Let's Keep Moving!

Draft

Regional Transportation Plan

November 3, 2003

REGIONAL TRANSPORTATION PLAN
MARICOPA ASSOCIATION of GOVERNMENTS

MARICOPA ASSOCIATION of GOVERNMENTS

Maricopa Association of Governments

DRAFT

REGIONAL TRANSPORTATION PLAN

November 3, 2003

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION 1-1

Description of the Planning Area 1-1
Governance Improvements 1-1
Transportation Policy Committee 1-1
MAG Area Challenges 1-2
One-Half Cent Transportation Excise Tax 1-2
Approach to the Planning Process 1-3
State and Federal Mandates 1-3
Costs and Revenue Estimates 1-8

CHAPTER TWO: PUBLIC INVOLVEMENT 2-1

The Public Involvement Process 2-1
Public Input Opportunities 2-2

CHAPTER THREE: REGIONAL OVERVIEW 3-1

Geographic Setting 3-1
Population Projections 3-1
Economic Base and Employment Growth 3-3
Community Job Centers 3-3
Pinal County Development 3-9

CHAPTER FOUR: GOALS, OBJECTIVES AND PERFORMANCE MEASURES 4-1

Plan Assessment Concepts 4-1
Performance Measures by Goal and Objective 4-2
Plan Phasing Priority Factors 4-4

CHAPTER FIVE: FINANCIAL PLAN 5-1

Regional Transportation Revenues 5-1
Financial Overview and Summary 5-6
Funding Assumptions 5-6

CHAPTER SIX: PLAN DEVELOPMENT AND PERFORMANCE ASSESSMENT . . 6-1

Plan Development Process 6-1
Performance Assessment 6-3

CHAPTER SEVEN: TITLE VI AND ENVIRONMENTAL JUSTICE 7-1

Introduction 7-1
Public Involvement Process for Title VI/EJ Communities 7-2
Regional Transportation Plan Improvements 7-3
Environmental Justice Analysis 7-3
Conclusions 7-11

CHAPTER EIGHT: FREEWAYS AND HIGHWAYS 8-1

Current System 8-1
Planned New Facilities and Improvements 8-1
Costs and Phasing - Regionally Funded Projects 8-13
Funding Summary 8-18
Ultimate Concepts 8-18
Life Cycle Program and MAG FY 2004-2007 Transportation Improvement Program 8-18

CHAPTER NINE: STREETS 9-1

Current System 9-1
Planned New Facilities and Improvements 9-1
Costs and Phasing - Regionally Funded Projects 9-6
Funding Summary 9-6
Ultimate Concepts 9-6
MAG FY 2004-2007 Transportation Improvement Program 9-6

CHAPTER TEN: TRANSIT 10-1

Public Transit Service 10-1
Transit Studies 10-1
Planned New Facilities and Service Improvements 10-2
Costs and Phasing - Regionally Funded Facilities and Services 10-10
Funding Summary 10-11
Future/Associated Planning Efforts 10-11

CHAPTER ELEVEN: AIRPORTS 11-1

Airport Planning 11-1
Regional Airport Plan 11-1
Plan Implementation 11-2
Funding Summary 11-4

CHAPTER TWELVE: BICYCLES 12-1

Bicycle Planning 12-1
Planned New Facilities and Improvements 12-1
Funding Summary 12-8

CHAPTER THIRTEEN: PEDESTRIANS 13-1

Pedestrian Planning 13-1
Pedestrian Design Assistance Program 13-1
Regional Pedestrian Plan 13-2

CHAPTER FOURTEEN: FREIGHT 14-1

Regional Freight Infrastructure 14-1
Freight in the MAG Region 14-1
Future Regional Freight Planning 14-7

CHAPTER FIFTEEN: DEMAND MANAGEMENT 15-1

Rideshare Programs 15-1
Clean Air Campaign 15-1
Trip Reduction Program 15-2
Vanpool Program 15-2
Transportation Management Associations 15-3
Telecommuting 15-3
Teleconferencing/Videoconferencing Project 15-4
Funding 15-4

CHAPTER SIXTEEN: SYSTEM MANAGEMENT 16-1

Intelligent Transportation Systems 16-1
ITS Plan 16-1
Advanced Public Transportation Systems 16-8
Funding Summary 16-9

CHAPTER SEVENTEEN: SPECIAL NEEDS TRANSPORTATION 17-1

Changes in Assistance 17-1
Transportation Programs 17-1
Elderly Mobility Concerns 17-2

CHAPTER EIGHTEEN: SAFETY 18-1

Transportation Safety Planning 18-1
Transportation Facilities and User Safety 18-1
Regional Transportation Safety Action Plan 18-5
Safety Planning Activities/Projects 18-6
Regional Safety Plan 18-6

CHAPTER NINETEEN: CONFORMITY ANALYSIS 19-1

Conformity Requirements 19-1
Conformity Tests 19-2
Results of the Conformity Analysis 19-2

CHAPTER TWENTY: PLAN IMPLEMENTATION POLICIES 20-1

APPENDIX: PUBLIC INVOLVEMENT AND CONSULTATION EVENTS A-1

LIST OF TABLES

TABLE 3-1: Total Resident Population by Municipal Planning Area - Maricopa County (2000-2030) 3-4
TABLE 3-2: Total Employment by Municipal Planning Area (2000-2030) . . 3-5
TABLE 5-1: Regional Revenue Sources: FY 2002-FY 2026 5-1
TABLE 5-2: ADOT Funds 5-3
TABLE 5-3: Sales Tax Extension Projections: 2006-2025 5-5
TABLE 5-4: Summary of Funding by Mode 5-7
TABLE 5-5: Funding Percent by Mode 5-8
TABLE 6-1: PM Peak Period Delay Per Lane Mile 6-5

TABLE 7-1: Communities of Concern for Maricopa County 7-1
TABLE 8-1: Freeway and Highway Number of Through Lanes, Through Lane Additions, Costs and Phasing 8-5
TABLE 8-2: Costs and Phasing for New Interchanges and HOV Ramps . 8-14
TABLE 8-3: Other Freeway and Highway Costs 8-14
TABLE 8-4: Highway Funding Estimates, Fiscal Years 2005-2026 8-17
TABLE 8-5: Life Cycle Program: Regional Freeway System Costs (Funded) 8-19
TABLE 9-1: Arterial Projects, Costs and Phasing 9-7
TABLE 9-2: Arterial Funding Estimates, Fiscal Years 2005-2026 9-10
TABLE 10-1: Regional Bus Services Phasing and Costs 10-13
TABLE 10-2: Light Rail Transit Phasing and Costs 10-14
TABLE 10-3: Schedule of Bus-Related Capital Investments And Operating Costs 10-15
TABLE 10-4: Transit Funding Plan, Fiscal Years 2005-2026 10-19
TABLE 11-1: Regional Aviation System Capital Funding Plan 11-5
TABLE 12-1: Bicycle and Pedestrian Funding Estimates, Fiscal Years 2005-2026 12-9
TABLE 14-1: Truck Movements in the MAG Region (By Type of Carrier - 2001) 14-4
TABLE 14-2: Rail Movements in the MAG Region (By Type - 2001) 14-5
TABLE 16-1: Expansion of the Regional Freeway System and the Freeway Management System 16-3
TABLE 16-2: State of Traffic Synchronization in the MAG Region 16-5
TABLE 16-3: ITS Funding Estimates, Fiscal Years 2005-2026 16-9
TABLE 18-1: Maricopa County Crash History for 1994-2000 18-2
TABLE 18-2: Fatalities and Injury on the Freeway System: 1998-2002 18-2
TABLE 18-3: Fatality and Injury Crashes on the Arterial and Local Street System: 1998-2002 18-3
TABLE 18-4: Bicycle User Crash Fatalities and Injuries: 1998-2002 18-3
TABLE 18-5: Pedestrian Crash Fatalities and Injuries: 1998-2002 18-3
TABLE 18-6: Younger Drivers in Crashes: 1998-2002 18-4
TABLE 18-7: Older Drivers in Crashes 18-5

LIST OF FIGURES

FIGURE 1-1: MAG Region 1-9
FIGURE 2-1: Test Vote on One-Half Cent Extension 2-6
FIGURE 3-1: Population and Employment (1980-2030) 3-2
FIGURE 3-2: 2000 Population Concentration for Interim Socioeconomic Projections 3-6
FIGURE 3-3: 2030 Population Concentration for Interim Socioeconomic Projections 3-7
FIGURE 3-4: Regional Job Centers 3-8
FIGURE 6-1: Plan Development Process 6-1
FIGURE 6-2: Future Base Network PM Peak Hours of Level of Service E and F 6-8
FIGURE 6-3: Future RTP Freeway PM Peak Hours of Level of Service E and F 6-9
FIGURE 6-4: Future Base Network Intersection PM Peak Hours of Level of Service E and F 6-10
FIGURE 6-5: Future RTP Intersection PM Peak Hours of Level of Service E and F 6-11
FIGURE 7-1: Environmental Justice: Minority Populations

In Maricopa County (2000 Census) 7-5
FIGURE 7-2: Minority Communities Affected by the Regional Transportation Plan 7-6
FIGURE 7-3: Environmental Justice: Low Income Population In Maricopa County (2000 Census) 7-7
FIGURE 7-4: Low Income Communities Affected by the Regional Transportation Plan 7-8
FIGURE 7-5: Environmental Justice: Population Age 60 and Over In Maricopa County (2000 Census) 7-9
FIGURE 7-6: Age 60+ Communities Affected by the Regional Transportation Plan 7-11
FIGURE 7-7: Environmental Justice: Mobility Disability Populations In Maricopa County (2000 Census) 7-12
FIGURE 7-8 Mobility Disability Communities Affected by the Regional Transportation Plan 7-13
FIGURE 7-9: Environmental Justice: Female Head of Household With Children Less than 18 Years of Age in Maricopa County (2000 Census) 7-14
FIGURE 7-10: Female Head of Household Communities Affected by the Regional Transportation Plan 7-15
FIGURE 8-1: Current Regional Freeway/Highway System Total Through Lanes 8-2
FIGURE 8-2: Roadway System Improvements: Freeways/Highways 8-3
FIGURE 8-3: Planned Regional Freeway/Highway System Total Through Lanes 8-4
FIGURE 8-4: Plan Phasing: Freeways/Highways 8-15
FIGURE 8-5: Plan Phasing: New Interchanges and HOV Ramp Connections 8-16
FIGURE 8-6: Regional Freeway System: July 2003 Certification 8-20
FIGURE 9-1: Current Arterial Network Total Through Lanes 9-2
FIGURE 9-2: Future Arterial Network Total Through Lanes 9-3
FIGURE 9-3: Roadway System Improvements: New/Improved Arterials 9-4
FIGURE 9-4: Plan Phasing: New/Improved Arterials 9-9
FIGURE 10-1: Local Fixed Route Bus Network 10-4
FIGURE 10-2: Super Grid System: New, Enhanced, Existing, and Rural Service 10-5
FIGURE 10-3: Freeway and Arterial BRT Routes 10-6
FIGURE 10-4: Identified High Capacity Corridors 10-9
FIGURE 10-5: Proposed Super Grid and Rural Service Plan Phasing 10-16
FIGURE 10-6: Freeway and Arterial BRT Routes Plan Phasing 10-17
FIGURE 10-7: Identified High Capacity Corridors Plan Phasing 10-18
FIGURE 11-1: Regional Aviation System Plan 11-3
FIGURE 12-1: MAG Regional Bike Plan 12-4
FIGURE 12-2: MAG Regional Off-Street System Plan 12-5
FIGURE 12-3: West Valley Multi-Modal Transportation Corridor Plan 12-7
FIGURE 14-1: Regional Freight Infrastructure 14-2
FIGURE 14-2: Total Freight Flows Into, Out of, and Within The MAG Region By Mode (by Total Tons) 14-3
FIGURE 16-1: MAG Regional Freeway Management System (FMS) 16-2
FIGURE 16-2: Existing Public Transportation Management Center Network 16-4
FIGURE 16-3: MAG Smart Corridor Network 16-7

FIGURE 19-1: Carbon Monoxide Results for Conformity

Budget Test 19-3
FIGURE 19-2: Volatile Organic Compound (VOC) Results for Conformity Budget Test 19-4
FIGURE 19-3: PM-10 Results for Conformity Budget Test 19-4

CHAPTER ONE

INTRODUCTION

This document presents the Draft Regional Transportation Plan (RTP) for the area comprising the Maricopa Association of Governments (MAG). The RTP is a comprehensive, performance based, multi-modal and coordinated regional plan, covering the period through Fiscal Year (FY) 2026. The RTP will replace the current MAG Long Range Transportation Plan and will provide a blueprint for future transportation investments in the region for the next several decades. In addition, the Plan, by reference, includes the projects and revenues in the MAG FY 2004-2007 Transportation Improvement Program.

DESCRIPTION OF THE PLANNING AREA

The Planning Area for purposes of the Plan covers all of Maricopa County, Arizona (See Figure 1-1). At present, MAG membership consists of the cities of Apache Junction, Avondale, Chandler, El Mirage, Glendale, Goodyear, Litchfield Park, Mesa, Peoria, Phoenix, Scottsdale, Surprise, Tempe, and Tolleson; the towns of Buckeye, Carefree, Cave Creek, Fountain Hills, Gila Bend, Gilbert, Guadalupe, Paradise Valley, Queen Creek, Wickenburg and Youngtown; Maricopa County; and the Gila River, and Salt River Pima-Maricopa Indian Communities. In addition, the Arizona Department of Transportation (ADOT) and the Citizens Transportation Oversight Committee (CTOC) serve as ex-officio members for transportation-related issues. More in-depth information pertaining to the region is presented in Chapter 3 of this Plan.

GOVERNANCE IMPROVEMENTS

In January 2001, at the Regional Council Retreat, the Council discussed broadening the policy-making process of MAG. In May 2001, the Regional Council formed the Governance Task Force and the Governance Advisory Committee. The leadership for this effort came from the Chair of the Regional Council at that time, Mayor Skip Rimsza of Phoenix.

Ten meetings were held by the Task Force, and three meetings of the Advisory Committee. In total, counting Management Committee and Regional Council meetings, more than 27 meetings were held to discuss improving our governance process.

One of the most significant Governance changes from this process was the formation of the Transportation Policy Committee – A new way of doing business for MAG. This new process included the business community as a full voting partner in developing the Regional Transportation Plan. This approach represents an inclusive process where all parties are provided an opportunity to advocate for their varying interests.

TRANSPORTATION POLICY COMMITTEE

The RTP was developed under the direction of the Transportation Policy Committee (TPC). The TPC is a public/private partnership charged with finding solutions to the region's transportation challenges. The Committee has twenty-two members, including a cross-section of MAG member agencies, community business representatives, and representatives from transit, freight, the Citizens Transportation Oversight Committee and ADOT. The TPC is dedicated to developing a plan that addresses diverse transportation needs throughout the region. The Committee makes its recommendations to the MAG Regional Council, which will adopt the final RTP.

Work to prepare the RTP began in December of 2000, and has continued to date,

representing the most extensive transportation plan update by MAG since the mid-1980s. The planning process established goals, objectives and performance measures; extensively evaluated the long-range population trends of the region; analyzed economic and land use development patterns; analyzed the current condition of the regional transportation system; assessed transportation needs over the next twenty years; and identified transportation investments that will best meet the present and future needs of the region. An extensive public involvement and outreach program was pursued throughout the planning effort.

MAG AREA CHALLENGES

The MAG region has experienced rapid and sustained growth for more than four decades, and continued growth is projected for at least the next 30 years. This growth will result in significant increases in traffic congestion on the regional freeway system and the regional arterial grid network. Regional development patterns have included strong and sustained residential growth on the fringes of the urbanized area, combined with infill development that is expected to significantly increase the urban density of the entire region. These patterns will require a variety of transportation approaches to respond to the different types of development occurring in the region. Transportation solutions will need to include increases in highway capacity, expanded mass transit service and alternative mode options.

The economic development and employment pattern of the MAG region includes a variety of disbursed job centers, which consist of concentrated, or mixed areas of industrial, office, retail, airport, and government land uses. These employment activities will significantly impact transportation patterns and characteristics at the local, sub-regional and regional levels.

Changing demographics include significant increases in ethnic minorities, an aging population, and concentrations of lower income populations. This trend reinforces the need for development of transit throughout the region in order to assure basic mobility, and to allow for access to employment and services.

The MAG region has made tremendous progress in reducing emissions from motor vehicles and other sources. The region must continue to work toward achieving and sustaining environmental quality through the process of rapid regional growth and development over the next 20 years and beyond.

In addressing these challenges, the MAG area benefits from a number of unique strengths of the regional transportation system. The existing regional freeway system, which largely has been built over the past 20 years, is relatively new and not yet in need of extensive rehabilitation. An extensive grid of regional arterial roads adds significant flexibility to the system. An Intelligent Transportation System (ITS) of traffic management has the potential to increase system capacity with less expansion of lane capacity than would otherwise be required. The core of a light rail system is already under development and has the potential to increase both quantity and flexibility of access to central cities. It will be important to build upon these strengths in order to meet future travel demand in the region.

ONE-HALF CENT TRANSPORTATION EXCISE TAX

On October 8, 1985, the voters of Maricopa County approved Proposition 300 to establish a one-half cent sales tax for construction of controlled-access highways. These funds are called Regional Area Road Funds (RARF). To be eligible for these funds, facilities must be identified within the MAG RTP and the State Highway System.

The one-half cent tax was approved for a period of 20 years and ends on December 31, 2005. The tax has been instrumental in the development of the regional freeway network,

but many transportation needs remain. In view of the continuing demand for transportation improvements in the region, there will be a need to replace this funding source.

APPROACH TO THE PLANNING PROCESS

During the Fall of 1999, MAG successfully devised a means of accelerating the regional freeway program, leading to completion of the freeway system by 2007. In March 2000, MAG adopted the plan for air quality conformity analysis. With this approval it became clear that MAG would soon need to develop a new comprehensive regional transportation plan.

With funding for the freeway system scheduled to expire on December 31, 2005, MAG Staff began looking for input and guidance on the establishment of a future Regional Transportation Plan to address transportation needs and investments over the next 20 to 25 years. MAG consulted with industry experts on the design of a possible planning approach, and the development of a Scope of Work to effectively implement the process.

The RTP process has followed several key principles since it was initiated. This effort has employed a comprehensive planning process that includes the following:

- A focus on issues of region wide concern.
- Extensive public involvement.
- Involvement of community and business leaders in oversight of the planning process.
- Inclusion of all modes of transportation, including both passenger and freight.
- Consideration of alternative growth scenarios and related land use and environmental needs.
- Identification of policies and strategies to guide transportation investment.
- Use of performance based planning techniques to evaluate alterative investment strategies.
- Development of a revenue-constrained project element.

The Regional Transportation Plan was developed in two phases. Phase I reviewed the status of transportation in the region; established regional transportation values, goals and objectives; analyzed the transportation implications of alternative growth concepts; and identified transportation planning principles. In addition, during Phase I a number of area plans were developed for corridors and sub-areas throughout the region. These sub-area plans provided the starting point for addressing regional transportation needs.

During Phase II, alternative approaches to meeting regional transportation needs were analyzed and compared against objectives and performance measures to identify effective approaches to meeting regional transportation needs. Based on the findings of the alternatives, a hybrid plan was developed to provide the basis for a balanced program of transportation investments funded within available revenue sources. This final stage of the planning process resulted in the Draft Regional Transportation Plan.

STATE AND FEDERAL MANDATES

State and federal statues and regulations address regional transportation planning, and establish a framework for approaching the process and determining the contents of the plan. The Draft RTP, as well as the planning process through which it was developed, has been structured to meet these requirements. State and federal planning requirements applicable to this planning process are listed below, along with a discussion describing the way in which the Draft Plan responds to these mandates.

State Planning Factors

House Bill 2292

House Bill 2292, which was passed in the Spring 2003 session of the Arizona

Legislature, recognizes MAG's establishment of a Transportation Policy Committee (TPC) that is tasked with developing a 20-year Regional Transportation Plan, and sets forth the process for an election to extend the current one-half cent county transportation excise tax. It requires the TPC to develop the Plan in cooperation with the Regional Public Transportation Authority (RPTA) and ADOT.

The legislation further refines the federally required consultation process and establishes a formal procedure for working with the County Board of Supervisors, Indian communities and cities and towns in Maricopa County in the plan's development. After reviewing the Plan, RPTA, the State Transportation Board (STB), and the County Board of Supervisors shall vote and submit a written recommendation to the TPC. Indian communities and cities and towns may submit a written recommendation to the TPC.

HB 2292 requires the TPC to consider RTP modifications proposed by RPTA, the State Transportation Board (STB), the County Board of Supervisors, Indian communities and cities and towns. Following this consideration the TPC is required to vote to approve, disapprove, or further modify the proposed modifications, during the Alternatives Stage and the Final Draft Stage of the Plan. MAG must provide a written response explaining the acceptance, rejection or modification of each proposed Plan modification.

The legislation expands current safeguards for the sales tax funded regional freeway program to other transportation modes funded by the extension of the tax. As part of these safeguards, it requires ADOT to adopt an annual budget process to ensure that the estimated costs of projects in the RTP for freeways and streets do not exceed expected revenues. The RPTA is required to adopt an annual budget process to ensure that the estimated costs of projects in the RTP for transit do not exceed expected revenues.

HB 2292 requires MAG to issue an annual status report and conduct a public hearing on the status of the projects. Also, it is stipulated that requests for changes that would materially increase costs of a transportation project must be approved by MAG.

In addition, it requires that any project enhancements must be approved by MAG and requires the requesting authority to pay for the enhancement. Also, it expands the duties of the Citizen's Transportation Oversight Committee to include all projects in the RTP.

Draft Plan Response

The way in which the Draft Plan responds to the major elements in HB 2292 is discussed below:

- **Recognition in statute of the Transportation Policy Committee, which oversees the development of the Plan.**

  The development of the Draft Plan was guided through every step of the process by the Transportation Policy Committee (TPC). This Committee included elected officials, business representatives and other stakeholders that constituted a broad spectrum of regional and community concerns regarding future transportation needs. The TPC unanimously recommended the Draft Plan to the MAG Regional Council.

- **Recognizes the federal law and the cooperative planning process among MAG, ADOT and RPTA. It further refined the consultation process to be explicit for Maricopa County, local governments, and Native American Communities.**

  The process to develop the Draft Plan was very broadly based. The above agencies are all members of MAG and have been continuously involved in the regional transportation planning process. Input from these agencies was

considered throughout the planning process and comments on the Draft Plan were specifically considered in the development of this draft version.

- **Sets timelines and approval requirements for the plan.**

  The effort to develop the Draft Plan was guided by a specific timeline and schedule that was closely adhered to throughout the process. Key dates for distribution of alternatives and the draft plan for review were met and the MAG Regional Council adopted the Plan for air quality conformity analysis by the required date of September 30, 2003.

- **Requires that the plan be balanced to revenues.**

  The estimated cost of the projects in the Draft Plan equals the total revenues projected for the planning period. Therefore, the Draft Plan is fiscally balanced.

The legislation also requires that the RTP must accomplish the following:

- **Be comprehensive, performance based, multimodal and coordinated.**

  The Draft Plan is comprehensive in scope, taking into account future land uses and growth throughout the region. It is multi-modal, including freeways, highways, streets, bus service, high capacity transit, and other transit services, as well as modes such as airports, bicycles and pedestrians. The Draft Plan closely coordinates the functions of all the modes through

  regional modeling, construction phasing and financial planning.

- **Include a transportation corridor prioritization and construction schedule.**

  The Draft Plan includes a phasing prioritization schedule, identifying where projects are programmed for construction during the planning period. This schedule is based on a number of factors, including traffic volumes and level of service, project readiness and cash flow availability.

- **Cover a twenty-year term.**

  The Draft Plan covers the period from, and including, FY 2005 through FY 2026. In addition, the Plan addresses some issues that extend beyond this planning period.

- **Consider growth and transportation system impacts in contiguous counties, cities, towns and Indian communities.**

  The transportation analysis area used to develop the Draft Plan covers the Indian Communities, and the portions of contiguous counties that are forecasted to develop during the planning period. This meant that the growth projected for these areas and its impacts on transportation demand were taken into account in the planning process.

- **Include an allocation of revenues between the regional area road fund and the public transportation fund.**

  The Draft Plan includes a financial plan element that allocates funding among and across modes by funding source.

Federal Planning Factors

Under Federal planning mandates, Section 3004 (a) 3(b) of the Transportation Equity Act for the 21st Century (TEA 21) specifies that, “The metropolitan transportation planning process for a metropolitan area under this section shall provide for consideration of projects and strategies that will:

- **Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.**

  The Draft Plan addresses this issue directly. Two of the major objectives identified for the Plan are as follows: 1) To maintain an acceptable level of service on transportation and mobility systems serving the region, taking into account performance by mode and facility type; and 2) To provide residents of the region with access to jobs, shopping, educational, cultural, and recreational opportunities and provide employers with reasonable access to the workforce in the region. In developing the Draft Plan, the effectiveness of transportation system performance was analyzed under alternative transportation investment choices. This analysis included factors such as travel times, peak period delay, speeds, and level of service.

- **Increase the safety and security of the transportation system for motorized and non-motorized users.**

  Safety is a critical element of each mode of transportation and Chapter Eighteen of the Draft Plan specifically addresses safety issues. Safety has been identified as a major focus, with one of the Plan objectives being: provide a safe and secure environment for the traveling public, addressing roadway hazzards, pedestrian and bicycle safety, and transit security. The Draft Plan also funds the development of a regional safety plan. In addition, specific safety projects and safety issues are addressed as part of the annual, ongoing transportation planning and programming process.

- **Increase the accessibility and mobility options available to people and for freight.**

  The Draft Plan identifies three objectives related to mobility options, which are as follows: 1) To maintain a reasonable and reliable travel time for moving freight into, through and within the region, as well as provide high-quality access between intercity freight transportation corridors and freight terminal locations, including intermodal facilities for air, rail and truck cargo; 2) Provide the people of the region with transportation modal options necessary to carry out their essential daily activities and support equitable access to the region's opportunities; 3) Address the needs of the elderly and other population groups that may have special transportation needs, such as non-drivers or those with disabilities. The Draft Plan increases accessibility and mobility options by calling for significant investments in freeways, highways, streets, bus service, high capacity transit facilities, bicycle and pedestrian facilities, and airports. The Plan also provides the planning foundations for freight and special needs transportation.

- **Protect and enhance the environment, promote energy conservation, and improve quality of life.**

  Early in the RTP process, the need to sustain the environment was recognized as a major factor. Draft Plan objectives related to this issue include the following: 1) To identify and encourage implementation of mitigation measures that will reduce noise, visual and traffic impacts of transportation projects on existing neighborhoods; 2) Encourage programs and land use planning that advance efficient trip-making patterns in the region; and 3) Make transportation decisions that are compatible with air quality conformity and water quality standards, the sustainable preservation of key regional ecosystems and desired lifestyles. In assessing options to be included in the Draft Plan, factors such as transit ridership, access of household to transit services and vehicle emissions were analyzed. In addition, air quality issues are extensively addressed in the

separate conformity analysis document prepared for the Draft Plan. Reductions in transportation energy use in the region are closely tied to air quality goals.

- **Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.**

  One of the major objectives of the Draft Plan is to maintain a reasonable and reliable travel time for moving freight into, through and within the region, as well as provide high-quality access between intercity freight transportation corridors and freight terminal locations, including intermodal facilities for air, rail and truck cargo. The broad range of modal improvements in the Draft Plan will facilitate goods movement and system connectivity throughout the region. In addition, Chapter Fourteen in the Draft Plan is dedicated to an assessment of the freight infrastructure in the region. This analysis will provide the basis for future freight planning.

- **Promote efficient system management and operation.**

  Minimizing congestion and resulting delays is a central theme in all modal elements of the Draft Plan. As one of its objectives, the Draft Plan calls for maintaining an acceptable and reliable level of service on transportation and mobility systems serving the region, taking into account performance by mode and facility type. Chapter Sixteen in the Draft Plan is dedicated to transportation system management, describing Intelligent Transportation Systems (ITS) applications and the Regional ITS Plan. The analysis of traffic congestion is addressed throughout the MAG planning process. The MAG transportation models are used to analyze future traffic congestion. Projects funded from regional sources are rated by an air quality rating system and a congestion management rating system.

- **Emphasize the preservation of the existing transportation system.**

  The RTP process recognizes the high importance of maintaining the regional transportation infrastructure. The Draft Plan identifies maintenance as a critical Plan element, with the following objective: To provide for the continuing preservation and maintenance needs of transportation facilities and services in the region, eliminating maintenance backlogs. The high level of importance placed on preservation is reflected by the allocation of regional-level funding in the Draft Plan to the freeway network for aspects of the maintenance function.

Federal funding is essential to the development of the region's transportation system and TEA-21, which is the Federal surface transportation and funding act, providing guidelines for regional plans. Federal legislation requires the plan to be:

- **Fiscally balanced.**

  The estimated cost of the projects in the Draft Plan equals the total revenues projected for the planning period. Therefore, the Draft Plan is fiscally balanced.

- **Developed in cooperation with the State Department of Transportation and transit operators, and in consultation with local governments.**

  The process to develop the Draft Plan was very broad-based. The agencies that are members of MAG have been continually involved in the regional transportation planning process. This includes the Arizona Department of Transportation, the Regional Public Transportation Authority, the Maricopa County Board of Supervisors, Indian communities, and the cities and towns of Maricopa County.

- **Include all modes of transportation.**

  The Draft Plan is multi-modal, and includes freeways, highways, streets, bus service, high capacity transit, and other transit services, as well as modes such as airports, bicycles, pedestrians and freight.

- **Meet goals for public involvement.**

  For the RTP process, a public involvement plan was prepared and followed closely. Meetings and events were held to accommodate citizens throughout the region. Outreach efforts were particularly directed at Title VI communities. All of the public events were scheduled in venues that are transit accessible and comply with the provisions of the Americans with Disabilities Act. In addition, Spanish language materials, sign language interpretation, alternate materials, and FM/Infrared Listening Devices were available upon request.

COSTS AND REVENUE ESTIMATES

As part of the preparation of the Draft Plan, overall revenue and costs estimates have been prepared and are considered to be reasonable for planning purposes. Contingency factors have been applied to recognize the uncertainties associated with projecting costs and revenues over a 20-year period. In addition, bonding strategies can have a major effect on the phasing of plan development. Bonding can accelerate the timing of project completion, but it also reduces the total work that can be accomplished due to the interest costs associated with bonding. It is important to note that cost and revenue uncertainties can only be resolved once detailed engineering studies are completed and economic conditions are revealed over time. Periodic adjustments and updating of the Plan will be needed to respond to changing conditions and new information.

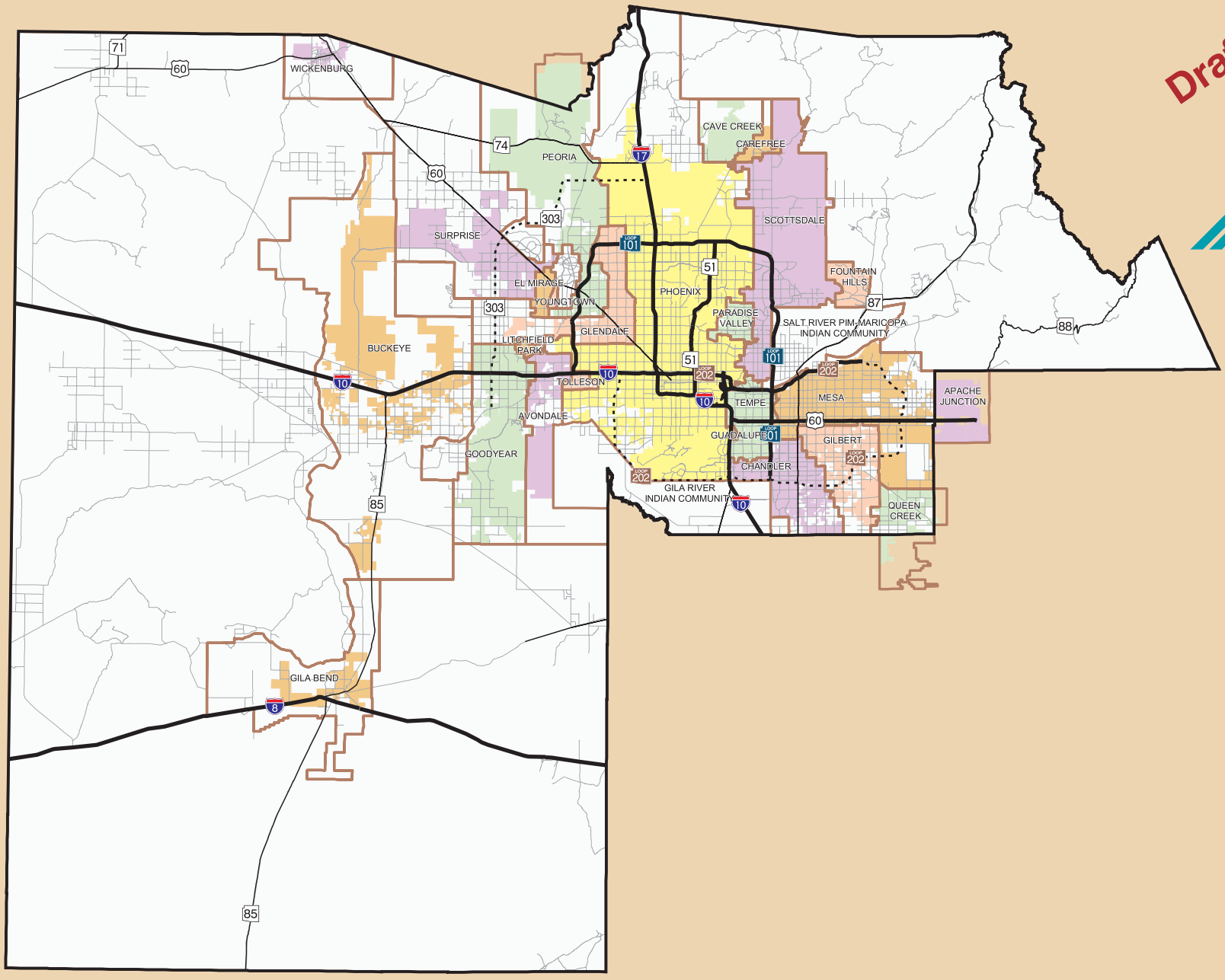
Regional Transportation Plan

Fig. 1–1

Draft

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS



MAG Region

- Municipal Planning Area
- Existing Freeway
- Planned Freeway
- Highways
- Other Roads

MAP AREA

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Miles 0 5 10

N

G:\Dev\projects\RTP\01-1_MAG_Region.mxd

CHAPTER TWO

PUBLIC INVOLVEMENT

The purpose of this chapter is to provide an overview of the public participation process that was conducted in the development of the Draft RTP. The RTP was developed in two phases, and public participation has been a key component in both of these phases. The following information represents the public involvement activities that were utilized in an effort to obtain input during the development of the RTP.

THE PUBLIC INVOLVEMENT PROCESS

Over the past two years, MAG has developed a number of comprehensive area studies and other transportation reports for the region, and has talked to thousands of people in an effort to identify future transportation needs. During the development of the RTP, MAG held 150 public input opportunities, 173 stakeholder opportunities (which included focus groups involving minority and senior travelers and several safety forums) and 117 agency meetings to solicit input from the public, community groups, business associations, transportation stakeholders, elected and appointed leaders, city planners, municipal technical staffs, transportation councils, and the Native American Indian Communities.

The RTP public involvement meetings and events were held to accommodate citizens throughout the MAG region. Meeting and event times were varied in an attempt to accommodate as many citizens as possible. Except for input opportunities provided at MAG meetings, public involvement events were off-site and in different parts of the region. All of the public meetings and events were scheduled in venues that are transit accessible and comply with the provisions of the Americans with Disabilities Act. In addition, Spanish language materials, sign language interpretation, alternate materials, and FM/Infrared Listening Devices were available upon request.

The transportation planning process has benefitted greatly by incorporating broad-based public input, which was received as the result of an aggressive public outreach effort. The information below highlights input that was received through a number of public participation opportunities that were part of the planning process, as well as from the 2003 MAG Town Hall and other public involvement events.

Please note that detailed information about the public involvement process and citizen comments can be found in the following documents:

Public Input Opportunity Report
(Fiscal Years 2000, 2001, 2002)

Regional Transportation Plan Input Opportunity Report Interim Report
Draft - Executive Summary
June 2003

Regional Transportation Plan Input Opportunity Report
June 2003

Final Draft Stage of the Regional Transportation Plan Input Opportunity Report
Draft -September 2003

Final Draft Stage of the Regional Transportation Plan Input Opportunity Report,
Addendums I and II
Draft -September 2003

PUBLIC INPUT OPPORTUNITIES

Expert Panel Forums

During the early months of the plan's development, MAG organized a series of expert panel forums that were open to the public. These forums included the following topics: Demographics and Social Change; The New Economy; Environmental and Resource Issues; Land Use and Urban Development; and Transportation and Technology. The forums featured speakers who were experts in each topic area. A series of research papers were produced as part of this effort.

Focus Groups

As part of the RTP's development, MAG conducted a series of 16 focus groups during May of 2001 to identify and document transportation issues and concerns. The focus groups were held throughout the region to obtain ideas from participants representing a number of geographically and ethnically diverse groups. The findings were utilized to assist MAG in the identification and formulation of regional values, goals and objectives, which effectively guided the development of the RTP.

The format of the focus groups included an opportunity for interactive discussion among participants, as well as a voting exercise that provided insights on priorities. The discussions were organized into the five topic focus group areas listed above.

Participants in the focus groups were encouraged to bring forward their own issues and concerns relating to each topic, both individually and in a round-table discussion. The responses received were documented in a "verbatim" format so that the message intended by each participant was accurately recorded. All input received during this process was utilized to address a variety of issues and concerns, and was assimilated into the region's goals, objectives, and performance measures as identified in Chapter Four of this Plan.

A number of transportation area and corridor studies were also undertaken, including the Southeast Maricopa/Northern Pinal County Area Transportation Study, the Northwest Area Transportation Study, the Southwest Area Transportation Study, the East/West Mobility Study, the High Capacity Transit Study, the Regional Transit Study, and the Freeway Bottleneck Study. These studies provided multiple opportunities for public input. Frequent study forums were held, that sought input from stakeholders on technical and planning issues. In addition, public meetings were conducted to inform participants about study findings and to obtain comments on transportation issues and concerns.

Special Events

Throughout the RTP development process, the MAG Public Involvement Team conducted numerous special events and community booths to provide information and conduct public opinion surveys. The primary objective of these special events was to reach larger groups of stakeholders who don't typically participate in transportation meetings or public hearings.

MAG hosted informational booths at a variety of events around the region. Booths included displays and informational materials, and surveys were distributed to help gauge citizens' awareness of issues and determine their transportation priorities for the region. Results of these surveys were presented to the Transportation Policy Committee for its consideration in the development of the Plan.

Special events included quarterly MAG at the Mall events as well as freeway openings, annual Sunday on Central events, the Arizona State Fair, Cinco de Mayo, Black History Month events, Cesar Chavez Festival, transportation fairs, and numerous other activities.

In an effort to maintain the cooperative planning process with the Arizona Department of Transportation (ADOT) and the region's transit operator, MAG teamed up with ADOT, Valley Metro, and Valley Metro Rail staff to jointly host a number of the special events. These groups shared information to ensure that all input which was gathered during the public outreach period was considered by the MAG TPC prior to, and during the development of the plan.

MAG Regional Town Hall

On March 28, 2003, MAG conducted its first annual Regional Town Hall to address transportation issues and priorities. The MAG Town Hall invited more than 500 individuals representing leadership groups from communities across the region. Approximately 150 people registered for the event, and each participant was provided with a Transportation Issue Paper, which specifically addressed the following eight categories: population and employment growth; a summary of current transportation plans and programs; past accomplishments in transportation; the role and performance of the freeway system; street and transit systems within the region; existing transportation revenue sources; issues affecting the future of transportation; and results of a regional transportation survey that was conducted in December of 2002. That survey polled 1,009 registered voters from within Maricopa County concerning their thoughts on regional transportation issues, and asked how they would decide to distribute or allocate future funding toward a variety of transportation needs.

At the MAG Regional Town Hall on transportation, participants were separated into ten preassigned discussion panels to specifically identify the successes and challenges of today's regional transportation system, and to develop a list of solutions for the future. As part of this process, Town Hall participants were asked to answer and prioritize a top five list of solutions addressing the following questions:

- What do you like about the transportation system in the Valley?
- What problems do you have in getting where you want to go?
- What can be done to solve these problems?

Participants were asked to answer these questions, and to prioritize a "top five" list of priority solutions for enhancing such transportation issues. In addition to this exercise, all Town Hall participants collectively reached consensus and voted on key issues, and were asked to prioritize the components of a regional transportation system. The creation of a multimodal transportation system that provides a variety of options, along with connectivity between modes and land uses, were indicated as the top priorities of the Town Hall Participants.

Four other important issues that received majority support from the group included the following:

- Additional funding for transportation: additional taxes/fees are needed to build a regional multimodal system.
- Regional transportation planning should include land use planning, and also focus on "buildout" needs for the next twenty years.
- Options should include high capacity travel and operate separately from the congested streets and freeways.
- Additional communications, marketing and advocacy to elected officials and the general public are needed on transportation issues.

Public Meetings, Hearings and Workshops

During May and June of 2003, public workshops were held in the Central, Northeast, Northwest, Southeast and Southwest areas of the metropolitan region. During these workshops, citizens participated in a "hands-on" exercise in which participants developed their own fiscally constrained regional transportation plan. Participants used a list of 19 major project categories,

such as "New Freeways," "Bus Service Capital," "Bottleneck Improvements," etc. The categories were based on more than 400 project requests for specific transportation facilities and improvements that were received by MAG at the beginning of the transportation planning process. A dollar amount for each category was determined based on the projected level of need between now and 2025.

Participants were given a deck of 19 cards listing each project and its cost. About $22 billion worth of projects were contained on the cards, but participants could not spend more than $8.3 billion in their plan – the amount anticipated to be raised by the half-cent sales tax extension, as specified under the provisions of Arizona House Bill 2292. A worksheet, or "Funding Priorities Survey," was provided to record the amounts spent on each category by each respondent. Participants were then asked to convene into small groups and reach consensus on spending priorities. The Funding Priorities Survey was also distributed to a number of community groups, local transportation commissions, the Hispanic Chamber of Commerce, Sun City Grand neighborhood representatives, and others.

Once the Final Draft of the Regional Transportation Plan was adopted by the Transportation Policy Committee (TPC) July 22, 2003, six additional public meetings/hearings were held to receive further review and comment on the Plan. These meetings were held at locations across the region in August and September of 2003. The areas where the meetings were held included the Central, Southwest, Northwest, Southeast and Northeast areas, as well as a Surprise/Sun City meeting. More than 500 individuals participated in the six meetings.

In addition to the six public meetings, six business meetings were also held to provide the opportunity for review and comment on the plan by members of the business community. The business community was identified early in the process by the TPC as a key stakeholder in the development of the plan, because of the impact of transportation on the Valley's economy. The TPC recognized that the movement of goods in and out of this region, as well as businesses' ability to attract high quality employees through an adequate transportation system, is vital to their livelihood and survival.

The format for the business meetings and public meetings was the same. Business meetings were held from 3:30 - 5:00 p.m. with a presentation at 4:00 p.m. Public meetings were held from 5:00 p.m. to 7:00 p.m. with a presentation at 5:30 p.m. An open house preceded the meetings featuring maps, informational materials and displays.

During the presentation portion of the meeting, information on the Draft Plan was presented followed by a question-and-answer period. Comments and responses made during the question-and-answer period were recorded in summary form and are included in the Final Draft Stage of the Regional Transportation Plan Input Opportunity Report. A court reporter was available in a designated area to record formal comments. Transcripts of the formal comments, and staff responses to comments, are also included in the Input Opportunity Report.

During the six business and public meetings, a "public input form" was distributed to capture respondents' level of agreement with elements in the Plan, as well as specific comments, in a survey format. The results of this survey were tabulated and can be found in Section VI of Regional Transportation Plan Input Opportunity Report.

MAG also continued its participation in special events such as the Latino Institute and the Grand Canyon Minority Business Opportunity Trade Fair. Staff made presentations on the Final Draft Stage of the Plan to the New River/Desert Hills Community Association, Mesa East Rotary Club and the East Valley Disability Advocacy Group.

The process for final public comment on the

Plan was complete after the Regional Council meeting on September 24, 2003.

Additional Input

In addition to the methods noted above, MAG also received comments regarding the Regional Transportation Plan via US Mail, phone conversations, e-mail, and online. Online comments were received through the MAG Web site at www.mag.maricopa.gov, and through a special Web site developed for the RTP process, www.LetsKeepMoving.com. These interactive sites included several opportunities to take online surveys during various Plan development phases and to provide comment on the Plan.

Comments collected through the means described above, and staff responses to those comments, can be found in the Regional Transportation Plan Input Opportunity Interim Report, June 2003, and the Final Draft Stage of the Regional Transportation Plan Input Opportunity Report, September 2003.

Small Group Presentations

As part of its continuing public outreach, MAG conducted numerous small group presentations during the development of the Regional Transportation Plan. Presentations were given to Rotary clubs, chambers of commerce, transportation coordinators, major employers, neighborhood associations, and numerous other community groups upon request.

During these presentations, MAG staff provided information, responded to comments and answered questions about the RTP and the ongoing planning process. Public opinion surveys were distributed at many of this events. Results of the surveys were compiled and forwarded to the MAG Transportation Policy Committee (TPC) for its consideration in the development of this Plan.

Scientific Polling

During the development of the Regional Transportation Plan, MAG conducted three scientific telephone polls to collect information about citizen priorities and their level of support for the half-cent sales tax extension.

The first poll was conducted in December 2001/January 2002 by WestGroup Research, and was commissioned jointly by the Regional Public Transportation Authority and the Maricopa Association of Governments. Five focus groups and 626 fifteen-minute surveys were completed.

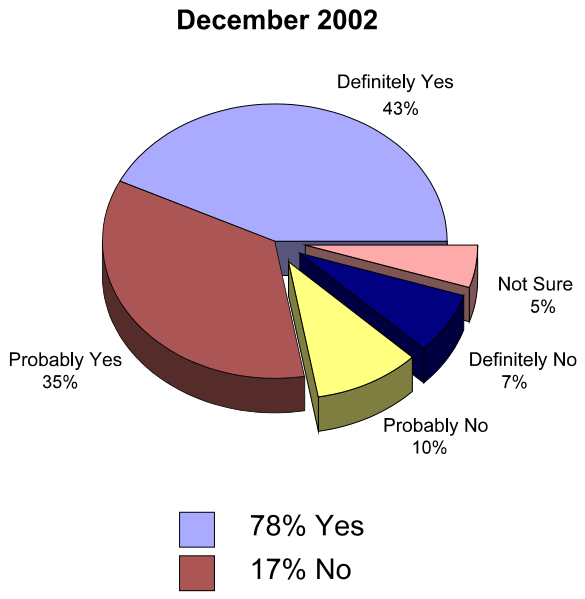
In December 2002, Behavior Research Center, working on behalf of the MAG TPC, conducted a poll of 1,009 Maricopa County voters to obtain information about transportation issues and concerns.

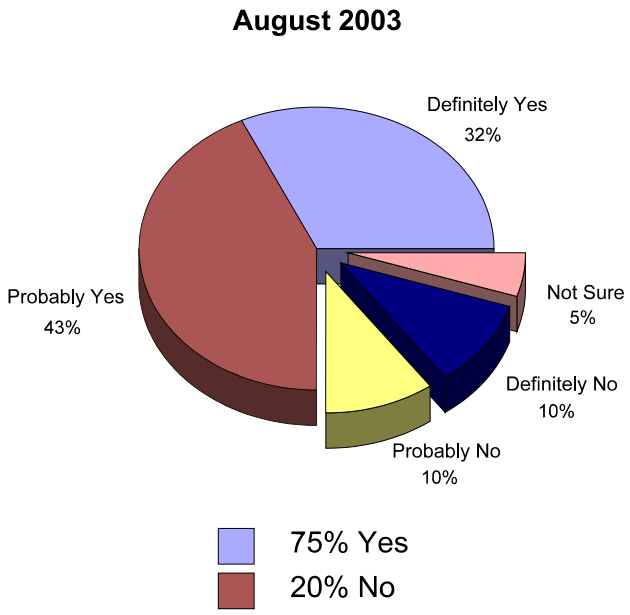
In August of 2003, Behavior Research Center, again working on behalf of the MAG TPC, conducted a poll of 600 Maricopa County voters to test elements of the draft Regional Transportation Plan and determine levels of support for the proposed tax extension. Results of all of these surveys, which show strong voter support, are displayed in Figure 2-1.

A comprehensive listing of all public input opportunities is provided in the Appendix located at the end of this document. This information includes a chronological listing of all major outreach and public involvement events, as well as meetings or events offered to stakeholders, member agencies, and other partners throughout the RTP planning process. These events are categorized and identified by (P) public input meetings, (S) stakeholder group meetings, and (A) agency meetings.

Figure 2-1

TEST VOTE ON ONE-HALF CENT EXTENSION





CHAPTER THREE

REGIONAL OVERVIEW

The purpose of this chapter is to provide an overview of the patterns and trends of development in the MAG region. This includes a discussion of the geographic setting of the region, regional growth and urban form, population projections, the economic base and employment growth, and community job centers. This information was utilized to forecast future travel demand and determine future regional transportation needs.

As a part of the process of developing regional growth data, MAG prepared a series of subregional population and employment forecasts. According to Executive Order 95-2, the Arizona Department of Economic Security (DES) is responsible for developing official State and County control total population projections, while MAG is responsible for preparing subregional projections consistent with these control totals. However, DES has not yet prepared official control totals for Maricopa County, because the agency is awaiting the availability of certain Census data to complete the projections. Therefore, MAG has prepared interim county control total projections of population and employment to use in preparing subregional projections.

Based on these interim control totals, MAG prepared interim Draft Projections of Population, Housing and Employment by Municipal Planning Area and Regional Analysis Zone for July 1, 2010, 2020, and 2025 for Maricopa County. The MAG Regional Council accepted these “interim” projections for Maricopa County in June of 2003. These forecasts provided the data reviewed below.

GEOGRAPHIC SETTING

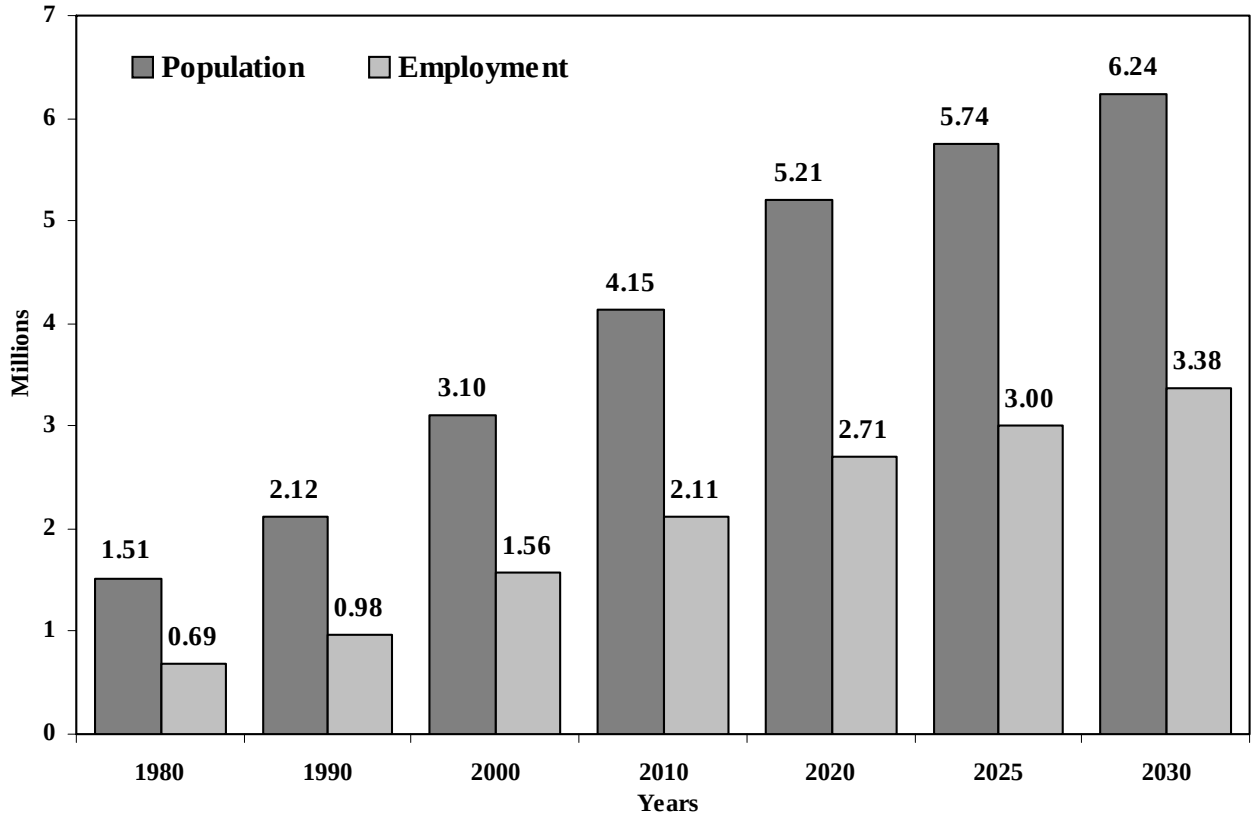
Maricopa County is 9,223 square miles in area and contains 24 incorporated cities and towns, five Indian Communities and a large area of unincorporated land. The region is located in the Sonoran desert with elevations generally ranging from 500 to 2,500 feet above sea level. In 2002, Maricopa County contained approximately 60 percent of the population in Arizona, as well as eight of the nine cities in Arizona with populations greater than 100,000 people.

According to data compiled by MAG in 2000, approximately 29 percent of all county lands were under private ownership; 28 percent of lands were under the direct ownership of the Bureau of Land Management; 14 percent of lands were under the jurisdiction of the U.S. Military; 11 percent of lands were was held within State trust; 11 percent of lands were under the direct ownership of the U.S Forest Service; 5 percent of land was comprised of Native American Communities, and the remaining 2 percent of lands in the county were classified as “other” public lands.

POPULATION PROJECTIONS

For the past several decades, the MAG region has been one of the fastest growing metropolitan areas in the United States, among those with populations of more than one million people. In April of 2000, Maricopa County had a resident population of 3,072,149. This was a population growth of approximately 44 percent, or 950,000 people in the decade from 1990 to 2000. MAG Interim Socioeconomic Projections indicate that this high growth rate is expected to continue. Historic and projected growth in population and employment is illustrated in Figure 3-1.

Figure 3-1: Population and Employment
Maricopa County (1980-2030)



Source: U.S Census Bureau, Arizona Department of Economic Security, MAG Interim Projections, June 2003

Maricopa County has grown from a population of 1.5 million persons in 1980, to a population of 3.1 million in 2000. By 2030, Maricopa County is projected to double in population over the 2000 base population, with an anticipated total of 6.24 million people. This means that the region will experience a growth of approximately one million people during each decade.

Table 3-1 shows the total resident population for Municipal Planning Areas (MPAs) from July 1, 2000, to July 1, 2030. Total resident population includes the resident population in households, and the resident population in group quarters (dorms, nursing homes, prisons and military establishments). Over the 30-year period (2000-2030), nine MPAs are projected to grow by more than 100,000 persons. These areas include Phoenix, Buckeye, Surprise, Goodyear, Mesa, Gilbert, Peoria, Avondale and Chandler. Another three MPAs are projected to experience population growth greater than 50,000 persons, which include Scottsdale, Glendale, and the Maricopa County portion of Queen Creek.

Currently, there are four MPAs within the MAG region with populations of over 200,000 persons, which include Phoenix, Mesa, Glendale and Scottsdale. By 2010, Chandler and Gilbert will surpass 200,000 in population, and will be followed by Peoria prior to the beginning of 2020. By 2025, the largest Municipal Planning Area – Phoenix , will contain 2.1 million persons, followed by Mesa at 630,000 and Surprise at 312,000. Figures 3-2 and 3-3 are maps that display the population concentrations for 2000 and 2030. By definition, the population concentration measures the average population within a

one-mile radius. This analysis helps in smoothing out differences in geographies and in identifying underlying spatial patterns in the data. The pattern of population concentrations illustrates the shape of urban form as it is projected to evolve according to local land use plans and densities.

ECONOMIC BASE AND EMPLOYMENT GROWTH

By 2025, Maricopa County is projected to nearly double its reported 2000 employment total. This means that employment within the region will grow at a number of approximately 575,000 jobs each decade (Figure 3-1). This item of the section describes the employment growth trends projected in the MAG region to 2030. In doing so, it should be noted that the employment projections are by place of work, and not by place of residence as reported by the Census Bureau.

Table 3-2 displays the present projected regional employment totals by Municipal Planning Area (MPA), which is reported by total employment from July 1, 2000, to July 1, 2030. Total employment categories also include individuals that work at home, and all construction employment. Since construction employment typically follows development, the projected employment numbers may in fact show declines in future years for certain MPAs.

Compared to 2000, it is projected that there will be a more equitable distribution of jobs by place of work between MPAs throughout the MAG region. Although the Phoenix MPA is expected to contain the most jobs in the region, its share declines from 47 percent of all jobs in 2000, to a figure of approximately 37 percent in 2030. In 2000, the top four MPAs of Phoenix, Mesa, Tempe and Scottsdale contained 78 percent of all jobs by place of work. By 2030, their collective share is projected to decline to 60 percent. Between 2000 and 2025, Maricopa County job growth is projected to be 1.4 million jobs, which includes the following stages of growth: 547,000 jobs between 2000 and 2010; 593,000 jobs between 2010 and 2020; and 297,000 jobs between 2020 and 2025.

COMMUNITY JOB CENTERS

Community Job Centers are areas that are comprised of an identifiable concentration of employment activities and land uses that are entirely, or predominantly of a non-residential nature. Delineated Community Job Centers consist of concentrated, or mixed areas of industrial, office, retail, airport, and government land uses and employment activities.

Job center information assists in the transportation planning process by providing valuable information on each of the following items: employment types at each job center; demographic data; existing and anticipated employment totals; floor area and total square footage of locations; existing acreage; and the total build out of each identified job center. Due to their significant commercial and industrial base, many of these areas have a tendency to generate a higher level of vehicular trips and trips associated with freight-related activities.

During 2002, MAG coordinated efforts with municipal planning and economic development directors throughout the region in an attempt to identify and effectively inventory existing and future job centers. Figure 3-4 displays a total of 106 job centers that are located within the MAG region. These particular job centers are categorized into the following four categories: Developed Centers, Existing Centers with Expansion Potential, Future Centers without Infrastructure, and Revitalization Centers.

In 2000 there were approximately 830,000 people employed within the MAG region's 106 job centers. In 2000, the existing community job centers consisted of 67,201

TABLE 3-1

TOTAL RESIDENT POPULATION BY MUNICIPAL PLANNING AREA (MPA) MARICOPA COUNTY (July 1, 2000 and Interim Projections July 1, 2010 to July 1, 2030)					
Municipal Planning Area (MPA)	**Total Resident Population 2000**	**Total Resident Population 2010**	**Total Resident Population 2020**	**Total Resident Population 2025**	**Total Resident Population 2030**
Avondale	37,800	82,100	122,500	141,600	161,400
Buckeye	16,700	58,600	153,400	275,500	380,600
Carefree	3,000	4,000	4,800	4,800	4,900
Cave Creek	3,900	5,100	5,800	9,800	12,900
Chandler	185,300	260,000	286,600	287,000	288,600
County Areas	85,300	92,900	109,900	124,600	138,000
El Mirage	8,700	29,700	31,400	32,200	33,100
Fountain Hills	20,500	24,700	30,400	30,400	30,700
Gila Bend	2,300	2,800	6,000	12,500	17,800
Gila River *	2,700	3,200	4,200	4,700	5,200
Gilbert	119,200	202,800	280,300	281,900	290,500
Glendale	230,300	290,400	308,100	309,800	312,200
Goodyear	21,200	61,300	161,100	247,400	330,400
Guadalupe	5,200	5,200	5,500	5,500	5,600
Litchfield Park	3,800	7,000	13,700	13,700	14,200
Mesa	441,800	537,900	617,800	630,300	647,800
Paradise Valley	14,100	15,200	15,700	15,800	15,900
Peoria*	114,100	160,800	206,600	232,200	253,400
Phoenix	1,350,500	1,700,300	2,022,500	2,101,600	2,187,500
Queen Creek*	7,400	18,900	58,300	73,100	88,100
Salt River	6,500	7,400	7,500	7,500	7,500
Scottsdale	204,300	253,100	287,300	289,600	292,700
Surprise	37,700	115,200	213,300	312,300	395,500
Tempe	158,900	176,400	189,200	192,700	196,700
Tolleson	5,000	6,100	6,200	6,200	6,300
Wickenburg	7,400	7,700	10,000	14,800	16,000
Youngtown	3,000	5,400	6,200	6,300	6,600
TOTAL	**3,096,600**	**4,134,400**	**5,164,100**	**5,664,000**	**6,140,000**

Source: Maricopa Association of Governments, Interim Projections, June 25, 2003

Notes:
Total resident population includes resident population in households and resident population in group quarters (dorms, nursing homes, prisons and military establishments). MPA numbers are rounded to the nearest 100. County numbers may not add due to rounding.
*These projections include the Maricopa county portion of Peoria, Queen Creek and the Gila River Indian Community only.

The City of Apache Junction, which became a member of MAG in 2002, had a resident population of approximately 40,000 in the Year 2000. MAG has assembled databases and compiled placeholder projections based on their input for portions of Pinal County. Based on their input, Apache Junction's population is projected to be 78,000 in 2010;122,000 in 2020; 142,000 in 2025; and 157,000 in 2020.

TABLE 3-2

TOTAL EMPLOYMENT BY MUNICIPAL PLANNING AREA (MPA) MARICOPA COUNTY (July 1, 2000 and Interim Projections July 1, 2010 to July 1, 2030)					
Municipal Planning Area (MPA)	**Total Employment 2000**	**Total Employment 2010**	**Total Employment 2020**	**Total Employment 2025**	**Total Employment 2030**
Avondale	9,100	21,900	50,800	53,800	59,400
Buckeye	7,100	26,200	64,200	124,100	194,400
Carefree	1,500	2,700	3,200	3,200	3,200
Cave Creek	800	1,900	2,100	2,900	3,700
Chandler	71,000	134,900	166,100	173,000	184,500
County Areas	31,800	33,400	37,100	45,700	54,500
El Mirage	1,900	4,500	9,200	15,700	23,600
Fountain Hills	4,300	7,700	9,000	8,800	8,600
Gila Bend	1,200	1,900	2,800	6,900	11,700
Gila River *	3,700	4,800	6,700	7,500	8,700
Gilbert	35,000	70,300	101,100	108,100	118,200
Glendale	84,500	130,500	158,300	172,300	190,200
Goodyear	13,900	30,900	66,800	84,200	105,800
Guadalupe	600	1,600	1,600	1,700	1,800
Litchfield Park	1,200	3,600	4,600	4,400	4,300
Mesa	172,000	240,600	293,900	304,200	318,100
Paradise Valley	5,400	5,600	5,900	5,900	5,900
Peoria*	28,400	51,300	87,400	111,900	141,500
Phoenix	741,000	900,100	1,093,200	1,166,600	1,264,000
Queen Creek*	1,700	6,400	19,800	27,200	36,800
Salt River	7,300	7,800	9,100	13,900	19,600
Scottsdale	152,100	181,300	205,900	209,800	214,800
Surprise	9,000	28,100	51,000	81,800	118,400
Tempe	162,400	191,400	227,500	233,000	241,100
Tolleson	12,800	16,000	20,300	25,100	30,900
Wickenburg	4,100	4,900	6,000	8,600	11,600
Youngtown	1,200	1,700	1,600	1,600	1,700
TOTAL	**1,564,900**	**2,112,000**	**2,705,000**	**3,002,000**	**3,377,000**

Source: Maricopa Association of Governments, Interim Projections, June 25, 2003

Notes:
Because Construction employment follows development, employment projections may show declines in future years.

*These projections include the Maricopa county portion of Peoria, Queen Creek and the Gila River Indian Community only.

The City of Apache Junction, which became a member of MAG in 2002, had employment of approximately 5,000 in the year 2000. MAG has assembled databases and compiled placeholder projections based on their input for portions of Pinal County. Based upon their input, Apache Junction's employment is projected to be 15,000 in 2010; 26,000 in 2020; 27,000 in 2025; and 28,000 in 2020.

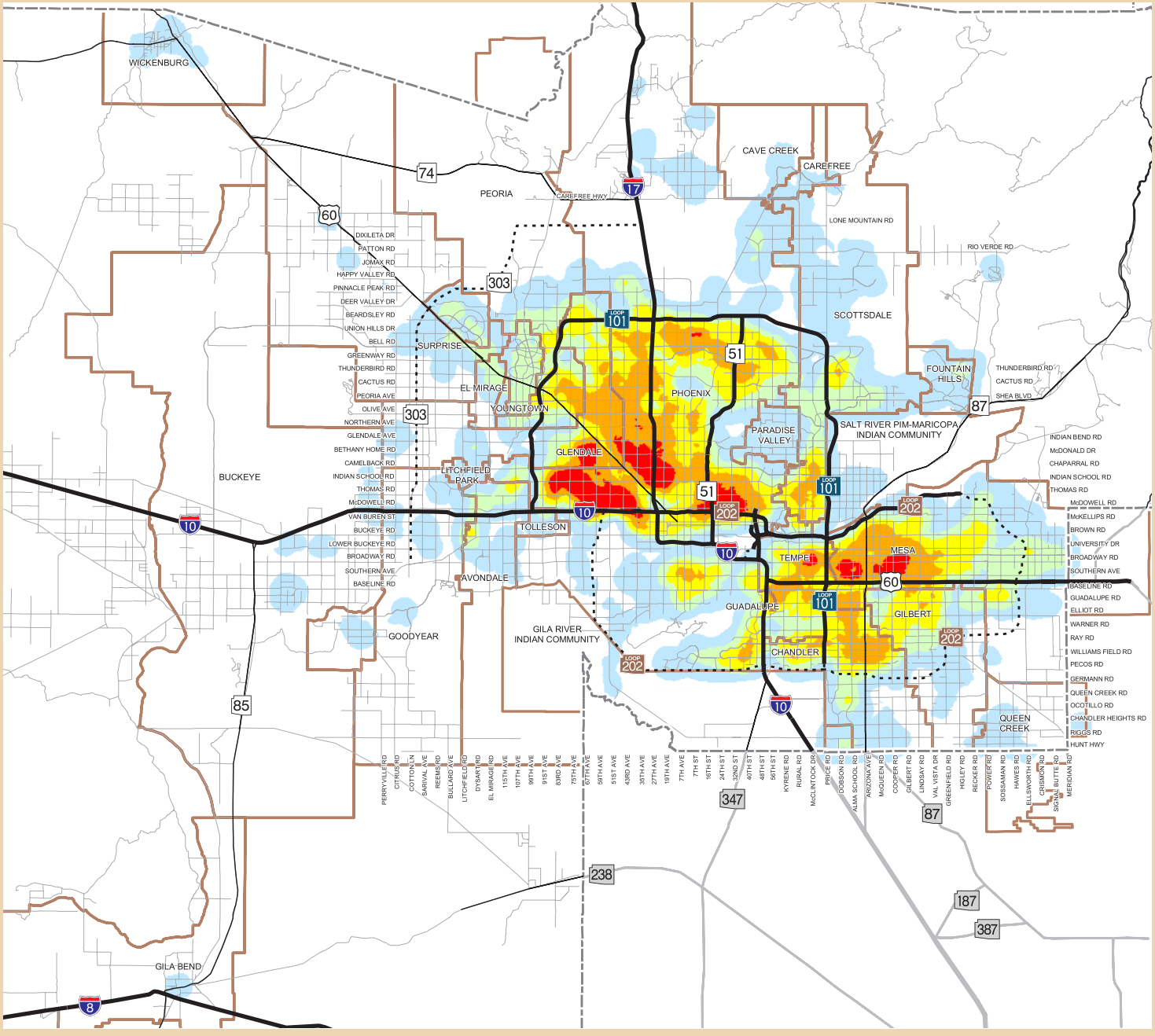
Regional Transportation Plan

Fig. 3-2

REGIONAL TRANSPORTATION PLAN

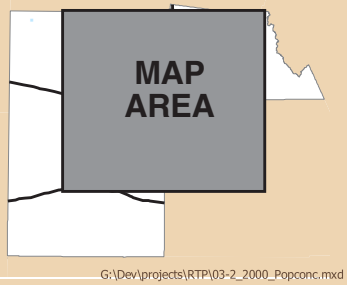
MARICOPA ASSOCIATION of GOVERNMENTS

2000 Population Concentration for Interim Socioeconomic Projections*



Persons per Square Mile
(Maricopa County Average = 336

- Less than 250
- 250 to 2,000
- 2,000 to 4,000
- 4,000 to 6,000
- 6,000 to 8,000
- More than 8,000
- Municipal Planning Area
- County Boundary
- Existing Freeway
- Planned Freeway
- Highways
- Other Roads



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Miles 0 5 10

N

*Based on Interim projections by Municipal Planning Area (MPA) and Regional Analysis Zone (RAZ) for 2010, 2020, 2025 and 2030 accepted by MAG Regional Council on June 25, 2003.

