



# South Mountain Transportation Corridor Study

Citizens Advisory Team  
Draft Technical Report Summary

## Social Conditions

### ***Why study social conditions in the Environmental Impact Statement (EIS)?***

Phoenix has grown from a small agricultural town to a major metropolitan city over the last 100 years. Its rapid growth is expected to continue well into the future. With this growth, communities and their neighborhoods are created and evolve. Patterns of life then develop within these communities, which contribute to a sense of place for its residents. Issues such as mobility, continuity, character, inclusion and maintenance of a sense of place become important aspects to residents in those communities.

Construction and operation of a major transportation facility like the proposed South Mountain Freeway could alter social conditions important to communities' residents. Environmental planners analyze potential impacts on communities when the construction and operation of a freeway like the proposed South Mountain Freeway could result in consequences both beneficial and adverse to those aspects important to communities, neighborhoods and their residents.

Often, this type of analysis is subjective because it may be influenced by personal preferences from the person conducting the research. It involves an attempt to identify and evaluate individuals' behaviors in a community and the characteristics that make the community unique. Studying social conditions of communities is challenging because communities, particularly those in the Phoenix metropolitan area, change rapidly. The communities of today may look very different from those 25 years in the future.

### ***What are the social conditions in the Study Area?***

Overall, the social conditions in the Study Area can best be described as dynamic. The southwestern area of Phoenix is one of the fastest growing areas in the region. Consequently, those community characteristics important to residents (i.e., mobility, continuity, character, inclusion and sense of place) are continually changing. The character of the communities as they are today will most likely change dramatically over the course of the next 25 years. For example, 29 percent of the land in the Western Section of the Study Area is currently agricultural. An examination of what is regulated through local zoning ordinances, however, shows that only 9 percent is planned for future agricultural use. The Western Section of the Study Area, has been transitioning from agricultural-based communities to more contemporary residential communities characterized by relatively large homes situated on small lots.

Throughout the Study Area, communities maintain distinct characteristics:

- The City of Tolleson, approximately 10 miles west of downtown Phoenix, was founded in 1912. The city is unique because it is only about 6 square miles—much smaller than most other incorporated cities in the Study Area. With a population of approximately 5,500 individuals, Tolleson has a distinct downtown area and maintains a family-oriented small-town atmosphere.



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- Laveen Village, located within the city of Phoenix between the South Mountains and the Salt River, has an identity intimately linked to its agricultural heritage. First homesteaded in the late nineteenth century, the area is still valued by farmers, equestrians and those looking for mountain access. Cotton and alfalfa fields bordered by canals and county roads contribute to Laveen's persisting rural character. West of Laveen is the Gila River Indian Community (GRIC), characterized by open space and views of the Sierra Estrella. The combination of Phoenix's most recent rapid growth to the southwest and Laveen's proximity to central Phoenix has triggered substantial local development pressures. The village contains largely undeveloped and agricultural property within a 10- or 20-minute commute to Interstate 10 (I-10) and downtown Phoenix. A planned village core, in the vicinity of 59th Avenue and Dobbins Road, will provide a blend of employment, commercial and recreational uses and will concentrate community activities. Current planning seeks to protect Laveen's rural character in the face of strong development pressures over the coming decades.

- The Santa Maria community is an 80-acre unincorporated county island. Established in the early 1900s, the community sits on a slightly raised ridge, which was unsuitable for farming when the community was established, but was ideal for residences. The original homestead was established in 1916 under authority of the Homestead Act of 1862. In the early 1940s, Mexican immigrants working on farms in the area established a fairly substantial makeshift tent community on the land. In 1944, the property owner conducted a land survey so that this property could be formally subdivided into 62 parcels for the immigrants to purchase. In 1945, Santa Maria was legitimately established through resultant land purchases.

From 1945 to today, the original Santa Maria townsite has thrived as a rural Hispanic community. Many of the original founding families maintain a strong community presence. The original 62 parcels have now been further subdivided into 137 parcels. A Roman Catholic mission church was built in the community in 1973 as part of the Cashion Parish. Today, the community retains a strong sense of its rural character, with its collage of buildings predominantly made using available resources, narrow streets built at ground level (no gutters or sidewalks) and aboveground utilities.

- The Dusty Lane community is an isolated residential area on the south side of Phoenix South Mountain Park/Preserve and is accessible by Dusty Lane. The area is bounded by the GRIC to the south and the park/preserve to the east and north. The mountain ridges create a sense of separation from the rest of Phoenix. Single-family dwellings and manufactured homes are scattered along mostly unpaved roads, giving the area a strong rural feel.
- Ahwatukee Foothills Village is bounded by I-10 to the east, the South Mountains to the north and the GRIC to the west and south. (Pecos Road—the 1988-approved alignment for the proposed South Mountain Freeway is the southernmost boundary.) Many people—residents and nonresidents alike—have characterized the area as one large cul-de-sac. Unlike portions of the Western Section of the Study Area, much of Ahwatukee is developed; vacant, undeveloped land is relatively rare. With its numerous contemporary, master-planned communities characterized by desert landscaping, golf



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courses and lakes, Ahwatukee is distinct in the Study Area. The adjacent Phoenix South Mountain Park/Preserve provides opportunities for hiking, biking and jogging. The lack of commercial development, the more recently developed master-planned residential communities and separation provided by the Phoenix South Mountain Park/Preserve and the GRIC define the village's modern and architecturally unified character.

