

# Southeast Maricopa / Northern Pinal County Area Transportation Study

## Draft

### Preliminary Analysis of Transportation Improvement Concepts

*Prepared for*

Maricopa Association of Governments  
Central Arizona Association of Governments  
Arizona Department of Transportation

*Prepared by*



February 10, 2003

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## **1.0 INTRODUCTION**

The Southeast Maricopa/Northern Pinal County Area Transportation Study (SEMNPTS) is a project jointly sponsored by the Maricopa Association of Governments (MAG), the Central Arizona Association of Governments (CAAG), and the Arizona Department of Transportation (ADOT).

### **1.1 Background**

The purposes of this study are to document the transportation relationships between Maricopa and Pinal Counties, examine the long-range transportation needs of the study area, and identify realistic projects to address the area needs. Ultimately, the projects identified in this study will be evaluated in a regional context in the MAG Regional Transportation Plan (RTP) process. Pinal County projects will be used by CAAG and Pinal County in their long range planning. Recommendations affecting current or potentially future state facilities will be considered by ADOT.

The Southeast Maricopa/Northern Pinal County Area Transportation Study is separated into three phases:

1. Review existing conditions and trends, document future travel demand and issues.
2. Identify and evaluate transportation improvement options.
3. Develop a list of future transportation needs for the study area.

### **1.2 Study Process**

In order to accomplish these three phases, the project includes a number of work tasks, which describe specific elements of work. During the course of the project, Working Papers will be prepared to document the results of certain work tasks. These working papers are in draft form, subject to review and comment. These working papers will form the basis of the final report.

The working papers to be produced and the task they are associated with are summarized below.

- Task 3 – Working Paper: Review of Other Studies
- Task 4 – Working Paper: Socio-economic Data
- Task 5 – Working Paper: Existing Transportation Data
- Task 6 – Working Paper: Transportation Issues
- Task 7 – Working Paper: Transportation Options and Evaluation
- Task 8 – Working Paper: Transportation Recommendations

This paper provides a preliminary analysis of transportation improvement options prior to preparation of the working papers for Task 7 and 8.

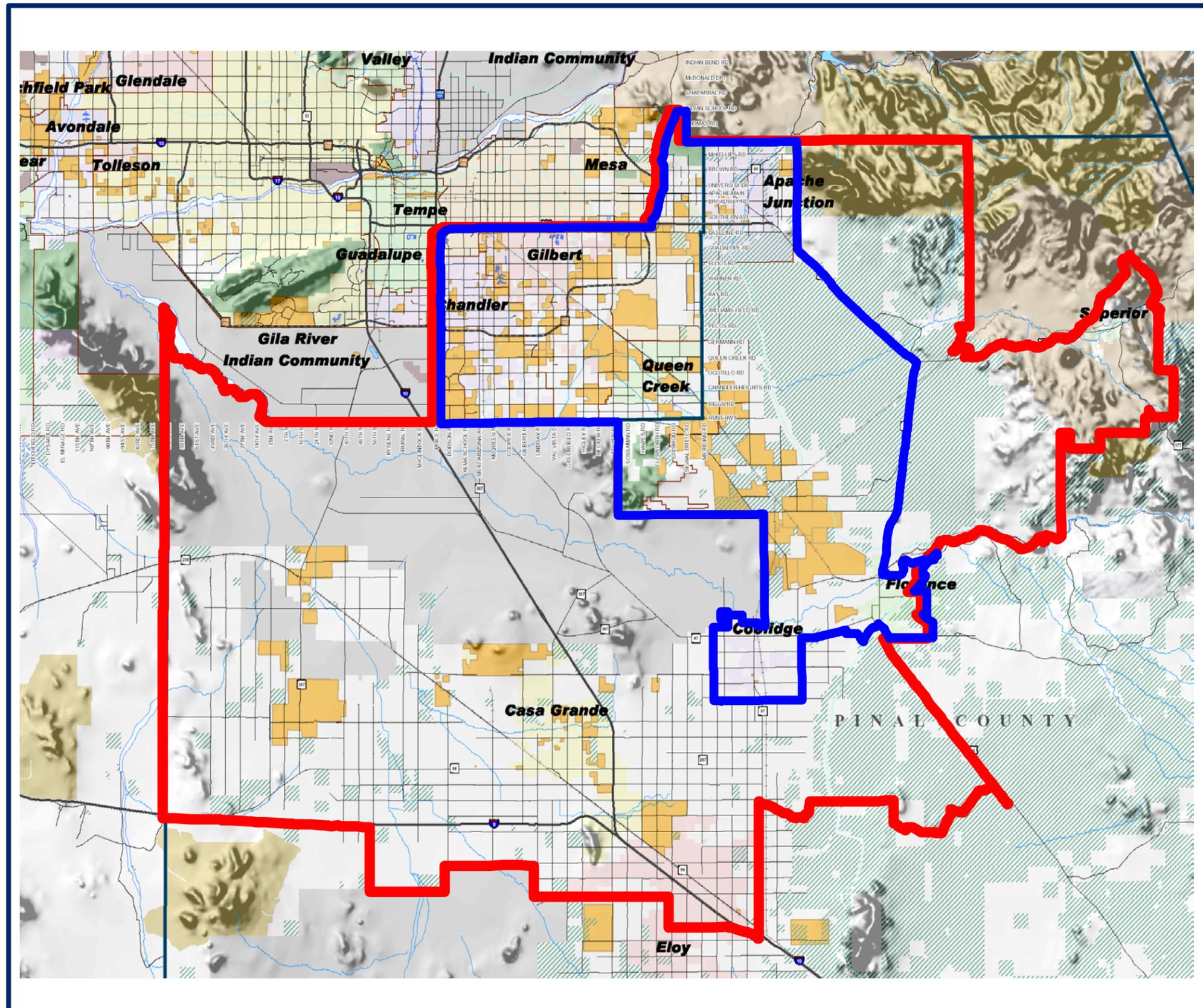
Transportation needs in Southeast Maricopa County and in Northern Pinal County have been studied in recent years. Each study examines future conditions to deal with the high levels of development expected in each individual community. However, the SEMNPTS is the first formal attempt to evaluate transportation linkages between Maricopa and Pinal Counties. As both areas continue to grow, the amount of undeveloped land between them diminishes and the interaction between them increases. This trend is expected to continue.

This working paper discusses the findings and recommendations of the Southeast Maricopa / Northern Pinal County Area Transportation Study. This working paper summarizes the existing transportation system, details the future base system which includes arterial street widening and new arterials, discusses improvements to the existing freeway and state highway system, and describes a number of new corridors to be considered. Also included is a brief description of transit improvements being considered in other studies, and non-motorized improvements. This expanded transportation system is needed to accommodate the substantial growth that is anticipated in the area.

### **1.3 Study Area**

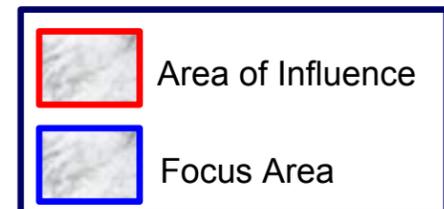
As the study name implies, the study includes southeastern Maricopa County and northern Pinal County. The study area is broadly defined as US 60/SR 79 on the east, Loop 101 and the Gila River Indian Community on the west, US 60 on the north and Coolidge and Florence on the south. This is considered the “focus area” for the study. In addition, a larger area was defined for travel demand modeling purposes. The definition of a “model area” allows for incorporating the travel demand impacts of surrounding areas. The study area, outlining the focus and model areas, is shown in Figure 1. The majority of the discussion and improvements are contained within the focus area, although for continuity some improvements are shown and discussed beyond the focus area limits.

The jurisdictions included within the study area are: Apache Junction, Chandler, Coolidge, Florence, Gilbert, Mesa, Queen Creek, Maricopa County, and Pinal County. In addition, the effects of transportation issues in surrounding communities such as Casa Grande, Guadalupe, the Gila River Indian Community, Phoenix, Superior, and Tempe will be considered.



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Figure 1  
Study Area



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## 1.4 Summary of 2000 System Operation

For reference and comparison with information provided in this working paper, the following information is presented to describe current conditions.

Figure 2 shows the existing number of through lanes for the arterial, highway, and freeway facilities in the focus area. The arterial streets in the northwest portion of the focus area are primarily four and six lanes while in the southeast portion of Maricopa County and in Pinal County, the arterial streets are mostly two-lanes. A summary of the existing arterial street system in the focus area is presented in Table 1.

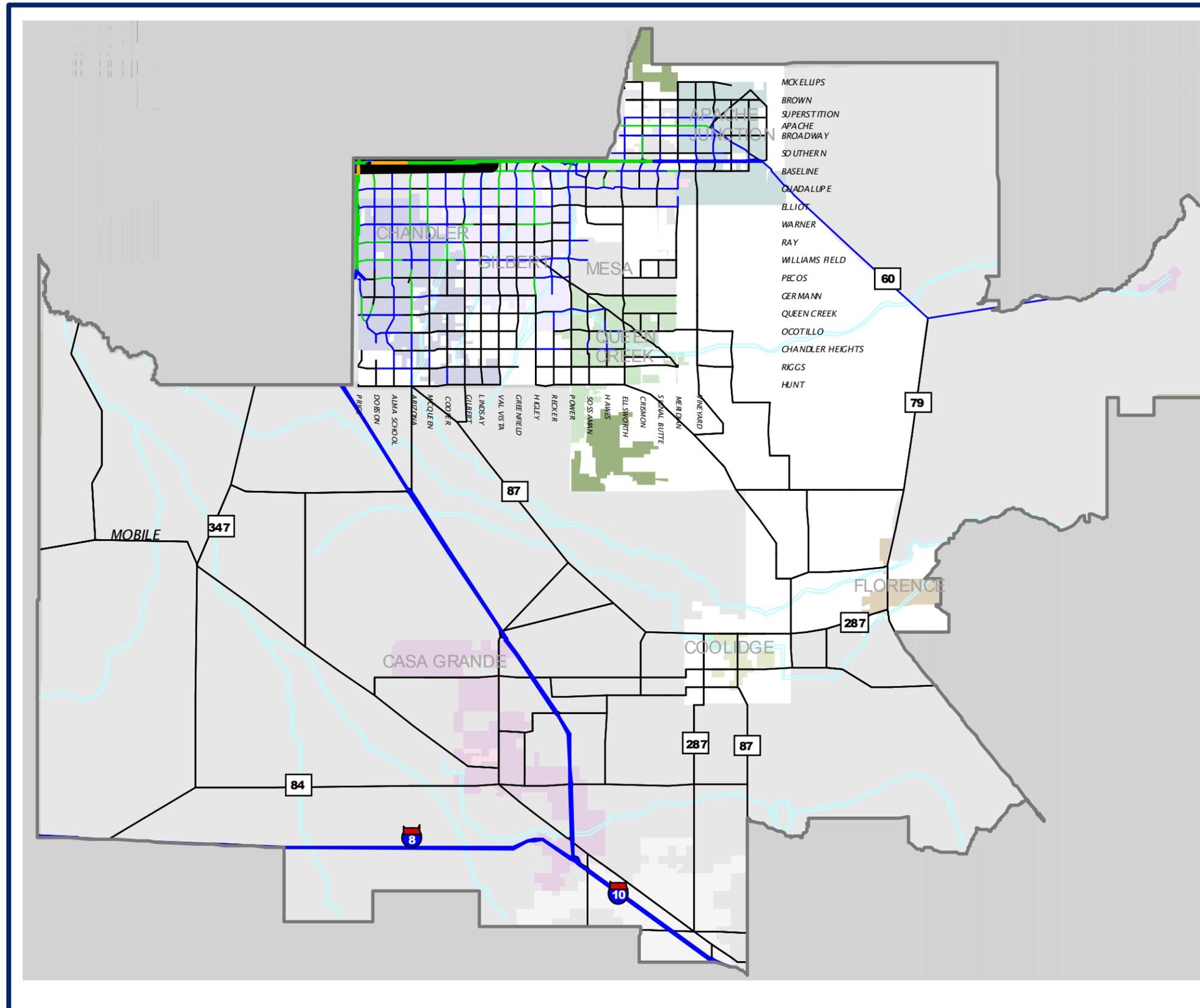
**Table 1**  
**Existing Arterial Street Summary**

<b>MEASURE</b>	<b>Maricopa County</b>	<b>Pinal County</b>
Centerline miles	455	148
Lane miles	1491	322

Figure 3 presents the segment level of service in the focus area. Level of Service (LOS) is the term used to describe the degree of traffic congestion on a roadway system. Level of Service can be estimated for various different roadway parameters and time frames. LOS can be calculated for roadway segments, intersections, freeway mainline, and ramps. LOS can also be calculated for different time periods including daily, AM peak hour, and PM peak hour.