G:\Dev\projects\RTP\03-2_2000_Popconc.mxd

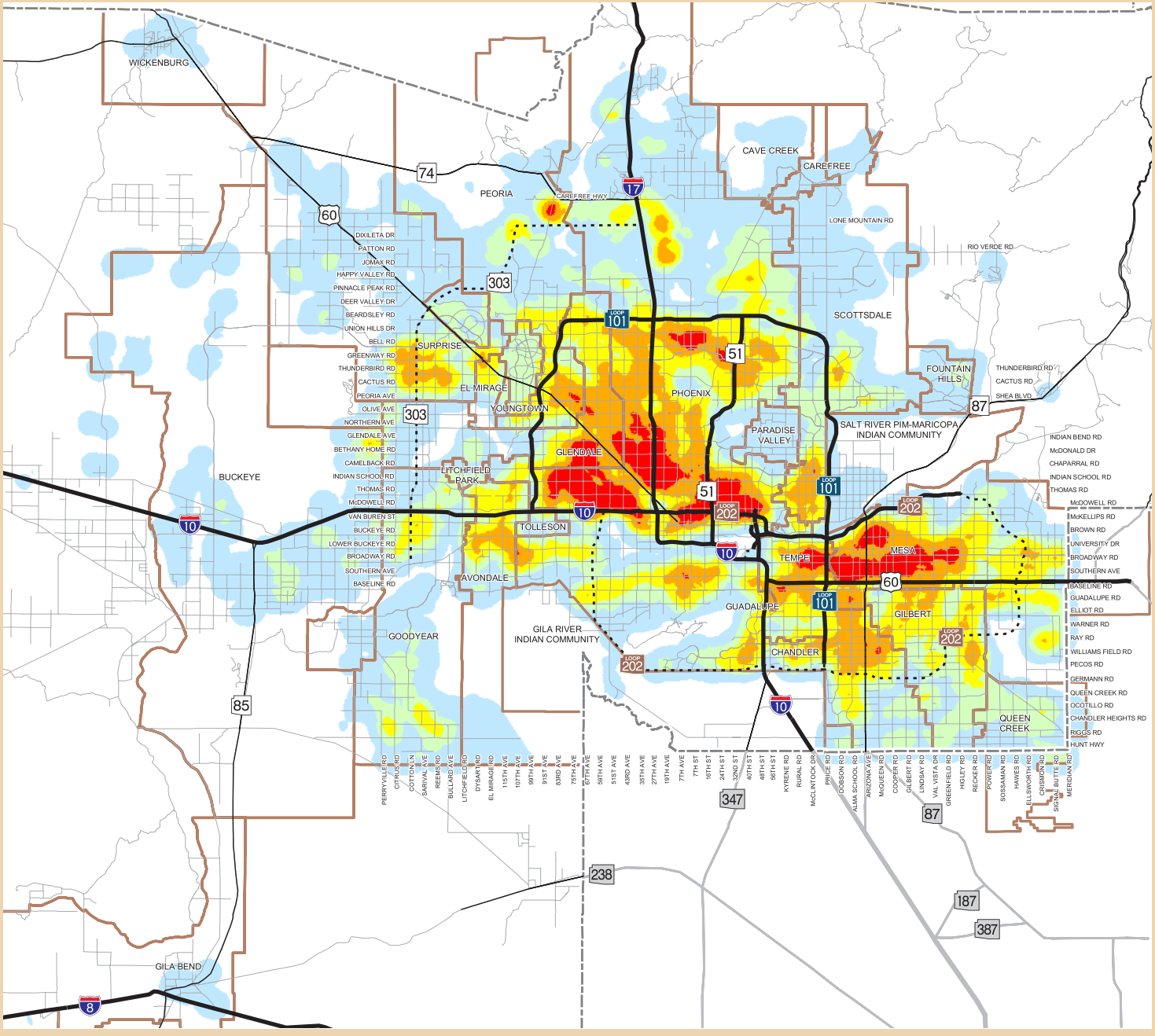
Regional Transportation Plan

Fig. 3-3

REGIONAL TRANSPORTATION PLAN

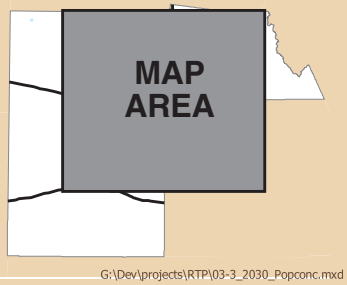
MARICOPA ASSOCIATION of GOVERNMENTS

2030 Population Concentration for Interim Socioeconomic Projections*



Persons per Square Mile
(Maricopa County Average = 666

- Less than 250
- 250 to 2,000
- 2,000 to 4,000
- 4,000 to 6,000
- 6,000 to 8,000
- More than 8,000
- Municipal Planning Area
- County Boundary
- Existing Freeway
- Planned Freeway
- Highways
- Other Roads



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Miles
0 5 10

N

*Based on Interim projections by Municipal Planning Area (MPA) and Regional Analysis Zone (RAZ) for 2010, 2020, 2025 and 2030 accepted by MAG Regional Council on June 25, 2003.

G:\Dev\projects\RTP\03-3_2030_Popconc.mxd

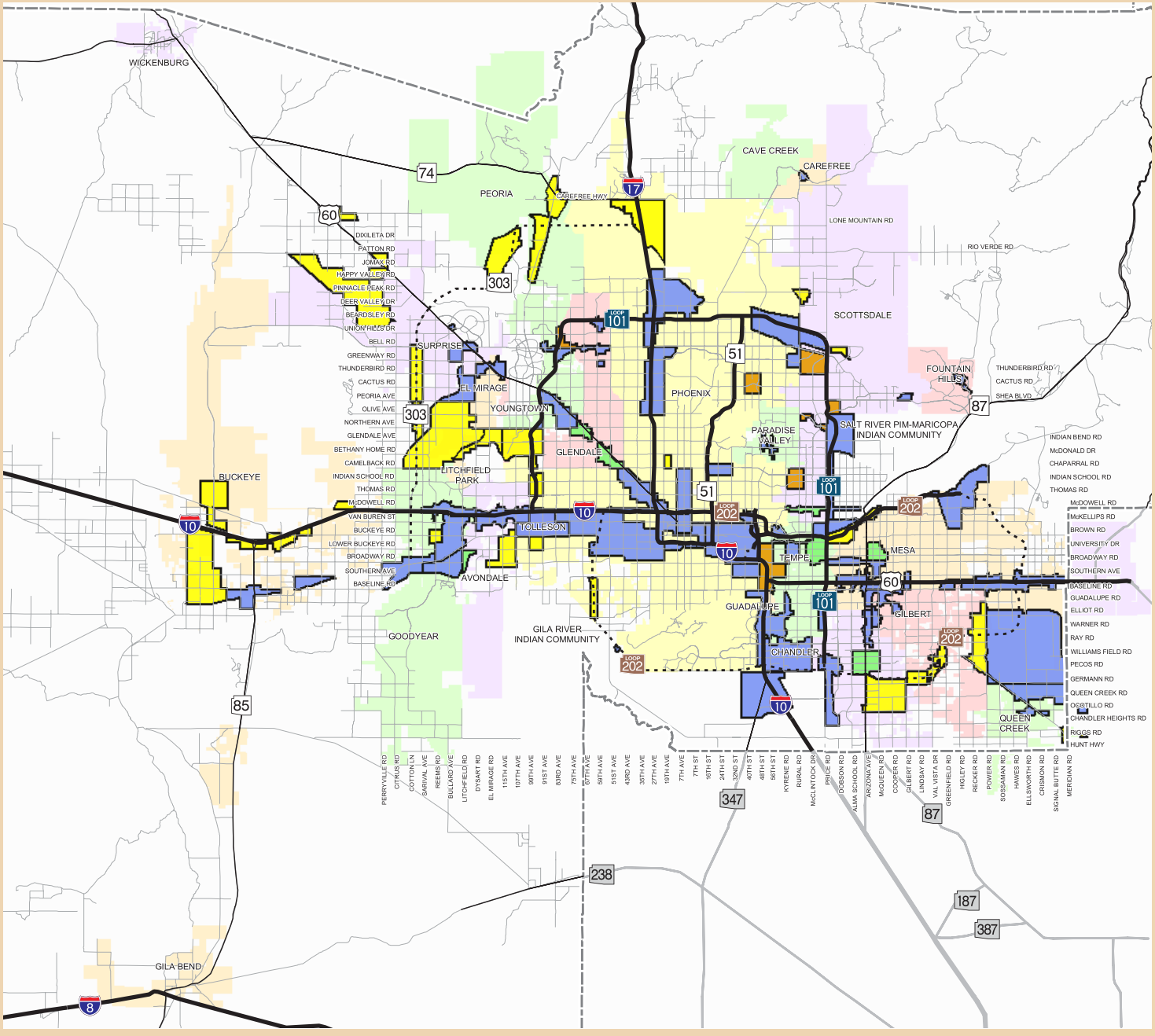
Regional Transportation Plan

Fig. 3-4

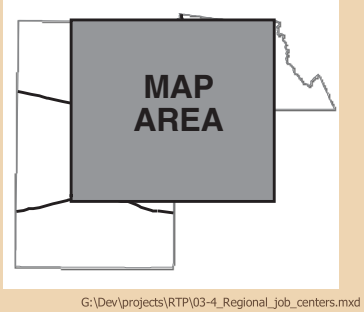
REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

Regional Job Centers



- Existing Center - Built-Out
- Existing Center - Expansion Potential
- Future Center - No Infrastructure
- Revitalization Center
- County Boundary
- Existing Freeway
- Planned Freeway
- Highways
- Other Roads



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

G:\Dev\projects\RTP\03-4_Regional_job_centers.mxd

acres, or a total area of approximately 105 square miles. However, based on planning and economic development estimates, the total size and employment numbers for the 106 community job centers are expected to expand considerably. At buildout, the centers are expected to employ over 2.6 million people. When the existing, identified community job centers are completely built and occupied, it is anticipated that they will comprise a total of 167,071 acres, or an area of about 261 square miles.

PINAL COUNTY DEVELOPMENT

The MAG transportation modeling region extends into Northern Pinal County. The extension of modeling was necessary in order to understand the regional transportation implications of population growth outside of Maricopa County. As a part of this modeling process, projections of population, households and jobs in Pinal County were needed in order to estimate future travel demand. Working with the Central Arizona Association of Governments (CAAG) and other local public agencies in Pinal County, MAG assembled databases and compiled placeholder projections. Based on this joint forecasting effort, the Pinal County portion of the MAG transportation modeling area is projected to grow from approximately 150,000 people in 2000, to approximately 917,000 by 2025. Total employment in the area is projected to grow from approximately 45,000 to 201,000 in the same period.

CHAPTER FOUR

GOALS, OBJECTIVES AND PERFORMANCE MEASURES

This chapter describes the goals, objectives and performance measures that were identified to guide the development of the Regional Transportation Plan. Goals and objectives provide the overall policy direction, whereas performance measures are needed for each objective, so that progress toward meeting goals and objectives can be determined. In addition, the related topic of plan phasing is also discussed in this section.

A set of regional transportation goals and objectives was approved by the Transportation Policy Committee (TPC) on February 19, 2003. Later, on May 21, 2003, the TPC took action to approve performance measures for each objective. Together, these criteria provide the planning process with a basis for identifying options, evaluating alternatives and making decisions on future transportation investments.

The Transportation Policy Committee utilized input from a variety of sources in developing a set of goals, objectives and performance measures. These sources included the results of the five expert panel forums held in the region during February and March 2001, and the sixteen (16) focus group sessions held throughout the region in May and June of 2001. In addition, information was obtained from a historical document search, which focused on goals and objectives contained in member agency general plans or other planning documents. This information was augmented by the results of other RTP study tasks, input from MAG modal committees, and extensive discussions by the TPC.

PLAN ASSESSMENT CONCEPTS

Sound planning principles call for the use of specific criteria to evaluate plan alternatives, assess plan performance and prioritize the phasing of projects. These criteria include a hierarchy of goals, objectives and performance measures.

A goal is a general statement of purpose that represents a long-term desired end to a specific state of affairs. It is generally measurable by qualitative means. By identifying broad goals that are both visionary and practical, and which respond to the values of the region, the focus of the planning process can be more readily communicated to the public. The goals, in turn, can be defined in greater detail by specifying multiple objectives for each goal.

An objective is very similar to a goal, as it represents a desired end to a specific state of affairs. However, an objective is an intermediate result that must be realized to reach a goal. The definition of an objective is usually more focused than that of a goal and is typically more subject to being measured. Objectives can be further assessed through performance measures that are identified for each objective.

Performance measures are criteria used to provide more quantitative information that can be used to assess how well objectives are being met. They can be applied at the system level and project level. In addition, they can be used to evaluate plan options, as well as monitor plan performance.

In the discussion below, goals, objectives and performance measures have been grouped into two categories of factors that can be used to gauge the progress and success of the plan. These categories are: 1) System Performance Measures, and 2) Plan Evaluation Criteria.

System Performance Measures

System performance measures are goals, objectives and performance measures that provide information about how the regional transportation system is performing overall. Some of these performance measures are also used to evaluate individual components of the overall transportation system or to evaluate proposed projects. For example, the average delay time during the peak commute period can be used to measure how the overall system is expected to perform in the future compared to today. This measure can also be used as one indicator to compare how two different future transportation systems perform. In addition, the average delay in a given travel corridor can be used to examine the impact of a proposed transportation investment within that corridor.

The performance measures are tied to the objectives contained for the first three goals:

- System Preservation and Safety
- Access and Mobility
- Sustaining the Environment

These measures were used in the analysis of proposed projects to be included in the RTP and to assess how different transportation system options perform with respect to the adopted objectives under these three goals. They will also serve as the basis to monitor how the transportation system performs as the RTP is implemented.

Plan Evaluation Criteria

This category of goals, objectives and performance measures provides information on objectives that relate to the planning process, and the importance of accountability during the development and implementation of the plan. These objectives are associated with the fourth goal:

- Accountability and Planning

PERFORMANCE MEASURES BY GOAL AND OBJECTIVE

The TPC identified a total of four goals, 15 objectives and 24 performance measures. These factors are listed below and grouped into the major categories of System Performance Measures and Plan Evaluation Criteria.

SYSTEM PERFORMANCE MEASURES

Goal 1: System Preservation and Safety

Transportation infrastructure that is properly maintained and safe, preserving past investments for the future.

Objective 1A: Provide for the continuing preservation and maintenance needs of transportation facilities and services in the region, eliminating maintenance backlogs.

Performance Measures:

- Percent of maintenance and preservation needs funded.

Objective 1B: Provide a safe and secure environment for the traveling public, addressing roadway hazards, pedestrian and bicycle safety, and transit security.

Performance Measures:

- Accident rate per million miles of passenger travel.

Goal 2: Access and Mobility

Transportation systems and services that provide accessibility, mobility and modal choices for residents, businesses and the economic development of the region.

Objective 2A: Maintain an acceptable and reliable level of service on transportation and mobility systems serving the region, taking into account performance by mode and facility type.

Performance Measures:

- Travel time between selected origins and destinations.
- Peak period delay by facility type and geographic location.
- Peak hour speed by facility type and geographic location.
- Number of major intersections at level of service “E” or worse.
- Miles of freeways with level of service “E” or worse during peak period.

Objective 2B: Provide residents of the region with access to jobs, shopping, educational, cultural, and recreational opportunities and provide employers with reasonable access to the workforce in the region.

Performance Measures:

- Percentage of persons within 30 minutes travel time of employment by mode.

Objective 2C: Maintain a reasonable and reliable travel time for moving freight into, through and within the region, as well as provide high-quality access between intercity freight transportation corridors and freight terminal locations, including intermodal facilities for air, rail and truck cargo.

Performance Measures:

- Average daily truck delay.

Objective 2D: Provide the people of the region with transportation modal options necessary to carry out their essential daily activities and support equitable access to the region’s opportunities.

Performance Measures:

- Jobs and housing within one-quarter mile distance of transit service.

- Percentage of major arterial streets that have bike lanes.
- Percentage of regional connectors funded as part of the total Off-Street System Plan and the Regional Bicycle Plan.

Objective 2E: Address the needs of the elderly and other population groups that may have special transportation needs, such as non-drivers or those with disabilities.

Performance Measures:

- Percentage of workforce that can reach their workplace by transit within one hour with no more than one transfer.

Note: There will also be a separate Title VI and Environmental Justice analysis.

Goal 3: Sustaining the Environment

Transportation improvements that help sustain our environment and quality of life.

Objective 3A: Identify and encourage implementation of mitigation measures that will reduce noise, visual and traffic impacts of transportation projects on existing neighborhoods.

Performance Measures:

- Per Capita Vehicle Miles of Travel (VMT) by facility type and mode.
- Total transit ridership.

Objective 3B: Encourage programs and land use planning that advance efficient trip-making patterns in the region.

Performance Measures:

- Households within one-quarter mile of transit.
- Transit share of travel (by transit sub-mode).

Objective 3C: Make transportation decisions that are compatible with air quality conformity and water quality standards, the sustainable preservation of key regional ecosystems and desired lifestyles.

Performance Measures:

- Households within five miles of park-and-ride lots or major transit centers.
- Amount of pollutant emissions by type National Air Quality Standards (NAQS).

PLAN EVALUATION CRITERIA

Goal 4: Accountability and Planning

Transportation decisions that result in effective and efficient use of public resources and strong public support.

Objective 4A: Make transportation investment decisions that use public resources effectively and efficiently, using performance-based planning.

Evaluation Criteria:

- Adopt performance measures that will result in a regional transportation system that is effective and efficient and meets the transportation goals and objectives of the region.

Objective 4B: Establish revenue sources and mechanisms that provide consistent funding for regional transportation and mobility needs.

Evaluation Criterion:

- Percent of state and federal transportation taxes collected in Maricopa County that are returned to the region.

Objective 4C: Develop a regionally balanced plan that provides geographic equity in the distribution of investments.

Evaluation Criterion:

- Geographic distribution of transportation investments.

Objective 4D: Recognize previously authorized corridors that are currently in the adopted MAG long-range transportation plan; i.e., Loop 303 and the South Mountain Corridor.

Evaluation Criterion:

- Inclusion of committed corridors.

Objective 4E: Achieve broad public support for needed investments in transportation infrastructure and resources for continuing operations of transportation and mobility services.

Evaluation Criterion:

- Voter approval for a regional transportation revenue source.

PLAN PHASING PRIORITY FACTORS

The phases in which the elements of a plan are implemented is another important consideration in the development of the total plan. The preparation of phasing schedules considers a number of factors, which are discussed below.

- Traffic demand and congestion: Traffic demand served and levels of congestion, taking into account traffic volumes throughout the planning period, are key considerations in phasing plan elements. Segments with higher traffic volumes and greater congestion early in the period are considered for implementation earlier.

- System continuity: The phasing of facility development needs to expand the highway network in a logical sequence, so that maximum possible system continuity, connectivity and efficiency are maintained.

- Revenue availability: The cash flow

patterns from revenue sources limit the amount of work that can be accomplished within a given period of time. In addition, since revenue streams are lower in the early years and greater in the later years, generally more construction can be phased in the later parts of the planning period.

- Bonding capacity and strategies: Through bonding, funding for transportation projects can be shifted to earlier phases in the planning period. However, this has to be weighed against the reduction in total revenues available for constructing projects resulting from interest costs. A conservative bonding scenario was assumed in developing the phasing plan.

- Cost: Large projects with high total costs may need to be spread over a period of years to accommodate cash flows.

- Project development process: The implementation of freeway and highway projects requires a complex development process. The early stages of this process involve extensive corridor assessments, environmental studies, and engineering concept analyses. This is followed by right-of-way acquisition and final design work, before actual construction may begin. All these steps must be sequenced over a multi-year period.

- Project readiness: Certain projects have already been under study for a number of years and are further along in the highway development process. These projects would continue to proceed through the process from their current stage.

- Concurrent progress on multiple projects: Major needs for freeway and highway improvements exist throughout the MAG area. The phasing of projects should proceed so that improvements to the roadway network can be accomplished throughout the planning period in all areas of the region.

CHAPTER FIVE

FINANCIAL PLAN

To bring a transportation plan to reality, a thorough plan for funding needed transportation improvements is a necessity. The following chapter addresses this issue by identifying funding sources and their ability to generate future revenues, allocating future revenues among transportation project categories, and reviewing approaches to managing financial resources, such as bonding strategies. Although this chapter precedes the description of the Draft Plan, it should be noted that transportation needs were identified first. The modal funding allocations described below were established after the modal planning process was completed and reflect the project needs determined through the technical planning process.

REGIONAL TRANSPORTATION REVENUES

The funding sources that are addressed in the RTP include: 1) ADOT 15 percent funds, 2) ADOT discretionary funds, 3) Federal transit 5307 funds, 4) Federal transit 5309 funds, 5) Federal surface transportation funds (STP), 6) Federal Congestion Mitigation and Air Quality funds (CMAQ), and 7) Extension of the county-wide half-cent sales tax for transportation. The Draft Plan was developed to reflect specific levels of future funding from these sources for the 21-year period covering 2006-2026. A total of $15.8 billion (in 2002 dollars) has been projected to be available from these regional revenue sources for the 21-year period (see Table 5-1). All forecasts of revenues are in 2002 dollars to be consistent with project cost estimates, which also are in terms of 2002 dollars.

TABLE 5-1

REGIONAL REVENUE SOURCES: FY 2006 - FY 2026
(Expressed in Millions of '02 Dollars)

Funding Source	Potential Uses	21-Year Revenues	(%)
ADOT Funds (Federal and State)	State Highway Improvements	$4,122	26.1
5307 Funds (Federal Suballocated)	Bus - Capital	$952	6.0
5309 Funds (Federal Discretionary)	Light Rail - Capital, Bus - Capital	$945	6.0
STP (Federal Suballocated)	Streets, Highways, Freeways, Transit - Capital	$500	3.2
CMAQ (Federal Allocated)	Air Quality and Congestion Relief Projects, Transit - Capital	$800	5.1
One-Half Cent Sales Tax Extension (Net of Interest Expense)	Freeways, Highways, Major Streets, Transit	$8,500	53.7
TOTAL		**$15,819**	**100.0%**

Source: Maricopa Association of Governments

The regional transportation revenues identified above are the focus of the RTP process, since they represent those resources that can be planned and programmed at the regional level. However, there are other revenue sources that play an important role in meeting transportation needs. Examples of these include local revenue contributions, city and county shares of the Arizona Highway User Revenue Fund (HURF), local sales taxes and general funds, and developer financed street construction.

Table 5-1 summarizes estimated future revenues from regional transportation sources (in 2002 dollars) and the types of projects to which they may be applied. It is estimated that revenues from an extension of the one-half cent sales tax for transportation, net of $500 million set aside for interest expense, would generate approximately $8,500 million or about 54 percent of the regional revenues expected to be available over the period. Other major sources include ADOT funds (federal and state), $4,122 million or 26 percent, and Federal Transit Funds, $1,897 million or 12 percent. The remaining 8 percent is provided to the region through federal highway and congestion mitigation/air quality funds. Individual funding sources and assumptions regarding projected available revenues are described in greater detail below.

ADOT Funds

The Arizona Department of Transportation relies on funding from two primary sources: the Highway User Revenue Fund (HURF) and federal transportation funds. The HURF is comprised of funds from the gasoline and use fuel taxes, a portion of the vehicle license tax, registration fees and other miscellaneous sources.

ADOT Funding Overview

For FY 2003, HURF collections totalled $1.1 billion. Of this, 40 percent comes from the gasoline tax and another 15 percent comes from the sale of diesel fuel. The portion of the Vehicle License Tax (VLT) that flows into the HURF accounts for about 25 percent of the total HURF funds. According to the Arizona constitution, HURF funds can only be used on highways and streets, therefore, HURF funds cannot be used for transit purposes.

ADOT, Arizona counties and cities and towns, and the Department of Public Safety (DPS) receive an allocation from HURF. For FY 2003, $54.5 million of HURF was taken to fund traffic enforcement for the DPS and $1.0 million was allocated to the Economic Strength Fund (ESF) that funds economic development projects. Of the remaining, ADOT receives 50.5 percent, 19 percent is allocated to counties, and 27.5 percent is allocated to Arizona cities and towns. The remaining 3 percent is allocated to cities with populations over 300,000.

For the purposes of the RTP, total HURF funds were projected based on projected population and assuming that there would no change in tax rates. Total HURF funds were then distributed to ADOT and the other entities based on the current statutory formula and policy.

From the ADOT HURF allocation, state statute provides that 12.6 percent of the HURF funds flowing to ADOT are earmarked for the MAG and PAG regions. In addition, the State Transportation Board has established a policy that another 2.6 percent of ADOT HURF funds would be allocated to the two regions. These funds are divided into 75 percent of the MAG region and 25 percent for the PAG region. These funds are referred to as 15 percent funds.

From the remaining HURF funds, ADOT must pay for operations and maintenance and debt service on outstanding bonds. This includes funds for the Motor Vehicle Division, administration, highway maintenance and additional funding for DPS. The total for these functions plus debt service on HURF bonds totaled about $354 million for FY 2003. The remaining HURF funds are then combined with federal highway funds to provide the

TABLE 5-2

ADOT FUNDS (Expressed in Millions of '02 Dollars)	
ADOT 15% Funds	$859
ADOT Discretionary Funds	$4,512
Total ADOT	**$5,371**
Less: Subprogram Allocation*	$660
Less: 2007 MAG Life Cycle Freeway Allocation	$230
Balance Available	**$4,481**
Less: Allowance for ADOT Contingencies	$359
Net Available	**$4,122**

Source: Maricopa Association of Governments

***** Includes: pavement preservation; bridge and safety preservation; bridge and safety preservation, traffic engineering, development support (design, utilities, Right-of-Way, environmental, planning, engineering support); operating support (training, work zone safety, outdoor advertising control, public information, risk management), minor and major spot improvements, enhancement program, major corridor improvement support, freeway safety patrol.

basis for the ADOT Highway Construction Program.

ADOT Funding in MAG Area

Table 5-2 tabulates ADOT funds in the MAG area. A portion of the 15 percent funds for the MAG area is already allocated to the completion of the regional freeway program and to the repayment of bonds. The remainder, approximately $859 million for the planning period, is available for additional regional freeway projects on the State Highway System in the MAG area.

ADOT discretionary funds include the HURF funds allocated to ADOT to support the State Highway System, ADOT Federal Aid Highway Funds, and other miscellaneous sources. A significant portion of the ADOT HURF funds, specified by the legislature as part of the state budgeting process, is used to pay for maintenance, operations and other road related expenses. Of the funds remaining for construction, 37 percent have generally been targeted to the MAG area. Over the planning horizon, this source is expected to generate $4,512 million for construction on state highways, including freeways and other state highways, in the MAG area.

MAG worked cooperatively with ADOT to develop the revenue and funding estimates for the region. This process was outlined as part of the Casa Grande Resolves, which was adopted in 1999. The Casa Grande Resolves established a cooperative planning process between ADOT and Metropolitan Planning Organizations (MPOs) and Councils of Governments (COGs) throughout the State of Arizona.

Three adjustments to the ADOT revenue stream have been made. First, an allocation for the ADOT "subprograms" has been made that totals $660 million over the planning period. This covers ADOT programs such as pavement preservation, freeway service patrol, and minor improvement projects. The second adjustment is to deduct the amount from the ADOT discretionary program that has been allocated for the 2007 completion of the Regional Freeway Program – about $230 million.

To provide ADOT funds for unanticipated projects, $359 million of ADOT funds have been reserved. This leaves a net available for the RTP of $ 4,122 million, expressed in 2002 dollars.

Federal Transit 5307 Funds

These Federal Transit formula grants are available to large urban areas to fund bus purchases and other transit development. Purchases made under this program must include a 20 percent local match. Over the planning horizon, this funding source is expected to generate $952 million for transit development.

Federal Transit 5309 Funds

These funds are available through discretionary grants from the Federal Transit Administration (FTA) and applications are on a competitive basis. They include grants for bus transit development and "new starts" of light-rail (LRT) and other high capacity systems. Bus transit development requires a 20 percent local match while new starts are expected to require a 50 percent local match. These funds are granted at the discretion of the FTA. Over the planning horizon, it is estimated that $945 million in 5309 funds for bus and rail transit projects will be made available to the MAG region from the FTA. This estimate includes $50 million per year of 5309 funds for light rail for the period from 2011 to 2025, $120 million of 5309 funds for bus maintenance facilities and $75 million for light rail upgrades. The total does not include the 5309 funds for the 20-mile light rail segment. The cost for this segment is also excluded from the Draft Plan summaries in this chapter.

Federal Surface Transportation Program (STP) Funds

These are the most flexible federal transportation funds and may be used for highways or transit. Some of these funds are dedicated to repayment of bonds issued to achieve accelerated completion of the regional freeway system program. Net of these obligations, $500 million will be available from STP funds for highway and transit projects during the planning period.

Federal Congestion Mitigation and Air Quality Funds

These federal funds are available for projects that improve air quality in areas that do not meet clean air standards ("non-attainment" areas). Projects may include a wide variety of highway, transit and alternate mode projects that contribute to improved air quality. While they are allocated to the state, Arizona's funds have been dedicated entirely to the MAG area. They are projected to generate $800 million over the life of the plan.

Extension of One-Half Cent Sales Tax for Transportation

The current half-cent sales tax goes almost entirely to the regional freeway system. A renewed sales tax may be available for a variety of uses including arterials, rail transit and bus expansion, as well as freeways. If renewed, this source is projected to generate an additional $9,000 million for transportation between 2006 and 2025. To account for interest expense associated with revenue bonding, the projected sales tax figure has been reduced by $500 million to $8,500 million. Table 5-3 presents the annual projections for the sales tax, the bonding assumptions that have been made, and the net annual sales tax proceeds available after paying debt service costs.

The sales tax projection is based on the projected population growth for the region through 2025. The sales tax collections for the first few years of the forecast period were adjusted downward to be consistent with the current level of receipts, which have suffered through three years of slow growth due to economic conditions. Over the 20-year period, the sales tax is expected to grow at an average annual rate of 3.7 percent compared to the historical average of 4.6 percent

TABLE 5-3

SALES TAX EXTENSION PROJECTIONS 2006-2025 (Expressed in Thousands of '02 Dollars)			
Year	**Sales Tax**	**Bond Proceeds**	**Net Sales Tax After Debt Service**
2006	285,788	300,000	262,725
2007	299,661	200,000	261,388
2008	317,117	200,000	263,512
2009	335,590	250,000	262,191
2010	355,139	100,000	274,977
2011	372,378	500,000	247,994
2012	390,455	325,000	237,902
2013	409,409	300,000	230,317
2014	429,283	400,000	211,541
2015	445,955	-	234,554
2016	463,273	208,844	231,637
2017	481,264	-	256,374
2018	499,954	-	281,615
2019	514,516	-	302,536
2020	529,502	258,767	273,527
2021	544,924	-	296,405
2022	560,796	-	319,515
2023	571,685	-	337,431
2024	582,786	-	355,355
2025	594,102	-	373,295
TOTAL	**8,983,578**	**3,042,611**	**5,514,791**

Source: Maricopa Association of Governments

(calculated in 2002 dollars) for the current sales tax. As part of the life cycle program, the sales tax projections are updated twice each year.

The bonding scenario for the sales tax is also shown in Table 5-3. Overall, about $3.0 billion (2002 dollars) of debt would be issued under the plan. Bonds are assumed to be issued at an interest rate of 4.5 percent annually with terms that extend up to 2025, the term of the sales tax extension. Maximum annual debt service could not exceed 50 percent of the sales tax revenue. The last column of Table 4 shows the amount of sales tax money available each year after deducting the debt service payments for the bonds. The total of bond proceeds ($3.0 billion) and net sales tax after debt service ($5.5 billion) is $8.5 billion, which is reflected

in the estimate of available regional revenues (see Table 5-1.)

FINANCIAL OVERVIEW AND SUMMARY

Table 5-4 provides a summary of funding by mode, and is followed by Table 5-5, which displays the percentage of each funding source being used by each transportation mode. As shown in Table 5-4, the estimated cost of projects in the Draft Plan total $15.8 billion. This compares to the total estimated regional revenue of $15.8 billion, which is identified in Table 5-1. Therefore, the Draft Plan is fiscally balanced.

FUNDING ASSUMPTIONS

For purposes of developing the financial cash flow for the phasing of the Draft Plan, the following funding assumptions were applied to the regional funding sources:

One-half cent sales tax extension:

Sales tax funds collected annually will be distributed annually to the designated funding categories as follows. These are in the same percentages as they are distributed in the Draft Plan.

- Freeway/Highway (56.2%)
- Arterial Street (10.2%)
- Transit (33.3%)
- Planning Programs (0.4%)

Additional assumptions regarding the funding from the one-half cent sales tax extension include the following principles:

- "Firewalls" are established so funding cannot be transferred from one category to another. For example, funds can't be taken from one category to cover cost overruns in another category.

- Bond proceeds will only be used for capital costs and not for maintenance or operations expenses.

- Consistent with the "firewall" principle, bonding for each funding category will be done independently.

Bonding assumptions:

The phasing concepts for the Draft Plan assume revenue bonding, supported by the one-half cent sales tax for capital projects. Bond revenues are distributed to freeway construction, street construction, and transit capital. It is important to note that these bonding levels were assumed for planning purposes. Actual future bonding levels will depend on a variety of factors, including the financial markets and program cash flow requirements.

Matching Requirements

In developing funding allocations among the various Plan components and project types, the following local matching requirements were generally assumed:

- 30 percent major street projects, including ITS elements.

- 30 percent bicycle and pedestrian projects.

- For air quality and transit projects involving federal funds, minimum federal match requirements were assumed. Depending on the specific project funding mix, this match may be provided from regional revenue sources.

TABLE 5-4

SUMMARY OF FUNDING BY MODE (Expressed in Millions of '02 Dollars)								
Mode	**Program Area**	**½ Cent**	**ADOT Funds**	**FTA (5307)**	**FTA (5309)**	**CMAQ**	**MAG-STP**	**Total Regional Funding**
Freeways	Capital	4,420	4,121	0	0	149	0	8,689
	Operations	354	0	0	0	0	0	354
	Total	4,774	4,121	0	0	149	0	9,043
Streets	Capital	863	0	0	0	105	497	1,464
Buses	Capital	355	0	857	120	0	0	1,332
	Operations	1,009	0	0	0	0	0	1,009
	Total	1,364	0	857	120	0	0	2,340
LRT	Capital	1,224	0	0	825	279	0	2,328
Other Transit	Capital	32	0	89	0	0	0	122
	Operations	211	0	0	0	0	0	211
	Total	243	0	89	0	0	0	333
Planning	Programs	31	0	0	0	0	0	31
Bicycle/ Pedestrian	Capital	0	0	0	0	132	0	132
Air Quality	Programs	0	0	0	0	113	0	113
Total Funding	Capital	6,894	4,121	946	945	665	497	14,067
	Operations	1,604	0	0	0	113	0	1,718
	Total	**8,498**	**4,121**	**946**	**945**	**778**	**497**	**15,785**
Total Expenditure Type and Funding Source								
Capital		6,894	4,121	945	945	665	497	14,067
O & M / Operations		1,604	0	0	0	113	0	1,718
Total		**8,498**	**4,121**	**945**	**945**	**778**	**497**	**15,785**

Source: Maricopa Association of Governments

TABLE 5-5

FUNDING PERCENT BY MODE (Expressed by Percentage)								
Mode	**Program Area**	**½ Cent**	**ADOT Funds**	**FTA (5307)**	**FTA (5309)**	**CMAQ**	**MAG-STP**	**Total Regional Funding**
Freeways	Capital	52.0	100.0	0.0	0.0	19.1	0.0	55.0
	Operations	4.2	0.0	0.0	0.0	0.0	0.0	2.2
	Total	56.2	100.0	0.0	0.0	19.1	0.0	57.3
Streets	Capital	10.2	0.0	0.0	0.0	13.4	100.0	9.3
Buses	Capital	4.2	0.0	90.6	12.7	0.0	0.0	8.4
	Operations	11.9	0.0	0.0	0.0	0.0	0.0	6.4
	Total	16.0	0.0	90.6	12.7	0.0	0.0	14.8
LRT	Capital	14.4	0.0	0.0	87.3	35.9	0.0	14.7
Other Transit	Capital	0.4	0.0	9.4	0.0	0.0	0.0	0.8
	Operations	2.5	0.0	0.0	0.0	0.0	0.0	1.3
	Total	2.9	0.0	9.4	0.0	0.0	0.0	2.1
Planning	Programs	0.4	0.0	0.0	0.0	0.0	0.0	0.2
Bicycle/ Pedestrian	Capital	0.0	0.0	0.0	0.0	17.0	0.0	0.8
Air Quality	Programs	0.0	0.0	0.0	0.0	14.6	0.0	0.7
Total Funding	Capital	81.1	100.0	100.0	100.0	85.4	100.0	89.1
	Operations	18.9	0.0	0.0	0.0	14.6	0.0	10.9
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percent Funding by Major Mode								
Freeways		56.2	100.0	0.0	0.0	19.1	0.0	57.3
Streets		10.2	0.0	0.0	0.0	13.4	100.0	9.3
Transit		33.3	0.0	100.0	100.0	35.9	0.0	31.7
Other		0.4	0.0	0.0	0.0	31.6	0.0	1.8
Total		100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Maricopa Association of Governments

CHAPTER SIX

PLAN DEVELOPMENT AND PERFORMANCE ASSESSMENT

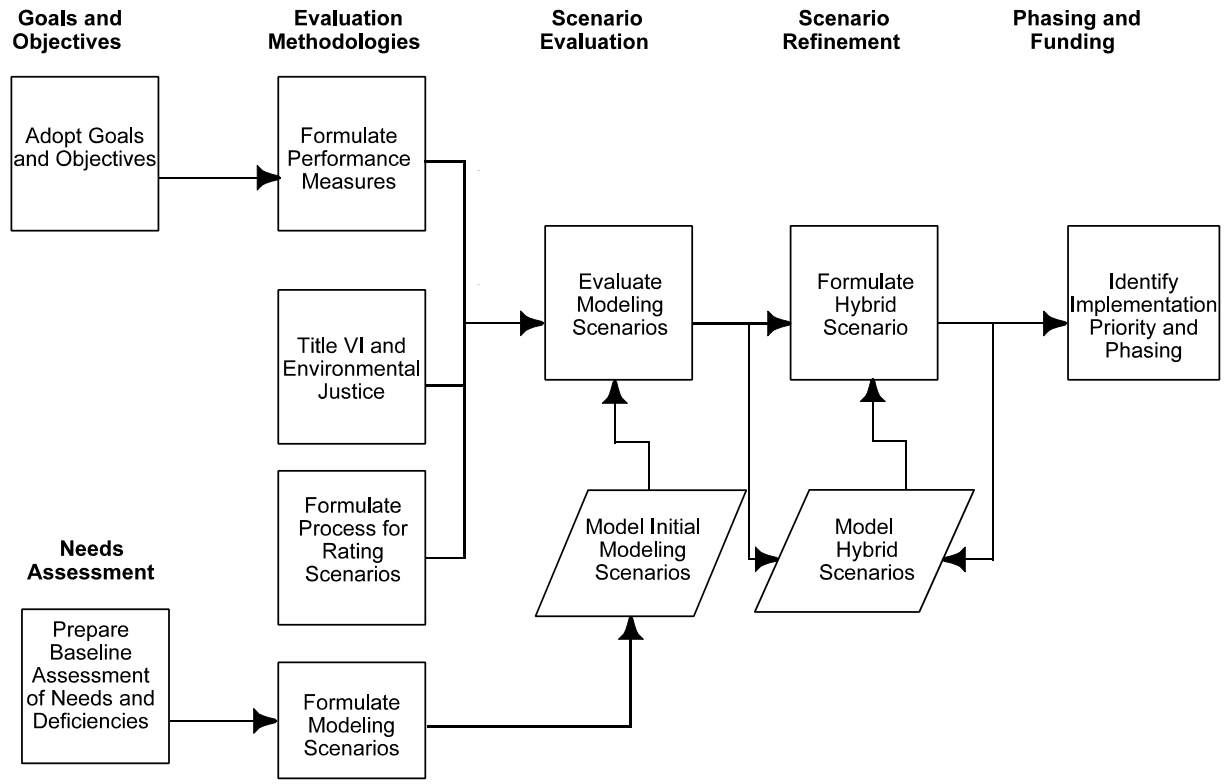
The Draft Plan was developed through a performance-based process that followed a specific methodology and evaluated the Plan relative to a range of performance measures. This chapter discusses this methodology and presents the results of the performance measure assessment.

PLAN DEVELOPMENT PROCESS

The process that was used in the preparation of the RTP is depicted in Figure 6-1. This approach is distinguished by the use of performance-based planning and the application of performance measures in the evaluation of the modeling scenarios. The methodology includes six major components: 1) Goals and objectives, 2) Needs assessment, 3) Evaluation methodologies,4) Scenario evaluation, 5) Scenario refinement, and 6) Phasing and funding.

Figure 6-1

Plan Development Process



Goals and Objectives

RTP goals and objectives have been developed. These goals and objectives provided the structure for developing options and evaluating scenarios. Performance measures have also been identified and linked with specific goals and objectives, so that the evaluation process reflects key regional issues and concerns. The complete set of goals, objectives and performance measures was discussed in Chapter Four.

Needs Assessment

A series of background studies have been conducted for the RTP, including area transportation studies, corridor assessments, and modal specific analyses, as well as other regional planning studies. Transportation needs and deficiencies identified in these studies have been assessed as part of the RTP process. In addition, projects identified by MAG member agencies have been tabulated and considered in the assessment of transportation needs in the region. Several of these key studies are described below.

High Capacity Transit Study

The High Capacity Transit Study found that due to projected growth for the region, there is sufficient travel need to justify additional light rail/bus rapid transit corridors. The study found that a strong grid network of light rail transit/bus rapid transit could provide a high capacity transit network to help meet day-to-day transit travel needs. Potential future commuter rail usage warrants the continued investigation of this mode.

East/West Mobility Study

The East/West Mobility Study focused on options for improving east-west traffic flow between State Route 51 and the Loop 303. Options for the area include street widenings, intersection and interchange improvements, bus service additions, signal coordination,

and development of a parkway concept on Northern Avenue.

MAG/CAAG Southeast Maricopa/Northern Pinal County Area Transportation Study

The Southeast Maricopa/Northern Pinal County Area Transportation Study examined common transportation concerns of Southeast Maricopa County and Northern Pinal County. Potential transportation options identified for that area include arterial network widenings and extensions; highway/freeway widenings; high occupancy vehicle (HOV) lane improvements; and potential new highway corridors – such as a connection from Loop 202 to the Williams Gateway Airport.

Northwest Area Transportation Study and Southwest Area Transportation Study

The Northwest Area and Southwest Area Transportation Studies also examined transportation trends. With rapid growth projected for the West Valley, major new or improved transportation facilities were identified. These include the Loop 303, the I-10 reliever, and the South Mountain freeway. Widening of existing freeways to structural limits or limits of right-of-way, and expansion of the arterial network, were also addressed.

MAG Grand Avenue Northwest Study

This study updated the ultimate concept for Grand Avenue between Loops 101 and 303 to be an "enhanced arterial/limited expressway." As such, it will continue to serve both local and regional traffic. Major improvements that were recommended from the study include the widening of Grand Avenue to six lanes, grade separations, and ITS improvements.

RPTA Regional Transit System Study

The RPTA Regional Transit System Study examined local fixed route service, circulators, shuttles, express service, bus rapid transit, and limited, or "skip" stop

service. Also studied were dial-a-ride, rural/urban connections, and vanpool services. The recommendations include expanded fixed route services and significant increases in dial-a-ride and transit services for seniors.

Freeway Bottleneck Study

The purpose of the Freeway Bottleneck Study was to identify and analyze bottlenecks on urban freeways; to evaluate the degree of congestion; and to assess projects to improve identified bottlenecks. Some of the projects involve minimal cost, such as the restriping of lanes. Others are quite expensive and will need further detailed study. Improvements were identified for both the Interstate System and the freeway loops in the region.

MAG/ADOT Value Lane Study

Value Lanes, also known as High Occupancy Toll (HOT) lanes, can best be described as new or existing High Occupancy Vehicle (HOV) lanes that are open to solo drivers for a fee. The purpose of the Value Lane Study was to provide information for use in updating the MAG HOV Plan, and to assess the feasibility of converting HOV lanes over to HOT lanes. The findings indicated that HOT Lanes, or Value Lanes may be feasible. However, obtaining public support for the concept may be somewhat difficult.

Evaluation Methodologies

The methodology for assessing system performance and evaluating scenarios utilized the set of performance measures listed in Chapter Four. The performance measures were used to provide information regarding the advantages and disadvantages of various approaches for meeting future travel demand needs, and to assess the relative strengths and weaknesses of the modeling scenarios. This was done within the overall context of regional transportation goals and objectives. As part of the overall evaluation framework, procedures for the assessment of Title VI and Environmental Justice considerations were also included. The results of this assessment are covered in Chapter Seven.

Scenario Evaluation

The RTP process included the development of transportation system modeling scenarios, which were evaluated by using performance measures. Three scenarios were identified for evaluation. The scenarios were structured in a manner as to reflect consistent levels of future funding and project eligibility. The primary goal of the scenarios was to provide a basis for analyzing the performance of potential plan components, rather than providing a detailed allocation of funding resources.

Scenario Refinement

The overall analysis of the scenarios provided insights into the tradeoffs associated with different transportation investment strategies, and with performance of system components. With the results of the evaluations, a hybrid scenario was defined. This scenario was modeled, evaluated and refined further. Based on this analysis, a final hybrid scenario was developed and evaluated to provide the basis for a plan for adoption.

Phasing and Funding

A final hybrid modeling scenario was established and defined in terms of elements for implementation and phasing, including potential funding mixes. The phasing of these elements considered a range of both quantitative and qualitative factors.

PERFORMANCE ASSESSMENT

The Draft Plan was evaluated using the same set of transportation performance measures that were used to evaluate the alternative modeling scenarios. These performance measures were used to provide information regarding the tradeoffs of applying different solutions to addressing future travel demand.

Values for the transportation performance measures were estimated using the MAG regional transportation demand modeling system.

The MAG model was applied to a base network and to the Draft Plan utilizing population, employment, and land use projections for the planning period. The base network represents a system that does not include any major investments in roadway or transit facilities. A discussion of the results is presented, by transportation goal, in the remainder of this chapter.

Goal 1: System Preservation and Safety

Maintenance

ADOT reports that the average annual cost to maintain urban freeways is $125,000 per centerline mile. This covers items such as sweeping, litter pickup, landscape maintenance, lighting, striping and the freeway management system. The Draft Plan includes funding of $60,000 per mile to cover litter removal and landscaping.

Travel Safety

Safety in the travel environment is a concern of every motorist in terms of preventing property damage and injury. Avoiding traffic incidents is also a major factor in maintaining a smooth flow of traffic on freeways and arterials, as well as ensuring reliable point-to-point travel times in the transportation network.

Vehicular-crash levels in the transportation network depend on a range of factors. One of the most important factors is the mix of travel performed on the various types of highway facilities, such as freeways, arterials, and local streets. Each facility type has a different historical crash rate. Simulations were conducted for the Draft Plan and the amount of travel by highway facility type was estimated, as well as volumes of traffic entering arterial intersections. Using the travel data and the historical accident rates, the total number of crashes per year was estimated. The Draft Plan results in a three percent reduction in crashes from the base network. Based on these estimates, the annual crash rate per 100 million vehicle miles traveled dropped from 4.22 with the base network to 3.93 with the Draft Plan.

Goal 2: Access & Mobility

Time Devoted to Traveling

With the nearly doubling of population and resulting congestion expected during the planning period, time spent traveling per capita on the roadway system will increase by 155 percent, assuming the base network is in place. With the Draft Plan, the person-hours of travel per capita during the PM peak period, while still 80 percent higher than existing conditions, will be 29 percent lower than the base network.

Travel Delays and Congestion

Poor levels of service and congestion in the transportation system result in costly delays and unreliable travel times. These conditions affect the ability of businesses in the region to operate efficiently, and can cost the individual who is traveling precious minutes on the way to work, or in the process of accomplishing personal errands.

The total PM peak period delay (in hours) for the base network is 1,754,851 hours, which is about double the 907,230 hours estimated for the Draft Plan. The Draft Plan thus results in approximately 50 percent less peak period hours of delay than the base network. The largest significance in delay reduction occurs on the freeways and arterials. In terms of delay per lane mile, the Draft Plan has over 50 percent lower levels of delay for the freeways and arterials when compared to the base network (Table 6-1). Delay per lane mile for the High Occupancy Vehicle (HOV)

TABLE 6-1

PM PEAK PERIOD DELAY PER LANE MILE (Expressed in Hours)		
Facility Type	**Base Network**	**Draft Plan**
Freeways	252.3	116.2
Arterials	68.4	29.7
HOV Lanes	240.0	68.2

Source: Maricopa Association of Governments

lanes is 70 percent lower in the Draft Plan than in the base network. The additional freeway mileage and improved transit system provide relief for the arterial system, while both the general-purpose and HOV lane additions to existing freeways provide congestion relief on those facilities.

An evaluation of average speeds on the roadway network indicates results similar to the delay analysis. The Draft Plan has an average weighted freeway speed of 8 miles per hour (mph) greater than the speed for the base network, 22 mph vs. 14 mph, and an average weighted arterial speed of 4 mph greater than the base network, 16 mph vs. 12 mph. The largest increase in the average weighted speed for the Draft Plan, 14 mph over the base network, occurred on the HOV lanes, 28 mph vs. 14 mph.

Looking at congestion in terms of level of service, the total number of lane miles of freeways at Level of Service (LOS) F in the PM peak period is greater in the Draft Plan than in the base network, 1,229 lane miles vs. 998 lane miles. However, because of the increase in lane miles of freeways, the ratio of lane miles at level of service F divided by the total number of lane miles is 10 percent less than in the base network, 58 percent vs. 48 percent. This is because the Draft Plan provides significantly more freeway improvements than the base network. Figures 6-2 and 6-3 provide another perspective on level of service. These figures depict the hours of level of service E and F on freeways for the base network and the Draft Plan, respectively. As may be observed, the hours of level of service E and F decrease on a number of freeway segments in the Draft Plan.

On arterial streets, when compared to the base network, the portion of intersections operating at level of service F or worse is 50 percent less in the Draft Plan, with 17 percent vs. 34 percent in the base. Figures 6-4 and 6-5 also show how intersection level of service improves. These figures indicate the hours of LOS E and F during the per peak period. The extent of intersections with greater than one hour of E and F decreases significantly.

Goal 3: Sustaining The Environment

Transit Mobility

The availability of modal options for travel in the region is a major concern to many sectors of the population. This includes a variety of transit dependent groups, as well as individuals who want to take advantage of the lower cost of commuting by transit. In addition, transit service options make a greater variety of land use concepts available for development in the region. Expansion of the bus and rail networks beyond what is included in the base network increases the number of jobs within one-quarter mile of transit service by roughly 22 percent, and the number of households within one-quarter of a mile of transit by 18 percent. Transit ridership

is 36 percent higher in the Draft Plan, compared to the base network. This also represents a 103 percent increase over current (Year 2000) transit ridership levels. Of the ridership in the Draft Plan, 75 percent is on local bus service, and 24 percent is on express bus/BRT/LRT.

Amount of Travel Performed

The amount of travel performed in the region is significant as a reflection of energy and other resources consumed. It also potentially reflects the level of impacts travel may be having on neighborhoods and the environment. Total daily travel is estimated at 184.8 million vehicle-miles for the base network and 192.3 million vehicle-miles (about four percent higher) for the Draft Plan.

The existing per capita vehicle-miles of travel of 30.2 miles per person is expected to increase to 32.8 miles per person with the Draft Plan. The 2025 base network results in 31.5 miles per person of travel. However, the small increase in per capita vehicle miles of travel between the base and Draft Plan is more than offset by the capacity improvements made to the system by the Draft Plan.

Air Quality

The Draft Plan will undergo an in-depth air quality conformity analysis to ensure that it supports the air quality implementation plan for the region.

Goal 4: Accountability and Planning

This goal was not quantitatively evaluated. However, it was an important consideration in the project phasing, which is presented later in this report.

Performance Evaluation Conclusions

The highlights of the performance of the Draft Plan compared to the base network and the general conclusions of the evaluation are provided below:

- The $15.8 billion in regional funds that would be invested in multi-modal transportation improvements, as specified in the Draft Plan, would reduce regional PM peak period delay to half of what it would be without the investment (1,754,851 hours compared to 907,230 hours).

- On a per capita basis, PM peak period delay would result in a decrease of 49 percent from the base network.

- On arterial streets, when compared to the base network, the portion of intersections operating at level-of-service “F,” is 50 percent less in the Draft Plan (17 percent vs. 34 percent)

- The Draft Plan has a balanced combination of freeway, major arterial, and transit improvements that results in 29 percent lower peak-period hours of travel per capita.

- The Draft Plan has 4 percent higher VMT per capita. Total travel is estimated at 184.8 vehicle-miles for the base network and 192.3 vehicle-miles for the Draft Plan. However, even with higher travel levels in the Draft Plan, the annual crash rate per 100 million vehicle miles traveled dropped from 4.22 in the base network to 3.93, due to more travel on safer facilities, such as freeways.

- New freeways in the Draft Plan provide congestion relief and link future growth areas to the regional transportation network. The Draft Plan has 57 percent higher average PM peak period freeway speed (22 mph vs. 14 mph).

- Congested lane miles of freeways (level-of-service “E” or worse), as a percentage of the total, improves from 58 percent in the base network to 48 percent in the Draft Plan.

- In the Draft Plan, total transit boardings increase by 36 percent.
- With the expanded transit network coverage provided in the Draft Plan, there are 22 percent more jobs within a quarter mile of transit, compared to the base network.

Regional Transportation Plan

Fig. 6-2

Draft

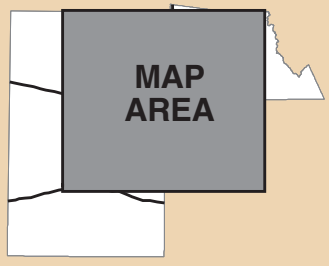
REGIONAL TRANSPORTATION PLAN

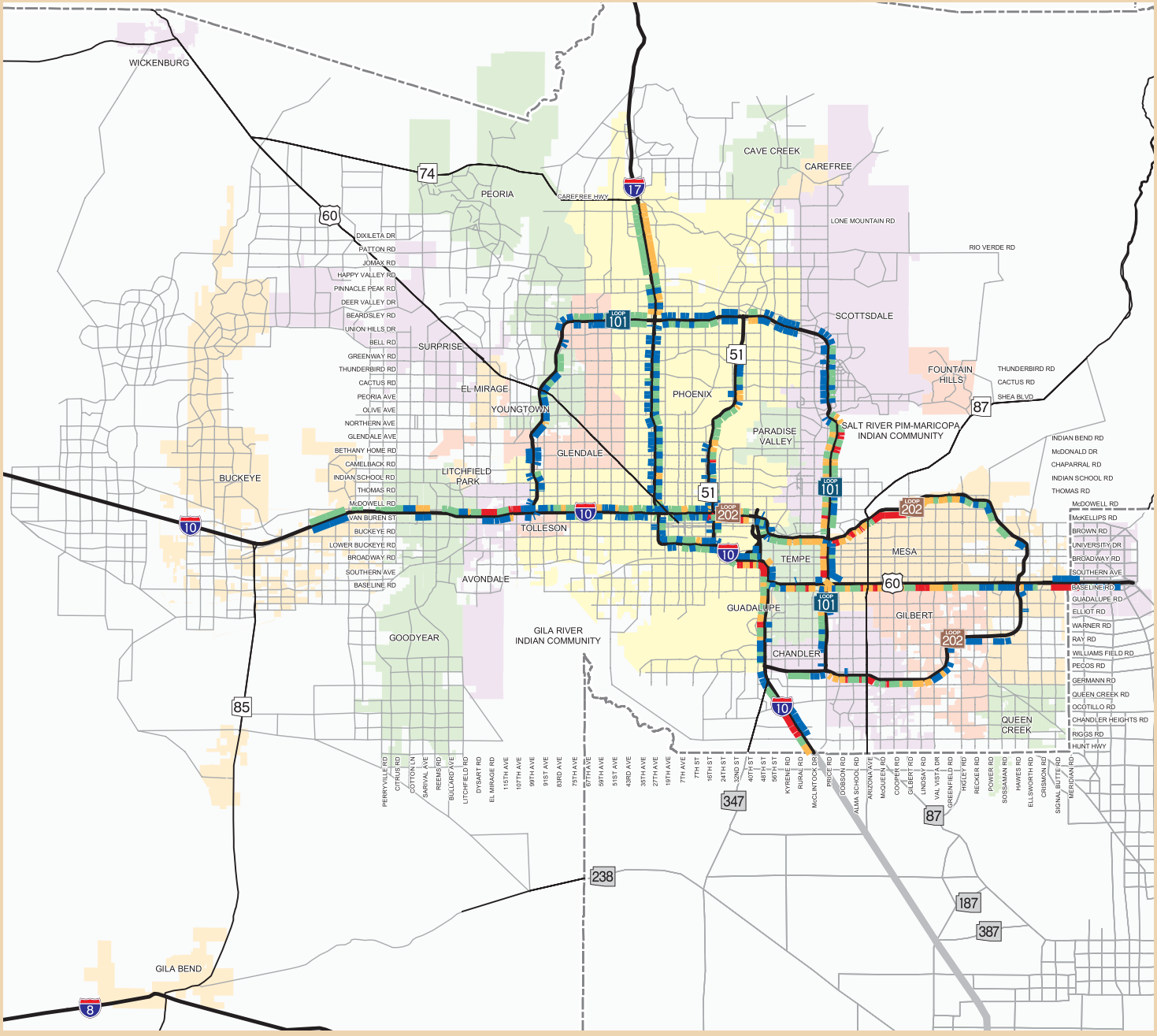
MARICOPA ASSOCIATION of GOVERNMENTS

Future Base Network PM Peak Hours of Level of Service E & F

- Less than 1
- 1 to 2
- 2 to 3
- Greater than 3
- County Boundary
- Freeways
- Highways
- Other Roads

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transportation Study jointly sponsored by MAG, CAAG, and ADOT.





While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

G:\Dev\projects\RTP\06-2_fwybasePM_LOS.mxd

Regional Transportation Plan

Fig. 6-3

Draft

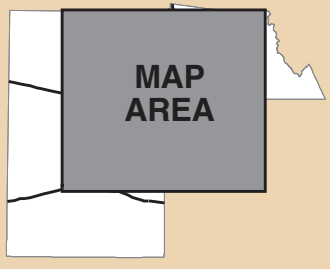
REGIONAL TRANSPORTATION PLAN

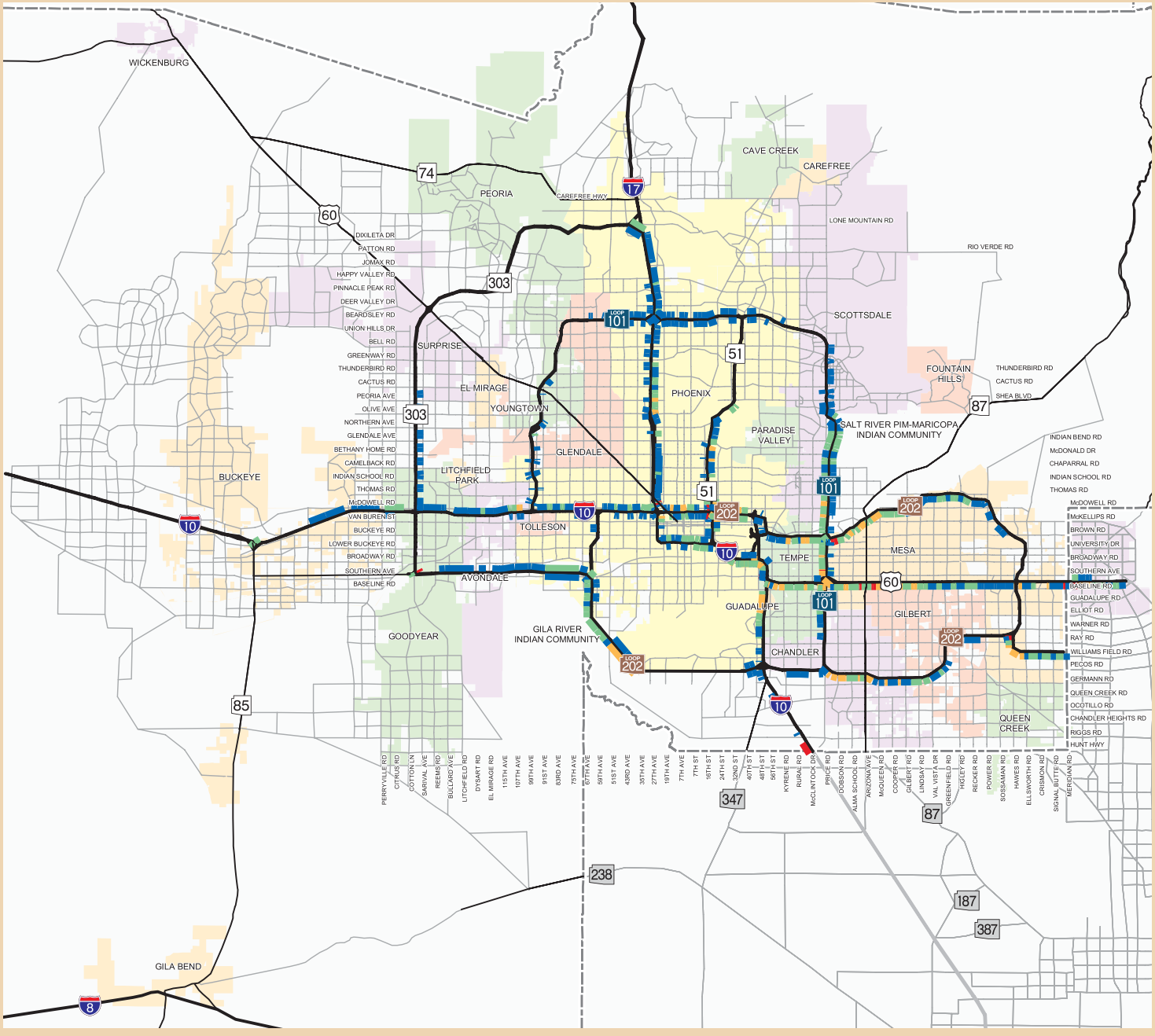
MARICOPA ASSOCIATION of GOVERNMENTS

Future RTP Freeway PM Peak Hours of Level of Service E & F

- Less than 1
- 1 to 2
- 2 to 3
- Greater than 3
- County Boundary
- Freeways
- Highways
- Other Roads

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transportation Study jointly sponsored by MAG, CAAG, and ADOT.





While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

G:\Dev\projects\RTP\06-3_rtp_fwy_PMLOS.mxd

Regional Transportation Plan

Fig. 6-4

Draft

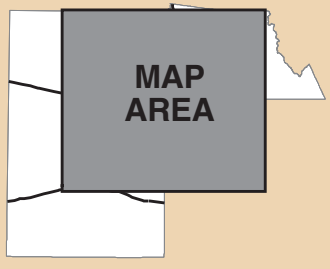
REGIONAL TRANSPORTATION PLAN

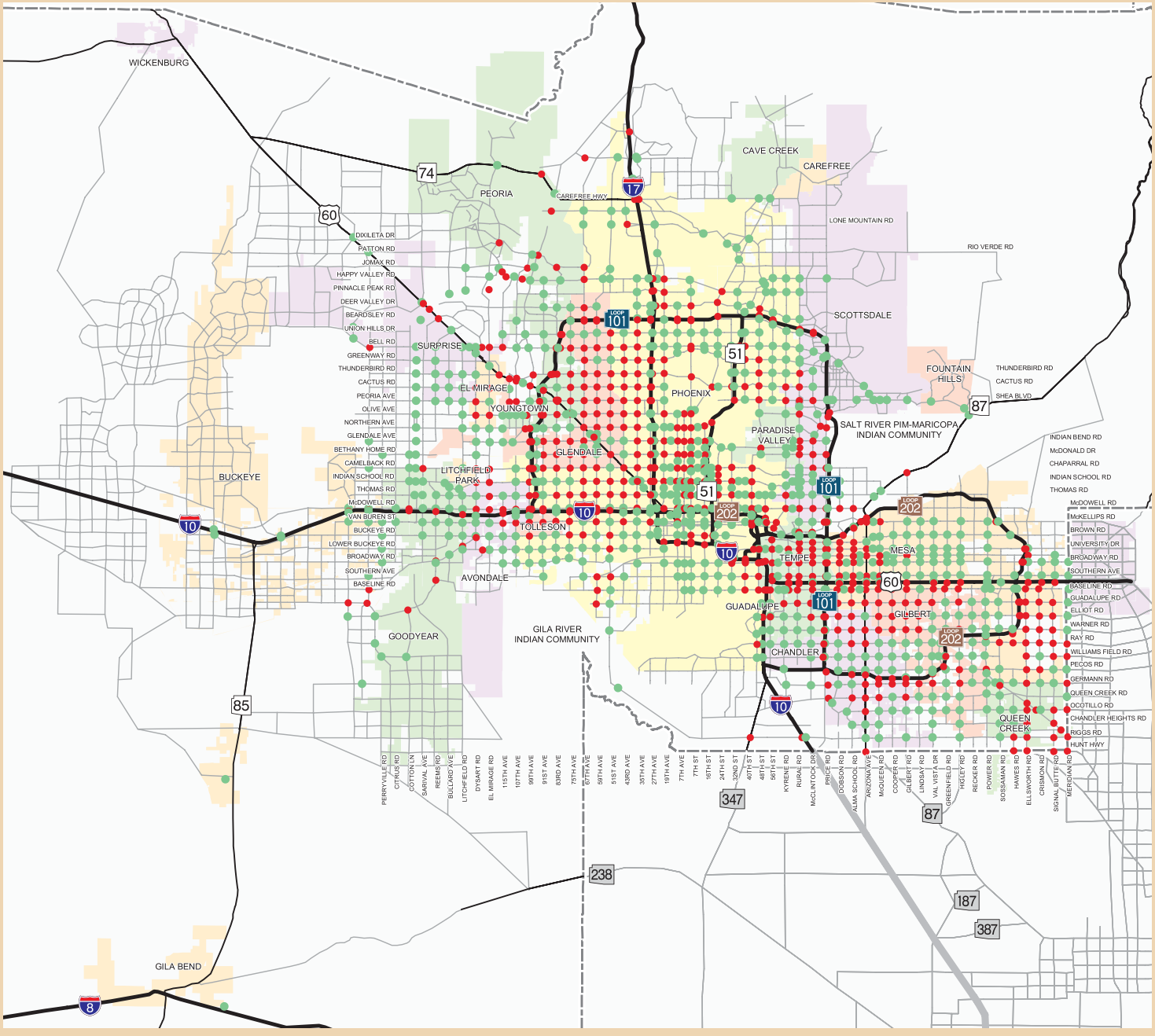
MARICOPA ASSOCIATION of GOVERNMENTS

Future Base Network PM Peak Hours of Level of Service E & F

- Less than 1
- Greater than 1
- County Boundary
- Freeways
- Highways
- Other Roads

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transportation Study jointly sponsored by MAG, CAAG, and ADOT.





