REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM

FY 2004 THROUGH FY 2008

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TIP Approved by PAG Regional Council on September 24, 2003
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PAG

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CHAPTER 1 - INTRODUCTION

The Transportation Improvement Program (TIP), prepared by Pima Association of Governments (PAG), is a five-year schedule of proposed transportation improvements within the Pima County, Tucson urbanized area.

The TIP is typically updated annually through a multi-step process in association with PAG’s member jurisdictions or other implementing agencies. The TIP addresses improvements to diverse elements of the regional transportation system including national, state and local highways, transit, aviation, ride sharing, bikeways, and pedestrian facilities. The TIP also responds to various state and federal regulatory requirements for development of a transportation improvement program and TIP conformance with air quality implementation plans, including the Transportation Equity Act for the 21st Century (TEA-21) enacted in June 1998.

The projects listed in Appendix 1 have an identified source of funding and are presently in some stage of project development. Every project, whether highway or transit, that is federally funded must be included in the TIP. The TIP also includes all regionally significant projects funded from non-federal sources.

The current five-year Transportation Improvement Program encompasses fiscal years 2004 to 2008. The complete project listing by jurisdiction is contained in Appendix 1.
CHAPTER 2 - TRANSPORTATION EQUITY ACT FOR THE 21ST CENTURY (TEA-21)

On June 9, 1998, Public Law 105-178, the Transportation Equity Act for the 21st Century (TEA-21), was signed into law authorizing highway, safety, transit and other surface transportation programs for the next six years.

TEA-21 builds on the initiatives established in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), which was the last major authorizing legislation for surface transportation. This new Act combines the continuation and improvement of current programs with new initiatives to meet the challenges of improving safety as traffic continues to increase at record levels, protecting and enhancing communities and the natural environment as we provide transportation and advance economic growth and competitiveness through an efficient and multi-modal transportation system.

TEA-21 continues the proven and effective program structure established for highways and transit under the landmark ISTEA legislation. Flexibility in the use of funds, emphasis on measures to improve the environment, focus on a strong planning process as the foundation of good transportation decisions - all ISTEA hallmarks - are continued and enhanced by TEA-21. New programs such as Border Infrastructure, Transportation Infrastructure Finance and Innovation, Transit Enhancements, and Access to Jobs target special areas of national interest and concern.

As the designated metropolitan planning organization, the Pima Association of Governments has the responsibility to develop a transportation improvement program in cooperation with the State and any affected public transit operator. In developing the program, citizens, affected public agencies, representatives of transportation agency employees, freight shippers, providers of freight transportation services, private providers of transportation, representatives of users of public transit, and other interested parties are provided an opportunity to comment on the proposed program.

The transportation planning process provides for consideration of projects and strategies that will:

" Support the economic vitality of the United States, the State of Arizona, and the Tucson metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
" Increase the safety and security of the transportation system for motorized and non-motorized users;
" Increase the accessibility and mobility options for people and freight;
" Protect and enhance the environment, promote energy conservation, and improve quality of life;
" Enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight;
" Promote efficient system management and operation; and
" Emphasize the preservation of the existing transportation system.
CHAPTER 3 - TRANSPORTATION IMPROVEMENT PROGRAMMING OVERVIEW

The goal of the transportation improvement programming process is to develop a TIP that makes optimum use of available funds and resources to serve transportation needs and implement the long range transportation plan known as the Regional Transportation Plan or RTP in the PAG region.

Federal legislation (Title 23, Section 134, Part h) sets forth the parameters for TIP development. Subpart 1, specifies that:

"The TIP, including the Annual Element, shall be developed by the Metropolitan Planning Organization in cooperation with the state and affected transit operators, and shall provide reasonable opportunity to comment on the proposed TIP to:

- Citizens
- Private providers of transportation
- Representatives of transportation agency employees
- Other affected employee representatives
- Affected public agencies
- Other interested parties"

The legislation specifically defines certain aspects of the programming process. The TIP includes project priorities and a financial plan which documents the financial resources available to implement the Program.

Federal laws regarding air quality [§109(j) of 23 U.S.C. and 40 CFR 52.138(d)1] require that the Regional TIP be analyzed and conform to the air quality implementation plan(s). The documentation of this effort is provided under the Air Quality section of this document.

The primary resource used for formulating the TIP is the RTP. The RTP documents transportation facilities and services required to meet future travel needs. Additional roadway facilities and expanded public transportation services, combined with greater opportunities for ride sharing, bicycling, intermodalism, and alternate modes, are incorporated into the RTP to improve air quality and support the efficiency of our regional transportation network.

PAG’S TIP PROCESS

PURPOSE

PAG’s TIP covers a 5-year period and describes planned regional transportation projects and improvements, which lead toward implementation of the RTP. The TIP is the mechanism through which the RTP is implemented in a manner consistent with local needs and priorities. It is also the mechanism through which the air quality impacts of regionally significant transportation projects can be evaluated and addressed. The TIP is financially constrained and includes
only those projects for which funding has been determined to be available. In addition to available federal funding sources, information is also included on projects using State and regional funding. The TIP includes regionally significant projects whether or not they are Federal Aid Projects. Information on other projects, which are locally funded, is included as available.

Contributing Agencies: Information on programmed projects is provided by the following agencies:

- PAG’s eight member governments - the cities of Tucson and South Tucson; Pima County; the towns of Oro Valley, Marana and Sahuarita; the Pascua Yaqui Tribe and the Tohono O’Odham Nation
- Tucson Airport Authority (TAA);
- SunTran;
- Pima County Department of Environmental Quality (PDEQ);
- Arizona Department of Environmental Quality (ADEQ);
- Arizona Department of Transportation (ADOT); and
- Other agencies or transportation interests.

TIP SUBCOMMITTEE

PAG's TIP Subcommittee is the standing technical committee responsible for development of the TIP. The TIP Subcommittee meets once a month throughout the year with additional meetings on an as needed basis to deal with technical issues and other matters related to TIP development. Regular meeting notices are provided to committee members and to a list of interested parties, which includes citizens, neighborhood groups, non-profit organizations and various special interest groups. Key aspects of the cooperative TIP process include maintenance of funding flexibility, recognition of diverse needs, and an ability to respond to changes in the community. Thus, the ability to request and take timely action upon TIP amendments is an important component of the process. Amendments to the TIP document may be processed, where necessary, to reflect changing needs, priorities, or funding scenarios.

TYPES OF PROJECTS

The types of projects that appear in the TIP may include roadway improvements, bridge improvements, transit improvements, transportation enhancements, transportation planning studies, bicycle and pedestrian programs, RideShare, Travel Reduction, Clean Cities, alternate mode programs, and airport improvements.

TITLE VI AND ENVIRONMENTAL JUSTICE

PAG is committed to planning, developing and implementing programs that are in compliance with Environmental Justice regulations and Title VI of the Civil Rights Act of 1964. Title VI states that no person in the United States shall, on the grounds of race, color, national origin, gender, age, or disability be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity. PAG addresses Title VI requirements both quantitatively and qualitatively with extensive public involvement and data analysis techniques.

PAG’s Public Involvement Program is designed to inform and solicit input from
the region's protected populations and engage them in meaningful participation in the transportation planning process.

All of the projects contained in the TIP must comply with PAG's 25 year transportation plan, known as the Regional Transportation Plan (RTP). The RTP has been analyzed and developed to provide an appropriate balanced program of transportation improvements with significant investment in transit, bicycle, and pedestrian projects that benefit low income individuals and others who may not own or operate a motor vehicle. The roadway component of the RTP is distributed throughout the region so as to not place disproportionate impacts on any one area or population group. PAG has developed maps of racial and ethnic distribution within the region and locations of low-income populations. These maps, along with official population statistics, current estimates and projections, and other data about households in the PAG region, assist in analyzing the potential impacts of the transportation plan on these groups.

The process of analyzing the impact of TIP projects on concentrations of protected groups continues to be refined. For this analysis, Transportation Analysis Zones (TAZs) were used as the geographic control to identify concentrations of the protected groups. TAZs were selected as the analysis unit to provide opportunities for a more quantitative analysis in the future.

Individually, each project sponsor is responsible for Environmental Justice and Title VI compliance for the planning and construction of the projects identified within the TIP and RTP. Thus, specific projects can be expected to have appropriate public involvement and mitigation techniques applied during their design & development process.

The following tables provide insight into the number of projects that are located in or near concentrations of the various protected population groups and the proportion of the protected populations benefitting from the TIP program. The tables show that the percentage of total projects benefitting each of the protected groups exceeds the percentage each group in the total population of the region.

Please note that some individuals may belong to more than one of the protected populations. For example, an elderly, disabled, low income Asian would be counted in four groups.

Table 3-1 shows the number of projects that will benefit concentrations of each protected class. Table 3-2 is similar to table 3-1 except that it accrues the benefits and burdens of a project to all people living within one mile of the project.
Table 3-1
Projects in or adjacent to Protected Groups

<table>
<thead>
<tr>
<th>Target Population</th>
<th>Population</th>
<th>% of Total</th>
<th>Total # of Projects</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Total</td>
<td>829,027</td>
<td>100.00%</td>
<td>128</td>
<td>100.00%</td>
</tr>
<tr>
<td>Black</td>
<td>24,675</td>
<td>2.98%</td>
<td>40</td>
<td>31.25%</td>
</tr>
<tr>
<td>Asian</td>
<td>17,204</td>
<td>2.08%</td>
<td>64</td>
<td>50.00%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>243,591</td>
<td>29.38%</td>
<td>59</td>
<td>46.09%</td>
</tr>
<tr>
<td>Native American</td>
<td>19,199</td>
<td>2.32%</td>
<td>52</td>
<td>40.63%</td>
</tr>
<tr>
<td>Low Income</td>
<td>116,196</td>
<td>14.02%</td>
<td>62</td>
<td>48.44%</td>
</tr>
<tr>
<td>ADA/Disabled</td>
<td>152,982</td>
<td>18.45%</td>
<td>80</td>
<td>62.50%</td>
</tr>
<tr>
<td>Elderly (65+)</td>
<td>120,040</td>
<td>14.48%</td>
<td>68</td>
<td>53.13%</td>
</tr>
</tbody>
</table>

Table 3-2
Projects Influencing Target Areas (1 mile buffer)

<table>
<thead>
<tr>
<th>Target Population</th>
<th>Population</th>
<th>% of Total</th>
<th>Total # of Projects</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Total</td>
<td>829,027</td>
<td>100.00%</td>
<td>128</td>
<td>100.00%</td>
</tr>
<tr>
<td>Black</td>
<td>24,675</td>
<td>2.98%</td>
<td>82</td>
<td>64.06%</td>
</tr>
<tr>
<td>Asian</td>
<td>17,204</td>
<td>2.08%</td>
<td>115</td>
<td>89.84%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>243,591</td>
<td>29.38%</td>
<td>93</td>
<td>72.66%</td>
</tr>
<tr>
<td>Native American</td>
<td>19,199</td>
<td>2.32%</td>
<td>89</td>
<td>69.53%</td>
</tr>
<tr>
<td>Low Income</td>
<td>116,196</td>
<td>14.02%</td>
<td>74</td>
<td>57.81%</td>
</tr>
<tr>
<td>ADA/Disabled</td>
<td>152,982</td>
<td>18.45%</td>
<td>114</td>
<td>89.06%</td>
</tr>
<tr>
<td>Elderly (65+)</td>
<td>120,040</td>
<td>14.48%</td>
<td>119</td>
<td>92.97%</td>
</tr>
</tbody>
</table>

Table 3-3 measures the distribution of the transit system as it applies to the protected groups. The analysis assumes transit service is provided to all persons living within 1/4 mile of a transit route.
### Table 3-3

**Persons Served by the Transit System**

(1/4 mile intercept)

<table>
<thead>
<tr>
<th>Target Population</th>
<th>Population</th>
<th>% of Total</th>
<th>Persons Served</th>
<th>% of Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional Total</td>
<td>829,027</td>
<td>100.00%</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>24,675</td>
<td>2.98%</td>
<td>16,165</td>
<td>65.51%</td>
</tr>
<tr>
<td>Asian</td>
<td>17,204</td>
<td>2.08%</td>
<td>10,603</td>
<td>61.63%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>243,591</td>
<td>29.38%</td>
<td>146,991</td>
<td>60.34%</td>
</tr>
<tr>
<td>Native American</td>
<td>19,199</td>
<td>2.32%</td>
<td>11,675</td>
<td>60.81%</td>
</tr>
<tr>
<td>Low Income</td>
<td>116,196</td>
<td>14.02%</td>
<td>81,848</td>
<td>70.44%</td>
</tr>
<tr>
<td>ADA/Disabled</td>
<td>152,982</td>
<td>18.45%</td>
<td>76,433</td>
<td>49.96%</td>
</tr>
<tr>
<td>Elderly (65+)</td>
<td>120,040</td>
<td>14.48%</td>
<td>47,167</td>
<td>39.29%</td>
</tr>
</tbody>
</table>

Tables 3-4 and 3-5 are similar to 3-1 and 3-2 as they summarize the portions of the populations that are in proximity to TIP projects. These tables identify the number of people that are close to projects, whereas the earlier tables identify the number of projects that are close to people.

