ARIZONA STATE LAND DEPARTMENT

SCOTTSDALE ROAD/LOOP 101
MULTI-MODAL STUDY

DRAFT STUDY REPORT

BRW, INC.

December 21, 2001

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ARIZONA STATE LAND DEPARTMENT

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EXECUTIVE SUMMARY

This Executive Summary presents the key findings and recommendations of the Arizona State Land Department's (ASLD) *Scottsdale Road/Loop 101 Multi-Modal Study*. The Study evaluates a variety of land use and transportation issues for the area generally surrounding the Scottsdale Road/Loop 101 interchange.

Two geographic areas are considered in the study. The first is the *Study Area*, which is an approximately 36-square mile area bounded on the north by Pinnacle Peak Road, on the east by Pima Road, on the south by Thunderbird Road, and on the west by 64th Street. This area establishes the overall framework for consideration of a variety of transportation and development issues. The Study Area includes several large, regionally significant projects (existing and proposed). These include Desert Ridge, Paradise Ridge, Grayhawk, DC Ranch, Scottsdale Airpark, and Reach 11 Recreation Area.

Within the Study Area is a much smaller *Project Area*, which focuses on the key area immediately surrounding the Scottsdale Road-Loop 101 interchange. This area covers approximately 3.5 square miles, most of which is State Trust land.

This Executive Summary highlights four aspects of the Study: (1) Study Purpose and Objectives; (2) Study Approach/Methodology; (3) Study Findings/Recommendations; and (4) Study Conclusions.

STUDY PURPOSE AND OBJECTIVES

ASLD initiated the Scottsdale Road-Loop 101 Multi-Modal Study in early 2001 with two principal objectives, one related to land use and development and the other related to transportation, as well as a third objective that addresses the relationship between the land use and transportation. These objectives are explained below.

Land Use

The Project Area for the Study encompasses the four quadrants created by the Scottsdale Road/Loop 101 interchange. The approximately 2,500-acre Project Area includes over 2,000 acres of developable land in one of the most desirable settings in the region, if not the State of Arizona or the southwestern United States. Much of this developable acreage is State Trust land that is managed by the Arizona State Land Department (ASLD). As such, the Department has a keen interest in ensuring that the area is planned for and developed with a complement of uses that takes full advantage of its unique locational assets. This interest is shared by the Cities of Phoenix and Scottsdale, which have jurisdictional responsibility and authority for preparing land use plans for the Project Area, which is roughly split between the two cities along Scottsdale Road.

Given the multi-jurisdictional influences in the Project Area, the first objective of the Study is to establish a land use program for the Project Area that makes sense in the local and regional context, irrespective of political boundaries.

Transportation

One of the factors that contributes to the overall attractiveness of the Project Area is its outstanding access, particularly because of the pending completion of the Loop 101 Freeway, which will run east-west through the area. As currently planned, however, the area stands to suffer worsening congestion because of its reliance on a transportation system that focuses almost exclusively on automobile access. This is a particular concern for the Scottsdale Road corridor, which currently provides the only continuous north-south access through the area. In recognition of the constraints imposed by the local roadway network envisioned for the Project Area, the Study's second objective is to conceptualize a more balanced, comprehensive

STUDY FINDINGS/RECOMMENDATIONS

As noted above, the final step of the study process was to develop and present recommendations for land use, transportation, and strategic implementation actions. Following are summaries of the Study's recommendations for each of these issues.

Land Use/Development

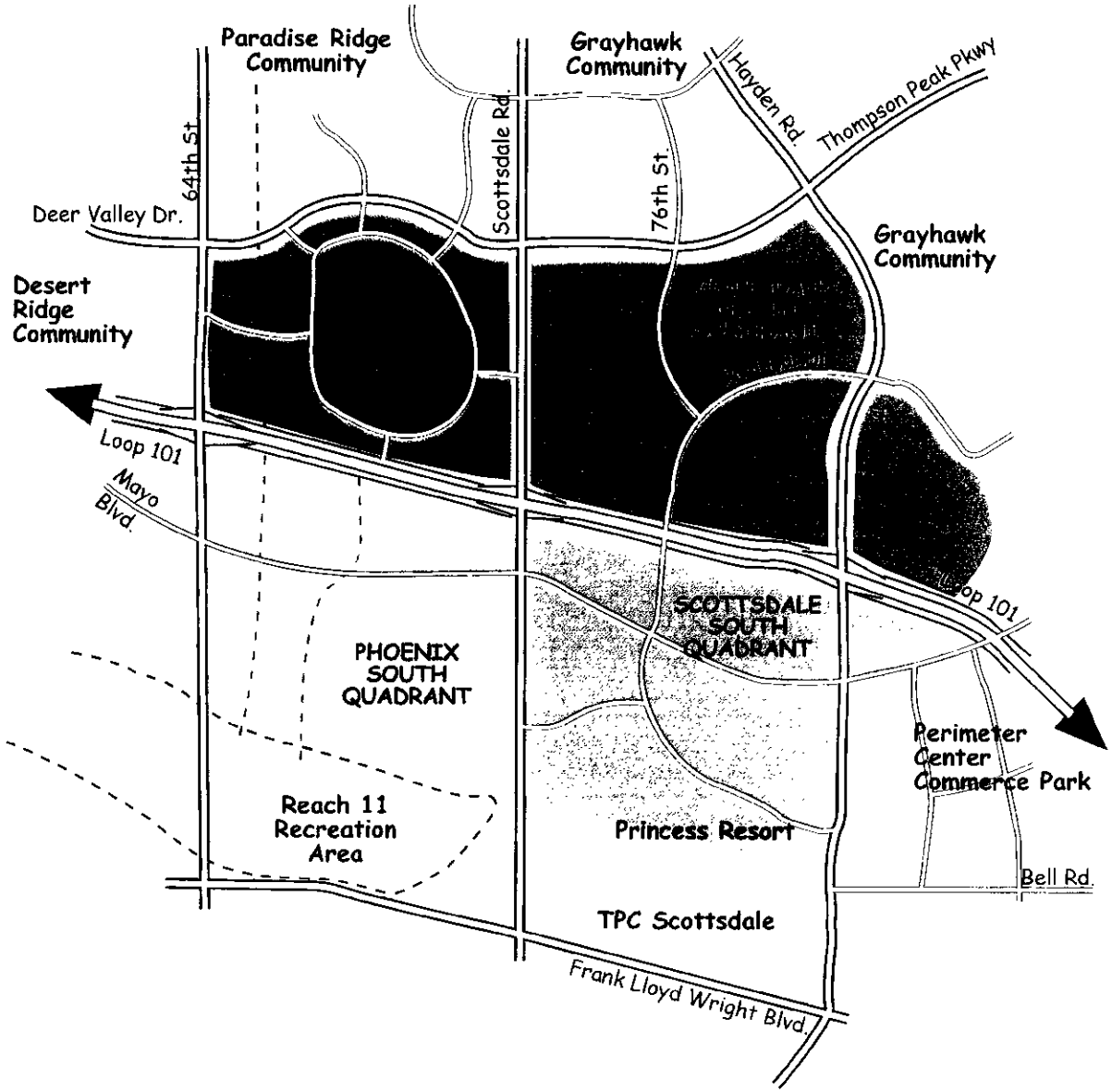
Based on the analysis of composite land use scenarios, the Study recommends a land use/development scenario that departs from the currently zoned/planned uses for the Project Area. The primary difference relates to the nature of the commercial uses proposed for the area. The existing plans for the Project Area essentially call for the development of regional malls on both sides of Scottsdale Road, one in Phoenix northwest of the Scottsdale Road-Loop 101 interchange and one in Scottsdale to the southeast of the interchange. Under the preferred scenario, the regional mall in Scottsdale would be replaced by a combination of high intensity commercial uses and "super-regional" entertainment commercial uses that would take advantage of the unique locational assets of the area.

Another aspect of the preferred scenario is the programmed establishment of quadrant-based function and character. In accordance with this approach, each of the four quadrants created by the Scottsdale Road and Loop 101 interchange would assume unique functions within the Project Area, as illustrated in Figure ES-1. Within each of the quadrants, primary activity nodes were identified, as well as some secondary nodes. These nodes represent focal points where different types of uses will converge, creating opportunities for intensive, mixed-use activity, as well as important crossroads for the transportation system. Figure ES-2 shows the recommended land use concept for the Project Area, highlighting the activity nodes. As the figure shows, all of the activity nodes that emerge from the recommended land use pattern are located away from Scottsdale Road. This will allow for the creation of a unique "village" identity for each quadrant, while diminishing the reliance on Scottsdale Road as the primary point of access for new development in the Project Area.

SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Project Development Quadrants

Figure ES-1



Legend

- Phoenix North Quadrant Regional/Commercial
- Phoenix South Quadrant Residential/Commercial Employment
- Scottsdale North Quadrant Residential/Employment Commercial
- Scottsdale South Quadrant Entertainment/Resort Commercial

BRW

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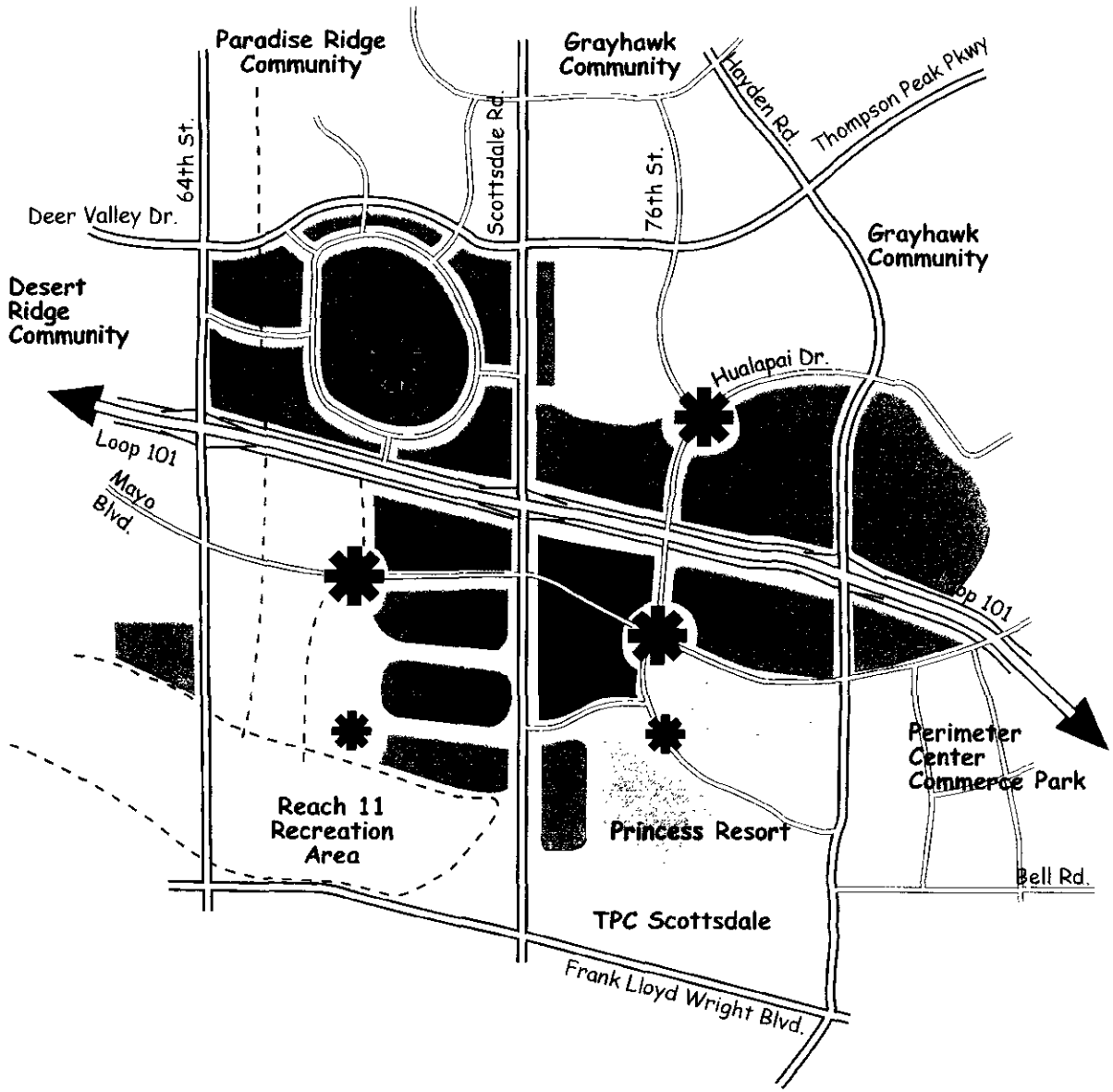


SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Generalized Land Use Concept and Activity Nodes

Figure ES-2

Legend

- High Intensity Commercial
- Commercial
- Residential
- Employment
- Specialty Entertainment
- Resort
- Activity Nodes

BRW

N

Table ES-1 summarizes the overall development capacity of the recommended land use and development scenario based on the net developable land in the Project Area.