While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Miles 0 5 10

N

G:\Dev\projects\RTP\06-4_intersection_basePMLOS.mxd

Regional Transportation Plan

Fig. 6-5

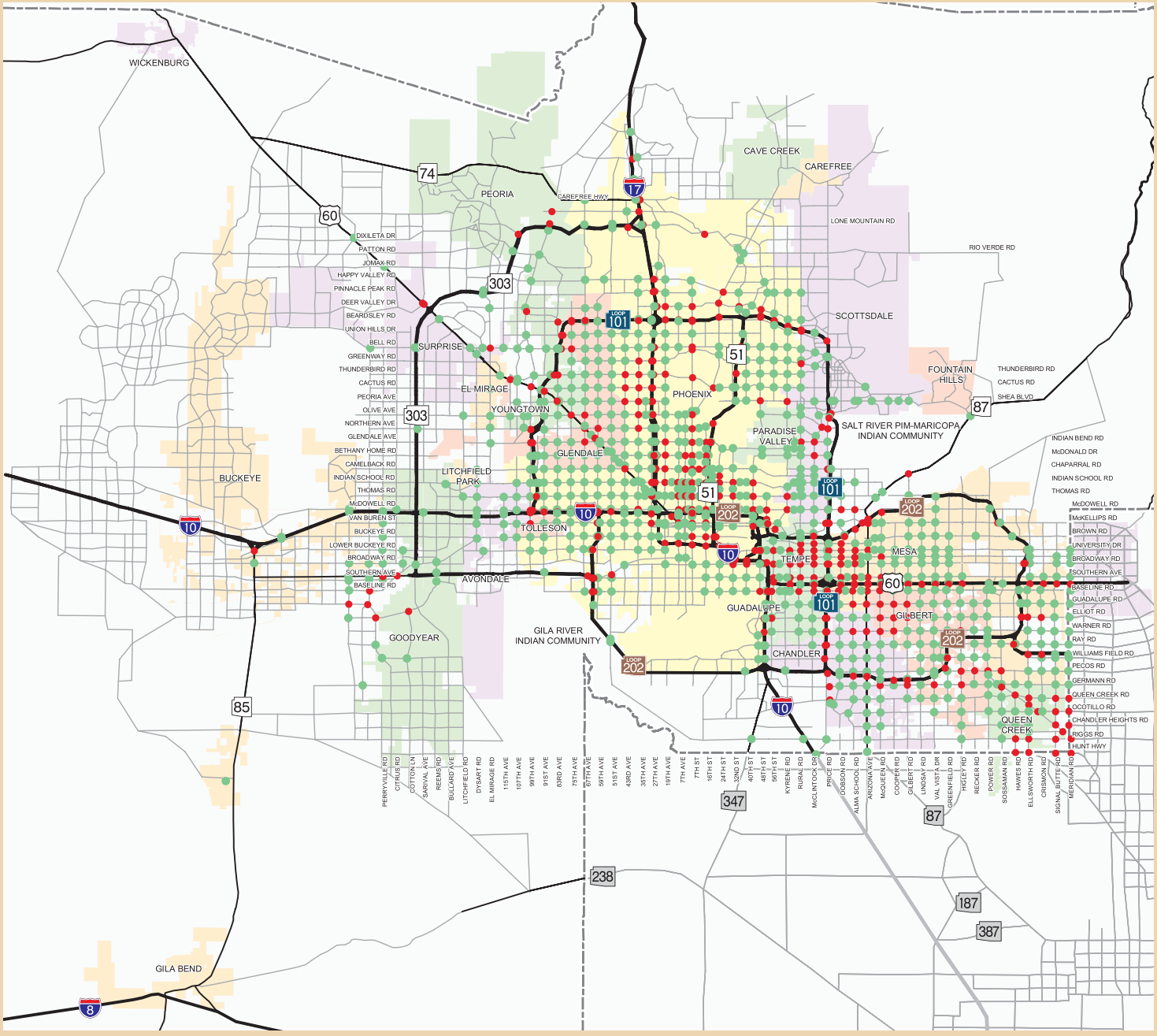
Draft

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

Future RTP Intersection PM Peak Hours of Level of Service E & F

- Less than 1
- Greater than 1
- County Boundary
- Freeways
- Highways
- Other Roads

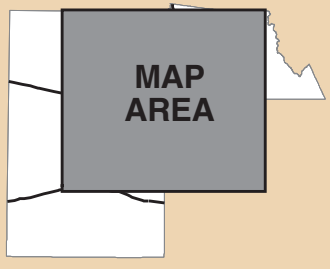


While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transportation Study jointly sponsored by MAG, CAAG, and ADOT.



G:\Dev\projects\RTP\06-5_rtp_inters_PMLOS.mxd

CHAPTER SEVEN

TITLE VI AND ENVIRONMENTAL JUSTICE

INTRODUCTION

The intent of environmental justice (EJ) is to ensure that communities of concern, defined as minority populations, low income populations, aged populations, mobility disabled populations, and female head of household populations, are included in the transportation planning process, and to ensure that they may benefit equally from the transportation system without shouldering a disproportionate share of its burdens. Environmental justice is a planning consideration based on Title VI of the 1964 Civil Rights Act, and Executive Order 12898 of 1994, entitled *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*.

As the designated Metropolitan Planning Organization (MPO) for regional transportation planning in Maricopa County, it is MAG's intent to recognize the significance of transportation in the quality of life of all residents of the metropolitan area. Also, as a recipient of federal funding, MAG is responsible for enforcing pertinent environmental justice policies and regulations. Therefore MAG has prepared this environmental justice analysis of the Regional Transportation Plan (RTP).

Title VI of the 1964 Civil Rights Act and related statutes require that individuals not be excluded from participating in, denied the benefit of, or subject to discrimination under any program or activity receiving federal funding on the basis of race, color, national origin, age, sex, or disability. Executive Order 12898 further directs that federal programs, policies and activities not have a disproportionately high and adverse human health and environmental effect on low-income populations.

Five communities are included in the Title VI/EJ Analysis. Table 7-1 lists these five communities and the proportion of the county population represented by each one. To identify the specific areas within the county, census tracts with concentrations of each community greater than the county average are listed.

TABLE 7-1

COMMUNITIES OF CONCERN FOR MARICOPA COUNTY

Population			Census Tracts			
Category		**Percent**	**Number of Tracts ≥ County Average**	**% Tracts**	**Affected Population**	**% of Targeted Population Captured in Tracts**
Maricopa County	3,072,149	100.0%	663	100%	--	--
Minority	1,037,619	33.8%	238	36%	699,429	69.6%
Age 60+	466,269	15.2%	197	30%	280,901	60.2%
Poverty	355,668	11.6%	234	35%	255,373	71.8%
Mobility	368,306	12.0%	296	45%	235,200	63.9%
Female Hhld	71,467	9.3%	322	49%	51,639	72.3%

Source: U.S. Census Bureau - 2000

Environmental justice principles that relate to the development of the RTP include:

- Ensuring the full and fair participation by all potentially affected communities in the transportation decision-making process, including those of low-income or minority populations.

- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by low income and minority populations.

- Avoid, minimize or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.

PUBLIC INVOLVEMENT PROCESS FOR TITLE VI/EJ COMMUNITIES

MAG's Public Involvement Process was adopted in 1994, and enhanced in 1998 with greater input from Title VI and Environmental Justice communities.

MAG's adopted policy for public involvement identifies opportunities for public input early on in the process, during the planning process, and prior to final hearings. The process provides complete information on transportation plans, timely public notice, full public access to key decisions, and opportunities for early and continuing involvement in the process for all segments of the region's population, including Title VI and environmental justice communities (MAG, 2001).

MAG addresses underserved populations in a number of ways. Whether it is through the Title VI Community Outreach Program, GIS mapping, the Human Services Division of MAG, or through programs administered by the Regional Public Transportation Authority (RPTA) using MAG funds, the needs of the underserved are considered. MAG's Community Outreach Program uses recognized individuals within target communities to solicit input and to act as a liaison between MAG and the target community.

Since the start of 2003, numerous public outreach activities have been conducted as part of the MAG RTP outreach efforts. These included staffed information booths, public workshops and meetings, attendance at events, presentations, and open houses. The outreach activities have been targeted to both specific minority groups and the general public as a whole. Chapter Two includes a summary of the public involvement.

During these public outreach activities, public comments on transportation issues were solicited from participants. Feedback provided at these meetings and events was considered by the TPC in the development of the Final Draft Stage of the RTP. Comments received during the Final Draft Stage, along with staff responses to comments, are included in the RTP Input Opportunity Report.

MAG's outreach to minority populations also involves the Spanish translation of RTP materials and documents. The Transportation Policy Committee's document entitled "*Our Transportation Future*," which details the process for the development of the RTP, has been translated in its entirety. Numerous additional materials have been translated including the "*Tell Us What You Think*" survey, designed to gather input on transportation funding and what can be done to improve transportation in the region.

Through RPTA's Complementary Paratransit Plan, the needs of the elderly and people with disabilities are served. In addition, a MAG committee reviews and prioritizes applications for federal assistance under the Elderly Persons with Disabilities Transportation Fund, which provides capital investments to programs serving the elderly and people with disabilities. MAG transportation plans and programs are also submitted to the Human Services Coordinating Committee for review. Additionally, MAG provides multi-modal transportation information for review and

comment through the Human Services planning process.

REGIONAL TRANSPORTATION PLAN IMPROVEMENTS

There are three major components to the Regional Transportation Plan: freeways/highways, transit (including bus and light rail), and arterial streets. The technical evaluation for the development of the RTP included the analysis of three transportation-modeling scenarios, each placing an emphasis on different components of the transportation system. The modeling scenarios were evaluated based on a set of performance measures; each of which was linked to a specific RTP goal or objective. Based on the results of this performance analysis, plus input from the public, the Regional Transportation Plan was developed.

The RTP identifies funding for $15.8 billion dollars of regional transportation improvements during the planning period.

Regional funding is allocated as follows:

- Freeways - 57.2%. Freeway funding includes new freeway construction, adding general purpose and High Occupancy Vehicle (HOV) lanes to existing freeways, constructing HOV connection ramps at system traffic interchanges, new traffic interchanges on the existing freeway system, and widening and preserving right-of-way on two existing highways.

- Transit - 31.7%. Transit funding includes capital and operations for the regional bus system and capital funding of light rail transit.

- Arterial streets - 9.3%. Arterial street funding includes new arterial street construction, widening of existing arterials, and intersection improvements.

The remaining 1.8 percent is identified for continued funding of ongoing programs, planning studies for new freeway corridors, light rail transit corridors, and commuter rail, and bicycle/pedestrian facilities.

Each of the three major components of the RTP (Freeways/Highways, transit and arterial roads) were analyzed separately in this environmental justice analysis to assess the distribution of benefits of projects included within the RTP. Regional funding of the arterial street system is about nine percent of the Plan, and represents approximately 10 percent of the region's arterial street funding. Analysis of the distribution of the arterial streets projects is included here to provide a consistent treatment of each of the major components of the Plan. The entire arterial system provides broad coverage throughout the region and is generally developed in consistence with growth patterns.

ENVIRONMENTAL JUSTICE ANALYSIS

The 2000 U.S. Census is the source of data used for determining the environmental justice communities of concern. The unit of analysis is the census tract. Census tracts are intended to remain relatively stable, and when they do change, the exact nature of the changes is published. Census tracts are drawn up by local committees, and accordingly are more likely to reflect the community's view of where one neighborhood ends and another begins. Tracts also are comparable in population size.

Communities of concern are identified as those tracts where the identified group represents a percentage of the population equal to or greater than that of the County mean. Federal guidelines state that minority populations should be identified where either (a) the minority population of the affected area exceeds 50 percent, or (b) the minority population percentage of the affected area is measurably greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (CEQ, 1997).

The populations identified as communities of concern included the specific groups called out by the Federal Highway Administration's "Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" memorandum dated December 2, 1998, and by Presidential Executive Order 12898. Each of these populations is addressed below.

Minority Populations

The Federal Highway Administration defines minority populations as American Indian or Alaskan Native; Asian or Pacific Islander; Black; not of Hispanic Origin; or Hispanic (FHWA, 1998). For the MAG RTP study this definition was expanded to include the following ethnic groups, as defined in the U.S. Census (2000): Black or African American alone - not Hispanic or Latino; American Indian and Alaska Native alone - not Hispanic or Latino; Asian alone - not Hispanic or Latino; Native Hawaiian and Other Pacific Islander alone - not Hispanic or Latino; some other race alone - not Hispanic or Latino; persons of two or more races - not Hispanic or Latino; and Hispanic or Latino (2000 U.S. Census SF4).

Minorities represent 33.8 percent of the population in Maricopa County. Census tracts equal to or greater than this percent number 238, or 36 percent of the 663 tracts in the County. Within these 238 tracts, 70 percent of the minority population in the County is found. Figure 7-1 shows the percentage of minority population in census tracts for Maricopa County. The areas with a higher concentration of minorities (i.e. greater than one standard deviation above the mean) are the central and southwestern areas of Maricopa County, and the sovereign nations of the Gila River Indian Community (GRIC), the Salt River Pima-Maricopa Indian Community (SRPMIC), the Gila Bend Reservation of the Tohono O'Odham, and the Fort McDowell Mohave-Apache Reservation Indian Community. The tracts with the highest concentration of minorities (i.e. greater than two standard deviations above the mean) are primarily located within the central Phoenix area, south of Thomas Avenue.

The transportation needs of minority populations are the same as society as a whole (ignoring economic status that is considered in the next section). Thus, transportation facilities in minority communities should be the same as those in non-minority communities. Figure 7-2 presents a comparison, using census tracts as the measure, of the number of tracts served by freeway/highway, transit and arterial projects in the RTP in both minority and non-minority communities.

The percent of minority (40.3 percent) and non-minority (41.2 percent) communities that are served by new freeways or widening of existing freeways and highways is nearly identical. Planned transit improvements serve 96.6 percent of minority communities and 87.8 percent of non-minority communities. Arterial streets projects addressed by regional funding serve 16 percent of the minority communities; and are primarily located in areas outside of the core metropolitan area where the majority of tracts with above average concentrations of the communities of concern exist. Because of the mature character of these core areas, transit improvements often represent the most advantageous approach to improving mobility.

Based on the review of freeway/highway, transit and arterial improvements, it is concluded that the RTP provides equal or better benefits to minority communities without causing disproportionately high adverse impacts.

Low-Income Populations

Low-income populations are those whose median household income is at or below the Department of Health and Human Services poverty guidelines (2000 U.S. Census SF3). Poverty is based on the poverty thresholds developed and utilized by the U.S. Census,

Regional Transportation Plan

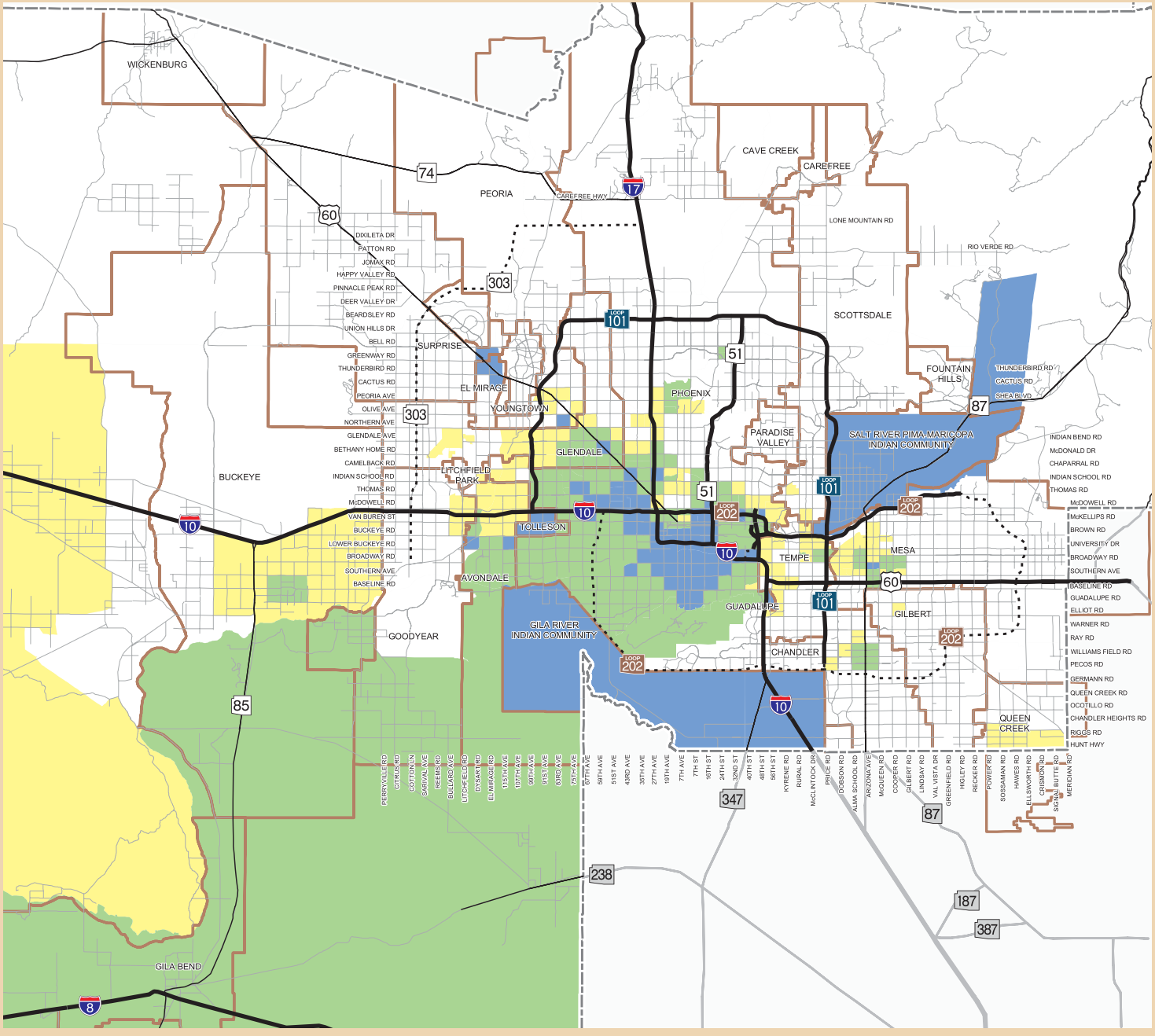
Fig. 7–1

Draft

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

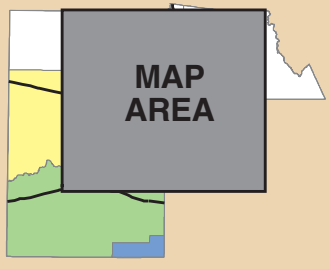
Environmental Justice: Minority Populations in Maricopa County (2000 Census)



Percent Minority Population

(County Average = 33.78%)

- 0% to 33%
- 33% to 50%
- 50% to 75%
- 75% to 100%
- Municipal Planning Area
- County Boundary
- Existing Freeway
- Planned Freeway
- Highways
- Other Roads



Source: 2000 Census, Tract level data

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

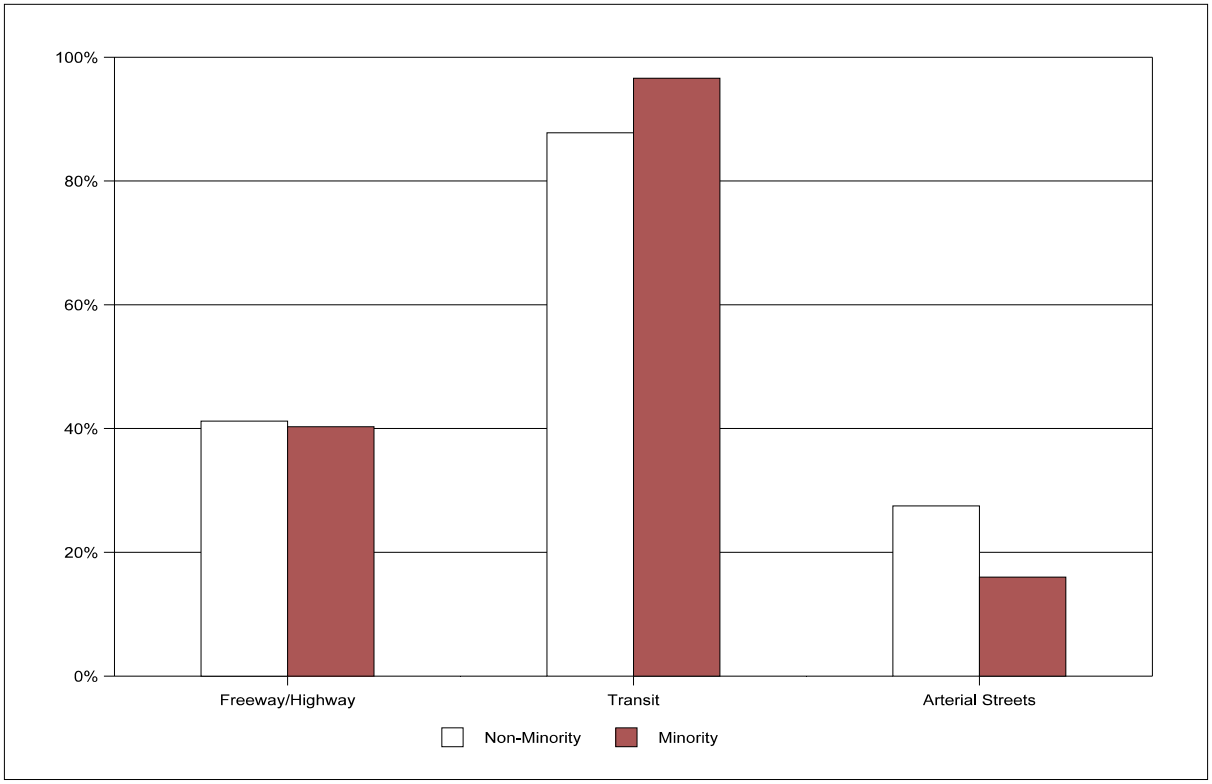
0 5 10 Miles

N

G:\Dev\projects\RTP\07-1_minority.mxd

Figure 7-2

MINORITY COMMUNITIES AFFECTED BY THE REGIONAL TRANSPORTATION PLAN



and are based on the size of family and number of related children less than 18 years of age. The poverty thresholds are revised annually to allow for changes in the cost of living. It is important to note that the poverty thresholds are the same for all parts of the country - they are not adjusted for regional, state or local variations in the cost of living.

To a great extent, the census tracts of higher than average minority populations are coincident with the tracts that contain a higher than average percentage of people living in poverty. Areas where poverty is above the County average, but minority populations are not, include the northwestern portion of the County and areas of Mesa, Buckeye and North Phoenix. The tracts with the highest concentrations of persons living in poverty include Central Phoenix south of McDowell Road, the Gila River Indian Community, and the Tohono O'Odham Indian Community. Figure 7-3 shows the percentage of people in poverty in Maricopa County.

The transportation needs of low-income communities would be met by more transit service than what would be important to the general population. Figure 7-4 presents a comparison of the number of census tracts served by the RTP in both low-income and non low-income communities.

Regional Transportation Plan

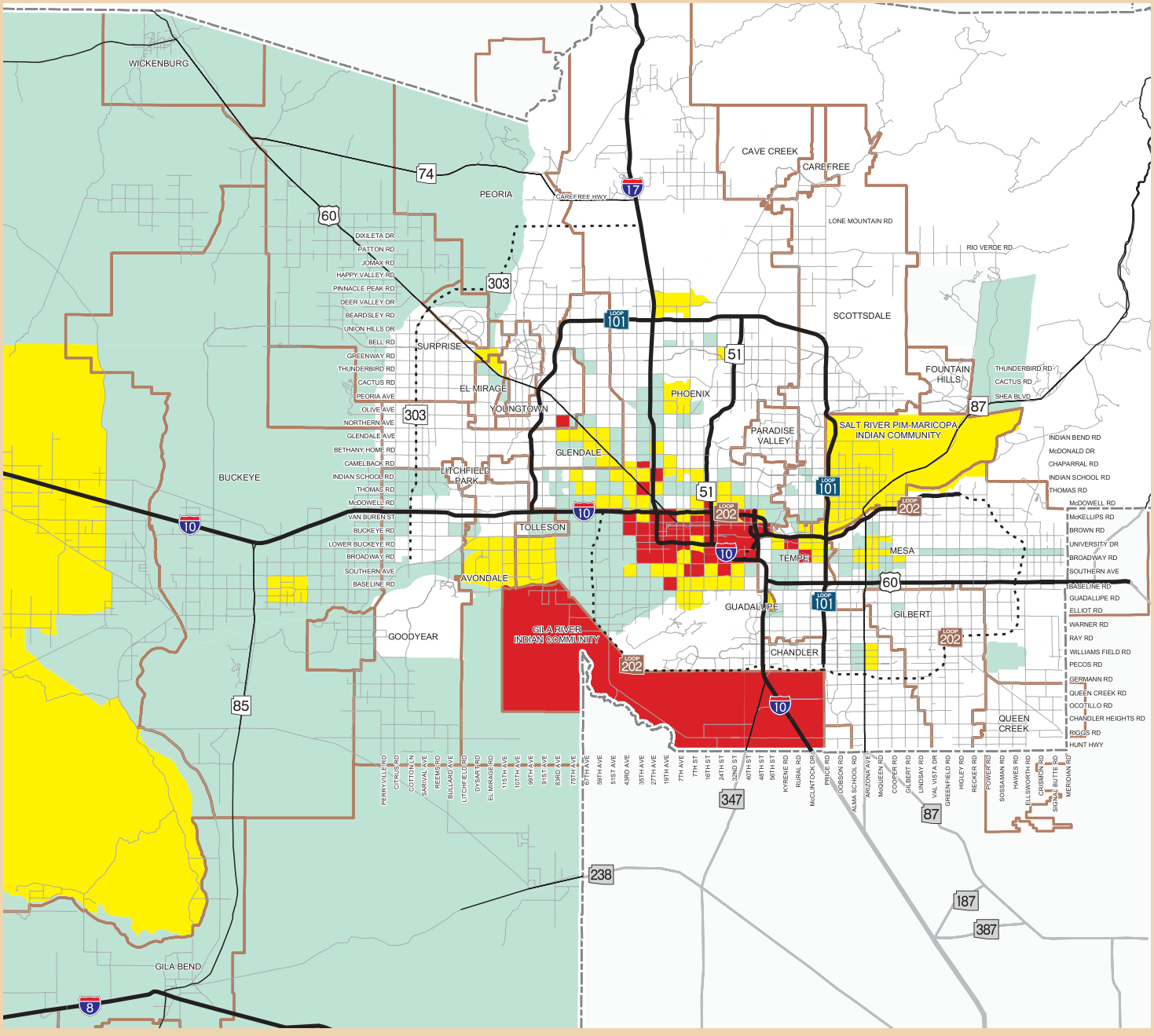
Fig. 7-3

Draft

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

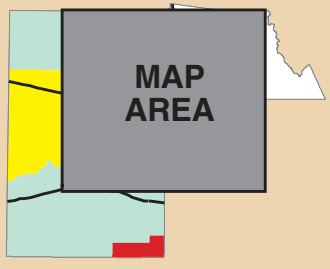
Environmental Justice: Low Income Population in Maricopa County (2000 Census)



Percent Population in Poverty

(Maricopa County Average = 11.75%)

- Less than 11.75%
- 11.75% to 20.00%
- 20.00% to 35.00%
- More than 35.00%
- Municipal Planning Area
- County Boundary
- Existing Freeway
- Planned Freeway
- Highways
- Other Roads



Source: 2000 Census, Tract level data

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

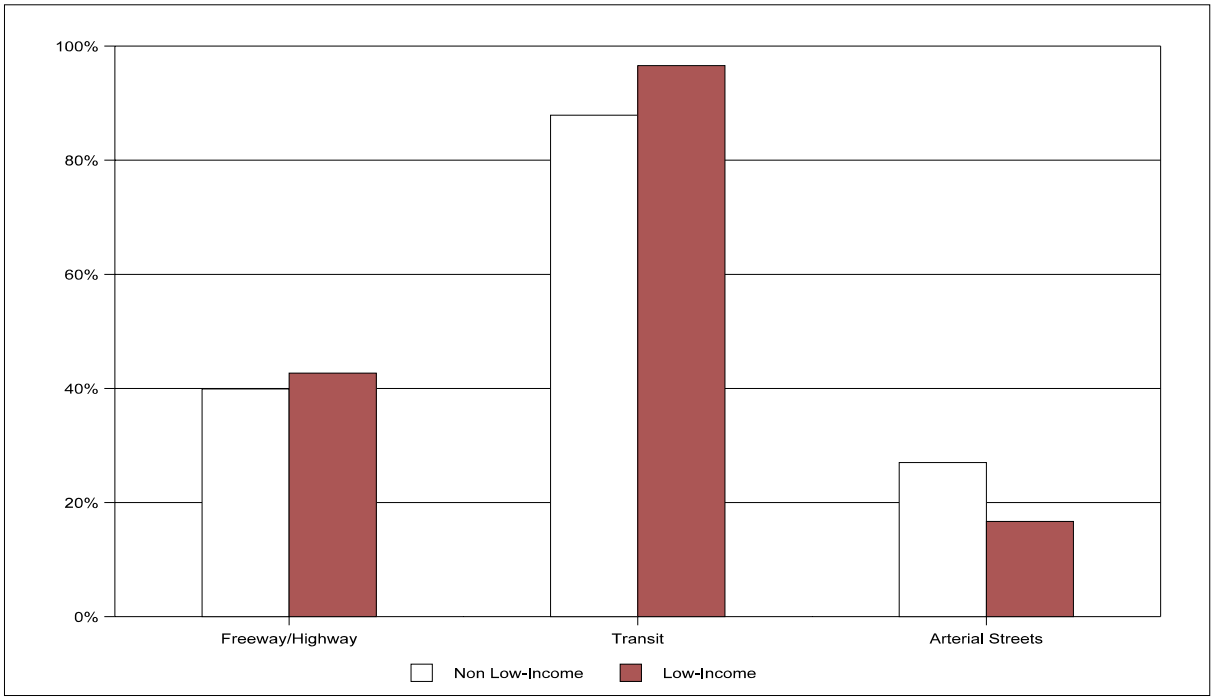
0 5 10 Miles

N

G:\Dev\projects\RTP\07-3_low_income.mxd

Figure 7-4

LOW INCOME COMMUNITIES AFFECTED BY THE REGIONAL TRANSPORTATION PLAN



Low-income communities that are served by the new freeways and widening of existing freeways and highways (42.7 percent) is slightly higher than communities identified as non low-income (39.9 percent).

Transit improvements serve nearly all of the census tracts identified as low income (96.6 percent) and 87.9 percent of the non low-income tracts. Arterial street projects included in the RTP funding serve approximately 17 percent of the low-income communities; which are largely coincident with the minority tracts discussed in the previous section.

The analysis of the Plan improvements demonstrates that low-income populations benefit from the Plan at about the same level, or in the case of transit considerably higher, than the census tracts not identified as low-income.

Aged Populations

Aged populations are defined as people 60 years of age and older (2000 U.S. Census SF1).

Areas with above average populations of age 60-plus persons are primarily located in the northern part of the County, with concentrations overlapping the concentrations of mobility-disadvantaged peoples as identified in the following section.

Figure 7-5 shows the concentration of the population age 60 and over for Maricopa County.

Regional Transportation Plan

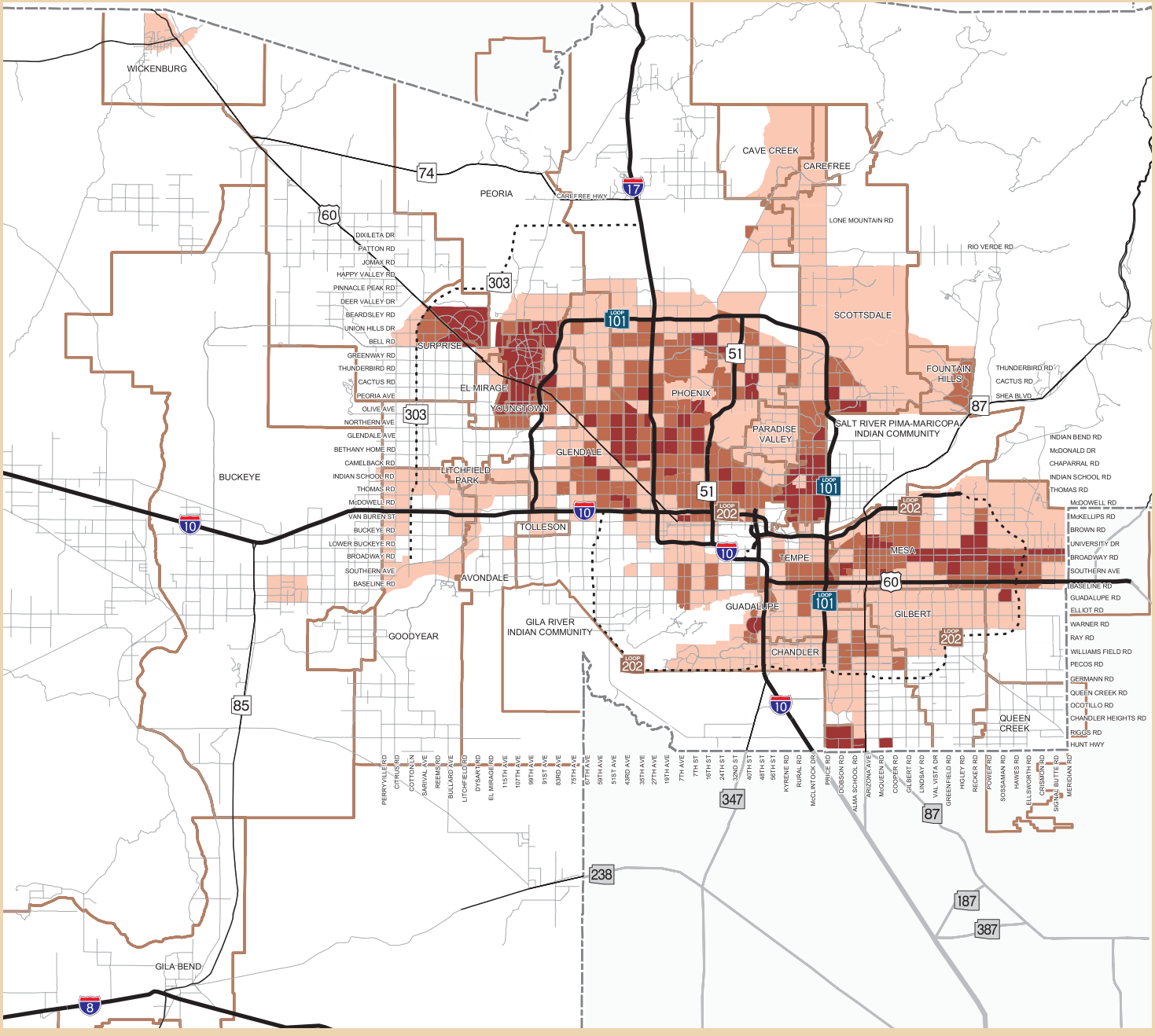
Fig. 7-5

Draft

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

Environmental Justice: Population Age 60 and Over in Maricopa County (2000 Census)



Source: 2000 Census, Tract level data

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

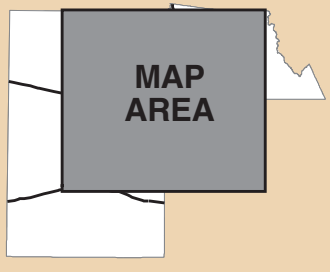
0 5 10 Miles

N

Persons per Square Mile

(Maricopa County Average = 50.61)

- Less than 50
- 50 to 500
- 500 to 1,000
- More than 1,000
- Municipal Planning Area
- County Boundary
- Existing Freeway
- Planned Freeway
- Highways
- Other Roads



G:\Dev\projects\RTP\07-5_60_plus.mxd

The transportation needs of aged populations are similar to those of the general population, with the need for transit increasing with age. Figure 7-6 presents a comparison of the number of census tracts served by the RTP in age 60 plus communities and under age 60 communities. The age 60-plus communities are served about the same as the other age groups in both freeway (around 40 percent) and transit (around 90 percent) funding. Arterial streets projects included in the RTP funding serve approximately 33 percent of the age 60-plus communities; higher than the number of below-60 tracts served (19.5%). This is indicative of the fact that many of the tracts containing higher than average age 60-plus communities are located outside of the metropolitan area core.

Mobility Disability Populations

Mobility Disability as defined in 42 U.S.C. § 12102, is a disability that necessitates the use of a wheelchair or scooter for mobility. For this study, mobility limitations are derived from the "physical" and "going-outside-of-home" categories for individuals that are age five and over (2000 U.S. Census SF3).

Census tracts with an above average percentage of mobility-disadvantaged people are widely scattered throughout the County, with notable concentrations in the unincorporated Sun City and Sun Lakes areas of Maricopa County, Youngtown, and south of East University Drive in Mesa. Figure 7-7 shows the percentage of the population in census tracts of the going-outside-of-home disability.

Transportation needs of residents with mobility disabilities are not the same as those of the general population. People with mobility disabilities may require special apparatus for vehicular transportation. For this and other reasons, people with mobility disabilities may be more reliant on the transit options to meet their transportation needs. Figure 7-8 presents a comparison of the number of census tracts served by the RTP in both mobility disability and non-mobility disability communities.

The number of Mobility Disability communities that are served by the new freeways and widening of existing freeways and highways (39.5 percent) is slightly lower than those not identified as mobility disability communities (41.8 percent). Transit improvements serve nearly all of the census tracts identified as mobility disability (96.3 percent). In addition to the transit coverage, the plan would regionally fund ADA complimentary paratransit service. Arterial street projects included in the RTP funding serve approximately 20 percent of the mobility disability communities higher than the number of tracts identified as non-mobility disability.

Female Head of Household Populations

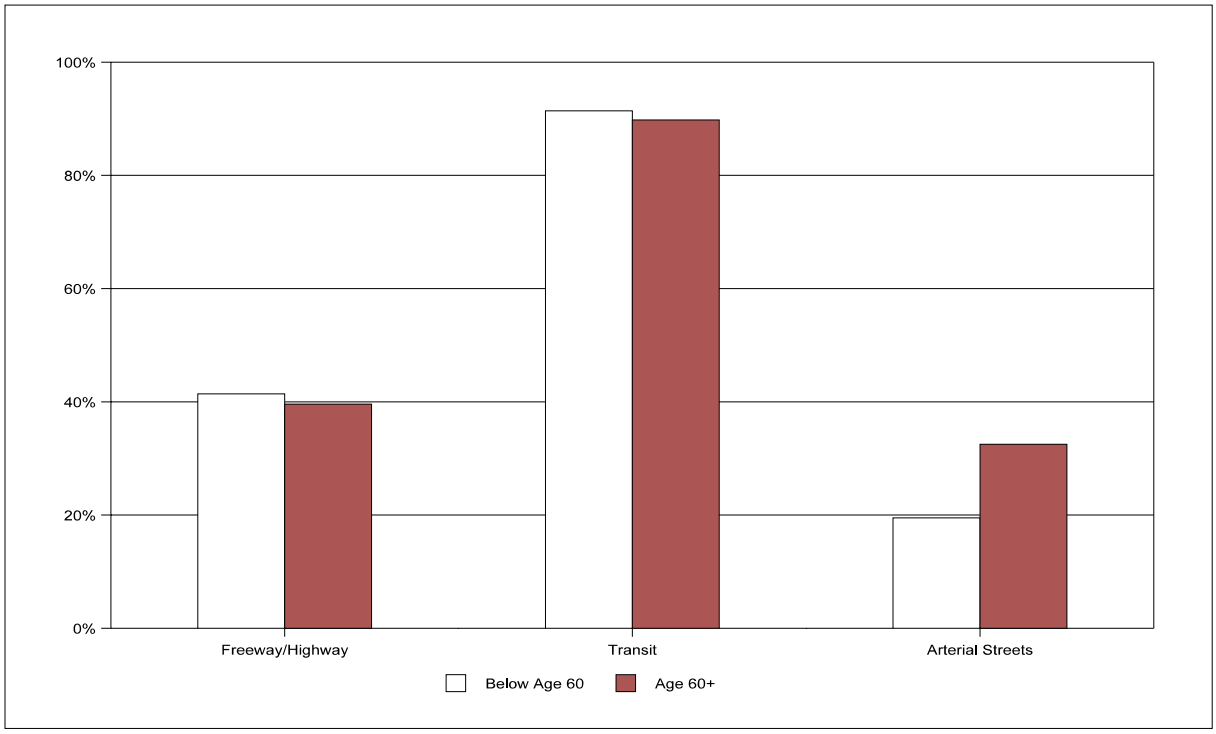
The female head of household category represents those households with a female householder, with no husband present, and with their own children under 18 years of age.

Areas of "female head of household with children" greater than the county average are widely dispersed through the central Phoenix metropolitan area. Outside of the urban core the areas above the county average are largely limited to the Indian communities. While census tracts above the county's average for female head of households with children are largely coincident with poverty, they are more widely dispersed across the county than both low income and minority tracts. The concentration of female head of household families with children less than 18 years of age (in census tracts for Maricopa County) is shown in Figure 7-9.

The transportation needs of the female head of household populations are no different than that of the general population. Figure 7-10 presents a comparison of the number of census tracts served by the RTP in both female head of household and non- female head of household communities.

Figure 7-6

AGE 60+ COMMUNITIES AFFECTED BY THE REGIONAL TRANSPORTATION PLAN



The percent of female head of household (39.1 percent) and non-female head of household (42.7 percent) communities that are served by new freeways or widening of existing freeways and highways is nearly identical. Planned transit improvements serve 95.7 percent of female head of household communities and 90.7 percent of non-female head of household communities. Arterial streets projects included in the RTP funding serve approximately 16 percent of the female head of household census tracts. The RTP provides equal or better benefits to female head of household communities without causing disproportionately high adverse impacts.

CONCLUSION

The Maricopa Association of Governments endeavors to incorporate environmental justice into regional transportation planning is an ongoing effort. Reaching out to disadvantaged communities and assessing their needs and interests is paramount to ensuring the continued quality of life of all residents in the Metropolitan Area.

MAG has demonstrated a commitment to listening to residents through continuous outreach efforts, and numerous events and activities have been held. To be effective, these efforts must be sustained, and the updating and expansion of contacts ongoing. Through the continued expression of this outreach effort, transportation planning for the

Regional Transportation Plan

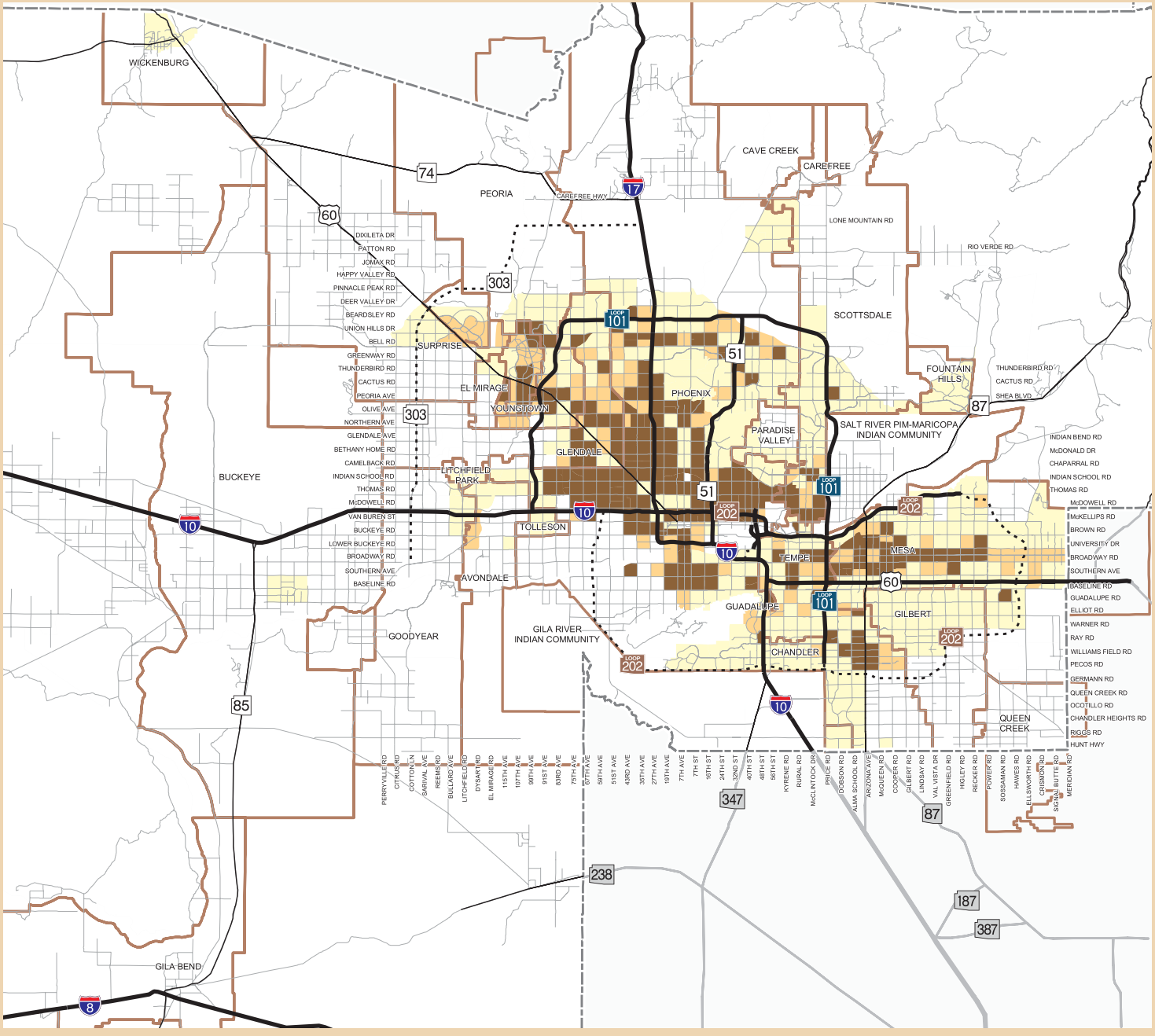
Fig. 7-7

Draft

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

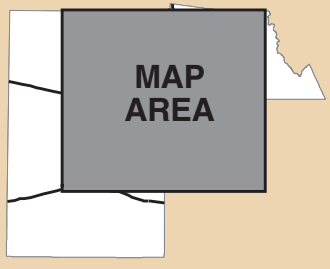
Environmental Justice: Mobility Disability Populations in Maricopa County (2000 Census)



Persons per Square Mile

(Maricopa County Average = 19.13)

- Less than 20
- 20 to 200
- 200 to 300
- More than 300
- Municipal Planning Area
- County Boundary
- Existing Freeway
- Planned Freeway
- Highways
- Other Roads



Source: 2000 Census, Tract level data

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

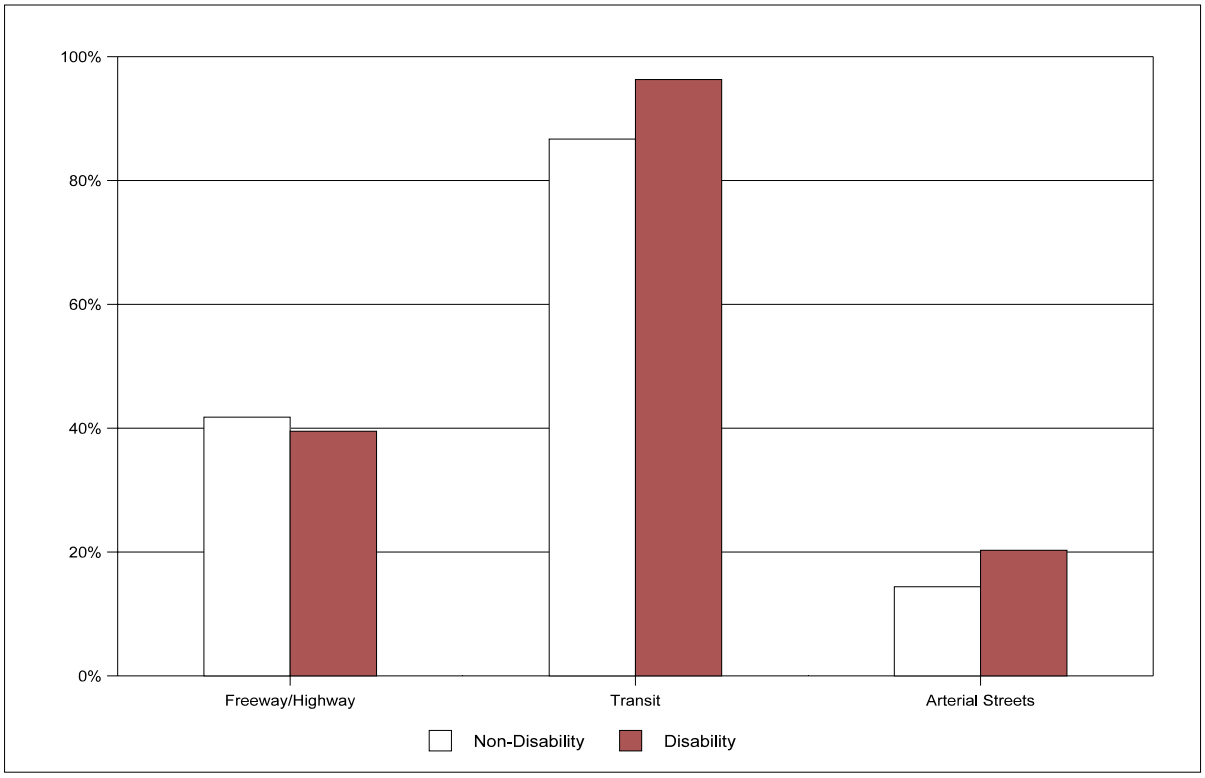
0 5 10 Miles

N

G:\Dev\projects\RTP\07-7_Disability.mxd

Figure 7-8

MOBILITY DISABILITY COMMUNITIES AFFECTED BY THE REGIONAL TRANSPORTATION PLAN



region can equitable address the needs of all residents.

Approximately 40 percent of the census tracts for each of the communities of concern (minority, female head of household, poverty, disability and age 60+) are served by the improved freeway/highway network; virtually the same as the 40 percent of the non-minority census tracts that are served. Similar results were found in transit where around 90 percent or more of the communities of concern were served by the transit network; whereas, a slightly lower number of non-community of concern census tracts were affected.

The overlay analysis relies on proximity to transportation improvements as a measure of equity in the transportation planning process. Proximity is an important issue; however, it is only one of many issues related to transportation equity. Direct access to transit may be a benefit, however, locating a freeway in close proximity to a neighborhood may not be of benefit. Individual project impacts must, and will be addressed on a project-by-project basis.

For those without cars in a region as geographically dispersed as the Phoenix Metropolitan area, transit provides a critical link to jobs, shopping and recreation. The 2000 Census reported that approximately two percent of the County's population used public transportation to travel to work, with an additional one percent regularly bicycling or walking to work. Reviewing the 2000 Census data, there appears to be a direct correlation between income and transit dependency.

Regional Transportation Plan

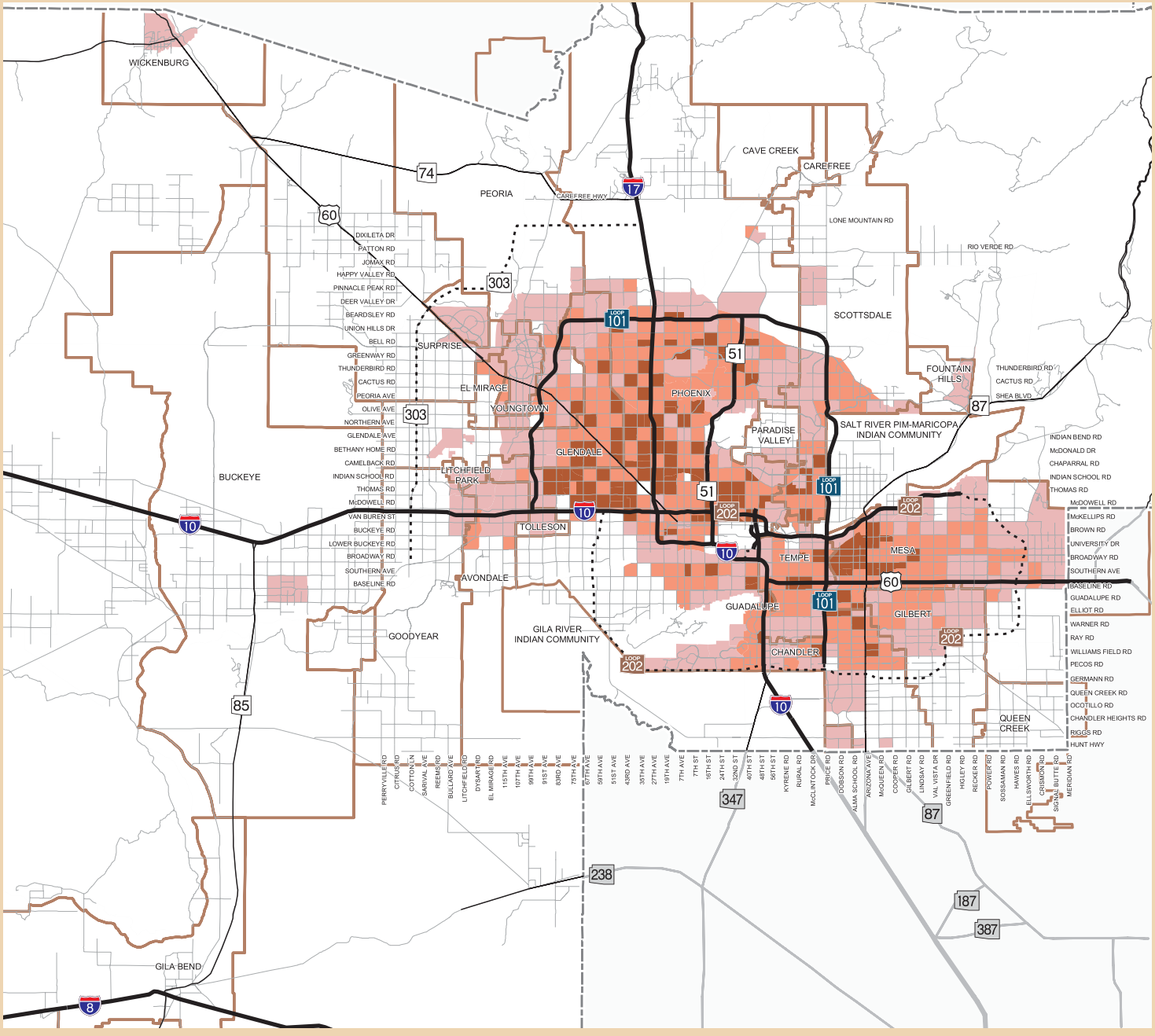
Fig. 7-9

Draft

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

Environmental Justice: Female Head of Household with Children Less than 18 Years of Age in Maricopa County (2000 Census)



Source: 2000 Census, Tract level data

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

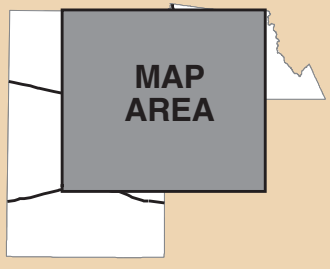
0 5 10 Miles

N

Families per Square Mile

(Maricopa County Average = 12.52)

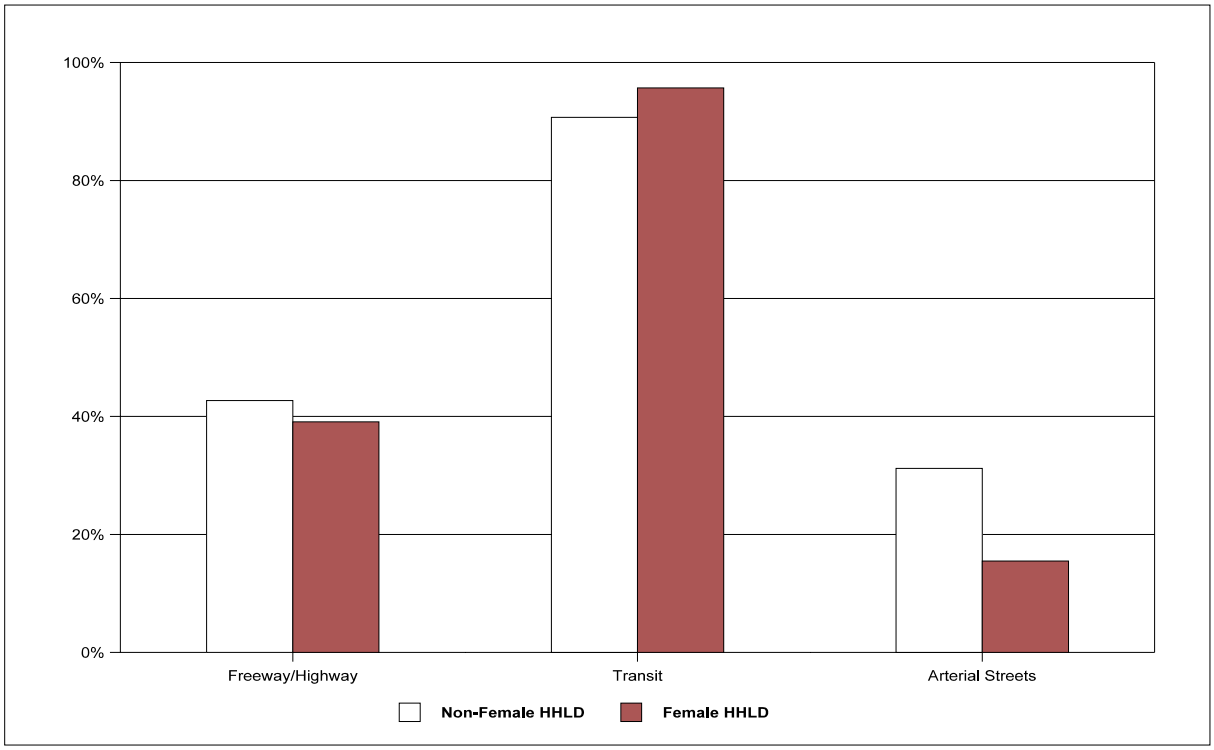
- Less than 12
- 12 to 100
- 100 to 300
- More than 300
- Municipal Planning Area
- County Boundary
- Existing Freeway
- Planned Freeway
- Highways
- Other Roads



G:\Dev\projects\RTP\07-9_Female_Head_HH.mxd

Figure 7-10

FEMALE HEAD OF HOUSEHOLD COMMUNITIES AFFECTED BY THE REGIONAL TRANSPORTATION PLAN



Reaching out to address this need, the Draft Plan increases funding for transit to 33 percent of the sales tax extension from the approximate two percent in the current sales tax, demonstrating a growing commitment to provide transportation options for all residents of Maricopa County.

Environmental justice does not create an entitlement for transportation projects and their benefits; it is an effort to ensure that the proposed transportation program does not have discriminatory effects or disparate impacts on any populations, especially those traditionally disadvantaged groups that were identified through this study. The results of this analysis demonstrate MAG's commitment to equity and environmental justice in the RTP.

CHAPTER EIGHT

FREEWAYS AND HIGHWAYS

This chapter presents the fiscally-constrained plan for freeways and highways in the MAG region through Fiscal Year (FY) 2026. New corridors, as well as improvements to existing facilities, are funded in this Draft update of the RTP. Projects remaining to be completed as part of the current Life Cycle Program and MAG Transportation Improvement Program are also discussed.

While MAG is responsible under federal and state law for developing the RTP, the Arizona Department of Transportation (ADOT) is responsible for implementation, which includes design, right-of-way acquisition, and construction of freeways and other state routes as specified in the Plan. It also includes design and construction of noise walls. ADOT is also responsible for the maintenance of all freeway facilities.

This chapter reviews the current system, and then presents the fiscally-constrained plan. Projects remaining to be completed as part of the existing Life Cycle Program and Transportation Improvement Program are reviewed at the end of the chapter.

CURRENT SYSTEM

Figure 8-1 presents the current system of freeways and highways as of 2003. The figure shows the total number of through lanes on each facility.

PLANNED NEW FACILITIES AND IMPROVEMENTS

Funding for new freeway and highway corridors in the Plan totals $3.7 billion. These new corridors will provide approximately 490 additional new lane miles to the network.

Funding for widenings and other improvements to the existing regional freeway/highway network totals an additional $4.4 billion. These improvements include an additional 530 lane-miles of general purpose lanes and 300 lane-miles of HOV lanes, covering essentially the entire existing system, including the loop elements now under construction. A number of bottleneck segments on the freeway system are also addressed in the Plan, with these improvements. Improvements to Grand Avenue and other highways are also funded.

Figure 8-2 highlights the improvements planned for the system, showing both new freeway corridors and improvements to existing (or soon to be completed) freeway and highway facilities. Figure 8-3 displays the total number of through lanes for freeways and highways in the Plan. Table 8-1 provides that same information on the number of lanes as well as cost and phasing information.

In addition to new travel lanes, a series of new interchanges with arterial streets on existing freeways is included in the Plan. Improvements at freeway-to-freeway interchanges to provide direct connections between HOV lanes have also been included. Together, these improvements total $396 million.

The Plan also provides funding for maintenance on the freeway system, directed at litter pickup and landscaping (including landscape restoration). In addition, the need to keep traffic flowing smoothly is addressed through funding identified for freeway management functions. Together, these components total $420 million. An additional $75 million is provided for noise mitigation.

Regional Transportation Plan

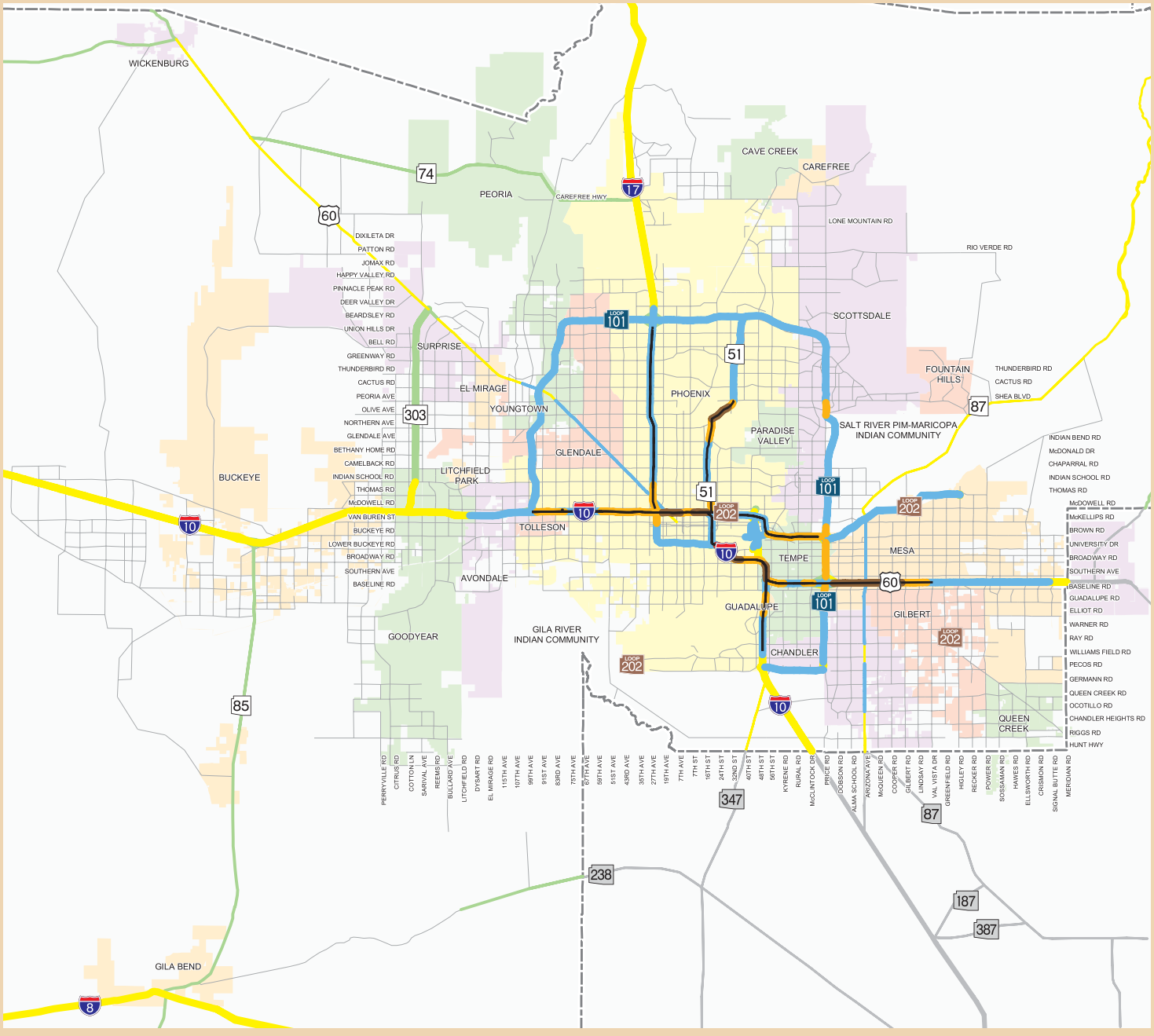
Fig. 8–1

Draft

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

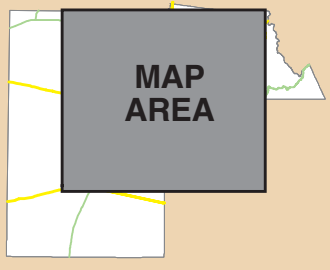
Current Regional Freeway/Highway System Total Through Lanes



- 2 Lanes
- 4 Lanes
- 6 Lanes
- 8 Lanes
- 10 Lanes
- 12 Lanes
- HOV Lanes
- County Boundary
- Other Roads

As of December, 2003.

HOV completion on SR 51 from Loop 202 to Shea Blvd by January, 2004



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Miles 0 5 10

N

G:\Dev\projects\RTP\08-1_Reg_hwy_sys.mxd

Regional Transportation Plan

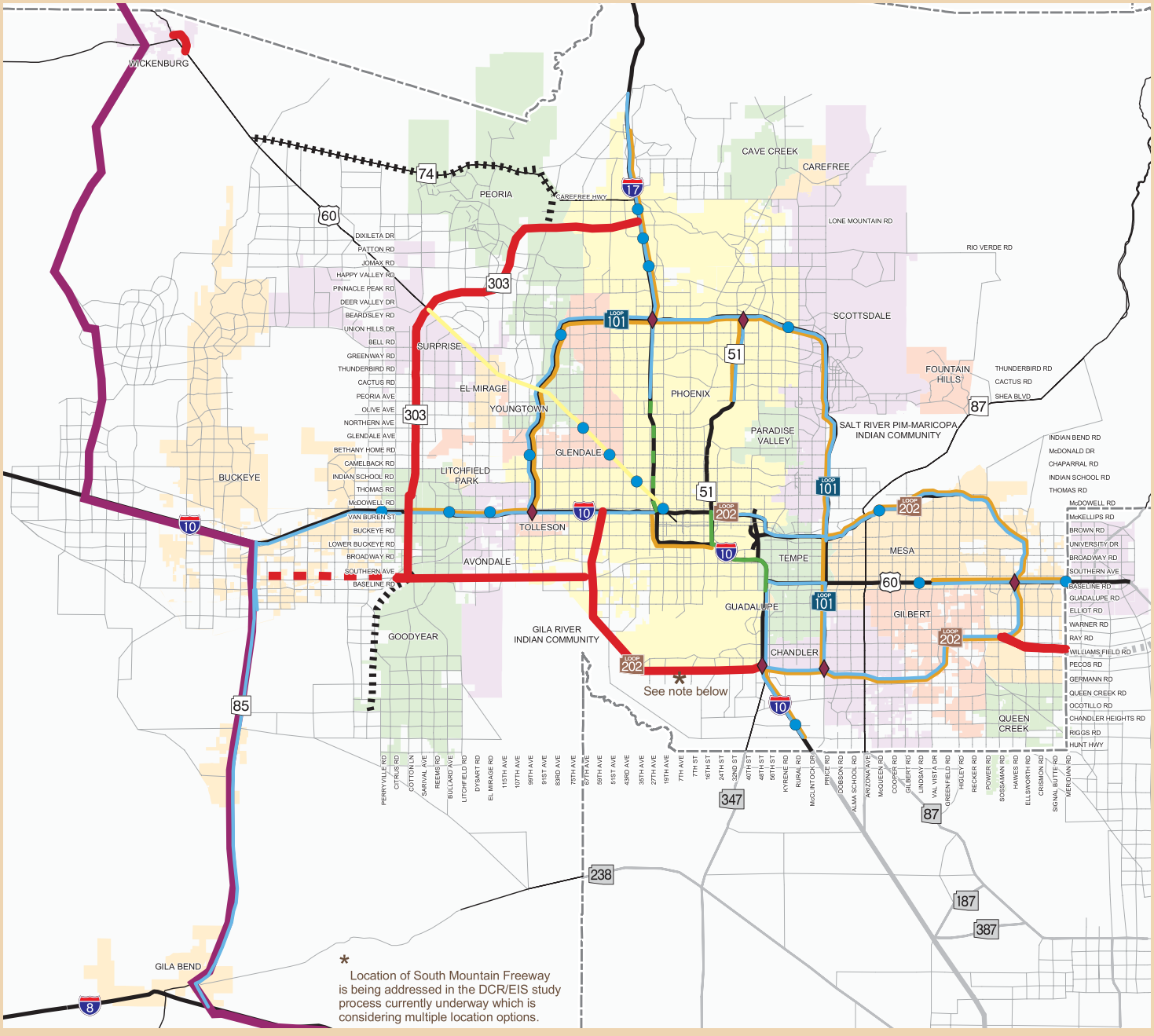
Fig. 8-2

Draft

REGIONAL TRANSPORTATION PLAN

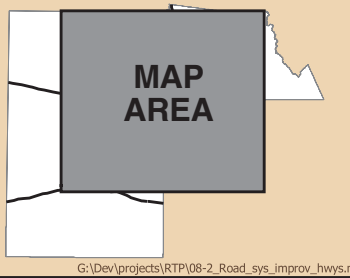
MARICOPA ASSOCIATION of GOVERNMENTS

Roadway System Improvements Freeways/Highways



- New Traffic Interchange
- New System TI HOV Ramps
- Corridor Improvements
- New HOV Lanes
- New General Purpose Lanes
- New C-D Road/Widening
- Long Term Capacity Improvements
- New Freeway Construction
- Interim Corridor Development and ROW
- Proposed CANAMEX Corridor
- Right of Way Preservation
- Future Corridor
- County Boundary
- Other Roads

Alignments for new freeway and highway facilities will be determined following the completion of appropriate design and environmental studies.