When compared to a baseline percentage of all residents in the urban portion of the county (labeled regional total) that are located in a TAZ that has or is within one mile of a TIP project all protected groups are within ten percentage points (+-) in at least one of the analyses.

The analysis assumes projects are equal in their benefits and burdens. Proximity to transit is assumed to be a benefit without negative consequences. The TIP strives to provide a balance so that are groups are affected at approximately the same ratio.

It should be noted that there are several programs in the TIP that are not mapable such as RideShare, JARC, purchase of transit vehicles, etc. These therefore are not included in this analysis. For the most part, these activities are targeted toward one or more of the protected classes or they are distributed uniformly throughout the region. It is therefore assumed that these activities are either neutral or would improve the observed benefits of the program for each of the protected populations.
### Table 3-4
Projects in or adjacent to Protected Groups

<table>
<thead>
<tr>
<th>Target Population</th>
<th>Total Population</th>
<th># of TAZs</th>
<th>TAZs w/Project</th>
<th>Concentrated Population</th>
<th>Population w/Project</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regional Total</strong></td>
<td>829,027</td>
<td>859</td>
<td>246</td>
<td>829,027</td>
<td>220,644</td>
<td>26.61%</td>
</tr>
<tr>
<td>Black</td>
<td>24,625</td>
<td>196</td>
<td>37</td>
<td>17,385</td>
<td>3,502</td>
<td>20.14%</td>
</tr>
<tr>
<td>Asian</td>
<td>17,204</td>
<td>242</td>
<td>69</td>
<td>12,846</td>
<td>3,431</td>
<td>26.71%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>243,591</td>
<td>236</td>
<td>74</td>
<td>161,689</td>
<td>42,608</td>
<td>26.35%</td>
</tr>
<tr>
<td>Native American</td>
<td>19,199</td>
<td>178</td>
<td>57</td>
<td>13,177</td>
<td>6,223</td>
<td>47.23%</td>
</tr>
<tr>
<td>Low Income</td>
<td>116,196</td>
<td>342</td>
<td>91</td>
<td>86,355</td>
<td>21,945</td>
<td>25.41%</td>
</tr>
<tr>
<td>ADA/Disabled</td>
<td>152,982</td>
<td>428</td>
<td>100</td>
<td>94,414</td>
<td>22,255</td>
<td>23.57%</td>
</tr>
<tr>
<td>Elderly (65+)</td>
<td>120,040</td>
<td>259</td>
<td>64</td>
<td>73,032</td>
<td>10,796</td>
<td>14.78%</td>
</tr>
</tbody>
</table>

### Table 3-5
Projects within 1 mile of Protected Groups

<table>
<thead>
<tr>
<th>Target Population</th>
<th>Total Population</th>
<th># of TAZs</th>
<th>TAZs w/Project</th>
<th>Concentrated Population</th>
<th>Population w/Project</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regional Total</strong></td>
<td>829,027</td>
<td>859</td>
<td>536</td>
<td>829,027</td>
<td>513,529</td>
<td>61.94%</td>
</tr>
<tr>
<td>Black</td>
<td>24,625</td>
<td>196</td>
<td>110</td>
<td>17,385</td>
<td>9,481</td>
<td>54.54%</td>
</tr>
<tr>
<td>Asian</td>
<td>17,204</td>
<td>242</td>
<td>164</td>
<td>12,846</td>
<td>9,157</td>
<td>71.28%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>243,591</td>
<td>236</td>
<td>159</td>
<td>161,689</td>
<td>103,769</td>
<td>64.18%</td>
</tr>
<tr>
<td>Native American</td>
<td>19,199</td>
<td>178</td>
<td>124</td>
<td>13,177</td>
<td>9,755</td>
<td>74.03%</td>
</tr>
<tr>
<td>Low Income</td>
<td>116,196</td>
<td>342</td>
<td>233</td>
<td>86,355</td>
<td>59,815</td>
<td>69.27%</td>
</tr>
<tr>
<td>ADA/Disabled</td>
<td>152,982</td>
<td>428</td>
<td>250</td>
<td>94,414</td>
<td>55,114</td>
<td>58.37%</td>
</tr>
<tr>
<td>Elderly (65+)</td>
<td>120,040</td>
<td>259</td>
<td>163</td>
<td>73,032</td>
<td>45,158</td>
<td>61.83%</td>
</tr>
</tbody>
</table>
REVENUE SOURCES

The use of major sources of transportation revenues such as federal transportation funds or regional Highway User Revenue Funds (HURF) monies is specified in the TIP. No regionally significant project is eligible to receive federal funding unless it has been included in the TIP with a finding that there are no adverse air quality impacts. While revenues available through the TIP are limited, competition for those funds is great. Thus, extensive cooperation between local jurisdictions and other competing agencies is required.

PRIORITIZATION

During 1995, PAG developed detailed evaluation criteria in support of ISTEA and PAG’s transportation planning goals. A test of the proposed procedure was conducted during 1996 for the development of PAG's 1997-2001 TIP. This test indicated that improvements should be made, in terms of the ease of utilization and verification of results of the process. Working from the initial prioritization criteria as a base, subsequent refinement of the process continues.

Additionally, the public input component provides for public evaluation and ranking of both the criteria used and their overall importance to the community. Finally, all projects are reassessed for consistency with the RTP. The overall program is itself evaluated to ensure an appropriate regional balance of selected projects by transportation mode, type of project, jurisdiction and/or geographical distribution.

SCHEDULE

PAG's TIP development process typically starts in July of each year. The first step in the process consists of revising the existing TIP to reflect the actual obligation of funds for specific projects, such as changes in schedules and budgets. Information about planned transportation improvements is then gathered from all involved jurisdictions or agencies. The information that is collected is then screened for compatibility with the Regional Transportation Plan and fiscal constraint, and forms the core of the draft TIP document. This draft TIP is presented to the public for comments at PAG's Annual Transportation Open House, held this past year on April 7-9, 2003.

Following receipt of public comment and any subsequent revision, this draft TIP is reviewed for air quality conformity and is presented for review at meetings of the PAG Transportation Planning Committee, Management Committee, and Regional Council for approval. This is scheduled for June 25, 2003.

JURISDICTIONAL PROGRAM DEVELOPMENT

The following section describes procedures used by each jurisdiction in developing their portion of the Regional Transportation Improvement Program.

STATE OF ARIZONA

The Arizona State Transportation Board determines state priorities through
recommendations from their Priority Planning Advisory Committee (PPAC) (mandated by A.R.S. 28-6951). The PPAC is comprised of key ADOT personnel plus a representative of the Citizen's Transportation Oversight Committee, as a non-voting member.

The state uses a priority rating system as one of the major criteria in selecting projects for the Five Year Construction Program. The intent is for projects with the highest priority ranking to be constructed first. However, such factors as continuity of improvement, environmental/utility clearances, right-of-way acquisition, and/or funding constraints may cause changes in the priorities.

When the Five Year Highway Construction Program is approved by the State Transportation Board, it is filed with the Director of the Department of Transportation and the Governor.

PASCUA YAQUI TRIBE

The Pascua Yaqui Tribe along with the Bureau of Indian Affairs Western Regional Office is in the process of updating the 1994 Master Transportation Plan for Pascua Pueblo. The Pascua Yaqui Tribe has seven (7) communities within Arizona. The reservation and central offices are located southwest of Tucson, just south of Valencia Road.

Today the tribe is also updating its Master Drainage Plan, Master Land Use Plan and developing a Multi-use Path Plan. All reports from each plan will be reflected in the final transportation update. All transportation improvement projects are implemented through the Pascua Yaqui Tribe Public Works Department in conjunction with the Development Services Department.

All transportation projects are identified in the transportation plan. A priority list is created by Tribal Council, then submitted to the BIA for funding.

PIMA ASSOCIATION OF GOVERNMENTS

PAG is the designated Metropolitan Planning Organization for Pima County. PAG's program areas include regional transportation planning as required by federal transportation legislation.

The Pima Association of Governments Transportation Planning Committee (TPC) provides guidance to PAG's Transportation Overall Work Program and the products produced. The TPC is comprised of the department heads of the local planning and transportation implementing agencies, as well as representatives from the Arizona State Transportation Board, ADOT Transportation Planning and Highway Divisions, the Tucson Airport Authority (TAA), Davis-Monthan Air Force Base, the Federal Highway Administration, the University of Arizona, Citizens Transportation Advisory Committee (CTAC), and the local public transit system.

The TPC reviews the TIP within the framework of the regional transportation planning and air quality conformity process and federal and state regulations. The TIP Subcommittee, composed of key staff from involved planning and implementing agencies, and other important stakeholders such as freight service providers, was established by TPC for this purpose. The TIP Subcommittee reviews the composite jurisdictional programs for consistency with both regional needs and the RTP. The programs found to be consistent are recommended by the TPC to the PAG Management Committee as the TIP. A public open house is
held to acquire input for development of a tentative program. The PAG Management Committee schedules the TIP for jurisdictional review and action, followed by adoption by the PAG Regional Council. Public hearings are held for adoption of both the tentative and final program documents.

PIMA COUNTY

Projects put forth for consideration in this TIP were developed by the Pima County Department of Transportation (PCDOT) staff and were subject to administrative review. Projects were selected on the basis of critical needs, giving due regard to social, economic, environmental, and energy conservation considerations.

These highway improvement projects primarily involve upgrading existing facilities in areas warranting immediate relief. These areas were identified by existing or imminent development trends, land use patterns, or by present and projected transportation demand.

Most projects included in the TIP are along major routes whose primary function is to provide mobility for heavy transportation demand areas. The cost figures for the projects include right-of-way acquisition costs, design work, and construction estimates.

All feasible traffic engineering alternatives have either been implemented or were considered on these projects and by themselves are inadequate to meet traffic demands. These projects are on routes required to provide adequate mobility in areas of ongoing or imminent development. Such rapidly increasing demand for greater capacity, as is being experienced on these routes, dictates the need for longer range solutions than would normally be provided by interim traffic engineering measures. These projects were further prioritized on the basis of available federal-aid funds and coordination with other proposed improvements.

PCDOT also operates the Ajo airport. Improvements to airport facilities are programmed on the basis of the current Regional Aviation System Plan (2002) and the Airport Development Master Plans.

CITY OF TUCSON

The City of Tucson develops its transportation improvement projects using funds from various sources: allocated highway user taxes, approved streets and corresponding bond funds, federal-aid funds, FTA funds, the General Fund, and assessments under state statutes. Local general funds are used primarily to provide operating revenue for transit and are minimally programmed for capital improvements.

Projects selected for implementation are based on evaluation of many criteria, which define need, consistent with adopted Regional Plan Elements.