Table ES-1
Recommended Land Use Scenario Development Summary at Buildout

Designation	Net Acreage*	Residential		Non-Residential	
		Dwelling Units	Residents**	Square Footage	Employees***
Residential					
High-Density Residential	494.0	9,880	14,820	-	-
Subtotal	**494.0**	**9,880**	**14,820**	**-**	**-**
Commercial					
Neighborhood Commercial	3.6	-	-	31,000	52
Community Commercial	308.6	-	-	2,689,000	4,480
Regional Commercial****	494.3	-	-	4,306,000	7,180
Specialty Commercial	103.6	-	-	903,000	1,510
Resort/Tourist Accommodation	62.8	-	-	410,000	680
Subtotal	**972.9**	**-**	**-**	**8,339,000**	**13,902**
Office/Employment					
Commercial Office	74.7	-	-	976,000	3,250
Commerce Park	412.4	-	-	7,186,000	23,950
Industrial Park	73.2	-	-	957,000	2,390
Subtotal	**560.3**	**-**	**-**	**9,119,000**	**29,590**
Project Area Total	**2,027.2**	**9,880**	**14,820**	**17,458,000**	**43,492**

*Reflects a reduction in total acreage to reflect developable land (i.e., without streets)
**Assumes 95% occupancy of residential units.
***Assumes 90% occupancy of commercial and office space.
****Includes High Intensity Commercial in Scottsdale
Source: BRW, Inc, June 2001.

Transportation

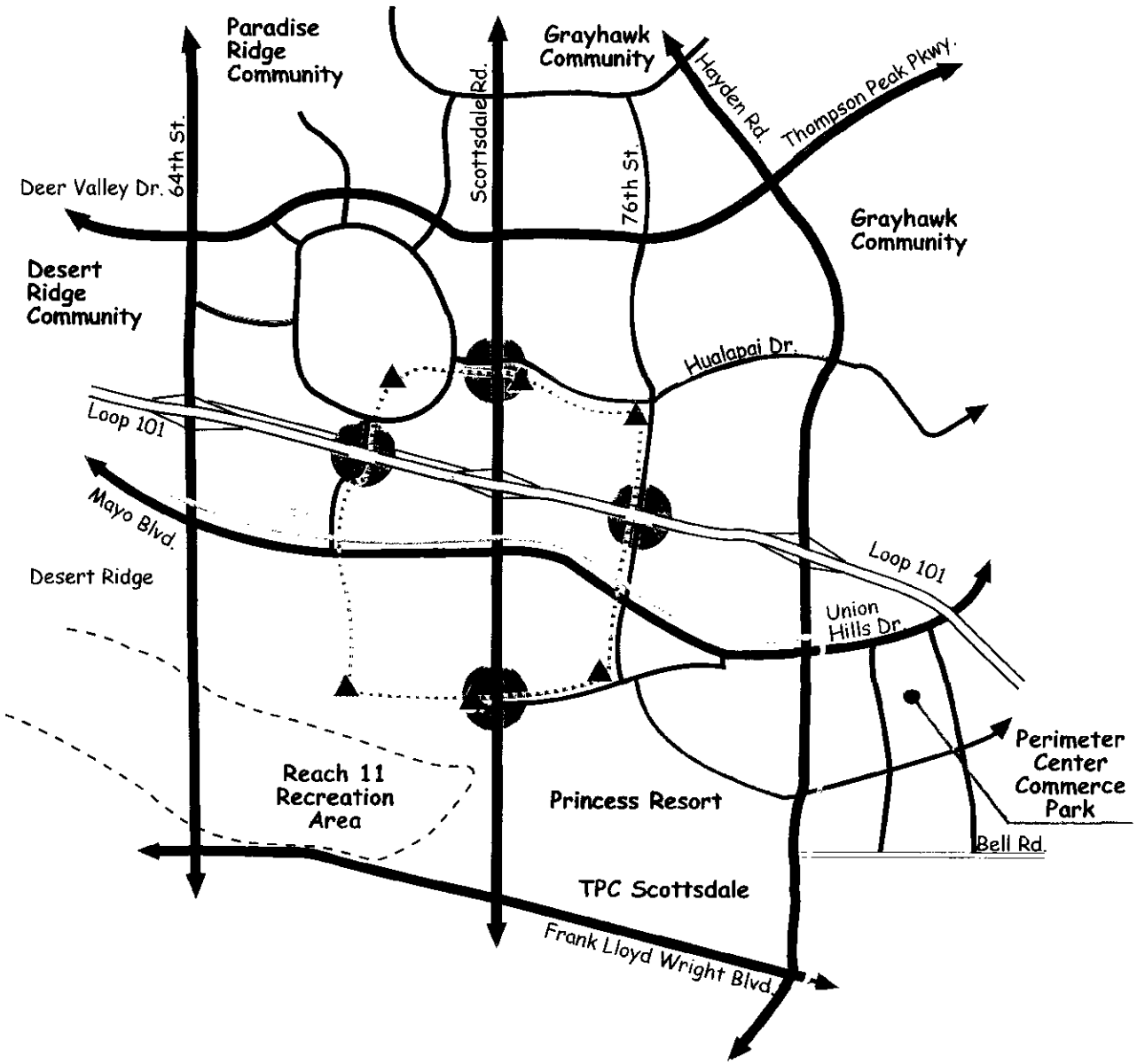
As Table ES-1 indicates, the recommended land use scenario (Figure ES-2) would result in dramatic growth within the Project Area, with approximately 15,000 new residents and 43,500 employees at buildout. (For purposes of the Study, buildout is assumed to occur by 2020.) Based on these totals, a trip generation analysis was prepared that considered several dimensions of travel within and through the Project Area. The most important conclusion of that analysis is that, with the addition of strategically located enhancements in roadway capacity and the addition of an effective system of regional and local transit (with supportive land use patterns), the new demand could be accommodated satisfactorily, without overburdening Scottsdale Road.

The key roadway improvement recommendations necessary to achieve acceptable conditions on the Project Area network are capacity increases on the arterials running parallel with Scottsdale Road (i.e., 64th Street and Hayden Road), plus widening of the SR 101 Pima Freeway to eight general-purpose lanes and two HOV lanes. This added capacity, along with the type of activity node-oriented development pattern and new transit service, would result in relatively good travel conditions. While the analysis indicates that Scottsdale Road would be operating at slightly above its six-lane design capacity, it is likely that traffic would gravitate toward the parallel, less congested arterial streets. Figure ES-3 shows the recommended conceptual Project Area transportation system, including the roadway network.

SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Conceptual Transportation System

Figure ES-3



Legend

- 8 Lanes Plus 2 HOV Lanes
- 6 Lanes
- 4 Lanes
- 2 Lanes
- Light Rail Transit Connection
- Regional Transit Center/Station
- At-Grade and /or Elevated Local Circulator Transit
- Local Transit Station/Stop
- Grade Separation

BRW

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As noted above, one of the key components of the transportation system necessary to ensure efficient travel in the Project Area is a transit network that provides both regional and local access. Figure ES-4 illustrates a multi-modal network that includes three levels of new transit service, as described below.

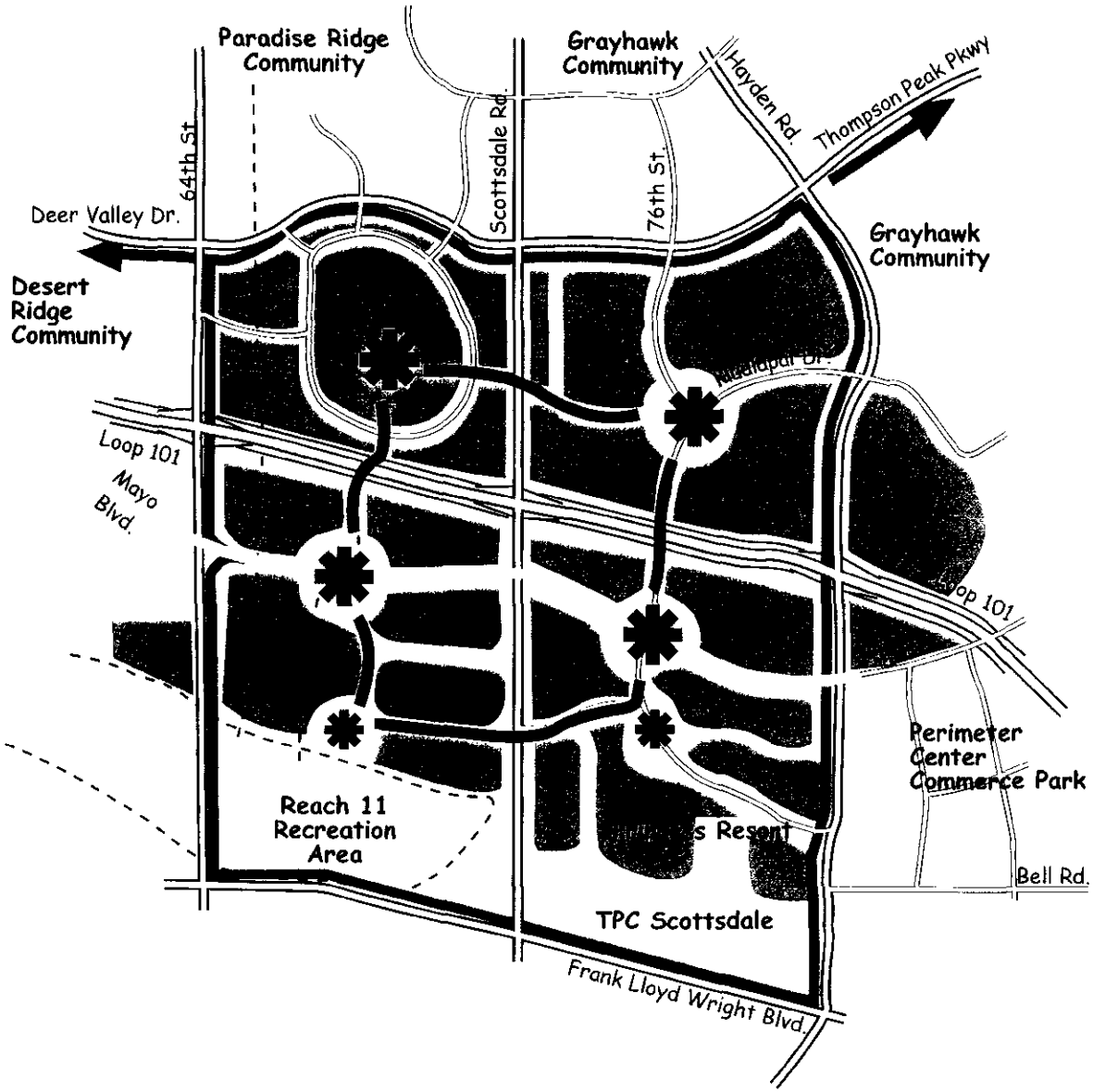
Regional Service: The highest level of transit service that would be provided to serve the Project Area is regional service that would provide for regional mobility and accessibility. That is, it would move travelers to the Project Area from other parts of the region. As recommended, this service would be accomplished through successful implementation of three separate initiatives, each of which is currently under study or design. The first would be a connection to the City of Phoenix's Transit 2000 light rail transit (LRT) program, an extension of which could run along Tatum Road to the west of the Project Area. The second is the high capacity transit service under consideration in the Scottsdale/Tempe North/South High Capacity Transit Study, which could extend up Hayden Road into the Project Area. As depicted in yellow in Figure ES-4, these could eventually be connected via a new LRT trackway along Mayo Boulevard. The other regional transit access to the Project Area would be a new express bus/bus rapid transit (BRT) service running along Loop 101; this would provide a much-needed high capacity travel option for east-west travel. The cost of developing these regional services would probably come from a combination of public funding sources (local, regional, state, federal), rather than private developers or property owners.

Neighborhood Service: The second level of new transit service to the Project Area would be a neighborhood circulator system to move travelers within the Project Area and between the Project Area and nearby activity centers (e.g., Scottsdale Airpark, Desert Ridge, Grayhawk). This neighborhood system would distribute travelers from the regional system to their destinations in the area, most likely on smaller buses similar to those being used for new neighborhood service in Tempe and in the Ahwatukee area of Phoenix. Conceptual routing for neighborhood circulators is depicted in blue on Figure ES-4; in actuality, because of the flexibility of the smaller buses, the routes would probably divert from the main route into activity centers and neighborhoods to provide more direct access. This service would likely be provided by the local public transit service providers (i.e., Cities of Scottsdale and Phoenix).

Local/Site Circulator Service: The third level of transit service in the Project Area would provide connectivity among the four quadrants created by Scottsdale Road and Loop 101. This service, which is depicted in red in Figure ES-4, would eventually be provided either by an automated guideway transit (AGT) system ("people mover") or a contemporary "urban streetcar." Because of the high capital expense associated with such technologies, initial site circulation would probably be provided with small buses, with the AGT system being installed when development reaches a level sufficient to support the cost (which would likely be borne by private developers).

Project Phasing

As noted above, buildout of development in the Project Area would be expected by 2020. This assumption is consistent with evaluations of market absorption potential prepared for areas within the Project Area. Specifically, this study relies on two sources to establish the basis for its discussion of development phasing: the Paradise Ridge project and a forecast of development demand for the Regional Core in Scottsdale. These studies indicate that level of development in the area depicted in Table ES-1 could be absorbed by 2020. While the pace and location of development over time will ultimately be dictated by market forces, the recommended development scenario assumes that development will radiate from activity nodes within each of the four quadrants in the Project Area. This would be consistent with the objective of creating distinct urban villages within each quadrant. It would also shift the orientation of development away from Scottsdale Road, which would help change transportation demand patterns and alleviate congestion on Scottsdale Road.



SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Conceptual Transit Plan

Figure ES-4

Legend

- Automated Guideway Transit
- Neighborhood Transit/ Neighborhood Circulator
- Regional Transit (Express Bus Bus Rapid Transit, Light Rail Transit)
- Activity Nodes

BRW

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Under the preferred scenario, the transportation system would evolve over time in response to demand associated with development in the Project Area, as well as elsewhere in the region. Capacity (i.e., more lanes) would be added to the roadway network, with all major arterials in the Project Area increasing to six lanes and Loop 101 increasing to eight lanes by 2020. At the same time, the transit system would develop in response to demand, as well as funding availability. Initially (before 2010), the system would consist principally of local and regional bus service, including Express Bus Rapid Transit on Loop 101 and neighborhood and site circulator buses. As development in the Project Area increases and other regional transit system improvements are completed, light rail transit and the people mover system would be completed within the Project Area. These improvements would be completed between 2010 and 2020.

