CHAPTER 1
Purpose and Need

PURPOSE OF THE DOCUMENT

The Arizona Department of Transportation (ADOT), the project sponsor, working in close consultation with the Federal Highway Administration (FHWA), the lead federal agency for the proposed action, and in cooperation with the U.S. Army Corps of Engineers (USACE), the U.S. Bureau of Indian Affairs (BIA), and the Western Area Power Administration (Western), has prepared this Draft Environmental Impact Statement (DEIS) and Section 4(f) Evaluation in accordance with:

- the National Environmental Policy Act (NEPA) of 1969 [42 United States Code (U.S.C.) § 4332(2)(c)]
- Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 U.S.C. § 303, as amended)
- Section 404 of the Clean Water Act of 1977 (33 U.S.C. § 1251)

The DEIS and Section 4(f) Evaluation 1) satisfies FHWA and ADOT's environmental analysis requirements; 2) provides a comparison of the social, economic, and environmental impacts that may result from implementation of the proposed action—construction and operation of a major transportation facility; and 3) identifies measures to avoid, reduce, or otherwise mitigate adverse impacts. The DEIS includes sufficient preliminary design information to compare alternatives.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was passed into law on August 10, 2005. This legislation addresses improving transportation safety, reducing traffic congestion, improving freight movement efficiency, increasing intermodal connectivity, and protecting the environment. Moving Ahead for Progress in the 21st Century (MAP-21) was passed into law on July 6, 2012. This legislation creates a streamlined performance-based surface transportation program. The South Mountain Freeway Environmental Impact Statement (EIS) was initiated prior to the passage of SAFETEA-LU and MAP-21 and is not subject to their procedural directives. Certain aspects of the legislations have, however, been incorporated within this document.

PURPOSE OF THE CHAPTER

A major transportation facility (the South Mountain Freeway) has been included in past and current regional transportation planning efforts. At the beginning of the EIS process, the need for a major transportation facility was reexamined to determine whether such a facility is still needed.

Sections of the chapter are presented to provide the reader an overall understanding of the analyses used to determine the purpose and need for the proposed action. Table 1-1 on the following page provides a summary of topics, content, and intended benefit to the reader.

CONTEXT OF PURPOSE AND NEED IN THE EIS PROCESS

An early step in preparing an EIS is to determine whether there is a purpose and need for the proposed action (see sidebar on this page regarding purpose and need content guidance). If the lead agency concludes through analysis that there is no need, an EIS would not be prepared. If the lead agency concludes through analysis that there is a need, the EIS process would continue with evaluation of a range of reasonable alternatives for a transportation facility in the Study Area. The Study Area for this proposed action has been defined as the southwestern portion of the Phoenix metropolitan area (see Figure 1-1).

The analysis used to determine the possible purpose and need for the proposed action followed FHWA guidance. The following may assist in explaining some items to be considered in establishing the purpose and need for a proposed action. They are not intended to be all-inclusive; they are intended as guides.

- **Capacity** – Is the capacity of present facilities adequate for the present and/or projected traffic? What capacity is needed? What are the existing and proposed facilities' current and/or projected level(s) of service (LOS) (see text box on page 1-14)?
- **Transportation demand** – Is the proposed action related to any statewide plan or adopted urban transportation plan? Are the proposed action's traffic forecasts substantially different from those estimates from the region's transportation planning process?
- **Social demands or economic development** – What projected socioeconomic, demographic, and/or land use changes indicate the need to improve or add to the transportation system capacity?

A proposed action's purpose and need documentation should:

"Identify and describe the proposed action and the transportation problem(s) or other needs which it is intended to address (40 Code of Federal Regulations [C.F.R.] § 1502.13). This section should clearly demonstrate that a 'need' exists and should define the 'need' in terms understandable to the general public. This discussion should clearly describe the problems which the proposed action is to correct. It will form the basis for the 'no action' discussion in the 'Alternatives' section, and assist with the identification of reasonable alternatives and the selection of the preferred alternative. Charts, tables, maps, and other illustrations (e.g., typical cross-section, photographs, etc.) are encouraged as useful presentation techniques."

Source: FHWA Technical Advisory T 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (U.S. Department of Transportation, T-FHWA, 1987)

Attention readers!

Acronyms, abbreviations, a glossary, a list of preparers, references, and an index can be found in the back of the DEIS.

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Table 1-1 Purpose and Need Content Summary, Chapter 1

Topic	Page	Highlights	Reader Benefit
Context of Purpose and Need in the EIS Process	1-1	• Context of purpose and need in the EIS[a] process • Context of the proposed action relative to the ADOT[b] mission	• An understanding of the issues and factors considered in assessing the proposed action's purpose and need • General guidance on how to assess the purpose and need for a proposed action • An understanding of the documentation of the proposed action's purpose and need as a step in the EIS process • An understanding of ADOT's obligation to Arizona citizens in relation to meeting transportation needs
Project Location, Description, and Current Status	1-4	• Overview of proposed action location and description • Establishment of the proposed action as a distinct action • Definition of the RTP[c]	• Orientation of the reader to the Study Area • Information the reader can use regarding a major transportation facility in the context of the region's current transportation planning
Historical Context of the Proposed Action	1-5	• Factors contributing to growth of the region • Historical population, employment, and housing growth rates • Evolution of the region's transportation network and its relationship to the proposed action • Transportation planning in conjunction with the region's growth • Voter support relative to transportation planning efforts	• An understanding of the region's historical growth patterns and factors contributing to that growth • Identification of the stakeholders responsible for regional planning efforts • An understanding of how the idea for the proposed action originated and how it evolved over time • The role of the public in regional transportation planning efforts in recent history through voter approval and regional transportation plan development
Context of the Proposed Action in Current Regional Transportation Planning	1-9	• The proposed action as part of the RTP	• An understanding of the proposed action as one of many interdependent components that make up the planned transportation network in the MAG[d] region • An understanding of the proposed action as a key piece of the RTP since the mid-1980s
Need Based on Socioeconomic Factors	1-11	• Projected population, housing, employment, and vehicle miles traveled • Relationship of the proposed action to projected growth	• An understanding of the region's projected growth patterns and factors contributing to the growth • An understanding of why a major transportation facility is needed in this area of the MAG region
Need Based on Regional Transportation Demand and Existing and Projected Transportation System Capacity Deficiencies	1-13	• Existing traffic conditions in the Study Area and immediate surroundings • 2035 forecast traffic conditions in the Study Area and immediate surroundings	• An understanding of 2010 and 2035 traffic volumes on freeways and arterial streets in the region and Study Area • An understanding of 2010 and 2035 operational characteristics of the region's transportation network • An understanding of 2010 and 2035 travel times at representative locations in the region • An understanding of projected deficiencies in the planned transportation network
Conclusions	1-21	• Determination of need for a major transportation facility	• Summary of the conclusions reached regarding the need for a major transportation facility in the Study Area

[a] environmental impact statement [b] Arizona Department of Transportation [c] *Regional Transportation Plan* [d] Maricopa Association of Governments

The chapter analyzes these questions to determine whether purpose and need for the proposed action exist. A conclusion section, presented at the end of the chapter, summarizes findings regarding the proposed action's purpose and need.