### ***What kind of impacts could occur from construction?***

- Visual and noise intrusions could alter current neighborhood character.
- Existing neighborhoods could be temporarily divided and internal street systems disrupted. Local transportation patterns could be altered.
- Portions of neighborhoods and/or communities with distinct character could be temporarily isolated.
- Access to public facilities could be temporarily altered.
- Residences, businesses and public facilities could be displaced and possibly relocated to some other geographic area.
- Access to public facilities and businesses could be temporarily altered because of construction activities.
- Temporary detours may affect police, fire and medical emergency travel routes and response times.

### ***How do the alternatives differ in construction-related impacts?***

Any action alternative implemented would affect the character and cohesion of adjacent communities and distinct portions of the overall Study Area. Each alignment would affect different neighborhoods, but all would have similar types of impacts on social conditions.

One form of social impact would be displacement of residences and businesses that would require relocation. Potential displacements, by action alternative, are shown on the following page.



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#### Potential Displacements<sup>a</sup>

Alternative/ Option	Businesses <sup>b</sup>	Residential					Community Facilities <sup>f</sup>
		Single- family	Lots <sup>c</sup>	MH <sup>d</sup>	MF <sup>e</sup>	Total	
W55	119	45	— <sup>g</sup>	3	—	48	0
W71	10	162	543	3	—	708	1
W101 and Options	3–6 <sup>h</sup>	168–193	53–323	5–6	—	228–522	0-1
E1	0	283	29	4	1	317	1

Source: Aerial photography flown in 2006; field inventories: September 2003, January and October 2005 and April 2006

<sup>a</sup> Displacements were estimated through use of aerial photography, flown in 2006, supplemented by field observations during September 2003, January and October 2005 and April 2006. Estimated displacement numbers may change because the aerial photography, fieldwork and design are continually updated and revised.

<sup>b</sup> includes businesses whose buildings would be directly and adversely affected by implementation of the action alternative and option; does not include businesses whose parking and outdoor storage areas would be adversely affected by an action alternative's construction and operation

<sup>c</sup> includes an estimate of the number of lots that have been platted but not built (streets have been built, construction has not begun)

<sup>d</sup> manufactured homes

<sup>e</sup> multifamily

<sup>f</sup> Schools were included in the community facility category, not businesses.

<sup>g</sup> not applicable

<sup>h</sup> W101 Alternative and options include ranges because of design options.

The W55 Alternative would cause the most business displacements, while the W101 Alternative would cause the most residential displacements. The W71 and W101 alternatives would affect platted lots in subdivisions currently under construction and, therefore, would cause additional residential displacements.

#### ***What kinds of freeway operational impacts (postconstruction) would occur?***

For all action alternatives, increased road capacity from a new freeway would improve overall circulation and accessibility both in the Study Area and in the greater Phoenix metropolitan area.

The existing character of residential and agricultural areas could be affected by the presence of the freeway and associated visual and noise intrusions into nearby neighborhoods. In the Western Section, however, the largely transitional character from agricultural to residential has been underway for several years. Operation of the freeway, in fact, has long been planned through Laveen Village since the late 1980s. Operation of the South Mountain Freeway could accelerate the rate of the transition from agricultural to largely residential subdivisions.



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The E1 Alternative would not substantially alter the character of Ahwatukee Foothills Village. As mentioned, Ahwatukee is nearly fully developed. Because the freeway alignment would incorporate the existing four-lane Pecos Road, located at the southern border of the village, Ahwatukee's internal mobility, established sense of place, feeling of inclusion and internal continuity would not be altered. While the proposed South Mountain Freeway would introduce additional noise impacts along the southern edges of the village, this type of impact would not be new, considering I-10 borders the village to the east.

Another overall general impact would be that business and industrial property access could change, particularly on a potential alignment that would bisect large, existing developed properties.

### ***How do the alternatives differ in operational-related impacts?***

Any of the action alternatives, when operational, generally would have similar types and levels of impacts on social conditions. Differences among the action alternatives have been described in preceding paragraphs.

### ***What if the project were not constructed?***

No direct impacts on community character and cohesiveness of existing or currently developing neighborhoods and commercial/industrial areas would occur as a result of selection of the No-Action Alternative. However, increasing congestion on the local street network would be expected, especially in the most rapidly urbanizing portions of the Study Area, if a controlled-access, high-speed travel option is not available to area residents, businesses and visitors. Lack of such an option could lead to increased travel times and inefficiencies in movement of people and goods in and across the area. It should also be noted that major portions of the Study Area are currently changing in character due to population growth and land development activity.