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.

G:\Dev\projects\RTP\08-2_Road_sys_improv_hwys.mxd

Regional Transportation Plan

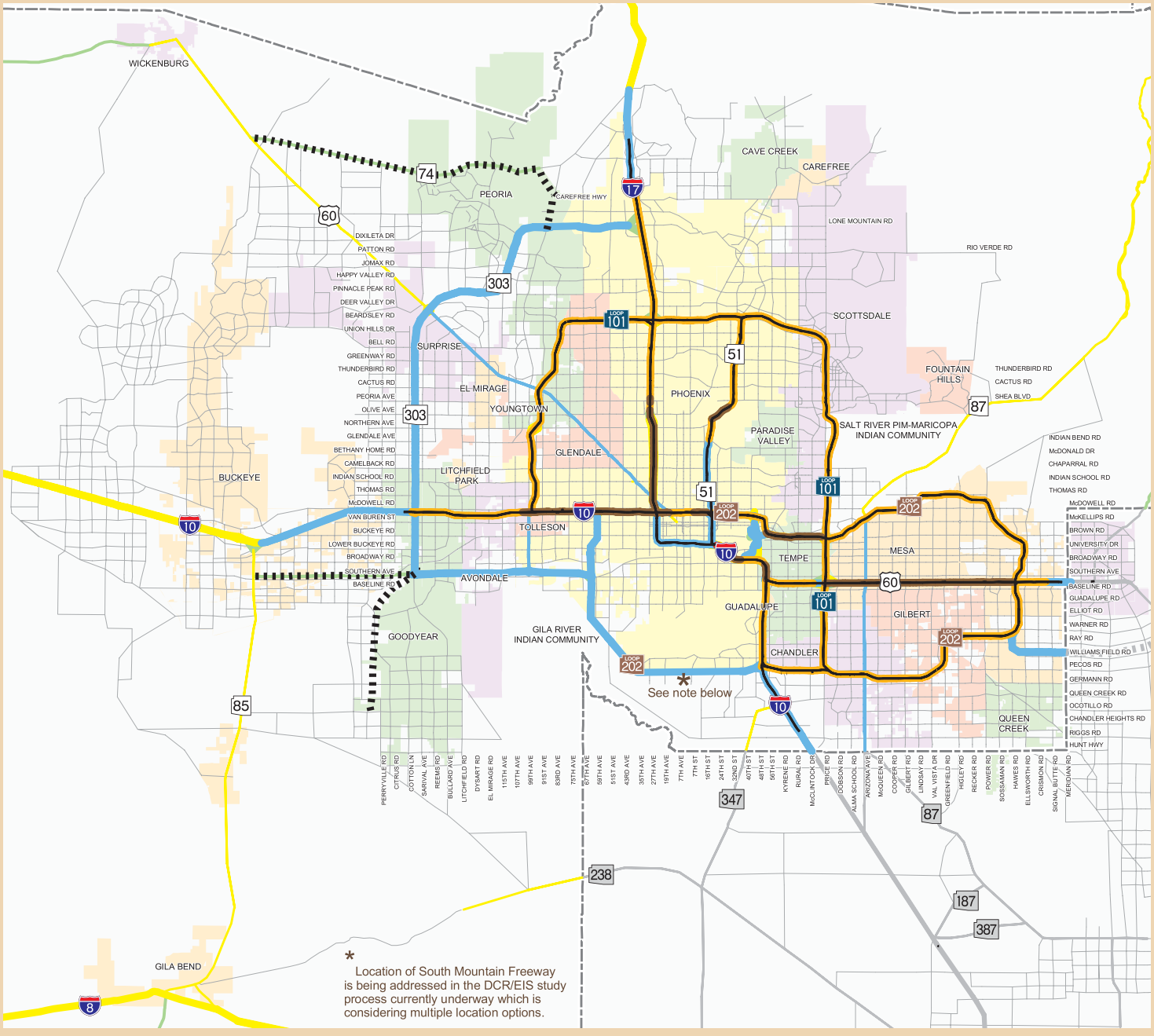
Fig. 8-3

Draft

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

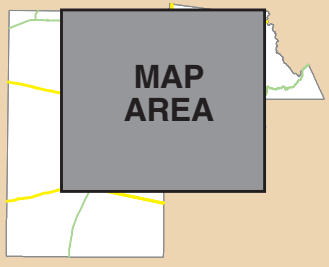
Planned Regional Freeway/Highway System Total Through Lanes



- 2 Lanes
- 4 Lanes
- 6 Lanes
- 8 Lanes
- 10 Lanes
- 12 Lanes
- HOV Lanes
- Right of Way Preservation
- Future Corridor
- County Boundary
- Other Roads

Alignments for new freeway and highway facilities will be determined following the completion of appropriate design and environmental studies.

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

G:\Dev\projects\RTP\08-3_Planned_Reg_hwy_sys.mxd

Table 8-1: Freeway and Highway Number of Through Lanes, Through Lane Additions, Costs and Phasing

Facility	Segment	Length (miles)	Number of Through Lanes in Each Direction: Current GP	Current HOV	Plan GP	Plan HOV	New Lanes GP	New Lanes HOV	Regional Costs (2002 Dollars, Millions): GP Phase I	GP Phase II	GP Phase III	GP Phase IV	HOV Phase I	HOV Phase II	HOV Phase III	HOV Phase IV	Total Regional Costs (2002 Dollars, Millions): GP	HOV	Total	Phase (Final Construction): GP	HOV
I-8	Yuma County to SR 85	37	2	0	2	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	SR 85 to Pinal County	31	2	0	2	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	Sub-total I-8	**68**							**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**		
I-10	Yuma County to Sun Valley Parkway	39	2	0	2	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	Sun Valley Parkway to SR 85	3	2	0	2	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	SR 85 to Loop 303	12	2	0	3	0	1	0	-	-	-	106	-	-	-	-	106	-	106	IV	
	Loop 303 to Dysart	5	2	0	4	1	2	1	-	66	-	-	-	28	-	-	66	28	94	II	II
	Dysart to 101L	6	3-4	0	4-5	1	1	1	-	35	-	-	-	22	-	-	35	22	57	II	II
	101L to I-17	7	4	1	5	1	1	0	79	-	-	-	-	-	-	-	79	-	79	I	
	I-17 to SR 51 Interchange	5	3-5	1	3-5	1	0	0	-	-	-	-	-	-	-	-	-	-	-		
	SR 51 Interchange to 40th St (CD Roads)	3	3-6	1	3-6	1	CD	0	-	120	-	-	-	-	-	-	120	-	120	II	
	40th St to Baseline Road (CD Roads)	6	3-6	1	3-6	1	CD	0	380	-	-	-	-	-	-	-	380	-	380	I	
	Baseline Road to Loop 202 Interchange	6	3-4	1	4-5	1	1	0	-	53	-	-	-	-	-	-	53	-	53	II	
	Loop 202 Interchange to Riggs Rd	6	2	0	3	1	1	1	23	-	-	-	23	-	-	-	23	23	46	II	II
	Riggs Rd to Pinal County	1	2	0	2	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	Sub-total I-10	**99**							**482**	**274**	**-**	**106**	**23**	**50**	**-**	**-**	**862**	**73**	**935**		
I-17	Yavapai County to New River	10	2	0	2	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	New River to Anthem Way	3	2	0	3	0	1	0	-	-	-	26	-	-	-	-	26	-	26	IV	
	Anthem Way to Carefree Hwy	5	2	0	3	1	1	1	-	-	-	44	-	-	-	28	44	28	72	IV	IV
	Carefree Hwy to Loop 101	9	2-3	0	4-5	1	2	1	119	-	-	-	50	-	-	-	119	50	169	I	I
	Loop 101 to Arizona Canal (between Peoria & Dunlap)	6	3	1	4	1	1	0	-	53	-	-	-	-	-	-	53	-	53	II	
	Arizona Canal to McDowell Rd	7	3-4	1	5-6	1	2	0	-	40	960	-	-	-	-	-	1,000	-	1,000	III	
	McDowell to I-10	1	3	0	3	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	I-10 (west) to I-10 (east)	7	3	0	3	1	0	1	-	-	-	-	-	-	77	-	-	77	77		III
	Sub-total I-17	**48**							**119**	**93**	**960**	**70**	**50**	**-**	**77**	**28**	**1,242**	**155**	**1,397**		
Loop 101	Agua Fria: I-10 to Grand Ave	10	3	0	4	1	1	1	-	-	-	85	-	-	53	-	85	53	138	IV	III
	Agua Fria: Grand Ave to I-17	12	3	0	4	1	1	1	-	-	-	102	-	-	-	64	102	64	166	IV	IV
	Sub-total Agua Fria	22							-	-	-	187	-	-	53	64	187	117	304		
	Pima: I-17 to SR 51	7	3	0	4	1	1	1	-	-	-	59	-	37	-	-	59	37	96	IV	II
	Pima: SR 51 to Shea Blvd	10	3	0	4	1	1	1	-	-	-	85	-	29	-	-	85	29	114	IV	II
	Pima: Shea Blvd to Loop 202/Red Mtn	11	3	0	4	1	1	1	-	94	-	-	83	-	-	-	94	83	177	II	I
	Sub-total Pima	28							-	94	-	144	83	66	-	-	238	149	387		
	Price: Loop 202/Red Mtn to approx. Baseline Rd	4	4	0	4	1	0	1	-	-	-	-	22	-	-	-	-	22	22		I
	Price: Baseline Rd to Loop 202/Santan	6	3	0	4	1	1	1	-	-	-	51	31	-	-	-	51	31	82	IV	I
	Price: Loop 202/Santan to I-10	6	0	0	TBD	TBD	TBD	TBD	-	-	-	-	-	-	-	-	-	-	-		
	Sub-total Price	16							-	-	-	51	53	-	-	-	51	53	104		
	Sub-total Loop 101	**66**							**-**	**94**	**-**	**382**	**136**	**66**	**53**	**64**	**476**	**319**	**795**		
Loop 202	Red Mountain: I-10/SR 51 Interchange to Rural Rd	7	3-4	1	4-5EB, 3-4WB	1	1 EB	0	67	-	-	-	-	-	-	-	67	-	67	I	
	Red Mountain: Rural Road to Loop 101	2	4	1	5	1	1	0	10	29	-	-	-	-	-	-	39	-	39	II	
	Red Mountain: Loop 101 to Gilbert	6	3	0	4	1	1	1	-	51	-	-	32	-	-	-	51	32	83	II	I
	Red Mountain: Gilbert to Higley	5	3	0	4	1	1	1	-	-	-	42	-	-	27	-	42	27	69	IV	III
	Red Mountain: Higley to US 60	10	0	0	4	1	1	1	-	-	-	85	-	-	-	52	85	52	137	IV	IV
	Sub-total Red Mountain	30							77	80	-	127	32	-	27	52	284	111	395		
	Santan: I-10 to approx. Dobson	5	3	0	4	1	1	1	-	-	-	43	-	27	-		43	27	70	IV	II
	Santan: Dobson to Higley	11	0	0	4	1	1	1	-	-	-	93	-	40	-	18	93	58	151	IV	IV
	Santan: Higley to US 60	7	0	0	4	1	1	1	-	-	-	59	-	-	-	37	59	37	96	IV	IV
	Sub-total Santan	23							-	-	-	195	-	67	-	55	195	122	317		
	South Mountain: I-10 (West) to 51st Ave	10	0	0	3	0	3	0	300	190	-	-	-	-	-	-	490	-	490	I to II	
	South Mountain: 51st Ave to Loop 202/I-10	12	0	0	3	0	3	0	70	507	-	-	-	-	-	-	577	-	577	II	
	Sub-total South Mountain	22							370	697	-	-	-	-	-	-	1,067	-	1,067		
	Sub-total Loop 202	**75**							**447**	**777**	**-**	**322**	**32**	**67**	**27**	**107**	**1,546**	**233**	**1,779**		
Loop 303	I-17 to US 60 (Grand Avenue)	18	0	0	3	0	3	0	250	395	-	-	-	-	-	-	645	-	645	I to II	
	US 60 (Grand Avenue) to I-10	15	1	0	3	0	2	0	50	495	-	-	-	-	-	-	545	-	545	II	
	I-10 to I-10R/MC 85	5	0	0	3	0	3	0	-	10	220	-	-	-	-	-	230	-	230	III	
	Sub-total Loop 303	**38**							**300**	**900**	**220**	**-**	**-**	**-**	**-**	**-**	**1,420**	**-**	**1,420**		

Source: Maricopa Association of Governments, 2003

Notes: ADT: Average Daily Traffic; GP: General Purpose Lanes; CD: Collector Distributor Roads; TBD: To be determined in future studies; HOV: High Occupancy Vehicle Lanes

Table 8-1: Freeway and Highway Number of Through Lanes, Through Lane Additions, Costs and Phasing (continued)

Facility	Segment	Length (miles)	Number of Through Lanes in Each Direction: Current GP	Current HOV	Plan GP	Plan HOV	New Lanes GP	New Lanes HOV	Regional Costs (2002 Dollars, Millions): GP Phase I	GP Phase II	GP Phase III	GP Phase IV	HOV Phase I	HOV Phase II	HOV Phase III	HOV Phase IV	Total Regional Costs (2002 Dollars, Millions): GP	HOV	Total	Phase (Final Construction): GP	HOV
SR 51	Loop 101 to Shea Blvd	6	3	0	4	1	1	1	-	-	-	51	32	-	-	-	51	32	83	IV	I
	Shea Blvd to Loop 202/Red Mtr	10	3-5	1	3-5	1	0	0	-	-	-	-	-	-	-	-	-	-	-		
	Sub-total SR 51	**16**							**-**	**-**	**-**	**51**	**32**	**-**	**-**	**-**	**51**	**32**	**83**		
SR 71	Yavapai County to US 60	5	1	0	1	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
SR 74	US 60/Grand Avenue to Loop 303	25	1	0	1	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	Loop 303 to I-17	5	1	0	1	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	Sub-total SR 74	**31**							**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**		
SR 85	I-10 to Hazen Rd	5	1-2	0	3	0	0-1	0	50	-	-	-	-	-	-	-	50	-	50	I	
	Hazen Rd to I-8	32	1-2	0	2	0	0-1	0	40	-	-	-	-	-	-	-	40	-	40	I	
	I-8 to Pima County	32	1	0	1	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	Sub-total SR 85	**69**							**90**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**90**	**-**	**90**		
SR 87	Gila County to Shea Blvd	34	2	0	2	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	Shea Blvd to Loop 202/Red Mountain	12	2	0	2	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	Loop 202/Red Mountain to Pinal County	18	2	0	2	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	Sub-total SR 87	**63**							**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**		
SR 88	Pinal County to Gila County	33	1	0	1	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
SR 143	Hohokam: McDowell to I-10	4	2-3	0	2-3	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
SR 153	Sky Harbor Expressway	2	3	0	3	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
SR 238	Buchan to Maricopa	17	1	0	1	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
SR 347	Maricopa Rd: I-10 to Pinal County	6	2	0	2	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
US 60	La Paz County to Wickenburg	31	1-2	0	1-2	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	Grand Avenue: Wickenburg to Loop 303	28	2	0	2	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
	Grand Avenue: Loop 303 to Loop 101 (plus FY 2008 program)	10	2-3	0	3	0	0-1	0	39	64	-	-	-	-	-	-	103	-	103	II	
	Grand Avenue: Loop 101 to Van Buren (includes grade separations at 51st, 35th & 19th Ave)	11	2-3	0	3	0	0-1	0	30	20	-	97	-	-	-	-	147	-	147	I to IV	
	Sub-total Grand Avenue	49							69	84	-	97	-	-	-	-	250	-	250		
	Superstition: I-10 to Loop 101	5	3	1	4	1	1	0	9	-	-	-	-	-	-	-	9	-	9	I	
	Superstition: Loop 101 to Val Vista	8	4-5	1	5	1	0	0	-	-	-	-	-	-	-	-	-	-	-		
	Superstition: Val Vista to Power	4	3	0	5	1	2	1	50	-	-	-	35	-	-	-	50	35	85	I	I
	Superstition: Power to Crismon	4	3	0	3	1	0	1	-	-	-	-	-	-	-	-	-	-	-		
	Superstition: Crismon to Meridian Road	2	2-3	0	3-4	1	1	1	-	-	18	-	-	-	13	-	18	13	31	III	III
	Sub-total Superstition	23							59	-	18	-	35	-	13	-	77	48	125		
	Sub-total US 60	**103**							**128**	**84**	**18**	**97**	**35**	**-**	**13**	**-**	**327**	**48**	**375**		
US 93	Yavapai County to Wickenburg	3	1-2	0	1-2	0	0	0	-	-	-	-	-	-	-	-	-	-	-		
I-10R	SR 85 to Loop 303	11	0	0	1	0	1	0	2	-	21	60	-	-	-	-	83	-	83	IV	
	Loop 303 to Loop 202/South Mountain	13	0	0	3	0	3	0	8	60	-	654	-	-	-	-	722	-	722	IV	
	Sub-total I-10R	24							**10**	**60**	**21**	**714**	**-**	**-**	**-**	**-**	**805**	**-**	**805**		
TBD	Wickenburg Bypass	TBD	0	0	2	0	2	0	27	-	-	-	-	-	-	-	**27**	**-**	**27**	I	
WGF	Loop 202 to Ellsworth	2	0	0	3	0	3	0	2	40	113	-	-	-	-	-	155	-	155	III	
	Ellsworth to Meridian	3	0	0	3	0	3	0	-	10	160	-	-	-	-	-	170	-	170	III	
	Sub-total Williams Gateway Freeway	**5**							**2**	**50**	**273**	**-**	**-**	**-**	**-**	**-**	**325**	**-**	**325**		
	R/W protection for 303L (extension south of MC 85) and SR 74 (US 60 to 303L)	TBD								**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**100**		
Total									**$1,605**	**$2,332**	**$1,492**	**$1,742**	**$308**	**$183**	**$170**	**$199**	**$7,171**	**$860**	**$8,131**		

Source: Maricopa Association of Governments, 2003

Notes: ADT: Average Daily Traffic
GP: General Purpose Lanes
CD: Collector Distributor Roads
TBD: To be determined in future studies
HOV: High Occupancy Vehicle Lanes

ADOT sub-programs or projects for pavement preservation, bridge and safety preservation, traffic engineering, development support (design, utilities, right of way, environmental, planning and engineering support), operating support (training, work zone safety, outdoor advertising control, public information, risk management), minor and major sport improvements, enhancement program, major corridor improvement program support, and Freeway Safety Service Patrols will be funded under this Plan. Funding for these programs through FY 2026 totals approximately $660 million.

In total, $9.0 billion in projects as identified in the Plan are allocated to the freeway/ highway element. A brief description of improvements that have been included in the Plan are provided below by individual corridor. Note that freeways may also be referred to as "fully access-controlled" roadways in this Plan.

It is important to note that the funding specified below for each corridor is separate from the funding allocated for fiscal years 2005 through 2007 of the existing Life Cycle Program. All Projects in the remaining years of the existing Life Cycle Program are part of the Plan, but for transparency are presented separately. The existing Life Cycle Program is discussed at the end of this chapter.

Interstate 8

This route traverses the southern part of Maricopa County, passing through Gila Bend and eventually terminating at I-10 near Casa Grande. It connects the region with California to the west, and in conjunction with I-10, also provides a link to New Mexico. It is a part of the CANAMEX Corridor, which was adopted by the MAG Regional Council during April of 2001. I-8 is a divided highway meeting interstate standards, with two lanes in each direction.

No projects are included on I-8 as part of the Plan.

Interstate 10 (Papago and Maricopa)

This freeway facility crosses through the heart of the MAG Region, and provides links to population centers throughout the southwestern U.S., and also provides passenger and freight mobility within the region. It traverses highly built-up urban areas within the MAG region as well as areas in the process of commercial, industrial and residential development. It is the only existing major east-west freeway serving the core, or central urban area of the MAG Region. The corridor is already highly congested, so without the addition of new capacity, continued growth in the region will significantly add to the congestion. I-10 is also a major truck route.

To address these issues, major improvements to increase the capacity of I-10 have been specified in the Plan. The improvements include the addition of general purpose lanes between I-17 and State Route 85, as well as an extension of HOV lanes as far west as Loop 303. In the southeast, general purpose lanes will be added between Baseline Road and Riggs Road, and HOV lanes will be extended as far south as Riggs Road.

In the urban center, I-10 has particularly high traffic volumes. A collector-distributor (CD) roadway system is planned for this area. The CD system will add arterial lanes, providing some local access parallel to I-10, and helping to reserve freeway lanes for through traffic.

Interstate 10 - Reliever

In addition to adding capacity to I-10 as described above, this Plan also funds the development of a reliever facility: a new six-lane freeway corridor parallel to and south of the existing I-10 Corridor. This facility will provide a second major east-west freeway serving the central urban area, relieving traffic on I-10.

The Reliever will be constructed in stages, with the initial stage to be constructed as part of this Plan. In the initial stage, a full freeway will be constructed between Loop 202 and Loop 303. An interim (minimum two-lane) roadway will also be constructed between Loop 303 and SR 85.

Between Loop 303 and SR 85, sufficient right-of-way for the future construction of a full freeway (not funded in this Plan) will also be acquired. Construction of a full freeway in this section is planned as part of the ultimate concept for this facility.

The I-10 Reliever will serve to bypass congestion on I-10 for through traffic and provide improved accessability to the area south of I-10 (which contains truck terminals and other generators of truck traffic). The Reliever will therefore need to be designed to handle high volumes of traffic, both goods movement (trucks) and passenger vehicles.

Interstate 17

This freeway route connects the MAG Region with I-40 to the north. It terminates at the junction of I-10 in the center of the urban areas. Within the MAG Region, it serves as the north-south backbone of the freeway system. As with I-10, this facility carries very high volumes of traffic and experiences lengthy periods of congestion. New residential and commercial development in the vicinity of Loop 101, and rapid development to areas north of Loop 101, is adding to traffic demand on I-17.

A series of improvements have been identified in the Plan in an effort to alleviate the traffic load and congestion on I-17. General purpose lanes will be added to I-17 from Peoria Avenue to New River Road. HOV lanes will be extended as far north as Anthem Way.

The segment of I-17 between McDowell Road and Peoria Avenue is extremely congested, representing a major bottleneck in the freeway network. The Plan includes funding to provide significant additional capacity for this segment. Options for this additional capacity will be assessed in future design studies, and will include the possible double-decking of the freeway.

Loop 101 (Agua Fria, Pima and Price)

This circumferential freeway route loops around the northern part of the MAG region. It is divided into three segments: the Agua Fria Freeway (I-10 to I-17), the Pima Freeway (I-17 to Loop 202/Red Mountain), and the Price Freeway (Loop 202/Red Mountain to Loop 202/Santan).

Loop 101 links a number of activity centers in the region and will become increasingly congested as the areas adjacent to its path become fully built-out. Several segments of the facility are already experiencing considerable peak period congestion.

To address the growing congestion and the future demands on this route, the Plan calls for the addition of both general purpose lanes and HOV lanes along the entire length of Loop 101. Once completed, Loop 101 will have a minimum of four general purpose and one HOV lane in each direction, or 10 lanes total.

An arterial connection from the south end of the Price Freeway to I-10 is also part of this plan. This arterial connection is presented in Chapter Nine.

Loop 202 (Red Mountain and Santan Freeways)

This circumferential freeway serves the southeastern part of the MAG region. It is divided into two segments: the Red Mountain Freeway (I-10 to US 60), and the Santan Freeway (US 60 to I-10 East). A third segment, the South Mountain Parkway (I-10 West to I-10 East), is also part of this plan and is discussed separately below.

The areas served by the Red Mountain and Santan facilities are expected to reach build-

out levels of population and employment in the next twenty years. In addition, areas in northern Pinal County adjacent to Maricopa County are projected to experience major growth. This growth will require the completion of a fully developed freeway system in the area.

Construction of the Red Mountain and Santan freeway facilities to three lanes in each direction (six lanes total) is fully funded and currently underway as part of the existing Life Cycle Program. Construction is scheduled to be completed by FY 2007.

To address the growing congestion and the future demands on this route, the Plan calls for the addition of both general purpose lanes and HOV lanes on the Red Mountain and Santan Freeways, from Loop 101 (Pima) to US 60 (Superstition), and to I-10 East. Once completed, the Red Mountain and Santan Freeways will each have a minimum of four general purpose and one HOV lane in each direction, or 10 lanes total.

In addition, the Plan includes funding for added capacity on the Red Mountain Freeway from I-10 to Loop 101 (Pima), to address the increasing congestion affecting the Red Mountain (Pima) freeway-to-freeway interchange.

Loop 202 (South Mountain Freeway)

The South Mountain segment of the Loop 202 has only partial funding under the existing Life Cycle Program, and is currently undergoing design concept and environmental studies to determine a final alignment. The system level interchange that the South Mountain Freeway shares with the Santan Freeway at I-10 is nearing completion.

The South Mountain segment is a vital component in the freeway system, which links the southern areas of the region with the central metropolitan area, and provides an alternative route to the highly congested I-10 (Papago) Freeway. This element of the freeway system was originally part of the MAG Plan in 1985 and remains an important link in the overall network.

The Plan includes funding for completion of the South Mountain Freeway as an initial six lane freeway facility from I-10 West to I-10 East.

Loop 303 (Estrella Freeway)

Originally part of the MAG Plan in 1985, but dropped due to funding shortfalls, Loop 303 was carried as an expressway in the 2002 update of the MAG Long Range Transportation Plan. Although it was not funded for construction under the Life Cycle Program, it has undergone some development using local funding. Design concept and environmental studies are currently underway.

Loop 303 will provide service to a number of West Valley Communities, which collectively represent a large area of growth in the region. Communities in this area will need to be linked together and tied into the regional freeway network. In addition, future growth will create traffic congestion that will require the high level of service that a controlled-access facility can provide.

The Plan funds the construction of Loop 303 as an initial six lane freeway from I-17 near Lone Mountain Road, to Grand Avenue, and then south to I-10 and the I-10 Reliever/MC 85. The segment of Loop 303 between I-17 and 75th Avenue, as well as the portion in the Surprise area, will be initially constructed as an at-grade expressway. It will later be upgraded to a freeway as demand warrants; funding for this is included in the Plan.

Right-of-way for a full freeway facility will be acquired as needed for all segments of the ultimate Loop 303 facility from I-17 to Riggs Road. This includes funding for the acquisition of right of way for a future extension of Loop 303 south of the I-10

Reliever to Riggs Road. However, construction for the extension to Riggs Road

is not funded in this Plan.

In January 2001, the MAG Regional Council approved the Lone Mountain alignment as the preferred option for the Loop 303 connection to I-17 and designated the New River alignment for further study. A connection from Loop 303 to I-17 in the vicinity of New River Road is currently being studied by ADOT and may be addressed in future updates of the Plan. Funding for the New River connection is currently not included in the Plan.

State Route 51

This freeway route carries north-south traffic between the I-10/Loop 202 (Red Mountain) Freeway interchange and Loop 101. It serves as an important commuter route to the north and is one of the few means of access through the Phoenix Mountains. Congestion on this facility will become an increasing problem as areas in the northern part of the region become more fully developed.

To address the future demands on this route, the Plan calls for the addition of both general purpose lanes and HOV lanes from Shea Boulevard to Loop 101.

State Route 71

Approximately five miles of this highway is located in northwestern Maricopa County, linking US 60 (Grand Avenue) in Maricopa County to State Route 93 in Yavapai County. No construction projects are included for SR 71 as part of the Plan.

State Route 74

This highway travels in an east-west direction in the Northwest Valley, extending from I-17 at Carefree Highway to US 60 at Morristown. The two-lane facility is primarily a rural route, and provides access to the Lake Pleasant recreational area, which is approximately 10 miles west of I-17. It passes through areas that will undergo development in the future, particularly along the eastern third of the route.

Funding for the acquisition of right of way sufficient for a future freeway facility between US 60 (Grand Avenue) and Loop 303 (Estrella Freeway) is provided in this Plan. However, no construction projects are included for SR 74 as part of the Plan.

State Route 85

This two-lane highway travels in a north-south direction in the Southwest Valley, extending from I-8 at Gila Bend, north to I-10. This segment is a component of the CANAMEX Corridor within the MAG region. The facility also continues south of I-8 to the Maricopa County Line, but experiences relatively low volumes of traffic along that stretch.

Between I-8 and I-10, State Route 85 is a major link for automobile and truck traffic traveling to points west on I-8. In conjunction with I-8, it also serves as by-pass for the metropolitan area for truckers using I-10. Traffic volumes (particularly truck traffic) on State Route 85 have been increasing steadily, taxing the capacity of the two-lane facility.

To address these needs, the Plan funds the widening of SR 85 between I-8 and I-10 to a four-lane, divided facility. The design of this facility should allow for the ultimate construction of a freeway (not funded in this plan).

State Route 87

This highway connects the region to the recreational areas in the eastern mountains, extending east along the Beeline Highway from Country Club Drive as a four-lane divided facility. It extends south along Country Club Road/Arizona Avenue to the Pinal County line and to points further south in Pinal County.

The Plan funds minor improvements at the far eastern end of this facility. No through

capacity is being added to SR 87 as part of these improvements.

State Route 88

This two-lane highway provides access to Canyon Lake in eastern Maricopa County. Minor improvements (a retaining wall for $2 million dollars) in the vicinity of Fish Creek Hill

are funded for this facility in the Plan. No through capacity is being added.

State Route 143 (Hohokam Expressway)

This expressway facility links I-10 and Loop 202 (Red Mountain), terminating at McDowell Road. It connects to the Sky Harbor Expressway ramp connections to Loop 202 (Red Mountain). It provides access to the Sky Harbor Airport as well as greater connectivity for the freeway network.

No projects are included on SR 143 as part of the Plan.

State Route 153 (Sky Harbor Expressway)

This expressway facility provides access to Sky Harbor Airport from the regional freeway network. It currently connects Van Buren Street to University Drive.

The final link to I-10 will be completed as part of the Life Cycle Program. No additional projects are included on SR 153 as part of the Plan.

State Route 238

This highway connects the Mobile area in southwestern Maricopa County to SR 347 in Pinal County.

No construction projects are included on SR 238 as part of the Plan.

State Route 347

This highway extends south from I-10 at Queen Creek Road through the Gila River Indian Community and to points south in Pinal County. For residents of the MAG Region, it provides access to western Pinal County, and functions as an alternative link to I-8.

No construction projects are included on SR 347 as part of the Plan.

US 60 (Superstition)

This east-west freeway route serves the Southeast Valley, and continues into Pinal County and eastern Arizona. It carries very high volumes of traffic, and will encounter increasing periods of congestion in the future. At its eastern end, new areas of residential, commercial, and industrial development extending into Pinal County are anticipated.

A series of improvements have been identified in the Plan to help deal with the traffic load and congestion on the Superstition. General purpose lanes are added at various points along the facility, primarily from Val Vista Drive, and east to the Pinal County line. HOV lanes are also extended as far east as Meridian Road.

US 60 (Grand Avenue)

This state highway extends diagonally on Grand Avenue from the core of the urban area to the northwest corner of the MAG Region. Grand Avenue provides a direct connection to communities in the northwest area. Because Grand Avenue is aligned diagonally across the regional grid and is parallel to an active railroad track, it has a number of problem intersections. In addition, the lack of continuity on several of the arterial grid streets in the northwest area channels traffic onto Grand Avenue.

A number of Grand Avenue intersections are being addressed in the Life Cycle Program through the construction of grade-separations. In addition, to address the growing capacity needs on Grand Avenue, the Plan calls for additional grade-separations and widening improvements south of Loop

303.

Grand Avenue south of SR 74 is generally planned as a partially-controlled access facility. Based on the results of the recently completed MAG Grand Avenue Northwest Corridor Study, it is further defined as an enhanced arterial / limited expressway between Loop 101 and Loop 303. The section south of Loop 101 is a partially controlled access facility (expressway or limited expressway) and may be further defined following the completion of a Major Investment Study which is in process for this corridor. Additional project details will also be determined in this study.

US 60 (Wickenburg to La Paz County)

This state highway extends from Wickenburg to La Paz County.

No construction projects are included for this section of US 60 as part of the Plan.

US 93

This highway extends northward from US 60 in Wickenburg, continuing to the northwest part of Arizona and providing a link to Las Vegas, Nevada. US 93 is part of the federally-designated CANAMEX Corridor through the MAG region.

A new alignment of US 93, providing an interim bypass around downtown Wickenburg, is included as part of the Plan.

Williams Gateway Freeway

The Williams Gateway Freeway is a new six-lane freeway corridor extending from Loop 202 (Santan) south to the Williams Gateway Airport, and east to the Pinal County line. Within Pinal County, and not funded as part of this Plan, the facility would extend east to US 60.

As the eastern part of the MAG Region builds out, a high level facility such as the Williams Gateway Freeway will be needed to provide access to job centers, commercial areas and residential development. The Williams Gateway Airport also represents a major regional activity center. In addition, expected growth in Pinal County will require freeway linkages to the MAG Region.

The Plan includes funding for construction of the Williams Gateway Freeway to six lanes. These monies are directed at only those sections of freeway that are located within Maricopa County.

CANAMEX Corridor

The CANAMEX Corridor is one of 43 national "high priority" corridors identified in the Intermodal Surface Transportation Efficiency Act (ISTEA); the 1995 National Highway System (NHS) Designation Act; and the Transportation Efficiency Act for the 21st Century (TEA-21). Section 1105 of the NHS Designation Act specifies the CANAMEX Corridor to run from:

> "…Nogales, Arizona, through Las Vegas, Nevada, to Salt Lake City, Utah, to Idaho Falls, Idaho, to Montana, to the Canadian Border."

In the State of Arizona, the CANAMEX Corridor is similarly specified in the NHS Designation Act to follow:

> "(i) I-19 from Nogales to Tucson; (ii) I-10 from Tucson to Phoenix; and (iii) United States Route 93 in the vicinity of Phoenix to the Nevada Border."

MAG and ADOT initiated a study in FY 2000 to designate the route for the CANAMEX Corridor through the MAG Region connecting the federally designated routes of I-10 and US 93 in the northwest.

In April of 2001, following completion of the study, the MAG Regional Council passed a resolution specifying the corridor to include: I-8, SR 85, I-10 from SR 85 to the

Wickenburg Road/Vulture Mine Road connection, an alignment in the general vicinity of Wickenburg Road/Vulture Mine Road, connecting to the future Wickenburg Bypass, and the Wickenburg Bypass from that point west to US 93.

This corridor bypasses the air quality non-attainment area for PM-10 (particulate matter under ten microns in diameter), which covers the urbanized portion of the region.

The CANAMEX Corridor is not fully funded, although improvements for some of the segments listed above are part of this Plan.

Once funded, the corridor will generally be constructed to a minimum standard of a four-lane divided highway.

ADOT may conduct location and design studies as needed for this corridor to determine an appropriate alignment and right-of-way needs, as well as key design elements. Right-of-way may then be obtained through negotiations with local landowners, and as funding permits.

New Interchanges and Interchange Improvements

As the region grows, additional access to the freeway network is required to maintain mobility throughout the MAG Region. To address this need, the Plan calls for the addition of 13 new arterial-to-freeway interchanges as listed in Table 8-2.

Table 8-2 also lists direct connections for high occupancy vehicle (HOV) lanes through freeway-to-freeway interchanges that are funded in the Plan. Funding is provided for the addition of HOV ramps at six freeway-to-freeway interchanges.

Maintenance and FMS

The Plan includes $279 million in funding for maintenance on the freeway system. A total of $143 million in funding is provided for freeway management systems (FMS), which help keep traffic flowing as smoothly as possible. The funding for maintenance is for litter pickup and landscaping (including landscape restoration).

Neighborhood (Noise) Mitigation

A total of $75 million is provided in the Plan for rubberized asphalt/noise mitigation.

COSTS AND PHASING - REGIONALLY FUNDED PROJECTS

In the preceding discussion, a broad overview of planned freeway and highway facilities in the region was provided. These planned facilities will be funded through federal, regional and local revenue sources.

Tables 8-1, 8-2, and 8-3 provide information on costs and phasing for the freeway and highway projects as well as improved and new interchanges specified in the Plan. Figures 8-4 and 8-5 show the phasing of the freeway, highway and interchange projects.

Funding for new freeways and improvement projects is not subject to local match requirements. Cost estimates are in millions of 2002 dollars.

The projects are grouped into four phases, or time periods based on fiscal years. Fiscal years end June 30th of the year indicated. The four phases are as follows:

Phase I: FY 2005 through 2010
Phase II: FY 2011 through 2015
Phase III: FY 2016 through 2020
Phase IV: FY 2021 through 2026

The phase specified for a project refers to the period in which funds would be programmed for construction.

Table 8-2: Costs and Phasing for New Interchanges and HOV Ramps (2002 Dollars, Millions)*

Facility	Arterial	Regional Costs**		Phase
New Interchanges on Existing Freeways & State Highways				
I-10	Bullard Rd	$ 9.2		I
	Chandler Heights	13.8		IV
	El Mirage	17.3		IV
	Perryville Rd	9.2		II
I-17	Dixileta Dr (half interchange)	9.2		II
	Dove Valley Rd	18.4		IV
	Jomax Rd	18.4		I
L101	64th St	18.4		I
	Beardsley Rd (half interchange, & reconstruct Union Hills interchange)	27.6		II
	Bethany Home Rd	20.7		I
L202	Mesa Dr (ramps only)	4.6		IV
US 60	Superstition: Lindsay Rd (half interchange)	4.6		II
	Superstition: Meridian Rd (half interchange)	4.6		II
	Other Projects in ADOT FY 03-07 Program	6.7		
Subtotal			**$182.7**	
New High Occupancy Vehicle Ramps at System Freeway Interchanges				
L101	I-10	$ 60.0		IV
	I-17	72.0		IV
L202	Red Mtn & US 60/Superstition	20.4		IV
	Santan & I-10	20.4		II
	Santan & L101/Price	20.4		III
SR 51	L101/Pima	20.4		I
Sub-total			**213.6**	
Total			**$396.3**	

Source: Maricopa Association of Governments, 2003

ADT: Average Daily Traffic

* Not including interchanges constructed as part of new freeway construction

** Includes contingency allowance. Assumes 100% regional funding (no local match) for new interchanges.

Table 8-3: Other Freeway and Highway Costs (2002 Dollars, Millions)

Category	Regional Costs*	
Freeway Management System	$ 143.0	
Maintenance (landscaping, including restoration, and litter pick-up)	279.0	
Noise Mitigation	75.0	
Minor Projects Previously Programmed	18.0	
Total		**$515.0**

Source: Maricopa Association of Governments, 2003

* Includes contingency allowance.

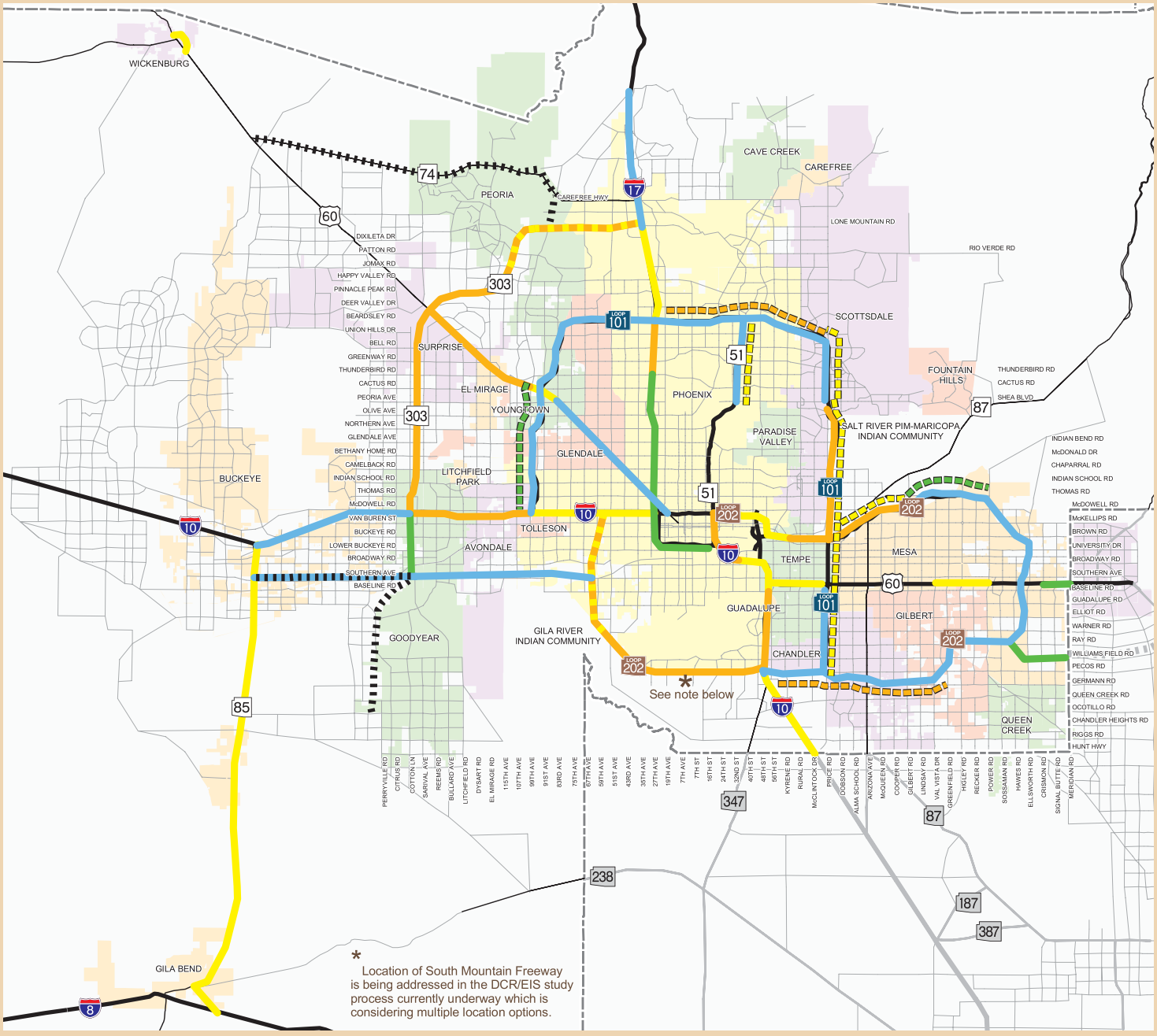
Regional Transportation Plan

Fig 8-4

Draft

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

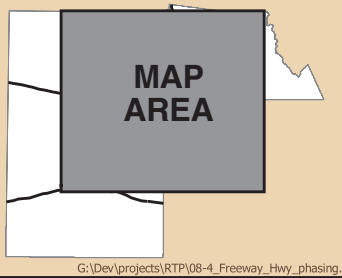


Plan Phasing Freeways/Highways

- Phase 1 (FY 2005 - FY 2010)
- Phase 2 (FY 2011 - FY 2015)
- Phase 3 (FY 2016 - FY 2020)
- Phase 4 (FY 2021 - FY 2026)
- Right of Way Preservation Phase 1 - 4
- Future Corridor
- County Boundary
- Freeways
- Highways
- Other Roads

Dashed lines represent HOV lane phasing where different from General Purpose lane phasing

Alignments for new freeway and highway facilities will be determined following the completion of appropriate design and environmental studies.



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

Miles 0 5 10

N

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.

G:\Dev\projects\RTP\08-4_Freeway_Hwy_phasing.mxd

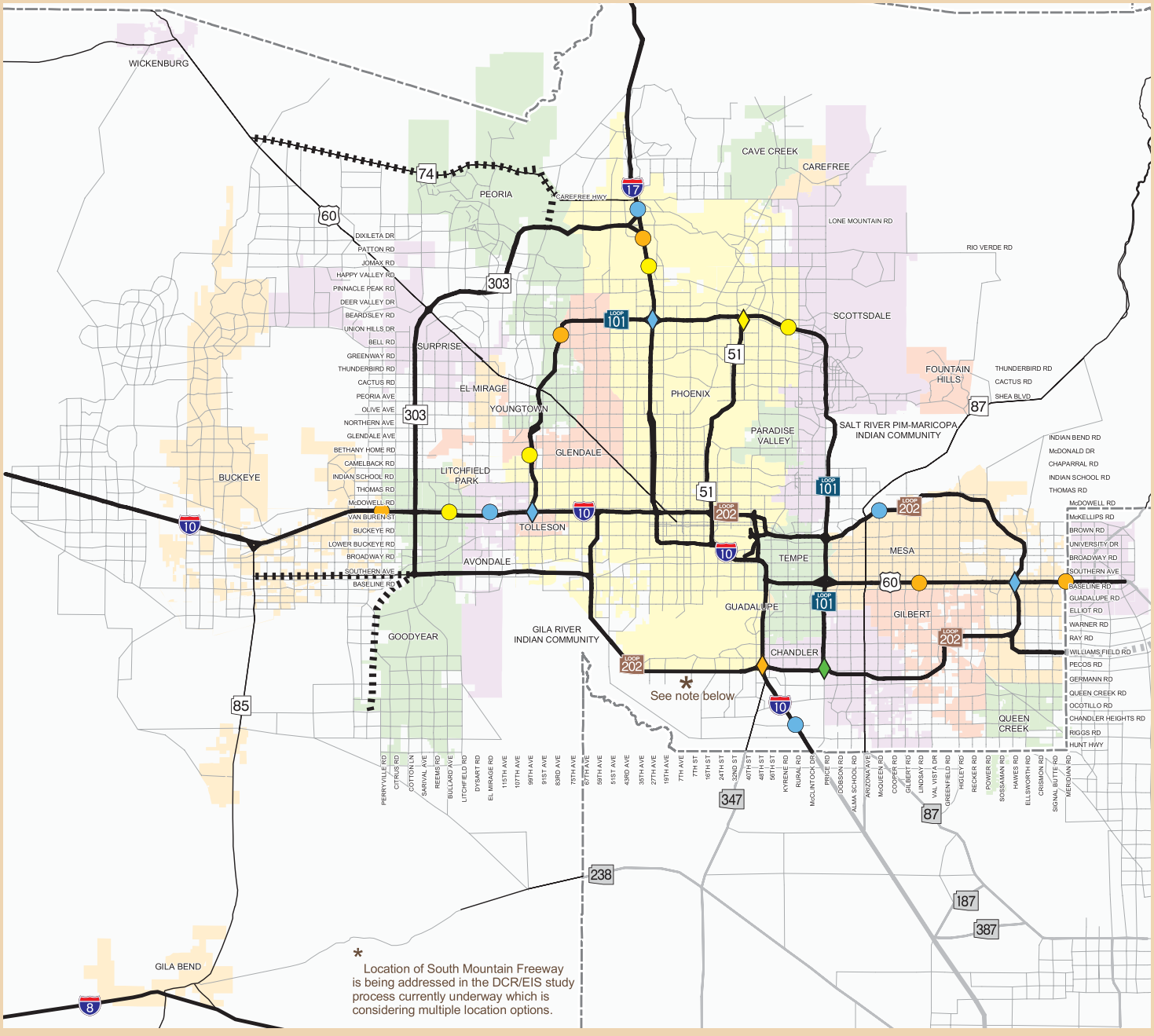
Regional Transportation Plan

Fig. 8-5

Draft

REGIONAL TRANSPORTATION PLAN

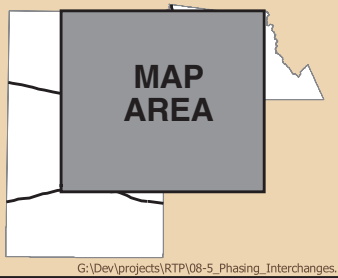
MARICOPA ASSOCIATION of GOVERNMENTS



Plan Phasing New Interchanges and HOV Ramp Connections

- New Traffic Interchange
- New System HOV Ramp Connections
- Phase 1 (FY 2005 - FY 2010)
- Phase 2 (FY 2011 - FY 2015)
- Phase 3 (FY 2016 - FY 2020)
- Phase 4 (FY 2021 - FY 2026)
- Right of Way Preservation
- Future Corridor
- County Boundary
- Freeways
- Highways
- Other Roads

Alignments for new freeway and highway facilities will be determined following the completion of appropriate design and environmental studies.



Miles 0 5 10

N

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

G:\Dev\projects\RTP\08-5_Phasing_Interchanges.mxd

Table 8-4: Highway Funding Estimates, Fiscal Years 2005 to 2026 (2002 Dollars, Millions)

FUNDING AND EXPENDITURES		TOTAL
FUNDING		
Statewide Revenues[1]		
Federal Funds (NHS, ADOT-STP, IM, BR & CMAQ)	$7,781	
State Discretionary Highway User Revenue Fund (HURF), and HURF Bonds	12,040	
MAG / PAG HURF for Controlled Access Facilities	2,115	
MAG Half-Cent Extension (net of debt service)	4,774	
Total Statewide Revenues		**$26,710**
Statewide Obligations		
ADOT Discretionary Programs (Outside the MAG Region) and Operations[2]	($15,002)	
MAG Debt Service on 15% Funds	($ 728)	
PAG Allocation	($ 529)	
Total Statewide Obligations		**($16,258)**
FUNDING AVAILABLE TO THE MAG REGION (Revenues minus Obligations)		**$10,452**
EXPENDITURES[3]		
New Projects & Services		
New Freeways	$3,716	
Widening of Existing Freeways	4,434	
New Interchanges and Improvements	182	
New HOV Ramps	214	
Intelligent Transportation System / Freeway Management System	143	
Maintenance[4]	354	
Total New Projects		**$ 9,043**
Subprograms		
ADOT Subprograms (MAG Region only)[5]	660	
ADOT Set Aside / Allowance for Contingencies	359	
Total Subprograms		**$ 1,019**
Previously Committed Projects		
MAG Life-Cycle Freeway Allocation FY 2005 through 2007	230	
ADOT FY 2005 MAG-Area Regional Freeway System Projects	177	
Total Previously Committed Projects		**$ 407**
TOTAL EXPENDITURES		**$10,470**
BALANCE (Funding Available to the MAG Region minus Expenditures)[6]		**($ 18)**

Source: Maricopa Association of Governments, 2003

BR: Bridge
CMAQ: Congestion Mitigation and Air Quality
IM: Interstate Maintenance
NHS: National Highway System
STP: Surface Transportation Funds

Notes:

1. Sources from which the MAG Region is eligible to receive funds.
2. Includes transfers to the Dept of Public Safety; Land, Buildings, and Equipment; Debt Service on Discretionary HURF; and Other Operations
3. Contingency allowances for each project have been included in the estimates for expenditures.
4. Maintenance funding allocated for litter pick-up and landscaping including restoration.
5. Includes Pavement Preservation, Freeway Service Patrol, Traffic Engineering and other subprograms.
6. The balance, which represents just 0.17% of total funding, is considered immarterial relative to the total funding and expenditures and well within the uncertainties associated with long-range revenue forecasts and cost estimates,

Other activities related to the project, such as design and right-of-way acquisition, may occur in preceding phases, but are not separately identified. Early right-of-way acquisition is conducted where feasible as a means to help minimize costs over the long term.

FUNDING SUMMARY

Table 8-4 has been prepared to provide a summary of the complete funding picture for the freeway/highway element of the Plan. This table lists the reasonably available funding sources for the planning period, and the uses of those funds. The balance between funds available and funds used indicates that the freeway/highway element can be accomplished within reasonably available funding sources over the planning period.

ULTIMATE CONCEPTS

Ultimate concepts for the regional freeway system and highways will be developed as part of future updates or amendments to the Plan.

LIFE CYCLE PROGRAM AND MAG FY 2004-2007 TRANSPORTATION IMPROVEMENT PROGRAM

This Plan includes projects that were already funded, but remain to be completed from the existing Life Cycle Program and all the projects in the FY 2004 to FY 2007 MAG Transportation Improvement Program (TIP). Projects being carried forward are those programmed from FY 2004 through FY 2007.

The Life Cycle Program funds controlled-access projects scheduled for completion in previous plans by the end of FY 2007.

Funding for the Program includes proceeds from the 1985 half-cent transportation excise tax (RARF), which expires at the end of 2005; portions of Highway User Revenue Funds (HURF); federal highway funds; and various other sources. All facilities funded with RARF funds are access-controlled and are on the State Highway system.

The Life Cycle Program is fiscally-constrained. To ensure that revenues and costs remain in balance, and that construction schedules remain realistic, ADOT reviews and certifies the costs, revenues and construction schedules in the Life Cycle Program every six months and issues a report. Figure 8-6 presents the most recent certification map.

For tracking purposes, the revenues and costs for projects already committed and programmed in FY 2004 through FY 2007 of the existing Life Cycle Program are treated separately from the revenues and costs for new projects as identified in this update of the RTP. Nonetheless, projects already programmed in FY 2004 through FY 2007 of the existing Life Cycle Program remain part of the RTP.

All remaining funding in the existing Life Cycle Program is listed in Table 8-5 for each major program element or project. Freeway projects listed in the table that remain to be completed by FY 2007 include the Red Mountain and Santan Freeways, as well as the Sky Harbor Expressway. A block of funding is also set aside for preliminary work on the South Mountain freeway facility. A total of eight grade-separated intersections along Grand Avenue will also be completed within this time frame. Further details may be obtained from the most recent ADOT Life Cycle Certification report, dated July 31, 2003.

This Plan also overlaps with and includes the MAG FY 2004-2007 Transportation Improvement Program (TIP). Projects in the TIP are also included in this Plan. Projects initiated in earlier years of the TIP that are still under construction are also part of this Plan.

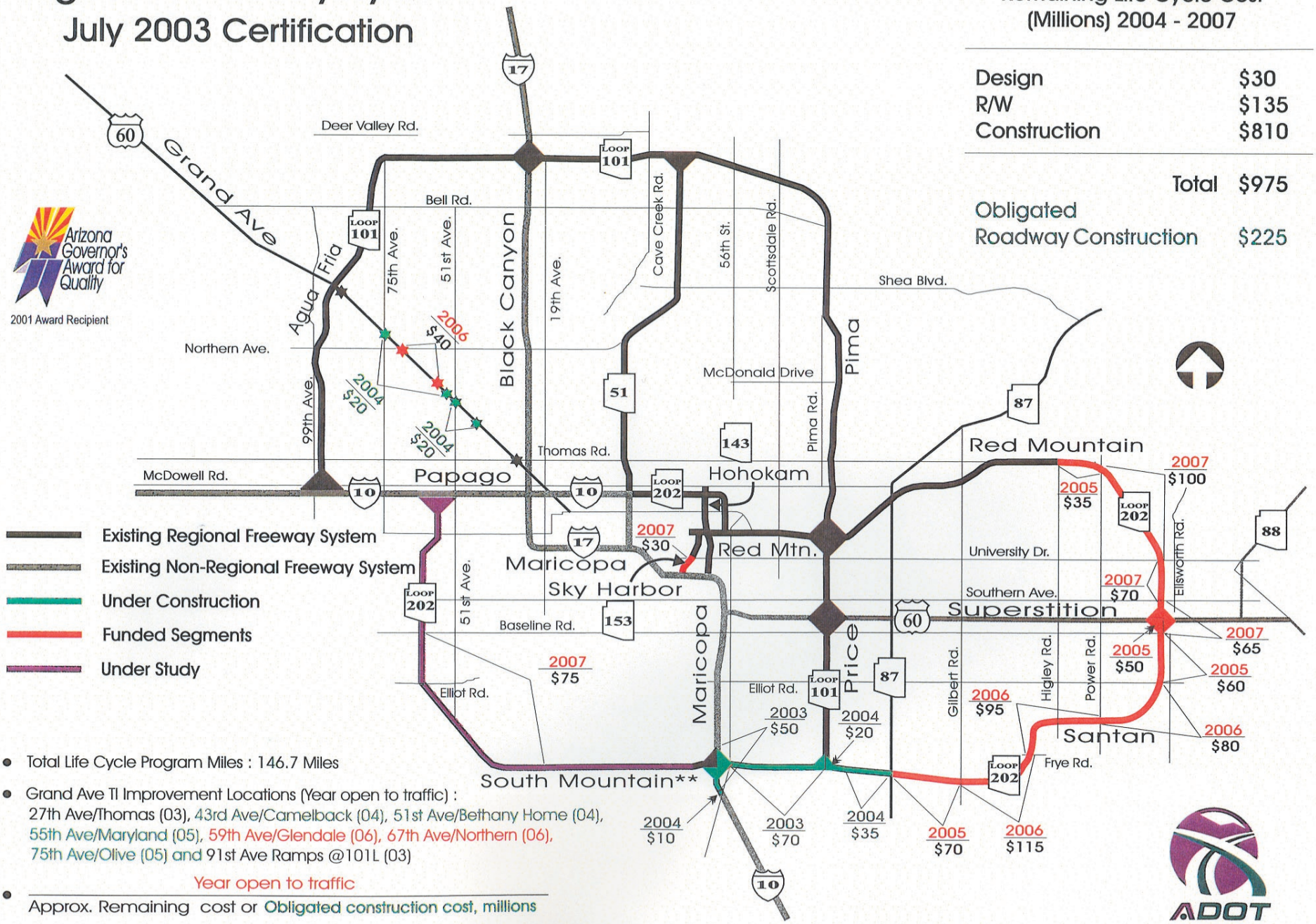
TABLE 8-5 LIFE CYCLE PROGRAM REGIONAL FREEWAY SYSTEM COSTS (Funded) (2002 Dollars - Millions)				
Corridor	**Design**	**Right-of-Way**	**Construction**	**Total**
Agua Fria	0.7	3.8	6.3	10.8
Grand Avenue	0.0	17.2	36.7	53.9
Pima	0.3	0.3	9.5	10.0
Price	0.0	1.3	0.0	1.3
Red Mountain	11.2	26.6	295.1	332.9
Santan	1.6	61.2	377.6	440.4
Sky Harbor	1.3	4.0	22.8	28.1
State Route 51	0.0	0.0	3.3	3.3
System Wide	12.9	2.1	0.0	15.0
South Mountain "Set Aside"	3.4	16.9	56.3	76.6
TOTAL	**31.4**	**133.4**	**807.6**	**972.4**

Source: ADOT Life Cycle Certification, July 31,2003; Maricopa Association of Governments

Figure 8-6

Regional Freeway System

July 2003 Certification



Remaining Life Cycle Cost (Millions) 2004 - 2007	
Design	$30
R/W	$135
Construction	$810
Total	$975
Obligated Roadway Construction	$225

- Total Life Cycle Program Miles : 146.7 Miles
- Grand Ave TI Improvement Locations (Year open to traffic) : 27th Ave/Thomas (03), 43rd Ave/Camelback (04), 51st Ave/Bethany Home (04), 55th Ave/Maryland (05), 59th Ave/Glendale (06), 67th Ave/Northern (06), 75th Ave/Olive (05) and 91st Ave Ramps @101L (03)
- Year open to traffic / Approx. Remaining cost or Obligated construction cost, millions
- ** Corridor under Environmental Impact Statement / Design Concept Report

Internet Address : http://www.dot.state.az.us/ROADS/rfs/mag_l.htm

CHAPTER NINE

STREETS

This chapter presents the fiscally-constrained plan (the "Plan") for major arterial streets in the MAG region through Fiscal Year (FY) 2026. The Plan incorporates MAG member agency street plans for the arterial street system.

While MAG is responsible for developing the regional transportation plan, local jurisdictions are primarily responsible for design, right-of-way acquisition, and construction of arterial facilities as identified in the Plan. Local jurisdictions are also responsible for the maintenance of these facilities. Detailed alignment and design information, as well as maintenance schedules for each facility are therefore not included in this Plan.

CURRENT SYSTEM

Figure 9-1 presents the existing arterial grid (and as modeled) as of August 2003. The mile arterial grid is a critical element of the regional transportation system. It consists primarily of paved roadways with four or more lanes on a mile grid.

The grid complements the regional freeway system and provides the region with a high level of accessibility and mobility. The grid serves automobile traffic, transit and bicycle and pedestrian traffic. The arterial system carries and will continue to carry approximately half of the total vehicle-miles-traveled in the region.

The mile grid system is supported by the non-arterial street system, which includes all local and collector streets. Non-arterial streets provide access to businesses and residences.

PLANNED NEW FACILITIES AND IMPROVEMENTS

The Plan provides regional funding for widening existing streets, improving intersections, and constructing new arterial segments. The continued implementation of intelligent transportation systems and (for air quality purposes) dust control measures is also funded.

Operations and maintenance, which are funded locally, are also part of the Plan and are discussed below.

Regional or Mile Arterial Grid

Figure 9-2 presents the future arterial network. It was developed through ongoing consultation with local agencies regarding their plans, and a series of sub-regional studies conducted by MAG. Figure 9-3 shows regionally funded arterial improvements in the network. Note local plans for arterials are subject to change, especially for rapidly growing areas of the region.

The Future Arterial Network extends the current mile arterial grid system concurrent with new development, and also closes gaps and improves connectivity in both developed and developing areas. Other arterials will receive major capacity improvements.

It is anticipated that the overall arterial street network will expand by a combination of new roadway construction, on the mile grid system, where feasible; paving dirt roads on the mile arterial grid system; and widening existing arterial streets. In some areas, natural features, such as mountains, preclude the extension of the mile grid system. Examples of topographical constraints can be

Regional Transportation Plan

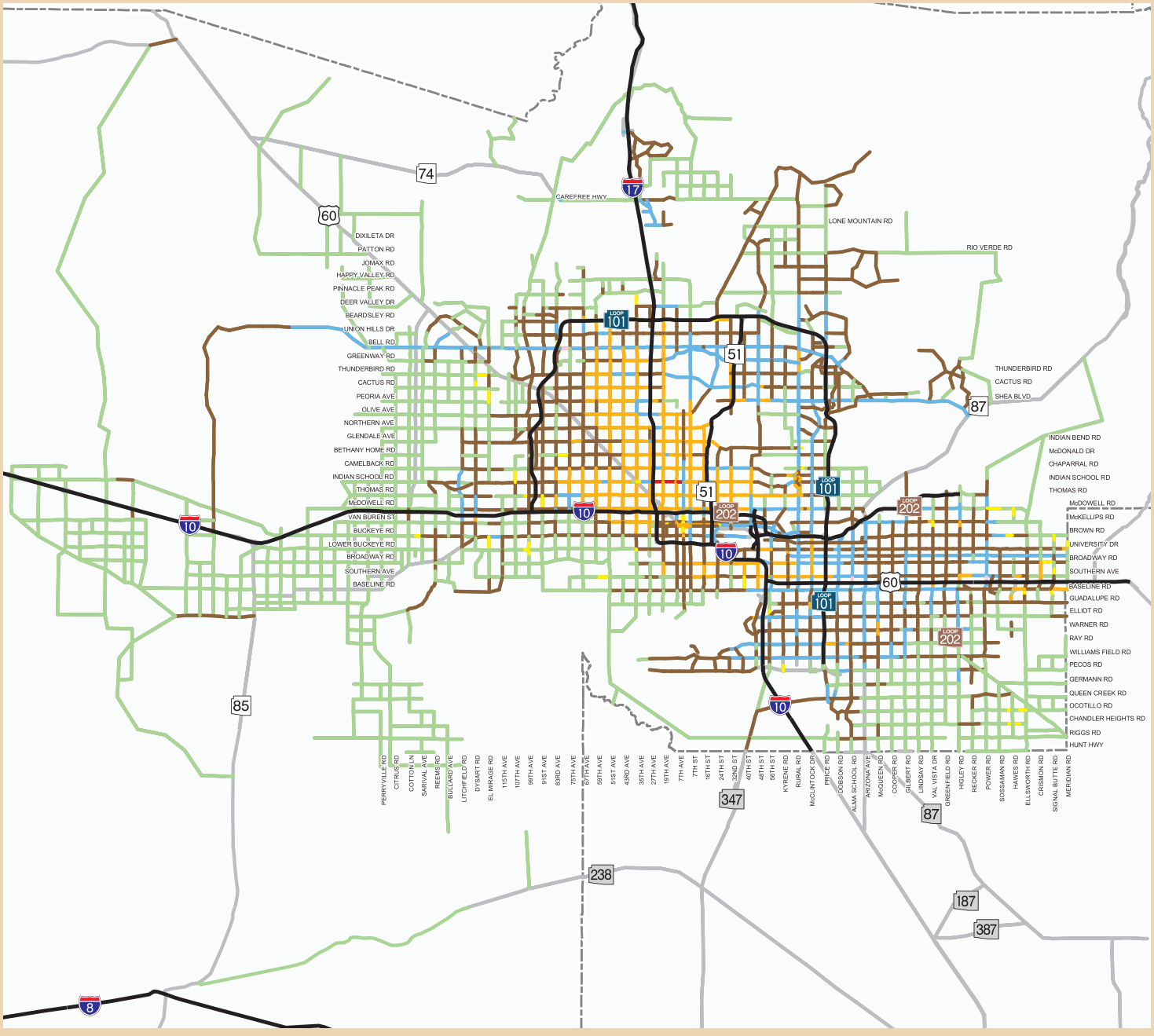
Fig. 9–1

Draft

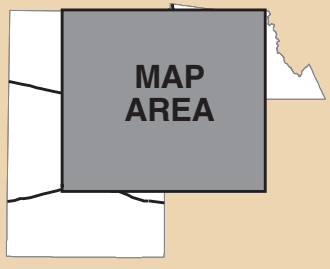
REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

Current Arterial Network Total Through Lanes



- 2 Lanes
- 3 Lanes
- 4 Lanes
- 5 Lanes
- 6 Lanes
- 7 Lanes
- 8 Lanes
- County Boundary
- Existing Freeways
- Other Roads



Miles
0 5 10

N

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

G:\Dev\projects\RTP\09-1_Existing_Arterials.mxd

Regional Transportation Plan

Fig. 9-2

Draft

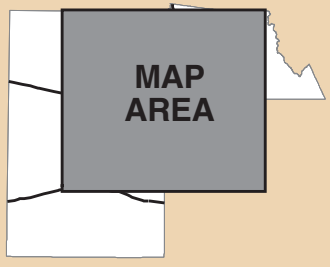
REGIONAL TRANSPORTATION PLAN

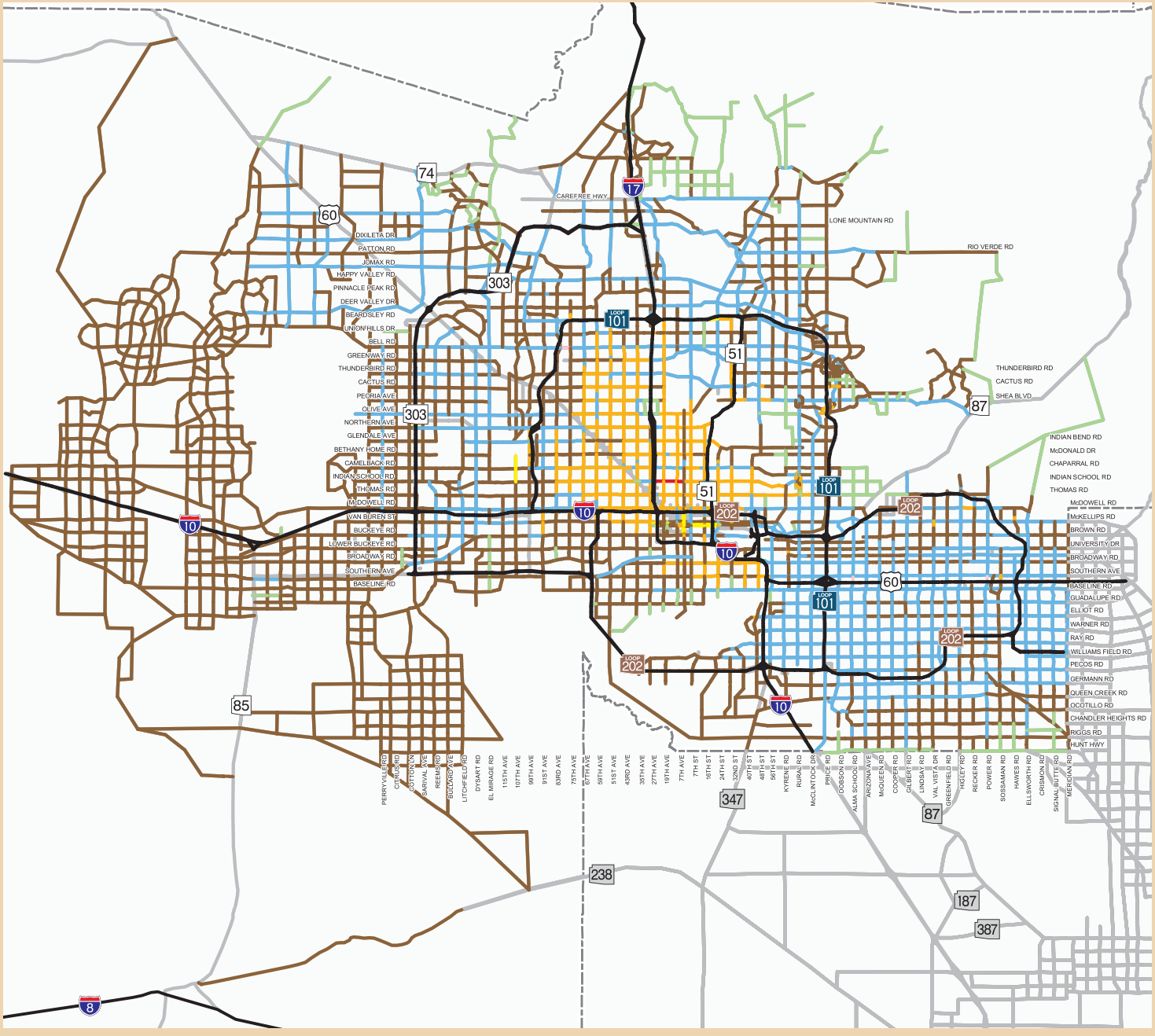
MARICOPA ASSOCIATION of GOVERNMENTS

Future Arterial Network Total Through Lanes

- 2 Lanes
- 3 Lanes
- 4 Lanes
- 5 Lanes
- 6 Lanes
- 7 Lanes
- 8 Lanes
- County Boundary
- Freeways
- Other Roads

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.