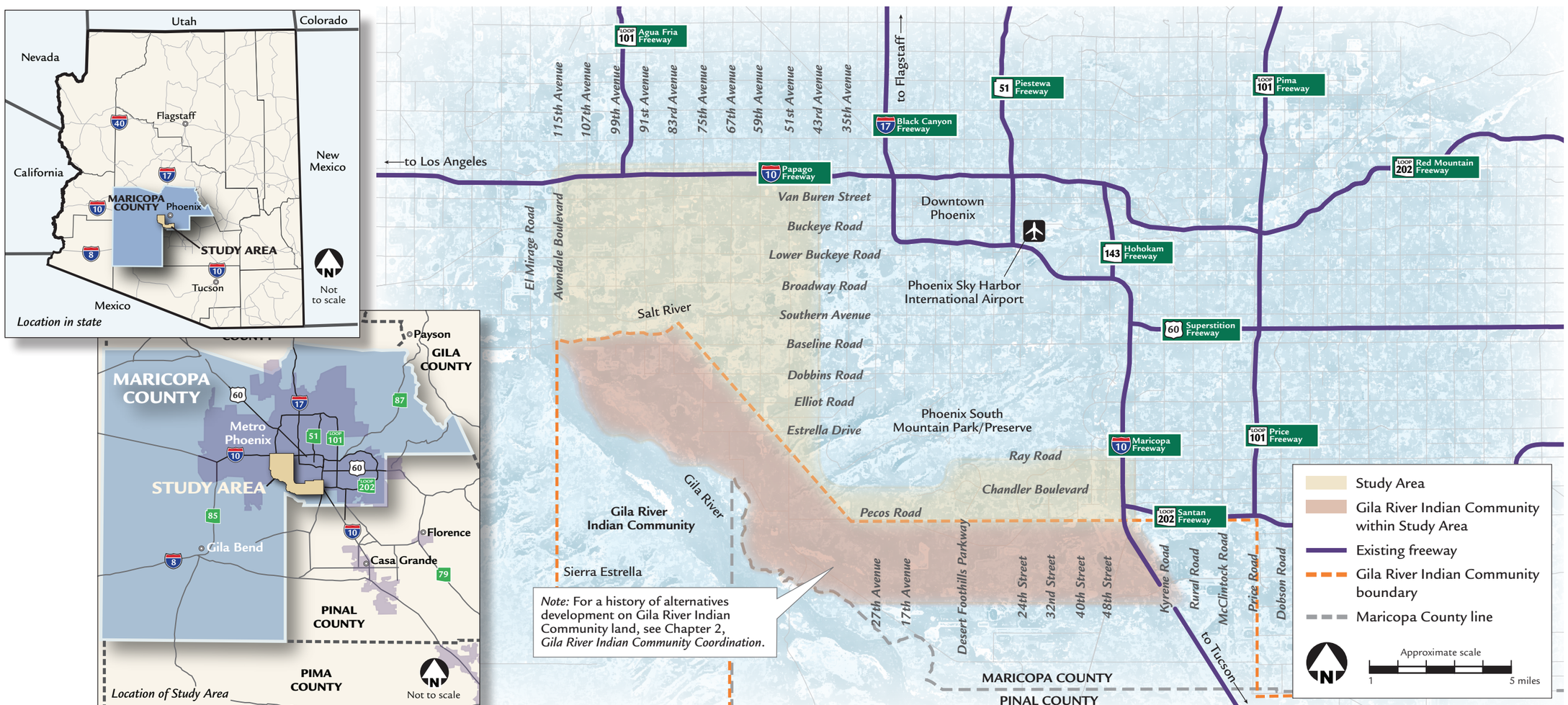
Context of the Proposed Action Relative to the ADOT Mission

ADOT's mission is to provide a safe, efficient, cost-effective transportation system that links Arizona to the global economy, promotes economic prosperity, and demonstrates respect for Arizona's environment and quality of life. Its stated goals relating to the proposed action are to:

- improve the movement of people and products throughout Arizona
- increase the quality, timeliness, and cost-effectiveness of ADOT's products and services
- optimize resource use
- enlist public and political support necessary to meet Arizona's transportation needs

ADOT's mission and stated goals are important in the context of determining the purpose and need for the proposed action. As the project sponsor, ADOT is obligated to continue to study the proposed action if analysis concludes there is purpose and need for the action.

Figure 1-1 Study Area



The Study Area for the proposed action encompasses the southwestern portion of the Phoenix metropolitan area.

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What are logical termini and independent utility?

Logical termini refer to rational end points for a transportation project and for a review of environmental impacts. Often, termini are points of major traffic generation, such as intersecting roads or major population centers, but other rationales can support determination of logical termini for a project. Such considerations include establishing a corridor of sufficient length to compare a range of alternatives and ensuring the project will not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

Independent utility means the ability of the proposed action to function independently of other planned transportation-related projects in the region.

The proposed facility must be usable and be a reasonable expenditure even if no additional transportation improvements are made within the area.

How are MAG data used in the DEIS?

