

bqaz Interstates 8 and 10 Hidden Valley Transportation Framework Study

<http://www.bqaz.org>

Executive Summary October 2009

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Maricopa Association of Governments • Arizona Department of Transportation
• Maricopa County Department of Transportation • Pinal County Department
of Public Works • Town of Buckeye • City of Goodyear • City of Maricopa

Executive Summary Report

Project Background, Purpose and Objectives

The Interstates 8 and 10 Hidden Valley Transportation Framework Study is the second long-range planning study that the Maricopa Association of Governments (MAG) is conducting in rapidly developing areas surrounding present-day metropolitan Phoenix. The purpose of these studies is to initiate the transportation planning process in large areas that are expected to experience intense growth and development over the next 30 to 50 years.

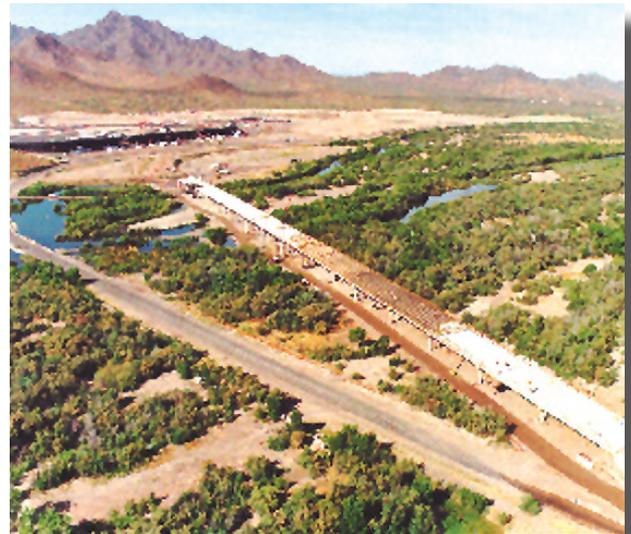
The study area, which encompasses approximately 3,000 square miles (larger than the state of Delaware), is situated in Maricopa and Pinal counties. Its boundaries are generally the Gila River on the north, the I-8 corridor on the south, Overfield Road (east of I-10) on the east, and 459th Avenue in Maricopa County on the west. The Hidden Valley study area contains two Native American communities, five wilderness areas, and the Sonoran Desert National Monument.

MAG and its partners are beginning broad-brush planning in advance of growth. The planning timeframes are 2030 and Buildout, which may occur after 2050. The table below shows the magnitude of expected growth. At Buildout, the Hidden Valley study area will have roughly two-thirds the population of Maricopa County today.

Completion of this study met the following objectives:

- Prepared a comprehensive set of maps illustrating the area's natural and man-made environment;

