



Regional Transportation Plan

Final Draft Stage

Draft Plan Evaluation and Phasing Priorities

Maricopa Association of Governments

August 26, 2003

INTRODUCTION

Under the direction of the Transportation Policy Committee (TPC), a new Regional Transportation Plan (RTP) is being developed for the MAG area. This Plan will provide a blueprint for future transportation investments in the region for the next several decades. The new RTP will provide a 20-year, comprehensive, performance based, multi-modal and coordinated plan for future transportation investments.

The purpose of this working paper is two-fold: 1) to report the results of the evaluation of the Draft Final Stage of the Regional Transportation Plan (hereinafter referred to as the Draft Plan) as presented in the July 22, 2003 working paper, and 2) to present the first draft of a Phasing Plan for the RTP.

It should be noted that this document only addresses freeways, highways and arterials. Transit modeling work is underway and transit phasing information will be provided in a separate document.

DRAFT PLAN COMPONENTS

The Draft Plan includes funding for new freeways and other controlled access corridors, arterial streets, local and regional bus transit, and light rail transit, as well as bicycle and pedestrian facilities. In addition to funding highway infrastructure, transit facilities, and transit vehicles, funding is also provided for freeway maintenance and regional bus operations. The details of the Draft Plan components are included in the July 22, 2003, Final Draft Stage Report. Tables that summarize the funding allocations by mode and source are presented in Exhibit 1. (Note: Cost estimates for the 303L and South Mountain freeways have been refined; therefore, the dollars and percents are slightly different from the July 22 report. The costs for these two facilities have been reduced by a total of \$450 million based on comments received from ADOT.) Maps of the Draft Plan components are provided in the appendix.

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 20-year period covering 2006-2025. A total of \$15.3 billion (in 2002 dollars) has been projected to be available from these regional revenue sources for the 20-year period. All forecasts of revenues are in 2002 dollars to be consistent with project cost estimates, which also are in terms of 2002 dollars.

Exhibit 2 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

Exhibit 1 Funding Allocation Concept

Total by Funding Source								
	Capital	6,881	4,026	945	945	610	495	13,904
	O&M/Programs	1,619	0	0	0	113	0	1,732
	Total	8,500	4,026	945	945	723	495	15,636

Total Funding by Mode								
Mode	Program Area	1/2 Cent	ADOT Funds	FTA (5307)	FTA (5309)	MAG-CMAQ	MAG-STP	Total Regional Funding
Freeways	Capital	4,583	4,026	0	0	149	0	8,757
	Operations	354	0	0	0	0	0	354
	Total	4,937	4,026	0	0	149	0	9,111
Streets	Capital	688	0	0	0	50	495	1,233
Buses	Capital	355	0	857	120	0	0	1,332
	Operations	1,020	0	0	0	0	0	1,020
	Total	1,375	0	857	120	0	0	2,352
LRT	Capital	1,224	0	0	825	279	0	2,328
Other Transit	Capital	32	0	89	0	0	0	122
	Operations	214	0	0	0	0	0	214
	Total	246	0	89	0	0	0	336
Planning	Programs	31	0	0	0	0	0	31
Bicycle/Ped	Capital	0	0	0	0	132	0	132
Air Quality	Programs	0	0	0	0	113	0	113
Total Funding	Capital	6,881	4,026	946	945	610	495	13,904
	Operations	1,619	0	0	0	113	0	1,732
	Total	8,500	4,026	946	945	723	495	15,636

Percent Funding by Mode								
Mode	Program Area	1/2 Cent	ADOT Funds	FTA (5307)	FTA (5309)	MAG-CMAQ	MAG-STP	Total Regional Funding
Freeways	Capital	53.9%	100.0%	0.0%	0.0%	20.6%	0.0%	56.0%
	Operations	4.2%	0.0%	0.0%	0.0%	0.0%	0.0%	2.3%
	Total	58.1%	100.0%	0.0%	0.0%	20.6%	0.0%	58.3%
Streets	Capital	8.1%	0.0%	0.0%	0.0%	6.9%	100.0%	7.9%
Buses	Capital	4.2%	0.0%	90.6%	12.7%	0.0%	0.0%	8.5%
	Operations	12.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.5%
	Total	16.2%	0.0%	90.6%	12.7%	0.0%	0.0%	15.0%
LRT	Capital	14.4%	0.0%	0.0%	87.3%	38.6%	0.0%	14.9%
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%	1.4%
	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/Ped	Capital	0.0%	0.0%	0.0%	0.0%	18.3%	0.0%	0.8%
Air Quality	Programs	0.0%	0.0%	0.0%	0.0%	15.7%	0.0%	0.7%
Total Funding	Capital	81.0%	100.0%	100.0%	100.0%	84.3%	100.0%	88.9%
	Operations	19.0%	0.0%	0.0%	0.0%	15.7%	0.0%	11.1%
	Total	100.0%						

Percent Funding by Major Mode								
Freeways		58.1%	100.0%	0.0%	0.0%	20.6%	0.0%	58.3%
Streets		8.1%	0.0%	0.0%	0.0%	6.9%	100.0%	7.9%
Transit		33.5%	0.0%	100.0%	100.0%	38.6%	0.0%	32.1%
Other		0.4%	0.0%	0.0%	0.0%	34.0%	0.0%	1.8%
Total		100.0%						

million set aside for bond interest expense, would generate approximately \$8,500 million or about 56% of the regional revenues expected to be available over the 20-year period. Other major sources include ADOT funds (federal and state), \$3,700 million or 24%, and Federal Transit Funds (5307 and 5309) \$1,897 million or 12%. The remaining 8% is provided to the region through federal highway and congestion mitigation/air quality funds.

Exhibit 2

Regional Revenue Sources - 2006-2025 (millions '02 \$'s)

Funding Source	Potential Uses	20-Year Revenues	%
ADOT Funds (Federal and State)	State highway improvements	\$3,700	24.2%
5307 Funds (Federal Suballocated)	Bus - capital	\$952	6.2%
5309 Funds (Federal Discretionary)	Light rail - capital, Bus - capital	\$945	6.2%
STP (Federal Suballocated)	Streets, highways, freeways, transit - capital	\$400	2.6%
CMAQ (Federal Allocated)	Air quality and congestion relief projects, transit - capital	\$800	5.2%
One-Half Cent Sales Tax Extension	Freeways, highways, major streets, transit	\$8,500	55.6%
Total		\$15,297	100.0%

ANALYSIS OF DRAFT PLAN

The Draft Plan was evaluated using the same set of transportation performance measures that were used to evaluate the May 22, 2003 modeling scenarios. (Note: The modeling scenarios presented in the May 22, 2003 report were targeted at a \$17.1 billion investment level, a funding level needed to include all potential projects in at least one of the scenarios. As previously discussed, the most recent revenue estimates have resulted in a total of \$15.3 billion being available. Thus the results of the Draft Plan evaluation are not directly comparable to the results of the modeling scenario evaluations.) These performance measures were used to provide information regarding the advantages and disadvantages of various approaches to meeting future travel demand needs and assess the relative strengths and weaknesses of the modeling scenarios. To ensure that the evaluation process reflects key regional issues and concerns, each of the performance measures was linked with a specific RTP goal and objective. These goals and objectives were developed earlier in the

RTP process and approved by the Transportation Policy Committee at their meeting of February 19, 2003.

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 year 2025.

A discussion of the results is presented, by goal, in the remainder of this section.

Goal # 1: Maintenance & Safety
Transportation infrastructure that is well maintained and safe.

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 pick-up, 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.

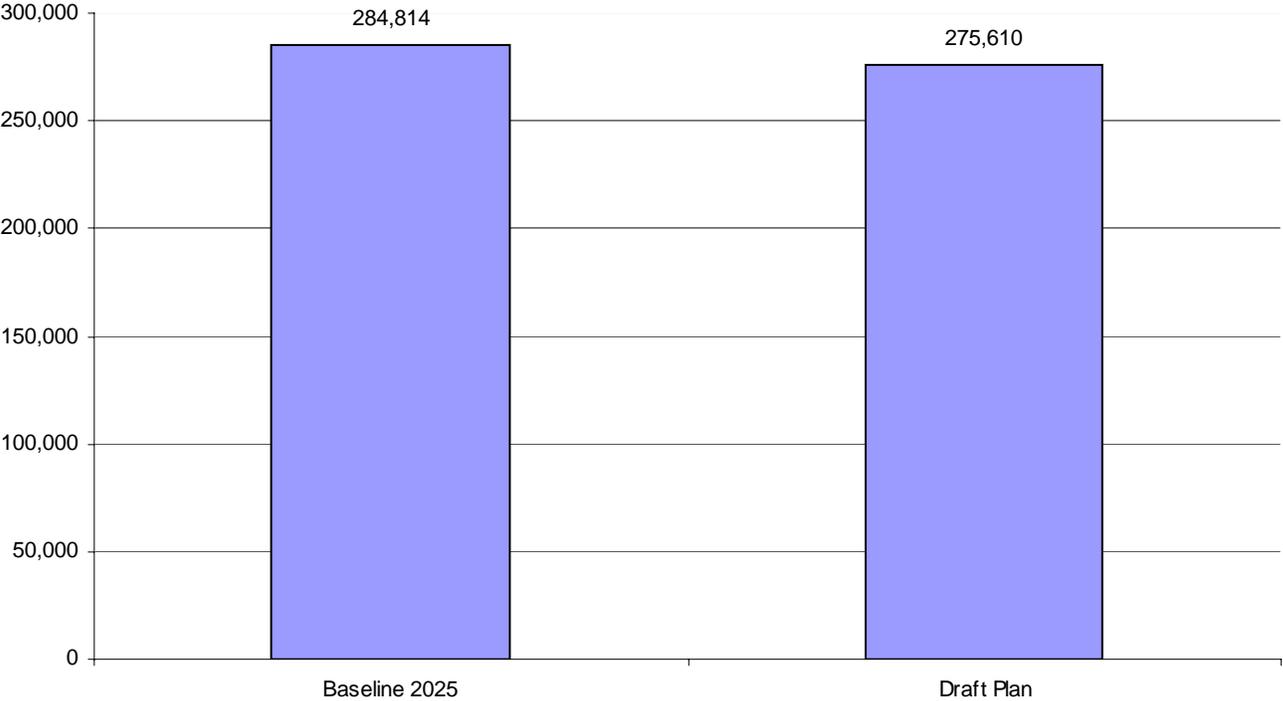
Travel Safety

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, i.e., 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 and is provided in Exhibit 3. 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 3.72 with the base network to 3.11 with the Draft Plan.