The criteria are:

1. Street and Highway Projects - Criteria for selection involve a highway sufficiency priority rating system involving physical conditions, traffic volume to capacity ratios (existing and future), and safety. The sufficiency index is updated annually. These items combined with professional experience, use data, and modal
interfacing, assist in determining the needs for street and highway improvements. Bikeway and pedestrian projects are considered an integral part of street and highway projects.

2. Transit Projects - Criteria for selection include: balance of public and handicapped transportation; route and service expansion; express service with the inclusion of park-and-ride facilities; and air quality conformity requirements.

The Mayor and Council of the City of Tucson have formally appointed a Citizens Transportation Advisory Committee (CTAC) to review and make recommendations to the Mayor and Council on all transportation issues. The Citizens Advisory Planning Committee works in conjunction with both the City’s Transportation and Planning departments and in coordination with the RTP process to provide for more effective regional transportation development programs.

TOHONO O ODHAM NATION

The Tohono O Odham Legislative Council (TOLC) passes resolutions that prioritize BIA road improvement projects based upon priority listings submitted by each of the Nation’s eleven Districts. Several years ago the Nation’s Planning Department succeeded in acquiring BIA 2% Planning Funds to conduct a system inventory and develop a Transportation Study and TIP. With the associated education process the TOLC recently approved joining PAG. The Nation’s prioritization process for non-BIA projects is under development. Currently the Planning Department coordinates these efforts with the Nation’s Executive Office of the Chairman, the Districts, and the TOLC.

TOWN OF ORO VALLEY

Transportation projects for the Town of Oro Valley Department of Public Works fall under the supervision of the Town Engineer. Federal, State and local funding as well as development impact fees, fund these projects. Generally, Town projects involve upgrading and widening arterials in the existing road network while adding turn bays, bicycle and pedestrian facilities and occasionally, traffic signals.

In addition to Public Works staff input, the Town employs a Public Participation Process for development of Capital Improvement Projects that are programmed in the Pima Association of Government’s TIP. Their involvement is an important element of the plan. In this process, citizens participate in Town meetings, community surveys, public hearings and focus group meetings. For some, participation may also include membership on the Technical Advisory Committee. Additionally, scheduled workshops are held in order to solicit feedback from the attendees.

Information gathered from the various modes of public input is used by the citizen’s Technical Advisory Committee to evaluate specific projects. Combining the Department of Public Works assessments with the recommendations of the Technical Advisory Committee, projects are then selected and sent to the Town’s Mayor and Council for review and action.
CITY OF SOUTH TUCSON

The City of South Tucson implements its transportation improvements through its Public Works Department. The determination of the projects to be undertaken is a combined process involving professional judgment, South Tucson's needs, and financial resources.

South Tucson encourages citizen participation via open Council meetings and public hearings. Through these meetings, residents have the opportunity to voice their opinions on transportation matters. A listing of transportation projects, stemming from the Public Works Department's assessment and public comments, is prepared for final action by the Mayor and Council.

TOWN OF MARANA

The Town of Marana prepared a Master Transportation Plan in 1989 to guide roadway development within the Town limits. The Circulation Element of the Town's General Plan, updated in February 1997, reflects the roadway concepts contained within the Master Transportation Plan. More recently, two sub-regional studies have been conducted: the Continental Ranch Sub-regional Transportation Study in 1997 and the Dove Mountain Sub-regional Transportation Study in 1999. The Master Transportation Plan was updated in 1999, and provides fiscally constrained project phasing through the year 2020 with expanded bicycle and pedestrian elements.

TOWN OF SAHUARITA

The transportation improvement projects for the Town of Sahuarita are developed from the town's Capital Improvement Plan (CIP). When the town prepares its CIP, it holds public meetings at the Council level. The public input is used to help prioritize projects in the plan.

TUCSON AIRPORT AUTHORITY

The Tucson Airport Authority is responsible for implementing projects at Tucson International Airport and Ryan Airfield. Projects are identified by the Tucson International Airport Master Plan, Ryan Airfield Master Plan, or from the Airport Authority staff. These proposed projects are then forwarded to the Operations Committee for their review and recommendation to the Authority's Board of Directors.

Primary consideration is given to airport needs, available federal and state funds, bonding capacity and the availability of Airport Authority matching funds. After determinations are made on specific projects, they are sent to the Board of Directors for final approval.
CHAPTER 4 - PUBLIC INVOLVEMENT

The primary, PAG sponsored event for regional public involvement in the development of the FY 2004-2008 TIP was the Annual Regional Transportation Open House. The Open House provides the public with an opportunity to review the candidate list of projects for the updated TIP and to submit comments on the proposed TIP. Other opportunities for public involvement were provided through PAG’s website and TIP Subcommittee meetings, which are open to the public.

Three Open Houses were held. One at the Main Downtown Library, one at the Foothills Mall, and a third at the El Pueblo Community Center on April 7, 8, and 9, 2003 respectively. Approximately 140 people attended the events with 79 of these indicating they did not work in the transportation field. A total of 44 TIP comment sheets were returned. The comment sheets solicited input on the proposed TIP, project impacts, and priorities for selecting projects. Verbatim comments and the tabulated results of the public comments on the proposed TIP are included in a separate public involvement report.

The TIP exhibit featured maps of TIP projects, displays about the TIP planning process, candidate project listings by jurisdiction or agency, Title VI analysis, and other related information, and the TIP public comment form. Transportation professionals from PAG member jurisdictions also were available to talk one-on-one with members of the public in attendance regarding TIP projects. Spanish speaking staff were in attendance.

The TIP Open Houses are widely publicized. Advertisements announcing the Open Houses were published in newspapers throughout the region including The Arizona Daily Star, The Tucson Citizen, the Northwest Explorer, The Green Valley News, and TV y Mas (a Spanish language publication). A news release was distributed to area print and electronic media. A total of 200 interior bus signs also were produced and displayed on SunTran buses.

A 2004-2008 TIP Web Page featured the candidate project list, an on-line public comment form, and information about the TIP planning process.

Following the Open House, TIP survey results were compiled and analyzed. This documentation was transmitted to the TIP Subcommittee for consideration in the development of final recommendations for project selection.

A 30 day final notice for public comment was issued on August 19, 2003 prior to the Regional Council considering the final TIP for adoption.

In addition to the PAG regional public participation process, the individual PAG jurisdictions also conduct public involvement activities which feed into the development of the regional TIP. Most jurisdictions conduct public participation efforts in conjunction with the development of their Capital Improvement Programs (CIP) prior to beginning the regional TIP development process. Jurisdictional recommendations for projects to be included in the candidate TIP project list are typically based on these CIP processes.
The Public Comment Form used during the TIP development process is shown below:

Pima Association of Governments  
Annual Regional Transportation Open House  
April 7-9, 2003  

COMMENT SHEET  
2004-2008 TRANSPORTATION IMPROVEMENT PROGRAM (TIP)  

The region’s leaders want to know what you think about the proposed transportation projects for the 2004-2008 Transportation Improvement Program (TIP). Please take a moment to review the maps and/or lists of proposed TIP projects, or talk to a transportation professional, and then answer the questions below.

1. What specific comments do you have about the proposed 2004-2008 Transportation Improvement Program (e.g. are there projects that should be deleted or added to the proposed list)?

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

2. In what ways do you feel the proposed 2004-2008 TIP project(s) might affect you or your immediate neighborhood either positively or negatively (e.g. increase safety, increase access to jobs and services; relieve congestion; harm the environment, divide or displace neighborhoods and businesses, etc)?

_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________

3. Given the region’s limited funding for transportation, please rate the relative importance of the following factors you would consider if you were making decisions about which transportation projects to fund in the next five years:

<table>
<thead>
<tr>
<th>Factors to be considered when selecting projects to be funded in the next five years</th>
<th>More important/Less important</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Please circle your choice)</td>
</tr>
<tr>
<td>Improve safety</td>
<td>5 4 3 2 1</td>
</tr>
<tr>
<td>Provide air quality benefits</td>
<td>5 4 3 2 1</td>
</tr>
</tbody>
</table>
### Factors to be considered when selecting projects to be funded in the next five years

<table>
<thead>
<tr>
<th>Factor</th>
<th>More important/Less important</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Please circle your choice)</td>
</tr>
<tr>
<td>Relieve congestion</td>
<td>5  4  3  2  1</td>
</tr>
<tr>
<td>Maintain and preserve the existing transportation infrastructure</td>
<td>5  4  3  2  1</td>
</tr>
<tr>
<td>Support economic development efforts by improving movement of goods/services and access to jobs, businesses and/or commercial areas</td>
<td>5  4  3  2  1</td>
</tr>
<tr>
<td>Distribute funds equitably among the various political jurisdictions</td>
<td>5  4  3  2  1</td>
</tr>
<tr>
<td>Provide opportunities for alternative modes of transportation such as transit, bicycling, walking, or ridesharing</td>
<td>5  4  3  2  1</td>
</tr>
<tr>
<td>Widen roads to gain more capacity from the existing system</td>
<td>5  4  3  2  1</td>
</tr>
<tr>
<td>Use new technology to gain more capacity from the existing system.</td>
<td>5  4  3  2  1</td>
</tr>
<tr>
<td>Solve specific problems in my neighborhood</td>
<td>5  4  3  2  1</td>
</tr>
<tr>
<td>Solve major problems on a regional level</td>
<td>5  4  3  2  1</td>
</tr>
<tr>
<td>Provide improvements that benefit the greatest number of people</td>
<td>5  4  3  2  1</td>
</tr>
</tbody>
</table>

### ADDITIONAL INFORMATION

- Please provide your five digit zip code (home):
- Do you work in transportation planning? YES NO
- Did you find the information you had expected at this Open House? YES NO
- Did you receive adequate answers to your questions? YES NO
- Can you suggest ways we might improve the Open House next year?

Name (optional):
CHAPTER 5 - AIR QUALITY EVALUATION

AIR QUALITY OVERVIEW

Motor vehicle emissions are a major contributor to air pollution across the nation and in the Tucson urban area. At least 60% of the total air pollutants within eastern Pima County come from motor vehicles, with the largest proportion being carbon monoxide (CO) emissions.

To assist local jurisdictions in measuring and improving air quality, the Environmental Protection Agency (EPA) established maximum acceptable levels of pollution for six common air contaminants. National Ambient Air Quality Standards (NAAQS) for outdoor or "ambient" air were established for carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter and sulfur oxides. If an area measures air pollution concentrations that violate these standards, that area is designated as a "non-attainment area" for that pollutant. When this happens, a non-attainment area plan must be developed and adopted to reduce emissions of that pollutant. The non-attainment area plan is incorporated in the State Implementation Plan (SIP) as a SIP amendment. If this is not done by the established deadline, or if the plan is declared inadequate, the EPA is required to promulgate a federal implementation plan (FIP) for the non-attainment area.

The SIP (or FIP) must contain effective strategies for curtailing air pollution. If a plan is to be approved by EPA, it must also include financial and resource commitments for plan implementation.

Part of the Tucson urban area was designated by EPA as a CO non-attainment area. This designation meant that the ambient CO concentration in the non-attainment area exceeded the level set as the NAAQS (9 parts per million for an 8-hour average) enough times to be in violation of the Federal standard. Historically, these violations occurred only at congested intersections, but no violations have been recorded since 1984.

The 1987 Carbon Monoxide State Implementation Plan Revision for the Tucson Air Planning Area (CO SIP) was fully approved by EPA on August 10, 1988. The EPA approval was appealed (Delaney v. EPA), and the Ninth Circuit Court of Appeals vacated the EPA approval (April 11, 1990) and ordered EPA to promulgate a CO FIP for Pima County. It was promulgated January 28, 1991. All transportation control measures included in the CO SIP when it was adopted continue in effect. In June of 1998 federal legislation was passed that voids the requirements of the Arizona FIP.

