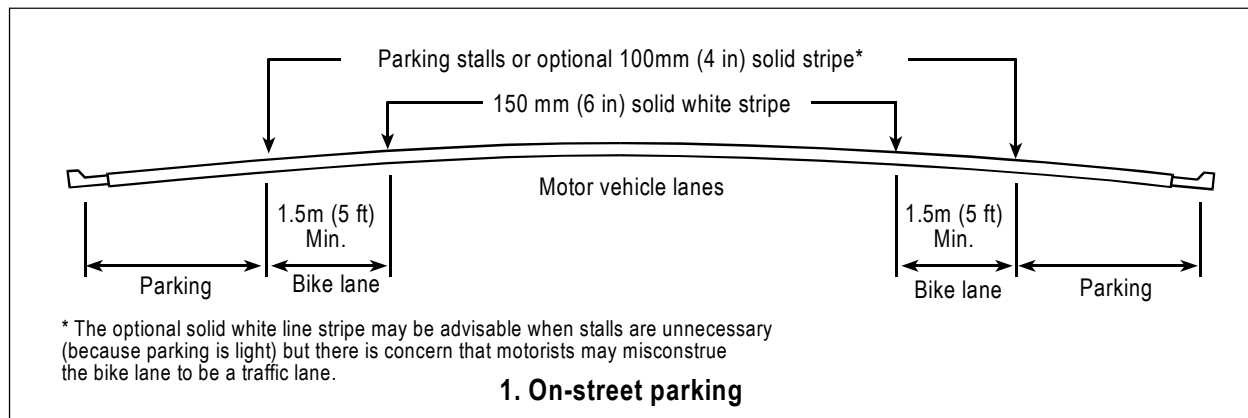
### **Bike Lanes**

Bike lanes can be incorporated into a roadway when it is desirable to delineate available road space for preferential use by bicyclists and motorists and to provide for more predictable movements by each. Bike lane markings can increase a bicyclist's confidence in motorists not straying into their path of travel.

Bike lanes should be one-way facilities and carry bicycle traffic in the same direction as adjacent motor vehicle traffic. Two-way bike lanes on one side of the roadway are not recommended as they result in bicycles riding against the flow of motor vehicle traffic. Wrong-way riding is the major cause of bicycle-motor vehicle collisions and violates the rules of the road as stated in the Uniform Vehicle Code (UVC).

Bike lanes as shown in Figure 7.3 have varying width requirements. For roadways with no curb or guardrail, the minimum width of a bike lane should be four feet. The recommended width of a bike lane when a curb or guardrail is present is five feet from the face of a curb or guardrail to the bike lane stripe. A bike lane should be delineated from the motor vehicle travel lanes with at least a six-inch solid white line.

**Figure 7.3 – Typical Bike Lane Cross-sections**



**Shared-use Paths**

**Typical Bike-lane Cross-sections**

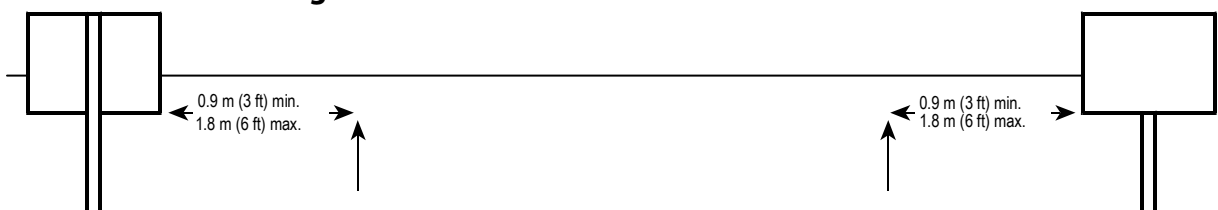


Acceptable shared-use paths are facilities on exclusive right-of-way with virtually no cross flow by motor vehicles. Users may include, but are not limited to: bicyclists, in-line skaters, roller skaters, wheelchair users (both non-motorized and motorized), and pedestrians (including walkers, runners, people with baby strollers, or people walking dogs). These facilities are most commonly designated for two-way travel and the guidance herein assumes a two-way facility is planned, unless otherwise stated. Shared-use paths **should never be used to preclude on-road bicycle facilities**, but rather to supplement a system of on-road bike lanes, wide outside lanes, paved shoulders, and bike routes, when appropriate.

Paths along highways are permissible, given no or virtually no driveways or cross streets, and appropriate separation between facilities. Some problems with paths located immediately adjacent to roadways are as follows:

- Unless sufficiently separated they require one direction of bicycle traffic to ride against motor vehicle traffic, contrary to normal rules of the road. (Wrong-way riding contributes to more bicycle-motor vehicle collisions than any other single act of conduct by bicyclists.)
- When the path ends, bicyclists going against traffic will tend to continue to travel on the wrong side of the street. Likewise, bicyclists approaching a shared-use path often travel on the wrong side of the street in getting to the path. (See prior note regarding the high collision potential this behavior creates.)
- At intersections, motorists entering or crossing the roadway often will not notice bicyclists approaching from their right, as they are not trained or conditioned to expect contra-flow vehicles.
- Signs posted for roadway users are backwards for contra-flow bike traffic; therefore, these cyclists are unable to read the information.
- When the available right-of-way is too narrow to accommodate highway and shared-use path features, the separation between the two, or the width of the path, may be improperly reduced.
- Many bicyclists will use the roadway instead of the shared-use path because they have found the roadway to be more convenient, better maintained or safer. Some motorists who feel that in all cases bicyclists should be on the adjacent path may harass bicyclists using the roadway.
- Although the shared-use path should be given the same priority through intersections as the parallel highway, many motorists falsely expect bicycles to stop or yield at all cross street and driveways. Shared-use paths should be merged into regular pedestrian crosswalks at intersections in order to avoid this problem.
- Stopped cross-street motor vehicle traffic or vehicles exiting side streets or driveways may block the path.

**Figure 7.4 - Shared-use Path Cross-Section**



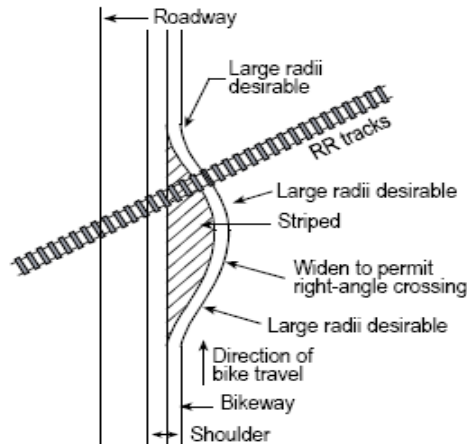
Because of the proximity of motor vehicle traffic to opposing bicycle traffic, barriers are often placed to keep motor vehicles out of shared-use paths and bicyclists out of traffic lanes. These barriers in most cases present a hazard to the bicyclists.

The paved width and the operating width required for a shared-use path are primary design considerations. Figure 7.4 above depicts a shared-use path on a separated right of way. Under most conditions, a recommended minimum paved width for a two-directional shared-use path is 10 feet. In very rare instances, a reduced width of 8 feet can be used. Under certain conditions it may be necessary or desirable to increase the width of a shared-use path to 12 feet, or even 14 feet, due to substantial use by bicyclists, joggers, skaters and pedestrians, and/or steep grades and clearance for maintenance vehicles. A minimum 2-foot wide graded area with a maximum 1:6 slope should be maintained adjacent to both sides of the path.

### **Other Design Considerations**

**Railroad-highway grade crossings** should ideally be at a right angle to the rails. This can be accomplished either as a separate path or a widened shoulder, as shown in Figure 7.5.

**Figure 7.5 - Railroad/Highway Crossings for Bicycles**



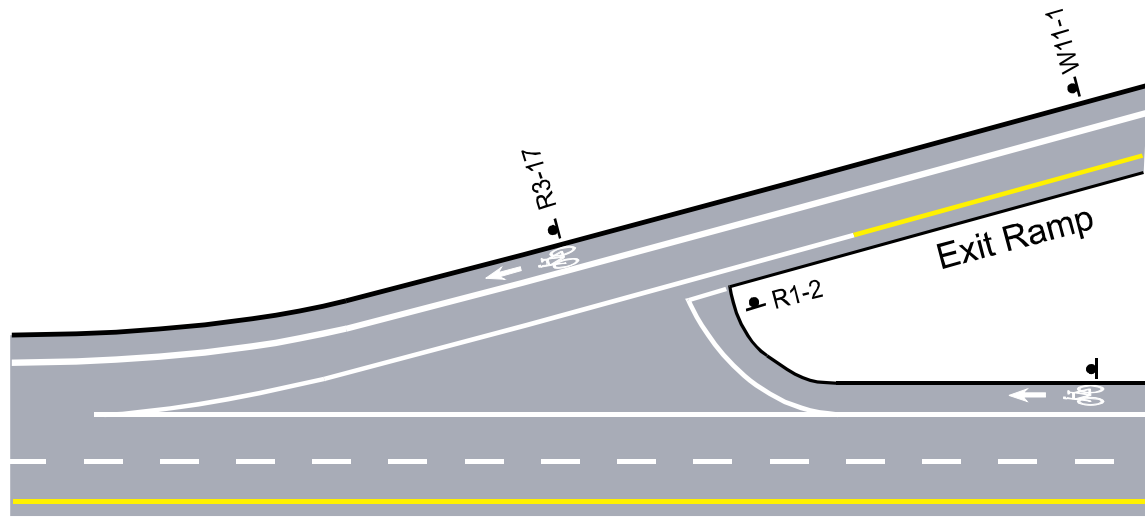
**Bicycles are permitted on the freeway** shoulders south of Wilmot on I-10 and south of Duval Mine Road on I-19. Essentially, the criteria involved assessing the safety and convenience of the freeway compared with available alternate routes. Freeway frontage roads are not yet available on many sections of the freeways where bicycle traffic is permitted and the freeways then offer the only route for bicyclists. In determining the suitability of alternate routes to the freeway, safety and convenience should be balanced. When and where frontage roads exist, they should have either shoulders or wide outside lanes, to more safely accommodate bicyclists.