Exhibit 3
Total Vehicle Crashes Per Year



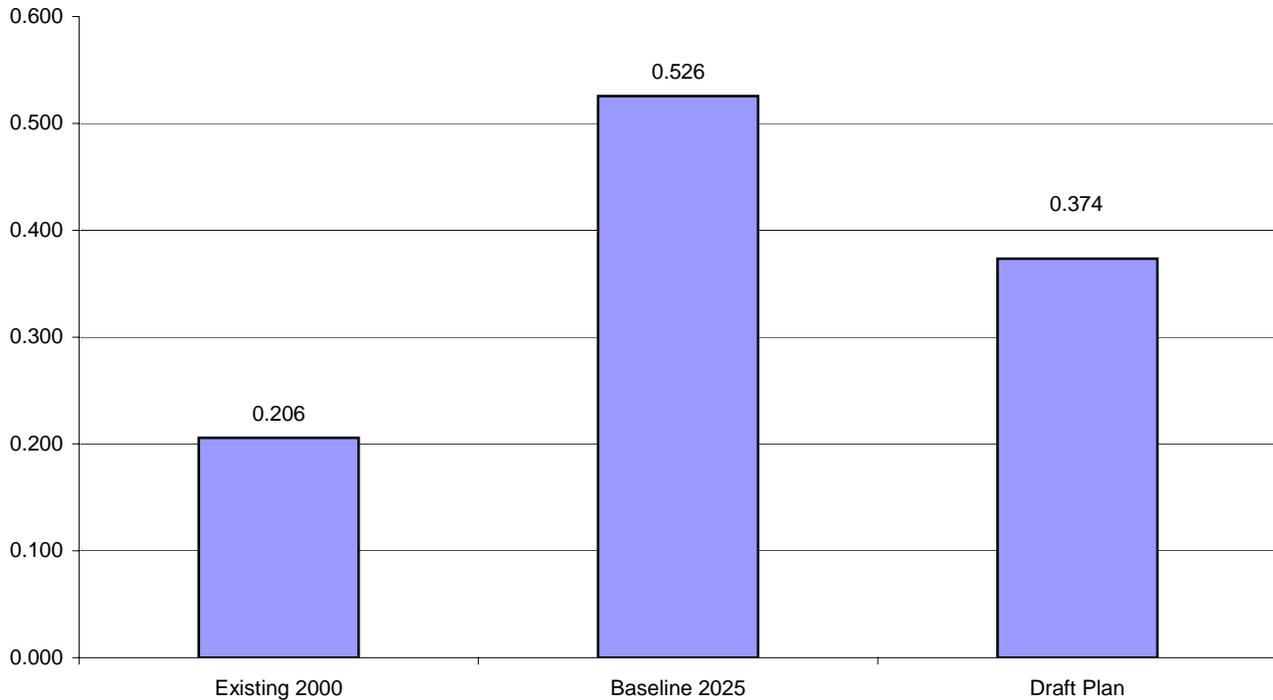
Goal # 2: Access & Mobility

Affordable transportation services that provide accessibility and mobility for everyone.

Time Devoted to Traveling

As shown in Exhibit 4, with the nearly doubling of population and resulting congestion expected in the next 20 years, time spent traveling per capita on the roadway system will increase by 155 percent unless significant transportation improvements are made. 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.

Exhibit 4
PM Peak-Period Person Hours of Travel per Capita



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 traveling precious minutes on the way to work or in accomplishing personal errands.

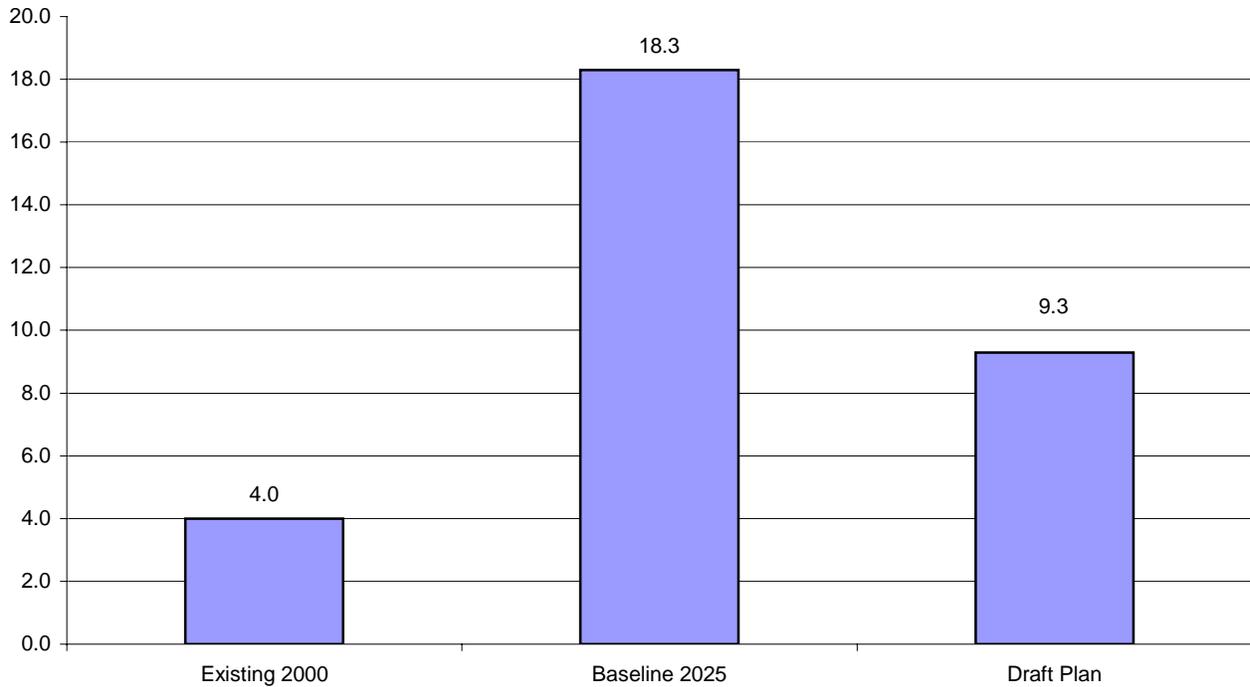
The total PM peak period delay (in hours) for the base network is 1,754,851 hours, about double the 907,230 hours estimated for the Draft Plan. The Draft Plan thus results in approximately 50% less peak period hours of delay than the base scenario. The largest significance in delay reduction occurs on the freeways and arterials. In terms of delay per lane mile, the Draft Plan has over 50% lower levels of delay for the freeways and arterials when compared to the base scenario. Delay per lane mile for the HOV lanes is 70% lower in the Draft Plan than in the base. 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.

PM Peak Period Delay Per Lane Mile

Facility Type	Baseline 2025	Draft Plan
Freeways	252.3	116.2
Arterials	68.4	29.7
HOV Lanes	240.0	68.2

On a per capita basis, PM peak period delay would increase by almost 350% compared to year 2000 levels (Exhibit 5). With the investments in the Draft Plan the future increase in per capita delay would be considerably less, though still increasing by 130%.

Exhibit 5
Per Capita PM Peak-Period Delay (Minutes)



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 eight miles per hour (mph) greater than the speed for the base scenario, 22 mph vs. 14 mph, and an average weighted arterial speed of four mph greater than the base scenario, 16 mph vs. 12 mph. The largest increase in the average weighted speed for the Draft Plan, 14 mph over the base scenario, 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 F in the PM peak period is greater in the Draft Plan than in the base, 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% less than in the base scenario, 58% vs. 48%. This is because the Draft Plan provides significantly more freeway improvements than the base scenario. On arterial streets, when compared to the base scenario, the Draft Plan has 17% fewer intersections operating at level of service F, with 17% vs. 34% in the base.

Goal # 3: Sustaining The Environment

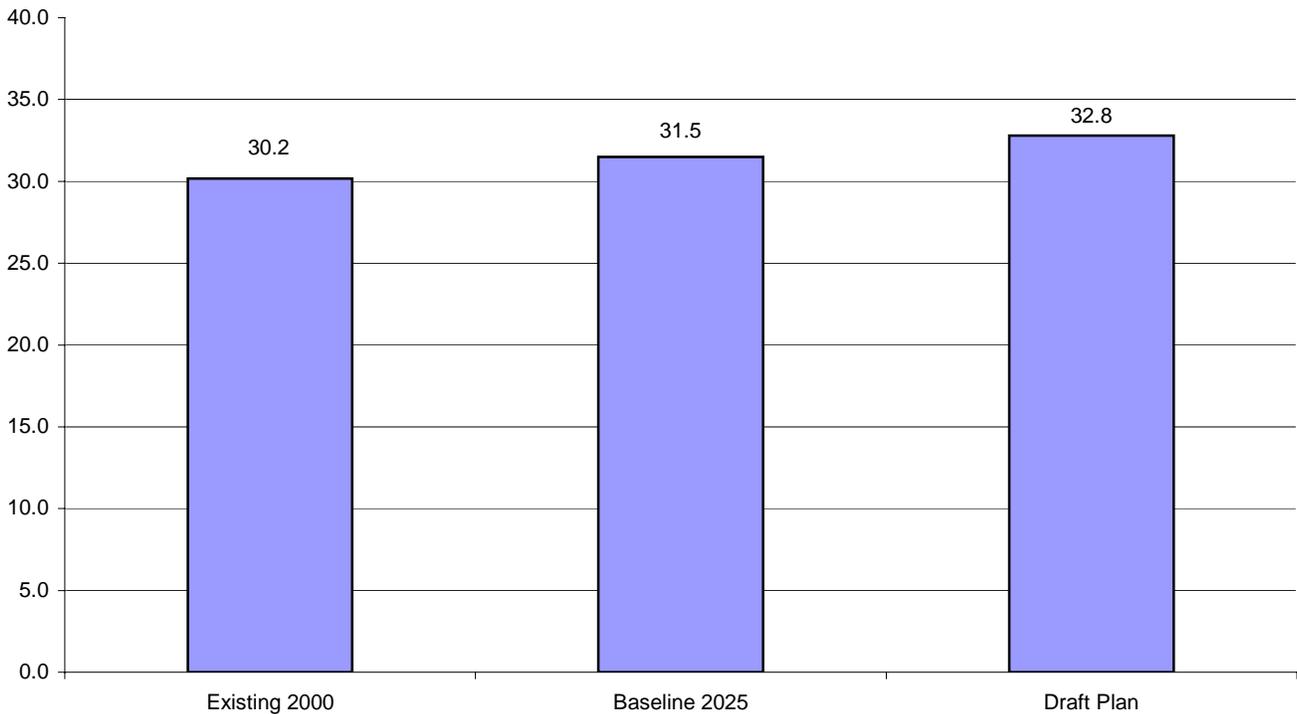
Transportation improvements that help sustain our environment and quality of life.