The Tucson area has not violated the CO NAAQS since 1984, and is projected to maintain compliance with the CO NAAQS for at least ten years. Redesignation to maintenance status was approved by the Region IX, EPA Regional Administrator, on April 24, 2000. The Carbon Monoxide Limited Maintenance Plan for the Tucson Air Planning Area (CO LMP) is approved as a SIP amendment and redesignates the area to attainment of the CO NAAQS. The CO LMP was effective July 10, 2000. It relies on monitoring and modeling procedures to predict when emissions control measures should be added or removed. Air quality modeling currently indicates that the area will maintain the CO NAAQS for at least 10 years without implementing any additional CO
transportation control measures (TCMs) or system improvements.

MAJOR DEVELOPMENTS

The Clean Air Act Amendments of 1990 (CAAA) and the CO SIP for Pima County require a comprehensive evaluation of the CO air quality impacts of transportation plans, programs and (under certain circumstances) projects. The 1998 PAG Metropolitan Transportation Plan was updated in 2001 as the 2001-2025 Pima Association of Governments Regional Transportation Plan (RTP) to comply with the 1991 ISTEA requirements. It was adopted by the PAG Regional Council on January 24, 2001. The Federal Highway Administration and Federal Transit Administration reviewed the Plan for conformity compliance. The conformity determinations for the 2001-2025 RTP and the 2002-2006 Transportation Improvement Program (TIP) were approved together in 2001. The conformity determination for the 2003-2007 TIP was approved in September 2004.

The transportation conformity rule was promulgated by EPA on November 24, 1993. Conformity procedures for the State of Arizona were certified by the Attorney General on June 16, 1995 and submitted to EPA on June 20, 1995 for promulgation and approval. EPA chose not to approve the Arizona conformity rules, pending amendment of the federal rule, but PAG must still comply with the Arizona conformity rules. In August of 1997 EPA amended the transportation conformity rule. The State of Arizona was required to revise its rule to conform with the amended federal rule by August 1998. However, a recent D.C. appeals court decision has modified the ability to enforce parts of the rule, pending possible EPA appeal. PAG continues to comply with all legal requirements for transportation conformity determinations in effect at the time of the conformity determination for this TIP.

The FIP replaced the 1987 CO SIP attainment demonstration and added detailed contingency and conformity procedures (similar to those in the CAAA). EPA did not impose any federal control measures for Pima County, but did include the PAG Travel Reduction Program, the Pima County Department of Environmental Quality (PDEQ) Voluntary No Drive Days Program and the State’s Oxygenated Fuels Program for Pima County as federally enforceable air quality control measures. Because these control measures are all included in the Arizona SIP, they will continue to be implemented in the absence of the FIP. Another control measure has been added by Arizona statute: a one-time only vehicle inspection failure waiver. Funds were appropriated by the legislature in 1999 and 2000 for the lawn and garden equipment replacement program, and a voluntary vehicle repair and retrofit program.

ISTEA also required that a Congestion Management System (CMS) plan be adopted. PAG has adopted such a plan. It is referred to as the PAG Mobility Management Plan (MMP). Implementation of the MMP is being carried out through a Memorandum of Understanding (MOU) among the PAG member jurisdictions, PAG and the Arizona Department of Transportation. The MMP was updated in August 2000.

SIP CONTROL MEASURES

The air quality emissions reduction measures now required for CO in the SIP are as follows, in order of effectiveness:

Federal Motor Vehicle Control Program (FMVCP)
Arizona Inspection and Maintenance Program (I/M)
Oxyfuels Program for Pima County (1.8% oxygen)
PAG Travel Reduction Program
PAG RideShare Program
Pima County Voluntary No-Drive Days Program
One-time emission inspection violation waiver (benefit not yet quantified)

All legally enforceable commitments to other control measures outlined in the 1987 SIP revision have been completed.

The EPA made the following statements in the January 28, 1991 FIP regarding the attainment and maintenance of the CO NAAQS in Pima County:

"The 1987 Pima plan (CO SIP) projected attainment of the CO NAAQS in early 1990 and maintenance through 2000 relying solely on emission reductions from the FMVCP, the State I/M program without the loaded-mode component, existing traffic flow improvements, and programmed road improvements. The Pima plan did not rely, for either attainment or maintenance, upon any of the additional measures being proposed in the plan (e.g., the travel reduction program) or later adopted by the State legislature (e.g., the loaded-mode I/M program and the oxygenated fuels program). Finally, new population and vehicle miles traveled (VMT) forecasts for the Pima area have recently been completed and are predicting substantially less growth in 1990 and future years than was assumed in the 1987 Pima plan. Combined, these three factors argue strongly that the 1987 Pima plan accurately predicted that attainment would occur in or before early 1990.

Therefore, EPA concludes today that sufficient emission reductions have already been achieved in Pima County to assure that current CO emission levels are below those needed to attain the CO NAAQS, and that no additional Federal measures are needed to ensure attainment.

EPA performed hot-spot modeling using the approved hot-spot model, CAL3QHC, to determine if sufficient measures were in place to ensure maintenance in Pima County for the required ten-year period after plan promulgation, i.e., until early 2001. This hot-spot modeling showed that with the existing control strategy that ambient CO concentrations for the next ten years would be well below the CO NAAQS even under 'worst-case' meteorological conditions.

Emission reductions from two control measures were explicitly included in the maintenance demonstration for Pima County. These control measures are the Arizona State inspection and maintenance program with the loaded-mode component and the oxygenated fuels program at 1.8 percent oxygen. Other measures in the SIP such as the travel reduction program were not explicitly included in the maintenance demonstration; however, such measures will provide an extra margin of emission reductions for maintenance. EPA, therefore, finds that no additional controls are necessary for maintenance in Pima County."

These EPA statements were based on a conservative use of the available data in most cases. The attainment demonstration is based on only two major control measures (three if the FMVCP is counted). Modeling was done for two microscale sites using "worst case" meteorology. The results were as follows: the estimated ambient concentration in parts per million (ppm) CO for an 8-hour average was 6.4 for the 22nd
St./Alvernon intersection and 7.2 for the Broadway/Craycroft intersection in the year 2000. EPA commented in the Technical Support Document, "These concentrations are well below the federal ambient CO standard of 9 ppm per 8-hour average. One thing to bear in mind is that all the modeling analyses were based on the worst case conditions. Therefore, the 8-hour average concentrations at these hot spots could be much lower." It should also be noted that EPA's attainment demonstration for Pima County is based on "existing traffic flow improvements and programmed road improvements." Emission "milestones" were not established for the Tucson Air Planning Area (TAPA) in the 1987 SIP. However, the annual emissions inventory for 1990 serves as a base-case because that is the year that the CO NAAQS attainment was projected and achieved. If future annual emissions inventories can be held below that level, and hotspot problems avoided, maintenance of the CO NAAQS is assured.

The long range control strategy will be to continue programs to control mobile emissions and reduce per capita VMT to offset continued regional population growth both through roadway and non-roadway elements. The most significant local strategy focused on direct VMT reduction (as compared to congestion management strategies) is the continued implementation of the PAG RideShare Program and the PAG Travel Reduction Program.

THE ANALYSIS APPROACH

The understanding of, and the continued compliance with, the SIP in Pima County is especially important. First, by reducing the amount of pollutants in the air, a significant contribution is made to the maintenance of the health of the region's citizens. Second, by conforming to an air quality plan that meets federal requirements, the Tucson urban area will continue to be eligible to receive available federal funding for essential transportation projects.

In order to assure compliance with clean air standards, an annual program of planning and evaluation has been established in Pima County. As part of this process an air quality analysis of the Regional TIP is performed, as prescribed by Federal laws (§109(j) of 23 U.S.C. and §176 of the Clean Air Act). The purpose of this analysis is to demonstrate compliance with the State transportation conformity rule (R18-2-1401 et seq.), to assure that all transportation control measure commitments are being implemented on schedule, and that the federal conformity requirements are met. With approval of the LMP, the requirement of meeting an emissions budget and demonstrating conformity through a modeling demonstration is removed for the 10-year period of the LMP.

The principal measure of compliance is the CO monitoring program. This program is operated by Pima County Department of Environmental Quality. In addition, PAG does an air quality evaluation of the TIP for comparative purposes and calculates the year 2008 CO emissions from mobile sources on the transportation network as it will exist if all TIP projects are completed on schedule and the 2008 CO emissions assuming no improvements to the network (no-build). The comparison for this TIP shows a decrease of XX tons from the 2004 year to 2008, assuming the TIP projects are completed on schedule. All calculations of VMT, speed and CO emissions include an addition to the network system figures of 15% of VMT at 12.9 mph to account for local (non-network) travel.

A supplementary air quality evaluation, required under the LMP, is conducted on the most congested hotspot intersections using the EPA-approved CAL3QHC microscale model using current year traffic conditions. The purpose of the microscale air quality analyses is to determine if any TIP projects are likely to affect or be affected by
congested intersections. The analyses are performed annually for the hot spots most likely to be the location for future CO NAAQS violations. The intersections that qualified in 2002 with the highest average daily traffic (ADT) and the worst level of service (LOS) are as follows:

Tanque Verde/Grant/Kolb (#1 highest ADT)
Speedway/Campbell (#2 highest ADT)
Broadway/Kolb (#3 highest ADT)
Broadway/Campbell (#1 worst LOS)
Orange Grove/Thornydale (#2 worst LOS)
Speedway/Swan (#3 worst LOS)

In addition, 22nd St./Alvernon was modeled for historical purposes. It ranked as #26 highest ADT and #22 worst LOS.

The most recent microscale analyses (using CAL3QHC) are presented below (worst at top) showing the 8-hour average CO concentration in ppm (the 8-hour NAAQS is 9 ppm):

<table>
<thead>
<tr>
<th>INTERSECTION</th>
<th>8 - HOUR AVERAGE CONCENTRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speedway/Swan</td>
<td>5.5 ppm</td>
</tr>
<tr>
<td>Tanque Verde/Grant/Kolb</td>
<td>4.9 ppm</td>
</tr>
<tr>
<td>Broadway/Campbell</td>
<td>4.7 ppm</td>
</tr>
<tr>
<td>Broadway/Kolb</td>
<td>4.6 ppm</td>
</tr>
<tr>
<td>Orange Grove/Thornydale</td>
<td>4.5 ppm</td>
</tr>
<tr>
<td>Speedway/Campbell</td>
<td>4.3 ppm</td>
</tr>
<tr>
<td>22nd St./Alvernon</td>
<td>3.9 ppm</td>
</tr>
</tbody>
</table>

Reductions in carbon monoxide emissions from the non-roadway elements such as carpooling and mass transit have previously been estimated for the Regional TIP using data compiled from PAG's Travel Reduction / RideShare Programs, the City of Tucson's Department of Transportation and SunTran. Emission reductions were calculated using methods developed in the Pima County Air Quality Control District's (now PDEQ) Reasonable Further Progress Reports (1981-1985) and PAG's report on the System for Monitoring Progress Toward Emission Reduction Goals (1983). As no emissions budget is required for conformity purposes, programs that result in emissions reductions are detailed in the following section.
SUMMARY OF EMISSIONS REDUCTION MEASURES

PAG RIDESHARE PROGRAM

The RideShare Program was established in 1974 and is administered by PAG. It offers a free computer-matching service for people interested in carpooling to work or college. At the close of 2002 the RideShare carpool database contained 29,160 active registrants representing 517 employment locations. The carpool database changes daily with the receipt of new applications for matching, requests for rematching, change to the registrant’s information and deletions. In 2002, RideShare averaged 2,195 carpool lists sent to requesters each month.

The RideShare Program also promotes the use of alternate modes of transportation, bicycling, walking, telework, and transit use. Printed material and promotional assistance are available from RideShare to employers wishing to promote alternate modes of transportation to their employees. Individuals can also call RideShare at (520) 884-RIDE to obtain carpool matching or other alternate mode information. In 2002, RideShare distributed 584,582 informational pieces (including carpool application brochures, bicycle maps, bicycle guides, bicycle posters, walking posters, and walking guides) and 344,363 promotional items.