### ***Are there any specific and/or unique impacts from implementation of any of the action alternatives?***

For a project the magnitude of the proposed South Mountain Freeway, no specific and/or unique impacts are anticipated from implementation of any of the action alternatives. However, the ability to complete the planned and approved Regional Freeway System (RFS) is being outpaced by Valley growth. Continued growth will lead to substantial congestion on the local arterial street network as well as on the RFS. Also, without the proposed South Mountain Freeway, the RFS would not operate as intended.



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### ***What could the Arizona Department of Transportation (ADOT) do to reduce construction impacts?***

ADOT would look at a number of ways to avoid or reduce construction-related impacts. The following are examples of some of the measures that could be used.

- maintain access to businesses, neighborhoods and public facilities during construction
- consider timing of construction activities to minimize social impacts
- coordinate with local jurisdictions to minimize impacts to emergency medical services and fire and police response times due to construction detours

### ***What could ADOT do to reduce social impacts once the freeway were operational?***

ADOT would look at ways to avoid or reduce operation-related impacts. The following are examples of some of the measures ADOT could undertake:

- use noise barriers and landscaping to reduce noise and visual intrusions
- maintain access to public facilities, neighborhoods and commercial areas through grade separations and planned interchanges
- coordinate with local jurisdictions to address and correct impacts on internal road networks
- coordinate with all appropriate emergency services and utility companies to ensure that emergency and utility services are maintained to all service areas

Measures will be presented in the Draft EIS and, if an action alternative is the selected alternative, would be finalized during the final design process.

### ***Are the conclusions presented in this summary final?***

Quantitative findings relative to impacts could change. Potential changes would be based on outcomes related to the following issues and will be presented to the public as part of publication of the Draft EIS, Final EIS and, if an action alternative were selected, in the final design process. The issues include:

- refinement in design features through the design process
- updated aerial photography as it relates to rapid growth in the Western Section of the Study Area
- ongoing communications with the City of Phoenix regarding measures to minimize harm to Phoenix South Mountain Park/Preserve
- ongoing communications with the GRIC regarding granting permission to study action alternatives on GRIC land
- ongoing consideration of public comments



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- potential updates to traffic forecasts as regularly revised by the Maricopa Association of Governments
- potential changes regarding updated census data
- regularly updated cost estimates for construction, right-of-way acquisition, relocation and mitigation

Even with these factors possibly affecting findings, the study team anticipates effects would be equal among the alternatives and, consequently, impacts would be roughly comparable. This assumption would be confirmed if, and when, such changes were to occur.

### ***As a member of the Citizens Advisory Team, how can you review the entire technical report?***

The complete technical report is available for review by making an appointment with Mike Bruder at 602-712-6836 or Mark Hollowell at 602-712-6819.



# South Mountain Transportation Corridor Study

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## Cost Estimate

### ***What is included in the cost estimate?***

This cost estimate summary combines the construction and right-of-way (R/W) cost estimates, and adds a cost for the design of the freeway. All of the estimates are based on September 2008 dollars.

ADOT has identified the W55 Alternative as the preliminary preferred alternative in the Western Section and the E1 Alternative as the only action alternative in the Eastern Section. Therefore, the cost estimate reflects the cost for the entire corridor, combining these two alternatives.

### ***Why address these issues in the Environmental Impact Statement (EIS)?***

While cost is not a primary criteria for eliminating alternatives during the detailed study phase, it is a criteria used in the comparison of similar alternatives. As such, a certain level of cost estimating is performed.

### ***What if the project were not constructed?***

If the project were not constructed, the funding currently designated would be returned to the regional freeway funding source administered by the Maricopa Association of Governments (MAG). The money could not be used for other elements including transit or arterial streets.

### ***What is included in the construction cost estimate?***

This construction cost estimate summary represents an update to the April 2006 estimate presented to the South Mountain Citizens Advisory Team (SMCAT). It includes updated quantities reflecting design refinements and updated unit prices reflecting market changes.

The major construction elements of the cost estimate include:

- Bridges—includes all the materials needed to construct the Salt River bridge, railroad bridge, bridges over arterial streets, wildlife crossings and system traffic interchange bridges
- Drainage—includes on- and off-site facilities, such as drainage basins, parallel channels, culverts, catch basins and pipes
- Earthwork—includes clearing and grubbing, roadway excavation through the South Mountains' ridges, drainage basins, placement of embankment material for the freeway and water
- Pavement—includes the concrete pavement and rubberized asphalt for the main line and other concrete and asphalt pavement for ramps and crossroads
- Traffic—includes traffic control during construction, guide signs, striping, lighting, new signals at interchanges and freeway management systems
- Utilities—includes relocation of utilities potentially impacted by the freeway
- Walls—includes sound walls and retaining walls

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## Cost Estimate

- Roadway appurtenances—includes guardrails, barriers, curb and gutter, fencing and crossroad sidewalks
- Other items—includes landscaping, mitigation measures, unidentified items (contingency) and construction mobilization, surveying, engineering and quality control

The approach for developing construction estimates has been developed by the Arizona Department of Transportation (ADOT) and MAG over the last 20 years during implementation of the Regional Freeway System. As projects move into design and ultimately reach construction bidding, cost estimates are refined based upon the developed design details.