**Bicycle facilities through interstate interchange areas** should be delineated both for entering bicycle traffic and for through bicycle traffic. Figure 7.6 illustrates guidelines for merging bicycle traffic exiting the freeway, joining with traffic on the cross street. It also shows two options for the through bicycle traffic where the off ramp merges with the cross street.

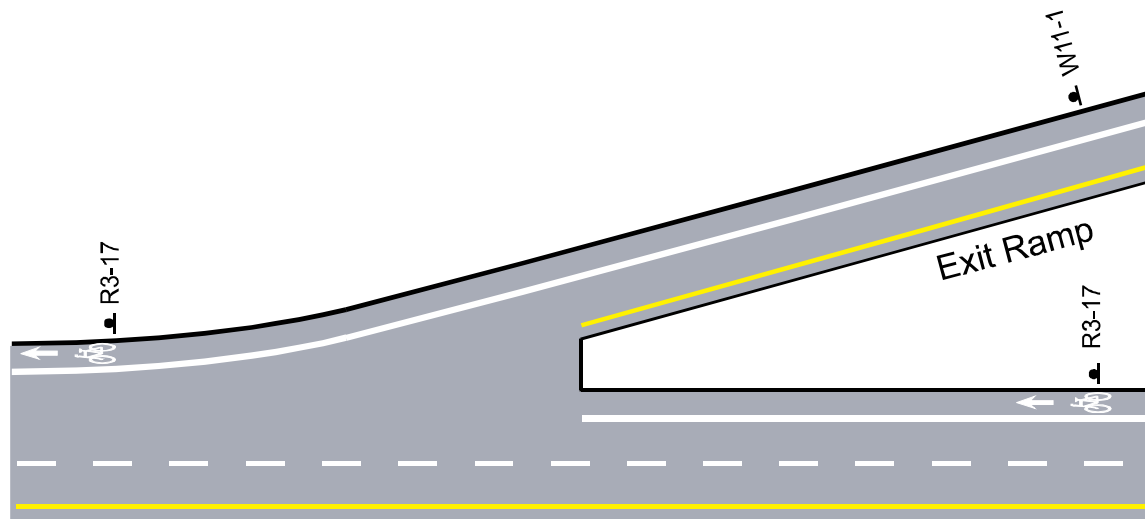
**Roundabouts** are used in a few locations in the region. In these locations, there are few negative safety impacts for bicyclists. Bicyclists are expected to circulate in the traffic lane at approximately the same speed as vehicles.

**Bicycles in signalized intersections**, as shown in Figure 7.7, should be accommodated by providing room for them to avoid right-turning motor vehicle traffic. Figure 7.8 identifies typical bicycle and auto treatments at major intersections with dedicated right turn lanes. It is important to provide a separate bicycle lane to the left of the right-turn only lane, wherever possible. A common Tucson solution to this situation, where right of way does not exist for a separate bike lane, is permitting the bicyclist to go straight in the right turn only lane. The cyclist should ride to the left of the right turn only lane for best safety in these situations. These types of lanes are often shared with buses such as the bus/bike lanes on Broadway and 22<sup>nd</sup> Street.

**Figure 7.6 - Bicycle Facilities in Interstate Interchange Areas**



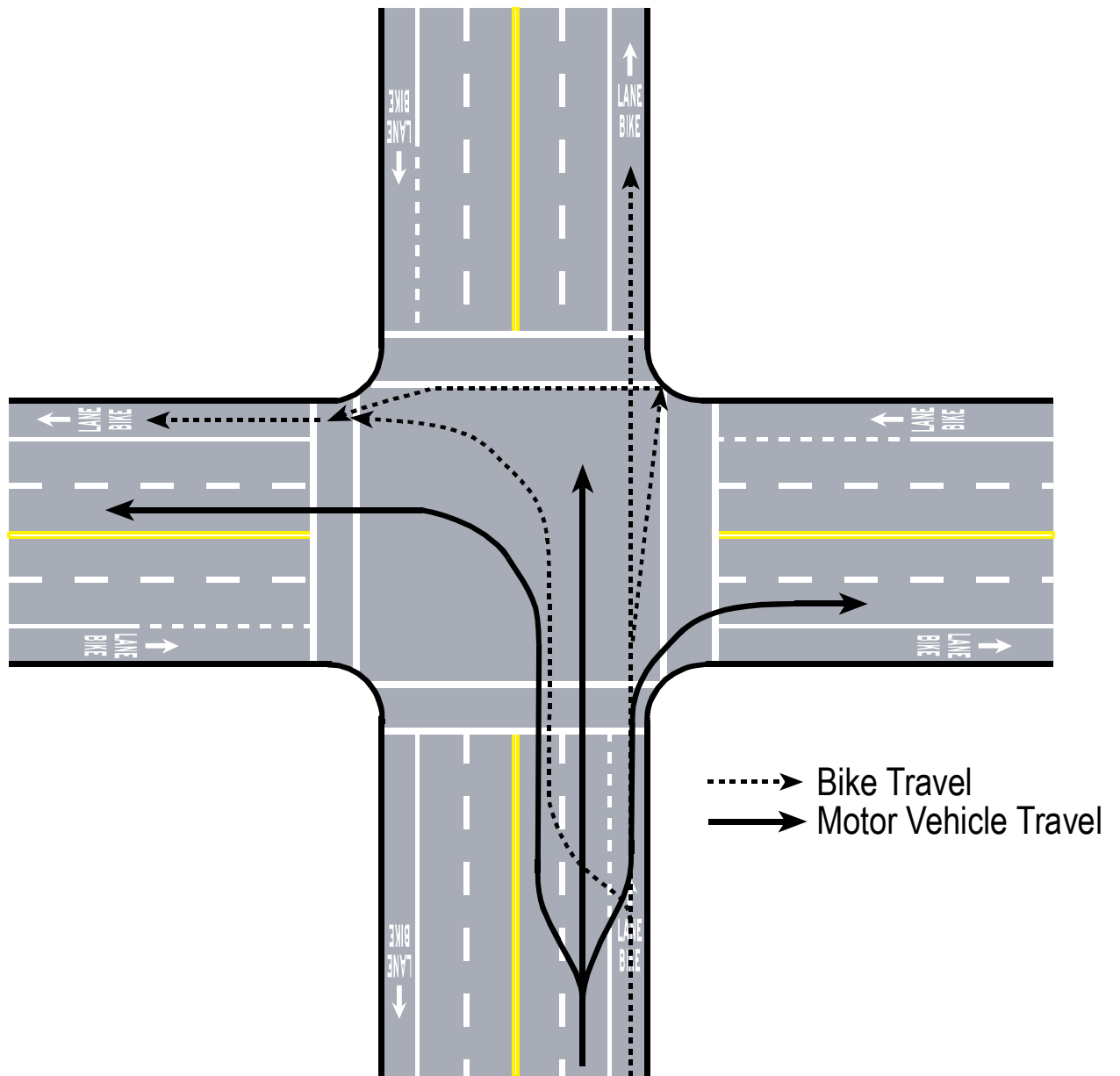
**Option 1**



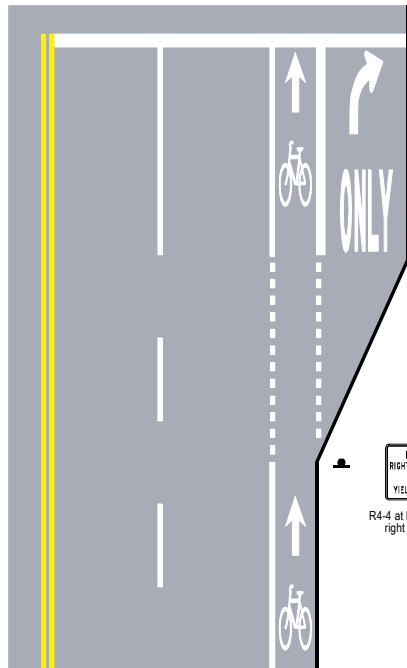
**Option 2**

Bicycle Crossing Of Interchange Ramp

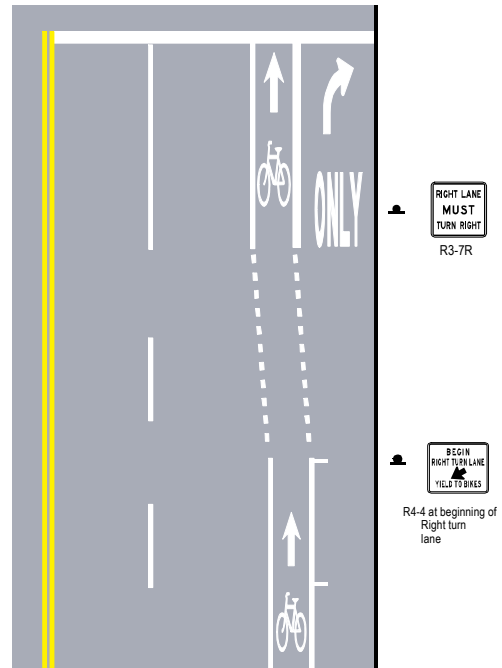
**Figure 7.7 - Bicycles in Signalized Intersections**