Policy and Program Recommendations

The final section of this Study outlines a series of program and policy recommendations related to promoting the implementation of the land use and transportation recommendations described above. Table ES-2 summarizes the recommended activities, along with a generalized prioritization of each activity and a timeframe for its completion. As Table ES-2 shows, the recommendations are organized according to five major initiatives, as follows:

1. Scottsdale/Tempe North/South Transit Corridor Study: These activities would consist primarily of working with the City of Scottsdale to elevate the priority of recommended regional transit service improvements to the Project Area, including broadening the City's Study Area to include the Multi-Modal Study Project Area. This initiative also addresses identification of additional funding sources to support regional transit services development, including State involvement and the reauthorization of the regional highway tax to support transit system development.
2. Phoenix Transit 2000: The recommendations under this initiative relate to promoting expenditure of Transit 2000 tax revenues to support improvements that would benefit the Study Area and Project Area (LRT, BRT, neighborhood circulator).
3. Maricopa Association of Governments Regional Transportation Plan (RTP): Recommendation to reflect and support the development and transportation recommendations from this study in RTP efforts.
4. City General Plan Updates: The Cities of Scottsdale and Phoenix have both updated their general plans to address the requirements of the State's Growing Smarter Plus statutes. The recommendations under this initiative are to request that the cities incorporate specific provisions in their plans that reflect recommendations contained in the Multi-Modal Study.
5. Private Development Interests: Ultimately, many of the principles reflected in the recommended land use scenario and transportation system recommendations will either be implemented or influenced by the private development community. Accordingly, the recommendations under this initiative address coordination with private property interests to ensure that their activities are supportive of the objectives of the Multi-Modal Study.

Table ES-2
Implementation of Recommended Actions

Activity	Priority	Timeframe
Scottsdale/Tempe North/South Transit Corridor Study		
Redefinition of Study Area(s)/Time Frames: Work with Scottsdale staff to extend corridor north to Project Area and to accelerate time frame for extension of service.	▪ High	▪ Immediate ▪ Study will continue through the end of 2001.
ASLD Involvement in North/South Study Process: Participate as member of "sponsors' committee."	▪ Medium	▪ If possible, ongoing through the end of the study process.
East-West LRT Connector: Begin planning for an east-west LRT connection between the Tempe-Scottsdale corridor and the potential City of Phoenix extension up the Squaw Peak Expressway.	▪ Low	▪ The connector would be a long-term improvement (probably beyond 20 years)
Increased State Financial Participation: Encourage State involvement in financing local (non-Federal) share of transit projects	▪ Medium	▪ Ongoing
Reauthorization of regional transportation sales tax	▪ Medium	▪ Existing tax sunsets in 2005. Effort underway.
City of Phoenix Transit 2000		
Promote Squaw Peak Expressway LRT Extension: Promote extension of LRT system up SR 51, across Cactus, and up Tatum to Desert Ridge.	▪ High	▪ Immediate ▪ Decisions probably won't take place for several years.
Promote BRT Service on SR 101: Promote extension of City's BRT system into Study Area.	▪ High	▪ Immediate ▪ Initial service expected to be active by 2003, with extensions following
Pursue Funding for Neighborhood Circulator: Target City's local and neighborhood bus programs as potential funding sources for neighborhood circulator.	▪ Low	▪ Demand for the circulator will come with development.
MAG Programs		
Regional Transportation Plan (RTP) Focus on Project Area: Encourage MAG to reflect principles of this study in its RTP efforts.	▪ Medium	▪ Current phase (through end of 2001) focusing on urban form. ▪ Next phase will focus on regional transportation system planning recommendations (early 2002).
City General Plans		
Support and Monitor City General Plan Implementation Processes: Promote implementation of plans consistent with the land use and transportation recommendations of this report.	▪ High	▪ Both Cities have adopted their updated plans. ▪ Public votes on both plans are scheduled for March.
Private Development Interests		
Reservation of Rights-of-Way for Regional Transit Services: Ensure that new roadways in Study Area account for needs of regional transit services, particularly light rail transit.	▪ High	▪ As discussion with prospective developers occurs.
Local Circulator System Planning: Begin discussions with prospective developers concerning local circulator technology and financing.	▪ Medium	▪ As discussion with prospective developers occurs.
Site Design Principles: Encourage prospective developers to incorporate transit- and pedestrian-supportive design, with a focus on activity nodes.	▪ Medium	▪ As discussion with prospective developers occurs.
Prospective Developers of Entertainment Commercial: Evaluate interest in theme-oriented entertainment commercial uses in Southeast Quadrant of the Project Area.	▪ High	▪ Immediate ▪ Ongoing

STUDY CONCLUSIONS

The *Scottsdale Road-Loop 101 Study Report* calls for an ambitious, but realistic, combination of land use and transportation improvements for the Scottsdale Road-Loop 101 Project Area over the next 20+ years. Ultimately, the development of the Project Area will require the involvement of and consensus among a broad variety of public and private interests. Achievement of the type of land use pattern and associated transportation system improvements recommended in this report will require the establishment of a common vision for the Project Area among these interests. It will also require a commitment to extensive coordination as the area develops. The biggest challenge will be to ensure that the timing of transportation improvements keeps pace with development. Often, transportation infrastructure, particularly transit service, lags behind development. If necessary rights-of-way and/or funding commitments are not secured at the time of initial development, the possibility of developing the type of balanced transportation system described in this report could be compromised. On the other hand, ongoing commitment to the principles outlined in this report could result in the emergence of the Project Area as a signature development of regional, if not national, prominence.

Responses to Key Questions

As noted earlier in this Executive Summary, three key questions were posed at the initiation of this Study. Following are succinct responses to these questions, based on the results of the evaluations and analyses conducted as part of the Study, and as reported in more detail in the body of this report.

1. Will planned transportation infrastructure, when fully implemented, be adequate to maximize commercial development on ASLD land?

The trip generation analysis presented in Section 3.2.2 of this report concludes that, with roadway and transit system improvements in place, the transportation system will support the travel demand generated by buildout of the Project Area.

2. What changes are needed to the planned transportation infrastructure to support full development of the scenarios evaluated?

Section 3.0 of this report describes Study Area roadway and transit system improvements that will support development of the recommended scenario. Section 4.0 focuses on multi-modal services and functions in the Project Area.

3. At what level of development of the Study Area will multi-modal connections or linkages be feasible and practical?

As Section 3.3 of this report indicates, regional high-capacity transit service (light rail), as currently programmed, will not reach the Study Area until at least 2015, although express bus service on Loop 101 could be provided as development demand emerges. With full development of the Project Area as recommended, the regional transit system improvements would be viable and would position the Project Area to compete successfully for funding to complete improvements as development occurs (i.e., by 2020).

Neighborhood and local transit services could be developed as demand warrants. This report assumes that local site circulation service will start as a bus circulator route that is eventually replaced by a people mover system consisting of either automated guideway transit (AGT) technology or a contemporary urban streetcar system similar to that being considered for Downtown Scottsdale as part of the Scottsdale/Tempe North/South High Capacity Transit Study. While the financing implications and the construction logistics of the two technologies would differ considerably, either could be achieved at full buildout of the Project Area.

1.0 INTRODUCTION

1.1 BACKGROUND/HISTORY

The Arizona State Land Department (ASLD) manages approximately 9.3 million acres of State Trust land, 660,000 acres of which are located within or adjacent to the State's 87 municipalities. Some of the most valuable of these urban State Trust lands are located along the Scottsdale-Phoenix municipal boundary along Scottsdale Road, between the CAP Canal and Deer Valley Road. This land, which is the last large area of developable land in the northeast Valley, has a unique combination of qualities that make it prime for development, including the outstanding visibility and regional roadway access that completion of the Loop 101 will bring. This combination of qualities prompted ASLD to take a closer look at the area from the perspective of broad land use and transportation issues. This report begins to address these issues.

1.2 STUDY AREA/PROJECT AREA

Two geographic areas have been identified for this study. The first is the *Study Area*, which is an approximately 36-square mile area bounded on the north by Pinnacle Peak Road, on the east by Pima Road, on the south by Thunderbird Road, and on the west by 64th Street. This area establishes the overall framework for consideration of a variety of transportation and development issues. The Study Area includes several large, regionally significant projects (existing and proposed). These include Desert Ridge, Paradise Ridge, Grayhawk, DC Ranch, Scottsdale Airpark, and Reach 11 Recreation Area. These projects are described in detail later in this report.

Within the Study Area is a much smaller *Project Area*, which focuses on the key area immediately surrounding the future Scottsdale Road-Loop 101 interchange. This area covers approximately 3.5 square miles, most of which is State Trust land. The Project Area includes much of the Paradise Ridge site and all of Chauncey Ranch (both of which are on the Phoenix side of Scottsdale Road). No specific development plans have been filed for the Scottsdale portion of the Project Area, although vested zoning already exists.

The Project Area dips to the south to pick up the Scottsdale Road/Frank Lloyd Wright intersection. This intersection, in addition to having a great potential impact on traffic movement north of the CAP Canal, is the terminal point of a Major Investment Study (MIS) now being conducted by the Cities of Scottsdale and Tempe to identify potential high capacity transit corridor(s) and technology(ies). This linkage will enable ASLD and the host cities to bring these two areas together in a unified multi-modal transportation plan.

Figure 1-1 shows the boundaries of the Study Area and Project Area.

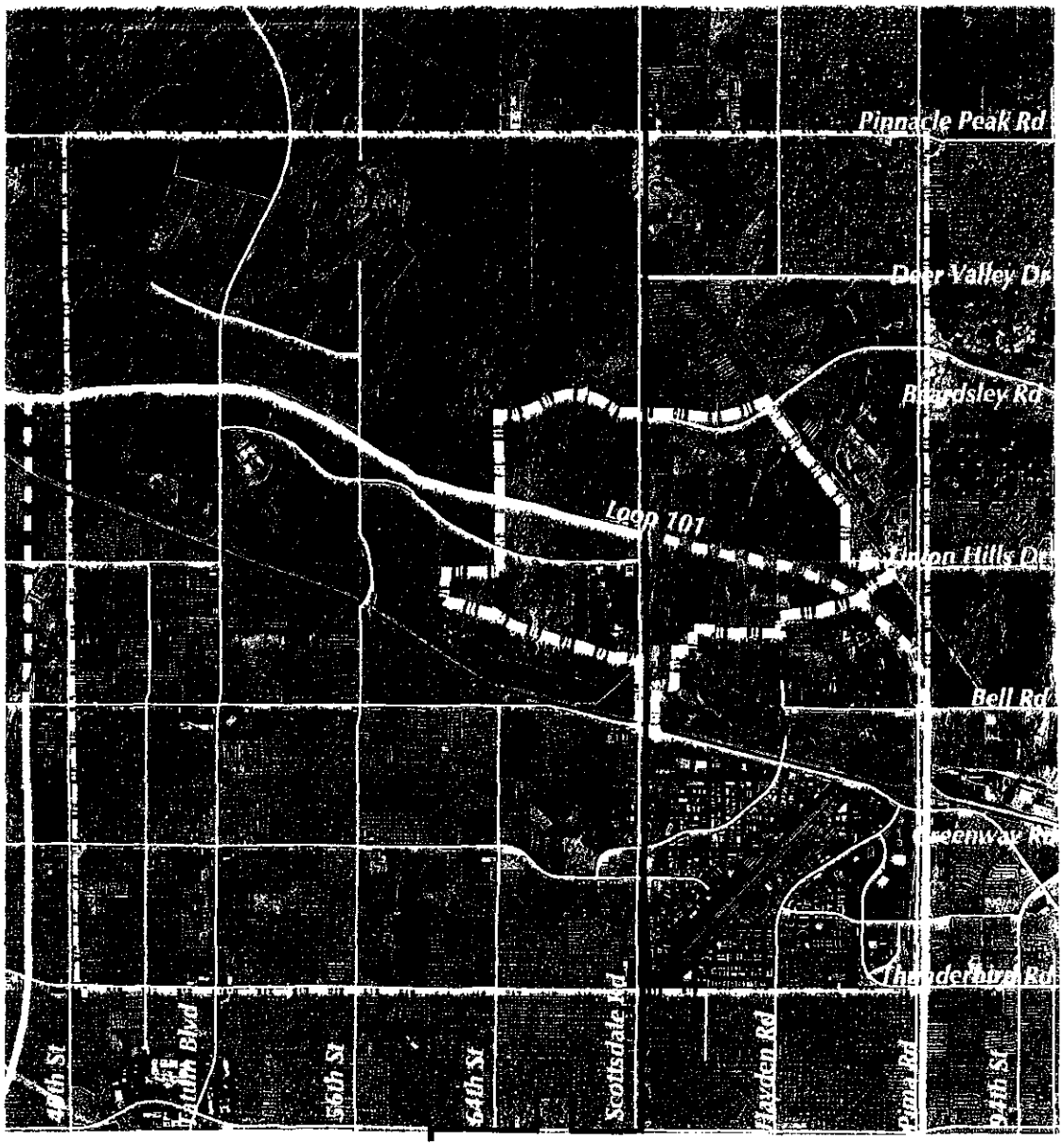
1.3 STUDY PURPOSE/OBJECTIVE

The basic purpose of this study is to evaluate the potential for multi-modal transportation linkages within the Study Area generally and the Project Area specifically. In commissioning the study, the State Land Department acknowledged that traffic congestion in Study Area is a growing problem, and it will continue to worsen as major new development projects occur. The study focuses on transportation issues at two levels. First, it considers regional mobility and accessibility issues. That is, how will people get to the Study Area and Project Area from other parts of the region? Second, it evaluates localized mobility and accessibility, or how people move around once they enter the Project Area. The ultimate objective of this study is foster the development of a balanced multi-modal transportation strategy that addresses regional and local transportation needs, as well as the land use and development interests of the Cities of Scottsdale and Phoenix.

SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Study Area and Project Area

Figure 1-1



Legend

- *Study Area*
- *Project Area*
- *City Limits*
- *Arterials*
- *Freeways*
- *Proposed Freeways*

1 0 1 Miles

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BRW

Source: Maricopa County Department of Transportation, 1999. Maricopa Association of Governments, July, 1997. BRW, Inc, June, 2001.

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2.0 LAND USE/TRANSPORTATION SETTING

The Study Area for this project is one of the most vital and growing areas of Maricopa County. It is identified in the General Plans of Phoenix, Scottsdale, and Maricopa County as a major regional growth area and activity center. In addition, through its Regional Transportation Plan Update, the Maricopa Association of Governments (MAG) is also evaluating the regional implications of growth in the Study Area. This section of the report establishes the setting for consideration of multi-modal transportation strategies by first discussing demographics, then summarizing relevant land use and development information, and finally outlining the transportation system framework.

2.1 POPULATION AND EMPLOYMENT

The Maricopa Association of Governments (MAG) has prepared population and employment forecasts for Maricopa County. Table 2-1 summarizes MAG's forecasts for the Study Area and Project Area for the years 2000 (existing), 2010, and 2020. The 2020 and 2040 estimates depicted in the table are derived from MAG forecasts prepared at the regional analysis zone (RAZ) level.

Table 2-1
Population and Employment

	Study Area			Project Area		
	2000	2020*	2040**	2000	2020*	2040**
Population	66,701	105,867	125,106	1,667	14,515	16,478
Employment	33,541	40,126	57,742	1,550	14,241	29,973

*2020 estimates derived from MAG traffic analysis zone (TAZ) forecasts
**2040 estimates are derived from MAG regional analysis zone (RAZ) estimates. For population 10 percent of RAZ 228 and 20 percent of RAZ 230 are assumed to be within Project Area. For employment, 45 percent of RAZ 228 and 80 percent of RAZ 230 are assumed to be in Project Area.
Source: Maricopa Association of Governments, 1997; BRW, June 2001.

As indicated, according to MAG's forecasts the Project Area will accommodate a total of approximately 16,500 residents and 30,000 employees. The corresponding numbers for the Study Area are 125,100 and 57,700. It is likely that these forecasts underestimate the actual level of development that will occur by 2020, because the estimates are based on general plan designations and development master plans in the Study Area. MAG's forecasts appear to overemphasize residential development in the area and discount employment. The following observations highlight the discrepancies:

- The Scottsdale Airpark already has over 30,000 employees and it is expected to have 50,000 by 2010; this suggests a significant undercounting (by MAG) of potential employment in the balance of the Study Area.
- Estimates prepared by the developers of Paradise Ridge indicate that it will contain approximately 5.6 million square feet of retail and office space by 2010 and 11.2 million by 2020. Assuming an average of 400 square feet of retail space per employee and 333 square feet per office employee, total employment in Paradise Ridge would be 14,300 in 2010 and 19,300 in 2020. Given that almost all of this employment would occur within the Project Area, MAG appears to have significantly undercounted employment. Conversely, Paradise Ridge estimates that it will contain 3,900 housing units by 2010 and 5,700 by 2020; assuming 1.0 persons per multi-family unit and 2.0 persons per single-family unit, the project would have 4,000 residents in 2010 and 6,700 in 2020.
- The City of Scottsdale has prepared estimates of development for a range of development scenarios in an area that generally approximates the Project Area. For population, these estimates range from 21,500 to

32,500. For employment, the range is from 19,400 to 36,900. These totals suggest that MAG's forecasts are low for both population and employment.

The discrepancies between the MAG estimates are significant because they can affect a variety of infrastructure planning analyses, including traffic. The transportation analysis presented later in this report addresses this issue.

2.2 LAND USE/DEVELOPMENT

2.2.1 Physical Setting

Except for levees along the CAP Canal, the entire Study Area, including the Project Area, is virtually flat. Also with the exception of the canal, there are no watercourses in the Study Area. There are, however, some natural washes that channel stormwater through the area. These washes are depicted in various development plans for the area as improved or natural open space corridors. These drainageways are also incorporated into master drainage plans that have been prepared for most of the Project Area, including the Core South, Core North, and Paradise Ridge sites.

The Project Area is lies in an area that has been largely undeveloped until recently. Accordingly, there are no known areas of environmental hazards that would affect State Trust lands.

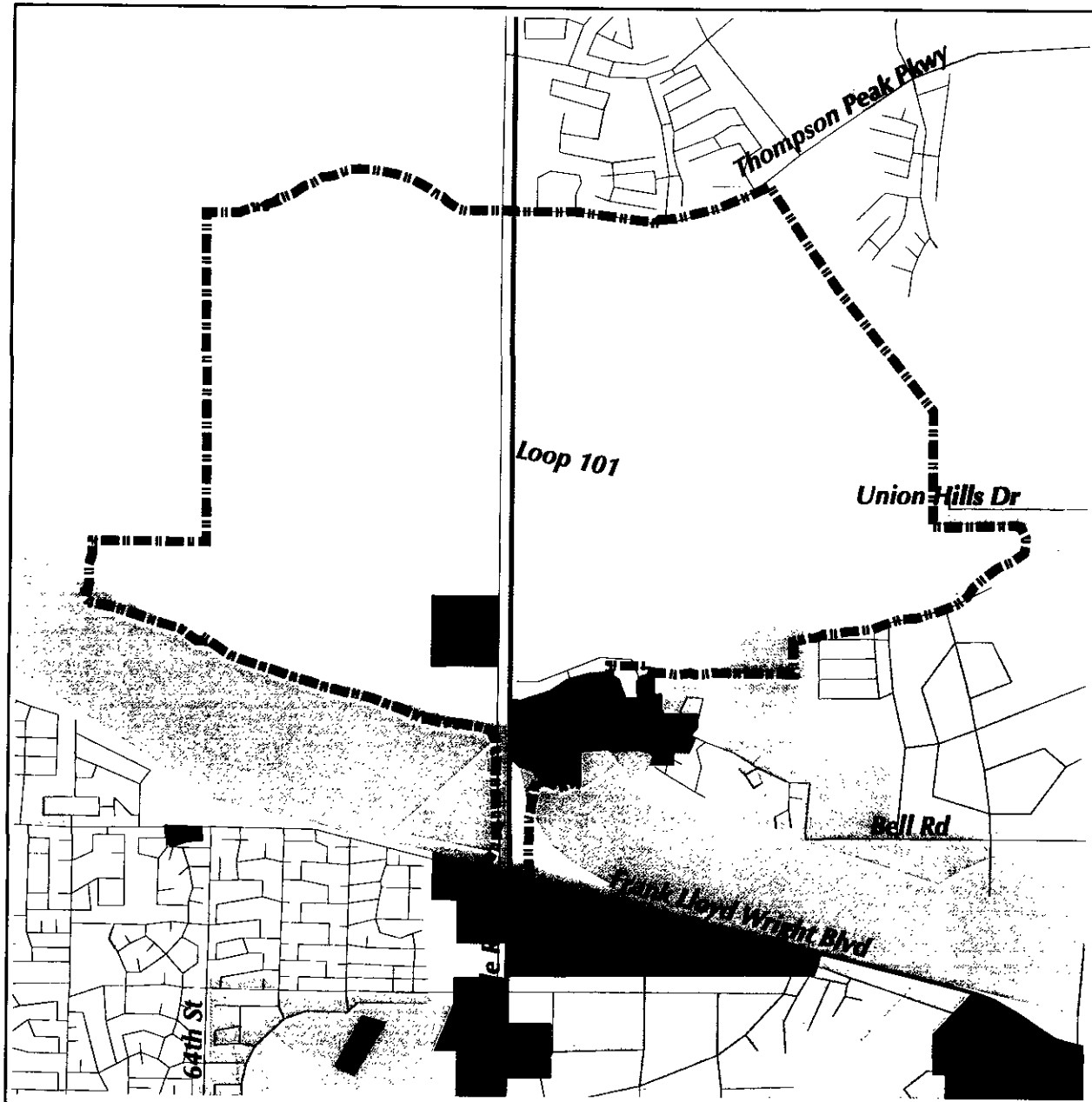
2.2.2 Existing Land Use

Table 2-2 and Figure 2-1 show the distribution of existing land use within the Study Area and Project Area. As they show, vacant land predominates, with 42.9 percent in the overall Study Area and 87.9 percent of the Project Area, with most of the vacant land located north of the CAP Canal. The most prominent use of developed land is low-density residential, with approximately 30.7 percent in the Study Area and 5.7 percent in the Project Area.

Table 2-2
Existing Land Use

	Study Area		Project Area	
Land Use	Acres	% of Total	Acres	% of Total
Single-Family	7,298.8	30.7%	138.5	5.7%
Multi-Family	592.6	2.5%	32.5	1.3%
Retail Commercial	839.5	3.5%	40.3	1.6%
Office/Employment	1,330.3	5.6%	0.0	0.0%
Resort	112.4	0.5%	48.3	2.0%
Public/Quasi-Public	611.6	2.6%	0.1	0.0%
Parks/Open Space	2,592.6	10.9%	36.4	1.5%
Agriculture	158.8	0.7%	0.0	5.8%
Transportation	22.2	0.1%	0.5	0.0%
Vacant Land	10,186.6	42.9%	2,150.1	87.9%
Total	**23,745.4**	**100.0%**	**2,446.7**	**100.0%**

Source: BRW, June 2001.



Scottsdale Road/Loop 101 Multi-Modal Study

Existing Land Use Project Area

Figure 2-1

Land Use

- *Low Density Residential (1-5 du/acre)*
- *High Density Residential (5+ du/acre)*
- *Commercial*
- *Employment*
- *Resort*
- *Public/Quasi-Public*
- *Parks/Open Space*
- *Agriculture*
- *Vacant*

LEGEND

- *Study Area*
- *Project Area*
- *City Limits*
- *Streets*
- *Freeways*
- *Proposed Freeways*
- *CAP Canal*

0.5 0 0.5 Miles

N

BRW

Source: Maricopa County Department of Transportation, 1999. Maricopa Association of Governments, July, 1997. BRW, Inc, June, 2001.

v:/projects/State_Lands_MIS/projects/luamap.apr 6/22/01

2.2.2 Major Projects

There are several major existing and proposed projects in the Study Area that could have a bearing on the Project Area, from both land use and transportation perspectives. The following summaries highlight the development features of several of these projects. The location of these projects is shown in Figure 2-2.

Paradise Ridge

Paradise Ridge is the single most important development proposal in the Project Area, occupying almost all the Phoenix portion of the Project Area. It is a proposed master planned community planned for 2,200 acres of State-owned vacant land bordered by Pinnacle Peak Road to the north, Scottsdale Road to the east, the Reach 11 Recreation Area to the south, and 64th Street (extended) to the west.

Table 2-3 shows the proposed phasing for the Paradise Ridge project:

Table 2-3
Paradise Ridge Development Program

Development Type/Units	Phase I 2005	Phase II 2010	Phase III 2020	Total
Single-Family Dwelling Units	125	1225	829	2,179
Multi-Family Dwelling Units	1,398	2,342	1,002	4,742
Total Dwelling Units	**1,523**	**3,567**	**1,831**	**5,721**
Retail Square Footage	760,000	4,240,000	880,000	5,880,000
Office Square Footage	600,000		937,000	1,537,000
Total Square Footage	**1,360,000**	**4,240,000**	**5,600,000**	**11,200,000**
Resort/Hotel Rooms	800			800
Golf Course (Holes)	36			36

Source: Landmark Land Company of Arizona, November 2000.

Most of Paradise Ridge is located north of the Pima Freeway, including most of the retail, the resort/hotels, the golf course, and all of the single-family development. South of the freeway is all multi-family residential and commercial.

The single largest issue with the Paradise Ridge project concerns the retail uses north of the freeway. As Table 2-3 shows, nearly 6 million square feet of retail uses are proposed, most of which (4.2 million square feet) is concentrated in the area bounded by Thompson Peak Parkway, Scottsdale Road, the freeway, and 64th Street. The Paradise Ridge Development Plan assumes that this area will develop by 2010 and could be configured as a regional mall.

Chauncey Ranch

Chauncey Ranch covers approximately 160 acres near southwestern corner of the Project Area. The site, which is bounded by Mayo Boulevard to the north, Scottsdale Road to the east, Princess Drive (extended) to the south, and 64th Street to the west, has been divided into roughly equivalent development parcels of 40 acres apiece. Parcel A (southeast) is currently being developed as a "high-end auto boutique," with six to ten dealerships; Parcel B (southwest) is proposed for development with 600 to 1,000 multi-family residential units; Parcel C (northwest) is proposed for 400,000 to 600,000 square feet of office space; and Parcel D (northeast) is proposed for 400,000 to 600,000 square feet of mixed-use (office and retail) development. Westcor Partners is developing the property.