At this time, the cost estimate reflects the following:

- Roadway elevation is at-grade or elevated everywhere except 1 mile of semi-depressed freeway at Dobbins Road
- Open cuts through the South Mountains' ridges
- Initial construction of 3 lanes in each direction

The construction cost estimate is presented for the entire corridor (W55 and E1 alternatives) in Table 1.

**Table 1. Construction Cost Estimate by Element**

<b>Construction Element</b>	<b>Estimated Cost</b>
Bridges	\$ 271,000,000
Drainage	\$ 106,000,000
Earthwork	\$ 137,000,000
Pavement	\$ 95,000,000
Traffic	\$ 87,000,000
Utilities	\$ 67,000,000
Walls	\$ 49,000,000
Roadway appurtenances	\$ 31,000,000
Other items	\$ 507,000,000
<b>Total construction cost</b>	<b>\$ 1,350,000,000</b>



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## Cost Estimate

### ***What is included in the right-of-way cost estimate?***

This R/W cost estimate summary represents an update to the April 2006 cost estimate presented to the SMCAT. It includes updated costs reflecting design refinements, market changes and costs associated with the acquisition process.

The individual property cost estimates are composed of three components: acquisition, relocation and demolition. Properties being acquired are classified as either business, residential or vacant. A determination of highest and best use for the properties was made based upon an analysis of its physical and legal characteristics, the influences of the surrounding region and neighborhood and supply and demand of the properties market segment. Once highest and best use of the property was determined, recent comparable sales and current listings were evaluated, and discussions occurred with knowledgeable market participants (real estate agents, developers and area buyers and sellers) familiar with the land in the various market segments.

Acquisition cost estimates were prepared in conformity with the Uniform Appraisal Standards for Federal Land Acquisitions and the Uniform Standards of Professional Appraisal Practice (USPAP), 2005 except to the extent that the Uniform Appraisal Standards for Federal Land Acquisitions required revocation of USPAP's Jurisdictional Exception Rule.

Field studies were performed in December 2005 and cost estimates were developed during January 2006.

### Factors Affecting Real Estate Costs

As real estate is fixed in location, it is important to analyze the external forces, which affect its value. This section introduces the four interrelated forces that have both a direct and indirect affect upon the marketability of real estate in the Phoenix metropolitan area. These factors are:

- Environmental Forces—includes an analysis of topography, climate, land-use patterns, water availability, transportation and street patterns, as well as constraints on future growth and development potential
- Economic Forces—includes an analysis of population and employment trends, wage levels, local market trends (including supply/demand characteristics of major market segments), availability of financing, and the availability of goods and services
- Government Forces—includes an analysis of local/regional governmental attitudes and policies regarding growth, development, provision of services, taxation, city planning and incentives to commerce, industry and real estate development
- Social Forces—includes an analysis and discussion of the demographic composition of the population and its demand for real estate. Consideration is also given to attitudes of the population regarding education, growth, development and lifestyle options



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## Cost Estimate

### Highest and Best Use Analysis

Highest and best use reflects a basic assumption about real estate market behavior—that the price a buyer will pay for a property is based on his or her conclusions about the most profitable use of the land or property. As defined by *The Dictionary of Real Estate Appraisal*, highest and best use is:

*The reasonably probable and legal use of vacant land or improved property, which is physically possible, appropriately supported, financially feasible, and that results in the highest value. The four criteria the highest and best use must meet are: legal permissibility, physical possibility, financial feasibility, and maximum profitability.*

The determination of a property's highest and best use may or may not conform to the existing use. The determination of highest and best use must be based upon careful consideration of prevailing market conditions, trends affecting market participation and change and the existing use of the subject property. This analysis was performed for all vacant and improved land.

### Assumptions

The R/W cost estimates were developed using the following assumptions:

- No title reports were acquired, rather the Maricopa County Assessor's records were used
- Acquisition costs for property were made for partial and total parcel takes
- Improved properties were typically estimated using the Sales Comparison Approach
- Parcels identified as public R/W were not included
- Properties were inspected from the exterior only, typically from the public R/W
- The title to the property is marketable and free and clear of all liens
- Utility relocation costs were not estimated
- The property is owned in fee simple title without encumbrances, unless otherwise mentioned
- Legal descriptions were correct and descriptive of the subject property, no survey or title reports were obtained for verification
- Improvements are within the boundaries of property lines and no encroachments exist unless otherwise noted
- No hidden or unapparent conditions of the property, subsoil or structures exist that would render the property more or less valuable
- Subsurface rights (mineral, oil, etc.) were not considered unless otherwise noted
- Property was assumed as vacant or improved and there was no historical or archeological significance
- All applicable zoning and use regulations and restrictions have been complied with unless a nonconformity is noted
- Properties are not in violation of any government regulations or laws pertaining to the environment
- No hazardous materials present on the property unless otherwise noted