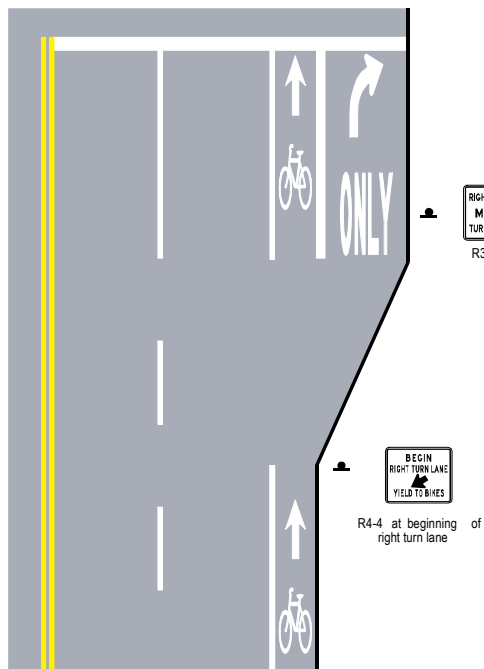
**Figure 7.8 - Bicycle Lanes approaching Right Turns**



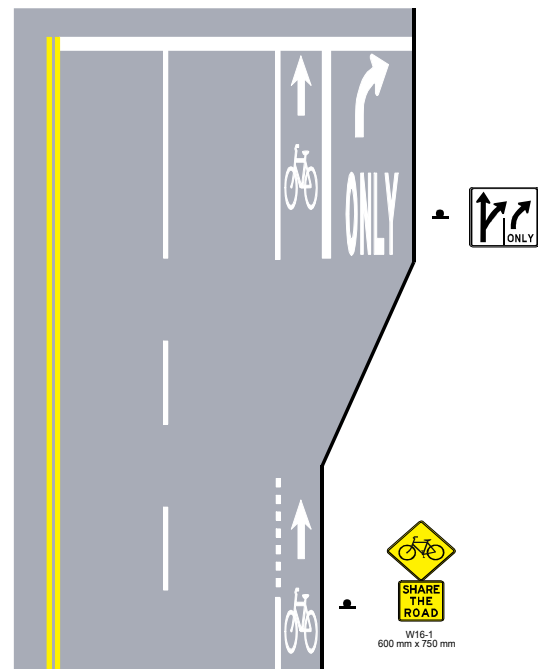
a. Right turn only lane



b. Parking lane into right turn only lane



c. Right turn only lane



d. Optional right/straight and right-turn-only

Bike Lanes Approaching Right-turn-only



## **Bicycle Boulevards**

The Tucson region is making it a priority to construct bicycle boulevards.

Bicycle boulevards are shared roadways that create an attractive, convenient, and comfortable cycling environment that is welcoming to cyclists of all ages and skill levels. In essence, bicycle boulevards are low-volume and low-speed streets that have been optimized for bicycle travel through treatments such as traffic calming and traffic reduction, signage and pavement markings, and intersection crossing treatments. These treatments allow through movements for cyclists while discouraging similar through trips by non-local motorized traffic.  
(IBPI 2009)

The 2009 Regional Bicycle Plan Update identifies over 40 streets and 150 miles to be turned into bicycle boulevards. Bicycle Boulevards are one tool the region will be using to improve safety conditions for all types of cyclists and to attract new bicyclists.

## **BICYCLE LEVEL OF SERVICE**

The issue of Level of Service has been in the professional arena for some years. Several proposals have been put forth, without any one being agreed upon as the nationally accepted model. Because of this situation, it was decided to not incorporate Level of Service into this Plan. Agreement may be reached in future years as to the approach that should be universally used to assess bicycle level of service.

## **MAINTENANCE CONSIDERATIONS**

In addition to construction costs, operating and maintenance costs must be included in the overall budget for the facility. Neglecting routine maintenance will allow deterioration of bicycle facilities until they become unsafe for riding. Bicyclists should be encouraged to report bicycle facilities in need of maintenance. The City of Tucson, Pima County, and the Town of Oro Valley all have a bicycle maintenance reporting process. Bicyclists may call the bike coordinator to report problems, complete an on-line report form, or send in pre-addressed and stamped postcards available at local bike shops and government offices.

A smooth surface free of potholes and debris should be provided on all bikeways. Glass, sand, litter and fallen leaves often accumulate in bike lanes, and on paved shoulders and shared-use paths; therefore, regular sweeping is important. After crashes, a better job of cleaning up/removing debris, especially broken glass, is needed. Police can help make this happen more consistently.

Pavement edges, especially on shoulders, should be uniform and should have no abrupt drop-offs. Signs and pavements markings should be inspected regularly and kept in good condition, and if determined to be no longer necessary, promptly

removed. Roadways with bicycle traffic may require a more frequent and higher level of maintenance than other roadways.

For shared-use paths, attention should be given to maintaining the full paved width and not allowing the edges to erode. Trees, shrubs and other vegetation should be controlled to provide adequate clearance and sight distances. Trash receptacles should be placed and maintained at convenient locations. Grass areas in the vicinity of shared-use paths should be mowed regularly. Also, enforcement is often necessary to prevent unauthorized motor vehicles from using a shared-use path.

The routine maintenance of roadways and bikeways will usually help provide good riding conditions. Several bicycle improvements described in this Plan can be implemented during routine maintenance activities. Considerations also can be given to adjusting lane widths and providing wider outside curb lanes for bicyclists during re-stripping operations. The addition of edge lines can better delineate a shoulder, especially at night. When shoulders are resurfaced, a smooth surface suitable for bicycle riding should be provided.

## **CONCLUSION**

This Regional Plan for Bicycling has a bold, publicly based and supported vision. The goals and action plan contained herein provide a strong, supportive context for PAG member jurisdictions to continue and strengthen their accommodation of bicycle travel, through development or update of Bicycle Improvement Plans, and subsequent implementation of bikeway improvements, educational and enforcement programs.

PAG will assist the implementation of this plan by member jurisdictions, cooperating and consulting with the Tucson-Pima County Bicycle Advisory Committee.

## **Appendix A – Indicators of Neighborhood Stress**

**2000**

**Tucson, Arizona**

**Indicators of  
Neighborhood  
Stress**

**Measures of Need and Dependency  
From Census 2000  
For Tucson Block Groups**

**Compiled by  
City of Tucson, Arizona  
Comprehensive Planning Task Force  
October 2002**

# **Mayor and Council**

**Robert E. Walkup, Mayor**

**Jose J. Ibarra – Ward 1**

**Carol W. West, Vice-Mayor – Ward 2**

**Kathleen Dunbar – Ward 3**

**Shirley C. Scott Ward 4**

**Steve Leal – Ward 5**

**Fred Ronstadt – Ward 6**

## **City Manager**

**James R. Keene, Jr.**

## **Comprehensive Planning Task Force**

**Albert Elias, Director**

**David Taylor, Planning Administrator**

**Autumn Figueroa, Principal Planner**

**Vickey Bagley, Planning Technician**



## Indicators of Neighborhood Stress

### History

In the late 1970s and early 1980s, the City of Tucson began studying different ways to evaluate the needs of its neighborhoods. City staff researched how other communities assessed neighborhood needs, but discovered that there are no national standards or thresholds with which to compare neighborhoods. No methods were found that would realistically tell community leaders when an area needed assistance. Therefore, twenty years ago the City developed a new and – as far as we know – unique approach.

Before developing the Indicators of Neighborhood Stress, staff did extensive research on using social indicators to predict community need. From this research, it became clear that data used in the study must come from a reliable source, be at a low level of geography, be updated regularly, and be low-cost or free. Expensive surveys and data for large areas (cities, counties, school districts, etc.) did not meet the purposes of the study. The census sample data was the obvious choice, as it met all the requirements above and offered a number of variables that related to community need.

After the release of 1980 Census sample data, indicators were chosen. The focus was on indicators of housing and family needs that could be addressed by Community Development Block Grant programs. Since the original indicators were chosen in 1983, they have changed somewhat due to availability of data. But the criteria have been consistent: the variables reflect family and housing conditions that indicate dependency and need. They relate to economic status, shelter costs and conditions, and possible social dependency (i.e., youth, old age, disability; see Appendix 1).