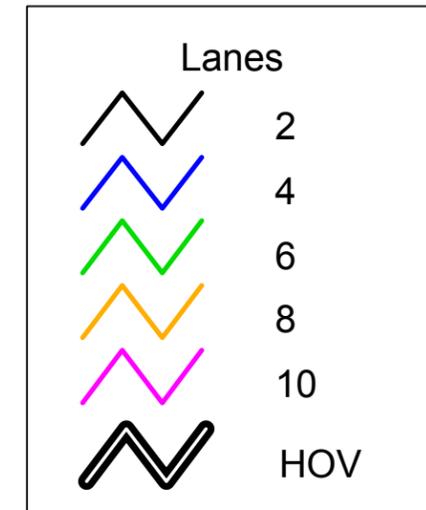
The various levels of service, which range from A to F, are generally defined as follows:

- **Level of Service A** represents free flow.
- **Level of Service B** is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable.
- **Level of Service C** is in the range of stable flow, but marks the beginning of the range in which the operation of individual users becomes significantly affected by others.
- **Level of Service D** represents high-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience.
- **Level of Service E** represents operating conditions at or near the capacity level. All speeds are reduced to a low but relatively uniform value.

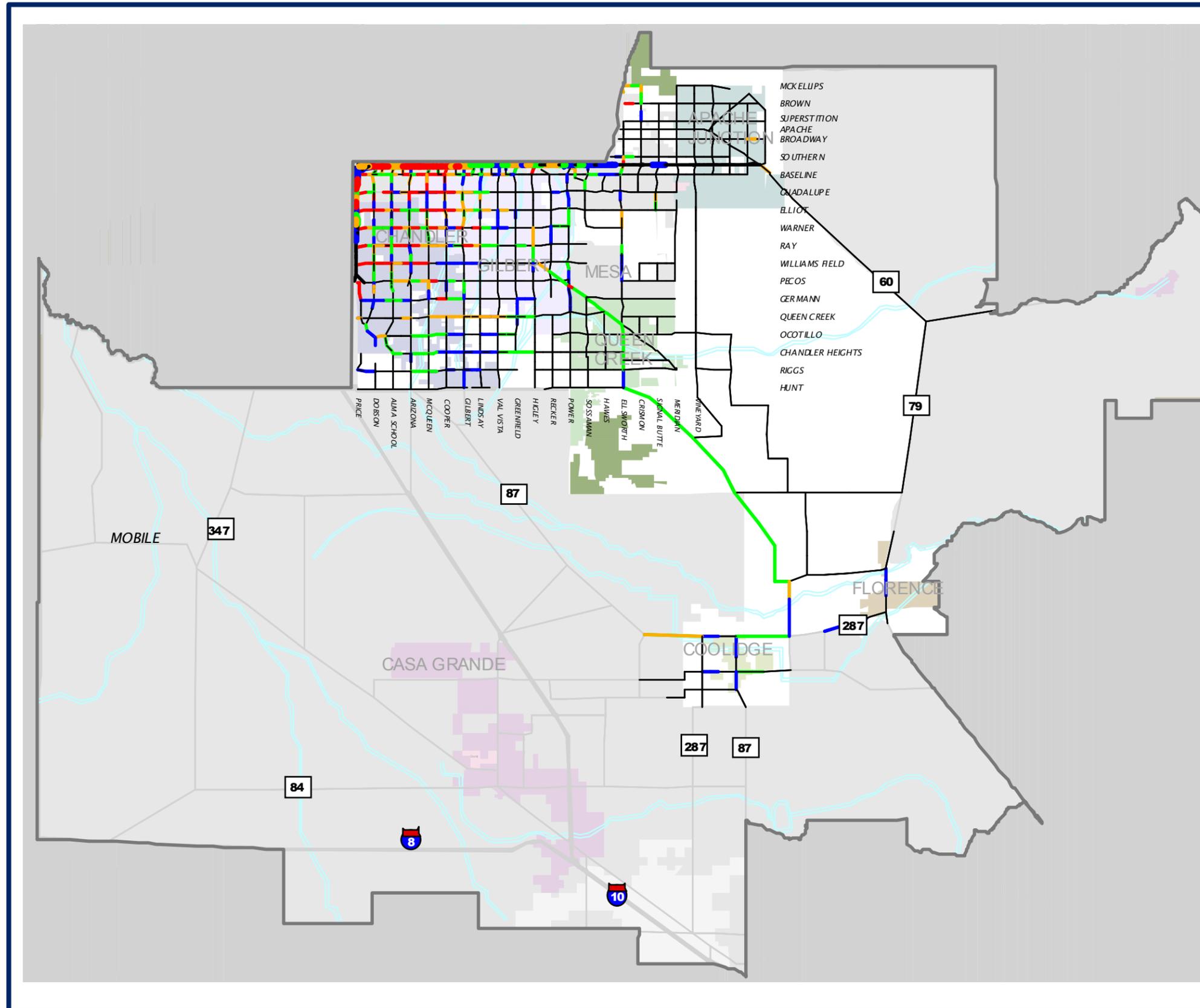


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Figure 2  
2002 Network  
Number of Lanes



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Figure 3  
2000 Link V/C

-  A (0 - .6)
-  B (.61 - .7)
-  C (.71 - .8)
-  D (.81 - .9)
-  E-F (.9 or higher)

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- **Level of Service F** is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point.

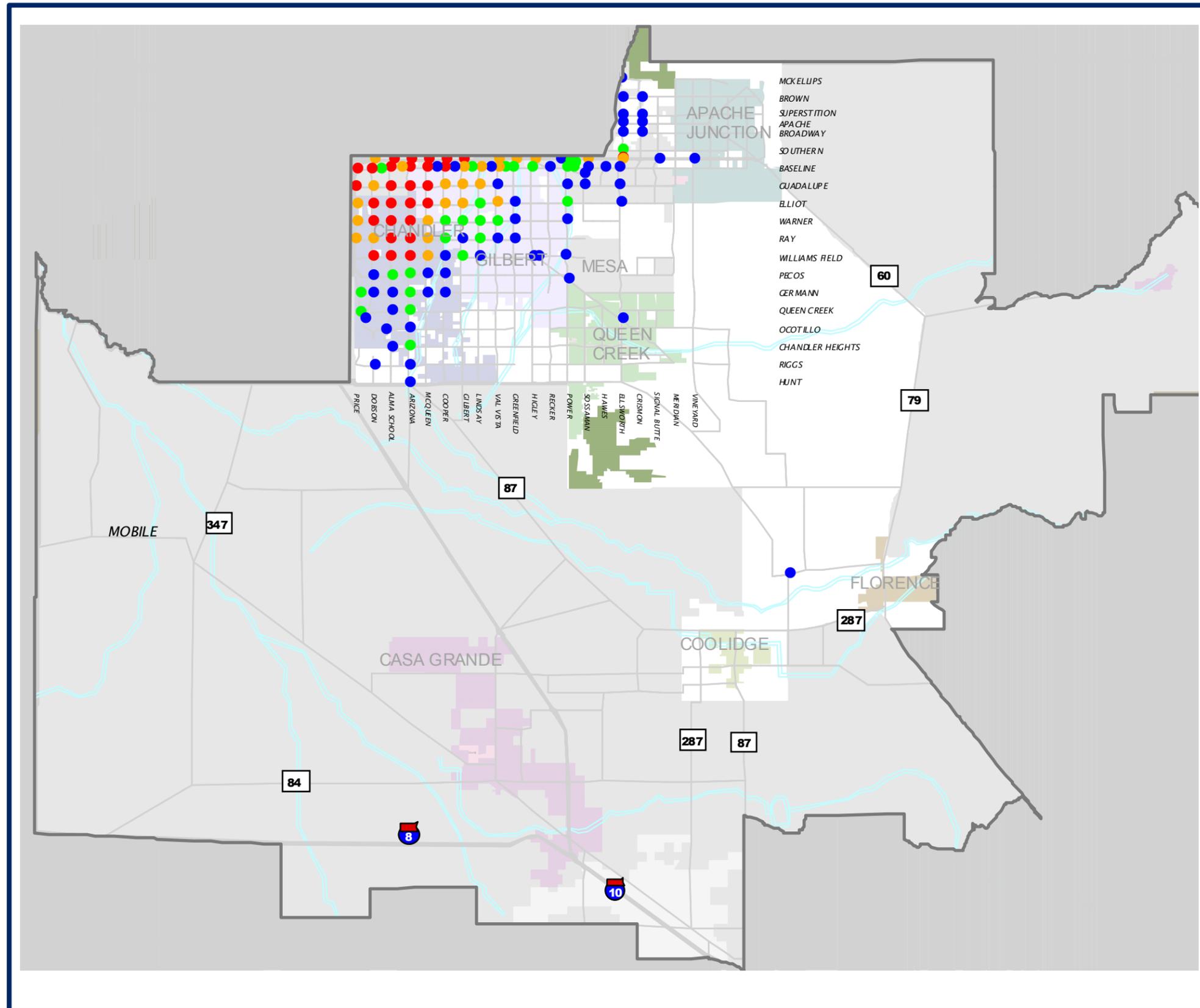
The operating efficiency of a roadway segment can further be defined by comparing volume to capacity. The ratio of the volume on a segment of road compared to the traffic capacity of the segment is known as the v/c ratio. This is calculated for each segment by simply dividing the traffic volume or forecast for the segment by the capacity of the segment. For this analysis, the daily volume was compared to the daily capacity to obtain a volume to capacity ratio.

The volume to capacity ratio is equated to level of service to define the performance of a road segment. The relationship between v/c ratio and level of service is summarized in Table 1.

**TABLE 2**  
**LOS AND V/C RELATIONSHIP**

LEVEL OF SERVICE	V/C RANGE
A	0.0 to 0.6
B	0.61 to .7
C	0.71 to 0.8
D	0.81 to 0.9
E	0.91 to 1.0
F	greater than 1.0

Figure 4 shows the intersection level of service in the focus area for the 2000 base condition. The level of service E and F locations are generally found in the northwest portion of the focus area.



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**Figure 4**  
**2000 Intersection LOS**

- A
- B
- C
- D
- E-F

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## **2.0 ARTERIALS**

The arterial street system forms the backbone of the area's transportation system. The expansion of the arterial street network is needed to support economic development and accommodate growth. The arterial street system additions and improvements are often provided with new development. As a result, these improvements follow the pattern of development.

This chapter describes the improvements to the existing arterial system to form what is defined as the Future Base. This system represents the long-range (20 years plus) street network target for the study area. The improvements include widening existing streets, new arterial segments, intersection improvements, bridge replacement, and operational enhancements.

### **2.1 New Arterial Construction**

The majority of the additions to the arterial street system are in the eastern portion of Maricopa County and in Pinal County. In addition, there is some new arterial construction in the developed portion of Maricopa County, which will eliminate many of the discontinuities in the existing system.

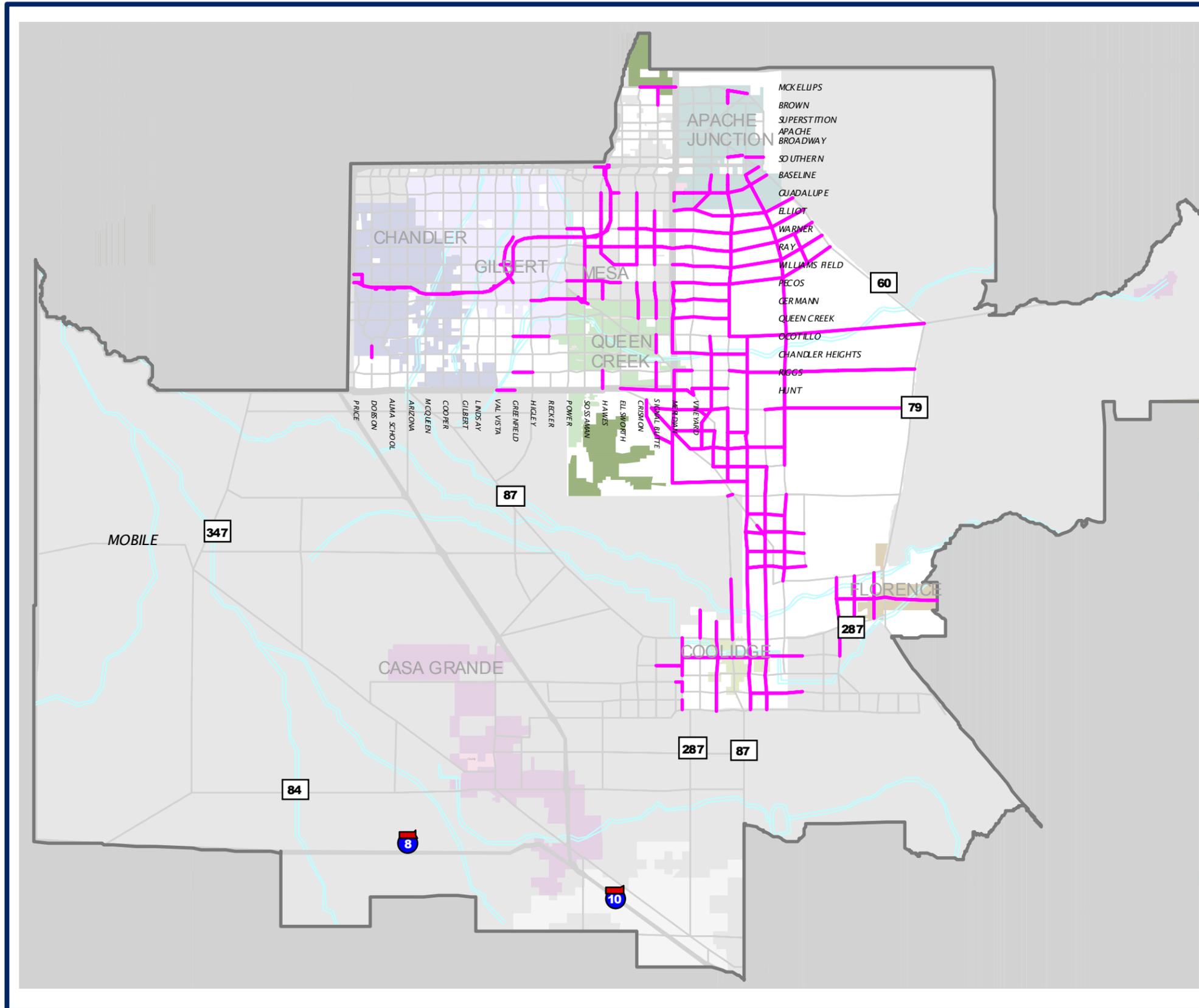
The additions to the arterial street system increases the number of centerline miles of arterial street in Maricopa County from 388 to 494 miles and in Pinal County from 185 to 463 miles. The new arterial construction is shown in Figure 5.