RideShare coordinates the Parent Pool Program (PPP) which is a free, confidential service to aid parents in organizing carpools in order to share the responsibility of driving their children to and from school. Participating in the PPP can help parents save time and money, and improve traffic congestion around the school. RideShare provides materials, staff to assist parents in signing up for school carpooling, and data entry and matching services for parents interested in carpooling. In 2002, 16 schools distributed 2,670 PPP applications and received 85 requests for carpool matching.

PAG TRAVEL REDUCTION PROGRAM (TRP)

Travel Reduction Ordinances (TROs) creating the Travel Reduction Program (TRP) are in place for each of the following jurisdictions: Pima County, the cities of Tucson and South Tucson, and the towns of Oro Valley, Marana, and Sahuarita. The TRP is implemented through PAG, working with major employers (an employer with 100 or more full-time equivalent employees at a single or contiguous site) to encourage their employees to reduce the vehicle miles traveled in the home to work commute trip through the use of alternate modes or adjusted work schedules such as compressed work weeks or teleworking.

The TROs establish targets for increases in alternate mode usage and reductions in employee vehicle miles traveled for each year of participation in the program. During 2002, 269 employment sites completed the TRP survey process and 38.7% successfully met their TRP goal. The number of participating employers and sites continues to rise as a result of Tucson's economic growth and population increase and as PAG’s TRP efforts expand. TRP staff contact employers on a regular basis to determine "full time employee" (FTE) status for eligibility under the TRP. Employers that don't qualify (less than 100 FTE) and do not chose to participate as a volunteer are added to the RideShare Program database to receive alternate mode information.

During 2002, TRP staff created and implemented a Vanpool Program. The Vanpool Incentive Program (VIP) was developed and a Contributor Agreement was created with Enterprise Rent-A-Car, Inc. to administer a $400.00 per month per van subsidy for a twelve-month introductory program to qualified TRP employees. Raytheon Missile Systems and Tucson Electric Power Company have both instituted subsidies for
employees participating in the VIP. The VIP will continue into 2004 as long as funding is available.

Travel Reduction Program participants during the 2002 program year helped improve the environment by saving:

" 97.0 million driving miles
" 4.9 million gallons of gasoline
" 2.8 million pounds of pollution

The table below shows regional results comparing the base year (1989) result with the most recent full year of the program (2002). This provides a picture of the performance of the program over its fourteen year history.

| Table 5-2 |
| Travel Reduction Program 1989 vs. 2002 Regional Survey Results |
| 1989 | 2002 | % Change |
| TRO Goals | Baseline | Fourteen | N/A |
| AMU% | N/A | 35% | N/A |
| VMT% change | N/A | -40% | N/A |
| AMU results % | 17.6% | 29.2% | 65.9% |
| VMT results | 47.3 | 58.6 | 23.9% |
| Survey Response Rate % | 68.5% | 84.9% | 23.9% |
| Number of Sites | 148 | 269 | 81.7 |
| Number of Employees | 77230 | 112518 | 45.7 |
| TRP | Travel Reduction Program |
| TRO | Travel Reduction Ordinance |
| AMU | Alternate Mode Usage in daily home-work commute (carpool, bus, bicycle, walk, vanpool or special programs) |
| VMT | Regional average weekly one-way motor Vehicle Miles Traveled factored by mode readership |

In addition to the data obtained through the TRP database from major employers, surveys on regional travel behavior have been performed for Pima County by several researchers since 1988. The mode splits from selected years of these surveys are tabulated below. The question asked was during a typical week, how often do you use each of the following methods to arrive at work or school? The percentages add up to more than 100 because respondents often used more than one mode during a typical week.
Table 5 - 3
Telephone Surveys Showing Mode Split (%) for the Home-to-Work Commute

<table>
<thead>
<tr>
<th></th>
<th>4/97</th>
<th>4/98</th>
<th>4/99</th>
<th>4/00</th>
<th>4/01</th>
<th>4/02</th>
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<tr>
<td>Drive Alone</td>
<td>78</td>
<td>80</td>
<td>77</td>
<td>72</td>
<td>83</td>
<td>79</td>
</tr>
<tr>
<td>Carpool</td>
<td>39</td>
<td>31</td>
<td>33</td>
<td>39</td>
<td>20</td>
<td>19</td>
</tr>
<tr>
<td>Bus</td>
<td>7</td>
<td>10</td>
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<td>8</td>
<td>6</td>
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<tr>
<td>Bicycle</td>
<td>11</td>
<td>13</td>
<td>13</td>
<td>16</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Walk</td>
<td>11</td>
<td>12</td>
<td>16</td>
<td>13</td>
<td>9</td>
<td>12</td>
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<tr>
<td>Motorcycle</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Reports prior to 2001 used a different calculation method and will not coincide with later years.

Sample size for 2002 was 508.

CLEAN CITIES PROGRAM

Vehicle miles traveled in the region have increased from 12 million miles a day in 1990 to over 20 million miles a day in 2001 according to Tucson-Pima County, August 2001 Transportation Energy Assessment. As vehicle miles increase, air quality suffers because approximately 70% of our air pollution is caused by motor vehicle use. The increasing miles traveled gave birth to the Tucson Region Clean Cities Coalition.

The Clean Cities program is a national effort, sponsored by the U.S. Department of Energy (DOE), to increase alternative fuel vehicle (AFV) usage for the purpose of improving air quality and reducing the country’s reliance on foreign petroleum sources. The Tucson Regional Clean Cities Coalition received its DOE designation in August 1999 as the 73rd such coalition in the nation (there are now 82 Clean Cities). The local 32 member coalition consists of representatives from major utilities and other fuel providers, private companies, including vehicle dealers, and fleet owners, and a variety of government agencies. The coalition developed a five-year plan, approved by DOE, which continues to be executed under the direction of a local steering committee with the assistance of a full-time PAG staff coordinator.

The Tucson Regional Clean Cities Program maintains a fuel-neutral position with respect to the promotion and use of all alternative fuels. Currently, regional emphasis is placed on the use of compressed natural gas (CNG), propane, biodiesel and electricity.

The region reported 827 same AFVs in 1999 same. During January 2002, our Coalition reported 1,874 AFVs, which exceeded the projection of 1899 for 2003. The projected figure is considered to be a conservative estimate, because AFVs are gaining in acceptance and popularity as fleet managers and the general public becomes aware of the benefits of owning and operating AFVs. In addition, State and Federal agencies and fuel providers are mandated by the Energy Policy Act of 1992 to procure AFVs annually.

A major obstacle to the proliferation of AFVs is having adequate alternative fuel infrastructure. The electric vehicle infrastructure is adequate at this time with seven
electric recharging stations throughout the metropolitan area, plus one in Casa Grande to facilitate travel between Tucson and Phoenix. However, due to the introduction of the hybrid vehicle, the all-electric non-neighborhood vehicles and electric charging stations have been significantly scaled back. Propane refueling stations are available throughout the region. The only drawback in the region has been the lack of public-access CNG refueling stations. The region has 11 restricted-access (business/government) CNG stations. Investment capital from a fuel provider and financial assistance in the form of grants from the State Energy Program have provided funds to build the region’s first public-access CNG refueling station in the spring of 2003 at the Tucson International Airport.

The Tucson Region Clean Cities Program Steering Committee meets bi-monthly to network, exchange information and work on the goals and objectives of the Clean Cities Plan that was adopted in August, 1999. Staff provides support to the steering committee, coordinating and participating at community outreach events to promote AFVs and acting as a clearinghouse for the Clean Cities Program to advocate use of alternative fuel vehicles.

VOLUNTARY VEHICLE REPAIR AND RETROFIT PROGRAM

The purpose of Pima County Department of Environmental Quality’s Voluntary Vehicle Repair and Retrofit (VVR&R) Program is to reduce vehicle-related emissions by providing a financial incentive to the owners of older, high emitting vehicles to repair the vehicles to pass the state emissions test. The VVR&R Program was established through state legislation in 1998 and the Program began repairing vehicles in Pima County in 1999. On average, emissions are reduced by 80 percent per vehicle. To date, over 1,650 vehicles have been repaired with a corresponding reduction of approximately 500 tons of emissions per year for the life of the repairs.

To qualify for the VVR&R Program, legislatively-set criteria must be met including the following: the vehicle must fail the state emissions test; the vehicle must be twelve years of age or older; the vehicle must have been registered in the state of Arizona during the last 12 months without a break in registration for more than 60 days; the vehicle must be titled in Arizona; the vehicle owner must pay the first $150 of repairs; and the vehicle must be operational and in good mechanical condition. If the vehicle meets these criteria and is entered into the Program, Pima County Environmental Quality will pay up to an additional $550 for emissions-related repairs, or up to an additional $650 for emissions-related repairs and retrofit kit installation. Funding for the VVR&R Program is provided through a grant from the Arizona Department of Environmental Quality.

VOLUNTARY NO-DRIVE DAY (CLEAN AIR) PROGRAM

The Pima County Department of Environmental Quality’s Voluntary No-Drive Day (Clean Air) Program is a state-mandated program that began in 1988 to address carbon monoxide violations in Pima County. The goals of the national award-winning program are to increase awareness of air quality issues and encourage actions to reduce air pollution. The Clean Air Program uses several methods to achieve its goals including:

Community Outreach Speakers Bureau, Air Pollution Advisories, Smoking Vehicle Hotline (622-5700), PDEQ Website (www.deq.co.pima.az.us), near real-time air quality information Website (www.airinfonow.org) with hotline (882-4AIR), Outreaches at Community Events and Major Employers, Advertising and Media Relations;

School and Youth Programs Classroom Presentations, Teacher Training,
Development and Distribution of Air Quality Curricula, Annual Art Contest, Kids for Clean Air Club (over 2,800 members); and

Annual Public Events - Sponsorship or Co-Sponsorship of events such as Walk Our Children to School Day, Car Care Checkup, Clean Air Fiesta and Earth Day.

During the 2001/2002 fiscal year, approximately 4,100 individuals attended Clean Air Program presentations, over 78,000 participated in community events, 120 educators received air quality curricula or training, over 124,000 requests for information were made to the PDEQ website, over 99,000 requests for information were made to the Air Info Now website, over 1,500 calls were processed for the Smoking Vehicle Hotline, and 278,000 educational brochures or items were distributed to the public.

CONFORMITY OF THE TIP

In order for PAG and the U.S. Department of Transportation (US DOT) to determine that this TIP is in conformity with the applicable air quality implementation plan (the SIP), the TIP must meet the conformity requirement findings in Arizona Administrative Code R18-2-1401 et seq.

This TIP is derived from, and consistent with, the 2001 through 2025 PAG Regional Transportation Plan. As described in previous TIPs, the following three conformity findings are required:

PAG finds by adoption of this TIP that the TIP provides for, or does not impede, the implementation of all Transportation Control Measures (TCMs) in the applicable air quality implementation plan (SIP) on the schedule set forth in the SIP.

PAG also finds by adoption of this TIP that CO emission levels, microscale and regional, resulting from implementation of the TIP will not interfere with maintenance of the CO NAAQS throughout the maintenance area during the period covered by the program.

In addition, PAG finds, by adopting this TIP that implementation of the program would not cause or contribute to a violation of the CO NAAQS anywhere within the maintenance area during the period covered by the program.

The Clean Air Act, as amended in 1990, requires that the TIP conform to the "applicable air quality implementation plan's" (SIP's) purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards; and that TIP activities will not cause or contribute to any new violation of any standard in any area, increase the frequency or severity of any existing violation of any standard in any area, or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

PAG finds by adopting this TIP that the TIP is in conformity with the applicable air quality implementation plan's (SIP's) purpose of attaining (maintaining) compliance with the CO NAAQS. PAG also finds by adopting this TIP that the CO NAAQS was attained in 1990 and that TIP projects will not contribute to any new violation of the CO NAAQS or delay any required emission reductions or other milestones in any area.