### A Look Ahead

This study is based on sample data from the Census of Population and Housing, which historically has been collected once every ten years. Near the end of each decade, decisions that are made using census sample data are based on very old information. In an effort to make timely data available, the U.S. Census Bureau has begun collecting sample data by means of the American Community Survey (ACS). If fully funded, the ACS will provide sample data every year beginning in 2004.

This opens up the possibility of more accurately determining whether neighborhood conditions are improving or declining. Although the decision to provide assistance to neighborhoods requires human judgment and therefore does not lend itself to threshold values, it may be possible to establish a threshold beyond which neighborhoods are more thoroughly studied to determine if assistance is appropriate. Yearly updates of sample data from the ACS could also provide benchmarks for the City's budget, to help determine whether past assistance served to improve conditions in the neighborhoods.





## Methodology

Because there are no national standards or thresholds, staff decided that the best course of action was to measure the City's neighborhoods against the average condition of the City as a whole. Therefore, the statistical method used measures areas in standard deviation units from the mean of the City. Each variable contributes equally to the overall composite score, as there is no credible basis for differential weighting.

Individual scores were standardized or normalized to remove differences in scale and variation among the variables. This process created variables whose means are zero and whose standard deviations are plus and minus 1. A score of +1.5 indicates that the area's score was 1.5 standard deviation units greater than the mean score of the Tucson area. Therefore, higher scores indicate higher stress. An overall, or composite, score was obtained by averaging all twenty-seven scores. Areas with scores greater than average were deemed to be "stressed." There is no consideration of whether the area's overall condition is good, bad, or indifferent. The scores reflect only population and housing variables. Highly relevant matters such as nutritional status, health status, recidivism, and crime, were not included in this approach (see Caveats, below).

## Caveats

Caution must be exercised in using these data and in interpreting their meaning. The items below must be taken into consideration when using this study.

1. **Thresholds:** There is no threshold beyond which an area automatically receives assistance. Because decisions about assistance involve public monies and goods, they are innately political and require human judgment.
2. **Neighborhood Boundaries:** The data used in this study are from the sample survey of Census 2000, and are reported to the block group level. In urban areas, a block group consists of about eight to ten city blocks, and in rural areas may be much larger. It is important to note that block group boundaries do not necessarily match the boundaries of registered neighborhood associations.
3. **Household Individuality:** These scores indicate general housing and social conditions for groups of households. The scores are not qualitative assessments of an area's or a single household's spirit or vitality; rather, these scores are simple, mathematical indicators of population and housing facets indicative of need. Each household is unique and may be quite different from others around it. For example, areas with very high scores indicative of great need and dependency may have many healthy, vital households.
4. **Scope:** The scope of this study is limited to indicators of housing and social conditions. It does not include other important indicators of welfare, such as health, nutrition, crime, other programs in place, and the organizational resources or assets of

the neighborhood group. Areas scored as having very low need or dependency may in fact have serious issues that are outside the scope of this study.

5. **Neighborhood Scores Versus City Average:** This study measures neighborhoods against the average condition of the City as a whole. Therefore, it is not possible to say whether a neighborhood's score is good or bad, only that it is higher or lower than the City average. If the average condition of the City is very good for a particular variable, then areas that score medium-high stress for that variable may not be of high concern. Conversely, the City as a whole may struggle with some issues, meaning that there may be more concern for areas that score medium-high stress for variables related to those issues.
6. **Need for Additional Data on Neighborhoods:** These scores and rankings have no agenda. They are intended for use as supporting facts and are not intended to be a substitute for human judgment. This study is provided to assist in fuller assessments of areas to be supported by community resources, and is only one factor to be considered in evaluation of an area.
7. **Comparison With Previous Studies:** Because the City's average changes with each census, it is not possible to say whether a neighborhood improved over the decades. It is only possible to say that its rank changed or remained the same relative to the City average. Comparisons with previous studies are further complicated by the fact that neighborhood boundaries and block group boundaries can change between censuses. Also, variables may change from decade to decade due to changes in data availability.
8. **Geographic Boundaries of Study:** Indicators of Neighborhood Stress for the City of Tucson encompasses a larger area than the incorporated City limits. This accounts for block groups that straddle or touch the City limits. These areas contribute to the City average and are shown on the Tucson Composite Stress Index Map.
9. **Pima County Data:** A separate Indicators of Neighborhood Stress was prepared for Pima County. For that study, the scores of all County block groups counted toward the average against which they were measured. Therefore, the same block group may have different standardized scores for the City of Tucson study and the Pima County study.

## APPENDIX 1 - NEIGHBORHOOD STRESS ELEMENTS

Neighborhood Stress scores are based on information obtained from the 2000 Census of Population and Housing, Summary File 3. This report provides an index of population and housing characteristics that can be used as supporting information in targeting areas for housing rehabilitation and implement programs to support and nourish those in need. This report identified 27 data items from the 2000 Census which were judged the best indicators of social dependency and housing need. The specific factors identified include the following:

### *1. Minor Population*

Persons 17 years old or less as a percentage of the total population.

### *2. Elderly Population*

Persons aged 65 years or more a percentage of the total population.

### *3. Pre-School Proportion*

Children 4 years or less as a percentage of the total youth population aged 17 years or less.

### *4. Dependency Index*

Ratio of youths (17 years or less) and elderly (65 years or more) to working age persons (18 – 64 years).

### *5. Fertility Index*

Number of children less than 5 years of age per 1,000 women aged 15 to 44 years of age.

### *6. Linguistic Isolation*

Households in which all persons 14 years of age and over have at least some difficulty speaking English as a percentage of all households.

### *7. Disability*

Civilian, noninstitutionalized persons 15 years and over with a disability as a percentage of all civilian, noninstitutionalized persons 15 years and over.

### *8. Poverty Status - Persons*

Persons below the poverty level as a percentage of all persons for whom poverty status is ascertained.

### *9. Poverty Status - Families*

The number of families below the poverty level as a percentage of all families for whom poverty status is ascertained.

***10. Poverty Status - Elderly Persons***

Persons 65 years or over who are below the poverty level as a percentage of all persons 65 years or over.

***11. Educational Attainment***

Persons aged 25 years and over who have completed less than 4 years of high school as a percentage of all persons 25 years and over.

***12. Unemployment Rate***

Unemployed persons 16 years and over who are in the civilian labor force as a percentage of all persons 16 years and over in the labor force.

***13. Not Working in 1999***

Persons 16 years and over with no employment in 1999 as a percentage of all persons 16 years and over.

***14. Working Mothers***

Females 16 years and over who are in the labor force and have children under 6 years of age as a percentage of all females 16 years and over with children under 6 years of age.

***15. Female Householder***

Families who have a female householder with related children under 18 with no husband present as a percentage of all families with related children under 18 years of age.

***16. Neighborhood Instability***

Persons 5 years old and older who lived in a different house five years ago as a percentage of all persons 5 years old and older.

***17. Crowding***

Housing units which have more than 1.01 persons per room as a percentage of all occupied housing units.

***18. Sanitation/Crowding***

Housing units that lack plumbing for exclusive use and which have more than 1.01 persons per room as a percentage of all occupied housing units.

***19. Plumbing***

Housing units that lack plumbing for exclusive use as a percentage of all housing units.

***20. Housing Age***

Housing units built before 1940 as a percent of all housing units.

***21. Kitchen Facilities***

Housing units which lack complete kitchen facilities as a percent of all housing units.

**22. Heating Fuel**

Occupied housing units lacking adequate heating fuels, i.e., that use fuel oil or kerosene, wood, coal, or no fuel at all, as a percentage of all occupied housing units.

**23. Vacancy Rate**

Vacant housing units as a percentage of all housing units.

**24. Owner Costs**

Owner households with incomes less than \$20,000 with owner costs exceeding 34% of their income as a percentage of specified owner occupied housing units.

**25. Renter Costs**

Renter households with incomes less than \$20,000 with gross rent exceeding 34% of their income as a percentage of specified renter occupied housing units.

**26. Communications**

Occupied housing units with no telephone and with a householder aged 65 years or over as a percentage of all occupied units.

**27. Access**

Occupied housing units with no vehicle available as a percentage of all occupied units.

Information about population and housing characteristics is central in the assessment of community needs. These data are necessary but not sufficient in forming a comprehensive strategy for community development and betterment. These data can be used as supporting information in targeting areas for rehabilitation and renewal of the physical housing stock and for implementing programs to support and nourish persons in need.

**MAPS:**

Tucson Composite Stress Index

2000 Census Tracts with Block Groups

## **APPENDIX 2. Listing of Tucson Area Block Groups in Rank Order by Stress Index**

Attached are seven pages listing the 443 block groups within or touching Tucson from Census 2000 in rank order by their composite stress index scores. If a locality or 'neighborhood' name was known to us for these block group areas, it is indicated. These data exist in much more detailed versions but are briefly summarized here for ease of use. Contact the Comprehensive Planning Task Force for further details.