The estimated cost in 2002 dollars for the new arterial streets in Maricopa County ranges from \$318 to \$424 million depending on the combination of four-lane and six-lane streets. The cost for Pinal County ranges from \$834 to \$1,112 million.

### **2.2 Arterial Street Widening**

The Future Base arterial street network includes a substantial number of miles of arterial street widening. The majority of the street widening occurs in Maricopa County and Apache Junction. In many instances, arterial street widening from 4 to 6 lanes requires additional right of way. For this analysis, it is assumed that the right of way will be acquired to complete the widening, however, in some cases this may not be true.

Some of the arterial street widening in the Maricopa County portion of the study area addresses the issue of scalloped streets. With the implementation of the Future Base network, all of the streets with reduced width would be eliminated and a consistent cross section would be provided.



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Figure 5  
Future Base  
Added Roadways

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There are 586 miles of arterial streets to be widened including 420 miles in Maricopa County and 168 miles in Pinal County. The estimated cost for Maricopa County is \$1,890 million and for Pinal County is \$756 million. Figure 6 shows the roadways that would be widened.

### **2.3 Intersection Improvements**

Arterial street/arterial street intersection improvements are intended to provide additional capacity at locations where the individual arterial streets will not be widened, but the intersections have unacceptable level of service. This can occur at locations where arterials have been built to a practical limit of six lanes or locations where a four lane arterial street cannot be widened because of development and/or right of way constraints.

On a four lane arterial street, the intersection widening would provide three through lanes, two left turn lanes, and one right turn lane. On a six lane arterial street, the intersection widening would provide two left turn lanes and one right turn lane.

According to the MAG travel forecasting model output, there are 30 arterial street intersections (not including freeway ramp intersections) in the study area (29 in Maricopa county and 1 in Pinal County) expected to operate at level of service E or F in the future base condition. The locations are depicted in Figure 7. The estimated cost to improve these intersections is \$72.5 million for Maricopa County and \$2.5 million for Pinal County.

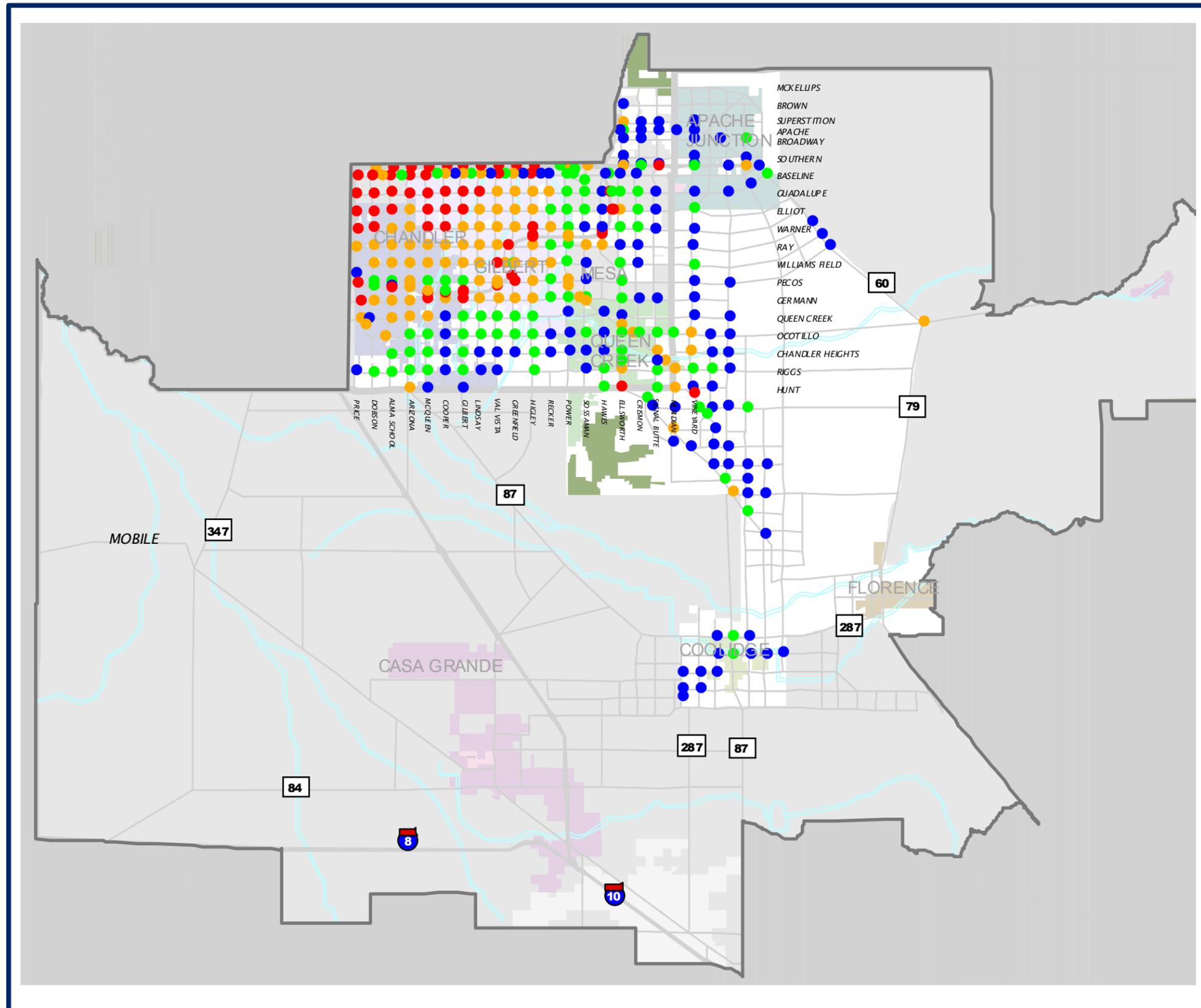
It should be noted that if other system improvements described elsewhere in this working paper are implemented, then the number of intersections at level of service E and F decreases. If the freeway widening and HOV improvements are implemented, then the number of intersections reduces to 15. If the new corridors are implemented, then the number of intersections at level of service E and F is 12.

### **2.4 Bridge Construction/Reconstruction and Railroad Crossings**

There are a number of features in the study area that can be impediments to the continuity of the arterial street system including canals, railroads, and a river. If an existing arterial street or an arterial street alignment crosses one or more of is included to these features, then additional cost is included for the crossing.

A canal crossing is assumed to be four or six lanes wide, 50 feet long, and cost \$60 per square foot. It is estimated there are 12 new four-lane, 12 new six-lane and 6 widen four to six lane canal crossings in Maricopa County. The estimated cost is \$7.4 million. It is estimated there are 6 new four-lane and 1 new six-lane canal crossings in Pinal County. The estimated cost is \$1.8 million.





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Figure 7  
Base/2030 Intersection  
LOS

- A
- B
- C
- D
- E-F

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A river crossing is assumed to be four or six lanes wide, 100 feet long, and cost \$90 per square foot. It is estimated there are 8 new four-lane river crossings in Pinal County. The estimated cost is \$5.9 million.

At-grade railroad crossings are generally not considered a desirable feature in the arterial street system. Railroad companies typically will oppose new at-grade crossings and each new crossing must be approved by the Arizona Corporation Commission. It is estimated there are three potential expanded at-grade crossings in Maricopa County and 11 in Pinal County. An upgraded grade crossing is estimated to cost \$.15 million each. A railroad grade separated crossing is assumed to be four lanes wide, 50 feet long, and cost \$110 per square foot for an estimated cost of \$.5 million.

## **2.5 Arterial Improvement Program**

There are several arterial streets in the study area that function as regional facilities because they are multi-jurisdiction, have good freeway connections and serve activity centers. These include, but are not limited to, the following.

- ◆ Arizona Avenue
- ◆ Gilbert Road
- ◆ Higley Road
- ◆ Power Road
- ◆ Ellsworth Road
- ◆ Ironwood Road
- ◆ Elliot Road
- ◆ Queen Creek Road
- ◆ Riggs Road

If one or more corridors are supported by the respective jurisdictions, then additional features could be considered to provide improved arterial operation. These features could include capacity improvements such as widening and intersection reconstruction, ITS such as variable message signs, cross jurisdiction signal coordination, bus priority, arterial HOV lanes, and expanded bus service. Policy issues to consider are intersection and signal spacing and number of access points.

## **2.6 Arterial Operational Improvements**

In 1996, a unique partnership known as AZTech was formed. The Phoenix area was one of four areas selected to receive model deployment initiative funding. The AZTech system provides motorists with traveler information real time traffic conditions, closures, and accidents. This information is provided using traffic camera, variable message signs, and a substantial communication system.

Phase I and II of AZTech were successful in disseminating real-time information through websites, kiosks, TV, and radio. The next phase of AZTech will provide real time digital traveler information.

In addition to AZTech, the Cities of Mesa and Chandler and the Town of Gilbert have computerized traffic signal systems. As new signals are installed they should be added to the signal systems in order to maintain the most effective signal coordination. Opportunities for cross-jurisdiction signal coordination should be pursued.

## 2.7 Arterial Mitigation/Aesthetics

As arterial streets are built and widened to four and six lanes, it is important to address and mitigate potential negative impacts. The most common mitigation to address wider streets is to provide landscaping that is compatible with the adjacent neighborhoods. Generally, this is included in the cost of new or widened arterial streets. However, in established areas where street improvements are not planned, then landscape rehabilitation enhances the arterial and supports the neighborhood character.

In addition, noise concerns will need to be addressed primarily in those areas where arterial street widening is planned. Mitigation for noise impacts may require noise walls and/or rubberized asphalt.

## 2.8 Future Base Summary

Tables 3 and 4 present a summary of the focus area future base network compared to the 2002 network for Maricopa and Pinal Counties. In Maricopa County, the centerline miles are expected to increase 22 percent while the number of lane miles nearly doubles. In Pinal County, the centerline miles increase by more than 200 percent, while the number of lane miles increase 500 percent.