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 case and 192.3 million vehicle-miles (about four percent higher) for the Draft Plan.

As indicated in Exhibit 6, 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 results in 31.5 miles per person of travel. However, the small increase in per capita travel between the base and Draft Plan is more than offset by the capacity improvements made to the system by the Draft Plan.

Exhibit 6
Daily VMT Per Capita



Air Quality

While vehicle-miles-of-travel (VMT) influences the amount of pollutants emitted by transportation activities, it is not the only determinant of emission levels. The speed at which vehicles travel is also an important determinant. Congested travel results in higher emissions on a per-mile basis. Therefore, despite having a higher daily VMT than the base scenario, the Draft Plan would result in an approximately 11% lower emission level than the base scenario, because of the speeds at which travel would occur.

Goal # 4: Accountability and Planning

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

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

Performance Evaluation Conclusions

The Draft Plan provides for significant improvements to the existing roadway system in the region through numerous multi-modal improvements. Based upon the evaluation presented in this section, general conclusions of this evaluation are:

The \$15.3 billion that will be invested in multi-modal transportation improvements with the extension of the half-cent sales tax and other available funding will reduce regional delay to half or less of what it would be without the investment.

The Draft Plan has a balanced combination of freeway, major arterial, and transit improvements that result in 50% less delay on freeways and arterials and 70% less delay on high occupancy vehicle (HOV) lanes than the base scenario.

With the Draft Plan there are 17% fewer intersections operating at level of service F in the PM peak hour than without the Plan improvements.

New freeways in the Draft Plan provide future growth areas with links to the regional transportation network.

Bottleneck and other capacity improvements on the existing freeway system deal directly with existing congestion.

The addition of HOV lanes and freeway-to-freeway HOV ramp connections have a positive impact on congestion by both providing additional capacity for all vehicles and by improving express transit operations, thus improving its competitive position with the private automobile.

PLAN PHASING

The phasing plans for implementing the Regional Transportation Plan for freeways and highways, traffic interchanges, arterial streets, light rail transit, and the regional bus system are presented in Exhibits 7 through 13. For the convenience of the reader, all these exhibits are located at the end of the report text.

The phasing of the plan is described in terms of four phases covering the planning period as follows:

- Phase I 2006-2010
- Phase II 2011-2015
- Phase III 2016-2020
- Phase IV 2021-2025

In order to prepare the phasing plan, modal elements were reviewed using a series of phasing factors, which are described below. In addition, a cash flow matrix was developed to quantify available funding by mode on an annual basis. The funding assumptions followed in preparing this matrix are also described below. Using the phasing factors as a guide, plan elements were matched against cash flows to identify a project implementation sequence constrained by available revenues. Tables 1 through 3 in the appendix provide traffic volumes on freeway, highway and arterial projects addressed in the phasing process.

Revenue and costs estimates used in the RTP process have been reviewed extensively 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 interest costs. It is important to note that many of these uncertainties can only be resolved once detailed engineering studies are completed and economic conditions are revealed over time. Periodic updating of the Plan will be needed to respond to these changing conditions.

Plan Phasing Factors

The preparation of the phasing plan considered a number of factors. These factors responded to the goals and objectives addressed in the plan evaluation process. Objectives addressed included items such as: Objective 2A - Maintain level of service; Objective 2B - Provide residents and employers with access; Objective 4A - Use public resources effectively and efficiently; Objective 4C - Develop a regionally balanced plan; and Objective 4D - Recognize previously authorized corridors. The factors considered in phasing the elements of the Draft Plan 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 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 system continuity, connectivity and efficiency are maintained to the maximum degree possible.

Revenue availability: The cash flow patterns from revenue sources obviously limit the amount of work that can be accomplished within a given period of time. In addition, since revenue streams are less 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 can be shifted to earlier phases in the planning period, but this has to be weighed against the reduction in total revenues available for constructing projects, resulting from interest costs. A conservative bonding scenario, based on a \$500 million allocation for interest costs, 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.

Funding Assumptions

For purposes of developing a draft phasing 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:

- Freeway/Highway (58.0%)
- Arterial Street (8.1%)

Transit (33.5%)
Planning Programs (0.4%).

This is in the same percentage as they are distributed in the Draft Plan.

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 cover cost overruns in another category.

Bond proceeds will not be used for non-capital costs, such as maintenance or operations expenses.

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

Other funding assumptions:

The phasing plans assume revenue bonding for capital projects in 2006 (\$1.4 billion), 2011 (\$400 million), 2016 (\$300 million), and 2021 (\$175 million). Bond revenues are distributed 66.6% to freeway construction, 10.0% to street construction, and 23.4% to transit capital, with the percentages being based upon the corresponding percentages in the Draft Plan for capital items only.

Freeway/Highway Funding equals 58.0% of RARF, plus 66.6% of bond revenues, plus 100.0% of ADOT (15% and discretionary), plus 20.6% of CMAQ.

Street Funding equals 8.1% of RARF, plus 10.0% of bond revenues, plus 6.9% of CMAQ, plus 100.0% of STP.

Transit Capital Funding equals 19.0% of RARF, plus 23.4% of bond revenues, plus 100.0% of FTA (5307 and 5309), plus 38.5% of CMAQ.

Transit Operations Funding equals 14.5% of RARF.

Other Regional Programs equals 0.4% of RARF (Planning Programs), plus 34.0% of CMAQ (air quality projects, bicycle and pedestrian projects).

Freeway/Highway Phasing

The phasing concepts for the freeway/highway element of the Draft Plan are mapped in Exhibits 7 and 8, which address new corridors, widenings, other capacity improvements, and new interchanges. Exhibits 10 through 13 provide a tabulation of the phasing sequence by project. The phase designation for projects in these tables indicates the

period in which construction is programmed. In addition, Tables 1 and 2 in the appendix provide detailed project information. It should be noted that the total dollar amounts on these tables do not exactly equal the amounts in Exhibit 1, since the latter includes items not specifically phased, such as maintenance, freeway management system (FMS) and minor projects in the FY 03-07 program. The overall pattern of phasing for the freeway/highway element is discussed below.

Phase I: In this phase, the emphasis is on addressing the currently congested parts of the system, moving forward with projects that are at a more advanced design stage, preparing for the construction of new corridors and beginning investigations of complex design issues. Key projects include construction of improvements on I-10, 202L (Red Mountain), US 60 (Superstition), and 101L (Pima/Price). Design and right-of-way preservation on the 303L and South Mountain freeways, as well as location and design studies on the I-10 Reliever and the Williams Gateway Parkway, are also included. In order to provide system continuity and connectivity, an interim connection of Loop 303 to I-17 is constructed.

Phase II: A major accomplishment in this phase is the completion of Loop 303 between I-10 and I-17, as well as the construction of the South Mountain Freeway. Early in the RTP process, the TPC identified these projects as being critical elements of the regional system. Also in Phase II, work continues to move forward on the more congested elements of the system, with the addition of general purpose lanes on parts of I-17, I-10, Loop 101 (Pima), Loop 202 (Red Mountain), and US 60 (Grand Avenue). HOV lanes are also added on other parts of 101L and 202L. Right-of-way acquisition proceeds on the I-10 Reliever and Williams Gateway Freeways.

Phase III: In this phase, work is completed on capacity improvements on I-17 between McDowell Road and Dunlap Avenue. Although this project is on a stretch of freeway with currently high congestion, its engineering complexity and need for large amounts of funding in a single block necessitated focusing the work in Phase III. Other key projects in this phase include completing HOV lanes on all of Loop 101 and construction of the Williams Gateway Freeway.

Phase IV: Phase IV completes the planned improvements on the system with general purpose lane widening and completion of a full HOV network. Another key accomplishment in this phase is the construction of system interchange HOV ramp connections. Phase IV also includes the construction of the I-10 Reliever as a full freeway between the South Mountain and Loop 303, as well as an interim connection between Loop 303 and SR 85.

New interchanges are phased throughout the planning period, while HOV ramp connections at freeway-to-freeway interchanges are generally constructed in Phase IV, to allow full construction of the HOV lane system feeding these interchanges.

Arterial Street Phasing

The phasing concepts for the arterial street element of the Draft Plan are mapped in Exhibit 9. Exhibits 10 through 13 provide a tabulation of the phasing sequence by project. The phase designation for projects in these tables indicates the period in which construction is programmed. In addition, Table 3 in the appendix provides detailed project information. It should be noted that the total dollar amount on this table does not exactly equal the amount in Exhibit 1, since the latter includes items not specifically phased, such as ITS.

As noted previously, a range of factors was taken into account in developing the phasing sequence for the various plan elements. In the case of arterial streets, one general guide was as follows: 1) projects with existing (year 2003) volume greater than 30,000 vehicles per day (vpd) were targeted for Phases I or II; 2) projects with 2015 volume greater than 40,000 vpd were targeted for Phases I or II; and 3) projects with 2025 volumes greater than 50,000 vpd were targeted for Phases II or III. Projects not meeting any of these criteria were generally targeted for Phase IV, but may have been placed in other phases based on budget and regional balance. The overall pattern of phasing for the arterial street element is discussed below.

Phase I: In this phase, key accomplishments include right-of-way protection and construction on the western end of the Northern Avenue “Super Street” project, widening of Scottsdale Road north of Loop 101 and a series of arterial and intersection projects in the East Valley.