As a key stakeholder and data source for the project, MAG has provided critical resources for compiling background information and developing data for the DEIS analyses. To identify the use of MAG resources, three forms of citation are used throughout this document:

- This citation is used when information was extracted directly from a MAG-developed document.
  Source: Maricopa Association of Governments, year
- This citation is used when data are presented as received from MAG.
  Source: Maricopa Association of Governments, year; used with permission
- This citation is used when analysis was performed using MAG data as inputs.
  Source: Maricopa Association of Governments, year; extrapolated analysis

PROJECT LOCATION, DESCRIPTION, AND CURRENT STATUS

Location and Description

The geographic area for which a major transportation facility has been identified in the past is in the southwestern portion of Maricopa County, Arizona (see Figure 1-1). The general area includes the southern and western city limits of Phoenix, Arizona. The logical termini (see sidebar on this page) for a project in the area are:

- In the west, Interstate 10 (I-10, Papago Freeway) is a major east–west Interstate highway and a major transportation corridor serving regional and interstate travel. The project would terminate at I-10 between 115th Avenue/Avondale Boulevard (milepost 131.7) and 43rd Avenue (milepost 140.7).
- In the east, State Route (SR) 202L (Santan Freeway) and I-10 (Maricopa Freeway) are major transportation corridors serving regional and interstate travel. The project would terminate near the system traffic interchange (see discussion of traffic interchanges, on page 3-48) connecting those freeways at milepost 161.3 on I-10.

Current Status of the Proposed Action

A major transportation facility (the South Mountain Freeway) has been included in the Maricopa Association of Governments' (MAG, see text box on this page) adopted transportation planning documents since 1985 and is in the current MAG *Regional Transportation Plan* (RTP, see text box on next page). Since 1985, the South Mountain Freeway has also been part of long-range planning efforts of local jurisdictions (e.g., the City of Phoenix) throughout the Study Area. Adopted in 2003 and last updated in 2010, the RTP is a comprehensive regional multimodal plan that addresses needs for all transportation modes and for planned transportation improvements in the MAG region beginning in 2006 and ending in 2026. Figure 1-2 illustrates the freeway network as proposed in 1985 and as presented in the

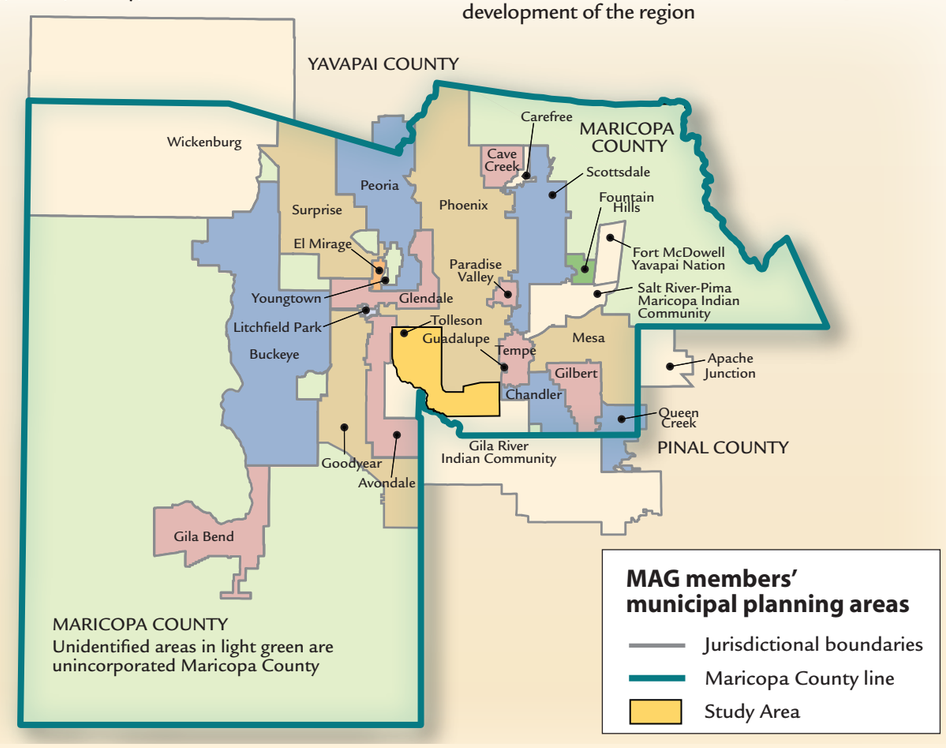
What Is the Maricopa Association of Governments?

MAG was created in 1967 to foster regional cooperation and address regional challenges in the greater Phoenix metropolitan area. In 1973, MAG became the designated metropolitan planning organization for regional planning in the Maricopa County region. Its current membership includes Maricopa County and the 25 incorporated towns and cities and 3 Native American Indian communities within Maricopa County and the contiguous urbanized area. ADOT and the Citizens Transportation Oversight Committee serve as ex-officio members for transportation-related issues.

MAG is at the service of its members (the local governments and citizens in the region); the association does not make decisions on behalf of its members without member majority approval. By fostering communication, planning, policymaking, coordination, advocacy, and technical assistance, MAG serves to facilitate and create an environment for its members to address issues and needs that cross city, town, county, and even state boundaries.

The Articles of Incorporation for MAG state that the association was formed to:

- provide a forum for discussion and study of regional problems of mutual interest to the governments in the region
- ensure, through cooperation and the pooling of common resources, maximum efficiency and economy in governmental operations that will provide every citizen with the utmost value for every dollar expended
- identify and comprehensively plan for the solution of regional problems (including transportation) requiring multicity, town, and county cooperation
- facilitate agreements among the governmental units for specific projects or other interrelated developmental actions or for the adoption of common policies with respect to problems common to its members
- attain the greatest degree of intergovernmental cooperation possible to prepare for future growth and development of the region



Note: MAG serves member agencies whose jurisdictions include those in Maricopa County and some whose jurisdictions extend into portions of Pinal and Yavapai counties.