EPA promulgated a final rule on April 24, 2000 to redesignate the Tucson Air Planning Area (TAPA) to attainment for the carbon monoxide (CO) National Ambient Air Quality Standard (NAAQS) and to approve a maintenance plan that will insure that the area
remains in attainment. EPA confirmed in the rule that no emissions budget test is needed to demonstrate conformity as long as the maintenance plan is followed and no violations of the CO NAAQS occur. Compliance under the LMP is determined by continued monitoring of the existing system with the additional monitoring requirements.

In Pima County, CO mobile source emissions estimates are calculated by PAG using MOBILE6 emission factors. The MOBILE6 emission factors are developed from local data, to the extent possible, including state I/M program, oxyfuels program, and local (County) vehicle registration distribution. PAG Transportation Planning Division (PAG TPD) uses the most recent census population data for 2000 in combination with State and local transportation and traffic data to generate vehicle miles traveled (VMT), vehicle hours traveled (VHT) and congestion levels. All these updated data sources were used for the air quality evaluation of this TIP. PDEQ is the designated air quality control agency for Pima County. PAG is the designated regional air quality planning agency and the MPO.

### Table 5-4

Summary of Carbon Monoxide Emissions Modeling Results for the 2004-2008 TIP

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Vehicle Miles Traveled</th>
<th>Regional Carbon Monoxide Emissions (tons)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>22,444,001</td>
<td>408.5</td>
<td>TIP Start Year</td>
</tr>
<tr>
<td>2008</td>
<td>27,576,332</td>
<td>380.0</td>
<td>TIP End Year</td>
</tr>
</tbody>
</table>

PAG finds, by adopting this TIP, that the Regional Transportation Improvement Program for FY 2004-2008 is in conformity with the SIP. PAG also affirms by adopting this TIP that it is consistent with the 2001 through 2025 Regional Transportation Plan.

**CONFORMITY OF THE PLAN**

The PAG Regional Council and the U.S. Department of Transportation made a conformity determination for the 2001 through 2025 PAG Regional Transportation Plan (RTP) in 2001. It was found to be in conformity with the SIP following procedures outlined in the federal transportation conformity rule (40 CFR Part 93) and the State of Arizona conformity rule (R18-2-1401 et seq.). Under the CO LMP, modeled results serve as a guide to the region for future air quality planning as compliance under the LMP is determined by continued monitoring of the existing system with the additional monitoring requirements.

PAG finds by adopting this TIP that the RTP continues to be in conformity with the SIP.

**REGIONAL AIR QUALITY CONFORMITY ASSESSMENT**

PAG is the designated air quality planning agency for the region and, as such, maintains close, cooperative relationships with the U.S. Environmental Protection Agency (EPA), Arizona Department of Environmental Quality (ADEQ), Arizona Department of Transportation (ADOT), and Pima County Department of Environmental Quality (PDEQ). Coordination of regional transportation planning with air quality planning has been carried out for many years. In April 1993, the procedures, methods and responsibilities for air quality planning were incorporated in a Memorandum of
Agreement (MOA) between PAG, ADEQ, ADOT and PDEQ. That MOA was updated in August 2000.

In summary, the Regional Council of the Pima Association of Governments finds, by adopting this TIP, that the TIP and all projects contained in this TIP are in conformity with the applicable implementation plan, the SIP.
CHAPTER 6 - TRANSIT

SUN TRAN

Overview:

Sun Tran provides fixed route transit service within the City of Tucson, with limited service into Pima County, the City of South Tucson, the Town of Marana, and the Town of Oro Valley. The system's 37 fixed routes cover a 199 square mile area. Currently, 68% of Sun Tran's fleet runs on compressed natural gas (CNG). Sun Tran operates 89 dedicated CNG buses and 47 dual fuel buses.

To accommodate its CNG fleet, Sun Tran utilizes one of the of the largest CNG vehicle fueling sites in Arizona. Sun Tran's advanced fueling system accommodates 136 buses.

The environmental benefits of using CNG are significant. One of the safest alternate fuels available, CNG emits significantly fewer particulates than traditional diesel-fueled vehicles.

Sun Tran also serves 19 free Park & Ride lots. To support multi-modal transportation, all buses have bike racks that allow passengers to bike and ride. Bike lockers are available at four of the Park & Ride lots.

Total ridership for FY 01-02 was 13.6 million passenger trips. The average trip length was 4.0 miles. A bargaining unit strike in September 2001 negatively affected annual ridership. Though Sun Tran continued to provide service on a limited basis during the strike, it is estimated that approximately 441,000 riders were lost during the 12-day work stoppage.

Sun Tran has recovered from the 2001 strike and is showing a significant increase in ridership. For the first eight months of FY 02-03, Sun Tran's ridership has increased approximately 7% over the same period in FY 01-02.

A $638,000 budget shortfall in FY 01-02 required Sun Tran to streamline the system in August 2001. Since restructuring efforts were executed, the system has enjoyed service level consistency, potentially contributing to the increase in FY 02-03 ridership.

Still, the challenge remains to fund transit. Though current budget deficits have threatened reductions in other city and county services, various jurisdictions have expressed dedication to keep Sun Tran at status quo service levels.

Advanced Technology:

All coaches dating from 1991 contain digital video recorders, enhancing operator and passenger security. The 1993 and newer model buses in the Sun Tran fleet are equipped with interior automatic annunciators. Forty-five newer buses are equipped with external annunciators as well, providing enhanced service for persons with disabilities.
Enhanced Amenities:

Several amenities have been added recently to attract riders to the system. Installation of advertising shelters and new bus benches began in early 2003. Through a contract awarded by the City of Tucson, Attention Transit Advertising will install 100 lighted shelters throughout the greater Tucson area this year. A total of 679 shelters will be installed by 2008, through a combination of shelter replacement and the addition of new shelter locations.

In partnership with the University of Arizona (UA), the Cherry Avenue Transit Hub and the Sixth Street Garage were completed in 2003. In addition to providing shelter from the elements, the Cherry Avenue Transit Hub offers passengers restrooms, water fountains and vending machines. The Sixth Street garage was designed to create a seamless transportation system for students and staff. The structure promotes multi-modal transportation, accommodating stops for Sun Tran and UA's Cat Tran service.

Keeping Community Ties:

Sun Tran is an integral and necessary part of the Tucson community. In 2002-2003, the organization continued its long-standing associations with businesses, social service organizations, schools, churches, and other governmental bodies.

In the summer of 2002, Sun Tran developed a unique program to preserve its popular special community event shuttle service. Tucson's Mayor and Council approved a proposal to sell advertising wraps on Sun Tran buses beginning in August 2002. The revenue stream from the pilot program allowed Sun Tran to continue operation of its shuttle service to community events such as the University of Arizona football games, the Colorado Rockies Spring Training games, and the Davis-Monthan Air Show. Over $130,000 in advertising revenues was generated, and new community partnerships were formed with KB Home, Arizona Lottery, O' Rielly Chevrolet and Garrett's Supermarkets.

Sun Tran continues to strengthen its image in the region through a variety of events. The system held a rider appreciation day at the transit centers, promoted Communities in Motion Day and participated in the annual Clean Air Fiesta. Sun Tran assisted the Community Food Bank and the Salvation Army through the "Stuff-the-Bus" donation programs in the winter of 2002.

Other examples of cooperative efforts in the community include Sun Tran's arrangement with TUSD and other school districts to qualify low-income students for economy passes and an agreement with Raytheon Systems which preserves an eastside and central route to serve the Aero Park area. Through Sun Tran's employer-subsidized bus pass program, Get on Board, most governmental employers in Tucson offer reduced-cost bus passes as an employee benefit. The UA offers subsidized bus passes to students and employees through the U-Pass program. Sun Tran and the UA have encouraged use of alternate modes through a successful partnership that has lasted nearly two decades.

Currently, all of Sun Tran's 199 bus fleet is wheelchair accessible. With the ongoing assistance of Transit Solutions, a three-part program consisting of community outreach, Sun Tran Boarding School, and joint consumer/operator sensitivity training, Sun Tran's long-term relationship with its passengers with disabilities has continued to develop. An approach that brings together bus operators and consumers to "walk a mile in each other's shoes" appears to be unique in the nation. In 2002, 123 people participated in
this unique training program. In addition to training, Sun Tran provided 32 passengers using mobility devices with "Secure Loops." These are straps that attach to the mobility device, making boarding and riding buses a safer, more efficient, and more comfortable experience.
CHAPTER 7 - INTELLIGENT TRANSPORTATION SYSTEMS

Intelligent Transportation Systems (or ITS) use real-time, travel related information to integrate all components of a traditional transportation system (roads, transit, traffic control devices, vehicles, and drivers) into an interconnected network. Intelligent Transportation Systems utilize advanced technologies in electronics, information processing, and communications to gather, process, and distribute information necessary to maintain and increase the efficiency and safety of the functioning system.

PAG, in coordination with the multi-jurisdictional Transportation Systems Subcommittee (formerly the Tucson Area ITS Working Group, is developing a new ITS strategic plan for the greater Tucson metropolitan area. The new Tucson Area ITS Strategic Deployment Plan -21st Century will replace the original ITS Plan completed in June 1996.

The new Plan will identify local ITS transportation options with the assistance of an ITS Citizens Advisory Committee, as well as a variety of ITS technical resource contributions. The new Plan will serve to examine details associated with ITS issues such as necessary communications infrastructure, transit, ITS data and traveler information, costs and fiscal considerations, intermodal applications, freeway management, and incident and emergency management related to transportation. This will provide an expansion upon four basic ITS components identified in the original ITS strategic plan.

The study will result in a roadmap for implementation of ITS projects and programs in the PAG region for the next 30 years. The new Plan will propose a five-year capital ITS program along with identification of ITS related projects and programs recommended for Medium (2009-13) and Long (2014-2030) range time periods. Projects and programs identified within the Plan will be reviewed on an annual basis to assure that the appropriate steps are taken to secure funding and align resources for project implementation. This approach aims at mainstreaming ITS projects into traditional transportation planning and programming processes, including both the 5-year TIP and the Regional Transportation Plan (long range plan w/ 2030 horizon). Integration of ITS into the transportation planning and programming processes also provides better identification of more cost efficient programming and operation of ITS related projects by incorporating ITS features into major projects as opposed to having these elements installed as sole and separate projects. Additional ITS programs and applied research studies will also evolve from the new ITS Plan. The ITS Plan relies heavily on the establishment of a Regional ITS System Architecture which identifies in-place, programmed and planned ITS projects and programs along with their integration and operation. This system architecture will provide an accurate record of the region’s ITS program while allowing for expansion and maintaining consistency with the National ITS Program.

ITS TRAFFIC SIGNAL SYSTEMS

On behalf of the region, the City of Tucson currently monitors and controls over 400 traffic signals from the City of Tucson Transportation Control Center. The City of Tucson, Arizona Department of Transportation, Pima County, Marana, Oro Valley,
Sahuarita and the City of South Tucson are in partnership to provide a "seamless" traffic signal operation across jurisdictional boundaries. This has resulted in the interconnection of traffic signals, in and adjacent to the City of Tucson, into a centrally coordinated operation. This system has been expanded to encompass all the traffic signals in the Greater Tucson Metropolitan Area. This makes Tucson one of the few, if not only, metropolitan areas of its size with 100% of its signals controlled from a single center. Real-time traffic monitoring of traffic as well as emergency response is being enhanced by the introduction of video detection cameras at pre-determined intersections on major arterials. In a multi-jurisdictional coordinated effort, the region’s signals utilize multiple signal timing patterns in order to maximize the efficiency of the network as a whole. This type of signal coordination improvement being implemented in the Tucson area is providing for improved traffic flow. Such improvements tend to be most effective in locally congested areas, where progressive flows can reduce stops and signal delay. The increase in flow rate and decrease in stops and idle time can lead to a significant reduction in CO. Los Angeles has experienced a 41% decrease in vehicle stops as a result of traffic signals that are coordinated to adjust to current traffic conditions. In addition, the Tucson region is working cooperatively with the University of Arizona ATLAS Research Center having recently field tested real-time traffic adaptive signal algorithms on the local road network. The algorithms respond to current traffic conditions and patterns by constantly readjusting signal timings according to traffic volumes, speeds and directions using detection equipment already installed by the City of Tucson.