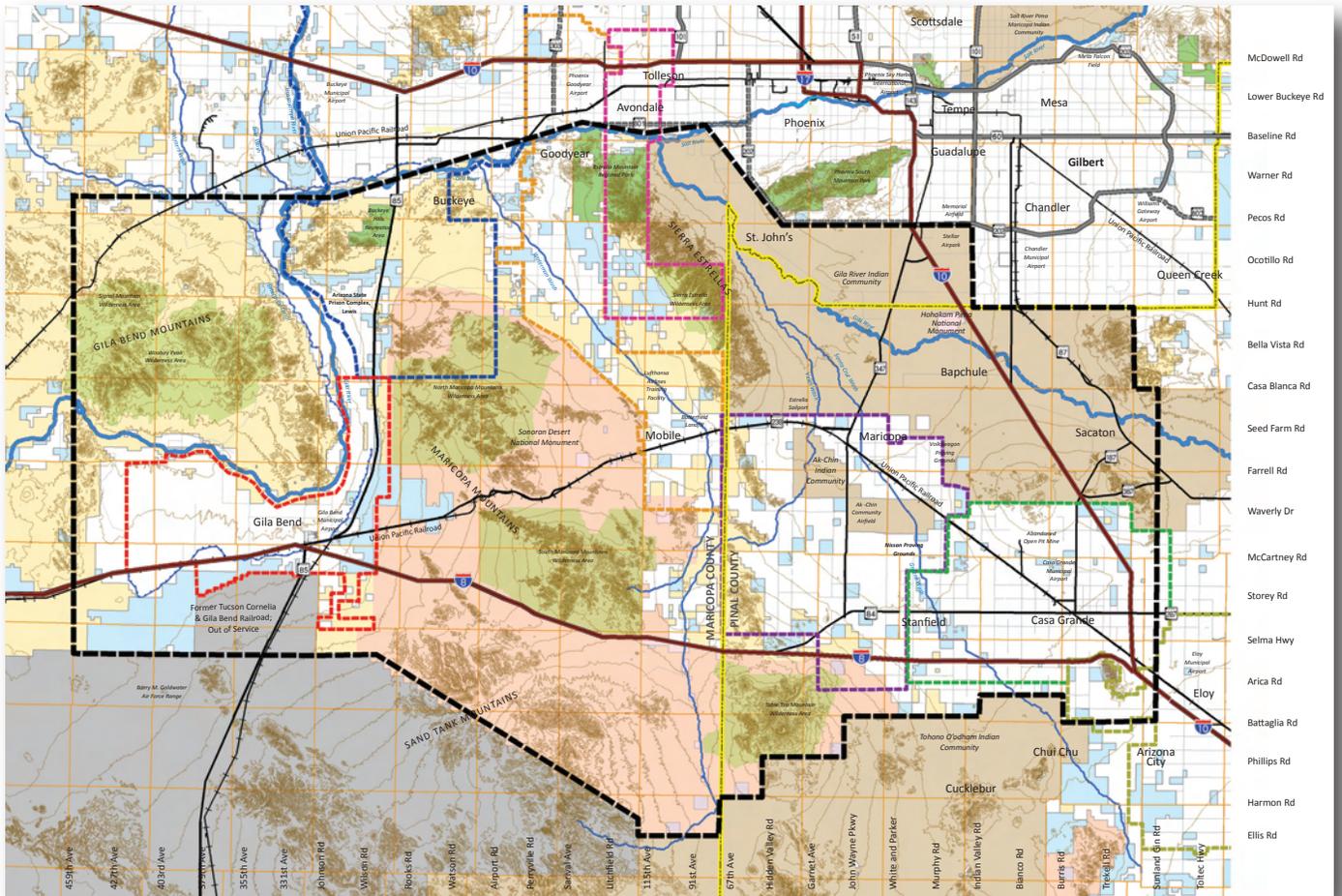
- Developed a conceptual network of transportation corridors for freeways, parkways, arterials, and public transit throughout the study area;
- Modeled alternative transportation scenarios;
- Identified potential traffic interchange locations on I-8, I-10, and proposed freeways;
- Established access management strategies for high-capacity corridors to ensure safe and efficient operation of the roadways;
- Integrated recommendations with results of the recently completed MAG Interstate 10 Hassayampa Valley Transportation Framework Study, which covered much of the area just north of the Hidden Valley study area;
- Determined logical phasing of major transportation improvements;
- Specified future corridors in which right-of-way should be preserved now; and
- Examined alternative funding strategies.



Date or Scenario	Population	Employment (Jobs)
Year 2005	90,000	49,000
Year 2030	448,000	224,000
Buildout (post-2050)	2,500,000	1,100,000

Source: MAG Study Team, 2009

Study Area Map



Recommended Framework

The recommended transportation framework for the Hidden Valley study area is illustrated on page 3. The network is multimodal, featuring expanded and new high-capacity roadway corridors to accommodate future travel demand, as well as transit corridors to facilitate travel to the major employment centers of metropolitan Phoenix and Tucson and activity hubs in the Hidden Valley. The framework is designed to:

- Meet the long-range mobility needs of the Hidden Valley region, in a manner consistent with adopted transportation and land use plans.
- Introduce new travel corridors between existing and proposed communities in the Hidden Valley.
- Accommodate travel demand in a sustainable and environmentally responsible manner, using context-sensitive solutions such as grade-separated wildlife crossings and “scenic ways” across visually attractive landscapes.
- Lay the foundation for local and regional multimodal planning, including approximate locations of future transportation hubs, traffic interchanges, and park-and-ride facilities.
- Allow for phased implementation, depending on development timeframes and available funding streams, over a period extending 40 or more years into the future.
- Be consistent with the continuing planning efforts of Native American communities within the Hidden Valley by avoiding known cultural resources and

- identifying transportation improvements on tribal lands that protect and enhance the goals of their communities.
- Provide seamless highway and transit links with adjacent regions.