## **Appendix B – Bicycle Plan Project List**

2009 Update #	Plan Phase	Project Name	Location To	Location From	Description	Costs (000's)	Sponsor	Distance	Category	Comments
3	1	18th St	Santa Cruz River Path	Cherrybell	Bike Blvd Improvements	300	Tucson	2	Bike Blvd Improvements	
4	1	22nd St	TUCSON BL	Country Club Rd	Construct bike lanes Restripe existing curb-to-curb width	100	Tucson	0.50	Connectivity	
7	1	33rd St / 29th St/ Calle Marte	Sahuara	Old Spanish Trail	Bike Blvd Improvements	930	Tucson	6.2	Bike Blvd Improvements	
10	1	9th St/8th St	4th Avenue	Country Club Rd	Bike Blvd Improvements	315	Tucson	2.1	Bike Blvd Improvements	
151	1	ABREGO	DUVAL RD	JAZMIN	Construct bike lanes	80	Pima County	0.2	Connectivity	
17	1	Alvernon	Valencia	Hughes Access	Construct bike lanes	1,015	Pima County	2.9	Connectivity	
18	1	Alvernon	Golf Links	Valencia	Construct bike lanes	943	Pima County/COT/ADOT	4.1	Connectivity	City & County currently working on designs; restripe plus some shoulder
19	1	Alvernon	29th St	Palo Verde Overpass / Golf Links	Construct bike lanes Improve Connectivity	1,000	Tucson	0.60	Connectivity	
20	1	Anklam	Speedway	Player's Club Drive	Construct bike lanes	630	Pima County	1.8	Connectivity	
27	1	Avra Valley Rd	Airline Rd	I-10	Construct bike lanes	735	Marana	2.1	Connectivity	
29	1	Bear Canyon	Snyder	Indian Bend	Construct bike lanes	960	Pima County	2.4	Connectivity	several washes
30	1	Beverly/Wyatt	Aviation	Glenn	Bike Blvd Improvements	810	Tucson	5.4	Bike Blvd Improvements	
38	1	Bilby / Bonney	Santa Clara	Benson Hwy	Bike Blvd Improvements	600	Tucson	4	Bike Blvd Improvements	
39	1	Blacklidge	Oracle	Columbus	Bike Blvd Improvements	675	Tucson	4.5	Bike Blvd Improvements	
42	1	Calle Concordia	La Canada	Rancho Feliz	Construct bike lanes	160	Pima County	0.4	Connectivity	
43	1	Calle Concordia Multimodal Project	Buena Vista	Loma Linda	Construct bike lanes	500	Oro Valley	0.5	Connectivity	Construct bike lanes, sidewalk, shared use paths
44	1	Calle Polar	Nicaragua	Escalante	Construct bike lanes	38	Tucson	0.25	Connectivity	
47	1	Camino de La Tierra	Ina Road	North Hwy Drive	Construct bike lanes	1015	Pima County	2.9	Connectivity	
63	1	Camino de Oeste	Ajo Hwy	Irvington	Construct bike lanes	280	Pima County	0.8	Connectivity	
48	1	Camino de Oeste	Sweetwater Dr	Gates Pass	Construct bike lanes	1375	Pima County	2.5	Connectivity	
51	1	Camino Del Portillo	ESPERANZA	CONTINENTAL	Restripe	25	Pima County	1	Connectivity	just stripe bike lane, no center lane needed
52	1	Camino Loma Alta	Old Spanish Trail	start bike lane; end bike lane to Colossal Cave Road	Construct bike lanes	735	Pima County	2	Connectivity	Excludes 1 mile in center constructed 2009
64	1	Camino Seco	Wrightstown Rd	SPEEDWAY	Construct bike lanes Add pavement to strip pavement	600	Tucson	0.30	Connectivity	
54	1	Campbell	Rillito Bridge/approaches		Construct bike lanes	1,000	Tucson	0.00	Connectivity	
58	1	CDO Linear Park	First Ave	Steam Pump Village	Shared-Use Path	901	Oro Valley	1.4	Non-Urban Loop SUP	New shared use paths
59	1	Cherrybell / Campbell	18th St	El Paso Greenway	Bike Blvd Improvements	300	Tucson	2	Bike Blvd Improvements	
66	1	Columbus Blvd, south end to Barraza-Aviation Bikeway			Shared-Use Path	560	Tucson	0.12	Connectivity	
67	1	Congress	Church	I-10	Construct bike lanes Push curbs back	225	Tucson	0.50	Connectivity	
68	1	Continental Rd. #1	Duval Mine Rd.	PCC	Construct bike lanes	840	Pima County	2.4	Connectivity	add shoulder
69	1	Contractors Way	Aviation	Irvington	Construct bike lanes	1050	Pima County/COT	3	Connectivity	
71	1	Country Club	1/4 mi S Irvington	Valencia	Construct bike lanes	630	Pima County	1.8	Connectivity	
73	1	Craycroft Rd	I-10	Los Reales	Construct bike lanes	105	Pima County	0.3	Connectivity	
74	1	Curtis Road	North Hwy Drive	La Cholla	Construct bike lanes	455	Pima County	1.3	Connectivity	
78	1	Dodge Traffic Calming	@ and around Rillito River		Traffic Calming	100	Pima County	0	Connectivity	
79	1	DOWNTOWN BIKE STATION			Develop center with showers, bike repair, air pumps etc.	2,150	Tucson	0.00	Connectivity	
81	1	Drexel	Arcadia	Craycroft	Construct bike lanes	245	Pima County/COT	0.7	Connectivity	
83	1	Drexel Rd	Tucson Blvd	Belvedere Ave	Construct bike lanes	770	Pima County/COT	2.2	Connectivity	
84	1	Duval Mine Rd	Rio Altar	La Canada	Construct bike lanes	350	Pima County	1	Connectivity	
85	1	Duval Mine Rd	MISSION	Rio Altar	Construct bike lanes	1225	Pima County	3.5	Connectivity	
87	1	El Paso and Southwestern Greenway	15th Avenue	Julian Wash	Shared-Use Path	10,000	Tucson/South Tucson	7	Non-Urban Loop SUP	
89	1	Escalante BIKE PED BRIDGE	Escalanate Wash		Construct bike-ped bridge	1,000	Tucson	0.00	Connectivity	
90	1	ESPERANZA	ABREGO	HIDALGO	Construct bike lanes under I-19 and Restripe the Rest	1500	Pima County/ADOT	1	Connectivity	probably use the TE proposal costs plus restripe 0.6 mile
91	1	Euclid Ave	Speedway Blvd	University Blvd	Construct bike lanes Push curbs back	375	Tucson	0.50	Connectivity	
92	1	Euclid Ave	University Blvd	Broadway	Construct bike lanes, Push curbs back	563	Tucson	0.75	Connectivity	
129	1	Flowing Wells Road / La Canada Drive #1	Roger	River Rd	Construct bike lanes	250	Pima County	1.25	Connectivity	slurry seal, restripe to 5' bike lanes
95	1	Fontana/4th Ave	Aviation	Rillito	Bike Blvd Improvements	375	Tucson	2.5	Bike Blvd Improvements	
97	1	Freeman Rd	Speedway	Spanish Trail	Construct bike lanes	1260	Pima County	3.6	Connectivity	
98	1	Ft Lowell	Oracle	Stone	Construct bike lanes Push curbs back	159	Tucson	0.35	Connectivity	