While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

G:\Dev\projects\RTP\09-2_Planned_Arterials.mxd

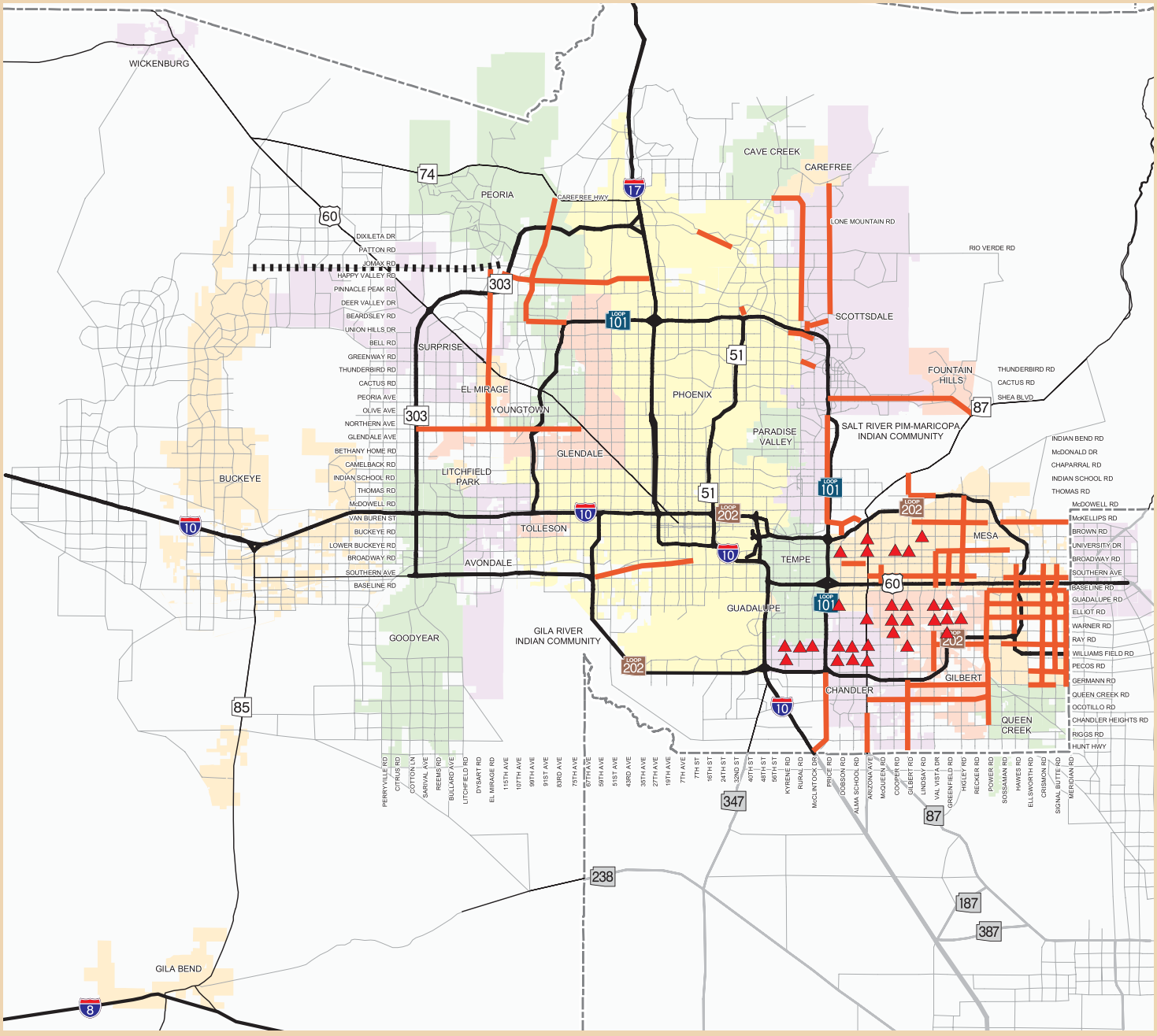
Regional Transportation Plan

Fig. 9-3

Draft

REGIONAL TRANSPORTATION PLAN

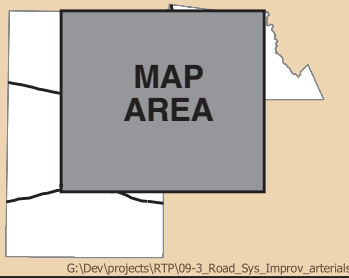
MARICOPA ASSOCIATION of GOVERNMENTS



Roadway System Improvements New/Improved Arterials

- Improved Intersections
- New/Improved Arterials
- Right of Way Preservation
- County Boundary
- Freeways
- Highways
- Other Roads

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.



0 5 10 Miles

N

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

G:\Dev\projects\RTP\09-3_Road_Sys_Improv_arterials.mxd

found in the northwest area of the urbanized region.

Based on historical trends, it is anticipated that a major portion of the new street construction, which accompanies new development, will continue to be funded from private sources. Similarly, it is anticipated that street widening will continue to be funded primarily from public sources.

A total of $1.5 billion from regional revenue sources is allocated to the arterial network in the Plan for the following categories:

- Major Capacity Improvements and New Connections: The continuity of the regional arterial street network is vital to efficient travel patterns. Major capacity enhancements in certain areas also make connectivity options more viable. Examples of these types of major arterial improvement projects in the Plan include the development of major capacity improvements along Northern Avenue, between Grand and Loop 303; the construction of a Rio Salado Parkway link along the Salt River; and major capacity enhancements on Higley Road.

- New/Widened Arterials As growth extends into new areas, widening and extension of the basic mile arterial street network will be needed in order to keep up with growing traffic volumes. Improvements which are planned for the arterial grid in the southeast metropolitan area are examples of these types of projects in the Plan.

- Intersection Improvements: Congestion on the arterial street network is often caused by inadequate intersection capacity. An example of this type of project in the Plan includes a series of intersection improvements identified for the southeast part of the region.

- Intelligent Transportation System (ITS) The Draft Plan allocates funding for the improvements identified in the regional ITS Plan.

Dust Control Measures

The Plan incorporates funding for measures to reduce PM-10 emissions generated by vehicle travel. From FY 2001-FY 2003, $6.7 million in Congestion Mitigation and Air Quality Improvement (CMAQ) funds were committed to purchase 52 PM-10 certified sweepers. An additional $5.8 million in CMAQ funds is programmed to purchase 48 additional PM-10 certified sweepers in the FY 2004-FY 2007 TIP. After FY 2007, it is anticipated that local governments will continue to purchase PM-10 certified sweepers to replace older broom sweepers, expand the area swept, and increase the frequency of sweeping. The Plan assumes that eight PM-10 sweepers will be acquired each year in FY 2008-FY 2010. After FY 2010, it is assumed that five additional PM-10 certified units will be purchased each year to increase the frequency of sweeping and clean new streets in developing areas of the rapidly-growing region.

In the Plan, the paving of dirt roads by local jurisdictions reflects a continuation of current commitments to reduce fugitive dust on unpaved roads with high traffic volumes; eliminate dirt roads in areas of new development; and pave dirt alleys, shoulders, and access points. Consistent with past trends, the Plan assumes that 10 centerline miles of high Average Daily Traffic (ADT) unpaved roads will continue to be paved each year.

The funding and expenditures for purchasing PM-10 certified street sweepers and paving dirt roads after FY 2007 are reflected in the FY 2005-FY 2026 Arterial Funding Estimates. Long-term implementation of these dust control measures will be financed with the resources shown in Table 9-2.

Non-arterial Street Systems

As development occurs on the urban fringe, unpaved rural roadways are paved, and new paved local roadways are constructed to provide for local access. Local and collector

streets carry a small amount of traffic. The growth in local street mileage is closely associated with the growth in population and employment.

Operations and Maintenance

MAG member agencies seek to maintain and operate the street system at its current level of service. To achieve this goal, it is anticipated that MAG member agencies will spend approximately $7.0 billion during the planning period, using committed local funds and State Highway User Revenue Funds. These expenditures would cover costs such as street lighting, street sweeping, landscaping, sign maintenance, pavement maintenance, the operation of traffic signals, and other recurring costs necessary to maintain the arterial street network.

COSTS AND PHASING - REGIONALLY FUNDED PROJECTS

Table 9-1 summarizes costs and phasing for the regionally funded projects specified in the Plan. All cost estimates are in 2002 dollars. Figure 9-4 shows the phasing of the arterial projects. The period covered by the Plan was divided into four phases. This process helps to indicate the sequenced development of the projects over time. Each fiscal year ends on June 30th of the year indicated. The four phases are as follows:

Phase I - FY 2005 through 2010
Phase II - FY 2011 through 2015
Phase III - FY 2016 through 2020
Phase IV - FY 2021 through 2026

The phase specified for a project refers to the period in which funds would be programmed for construction.

Other activities related to the project, such as design and right-of-way acquisition, may occur in preceding phases, but are not separately identified. Early right-of-way acquisition is conducted where feasible, primarily as a means to help minimize costs over the long term.

For arterial projects receiving regional funds, the Plan requires a match of 30 percent from the implementing jurisdiction. This helps ensure local commitment and support for the arterial projects that are selected for regional funding. It also leverages regional funding, allowing more projects in total to be funded.

FUNDING SUMMARY

Table 9-2 has been prepared in order to provide a summary of the complete funding scenario for the streets element of the Plan. This table lists the reasonably available funding sources for the planning period, and the uses of those funds. The balance between the funds that are available, and the funds which are used, indicates that the arterials element of the Plan can be accomplished by using reasonably available funding sources over the planning period.

ULTIMATE CONCEPTS

Ultimate concepts for the arterial system will be developed as part of future updates or amendments to the Plan.

MAG FY 2004 - 2007 TRANSPORTATION IMPROVEMENT PROGRAM

All arterial projects in FY 2004 through FY 2007 in the MAG FY 2004-2007 Transportation Improvement Program (TIP) are part of this Plan. Projects initiated in earlier years, and that are still under construction, are also part of this Plan.

Table 9-1: Arterial Projects, Costs and Phasing

Facility	Segment	Comments	Length (miles)	Regional Costs (2002 Dollars, Millions)	Phase
Arterial Capacity Improvements					
101L	Princess Dr to Scottsdale Rd	Add frontage roads	2	$ 19.1	I
101L south frontage roads	Hayden to Princess	Add frontage roads	1	11.4	I
Arizona Avenue	Ocotillo to Hunt Hwy	Widen and Improve Roadway	3	5.1	II
Baseline Road	Power Road to Meridian Road	Widen and Improve Roadway	6	14.7	IV
Beardsley Rd	Loop 101 to Lake Pleasant Pkwy	Construct Roadway	3	19.1	I-II
Black Mtn Pkway	SR 51 to Blk Mtn Pkwy	Construct Roadway	1	18.5	I
Broadway Rd	Dobson Rd to Country Club Dr	Widen to 6 lanes	2	6.1	I
Carefree Highway	Cave Creek Rd to Scottsdale Rd	4 lanes +median	2	7.7	III
Crismon Rd	Broadway Rd to Germann Rd	Widen to 6 lanes	9	30.2	IV
Dobson Rd	Salt River	Construct New Bridge	1	15.3	I
El Mirage Rd	Bell Rd to Jomax Rd	Construct Roadway	6	16.1	III
El Mirage Rd	Paradise Ln over Grand Ave to Thunderbird Rd	Construct Roadway w/ Grade Separation	2	17.6	I-II
El Mirage Rd	Thunderbird to Northern Ave	Widen and Improve Roadway	4	13.8	III
Elliot Rd	Power Rd to Meridian Rd	Widen to 6 lanes	6	14.9	IV
Germann Rd	Ellsworth Rd to Signal Butte Rd	Widen to 6 lanes	2	10.3	IV
Germann Rd	Gilbert Road to Power Road	Widen and Improve Roadway	6	18.2	I
Gilbert Rd	Loop 202 (Santan) to Hunt Hwy	Widen Roadway	5	17.2	IV
Gilbert Rd	Salt River	Construct New Bridge	1	11.5	II
Greenfield Road	Elliot Road to Warner Road	Widen and Improve Roadway	1	3.4	IV
Greenfield Road	University Road to Baseline Road	Widen and Improve Roadway	3	8.9	I
Guadalupe Road	Power Road to Meridian Road	Widen and Improve Roadway	6	19.0	II
Happy Valley Rd	Loop 303 to 67th Ave	6 Lane Controlled Access	5	17.0	IV
Happy Valley Rd	67th Ave to I-17	6 Lane Controlled Access	4	13.6	IV
Hawes Road	Broadway Road to Ray Road	Widen and Improve Roadway	6	17.1	IV
Higley Rd Pkwy	US 60 to 202L (Red Mountain)	6 Lane Controlled Access	6	13.8	III
Jomax Rd	Loop 303 to Sun Valley Parkway	Widen and Improve Roadway	17	17.0	III
Lake Pleasant Parkway	Beardsley to 303L	Corridor Improvements	6	46.0	II
McKellips Rd	E of Sossaman to Meridian Rd	Widen to 6 lanes	5	16.4	IV
McKellips Rd	Gilbert Rd to Power Rd	Widen to 6 lanes	6	17.9	I
McKellips Rd	Salt River	Construct New Bridge	1	11.5	II
McKellips Rd	Loop 101 Pima - SRPM Indian Community	6 lanes inc. median	2	32.4	II
Meridian Rd	Baseline Rd to Germann Rd	Construct 6 lane Roadway	7	24.1	III
Mesa Dr	Broadway Rd to US 60	Widen to 6 lanes	2	7.7	I
Miller Rd/L101 Underpass	Princess to Center	Construct Underpass	0.5	11.5	III
Northern Ave	Grand Ave to Loop 101	Grand connection and ultimate const	4	70.0	III
Northern Ave	Loop 101 to Loop 303	L101 connection and ultimate const	8	71.3	IV
Northern Ave	Dysart Rd to Loop 303	R/W Protection and interim roadway	4	50.0	I
Pecos Road	Ellsworth Road to Meridian Road	Widen and Improve Roadway	3	10.4	I
Pima Rd	Deer Valley to Happy Valley & Dynamite to Cave Creek Road	4 lanes inc. drainage and ITS	7	68.4	II
Pima Rd	Happy Valley to Dynamite	4 lanes inc. drainage and ITS	2	19.5	III
Pima Rd	S. City Limits to 90th St	4 lanes, ITS	8	25.2	I
Power Rd	Baseline Rd to Williams Field Rd	Widen to 6 lanes	5	14.9	II
Power Rd	Williams Field to Chandler Heights	Widen and Improve Roadway	5	17.0	IV
Price Rd Extension	Loop 202 to I-10	Construct Roadway	6	46.0	III
Queen Creek Rd	Arizona Ave to Power Rd	Widen Roadway	9	31.1	II
Ray Road	Val Vista Road to Power Road	Widen and Improve Roadway	4	13.7	IV
Ray Road	Sossaman Rd to Meridian Rd	Construct 4/6 lane Roadway	5	20.7	IV
Rio Salado Pkwy	7th St to Loop 202 (SM)	Construct Roadway	7	36.7	II
Scottsdale Airport	Runway Tunnel	Additional funds (original $40 m total)	1	57.7	III
Scottsdale Rd	Thompson Peak to Happy Valley	6 lanes inc. drainage and ITS	3	11.0	II
Scottsdale Rd	Happy Valley to Carefree Hwy	6 lanes inc. drainage and ITS	6	23.4	III
Shea Blvd	Palisades Blvd to Saguaro Blvd	6 lanes +median	3	5.0	I
Shea Blvd	Loop 101 to SR 87	Corridor Improvements	12	19.1	IV
Signal Butte Road	Broadway Road to Pecos Road	6 lanes inc. drainage and ITS	8	27.2	IV
Sonoran Pkwy	Central to 32nd Ave	Construct Roadway	4	26.8	II
Southern Ave	Country Club Dr to Recker Rd	Widen to 6 lanes	8	25.3	I
Southern Ave	Sossaman Rd to Meridian Rd	Widen to 6 lanes	5	14.9	IV
Thomas Rd	Gilbert Rd to Val Vista Dr	Construct 4 lane Roadway	2	4.6	I
Union Hills Dr	Hayden to Pima	Widen and Improve Roadway	1	11.2	IV
University Dr	Val Vista Dr to Hawes Rd	Widen to 6 lanes	6	17.9	IV
Val Vista Dr	University Dr to Baseline Rd	Widen to 6 lanes	3	9.1	III
Val Vista Dr	Warner Road to Pecos Road	Widen and Improve Roadway	3	9.1	II
Sub-total Arterial Capacity Improvements				**$1,301.0**	

Source: Maricopa Association of Governments, 2003

Table 9-1: Arterial Projects, Costs and Phasing (continued)

Facility	Segment	Comments	Regional Costs (2002 Dollars, Millions)	Phase
Intersection Improvements				
Arizona Ave	Elliot Rd	Improve intersection	$ 3.1	IV
Arizona Ave	Ray Rd	Improve intersection	3.1	I
Arizona Ave	Chandler Blvd	Improve intersection	3.1	II
Chandler Blvd	Alma School Rd	Improve intersection	3.1	I
Chandler Blvd	Dobson Rd	Improve intersection	3.1	I
Chandler Blvd	Kyrene Rd	Improve intersection	3.1	II
Country Club Dr	University Dr	Improve intersection	2.3	III
Country Club Dr	Brown Rd	Improve intersection	2.3	IV
Dobson Rd	Guadalupe Rd	Improve intersection	2.3	I
Dobson Rd	University Dr	Improve intersection	2.3	III
Elliot Rd	Greenfield Rd	Improve intersection	3.1	IV
Elliot Rd	Higley Rd	Improve intersection	3.1	IV
Elliot Rd	Cooper Rd	Improve intersection	3.1	I
Elliot Rd	GilbertRd	Improve intersection	3.1	III
Elliot Rd	Val Vista Dr	Improve intersection	3.1	IV
Gilbert Rd	University Dr	Improve intersection	2.3	IV
Guadalupe Rd	Greenfield Rd	Improve intersection	3.1	IV
Guadalupe Rd	Power Rd	Improve intersection	3.1	IV
Guadalupe Rd	Cooper Rd	Improve intersection	3.1	I
Guadalupe Rd	Gilbert Rd	Improve intersection	3.1	I
Guadalupe Rd	Val Vista Dr	Improve intersection	3.1	III
Higley Rd Pkwy	US 60 to 202L (Red Mt.)	Construct 3 Grade Separations	22.9	III
Kyrene Rd	Ray Rd	Improve intersection	3.1	IV
Lindsay Rd	Brown Rd	Improve intersection	2.3	IV
Ray Rd	Alma School Rd	Improve intersection	3.1	I
Ray Rd	Dobson Rd	Improve intersection	3.1	II
Ray Rd	Gilbert Rd	Improve intersection	3.1	III
Ray Rd	McClintock Dr	Improve intersection	3.1	II
Ray Rd	Rural Rd	Improve intersection	3.1	II
Stapley Dr	University Dr	Improve intersection	2.3	IV
Warner Rd	Cooper Rd	Improve intersection	3.1	I
Warner Rd	Greenfield Rd	Improve intersection	3.1	II
Sub-total Intersection Improvements			**$ 113.4**	
Systemwide	Intelligent Transportation Systems		**50.0**	
Total			**$1,464.5**	

Source: Maricopa Association of Governments, 2003

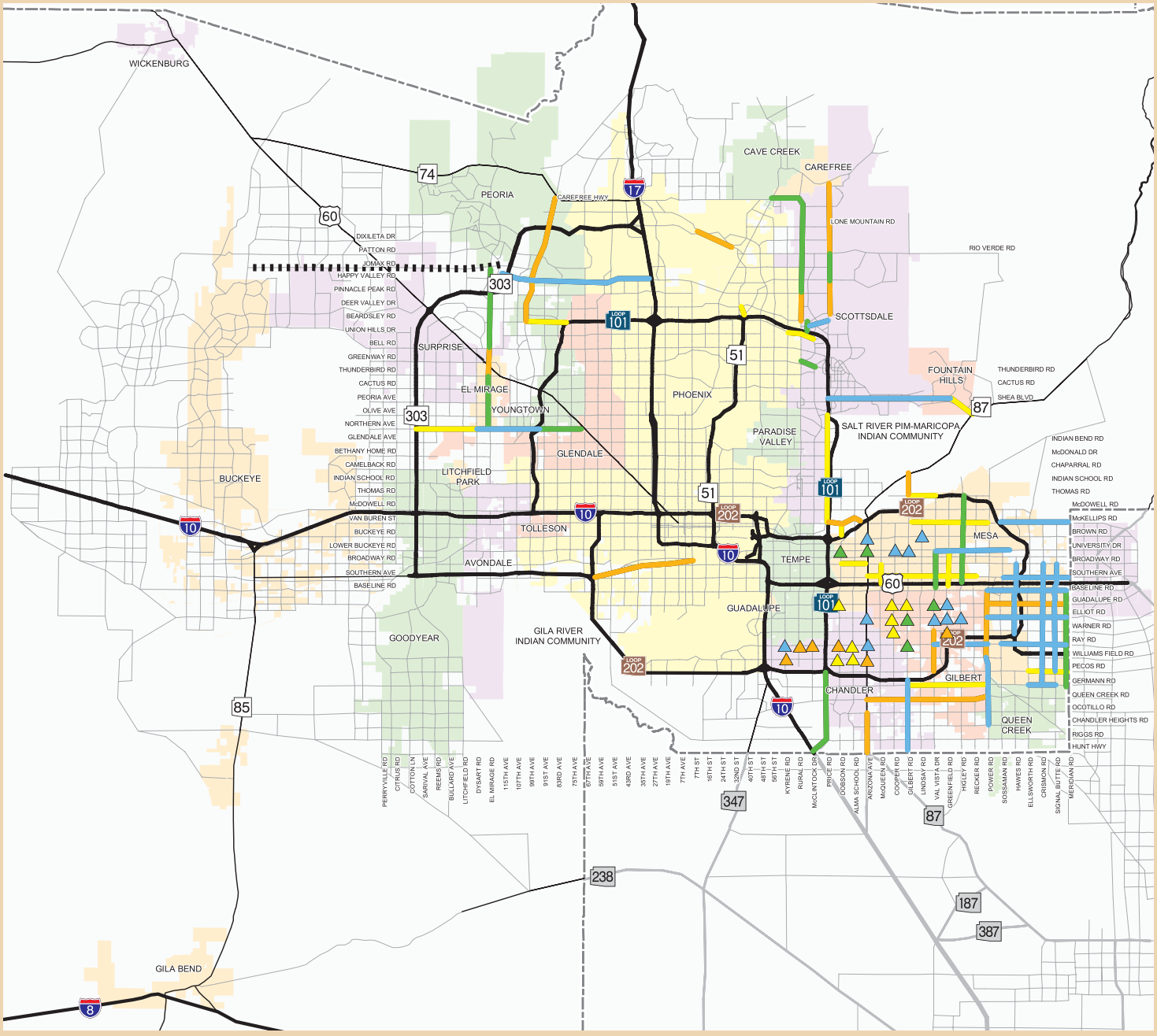
Regional Transportation Plan

Fig. 9-4

Draft

REGIONAL TRANSPORTATION PLAN

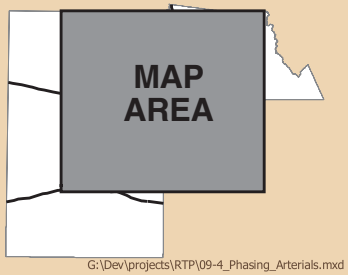
MARICOPA ASSOCIATION of GOVERNMENTS



Plan Phasing New/Improved Arterials

- Improved Intersections
- New/Improved Arterials
- Phase 1 (FY 2005 - FY 2010)
- Phase 2 (FY 2011 - FY 2015)
- Phase 3 (FY 2016 - FY 2020)
- Phase 4 (FY 2021 - FY 2026)
- Right of Way Preservation
- County Boundary
- Freeways
- Highways
- Other Roads

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.



0 5 10 Miles

N

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

G:\Dev\projects\RTP\09-4_Phasing_Arterials.mxd

Table 9-2: Arterial Funding Estimates, Fiscal Years 2005 to 2026 (2002 Dollars, Millions)

FUNDING AND EXPENDITURES		TOTAL
FUNDING		
Revenue Available for Local Agency Transportation Projects [2]		
CMAQ (Arterial Street Improvements)	$ 105	
CMAQ (PM-10 and other Air Quality Programs)	113	
MAG-STP	497	
MAG Half-Cent Extension	863	
Highway User Revenue Fund (Fuel Taxes, Vehicle Registration, etc.)	7,605	
Local Sources (General Fund, Local Sales Taxes, etc.)[3]	918	
Private Funding (Development Impact Fees, Developer Contributions, etc.) [4]	6,144	
TOTAL FUNDING		**$16,245**
EXPENDITURES [5]		
New Arterial Streets		
Regionally Funded New Arterial Streets	$ 412	
Programmed New Arterial Streets	107	
Planned New Arterial Streets from Existing Sources	3,300	
Total Arterial Streets		**$ 3,820**
Arterial Street Widenings & Improvements [6]		
Regionally Funded Widenings & Improvements	1,002	
Programmed Arterial Street Widenings & Improvements	499	
Planned Widenings & Improvements from Existing Sources	3,909	
Total Arterial Street Widenings and Improvements		**$ 5,410**
Operations and Maintenance [7]		**$ 6,960**
TOTAL EXPENDITURES		**$16,190**
BALANCE (Revenues minus Expenditures)		**$ 55**

Source: Maricopa Association of Governments, 2003

CMAQ: Congestion Mitigation and Air Quality

PM-10: Particulate Matter under 10 microns in diameter (criteria air pollutant)

STP: Surface Transportation Funds

Notes:

1. Contingency allowances for each project have been included in the estimates for expenditures.
2. Includes only revenue sources that are received by MAG member agencies to construct, improve, operate and maintain streets. Does not include revenue from the State Highway Fund or Federal funding sources that are limited for use on the State Highway System. Also, it does not not include revenue set aside specifically for bicycle and pedestrian projects.
3. Estimated on a per capita basis from data in the FY 2003-2007 MAG Transportation Improvement Program. Amounts included for FY 2005 through FY 2007 were taken directly from the FY 2003-2007 MAG Transportation Improvement Program.
4. Includes developer contributions and development impact fees.
5. Does not include expenditures for bicycle, pedestrian or ITS capital facilities, except where they are included as part of new roadway construction or widening or as incremental improvements to the roadway system.
6. Includes the cost to widen roadways and make incremental improvements to the roadway network as appropriate.
7. Includes the cost to maintain and operate the street network, including the cost of ITS operations, lighting, street sweeping, minor repairs, pedestrian and bicycle facilities, landscaping, pavement and other features. Includes $50 million in regional funding for ITS.

CHAPTER TEN

TRANSIT

This chapter documents the transit element of the RTP. It incorporates the findings of several regional, subregional, local, and corridor specific transit studies that have been undertaken by MAG, RPTA and their member agencies.

PUBLIC TRANSIT SERVICE

While some level of public transit service has existed for many years in the MAG Region, regional public transit is a relatively recent development. In 1985, the Arizona Legislature passed legislation authorizing a public vote in Maricopa County on a sales tax to fund regional freeway and transit improvements. This legislation also provided for the creation of the Regional Public Transportation Authority (RPTA). The subsequent successful passage of the sales tax in October of that year provided funding for a network of regional freeways that are just now reaching completion. The election also provided RPTA with a modest amount of regional funding (approximately two percent of the annual revenues raised by the new sales tax) to underwrite transit services within the county. Since the amount of regional funding was small, public transportation remained primarily a locally funded service.

Public transit in the MAG Region is comprised of several systems where much of the service is planned and operated by local cities. Cities, including Glendale, Mesa, Phoenix, Scottsdale and Tempe, provide for fixed route services in their jurisdictions. Since many fixed routes cross municipal boundaries, intergovernmental agreements have been developed among neighboring communities to jointly provide for service. This service is supplemented by additional fixed route service funded by RPTA. In addition to fixed route service, many communities in the region provide some form of demand response paratransit service to their citizens. Since the majority of operating funding for both fixed route transit and paratransit is locally derived, the level of service can vary significantly from jurisdiction to jurisdiction.

Since 1985, the MAG region has experienced phenomenal growth which has placed additional demands on its roads and public transportation services. In response to these growing transportation needs, RPTA initiated a Regional Transit System (RTS) Study in 2001 to quantify these transit needs and identify investments that would address both currently unmet and future transportation needs. The RTS Study evaluated all modes of public transit, with the exception of fixed guideway/high capacity transit, to determine how best to meet identified transportation needs in the region.

The RTS Study was developed under the guidance of an Agency Advisors Group (AAG), and with input provided by local and agency stakeholders, as well as the general public. The AAG consisted of representatives from RPTA, MAG, the Arizona Department of Transportation (ADOT), Maricopa County, the Cities of Phoenix, Tempe, Mesa, Scottsdale, Chandler, Glendale, and Avondale. Local and agency stakeholders included representatives of other cities and towns that also participated in the study process. Public participation in the planning process included public outreach events; presentations at public and civic forums; presentations at meetings with local officials and representatives of special population groups; and public participation via the RTS Study project website.

TRANSIT STUDIES

In addition to the Regional Transit System Study, several other transit planning efforts have been pursued and have provided input

to the development of the Draft Plan. These studies are listed below:

- The MAG High Capacity Transit Plan, which evaluated the potential for development of high capacity transit corridors including commuter rail, light rail transit and bus rapid transit options.

- The Annual Transit Performance Report, which provides an overview of how well the transit system performed in the prior fiscal year. The report includes the Performance Management Analysis System (Phase) Report as an appendix.

- Three recent MAG subarea studies that analyzed transportation options in the northwest area, southwest area, and southeast/northern Pinal County area.

- Major investment studies in Chandler and Scottsdale/Tempe, with transit options in identified arterial road corridors.

- Two additional transit studies (Avondale and Gilbert) are currently underway, which will identify transit options to address growing transit needs within the communities.

The results of these and other studies provide input into the development of the transit component of the RTP, which is presented in the following pages.

PLANNED NEW FACILITIES AND SERVICE IMPROVEMENTS

This Plan provides for a range of transit facilities and services throughout the region. These transit sub-modes include 1) Local fixed route bus, 2) Regional bus, 3) Rural/non-fixed route transit, 4) Commuter vanpools, 5) Paratransit, 6) Light rail transit, and 7) Commuter rail. These components are funded from a variety of sources, including federal, regional and local revenues, as well as farebox receipts.

Local Fixed Route Bus

The backbone of the region's public transportation system is local transit bus service. Local bus service makes up a significant portion of the revenue hours and miles of service and, by extension, the cost of providing that service. Local transit service consists of two categories of fixed route transit:

- Local fixed routes, which operate along set routes and follow set schedules. Local fixed routes operate primarily on arterial streets.

- Circulator / shuttle routes, which provide service within neighborhoods and activity centers and typically operate on short routes at high frequencies. Neighborhood circulators and shuttles may travel on local streets.

Local transit service serves a range of trip needs, including work, shopping, medical appointments and school trips. The service design emphasis is on area coverage, so that the maximum possible population can access the bus network. Service levels on particular routes are dictated by the demand for transit along those routes, as well as by availability of funding. Local service routes typically operate all day, seven days a week, in some cases with higher levels of service during peak travel hours. Unlike express services, which are oriented around peak periods of demand, local transit service provides access to transit for people who need to travel at all hours.

Since local routes make multiple stops and generally travel in mixed traffic, operating speeds tend to be slow. For this reason riders making longer trips may choose to use express or limited stop transit services where available.

Shuttles and neighborhood circulators fulfill several needs in support of an integrated transit system. They address local circulation needs, and provide connections to local bus,

supergrid, BRT and LRT services. Local trip needs addressed by circulators include shopping, school and work trips.

Shuttles and circulators feed riders into the rest of the transit system at transfer points such as transit centers, park-and-ride lots, and major activity centers. In this role, service frequency is especially important to minimize transfer wait times. It is critical that planning for service frequencies by time of day and specific alignments need to be coordinated with other transit planning efforts at the local and regional level to achieve good transfer performance. The Plan identifies existing services in Glendale, Phoenix, Tempe and Scottsdale and proposes new service in the following activity centers and corridors:

- 59th Avenue corridor between downtown Glendale and Glendale Community College
- Camelback corridor from Central Avenue to 24th Street
- Sky Harbor Airport
- Downtown Mesa
- Downtown Chandler
- Downtown Scottsdale
- Scottsdale corridor from the Tempe light rail line to downtown Scottsdale
- Metrocenter area

Figure 10-1 describes the local fixed route bus network.

Regional Bus

Regional transit services include both arterial grid and express type services that are designed to provide regional connections. Routes are designed to connect together activity centers, transportation nodes, or residential areas across jurisdictional boundaries. Regional bus service consists of three categories of service:

- Supergrid Routes - These are arterial grid routes that provide a regional connection function. Regional funding of this service insures consistent (and in some cases higher) service levels across jurisdictions that would not be possible if the routes had to depend on varying local funding levels from the served jurisdictions.

- Arterial Bus Rapid Transit (BRT) Routes - These operate as overlays on corridors served by local fixed route service, but provide higher speed services by operating with limited stops and with other enhancements, such as bus only lanes, queue-jumpers or signal priority systems. Arterial BRT routes can operate during peak and off-peak periods.

- Freeway BRT Routes - These use existing and proposed high occupancy vehicle (HOV) facilities to connect remote park-and- ride lots with major activity centers, including core downtown areas. These routes also can provide suburb-to-suburb connections using the regional freeway system and intermediate stops.

The supergrid network addresses a major weakness of the current fixed route bus network. The operational efficiency of the current bus network is hampered by varying service levels across routes and jurisdictions, which is a direct result of the variability of local funding from jurisdiction to jurisdiction. The supergrid addresses this problem by regionally funding key routes at a consistent level of service across all served jurisdictions.

Arterial BRT is an innovative approach to rapid transit that takes advantage of the economy and flexibility of buses and focuses on speed, comfort, and reliability. BRT provides a bridge between lower capacity local bus service and high capacity modes such as Light Rail Transit. The freeway BRT system serves two functions: providing connections between the suburbs and the central city, and suburb-to-suburb connections. The latter reflects the evolution of land use in the region, from a central Phoenix focus to a more amorphous development pattern featuring multiple employment and activity centers. The proposed freeway BRT network addresses

Regional Transportation Plan

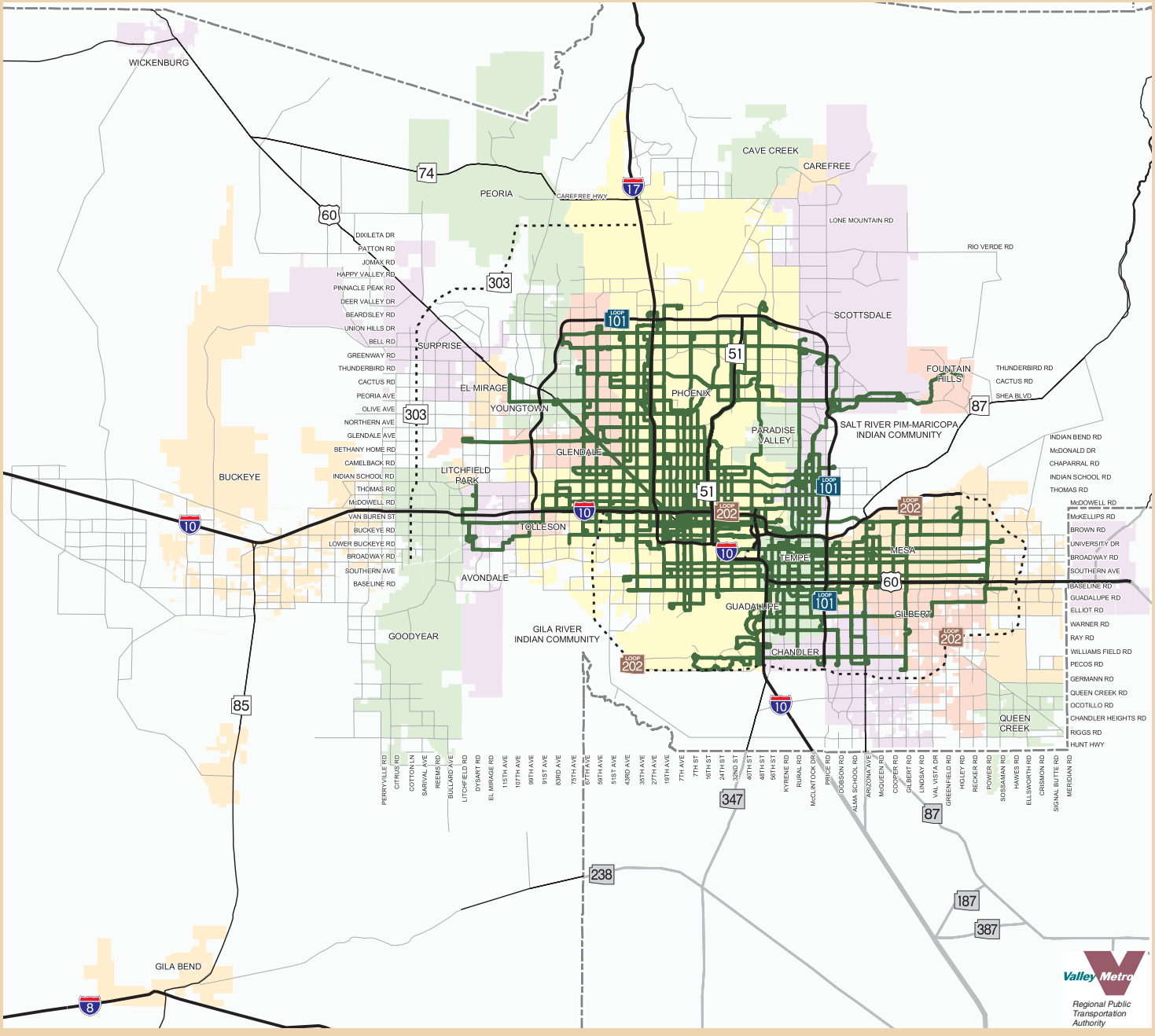
Fig. 10–1

Draft

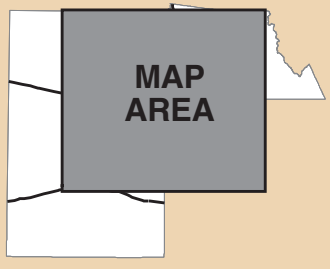
REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

Local Fixed Route Bus Network



- Bus Network
- County Boundary
- Existing Freeway
- Planned Freeway
- Highways
- Other Roads



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

G:\Dev\projects\RTP\10-1_Local_bus_net.mxd

Regional Transportation Plan

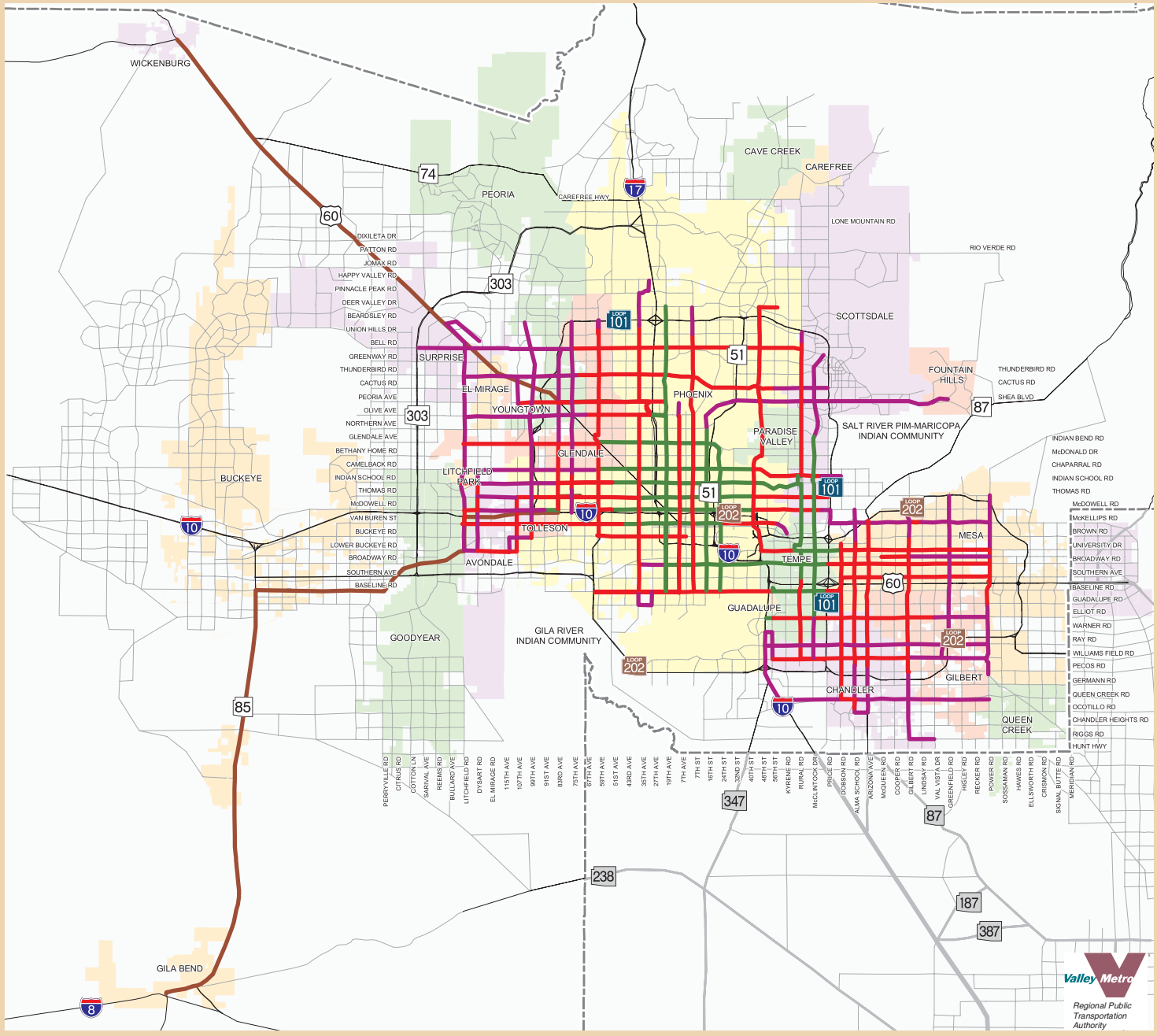
Fig. 10-2

Draft

REGIONAL TRANSPORTATION PLAN

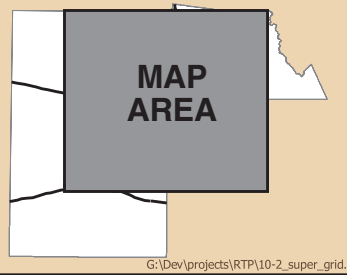
MARICOPA ASSOCIATION of GOVERNMENTS

Super Grid System: New, Enhanced, Existing, and Rural Service



- Current Service
- Proposed service has greater peak frequency than current service
- New Service
- Proposed Rural Routes
- County Boundary
- Freeways/Highways
- Other Roads

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

G:\Dev\projects\RTP\10-2_super_grid.mxd

Regional Transportation Plan

Fig. 10-3

Draft

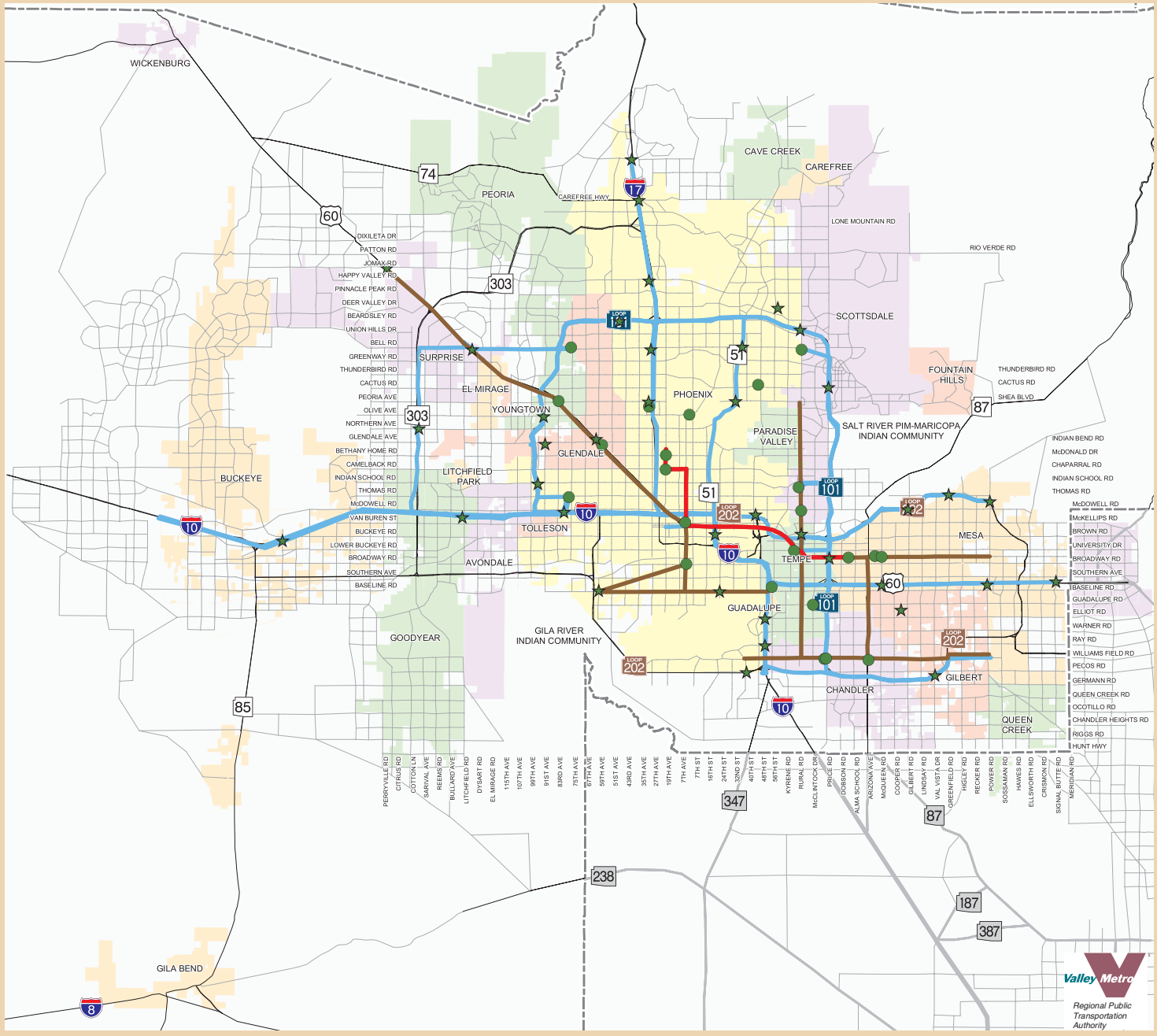
REGIONAL TRANSPORTATION PLAN

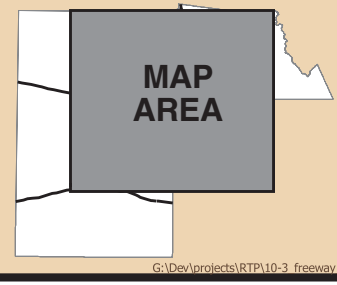
MARICOPA ASSOCIATION of GOVERNMENTS

Freeway and Arterial BRT Routes

- Approved Minimum Operating Segment
- Arterial High Capacity BRT
- Proposed Freeway Routes
- Planned or Existing Park-and-Rides
- Planned or Existing Transit Centers
- County Boundary
- Freeways/Highways
- Other Roads

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.





While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

G:\Dev\projects\RTP\10-3_freeway_brt.mxd

both these trip types through use of the region's soon to be completed regional freeway system.

These BRT routes address regional trip needs and are in turn supported by an underlying network of locally funded, locally oriented bus transit services. Under the plan, local bus service will consist of a mix of locally funded, locally oriented bus routes, and regionally funded, regionally oriented bus routes. Figure 10-2 describes the funded supergrid network, while Figure 10-3 depicts the Arterial BRT and Freeway BRT systems. These systems would be regionally-funded for both capital and operating expenses.

Bus maintenance and passenger facilities also represent a vital regional component of the transit network. These facilities include transit centers, park-and-ride lots and bus repair facilities. The Draft Plan identifies regional funding for these needs.

Rural/Flexible Route

This service type addresses the need to provide connections between the urban and rural communities of the county. For the purposes of this plan the urban area is that portion of the metropolitan area served by local fixed-route transit service. Rural routes provide connections between remote communities and urban transit nodes and address a range of trip needs including work, shopping, education, and access to various community services. Figure 10-2 shows the proposed rural services.

Commuter Vanpools

Commuter vanpools allow groups of employees to self-organize and lease a vehicle from Valley Metro to use to operate a carpool service. Vanpools can be very effective at serving suburban employment centers such as office parks and office campuses. Vanpools are essentially a personalized express service for commuters. The vanpool program is managed by RPTA through its complementary rideshare program. Vanpooling consists of a group of seven to fifteen employees who share a ride to work and divide the expenses of operating the vanpool equally. Vans are purchased by RPTA. The driver of the vanpool receives a free ride to and from work each day and is allowed limited number of personal use miles on the van each month.

In order to address projected need over the life of the plan, the vanpool fleet will increase to over 650 vehicles. This expanded fleet will provide a flexible transit solution for those trips not well served by more conventional fixed route service.

Paratransit Services

Paratransit includes all modes of transit service generally intended to serve only seniors and persons with disabilities. Paratransit service is demand-response and provides curbside pick-ups and drop-offs. In some cases, paratransit service may connect with fixed route service at transit centers or other nodes.

Paratransit consists of two types of service:

- ADA-paratransit service. Addresses the needs of disabled riders who cannot utilize fixed route bus service due to physical or cognitive disability. Service is required by the Americans with Disabilities Act (ADA) for all areas within ¾ mile of a fixed route for all ADA-certified patrons.

- Senior paratransit service. An optional service provided for the senior population and disabled patrons who do not meet ADA eligibility criteria. Paratransit can include client transportation services such as Phoenix's Reserve-a-Ride program, which provides trips to Senior Centers in the city; or other programs such as taxi vouchers or volunteer driver programs. In some communities, non-ADA paratransit services are also available to the general

public where local fixed route service is not available.

Under the plan, ADA complimentary paratransit service would be regionally funded, while Dial-a-Ride would continue to be locally funded. The reasons for this are as follows: 1) ADA complimentary paratransit service is a Federal requirement, while Dial-a-Ride is an optional service. 2) Paratransit service is expensive to provide, and should only be considered where other options, such as fixed route bus, flex route bus, or neighborhood circulators, can not meet the need or do not conform to Federal requirements. 3) Paratransit should not be seen as a transition to future fixed route bus service, since it can be very difficult to withdraw demand-response service once it has been provided, even if another service is being provided in its place.

Light Rail Transit (LRT)

The Draft Plan includes a 57.5-mile (LRT) system, which incorporates the 20.3-mile minimum-operating segment (MOS) designated in the Central Phoenix/East Valley Major Investment Study (MIS), a five-mile extension to Metro Center, a five-mile extension to downtown Glendale, an 11-mile extension along I-10 west to 79th Avenue, a 12-mile extension to Paradise Valley Mall, a two-mile extension south of the MOS on Rural Road to Southern Avenue, and a 2.5-mile extension from the east terminus of the MOS to Mesa Drive. The first segment of this system is scheduled for completion in late 2006.

The approved alignment for the LRT MOS starter segment extends from Bethany Home Road and 19th Avenue (formerly Chris-Town Mall, and recently renamed the Spectrum Mall) into downtown Phoenix, downtown Phoenix to downtown Tempe and Arizona State University, and continuing to Main and Longmore in Mesa.

The MOS of the LRT will operate primarily at-grade on city streets. The LRT will have two tracks, with light rail vehicles running in trains from one to three cars. The trains will run in both directions approximately 18 to 21 hours per day, seven days per week. The trains will initially operate every 10 minutes during peak hours and approximately every twenty minutes during off-peak hours.

Important elements of the light rail plan include provisions for park-and-ride lots at the end of rail lines and signal priority strategies to improve speed. Twenty-seven station locations have been identified on the MOS alignment, with 21 scheduled for completion by opening day and six scheduled for development by 2010. Stations are generally located about a mile apart, but closer (1/2 mile apart) in urban centers. Shuttle buses and an improved fixed route network also play an important role in the light rail system. Planned light rail service is shown in Figure 10-4. This figure also indicates additional potential high capacity corridors, which are largely beyond the 20 year horizon of the Plan.

Committed extensions to the MOS included a five-mile extension from the northern terminus to Metrocenter at approximately 29th Avenue and Peoria and a five-mile extension from the northern terminus of the MOS to downtown Glendale at approximately 59th Avenue and Glendale. Both of these five-mile extensions were included in local sales tax elections passed by voters in the cities of Glendale and Phoenix.

Advanced planning and environmental documentation is currently underway for the Metrocenter extension. Included in the planning process for Metrocenter is a review of possible LRT connections to the five-mile Glendale extension to determine the most appropriate location to connect with the Metrocenter extension.

Additional high capacity corridors were also identified for LRT in the Phoenix sales tax referendum passed in March of 2000. They include an 11-mile extension of the MOS from downtown Phoenix west to the State Capital

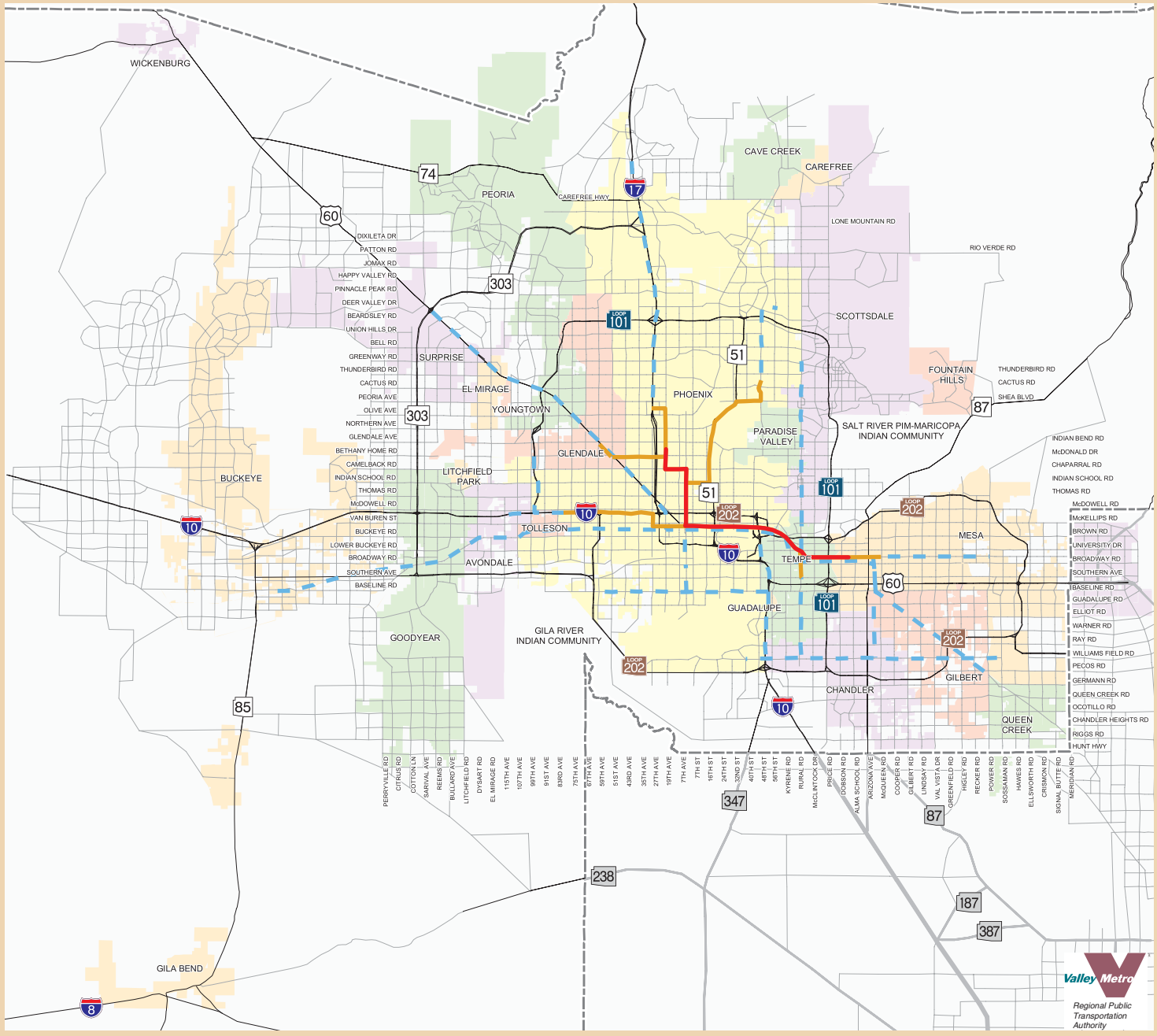
Regional Transportation Plan

Fig. 10-4

Draft

REGIONAL TRANSPORTATION PLAN

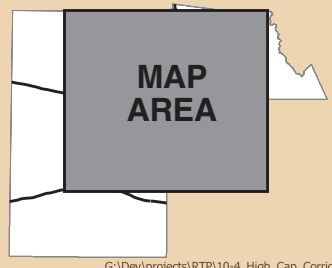
MARICOPA ASSOCIATION of GOVERNMENTS



Identified High Capacity Corridors

- Approved Minimum Operating Segment
- Committed Light Rail/High Capacity Corridors
- Eligible High Capacity Corridors
- County Boundary
- Freeways/Highways
- Other Roads

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

G:\Dev\projects\RTP\10-4_High_Cap_Corridors.mxd

complex and continuing west along the I-10 corridor to the vicinity of 79th Avenue. Another 12-mile extension is also identified from uptown Phoenix north to vicinity of Paradise Valley Mall at Tatum and Cactus Roads.

The Central Phoenix/East Valley Major Investment Study identified a high capacity corridor extending from the eastern terminus of the MOS for approximately 2.5-miles into downtown Mesa. The Draft Environmental Impact Statement completed for the 20-mile MOS included this extension.

An additional high capacity corridor was identified in a Major Investment Study completed on a north-south corridor from Tempe north into Scottsdale where LRT was identified as an ultimate technology for implementation. A portion of that corridor is the two-mile extension in Tempe traveling south from the MOS on Rural Road, as illustrated in Figure 10-4.

The plan includes the cost of all LRT operations to be from local city revenues. The high-capacity extensions extending east into Mesa and south of Rural Road in Tempe may include phased technology, beginning with BRT and implementing LRT once capacity warrants the LRT implementation.

It is estimated that by 2025, the operating costs of the LRT program would amount to $66.3 million dollars a year. This would be net of farebox revenues which are projected to be 45 percent of operating costs. A portion of the capital costs would be met by regional funding, while operating costs would be paid for from local funding sources.

Commuter Rail

The MAG High Capacity Transit Study identified over 129 miles of potential commuter rail corridors in the region. The plan recognizes that these corridors may potentially serve a vital function in addressing future travel needs in the region, especially as continuing land development limits opportunities for developing entirely new high capacity corridors. Since population densities sufficient to warrant investment in commuter rail is seen as occurring beyond the 20 year planning horizon of the RTP, the Draft Plan recommends setting aside funds during the current planning period for corridor specific studies and possibly leading to ROW preservation.

The Draft Plan provides for continuing development of commuter rail options for the region. A total of $5 million is allocated in the Plan to develop commuter rail options and implementation strategies. This is included under planning programs (see Table 5-4).

COSTS AND PHASING - REGIONALLY FUNDED FACILITIES AND SERVICES

In the preceding discussion, a broad overview of planned transit facilities and services in the region was provided. As indicated, these transit services are funded by a variety of revenue sources, including federal, regional and local revenues, and farebox receipts. The following discussion addresses those projects that would be funded from regional revenue sources. These projects and their regional funding are the focus of the Draft Plan. Tables 10-1 through 10-3 list the transit services and projects that are proposed for regional funding in the Draft Plan and indicate how their implementation would be phased during the planning period.

Figures 10-5 through 10-7 show the phasing of the proposed super grid and rural service, the proposed freeway and arterial BRT Routes, and the high capacity corridors. All cost estimates are in 2002 dollars.

The period covered by the Draft Plan was divided into four phases to indicate the development sequence of the freeway and highway projects in the Draft Plan. (Fiscal years end June 30th of the year indicated). The four phases are:

- Phase I - FY 2005 through FY 2010
- Phase II - FY 2011 through FY 2015

- Phase III - FY 2016 through FY 2020
- Phase IV - FY 2021 through FY 2026

In the first phase, the plan would fund seven supergrid routes and nine BRT freeway express routes and two arterial BRT routes. In the second phase of the plan, regional funding would be extended to an additional fourteen supergrid, six freeway BRT and one arterial BRT route. In the third phase of the plan, an additional eight supergrid and seven freeway BRT routes would be funded. The last phase of the plan, an additional three supergrid, four freeway BRT and one arterial BRT route would be added.

FUNDING SUMMARY

Table 10-4 has been prepared to provide a summary of the complete funding picture for the potential Long Range Transit element of the Draft Plan. This table lists the reasonably available funding sources for the planning period and the uses of those funds. Table 10-4 also lists annual/revenue miles of service obtained through farebox revenues. Additionally, operating and capital costs are identified as part of the Long-Range Transit Funding Plan. The balance between funds available and used indicates that the transit element can be accomplished within reasonably available funding sources over the planning period.

FUTURE/ASSOCIATED PLANNING EFFORTS

Major Investment Studies

The next step in the evaluation of the identified high capacity corridors is the Major Investment Study (MIS). The MIS allows for a more in-depth analysis of corridor alignments and transit mode alternatives and provides a transition to preliminary design and environmental review under the NEPA process. An MIS would be undertaken for each identified LRT, BRT and CRT corridor over the life of the plan. Corridor selection for study would be based on the projected implementation year for the specific corridor.

An associated effort that will impact the plan is the Phoenix Sky Harbor People Mover project that will provide a connection from the airport passenger terminals to the initial operating segment of the LRT system. Design and construction of this project is being overseen by the Airport Authority, who is working with Valley Metro Rail staff on establishing a transfer point between the people mover and the LRT system.

The Plan recognizes that transit technologies continue to evolve. To address this, a future planning effort will look at the development of alternative fuel technologies and will assess how these advances could be incorporated into the region's transit fleets through life cycle vehicle and facility replacement.

Site Evaluation & Design

Associated with the expansion of transit service will be the need for additional maintenance and passenger facilities. In order to insure that these facilities are in place when needed, an associated planning effort will include the identification and evaluation of potential sites for these associated transit facilities. This process will guide the selection of sites and will be done in cooperation with the host communities.

Transit Oriented Design (TOD) Model Ordinance

Land use and transportation are intricately linked, with investments in transportation affecting future development patterns. The reverse is also true. This relationship will influence the future of the region, and the quality of life of its residents. Designing communities for transit can generate benefits that extend beyond simple system efficiency. Transit-Oriented Design (TODs) communities are mixed-use, walkable communities that are developed around transit stops. These designs significantly reduce auto dependency. They also have proven to be an economic boon in other parts of the country, revitalizing downtowns and main streets and offering a new model for managing growth.

Recognizing the potential benefits of this type of development, the Plan recommends development of a model TOD ordinance that could be adopted by cities and towns in the region.

Table 10-1: Regional Bus Services Phasing and Costs (2002 Dollars, Millions)*

Segment	Phase (Begin Service)	Operating Cost	Operating Cost by Phase: Phase I	Phase II	Phase III	Phase IV
Freeway Express/BRT						
North Loop 101 Connector Surprise to Scottsdale P&R)	I	$ 4.5	$ 1.0	$ 1.1	$ 1.1	$ 1.2
North Glendale Express	I	9.4	1.7	2.5	2.5	2.7
Papago Fwy Connector (to West Buckeye P&R)	I	3.3	0.6	0.9	0.9	1.0
West Loop 101 Connector (to North Glendale P&R)	I	5.0	0.9	1.3	1.3	1.5
East Loop 101 Connector	I	3.2	0.4	0.9	0.9	1.0
Red Mountain Express	I	14.2	2.0	4.0	4.0	4.4
Main Street Arterial BRT	I	10.1	1.4	2.8	2.8	3.1
Desert Sky Express	I	8.8	0.8	2.6	2.6	2.8
Apache Junction Express	I	3.5	0.3	1.0	1.0	1.1
Arizona Avenue Arterial BRT	I	8.6	0.8	2.5	2.5	2.8
Buckeye Express (to West Buckeye P&R)	I	1.7	0.1	0.5	0.5	0.6
Superstition Fwy Connector	II	0.8	-	0.2	0.3	0.3
Pima Express (To Airpark P&R)	II	3.2	-	0.8	1.1	1.2
Grand Avenue Limited	II	5.4	-	1.3	1.9	2.1
Scottsdale/Rural Arterial BRT	II	9.0	-	0.8	4.2	4.2
Peoria Express (to Peoria P&R)	II	7.6	-	0.9	3.1	3.5
S. Central Avenue	II	21.3	-	2.7	8.9	9.8
South Central Avenue Arterial BRT	II	3.8	-	0.5	1.6	1.7
Black Canyon Freeway Corridor	II	4.8	-	0.2	2.2	2.4
Ahwatukee Connector	III	1.1	-	-	0.5	0.6
Santan Express	III	9.1	-	-	2.8	6.2
Anthem Express	III	2.4	-	-	0.5	1.9
Red Mountain Fwy Connector	III	2.3	-	-	0.5	1.8
Superstition Springs Express	III	15.5	-	-	3.3	12.2
Deer Valley Express	III	9.4	-	-	0.8	8.6
Avondale Express	III	6.6	-	-	0.5	6.0
North I-17 Express	IV	0.7	-	-	-	0.7
Loop 303 Express	IV	3.7	-	-	-	3.7
SR. 51 Express	IV	5.4	-	-	-	5.4
Chandler Boulevard Arterial BRT	IV	14.1	-	-	-	14.1
Ahwatukee Express	IV	12.0	-	-	-	12.0
Regional Passenger Support Services		21.9	1.1	2.9	5.2	12.7
Sub-total		**$ 232.1**	**$ 11.1**	**$ 30.5**	**$ 57.6**	**$ 133.1**
Supergrid Route						
Scottsdale/Rural	I	$ 83.2	$ 20.7	$ 20.8	$ 20.8	$ 20.9
Glendale Avenue	I	11.6	2.1	3.0	3.0	3.4
Main Street	I	17.0	2.4	4.7	4.7	5.2
Baseline/Southern/Dobson ext	I	87.3	7.7	25.7	25.7	28.2
Arizona Avenue/Country Club	I	25.3	2.2	7.4	7.4	8.2
Gilbert Road	I	26.6	2.3	7.8	7.8	8.6
Chandler Blvd.	I	22.2	0.7	7.0	7.0	7.6
University Drive (to Ellsworth Road)	II	42.3	-	12.7	14.1	15.5
Camelback Road	II	6.1	-	1.8	2.0	2.2
Broadway	II	41.1	-	10.3	14.7	16.1
Elliot Road	II	40.6	-	10.2	14.5	16.0
Alma School Rd.	II	26.8	-	6.7	9.6	10.5
Hayden/McClintock	II	41.7	-	8.0	16.0	17.6
Peoria Ave./Shea (3)	II	12.6	-	2.4	4.9	5.3
Dysart Road	II	8.2	-	1.6	3.2	3.5
59th Avenue	II	11.4	-	1.4	4.7	5.2
McDowell/McKellips	II	35.3	-	4.4	14.7	16.2
Power Road	II	15.2	-	1.9	6.3	7.0
Tatum/44th Street	II	3.9	-	0.5	1.6	1.8
Ray Road	II	41.9	-	5.2	17.5	19.2
Van Buren	II	8.6	-	0.4	3.9	4.3
Queen Creek Road (Pecos P&R to Power Road)	III	25.8	-	-	10.0	15.8
Bell Road (via 303)	III	14.8	-	-	4.6	10.1
Waddell/Thunderbird	III	5.3	-	-	1.7	3.6
Thomas Road (2)	III	11.7	-	-	3.7	8.1
Buckeye Road (Litchfield Road to Central Ave.)	III	2.0	-	-	0.4	1.6
Indian School Road	III	9.5	-	-	2.0	7.5
Dunlap/Olive Avenue	III	5.5	-	-	1.2	4.3
99th Avenue	III	1.8	-	-	0.4	1.4
83rd Avenue/75th Avenue	IV	4.8	-	-	-	4.8
Litchfield Road	IV	3.0	-	-	-	3.0
Greenfield Road	IV	5.3	-	-	-	5.3
Regional Passenger Support Services		78.5	4.2	16.2	25.6	32.4
Sub-total		**$ 776.8**	**$ 42.4**	**$ 160.2**	**$ 253.7**	**$ 320.5**
Total		**$1,009.0**	**$ 53.5**	**$ 190.6**	**$ 311.3**	**$ 453.6**

Source: Valley Metro / Regional Public Transportation Authority, 2003; Maricopa Association of Governments

* Runs through calendar year 2025

Table 10-2: Light Rail Transit Phasing and Costs (2002 Dollars, Millions)

Facility	Segment	Length (miles)	Regional Costs: Route Construction	Regional Costs: Support Infrastructure	Phase
MOS	I9th Ave/Bethany Home to Apache/Longmore	20	$ 0.0	$ 164.0	I
Metro Center Link	I9th Ave/Bethany Home to Metrocenter	5	150.0	30.0	I
Glendale Link	19th Ave/Bethany Home to Downtown Glendale	5	150.0	30.0	III
I-10 West Link	Washington/Central to I-10 / 79th Ave	11	660.0	0.0	III
Northeast Phoenix Link	Indian School/Central to Paradise Valley Mall	12	720.0	0.0	IV
Tempe South Link	Main/Rural to Rural/Southern	2	120.0	0.0	II
East Mesa Link*	Main/Longmore to Main/Mesa Drive	2.7	150.0	0.0	II
Systemwide		na	0.0	154.0	
Totals		**57.7**	**$1,950.0**	**$ 378.0**	

Source: Valley Metro / Regional Public Transportation Authority, 2003; Maricopa Association of Governments

MOS: Minimum Operating Segment

* Technology to be determined.