Source: Maricopa Association of Governments, 2006a

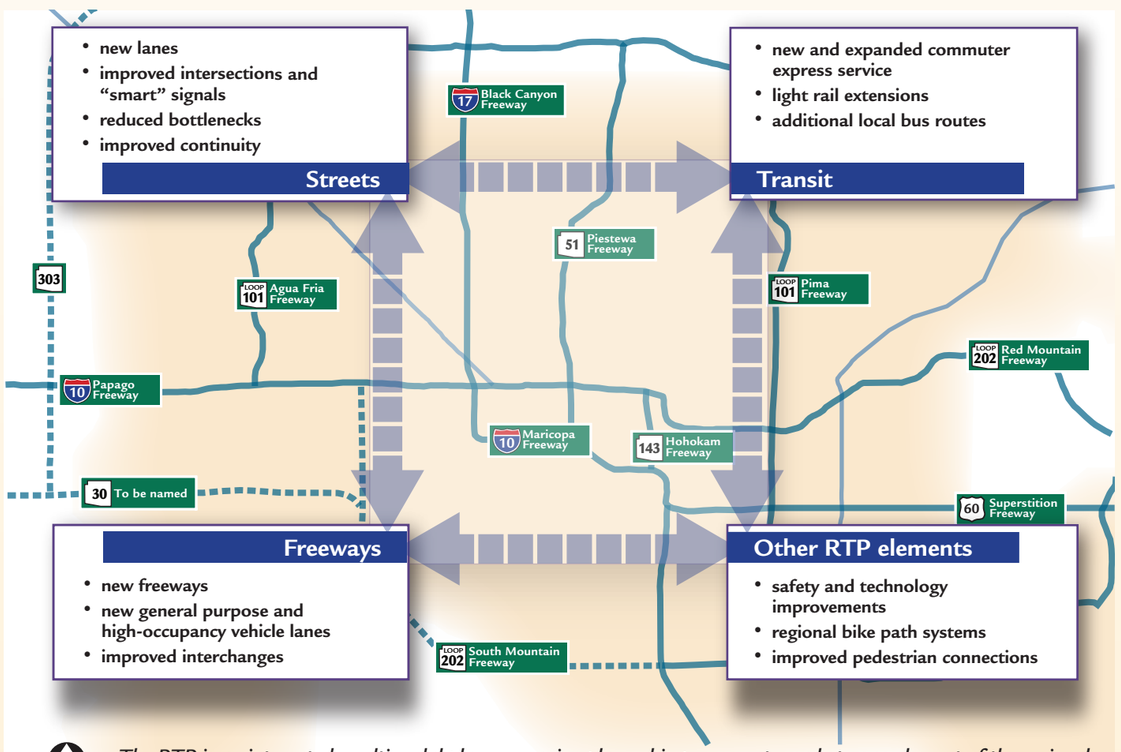
What Is the *Regional Transportation Plan?*

The result of a major planning effort initiated in 2001 and completed in late 2003, the RTP provides a broad, integrated vision for the regional transportation system through 2026, addressing freeways, streets, transit, airports, bicycle and pedestrian facilities, freight, demand management, system management including intelligent transportation systems, and safety. The plan received unanimous support from the MAG Transportation Policy Committee, approval from the MAG-appointed Regional Council, and successful passage of federally required air quality conformity tests. The plan includes only projects for which funding is available or is reasonably expected. Every 5 years through the life of the plan, the RTP will be reevaluated, giving consideration to new information, RTP adjustments, and relevant new studies.

As the "blueprint for future transportation investments in the region for the next several decades" (MAG 2003), the RTP is a performance-based, integrated plan that recognizes different transportation needs in different areas of the MAG region. The planning process for the RTP, among other things, included:

- evaluation of the region's population, economic, and planned land use development trends
- analysis of the condition of the transportation system
- assessment of transportation needs for its 20-year planning horizon
- identification of transportation investments to best meet future regional needs

MAG members consider the RTP to be vital in addressing transportation needs in response to and in support of continued growth and economic sustainability in the MAG region. The Regional Freeway and Highway System, an integrated system of beltway and arterial freeways, is a principal component of the RTP.



The RTP is an integrated, multimodal plan—meaning planned improvements made to one element of the regional transportation system provide benefits to and improve operation of the entire system.

current RTP. Some notable observations pertaining to Figure 1-2 are:

- The Grand Avenue portion of U.S. Route 60 (US 60) is maintained as a major arterial street, providing access to most intersecting streets and some access to adjacent properties.
- The 1985-proposed Paradise Parkway is no longer included in the RTP.
- Most of SR 202L is completed and operating.
- The general location for the South Mountain Freeway has remained unchanged since 1985.

The decision to study the proposed action in this document is based on logical termini, sufficient length, independent utility, projected travel needs, and construction priorities. This document recounts the analysis used to determine whether the proposed action could meet regional transportation needs in an environmentally acceptable manner and at a reasonable cost.

HISTORICAL CONTEXT OF THE PROPOSED ACTION

Over the course of its Euro-American history, the Phoenix metropolitan area has experienced continuous growth. Several factors have substantially contributed to the area being a popular destination for people and industry, and several of these factors are expected to contribute to the area's future growth. It is important to understand:

- how these factors have driven growth and will continue to drive growth
- how much of the historic growth occurred without the presence of a freeway system
- how this growth, in turn, has driven the need for transportation infrastructure
- how a major transportation facility would be part of an integrated response to both historical and projected growth

What is the MAG regional travel demand model?

The traffic assessment for the Study Area employed the MAG travel demand model (TransCAD software platform), as certified by FHWA and reviewed by the U.S. Environmental Protection Agency (EPA) for air quality conformity. The model projects demand for multiple modes of travel, including automobile, bus, and light rail. Key model inputs used to forecast travel demand included:

- socioeconomic data based on the adopted general plans of MAG members, along with population and economic forecasts and the existing and planned transportation infrastructure as identified by MAG members
- the anticipated average number of vehicle trips within the region (including those to and from the region's households) on a daily basis (this number is monitored regularly by MAG)
- the distribution of transportation modes used by travelers in the MAG region (also monitored regularly by MAG)
- the capacity of the transportation infrastructure to accommodate regional travel
- the future transportation infrastructure established using RTP-planned projects and improvements and from known arterial street network improvements assumed to be made by the County, Cities, and private developers