The network includes several new freeways and parkways, and identifies approximate locations of arterials. All of the framework routes should be viewed as generalized corridors, not specific alignments. Specific locations for roadway and transit facilities will be established in future planning and design studies. While all recommendations on tribal lands have been informally agreed upon, such improvements are contingent upon formal acceptance by both the Ak-Chin and GRIC tribal councils.

The roadway network contains approximately 1,960 lane miles of freeways, 1,703 lane miles of parkways, and 3,668 lane miles of arterials. Freeways are fully access-controlled and have four to five lanes per direction at Buildout. Arizona Parkways are intermediate- capacity, six- to eight-lane divided roadways with partial access control and indirect left turns permitted at major intersections. Parkway facilities are generally spaced every three to five miles. The background network of arterial streets would accommodate shorter trips in and between Hidden Valley communities. A series of interchanges is illustrated on the map. FHWA, ADOT, MAG, and CAAG are working to set a minimum spacing of two miles between interchanges on Interstate highways, except where closer spacing already exists or was previously approved. Existing or proposed traffic interchanges refer to freeway-to-arterial or freeway-to-parkway access points. System interchanges refer to freeway-to-freeway ramp systems.

A synopsis of additional features follows:

- Two scenic ways are proposed, reflecting a parkway cross-section with enhanced wildlife crossing corridors. These roadways can also provide accessibility for recreational opportunities.
- High occupancy vehicle lanes are identified on those freeways that connect communities to major employment centers.
- Freeway transit and parkway bus transit corridors are proposed to connect major activity centers, with potential park-and-ride facilities identified

on the map.

- Communities would offer local bus transit and paratransit services.
- Two enhanced transit corridors are illustrated. The City of Goodyear has proposed an enhanced transit corridor to connect the multiple Goodyear city centers along a north- south transit spine. The City of Maricopa has proposed an enhanced transit corridor along SR-347 to provide a rapid transit connection to freeway transit along I-10.
- A proposed route for future commuter rail service is illustrated. This service could connect with a potential system serving central Phoenix.
- A potential freight rail route is depicted in the western portion of the study area, connecting two Union Pacific lines, one near Gila Bend and another in Buckeye. This could extend farther north to the BNSF Railway parallel to US-60/Grand Avenue.

Coordination and Outreach

The Interstates 8 and 10 Hidden Valley Transportation Framework Study included an agency coordination and community outreach program throughout the project. Approximately 200 meetings were conducted with public agency staff, elected officials, and a wide range of private stakeholders, such as landowners and developers. All of these public and private stakeholders were invited to participate in several forums. Over 100 people, including several elected officials, attended each event. MAG also conducted two sets of community workshops to present the study findings to the general public.

The MAG team supplemented these meetings with three newsletters and a special web page, <http://www.bqaz.org>, linked to the MAG website. The stakeholder team included:

Funding Partners:

- Maricopa Association of Governments
- Arizona Department of Transportation
- Maricopa County Department of Transportation
- Pinal County Department of Public Works
- Town of Buckeye
- City of Goodyear
- City of Maricopa

Contributing Partners:

- Central Arizona Association of Governments
- City of Casa Grande

Study Review Team:

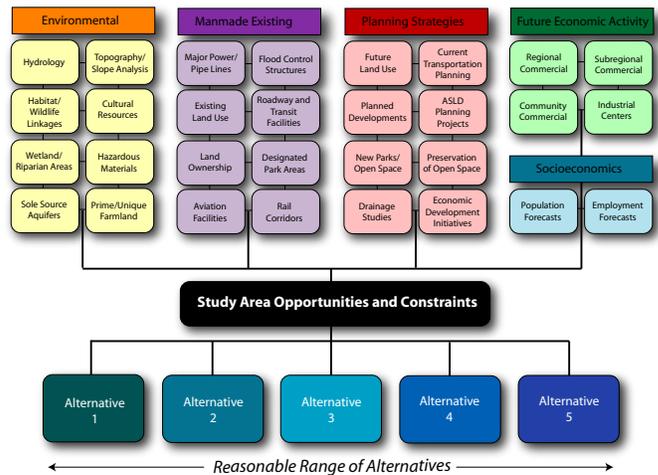
- Ak-Chin Indian Community
- Arizona Department of Environmental Quality
- Arizona Department of Transportation
- Arizona Game and Fish Department
- Arizona State Land Department
- Central Arizona Association of Governments
- City of Avondale
- City of Casa Grande
- City of Goodyear
- City of Eloy
- City of Maricopa
- Federal Highway Administration
- Flood Control District of Maricopa County
- Gila River Indian Community
- Maricopa Association of Governments
- Maricopa County Department of Transportation
- Pinal County Department of Public Works
- Tohono O’odham Indian Community
- Town of Buckeye
- Town of Gila Bend
- U.S. Air Force (Luke Air Force Base and Goldwater Range)
- U.S. Bureau of Land Management

Environmental Scan and Development Suitability Analysis

An environmental scan, like an environmental overview at a corridor level, assists in identifying critical flaws of transportation alternatives. An environmental scan of more than 35 maps was created to display existing and future conditions of the study area. The scan included a review of the social, environmental, physical, and economic aspects of the study area. It is especially useful for providing background information at a glance to stakeholders and the community.

Upon completion of the scan, a development suitability analysis was conducted by combining natural and man-made opportunities on two maps, which were used to develop regional transportation network alternatives for the Hidden Valley study area.

Development Suitability Analysis Process



Arizona Parkway Functional Classification

The Arizona Parkway is a new roadway functional classification, proposed in the Hassayampa Valley Study and further studied by the Maricopa County Department of Transportation. This facility type has an excellent record of providing capacity up to double that of a conventional arterial, at a fraction of the cost of a freeway.

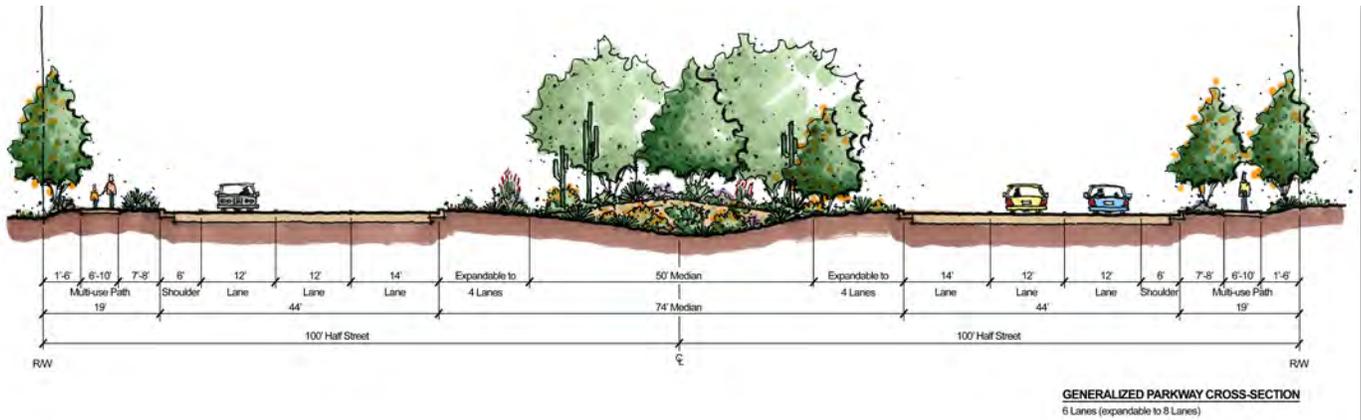
Parkways include: six- to eight-lane divided roadways, more access management than a typical arterial roadway, right-of-way of at least 200 feet, and a minimum 60-foot median to accommodate storage for indirect left turns and large vehicle turning radii.

A unique intersection design feature that greatly increases parkway capacity is the “indirect left turn.”



Aerial view of parkway in the state of Michigan

Arizona Parkway Cross-Section



Traditional left turns are not permitted at intersections, resulting in a two-phase signal cycle that improves traffic operations and safety. At high-volume junctions between two parkways, grade-separated intersections may be provided.