Desert Ridge

The Desert Ridge area of approximately 5,800 acres is bounded by Pinnacle Peak Road on the north, the Central Arizona Project Canal on the south, 64th street on the east, and 32nd street on the west. Desert Ridge is planned for a mix of residential, commercial, and employment uses along with an extensive pedestrian-oriented street network in a masterplanned setting that is designed around the area's natural drainage system. Desert Ridge is located adjacent to the Loop 101 freeway corridor and is designed to include a Village Core, which includes development of a mid- to high-density mixed-use core with a variety of commercial, employment, medical, entertainment, public and residential uses.

Currently under construction are the 110-acre Desert Ridge Market Place, the 950-room (and 18-hole golf course) Marriott Resort, and an approximately 90-acre American Express regional corporate office campus. These complement the already established Mayo Hospital and the Sumitomo microchip manufacturing facility, both of which are located south of the freeway.

Desert Ridge has been planned and phased to achieve a balance between jobs and housing. It is designed to develop a strong employment core, which will result in a better jobs/housing balance than other master planned communities in the region. This balance will help minimize the project's impact on the regional and arterial transportation network. The pedestrian system within Desert Ridge is also designed to provide a continuous pedestrian linkage from all neighborhoods to the Village Core, which will help alleviate demand on the local road network.

DC Ranch

DC Ranch is a planned community located generally to the northeast of the Study Area, east of Pima Road and north of Bell Road on Thompson Peak Parkway. The site encompasses a total of 8,281 acres, 3,700 acres of which are developable land with the balance being incorporated into the McDowell Sonoran Preserve. DC Ranch is located on land that has been a working cattle ranch since the early 1900s. When complete, its first phase will consists of 1,200 homes. With a planned build-out of 10 years, DC Ranch is expected to include between 4,000 and 5,000 residential units, along with schools, houses of worship, office and retail space, and several public parks.

Currently, DC Ranch includes one commercial center, Market Street at DC Ranch, the first phase of which opened in July 2001. The initial phase of the 300,000-square foot center includes a Safeway supermarket and other neighborhood retail uses, while the second phase will consist of offices and is scheduled to open in 2002. Market Street lies at the head of DC Ranch's trail network, encouraging shoppers to walk or ride bikes to stores. Two shopping centers are proposed in future, including DC Ranch's 60-acre Town Center near the base of the McDowell Mountains.

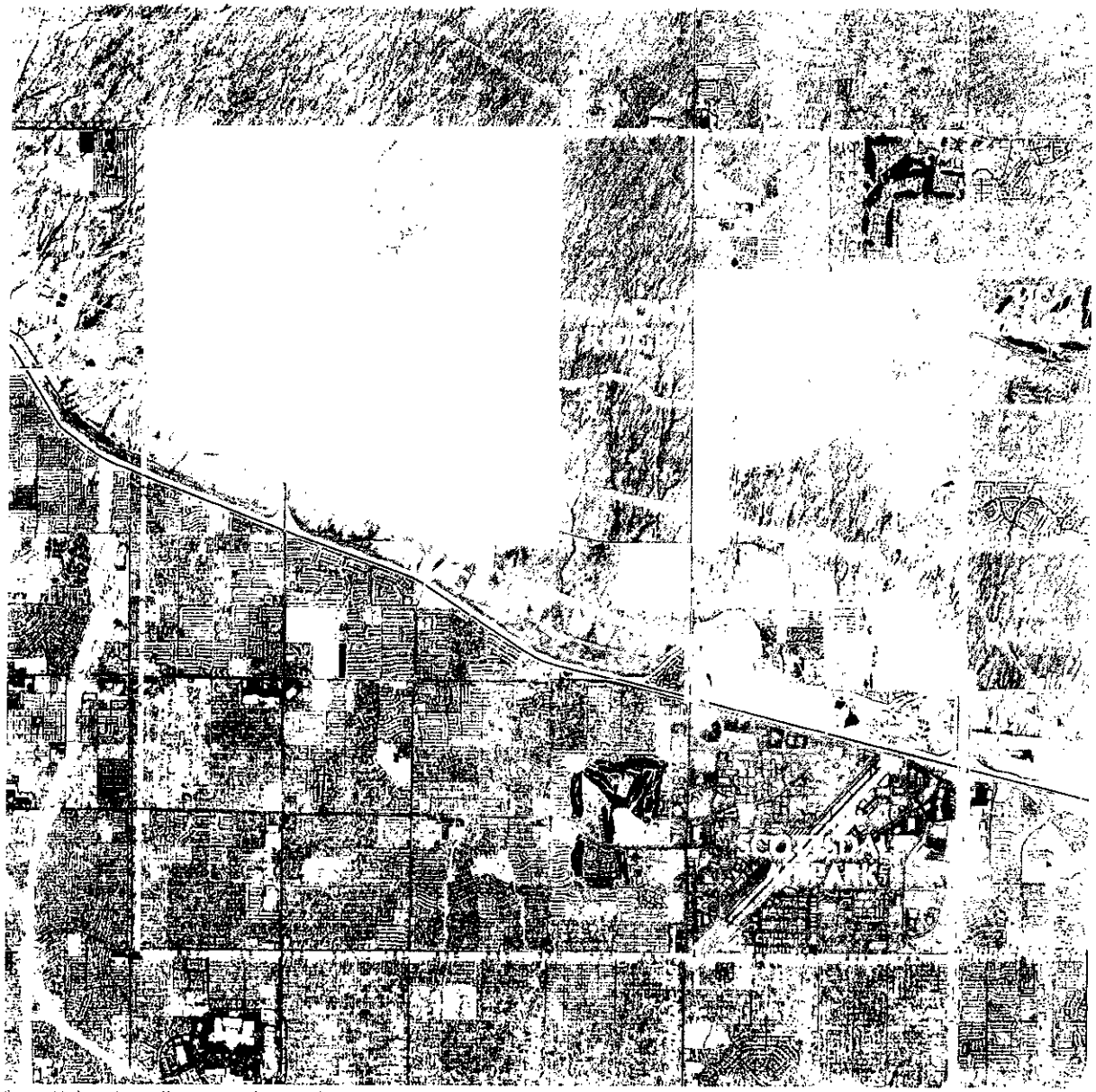
Grayhawk

Located immediately north and northeast of the Project Area between Scottsdale Road and Pima Road, Grayhawk is a 1,600-acre planned community. The project is predominantly single-family, consisting of two single-family "neighborhoods": the Retreat, which also includes two 18-hole public golf courses, and the Park, which has two elementary schools (one public and one private), an assisted-living retirement community, high-end residential rentals, a retail center, and a Boys and Girls Club. In addition, Grayhawk has over 30 miles of hiking, biking, and jogging trails, as well as barbecue pavilions, tennis courts, and neighborhood swimming pools. An on-site medical campus provides convenient access to healthcare services.

SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Major Projects

Figure 2-2



Source: Maricopa County Department of Transportation, 1999.
BRW, Inc., June 2001.

Legend

- Study Area
- Project Area

1 0 1 Miles

N

BRW

Scottsdale Airpark

The Scottsdale Airpark consists of more than 13 million square feet of building space situated on more than 2,600 acres bounded by Pima Road to the east, 70th Street to the west, Thunderbird Road to the south, and Bell Road to the north. The Airpark has become a national model for airport-based business parks. Several important factors have contributed to the success of the Scottsdale Airport/Airpark: it is headquarters for over 25 national/regional corporations; home to more than 1,800 small to medium-sized businesses; workplace of more than 30,000 employees; and has easy airport access and seven miles of taxiway access.

Following are some salient facts about the project:

- The employment base at the Airpark in 1995 represented 17 percent of the total employment in the City of Scottsdale. By 2020 this area is forecasted to represent 27 percent of the city's total employment.
- The makeup of businesses at the Scottsdale Airpark is currently Business Services (20%); Retail (17%); Wholesale Trade (15%); Finance, Insurance, and Real Estate (13%), and Construction (9%).
- Businesses average 33 workers (28 on-site and 5 off-site). Average size has grown in recent years with the addition of very large employers such as The Dial Corp and Vanguard Financial.
- Low-rise/garden office and mid-rise office combine to constitute 43% of the building type in the Airpark with commercial retail and freestanding restaurant/commercial building at 14% and industrial at 12%.

Given the magnitude of existing and proposed development in the area, the Airpark will continue to add burden to the regional and local transportation system in both the Study Area and the Project Area.

Kierland

Kierland, a 730-acre master-planned community, is located west of Scottsdale Road straddling Greenway Parkway. The Kierland Community master plan includes single-family and multi-family residential homes with resort and recreational uses, as well as office, commercial, business and retail projects (see the following table).

Table 2-4
Kierland Development Program

Land Uses	Acres
Resort Hotel/Clubhouse	54.0
Kierland Golf Club	206.0
Single-family Residential	135.0
Multifamily Residential	87.0
Commercial / Retail	59.7
Kierland Commons - specialty retail	26.3
Commerce Park	155.0
Parks / Open Space	7.0
Total	**730.0**

Source: Woodbine Southwest Corporation, The Herberger Interests of Phoenix.

Kierland Commons, the commercial core of Kierland, is located on the northwest corner of Greenway Parkway and Scottsdale Road. The Commons is the first "urban village" center to be built in the Phoenix area and features a pedestrian-friendly main street environment and a town square. With its pedestrian-friendly "main street" ambiance, open outdoor public spaces and a mix of upscale retail shops, restaurants,

and office space, Kierland Commons reflects a growing national trend of modeling suburban retail projects after traditional urban downtowns.

2.3 TRANSPORTATION

2.3.1 Roadway Design Criteria

Arterial streets are the major roadways carrying traffic across the Phoenix metropolitan area. The primary function of arterials is to carry through traffic, with a secondary function of providing access to adjacent land uses. Traffic on urban arterials generally has the right-of-way over all cross traffic except at signalized intersections. Minor arterials typically provide lower travel speeds and greater access to adjoining properties than principal arterials, which often employ access management techniques such as raised medians, frontage roads, driveway consolidation and driveway turn restrictions.

Collector streets are designed to carry lower traffic volumes for shorter distances than arterials. Collectors receive traffic from local streets and distribute it to arterials, and vice versa. They serve more of a land access function as opposed to providing mobility for long-distance through traffic. Minor collectors generally have two lanes, while major collectors may have four. Collectors typically have lower speed limits and more residential frontage than arterials.

Table 2-5 lists the current design criteria of the cities of Phoenix and Scottsdale for arterial and collector roadways. Each city prescribes six lanes for major arterials, four lanes for minor arterials, two to four lanes for major collectors, and two lanes for minor collectors. Raised medians that physically separate opposing traffic flows are part of the design criteria for major arterials, and in Scottsdale for minor arterials as well. Higher functional classifications generally require greater right-of-way and roadway width.

Table 2-5
Design Criteria for Roadways

Roadway Classification	Jurisdiction	Number of Travel Lanes	Median Type	R/W Width (feet)	Roadway Width (feet)
Major Arterial	Scottsdale	6	24' Raised	140-150	108
	Phoenix (Section A)	6	24' Raised	140	104
	Phoenix (Section B)	6	14' Raised	130	94
Minor Arterial	Scottsdale	4	16' Raised	110	80
	Phoenix (Section C)	4	TWLTL	110	74
	Phoenix (Section D)	4	TWLTL	110	64
Major Collector	Scottsdale	4	TWLTL	100	72
	Phoenix (Section E)	2	TWLTL	100	50
Minor Collector	Scottsdale	2	TWLTL	80	40
	Phoenix (Section E)	2	None	80	40

Note: TWLTL = two-way left-turn lane.
Source: Paradise Ridge Traffic Impact Analysis Report, Kirkham Michael Consulting Engineers, November 2000.

2.3.2 Level of Service Concept and Thresholds

The level of service concept is used to determine the efficiency of existing and future roadway and intersection operations. Level of service (LOS) is reported as a "letter grade" ranging from A to F, with A representing the best and F representing the worst level of congestion or driver discomfort. Levels of service on roadway segments are defined as follows:

- *Level of Service A* – Free-flowing conditions. The operation of vehicles is virtually unaffected by the presence of other vehicles, and operations are constrained only by the geometrics of the roadway and driver preferences.
- *Level of Service B* – Indicative of free flow, but the presence of other vehicles begins to have a noticeable impact on speeds and freedom to maneuver.
- *Level of Service C* – Represents a range in which the influence of traffic density on operations becomes marked. The ability to maneuver within the traffic stream, and to select an operating speed, is clearly affected by the presence of other vehicles.
- *Level of Service D* – Borders on unstable flow. Speeds and ability to maneuver are severely restricted because of traffic congestion.
- Level of Service E – Operations at or near capacity, and quite unstable.
- *Level of Service F* – Represents forced or breakdown flow.

In large urbanized areas with heavy traffic and extensive peak hour congestion, LOS E is often considered the minimum tolerable. Segments or intersections operating at LOS F are assumed to need increased capacity or other mitigation. Table 2-6 presents typical segment capacities at LOS E for various facility types.

Table 2-6
Daily Segment Volume Thresholds

Functional Classification	Acceptable Range of Average Daily Traffic	
	From	To
Freeway, 8 lane	N/A	169,200
Freeway, 6 lane	N/A	126,900
Major Arterial, 6 lane	35,000	55,000
Minor Arterial, 4 lane	25,000	37,000
Major Collector, 4 lane	15,000	30,000
Minor Collector, 2 lane	5,000	15,000

Note: Shading indicates upper limit of volume range at level of service E. N/A = not applicable.
Sources: City of Scottsdale Design Standards & Policy Manual; City of Phoenix Street Classification System, General Policy Document and Technical Supplement, July 1992; 1994 Highway Capacity Manual; Florida Department of Transportation 1995 LOS Manual; BRW, Inc., October 2000.