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- No inclusion of the time and cost of potential condemnation litigation
- Railroad tracks, spurs and drill lines will not be severed from the improved properties relying on them
- Drainage channels and canals will not be severed and will be allowed to pass through the freeway R/W
- Aboveground storage tanks (except those owned by Arizona Fueling Facilities Corporation—tank farm), transmission towers and related improvements were considered personal property that could be relocated

The conclusion of opinions of values were not based on:

- Racial, ethnic or religious homogeneity of the inhabitants of an area or of a property
- Racial, religious and ethnic factors as predictors of value trends or price variance
- Neighborhood trends analyzed upon stereotyped or biased presumptions relating to race, color, religion, sex or national origin, or upon unsupported presumptions relating to the effective age or remaining life of the property or the life expectancy of the neighborhood in which it is located

Other costs have been added to the estimate based on recent experience with regional freeway projects. These costs are associated with property surveys, appraisals, and legal fees and court settlements associated with the condemnation process.

The R/W cost estimate is presented for the entire corridor (W55 and E1 alternatives) in Table 2.

**Table 2. Right-of-Way Cost Estimate by Element**

<b>Right-of-Way Element</b>	<b>Estimated Cost</b>
Acquisition	\$ 582,000,000
Relocation	\$ 38,500,000
Demolition	\$ 16,300,000
Other costs	\$ 293,800,000
<b>Total R/W cost</b>	<b>\$ 930,600,000</b>



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### ***What is the total cost of the action alternative?***

Design costs are estimated at approximately 10 percent of the total construction cost. Table 3 summarizes the cost estimates as evaluated in September 2008.

**Table 3. Total Cost Estimate**

<b>Item</b>	<b>Estimated Cost</b>
Construction	\$ 1,350,000,000
Design (10 percent of construction)	\$ 135,000,000
Right-of-way	\$ 930,600,000
<b>Total Cost</b>	<b>\$ 2,415,600,000</b>

### ***Are the costs presented in this summary final?***

The construction and R/W cost estimate could change. Since they are presented in current dollars, they are anticipated to increase at a minimum for inflation. Other potential changes would be based on the following and would be presented to the public during the Draft EIS, Final EIS and, if an action alternative were selected, in the final design process:

- Refinement in design features through the design process
- Updated aerial photography as it relates to rapid growth in the Western Section of the Study Area
- Ongoing communications with the City of Phoenix regarding measures to minimize harm to Phoenix South Mountain Park/Preserve
- Ongoing communications with the Gila River Indian Community (GRIC) regarding granting permission to study action alternatives on GRIC land
- Ongoing consideration of public comments
- Potential updates to traffic forecasts as regularly revised by MAG
- Potential changes regarding updated census data
- Regularly updated unit prices for construction, right-of-way acquisition, relocation and mitigation

Even with these factors possibly affecting the cost, the study team anticipates effects would be equal among the alternatives and, consequently, changes would be roughly comparable. This assumption would be confirmed if, and when, such changes were to occur.



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## Cumulative and Secondary Impacts

### ***What are cumulative and secondary impacts?***

Federal guidance defines cumulative impacts as “the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). In more basic terms, cumulative impacts occur where several actions in an area combine to create an impact on a given resource greater than any one individual activity. An example of this is when individual cars added together in one general location lead to a traffic jam. Cumulative impacts result from spatial (geographic) and temporal (time) crowding of environmental impacts. The effects of human activities would accumulate when a second impact occurs at a site or in a region before the environmental system can fully rebound from the effect of the first impact.

Secondary impacts (sometimes referred to as indirect impacts) are “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate and related effects on air and water and other natural systems” (40 CFR 1508.8). An example of this is when a new highway interchange is constructed, a cross street can attract development, such as a gas station.

The draft technical report follows two principles outlined by the Council of Environmental Quality (CEQ) guidance (1997) in considering secondary and cumulative analyses: (1) focus only on the effects and resources within the context of the proposed action; and (2) present a concise list of issues that have relevance to the anticipated effects of the proposed action or eventual decision.

### ***Why study cumulative and secondary impacts in the Environmental Impact Statement (EIS)?***

The Phoenix metropolitan area is growing rapidly and has been since the 1950s. The Valley has gone from a set of small agricultural towns to a major metropolitan area over the last 100 years. The rapid growth is expected to continue well into the future, which would result in cumulative effects on natural resources in the area, communities, residents, infrastructure and economic conditions. Evaluating cumulative impacts from the proposed action and other activities on various resources provides an understanding of the overall health, or condition, of each resource and the proposed action’s contribution to effects on the resource. The proposed action may also result in impacts which occur elsewhere or later in time; therefore, secondary impacts are evaluated to identify if such effects are occurring.