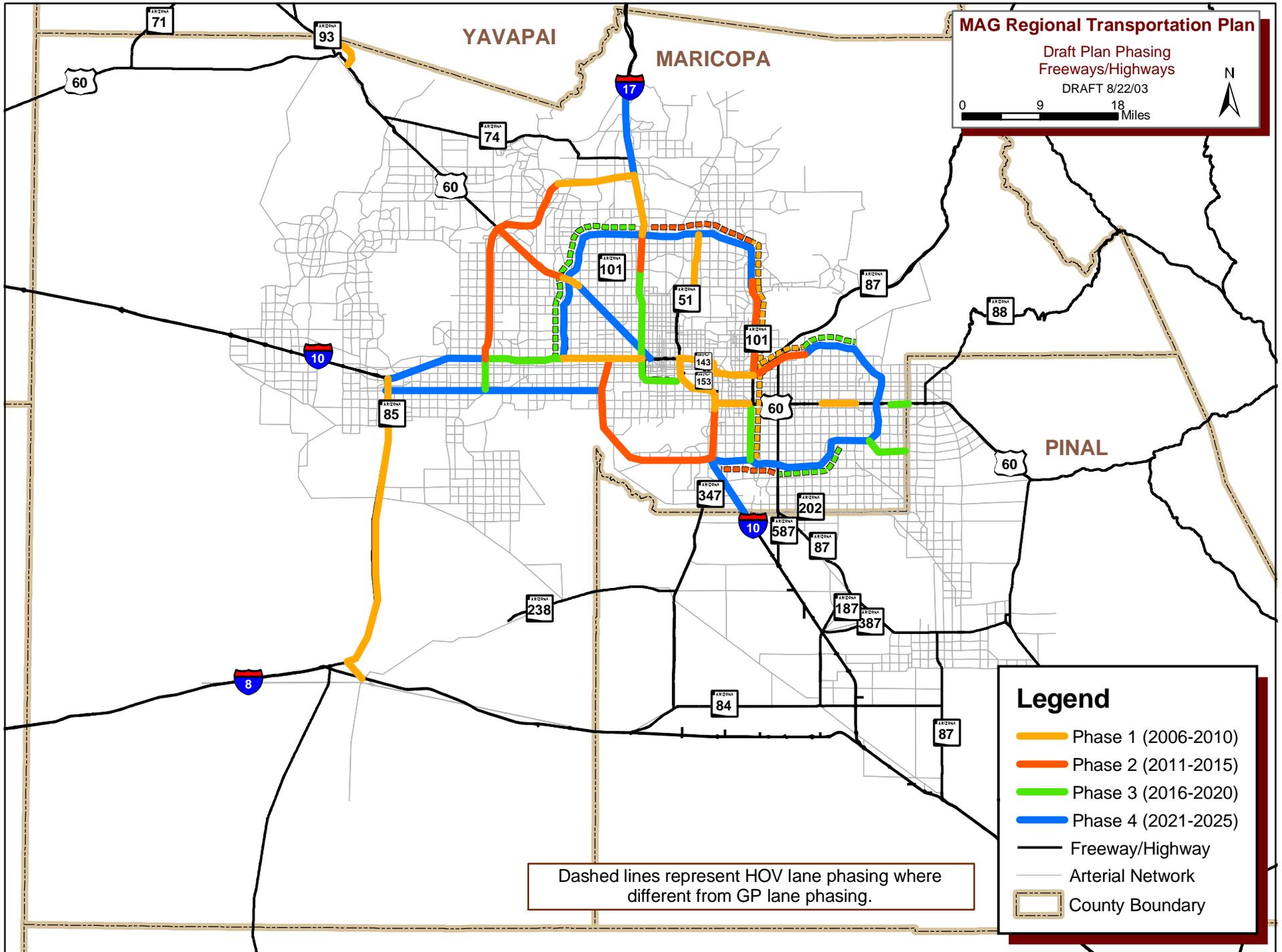
Phase II: Several major links, including the Rio Salado Parkway, the Lake Pleasant/Beardsley link between Loop 101 and Loop 303 and widening of Pima Road, are completed in Phase II.

Phase III: In Phase III, key accomplishments include improvements on El Mirage Road to move traffic across Grand Avenue into the northwest part of the region, construction of the Sonoran Desert Parkway, completion of the Scottsdale Airport Tunnel and continued intersection and arterial improvements in the East Valley.

Phase IV: The arterial street program is completed in Phase IV, with major improvements to Pima Road in the northeast part of the region, completion of the last segment of the Northern Avenue “Super Street”, and final intersection and street projects in the East Valley.

Regional Programs Phasing

The major components in the regional programs element are bicycle and pedestrian projects, and air quality mitigation projects. Plan implementation studies, such as corridor assessments and major investment studies (MIS), are also included. Phasing of the projects in this element would proceed under the funding constraints identified in the Draft Plan. Specific project listings and sequencing would be developed through MAG technical committees, with final approval by the TPC. The system management portions of the freeway/highway and arterial elements (FMS/ITS) would also be handled in this manner.



MAG Regional Transportation Plan
 Draft Plan Phasing
 Freeways/Highways
 DRAFT 8/22/03

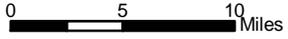
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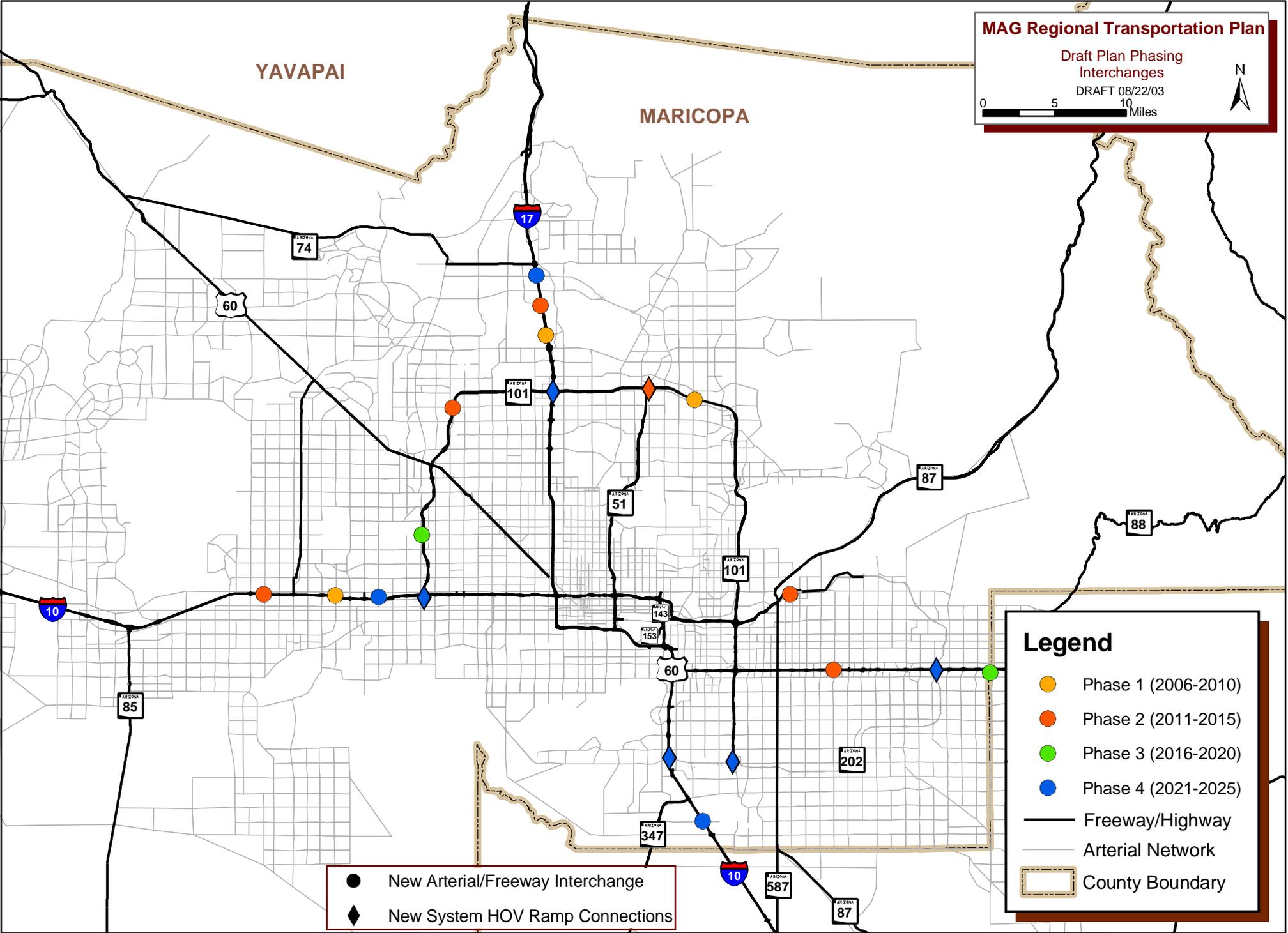
- Phase 1 (2006-2010)
- Phase 2 (2011-2015)
- Phase 3 (2016-2020)
- Phase 4 (2021-2025)
- Freeway/Highway
- Arterial Network
- County Boundary

Dashed lines represent HOV lane phasing where different from GP lane phasing.



YAVAPAI

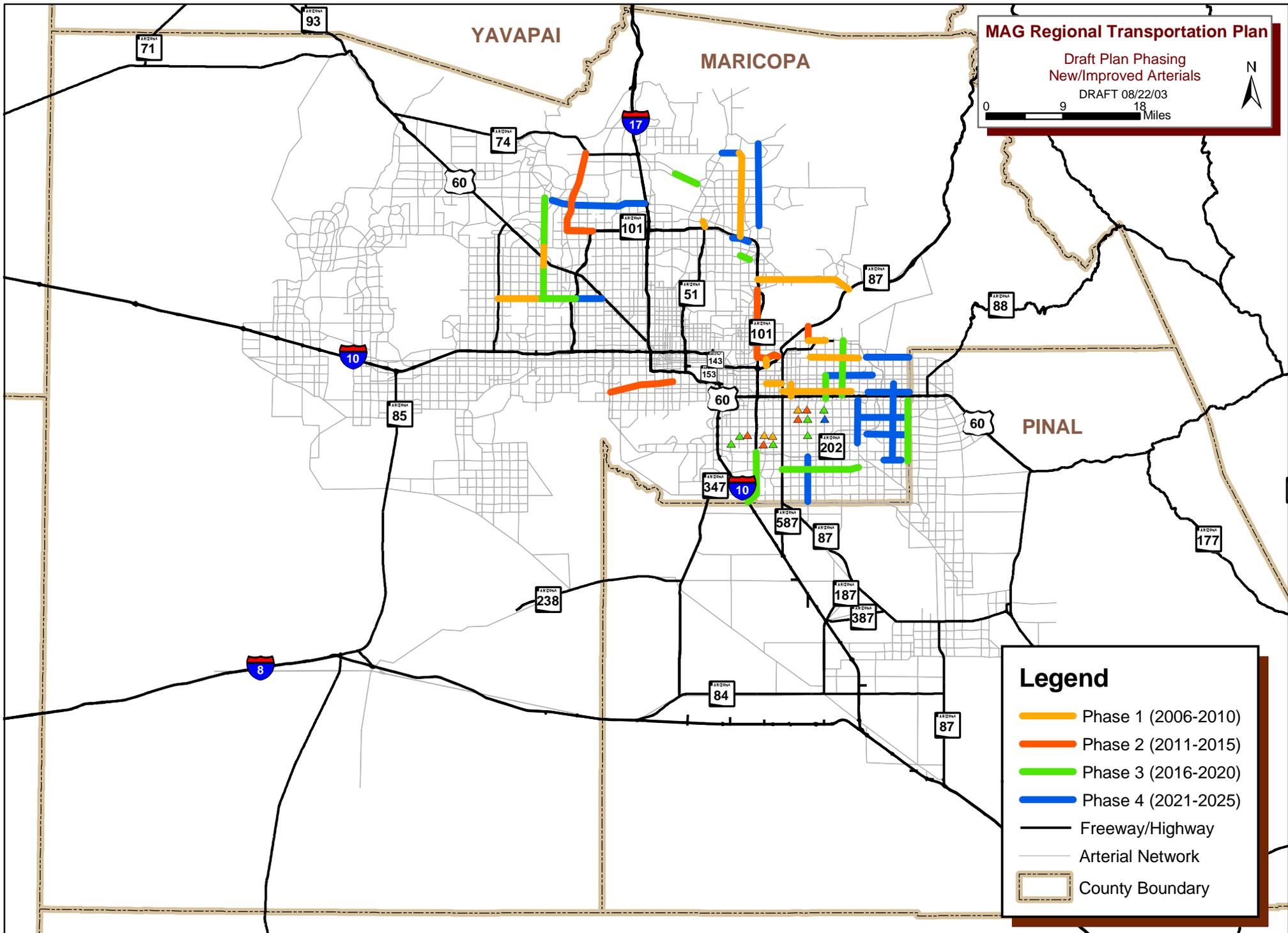
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- New Arterial/Freeway Interchange
- ◆ New System HOV Ramp Connections