2.3.3 Existing Roadway Network

Following are descriptions of the major roadways in the Study Area. The descriptions are derived from various sources, including the City of Phoenix and Scottsdale General Plans, network assumptions from the MAG regional travel model, and assumptions made for various development plans, particularly those documented in a traffic analysis conducted for the Paradise Ridge project.

Pinnacle Peak Road, the northern boundary of the Study Area, extends from Cave Creek Road in Phoenix to roughly the alignment of 108th Street in Scottsdale. It currently has four lanes from the 64th Street alignment (future intersection) to Scottsdale Road, except where it has been widened at intermediate cross streets and driveways to provide a center left-turn lane. The posted speed limit is 50 miles per hour (MPH). The City of Phoenix has classified this section as a major arterial roadway, indicating that it will ultimately be improved to a six-lane divided configuration within a 140-foot right-of-way, except at major intersections where the roadway and right-of-way widths will probably be greater to allow for right- and left-turn lanes. Pinnacle Peak Road does not enter the Project Area.

Scottsdale Road runs continuously across Scottsdale from Carefree to Tempe. This City of Scottsdale roadway currently has four lanes with a center left-turn lane at intermediate intersections. Scottsdale has

classified this section as a major arterial roadway, indicating that it will ultimately be improved to a six-lane divided configuration within a 140-foot right-of-way, except at major intersections where the roadway and right-of-way widths will probably be greater to allow for right- and left-turn lanes. Scottsdale Road lies within the Project Area for approximately 1.1 miles beginning at the Bell Road intersection. Scottsdale Road is also the boundary between Phoenix and Scottsdale, and MAG has designated it a Road of Regional Significance.

The *Loop 101/Pima Freeway* (SR 101) is currently under construction through the Study and Project Areas as a six-lane facility with full access control. The freeway is currently nearing completion from 56th Street to Scottsdale Road, with opening of the final segment between Scottsdale and Pima Roads scheduled for 2003. Traffic interchanges at 56th Street and Scottsdale Road will open to traffic along with the mainline. Additional interchanges at 64th Street and Miller/Hayden Road are planned, but have not been programmed or funded at this time.

Mayo Boulevard extends from Tatum Boulevard to Scottsdale Road, but will eventually continue east/northeastward to connect with Hayden Road and/or cross over SR 101 at approximately the Miller Road/76th Street alignment. Phoenix classifies Mayo Boulevard as a major arterial, meaning that it will ultimately be a six-lane divided roadway. Within the Project Area, it is currently a three-lane facility with a striped two-way left-turn lane.

Bell Road/Frank Lloyd Wright Boulevard is a continuous route across the Phoenix metro area from Scottsdale to Surprise, passing through Phoenix, Glendale, Peoria and unincorporated Maricopa County. In the study area Bell Road is a four-lane facility with additional turn lanes at intermediate intersections and major driveways. Classified as a "special section" by Phoenix and as a Road of Regional Significance by MAG, it will ultimately be improved to a six-lane divided roadway. East of Scottsdale Road, Bell becomes Frank Lloyd Wright Boulevard, a six-lane divided facility. This street touches the south edge of the Project Area but does not enter it.

64th Street currently runs continuously from Doubletree Ranch Road on the south to Bell Road on the north. It will eventually be extended north across the Central Arizona Project Canal and SR 101 to Jomax Road. Just south of its existing northern terminus, 64th Street is now a four-lane road with a center left-turn lane. When completed, 64th Street will follow the western edge of the Project Area.

Deer Valley Road/Thompson Peak Parkway: Deer Valley Road, which does not currently exist, will eventually be constructed as a major (six-lane divided) arterial from Tatum Boulevard to Scottsdale Road in Phoenix. It will run along the northern edge of the Desert Ridge Village Center and then into Paradise Ridge, where it will create the northern edge of the proposed regional mall. Once it crosses Scottsdale Road into Scottsdale Deer Valley Road becomes Thompson Peak Parkway, which is a six-lane, divided arterial that is the major east-west roadway running through Grayhawk and DC Ranch.

Princess Boulevard is an east-west roadway that currently exists in Scottsdale only. It has two lanes in each direction, plus a raised median.

Within the Project Area, signalized intersections exist at the following locations:

- Bell Road/Frank Lloyd Wright Boulevard/Scottsdale Road
- Tournament Players Club Access/Scottsdale Road
- Princess Boulevard/Scottsdale Road
- Mayo Boulevard/Scottsdale Road
- Thompson Peak Parkway/Scottsdale Road

Additional signals will operate at the 56th Street and Scottsdale Road interchanges once SR 101 opens to traffic. Many other intersections within the larger Study Area are also signalized.

Table 2-7 presents the current approach lane configuration for the Scottsdale Road intersections with Bell Road, Princess Boulevard, Mayo Boulevard and Thompson Peak Parkway.

Table 2-7
Existing Lane Configuration of Project Area Intersections

Intersection	Approach	Number of Lanes		
		Left	Through	Right
Bell Rd/Frank Lloyd Wright Blvd/Scottsdale Rd	NB	2	2	1
	SB	2	3*	0
	EB	1	2*	0
	WB	1	2	1
Princess Blvd/Scottsdale Rd	NB	0	2	1
	SB	1	2	0
	WB	2	0	1
Mayo Blvd/Scottsdale Rd	NB	1	2	0
	SB	0	2*	0
	EB	1	0	1
Thompson Peak Pkwy/Scottsdale Rd	NB	0	2	1
	SB	1	2	0
	WB	2	0	1

Note: *Right-turning vehicles share a lane with through traffic.
Source: Paradise Ridge "Appendix B B-1 Traffic Report," Kirkham Michael, April 2001.

The following 24-hour traffic volumes from 1998 counts are available for City of Scottsdale roadways within or adjacent to the Project Area:

- Frank Lloyd Wright Boulevard, Scottsdale-Hayden Road: 47,000
- Scottsdale Road, Frank Lloyd Wright Boulevard-Thompson Peak Parkway: 32,000
- Thompson Peak Parkway, Scottsdale-Pima Road: 2,000

All of these average daily traffic (ADT) volumes fall below the LOS E thresholds listed in Table 2-6. However, the *1998 MAG Regional Congestion Management Study* reports that the Bell/Frank Lloyd Wright/Scottsdale Road intersection operates at LOS F during a portion of both the AM and PM peak hour.

2.3.4 Existing Transit Network

Seven local bus routes and one express route currently serve portions of the study area, as Table 2-8 indicates. Most of the routes are in Phoenix and therefore operate west of Scottsdale Road, including two routes (Blue and 186) that terminate at the Mayo Clinic. As a part of the Phoenix Transit 2000 program, funded by a 0.4 percent sales tax approved in March 2000, bus service hours will be extended to midnight and most peak period headways will improve to 15 minutes by 2005. The system will also be expanded to serve all major roads in the city.

- Make automobile, transit and other multimodal circulation more efficient.
- Promote the public and private construction of timely and financially sound infrastructure expansion through the use of infrastructure funding and fiscal planning that is coordinated with development activity.
- Promote development timing that is guided by the adequacy of existing and/or expandable infrastructure, services, and facilities.

Beyond the fact that the City of Scottsdale's *General Plan* update will apply to half of the Project Area, the goals outlined above and their respective approaches represent a major shift in land use and transportation policy in Scottsdale. These are likely to result in significantly enhanced alternatives to automobile usage in the Study Area and between the Study Area and other parts of Scottsdale and the greater region. This appears to offer strong backing for the type of development and transportation services foreseen within the Project Area

City of Phoenix General Plan

In accordance with the requirements of *Growing Smarter* and *Growing Smarter Plus*, the City of Phoenix is in the process of updating its *General Plan*, including the addition of five new elements. "Preserving our past, choosing our future" is the slogan for the *General Plan* update. The City Council adopted the *General Plan* on December 3, 2001. In doing so, it also voted to place the adopted plan on the March 2002 ballot for ratification by the voters of Phoenix, which is required by the Growing Smarter statutes.

The City of Phoenix's *General Plan* that is currently in force was adopted in 1985. It is based on an urban village concept. The unifying idea of urban villages is the development of identifiable communities within the larger city, giving residents a sense of belonging and control over their environment. In addition, the urban villages should contain a variety of housing, jobs, stores, recreational, and educational facilities. The 1985 *General Plan* contained nine urban villages and nine elements. Since that time, five additional urban villages have been created, and seven elements added.

The Land Use Element of the *General Plan* update includes 13 goals, with complementary discussions included in six other elements (e.g. Growth Element, Circulation Element). The following six Land Use Element goals are particularly relevant to the Project Area:

- Urban Form: Growth should be structured into a series of urban villages characterized by the five components of the urban village model: core, neighborhoods, community service area, regional service area, and open space.
- Employment and Population Balance: Development of each village's potential should be encouraged by distributing a diversity of employment and housing in a way that achieves a balanced city-wide plan.
- Mixed Land Use: Mixed land use patterns should be developed within urban villages and within community areas to minimized the number and length of trips.
- Integration of Land Use and Transportation System: An integrated transportation system which furthers the urban village model and minimizes the impacts of the transportation system on homes, businesses and public uses should be encouraged.
- Pedestrian Oriented Design: Development should be designed or retrofitted, as feasible, facilitate safe, convenient, and attractive movement.
- Transit Oriented Design: Development should be designed or retrofitted, as feasible, to facilitate safe and convenient access to transit facilities by all existing and potential users.

The Land Use Map indicates that mixed use will be the predominant land use within the Project Area. Other uses within the area include residential (5-10 DU/acre) and commercial. Additional land uses

adjacent to the Project Area include residential (2-10 DU/acre) and parks/open space (CAP/Reach 11), as well as the Desert Ridge primary core to the west of the Study Area.

The Circulation Element of the *General Plan* update is divided into eight groups of goals and/or sub-goals. The following goals/sub-goals are particularly relevant to the Project Area:

- An Effective Multi-Modal Transportation System: A multimodal transportation system should be established and built that will allow the movement of goods and people safely and smoothly throughout the city especially into, and between the urban village cores.
- Transportation System Management: The efficient use of existing facilities and optimization of transportation demand and supply should be promoted through the use of transportation system management techniques.
- Urban Public Transit: Urban public transit and related facilities and services should be supplemented and expanded to encourage greater use of transit, reduce traffic congestion, increase the effective person carrying capacity of the roadway system, improve air quality, conserve energy, and provide better transportation options especially for those unable to drive.
- Bus and Dial A Ride System: The bus and dial a ride system should meet the demand for the range of service from door to door, neighborhood bus, and local bus to bus rapid transit and should support service to fixed guideway transit systems.
- Rail Transit Systems: Light rail transit service should be provided in corridors where demand for transit service exceeds that which can reasonably be provided with buses.
- Accessibility to Transit Facilities: The use of public transit should be facilitated by improving pedestrian and bicycle access to transit facilities.
- Transit System Safety and Security: Transit customers and operations should be provided to a level of safety and security that neither restricts the demand for transit nor the willingness of employees to provide transit service.
- Pedestrian and Bicycle Circulation: Facilities for the bicycle and pedestrian should be developed and designed in a manner that increases the proportion of short trips and social and recreational trips taken by riders and pedestrians.

The Growth Element of the *General Plan* update is based on a City of Phoenix policy document titled "Phoenix' Strategic View of Growth". According to this document, the City of Phoenix should focus on the management of long-term employment and residential growth, encouraging short-term infill, protecting desert resources, and linking economic development with community needs and growth goals. The draft Growth Element specifies a single goal, "Maintain a high quality of life and economically healthy community", and eight concepts providing guidance to City programs. The following concepts are particularly relevant to the Project Area:

- Transit and Transportation Planning – Protecting Air Quality: In order to protect and enhance air quality, the location and allocation of land uses in and transit and transportation planning in existing and growth areas should be optimized for transit use and to reduce employment and residential trip length.
- Targeted Growth Areas: City programs should recognize six growth areas when setting priorities for infrastructure development and expansion of City services and promoting or discouraging growth in different parts of Phoenix.

The Growth Element map also designates the Desert Ridge primary core as a growth area.

Applying as it does to half of the Project Area, the City of Phoenix' *General Plan* update will obviously have a significant effect on development within the Project Area. Furthermore, the revised/new goals listed

above indicate an increasing emphasis by the City toward a policy of balanced land uses and transportation modes, as well as focused growth.

Maricopa County Comprehensive Plan

The Maricopa County Board of Supervisors adopted the *Maricopa County Comprehensive Plan – Eye to the Future* in 1997. The plan currently includes four elements (Land Use, Transportation, Environment, Economic Development), as well as an action plan identifying specific implementation techniques.

Maricopa County does not regulate land uses within incorporated areas, which instead fall under the jurisdiction of the relevant cities, towns and Native American communities. A portion of the Project Area (Chauncey Ranch) is currently unincorporated and, therefore, is under Maricopa County jurisdiction. However, according to the *Maricopa County Comprehensive Plan*, the property is within a designated General Plan Development Area (GPDA), indicating that it is likely to be annexed to a the City of Phoenix in the future and is included in the City of Phoenix's *General Plan* (see below). As a result, the Land Use Element of the *Maricopa County Comprehensive Plan* will not apply to the Project Area.

The Maricopa Association of Governments (MAG) is the Maricopa County Metropolitan Planning Organization (MPO), making it ultimately responsible for the planning of regional transportation systems in Maricopa County. Despite this situation, the transportation element of the *Maricopa County Comprehensive Plan* includes a Transportation System Plan (TSP) which defines the County's role in transportation throughout the region (in both incorporated and unincorporated areas) and guides the physical development of transportation facilities within unincorporated areas. The TSP includes numerous plans and policies relating to all modes of transportation throughout the County.