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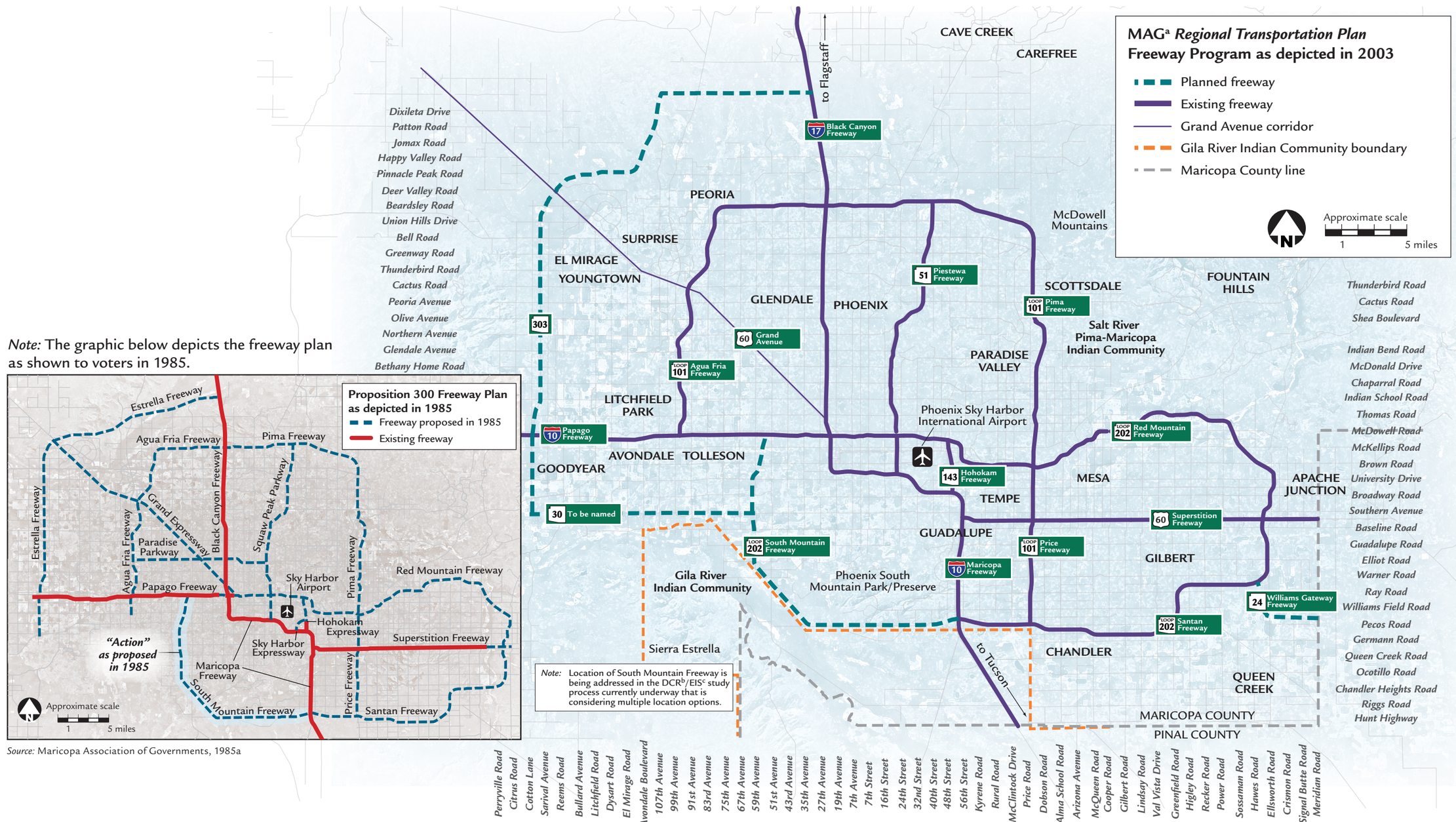
Figure 1-2 Maricopa Association of Governments Regional Freeway and Highway System, 1985 and 2003



Source: Maricopa Association of Governments, 1985a

Source: Maricopa Association of Governments, 2003; extrapolated analysis

[a] Maricopa Association of Governments [b] design concept report [c] environmental impact statement

Since 1985, the Maricopa Association of Governments Regional Freeway and Highway System has been constructed in reaction to economic and population growth. The South Mountain Freeway has remained an integral part of the region's planned freeway system—a combination of loop or belt routes and freeway arteries to, from, and around the urban core. The general location for the South Mountain Freeway has remained unchanged since 1985. The inset portrays the map conveyed to Maricopa County voters pertaining to the passage of Proposition 300 in 1985 (see sidebar on page 1-9 regarding Proposition 300).

Figure 1-3 Westward Ho Hotel, 1939

Source: www.acmeron.com

As photographed in 1939, the Westward Ho Hotel depicts some of the initial tourism infrastructure in Phoenix.

From the city's inception to the mid-1900s, resources specific to the region and its strategic location drove growth in the valley. Agriculture, mining, and product distribution drove economic opportunity and population growth during this period. In the early 1900s, completion of a series of dam projects resulted in controlled flows of the Salt River that allowed the community's agricultural industry to prosper. This era was a turning point in the area's economic base:

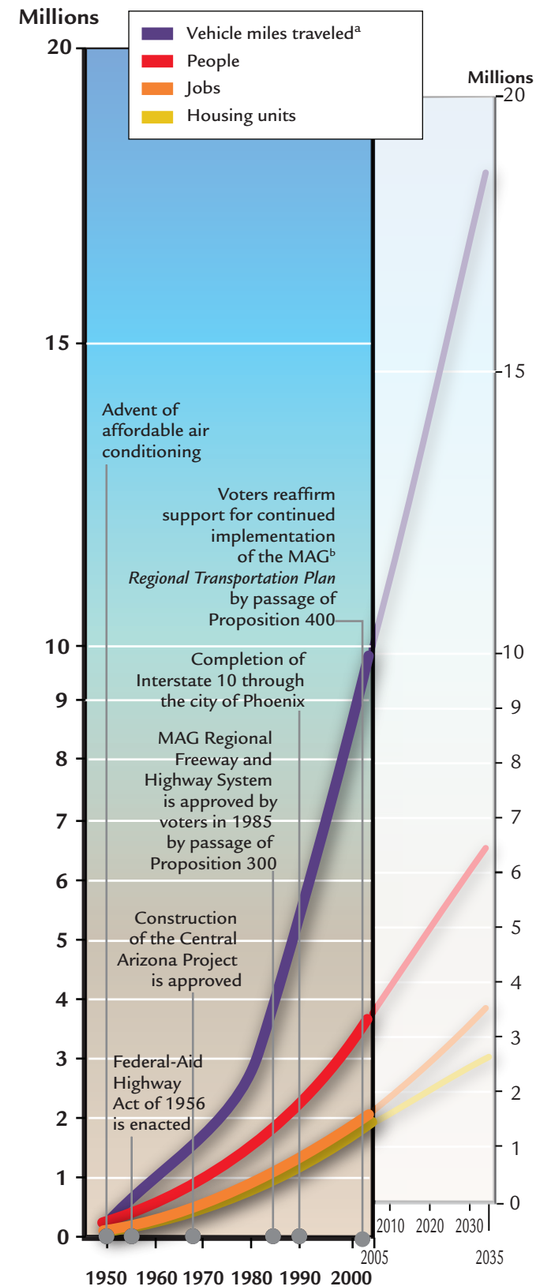
- Additional rail lines were completed, allowing other industries to settle in the region.
- Because of the area's desirable climate and desert setting, tourism was established as a primary economic force, as evidenced by the openings of the Arizona Biltmore Hotel and the Westward Ho Hotel in 1929 (see Figure 1-3), which coincided with the first scheduled commercial flights between Los Angeles and Phoenix. Tourism remains a key economic driver.
- Climate and terrain also made the region suitable for military training purposes. In response to the World Wars, military facilities such as Luke Field, Williams Field, Falcon Field, and related ground training centers were built in the area.
- In 1948, Motorola opened its first Phoenix research and development center for military electronics. Other related businesses (e.g., Intel, McDonnell Douglas) later established operations in the area.