Legend

- Phase 1 (2006-2010)
- Phase 2 (2011-2015)
- Phase 3 (2016-2020)
- Phase 4 (2021-2025)
- Freeway/Highway
- Arterial Network
- ▭ County Boundary



MAG Regional Transportation Plan
 Draft Plan Phasing
 New/Improved Arterials
 DRAFT 08/22/03



Legend

- Phase 1 (2006-2010)
- Phase 2 (2011-2015)
- Phase 3 (2016-2020)
- Phase 4 (2021-2025)
- Freeway/Highway
- Arterial Network
- County Boundary

Exhibit 10: Phase I Projects - Freeways/Highways/Arterials

Facility	Segment
<u>New Freeways</u>	
Loop 303	I-17 to 99th Ave (Interim Connection)
<u>New General Purpose Lanes</u>	
I-10	101L to I-17
I-10	SR 51 Interchange to 32nd St (CD Roads)
I-10	32nd St to Baseline Road (CD Roads)
I-17	Loop 303 to Loop 101
Loop 202	Red Mountain: I-10/SR 51 Interchange to Rural Rd
Loop 202	Red Mountain: Rural Rd to Loop 101
Loop 303	I-17 to Lake Pleasant Rd (Interim Facility)
SR 51	Loop 101 to Shea Blvd
SR 85	I-10 to Hazen Rd
SR 85	Hazen Rd to I-8
US 60	Grand: Loop 101 to Loop 303
US 60	Superstition: I-10 to Loop 101
US 60	Superstition: Val Vista to Power
TBD	Wickenburg Bypass
<u>New High Occupancy Vehicle Lanes</u>	
I-17	Loop 303 to Loop 101
Loop 101	Pima: Shea Blvd to Loop 202/Red Mtn
Loop 101	Price: Loop 202/Red Mtn to Baseline Rd
Loop 101	Price: Baseline Rd to Loop 202/Santan
Loop 202	Red Mountain: Loop 101 to Gilbert
SR 51	Loop 101 to Shea Blvd
US 60	Superstition: Val Vista to Power
<u>New Interchanges</u>	
I-10	Bullard Rd
I-17	Jomax Rd
L101	64th St
<u>Arterial Improvements/Construction</u>	
Black Mtn Pkwy	SR 51 to Blk Mtn Pkwy
Broadway Rd	Dobson Rd to Country Club Dr
Dobson Rd	Salt River
El Mirage Rd	Paradise Ln over Grand Ave to Thunderbird Rd
McKellips Rd	Gilbert Rd to Power Rd
Mesa Dr	Broadway Rd to US 60
Northern Ave	Dysart Rd to Loop 303
Scottsdale Rd	Thompson Peak to Carefree Hwy
Shea Blvd	Palisades Blvd to Saguaro Blvd
Southern Ave	Country Club Dr to Recker Rd
Thomas Rd	Gilbert Rd to Val Vista Dr
Guadalupe/Cooper	Intersection Improvement
Ray/Alma School	Intersection Improvement
Ray/Dobson	Intersection Improvement

Exhibit 11: Phase II Projects - Freeways/Highways/Arterials

Facility

Segment

New Freeways

Loop 202	South Mountain: I-10 (West) to 51st Ave
Loop 202	South Mountain: 51st Ave to Loop 202/I-10
Loop 303	I-17 to US 60 (Grand Avenue)
Loop 303	US 60 (Grand Avenue) to I-10

New General Purpose Lanes

I-10	Baseline Rd to Loop 202 Interchange
I-17	Loop 101 to Arizona Canal (between Peoria & Dunlap)
Loop 101	Pima: Shea Blvd to Loop 202/Red Mtn
Loop 202	Red Mountain: Loop 101 to Gilbert
US 60	Grand: Loop 101 to Loop 303

New High Occupancy Vehicle Lanes

Loop 101	Pima: I-17 to SR 51
Loop 101	Pima: SR 51 to Shea Blvd
Loop 202	Santan: I-10 to Dobson

New Interchanges

I-10	Perryville Rd
I-17	Dixileta Dr
L101	Beardsley Rd
L202	Mesa Dr
US 60	Superstition: Lindsay Rd

New System HOV Ramp Connections

SR 51	L101/Pima
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Arterial Improvements/Construction

Beardsley Rd	Loop 101 to Lake Pleasant Pkwy
Gilbert Rd	Salt River
McKellips Rd	Salt River
McKellips Road	Loop 101 Pima - SRP-MIC
Pima Rd	S. Scottsdale City Limits to 90th St
Rio Salado Pkwy	7th St to Loop 202
Chandler Blvd/Dobson	Intersection Improvement
Elliot/Cooper	Intersection Improvement
Guadalupe/Gilbert	Intersection Improvement
Ray/McClintock	Intersection Improvement

Exhibit 12: Phase III Projects - Freeways/Highways/Arterials

Facility	Segment
<u>New Freeways</u>	
Loop 303	I-10 to I-10R
TBD	Williams Gateway Freeway
<u>New General Purpose Lanes</u>	
I-10	Loop 303 to Dysart
I-10	Dysart to 101L
I-17	Arizona Canal to McDowell Rd
Loop 101	Price: Baseline Rd to Loop 202/Santan
<u>New High Occupancy Vehicle Lanes</u>	
I-10	Loop 303 to Dysart
I-10	Dysart to 101L
I-17	I-10 (west) to I-10 (east)
Loop 101	Agua Fria: I-10 to Grand Ave
Loop 101	Agua Fria: Grand Ave to I-17
Loop 202	Red Mountain: Gilbert to Higley
Loop 202	Santan: Dobson to Higley
US 60	Superstition: Crismon to Meridian Road
<u>New Interchanges</u>	
L101	Bethany Home Rd
US 60	Superstition: Meridian Rd
<u>Arterial Improvements/Construction</u>	
El Mirage Rd	Bell Rd to Jomax Rd
El Mirage Rd	Thunderbird to Northern Ave
Higley Rd Pkwy	US 60 to 202L (Red Mt.)
Higley Rd Pkwy	US 60 to 202L (Red Mt.)
Meridian Rd	Baseline Rd to Germann Rd
Northern Ave	Loop 101 to Dysart Rd
Price Rd Extension	Loop 202 to I-10
Queen Creek Rd	Arizona Ave to Power Rd
Runway Tunnel	Scottsdale Airport
Sonoran Pkwy	Central to 32nd Ave
Val Vista Dr	University Dr to Baseline Rd
Chandler Blvd/Alma School	Intersection Improvement
Chandler Blvd/Kyrene	Intersection Improvement
Elliot/Gilbert	Intersection Improvement
Guadalupe/Val Vista	Intersection Improvement
Ray/Gilbert	Intersection Improvement
Ray/Rural	Intersection Improvement

Exhibit 13: Phase IV Projects - Freeways/Highways/Arterials

Facility	Segment
<u>New Freeways</u>	
I-10 R	SR 85 to Loop 303 (Interim Facility)
I-10 R	Loop 303 to Loop 202/South Mountain
<u>New General Purpose Lanes</u>	
I-10	SR 85 to Loop 303
I-10	Loop 202 Interchange to Riggs Rd
I-17	New River to Anthem Way
I-17	Anthem Way to Loop 303
Loop 101	Agua Fria: I-10 to Grand Ave
Loop 101	Agua Fria: Grand Ave to I-17
Loop 101	Pima: I-17 to SR 51
Loop 101	Pima: SR 51 to Shea Blvd
Loop 202	Red Mountain: Gilbert to Higley
Loop 202	Red Mountain: Higley to US 60
Loop 202	Santan: I-10 to Dobson
Loop 202	Santan: Dobson to Higley
Loop 202	Santan: Higley to US 60
US 60	Grand Avenue: Loop 101 to Van Buren (includes grade separations at 51st, 35th & 19th Ave)
<u>New High Occupancy Vehicle Lanes</u>	
I-10	Loop 202 Interchange to Riggs Rd
I-17	Anthem Way to Loop 303
Loop 202	Red Mountain: Higley to US 60
Loop 202	Santan: Higley to US 60
<u>New Interchanges</u>	
I-10	Chandler Heights
I-10	El Mirage
I-17	Dove Valley Rd
<u>New System HOV Ramp Connections</u>	
L101	I-10
L101	I-17
L202	Red Mtn & US 60/Superstition
L202	Santan & I-10
L202	Santan & L101/Price
<u>Arterial Improvements/Construction</u>	
101L	Princess Dr to Scottsdale Rd
Carefree Highway	Cave Creek Rd to Scottsdale Rd
Crismon Rd	Broadway Rd to Germann Rd
Elliot Rd	Power Rd to Meridian Rd
Germann	Ellsworth Rd to Signal Butte Rd
Gilbert Rd	Loop 202 (Santan) to Hunt Hwy
Happy Valley Rd	Loop 303 to I-17
McKellips Rd	E of Sossaman to Meridian Rd
Northern Ave	Grand Ave to Loop 101
Pima Rd	Deer Valley to Cave Creek Road
Power Rd	Baseline Rd to Williams Field Rd
Ray Road	Sossaman Rd to Meridian Rd
Southern Ave	Sossaman Rd to Meridian Rd
University Dr	Val Vista Dr to Hawes Rd
Elliot/Val Vista	Intersection Improvement