Table 10-3
Schedule of Bus-Related Capital Investments and Operating Costs (2002 Dollars)

Cost Item	Unit Type	Units	Spares	Cost/Unit	Total Cost
Capital Investments					
Fleet					
Fixed Route Networks	Bus	1,773	365	$ 400,000	$ 855,000,000
Rural Routes	Rural Bus	30	6	60,000	2,160,000
Paratransit	DAR Van	830	170	72,000	72,000,000
Van Pool	Vanpool Van	1,350	54	30,000	42,120,000
Sub-total Fleet		**3,983**	**595**		**$ 971,280,000**
Capital Facilities					
13 Park & Ride Lots	Per Parking Space	3,500		$ 14,000	$ 49,000,000
6 Transit Centers, 4 Bay	Facilities	6		1,600,000	9,600,000
4 Transit Centers, 6 Bay	Facilities	4		2,300,000	9,200,000
3 Transit Centers, Major Activity Centers	Facilities	3		5,500,000	16,500,000
5 Bus Maintenance Facilities	Vehicle	1,425		118,000	168,150,000
2 DAR & Rural Bus Maintenance	Vehicle	518		32,000	16,576,000
1 Vanpool Maintenance	Vehicle	778		6,000	4,668,000
Dedicated BRT ROW & Maint	Per Mile	10		7,600,000	76,000,000
Arterial BRT ROW Improvements	Per Mile	50		330,000	16,500,000
Bus Stop Pullouts/Improvements	Avg per Location	1,200		22,000	26,400,000
ITS/VMS	Per Vehicle	2,154		11,000	23,688,500
Sub-total Capital Facilities		**6,135**			**$ 416,282,500**
Contingency					**$ 66,137,500**
Total Fleet and Capital Facilities					**$1,453,700,000**
			26.6%	RARF:	387,400,000
			73.4%	FEDERAL:	1,066,300,000

Allocation by Type of Service

Component	Sales Tax	Federal	Total	*Percent*
Bus Capital	$ 238,711,410	$ 657,041,755	$ 895,753,164	*61.6%*
Facilities	116,223,839	319,900,566	436,124,405	*30.0%*
Paratransit	20,102,013	55,329,832	75,431,845	*5.2%*
Vanpool	11,759,678	32,367,952	44,127,630	*3.0%*
Rural	603,060	1,659,895	2,262,955	*0.2%*
Total Capital	**$ 387,400,000**	**$1,066,300,000**	**$1,453,700,000**	*100.0%*

Other Operating Funds	Sales Tax	Total
Paratransit	$ 199,000,000	$ 199,000,000
Rural/Non-Fixed Routes	12,000,000	12,000,000
Total Other Operating Funds	**$ 211,000,000**	**$ 211,000,000**

Source: Valley Metro / Regional Public Transportation Authority, 2003; Maricopa Association of Governments

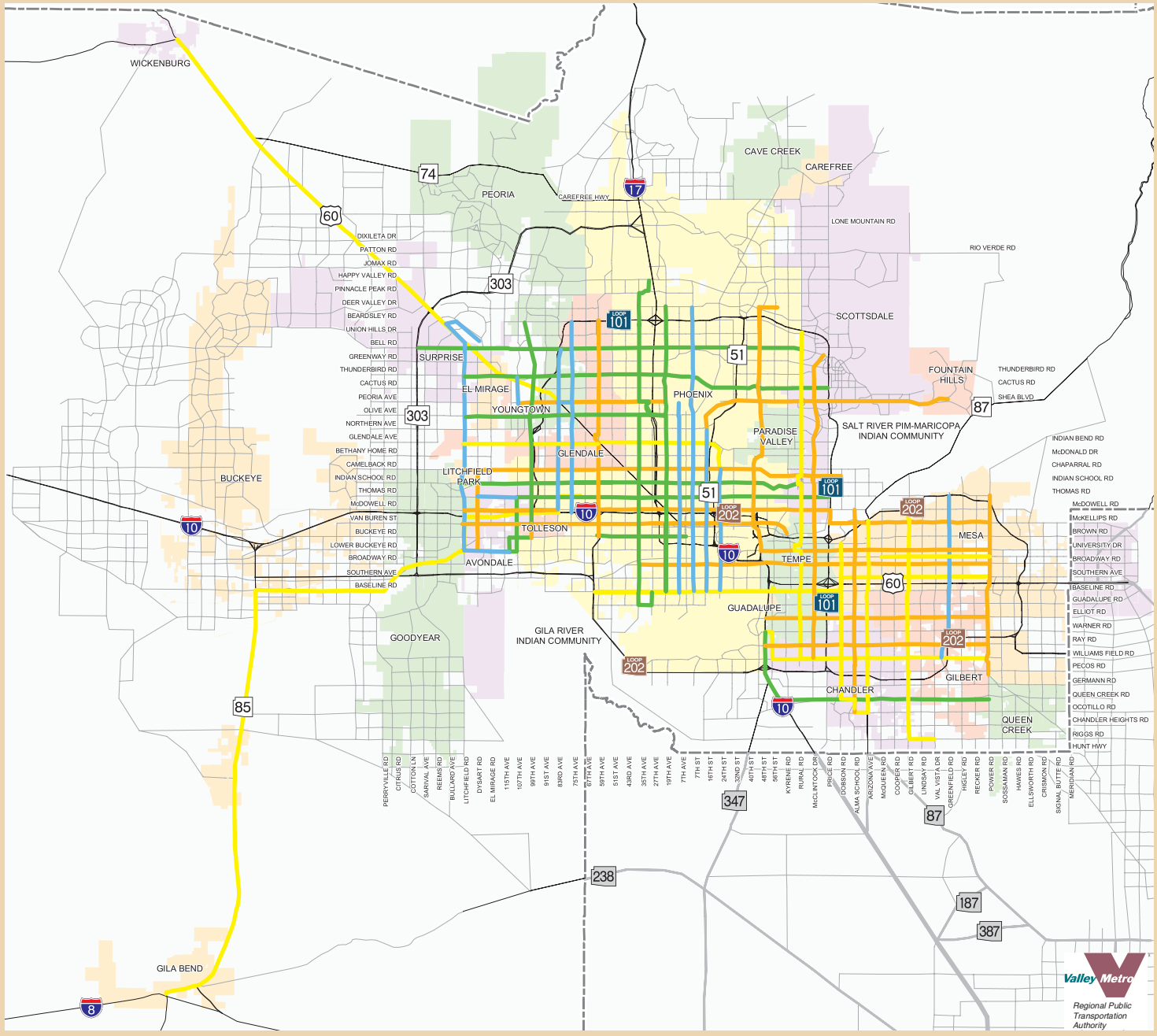
Regional Transportation Plan

Fig. 10-5

Draft

REGIONAL TRANSPORTATION PLAN

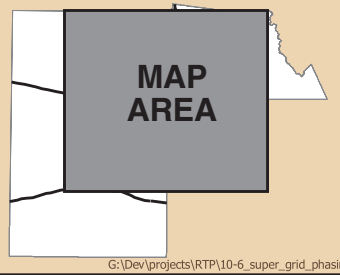
MARICOPA ASSOCIATION of GOVERNMENTS



Super Grid and Rural Service Plan Phasing

- Phase 1 (FY 2005 - FY 2010)
- Phase 2 (FY 2011 - FY 2015)
- Phase 3 (FY 2016 - FY 2020)
- Phase 4 (FY 2021 - FY 2026)
- County Boundary
- Freeways/Highways
- Other Roads

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

G:\Dev\projects\RTP\10-6_super_grid_phasing.mxd

Regional Transportation Plan

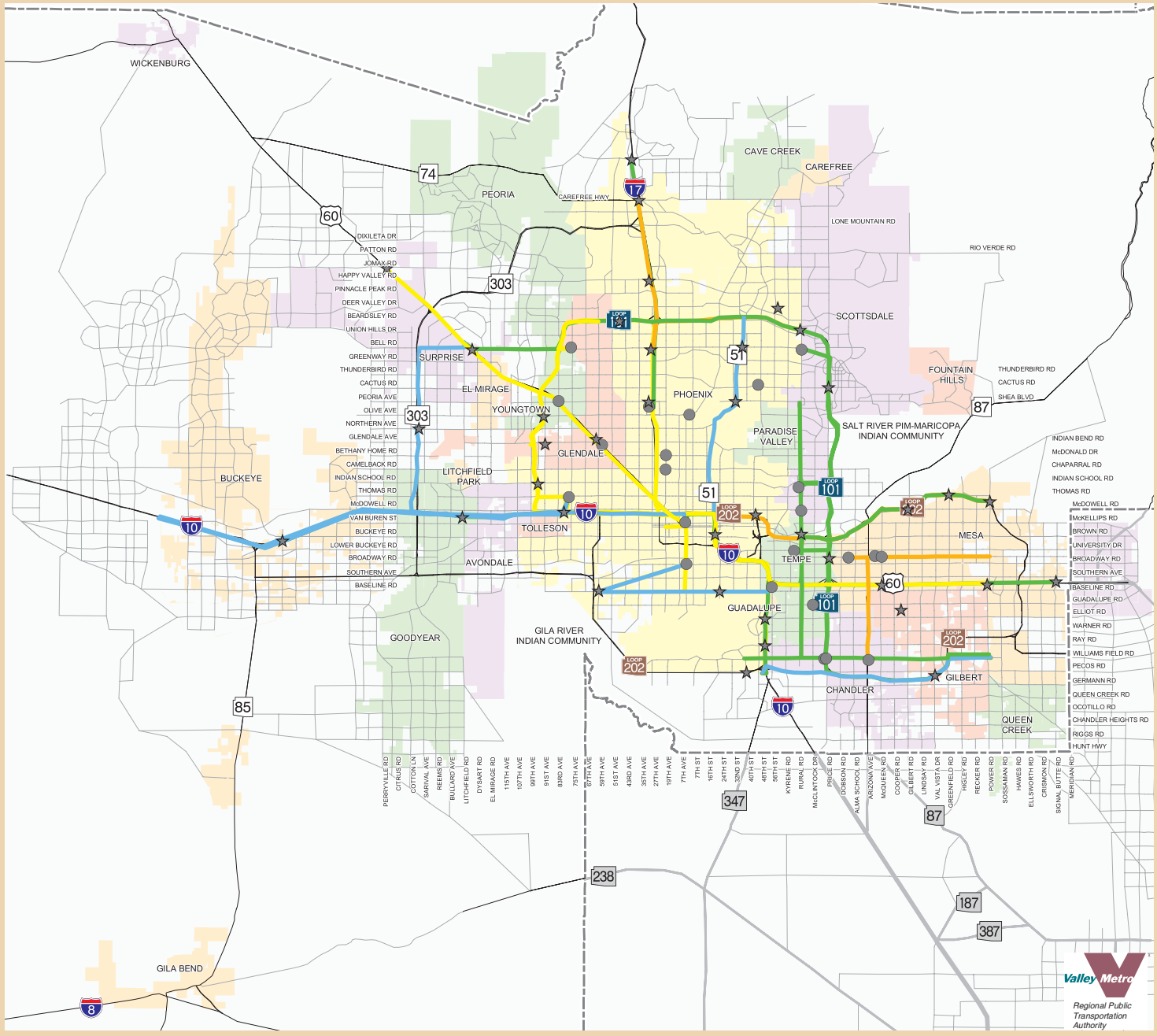
Fig. 10-6

Draft

REGIONAL TRANSPORTATION PLAN

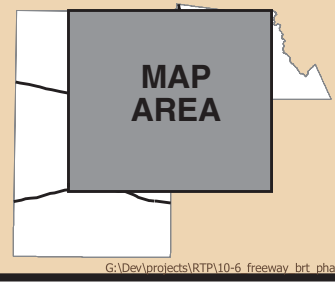
MARICOPA ASSOCIATION of GOVERNMENTS

Freeway and Arterial BRT Routes Plan Phasing



- Phase 1 (FY 2005 - FY 2010)
- Phase 2 (FY 2011 - FY 2015)
- Phase 3 (FY 2016 - FY 2020)
- Phase 4 (FY 2021 - FY 2026)
- Planned or Existing Park-and-Rides
- Planned or Existing Transit Centers
- County Boundary
- Freeways/Highways
- Other Roads

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

G:\Dev\projects\RTP\10-6_freeway_brt_phasing.mxd

Regional Transportation Plan

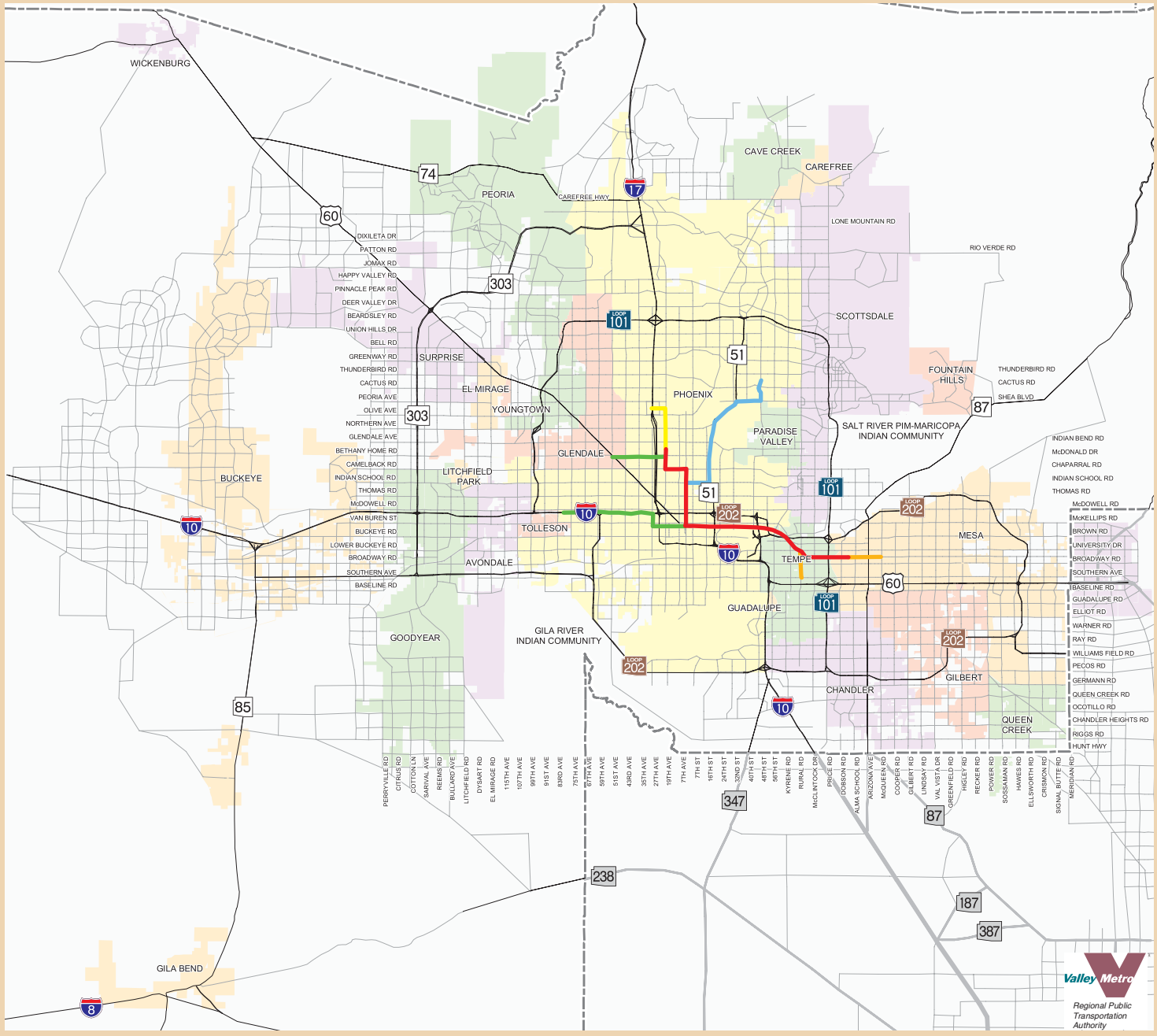
Fig. 10-7

Draft

REGIONAL TRANSPORTATION PLAN

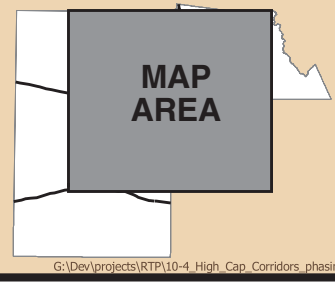
MARICOPA ASSOCIATION of GOVERNMENTS

Identified High Capacity Corridors Plan Phasing



- Phase 1 (FY 2005 - FY 2010)
- Phase 2 (FY 2011 - FY 2015)
- Phase 3 (FY 2016 - FY 2020)
- Phase 4 (FY 2021 - FY 2026)
- Phoenix Minimum Operating Segment
- County Boundary
- Freeways/Highways
- Other Roads

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

G:\Dev\projects\RTP\10-4_High_Cap_Corridors_phasing.mxd

Table 10-4: Transit Funding Plan, FY 2005 through FY 2026 (2002 Dollars, Millions)

FUNDING AND EXPENDITURES		TOTAL
FUNDING		
Regional		
MAG Half-Cent Extension (12)	$ 2,830.6	
Federal Transit (Section 5307)	946.3	
Federal Transit (Section 5309)	945.0	
Congestion Mitigation and Air Quality (CMAQ)	279.0	
Total Regional Funding		**$ 5,001**
Local / Other		
Federal Light Rail Transit & Bus (Section 5309)	$ 550.0	
Fixed Route Bus Fares (7)	1,397.3	
BRT Freeway and Express Fares	29.6	
Rural Transit Fares	1.2	
Light Rail Transit Fares	78.2	
Paratransit Vehicle Fares	41.4	
Local General Funds	1,027.0	
Local Sales Tax (11)	3,141.9	
Local Funds Provided for Rail Capital	2,080.7	
LTAF II	165.0	
Total Local / Other Funding		**8,518**
TOTAL FUNDING		**$13,519**
EXPENDITURES (1)		
Regionally Funded		
Capital		
Regional Bus Service	$ 895.7	
Bus Maintenance and Passenger Facilities (3) (4) (5)	436.1	
Light Rail Transit (LRT) Regional Infrastructure for MOS & Extensions (6)	677.7	
Light Rail Transit- Additional Miles (2)	1,650.0	
Paratransit (Americans with Disabilities Act, or ADA, compliant)	75.4	
Vanpool	44.1	
Rural/Non-Fixed Route Transit	2.3	
Total Capital	$ 3,781.3	
Operating		
Regional Bus Service	$ 1,009.0	
Light Rail Transit	0.0	
Paratransit (ADA-compliant) (10)	199.0	
Vanpool	0.0	
Rural/Non-Fixed Route Transit	12.0	
Total Operating	$ 1,220.0	
Total Regionally Funded Expenditures (Capital and Operating)		**$ 5,001**
Locally / Other Funded		
Capital		
Fixed Route Buses (Local and Express)	$ 1,166.8	
Paratransit Vehicles	127.0	
Light Rail (13)	1,785.4	
Operating Support	244.5	
Vanpool Program	56.8	
Park & Ride Lots and Bus Pullouts (4)	285.6	
Transit Stations, Centers and Stops	95.0	
Maintenance Facilities (5)	235.0	
Other Capital Support (3) (6)	53.6	
Total Capital	$ 4,049.7	
Operating Costs		
Supergrid	$ 310.8	
Freeway Bus Rapid Transit (BRT) and Express Bus (8)	102.8	
Arterial BRT (8)	15.5	
Paratransit (10)	266.7	
Rural Routes	0.0	
Light Rail (9)	173.8	
Local	3,337.8	
Planning	20.2	
Travel Demand Management and Vanpool Program	240.5	
Total Operating	$ 4,468.1	
Total Locally/Other Funded Expenditures		**8,518**
TOTAL EXPENDITURES		**$13,519**

Source: Valley Metro / Regional Public Transportation Authority, 2003; Maricopa Association of Governments

** The MAG half-cent sales tax extension covers transit and operating costs for calendar years 2006 through 2025 only.*

Notes:

1. Includes local and regional expenditures for public transportation.
2. Assumes that LRT will expand beyond the initial 20 mile minimum operating segment (MOS) in FY 2007.
3. Includes computer and communications equipment, support vehicle purchases and other equipment to support various programs.
4. Includes the twenty Park & Ride Sites identified in the MAG Park and Ride Study as well as Park-n-Ride improvements identified by the City of Phoenix.
5. Includes new construction identified in the RPTA Transit Operating Facility Master Plan and assumes maintenance costs after FY 2010.
6. Includes Intelligent Transportation System Costs.
7. Assumes fare revenue will be 30 percent of local bus operating costs.
8. Assumes that fare revenue will be 25 percent of express bus/BRT operating costs.
9. Assumes that fare revenue will be 45 percent of LRT operating costs.
10. Assumes fare revenue will be 8.9 percent of Dial-a-Ride operating costs.
11. Includes sales tax in the Cities of Phoenix, Mesa, Tempe, and Glendale.
12. Assumes reauthorization of the regional sales tax in 2006.
13. Assumes federal funds are available for high capacity transit after the initial segment in FY 2007. FY 2001-2007 figures from Central Phoenix/East Valley LRT Project: Section 5309 Supplemental Report on New Start, Table 8, September 2001. For FY 2008-2022, federal funds assumed to be approximately 50 percent of capital costs, up to a regional total of $945 million.

CHAPTER ELEVEN

AIRPORTS

The purpose of this chapter is to provide an overview of airport planning in the MAG Region, to detail the intended Airport Plan for the Region, and to assess proposed project costs and phasing.

AIRPORT PLANNING

At present, MAG is the officially designated agency for regional aviation system planning. The first MAG Regional Aviation System Plan (RASP) was developed in 1979, with subsequent updates to the plan occurring in 1986 and 1993. In December of 1996, the MAG Regional Council approved a MAG RASP Implementation Study to facilitate with the long-term implementation of the RASP. In 2000, MAG initiated an update of its Regional Aviation System Plan, which is expected to be completed by the end of 2003.
When considering demand projections, airline aircraft activity at Phoenix Sky Harbor International Airport has nearly doubled between 1960 and 1990, while the number of air passengers has increased substantially. In 2002, Phoenix Sky Harbor was estimated to have over 36 million passengers (which is about the same traffic level experienced in the year preceding the terrorist attacks of September 11, 2001). By 2025, it is projected that the total number of air passengers served at Sky Harbor will range from 56 to 72 million passengers.

The aviation demand projections for Phoenix Sky Harbor were taken from the 2000 MAG RASP Update. Projections of based aircraft and aircraft takeoffs and landings were also prepared for 16 general aviation airports.

The number of general aviation-based aircraft in Maricopa County have increased by more than 500 percent between 1960 and 1990. However, based aircraft are forecast to grow at a slower rate over the next 25 years. It is anticipated that there will be approximately 7,300 based aircraft by 2025.

REGIONAL AIRPORT PLAN

The 1993 MAG RASP Update evaluated the long-term air transportation needs in the region, and recommended improvements to accommodate future demand based on forecasts prepared in 1992. Because the 2000 MAG RASP Update, which is currently in progress, has developed new forecasts, the 1993 Update's recommendations will need to be reevaluated. The 1993 MAG RASP Update recommendations are listed below and accompanied by comments on which projects have been completed, and which may need to be reevaluated.

- Extend the north runway at Phoenix Sky Harbor International Airport.

- Develop Williams Gateway Airport as a civilian airport serving commercial carriers, cargo and general aviation.

- Construct a parallel runway at Phoenix Goodyear Airport. A second runway was deleted from the Glendale Airport Master Plan in 1998.

- Construct runway extensions at the following general aviation airports:

  - Buckeye Municipal
  - Glendale Municipal
  - Mesa-Falcon Field
  - Wickenburg Municipal

- Identify and protect potential new Visual Flight Rule (VFR) airport site areas to serve general aviation demand beyond 2015 including:

  - Northwest Phoenix/Peoria /Pleasant Valley (This will need to

be reevaluated to ensure that any such site does not intrude on the mission of Luke Air Force Base
  - Estrella Sailport/Gila River Indian Community

- Protect the mission of Luke Air Force Base by establishing procedures to minimize interactions with military activity.

- Maximize economic impacts for Maricopa County with Williams Gateway Airport reused as a satellite commercial service, cargo and general aviation airport.

- Support implementation of individual airport master plans.

- Pursue airport demand management options.

- Accommodate general aviation demand primarily at existing publicly owned airports.

A number of the projects identified above have already been implemented. These include the extension of runways at Phoenix Sky Harbor International and Glendale Municipal Airport, and the initiation of limited commercial service at Williams Gateway Airport. Two projects considered in the 2000 MAG RASP Update, the runway extension project at Mesa Falcon Field and the construction of a second runway at Glendale, have been eliminated from consideration. Other projects identified are being reevaluated in the 2000 MAG RASP Update.

A map of the airports included in the RASP are identified in Figure 11-1. The map classifies airports by commercial service, military, general aviation reliever and general aviation categories. A general aviation reliever airport is an airport that relieves Phoenix Sky Harbor Airport by providing an alternative landing place for small aircraft.

At present, there are higher forecasts for Phoenix Sky Harbor International than those included within the 1993 MAG RASP Update. This requires a reevaluation of whether Sky Harbor's three runways will be adequate to meet the projected demand to the year 2025. If the demand cannot be met on three runways, consideration should be given to the concept of expanding Sky Harbor's capacity, and/or finding additional air carrier capacity at existing or new airports.

An updated project listing together with costs for the MAG system airports was conducted as a part of the MAG RASP Implementation Plan approved by the MAG Regional Council in December, 1996. The project listing is consistent with the recommendations contained in the 1993 MAG RASP Update, but the costs are updated, and more projects funded solely from local sources are identified. The projects and costs will need to be revamped to take into account the results of the 2000 MAG RASP Update. These revised costs and projects are identified in the funding plan presented in the following section on project costs and phasing.

PLAN IMPLEMENTATION

Subsequent to the approval of the MAG RASP Update in December 1993, two major projects that were recommended have either been implemented, or are in the implementation phase. In March of 1994, Williams Air Force Base was opened to civilian use and redesignated as Williams Gateway Airport. At Sky Harbor the third runway was opened to traffic in October of 2000, and the extension of the airport's north runway is currently underway.

To facilitate the implementation of other recommendations in the MAG RASP Update, the MAG Regional Council approved a MAG RASP Implementation Study in December 1996. The study accomplished the following:

Regional Transportation Plan

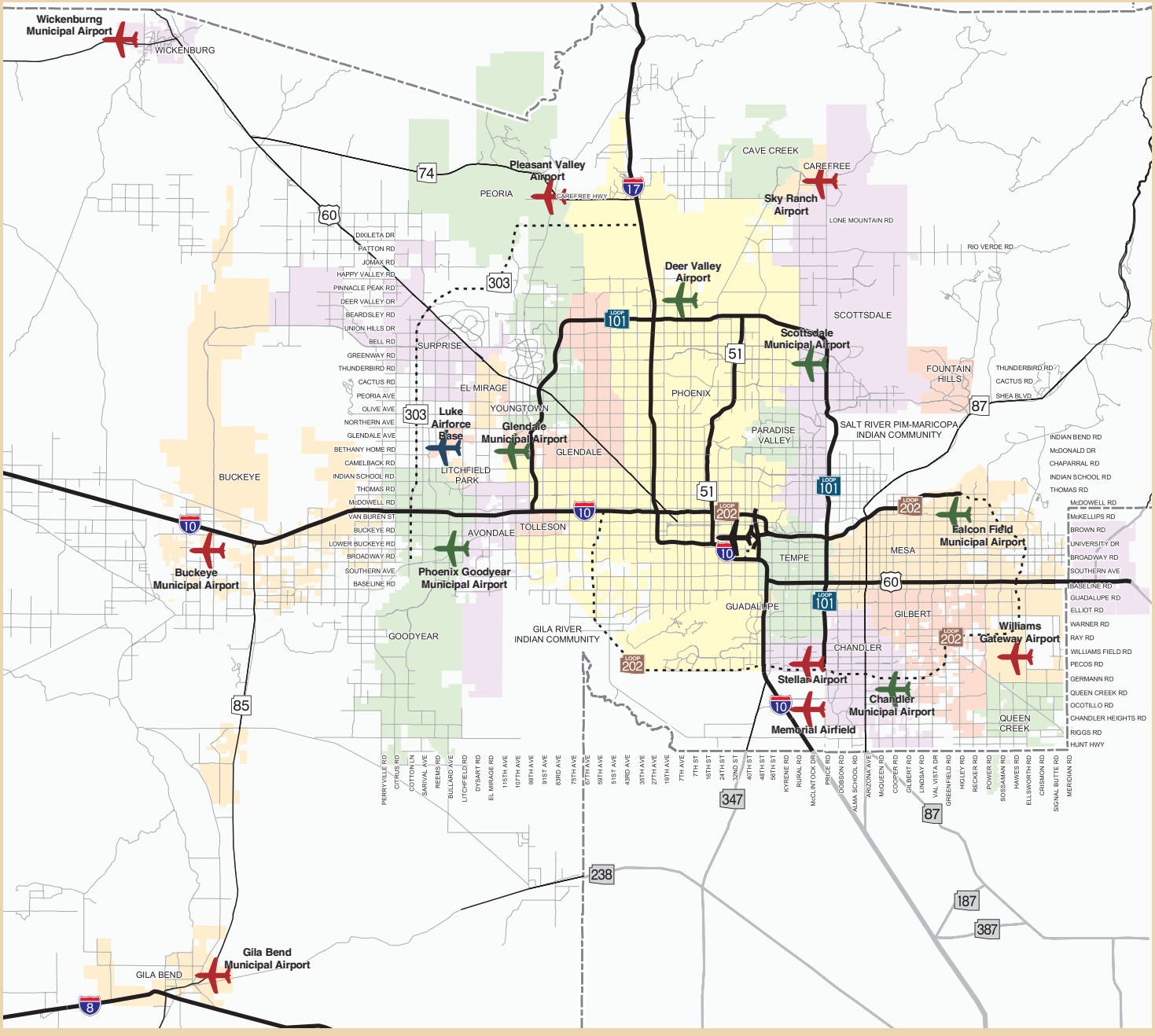
Fig. 11-1

Draft

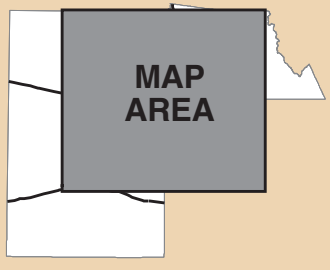
REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

Regional Aviation System Plan



- Commercial Service
- Military
- General Aviation Reliever
- General Aviation
- County Boundary
- Existing Freeway
- Planned Freeway
- Highways
- Other Roads



Miles 0 5 10

N

While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

G:\Dev\projects\RTP\11-1_Aviation_plan.mxd

- Created an airport database and accompanying sketches to facilitate maintaining data on MAG airports.

- Established a Consolidated Airport Capital Improvement Program (CACIP) along with generalized priorities by project category. While this CACIP did not change any of the recommendations in the MAG RASP Update, it does include a more extensive list of projects that are based on local needs and are not eligible for federal or state funds. It also includes more current cost estimates. The results of the CACIP are included in the funding program.

- Assessed intermodal access to airports.

- Prepared computerized noise contours and superimposed them over existing and general plan land use coverages.

In 1996, MAG staff also worked with the MAG Building Codes Committee to develop a sound attenuation ordinance for the area around Luke Air Force Base. This ordinance will help meet one of the objectives of the MAG RASP -- to preserve the military mission of Luke Air Force Base -- by reducing interior noise levels of new residences constructed within the noise contours of Luke Air Force Base. The model ordinance was approved by the MAG Regional Council in April of 1996. Subsequently, several member agencies have adopted ordinances based on the model ordinance. These members include El Mirage, Maricopa County, Goodyear and Glendale.

The MAG RASP Update 2000 is underway. To date, the following tasks have been completed:

- Inventory - a database was prepared in hard copy and electronic format to help evaluate the existing status of the air transportation system, and to provide information which is necessary to prepare forecasts and determine facility requirements.

- Forecasts - Forecasts of passengers, aircraft operations, cargo, and based aircraft were prepared for the region and by individual airport.

- Demand/Capacity Analysis - Annual and hourly airport capacities were calculated and compared with forecasts to identify potential capacity shortages.

- Alternatives - Alternatives were defined in order to examine different development options.

These alternatives are currently being evaluated in terms of factors such as airspace, land use compatibility, cost, ground access and user convenience. The evaluation of these alternatives, together with input received from aviation stakeholders and the MAG RASP Policy Committee, will be used to develop a plan recommendation and an implementation program.

FUNDING SUMMARY

The funding plan included in the RTP is based on the MAG Regional Aviation System Plan, which was adopted in December 1993. The project costs have been updated to 2001 dollars. While the update of that plan is currently underway, capital improvement recommendations and their costs have not yet been developed. In addition, significant changes in state funding may reduce the amount of resources available to cover the costs of these projects. It is anticipated that the MAG RASP Update 2000 will be completed by the end of the year. At that time it will be necessary to reevaluate the ability of existing and projected sources of revenue to cover the costs of the long-range aviation improvement program. These caveats need to be taken into account in

TABLE 11-1

REGIONAL AVIATION SYSTEM CAPITAL FUNDING PLAN (In Millions of 2001 Dollars)					
Period	**Local**	**State**	**Federal**	**Other**	**Total**
Phase I	$107	$17	$365	$73	$562
Phase II	40	4	80	18	142
Phase III	52	5	103	24	184
Total All Periods	**$199**	**$26**	**$548**	**$115**	**$888**

Source: Maricopa Association of Governments

reviewing the funding plan described in the following paragraphs.

A funding plan was developed to implement the recommendations as specified within the 2000 MAG RASP. Airport improvement costs were estimated in 2001 dollars as noted in Table 11-1.

Of the approximately $888 million needed in airport development projects, $548 million are eligible for federal funds, $26 million are eligible for state funds, $199 million is required from local sponsors, and $115 million is required from private and other sources (e.g., airlines, developers, non-aviation government agencies, and fixed base operators).

This assumes that the federal Airport Improvement Program (AIP) continues through the 2022 planning period at an annual national funding level of $2 billion, and that State airports continue to receive between $30 and $50 million annually in AIP funds. This program generates an estimated $118 million in entitlement funds for Phoenix Sky Harbor International, Williams Gateway and Scottsdale Airports, and between $156 million and $338 million in discretionary funds that can generally be used at any eligible airport.

An estimated $1.0 billion in Passenger Facility Charges (PFCs) could be generated at Phoenix Sky Harbor International and Williams Gateway Airports though 2022. It is anticipated that Scottsdale Airport will also be eligible to apply for PFC revenues. The effects of imposing PFCs for use at eligible airports, and the additional AIP funding that may be available for other airports in the Region for airport development, would be significant.

While in the past an assumption was made that the Arizona Department of Transportation funding levels would continue at $10 to $12 million annually, recent state budget problems and efforts to reconcile them has resulted in a decline of Aviation Fund Revenues. Therefore, previous assumptions of the region receiving one-half of an estimated $100 million to $120 million will need to be reduced by about 50 percent. Total operations and maintenance costs for airports are estimated to be at $2.6 billion over the 20 year planning period.

CHAPTER TWELVE

BICYCLES

The purpose of this chapter is to provide an overview of bicycle planning, and to address current plans, which collectively, are utilized in an effort to plan for future bicycle planning and facilities throughout the region. This chapter also addresses future projects and phasing for construction, development, or implementation of future planning and improvements, and also addresses other relevant topics and activities pertaining to bicycle planning beyond the 20-year planning horizon of the MAG RTP.

BICYCLE PLANNING

MAG has maintained an active role in promoting the establishment of improved travel opportunities for bicyclists for many years. In 1991, MAG developed a plan to address the needs and concerns of bicyclists in the region, and to encourage bicycling as a way to alleviate congestion and air pollution. The MAG Regional Bicycle Plan was adopted by the Regional Council in February, 1992, and was incorporated into the region's ongoing long range transportation planning process, which is updated on an annual basis.

On June 9, 1998, President Clinton signed the Transportation Equity Act for the 21st Century (TEA-21) into law. This legislation has numerous provisions which relate to improving conditions for bicycling and walking, and improving safety of the two modes. TEA-21 confirms and continues the principle established in the Intermodal Surface Transportation Efficiency Act (ISTEA): "due consideration" of bicycle and pedestrian travel needs is to be given during the planning, developing, and construction of all Federal-aid transportation projects.

The MAG Regional Bicycle Task Force, which was responsible for assisting in the development of the original MAG Bicycle Plan in 1992, has maintained an active role in promoting improved travel opportunities for bicyclists. The MAG Regional Bicycle Task Force continues to provide key input into bicycle planning and decision making activities, and is comprised of representatives from MAG member agencies, the Arizona Department of Transportation (ADOT) and Valley Metro. The Task Force was also very involved in the development of the region's Bicycle Plan Update, which was adopted by the MAG Regional Council in March of 1999. MAG followed the 1999 Bicycle Plan Update with the Regional Off-Street System (ROSS) Plan, which was adopted by the Regional Council in February, 2001. Following these efforts, the MAG West Valley Multi-Modal Transportation Corridor Plan (Plan) and accompanying action plan were adopted by the MAG Regional Council on October 3, 2001.

PLANNED NEW FACILITIES AND IMPROVEMENTS

All current regional bicycle planning within the MAG Region adheres to, and is implemented through the policies and recommendations of three existing plans. These plans include the MAG Regional Bicycle Plan; the Regional Off-Street System (ROSS) Plan; and the West Valley Multi-Modal Transportation Corridor Plan. The following information will provide an overview of each plan.

MAG Regional Bicycle Plan

The MAG Regional Bicycle Plan focuses primarily on-street facilities, and was updated in 1999. The planning process resulted in the identification of issues and needs; and adopted goals and objectives, which were refined in light of these issues and needs. As part of the planning process, maps of planned bicycle routes were created, as well as a composite map of planned and existing local

bicycle facilities. Figure 12-1 depicts the major elements of the Regional Bicycle Plan.

In addition, the criteria used to select projects for funding were reviewed. Changes to the Congestion Management System (CMS) were suggested, which incorporated the revised goals and objectives. Policies were also developed for rating various bicycle projects, and a revised Regional Bicycle Task Force rating system was created which incorporated updated goals and objectives.

The goals of the MAG Regional Bicycle Plan fall within the realms of engineering and planning, education, enforcement, and encouragement. These goals are meant to provide cities and towns within the MAG region with guidance in planning, designing, and implementing a system of internal and regionally connected bikeways that serve the daily travel needs of bicyclists. The four goals are:

- Engineering and Planning: The Engineering and Planning Goal is to develop bikeways as an integral part of a multi-modal transportation system in the MAG region and, as a consequence, to make bicycling a viable option for daily travel trips for all purposes.

- Education: The Education Goal is to increase public awareness of safer bicycling behaviors and the need for bicyclists and motorists to share the road. A secondary goal is to educate engineers and planners on bicycle issues.

- Enforcement: The Enforcement Goal is to encourage police agencies to increase levels of enforcement of traffic laws most often violated by bicyclists and to improve tolerance and courtesy among all roadway users.

- Encouragement: The Encouragement Goal is to promote bicycling as a means of personal mobility for local, daily travel trips for all purposes and as a form of healthy recreation and exercise.

Regional Off-Street System (ROSS) Plan

The Regional Off-Street System (ROSS) Plan reveals a regionwide system of off-street paths/trails for non-motorized transportation. Throughout the MAG region, numerous opportunities for off-street travel by people who walk and bicycle exist along areas such as canal banks, utility line easements and flood control channels. These types of rights-of-way and easements are found throughout Maricopa County and intersect numerous arterial MAG Regional Bicycle Plan streets where local daily destinations are typically located. The goal of the ROSS plan is to help make bicycling and walking viable options for daily travel trips using off-street opportunities.

The ROSS plan provides guidance to MAG member agencies in creating an off-street, non-motorized transportation system. The Plan focuses on potential corridors that form the backbone of a regional off-street system of routes. The five key issue areas addressed in the ROSS include access, safety, connectivity, user-friendliness, and implementation. Other off-street segments will be necessary to provide additional connections between origins and destinations.

The ROSS Plan identifies issues associated with paths/trails and non-motorized transportation, identifies corridors which could be used for paths/trails in the MAG region, and provides design guidelines for paths/trails. The vision of the ROSS is for residents of the MAG region to have safe, convenient access to an attractive, multi-use, non-motorized transportation system that provides a viable alternative to driving for local trips, such as trips to work, school, shopping and leisure activities. The ROSS Plan map is shown as Figure 12-2. The key topics of the ROSS Plan are as follows:

- Corridor Identification: Several types of corridors were identified for inclusion in

the ROSS plan. These corridors typically have a primary purpose other than non-motorized transportation, and intersect arterial streets where many daily destinations, such as grocery stores and employers, are located. The MAG region is fortunate to have a variety of linear corridors and rights-of-way which can be utilized in an off-street transportation system by bicycles and pedestrians. These potential corridors form the backbone of a regional off-street system of routes. Identified corridors include canals, desert washes and waterways, flood control structures and rights-of-way, highway and freeway rights-of-way, railway corridors, and utility easements.

Other off-street segments may be needed to provide additional connections between origins and destinations. Of particular importance, public lands and existing parkland, such as mountain preserves, can provide vital links in the system. These and other opportunities and constraints should be examined more fully by jurisdictions as they implement the system.

- Design Guidelines: Basic design guidelines are provided to assist MAG member agencies in developing the corridors identified in the ROSS. These guidelines have been developed based upon the analysis of the representative projects, and include standards from several sources, including: (1) MAG member agencies; (2) MAG *Pedestrian Area Policies and Design Guidelines*; (3) MAG *Pedestrian Plan 2000*; (4) American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities*; (5) Trails for the 21st Century; and (6) Universal Trail Assessment by Beneficial Design.

- Implementation and Funding: The implementation section of the ROSS begins with a general process to develop an off-street non-motorized transportation system, including a model ordinance for adoption of the MAG ROSS Plan. Sample evaluation criteria are also included. Funding for construction of paths/trails is a critical element of implementing a regional system of non-motorized off-street transportation system. Several sources of public sector (government) funding are identified in the ROSS Plan. Another source of funding that can contribute significantly to paths/trails development is the private sector.

West Valley Multi-Modal Transportation Corridor Plan

The MAG West Valley Multi-Modal Transportation Corridor Plan and accompanying action plan were adopted by the Regional Council on October 3, 2001. Figure 12-3 provides a map of the Master Plan of the West Valley Multi-Modal Transportation Corridor Plan. This plan is one component of a much larger project: the West Valley Recreation Corridor.

Working with funds provided through the ADOT Transportation Enhancement Funds Program, the MAG Plan creates a master plan and action plan to implement a 42-mile trail network for pedestrians, equestrians, bicyclists and other non-motorized trail users for the New River and lower Agua Fria River. The master plan establishes a mechanism for the conservation of natural river resources and expands on existing and planned trail linkages to provide a universally accessible, consistent 42-mile trail for non-motorized users.

The master plan provides for regional consistency in development of non-motorized transportation facilities along the corridor by establishing consistent and uniform design for the development of a safe and comfortable multi-modal trail system. The accompanying action plan identifies land ownership,

Regional Transportation Plan

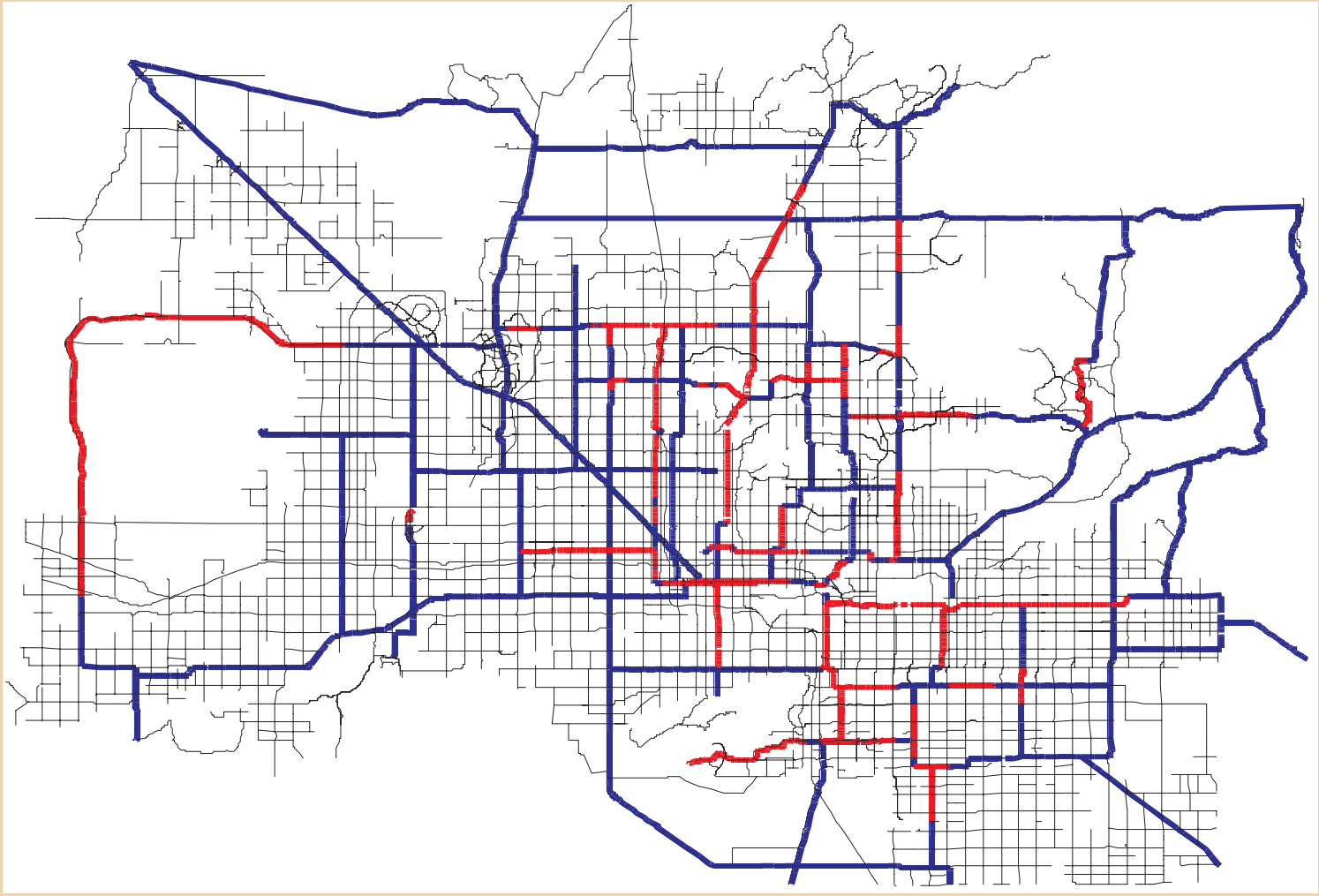
Draft

Fig. 12–1

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

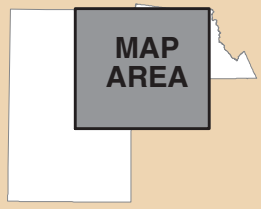
MAG Regional Bike Plan



Existing Bike Lanes

Planned Bike Lanes

Major Roads



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

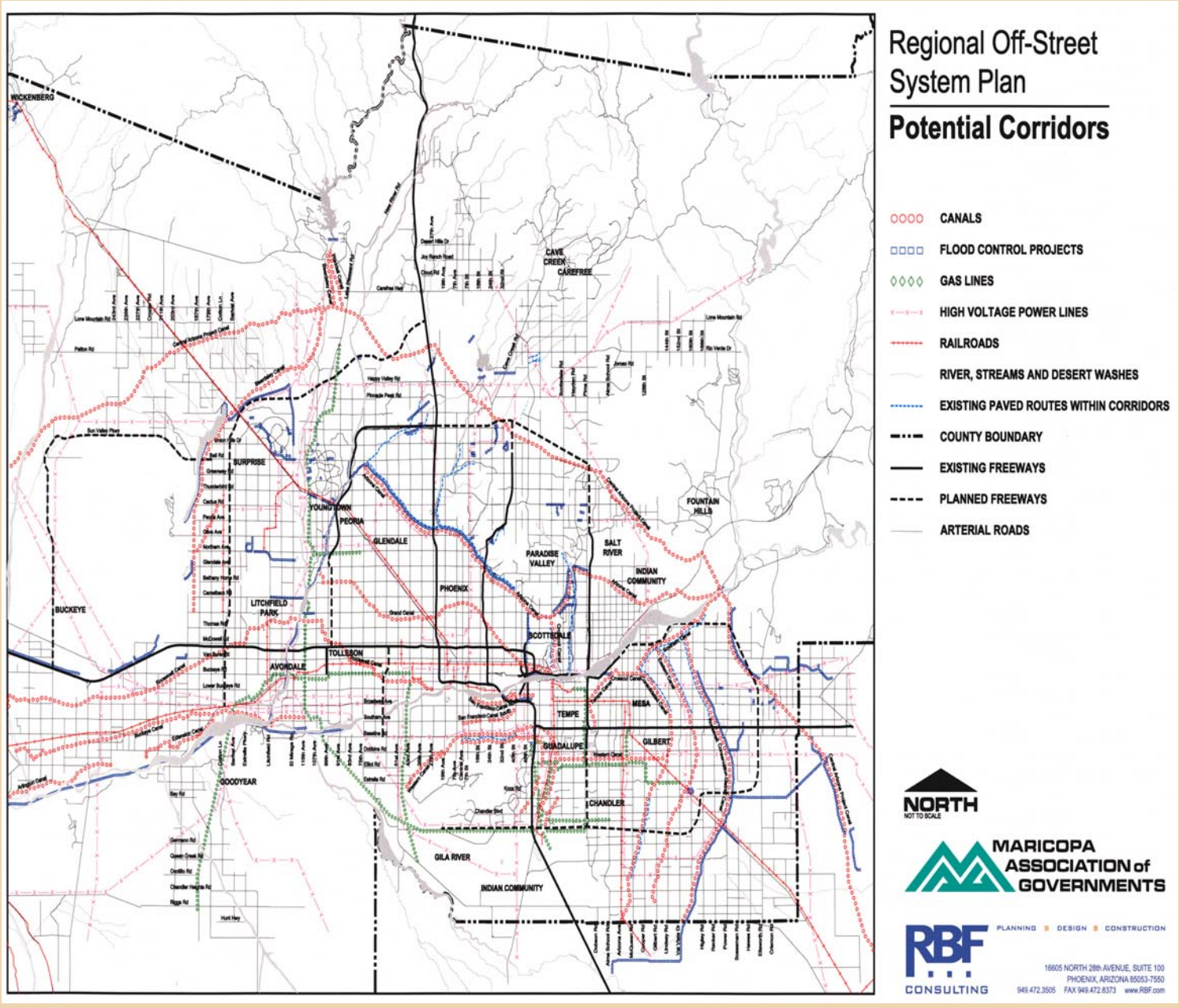
N

G:\Dev\projects\RTP\12-1_MAG_Reg_Bike_plan.mxd

Regional Transportation Plan

Draft

Fig. 12-2



Regional Off-Street System Plan

Potential Corridors

- CANALS
- FLOOD CONTROL PROJECTS
- GAS LINES
- HIGH VOLTAGE POWER LINES
- RAILROADS
- RIVER, STREAMS AND DESERT WASHES
- EXISTING PAVED ROUTES WITHIN CORRIDORS
- COUNTY BOUNDARY
- EXISTING FREEWAYS
- PLANNED FREEWAYS
- ARTERIAL ROADS

NORTH
NOT TO SCALE

MARICOPA ASSOCIATION of GOVERNMENTS

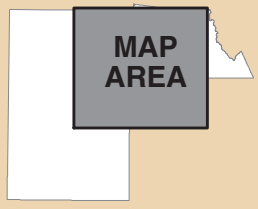
RBF CONSULTING
PLANNING ■ DESIGN ■ CONSTRUCTION
16605 NORTH 28th AVENUE, SUITE 100
PHOENIX, ARIZONA 85053-7550
949.472.3505 FAX 949.472.8373 www.RBF.com

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

MAG Regional Off-Street System Plan

- Canals
- Flood Control Projects
- Gas Lines
- High Voltage Power Lines
- Railroads
- River, Stream, Desert Wash
- Existing Paved Routes within Corridors
- County Boundary
- Existing Freeways
- Planned Freeways
- Arterial Roads



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

N

G:\Dev\projects\RTP\12-2_Offst_sys_plan.mxd

implementation strategies and a variety of funding mechanisms to implement the project for communities along the corridor. Several implementation strategies are identified, along with several potential funding sources.

The Master Plan contains several elements and is also complemented by a Implementation Strategies Action Plan. The Plan elements and Action Plan are described in greater detail below:

- Trail Segments: To more effectively plan, implement and manage areas for design and development, the 42-mile Corridor was divided into 16 trail segments. These trail segments were determined by location within three "reaches," or distinctive landscape zones; jurisdiction; desire to maintain an approximate length of 2.5 to three miles in length; and geographic and other features that serve as logical boundaries, such as the New River's confluence with the Agua Fria River. For each segment, the Master Plan contains detailed maps and descriptions of design considerations, trail types and lengths, trail elements, and costs.

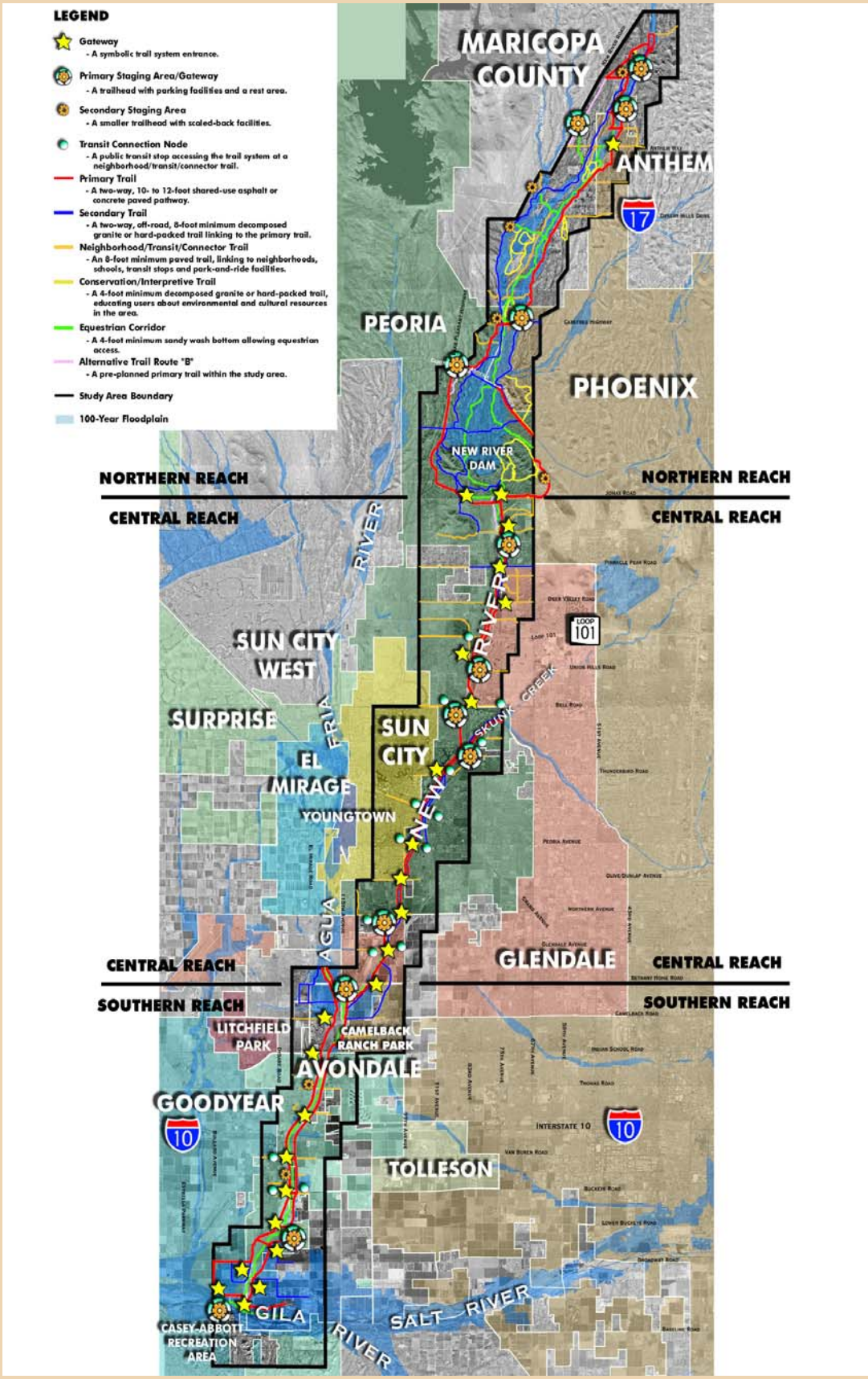
- Trail Elements: In addition to the five main trail types, a range of trail elements are identified to ensure user comfort and safety. These elements include gateways, staging areas and parking locations, trail connections, riverbed access ramps, future roadway bridges, prefabricated bridge structures, nodal connections to transit, underpasses and at-grade trail crossings.

- Trail Segment Costs: Estimated costs for development of the trail system range by segment type from $1.6 million to $11.7 million. These costs, based on an optimal system, vary due to trail surface (paved versus unpaved), trail length (amount of paving), and the number of trail elements (gateways, staging areas, bridges, underpasses, etc.) that are located within each segment. The average cost to develop each trail segment is estimated at $5.4 million. These costs were developed based on 2001 figures.

- Policy Recommendations: The Master Plan also identifies nine steps to implement the West Valley Multi-Modal Transportation Corridor Plan, which include:

  – Local governments support the trails initiative by formal adopted resolution.
  – Local jurisdictions should work collaboratively with clearly defined intergovernmental agreements.
  – Leverage funding from a variety of sources through capital improvement program and bond funding programs with Flood Control District and private development participation.
  – Initiate appropriate policy changes to allow public access on urban flood control and other state owned lands.
  – Establish a West Valley Trails 'champion' by supporting public efforts as partnerships.
  – Ensure consistency in trail system design throughout the entire corridor.
  – Fulfill the vision of the Master Plan by following the Implementation Strategies Action Plan.
  – Create an ongoing operational and maintenance program through the West Valley River Corridor.
  – Conduct evaluations of key programs, completed trail segments and ongoing processes for each phase of trail development.

- Implementation Strategies Action Plan: The Implementation Strategies Action Plan (Action Plan) serves as both a stand-alone document and a supplement to the West Valley Multi-Modal Transportation Corridor Plan. The Action Plan outlines several strategies and funding sources for the implementation of the proposed 42-mile, shared-use trail network to be developed for bicyclists,



Regional Transportation Plan

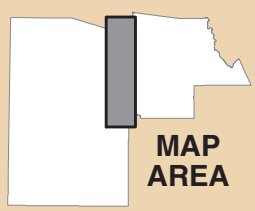
Draft

Fig. 12-3

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

West Valley Multi-Modal Transportation Corridor Plan



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

N

G:\Dev\projects\RTP\12-3_WV_multi_trans_plan.mxd

pedestrians, equestrians, physically challenged persons and other non-motorized trail users in the West Valley.

Because the trail corridor falls within several different jurisdictions (incorporated cities) and land management agencies (state and local), it is critical that a regional and community partnering approach be a foremost fundamental consideration if the West Valley Multi-Modal Corridor Project is to become a reality.

FUNDING SUMMARY

The bicycle element should be viewed as an illustrative plan rather than a fully funded part of the Draft Plan. The cost to reconstruct existing roadways to accommodate the above plan is beyond reasonable available revenues at this time. The bicycle element can serve as a guide to coordinate street and bicycle investments within cities and between jurisdictions. In addition, the Draft Plan and TIP include a strong commitment to implement bicycle facility improvements. Approximately 60 percent of the centerline mileage of street projects in the TIP that add new through lane capacity include improvements to accommodate bicycle usage. The funding for these projects are accounted for in the Street Section of the Draft Plan, as it is not possible to separate out the combined cost of adding new through lanes and bicycle improvements in the same project.

The Draft Plan has identified a share of the regional funding available for bicycle and pedestrian projects. This funding consists primarily of Congestion Mitigation and Air Quality (CMAQ) funds. Table 12-1 summarizes these figures for the planning period.

Table 12-1
Bicycle and Pedestrian Funding Estimates,
Fiscal Years 2005 to 2026 (2002 Dollars, Millions)

FUNDING	
Revenue for Bicycle and Pedestrian Projects[1]	
Programmed CMAQ (2005-2007)	$ 20
Planned CMAQ	132
Local Sources (General Fund, Local Sales Taxes, etc.)	85
TOTAL FUNDING	**$236**
EXPENDITURES	
Projected Bicycle and Pedestrian Expenditures[2]	
Programmed Bicycle and Pedestrian Facilities	$ 65
Planned Bicycle and Pedestrian Facilities	172
TOTAL EXPENDITURES	**$236**
BALANCE (Revenues minus Expenditures)	$

Source: Maricopa Association of Governments, 2003

1. Includes only revenue specifically set aside for new bicycle and pedestrian facilities. The majority of bicycle and pedestrian facilities are constructed as part of new street construction or the widening of streets in developing areas.
2. Does not include pedestrian and bicycle improvements constructed as part of new street construction or street widenings. These improvements are accounted for as street construction or improvements. Also, does not include operations and maintenance for bicycle facilities.

CHAPTER THIRTEEN

PEDESTRIANS

The purpose of this chapter is to provide an overview of pedestrian planning, and to address current programs, which collectively, are utilized in an effort to plan for future pedestrian facilities throughout the region. This includes design assistance programs and guidelines for pedestrian facilities. Estimated funding for pedestrian projects is shown in Table 12-1 in Chapter 12.

PEDESTRIAN PLANNING

On June 9, 1998, President Clinton signed into law the Transportation Equity Act for the 21st Century. This legislation has numerous provisions which relate to improving conditions for bicycling and walking, and improving safety of the two modes. TEA-21 confirms and continues the following principle established in the Intermodal Surface Transportation Efficiency Act (ISTEA): planning and giving "due consideration" of pedestrian travel needs is to be given during the planning, developing, and construction of all Federal-aid transportation projects.

MAG is a leader in promoting improvement in the Valley's streetside environments to better accommodate pedestrian travel. Past pedestrian planning efforts conducted by MAG and its member agencies have led to a variety of pedestrian-oriented policies, programs and roadway improvements. In 1993, MAG developed a plan which identified policies to encourage walking, and suggested areas where these policies might be best implemented. In 1994, MAG formed the Pedestrian Working Group to promote increased awareness of walking as an alternative mode of travel and to improve facilities for people who walk. The Working Group consists of appointed staff from MAG member agencies and representatives from the development and planning community.

As part of its efforts, the MAG Pedestrian Working Group sponsored a regional pedestrian survey in 1994. It identified that while in many cases, jurisdictions and the private sector provided pedestrian facilities, the facilities were not being used by pedestrians. As a result, the facilities were eliminated from subsequent projects. The MAG Pedestrian Working Group correctly believed that the reason that the facilities didn't get used is because they didn't adequately address pedestrian needs.

Building upon the results of the pedestrian survey, development of the *Pedestrian Area Policies and Design Guidelines* began with fifteen local case studies to discover needs and expectations of pedestrians in the MAG region. The data accumulated for each case study included origins and destinations, perceptions of personal safety and security, reasons for walking, pedestrian counts, long range plans for the area, physical measurements and other inventories of the pedestrian area.

The *Pedestrian Area Policies and Design Guidelines* identifies types of pedestrian areas commonly found in the MAG region, and proposes policies and design elements to promote walking. The MAG *Pedestrian Area Policies and Design Guidelines* is a comprehensive manual of pedestrian policies and facility design that creates a regional standard that can be used by community groups, planners and design professionals.

PEDESTRIAN DESIGN ASSISTANCE PROGRAM

The MAG Pedestrian Design Assistance Program was initiated in 1996 to encourage the development of designs for pedestrian facilities according to the MAG *Pedestrian Area Policies and Design Guidelines*. The intent of the program was to stimulate integration of pedestrian facilities into the

planning and design of all types of infrastructure and development. That intent has become a reality. Seventeen pedestrian projects have already been initiated through the program, which has leveraged extensive funding for pedestrian facilities. In fact, an investment of $701,000 in 17 projects (three are just beginning) has leveraged nearly $5 million in federal transportation funds for pedestrian areas, which does not include substantial local or private funds used to construct the designs. The 17 projects funded with the Program are located in the communities of Avondale, Gila Bend, Glendale, Goodyear, Mesa, Peoria, Phoenix, Surprise and Tempe.

REGIONAL PEDESTRIAN PLAN

The purpose of the *Pedestrian Plan 2000* is to identify and recommend programs and actions that guide and encourage the development of pedestrian areas and facilities and ultimately increase walking as a viable mode of transportation throughout the region. The update incorporates a unique approach: flexible design tools (Roadside Performance Guidelines) to assist MAG member agencies in creating better walking environments within the existing or new roadway network. A stakeholders group was directly involved in the development of the plan update, which was overseen by the Pedestrian Working Group, and adopted by the MAG Regional Council on December 8, 1999. The major elements of the plan are summarized below.

Plan Goals and Objectives

The plan contains five goals addressing areas vital to creating a mode shift away from driving and towards pedestrians. Each goal has several objectives, and each objective is linked to the action plan. The five goals are listed below, and the objectives are provided in the *Pedestrian Plan 2000.* The five goals are:

- Land Use — Promote and guide land use that is conducive to pedestrians and results in a mode shift away from automobiles and towards pedestrians.
- Public Awareness — Develop a variety of educational programs to promote the benefits of pedestrian-oriented design. Initiate demonstration project to illustrate these benefits using potential pedestrian demand and pedestrian design techniques.
- Funding — Provide funding for pedestrian facility development that results in walking as a key form of transportation in the region.
- Design for People — Develop, build and maintain a diversity of pedestrian facilities that recognize the region's character, variety and intensity of land use patterns, and is responsive to the region's diverse population.
- Linkage — Provide a regional pedestrian network that identifies and safely links on-and off-street transportation modes with pedestrian areas and destinations.

The Roadway Design Performance Guidelines

One of the major regional initiatives reflected throughout the goals and objectives of the *Pedestrian Plan 2000* is to establish performance guidelines for pedestrian facilities within road right-of-ways. Establishing regionwide performance guidelines, as opposed to rigid roadway cross-sections, gives design flexibility to MAG member agencies. Providing this flexibility within performance guidelines, as opposed to prescriptive cross-sectional standards, will ensure that roadways will meet the needs of other travel modes while simultaneously encouraging pedestrian travel throughout the MAG region.

MAG recognizes that its members have unique goals, challenges, and constraints with respect to their transportation networks and right-of-ways. Accordingly, roadway performance guidelines are the best way to achieve these regional goals. Details of the creation of the guidelines are described in the

Pedestrian Plan 2000 and its accompanying Technical Appendix.

Following a decision to incorporate a sidewalk in a roadway design, perhaps the single most important design consideration is determining the appropriate amount and type of lateral separation and buffering between the sidewalk and the motor vehicle travel lanes. Mentioned in the *Pedestrian Area Policies and Design Guidelines*, the appropriate amount and type of separation and buffering depends on traffic and geometric conditions — simple cross-sections standards do not allow roadway designers the flexibility to provide the target quality walking environment, particularly with regard to the sense of safety or comfort afforded to pedestrians. While the *Pedestrian Area Policies and Design Guidelines* can be referenced for shade canopy and other pedestrian facility environment aspects, the *Pedestrian Plan 2000* focused on guidelines for lateral separation and buffering.