By 1950, 105,000 people lived in Phoenix, with thousands more settling adjacent to its city limits. From approximately 1900 to 1950, the population had grown by more than 1,800 percent. During that time frame, automobiles became more affordable. The arterial street network grew in support: in 1950, 311 miles of the arterial street grid had been developed.

While the region remained a popular and desirable place to live, certain factors continued to inhibit the rate of growth. This changed, starting in the 1950s:

- The use of affordable air conditioning in homes and businesses became widespread and dramatically increased the livability of the area. In 1959 alone, the city of Phoenix experienced more construction than in the previous 30 years.
- The Federal-Aid Highway Act of 1956 called for the creation of the nation's 42,500-mile national Interstate Highway System (it would not be until 1990 that

Figure 1-4 Growth Rates, 1950–2000



[a] vehicle miles traveled reduced to one-tenth of their actual values to facilitate comparison of growth rates on the same axis
[b] Maricopa Association of Governments

Sources: 1950–2000 U.S. Census; Maricopa Association of Governments, 2007a and 2009b

What kind of travel occurs on roads in the MAG region?

Motorists in the MAG region have different purposes for traveling on the region's road network. Generally, travel in the MAG region can be categorized into three travel types:

- Local travel is generally short trips to nearby residences, businesses, or some centers of "activity." Local travel makes up a large portion of the total travel because of the higher frequency of these trips. Local travel is predominantly served by arterial streets and neighborhood collector streets.
- Regional travel is generally longer trips to regional employment and entertainment centers. Commuting is often associated with regional trips. Regional travel makes up a large portion of the total travel in the MAG region. Regional travel is predominantly served by freeways and secondarily by major arterial streets.
- Intrastate and interstate travel generally includes the longest trips between major population centers across the state and to other states. This form of travel is predominantly served by Interstate and state highways.

Road networks in metropolitan areas are often planned and designed to accommodate these different travel needs.

In recent years, the Maricopa Association of Governments region has maintained some of the fastest population, housing, and employment growth rates in the country. The growth rate of vehicles miles traveled has, however, continually outpaced these growth trends.

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The National Highway System

The National Highway System consists of roadways important to the nation's economy, defense, and mobility. It features the following subsystems:

- **Interstate: The Eisenhower Interstate System of highways retains its separate identity within the National Highway System.**
- **Other principal arterials: Highways in rural and urban areas that provide access between an arterial and a major port, airport, public transportation facility, or other intermodal transportation facility.**
- **Strategic Highway Network: A network of highways that is important to the United States' strategic defense policy and that provides access, continuity, and emergency capabilities for defense purposes.**
- **Major strategic highway network connectors: Highways that provide access between major military installations and highways in the Strategic Highway Network.**
- **Intermodal connectors: These highways provide access between major intermodal facilities and the other four subsystems making up the National Highway System.**

Within Arizona, portions or all of US 60, US 89, US 93, US 95, and US 160; portions of SR 85, SR 87, SR 90, SR 95, and SR 260; and the entire Regional Freeway and Highway System are important and substantial links in the National Highway System.

For further information, see the Web site, <www.fhwa.dot.gov/planning/national_highway_system/>.

the region would receive its full benefit, with the completion of I-10 through central Phoenix).

- In 1968, a bill approving the construction of the Central Arizona Project was signed, essentially ensuring a long-term supply of water to central Arizona.

With the culmination of enhanced livability, improved access, and assurance of long-term water supply, the population in Maricopa County reached about 700,000 in 1960, just under 1 million in 1970, and just over 1.5 million in 1980 (see Figure 1-4)—all of this growth occurred without the presence of a single freeway. To summarize, from the early 1950s to the mid-1990s, population grew by over 500 percent. (The population in the United States as a whole grew by approximately 70 percent during this time period.)

To address transportation needs in response to the growth, the system of local arterial streets was continually expanded. But growth in the latter half of the 1900s created new challenges—ones that were regional in context. In response, MAG was formed. One of these regional challenges related directly to transportation. With growth, mobility needs expanded from local and interstate to include regional travel (see sidebar regarding travel in the region on previous page). In fact, since the 1940s, annual growth in vehicle miles traveled (VMT, see sidebar on page 1-13) in the MAG region has continued to exceed population growth (see Figure 1-4). The arterial street network that had served transportation needs well was no longer able to meet all the needs and demands of the driving public.

With the ongoing construction of the nation's Interstate Highway System, the concept of a circumferential, or loop, freeway system around the city of Phoenix was introduced. In 1960, a study was published by the U.S. Department of Commerce Bureau of Public Roads for the Arizona State Highway Commission. The study, *A Major Street and Highway Plan, Phoenix Urban Area, Maricopa County*, examined the relative merits of various major street and highway layouts for the urban area and its surroundings. In this study, recommendations were made to plan for outer-belt/loop-highway routes (over the existing arterial street grid) to collect and distribute external and regional traffic from other elements of the transportation system.

The challenge before MAG members was to design an integrated intermodal transportation network to accommodate the region's future transportation needs. In the early 1980s, planners from the local jurisdictions that compose MAG membership evaluated transportation needs in the region. The need for a major transportation facility in the Study Area was first identified in the 1983 *Southwest Area Transportation Study*. In 1985, the MAG Regional Council recommended the final elements of a freeway system to go to the voters for funding through a one-half cent sales tax.