**Table 3**  
**Future Base Arterial Street Summary-Maricopa County**

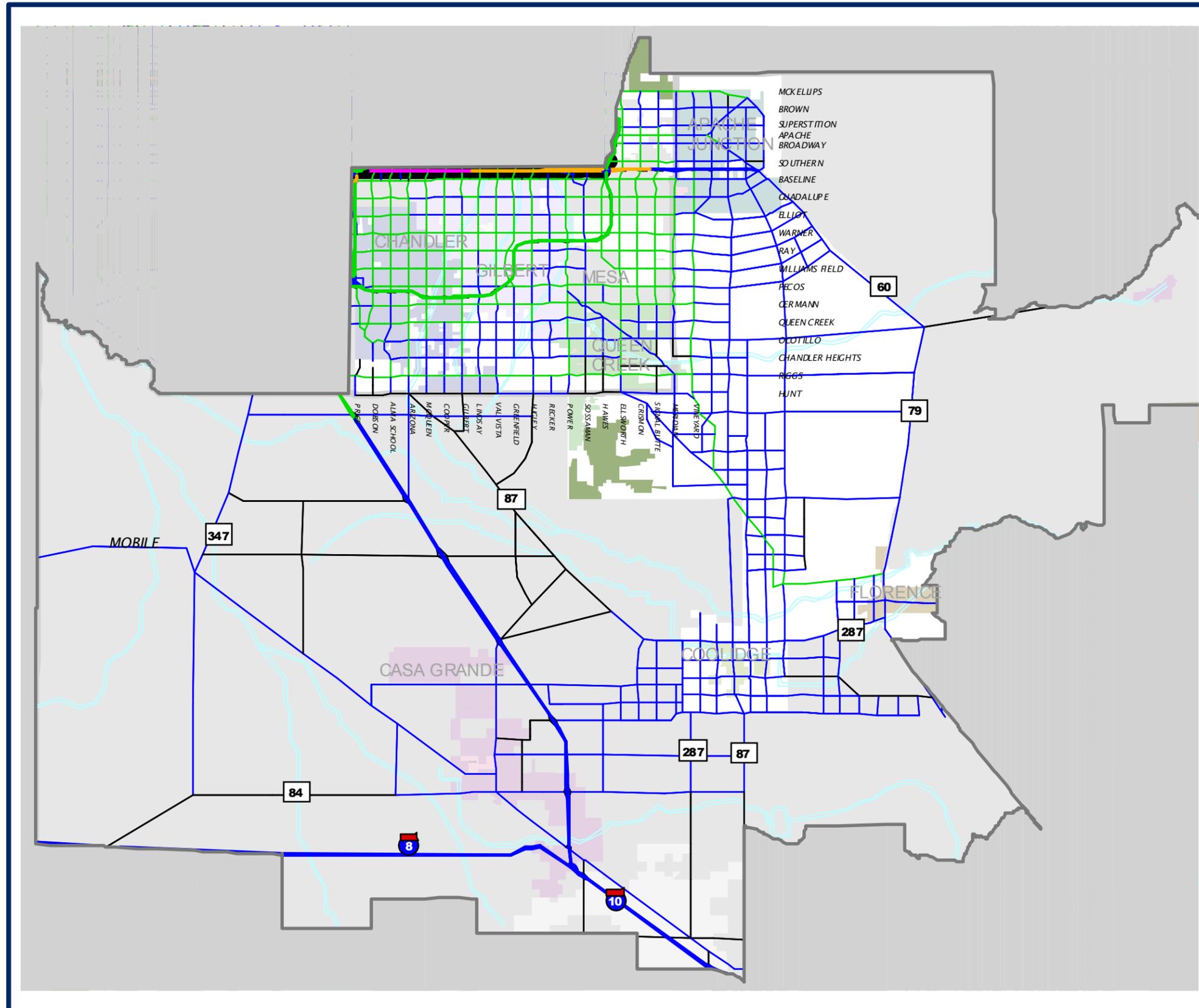
<b>MEASURE</b>	<b>2002</b>	<b>FUTURE BASE</b>
Centerline miles	455	554
Lane miles	1491	2827
Cost (million)	NA	\$2,208

**Table 4**

**Future Base Arterial Street Summary-Pinal County**

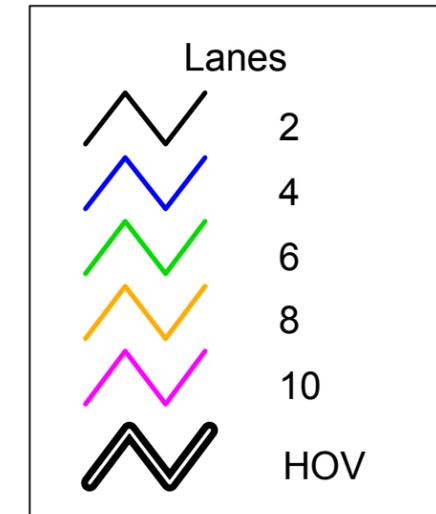
<b>MEASURE</b>	<b>2002</b>	<b>FUTURE BASE</b>
Centerline miles	148	482
Lane miles	322	1962
Cost (million)	NA	\$1,590

Figure 8 shows the total number of lanes in the focus area that result with the future base improvements. Figure 9 presents the future base segment level of service in the focus area.

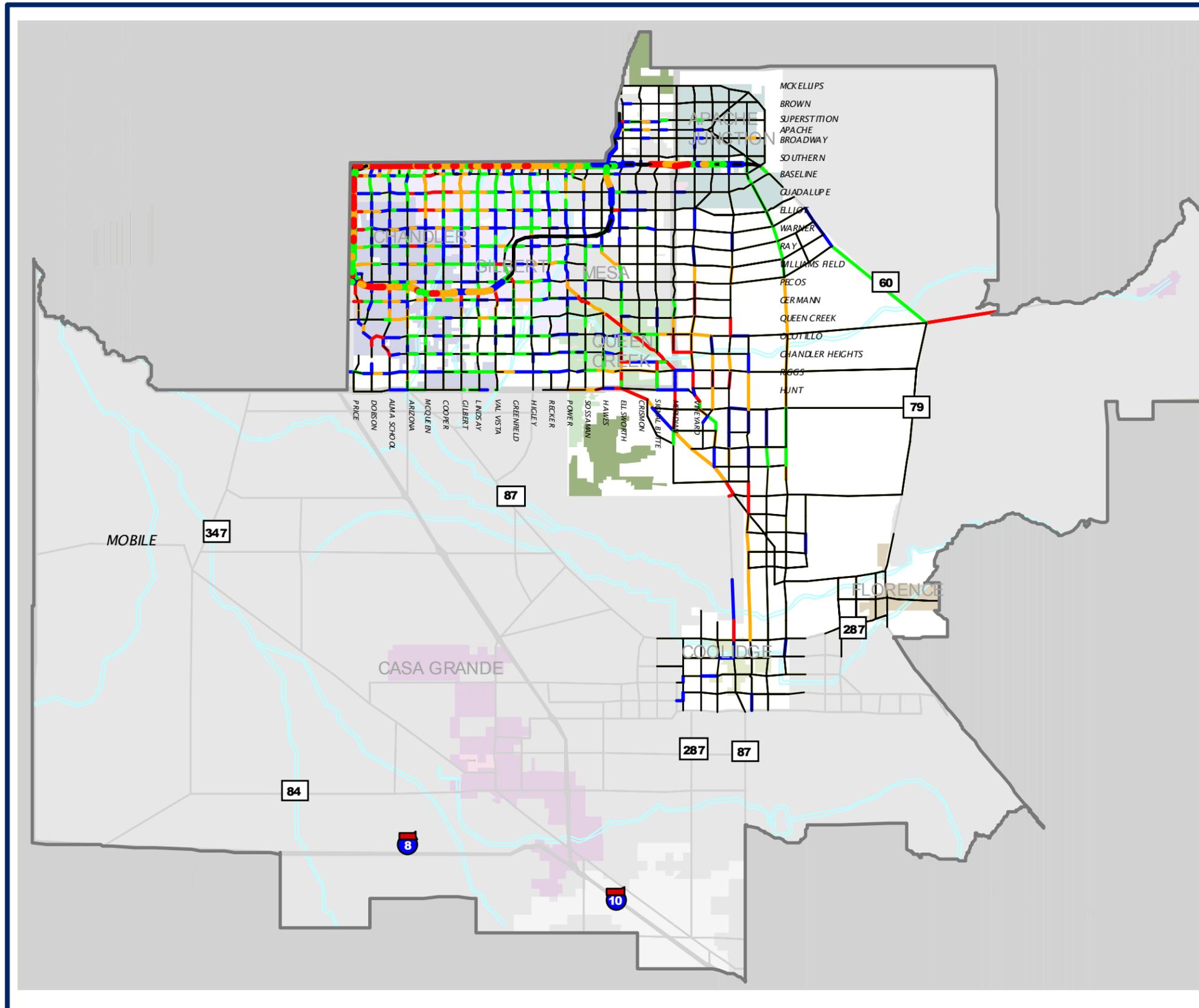


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Figure 8  
Future Base Network  
Number of Lanes



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**Figure 9**  
**Base/2030 Link V/C**

-  A (0 - .6)
-  B (.61 - .7)
-  C (.71 - .8)
-  D (.81 - .9)
-  E-F (.9 or higher)

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## 3.0 FREEWAYS

Freeways are defined as high speed divided roadways with limited access that is provided via grade separated interchanges. In general, the freeways carry the longer trips in the area and serve to connect the communities and major activity centers.

There are 40 centerline miles of existing freeway in the study focus area. The existing freeways in the study area are US 60 and Loop 101. US 60 extends from Loop 101 in Tempe to Goldfield Road in Apache Junction. East of Goldfield Road, the US 60 freeway transitions to a highway facility with at grade intersections. The study area portion of Loop 101 extends from US 60 in Tempe to its current southern terminus south of Chandler Blvd in Chandler.

One new freeway is included in the future base roadway system. Loop 202 in the study area will extend from University Drive in Mesa to the south and west through Gilbert and Chandler to Loop 101. Loop 202 will add 22 miles of freeway and provide three lanes in each direction. The estimated cost of the construction of the 22 miles of Loop 202 is \$880 million.

A summary of the existing and future base freeway characteristics is presented in Table 5.

**Table 5**  
**FREEWAY FACILITIES-FOCUS AREA**

	Existing Freeways	Future Base Freeways
Centerline Miles	40	210
Lane Miles	22	276

### 3.1 Potential New Freeway Corridors

New freeways can provide a variety of benefits for communities in the East Valley. Freeway facilities can provide congestion relief to adjacent parallel arterial streets especially during the peak hours of commuter travel. Properly planned freeway facilities can provide needed access to developing areas and support economic development. Also, a freeway facility provides the infrastructure necessary to accommodate HOV lanes and express bus service.

Five potential new freeway corridors were analyzed for the Southeast Area. These potential corridors include both general purpose lanes and HOV lanes. These corridors are described in the following sections.

Williams Gateway Freeway (Loop 202 to US 60)

The Williams Gateway Freeway corridor is located in southeast Mesa near Williams Gateway Airport. The freeway would begin at Loop 202 near the Hawes Road interchange and extend southeasterly into Pinal County and connect to US 60. The freeway would provide three lanes in each direction with grade-separated interchanges spaced 1-2 miles apart. The general location is shown in Figure 10.

The freeway would serve the Williams Gateway Airport and ancillary developments, the General Motors site (scheduled for re-development), and potential developments on State Land in Pinal County. The majority of the land in the corridor is currently vacant. The freeway could serve as a link between the emerging development area at the county boundaries. The freeway could be phased to keep pace with the developments.

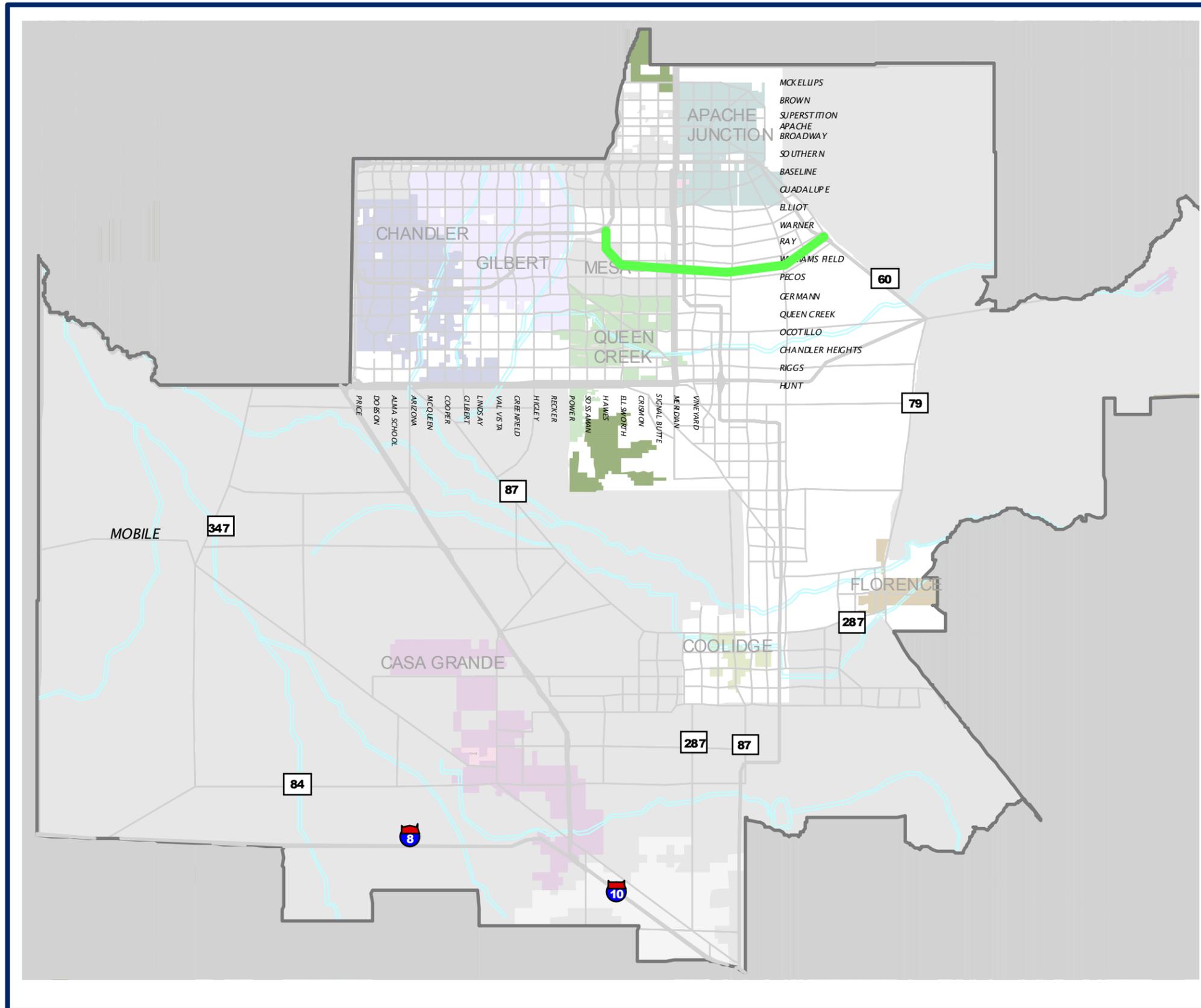
This freeway is included in the Mesa Transportation Plan as a facility that provides regional access to the planned employment hub in this part of this City.