The format of these performance guidelines allows roadway designers to consider a variety of design options in achieving the minimum walking environment quality according to the roadway's classification of potential pedestrian activity level. These performance thresholds establish that roadways within areas with the highest potential to serve pedestrian trip activity (or a mode shift) in the MAG region should provide the highest quality walking environment with respect to pedestrians' sense of safety. The tables included in the *Pedestrian Plan 2000* were developed using the Roadside Pedestrian Conditions Model to determine the roadway cross-sectional geometry necessary to meet these performance standards. These tables provide planners and engineers with design information to achieve the performance guidelines for roadways. One table has been created for each pedestrian area type as identified in the *Pedestrian Area Policies and Design Guidelines*: District, Campus, Community and Neighborhood.

In many cases, there will not be sufficient right-of-way width to provide the recommended unbuffered area between the sidewalk and roadway. For these reasons, or aesthetic considerations, the roadway designer may choose other methods to achieve the same level of service for pedestrians, but with a reduced lateral separation, or buffer width. There are numerous alternatives to reduce buffer width depending on the roadway, traffic, and adjoining land use conditions, such as providing on-street parking, bicycle lanes or undesignated shoulders, vertical barriers, or street trees and landscaped buffers.

The *Pedestrian Plan 2000* includes a table of alternative buffer widths which can be provided if street trees are used to reduce the unadjusted lateral separation between the sidewalk and the roadway. This table reflects the positive effect of tree spacing on the pedestrians' sense of safety with respect to motor vehicle traffic. This table was derived using the Roadside Pedestrian Conditions Model in conjunction with direct observations and roadway evaluations throughout the MAG region.

Other Pedestrian Factors

While providing appropriate roadside pedestrian conditions is an important ingredient in improving the regional pedestrian environment, other parts of the pedestrian transportation system must also be enhanced to achieve the overall objectives of MAG. These include:

- Meeting ADA accessibility standards.
- Improving pedestrian accommodation and safety at intersections and mid-block crossings.
- Providing the shade canopy and street furniture and other pedestrian travel amenities covered in the 1995 *Pedestrian Area Policies and Design Guidelines* and applicable local, state and national roadway and traffic design guidelines.

Objectives such as these, along with

minimizing pedestrian-vehicle conflicts and street crossing distances at intersections are integral to the overall improvement in the Region and should be pursued with equal vigor as improving the roadside walking environment.

Action Plan

The full text of the adopted action plan, which links to the goals and objectives of the plan, is included in the *Pedestrian Plan 2000.* As a way to implement the action plan adopted by the MAG Regional Council, the Pedestrian Working Group will be pursuing the following activities in the next year:

- Continue efforts to educate planners, engineers, design professionals and advocates of walking through the Walking and Bicycling into the 21st Century series.
- Continue to fund the Pedestrian Design Assistance Program for the planning and design of pedestrian facilities which demonstrate design principles that support walking.
- Identify new opportunities to further integrate progressive pedestrian facility design principles into the region's transportation infrastructure.

CHAPTER FOURTEEN

FREIGHT

This chapter summarizes the structure and level of freight activity in the MAG Region. At present, MAG is in the process of finalizing a regional freight assessment, which is intended to serve as a comprehensive base for the analysis of current and future needs for regional freight infrastructure improvements, activities, and future planning endeavors related to freight and the goods movement process.

The movement of goods into, within, and out of the region is vital to the local economy. The movement of goods is conducted through the utilization of multiple modes of transport, such as air, pipeline, water, truck, rail, or other non-traditional means. Freight transport involves a complexity of networks and players who use a variety of methods, modes, available information technologies, and equipment to move raw materials, semi-processed and processed goods through regional, national and international markets for the purpose of commerce.

In the United States, the freight industry is essentially dominated by the private sector, and includes trucking companies, railroads, air carriers, pipeline industries, couriers, freight brokers, terminal operators, freight intermediaries, freight forwarders, package express carriers, and all other shippers and receivers of freight, as well as all freight industry customers.

REGIONAL FREIGHT INFRASTRUCTURE

Collectively, within the MAG Region, the regional highway network, the regional arterial network, railroads, airports, pipelines, freight terminals, warehouses, and intermodal facilities essentially comprise what is commonly referred to as the regional transportation system's overall "freight infrastructure." Figure 14-1 displays the current freight infrastructure system that is responsible for facilitating the goods movement process within and throughout the MAG Region.

Warehouses, trucking companies, freight terminals, manufacturers, wholesale facilities, air couriers and the local postal system represent some of the primary freight generators located throughout the MAG Region. Other freight generators of significance are the region's intermodal facilities and the primary air cargo airports, which are Sky Harbor International Airport and Mesa Williams Gateway Airport.

FREIGHT IN THE MAG REGION

For purposes of analysis, MAG was able to identify freight movements in and out of Maricopa County to other areas of the United States. The database provides detailed information on the number of tons moving into and out of the region, and is focused on the primary categories of freight modes, commodities, and the origin and destination of goods.

In 2001, 48.9 percent of all aggregate freight that was hauled by truck, rail, or air was received into the region from other destinations outside of Maricopa County. A total of 43.0 percent of all transported freight in the region was shipped out to other destinations throughout Arizona and to other areas of the country. Of all freight shipments, 8.1 percent consisted of internal movements, which were comprised of freight loads that maintained both places of origin and destination within the county. Also, as displayed by Figure 14-2, when considering all aggregate freight flows that take place into, out of, and within the MAG Region, 91.2 percent of all movements take place by truck, 8.5 percent occurred by rail,

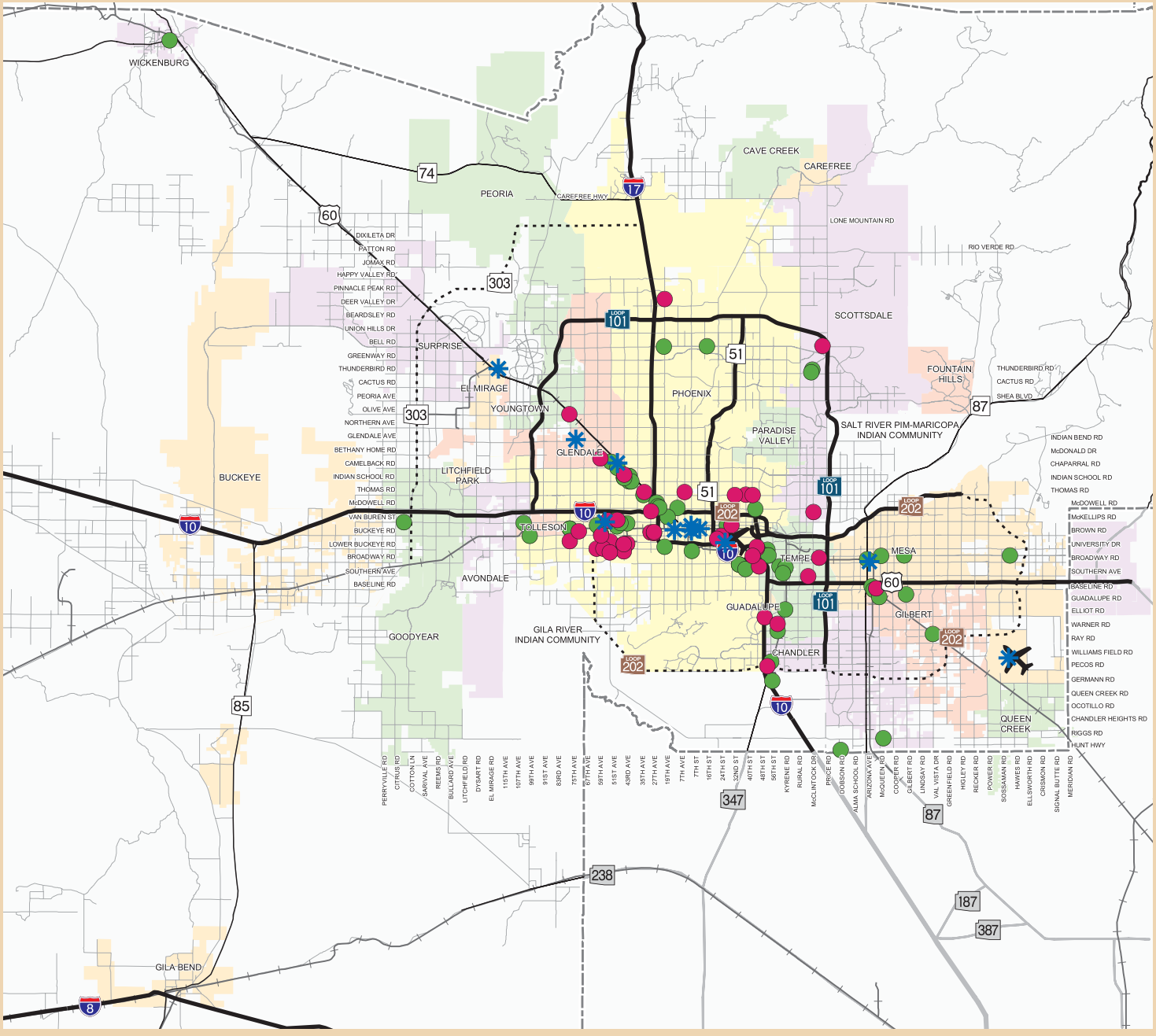
Regional Transportation Plan

Fig. 14–1

Draft

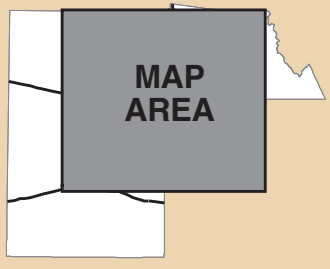
REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS



Regional Freight Infrastructure

- Intermodal Facilities
- Freight Terminals
- Warehouses
- Cargo Airports
- County Boundary
- Existing Freeway
- Planned Freeway
- Highways
- Other Roads
- Railroads



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

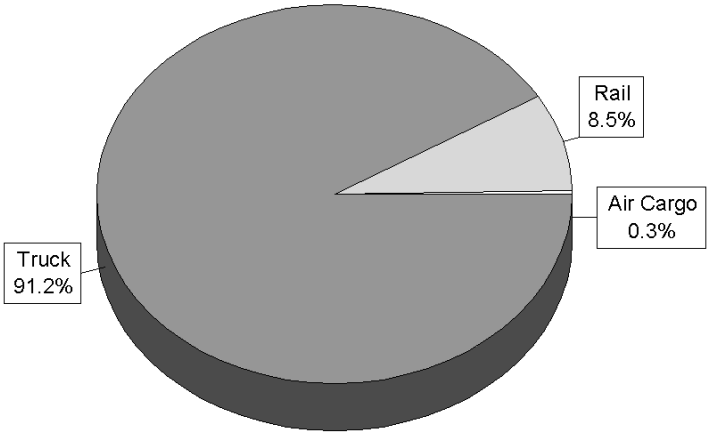
0 5 10 Miles

N

G:\Dev\projects\RTP\14-1_regional_freight.mxd

Figure 14-2

TOTAL FREIGHT FLOWS INTO, OUT OF, AND WITHIN THE MAG REGION BY MODE (by Total Tons)



Source: Reebie Associates, Maricopa Association of Governments

and the remaining 0.3 percent was generated by air.

When considering incoming goods, in 2001, 85.8 percent of all freight came from the western region of the United States. The major trading area for incoming goods into the MAG Region consisted of the remaining 14 counties within Arizona. Approximately 57 percent of all incoming freight was generated from areas within the state. When assessing trading areas throughout the United States in 2001, the primary trade area for the MAG Region for all incoming and outgoing freight was the State of Arizona.

Overall, the MAG Region receives more freight than it exports to other areas, and the trucking industry maintains a key role in the transporting of goods into, within, and out of the region.

Trucking

Trucks are responsible for moving the bulk share of freight within our region's cities and towns, and their ability to operate in an efficient environment is crucial to maintaining the regional economy. Trucking companies maintain an important role in local economies by providing for the necessary ground-based transportation of goods, and in many cases, needed services or ancillary uses such as the movement of waste products. From a freight perspective, the trucking industry is responsible for bringing in raw materials and processed goods for manufacturing; transporting freight to and from intermodal facilities; distributing goods to warehouses and retail locations; and delivering goods to businesses and consumers.

In 2001, over 91 percent of total freight flows into, out of, and within the MAG Region took

place by the use of a truck. When considering the combined truck, rail, and air cargo freight modes in the region in 2001, a total of 86.4 percent of all inbound freight was received through truck transport. Also, 97.8 percent of all goods that were sent out of the region were shipped through the use of a truck.

As displayed by Table 14-1, in 2001 the majority (51.8 percent) of all outbound truck freight was shipped to other destinations by private truck; whereas 47.1 percent of all truck freight consisted of for-hire Truckload (TL) movements, and only 1.1 percent consisted of for-hire Less Than Truckload (LTL) movements. Reported LTL movements as displayed by Table 14-1 consist of individual loads that are less than 10,000 pounds.

Rail

The railroad industry plays a major part in the national and regional economy, and transports certain types of goods throughout the country that would not be cost-effective or feasible to be hauled by other types of freight modes, such as truck, air or pipeline. Railroads in the United States are essentially transporters of bulk quantity goods, which are usually hauled by multiple train carloads over long distances. Trains are often the mode of choice for low value, bulk commodities that are not extremely time sensitive.

At present, there are a total of three operational railroads in the MAG Region. These railroads include the Burlington Northern and Santa Fe Railway (BNSF), the Union Pacific Railroad (UP), and the Arizona and California Railroad (ARZC). The BNSF and the UP are classified as Class I carriers,

TABLE 14-1

TRUCK MOVEMENTS IN THE MAG REGION
(By Type of Carrier – 2001)

OUTBOUND TRUCK FREIGHT		
Type of Movement	**Total Tons**	**Percent**
For-Hire Truckload (TL)	22,348,463	47.1
For-Hire Less Than Truckload (LTL)	524,236	1.1
Private Truck	24,620,516	51.8
Total	47,493,215	100.0
INBOUND TRUCK FREIGHT		
Type of Movement	**Total Tons**	**Percent**
For-Hire Truckload (TL)	23,975,594	51.3
For-Hire Less Than Truckload (LTL)	1,270,448	2.7
Private Truck	21,482,233	46.0
Total	46,728,275	100.0

Source: Reebie Associates, Maricopa Association of Governments

whereas the ARZC is considered to be an active Short Line, or Line Haul railroad. As of 2003, the BNSF maintained approximately 70 miles of active track in the MAG Region, the UP maintained a total of approximately 180 miles of active track, and the ARZC maintained a total of about 27 miles of active track.

From a broader, regional and national perspective, the BNSF and the UP railroads maintain lines that are part of an integrated, transcontinental system. The BNSF line that maintains operations in the City of Phoenix travels northwest through the Town of Wickenburg, across Yavapai and Coconino Counties, to a junction near Flagstaff, Arizona. The northern BNSF line serves as an important link between the ports of California, the Chicago metropolitan area, and a number of East Coast markets. The ARZC is located in the far northwest region of MAG. The ARZC line branches off from the BNSF line near the Town of Wickenburg, and exits the region at the La Paz County border, located on the western boundary of the MAG Region.

The current UP rails located in the Phoenix metropolitan area are essentially a northern track network that extend from the southern UP main line, which is located in the southern MAG Region. The southern MAG UP line travels east and west throughout the region and the State of Arizona, and serves as a viable east-west transcontinental connection between southern California; the City of Chicago; the ports of the Gulf Coast; markets in the eastern U.S.; and a number of cities throughout the south. Within the MAG Region, the northern UP branch extends from its origin in central Pinal County, and enters into the metropolitan Phoenix area from the southeast valley. The northern UP line travels west into downtown and terminates near the Palo Verde nuclear facility in the West Valley. Today, all northbound and southbound freight to Phoenix that travels along the existing UP lines originates near Picacho Junction, which is located near the City of Eloy in central Pinal County.

Table 14-2
RAIL MOVEMENTS IN THE MAG REGION
(By Type – 2001)

OUTBOUND RAIL FREIGHT		
Type of Movement	**Total Tons**	**Percent**
Carload	606,301	63.6
Intermodal	347,766	36.4
Total	954,067	100.0
INBOUND RAIL FREIGHT		
Type of Movement	**Total Tons**	**Percent**
Carload	6,261,089	88.0
Intermodal	856,247	12.0
Total	7,117,336	100.0

Source: Reebie Associates, Maricopa Association of Governments

Within the MAG Region, each of the existing railroad companies that are presently conducting operations are primarily involved in the movement of freight. The only section of rail that presently contains Amtrak passenger service is located in southern Maricopa County along the UP mainline. The Phoenix metropolitan area presently lacks any viable form of commuter or passenger rail service.

The BNSF Railway currently maintains four active intermodal facilities within the MAG Region. The UP also maintains four active intermodal facilities. All BNSF and UP freight operations utilize numerous rails, and each company also maintains their respective areas of right-of-way within their designated track areas, transfer areas, and switching facilities. The primary modes of access for all eight of the identified BNSF and UP intermodal facilities include rail and truck.

In 2001, 88.2 percent (7,117,336 tons) of rail cargo was inbound, and 11.8 percent (954,067) was outbound from the region. When assessing the types of movements that occur in the rail industry, most goods are either categorized as being transported by carload or intermodal rail. Unlike other areas of the country where intermodal rail freight can be transferred by truck, pipeline, air or water, within the MAG Region, the only connecting mode with intermodal rail freight is through truck.

By definition, intermodal rail is considered freight that utilizes various combinations, such as highway and rail. This is common for Container-on-Flatcar (COFC) and Trailer-on-Flatcar (TOFC) movements, where the long haul portion of the trip is conducted by flat car, and the pickup or delivery of the container or trailer is conducted by truck. By contrast, carload rail freight is non-intermodal, and is conducted through the transport of other means.

Air Cargo

The Air Cargo, or “air freight” industry in the United States maintains a very important role in the overall freight transportation industry, and generates billions of dollars on an annual basis. Although the bulk share of goods that are transported in the U.S. by plane are relatively low in comparison to the truck and rail freight modes, the air cargo industry continues to play an important role in specific segments of the overall goods movement process. The industry serves a number of particular markets, which are primarily focused on time-sensitivity issues, accommodating high-value commodities, and goods that solely rely on air transport for a variety of reasons.

Any form of freight that is transported by plane is considered air cargo. According to the U.S. Department of Transportation, for identification purposes, air freight services are categorized into whether goods are time sensitive, or less time sensitive; whether they are sent by integrated or non-integrated providers; or by the major type of cargo carrier, which are identified as being one of the following: express carrier, scheduled, mail or chartered air service providers.

There are presently a total of 12 airports located throughout the Greater Phoenix Metropolitan Area of MAG. Of these airports, Phoenix Sky Harbor International and Williams Gateway are the primary airports that maintain functional air cargo operations that significantly contribute to the regional economy. Sky Harbor International and Williams Gateway are the largest airports in the MAG Region, and maintain considerably active schedules for inbound and outbound air freight.

At present, Sky Harbor International Airport maintains four active air cargo facilities on the west side of the airport, which provide non-integrated and integrated air cargo services. Cargo Buildings A, B and C contain a total of

197,760 square feet of space, and collectively have a total of 103 air cargo bays to facilitate planes and air cargo.

At present, air cargo operations at Williams Gateway are comprised of specialized services, and are essentially comprised of unscheduled charter flights. However, according to the *Williams Gateway Airport Master Plan*, there are specific plans to increase air cargo services to serve the growing demands of the East Valley of metropolitan Phoenix, and to alleviate cargo volume at the Phoenix Sky Harbor International Airport.

Future dedicated air cargo facilities have been planned for the east and west sides of the airport, and there is a planned expansion of one of the airport's runways to effectively accommodate air cargo aircraft. At present, Williams Gateway is actively working on the development of new cargo facilities, which includes an $11 million cargo ramp that is currently under construction. They are also leasing land adjacent to the ramps for new cargo related buildings.

In 2001, there was a total of 342,674 tons of inbound and outbound air cargo moving in and out of the MAG Region. Of this amount, 72.1 percent (247,172 tons) was inbound, and 27.9 percent (95,502) was outbound from the region. Approximately 0.3 percent of all inbound and outbound freight movements within the MAG Region were conducted by air.

Pipelines

At present, the El Paso Corporation and the Southwest Gas Corporation are the only companies that are actively involved in the regional distribution of natural gas products for residential and commercial use. In addition to these companies, there is a primary metropolitan pipeline terminal facility located on the west side of the City of Phoenix. This facility is located near I-10 and provides refined oil and gasoline products that are transferred to trucks. It also contains main pipelines that connect with the states of California and New Mexico, and a series of smaller pipelines that connect to Phoenix Sky Harbor International Airport and Luke Air Force Base. The facility also contains a smaller line that extends south to the Tucson area.

FUTURE REGIONAL FREIGHT PLANNING

The Regional Freight Assessment discussed above is the latest in a series of MAG activities in the freight planning process. Past activities have included: 1) developing an Intermodal Management Systems report, which is considered in the preparation of the Transportation Improvement Program, 2) conducting freight forums, which provided goods movement providers and users an opportunity to give input on transportation needs and investments, and 3) considering freight movement factors as a part of modal plan development, which has been specifically addressed in the airport planning process.

Future steps in freight planning include: 1) continuing to monitor the impact and role of freight in the regional transportation system, 2) projecting future overall goods movement demand, within, into and out of the region, 3) expanding the freight element of the regional transportation network modeling process, 4) enhancing coordination and involvement of the "freight community" in the regional transportation planning process, and 5) investigating the potential for developing a separate regional freight plan, including the organization and structure of freight planning and infrastructure needs to facilitate freight movement across the region.

CHAPTER FIFTEEN

DEMAND MANAGEMENT

Transportation Demand Management (TDM) programs encourage reductions in travel demand within the transportation system. These programs promote alternative modes of travel, which include carpooling, vanpooling, walking, bicycling, alternative work schedules that reduce trips, and telecommuting and compressed work schedules. Based on a recent survey, 37 percent of people use alternative modes or work schedules to work one or more days a week (2003 *TDM Annual Survey*, WestGroup Research, 2003). The following information describes a number of TDM activities that are utilized throughout the region.

RIDESHARE PROGRAMS

Federal transportation funds distributed by MAG support the Valley Metro Regional Rideshare Program and provide partial support to the Maricopa County Trip Reduction Program and the state Travel Reduction Program. The rideshare programs support efforts to carpool, and to use alternative modes of transportation and work schedules throughout the MAG area.

The regional carpool/vanpool matching program, sponsored by MAG, was initiated in 1973 for the purpose of reducing energy consumption during the "energy crisis." The Regional Rideshare Program has been expanded significantly since 1987 as an adopted air pollution control strategy for carbon monoxide, ozone, and particulate matter in the State Implementation Plan. Since 1986, the Regional Rideshare Program has been administered by the Regional Public Transportation Authority/Valley Metro.

Valley Metro Rideshare conducts a variety of services including: an free carpool/vanpool on-line ride matching service; the promotion of single-occupancy vehicle alternatives via the Clean Air Campaign; assistance to Transportation Management Networks; assistance to employers in the Maricopa County's Trip Reduction Program; administration of the Vanpool Program and promotion of the telecommuting program.

In addition, the Arizona Department of Administration Travel Reduction Program offers carpool matching and other rideshare services to all state employees located in Maricopa County.

CLEAN AIR CAMPAIGN

The Clean Air Campaign, an area-wide public awareness program, is designed to reduce unnecessary vehicle use and has been ongoing since 1987, when it was initiated by the Greater Phoenix Chamber of Commerce. The Clean Air Campaign is a public/private partnership with sponsors that include the Greater Phoenix Chamber of Commerce, the Arizona Departments of Environmental Quality and Transportation, Maricopa County, MAG, and Valley Metro. A working group of sponsors provides direction to the campaign, which was expanded in 1996 to include additional community organizations such as the Arizona Lung Association and Valley businesses. The sponsors provide the necessary leadership to encourage business participation and initiatives.

The Campaign urges residents to reduce vehicle miles traveled during peak hours by using alternative modes or alternative work schedules at least one day a week. The campaign has concentrated its media campaign during the carbon monoxide and particulate pollution season from mid-October through February. During the summer of 1996, a summer ozone media campaign was

launched to address the critical need to avoid a reclassification related to meeting ozone standards with emergency funds provided by the Arizona Department of Environmental Quality. This was followed in 1999, 2000, and 2001 by the Governor's Ozone Alert Program. On May 30, 2001, the EPA determined that the Phoenix nonattainment area had attained the 1-hour ozone standard. During Summer 2003, Valley Metro, the Arizona Department of Environmental Quality, and Maricopa County developed plans for an Ozone Education Program to address the more stringent 8-hour ozone standard.

TRIP REDUCTION PROGRAM

The need to improve air quality was the primary factor leading to the establishment of the Maricopa County Trip Reduction Program (TRP). Mandated by Arizona legislation in 1988, employers with 100 or more workers at a site began participating in this program in 1989. At that time, approximately 500 employers and schools participated in this program representing over 350,000 employees and students. Participating employers are required to conduct an annual survey of the commuting modes of their employees, and prepare and implement a travel reduction plan to reduce the rates of single-occupancy vehicle (SOV) trips or the single occupancy vehicle miles traveled. Another key role of the Trip Reduction Program is to assist employers and schools of 50 or more employees or students through the provision of support services and programs.

Originally, state law established trip reduction goals of five percent for the first and second year of participation by an employer. After implementing the program, it was determined that approximately 30 percent of the workforce in the region was covered by these requirements. It was anticipated that full implementation of the requirements would reduce regional vehicle miles of travel (VMT) by 0.8 percent from projected levels for 1995.

The 1988 Arizona air quality legislation also required Maricopa County to enact an ordinance in 1992 to prescribe reduction goals and employer participation for subsequent years. On October 5, 1992, Maricopa County enacted an ordinance that strengthened the TRP by providing third, fourth, and fifth year travel reduction goals of five percent annually, and by expanding the ordinance to apply to employers with 75 or more employees at a work site. Since the program was expanded, over 800 employers became involved. It is estimated that the strengthened TRP would reduce regional VMT by 1.8 percent from projected levels for December 1995, as needed to meet carbon monoxide emission reduction goals.

In November 1993, a special session of the state legislature passed an air quality bill that further expanded the TRP to include employers of 50 or more employees and increased the goals to 10 percent per year reduction in SOV trips or miles traveled. Currently, over 1,200 employers are participating in the program representing over 613,000 students and employees.

In the summer of 1996, another special session of the legislature passed an innovative enhancement to the TRP whereby employers would be allowed to implement several new "flexibility" strategies to meet TRP goals. The majority of employers have not met the annual goals of 10 percent reduction in SOV trips or miles. Now, under these flexibility provisions, employers have an expanded menu of measures for implementation, including reduction of business-related vehicle trips, off-peak hour commuting, reduced use of other gasoline powered equipment, and stationary source emission reductions.

VANPOOL PROGRAM

The RPTA has provided a third-party vanpool service to interested commuters since 1987. Over 941,000 passenger trips per year are made by vanpool. RPTA has been

contracting with a third party private vanpool firm to provide vehicles, insurance, fleet services and billing. Seeking to make the program more cost effective, Valley Metro initiated an aggressive van purchasing program using federal Congestion Mitigation and Air Quality funds to replace vendor owned vans in the vanpool fleet, and as a result, the agency now owns the entire vanpool fleet.

Surveys of Rideshare Program participants indicated a high level of interest among commuters and employers in reasonably priced vanpooling. Vanpooling is one of the Transportation Demand Management strategies many employers have implemented as a Trip Reduction Program measure. Through sponsorship and funding of a vanpool program, Valley Metro aspires to maintain rider fares at a level that is attractive to the commuter and available to all employers and commuter groups in Maricopa County.

By June 30, 2002 the program had grown to 206 vanpools. During the 2001/02 fiscal year 33 vanpools began operation and 23 vanpools terminated for various reasons, resulting in a net growth of 10 vanpools. This was somewhat lower than previous years, but remained consistent with economic and social variables that affect the vanpool program. A lackluster economy, layoffs, transfers in location, changing employment, consolidation of work sites and more are all factors that contribute to formation and termination of vanpools. The major goal of Valley Metro Vanpool Program for FY 2002/03 was to position itself in the market for continued growth with a goal of 24 vanpools (230 total vanpools) operating by June 30, 2003.

TRANSPORTATION MANAGEMENT ASSOCIATIONS

Another approach to travel demand management is the formation of Transportation Coordinator Alliance (TCA) groups. Through these informal associations, employers share resources to promote alternative mode use, improve mobility, or implement trip reduction programs in their local areas. As of June 2003, there were twelve TCAs in the MAG region. Together, these TCAs involve about 250 employers. RPTA provides staff support to all of the network groups in the Valley.

TELECOMMUTING

With the advent of new technology and the change to a knowledge-based economy, a growing number of employers are allowing their employees to work in a location other than the central office. With telecommuting, employees can be linked to an office by a personal computer. A random survey of Valley residents in 2003 indicates that over 85 percent of employed residents in the Phoenix area have a personal computer (2003 *TDM Annual Survey*, WestGroup Research, 2000). Approximately 88 percent of households now have Internet access at home or at work. About 29 percent of employed residents also have "connectivity" from home to work. And 36 percent of employed residents have high speed lines. This high level of PC ownership, Internet access, connectivity from home to work, and high speed lines will continue to make it easier for more Valley employed persons to telework.

Employees may telecommute either on a full-time or on a part-time basis, with most telecommuters working at or near home one or two days per week. By working at home, or at a satellite work center, the commute trip is eliminated or shortened. About 11 percent or approximately 150,000 residents work from home at least once a week. If you include those who are regular and occasional telecommuters, it is estimated that 15 percent of employees telecommute.

Arizona has become a leader in the promotion of telecommuting. The State of Arizona and AT&T started some of the first formal telecommuting programs in the state

with a joint pilot program in 1990. MAG and RPTA started promoting telecommuting in 1992 and its usage has increased every year since it was first tracked in 1993. RPTA provides support and technical assistance to employers to help them start telecommuting programs, including training workshops and sample policies and agreements, management briefings and one-on-one assistance.

Opportunities to reduce trip making in this category would appear to be substantial. The random survey of Valley residents in 2002, mentioned above, also finds that 33 percent of all workers indicate that their jobs would allow them to telecommute at least one day per week and would have an interest in doing so if the option was available. There are almost 400 Valley employers of over 50 employees indicating they allow some form of telecommuting. A business survey of employers of over five employees indicates that up to 16 percent of all Valley businesses allow some form of telecommuting.

TELECONFERENCING/ VIDEOCONFERENCING PROJECT

MAG has established a Teleconferencing Program to link MAG and its member agencies via teleconferencing. The first phase of this program, the MAG Regional Videoconferencing System Project, is designed to facilitate communication between agencies while reducing the need to travel to meetings. The MAG Regional Videoconferencing System has a central videoconferencing location at the MAG offices and satellite locations housed at each member agency. This system allows for communication between MAG and its member agencies as well as among member agencies without direct participation by MAG.

The benefits of the MAG Regional System Videoconferencing Project include:

- Reducing vehicle miles traveled by making it unnecessary to travel to as many meetings, and in turn relieve traffic congestion and reduce air pollution.
- Increasing public input in the regional decision-making process by affording the public an opportunity to participate in meetings at various videoconferencing sites.
- Facilitating audio and visual electronic meetings for community groups and under-served populations.
- Widening communication possibilities outside the region.

FUNDING

Transportation Demand Management programs will be funded by a number of revenue sources during the planning period. Regional funding sources will contribute to rideshare, trip reduction and vanpool activities. (See Table 5-4: air quality programs and other transit). In addition, it is anticipated that elements of travel demand management and the vanpool program will be addressed by local funding sources (See Table 10-4).

CHAPTER SIXTEEN

SYSTEM MANAGEMENT

Transportation System Management (TSM) programs help to accommodate the safe and efficient movement of people and vehicles within the transportation system. The full spectrum of transportation technology applications, known as Intelligent Transportation Systems (ITS), now forms the basis for all of these programs. This section describes a number of TSM programs which are part of the MAG RTP.

INTELLIGENT TRANSPORTATION SYSTEMS

Intelligent Transportation Systems, or ITS, involve the application of advanced sensors, computers, electronics and communication technologies in an integrated manner, along with management strategies, to increase the safety and efficiency of the surface transportation system. The products and services resulting from ITS help improve safety and efficiency by:

- Collecting and transmitting information on traffic conditions and transit schedules to aid travelers before and during their trips.
- Relieving congestion by reducing the number of traffic incidents through better traffic flow coordination, detecting and clearing incidents quickly when they occur, and rerouting traffic flow.
- Helping drivers reach desired destinations with navigational aid systems.
- Raising the productivity of vehicle fleets through automated tracking, dispatch and weigh-in-motion systems.
- Benefitting public and governmental agencies through lower costs, enhanced services and a healthier environment for all.
- Helping people and goods move more safely and efficiently by providing information links between travelers, vehicles and infrastructure.

ITS PLAN

Since 1996, MAG has taken progressive steps toward mainstreaming the development of regional ITS within the transportation planning process. All planning activities for public sector ITS infrastructure in the region are currently coordinated and led by MAG. In September of 1999, MAG launched a project to develop a comprehensive ITS Strategic Plan. Oversight for this project was provided by a group of Regional ITS Stakeholders consisting of the MAG ITS Committee and other regional ITS stakeholders. The Plan was adopted by MAG in April of 2001 and currently serves as the road map for future ITS within the region. Foresight by MAG led to the development of a regional ITS architecture as part of this project, thus immediately meeting a USDOT requirement that was announced during April of 2001.

Freeway Management System

The urban freeway system is a key component of the overall regional transportation system. Mobility in the region largely depends on the ability of this system to address travel demand. For efficient operation and management of this system, ADOT is utilizing an integrated package of ITS strategies commonly referred to as a Freeway Management System (FMS). The regional FMS first became operational in 1996 and provides surveillance, incident management and traveler advisory functions.

Regional Transportation Plan

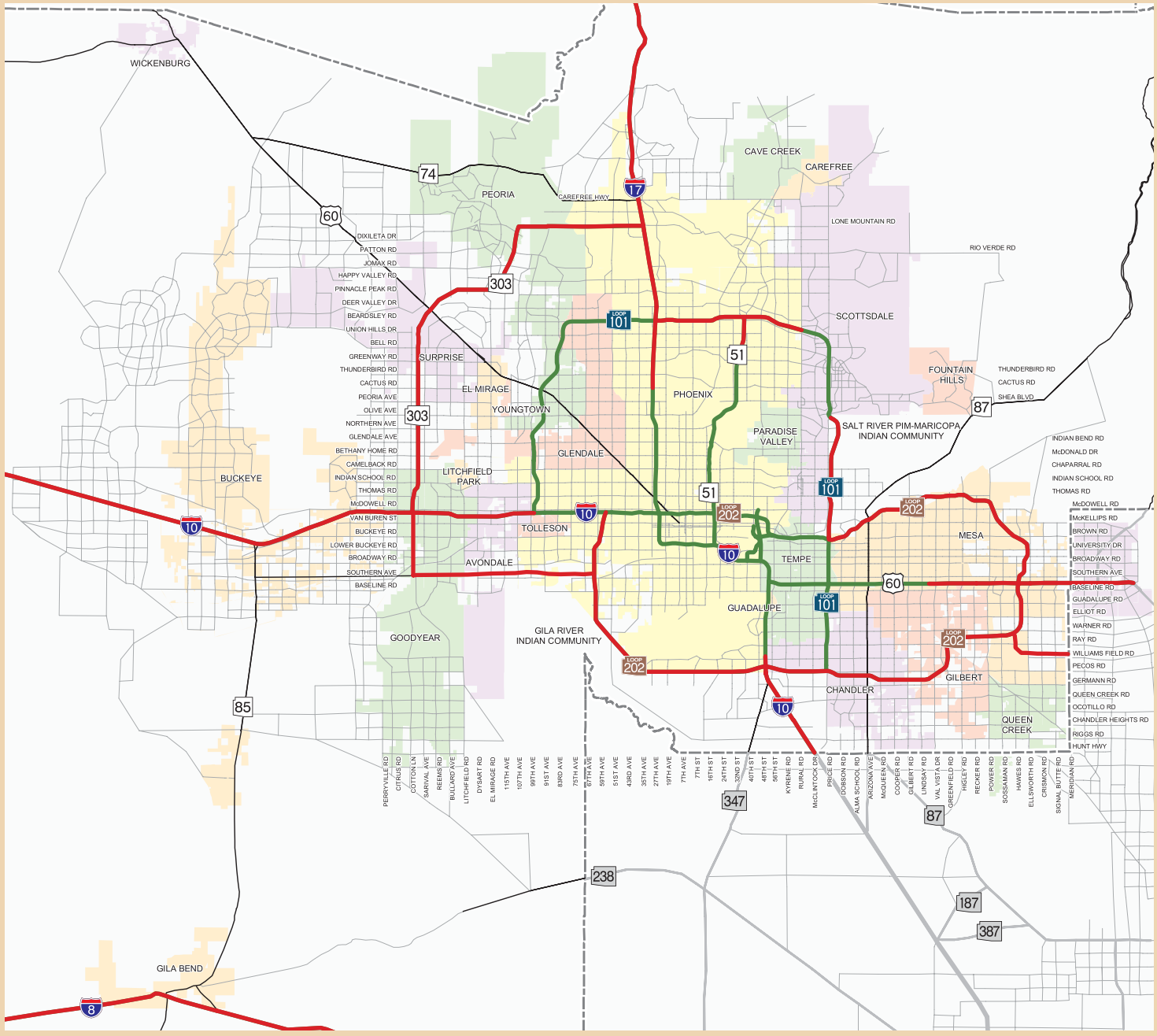
Fig. 16–1

Draft

REGIONAL TRANSPORTATION PLAN

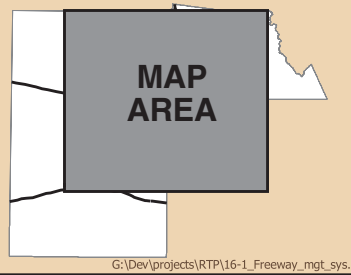
MARICOPA ASSOCIATION of GOVERNMENTS

MAG Regional Freeway Management System (FMS)



- RTP FMS
- Programmed FMS
- County Boundary
- Highways
- Other Roads

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transporation Study jointly sponsored by MAG, CAAG, and ADOT.



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

G:\Dev\projects\RTP\16-1_Freeway_mgt_sys.mxd

TABLE 16-1

EXPANSION OF THE REGIONAL FREEWAY SYSTEM AND THE FREEWAY MANAGEMENT SYSTEM			
	2003	**2007**	**2025**
Urban Freeway System	234 Miles	274 Miles	347 Miles
Freeway Management	87 Miles	94 Miles	275 Miles

Source: Maricopa Association of Governments

Table 16-1 and Figure 16-1 describe the existing coverage of FMS, and the projected expansion of the regional FMS.

The physical system consists of electronic message signs, traffic signals for metering traffic flow at ramps, closed circuit television cameras, vehicle detectors, and a telecommunication network that links all of these devices to a Traffic Operations Center (TOC). Traffic management strategies are directed from the control center in response to varying traffic conditions. The TOC is staffed 24 hours per day, seven days a week, and also serves as a statewide highway emergency management center.

Completion of the FMS is an important priority for the region. To facilitate rapid FMS implementation, MAG has approved the installation of communication conduits and other basic infrastructure whenever new freeway segments are constructed. In addition, the RTP proposes the completion of full FMS on all of the freeways in the region.

Traffic signals used at the end of freeway ramps to control entry of vehicles on to the freeway are known as Ramp Meters. Ramp meters have been installed at many locations and they are typically active during peak traffic periods. At some freeway ramps that carry two lanes, one lane is reserved for HOV vehicles. The prior MAG policy required exclusive HOV access at all ramps, based on the 1991 MAG HOV Plan, which was developed in advance of local experience with HOV ramps. However, actual ADOT experience in ramp operations has indicated that it is not practical to build, nor operate, exclusive HOV lanes at all ramp locations in the region. Therefore, the existing policy on HOV access at freeway ramps is revised to reflect that the need for exclusive HOV access at freeway ramps will be site specific and determined based on factors such as HOV traffic demand and available right-of-way for an exclusive HOV lane.

Approximately $143 million in regional funding has been identified for planned toward the expansion of the FMS, which would result in a total of 275 miles of FMS coverage.

Freeway Service Patrol Program

During September of 2000, MAG, in partnership with FHWA, ADOT and DPS, launched the state's first Freeway Service Patrol (FSP) program. The program was funded by MAG and provided vehicles, equipment, and operating expenses for a period of three years (ending in June 2003). The program involves DPS civilian employees that serve as Roadside Motorist Assistants on the urban freeway system during peak traffic periods. The many services provided by the FSP include: helping motorists change tires; removing road debris; helping with gasoline; and removing abandoned vehicles. Over 8,000 motorists were helped in 2002. All major urban regions in the nation have programs to provide similar services on their urban freeway systems.

Regional Transportation Plan

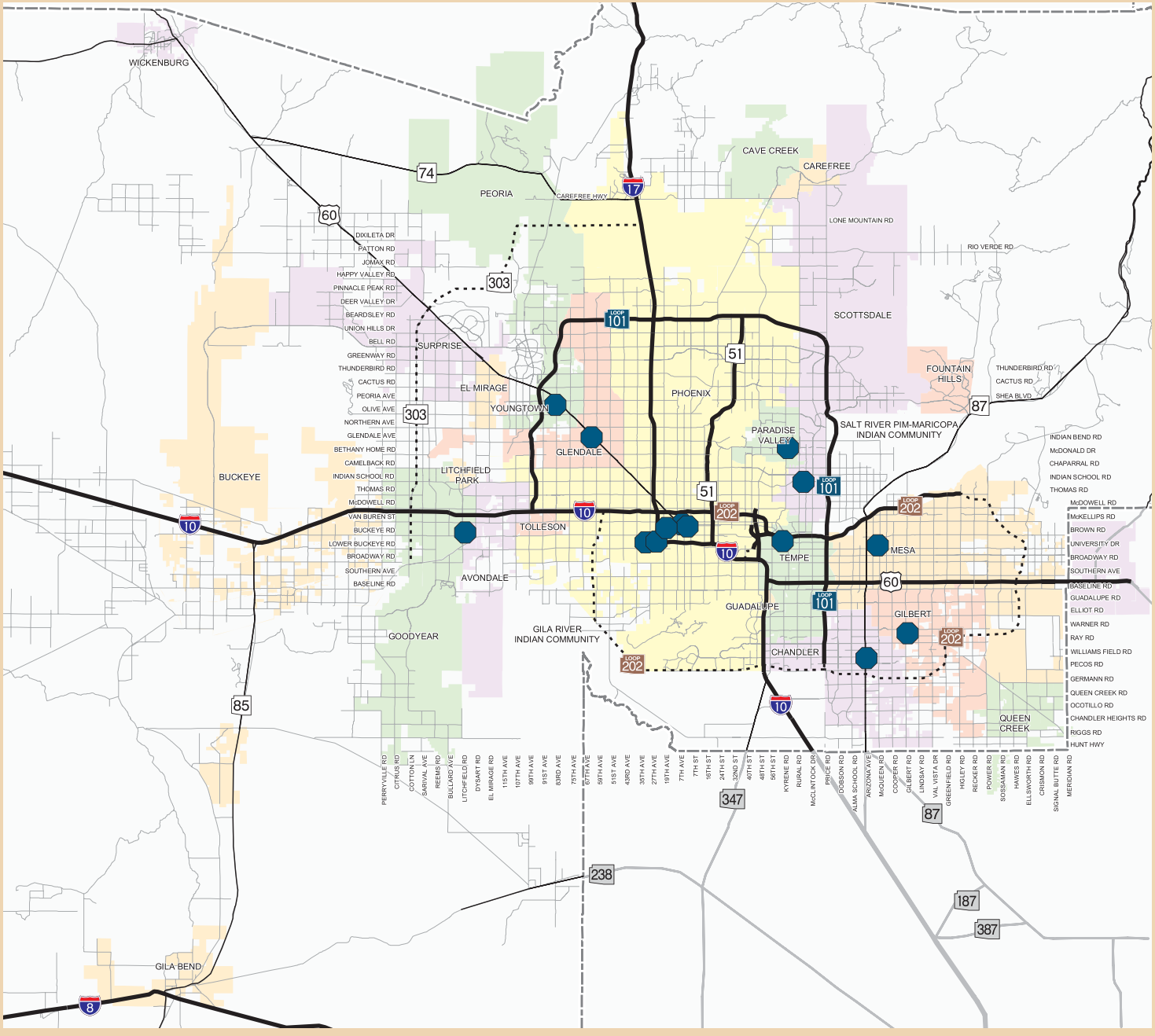
Fig. 16-2

Draft

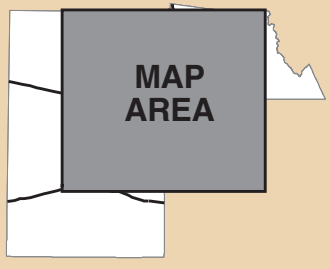
REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

Existing Public Transportation Management Center Nework



- Traffic Management Centers
- County Boundary
- Existing Freeway
- Planned Freeway
- Highways
- Other Roads



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

0 5 10 Miles

N

G:\Dev\projects\RTP\16-2_Traffic_Mgt_centers.mxd

TABLE 16-2

STATE OF TRAFFIC SYNCHRONIZATION IN THE MAG REGION (September 2003)					
Agency/ Jurisdiction	**Total Traffic Signals**	**Synchronized Signals**	**Synchronized Signals (%)**	**Traffic Management Center?**	**Are Signals Synchronized with Adjacent Cities?**
ADOT	**154**	**27**	**18%**	**Yes**	**Yes**
Chandler	**143**	**139**	**97%**	**Yes**	**Yes**
Gilbert	**68**	**57**	**84%**	**Yes - 2003**	**Yes**
Glendale	**149**	**136**	**91%**	**Yes - 2003**	**Yes**
Goodyear	**21**	**0**	**0%**	**Yes - 2004**	**No**
Maricopa Co.*	**125**	**75**	**60%**	**Yes**	**Yes**
Mesa	**334**	**325**	**97%**	**Yes - 2003**	**Yes**
Peoria	**64**	**64**	**100%**	**Plan - 2005**	**Yes**
Phoenix	**881**	**844**	**96%**	**Yes**	**Yes**
Scottsdale	**260**	**260**	**100%**	**Yes**	**Yes**
Tempe	**188**	**188**	**100%**	**Yes**	**Yes**
TOTAL	**2,387**	**2,115**	**88.6%**	**---**	**---**

Source: Maricopa Association of Governments ***Unincorporated area only.**

Due to the significant contributions of this program toward safety and managing traffic on the freeway system, it is anticipated that this program will continue well into the future. Increasing freeway mileage to be covered by this program will require additional resources. The continuation of this service has been included in this Plan.

Arterial Traffic Management

Traffic management on municipal arterial streets is the responsibility of individual jurisdictions. The larger cities and towns in the region have computerized traffic management systems linked to a central Traffic Management Center (TMC). Traffic management devices at the street level include: traffic signals, controllers, vehicle sensors, cameras, and electronic message boards. Communications between these field devices and the TMC is carried out via leased or agency owned telecommunication lines. The existing regional TMC network and likely future locations are shown in Figure 16-2.

Table 16-2 shows the number of traffic signals in each jurisdiction within the MAG region. Traffic signal coordination along major arterials is a basic practice in the region. Approximately 89 percent of all traffic signals in the region are coordinated with adjacent traffic signals. The regional ITS infrastructure includes a network of interconnected Traffic Management Centers. The central hub for this network is the Arizona Department of Transportation's (ADOT)

Traffic Operations Center. See Figure 16-2). Computers and various connecting devices are housed at the ADOT Traffic Operations Center. However, traffic management and signal operations functions within each MAG member jurisdiction are carried out entirely by the local agency. There is a no central agency in the MAG region that has the ability to make any changes to another agency's traffic signal system. The regional connectivity provides the ability for adjacent cities to access and exchange traffic camera images, traffic data and information for effective traffic management within their own jurisdictions.

The MAG Region was selected by the USDOT in 1996 as one of four national model sites for urban ITS, and received a federal grant to develop a fully integrated regional traffic management system. The project was named AZTech™ by the local consortium. The goal of the AZTech™ project was to implement the basic framework for an urban ITS in an effort to improve mobility and safety throughout the region. Eleven MAG member agencies, including ADOT, participated in the AZTech™ project. The grant-funded project was considered the first phase of the AZTech™ system and covered approximately 198 miles of arterial streets. Due to the broad national recognition that the USDOT funded project received, the name "AZTech™" has been adopted as the name for the interconnected regional arterial traffic management system.

Since 1996, under the auspices of the MAG ITS planning program, the region has continued to build traffic management infrastructure expanding beyond the initial AZTech™ project. The Capital Improvement Programs at local agencies are also making sizeable contributions to building this infrastructure. Twenty four high-priority arterial corridors, called Smart Corridors, are identified in the MAG ITS Strategic Plan. They are being instrumented with additional vehicle detection, surveillance cameras and electronic message signs. Nearly 530 miles of major arterials are currently being turned into Smart Corridors under a three-phased project. In addition, a number of new corridors and extensions of current corridors have been identified for the Regional Smart Corridor System for 2025 (See Figure 16-3). The total coverage of Smart Corridors in the region by 2025 will be approximately 1,300 miles. The 2025 Smart Corridors shown on the map are based on the extension of existing Smart Corridors and an estimation of traffic management needs based on forecast traffic volumes. It is acknowledged that this map may change over the next 20 years.

Approximately $50 million in regional funding has been identified in the Draft Plan for ITS improvements on the arterial system.

Other ITS Elements

In recent years, a number of other concepts have been pursued as part of the ITS planning process. These ITS elements include:

- Traveler Information Systems: The most prominent of these traveler information services are enhanced radio and television traffic reports, and personalized traffic messages via Web-enabled telephones or e-mail traffic alerts.

- Arizona 511 System**:** In 2002, the State of Arizona was selected by USDOT to be serve as a national model site for implementing a 511 telephone hotline for travel information. Anyone can access the system by simply dialing "511" on any telephone, which provides access to current information on the road systems or transit systems of Phoenix and Tucson.

- Electronic Communications: Traffic broadcasts provide feeds for cable and broadcast television based on traffic conditions monitored by the system. The initial service started in the City of Tempe in June, 1998, and is expected to expand to other local cities. Additionally, a

Regional Transportation Plan

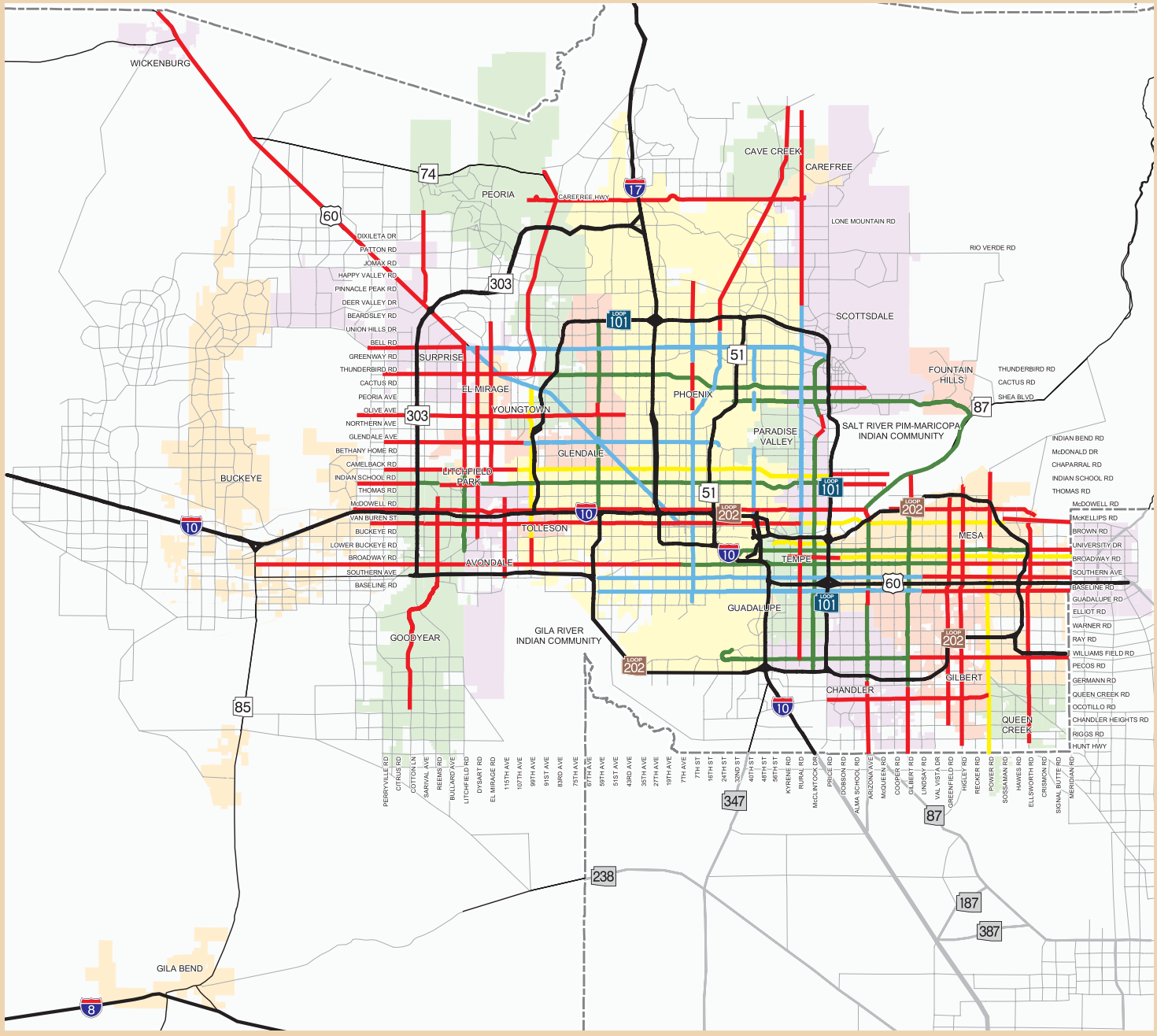
Fig. 16-3

Draft

REGIONAL TRANSPORTATION PLAN

MARICOPA ASSOCIATION of GOVERNMENTS

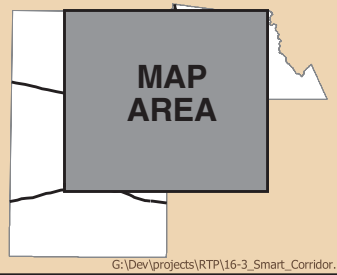
MAG Smart Corridor Network (Ultimate Concept)



- RTP Smart Corridor
- Smart Corridor Phase 1 (Completed)
- Smart Corridor Phase 2
- Smart Corridor Phase 3
- County Boundary
- Freeways
- Highways
- Other Roads

Note: Subject to change with future updates of the MAG ITS Strategic Plan and of the RTP.

Regional transportation facilities in Pinal County are planned by the Central Arizona Association of Governments (CAAG). Potential new facilities shown in Pinal County are from the Southeast Maricopa/Northern Pinal County Area Transportation Study jointly sponsored by MAG, CAAG, and ADOT.



While every effort has been made to ensure the accuracy of this information, the Maricopa Association of Governments makes no warranty, expressed or implied, as to its accuracy and expressly disclaims liability for the accuracy thereof.

G:\Dev\projects\RTP\16-3_Smart_Corridor.mxd

commercial Internet Website provides information on freeway and arterial traffic conditions, road closures, restrictions and incidents.

- Regional Transportation Operations: During the development of the ITS Strategic Plan in 2000, the region's ITS stakeholders identified an urgent need to develop a plan for coordinated transportation operations in order to realize the full benefits of ITS. A project to develop a Concept of Operations was included as a short-term strategy of the Plan. This project was launched by MAG in 2002, and is the first such project in the nation. As proposed by USDOT, the SAFETEA Reauthorization Act requires all metropolitan regions to develop a concept of operations.

ADVANCED PUBLIC TRANSPORTATION SYSTEMS

Advanced Public Transportation Systems (APTS) are defined as advanced technology based ITS applications in public transportation. These applications are relevant to fixed route bus, paratransit, vanpool, and rail. These technologies can be used to improve passenger convenience, vehicle operations, and mechanical systems.

Passenger convenience technologies directly benefit passengers through advanced traveler information, real-time schedule updates, and fare payment. Vehicle operations technologies are associated with dispatching vehicles and in-vehicle systems. Mechanical systems technologies are designed to remotely monitor the electrical and mechanical infrastructure of transit vehicles.

The Valley Metro Vehicle Management System Master Plan (VMS) serves as the regional guide for implementing ITS transit infrastructure. The implementation of VMS has begun and will be completed by 2004.

Full implementation of the VMS will result in the entire regional bus fleet being equipped with Automatic Vehicle Location (AVL) devices, which use Global Positioning Satellite (GPS) receivers to electronically track vehicle location. All transit and light rail traffic will be coordinated from a Transit Control Center that is currently being built.

Additional benefits of implementing AVL include new operations data, which can result in better allocation of capital resources, improved road supervision and emergency response times, and lower operating costs. Planned systems are listed below.

- Passenger Convenience
  - Automatic vehicle locator/geographical positioning system (AVL/GPS).
  - In-vehicle automatic next-stop annunciators.
  - Changeable message signs and/or audio annunciators (at transit centers and other remote locations).
  - Smart-card fareboxes and complementary infrastructure.
  - Centralized dial-a-ride call-taking and scheduling.
  - Centralized trip planning facilities.
  - Electronic messages at transit centers and bus stops used to inform passengers of current bus location.
  - Interactive information kiosks at transit centers that provide bus route, schedule and traffic condition information.

- Vehicle Operations
  - Intelligent Vehicle Control Units (IVCUs) to control on-board mobile data terminals (MDT), radios, GPS receivers, emergency alarm, covert audio and video monitoring, public address systems, destination signs, engine monitoring, fareboxes, automatic passenger counters, and traffic signals.

- Computer aided dispatch (CAD) systems. In-vehicle mobile data terminals (MDT).
- In-vehicle emergency alarm activation and covert audio\video monitoring devices.
- In-vehicle automatic passenger counters.
- Systems that provide dispatchers real-time updates on traffic conditions and route status to determine if buses are on schedule.
- Dial-a-ride scheduling system.

• Mechanical Systems

- In-vehicle sensors to monitor vehicle electrical and mechanical systems.

FUNDING SUMMARY

The need to maintain smooth traffic flow is an important factor in the development of the arterial network and public transit system. The previous plan called for the implementation of ITS, which is in the process of being initiated throughout the region. This Plan allocates regional funding for the continued implementation of ITS in order to keep motorists and transit users informed of traffic conditions, and to coordinate traffic control functions. The Draft Plan has identified a share of the regional funding available for ITS. This funding consists primarily of Congestion Mitigation and Air Quality (CMAQ) funds. Table 16-3 summarizes these figures for the planning period.

Table 16-3
ITS Funding Estimates,
Fiscal Years 2005 to 2026 (2002 Dollars, Millions)

FUNDING	
Revenue Set Aside for Local Agency ITS Projected[1]	
Programmed CMAQ	$ 10
Planned CMAQ	50
Local Sources (General Fund, Local Sales Taxes, etc)	35
TOTAL FUNDING	**$ 95**
EXPENDITURES	
Local Agency Expenditures[2,3]	
Programmed ITS Projects	$ 30
Planned ITS Projects	65
TOTAL EXPENDITURES	**$ 95**
BALANCE (Revenues minus Expenditures)	$

Source: Maricopa Association of Governments, 2003

1. Includes only revenue specifically set aside for new ITS capital investments. Many ITS improvement occur as part of new street construction or the widening of streets or as incremental improvements.
2. Does not include ITS improvements constructed as part of new street construction or street widenings. These improvements are accounted for as street construction or improvements. Also, does not include expenditures for ITS operations and maintenance.
3. Does not include $143 million for FMS.

CHAPTER SEVENTEEN

SPECIAL NEEDS TRANSPORTATION

This element of the Regional Transportation Plan addresses the special transportation needs of certain user groups. The transportation needs of special populations are a regional concern. Limitations caused by age or disability complicate the process of securing transportation for a portion of the population. In addition, those who are seeking employment or training, and those who lack financial resources find limited transportation options available to reach second shift and weekend employment.

CHANGES IN ASSISTANCE

Changes in federal welfare laws now limit cash assistance to a five-year lifetime limit, and require recipients to enroll in education and training, and to seek employment within a two-year time frame. There are thousands of people receiving this assistance in the region, and they must transport their children to child care in addition to meeting employment and training requirements. Failure to meet these requirements results in the loss of cash assistance, giving a new urgency to clearly define the transportation needs of this population.

To better understand the transportation barriers faced by these populations, and to identify potential transportation options, a special study was conducted. Data in the study was secured from the Arizona Department of Economic Security (DES) to spatially locate cash assistance recipients. New employment opportunities were matched with these individuals, along with locations of employment, training facilities and child care centers. MAG sponsored several regional and statewide meetings to identify barriers, and to secure input on possible options.

TRANSPORTATION PROGRAMS

Special Transportation Services (STS) provides transportation assistance to the most transit dependant populations in Maricopa County, which include the elderly, disabled, and low-income individuals. Assistance is provided through the following programs:

Work Links

Work Links is a 24-hour, 7-day a week, transportation brokerage service for low-income workers. The program is designed to assist low-income persons with transportation to work, and transportation to work-related activities, which includes childcare sites. Transportation Mobility Specialists work with participants to assess transportation needs, and match them with a transportation option that accommodates their specific needs. In addition to providing connectivity to various public transportation options, including carpools/vanpools. Work Links also provides van transit, bicycles, vehicle repair and emissions retrofitting, and gas stipends. STS operates this program county-wide in partnership with a number of transportation and human services providers and employment centers. The primary funding sources for this program are the Federal Transit Administration's Job Access and Reverse Commute funds, and MAG's federal transportation funds. From July 1, 2000, to June 30, 2002, the Work Links program provided service to 5,482 people.

Special Needs

Special Needs is an advanced reservation transportation assistance program that provides transportation to elderly, disabled, and low-income individuals. Transportation is cost-free to the participant and is provided

Monday through Friday, between the hours of 8:00 a.m and 4:00 pm. Trips can be scheduled for medical, dialysis, recreational, shopping, social service, adult-day care, and senior center activities. STS also delivers nutritious noon meals to homebound elderly or disabled persons. STS owns and operates a 70-van fleet to provide services.

Southwest Inter-City Transit System

The FTA Job Access grant, which was received this past year from the Federal Government to fund Work Links, has also provided funding to support the Southwest Inter-City Transit System. This is a neighborhood bus service available to residents in the West Valley cities of Avondale, Goodyear, Litchfield Park and Tolleson.

ELDERLY MOBILITY CONCERNS

By the year 2021, approximately 22 percent of the residents of Maricopa County will be age 60 or older. Of this number, approximately one third will be 75 or older. Although the seniors of the future will be healthier, better educated, and more financially secure than comparable elders of a few years ago, many will experience physical, financial, emotional and mental barriers in using various transport modes. Elders who live alone; have disabilities that prevent driving; lack the availability of close-by family members; and/or have limited financial means will face even more difficult and life-threatening transportation challenges.

National research has found that the preferred method of travel among seniors is driving, which accounts for over 80 percent of trips made by those 65 and older. Even among those who are 85, almost 40 percent of those traveling in a private vehicle consist of the individual driver. Conversely, no current age cohort of the elderly collectively takes more than 2.3 percent of their trips by transit. Walking is a more frequent mode choice for older people than is public transit. While elder drivers are involved in fewer total crashes than other age-groups, there are more crashes compared to the number of miles driven. Persons above 80 years of age who are involved in crashes are approximately four times as likely to die in a crash than would a younger driver.

Regional Action Plan on Aging and Mobility

In response to such needs as provided above, MAG began an intensive process to develop a *Regional Action Plan on Aging and Mobility*. MAG brought together experts and concerned citizens to form the Elderly Mobility Stakeholder Working Group. The group divided into subcommittees, who studied and then developed 25 recommendations for an action plan based on Infrastructure and Land Use, Alternative Transportation Modes, Driver Competency, and Education and Training needs. The plan provided a comprehensive overview of senior mobility issues and was adopted by the MAG Regional Council on October 3, 2001.

The key recommendations as identified in the *Regional Action Plan on Aging and Mobility* are as follows:

- Review the Maricopa Association of Governments (MAG) Uniform Standard Specification and Details for Public Works Construction, and the Arizona Department of Transportation (ADOT) Design Standards to: determine how and which guidelines from the Federal Highway Administration (FHWA) Older Driver Highway Design Guidelines can be incorporated; and to determine if certain traffic calming measures could be included as a new section in the MAG Uniform Standard Specification and Details for Public Works Construction.

- Require the consideration of the Federal Highway Administration (FHWA)Older Driver Highway Design Guidelines in the ADOT/MAG application and review of federally funded projects. Develop a checklist for planners and designers of

transportation projects to use in the preparation of their proposals and for the application review team to utilize.

- Encourage dedicated funding for the maintenance of current infrastructure and increase funding to expand programs like adopt-a-road. In addition, utilize trained volunteers, school districts, and neighborhood groups to report maintenance problems with the transportation system.

- Improve the accessibility of transportation facilities and intermodal connections. Start with an analysis and potential changes to Sky Harbor Airport and then broaden the scope to include park-and-rides, major bus transfer points, pedestrian facilities, light rail stops, and possible local airports.

- Review and update the MAG Pedestrian Area Policies and Design Guidelines so that they address and promote senior mobility.

- Build upon the land use principles included in the Maricopa Association of Governments (MAG) Pedestrian Area Policies and Design Guidelines and other adopted MAG plans and policies to develop land use guidelines (neighborhood and subdivision-based) to meet the needs of an aging population.

- Educate city planners, developers, students, and community groups on how to manage senior mobility issues in their communities through the following methods: publish a comprehensive, user-friendly Senior Mobility Guide book for cities, developers, community groups, and educational institutions; organize a series of elderly/pedestrian urban/suburban design forums targeting the real estate and land development industries and city planners; develop a Senior Transportation/Land Use Design Awards Program for cities that implement elderly mobility improvements; and utilize the Senior Mobility Checklist and AARP Liveable Cities Audit to measure performance and make award decisions.

- Develop and train city-based Senior Audit Teams to go on-site to review the current infrastructure/land use and take part in the transportation project review process.

- Request the MAG ITS Committee to consider the development and implementation of Intelligent Transit Stop technologies. Intelligent Transit Stops, or “Smart Stops,” will enable transit management to be informed about how many and what kinds of customers are waiting for service. Management will be able to calculate in real-time terms whether these customers are likely to be picked up on schedule and, if not, to select alternative means for aiding such customers in completing their trip.

- Dedicate MAG staff to the ongoing tracking and implementation of the Regional Action Plan recommendations. MAG staff should focus efforts in the following areas: Integrating the Aging and Mobility recommendations into the work of the MAG modal committees; serving as a resource to community stakeholder groups who take the lead on some of the recommendations; and convening a quarterly stakeholder meeting to assess the implementation process.

- Establish a Transportation Consortium to design and oversee a Transportation Coordinated System for older adults and other transportation-limited populations.

- Improve transportation information gathering and dissemination through a coordinated Transportation Information System.

- Build the Family of Transportation Services available to older adults and transportation-limited populations by expanding the following programs across the county: Mileage Reimbursement

currently in Mesa and Scottsdale); Taxi Voucher Program (Cab Connections in Scottsdale); Peer/Group Travel Training (Community Forum and ValleyMetro/Regional Public Transportation Authority); Neighborhood Circulators/Community Buses (Tempe, Ahwatukee); and Flex Route Bus Routes currently operating in Avondale, Tolleson, Litchfield Park, Goodyear, Phoenix and Fountain Hills.

- Develop new transportation options by piloting an Independent Transportation Network (ITN) program in a community that is interested in being a demonstration site, and piloting a Senior Van Pool Program.

- Promote private sector involvement in providing alternative transportation options to older adults and other special needs populations. Tax incentives could help subsidize trips to stores, help provide vehicles to augment a specialized transportation service, or provide employer run van pools and other projects.

- Increase transit use through improved amenities at transportation facilities to include, but are not limited to: shade, restrooms at transfer points, bike lockers/storage facilities, park-and- rides, water fountains, benches, increased security and optimal stop locations.

- Expand or replicate the existing Peer Travel Training Program. This should include increasing the volunteer core/mentors by utilizing the religious community and civic groups like Neighbors Who Care in Sun Lakes, Rotary and Lions Clubs, etc., and community service incentives.

- Encourage legislation which supports funding for transportation coordination efforts.

- Develop and implement a Pilot Driver Screening Battery Study. After completion of the study, implement Cognitive/Physical Testing Centers across the Valley.

- Improve the data collection, analysis, and dissemination of older driver information. The ADOT Motor Vehicle Division (MVD) needs to improve the statistical information that is available on senior drivers, such as the number of older driver crashes, type of crashes, violations, injuries, licenses granted and revoked, and also to possibly isolate factors like location, demographics, and persons with repeated incidences.