According to the Transportation Element of the *Maricopa County Comprehensive Plan*, Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard are primary roads. The primary road classification indicates that they are of regional significance and/or major importance to the County roadway system based on their ability for the following: congestion relief; system continuity; and air quality improvement. Based on this classification, these roads have high priority in relation to Capital Improvement Programs (CIP) and funding (see below). Scottsdale Road and Bell Road/Frank Lloyd Wright Boulevard are also designated smart corridors under the *AZTech Model Deployment Initiative Overview*. In addition, the Transportation Element discusses Maricopa County's support of the Regional Public Transportation Authority (RPTA) trip reduction efforts, including the provision of a park-and-ride facility east of Scottsdale Road on Greenway (see below).

Following the passage of *Growing Smarter* and *Growing Smarter Plus* legislation, Maricopa County is now required to include five new *Comprehensive Plan* elements (Open Space, Growth Areas, Environmental Planning, Water Resources, Cost of Development) and several other policy documents (Development Master Plan Guidelines, Public Participation Guidelines, Comprehensive Plan Amendment). To date, Maricopa County has developed drafts of the new *Comprehensive Plan* elements and policy documents, held focus groups and public meetings, and is circulating the revised draft elements for final comments. Public hearings leading to the approval of the new elements and policy documents are expected to begin during summer 2001.

The draft Growth Areas element of the *Maricopa County Comprehensive Plan* provides guidelines for when and where growth should occur in unincorporated areas of Maricopa County. These guidelines are intended to reduce traffic congestion and infrastructure costs, and increase the likelihood of multi-modal transportation and natural resource conservation. As noted previously, a portion of the Project Area (Chauncey Ranch) is currently unincorporated and a designated General Plan Development Area (GPDA)

under the *Maricopa County Comprehensive Plan.* According to the draft Growth Element, future growth is encouraged within GPDAs.

In summary, the *Maricopa County Comprehensive Plan* has some relevance to the Multi-Modal Study area due to Chauncey Ranch's current status as an unincorporated County island. The *Maricopa County Comprehensive Plan* also refers to a number of other plans and programs that may affect the Project Area. However, because Chauncey Ranch is in the process of being annexed by the City of Phoenix, the *Maricopa County Comprehensive Plan* will ultimately have little relevance to development within the Project Area.

2.4.2 Transportation Plans and Programs

Several transportation plans and ongoing planning programs are relevant to the Study Area. Following are descriptions of these plans and programs that highlight their relevance to the Multi-Modal Study.

Scottsdale/Tempe North/South Transit Corridor Study

The Cities of Scottsdale and Tempe, in partnership with MAG and the Regional Public Transportation Authority (RPTA or Valley Metro), jointly retained BRW and a team of consultants to complete the *Scottsdale/Tempe North/South Transit Corridor Study.* The purposes of the study are to determine the feasibility of a high-capacity transit system for the study corridor and to select a preferred alignment and technology. The primary motivation for the study is to plan for anticipated growth in travel demand, which is expected to exceed existing and committed transportation system capacity by 2020. The final outcome of the study will be a locally preferred alternative (LPA) that outlines solutions to anticipated problems in a manner that is effective, efficient, and environmentally sensitive.

The study corridor covers an area generally bounded by Bell Road/Frank Lloyd Wright Boulevard on the north, the Pima/Price Freeway on the east, Elliot Road on the south, and 64th Street/Kyrene Road on the west. The system would be designed to integrate with the larger regional transportation system, including the Central Phoenix/East Valley Light Rail Transit (CP/EV LRT) line, as well as other potential rapid transit corridors and the express and local bus system.

The study was initiated in mid-2000 and is currently scheduled for completion by the end of 2001. The study uses a three-step (multi-tiered) screening process to evaluate alternative technologies and alignments. As the study moves through the steps, the number of options decreases, while the number of criteria and the level of detail increase.

The first phase of the study (Tier 1) was completed in April 2001. The primary outcome of the first step (Tier 1) was the recommendation of three transit technologies and corresponding alignment alternatives. The following are the three recommended technologies:

- Light rail transit (LRT);
- Busway/bus rapid transit (BRT); and
- Express bus service on freeway high-occupancy vehicle (HOV) lanes.

Two primary alignment alternatives were identified (Rural/Scottsdale Road, Price/Pima Freeway), with multiple possible alignments within a few areas, including the north Tempe and downtown Scottsdale areas.

The second step of the study (Tier 2) involves further analysis of only the central portion of the study area, from Indian Bend Road in the north to Apache Boulevard in the south. The goal of this step is the selection of two alternatives and their refinement based on input from stakeholders and the general public. This step was completed in December 2001. Tier 2 resulted in a recommendation to carry forward the three

highest-rated alternatives—LRT Alternatives A and B (both of which would place a trackway on Scottsdale Road), and BRT/busway Alternative E (on Scottsdale Road)—into the more detailed Tier 3 analysis.

The third and final step of the study (Tier 3) will be the most detailed. It will entail the development of an exhaustive set of evaluation criteria, with assessment of the two remaining alternatives against a base or "no build" case. Tier 3 is expected to produce an LPA to be added to the *MAG RTP.* The Tier 3 evaluation is focusing on an analysis of the various options proposed for routing the LRT and BRT/busway options through downtown Scottsdale, with its heavy retail activity, congested streets, right-of-way constraints and other challenges. Alignments under consideration include (1) both directions on Scottsdale Road, (2) northbound on Drinkwater and southbound on Goldwater, (3) northbound on Scottsdale Road and southbound on Goldwater, and (4) northbound on Drinkwater and southbound on Scottsdale Road.

If Tier 3 recommends LRT as the preferred technology for the Scottsdale/Tempe corridor, the Study will consider the option of a more modest streetcar operation, especially in downtown Scottsdale. Compared to full LRT, streetcars use smaller and lighter vehicles, operate in mixed traffic, stop more frequently, and hence offer much lower capacity and travel speed. A separate study would be required to evaluate the cost-effectiveness of streetcars and the feasibility of future conversion of a streetcar system to full LRT.

The Tier 3 analysis will also incorporate express buses on the Pima/Price Freeway as a baseline alternative, which consists of a year 2020 highway and transit network without high-capacity transit in the Scottsdale/Tempe North/South Corridor.

Tier 3 is scheduled for completion by the end of 2001.

In the near term, the *Scottsdale/Tempe North/South Transit Corridor Study* will have a relatively minor impact on the Project Area, due to a number of factors, including the following:

- The LPA is unlikely to be operational before 2010;
- The present study efforts focus on the primary study area (from Indian Bend Road in the north to Apache Boulevard in the south); and
- There is currently no schedule for additional studies of alignments outside the primary study area.

Nonetheless, the *Scottsdale/Tempe North/South Transit Corridor Study* may ultimately have a very strong effect on transportation services to and from the Project Area, because the study will lay the foundation for long-term extension of the LPA into the vicinity of the Project Area.

City of Phoenix Transit 2000

On March 14, 2000, the voters of Phoenix approved a 20-Year sales tax program by a nearly 2-1 ratio. Passage of Proposition 2000 increased the sales tax rate in Phoenix by 0.4 cents per dollar. The tax will generate $2.9 billion over 20 years. Revenues generated from the tax will support the expansion of transit service in Phoenix, including the Central Phoenix/East Valley Light Rail Transit (LRT) Project and future LRT extensions. Table 2-9 lists the service improvements that the Transit 2000 tax will support.

Table 2-9
City of Phoenix Transit 2000 Proposed Transit Service Improvements

Local Bus Service	▪ Regular bus service on all major streets across the city. ▪ Service every 15 minutes during peak travel periods and every 30 minutes the rest of the day. Extended peak hours from 5 a.m. to 9 a.m. and from 3 p.m. to 7 p.m. ▪ Weekday and Saturday service from 5 a.m. to midnight; Sunday and holiday service from 6 a.m. to 10 p.m. ▪ Capital costs of additional and replacement buses, passenger shelters and benches, transit centers and a new maintenance facility.
Dial-A-Ride Service	▪ Curb to curb service restricted to seniors and persons with disabilities. Also complementary paratransit service as required by the Americans With Disabilities Act. ▪ Weekday and Saturday service from 5 a.m. to midnight and Sunday/Holiday service from 6 a.m. to 10 p.m. ▪ Capital costs of additional and replacement vehicles.
Bus Rapid Transit	▪ Operates during peak travel periods from 5 a.m. to 9 a.m. and 3 p.m. to 7 p.m. in five corridors. ▪ Service every 10 to 15 minutes (20 morning and 20 afternoon trips per corridor). ▪ Connects outlying areas of the city to Central Phoenix via high-occupancy vehicle (HOV) lanes where available. ▪ Includes capital costs of dedicated stations additional buses, park-and-rides, and possible signal priority treatments.
Light Rail Rapid Transit	▪ 24 miles within 16 years in the most heavily traveled corridors. ▪ Separate from auto traffic, powered electrically. ▪ First 20-mile segment (12 miles in Phoenix) begins operation in the sixth year, ▪ Includes capital costs of track, rail cars, stations, power supply, and a maintenance facility.
Limited Stop Service	▪ Implement demonstration project on two selected local routes to provide faster service for longer distance commute trips. ▪ Operate during peak hours only with service every 20 to 30 minutes. ▪ Frequency of service on the underlying local bus service would not be reduced. ▪ Includes capital costs of additional and replacement buses.
Neighborhood Bus Service	▪ Connects hard-to-serve neighborhoods with regular and express bus services. ▪ Designed in cooperation with citizens to provide internal circulation within neighborhoods to destinations such as shopping, recreation, medical facilities, and cultural attractions. ▪ Demonstration mini-bus service would be provided in Ahwatukee and Desert Foothills neighborhoods. ▪ Includes capital costs of additional and replacement vehicles.
Other Transportation Improvements	▪ Build 500 additional bus pull-outs. ▪ Construct 300 miles of additional bike lanes.

The Transit 2000 revenues will support the development of Phoenix' portion of the first phase of the Central Phoenix/East Valley Light Rail Transit Project, which is an approximately 13-mile segment that will run between Chris-Town Mall (19th Avenue and Bethany Home Road) and the Phoenix-Tempe city limits. This part of this system will be constructed by 2006. As noted in Table 2-9, the tax will ultimately support

the development of 24 miles of the system. The first extension will be from Chris-Town to Metrocenter and will be completed by 2010. The final extension in Phoenix will be determined based on demand as established through studies to be completed over the next several years. One of the possible routes for the second extension, which is assumed to be completed by 2016, would follow the Squaw Peak Expressway (SR 51) to Cactus Road, to the Paradise Valley Mall, and then up Tatum Boulevard to the Desert Ridge Village Core.

The other major service improvement funded by the Transit 2000 tax is the Bus Rapid Transit (BRT) system. The City of Phoenix is currently preparing detailed plans for the initial operations of BRT. While the first segments will not extend to the Study Area, it is conceivable that future routes could, particularly when the final segments of the Pima and Squaw Peak Freeways are completed. These two freeways could combine with I-17 to provide excellent BRT service to the Study Area. Such service might satisfy a growing demand for suburb-to-suburb travel.

MAG Long Range Transportation Plan – 2000 Update

The *MAG Long Range Transportation Plan (MAG LRTP) – 2000 Update* addresses all modes of transportation in the region over a 20-year or longer time horizon. It is normally updated annually, with the most recent update in 2000, giving it a planning period of 2000-2020. The *MAG LRTP* will be replaced by the *MAG Regional Transportation Plan* (see below).

MAG is the designated Metropolitan Planning Organization (MPO) for the region, making it responsible for the planning of regional transportation systems in Maricopa County. As such, it has a major impact on transportation planning in communities throughout the region.

Over the life of the current *MAG LRTP*, population in Maricopa County is projected to increase by approximately 80 percent. As a result, planned extensions to roadways and transit services include the following: an 89 percent increase in freeway/expressway miles; a nearly 50 percent increase in street lane miles; a tripling of local bus services; a quadrupling of express and commuter bus service; and a 39-mile light rail transit system. However, even with these transportation system improvements, congestion levels are projected to worsen.

According to the most recent *MAG LRTP*, some 129 miles of freeways and expressways remain to be competed in the region, with a target completion date of 2007. Included in this is Loop 101, scheduled for completion in 2003, with the final segment running through the Project Area, from Scottsdale Road to Pima Road. Major arterial streets, which are typically located on the mile grid and carry most of the region's traffic, are expected to be extended and widened, resulting in a projected 50 percent increase in major street lane mileage over the next 20 years.

Increases in fixed bus routes would generally follow the mile grid street system as development occurs, with paratransit services provided to persons physically unable to use the bus system. The quadrupling of express bus service miles would include service on both Loop 101 and on Scottsdale Road, as well as a park-and-ride lot near their intersection. Shuttles and neighborhood circulators may be used to serve local circulation requirements, especially in central activity areas. However, expansion of transit in most of the MAG region depends on the development of funding sources that do not yet exist.

Another component of the *MAG LRTP* is the *MAG Bicycle Plan*, which was updated in 1998 and emphasizes on-street facilities, with an off-street plan under development. The plan is designed to provide guidance in the planning, design and implementation of regionally connected bikeways to meet the daily needs of bicyclists.

The *MAG Pedestrian Plan 2000* was adopted in 1998. Encouraging walking as a viable mode in the region is the overarching goal of the plan, which identifies and recommends programs and actions to encourage the development of pedestrian areas and facilities.

Transportation demand management (TDM) and transportation system management (TSM) are increasingly integral parts of the *MAG LRTP*. TDM efforts including telecommuting, rideshare, and vanpool programs, while TSM activities including real-time traffic management systems and infrastructure capacity improvements.