Key advantages of this type of roadway over a typical arterial include: higher vehicle capacity, faster travel times, better gas mileage due to fewer stops and less idling at intersections, and less potential for accidents at intersections due to elimination of left turns.

Following the preliminary recommendations of the Hassayampa Valley Framework Study, the Maricopa County Department of Transportation led several studies to identify the operational feasibility and construction implications of the Arizona Parkway cross-section. Please find these studies and additional information at: <http://www.bqaz.org/azparkway/index.asp>

Wildlife Crossings

The Arizona Wildlife Linkages Workgroup, a partnership of public agencies and non-governmental organizations, completed a study known as *Arizona's Wildlife Linkages Assessment* in 2006. The assessment documented and mapped initial work to identify habitat blocks, fracture zones, and potential linkage zones, in an effort to promote connectivity of habitat for Arizona's wildlife. The assessment is intended to provide a framework for land managers and planners to assess opportunities for mitigation, such as wildlife crossings and land protection measures.

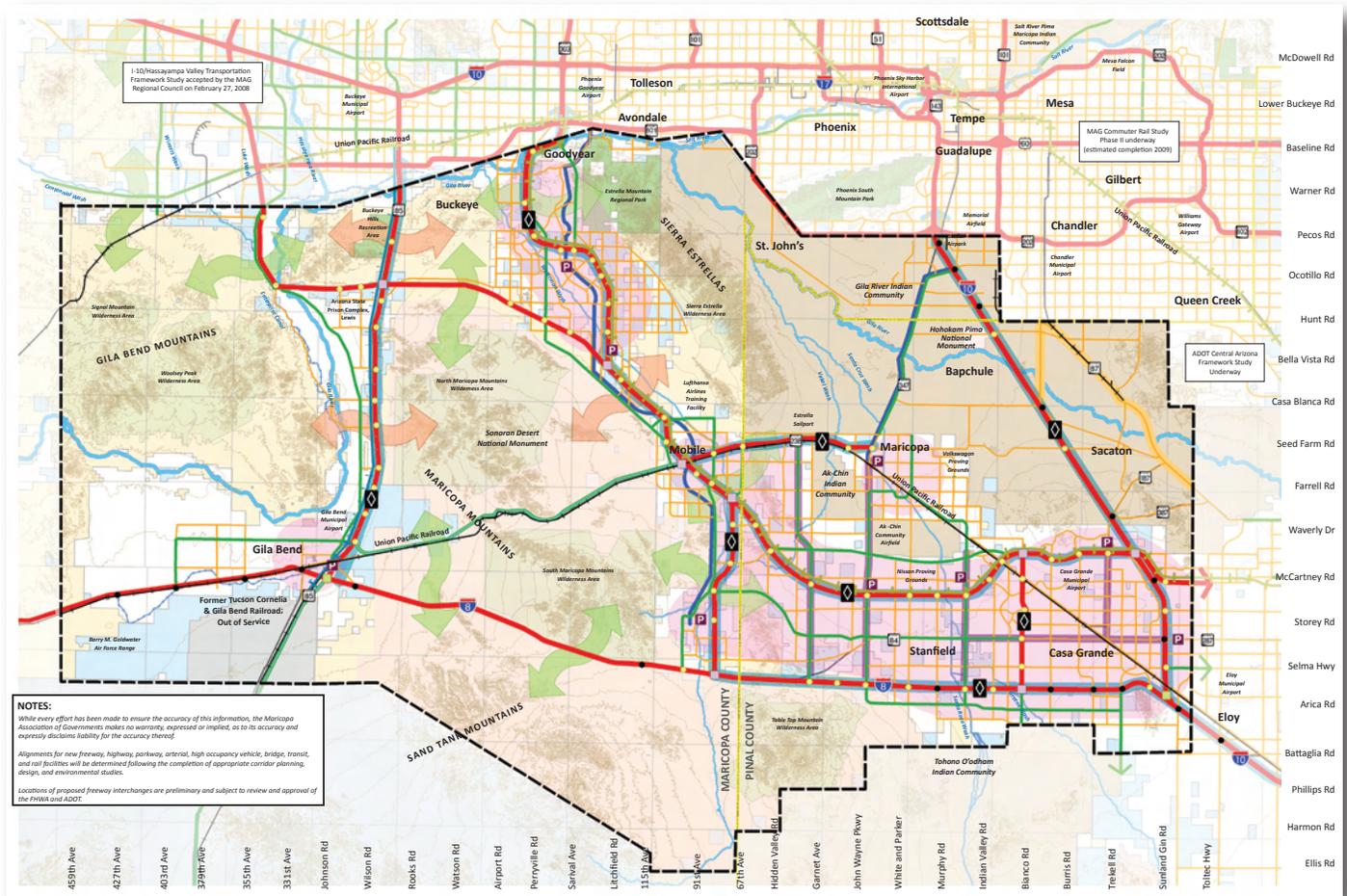
Concrete ramp for tortoise crossing near US-60 (right)