APPENDIX

Map 1 - Freeways/Highway Improvements

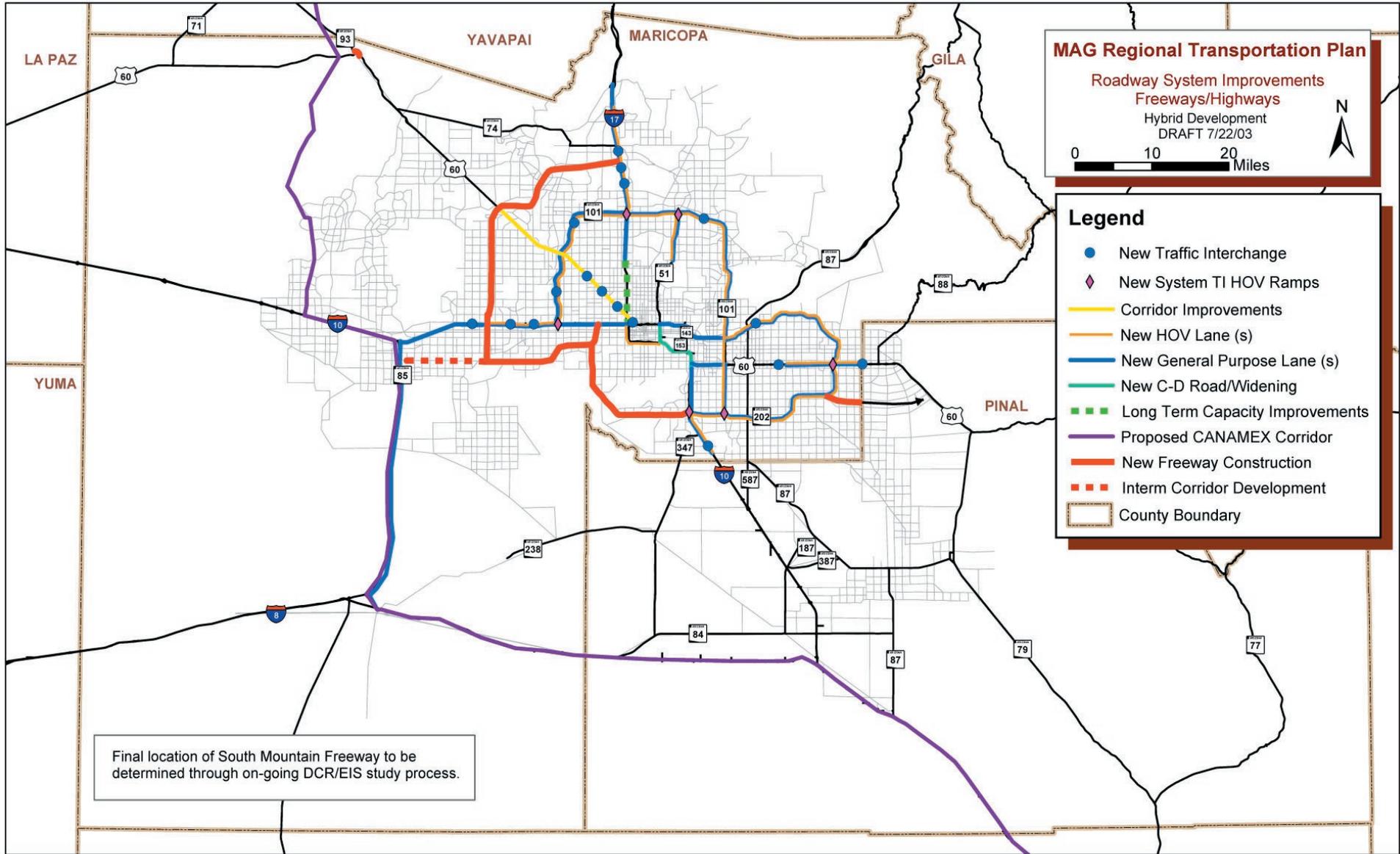
Map 2 - New/Improved Arterial Street Projects

Table 1 - Freeway/Highway Projects Phasing

Table 2 – New/Improved Interchanges Phasing

Table 3 - Arterial Projects Phasing

Freeways/Highways



MAG Regional Transportation Plan
 Roadway System Improvements
 Freeways/Highways
 Hybrid Development
 DRAFT 7/22/03

0 10 20 Miles

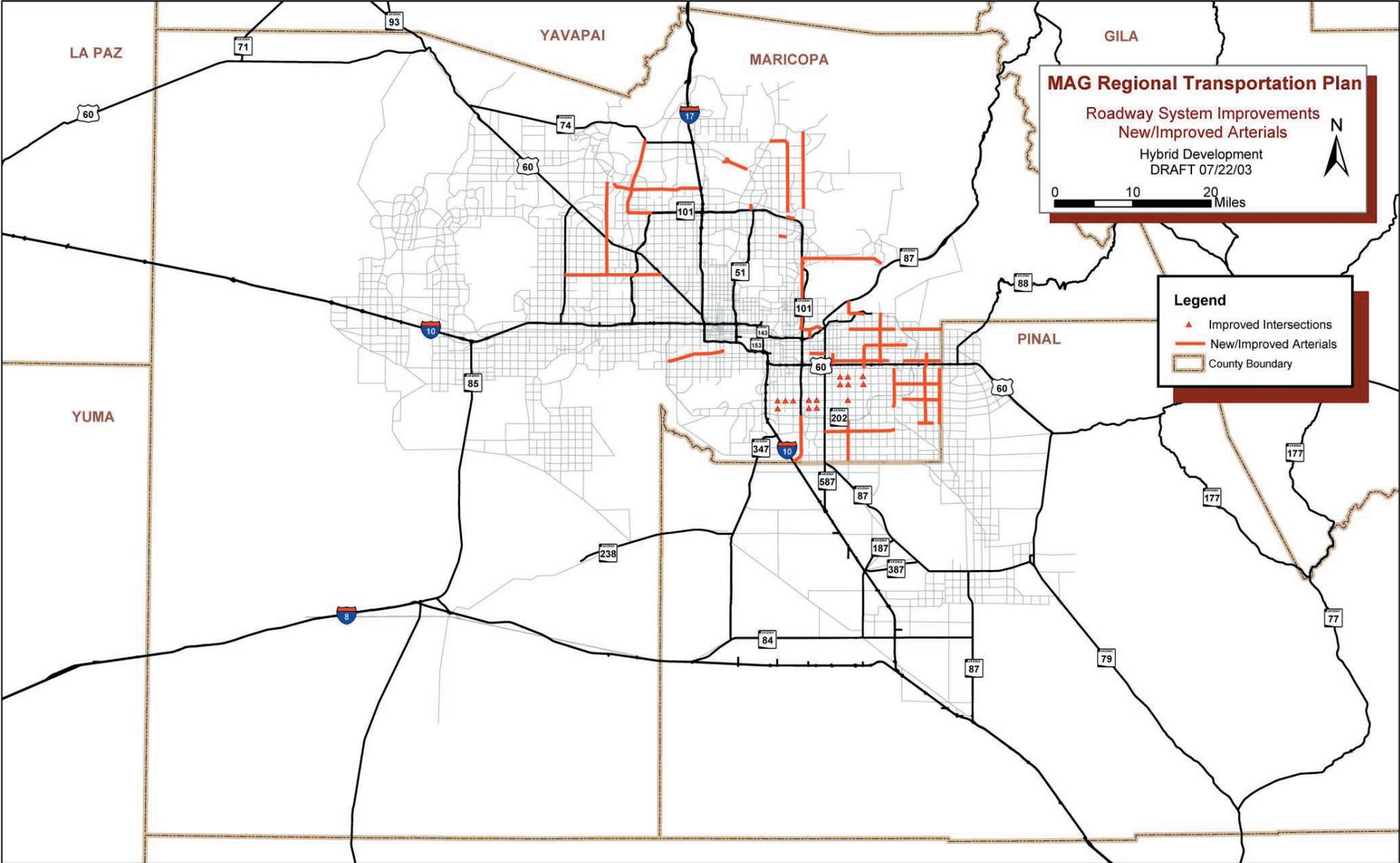
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Legend

- New Traffic Interchange
- ◆ New System TI HOV Ramps
- Corridor Improvements
- New HOV Lane (s)
- New General Purpose Lane (s)
- New C-D Road/Widening
- - - Long Term Capacity Improvements
- Proposed CANAMEX Corridor
- New Freeway Construction
- - - Interm Corridor Development
- ▭ County Boundary

Final location of South Mountain Freeway to be determined through on-going DCR/EIS study process.

New/Improved Arterials



MAG Regional Transportation Plan
Roadway System Improvements
New/Improved Arterials
Hybrid Development
DRAFT 07/22/03