The Williams Gateway Freeway would be approximately 15 miles in length with six miles in Maricopa County and nine miles in Pinal County. The alignment includes a crossing of the Central Arizona Project. This facility is expected to carry daily traffic volumes in the range of 60,000 to 100,000 vehicles in the Maricopa County area based on 2030 projections. It should be noted that revised population projections being prepared for the Northern Pinal County area covering the State Land property will likely result in higher traffic volume projections. The estimated construction cost of the Williams Gateway Freeway is \$750 million.

Price Freeway Extension (Loop 202 to I-10)

The Price Freeway Extension would extend Loop 101 from its current terminus at Loop 202 in Chandler south to I-10. The extension would continue the three lanes in each direction to match the existing section to the north. The general location is shown in Figure 11.

With the current system, traffic traveling between I-10 and Loop 101 in the East Valley has to exit I-10 onto Loop 202 and then exit Loop 202 to Loop 101. The concept of the Price Freeway Extension is to provide direct access between I-10 and Loop 101. This facility would also provide improved access to Memorial Airfield on the Gila River Indian Community.



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Figure 10  
Williams Gateway  
Freeway Concept

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Two potential alignments have been reviewed for the extension and are shown as dotted lines on the map. One would extend Loop 10 straight south and connect to I-10 in the vicinity of Hunt Highway. This location is on the boundary between Chandler and the Gila River Indian Community. Depending on which side of the boundary the facility was located, it could be disruptive to existing residential and industrial developments.

The other alignment extends Loop 101 south from Loop 202 to Queen Creek Road. At this point, the facility would turn to the west and follow the existing Queen Creek Road alignment across the Gila River Indian Community to I-10. The existing interchange would be modified to function as a freeway to freeway interchange. This alignment of the extension would reduce the potential impacts on existing development compared to the one which continues straight south.

With either alignment, the Price Freeway Extension would be approximately six miles in length and carry an estimated 96,000 to 140,000 vehicles daily. The construction cost is projected to be \$390 million including the freeway to freeway interchange.

#### US 60 Freeway Extension (Baseline to Ray)

This potential freeway is an extension of the US 60 freeway from its current terminus at Goldfield Road to the southeast. The facility would parallel the existing US 60 Highway alignment through the Gold Canyon Ranch area in Pinal County. The facility is currently under study by ADOT (US 60, Goldfield Road to Florence Junction Design Concept Study) and is referred to as the US 60 Bypass alignment. The general location is shown in Figure 12.

According to study documents, ADOT undertook the study to address the increasing congestion and safety concerns along US 60. The study also cites concerns about the rapid pace of development in the Gold Canyon area and associated access issues as a reason for the study.

The US 60 Freeway Extension would continue the freeway to the east on the south side of the existing US 60 Highway. The corridor identified in the study would be on new right of way. The right of way, which is estimated to be 351 acres, would be on State Land. Environmental impacts identified in the report include change in visual quality, Section 404 impacts, habitat fragmentation, and disturbance of suitable habitat for the pygmy-owl and the long-nosed bat.

According to the Design Concept Study, the facility would provide two lanes in each direction and be approximately 7 miles long. The year 2025 daily traffic forecasts in the study range from 35,000 to 65,000 vehicles. The concept includes two interchanges, one east of Mountain View Road and one at Peralta Road. The study states that the estimated cost of the US 60 Bypass is \$117 million.



### East Valley Corridor (I-10 to Florence Junction)

The East Valley Corridor is a corridor that would extend in an east-west direction through the middle of the study focus area. The Corridor parallels or overlaps Hunt Highway along the southern boundary of Maricopa County. The general location is shown in Figure 13.

The concept is to provide a high-level facility which extends from I-10 eastward to US 60 near Florence Junction. Currently there are two arterials that follow a portion of the corridor: Riggs Road and Hunt Highway. Both are arterial roadways that start at I-10 and extend to the east. However, both roadways provide local access and are not suitable for higher-speed, through traffic. This corridor would provide an alternative for east-west travel.

The alignment on the west end of the corridor would have to consider existing land uses and minimize impacts to development. The land on the east end of the facility is currently vacant. Between Power Road and I-10, the corridor is located along the border between Maricopa County and the Gila River Indian Community. Depending on which side of the boundary the facility was located, it could be disruptive to existing development.

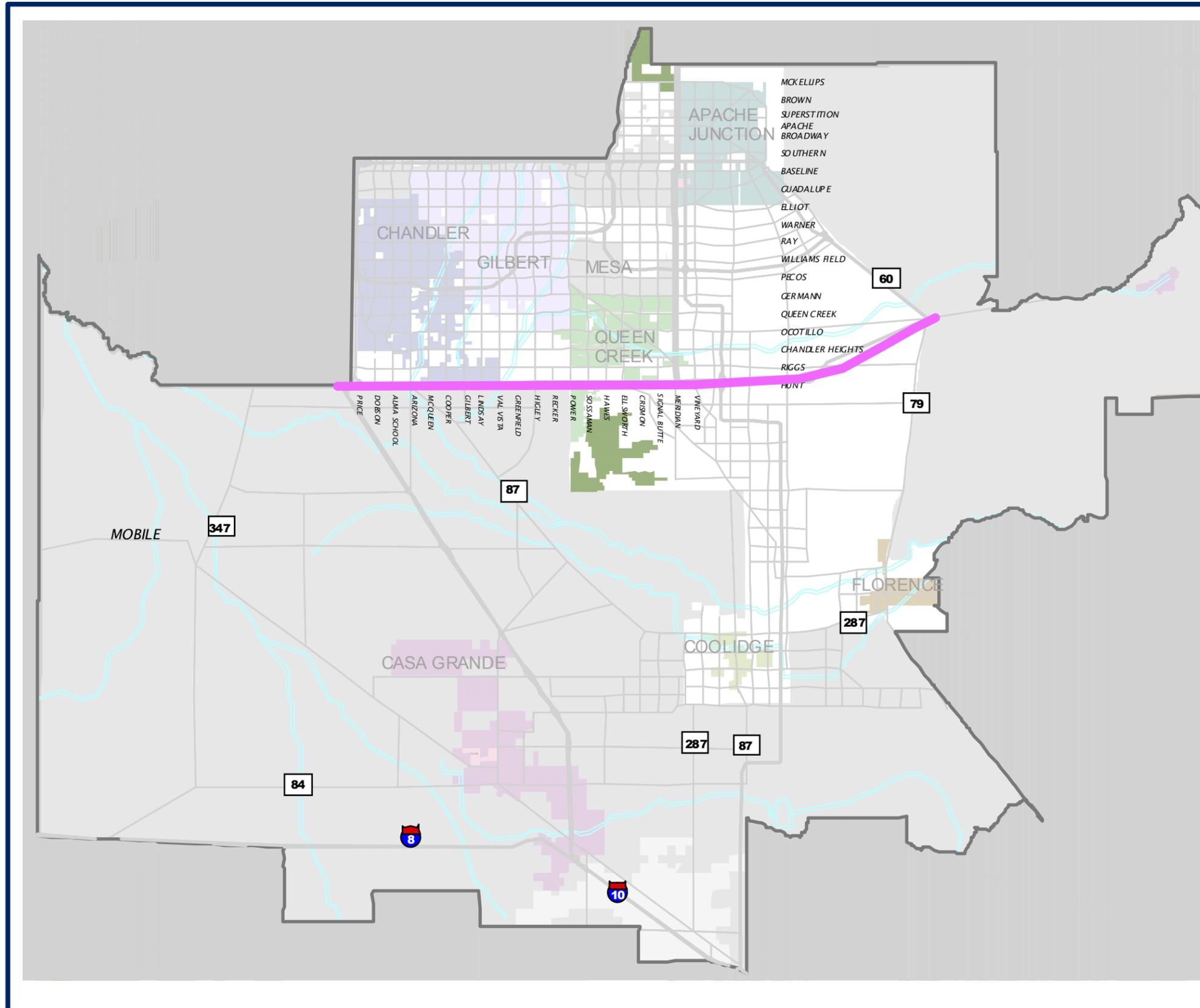
The facility would be approximately 31 miles long with 19 miles within Maricopa County and 12 miles within Pinal County. The East Valley Corridor would be a six-lane facility with interchanges at 1-2 mile spacing. According to MAG travel projections, the Corridor would carry 64,000 to 110,000 vehicles daily. The estimated cost of the overall facility is \$1,390 million.

### Apache Junction/Casa Grande Corridor (I-10 to US 60)

The longest of the corridors under consideration, the Apache Junction/Casa Grande Corridor, extends approximately 36 miles in the north-south direction on the east side of the study area. The Corridor generally follows SR 87 south of Coolidge and continues north to US 60. The general location is shown in Figure 14.

The concept is to provide a freeway facility between US 60 in Apache Junction and I-10 in Casa Grande. Freeway traffic destined for the East Valley from Tucson currently uses I-10 and continues northwesterly to the US 60 interchange in Tempe. This corridor would reduce travel time for those travelers and relieve congestion on I-10. In addition, a freeway facility in this part of the Valley would serve regional trips and provide an alternative for truck traffic to and from industrial developments.

Because of its length, this facility would most likely be built in phases rather than all at once. The design characteristics of the facility may change across its length as well. Portions of the facility would be near the communities of Apache Junction, Coolidge, and Florence. In these areas, the design will need to be compatible with the surrounding land uses.



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Figure 13  
East Valley Corridor  
Concept

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The concept includes two alternatives for the southern terminus. One alternative follows the existing SR 87 alignment south to I-10 at Eloy. This routing follows the overall north-south direction of the facility. Another potential terminus would be at the interchange of I-10 and I-8. With this alternative, the corridor would turn and follow an east-west alignment toward Casa Grande. The east-west portion of the alignment would be an extension of the existing I-8 facility.

The Apache Junction/Casa Grande Freeway would be entirely within Pinal County. The alignment includes a crossing of the Gila River and a crossing of the UPRR mainline tracks. This facility is expected to carry daily traffic volumes in the range of 46,000 to 110,000 vehicles based on 2030 projections. As noted previously, revised population projections for northern Pinal County will likely increase projected traffic volumes. The estimated construction cost of the facility is \$1,640 million.