Mitigation measures are important for two reasons. The first reason is human safety. As our infrastructure expands into more rural areas, we are moving into the wildlife habitat, increasing the chances of wildlife-vehicle collisions. Secondly, wildlife crossings reduce the adverse effects of roads, decreasing wildlife mortality.

A follow-on program to the Arizona's Wildlife Linkages Assessment, the *Arizona Missing Linkages*, assesses specific regions to determine these wildlife crossing needs. The Gila Bend-Sierra Estrella Linkage Design identifies the two most important linkages in the study area – the connection across SR-85 between the Gila Bend Mountains and the Sonoran Desert National Monument, and the connection across the proposed Hassayampa Freeway between the Sonoran Desert National Monument and the Sierra Estrella Wilderness Area. Both of these areas include a range of species size for which wildlife crossings should include appropriate infrastructure.



Arizona Wildlife and Missing Linkages



Wildlife Linkage Priority Linkage/Arizona Missing Linkage

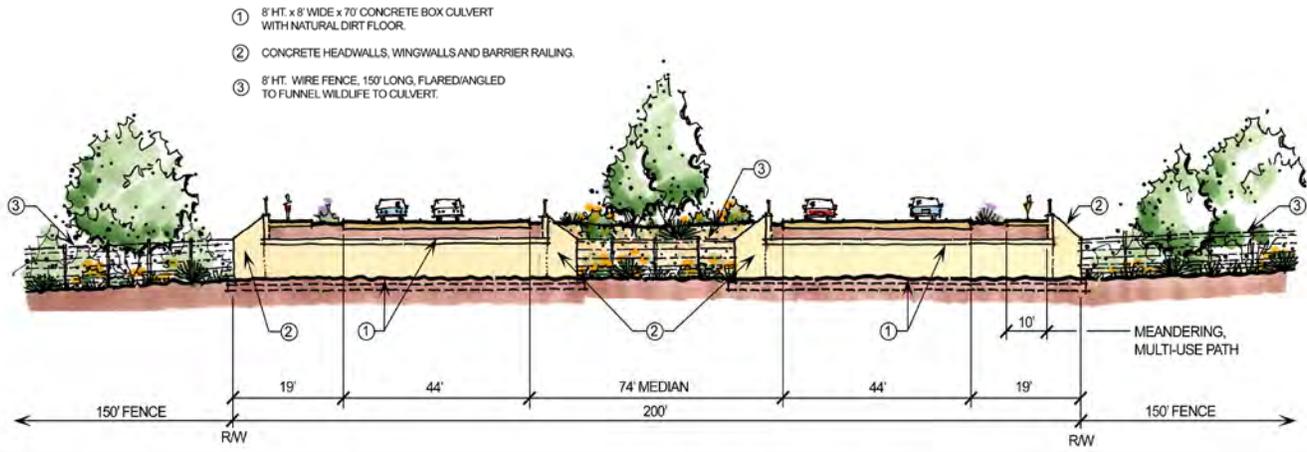
Several wildlife crossings are planned or exist in Arizona and offer examples of alternative mitigation measures. For example, to accommodate desert bighorn sheep on US-93, three wildlife bridges will be constructed over the highway, to appeal to the sheep's desire to be up high. On the other hand, eleven underpasses were constructed on a 17-mile section of SR-260 between Payson and Show Low, permitting elk to cross the highway after over 100 documented wildlife-vehicle collisions in 2001. Mitigation measures included elk crossing signs along SR-260 between Payson and Show Low and pedestrian-wildlife underpasses with monitoring equipment. Since implementation of these crossings on SR-260, elk-vehicle collisions have fallen as much as 95 percent. Near Superior along the Gonzales Pass segment of US-60, concrete ramps have been constructed at the entrance of each culvert to help tortoises avoid slipping between the

riprap entrances to culverts. The ramp guarantees the animals a pathway up to and into the culvert.