99	1	Ft Lowell	Alvernon	LAUREL AVE	Construct bike lanes Push curbs back	346	Tucson	0.77	Connectivity	
101	1	Golder Ranch	Oracle	Rancho del Lago	Construct bike lanes	420	Pima County	1.2	Connectivity	
102	1	Golf Links Rd	Swan	Wilmot	Construct bike lanes Restripe existing curb-to-curb width	450	Tucson	2.00	Connectivity	
103	1	Grant	Swan	Tanque Verde	Construct bike lanes Push curbs back	1,125	Tucson	2.50	Connectivity	
104	1	Grant Rd	SCR Bridge	Flow Wells Rd	Construct bike lanes Push curbs back except at RR underpas	225	Tucson	0.50	Connectivity	
257	1	Green Valley West Side Path	Casa Verde	Canoa Ranch Golf Course	Shared-Use Path	1200	Pima County	8	Non-Urban Loop SUP	
106	1	Hardy Rd. / Overton	Oracle Highway	Thornydale	Construct bike lanes	1600	Pima County/Oro Valley	4	Connectivity	
107	1	Harrison	Wrightstown Rd	Speedway	Construct bike lanes Some add asphalt (some shoulder exists)	70	Tucson	0.60	Connectivity	
250	1	Highland	6th Street	Arroyo Chico	Bike Blvd Improvements	113	Tucson	0.75	Bike Blvd Improvements	
112	1	Houghton	Tanque Verde	Catalina Hwy	Construct bike lanes	420	Pima County	1.2	Connectivity	
113	1	Houghton	I-10	Sahuarita Rd	Construct bike lanes	1400	Pima County	4	Connectivity	should be a widened road project
114	1	Houghton	Catalina Hwy	Snyder Road	Construct bike lanes	480	Pima County	1.2	Connectivity	
115	1	Hughes Access	Nogales Hwy	Alvernon	Construct bike lanes	1015	Tucson - Pima County	2.9	Connectivity	
121	1	Irvington	6th Ave	700 FT EAST	Restripe	27	Tucson	0.13	Connectivity	
122	1	Irvington	Mesquite Ranch Rd	Houghton	Construct bike lanes Add pavement to strip pavement	52	Tucson	0.26	Connectivity	
123	1	Irvington Rd	.1 mi W of I-10	.1 mi E of Alvernon	Restripe	227.5	ADOT/Pima County	0.7	Connectivity	slurry seal, restripe to 5' bike lanes (27.5' half-section for Irvington)
127	1	Julian Wash River Park	Rita Road	Houghton Road	Shared-Use Path	3,000	Tucson	2.31	Urban Loop SUP	
260	1	Julian Wash River Park	Valencia Road	Rita Road	Shared-Use Path	2,500	Pima County	5	Urban Loop SUP	
126	1	Julian Wash River Park	Kino	Valencia	Shared-Use Path	1,270	Tucson/Pima County	5	Urban Loop SUP	
131	1	La Cholla	Ruthrauff	Gardner	Construct bike lanes	280	Pima County	0.8	Connectivity	
132	1	LA VILLTA	SAHUARITA RD	RANCHO SAHUARITA	Construct bike lanes	420	SAHUARITA	0.7	Connectivity	new curbing also
133	1	Lago Del Oro	Edwin	Bowman	Construct bike lanes	1600	Pima County	4	Connectivity	
134	1	Lambert Lane	Shannon	1st Ave	Construct bike lanes	3,700	Oro Valley	4.4	Connectivity	widen to 4 lanes, bike lanes, multi use paths and drainage
138	1	Liberty / Missiondale	Cushing	Los Reales	Bike Blvd Improvements	750	Tucson	5	Bike Blvd Improvements	
140	1	Los Reales	Country Club	Craycroft	Construct bike lanes	1050	Pima County	3	Connectivity	
141	1	Los Reales	12th Ave	Nogales Hwy	Construct bike lanes HALF ROW ADD STRIP PAVEMENT	200	Tucson	1.00	Connectivity	
145	1	Michigan	Benson Hwy	Santa Cruz River Path	Bike Blvd Improvements	330	Tucson	2.2	Bike Blvd Improvements	
262	1	Mission Road	San Xavier	Drexel	Construct bike lanes	550	Pima County/Tohono Oodham	3	Connectivity	
149	1	Moore Road #5	Dove Mountain	La Cholla	Construct bike lanes	0	Marana	3.75	Connectivity	Developer obligated to construct roadway
150	1	Moore Road #6A	La Cholla	La Canada	Construct bike lanes	350	Oro Valley	1	Connectivity	
155	1	Nicaragua	Calle Polar	Kolb Rd	Restripe	40	Tucson	0.25	Connectivity	
157	1	North Hwy Drive	Cmno de la Tierra	Curtis	Construct bike lanes	105	Pima County	0.3	Connectivity	
158	1	Oracle Rd	River Rd	Roger Rd	Construct bike lanes	455	ADOT	1.3	Connectivity	
159	1	Orange Grove	I-10	Thornydale	Restripe	100	Marana	0.35	Connectivity	
160	1	Orange Grove	La Canada	Oracle	Construct bike lanes	420	Pima County	1.2	Connectivity	County Bond Roadway widening project, probably 2015 or later
161	1	Orange Grove	Oracle Rd	Shadow Bluff Drive	Construct bike lanes	800	Pima County	0.6	Connectivity	Major issues with wash, road alignment. Part may be sharrows.
164	1	Palo Verde	Aviation	Ft. Lowell	Bike Blvd Improvements	330	Tucson	2.2	Bike Blvd Improvements	
166	1	Pantano River Park	Craycroft Road	Gateway Circle	Shared-Use Path	5,300	Tucson	4.08	Urban Loop SUP	
168	1	Park	Irvington	Valencia	Construct bike lanes Push back curbs	900	Tucson	2.00	Connectivity	
169	1	Park Ave	Ft. Lowell	Aviation Bikeway	Bike Blvd Improvements	450	Tucson	3	Bike Blvd Improvements	
181	1	Prudence	Escalante	Broadway	Bike Blvd Improvements	480	Tucson	3.2	Bike Blvd Improvements	
182	1	Prudence/Grady/Pio Decimo	Tanque Verde Wash	Speedway	Bike Blvd Improvements	405	Tucson	2.7	Bike Blvd Improvements	
258	1	Quail Connector trail	Quail Crossing	Abrego	Shared-Use Path	750	Sahuarita/PC	1	Non-Urban Loop SUP	
183	1	Rancho Felize	Overton	Calle Concordia	Construct bike lanes	70	Pima County	0.2	Connectivity	Pima Co per Craig Civilier
184	1	Rillito Path - south side	Campbell Avenue	Mountain Avenue Bridge	Shared-Use Path	800	Pima County	0.5	Urban Loop SUP	
185	1	Rillito Path Offramps & Onramps	@ Swan Road		Shared-Use Path	750	Pima County	0	Urban Loop SUP	
186	1	Rillito Path Offramps & Onramps	@ Stone Avenue		Shared-Use Path	750	Pima County	0	Urban Loop SUP	
187	1	Rillito Path Offramps & Onramps	@ Mehl Park / River Road		Shared-Use Path	750	Pima County	0	Urban Loop SUP	
188	1	Rillito path-north side	Racquet Club Bridge	Hacienda del Sol	Shared-Use Path	800	Pima County	0.3	Urban Loop SUP	
191	1	Roger	La Cholla	Tucson Blvd	Bike Blvd Improvements	675	Tucson	4.5	Bike Blvd Improvements	
192	1	Roger Rd	Romero Rd	Flowing Wells	Construct bike lanes .75 push back curbs, .25 add pavement	388	Tucson	0.5	Connectivity	
194	1	S. 4th Avenue	Broadway	I-10	Bike Blvd Improvements	300	Tucson	2	Bike Blvd Improvements	
197	1	Sahua	Aviation	Rillito	Bike Blvd Improvements	600	Tucson	4	Bike Blvd Improvements	
200	1	Sahuarita Road #5 (was town limits to Alv.)	Santa Rita Rd	Alvernon	Construct bike lanes	420	Pima County/SAH	1.2	Connectivity	
210	1	Santa Cruz River Park	Irvington Road	Valencia Road	Shared-Use Path	2,431	Tucson	1.87	Non-Urban Loop SUP	