<table>
<thead>
<tr>
<th>Table 7-1</th>
<th>Summary of Traffic Signal System Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel time</td>
<td>Decrease 8% - 15%</td>
</tr>
<tr>
<td>Travel speed</td>
<td>Increase 14% - 22%</td>
</tr>
<tr>
<td>Vehicle stops</td>
<td>Increase 0% - 35%</td>
</tr>
<tr>
<td>Delay</td>
<td>Decrease 17% - 37%</td>
</tr>
<tr>
<td>Fuel consumption</td>
<td>Decrease 6% - 12%</td>
</tr>
<tr>
<td>Emissions</td>
<td>Decrease CO emissions 5% - 13%</td>
</tr>
<tr>
<td></td>
<td>Decrease HC emissions 4% - 10%</td>
</tr>
</tbody>
</table>

ITS FREEWAY MANAGEMENT SYSTEMS

ITS Freeway Management System Deployment of Phase I and Phase IIA of the Tucson metro area Freeway Management System (FMS) has been completed. The initial phase of the FMS utilizes 13 CCTV cameras with the ability to tilt, zoom and pan 359° for use in monitoring traffic flow and detecting incidents. The cameras have been strategically placed along the mainline at approximately one-mile spacing so that they can be used to observe traffic on the approaching arterials as well as Interstates 10 and 19. Eight Variable Message Signs (VMS) are also used to provide real-time information for drivers. FMS equipment has been located along the Interstate system so that the FMS will remain functional during and after planned future capacity expansions. The City of Tucson Transportation Control Center (TTCC) will serve as the operations headquarters for the FMS during normal business hours. All maintenance and detection information of the FMS will also be directly linked to the Traffic Operations Center (TOC) in Phoenix so that coverage can be maintained during non-business hours. Links to the City of Tucson 911 Center, the State Department of Public Safety and
ADOT Maintenance have also been established during Phase I of the project in order to improve response and clearance times of incidents along the mainline. San Antonio predicted an average savings of 700 vehicle hours of delay and a resulting fuel consumption reduction of 9,880 liters through improved response time for one major incident. ADOT has recognized the importance of incident clearance and has initiated a tow truck service patrol during construction of the I-10/I-19 traffic interchange.

<table>
<thead>
<tr>
<th>Table 7-2</th>
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<tbody>
<tr>
<td>Summary of Freeway Management System Benefits</td>
</tr>
<tr>
<td>Travel time</td>
</tr>
<tr>
<td>Travel speed</td>
</tr>
<tr>
<td>Freeway Capacity</td>
</tr>
<tr>
<td>Accident rate</td>
</tr>
<tr>
<td>Fuel consumption</td>
</tr>
<tr>
<td>Emissions (Detroit study)</td>
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</table>

Similar positive effects on various metropolitan area transportation network efficiency and safety have been experienced in the areas of ITS-related transit improvements and traveler information, which are both being instrumented in the Tucson region. It is expected that the ITS projects relating to these two topics will result in benefits to the efficiency and operation of the transportation network by offering alternative travel routes and mode options more conveniently to the traveling public.

The City of Tucson provides the latest traveler information to the region’s residents through commercial radio, television and the Internet. In 1998 the City of Tucson established a partnership with METRO Networks-Tucson, a private traveler information provider, to implement a regional ITS Traveler Information System program. METRO Networks-Tucson provides funding for the operation and upgrading of the region’s transportation control center, helicopter flight time for staff to monitor roadway conditions, broadcasting of peak-hour transportation announcements, and a potential revenue stream for the city to use on related ITS projects.

Arizona’s newly established 511 phone-based travel information system is expected to provide tremendous benefits to the traveling public by making accessible and current information on system conditions and transit information readily available to the public.
APPENDIX 1
FY 2004-2008
Project Listing
APPENDIX 1 - FY 2004 - 2008 TIP TABLES

The tables on the following pages present PAG's Regional TIP for the five-year period beginning in FY 2004 and ending with FY 2008. Project priorities are indicated by the year during which the project is programmed to utilize the designated funds. For federally funded projects, the year programmed refers to the federal fiscal year ending September 30th. For state and locally funded projects from sources other than federal, the year programmed refers to the fiscal year ending June 30th.

The TIP includes federally funded transportation system improvements (highways, transit, airports, etc.) and, for informational purposes, non-federally funded transportation system improvements of regional significance. The project sponsor is the agency responsible for implementation and is identified with each project. The tables present information in columns that cover the following:

1. TIP ID: Each project has a project ID number that is used to identify the projects in the text and on any reference maps.
2. Project Name: Each project is identified by its location and beginning and ending points, where applicable.
3. Project Description: The general scope of each project is described.
4. Length: The length of the project in miles, where applicable.
5. Total Cost: The total cost of the project including studies, design and construction in thousands of dollars.
6. Yearly Costs: Costs associated with the project in the years one to five as applicable in thousands of dollars.
7. Phase: Phase indicates whether the funds are programmed for Study, (D) Design, (R) Right of Way, or (C) Construction
8. Funding Source: The funding source or sources. Funding source acronyms are listed in Appendix 3.

* Unless otherwise designated, the funding ratio for STP projects is assumed to be 94.3% federal and 5.7% local match. Transit projects are 80% federal and 20% local match unless otherwise shown. These ratios conform to historical ratios.
APPENDIX 2
Fiscal Constraint Analysis
HISTORICAL TIP REVENUES

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>2.6% Funds</th>
<th>12.6% Funds</th>
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</thead>
<tbody>
<tr>
<td>1993</td>
<td>2,786,762</td>
<td>15,949,693</td>
</tr>
<tr>
<td>1994</td>
<td>2,910,460</td>
<td>14,516,266</td>
</tr>
<tr>
<td>1995</td>
<td>3,084,403</td>
<td>14,703,127</td>
</tr>
<tr>
<td>1996</td>
<td>3,227,427</td>
<td>15,712,857</td>
</tr>
<tr>
<td>1997</td>
<td>3,774,982</td>
<td>15,012,824</td>
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<tr>
<td>1998</td>
<td>3,660,930</td>
<td>14,026,680</td>
</tr>
<tr>
<td>1999</td>
<td>4,568,095</td>
<td>16,519,676</td>
</tr>
<tr>
<td>2000</td>
<td>4,879,583</td>
<td>17,845,269</td>
</tr>
<tr>
<td>2001</td>
<td>4,833,927</td>
<td>18,597,617</td>
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<tr>
<td>2002</td>
<td>4,844,033</td>
<td>17,544,352</td>
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</table>

Estimated Revenues

<table>
<thead>
<tr>
<th></th>
<th>2.6% Funds</th>
<th>12.6% Funds</th>
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<tbody>
<tr>
<td>2003</td>
<td>4,415,000</td>
<td>17,525,000</td>
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<tr>
<td>2004</td>
<td>3,599,000</td>
<td>14,163,000</td>
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<tr>
<td>2005</td>
<td>4,245,000</td>
<td>18,914,000</td>
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<tr>
<td>2006</td>
<td>4,256,000</td>
<td>19,817,000</td>
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<td>2007</td>
<td>4,300,000</td>
<td>20,780,000</td>
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<tr>
<td>2008</td>
<td>4,493,000</td>
<td>21,676,000</td>
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<tr>
<td>Fiscal Year</td>
<td>STP Urban¹</td>
<td>STP Outside Urban</td>
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<tr>
<td>------------</td>
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<tr>
<td>1996</td>
<td>5,536,658</td>
<td>1,568,339</td>
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<tr>
<td>1997</td>
<td>9,860,433</td>
<td>2,396,396</td>
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<td>1998</td>
<td>8,127,189</td>
<td>1,895,414</td>
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<tr>
<td>1999</td>
<td>9,725,368</td>
<td>5,428,456</td>
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<tr>
<td>2000</td>
<td>10,589,429</td>
<td>5,428,456</td>
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<tr>
<td>2002</td>
<td>12,265,462</td>
<td>5,428,456</td>
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<tr>
<td>2003</td>
<td>9,531,861</td>
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(1) Includes PL and SPR funds

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<thead>
<tr>
<th></th>
<th>Estimated Revenues</th>
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<tr>
<td>2004</td>
<td>17,694,000</td>
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<tr>
<td>2005</td>
<td>17,694,000</td>
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<tr>
<td>2006</td>
<td>17,694,000</td>
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<tr>
<td>2007</td>
<td>17,694,000</td>
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<tr>
<td>2008</td>
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<tr>
<td>Fundtype</td>
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<tr>
<td>--------------------------------</td>
<td>------</td>
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<td>Carry Forward from FY '03</td>
<td>35413</td>
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<tr>
<td>FY '04 Revenues</td>
<td>3599</td>
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<td>FY '04 Expenses</td>
<td>20105</td>
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<td>Balance/Carry Forward</td>
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<td>FY '05 Revenues</td>
<td>4245</td>
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<td>FY '05 Expenses</td>
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<td>Balance/Carry Forward</td>
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<td>FY '06 Revenues</td>
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<td>FY '06 Expenses</td>
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<td>Balance/Carry Forward</td>
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<td>FY '07 Revenues</td>
<td>4300</td>
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<td>FY '07 Expenses</td>
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<td>Balance/Carry Forward</td>
<td>4558</td>
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<td>FY '08 Revenues</td>
<td>4493</td>
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<tr>
<td>FY '08 Expenses</td>
<td>8935</td>
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<td>Balance/Carry Forward</td>
<td>116</td>
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</table>

* Expenses include financial accounting such as debt service which are not listed in the project tables.
APPENDIX 3
GLOSSARY
OF
Funding Sources
# APPENDIX 3 - GLOSSARY OF FUNDING SOURCES

<table>
<thead>
<tr>
<th>Fund Name</th>
<th>Description</th>
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<tbody>
<tr>
<td>2.6%</td>
<td>Highway User Revenue Funds reserved for State Highways</td>
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<tr>
<td>12.6%</td>
<td>Highway User Revenue Funds (HURF)</td>
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<tr>
<td>5307</td>
<td>Federal FTA formula funds (Urbanized Area Transit)</td>
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<tr>
<td>5309</td>
<td>Federal FTA Capital Investment Grants &amp; Loans (New starts)</td>
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<tr>
<td>5310</td>
<td>Federal FTA funds (Elderly &amp; Disabled Transit)</td>
</tr>
<tr>
<td>5311</td>
<td>Federal FTA Rural Transit</td>
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<tr>
<td>ACSTP</td>
<td>Advance Construction STP Funds Programmed by PAG</td>
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<tr>
<td>ADEQ</td>
<td>Arizona Dept. of Environmental Quality</td>
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<tr>
<td>ASTP</td>
<td>Federal STP Funds Programmed by ADOT</td>
</tr>
<tr>
<td>ATEA</td>
<td>Federal Transportation Enhancement funds programmed for ADOT projects</td>
</tr>
<tr>
<td>BIA</td>
<td>Bureau of Indian Affairs - Federal funds provided for tribal projects</td>
</tr>
<tr>
<td>BOND</td>
<td>Local Jurisdiction Bond Funds</td>
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<tr>
<td>BR</td>
<td>ADOT Federal Bridge Funds</td>
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<tr>
<td>DEMO</td>
<td>Federal High Priority Project Funds</td>
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<tr>
<td>DIFO</td>
<td>Local Funds Generated by Development Impact Fee Ordinances</td>
</tr>
<tr>
<td>ER</td>
<td>Federal Emergency Repair Funds</td>
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<tr>
<td>FAA</td>
<td>Federal Aviation Administration</td>
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<tr>
<td>HELP</td>
<td>Highway Expansion Loan Program (state infrastructure bank)</td>
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<tr>
<td>HES</td>
<td>Federal Safety Program Funds Programmed by ADOT</td>
</tr>
<tr>
<td>IM</td>
<td>Federal Interstate Maintenance Program</td>
</tr>
<tr>
<td>ITS</td>
<td>Special appropriations in TEA-21 for Intelligent Transportation Projects</td>
</tr>
<tr>
<td>LTAF</td>
<td>Local Transportation Assistance Fund (state lottery funds)</td>
</tr>
<tr>
<td>LOCAL</td>
<td>Local Jurisdiction Sources</td>
</tr>
<tr>
<td>MAR</td>
<td>Marana funds provided for projects sponsored by other agencies</td>
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<tr>
<td>NH</td>
<td>Federal National Highway System</td>
</tr>
<tr>
<td>OV</td>
<td>Oro Valley funds provided for projects sponsored by other agencies</td>
</tr>
<tr>
<td>PC</td>
<td>Pima County Funds provided for projects in other jurisdictions</td>
</tr>
<tr>
<td>PDAF</td>
<td>Project Development Activity Funds (subcategory of 12.6%)</td>
</tr>
<tr>
<td>PLH</td>
<td>Public Lands - Highways (Federal)</td>
</tr>
<tr>
<td>PVT</td>
<td>Private Contributions</td>
</tr>
<tr>
<td>RABA</td>
<td>Revenue Aligned Budget Authority - A federal fund category similar to STP</td>
</tr>
<tr>
<td>STATE</td>
<td>Non Federal State Funds</td>
</tr>
<tr>
<td>STP</td>
<td>Federal Surface Transportation Program Funds Programmed by PAG</td>
</tr>
<tr>
<td>STPX</td>
<td>Federal Surface Transportation Program Funds Programmed by PAG which are intended to participate in the State’s HURF Exchange Program</td>
</tr>
<tr>
<td>TAA</td>
<td>Tucson Airport Authority Funds</td>
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<tr>
<td>TEA</td>
<td>Transportation Enhancement Funds Programmed by ADOT</td>
</tr>
<tr>
<td>TENH</td>
<td>STP Funds Programmed by PAG for Transit Enhancement Purposes</td>
</tr>
</tbody>
</table>
TUC City of Tucson funds provided for projects sponsored by other agencies