Example elk underpass on SR-260

Arizona Parkway Sample Wildlife Crossing for Large Mammal: Cross-Section



Arizona Parkway Sample Wildlife Crossing for Large Mammal: Elevation



A bridge or box culvert with a large opening attracts larger species, whereas low pipe or box culverts with smaller openings are more attractive to small- and medium-sized animals. In both situations, fencing is necessary to guide the animals into the crossing, and not over the road.

The cross-section presented above can easily be adapted to a freeway or arterial by varying the dimensions of the culvert opening in relation to the roadway width. Additionally, depending on the animal size, the box culvert can be replaced with a pipe culvert or other appropriate pathway, which may use an overpass rather than an underpass.

Protection of significant wildlife crossings is an important element of this study. Appropriate mitigation measures should be included in future design of the recommended roadways, especially scenic ways.



Artist rendition of a bighorn sheep crossing over US-93

Relationship to Statewide Transportation Planning Framework

The Arizona State Transportation Board has undertaken a statewide collaborative process to identify Arizona’s multimodal transportation needs and a range of options to meet them. It is the first statewide transportation planning effort in Arizona to address truly long-range needs (2030 and 2050); the first to consider all roadways and transit on an equal footing; the first to include city and county, as well as state systems; and the first to fully integrate principles of smart growth, environmental stewardship, and tribal participation. It will also include a rail development program and investment strategy for the state.

ADOT’s program has applied the concept of a framework study statewide. For Maricopa County and a portion of Pinal, the Hidden Valley Study, the I-10 Hassayampa Valley Regional Transportation Framework, and the update of the MAG RTP provide the basis for the future transportation network. In Pima County, ADOT will incorporate the update of the PAG RTP. ADOT has split the rest of the state into four regions – Northern Arizona, Western Arizona, Central Arizona, and Eastern Arizona. The Hidden Valley recommended network is fully integrated with its adjacent study area, the Central Arizona Framework, which encompasses the rest of Pinal County.

In summer 2009, ADOT and its regional partners will use the information developed to create a Statewide Transportation Planning Framework (a 2050 multimodal transportation vision), which will lead to the updated State Long-Range Transportation Plan.

System Funding

Building the recommended roadway network in the study area will cost over \$25 billion in today’s dollars. These roadway projects are not funded or included in the adopted Regional Transportation Plans. The study team identified various transportation revenue sources in use today by study area jurisdictions, including the Highway User Revenue Fund (HURF) (primarily the

Framework Planning Regions



state fuel tax), the Regional Area Road Fund (RARF) which comes from the voter-approved half-cent sales tax in Maricopa County, and the Pinal County Transportation Excise Tax extended to 2025 in Pinal County. The HURF has been declining in real terms for almost twenty years, and the RARF and the Pinal County tax expire in 2025. Accordingly, these sources cannot be relied on for the proposed Hidden Valley framework. We need to identify and commit a new array of funding sources to build the network. Funding will also be needed for continuing operation and maintenance once construction is complete.

There are no easy solutions to this funding predicament, as the sources that generate the most revenue will likely be the most difficult to enact. Even though the conceptual network is a long-term vision, we should begin to think now about how to overcome the funding shortfall.