259	1	Santa Cruz River Park	Silverlake	Ajo	Shared-Use Path	750	Pima County	1.5	Urban Loop SUP	
261	1	Santa Cruz River Park	Curtis Road	Ironwood	Shared-Use Path	2,000	Pima County	4	Urban Loop SUP	
214	1	Senaca / Waverly	Wilmot	4th Ave	Bike Blvd Improvements	1,050	Tucson	7	Bike Blvd Improvements	
215	1	Shannon	Cortaro Farms	Naranja	Construct bike lanes	1600	Pima County/Oro Valley	4	Connectivity	
216	1	Shannon Road	Lambert	Tangerine	Construct bike lanes	2500	Oro Valley	2	Connectivity	Constuct new road through OV with bike lanes, shared use paths and sidewalks
218	1	Snyder	Bear Canyon	Catalina Hwy	Construct bike lanes	945	Pima County	2.7	Connectivity	
219	1	Speedway	Cam. De Oeste	Painted Hills	Construct bike lanes	640	Pima County	1.6	Connectivity	
220	1	Speedway	Greasewood	Silverbell	Construct bike lanes Add pavement to strip pavement	200	Tucson	1	Connectivity	
221	1	Speedway	Stone Ave	Euclid Ave	Construct bike lanes Push back curb	338	Tucson	0.75	Connectivity	
222	1	Speedway	Houghton	Freeman	Construct bike lanes	700	Tucson/Pima County	2	Connectivity	
229	1	Sweetwater Dr	Camino de Oeste	Silverbell	Construct bike lanes	760	Pima County	1.9	Connectivity	
235	1	Thornsdale	Linda Vista Boulevard	Lambert Lane	Construct bike lanes	350	Pima County	1	Connectivity	
263	1	Thornsdale	Lambert Lane	Tangerine	Construct bike lanes	700	Pima County/Marana	2	Connectivity	
236	1	Thornsdale Road #6	Tangerine	Moore	Construct bike lanes	350	Marana	1	Connectivity	
237	1	Timrod St./14 <sup>th</sup> St./William Boulevard	Reid Park	Park Place Mall	Bike Blvd Improvements	413	Tucson	2.75	Bike Blvd Improvements	
238	1	Treat/Cactus/Christmas	Aviation	Rillito	Bike Blvd Improvements	750	Tucson	5	Bike Blvd Improvements	
241	1	Univ (Collector)/3rd St/Rosewood	Aviation	Rillito	Bike Blvd Improvements	1,050	Tucson	7	Bike Blvd Improvements	
242	1	Valencia	Westover	Mission	Construct bike lanes	135	Pima County	0.3	Connectivity	Do these two projects together
243	1	Valencia	Cardinal	Camino de la Tierra	Construct bike lanes	225	Pima County	0.5	Connectivity	Do these two projects together
247	1	Wetmore	Hwy Drive	Romero	Construct bike lanes	385	Pima County	1.1	Connectivity	
249	1	Wilds Road	Oracle	Rancho del Lago	Construct bike lanes	420	Pima County	1.2	Connectivity	
264	1	Wilmot Road	I-10	2 Miles South of Old Vail Connection Road	Construct bike lanes	1575	Tucson/Pima County	4.5	Connectivity	
1	2	10 <sup>th</sup> Avenue	Ajo Way	Cushing Street	Bike Blvd Improvements	563	Tucson	3.75	Bike Blvd Improvements	
5	2	22nd Street #5	Houghton	Melpomene Way	Construct bike lanes Add pavement to strip pavement	200	Tucson	1.00	Connectivity	
6	2	27th St/Sylvain	Treat	Ave. Sirio	Bike Blvd Improvements	600	Tucson	4	Bike Blvd Improvements	
8	2	5th St / Vicksburg / 7th St	Pantano	Houghton	Bike Blvd Improvements	450	Tucson	3	Bike Blvd Improvements	
9	2	9th Ave	Ft. Lowell	Franklin	Bike Blvd Improvements	450	Tucson	3	Bike Blvd Improvements	
16	2	Alameda / El Rio / Dagoon	Grant / Greasewood	Santa Cruz River Path	Bike Blvd Improvements	525	Tucson	3.5	Bike Blvd Improvements	
23	2	Arcadia	Grant	Arroyo Chico Bikeway	Bike Blvd Improvements	390	Tucson	2.6	Bike Blvd Improvements	
22	2	Arcadia	Cindrich St	Drexel	Construct bike lanes	140	Pima County/COT	0.4	Connectivity	
24	2	ARIVACA RD	AMADO	ARIVACA	Construct bike lanes	11500	Pima County	23	Connectivity	maybe reserve until developers pay
25	2	Arroyo Chico Bikeway/Kenyon	Aviation	Harrison	Bike Blvd Improvements	1,350	Tucson	9	Bike Blvd Improvements	
26	2	Arroyo Chico Bridge	@Campbell		Construct bike-ped bridge	5,000	Tucson	0.00	Connectivity	
31	2	Big Wash Linear Park	Tangerine	Rancho Vistoso Blvd	Shared-Use Path	2600	Oro Valley	1.7	Non-Urban Loop SUP	
45	2	CALLE TRES	C. DEL SOL	West Frontage Road	Construct bike lanes	400	Pima County	0	Connectivity	0.3 probably \$400k
49	2	Camino De Oeste	Cortaro Farms	Lambert Lane	Construct bike lanes	945	Pima County	2.1	Connectivity	Middle 3,000 feet has bike lanes
53	2	Camino Miramonte/Howard Ave	Arroyo Chico Bikeway	Bellevue	Bike Blvd Improvements	225	Tucson	1.5	Bike Blvd Improvements	
56	2	Cañada Del Oro River Park	La Cholla Road	La Cañada Drive	Shared-Use Path	500	Pima County	1.5	Non-Urban Loop SUP	n/a
57	2	Cardinal	Irvington	Los Reales Rd	Construct bike lanes	980	Pima County	2.8	Connectivity	
62	2	Cindrich St	Swan	Arcadia Ave	Construct bike lanes	105	Pima County/COT	0.3	Connectivity	
72	2	Country Club	Michigan	Irvington	Construct bike lanes Add pavement to strip pavement	100	Tucson	0.50	Connectivity	
76	2	Desert/Calalina/Goyette	Glenn	22nd St	Bike Blvd Improvements	525	Tucson	3.5	Bike Blvd Improvements	
77	2	Dodge	El Con Mall	Rillito	Bike Blvd Improvements	450	Tucson	3	Bike Blvd Improvements	
80	2	Drachman / Fairmount	Wilmot	Oracle Rd	Bike Blvd Improvements	1,080	Tucson	7.2	Bike Blvd Improvements	
82	2	Drexel	Cardinal	Mission	Construct bike lanes	315	Pima County	0.9	Connectivity	
88	2	Escalante	Calle Polar	Kolb Rd	Construct bike lanes	488	Tucson	0.75	Connectivity	Add pavement s side, push back curbs n side
93	2	Euclid Ave	18th St	El Paso Greenway	Bike Blvd Improvements	300	Tucson	2	Bike Blvd Improvements	
94	2	Fairview/15th Ave	Speedway Blvd	Tucson Mall	Bike Blvd Improvements	750	Tucson	5	Bike Blvd Improvements	
100	2	Glenn (Collector)	Fairview	Sahuara	Bike Blvd Improvements	900	Tucson	6	Bike Blvd Improvements	
105	2	Hacienda del Sol	River	Sunrise	Construct bike lanes	1320	Pima County	2.4	Connectivity	
109	2	Harrison	Catalina Hwy	Snyder	Construct bike lanes	680	Pima County	1.7	Connectivity	washes
119	2	Irving	3rd Street	22nd St	Bike Blvd Improvements	450	Tucson	3	Bike Blvd Improvements	
120	2	Irvington	Contractors Way	Swan	Construct bike lanes	315	Pima County/COT	0.9	Connectivity	
124	2	Jacinto/Coper/Jacinto/Flower	Fairview	Swan	Bike Blvd Improvements	855	Tucson	5.7	Bike Blvd Improvements	
125	2	Jessica/Mann/Sirio	Stella	Carondelet	Bike Blvd Improvements	525	Tucson	3.5	Bike Blvd Improvements	

135	2	Lambert Lane	Thornydale	Shannon	Construct bike lanes	350	Pima County	1	Connectivity	
136	2	Lambert Lane	Camino De Oeste	Thornydale	Construct bike lanes	350	Pima County	1	Connectivity	
147	2	Mission Road #2	Helmet Peak Rd	San Xavier	Construct bike lanes	4375	Pima County/Tohono Oodham	12.5	Connectivity	low adt
153	2	Naranja	Shannon	La Canada	Construct bike lanes	700	Oro Valley	2	Connectivity	
154	2	Naranja Drive	Shannon	First Ave	Construct bike lanes	1000	Oro Valley	4	Connectivity	Add bike lanes & multi use lanes, grade, pave, drain, add curb & gutter
165	2	Pantano River Park	Broadway Boulevard	Kenyon Road	Shared-Use Path	702	Tucson	0.54	Urban Loop SUP	
172	2	Plummer	Elm	Aviation Bikeway	Bike Blvd Improvements	300	Tucson	2	Bike Blvd Improvements	
173	2	Pontatoc Road	River	Sunrise	Construct bike lanes	805	Pima County	2.3	Connectivity	
190	2	Rita Rd	Old Vail	WI10 RAMP	Construct bike lanes 1mi add shoulder, .12 mi restripe, pinch p	221	Tucson	1.2	Connectivity	
198	2	Sahuarita	Houghton	SR 83	Construct bike lanes	2360	Pima County	5.9	Connectivity	Washes
199	2	Sahuarita Road #1 (Helmet Peak Road)	Mission	La Canada	Construct bike lanes	1645	Pima County	4.7	Connectivity	
201	2	San Xavier Rd	Mission Rd	Los Reales Rd	Construct bike lanes	1260	Pima County/Tohono Oodham	3.6	Connectivity	
204	2	Sanders Rd	Marana Rd	Avra Valley Rd	Construct bike lanes	425	Marana	4	Connectivity	
205	2	Santa Clara / 15th and 16th Ave	Los Reales	44th St	Bike Blvd Improvements	675	Tucson	4.5	Bike Blvd Improvements	
207	2	Santa Cruz River Park	Ina Road	Curtis Road	Shared-Use Path	3,828	Marana	3.6	Non-Urban Loop SUP	
209	2	Santa Cruz River Park	Sahuarita Road	Continental Road	Shared-Use Path	4,978	Sahuarita		Non-Urban Loop SUP	
211	2	Santa Cruz River Park	Valencia Road	I-19	Shared-Use Path	3,081	Tucson	2.37	Non-Urban Loop SUP	
213	2	Sarnoff /29th St	Speedway Blvd	Old Spanish Trail	Bike Blvd Improvements	600	Tucson	4	Bike Blvd Improvements	
217	2	Skyline	Swan	Sunrise	Construct bike lanes	680	Pima County	1.7	Connectivity	topography
223	2	Speedway #6 Bike Lanes	Tanque Verde Loop Rd.	Wentworth	Construct bike lanes	700	Pima County/COT	2	Connectivity	
225	2	Stella / Emily	Aviation Bikeway at Wilmot	Houghton	Bike Blvd Improvements	750	Tucson	5	Bike Blvd Improvements	
227	2	Swan	Skyline	Sunrise	Construct bike lanes	350	Pima County	1	Connectivity	
232	2	Tangerine	2/3 mi E of Thornydale	Shannon	Construct bike lanes	105	Pima County	0.3	Connectivity	Should be constructed by Marana or OV as part of larger project
234	2	Tanque Verde Loop Rd	Tanque Verde	Broadway	Construct bike lanes	735	Tucson/Pima County	2.1	Connectivity	Major wash
244	2	Warren	Grant	Speedway	Bike Blvd Improvements	150	Tucson	1	Bike Blvd Improvements	
246	2	Wentworth Road	Sahuarita Rd.	Dawn Drive/Tuc City Limits	Construct bike lanes	1715	Pima County	4.9	Connectivity	
2	3	12th Ave	JETTY AVE	Drexel	Mill and replace	2,500	Tucson	2.4	Connectivity	
13	3	Ajo Hwy 86	Mile Post 128.5 (6 miles west of SR 386)	Why, AZ	Construct bike lanes	30,800	ADOT/Pima County	77	Connectivity	
21	3	Anza Trail/Santa Cruz River Park	Bridge S. of Torres Blancas	Santa Cruz County Line	Shared-Use Path	300	Pima County	8	Non-Urban Loop SUP	Dirt Path
255	3	Anza Trail/Santa Cruz River Park	Continental Rd	Bridge S. of Torres Blancas	Shared-Use Path	1000	Pima County	3	Non-Urban Loop SUP	
32	3	Big Wash River Park	Rancho Vistoso	Pinal County Line	Shared-Use Path	3,118	Oro Valley/Pima County	5	Non-Urban Loop SUP	
41	3	Broadway	Ridgeside	Freeman	Construct bike lanes	455	Tucson / Pima County	1.3	Connectivity	
50	3	Camino del Cerro	Silverbell	West to end of County maintained pvmt	Construct bike lanes	980	Pima County	2.8	Connectivity	
152	3	Campbell	1/4 mi. north of Skyline	End	Construct bike lanes	315	Pima County	0.7	Connectivity	drainage issues, topography
55	3	Cañada Del Oro River Park	Santa Cruz River	Thornydale Road	Shared-Use Path	1,171	Marana	1.5	Non-Urban Loop SUP	
60	3	Christie	Ina Road	Magee Rd	Construct bike lanes	750	Pima County	1.5	Connectivity	
65	3	Columbus	29th St	Rillito	Bike Blvd Improvements	750	Tucson	5	Bike Blvd Improvements	
75	3	Davis	Ruthrauff	Curtis	Construct bike lanes	350	Pima County	0.5	Connectivity	curb reconstruct or sharrows
86	3	I-19 East Frontage Road	CANOA	AMADO	Construct bike lanes	2700	Pima County/ADOT	6	Connectivity	lots of shoulder work
96	3	Forecastle	Mainsail	Edwin	Construct bike lanes	440	Pima County	1.1	Connectivity	
108	3	Harrison	1/4 mi N of Irvington	Irvington	Construct bike lanes Push back curbs	113	Tucson	0.25	Connectivity	
116	3	Higway Drive	Wetmore	Ruthrauff	Construct bike lanes	245	Pima County	0.7	Connectivity	
117	3	I-19 West Frontage Road	CONTINENTAL	CALLE TRES	Construct bike lanes	2500	Pima County/ADOT	5	Connectivity	lots of shoulder work
118	3	I-19 West Frontage Road	CALLE TRES	AMADO	Construct bike lanes	3150	PCDOT/ADOT	7	Connectivity	should be from Calle Tres, lots of shoulder work
128	3	Julian Wash River Park	Santa Cruz River	I-19	Shared-Use Path	767	Tucson	0.59	Urban Loop SUP	
130	3	La Cholla	Moore	Tangerine	Construct bike lanes	490	Oro Valley	1	Connectivity	Add bike lanes & sidewalks to La Cholla
137	3	Lester/Elm/Pima	Wilmot	15th Ave	Bike Blvd Improvements	900	Tucson	6	Bike Blvd Improvements	
139	3	Linda Vista #6 Safety Improvements	Calle Buena Vista	Oracle	Construct bike lanes	2500	Oro Valley	0.9	Connectivity	Reconstruct, bike lanes, pedestrian facilities, drainage
142	3	Los Reales	Sorrel	Mission	Construct bike lanes	680	Pima County	1.7	Connectivity	some curbing one side
143	3	MAGEE RANCH RD	MISSION RD	W	Construct bike lanes	3000	Pima County	6	Connectivity	maybe reserve until developers pay
144	3	Magee Road #5	Oracle	First / Christie	Construct bike lanes	3000	Oro Valley	1.5	Connectivity	Reconstruct & add bike lanes
146	3	Mission Road #1	Duval Mine Road	Helmet Peak Rd	Construct bike lanes	3800	Pima County	7.6	Connectivity	very low adt
156	3	North Craycroft/Kolb	Sunrise	beginning of N. Kolb bike lane	Construct bike lanes	1000	Pima County	2.5	Connectivity	topography; some restriping