Summary

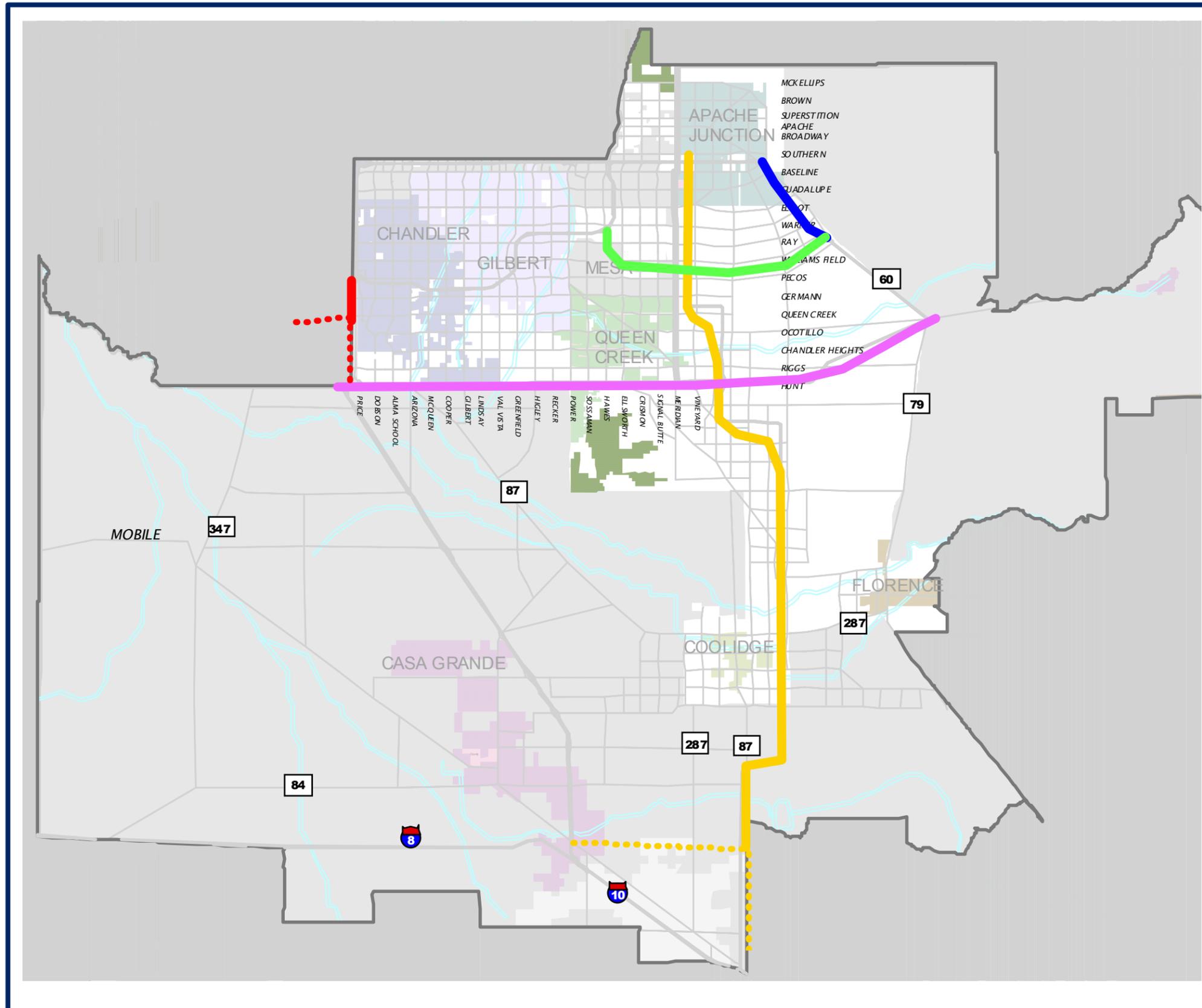
Table 6 presents a summary of the miles and costs of the new freeway facilities.

**Table 6  
NEW FREEWAYS SUMMARY**

	<b>CENTERLINE MILES</b>	<b>CONSTRUCTION COST (in millions)</b>
Williams Gateway Freeway	15	\$750
Price Freeway Extension	6	\$390
US 60 Freeway Extension	7	\$117
East Valley Corridor	31	\$1,390
Apache Junction/Casa Grande Corridor	36	\$1,640

The five corridor concepts are presented in Figure 15. As shown in the figure, the new facilities intersect with each other or with an existing freeway. At the intersection of these freeways, a system level interchange would be required. In the study area, six freeway-to-freeway interchanges are identified as shown in the figure. The East Valley Corridor would have freeway-to-freeway interchanges at Price Freeway Extension and at the Apache Junction/Casa Grande Corridor. The Apache Junction/Casa Grande Corridor would also have freeway-to-freeway interchanges at the Williams Gateway Freeway, at US 60, and at I-10. Williams Gateway Freeway would require a system interchange at the US 60 Freeway Extension. The cost of the system interchanges are included in freeway costs listed in Table 6.

If constructed, these new facilities could be built in phases rather than constructed for their entire length as one project. For example, each freeway could be built in segments of five to seven miles in length. Another option for phasing the construction is to build less than



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Figure 15  
Summary of New  
Corridor Concepts

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the ultimate the number of lanes. If the freeway is to be three lanes in each direction with grade separated interchanges, an initial phase could be two lanes in each direction with limited at-grade intersections.

### **3.2 Freeway Widening**

Widening was assessed for several freeway facilities in the study area. The widening of a facility could include general purpose lanes, HOV lanes, or both. In many instances, the widening of an existing freeway can be accomplished with minimal disruption to adjacent land uses and crossroads. The freeways can be widened within the existing right of way and use the existing interchanges and cross road bridges.

The widenings include 42 miles of freeway widening and 38 miles of HOV lanes and are described in the following sections.

#### I-10 (Study area boundary/Hunt Highway to I-8)

The widening of Interstate 10 would extend through the entire study area from Hunt Highway to I-8. The widening will provide an additional general purpose lane in each direction within the existing right of way. The widening is part of overall widening, which is being studied by ADOT for the entire I-10 corridor between Phoenix and Tucson.

The widening will provide additional capacity for traffic between the Phoenix and Tucson metropolitan areas. In addition, there is an increasing amount of commuter traffic between the cities and towns within the study area that use the facility.

Twenty-nine miles of widening is included in this project. The cost of the widening is estimated to be \$232 million.

#### US 60 (Gilbert to Val Vista)

US 60 is currently five through lanes plus an HOV lane in each direction from Loop 101 at the edge of the study area to Gilbert Road. East of Gilbert Road to Val Vista Drive, there are four general purpose lanes and an HOV lane in each direction. This widening would provide an additional general purpose lane eastbound and westbound to match the section to the west.

The widening extends for 2 miles. The estimated cost of the widening is \$16 million.

#### US 60 (Val Vista to Loop 202)

East of Val Vista to the future Loop 202 alignment (between Hawes and Ellsworth Roads), there are currently three general purpose lanes in each direction: The widening of this six-mile segment will provide five general purpose lanes and one HOV lane in each direction.

The provision of the HOV lanes will extend the overall HOV system and provide increased opportunities for carpooling and express bus service on the east side of the metropolitan area.

The overall cost of this widening, including both the general purpose lanes and the HOV lanes is \$132million and includes widening through the freeway-to-freeway interchange at Loop 202 and providing direct HOV connections between US 60 and Loop 202.

#### US 60 (Loop 202 to Signal Butte Road)

This section of US 60 is east of Loop 202 in Maricopa County and continues east three miles. Currently, there are three lanes in each direction. The widening will provide eight lanes with HOV lanes.

The widened facility would serve traffic within the growing areas of eastern Maricopa County, Apache Junction, and northern Pinal County. Currently, there are not any HOV facilities in the area as an alternative to the single occupant vehicle. Park and ride lots should be developed in the corridor to complement the HOV lane construction.

The overall cost of this widening, including both the general purpose lanes and the HOV lanes is \$42 million.

#### US 60 (Signal Butte to Goldfield Road)

US 60 from Signal Butte to Goldfield Road is a four lane freeway. East of Goldfield Road, the freeway transitions to a four lane divided highway. This section of US 60 crosses boundary of Maricopa and Pinal Counties at Meridian Road. The widening would provide three through lanes and an HOV lane in each direction.

The widening will continue the HOV lanes into Pinal County. Park and ride lots should be developed in the corridor to complement the HOV lane construction.

The overall cost of this five mile widening, including both the general purpose lanes and the HOV lanes is \$70 million.

#### Loop 202 (Loop 101 to University Dr)

Loop 202 between Loop 101 and University Drive is being built as a six-lane facility with three general purpose lanes in each direction. The design of the facility includes provisions for future widening such as leaving open space within the median and building the crossroad bridges wide enough to accommodate the future lanes.

The widening of this facility will provide a fourth lane and an HOV lane in each direction. The length of the widening is 22 miles and would include HOV connections between Loop 202 and Loop 101 at the west end and between Loop 202 and US 60 on the east end.

The HOV lane improvements will provide a complete system on Loop 202 from I-10 in Phoenix through Tempe, Mesa, Gilbert, and Chandler.

The estimated cost of the widening is \$308 million.

Loop 101 (US 60 to Loop 202 (south))

Loop 101 has been constructed through the study area. The current facility has three lanes in each direction. This widening will provide an additional through lane and HOV lane in each direction between US 60 and Loop 202. The widening serves commuters traveling to and from Chandler.

The widening is 7 miles in length and includes modifying the Loop 101 and US 60 interchange in Tempe. The estimated cost of construction is \$98 million.

Summary

The freeway widenings are highlighted in Figure 16. The following table presents a summary of the miles and costs for the widened freeway facilities.

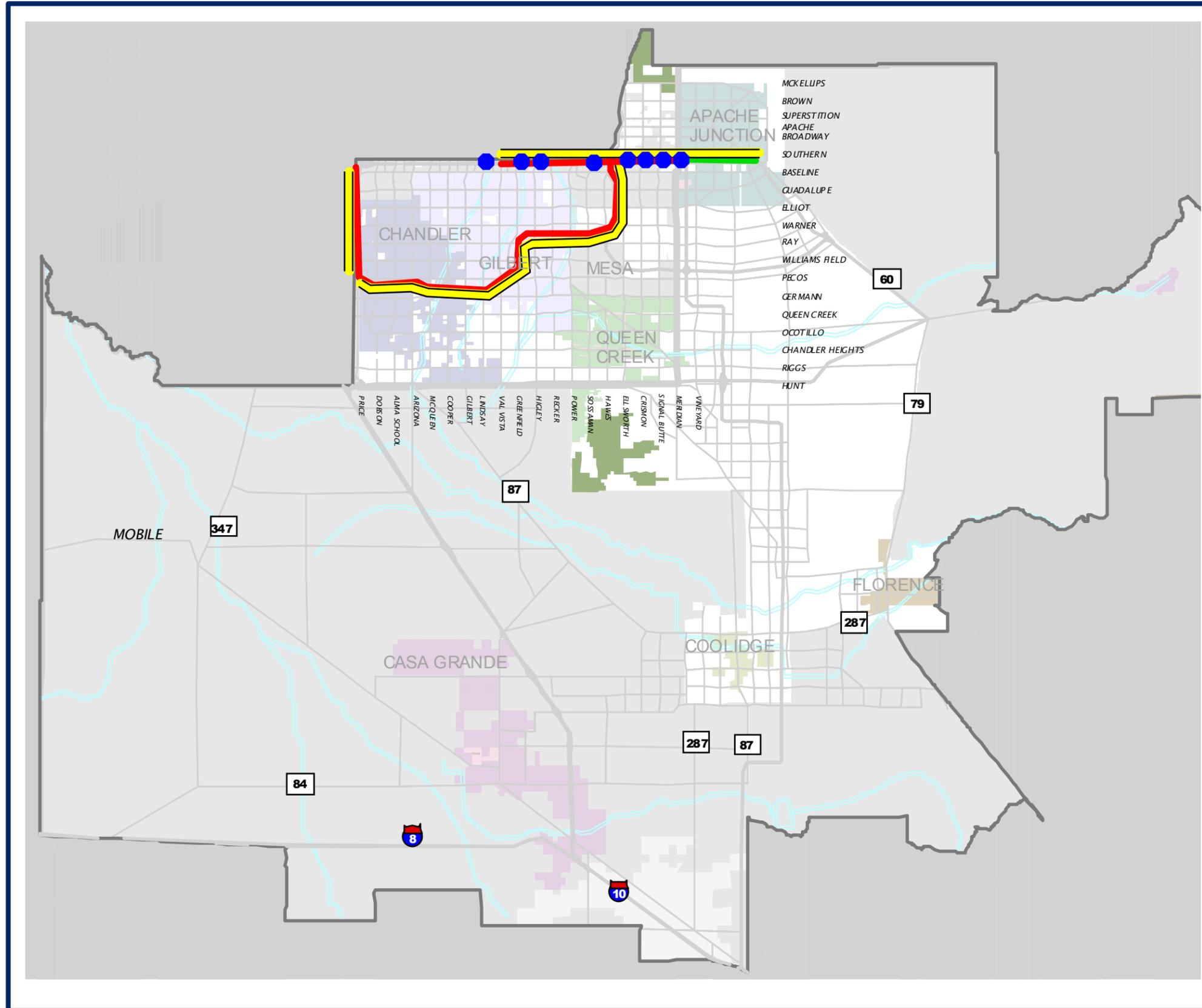
**Table 7  
FREEWAY WIDENING SUMMARY**

	LENGTH (mi)	FREEWAY LANES ADDED	HOV LANES ADDED	CONSTRUCTION COST (\$millions)
I-10: <i>Hunt Hwy to I-8</i>	29	2		\$232
US 60 <i>Gilbert to Val Vista</i>	2	2		\$16
US 60: <i>Val Vista to Loop 202</i>	6	4	2	\$132
US 60: <i>Loop 202 to Signal Butte</i>	3	2	2	\$42
US 60: <i>Signal Butte to Goldfield</i>	5	2	2	\$70
Loop 202: <i>(Loop 101 to University Dr)</i>	22	2	2	\$308
Loop 101: <i>US 60 to Loop 202 (south)</i>	7	2	2	\$98

**3.3 Freeway/Arterial Interchange Construction**

Interchange improvement includes the construction of new interchanges or modifying existing interchanges. Ten interchange locations within the study area have been identified for improvements. The locations are shown in Figure 16.