The 232-mile freeway system proposed in 1985 eventually became the Regional Freeway and Highway System. Not unlike many urban freeway systems being planned and constructed in several major cities across the country, the proposed system was to be a series of belt, or loop, highways around the major urban core with major freeway arterials into the urban core of Phoenix. As part of the National Highway System (see sidebar on this page), the system would supplement the urban Interstate Highway System's arterial function—mainly, the role served by I-10 in moving large volumes of intracity and regional traffic. When integrated with the urban Interstate system and major arterial street system, the loop highways would complete a surface transportation system that would:

- reduce increasing congestion on the Interstate Highway System in the urban core
- facilitate and more effectively distribute the regional movement of goods and delivery of services
- more evenly distribute traffic on the major arterial street grid and reduce regional traffic using the grid
- better serve already-occurring regional traffic
- provide an alternate route for pass-through traffic
- provide an integrated intermodal network of freeways strategically located to accommodate local and regional land use planning
- enhance local mobility by removing regional traffic from the local road network
- create infrastructure to support the regional bus transit system component of the intermodal *Long-Range Transportation Plan* (LRTP) (MAG 2001a)
- encourage and direct planned growth

A major element of the region's freeway loop, or beltway system, traversed the Study Area and was originally called the Southwest Loop. It was an integral piece of the Regional Freeway and Highway System approved by Maricopa County voters in the 1985 one-half cent sales tax referendum. The Regional Freeway and Highway System plan was included as a key component in the LRTP.

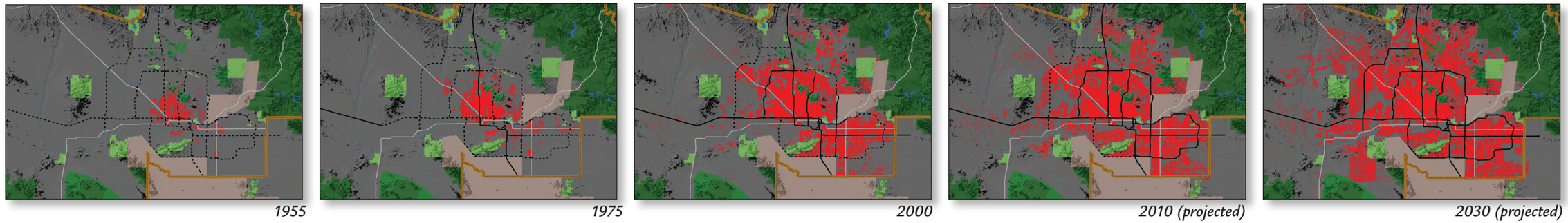
Subsequent location/design and State-level environmental studies were conducted by ADOT for Regional Freeway and Highway System segments. Additional studies were prepared to examine other alternatives in the Study Area. Examples of other studies include:

- *Southwest Loop Highway (SR 218) Final Environmental Assessment* (ADOT 1988a)
- *Southwest Loop Highway (SR 218) Design Concept Report* (ADOT 1988b)
- *Alignment Recommendation, South Mountain Corridor Loop 202* (Arizona Transportation Group and South Mountain Community Highway Association 1997)

The 1988 State-level environmental assessment (EA) and design concept report (DCR) were prepared for what was then known as the South Mountain Freeway. This same route (now designated as part of SR 202L) was approved by the State Transportation Board (STB) in 1988. All these studies provided sufficient design detail to establish an adopted and publicized location for the freeway. The 1988 freeway plan outlined a six-lane freeway.

The Regional Freeway and Highway System has been constructed sequentially to meet the most pressing transportation needs in the MAG region and as funds have become available. Consequently, freeway construction followed geographic patterns of development and population growth. High-growth areas historically were in the northeastern, northwestern, southeastern, and central areas of the MAG region (see Figure 1-5). Available funds were used to build Regional Freeway and Highway System segments in those areas, and completing the Regional Freeway and Highway System in the Study Area (southwestern quadrant of the greater Phoenix metropolitan area) has been a lower priority.

Figure 1-5 Historic and Projected Population Distribution, 1955–2030, Phoenix Metropolitan Area



Source: Maricopa Association of Governments, 2008a; used with permission

Red area depicts areas of high population density. Population has spread throughout the region, starting from downtown Phoenix, moving to the north and east and eventually to the west. This more recent westward trend in the geographic distribution of population densities is expected to continue. For additional information regarding population growth in the region, see the section, Population and Employment, *beginning on page 4-20. (The black dashed and solid lines depict the locations of regional and Interstate freeways in the region. They are shown here as locational aids to the reader.)*

During initial implementation of the Regional Freeway and Highway System, population growth in the MAG region continued at a rapid pace. From 1980 to 2005, the population of Maricopa County more than doubled, from 1.5 million to 3.7 million. The MAG region has been one of the fastest-growing metropolitan areas in the United States; by population, Phoenix is the fifth-largest city in the country and the region ranks as the 12th-largest metropolitan area in the country (U.S. Census Bureau 2011).

The number of housing units and the employment base in the region have maintained a similar growth rate. As of 2005, almost 1.5 million housing units (including homes and apartments) were in Maricopa County (MAG 2007a). Employment in Maricopa County increased at a high rate. Between 1980 and 2005, total employment increased by over 1 million jobs, from 690,000 to 1.7 million jobs. In general, the employment base in the region has outpaced the national average. For example, for the 10-year period beginning in 1984, employment in the region increased by 49 percent while the national gain was 24 percent. Employment growth rates from 1970 through the mid-1980s (the period prior to the conception of the Regional Freeway and Highway System) were equal to the growth rates from 1985 to 2005.

Projections of what the region is expected to look like in terms of population, housing, and employment are described in the section, *Need Based on Socioeconomic Factors*, beginning on page 1-11.

While growth continued, ADOT, on behalf of MAG, moved toward completing the Regional Freeway and Highway System. By 2001, ADOT had completed 120 miles of the originally planned 232-mile Regional Freeway and Highway System. Further, the one-half cent transportation sales tax approved in 1985 was set to expire at the end of 2005. In response, in late 2004, a referendum (Proposition 400) to extend the one-half cent sales tax for another 20 years was placed before and approved by Maricopa County voters (see sidebar regarding Propositions 300 and 400 on this page). The funds to be generated by this tax are planned to ensure completion of the remaining segments of the Regional Freeway and Highway System and to support other regional transportation projects as programmed in the RTP. The 2003 RTP and its annual updates serve as the "next generation" of the LRTP.