Potential Implementation Timeframe

Corridor	Segment	Corridor/ Preliminary Alignment Study	Right-of-Way Preservation	Facility Level of Development*	
				Interim (2030)	Buildout
Freeway					
I-8	I-10 to SR-347	N/A	2010-2015 (for new TIs)	6 lanes (general purpose)	10 lanes, including 2 HOV, and new TIs
	West of SR-347			4 lanes (existing)	10 lanes, including 2 HOV, and new TIs
I-10**	SR-202L to I-8	N/A	2010-2015 (for new TIs)	6 lanes (general purpose)	10 lanes, including 2 HOV, and new TIs
SR-85	I-8 to I-10	Complete	Complete	4 lanes (general purpose)	8 lanes, including 2 HOV
SR-303L Extension	I-10 to Rainbow Valley Rd	2010-2015	2010-2020	6 lanes (general purpose)	8 lanes, including 2 HOV
	Rainbow Valley Rd to Hassayampa Fwy	2010-2020	2015-2020	4 lanes (general purpose)	8 lanes, including 2 HOV
SR-303 Spur	Hassayampa Fwy to I-8	2010-2020	2015-2020	6-lane parkway	8 lanes, including 2 HOV
Hassayampa Fwy	I-10 (Casa Grande) to I-10 (Buckeye)	2010-2015	2010-2020	6 lanes (general purpose)	8 lanes, including 2 HOV
SR-238	Hassayampa Fwy to SR-347	2010-2015	2015-2020	4 lanes (general purpose)	8 lanes, including 2 HOV
Montgomery Fwy	I-8 to Hassayampa Fwy	2020-2025	2020-2030	4 lanes (general purpose)	8 lanes, including 2 HOV
Parkway					
SR-347** ^H	I-10 to Maricopa-CG Hwy	N/A	2010-2020	6 lanes	6 lanes
	Farrell Rd to I-8		2010-2020	4 lanes	8 lanes
Sonoran Valley ^H	SR-238 to SR-303L	2010-2015	2010-2020	4 lanes	6 lanes
Warren-Ralston ^H	I-8 to SR-238	2010-2015	2010-2020	4 lanes	8 lanes
Anderson ^H	SR-84 to Maricopa-CG Hwy	2010-2015	2010-2020	4 lanes	8 lanes
Anderson ^M	I-8 to SR-84	2015-2020	2015-2025	4 lanes	6 lanes
Cotton Ln ^H	SR-303L to SR-303L	2010-2015	2010-2020	4 lanes	6 lanes
Kortsen/SR-84/SR- 287 ^M	Montgomery to SR-303 Spur	2015-2020	2015-2025	4 lanes	6 lanes
Maricopa-CG Hwy ^M	All (parkway portion)	2010-2020	2015-2025	6 lanes	6 lanes
Farrell ^M	All (parkway portion)	2010-2020	2015-2025	4 lanes	6 lanes
Val Vista ^M	Hassayampa Fwy to Hassayampa Fwy	2010-2020	2015-2025	4 lanes	6 lanes
Selma Hwy ^M	East of I-10	2010-2020	2015-2025	6 lanes	6 lanes
Trekell ^M	South of I-8	2010-2020	2015-2025	4 lanes	6 lanes
Vekol Valley ^M	I-8 to Hassayampa Fwy	2010-2020	2015-2025	4 lanes	6 lanes
Hidden Waters ^L	Gila Bend to I-10	2010-2015	2010-2020	2-lane arterial	6 lanes
Tabletop ^L	SR-347 to Trekell	2015-2025	2020-2030	4-lane arterial	6 lanes
Watermelon/ Paloma ^L	I-8 to Hidden Waters	2015-2025	2020-2030	2-lane arterial	8 lanes

Potential Implementation Timeframe (cont.)

Corridor	Segment	Corridor/ Preliminary Alignment Study	Right-of-Way Preservation	Facility Level of Development*	
				Interim (2030)	Buildout
Parkway (cont.)					
SR-85 Scenic Way	South of I-8	N/A	Post 2030	2-lane arterial (no change)	4-lane scenic way
De Anza Scenic Way	SR-238 to SR-85	N/A	Post 2030	2-lane arterial (no change)	4-lane scenic way
Regional Transit					
Passenger Rail	Queen Creek-Eloy (UP Phoenix Subdivision)	2010-2015	2010-2020	Peak period service	Full service
	SR-303L/Hassayampa Fwy corridor	In conjunction with Hassayampa Fwy studies	2015-2025	Limited or no service	Full service
Regional Bus	All	N/A	N/A	Based on demand	Based on demand

*Refers to total lanes in both directions.

**All transportation improvements on tribal community land require advance authorization from the tribal governing council.

Parkway priorities: ^HHigh ^MMedium ^LLow

Source: MAG Study Team, 2009