There are two new interchanges proposed for US 60 and two for I-10 at an estimated cost of \$64 million. On US 60, the new interchanges are located at Lindsay Road in



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**Figure 16  
Widened Freeways**

-  HOV Facility
-  New or Improved Interchange
-  Widened to 6 Lanes
-  Widened to 8 Lanes and HOV

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Mesa and at Meridian Road in Apache Junction. The Lindsay Road location would relieve congestion on adjacent interchanges. The Meridian Road interchange would provide an additional access point for Apache Junction traffic. The two new interchanges on I-10 were both identified as part of the Casa Grande Transportation Plan to provide access to proposed developments. The new interchanges on I-10 would be located at Kortsten and at Val Vista.

There are six interchanges that would be reconstructed on US 60 as part of the interchange improvements. The interchanges are at Greenfield Road, Higley Road, Power Road, Ellsworth Road, Crismon Road, and Signal Butte Road. The reconstruction is estimated to cost \$7 million per interchange for a total of \$42 million in interchange reconstruction.

The total estimated cost of the interchange improvements is \$106 million.

### **3.4 Freeway Operational Improvements**

The ADOT Freeway Management System (FMS) employs many of the Intelligent Transportation System (ITS) technologies. The system includes fiber optic communications, ramp metering, CCTV cameras, vehicle detectors, and variable message signs. There are 66 miles of freeway currently in operation. ADOT has made a commitment to ITS and maintaining the FMS and will continue to add ITS features to the existing system. New sections of freeway will be designed and constructed with the ITS elements included. ADOT estimates the cost for these facilities on the freeway system to be \$1 million per mile.

Another freeway operational feature that is currently in use is the Freeway Service Patrol. It is a cooperative effort among DPS, AAA of Arizona, MAG, and ADOT. Trained personnel use specially equipped vehicles to assist stranded motorists and remove road hazards. The service is available 18 hours a day, 7 days a week. ADOT has programmed this service through the year 2007. As freeway volumes grow and become more congested, it will be important to continue and expand this service.

### **3.5 Freeway Mitigation/Aesthetics**

As freeways are built and widened, it is important to mitigate potential negative impacts and to provide positive aesthetic treatments. A major freeway mitigation issue is noise. This can be addressed with the construction of noise walls or berms and with the use of rubberized-asphalt for the riding surface. These mitigation items are usually included in the cost of a new facility. However, there are existing freeways in Maricopa County that are being retrofitted with rubberized asphalt. Also, land uses adjacent to freeways can change over time and as a result additional mitigation treatments may need to be added years after a facility is constructed.

In addition, aesthetics treatments are often included within the freeway right of way. Landscaping is a common treatment. The landscape elements vary depending on the facility design. Also, the landscape can be phased depending on available. Another aesthetic treatment that is being incorporated in to freeway design is the color and design of wall fascia. Adjacent communities are often involved in the design and cost of the walls.

### **3.6 Freeway Maintenance**

In order to maintain the integrity of the freeway system, the facilities need to be maintained to acceptable service conditions. Freeway maintenance includes provide a satisfactory riding surface for the traveling public. The roadway surface should be kept relatively clean with minimal cracking and rutting. If the surface is maintained, the frequency of reconstruction can be minimized.

The term maintenance also includes litter control, service patrols, and landscape maintenance.

## 4.0 HIGHWAYS

There are a number of state highways in the focus area that serve regional travel. The majority of these facilities are two-lane roads. This chapter describes possible improvements to several of these state highways to accommodate future demand and improve mobility.

### 4.1 Highway Widening

A number of state highways were identified as candidates for widening. Each is described in the following sections.

#### US 60 (Ray Road to Florence Junction)

This section of US 60 begins at the east end of the proposed US 60 bypass and continues to Florence Junction (SR 79), a length of approximately 8 miles. It is currently a four-lane divided highway with direct access and at-grade intersections. The concept would be to widen this section to three lanes in each direction, which would be consistent with the bypass.

This section of US 60 serves a rapidly developing area that has the potential to experience even more significant growth as a substantial amount of State Land to the south could be developed. Currently, the MAG travel forecasting model shows a future volume of 36,000 vehicles per day in 2030, however, this does not include any development southwest of US 60 on the State Land parcel.

The estimated cost for widening this portion of US 60 is \$28 million.

#### SR 79 (Florence Junction to focus area boundary)

This section of SR 79 begins at Florence Junction (US 60) and continues south to the focus area boundary near SR 287, a length of approximately 17 miles. It is currently a two-lane highway with direct access and at-grade intersections. The concept is to widen this section to two lanes in each direction.

This section of SR 79 is the primary highway connection between eastern Maricopa County and northern Pinal County. Currently, the MAG travel forecasting model shows a future volume that ranges from 10,000 to 19,000 vehicles per day in 2030; however, this does not include any development to the west on the State Land parcel.

The estimated cost for widening this portion of US 60 is \$59.5 million.

SR 287 (SR 87 to SR 79)

This section of SR 287 begins at SR 87 (Arizona Boulevard) and continues east to SR 79 a length of approximately 10 miles. It is currently a two-lane highway with direct access and at-grade intersections. The concept is to widen this section to two lanes in each direction. This portion of SR 287 currently has a railroad overpass just east of SR 87, which would either have to be widened or require an additional bridge for the new two lanes.

Along with SR 87, this section of SR 287 is the primary highway connection between the Casa Grande area, Coolidge, and Florence. Currently, the MAG travel forecasting model shows a future volume that ranges from 2,000 to 16,000 vehicles per day in 2030.

The estimated cost for widening this portion of US 60 is \$36 million, which includes the additional railroad crossing.

SR 87 (SR 387 to SR 287)

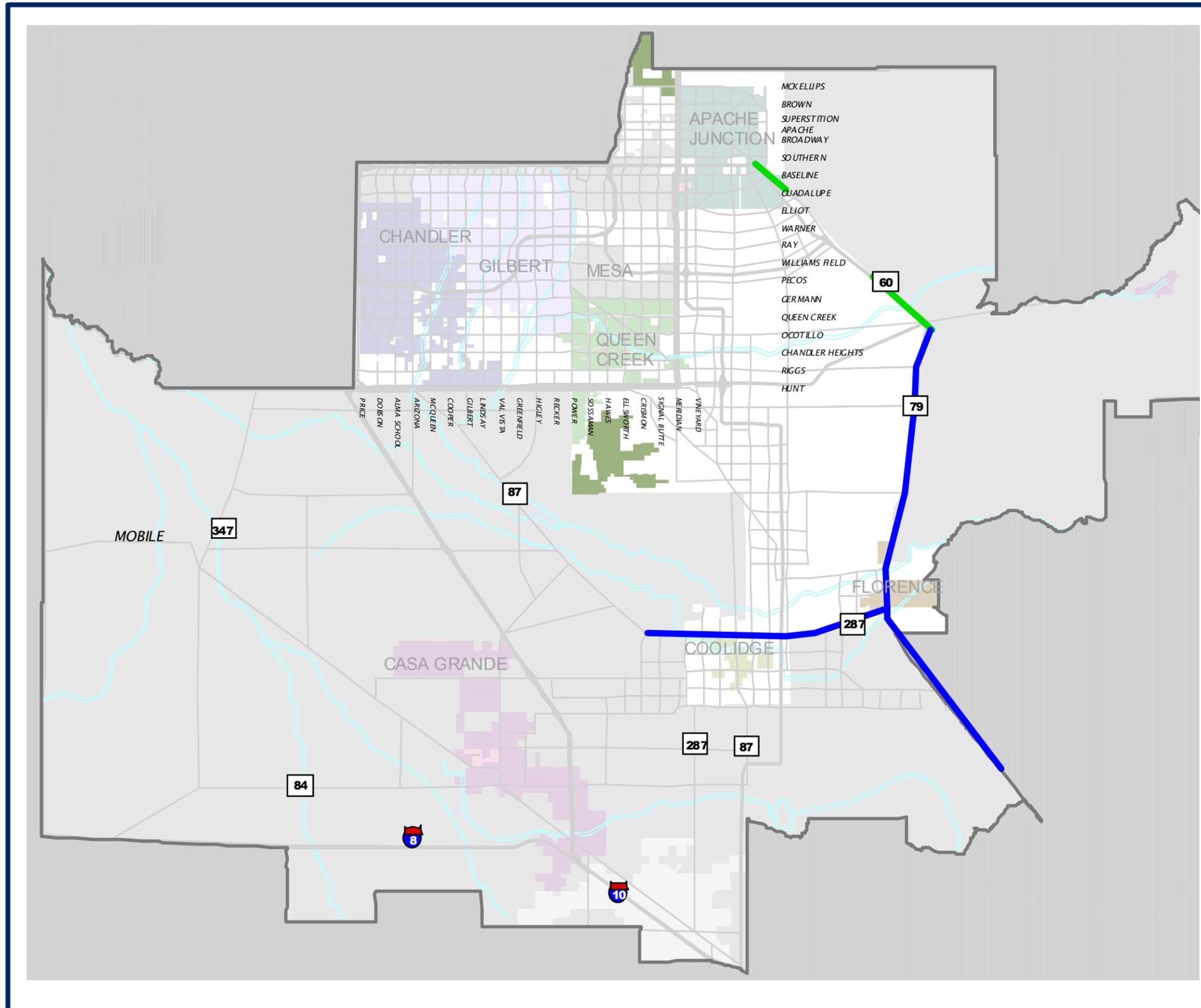
This section of SR 87 begins at SR 387 and continues to SR 87 (Arizona Boulevard)/SR 287, a length of approximately 8 miles. It is currently a two-lane highway with direct access and at-grade intersections. The concept is to widen this section to two lanes in each direction.

This section of SR 87 is a continuation of SR 87 from Maricopa County and provides several connections to I-10. It is the primary highway corridor across the Gila River Indian Community. Currently, the MAG travel forecasting model shows a future volume that ranges from 14,000 to 24,000 vehicles per day in 2030.

The estimated cost for widening this portion of US 60 is \$28 million.

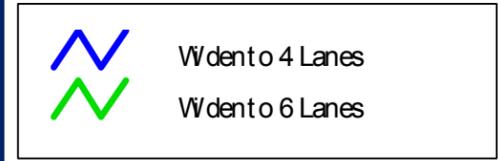
Summary

The highway widening projects are depicted in Figure 17 and summarized in Table 8.



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Figure 17  
Widened State  
Highways



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**TABLE 8**  
**SUMMARY OF HIGHWAY WIDENING**

	<b>SEGMENT LENGTH (mi)</b>	<b>NUMBER OF LANES ADDED</b>	<b>COST (\$millions)</b>
US 60 (Ray Road to Florence Jct.)	8	2	\$28
SR 79 (Florence Jct. To Focus Area Boundary)	17	2	\$59.5
SR 287 (SR 87 to SR 79)	10	24	\$36
SR 87 (SR 387 to SR 287)	8	2	\$28
<b>TOTAL</b>	<b>43</b>		<b>\$151.5</b>

## 4.2 Highway Interchanges

There are highway locations where traffic interchanges may be considered at some point in the future. The need to consider a grade separation at the intersection of two highways may be a result of volume, accident experience, or the need to maintain route continuity.