The local share for roadway and transit improvements refers to funds contributed by local governments and does not include any federal or state funds. The local share for Airport improvements sponsored by TAA does not include any contributions by local governments but represents revenue derived from the operation of the airport. Airport improvements sponsored by Pima County include revenue from the operation of County owned airports plus Pima County General Funds.
APPENDIX 4
Glossary of Terms and Acronyms
## APPENDIX 4 - GLOSSARY OF TERMS AND ACRONYMS

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>ADA</td>
<td>American with Disabilities Act</td>
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<tr>
<td>ADEQ</td>
<td>Arizona Department of Environmental Quality</td>
</tr>
<tr>
<td>ADOT</td>
<td>Arizona Department of Transportation</td>
</tr>
<tr>
<td>ADT</td>
<td>Average Daily Traffic</td>
</tr>
<tr>
<td>AFV</td>
<td>Alternate Fuel Vehicle</td>
</tr>
<tr>
<td>AMU</td>
<td>Alternate Mode Usage</td>
</tr>
<tr>
<td>ASTM</td>
<td>American Society for Testing Materials</td>
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<tr>
<td>CAAA</td>
<td>Clean Air Act Amendments of 1990</td>
</tr>
<tr>
<td>CIP</td>
<td>Capital Improvement Plan</td>
</tr>
<tr>
<td>CMAQ</td>
<td>Congestion Mitigation and Air Quality Improvement Program</td>
</tr>
<tr>
<td>CNG</td>
<td>Compressed Natural Gas</td>
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<tr>
<td>CO SIP</td>
<td>Carbon Monoxide State Implementation Plan</td>
</tr>
<tr>
<td>CO</td>
<td>Carbon Monoxide</td>
</tr>
<tr>
<td>CTAC</td>
<td>Citizens Transportation Advisory Committee</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>FAA</td>
<td>Federal Aviation Administration</td>
</tr>
<tr>
<td>FHA</td>
<td>Federal Highway Administration</td>
</tr>
<tr>
<td>FHWA</td>
<td>Federal Highway Administration</td>
</tr>
<tr>
<td>FIP</td>
<td>Federal Implementation Plan</td>
</tr>
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<td>FMS</td>
<td>Freeway Management System</td>
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<tr>
<td>FMVCP</td>
<td>Federal Motor Vehicle Control Program</td>
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<tr>
<td>FTA</td>
<td>Federal Transit Administration</td>
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<tr>
<td>FTE</td>
<td>Full time employee</td>
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<tr>
<td>FY</td>
<td>Fiscal Year</td>
</tr>
<tr>
<td>HC</td>
<td>Hydrocarbons</td>
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<tr>
<td>HURF</td>
<td>Highway User Revenue Funds</td>
</tr>
<tr>
<td>I/M</td>
<td>Inspection and Maintenance Program</td>
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<td>ISTEA</td>
<td>Intermodal Surface Transportation Efficiency Act of 1991</td>
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<td>ITS</td>
<td>Intelligent Transportation Systems</td>
</tr>
<tr>
<td>IVHS</td>
<td>Intelligent Vehicle Highway Systems</td>
</tr>
<tr>
<td>OWP</td>
<td>PAG's Overall Work Program</td>
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<tr>
<td>MMP</td>
<td>Mobility Management Plan</td>
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<tr>
<td>MOA</td>
<td>Memorandum of Agreement</td>
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<td>MPO</td>
<td>Planning Organization</td>
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<td>MTP</td>
<td>Metropolitan Transportation Plan</td>
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<tr>
<td>MTPD</td>
<td>Metric Tons Per Day</td>
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<tr>
<td>NAAQS</td>
<td>National Ambient Air Quality Standards</td>
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<tr>
<td>NHS</td>
<td>National Highway System</td>
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<tr>
<td>NOX</td>
<td>Oxides of Nitrogen</td>
</tr>
<tr>
<td>PAG</td>
<td>Pima Association of Governments</td>
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<tr>
<td>PAG TPD</td>
<td>PAG's Transportation Planning Division</td>
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<tr>
<td>PCDOT</td>
<td>Pima County Department of Transportation</td>
</tr>
<tr>
<td>PDEQ</td>
<td>Pima County Department of Environmental Quality</td>
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<td>PPC</td>
<td>Priority Planning Committee</td>
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<tr>
<td>ppm</td>
<td>parts per million</td>
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<tr>
<td>RAQCA</td>
<td>Regional Air Quality Conformance Assessment</td>
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<tr>
<td>RS</td>
<td>Regional Significance</td>
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RTA  Regional Transportation Authority
RTP  Regional Transportation Plan
SDP  Strategic Deployment Plan
SIP  State Implementation Plan
SRTP Short Range Transit Plan
STIP State Transportation Improvement Program
STP  Surface Transportation Program
TAA  Tucson Airport Authority
TAP  Transportation Action Program
TAPA Tucson Air Planning Area
TCM  Transportation Control Measures
TE  Transportation Enhancements
TEA-21 Transportation Equity Act for the 21st Century of 1998
TIP  Transportation Improvement Program
TPC  Transportation Planning Committee
TPY  Tons Per Year
TRO Travel Reduction Ordinance
TRP Travel Reduction Program
US DOT U.S. Department of Transportation
VHT  Vehicle Hours Traveled
VMT  Vehicle Miles Traveled
APPENDIX 5
Obligations and Expenditures for Previous TIP Projects
APPENDIX 6
Federal Certifications
APPENDIX 6 - FEDERAL CERTIFICATIONS

METROPOLITAN TRANSPORTATION PLANNING PROCESS
SELF-CERTIFICATION

The Arizona Department of Transportation and the Pima Association of Governments, the Metropolitan Planning Organization for the Tucson urbanized area(s) hereby certify that the transportation planning process is addressing the major issues in the metropolitan planning area and is being conducted in accordance with all applicable requirements of:

I. 49 U.S.C. Section 5323(k) and 23 U.S.C. 134;

II. Title VI. Of the Civil Rights Act of 1964 and the Title VI. Assurance executed by each State under 23 U.S.C. 324 and 29 U.S.C. 794;

III. Section 1101 of the Transportation Equity Act for the 21st Century (Pub. L. 105-178) regarding the involvement of disadvantaged business enterprises in the FHWA and the FTA funded project (Sec. 105(f), Pub. L. 97-424, 96 Stat. 2100, 49 CFR part 23);


V. The provision of 49 CFR part 20 regarding restrictions on influencing certain activities; and

VI. Sections 174 and 176(c) and (d) of the Clean Air Act as amended (42 U.S.C. 7504, 7506(c) and (d)). (Note - only for Metropolitan Planning Organizations with non-attainment and/or maintenance areas within the metropolitan planning area boundary.)

Pima Association of Governments

_______________________________  Arizona Department of Transportation

James D. Altenstadter  Date  Victor Mendez  Date
Interim Executive Director  Director

ADOT Transportation Planning Div.

_______________________________  Date
Dale Buskirk  Date
Director
APPENDIX 7 - PUBLIC NOTICES

The following notices were published in local media during the TIP development process.

**Regional Transportation Open House**

The Pima Association of Governments (PAG) and its member jurisdictions, invite you to come and talk with transportation planners about the proposed 5-year (2004-2008) Transportation Improvement Program (TIP) that identifies the projects and programs under development for our regional transportation system.

**When:** Monday, April 7, 2003
11:30 AM - 2 PM

**Where:** Main Library - Downtown
Lower Level Conference Room
101 N. Stone Ave.,
Tucson, AZ

**When:** Tuesday, April 8, 2003
4 PM - 7 PM

**Where:** Foothills Mall
Food Court
7325 North La Cholla Boulevard,
Tucson, AZ

**When:** Wednesday, April 9, 2003
4 PM - 7 PM

**Where:** El Pueblo Neighborhood Center
Building One
101 West Irvington Street,
Tucson, AZ

**Special Provisions:**
- The meeting facilities are wheelchair accessible. Van Tran patrons may ride for free by contacting 798-1000 extension 311.
- For any special accommodations or a free Sun Tran bus pass, please contact Natalie Clark at 792-1093 at least 48 hours in advance of the event.

**Light refreshments provided**

**Green Valley News 4/2/2003**

**Tucson Citizen 4/3/2003**

**Arizona Daily Star 4/4/2003**
Regional Transportation Open Houses

The Pima Association of Governments (PAG) invites the public to review proposals for a proposed five-year Transportation Improvement Program (2004-2008). Three open houses will be held:

Mon., Apr. 7, 11:30 a.m. - 2:00 p.m., Main Library Lower Level, 101 N. Stone
Tues., Apr. 8, 4:00 p.m. - 7:00 p.m., Foothills Mall Food Court, 7401 N. La Cholla
Wed., Apr. 9, 4:00 p.m. - 7:00 p.m., El Pueblo Neighborhood Center, 101 W. Irvington

Public review and input is important to ensure that the region’s transportation systems meet the needs of the community. For information, including how to get a free Sun Tran bus pass to an open house, call 792-1093 or go online to www.pagnet.org. For information on a free Van Tran ride to an open house, call 798-1008, ext. 311.

Tucson Citizen 3/3/2003

3 open houses set on transport plan

The Pima Association of Governments has set three open houses to review the proposed five-year transportation improvement program (2004-2008):

- April 7, Main Library, 101 N. Stone Ave., 11:30 a.m. to 2 p.m.
- April 8, Foothills Mall Food Court, 7401 N. La Cholla Blvd., 4 to 7 p.m.
- April 9, El Pueblo Community Neighborhood Center, Building One, 101 W. Irvington Road, 4 to 7 p.m.

The public can view displays, get information, submit comments and speak with transportation professionals about transportation activities proposed for the region. Light refreshments will be provided.

APPENDIX 8
Reserve Projects
APPENDIX 8 - RESERVE PROJECTS

This Appendix contains a listing of projects that were submitted for funding during this TIP cycle but were not funded due to inadequate financial resources. These projects will be carried forward for consideration during the next TIP cycle.