- Create a Driver Intervention Program (modeled off of “Getting in Gear” in Tampa, Florida) that is centrally located and also available in satellite branch offices in East/West Valley cities.

- Develop a Regional Public Awareness/Education Campaign which adopts a fitness-to-drive or wellness approach.

- Develop and implement Education/Sensitivity Training on senior mobility issues to the following professional communities: health care, insurance companies, city traffic engineers, law enforcement (Department of Public Safety and city fire emergency personnel through Arizona Peace Officers Standards Training and ongoing in-service training), court personnel, transit drivers/personnel, Motor Vehicle Department personnel, and aging services personnel.

- Publicize and utilize the Senior Help Line as the resource for aging and mobility information covering the following areas: remediation, training and education opportunities for drivers, alternative transportation options available, linkage with transportation Web site with MAP

Blast feature to help tell user the best way to get from Point A to Point B.

- Advocate for mandatory insurance discounts for seniors who complete the Arizona Association of Retired Persons (AARP) 55-Alive Course.

CHAPTER EIGHTEEN

SAFETY

This chapter describes how road safety is addressed in the regional transportation planning process. Safety continues to be highlighted as a key planning emphasis area, and improving the levels of safety across the regional transportation system is an essential planning goal. The system improvements included in the Plan address future travel demand in the region estimated through transportation planning models that help plan for adequate infrastructure capacity to accommodate anticipated future traffic flows.

TRANSPORTATION SAFETY PLANNING

The National Cooperative Highway Research Program has recently launched a project to develop guidelines for incorporating safety in the planning process. MAG is a participant in that project as a pilot planning agency. The Safety Planning Program at MAG was initiated in 2001 and is in the developing stages. A Regional Transportation Safety Stakeholders Group was formed in November 2001 with representation from member agencies and a broad cross section of safety advocacy groups.

Transportation safety is addressed at two levels within the planning process. The first involves long-range planning, where decisions on large regional transportation infrastructure investments are made. Methods utilized to estimate safety consequences of planning scenarios were developed by MAG staff, based on best available data. These planning decisions made at the regional level on infrastructure investment priorities have a significant indirect impact on the overall safety of the system. An example for this is a new or expanded freeway system that would draw traffic away from parallel arterial streets. Since the overall safety on freeways is higher than on arterial streets, there is an indirect improvement to overall systemwide safety.

The second level of safety planning addresses needs of a more immediate or short-term nature. This involves working with many stakeholders through a multidisciplinary safety improvement program. The program is focused on problem identification, prioritization and implementation of strategic actions toward bringing about systemic improvements to road safety. This program of activities is based on the 4 E's of safety: Engineering, Education, Enforcement and Emergency Medical Services. A Safety Action Plan has been developed and will be the basis for road safety activities over the next few years. The range of actions that may be initiated under this program is likely to reach beyond the traditional transportation planning arena. The program at MAG has begun to serve as the focal point to lead and facilitate this effort for the region.

TRANSPORTATION FACILITIES AND USER SAFETY

Table 18-1 shows statistics for the years 1994 -2000 on the number of crashes that occurred in the MAG region and the economic loss that resulted from these crashes. The economic cost accounts only for loss of life, injury and loss of property and does not include congestion and delay related costs to other motorists affected by crashes. These statistics indicate that between 1994 and 2000 total crashes have increased by 29 percent, total injury crashes have increased by 15 percent, and the number of total fatal crashes increased by 17 percent.

Freeways

The urban freeway system is the safest transportation facility in the region. The

TABLE 18-1

MARICOPA COUNTY CRASH HISTORY (1994-2000)					
Year	**Fatal**	**Injury**	**Property Damage Only**	**Total**	**Economic Loss (Millions $)**
1994	337	27,655	38,781	66,773	1,255
1995	417	29,066	42,875	72,358	1,593
1996	360	28,769	43,867	72,996	1,205
1997	372	27,567	45,667	73,616	1,260
1998	372	28,730	49,293	78,395	1,267
1999	394	30,331	52,345	83,070	1,332
2000	394	31,837	54,457	86,688	1,547

Source: ADOT, Arizona Motor Vehicle Crash Facts

TABLE 18-2

FATALITIES AND INJURY ON THE FREEWAY SYSTEM (1998-2002)					
Year	**Fatal**	**Injury**	**Property Damage Only**	**Others**	**Total**
1998	49	2,896	7,522	100	10,567
1999	46	3,155	7,715	104	11,020
2000	58	3,895	9,134	128	13,215
2001	68	4,188	9,677	155	14,088
2002	72	4,773	11,134	182	16,161

Source: ADOT, Arizona Motor Vehicle Crash Facts

overall safety on the system has been enhanced through MAG-sponsored safety initiatives such as the implementation of Cable Median Barriers and the Freeway Service Patrol Program. The Freeway Management System (FMS) operated by ADOT is another contributor to overall freeway safety. Completion of the FMS to cover the entire urban freeway system is recognized as a high priority in the RTP.

Excessive speeding, particularly on newer freeway segments, continue to pose a threat to road safety. The State Department of Public Safety continues to monitor and address threats to overall safety through increased enforcement. Table 18-2 depicts the crash record on freeways in the MAG area.

TABLE 18-3

FATALITIES AND INJURY CRASHES ON THE ARTERIAL AND LOCAL STREET SYSTEM (1998-2002)					
Year	**Fatal**	**Injury**	**Property Damage Only**	**Others**	**Total**
1998	332	25,997	40,379	1,569	68,277
1999	350	27,344	43,065	1,843	72,602
2000	320	27,816	42,992	2,967	74,095
2001	382	26,747	43,660	2,306	73,095
2002	355	25,767	43,022	2,317	71,461

Source: ADOT, Arizona Motor Vehicle Crash Facts

TABLE 18-4

BICYCLE USER CRASH FATALITIES AND INJURIES (1998-2002)					
Year	**Fatal**	**Injury**	**Property Damage Only**	**Others**	**Total**
1998	14	1,466	204	2	1,686
1999	19	1,515	216	1	1,751
2000	18	1,352	198	19	1,587
2001	19	1,213	170	2	1,404
2002	10	1,138	156	3	1,307

Source: ADOT, Arizona Motor Vehicle Crash Facts

TABLE 18-5

PEDESTRIAN CRASH FATALITIES AND INJURIES (1998-2002)					
Year	**Fatal**	**Injury**	**Property Damage Only**	**Others**	**Total**
1998	88	961	33	0	1,082
1999	74	959	54	1	1,088
2000	73	1,015	51	1	1,140
2001	86	978	47	1	1,112
2002	80	888	68	1	1,037

Source: ADOT, Arizona Motor Vehicle Crash Facts

Arterial Street System

Intersection and mid-block crashes on the arterial street system are a continuing safety concern within the region. Speeding and red light running are the key contributory factors for the more severe crashes. A recent study by the Insurance Institute for Highway Safety identified Phoenix as having a very high red light running crash rate based on population. A number of MAG jurisdictions have installed automated enforcement systems to address both speeding and intersection red light running. These systems have proven very effective in reducing crashes at their locations as well as in the surrounding area. Table 18-3 depicts the crash record on arterials in the MAG area.

Bicycle Facilities

Developing safe bicycle facilities or bikeways as an integral part of a multi-modal transportation system in the MAG region, and making bicycling a viable option for daily travel trips is a stated goal of the Regional Bicycle Plan. Another goal is to educate bicyclists and motorists in order to increase safety on shared roads, and to educate engineers and planners on bicycle safety issues. The regional plan encourages the jurisdictions to develop safe bicycle facilities.

A number of MAG jurisdictions have developed their own Bicycle Plans which further address bicycle safety. The most recent Bike Map published by MAG shows all of the on-street and off-street bicycle facilities in the region. The identification of types of bike facilities helps users anticipate what they are likely to encounter on each route. It is difficult to obtain a full assessment of the safety of bicycle users, as crash data is available only for crashes that involve at least one motor vehicle on public roads. Table 18-4 depicts the crash record involving bicycle users in the MAG area.

TABLE 18-6

YOUNGER DRIVERS IN CRASHES (1998-2002)

Year	Fatal	Injury	Property Damage Only	Others	Total
1998	152	16,613	26,429	1,019	44,213
1999	201	18,727	31,239	1,993	52,160
2000	197	19,770	32,818	2,596	55,381
2001	206	16,353	26,746	118	43,423
2002	196	16,552	27,954	125	44,827

Source: ADOT, Arizona Motor Vehicle Crash Facts

TABLE 18-7

OLDER DRIVERS IN CRASHES (1998-2002)					
Year	**Fatal**	**Injury**	**Property Damage Only**	**Others**	**Total**
1998	85	5,153	8,678	675	14,591
1999	73	4,253	6,503	16	10,845
2000	66	4,158	6,329	17	10,570
2001	57	3,989	6,270	132	10,448
2002	73	3,775	6,316	43	10,207

Source: ADOT, Arizona Motor Vehicle Crash Facts

Pedestrian Facilities

Pedestrian safety and improved pedestrian facilities are addressed by the MAG Pedestrian Working Group, and the MAG Pedestrian Plan 2000 also incorporated a number of safety topics for consideration. Pedestrian safety is a primary area of concern, as recent national studies have referred to Phoenix as having a very high pedestrian fatality rate. Table 18-5 depicts the crash record involving pedestrians in the MAG area.

High-Risk Drivers

Both younger and older drivers are associated with elevated risk for vehicular crashes, based on their involvement in crashes. Older drivers have been observed to be particularly susceptible to accidents at intersections. Safety issues are considered when existing intersections are improved and left-turn lanes are added. The adequacy of street signs and pavement markings for older drivers in the region is another key safety issue. Potential initiatives to help older road users include: promoting a uniform standard such as six-inch road name signs across the region, and left-turn signal phasing and lanes at intersections. Tables 18-6 and 18-7 depict the crash record of younger and older drivers in the MAG area.

Transit Riders and Operators

Through the procurement process for transit operations, RPTA requires operators to be apprised of safety and security issues, as well as to perform multiple functions related to safety of capital equipment. Contract incentives are provided for preventable accidents. Future improvements to safety and security in transit vehicles are being addressed through RPTA's Vehicle Management System Plan.

REGIONAL TRANSPORTATION SAFETY ACTION PLAN

A Regional Transportation Safety Action Plan has been developed by the MAG Safety Stakeholders Group as an immediate planning measure to address road safety in the region. It outlines specific goals and actions for improving safety generated by three working groups that focused on: (1) Roadways; (2) Enforcement, Education and Emergency Medical Services, and (3) Pedestrians and Bicycle and Transit Users.

Roadway Safety Goals

- Regional Transportation Safety Management System - Develop a method to assess safety performance of the transportation system.

- Promote Road Safety Audits.
-

Improve utilization of available safety funds.

- Reduce crash clearance time.
- Reduce the incidence of severe intersection crashes.
- Improve traffic safety in work zones.
- Safety reviews of LRT and BRT operations during final design.
- Improved lighting, signage and delineation for older road users.

Enforcement, Education and Emergency Medical Services Goals

- Improve overall public awareness of key road safety issues.
- Reduce crashes related to DUI, speeding, red-light running and illegal passing of school buses.
- Strengthen driver training and licensing standards.
- Reduce time to respond and clear crash sites.
- Educate public on safe actions at crash scenes.

Pedestrian, Bicycle and Transit User Goals

- Improve safety on access routes to schools.
- Integration of safety in pedestrian and bicycle planning.
- Safe multimodal access.
- Improve transportation security.
- Several activities have been launched to address the goals highlighted above.

SAFETY PLANNING ACTIVITIES/PROJECTS

Annual Regional Transportation Safety Forum

The Annual Safety Forum that was held in March of 2001 has become an ongoing fixture in the Safety Calendar. The main purpose of the Forum is to share information on safety planning, provide updates on projects and exchange ideas on how best to address pressing road safety issues in the region.

Freeway Service Patrol

A MAG project has launched the region's first Freeway Service Patrol. This service involves prompt motorist assistance provided by Roadside Motorist Assistants that are driving fully-equipped patrol vehicles on the regional freeway system. This service is staffed by civilian employees of the Department of Public Safety (DPS) and funded through a contract between MAG and DPS. The launching of the service and its ongoing operation is currently funded for five years, with Arizona DOT funding the last three years. This service will improve overall safety on the urban freeway system. Similar patrols in other regions of the nation have proven to be extremely effective. Funds for this project have been identified in the RTP.

Regional Safety Management System

A discussion between MAG and ADOT on the need for a Regional Safety Management System has led to the programming of FY 2005 funds for developing a Regional Safety Management System. The planned system will produce an annual safety report and enhance easy access to crash statistics for the region as well as for individual agencies. Working with ADOT, MAG is currently developing a process for crash data analysis.

REGIONAL SAFETY PLAN

A number of major changes to the current state and local procedures for addressing road safety improvements are imminent. The proposed SAFETEA reauthorization act includes significant federal investments in both road safety planning and implementation. The USDOT proposal suggests that some federal safety funding areas be increased by 300 percent. There is also a realization among national and state

transportation agencies that road safety needs to be better addressed when making major transportation investment decisions. Lack of appropriate models and methodologies has been the primary reason for lack of progress. However, a number of national projects are currently underway to produce needed solutions. The region, through MAG, is actively involved in and is contributing to these activities. All of these developments point to the need for a comprehensive Regional Transportation Safety Plan with goals linked to both national and state safety plans.

Funds for developing such a plan (approximately $500,000) have been included in the RTP and are covered under planning programs (see Table 5-4). It is anticipated that funds for implementing the resulting recommendations of this plan will come from a combination of dedicated federal road safety funds and local funds. The Safety Management System will provide a data resource for the development of the Plan.

CHAPTER NINETEEN

CONFORMITY ANALYSIS

This chapter presents the 2003 MAG Conformity Analysis for the FY 2004-2007 MAG Transportation Improvement Program (TIP) and the MAG Regional Transportation Plan (RTP). The Maricopa Association of Governments (MAG) is the designated Metropolitan Planning Organization (MPO) in Maricopa County, Arizona, and is responsible for regional transportation and air quality planning.

As required by the Clean Air Act, an air quality conformity analysis was conducted on the TIP and RTP as a whole. The conformity analysis demonstrates that the TIP and Regional Transportation Plan are in conformance with regional air quality plans and will not contribute to air quality violations. In its entirety, the conformity analysis demonstrates that the criteria specified in the federal transportation conformity rule for a conformity determination are satisfied by the TIP and RTP. A finding of conformity for the FY 2004-2007 MAG TIP and MAG RTP is therefore supported.

Summarized below are the applicable federal criteria or requirements for conformity determinations, the conformity tests applied, and the results of the conformity assessment of the TIP and RTP. This information is followed by figures presenting the conformity test results.

CONFORMITY REQUIREMENTS

The federal transportation conformity rule (40 Code of Federal Regulations Parts 51 and 93) specifies criteria and procedures for conformity determinations for transportation plans, programs, and projects and their respective amendments. The federal transportation conformity rule was first promulgated in 1993 by the U.S. Environmental Protection Agency (EPA), following the passage of amendments to the federal Clean Air Act in 1990. The federal transportation conformity rule has been revised several times since its initial release to reflect both EPA rule changes and court opinions. A summary of the transportation conformity rule and court opinions may be found in the 2003 MAG Conformity Analysis report.

The conformity rule applies nationwide to “all nonattainment and maintenance areas for transportation-related criteria pollutants for which the area is designated nonattainment or has a maintenance plan” (40 CFR 93.102). Currently, portions of Maricopa County are designated as nonattainment areas with respect to federal air quality standards for three criteria pollutant, which are carbon monoxide (CO), ozone, and particulate matter under ten microns in diameter (PM-10). Therefore, transportation plans and programs for the nonattainment areas for the Maricopa County area must satisfy the requirements of the federal transportation conformity rule.

Under the federal transportation conformity rule, the principal criteria for a determination of conformity for transportation plans and programs are:

(1) The TIP and RTP must pass an emissions budget test with a budget that has been found to be adequate by EPA for transportation conformity purposes, or an emissions reduction test.

(2) The latest planning assumptions and emission models specified for use in air quality implementation plans must be employed.

(3) The TIP and RTP must provide for the timely implementation of transportation control measures (TCMs) specified in the applicable air quality implementation

plans.

(4) Consultation.

Consultation generally occurs at the beginning of the conformity analysis process; on the proposed models, associated methods, and assumptions for the upcoming analysis and the projects to be assessed; and at the end of the process, on the draft conformity analysis report. The final determination of conformity for the TIP and RTP is the responsibility of the Federal Highway Administration and the Federal Transit Administration.

CONFORMITY TESTS

The conformity tests specified in the federal transportation conformity rule are: (1) the emissions budget test, and (2) the emissions reduction test. For the emissions budget test, predicted emissions for the TIP and RTP must be less than or equal to the motor vehicle emissions budget specified in the approved air quality implementation plan or the emissions budget found to be adequate for transportation conformity purposes. If there is no approved air quality plan for a pollutant for which the region is in nonattainment or no emission budget found to be adequate for transportation conformity purposes, the emissions reduction test applies. For the 2003 MAG Conformity Analysis, the emissions reduction test was not applied.

The carbon monoxide motor vehicle emission budgets submitted in the Carbon Monoxide Redesignation Request and Maintenance Plan, and the PM-10 emission budget submitted in the Revised 1999 MAG Serious Area PM-10 Plan, may be used for conformity. In the September 29, 2003, *Federal Register*, EPA found the motor vehicle emissions budgets contained in the Carbon Monoxide Maintenance Plan adequate for conformity purposes, effective October 14, 2003. The EPA also issued a notice of adequacy in the *Federal Register*, effective April 21, 2000, finding that the submitted PM-10 motor vehicle emissions budget contained in the Revised MAG 1999 Serious Area Particulate Plan for PM-10 was adequate for transportation conformity purposes (EPA, 2000a). In addition, EPA published the approval of the Revised MAG 1999 Serious Area Plan for PM-10 and budget on July 25, 2002.

A summary of the applicable air quality implementation plans and conformity tests for carbon monoxide, ozone, and PM-10 may be found in the 2003 MAG Conformity Analysis report. For the 2003 MAG Conformity Analysis, the emissions budget test was applied for CO, since the CO emissions budget was found to be adequate for transportation conformity purposes by EPA, effective October 14, 2003. For ozone, an emissions budget test was performed for volatile organic compounds (VOC), because an approved SIP budget for VOC is contained in the Revised 1998 15 Percent Rate of Progress Federal Implementation Plan for Ozone. For PM-10, the emissions budget test was applied using the approved budget from the Revised MAG 1999 Serious Area Plan for PM-10.

RESULTS OF THE CONFORMITY ANALYSIS

A regional emissions analysis was conducted for the years 2006, 2015, 2016, and 2026 for each pollutant. All analyses were conducted using the latest planning assumptions and emissions models. The major conclusions of the 2003 MAG Conformity Analysis are:

- For carbon monoxide, the total regional vehicle-related emissions associated with implementation of the TIP and RTP for the analysis year 2006 is projected to be less than the adequate interim emissions budget, and the emissions associated with implementation of the TIP and RTP for the analysis years 2015, 2016, and 2026 are projected to be less than the adequate maintenance budget for 2015 established in the Carbon Monoxide Redesignation Request and Maintenance Plan. The applicable conformity test for carbon monoxide is therefore satisfied.

The results of the regional emissions analysis for carbon monoxide are presented in Figure 19-1.

- For volatile organic compounds, the total regional vehicle-related emissions associated with implementation of the TIP and RTP for all years tested are projected to be less than the emissions budget specified in the applicable Revised 1998 15 Percent Rate of Progress Federal Implementation Plan for Ozone. The conformity test for ozone is therefore satisfied. The results of the regional emissions analysis for VOC are presented in Figure 19-2.

- For PM-10, the total regional vehicle-related emissions associated with implementation of the TIP and RTP for all years tested are projected to be less than the emissions budget found to be adequate for transportation conformity purposes from the Revised MAG 1999 Serious Area Particulate Plan for PM-10. The conformity test for PM-10 is therefore satisfied. The results of the regional emissions analysis for PM-10 are presented in Figure 19-3.

- Implementation of the TIP and RTP will support and not impede the implementation of the Transportation Control Measures that have been adopted as part of applicable air quality implementation plans. The current status of TCM implementation is documented in the Draft 2003 MAG Conformity Analysis report.

- Consultation has been conducted in accordance with federal requirements.

Figure 19-1
Carbon Monoxide Results for Conformity Budget Test

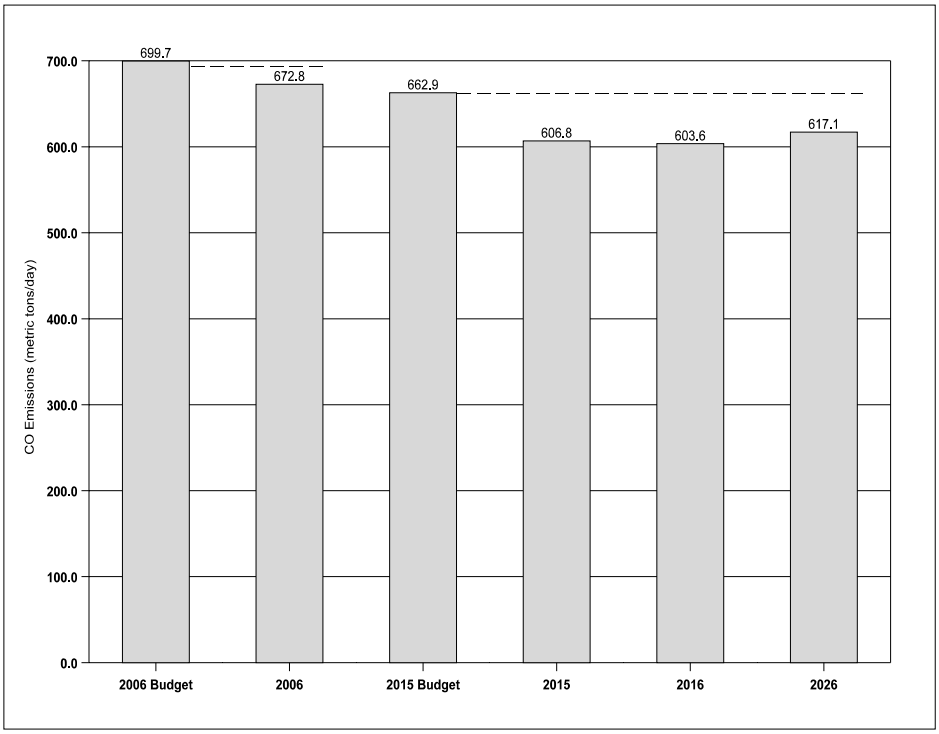


Figure 19-2
Volatile Organic Compound (VOC) Results for Conformity Budget Test

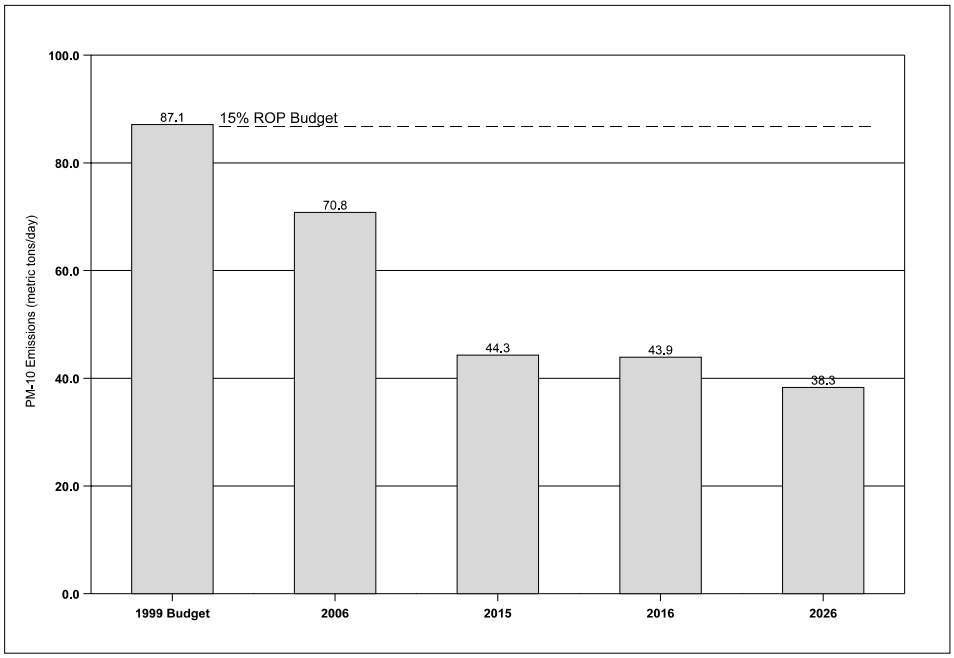
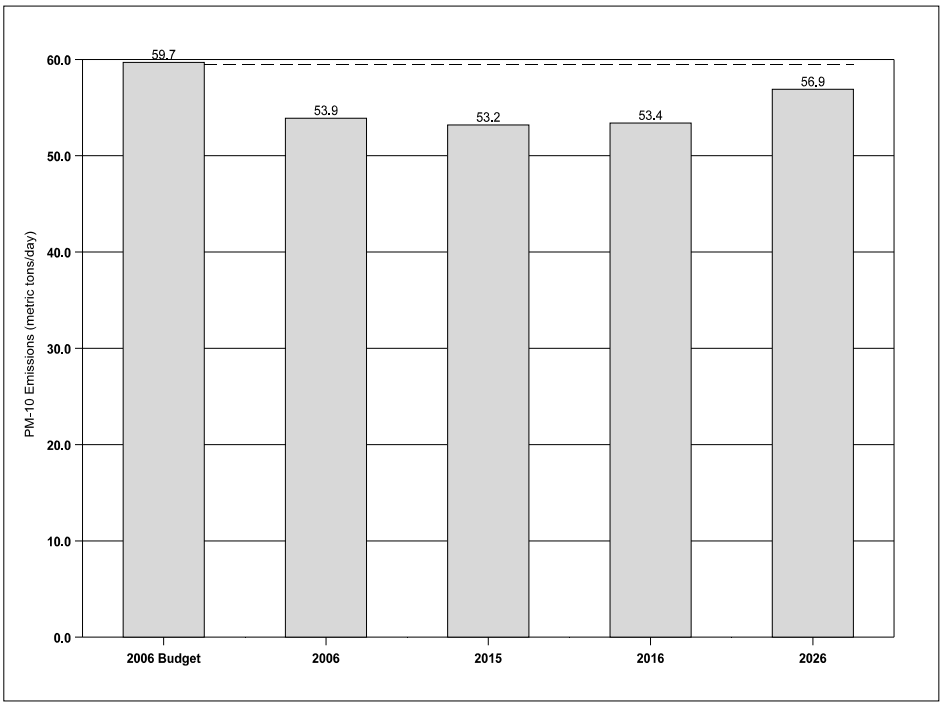


Figure 19-3
PM-10 Results for Conformity Budget Test



CHAPTER TWENTY

PLAN IMPLEMENTATION POLICIES

(This section will be revised as appropriate upon future discussion by the MAG Transportation Policy Committee)

In addition to the transportation facilities and services aspects of the RTP, the Transportation Policy Committee also addressed plan implementation policy issues. These policies will play a vital part in how the RTP is managed and updated over the coming years. The policy concepts listed below were adopted by the TPC on September 17, 2003, as part of their action to recommend a Draft Plan for air quality conformity analysis. (Items on additional arterial projects and noise mitigation included in that action are not listed, since they have been specifically included in the Draft Plan in Chapters 8 and 9.)

- That funding firewalls be established for the following modes of transportation: freeways, streets and transit, with the understanding that these firewalls represent the percentage of funding identified in the plan and that the funds from the sales tax be deposited in their respective accounts (Regional Area Road Fund for freeways, a sub-account of the RARF for streets and the Public Transportation Fund for transit). Increases or decreases in sales tax revenue would be reflected proportionately in the respective accounts.

- That the Arizona Department of Transportation develop a Life Cycle Certification Program for freeways and streets and the Regional Public Transportation Authority develop a Life Cycle Certification Program for transit to ensure that costs and revenues for the Regional Transportation Plan are balanced annually.

- That freeway and street project accelerations be considered, with the existing highway acceleration policy used as a model for consideration.
- That the material cost change and enhancement policies now used for the freeway program be expanded to transportation projects funded by the sales tax as prescribed by state law.

- That every five years, the Regional Transportation Plan be re-evaluated to consider major plan adjustments resulting from new information or studies pertaining to the implementation of the Plan.

An additional set of policies submitted by Maricopa County was considered by the TPC at their September 17, 2003 meeting. These policies, which complement and reinforce the above items, are listed below. The TPC adopted the first, second and last bullet-items in this list. The TPC determined that the remaining three items need to be examined further and refined prior to adoption.

- Require an independent evaluation of the performance of the RTP every five years. (Full audit of implemented projects and evaluation of projects within the balance of the plan time frame.)

- The TPC must review the independent RTP evaluation and may recommend amendments to the RTP based on the independent evaluation.

- *Not adopted - A minor amendment may be made through a 2/3-majority vote by the TPC. (A minor amendment is an adjustment that does not change the overall modal funding percentages in the RTP).*

- *Not adopted - A major amendment to the RTP must be approved by a majority vote of the TPC and a majority vote of the citizens of Maricopa County. (A major amendment includes any of the following: the addition or deletion of a freeway, expressway or high capacity transit project; or any other adjustment that would change the overall modal funding percentages in the RTP). The TPC, on approval of a major amendment, shall request the County Board of Supervisors to call for an election, on the next general election date, to consider the amendment.*

- *Not adopted - In no case may an amendment change the regional funding percentages in the RTP.*

- Include the above accountability provisions in the authorizing legislation.

APPENDIX

PUBLIC INVOLVEMENT AND CONSULTATION EVENTS

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
High Occupancy Vehicle (HOV)/High Occupancy Toll (HOT) Lane Study	Regional Council	2003	MAG	A
Regional Transportaion Plan (RTP)	Economic Outlook 2004	2003	Greater Phoenix Chamber of Commerce	S
RTP	Public Meeting/Hearing	2003	Scottsdale	P
RTP	Public Meeting/Hearing	2003	Mesa	P
RTP	Public Meeting/Hearing	2003	Surprise	P
RTP	Public Meeting/Hearing	2003	Glendale	P
RTP	Public Meeting/Hearing	2003	Avondale	P
RTP	Public Meeting/Hearing	2003	Phoenix	P
RTP	Public Workshop	2003	Mesa	P
RTP	Public Workshop	2003	Avondale	P
RTP	Public Workshop	2003	Scottsdale	P
RTP	Public Workshop	2003	Glendale	P
RTP	Public Workshop	2003	Phoenix	P
RTP	East Valley Disability Advocacy	2003	Mesa	P
RTP	10th Annual Grand Canyon Minority Business Opportunity Fair	2003	Phoenix	P
RTP	Conference of Minority Transportation Officials	2003	Phoenix	P
RTP	Juneteenth Festival - MAG Booth	2003	South Phoenix	P
RTP	Juneteenth Festival - MAG Booth	2003	Chandler	P
RTP	Presentation on RTP	2003	Apache Junction	A
RTP	Presentation on RTP	2003	Avondale	A
RTP	Presentation on RTP	2003	Buckeye	A
RTP	Presentation on RTP	2003	Carefree	A
RTP	Presentation on RTP	2003	Chandler	A
RTP	Presentation on RTP	2003	Citizens Transportation Oversight Committee (CTOC) - Phoenix	A
RTP	Presentation on RTP	2003	El Mirage	A
RTP	Presentation on RTP	2003	Fountain Hills	A
RTP	Presentation on RTP	2003	Gila Bend	A
RTP	Presentation on RTP	2003	Gila River Indian Community	A
RTP	Presentation on RTP	2003	Gilbert	A
RTP	Presentation on RTP	2003	Glendale	A
RTP	Presentation on RTP	2003	Goodyear	A
RTP	Presentation on RTP	2003	Guadalupe	A
RTP	Presentation on RTP	2003	Litchfield Park	A
RTP	Presentation on RTP	2003	Mesa	A
RTP	Presentation on RTP	2003	Paradise Valley	A
RTP	Presentation on RTP	2003	Peoria	A
RTP	Presentation on RTP	2003	Phoenix	A
RTP	Presentation on RTP	2003	Queen Creek	A
RTP	Presentation on RTP	2003	Salt River Pima-Maricopa Indian Community	A
RTP	Presentation on RTP	2003	Scottsdale	A
RTP	Presentation on RTP	2003	Tempe	A
RTP	Presentation on RTP	2003	Tolleson	A
RTP	Presentation on RTP	2003	Wickenburg	A
RTP	Presentation on RTP	2003	Youngtown	A
RTP	Presentation/Survey on RTP	2003	Sun City	A
RTP	Presentation/Survey on RTP	2003	Sun City West	A
RTP	Presentation/Survey on RTP	2003	Sun City Grand	A
RTP	Presentation/Survey on RTP	2003	Arizona Hispanic Chamber of Commerce - Phoenix	A
RTP	Presentation/Survey on RTP	2003	Greater Phoenix Black Chamber of Commerce - Phoenix	A
RTP	Presentation/Survey on RTP	2003	Mesa Association of Hispanic Citizens	A
RTP	Presentation/Survey on RTP	2003	Arizona Latino Business Coalition - Phoenix	A
RTP	Presentation/Survey on RTP	2003	Black Board of Directors - Phoenix	A
RTP	Presentation/Survey on RTP	2003	Asian Chambers of Commerce	A
RTP	Presentation/Survey on RTP	2003	Sierra Club - Phoenix	A
RTP	Presentation/Survey on RTP	2003	Maricopa County - Phoenix	A
RTP	Presentation/Survey on RTP	2003	Valley Forward - Phoenix	S
RTP	Presentation/Survey on RTP	2003	Sky Harbor Transportation Coordinators Alliance (TCA) Meeting - Phoenix	S

Note: Each study has a Web Page on the MAG Web site.

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
RTP	Presentation/Survey on RTP	2003	Valley Citizens League - Phoenix	S
RTP	Presentation/Survey on RTP	2003	Intel Community Advisory Panel - Phoenix	S
RTP	Presentation/Survey on RTP	2003	Glendale CTOC	A
RTP	Presentation/Survey on RTP	2003	Environmental Group Leaders - Phoenix	S
RTP	Presentation/Survey on RTP	2003	Financial Management Class - Phoenix	S
RTP	Presentation/Survey on RTP	2003	Sun City Grand Neighborhood Representatives	S
RTP	Presentation/Survey on RTP	2003	MAG Bicycle Task Force	A
RTP	Presentation/Survey on RTP	2003	Tempe Transit Commission	A
RTP	Presentation/Survey on RTP	2003	Mesa Tranist Commission	A
RTP	Presentation/Survey on RTP	2003	Phoenix Surface Transportation Commmittee	A
RTP	Presentation/Survey on RTP	2003	Goodyear Planning and Zoning Commission	A
RTP	Presentation/Survey on RTP	2003	Intel Community Advisory Panel - Phoenix	A
HOV/HOT Lane Study	City of Phoenix	2003	Phoenix	A
HOV/HOT Lane Study	Transportation Review Committee (TRC)	2003	MAG	A
HOV/HOT Lane Study	Management Committee	2003	MAG	A
Bottleneck Study	TRC: Study Findings	2003	MAG	A
Bottleneck Study	Street Committee: Study Findings	2003	MAG	A
Bottleneck Study	TRC: Project Progress Presentation	2003	MAG	A
Grand Avenue Northwest Study	Regional Council	2003	MAG	A
Southwest Area Transportation Study (SWATS)	Agency/Community Workshop	2003	Goodyear	A
Southeast Maricopa/ Northern Pinal County Area Transportation Study (SEM/NPC ATS)	Agency Forum	2003	Florence	A
RTP	Maricopa County Board of Supervisors	2003	Maricopa County	A
RTP	Citizens Transit Commission (CTC)	2003	Phoenix	A
RTP	CTC	2003	Phoenix	A
RTP	Loop 202 Freeway Opening	2003	Mesa	P
Northwest Area Transportation Study (NWATS)	Public Meeting	2003	Peoria	P
SEM/NPC ATS	Public Meeting	2003	Gilbert	P
SWATS	Public Meeting	2003	Goodyear	P
NWATS	TRC	2003	MAG	P
SEM/NPC ATS	TRC	2003	MAG	P
SWATS	TRC	2003	MAG	P
High Capacity Transit	TRC	2003	MAG	P
RTP	Northwest Black History Festival - MAG Booth	2003	Peoria	P
RTP	Presentation on RTP	2003	Tempe Rotary	P
RTP	Seminar in Spanish and Business Expo - MAG Booth	2003	Phoenix	P
RTP	Phoenix Latino Institute - MAG Booth	2003	Paradise Valley	P
RTP	Black Heritage Festival - MAG Booth	2003	Phoenix	P
High Capacity Transit	Management Committee	2003	MAG	P
High Capacity Transit	Transportation Policy Committee	2003	MAG	P
High Capacity Transit	Regional Council	2003	MAG	P
RTP	MAG at the Mall - MAG Booth	2003	Phoenix	P
RTP	Chicanos Por La Causa Cesar Chavez Festival - MAG Booth	2003	Phoenix	P
RTP	MAG Regional Town Hall	2003	Phoenix	P

Note: Each study has a Web Page on the MAG Web site.

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
RTP	Sunday on Central - MAG Booth	2003	Phoenix	P
RTP	Cinco de Mayo Festival - MAG Booth	2003	Phoenix	P
RTP	Papago Area TCA	2003	Buckeye	P
RTP	Arizona Hispanic Chamber of Commerce	2003	Phoenix	P
RTP	Go Glendale Transportation Open Houses - MAG Booth	2003	Glendale	P
RTP	MAG at the Mall	2003	Glendale	P
RTP	NW Valley TCA	2003	Glendale	P
RTP	SR 51 Freeway Opening	2003	Phoenix	P
RTP	MAG at the Mall - MAG Booth	2003	Chandler	P
RTP	MAG at the Mall - MAG Booth	2003	Phoenix	P
RTP	American Council of Consulting Engineers	2003	American Council of Consulting Engineers	S
RTP	Association of Equipment Distributors of America	2003	Association of Equipment Distributors of America	S
RTP	Business Coalition/Maricopa 2020	2003	Business Coalition/Maricopa 2020	S
RTP	Business Coalition Leadership Council	2003	Business Coalition Leadership Council	S
RTP	Chandler Chamber of Commerce Policy Committee	2003	Chandler	S
RTP	Citizens Transportation Oversight Committee	2003	CTOC	S
RTP	East Valley Partnership	2003	East Valley Partnership	S
RTP	Glendale Citizens Transportation Oversight Committee	2003	Glendale CTOC	S
RTP	Phoenix Chamber of Commerce	2003	Phoenix	S
RTP	Tempe Chamber of Commerce	2003	Tempe	S
RTP	Valley Citizens League	2003	Valley Citizens League	S
RTP	Valley Forward	2003	Valley Forward	S
RTP	Valley Partnership	2003	Valley Partnership	S
Bottleneck Study	Stakeholder Meeting: Freeway ROW Alternatives	2003	MAG	S
High Capacity Transit	High Capacity Transit Working Group	2003	MAG	S
Bottleneck Study	Stakeholder Meeting: Highway Capacity Enhancement Findings	2003	MAG	S
HOV/HOT Lane Study	Stakeholders	2003	MAG	S
Valley Metro/Regional Public Transportation Authority (VM/RPTA) Regional Transit Study	Special VMOS Meeting	2002	Valley Metro	A
VM/RPTA Regional Transit Study	Agency Workshops	2002	Chris Town Conference Room, Valley Metro/Rail, Phoenix	A
VM/RPTA Regional Transit Study	Agency Workshops	2002	Chris Town Conference Room, Valley Metro/Rail, Phoenix	A
VM/RPTA Regional Transit Study	Agency Forum	2002	Goodyear	A
SWATS	Agency/Community Workshop	2002	Goodyear	A
High Capacity Transit	Presentation at Agency Forum for Southwest Area Transportation Study	2002	Goodyear	A
Grand Avenue NW Study	TRC	2002	MAG	A
VM/RPTA Regional Transit Study	Agency Forum	2002	Peoria	A
NWATS	Agency/Community Workshop	2002	Peoria	A
High Capacity Transit	Presentation at Agency Forum for Northwest Area Transp. Study	2002	Peoria	A
VM/RPTA Regional Transit Study	Agency Forum	2002	Queen Creek	A
SEM/NPC ATS	Agency Forum	2002	Queen Creek	A

Note: Each study has a Web Page on the MAG Web site.

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
High Capacity Transit	Presentation at Agency Forum for Southeast Maricopa/Northern Pinal	2002	Queen Creek	A
High Capacity Transit	I-10 Corridor Transit Integration Meeting	2002	ADOT	A
VM/RPTA Regional Transit Study	Interagency Coordination Meeting	2002	MAG	A
High Capacity Transit	Mesa City Council Transportation Committee	2002	Mesa	A
Bottleneck Study	Mesa Transportation Council: Bottleneck Analysis	2002	Mesa	A
Grand Avenue NW Study	City of El Mirage Review	2002	Phoenix	A
High Capacity Transit	Briefing to Mayor Keno Hawker & City Staff	2002	Mesa	A
High Capacity Transit	Presentation to CTC	2002	Phoenix	A
High Capacity Transit	Presentation at Joint Meeting of Scottsdale and Tempe Transportation Committee	2002	Scottsdale	A
Grand Avenue NW Study	Agency Forum	2002	Surprise	A
VM/RPTA Regional Transit Study	Agency Workshops	2002	MAG	A
VM/RPTA Regional Transit Study	Agency Workshops	2002	MAG	A
HOV/HOT Lane Study	TRC	2002	MAG	A
High Capacity Transit	Presentation to City of Peoria	2002	Peoria	A
High Capacity Transit	Provide an Update on the HCT Plan to City of Gilbert	2002	Gilbert	A
High Capacity Transit	Presentation City of Phoenix Management	2002	Phoenix	A
High Capacity Transit	Update to the Regional Council	2002	MAG	A
High Capacity Transit	Update to the Management Committee	2002	MAG	A
East-West Mobility Study	Agency Forum	2002	Glendale	A
VM/RPTA Regional Transit Study	Interagency Coordination Meeting	2002	Phoenix	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	ADOT	A
VM/RPTA Regional Transit Study	Agency Meeting	2002	ADOT	A
High Capacity Transit	Presentation Chandler Transportation Commission	2002	Chandler	A
VM/RPTA Regional Transit Study	Agency Meeting	2002	Maricopa County	A
High Capacity Transit	Briefing to Mayor Keno Hawker	2002	Mesa	A
HOV/HOT Lane Study	State Transportation Board	2002	Phoenix	A
High Capacity Transit	Briefing to Wulf Grote	2002	Valley Metro Rail	A
VM/RPTA Regional Transit Study	Agency Meeting	2002	Intergov Coordinator, Town of Gilbert, Gilbert	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Chandler	A
VM/RPTA Regional Transit Study	Agency Meeting	2002	Transit Division - Scottsdale	A
VM/RPTA Regional Transit Study	Agency Meeting	2002	Community Services Department - Peoria	A

Note: Each study has a Web Page on the MAG Web site.

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
VM/RPTA Regional Transit Study	Agency Meeting	2002	RTS Sponsors Group Meeting, Phoenix	A
VM/RPTA Regional Transit Study	Agency Meeting	2002	Transit Division - Tempe	A
VM/RPTA Regional Transit Study	Agency Meeting	2002	Transit Division - Glendale	A
VM/RPTA Regional Transit Study	Agency Meeting	2002	Transit Division - Mesa	A
VM/RPTA Regional Transit Study	Agency Meeting	2002	Transit Division - Chandler	A
VM/RPTA Regional Transit Study	High Capacity Transit/Regional Transit System Studsy (HCT/RTS) Interagency Coordination Meeting	2002	MAG	A
VM/RPTA Regional Transit Study	Agency Meeting	2002	Phoenix Transit Department - Phoenix	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Gila River Indian Community	A
SEM/NPC ATS	Agency Forum	2002	Queen Creek	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Gilbert	A
NWATS	Agency Workshop	2002	Glendale	A
VM/RPTA Regional Transit Study	Agency Meeting	2002	Gila River Indian Community	A
SWATS	Agency Workshop	2002	Goodyear	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	State Land Department - Phoenix	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Pinal County	A
Park & Ride	Agency Forum	2002	MAG	A
Grand Avenue NW Study	Agency Forum	2002	MAG	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Williams Gateway Airport - Mesa	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Coolidge	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Maricopa County	A
East-West Mobility Study	Agency Forum	2002	Glendale	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Casa Grande	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Florence	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Apache Junction	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Queen Creek	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Pinal County	A
Park & Ride	Agency Forum	2002	MAG	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Maricopa County	A
SEM/NPC ATS	Elected Officials/Staff Interviews	2002	Mesa	A
Grand Avenue NW Study	Agency/Community Forum	2002	Surprise	A
SEM/NPC ATS	Agency Forum	2002	Queen Creek	A
East-West Mobility Study	Agency Forum	2002	Glendale	A
Public Involvement	Loop 202 Freeway Opening - MAG Booth	2002	Mesa	P
Public Involvement	Loop 202 Freeway Opening - MAG Booth	2002	Mesa	P
Public Involvement	Juneteenth Celebration - MAG Booth	2002	Phoenix	P
Public Involvement	MAG at the Mall - MAG Booth	2002	Tempe	P
Public Involvement	Powell Junior High School Career Day - MAG Booth	2002	Mesa	P
Public Involvement	Transportation Fair - MAG Booth	2002	Phoenix	P
Public Involvement	Joint Transportation Agency Open House & Public Hearing	2002	Phoenix	P
Public Involvement	Loop 101 Freeway Opening - MAG Booth	2002	Peoria	P
Public Involvement	Sunday on Central - MAG Booth	2002	Phoenix	P

Note: Each study has a Web Page on the MAG Web site.

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
Public Involvement	Earthfest 2002 - MAG Booth	2002	Phoenix	P
Bottleneck Study	TRC	2002	MAG	P
Grand Avenue NW Study	Public Meeting	2002	Surprise	P
Public Involvement	National Conference on Independent Living Transportation Workshops	2002	Washington D.C.	P
Public Involvement	MAG at the Mall - MAG Booth	2002	Mesa	P
Public Involvement	8th Annual Arizona Business Seminar (Spanish)	2002	Phoenix	P
Public Involvement	Joint Transportation Agency Open House & Public Hearing	2002	Phoenix	P
Public Involvement	"High Hopes, High Expectations" Self Determination Conference Historical Bus Dedication	2002	Phoenix	P
East-West Mobility Study	Public Meeting	2002	Peoria	P
Public Involvement	City of Phoenix Diversity Program, "Why Learn Spanish?"	2002	Phoenix	P
Public Involvement	Phoenix Citizens Transit Commission Meeting	2002	Phoenix	P
Public Involvement	ADOT Public Meeting	2002	Phoenix	P
Public Involvement	City of Phoenix Mayor's Commission	2002	Phoenix	P
Public Involvement	ICMA/Hispanic Network Meeting of Public Relations/Marketing Committee for April 2003 National Convention	2002	Phoenix	P
High Capacity Transit	TRC	2002	MAG	P
SEM/NPC ATS	Public Meeting	2002	Florence	P
SWATS	Public Meeting	2002	Avondale	P
Public Involvement	Transportation Fair - MAG Booth	2002	Phoenix	P
VM/RPTA Regional Transit Study	Transportation Fair - MAG Booth	2002	Phoenix	P
NWATS	Public Meeting	2002	Glendale	P
Public Involvement	Transportation Fair - MAG Booth	2002	Phoenix	P
VM/RPTA Regional Transit Study	Transportation Fair - MAG Booth	2002	Phoenix	P
Public Involvement	BankOne Ballpark Disability Expo - MAG Booth	2002	Phoenix	P
Public Involvement	MAG at the Mall - MAG Booth	2002	Phoenix	P
VM/RPTA Regional Transit Study	MAG at the Mall - MAG Booth	2002	Mesa	P
Public Involvement	Tempe Tardeada Cultural Festival	2002	Tempe	P
SEM/NPC ATS	Public Meeting	2002	Gilbert	P
Bottleneck Study	TRC: Bottleneck Analysis	2002	MAG	P
VM/RPTA Regional Transit Study	Transportation Review Committee	2002	MAG	P
Public Involvement	Presentation to Kiwanas Club	2002	Queen Creek	P
Public Involvement	Glendale On-Board Transportation Plan Open House - MAG Booth	2002	Glendale	P
Public Involvement	Booth at Latino Institute, City of Phoenix information fair to provide info in Spanish	2002	Phoenix	P
Public Involvement	Glendale On-Board Transportation Plan Open House - MAG Booth	2002	Glendale	P
VM/RPTA Regional Transit Study	Management Committee	2002	MAG	P

Note: Each study has a Web Page on the MAG Web site.

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
Public Involvement	Glendale On-Board Transportation Plan Open House - MAG Booth	2002	Glendale	P
Public Involvement	CONTACTOS networking event for members of Arizona Hispanic Chamber of Commerce	2002	Phoenix	P
Public Involvement	Individual meeting with Radio Unica/740 AM Community Relations Representative to Discuss Input Opportunities	2002	Phoenix	P
VM/RPTA Regional Transit Study	Transit Community Public Meeting	2002	Gilbert	P
VM/RPTA Regional Transit Study	Regional Council	2002	MAG	P
VM/RPTA Regional Transit Study	Transit Community Public Meeting	2002	Glendale	P
VM/RPTA Regional Transit Study	Transit Community Public Meeting	2002	Phoenix	P
Public Involvement	Presentation to Legislative Awareness Day for People with Disabilities	2002	Phoenix	S
MAG Transportation Safety Action Plan	Roadway Safety Team	2002	MAG	S
MAG Transportation Safety Action Plan	Pedestrian-Bike-Transit Safety Team	2002	MAG	S
MAG Transportation Safety Action Plan	Education-Enforcement-EMS Safety Team	2002	MAG	S
High Capacity Transit	Kick Off Meeting	2002	MAG	S
High Capacity Transit	Stakeholders Interviews	2002	ADOT	S
High Capacity Transit	Stakeholders Interviews	2002	Avondale	S
High Capacity Transit	Stakeholders Interviews	2002	Buckeye	S
High Capacity Transit	Stakeholders Interviews	2002	Chandler	S
High Capacity Transit	Stakeholders Interviews	2002	Friends of Transit - Phoenix	S
High Capacity Transit	Stakeholders Interviews	2002	Gilbert	S
High Capacity Transit	Stakeholders Interviews	2002	Glendale	S
High Capacity Transit	Stakeholders Interviews	2002	Maricopa County	S
High Capacity Transit	Stakeholders Interviews	2002	Mesa	S
High Capacity Transit	Stakeholders Interviews	2002	Peoria	S
High Capacity Transit	Stakeholders Interviews	2002	Phoenix Public Transit Department	S
High Capacity Transit	Stakeholders Interviews	2002	Scottsdale	S
High Capacity Transit	Stakeholders Interviews	2002	Surprise	S
High Capacity Transit	Stakeholders Interviews	2002	Tempe	S
High Capacity Transit	Stakeholders Interviews	2002	Wickenburg	S
High Capacity Transit	Stakeholders Interviews	2002	Valley Metro	S

Note: Each study has a Web Page on the MAG Web site.

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
MAG Transportation Safety Action Plan	Roadway Safety Team	2002	MAG	S
MAG Transportation Safety Action Plan	Pedestrian-Bike-Transit Safety Team	2002	MAG	S
MAG Transportation Safety Action Plan	Education-Enforcement-EMS Safety Team	2002	MAG	S
Public Involvement	Presentation to Clear Path	2002	Phoenix	S
High Capacity Transit	High Capacity Transit Working Group	2002	MAG	S
MAG Transportation Safety Action Plan	Roadway Safety Team	2002	MAG	S
MAG Transportation Safety Action Plan	Pedestrian-Bike-Transit Safety Team	2002	MAG	S
MAG Transportation Safety Action Plan	Education-Enforcement-EMS Safety Team	2002	MAG	S
Grand Avenue NW Study	Developers & Landowners Meeting	2002	MAG	S
High Capacity Transit	High Capacity Transit Working Group	2002	MAG	S
MAG Transportation Safety Action Plan	Roadway Safety Team	2002	MAG	S
MAG Transportation Safety Action Plan	Pedestrian-Bike-Transit Safety Team	2002	MAG	S
MAG Transportation Safety Action Plan	Education-Enforcement-EMS Safety Team	2002	MAG	S
Bottleneck Study	Stakeholder Meeting: Data Collection and Evaluation	2002	MAG	S
Public Involvement	Hosted Transportation Meeting for People with Disabilities	2002	Arizona Bridge to Independent Living (ABIL) - Phoenix	S
MAG Transportation Safety Action Plan	Regional Transportation Safety Stakeholders Group	2002	MAG	S
Public Involvement	Early Phase Stakeholders Meeting	2002	MAG	S
Public Involvement	East Valley Disability Advocacy Group Meeting	2002	Phoenix	S
Public Involvement	Arizona Hispanic Chamber of Commerce Annual Business Symposium in Spanish	2002	Phoenix	S
High Capacity Transit	Northwest Area Transportation Study/Transit	2002	MAG	S
High Capacity Transit	Southeast Area Transportation Study/Transit	2002	MAG	S
High Capacity Transit	Southwest Area Transportation Study/Transit	2002	MAG	S
High Capacity Transit	Consultant/Staff Coordination	2002	MAG	S
High Capacity Transit	Transit Study Coordination	2002	MAG	S

Note: Each study has a Web Page on the MAG Web site.

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
Regional Concept of Transportation Operation	RCTO Stakeholders Group	2002	MAG	S
RTP	Planner/Stakeholder Workshop	2002	MAG	S
High Capacity Transit	High Capacity Transit Working Group	2002	MAG	S
Regional Concept of Transportation Operation	RCTO Stakeholders Group	2002	MAG	S
MAG Transportation Safety Action Plan	Regional Transp. Safety Stakeholders Group	2002	MAG	S
Public Involvement	Meeting of Transportation Regional Improvement (Disabled Residents)	2002	Phoenix	S
High Capacity Transit	Consultant/Staff Coordination	2002	MAG	S
Bottleneck Study	Stakeholder Meeting: Safety Review, Bottleneck Analysis, and Capacity Enhancement Working Paper	2002	MAG	S
High Capacity Transit	Meeting with BNSF representative	2002	Phoenix	S
High Capacity Transit	High Capacity Transit Working Group	2002	MAG	S
MAG Transportation Safety Action Plan	Roadway Safety Team	2002	MAG	S
High Capacity Transit	Presentation to START Committee	2002	Goodyear	S
MAG Transportation Safety Action Plan	Pedestrian-Bike-Transit Safety Team	2002	MAG	S
MAG Transportation Safety Action Plan	Education-Enforcement-EMS Safety Team	2002	MAG	S
Regional Concept of Transportation Operation	RCTO Stakeholders Group	2002	Goodyear	S
High Capacity Transit	Presentation to Intel Citizens Transportation Commission	2002	Chandler	S
High Capacity Transit	IBI meets with BNSF representative	2002	Phoenix	S
High Capacity Transit	Transit Study Coordination	2002	MAG	S
Public Involvement	MAG presentation to T.R.I.P. (Transportation Regional Improvement Program)	2002	Phoenix	S
High Capacity Transit	BNSF Coordination Meeting	2002	Phoenix	S
Public Involvement	MAG presentation to Los Vecinos, citizens group	2002	Tempe	S
MAG Transportation Safety Action Plan	Roadway Safety Team	2002	MAG	S
MAG Transportation Safety Action Plan	Pedestrian-Bike-Transit Safety Team	2002	MAG	S
MAG Transportation Safety Action Plan	Education-Enforcement-EMS Safety Team	2002	MAG	S
High Capacity Transit	Transit Study Coordination	2002	MAG	S

Note: Each study has a Web Page on the MAG Web site.

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
VM/RPTA Regional Transit Study	ADA/Senior Stakeholder Meeting	2002	Valley Metro	S
Regional Concept of Transportation Operation	RCTO Stakeholders Group	2002	MAG	S
High Capacity Transit	High Capacity Transit Working Group	2002	MAG	S
High Capacity Transit	Transit Community Workshop	2002	Gilbert	S
High Capacity Transit	Transit Community Workshop	2002	Glendale	S
MAG Transportation Safety Action Plan	Regional Transp. Safety Stakeholders Group	2002	MAG	S
High Capacity Transit	Transit Community Workshop	2002	Phoenix	S
High Capacity Transit	Transit Study Coordination	2002	MAG	S
High Capacity Transit	Consultant/Staff Coordination	2002	MAG	S
High Capacity Transit	High Capacity Transit Working Group	2002	MAG	S
SEM/NPC ATS	Agency Forum	2001	Apache Junction	A
SWATS	Agency Forum	2001	Goodyear	A
NWATS	Agency Forum	2001	Surprise	A
East-West Mobility Study	Agency Forum	2001	Glendale	A
RTP	TRC Focus Group	2001	MAG	A
Grand Avenue NW Study	Agency/Community Forum	2001	Surprise	A
HOV/HOT Lane Study	MAG Management Committee	2001	MAG	A
HOV/HOT Lane Study	Interagency HOV Meeting	2001	MAG	A
HOV/HOT Lane Study	TRC	2001	MAG	A
HOV/HOT Lane Study	Regional Council Subcommittee	2001	MAG	A
HOV/HOT Lane Study	TRC	2001	MAG	A
Park & Ride	Management Committee	2001	MAG	P
Park & Ride	Regional Council	2001	MAG	P
Public Involvement	MAG at the Mall - MAG Booth	2001	Phoenix	P
Public Involvement	MAG at the Mall - MAG Booth	2001	Phoenix	P
Public Involvement	Transportation Fair - MAG Booth	2001	Phoenix	P
Public Involvement	NW Black History Committee 5th Annual Black History Festival - MAG Booth	2001	Peoria	P
Public Involvement	Joint Transportation Agency Open House & Public Hearing	2001	MAG	P
Public Involvement	Cesar Chavez/Si Se Puedel Day - MAG Booth	2001	Mesa	P
Public Involvement	MAG Spanish Language Information telephone line	2001	MAG	P
Public Involvement	Sunday on Central - MAG Booth	2001	Phoenix	P
Public Involvement	Earthfest 2001 - MAG Booth	2001	Phoenix	P
Public Involvement	Met with Chandler PIO Staff	2001	Chandler	P
Public Involvement	Cinco de Mayo Celebration - MAG Booth	2001	Chandler	P

Note: Each study has a Web Page on the MAG Web site.

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
Public Involvement	Immigrants/Border Conference - National convention of League of United Latin American Citizens (LULAC) - MAG Booth	2001	Phoenix	P
Public Involvement	Translated and Delivered New Articles to Hispanic Media	2001	MAG	P
Public Involvement	MAG at the Mall - MAG Booth	2001	Phoenix	P
Public Involvement	MAG at the Mall - MAG Booth	2001	Phoenix	P
Public Involvement	Junteenth Festival - MAG Booth	2001	Phoenix	P
Public Involvement	Minority Business Development Fair	2001	Civic Plaza	P
Public Involvement	Joint Transportation Agency Open House & Public Hearing	2001	MAG	P
Public Involvement	Met with News Director of Radio Unica/Phoenix 740 AM	2001	Phoenix	P
Public Involvement	Guest In One-Hour Talk Radio Program to Discuss Input Opportunities	2001	Phoenix	P
Public Involvement	Pima Freeway/Loop 101 Opening - MAG Booth	2001	Scottsdale	P
Public Involvement	MAG at the Mall - MAG Booth	2001	Phoenix	P
Public Involvement	MAG at the Mall - MAG Booth	2001	Phoenix	P
Public Involvement	Hispanic Culture Celebration - MAG Booth	2001	Tempe	P
Public Involvement	Hispanic Heritage Festival - MAG Booth	2001	Phoenix	P
Public Involvement	Annual Hispanic Women's National Conference - MAG Booth	2001	Phoenix	P
Public Involvement	Presentation to "Kaleidoscope: Spectrum of Diversity" Conference	2001	Phoenix	P
Public Involvement	MAG at the Mall - MAG Booth	2001	Phoenix	P
Public Involvement	Met with Radio Campesina Representative to Discuss Input Opportunities	2001	Phoenix	S
Public Involvement	Met with QueBuena 103.5 Representative to Discuss Input Opportunities	2001	Phoenix	S
Public Involvement	Interview with Alma Neria of Prensa Hispana on RTP	2001	Phoenix	S
Public Involvement	Interview with Juan Villa of La Voz on RTP	2001	Phoenix	S
RTP	RTP Kick-off Dinner	2001	Phoenix	S
RTP	Demographics and Social Change Expert Forum	2001	Tempe	S
RTP	New Economy Expert Forum	2001	Tempe	S
RTP	Environment And Resources Expert Forum	2001	Tempe	S
Public Involvement	Presenter at Organizacion de Latino Americanos Convention (Spanish Media)	2001	Phoenix	S
RTP	Land Use and Development Expert Forum	2001	Tempe	S
RTP	Transportation and Technology Expert Forum	2001	Tempe	S
RTP	Southwest Valley Focus Group	2001	Avondale	S
RTP	Northwest Valley Focus Group	2001	Surprise	S
RTP	East Valley Focus Group	2001	Mesa	S
RTP	North Valley Focus Group	2001	Phoenix	S
RTP	Southeast Valley Focus Group	2001	Chandler	S
RTP	Ahwatukee/Guadalupe/Tempe Focus Group	2001	Tempe	S
RTP	Phoenix (Central) Focus Group	2001	Phoenix	S
RTP	Gilbert Focus Group	2001	Gilbert	S
RTP	West Valley Focus Group	2001	Peoria	S
RTP	Phoenix (North) Focus Group	2001	Phoenix	S
RTP	Phoenix (West-South) Focus Group	2001	Phoenix	S

Note: Each study has a Web Page on the MAG Web site.

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
RTP	Northeast Valley Focus Group	2001	Scottsdale	S
RTP	Agency Based Focus Group	2001	MAG	S
RTP	African-American Focus Group	2001	MAG	S
Public Involvement	Hispanic Community Focus Group	2001	Phoenix	S
RTP	Hispanic-American Focus Group	2001	Phoenix	S
Public Involvement	Met with Publisher of Monitor Hispano	2001	Phoenix	S
Bottleneck Study	Stakeholders Meeting: Kick-off Meeting: Work Plan	2001	MAG	S
Public Involvement	Early Phase Stakeholders Meeting	2001	Phoenix	S
Public Involvement	Early Phase Stakeholders Meeting	2001	Mesa	S
Public Involvement	Early Phase Stakeholders Meeting	2001	Glendale	S
RTP	Planner/Stakeholder Interview	2001	Salt River Pima-Maricopa Indian Community	S
RTP	Planner/Stakeholder Interview	2001	Gila River Indian Community	S
Public Involvement	Early Phase Stakeholders Meeting	2001	MAG	S
RTP	Planner/Stakeholder Interview	2001	Goodyear	S
Bottleneck Study	Stakeholders' meeting: Existing data working paper	2001	MAG	S
RTP	Planner/Stakeholder Interview	2001	Chandler	S
RTP	Planner/Stakeholder Interview	2001	Gilbert	S
RTP	Planner/Stakeholder Interview	2001	Queen Creek	S
RTP	Planner/Stakeholder Interview	2001	Surprise	S
RTP	Planner/Stakeholder Interview	2001	Avondale	S
RTP	Planner/Stakeholder Interview	2001	Fort McDowell Mohave-Apache Indian Community	S
RTP	Planner/Stakeholder Interview	2001	Buckeye	S
RTP	Planner/Stakeholder Interview	2001	Mesa	S
RTP	Planner/Stakeholder Interview	2001	Apache Junction	S
RTP	Planner/Stakeholder Interview	2001	Phoenix	S
RTP	Planner/Stakeholder Interview	2001	Scottsdale	S
RTP	Planner/Stakeholder Interview	2001	Glendale	S
RTP	Planner/Stakeholder Interview	2001	Tempe	S
RTP	Planner/Stakeholder Interview	2001	Peoria	S
RTP	Planner/Stakeholder Interview	2001	Tolleson	S
RTP	Planner/Stakeholder Workshop	2001	MAG	S
MAG Transportation Safety Action Plan	Regional Transportation Safety Stakeholders Group	2001	MAG	S
Public Involvement	Presentation to Governor's Council on Blindness & Visual Impairment	2001	Phoenix	S
High Capacity Transit	Consultant/Staff Kick-off	2001	MAG	S
East-West Mobility Study	Stakeholder Meeting	2001	ADOT	S
East-West Mobility Study	Stakeholder Meeting	2001	Maricopa County	S
East-West Mobility Study	Stakeholder Meeting	2001	Valley Metro	S
East-West Mobility Study	Stakeholder Meeting	2001	Peoria	S
East-West Mobility Study	Stakeholder Meeting	2001	Glendale	S
East-West Mobility Study	Stakeholder Meeting	2001	Surprise	S
East-West Mobility Study	Stakeholder Meeting	2001	Phoenix	S
East-West Mobility Study	Stakeholder Meeting	2001	Youngtown	S
Park & Ride	Agency Forum	2000	MAG	A
Grand Ave. NW Study	Agency / Community Forum	2000	Surprise	A

Note: Each study has a Web Page on the MAG Web site.

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
HOV/HOT Lane Study	ADOT - MAG HOT Lane Study Coordination	2000	ADOT	A
HOV/HOT Lane Study	State Transportation Board	2000	Gilbert	A
HOV/HOT Lane Study	ADOT - MAG HOT Lane Study Coordination	2000	ADOT	A
HOV/HOT Lane Study	Interagency HOV Meeting	2000	Valley Metro	A
Park & Ride	Agency Forum	2000	MAG	A
Grand Avenue NW Study	Agency / Community Forum	2000	MAG	A
HOV/HOT Lane Study	Interagency HOV Meeting	2000	MAG	A
HOV/HOT Lane Study	TRC	2000	MAG	A
HOV/HOT Lane Study	Interagency HOV Meeting	2000	MAG	A
HOV/HOT Lane Study	Interagency HOV Meeting	2000	MAG	A
Park & Ride	Agency Forum	2000	MAG	A
HOV/HOT Lane Study	Interagency HOV Meeting	2000	MAG	A
Park & Ride	Agency Forum	2000	MAG	A
HOV/HOT Lane Study	Interagency HOV Meeting	2000	MAG	A
Park & Ride	Agency Forum	2000	MAG/Valley Metro	A
Park & Ride	Agency Forum & Public Meeting	2000	MAG	A & P
Intelligent Transportation Systems (ITS) Strategic Plan	MAG ITS	2000	MAG	P
ITS Strategic Plan	MAG ITS	2000	MAG	P
ITS Strategic Plan	MAG ITS	2000	MAG	P
ITS Strategic Plan	MAG ITS	2000	MAG	P
ITS Strategic Plan	MAG ITS	2000	MAG	P
ITS Strategic Plan	MAG ITS	2000	MAG	P
ITS Strategic Plan	MAG ITS	2000	MAG	P
ITS Strategic Plan	MAG ITS	2000	MAG	P
ITS Strategic Plan	MAG ITS	2000	MAG	P
Grand Avenue NW Study	Public Meeting	2000	Surprise	P
Public Involvement	Loop 101 Freeway Opening - MAG Booth	2000	Scottsdale	P
Park & Ride	TRC	2000	MAG	P
Public Involvement	Loop 101 Freeway Opening - MAG Booth	2000	Peoria	P
ITS Strategic Plan	Regional ITS Stakeholders Group	2000	MAG	S
ITS Strategic Plan	Regional ITS Stakeholders Group	2000	MAG	S
ITS Strategic Plan	Regional ITS Stakeholders Group	2000	MAG	S
ITS Strategic Plan	Regional ITS Stakeholders Group	2000	MAG	S
ITS Strategic Plan	Regional ITS Stakeholders Group	2000	MAG	S
ITS Strategic Plan	Regional ITS Stakeholders Group	2000	MAG	S
ITS Strategic Plan	Regional ITS Stakeholders Group	2000	MAG	S
ITS Strategic Plan	Regional ITS Stakeholders Group	2000	MAG	S

Note: Each study has a Web Page on the MAG Web site.

Public, Agency and Stakeholder Outreach and Consultation Events

Meeting Type: A=Agency, P=Public Involvement, S=Stakeholder

Study	Meeting or Event	Year	Location/Organization/City	Meeting Type
ITS Strategic Plan	MAG ITS	1999	MAG	P
ITS Strategic Plan	MAG ITS	1999	MAG	P
ITS Strategic Plan	MAG ITS	1999	MAG	P
ITS Strategic Plan	MAG ITS	1999	MAG	P
HOV/HOT Lane Study	MAG HOV Working Group	1999	MAG	S
HOV/HOT Lane Study	HOV Forum	1999	MAG	S
HOV/HOT Lane Study	HOV Forum	1999	MAG	S
ITS Strategic Plan	Regional ITS Stakeholders Group	1999	MAG	S
HOV/HOT Lane Study	HOV Forum	1999	MAG	S
ITS Strategic Plan	Regional ITS Stakeholders Group	1999	MAG	S
HOV/HOT Lane Study	HOV Forum	1999	MAG	S
ITS Strategic Plan	Regional ITS Stakeholders Group	1999	MAG	S

Note: Each study has a Web Page on the MAG Web site.