Legend

- ▲ Improved Intersections
- New/Improved Arterials
- County Boundary

Table 1: Freeway/Highway Projects Phasing

Facility	Segment	Length (miles)	Number of Through Lanes in Each Direction						Regional Costs*								Total Costs			Volumes (ADT, thousands)**						Phase	
			Current		Plan		New Lanes		(2002 Dollars, Millions)				(2002 Dollars, Millions)				2001		2015		2025		(Final Construction)				
			GP	HOV	GP	HOV	GP	HOV	GP				HOV				GP	HOV	Total	GP	HOV	GP	HOV	GP	HOV	GP	HOV
									Phase I	Phase II	Phase III	Phase IV	Phase I	Phase II	Phase III	Phase IV											
I-8	Yuma County to SR 85	37	2	0	2	0	0	0							0	0	0										
	SR 85 to Pinal County	31	2	0	2	0	0	0							0	0	0										
	<i>Sub-total</i>								\$ 0.0				\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0										
I-10	Yuma County to Sun Valley Parkway	39	2	0	2	0	0	0							0	0	0										
	Sun Valley Parkway to SR 85	3	2	0	2	0	0	0							0	0	0										
	SR 85 to Loop 303	12	2	0	3	0	1	0				106			106	0	106	50			124		143			IV	
	Loop 303 to Dysart	5	2	0	4	1	2	1				66		28	66	28	94	80			158	14	188	26		III	
	Dysart to 101L	6	3-4	0	4-5	1	1	1				35		22	35	22	57	114			177	26	174	42		III	
	101L to I-17	7	4	1	5	1	1	0		79					79	0	79	163			239		219			I	
	I-17 to SR 51 Interchange	5	3-5	1	3-5	1	0	0							0	0	0										
	SR 51 Interchange to 32nd St (CD Roads)	3	3-6	1	3-6	1	CD	0		180					180	0	180	150								I	
	32nd St to Baseline Road (CD Roads)	6	3-6	1	3-6	1	CD	0		320					320	0	320	220								I	
	Baseline Road to Loop 202 Interchange	6	3-4	1	4-5	1	1	0		53					53	0	53	130			189		199			II	
	Loop 202 Interchange to Riggs Rd	6	2	0	3	1	1	1			53			33	53	33	86	60			124	4	132	7		IV	
	Riggs Rd to Pinal County	1	2	0	2	0	0	0																			
<i>Sub-total</i>								\$ 579.0	\$ 53.0	\$ 101.0	\$ 159.0	\$ 0.0	\$ 0.0	\$ 50.0	\$ 33.0	\$ 892.0	\$ 83.0	\$ 975.0									
I-17	Yavapai County to New River	10	2	0	2	0	0	0							0	0	0										
	New River to Anthem Way	3	2	0	3	0	1	0				26			26	0	26	26			48		68			IV	
	Anthem Way to Loop 303	7	2	0	3	1	1	1				62		39	62	39	101	50			91	3	110	4		IV	
	Loop 303 to Loop 101	7	2-3	0	4-5	1	2	1		92			39		92	39	131	75			170	6	205	18		I	
	Loop 101 to Arizona Canal (between Peoria & Dunlap)	6	3	1	4	1	1	0		53					53	0	53	154			191		201			II	
	Arizona Canal to McDowell Rd	7	3-4	1	5-6	1	2	0		40	960				1,000	0	1,000	179			231		243			III	
	McDowell to I-10	1	3	0	3	0	0	0							0	0	0										
	I-10 (west) to I-10 (east)	7	3	0	3	1	0	1						77	0	77	77	110				22		35		III	
<i>Sub-total</i>								\$ 92.0	\$ 93.0	\$ 960.0	\$ 88.0	\$ 39.0	\$ 0.0	\$ 77.0	\$ 39.0	\$ 1,233.0	\$ 155.0	\$ 1,388.0									
Loop 101	Agua Fria: I-10 to Grand Ave	10	3	0	4	1	1	1				88		55	88	55	143	90			162	9	186	16		IV	
	Agua Fria: Grand Ave to I-17	12	3	0	4	1	1	1				106		66	106	66	172	104			155	6	179	17		IV	
	<i>Sub-total</i>								\$ 0.0	\$ 0.0	\$ 0.0	\$ 194.0	\$ 0.0	\$ 0.0	\$ 121.0	\$ 0.0	\$ 194.0	\$ 121.0	\$ 315.0								
	Pima: I-17 to SR 51	7	3	0	4	1	1	1				62		38	62	38	100	73			198	9	214	26		IV	
	Pima: SR 51 to Shea Blvd	10	3	0	4	1	1	1				88		54	88	54	142	60			178	14	192	25		IV	
	Pima: Shea Blvd to Loop 202/Red Mtn	11	3	0	4	1	1	1		97			61		97	61	158	137			206	32	221	45		II	
<i>Sub-total</i>								\$ 0.0	\$ 97.0	\$ 0.0	\$ 150.0	\$ 61.0	\$ 92.0	\$ 0.0	\$ 0.0	\$ 247.0	\$ 153.0	\$ 400.0									
	Price: Loop 202/Red Mtn to approx. Baseline Rd	4	4	0	4	1	0	1				22			0	22	22	191					33		49		I
	Price: Baseline Rd to Loop 202/Santan	6	3	0	4	1	1	1		53			33		53	33	86	100			169	19	197	33		III	
	Price: Loop 202/Santan to I-10	6	0	0	TBD	TBD	TBD	TBD							0	0	0										
<i>Sub-total</i>								\$ 0.0	\$ 0.0	\$ 53.0	\$ 0.0	\$ 55.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 53.0	\$ 55.0	\$ 108.0									
Loop 202	Red Mountain: I-10/SR 51 Interchange to Rural Rd	7	3-4	1	4-5EB, 3-4WB	1	1 EB	0		70					70	0	70	192			196		208			I	
	Red Mountain: Rural Road to Loop 101	2	4	1	5	1	1	0		40					40	0	40				222		239			I	
	Red Mountain: Loop 101 to Gilbert	6	3	0	4	1	1	1		53			33		53	33	86	88			186	25	190	37		II	
	Red Mountain: Gilbert to Higley	5	0	0	4	1	1	1				44		28	44	28	72				162	10	165	20		IV	
	Red Mountain: Higley to US 60	10	0	0	4	1	1	1				88		55	88	55	143				140	4	165	20		IV	
	<i>Sub-total</i>								\$ 110.0	\$ 53.0	\$ 0.0	\$ 132.0	\$ 33.0	\$ 0.0	\$ 28.0	\$ 55.0	\$ 295.0	\$ 116.0	\$ 411.0								
		Santan: I-10 to approx. Dobson	5	3	0	4	1	1	1				44		28	44	28	72				173	12	191	23		IV
		Santan: Dobson to Higley	11	0	0	4	1	1	1				97		60	97	60	157				131	11	167	26		IV
		Santan: Higley to US 60	7	0	0	4	1	1	1				61		38	61	38	99				133	5	158	10		IV
	<i>Sub-total</i>								\$ 0.0	\$ 0.0	\$ 0.0	\$ 202.0	\$ 0.0	\$ 28.0	\$ 60.0	\$ 38.0	\$ 202.0	\$ 126.0	\$ 328.0								
		South Mountain: I-10 (West) to 51st Ave	10	0	0	3	0	3	0		110	413				523	0	523				127		148			II
		South Mountain: 51st Ave to Loop 202/I-10	12	0	0	3	0	3	0		70	507				577	0	577				138		150			II
<i>Sub-total</i>								\$ 180.0	\$ 920.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 1,100.0	\$ 0.0	\$ 1,100.0								

ADT: Average Daily Traffic
 GP: General Purpose Lanes
 HOV: High Occupancy Vehicle Lanes
 TBD: To be determined in future studies
 * Includes 0-20% contingency allowance.
 **Traffic volumes provided only where improvements are identified.

Table 1: Freeway/Highway Projects Phasing (continued)

Facility	Segment	Length (miles)	Number of Through Lanes in Each Direction						Regional Costs*								Total Costs			Volumes (ADT, thousands)**						Phase	
			Current		Plan		New Lanes		(2002 Dollars, Millions)								(2002 Dollars, Millions)			2001		2015		2025		(Final Construction)	
			GP	HOV	GP	HOV	GP	HOV	GP				HOV				GP	HOV	Total	GP	HOV	GP	HOV	GP	HOV	GP	HOV
									Phase I	Phase II	Phase III	Phase IV	Phase I	Phase II	Phase III	Phase IV											
Loop 303	I-17 to US 60 (Grand Avenue)	18	0	0	3	0	3	0	350	310					660	0	660			56		119			II		
	US 60 (Grand Avenue) to I-10	15	0	0	3	0	3	0	50	510					560	0	560			92		133			II		
	I-10 to I-10R	5	0	0	3	0	3	0		30	200				230	0	230			57		122			III		
	<i>Sub-total</i>								\$ 400.0	\$ 850.0	\$ 200.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 1,450.0	\$ 0.0	\$ 1,450.0							
SR 51	Loop 101 to Shea Blvd	6	3	0	4	1	1	1	53					33	53	33	86	80		116	5	148	9		I	I	
	Shea Blvd to Loop 202/Red Mtn	10	3-5	1	3-5	1	0	0							0	0	0										
	<i>Sub-total</i>								\$ 53.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 33.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 53.0	\$ 33.0	\$ 86.0							
SR 71	Yavapai County to US 60		1	0	1	0	0	0							0	0	0										
SR 74	US 60/Grand Avenue to Loop 303		1	0	1	0	0	0							0	0	0										
	Loop 303 to I-17		1	0	1	0	0	0							0	0	0										
	<i>Sub-total</i>								\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0							
SR 85	I-10 to Hazen Rd		1-2	0	3	0	0-1	0	50						50	0	50									I	
	Hazen Rd to I-8		1-2	0	2	0	0-1	0	40						40	0	40									I	
	I-8 to Pinal County		1	0	1	0	0	0							0	0	0										
	<i>Sub-total</i>								\$ 90.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 90.0	\$ 0.0	\$ 90.0							
SR 87	Loop 202/Red Mountain to Shea Blvd		2	0	2	0	0	0							0	0	0										
	Shea Blvd to Pinal County		2	0	2	0	0	0							0	0	0										
	<i>Sub-total</i>								\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0							
SR 88	Pinal County to Gila County		1	0	1	0	0	0							0	0	0										
SR 143	Hohokam: Washington St. to I-10		2-3	0	2-3	0	0	0							0	0	0										
SR 153	Sky Harbor Expressway		3	0	3	0	0	0							0	0	0										
SR 238	Maricopa Rd: Gila Bend to Maricopa		1	0	1	0	0	0							0	0	0										
SR 347	Maricopa Rd: I-10 to Pinal County		2	0	2	0	0	0							0	0	0										
US 60	La Paz County to Wickenburg		1	0	1	0	0	0							0	0	0										
	Grand Avenue: Wickenburg to Loop 303		2	0	2	0	0	0							0	0	0										
	Grand Avenue: Loop 303 to Loop 101	10	2-3	0	3	0	0-1	0	39	66					105	0	105	42		42		47				III	
	Grand Avenue: Loop 101 to Van Buren (includes grade separations at 51st, 35th & 19th Ave)	11	2-3	0	3	0	0-1	0			151				151	0	151	42		53		55				IV	
	<i>Sub-total</i>								\$ 39.0	\$ 66.0	\$ 0.0	\$ 151.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 256.0	\$ 0.0	\$ 256.0							
	Superstition: I-10 to Loop 101	4.5	3	1	4	1	1	0	9						9	0	9	124								I	
	Superstition: Loop 101 to Val Vista	8	4-5	1	5	1	0	0							0	0	0										
Superstition: Val Vista to Power	4	3	0	5	1	2	1	50					35	50	35	85	145		204	35	232	38			I		
Superstition: Power to Crismon	4	3	0	3	1	0	1							0	0	0											
Superstition: Crismon to Meridian Road	2	2-3	a	3-4	1	1	1			18			13	18	13	31	43		143	17	138	28			III		
<i>Sub-total</i>								\$ 59.0	\$ 0.0	\$ 18.0	\$ 0.0	\$ 35.0	\$ 0.0	\$ 13.0	\$ 0.0	\$ 0.0	\$ 77.0	\$ 48.0	\$ 125.0								
US 93	Yavapai County to Wickenburg		1	0	1	0	0	0							0	0	0										
TBD	I-10 Reliever														0	0	0										
	SR 85 to Loop 303	11	0	0	1	0	1	0	2		21	66			89	0	89			16		19				IV	
	Loop 303 to Loop 202/South Mountain	13	0	0	3	0	3	0	8	60		704			772	0	772			124		145				IV	
<i>Sub-total</i>								\$ 10.0	\$ 60.0	\$ 21.0	\$ 770.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0	\$ 861.0	\$ 0.0	\$ 861.0								
TBD	Wickenburg Bypass		0	0	2	0	2	0	27						27	0	27									I	
TBD	Williams Gateway Parkway	5	0	0	3	0	3	0	2	50	295				347	0	347			137		151				III	
Total									\$1,641.0	\$2,242.0	\$1,648.0	\$1,846.0	\$256.0	\$120.0	\$349.0	\$165.0	\$7,377.0	\$890.0	\$8,267.0								

ADT: Average Daily Traffic
 GP: General Purpose Lanes
 HOV: High Occupancy Vehicle Lanes
 TBD: To be determined in future studies
 * Includes 0-20% contingency allowance.
 **Traffic volumes provided only where improvements are identified.