In this context, the following conclusions can be made:

- Historical, rapid growth in population, employment, and housing has been driven by mild climate, affordable cost of living, and economic opportunities.
- With regional growth came regional mobility needs. Motorists who earlier had only local or intra-/interstate travel needs wanted to be able to travel efficiently and conveniently within the region.
- The region's transportation infrastructure evolved in response to growth to one that included a regional freeway system to meet these regional needs.
- Planning continued for one of the "missing" Regional Freeway and Highway System segments: the South Mountain Freeway.

CONTEXT OF THE PROPOSED ACTION IN CURRENT REGIONAL TRANSPORTATION PLANNING

According to Arizona Revised Statutes (A.R.S.) § 42-6105E, the Transportation Policy Committee (TPC) is mandated to develop a plan to readdress long-range transportation needs in the region and to do so in cooperation with the Regional Public Transportation Authority (RPTA) and ADOT. The TPC is a public-private partnership established by MAG. It consists of a cross section of MAG member agencies and representatives from business, transit, freight, the Citizens Transportation Oversight Committee, and ADOT. From TPC recommendations, the RTP evolved; it was submitted to the MAG Regional Council for final adoption in 2003. In preparing the RTP, MAG offered 150 public input opportunities and held 117 agency meetings and 173 stakeholder meetings. Opportunities for public input included expert panels, focus groups, special events and workshops, and public hearings (see the MAG Web site, <www.azmag.gov>, for additional information).

What do the results of Propositions 300 and 400 tell us?

Voter approval of the one-half cent sales tax in 1985 (Proposition 300) and its continued endorsement in 2004 (Proposition 400) underscore continued public support for investment in regional transportation projects. Results from the Maricopa County Official Canvas (Maricopa County 2004a) indicate voters in 90 percent of the county's 1,058 voting precincts voted in favor of Proposition 400 and the projects it would fund.

Voters in 81 percent of the 31 voting precincts in the Study Area favored Proposition 400 and the projects it would fund.

1

What are TSM and TDM?

Transportation system management (TSM) and transportation demand management (TDM) are programs and strategies that seek to maximize existing roadway efficiency without incurring the costs of substantial physical improvements.

TSM attempts to maximize the safety and efficiency of the existing transportation network using such traffic management tools as electronic message signs, signals to meter traffic flow at on-ramps, closed circuit television cameras, and vehicle detectors.

TDM seeks to reduce travel demand in the existing transportation network by promoting alternative modes of travel, including carpooling, van pooling, walking, bicycling, alternative work schedules and compressed work schedules to reduce the number of trips, and telecommuting.

Table 1-2 shows the highlights of the RTP. Three agencies implement three major RTP programs: ADOT – freeway/highway program; RPTA – transit program; and MAG – arterial street program. Each agency is required to regularly report on the status of the projects within its program and update revenue projections and cost opinions so that the programs remain fiscally balanced.

In 2009, MAG and ADOT began the process of making a substantial update to the freeway program of the RTP (the transit and arterial street programs underwent similar reviews). The update became necessary in response to both declining sales tax revenues resulting from the national economic downturn and to rising project cost estimates for the freeway program. *Tentative Scenario for the MAG Regional Freeway and Highway Program* (MAG 2009a) presents the bleak financial situation. The original, 2003 RTP balanced projected revenues and project cost opinions at approximately $9.4 billion. Since that time, the cost opinions have increased to approximately $16 billion, with $2.7 billion obligated or spent to date. With declining revenues and softer revenue projections, it is anticipated that only $6.6 billion in revenues will be collected through the end of the RTP horizon to fund the remaining $13.2 billion in projects. That left a program deficit of approximately $6.6 billion.

The TPC held meetings throughout 2009 to discuss options for bringing the freeway program into balance. In developing its recommended scenario, the TPC considered numerous options, including removing projects, reprioritizing projects, scaling projects back, and deferring projects outside of the 2026 funding horizon. The recommended changes were presented at a public hearing on October 13, 2009, and adopted by the MAG Regional Council later that month. The recommended scenario maintained the core enhancements and priorities of the RTP and balanced the budget by deferring a number of projects to an "unfunded" status beyond the plan's funding horizon.

The projects that remained funded by the RTP, including the proposed action, were repackaged with new budgets and cost savings recommendations (MAG 2010a). The *RTP 2010 Update* included a fiscally balanced plan for completing the identified freeway/highway, arterial street, and transit programs (MAG 2010a). The cash flow projections continued to be reviewed annually. In 2012, a similar rebalancing effort was completed to address an additional projected shortfall of $390 million. Program changes were approved by the MAG Regional Council in May 2012. The approved program includes $1.9 billion for design, right-of-way, and construction of the proposed action. Also of note is that funding for project-related activities are included in the immediate 5-year programs identified in the regional *Transportation Improvement Program* (TIP) as well as the *State Transportation Improvement Program*.

Table 1-2 *Regional Transportation Plan* Highlights

Element[a]	Highlights	Plan Benefit	
		Specific	Overall
Freeway	• Add new freeway corridors, providing approximately 490 lane-miles • Improve existing freeways—add 530 lane-miles of general purpose lanes and 300 lane-miles of HOV[b] lanes	• Increase Regional Freeway and Highway System capacity • Reduce travel time and delay • Improve regional continuity, connectivity, and efficiency	• Form integrated transportation system and transportation services to provide accessibility, mobility, and modal choice for residents, businesses, and the economic development of the region • Create integrated transportation system and services with safety as a core value and feature • Plan and implement improvements for each modal and system element to augment and enhance the service performance of other Regional Freeway and Highway System elements
Arterial Street System	• Add through- and turning lanes to existing streets with one to three lanes in each direction • Improve intersections • Construct new arterial street segments	• Reduce travel time and delays • Improve local continuity, connectivity, and efficiency	
Transit	• Add new 58-mile light rail system through central MAG[c] region • Expand bus rapid transit and regional bus grid • Expand paratransit, rural/nonfixed-route transit and commuter van pools	• Shorten bus wait times • Lengthen duration of bus service • Improve regional transit continuity, connectivity, and efficiency	
TSM/TDM[d]	• Promote ridesharing, van pool programs, telecommuting • Increase real-time traffic management technology	• Reduce travel demand • Improve Regional Freeway and Highway System, arterial street network, and transit efficiency	

[a] Features listed in this table are not comprehensive; the reader is referred to the *Regional Transportation Plan* for all proposed plan improvements. See <www.azmag.gov>.
[b] high-occupancy vehicle [c] Maricopa Association of Governments [d] transportation system management/transportation demand management—see sidebar on this page