163	3	Palisades Road	First Ave	1 mile East	Construct bike lanes	4125	Oro Valley	1	Connectivity	Add shoulders, turn lanes & bike lanes
167	3	Pantano River Park	Creek Street Alignment	Houghton Road	Shared-Use Path	2,970	Tucson	2.29	Urban Loop SUP	
170	3	Picture Rocks Road	Sandario	Saguaro Nat. Park West Boundary	Construct bike lanes	1520	Pima County	3.8	Connectivity	
171	3	Picture Rocks Road / Ina Road	Saguaro Nat. Park west boundary	Silverbell	Construct bike lanes	2860	Pima County	5.2	Connectivity	Major topography issues
189	3	Rillito River Park	Santa Cruz River	Camino De La Tierra	Shared-Use Path	1,000	Pima County	1.3	Urban Loop SUP	n/a
193	3	Rollins	Oracle	Rancho del Lago	Construct bike lanes	455	Pima County	1.3	Connectivity	
256	3	Sahuarita Road Trail	Mission Rd	Rt 83	Shared-Use Path	3600	Sahuarita/PC	24	Non-Urban Loop SUP	
202	3	Sandario	Avra Valley Road	Ajo	Construct bike lanes	6930	PC/MAR/SNP	19.8	Connectivity	
203	3	Sandario Rd. #1	South Town Limits	Twin Peaks	Construct bike lanes	312	Marana	1	Connectivity	
206	3	Santa Cruz River Park	I-19	Pima Mine Road	Shared-Use Path	4,711	Tohono O'Odham	8.25	Non-Urban Loop SUP	
208	3	Santa Cruz River Park	Pima Mine Road	Sahuarita Road	Shared-Use Path	1,780	Sahuarita	3.5	Non-Urban Loop SUP	
212	3	Santa Cruz River Park, (One bank only)	Postvale Road Alignment	Linda Vista Boulevard	Shared-Use Path	1,500	Marana	6.2	Non-Urban Loop SUP	
226	3	Sun City Blvd Bike Lanes	Rancho Vistoso Blvd	Lost Arrow Dr	Construct bike lanes	500	Oro Valley	0.9	Connectivity	West side of Sun City Blvd
228	3	Swan	Irvington	Cindrich Street	Construct bike lanes	210	Pima County/COT	0.6	Connectivity	
239	3	Trico-Marana Rd	Trico Rd	Sandario Rd	Construct bike lanes	538	Marana	4.5	Connectivity	
240	3	Tucson Blvd	8th St	Broadway	Construct bike lanes	900	Tucson	1	Connectivity	
248	3	WHITEHOUSE CYN RD	SCHOOL	MADERA CYN	Construct bike lanes	5000	Pima County	10	Connectivity	lots of shoulder work/bridges need to be widened (not included in cost)
33	1,2,3	Bike corral bike parking facilities			Program	200	Tucson	0	Program	
34	1,2,3	Bike rack relocation grant - retail centers			Program	100	Tucson	0	Program	
35	1,2,3	Bike Safety / Encouragement PSAs			Program	4500	Tucson/Pima County	0	Program	
36	1,2,3	Bike Station	@ Williams Center		Program	500	Tucson	0	Program	
37	1,2,3	Bike Stencil Program (onstreet markings)	Throughout	Regionwide	Program	650	PAG	0	Program	650 miles x \$1000
61	1,2,3	Ciclovía Program			Program	500	Tucson	0	Program	
110	1,2,3	HAWK / Signalized Bike Crossing	Region-Wide		Program	30000	PAG	0	Program	150 Hawks x \$200K
111	1,2,3	HAWKS Retrofit	Throughout		Program	2000	Tucson	0	Program	
162	1,2,3	OV Bike & Ped Program	Townwide		Program	4780	Oro Valley	0	Program	Add bike lanes/shared use paths per OV Plan
174	1,2,3	Program - Bicycle Commuter Incentives	Regionwide		Program	5000	PAG	0	Program	
175	1,2,3	Program - Bicycle parking and other amenities (\$200k/yr)	Various locations		Program	5,000	Tucson	0	Program	
176	1,2,3	Program - Bicycle Safety Education (Adult)	Regionwide		Program	700	PAG	0	Program	Increased 25% over 2030 RTP
177	1,2,3	Program - Bicycle Safety Improvements & Programs			Program - Bike lanes/paved shoulders/clear zones	27500	Pima County	0	Program	n/a
178	1,2,3	Program - Bike Lanes & Shared-Use Bike Paths	@Various locations		Program	13,000	Tucson	0	Program	
179	1,2,3	Program - Bikeways Continuity & Maint.	Regionwide		Program	37500	PAG	0	Program	Increased 25% over 2030 RTP
180	1,2,3	Program - Traffic Safety Education Program	Regionwide		Program	625	Tucson	0	Program	
195	1,2,3	Safe Routes to School - Every School Program			Program	55000	PAG	0	Program	550 schools x \$100K
196	1,2,3	Safe Routes to Shopping Program			Program	1000	PAG	0	Program	
245	1,2,3	Way-Finding & Wrong-Way Signage	Region-Wide		Signage	1400	PAG	0	Program	770 miles x 8 x \$175 + Staff Costs





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