Table 2: New/Improved Interchanges Phasing*

Facility	Arterial	Regional Costs** (2002 Dollars, Millions)	Ramp Volumes ***	Phase
			(ADT, thousands) 2025	
<u>New Interchanges on Existing Freeways & State Highways</u>				
I-10	Bullard Rd	4.6	30.9	I
	Chandler Heights	6.9	1.1	IV
	El Mirage	8.6	34.7	IV
	Perryville Rd	4.6	41.5	II
I-17	Dixileta Dr	4.6	31.1	II
	Dove Valley Rd	9.2	9.4	IV
	Jomax Rd	9.2	39.8	I
L101	64th St	9.2	44.3	I
	Beardsley Rd	13.8	24.3	II
	Bethany Home Rd	20.7	30.5	III
L202	Mesa Dr	2.3	27.4	II
US 60	Superstition: Lindsay Rd	2.3	16.2	II
	Superstition: Meridian Rd	2.3	8.9	III
<i>Subtotal</i>		\$98.3		
<u>New High Occupancy Vehicle Ramps at System Freeway Interchanges</u>				
L101	I-10	60.0		IV
	I-17	72.0		IV
L202	Red Mtn & US 60/Superstition	20.0		IV
	Santan & I-10	20.0		IV
	Santan & L101/Price	20.0		IV
SR 51	L101/Pima	20.0		I
<i>Sub-total</i>		\$212.0		
Total		\$310.3		

ADT: Average Daily Traffic

* Not including interchanges constructed as part of new freeway construction

** Includes 15-20% contingency allowance. Assumes 50% local match for new T.I.s except for Bethany Home Rd., which is 100% regionally funded. HOV ramps are 100% regionally funded.

*** Volumes from preliminary modeling results

Table 3: Arterial Projects Phasing

Facility	Segment	Comments	Length (miles)	Regional Costs* (2002 Dollars, Millions)	Volumes (ADT, thousands)			Phase
					2003	2015	2025	
Arterial Capacity Improvements								
101L	Princess Dr to Scottsdale Rd	Add frontage roads	2	20.1	NA	9.0	10.0	IV
Beardsley Rd	Loop 101 to Lake Pleasant Pkwy	Construct Roadway	3	20.1	NA	28.3	43.3	II
Black Mtn Pkwy	SR 51 to Blk Mtn Pkwy	Construct Roadway	1	19.3	NA	44.0	45.0	I
Broadway Rd	Dobson Rd to Country Club Dr	Widen to 6 lanes	2	6.3	31.0	37.0	42.0	I
Carefree Highway	Cave Creek Rd to Scottsdale Rd	4 lanes +median	2	8.1	14.0	16.0	25.0	IV
Crismon Rd	Broadway Rd to Germann Rd	Widen to 6 lanes	9	31.6	NA	26.5	32.0	IV
Dobson Rd	Salt River	Construct New Bridge	1	16.1	NA	37.0	37.0	I
El Mirage Rd	Bell Rd to Jomax Rd	Construct Roadway	6	16.9	9.5	20.8	30.0	III
El Mirage Rd	Paradise Ln over Grand Ave to Thunderbird Rd	Construct Roadway w/ Grade Separation	2	18.5	NA	29.0	39.0	I
El Mirage Rd	Thunderbird to Northern Ave	Widen and Improve Roadway	4	14.5	5.5	34.8	38.3	III
Elliot Rd	Power Rd to Meridian Rd	Widen to 6 lanes	6	15.7	7.6	20.8	29.5	IV
Germann	Ellsworth Rd to Signal Butte Rd	Widen to 6 lanes	2	10.9	2.0	10.0	39.0	IV
Gilbert Rd	Loop 202 (Santan) to Hunt Hwy	Widen Roadway	5	18.1	7.8	25.5	33.5	IV
Gilbert Rd	Salt River	Construct New Bridge	1	12.1	NA	28.0	51.0	II
Happy Valley Rd	Loop 303 to I-17	6 Lane Controlled Access	9	32.2	14.2	24.8	39.1	IV
Higley Rd Pkwy	US 60 to 202L (Red Mt.)	6 Lane Controlled Access	6	14.5	NA	20.3	22.8	III
Lake Pleasant Parkway	Beardsley to 303L	Corridor Improvements	6	48.3	3.0	21.5	37.6	II
McKellips Rd	E of Sossaman to Meridian Rd	Widen to 6 lanes	5	17.2	NA	19.4	38.8	IV
McKellips Rd	Gilbert Rd to Power Rd	Widen to 6 lanes	6	18.8	18.8	23.5	31.7	I
McKellips Rd	Salt River	Construct New Bridge	1	12.1	NA	38.0	39.0	II
McKellips Road	Loop 101 Pima - SRP-MIC	6 lanes inc. median	2	34.1	13.8	40.5	48.5	II
Meridian Rd	Baseline Rd to Germann Rd	Construct 6 lane Roadway	7	25.4	NA	15.1	32.3	III
Mesa Dr	Broadway Rd to US 60	Widen to 6 lanes	2	8.1	33.4	41.0	44.0	I
Northern Ave	Grand Ave to Loop 101	Grand connection and ultimate const	4	75.0	16.0	49.0	61.0	IV
Northern Ave	Loop 101 to Dysart Rd	L101 connection and ultimate const	4	75.0	7.8	58.0	61.0	III
Northern Ave	Dysart Rd to Loop 303	R/W Protection and interim roadway	4	50.0	2.0	35.0	47.0	I
Pima Rd	Deer Valley to Cave Creek Road	4 lanes inc. drainage and ITS	9	92.6	24.2	25.5	24.6	IV
Pima Rd	S. City Limits to 90th St	4 lanes, ITS	8	26.6	NA	34.4	35.8	II
Power Rd	Baseline Rd to Williams Field Rd	Widen to 6 lanes	5	15.7	NA	25.4	39.2	IV
Price Rd Extension	Loop 202 to I-10	Construct Roadway	6	48.3	NA	35.0	41.2	III
Queen Creek Rd	Arizona Ave to Power Rd	Widen Roadway	9	32.6	10.0	36.0	43.8	III
Ray Road	Sossaman Rd to Meridian Rd	Construct 4/6 lane Roadway	5	21.7	NA	14.2	37.8	IV
Rio Salado Pkwy	7th St to Loop 202 (SM)	Construct Roadway	7	38.6	NA	45.4	54.1	II
Runway Tunnel	Scottsdale Airport	Construct Tunnel under runway	1	32.2	NA	44.0	50.0	III
Scottsdale Rd	Thompson Peak to Carefree Hwy	6 lanes inc. drainage and ITS	9	36.2	30.5	32.8	39.6	I
Shea Blvd	Palisades Blvd to Saguaro Blvd	6 lanes +median	3	5.2	21.0	34.0	40.7	I
Shea Blvd	Loop 101 to SR 87	Corridor Improvements	12	20.1	38.0	48.5	55.3	I
Sonoran Pkwy	Central to 32nd Ave	Construct Roadway	4	28.2	NA	33.3	51.3	III
Southern Ave	Country Club Dr to Recker Rd	Widen to 6 lanes	8	26.7	NA	33.6	44.6	I
Southern Ave	Sossaman Rd to Meridian Rd	Widen to 6 lanes	5	15.7	8.7	19.6	35.8	IV
Thomas Rd	Gilbert Rd to Val Vista Dr	Construct 4 lane Roadway	2	4.8	NA	27.5	35.5	I
University Dr	Val Vista Dr to Hawes Rd	Widen to 6 lanes	6	18.8	21.1	15.3	24.3	IV
Val Vista Dr	University Dr to Baseline Rd	Widen to 6 lanes	3	9.4	NA	37.0	42.0	III
<i>Sub-total</i>					\$1,112.5			
Intersection Improvements (Only)								
Chandler Blvd/Alma School		Improve intersection		3.2		30.0	40.5	III
Chandler Blvd/Dobson		Improve intersection		3.2		32.0	40.5	II
Chandler Blvd/Kyrene		Improve intersection		3.2		26.5	34.5	III
Elliot/Cooper		Improve intersection		3.2		31.5	35.5	II
Elliot/Gilbert		Improve intersection		3.2		27.0	31.5	III
Elliot/Val Vista		Improve intersection		3.2		25.0	32.5	IV
Guadalupe/Cooper		Improve intersection		3.2		34.0	37.5	I
Guadalupe/Gilbert		Improve intersection		3.2		30.5	36.5	II
Guadalupe/Val Vista		Improve intersection		3.2		27.5	34.5	III
Higley Rd Pkwy	US 60 to 202L (Red Mt.)	Construct 3 Grade Separations		24.2		20.3	22.8	III
Ray / Alma School		Improve intersection		3.2		36.5	42.0	I
Ray/Dobson		Improve intersection		3.2		35.5	43.0	I
Ray/Gilbert		Improve intersection		3.2		29.0	38.0	III
Ray/McClintock		Improve intersection		3.2		31.0	36.5	II
Ray/Rural		Improve intersection		3.2		27.5	34.5	III
<i>Sub-total</i>					\$69.2			
Total					\$1,181.7			

ADT: Average Daily Traffic

* Includes 15% contingency allowance and 30% local match.