The primary purpose of presenting these types of impacts in an EIS is specifically for public disclosure—to inform the public through this process the health of resources affected, the contribution of the action’s impacts on the resources, and what other non-project related impacts are affecting the resources.



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### Cumulative and Secondary Impacts

***What other activities are considered in evaluating cumulative impacts?***

The definition of cumulative impacts requires consideration of past, present and reasonably foreseeable changes that could result in cumulative impacts when combined with the environmental effects of the proposed action. Specifically, activities are identified when, in combination with the potential impacts of the proposed action, they could result in substantial cumulative impacts. In accordance with precedence set by court cases, other projects deemed reasonably foreseeable were limited to those that are planned and/or funded. The following types of activities that could result in cumulative impacts were reviewed:

- Other highway projects
- Planned mass transit projects in the Study Area
- Major utility projects in the Study Area
- Other general development patterns

Other proposed transportation projects in the proximity to the Study Area include light rail on Interstate 10 (I-10), the I-10 Median and Outside Widening projects (State Route [SR] 303L to SR 101L [Agua Fria Freeway]), the I-10 Outside Widening project (SR 101L [Agua Fria Freeway] to I-17), the SR 801 project, the I-10 Corridor Improvement Study (SR 51 to SR 202L [Santan Freeway]) (local and express roads), and the Avenida Rio Salado project. No major utility projects were identified aside from local distribution system extensions to service existing growth.

***What kind of impacts would occur from the proposed action?***

Critical resources warranting secondary impact analysis are presented in this section. To address the potential impact severity, classifications in accordance with Federal Highway Administration (FHWA) guidance are presented in Table 1.

**Table 1. Secondary and Cumulative Impact Severity Classification**

Impact Category	Impact Classification	Description
<b>Type<sup>a</sup></b>	Neutral or negative	Compares the final condition of a given resource with its existing condition (assumes that the expected impact occurs).
<b>Severity</b>	Minor, moderate or substantial	Considers the relative contribution of the proposed action to a given impact.
<b>Duration</b>	Temporary or permanent	Permanent is assumed unless otherwise noted.
<sup>a</sup> The project can have positive impacts		

Tables 2 and 3 summarize anticipated secondary and cumulative impacts, respectively, that can be reasonably foreseeable as they relate to the proposed action.



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### Cumulative and Secondary Impacts

**Table 2. Secondary Impacts**

Resource	Proposed Action Impact	Reasonably Foreseeable Impact	Impact Classification
<b>Biological resources</b>	Habitat loss from direct conversion to transportation use	Habitat loss from urban development	Neg/Mod
	Vehicle-animal collisions	Wildlife population reduction	Neg/Mod
	Loss of native vegetation	Increased rate of land conversion	Neg/Mod
<b>Water resources</b>	Loss and/or alteration of natural drainage features	Loss from urban development	Neg/Min
	Modification of groundwater tables from pumping to drain a depressed facility; eventual impact on the water table by removing this water from use	Groundwater drawdown from continued development	Neg/Mod
<b>Air quality</b>	Particulate matter due to construction activities	Reduced air quality from construction activities related to continued rapid urban growth in the region	To be included with air quality report summary
<b>Cultural resources</b>	Disturbance to known historic and prehistoric sites	Loss due to enhanced access to undisturbed land	Neg/Min
<b>Land use</b>	Conversion of agricultural land to other uses	Conversion from ongoing urban development	Neg/Min
	Land use ownership conversions	Conversion of zoned parcels to more intensive land uses	Neu/Min
	Alteration of community character	Change in character from ongoing urban development and its effect on community character	Neu/Min
<b>Economic conditions</b>	Enhanced movement of goods, materials, and services	Projected growth in land values and economic activity in study area	Neu/Min
Neu = neutral; Neg = negative; Min = minor; Mod = moderate; Sht-Trm = short-term			



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### Cumulative and Secondary Impacts

**Table 3. Cumulative Impacts**

<b>Resource</b>	<b>Proposed Action Impact</b>	<b>Reasonably Foreseeable Impact</b>	<b>Impact Classification</b>
<b>Biological resources</b>	Habitat loss from direct conversion to transportation use	Habitat loss from urban and transportation development	Neg/Mod
	Habitat isolation and fragmentation	Habitat loss and isolation from urban and transportation development	Neg/Mod
	Vehicle-animal collisions	Wildlife population reduction	Neg/Mod
	Loss of native vegetation	Future construction of residential, industrial, commercial and transportation projects	Neg/Mod
	Introduction of noxious weeds	Future nonfederal and nonstate-funded projects' contributions to the spread of invasive species; federally funded and state-funded projects' reductions in this spreading	Neu/Min
<b>Water resources</b>	Increased runoff and flushed contaminants from impervious surfaces	Increased runoff volumes from other projects and higher potential for pollutant discharges into receiving water bodies	Neg/Min
	Loss and/or alteration of natural drainage features	Loss from urban development	Neg/Min
	Modification of groundwater tables from pumping to drain a depressed facility	Future construction of residential, industrial, commercial and transportation projects	Neg/Min
	Increased demand on water availability	Ongoing development in the region	Neg/Min
<b>Air quality</b>	All predictable measures below federal and state standards; mobile source air toxics (MSATs) being evaluated	Reductions in on-highway emissions of air toxics due to attainment requirements and source emission requirements as established by air quality programs implemented by such agencies as the Maricopa Association of Governments and the Environmental Protection Agency	To be included with air quality report summary
<b>Cultural resources</b>	Disturbance to known historic and prehistoric sites	Enhanced access to undisturbed land; permanent loss due to proposed action and ongoing urban growth; preservation of some cultural resources in place as a result of the proposed freeway	Neu/Min