Potential locations are:

- ◆ SR 287 and Main Street – Florence
- ◆ SR 287 and SR 87
- ◆ SR 87 and SR 587

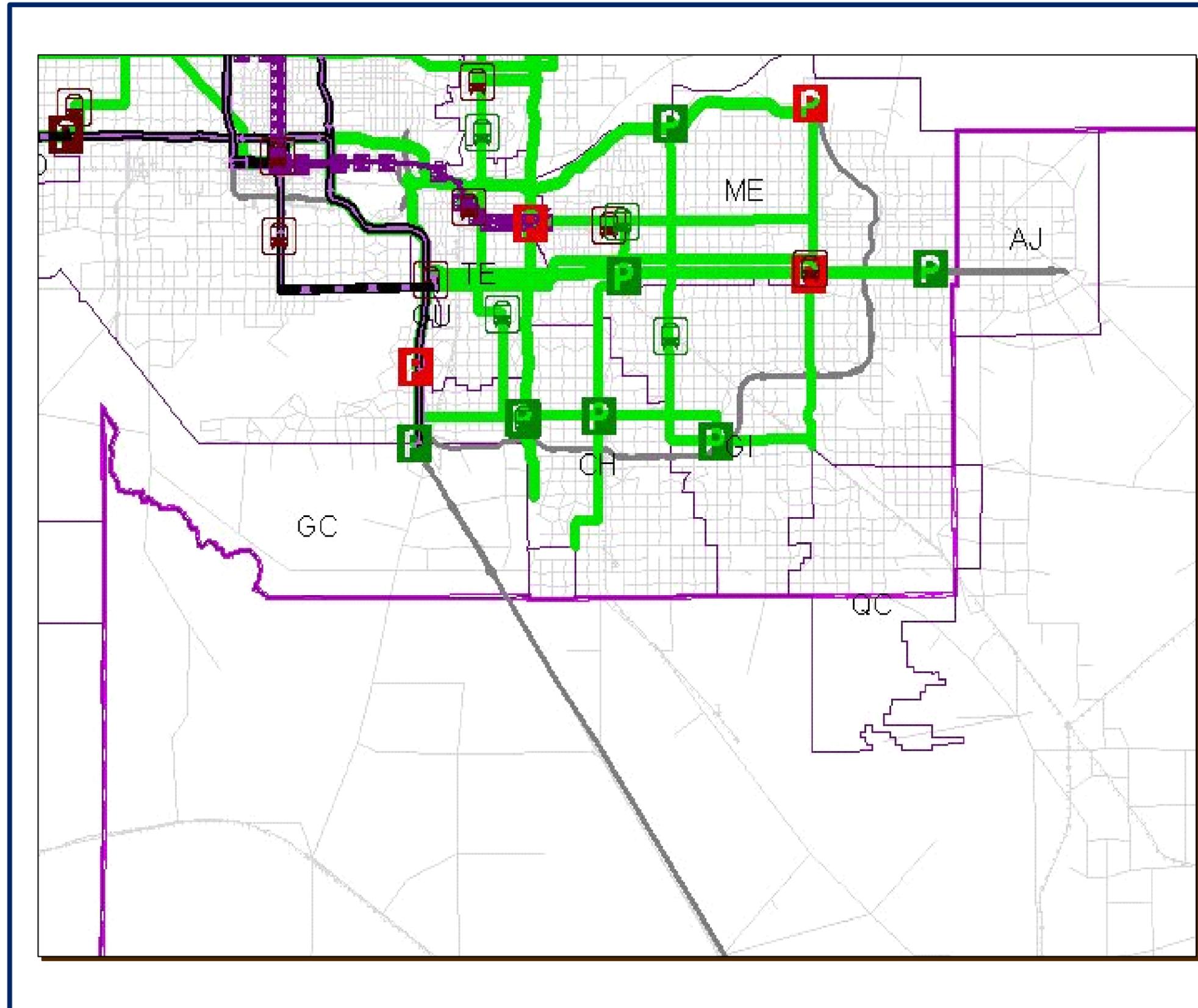
It should be noted that a grade separation is already planned for US 60 and SR 79 (Florence Junction).

## 5. TRANSIT

There are currently two studies nearing completion that will help define the future transit system for the Phoenix area. One is the Regional Transit Study being conducted by the RPTA and the other is the High Capacity Corridor Study being conducted by MAG. In addition, the City of Chandler and the Town of Gilbert are both completing transit studies. The Chandler study is an MIS that is analyzing potential corridors for high capacity transit in the city. The Town of Gilbert study is to prepare a transit plan for the Town.

Several figures that depict the preliminary results from the two regional studies are included here. Figure 18 shows existing and proposed regional facilities including park and ride lots and transit centers. Figure 19 shows a potential future fixed route and demand response area as well as the route network. Figure 20 presents the high capacity corridors that are being considered. The high capacity corridors under consideration in the Southeast Maricopa/ Northern Pinal County area and their potential cost are summarized below.

- ◆ UP Mainline Chandler - \$226 to \$530 million
- ◆ Chandler Boulevard - \$306 to \$684 million
- ◆ Main Street – \$185 to \$374 million
- ◆ Power Road - \$237 to \$465 million
- ◆ UP Southeast - \$567 million
- ◆ TOTAL - \$1.5 to \$2.6 billion



# S.E. Maricopa N. Pinal County Transportation Study

Figure 18  
Regional Connections

Regional Transit System Study 

### Existing and Proposed Regional Transit

Major transit projects existing, underway or included in FY 2003-2007 TIP plus those proposed by LKC and others

**Passenger Facilities**

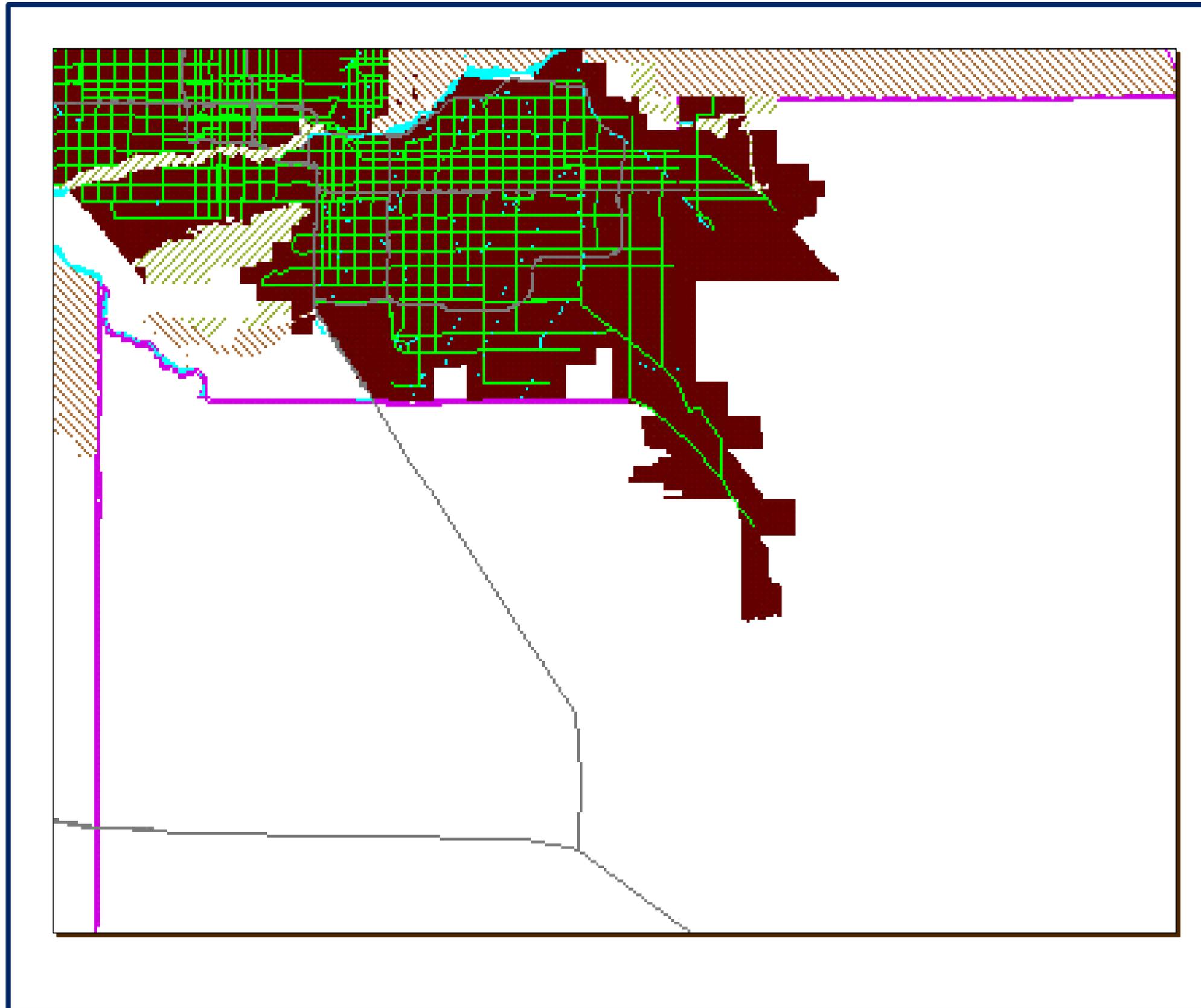
-  P&R - proposed
-  TC - proposed
-  P&R - existing
-  TC - existing
-  P&R - TIP

-  Regional connector rtes
-  Phoenix BRT extensions
-  C/EV LRT line (MOS)
-  LRT stations (MOS)
-  Phoenix BRT Plan
-  Interstates & Freeways
-  MPA Boundaries
-  County Boundaries
-  Rails (2000)
-  Planned Road Network

  
0 6 Miles

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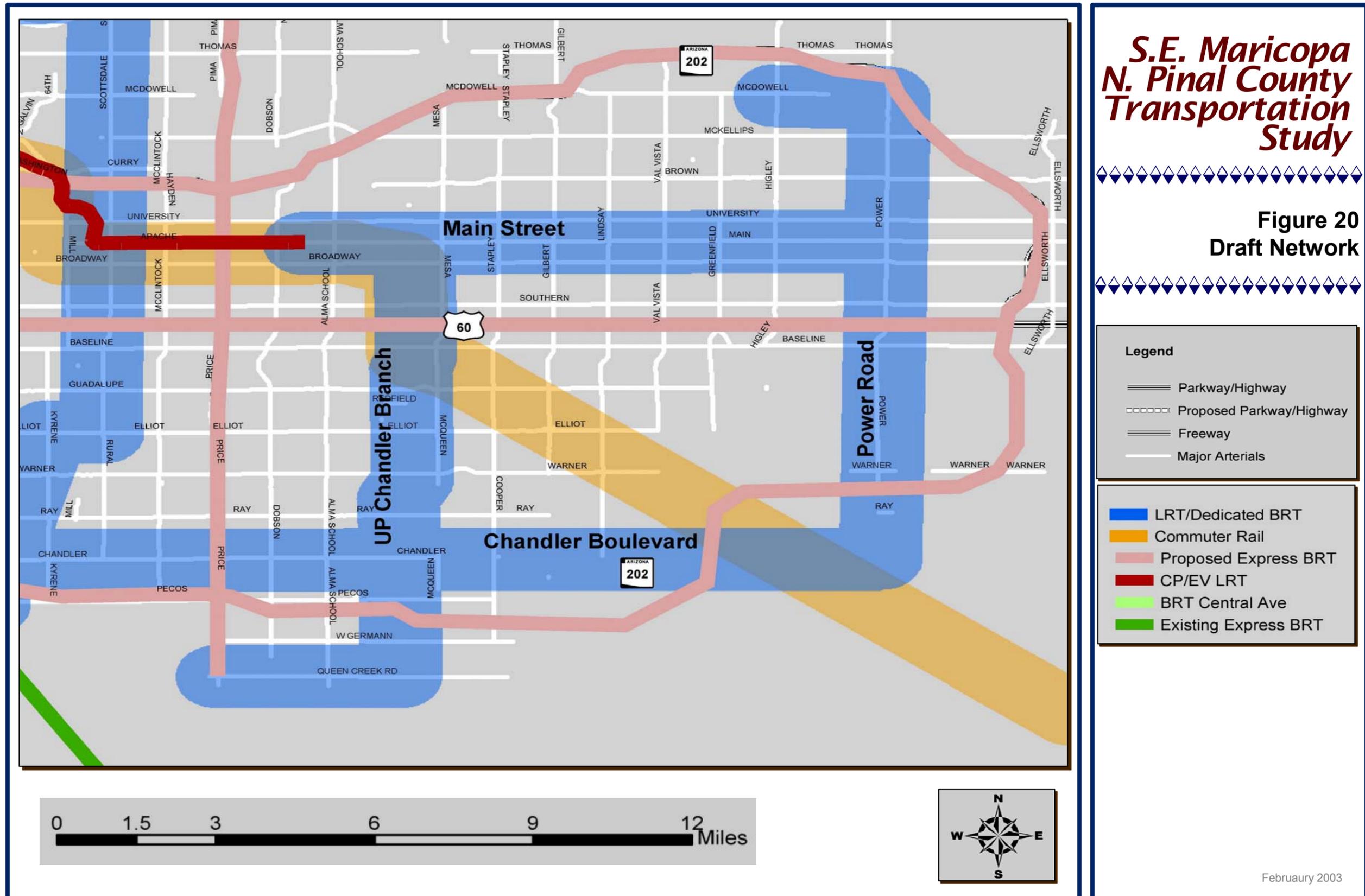


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Figure 19  
Local Network &  
Rural Transit Access



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