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### Cumulative and Secondary Impacts

**Table 3. Cumulative Impacts**

Resource	Proposed Action Impact	Reasonably Foreseeable Impact	Impact Classification
Land use	Conversion of agricultural land to a transportation use	Conversion from ongoing urban development	Neg/Min
Land use (continued)	Loss of recreational lands	Ongoing residential, industrial and commercial development and other transportation and public infrastructure projects	Neg/Min
	Residential and business displacements	Proposed project and other transportation and public infrastructure projects' contribution to displacements	Neg/Min
	Land use ownership conversions	Ongoing residential, industrial and commercial development and other transportation and public infrastructure projects	Neu/Min
	Alteration to community character and cohesion		Neg/Min
Neu = neutral; Neg = negative; Min = minor; Mod = moderate			

#### ***How do the alternatives differ in cumulative and secondary impacts?***

The action alternatives would have comparable effects. The various activities affecting resources and people in the Study Area and the proposed action can have localized variations at a project level, depending on the specific location of a given effect. However, applying a broader view to the cumulative and indirect effects on affected resource, each action alternative has comparable effects.

#### ***What if the project were not constructed?***

If the South Mountain Freeway were not implemented, the incremental effects contributed solely by the proposed action would not occur. However, no action would not preclude other activities from affecting resources in a similar manner. Most cumulative impacts would result from ongoing conversion of land to more intensive human-based development. These effects, such as the permanent loss of cultural resources and the permanent loss of agricultural lands would occur without the proposed action in place.

Secondary effects would not occur as such effects must be tied directly to the proposed action.

#### ***What could be done to reduce cumulative or secondary impacts?***

Disclosure of secondary and cumulative impacts does not require the project proponent to propose and implement mitigation to address such impacts. Project-specific mitigation as proposed to mitigate direct impacts inherently addresses reductions in reported cumulative impacts. However, impact disclosure primarily is for informative purposes. By disclosing these



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types of impacts, those concerned are provided a mechanism to contact responsible parties either contributing to such impacts or having regulatory authority pertaining to such matters. For example, the Environmental Protection Agency has enacted rules to reduce vehicle emissions at the national and regional levels. Local jurisdictions governing land development have enacted local zoning ordinances to control and regulate development.

### ***Will the proposed action induce additional travel to occur?***

Induced travel is a phrase often used to describe observed traffic volume increases occurring on a new highway after it is opened to traffic. The observation is prominent in areas where congestion is already evident (the Phoenix metropolitan area is a prime example) for the reasons summarized below.

The proposed action would be constructed where existing traffic congestion has already decreased travel speeds throughout much of the regional freeway system and the major arterial network. To avoid the congestion, over time, some travelers have diverted to alternative routes, changed the time they make their trips, switched to different travel modes, traveled to other destinations or decided not to make a particular trip at all. Because the proposed action would carry substantially more traffic before it would become congested, many of these travelers may switch to the new facility when opened to take advantage of decreased travel times. Some travelers using transit as a choice may also switch and further, some may choose to travel to a different (more distant) destinations (e.g., for shopping) or take a trip that they previously avoided altogether, because it was previously "too much trouble" to make. The behavior driving this switch is often associated with drivers' perception in resulting decreases in the generalized cost of travel, including both travel-time and out-of-pocket costs. However, it is commonly recognized the cause of this 'switch' is more complex; involving various travel behavior responses, evolving individual needs, residential and business location decisions and changes in regional population and economic growth.

Some induced travel would represent 'new trips' or 'induced demand.' However, most of the increase in traffic caused by induced travel is expected to come from trips already being made before the proposed action were put into operation (predictable traveler behavior accounted for in the travel demand forecasts conducted for the proposed action). The resulting traffic increase on the South Mountain Freeway is also expected to be largely offset by decreases in traffic volumes on parallel routes and at other times of the day. It is fully expected the net effect on daily vehicle miles of travel in the Valley as a result would be minimal. Examples in the Valley where this phenomenon has been experienced include the recent openings of the Pima Freeway in Scottsdale and Red Mountain Freeway in Mesa. Studies by the cities of Scottsdale and Mesa found substantial reductions in traffic volumes on parallel arterials within two miles of the freeways.

The results of both studies provide insight to general driver behavior. At the time of opening, both freeways represented to drivers a savings in time and/or cost in travel. Consequently, drivers moved from the arterial network to the freeway system. Over the course of time, it would be expected that some drivers would return to the arterial network as more vehicles traveled on the freeways. For the South Mountain Freeway project, a net reduction on the arterial network is



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anticipated through the design year 2030 as projected traffic volumes on the arterial network are projected to be less with the proposed action in place than without the proposed action.

For the proposed action, the minimal contribution to overall traffic use by induced travel is expected to have both positive and negative consequences (positive effects on the neighboring roadway network have been previously addressed). Changes in driving behavior leading to the use of the proposed action would be the result of perceived benefits which could include reduced total daily travel time and cost or an increased value associated with a new destination (e.g., a previously 'inaccessible' shopping area with more variety or lower costs).

As a negative consequence, each user of the proposed action would contribute to increased congestion on the freeway. As congestion grows on the new facility, the benefit attributable to potential travel time savings would be expected to decline. Congestion-related impacts (e.g., reduced air quality) would also increase over time. However, it is important to note the overall contribution to projected traffic volumes on the proposed action is anticipated to be minimal (some of which is accounted for in regional traffic models).

It is important to consider that improvements proposed for any type of transportation system (e.g., a new bus route, rail transit line or commuter rail service) would likely lead to changes in travel behavior, which in turn would lead to increased use of the particular system. It is the purpose of 'improvements' made to a given transportation system—to attract new users to the improvement. If this were not a primary goal, the improvement would not be effective nor warranted. For the proposed action, a goal is to attract users of other segments of the regional freeway system and the local arterial network, now and in the future, to the project to optimize, in part, the entire regional transportation system. Further, it is important to consider that as improvements are made to all transportation systems, cyclical benefits and impacts would occur. For example, as auto trips are diverted to transit (either due to direct improvements or increased congestion), traffic congestion on parallel highway facilities may lessen, at least temporarily. The resulting reduction in highway traffic congestion may, in turn, attract additional highway trips, similar to an increase in highway capacity.

The FHWA's current position relative to induced travel is consistent with the consensus of the transportation planning and travel behavior research community—induced travel is neither more nor less than the cumulative result of individual traveler choices and land development decisions made in response to an improved level of transportation service. Many of the travel choice decisions are accounted for in current travel forecasting models or land use transportation interaction models.

### ***Will the proposed action lead to unplanned growth?***

Unplanned growth is often termed urban sprawl. Generally, the reference is made in the context of the rapid and uncontrolled urban growth onto previously undeveloped land—usually on the outskirts of an existing urban area. Construction of projects like the proposed action is pointed to as a major contributor to urban sprawl. Freeway projects are often cited as making land at the urban fringe more accessible and therefore more attractive for development.

But as with issues surrounding induced growth, the relationship between transportation improvements and land development is complex. Land accessibility in a particular area as a



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result of a freeway project may make land more attractive for development, but other factors such as utility infrastructure, quality of public services, land acquisition and development costs, economic conditions and entitlement costs contribute major roles in determining where and how development would occur. And in fact, in many cases, new development being attracted to one part of a metropolitan region often represents development that has been redirected from other parts of the region.

The proposed action would occur in an already quickly urbanizing area (most noticeably in the Western Section of the Study Area). As such, the proposed action would not provide new or substantially improved access to a large undeveloped geographic area. The proposed action would occur in an area planned for urban growth as established in local jurisdiction land use planning activities for as much as the last 20 years. The purpose of the project is not to promote economic development but to respond to a growing need for additional transportation capacity as a result of Valley growth occurring now and as projected into the future.

### ***Are the conclusions presented in this summary final?***

Findings relative to impacts could change. Potential changes would be based on outcomes related to the following issues and will be presented to the public as part of publication of the Draft EIS, Final EIS and, if an action alternative were selected, in the final design process. The issues include:

- refinement in design features through the design process
- updated aerial photography as it relates to rapid growth in the Western Section of the Study Area
- ongoing communications with the City of Phoenix, Gila River Indian Community (GRIC) and other stakeholders to finalize measures to minimize harm to the South Mountains
- ongoing communications with the GRIC regarding granting permission to study action alternatives on GRIC land
- ongoing consideration of public comments
- potential updates to traffic forecasts as regularly revised by the Maricopa Association of Governments
- New previously unavailable data, studies, or analytical methods that would provide further insight to impact analysis and add value to the decision making element of the EIS process
- potential changes regarding updated census data
- regularly updated cost estimates for construction, right-of-way acquisition, relocation and mitigation

Even with these factors possibly affecting findings, the study team anticipates effects would be equal among the alternatives and, consequently, impacts would be roughly comparable. This assumption would be confirmed if, and when, such changes were to occur.



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***As a member of the Citizens Advisory Team, how can you review the entire technical report?***

The complete technical report is available for review by making an appointment with Mike Bruder at 602-712-6836 or Mark Hollowell at 602-712-6819.