The Project Area would receive significant specific benefits from projects in the *MAG LRTP*, including improved freeway access, local and express bus service, and access to a park-and-ride facility. Less immediate benefits would result from improvements to pedestrian and bicycle planning, as well as TDM and TSM.

MAG Regional Transportation Plan

The *MAG Regional Transportation Plan (MAG RTP)* is being developed by MAG in two phases, the first phase of which is currently underway. The *MAG RTP* will eventually replace the existing *MAG Long Range Transportation Plan (MAG LRTP)*. Like the plan it is replacing, the *MAG RTP* will provide a policy framework guiding regional transportation investments over the next 20 or more years.

Phase One of the *MAG RTP Update* involves the preparation of the regional transportation plan in outline form, including draft goals, alternatives, strategies, and performance measures. Phase Two will involve the formal preparation and adoption of the plan by MAG, including specific operation and maintenance strategies as well as transportation infrastructure included in the plan.

Phase One is being completed by MAG with the assistance of URS Corporation and BRW, Inc. This phase consists of the following steps:

- Issue Papers and Public Forums (December 2000 to June 2001)
- State of the Region Report (January to June 2001)
- Public Involvement (December 2000 to October 2001)
- Values, Goals and Objectives (March to July 2001)
- Alternative Growth Concepts (May to September 2001)
- Analysis of Concepts (July to September 2001)
- Policies and Strategies (August to October 2001)
- Performance Measures (August to October 2001)
- Final Report (September 2001 to March 2002)

Phase Two of the *MAG RTP* will immediately follow the first phase. No specifics regarding the second phase have yet been released by MAG.

The *MAG RTP* will have a major impact on the Project Area. For example, the fifth step of Phase One, Alternative Growth Concepts, is expected to include a number of regional urban form and transportation alternatives that directly relate to the Project Area, such as growth of existing/future activity centers and transportation corridors/stations.

MAG Transportation Improvement Program

The *MAG Transportation Improvement Program (TIP)* is prepared via a cooperative process involving Federal, State, regional and local agencies as well as members of the public. Effectively, the capital and

operational programs of all these agencies are pooled together to form the *MAG TIP*. The most recent version of the *MAG TIP*, which covers Fiscal Year (FY) 2001-2005, received final approval in July 2000.

The *MAG TIP* is divided into two segments, highways and transit, and organized by agency and fiscal year. In terms of the highway segment of the *MAG TIP*, there are 18 projects with approximately $78.1 million in funds allocated for improvements in or adjacent to the Study Area over the period FY 2001-2005. The type of work for these projects varies widely and includes the following: roadway design; roadway construction; drainage construction; landscape construction; utilities installation; roadway extension; and roadway widening. Funding has been allocated for region-wide activities (e.g., rideshare programs, telecom projects, pedestrian design assistance, travel reduction programs, bicycle planning, transportation, air quality studies, the AZTech Smart Corridor program, and the Work Links Program) or citywide activities (e.g., installation of new traffic signals or street lighting), which could affect highway usage in the Study Area.

The transit segment of the *MAG TIP* is less location-specific, applying as it does to transit activities that involve programs and routes that are regionwide. Examples of these include the following: elderly and handicapped vehicles; purchase and maintenance of buses; design and construction of park-and-ride facilities; installation of bus stop improvements; fixed guideway corridor studies; and acquisition of telecommunications and computer hardware and software. The following are the TIP transit funding total for agencies whose transit activities will affect the Study Area: ADOT, $13.2 million; MAG, $10.0 million; Maricopa County, $3.9 million; City of Phoenix, $176.0 million; RPTA, $795.7 million; and City of Scottsdale, $26.3 million.

Clearly, both the highway and transit segments of the *MAG TIP* will have major effects on the Study Area. The highway segment of the *MAG TIP* will have clearer effects, although these will primarily focus on the highway/roadway network and, therefore, largely impact motor vehicle usage. The transit segment, while less easily defined in terms of direct effects, is sure to result in an increased focus on transit activities in the Study Area.

2.4.3 Recreation and Open Space Plans and Programs

Several regional and local recreation and open space planning efforts could also have a bearing on the development of the Project Area, although they will not affect land use regulation or transportation improvement programming directly. Following are brief descriptions of two of these efforts: The Reach 11 Master Plan and the Desert Spaces – Environmentally Sensitive Development Areas (ESDA)

Reach 11 Recreation Area Preliminary Proposed Master Plan

The Reach 11 Recreation Area (Reach 11) is located in the northeastern part of the City of Phoenix and comprises of approximately 1,500 acres along the northern edge of the Central Arizona Project (CAP) canal between Cave Creek Road and Scottsdale Road. The primary purpose of Reach 11 is to capture floodwaters so they do not impact the CAP.

The U.S. Department of Interior, through the Bureau of Reclamation, has jurisdictional responsibility for the CAP and associated facilities, including Reach 11. The Central Arizona Water Conservation District is under contract to the Bureau of Reclamation for operation and maintenance of all lands, structures, and facilities required to control waters in the CAP canal, including flood control.

The areas of Reach 11 that are not under Bureau of Reclamation control are managed by the City of Phoenix Parks, Recreation and Library Department (PRLD) under the 1986 Recreational Land Use Agreement (RLUA) with the Bureau of Reclamation. This agreement also mandates that Reach 11 be used

for secondary recreation, with certain limits placed on construction within the area to ensure that flood control capacity is not compromised. In addition, the agreement required the City to prepare a master plan for Reach 11 proposing recreation uses acceptable to the Bureau of Reclamation and in accordance with the Paradise Valley Flood Retention Basin Master Plan.

Following an inventory of existing recreation facilities in the vicinity of Reach 11 and an evaluation of public interest in various recreation uses, Reach 11 was designated a district park by the City of Phoenix in the fall of 1998. After designation of Reach 11 as a district park, three alternative recreation master plan concepts were developed and a series of public meetings were held during 1999. The City of Phoenix Parks Board approved a preferred plan in September 1999 as the *Reach 11 Recreation Preliminary Proposed Master Plan*. In accordance with Federal regulations and guidelines, a draft environmental impact statement (DEIS) is currently being prepared by URS/BRW for the *Reach 11 Recreation Preliminary Proposed Master Plan*.

The concept basis of the *Reach 11 Recreation Preliminary Proposed Master Plan* is "... the accommodation of the primary needs for active and passive recreational function while conserving the areas of the site designated as sensitive habitat." The plan divides Reach 11 into six zones.

Zone 6, the easternmost zone, is located between Scottsdale Road and 64th Street, directly adjacent to the southwestern quadrant of the Project Area. It is approximately 200 acres in size and has three major program elements: open park area (community park setting); multi-use trails; and irrigation pond. Next is Zone 5, located between 64th Street and 56th Street. It is approximately 205 acres in size and has two major program elements: desert picnic area; and multi-use trails.

The *Reach 11 Recreation Preliminary Proposed Master Plan* is unlikely to have a significant effect on development within the Project Area. The key impacts are likely to be confined to the following points: three multi-use trail connections are specified from Zone 6 into the Project Area; an underpass is noted linking the multi-use trails from Zone 6 under 64th Street to Zone 5; and it is understood that 65th Street, which is specified as aligned straight north-south across Reach 11, is likely to make a slight deviation to the east across Reach 11 before returning to its normal alignment.

Desert Spaces – Environmentally Sensitive Development Areas (ESDA) – Policies and Design Guidelines

The *Desert Spaces ESDA* was prepared for the Maricopa Association of Governments Desert Spaces Subcommittee in June 2000. The *ESDA* grew out of the "Desert Spaces Plan" adopted in 1995 by the Maricopa Association of Governments. The "Desert Spaces Plan" is a regional open space plan developed to protect sensitive open spaces, while permitting future growth and development.

The *Desert Spaces ESDA* provides policies and design guidelines for the "Environmentally Sensitive Development Areas (ESDA)," also known as "Retention Areas," defined in the "Desert Spaces Plan." These areas include 759,100 acres of publicly owned land and 566,643 acres of privately owned lands, recommended for sensitive development. In this case, sensitive development means retaining "... the integrity of undeveloped hillsides and ridge lines, rivers and washes, native vegetation, wildlife diversity, and archaeological and historic sites." Distinct from these areas are "Conservation Areas" and "Fragile Areas" which are recommended for protection from development.

The *Desert Spaces ESDA* is composed of two parts: policies and design guidelines. The first part, policies, provides general guidelines related to land and development. The policies section also specifies six land classification categories defined on the basis of vegetation type and land form. The second part of the *Desert Spaces ESDA*, design guidelines, provides general guidelines for development and, more

importantly, utilizes the land classification system to define specific design guidelines for each of the six land categories.

The *Desert Spaces ESDA* is intended to be a planning framework tool providing guidance to local municipalities, not to be converted directly into local policy or ordinance. In addition, it is not a legally binding document and is relatively new, with limited time for local municipalities to adopt policies and guidelines from it. However, the *Desert Spaces ESDA* was developed by members of the Maricopa Association of Governments Desert Spaces Subcommittee, which included representatives from the City of Phoenix and the City of Scottsdale. In fact, the City of Scottsdale has an *Environmentally Sensitive Lands Ordinance (ESLO)* that was adopted in 1991, which may apply to a small portion of the eastern half of the Project Area, and which currently is in the process of being revised.

The *Desert Spaces ESDA* contains a map denoting Environmentally Sensitive Development Areas (ESDA), predominant vegetation communities, and secured open space in Maricopa County. The northern half of the Project Area is identified as having Lower Sonoran Vegetation and the northwestern quarter of the site is identified as an Environmentally Sensitive Development Area. This area is likely to be classified as Lower Sonoran, Valley Floor according to the Land Classification Categories, the most common land category. The Reach 11 Recreation Area, which includes a portion of the southern edge of the Project Area, is also identified on the map.

While as noted above these designations currently have no legal effect on the type and form of development, the policies and guidelines contained with the *Desert Spaces ESDA* are likely to be adopted in whole or in part by local municipalities and, therefore, to effect the form of development in this area, including a portion of the Project Area. Such effects may include the following: preservation/use of indigenous vegetation; transitional areas and buffers; low profile development; use of desert colors/material; restricted development in/along wash corridors; encouragement of cluster development; innovative grading and terracing; preservation of open space; and large-scale recreational development. However, a review of the relevant municipal planning policies and ordinances is required to determine the exact impact of the *Desert Spaces ESDA*.

3.0 LAND USE SCENARIOS AND TRANSPORTATION EVALUATION

As the summary of the general plans for Scottsdale and Phoenix in the previous section of this report indicates, both cities view the Study Area as a prime location for future development. The area's freeway visibility and accessibility, large properties under single ownership, and strong existing employment base combine to make it the last major area in the northeast Valley suitable for major development. This section of the report outlines two potential development scenarios for the Project Area and presents an assessment of multi-modal transportation opportunities.

3.1 LAND USE SCENARIOS

For purposes of evaluating the potential multi-modal transportation implications of development in the Project Area, two scenarios have been identified. The scenarios are based on the draft general plans currently under review by the Cities of Scottsdale and Phoenix. As described in the previous section of this report, both cities have designated the Project Area for "mixed-use" on the draft general land use maps undergoing public review. This means that neither City has committed to a specific mix of uses in the area. For practical purposes, a wide range of development types and arrangements could be accommodated under the proposed mixed-used designations.

For each of the scenarios prepared for this study, the mixed-use designation was further divided into specific land use designations. These designations are shown in Figure 3-1 through 3-4. Specific assumptions about the types of uses and their associated densities (dwelling units per net acre) and intensities (floor area ratio) were then made for each designation. Table 3-1 shows these density and intensity assumptions, along with the assumptions used to translate the development estimates derived from them into population and employment estimates for use in the comparative analysis of the scenarios.

Table 3-1
Development Assumptions for Land Use Scenarios

	Residential		Non-Residential	
Map Designation	Net Density (units/acre)	Persons per Household	Floor-Area Ratio (FAR)	Square Feet per Employee
Low-Density Residential	5	2.5		
High-Density Residential	20	1.5		
Neighborhood Commercial			0.20	600
Community Commercial			0.20	600
Regional Commercial			0.20	600
Specialty Commercial			0.20	600
Resort/Tourist Accommodation			0.15	600
Commercial Office			0.30	300
Commerce Park			0.40	300
Industrial Park			0.30	400

To facilitate review of the scenarios, ASLD has divided the Project Area into four quadrants, as defined by the intersection of Loop 101 and Scottsdale Road. The boundaries of these quadrants are described in Table 3-2.

Table 3-2
Project Area Quadrant Definitions

Quadrant	North	East	South	West
Northwest (Phoenix North)	Deer Valley Road	Scottsdale Road	State Route 101	64th Street
Southwest (Phoenix South)	State Route 101	Scottsdale Road	Reach 11 Recreation Area	64th Street
Northeast (Scottsdale North)	Thompson Peak Parkway	Power Corridor	State Route 101	Scottsdale Road
Southeast (Scottsdale South)	State Route 101	Perimeter Center	Princess Route/TPC	Scottsdale Road

The following descriptions explain the assumptions made for each of the two scenarios selected for evaluation, as well as the development, or holding capacity, estimates used as the basis for evaluation of the scenarios.

3.1.1 Scenario One: Existing General Plan

Scenario One is based on specific assumptions for the Phoenix and Scottsdale sides of Scottsdale Road. On the Phoenix side of Scottsdale Road, the designations are based on the Paradise Ridge Master Plan that the City of Phoenix has already approved in concept. For the Chauncey Ranch property, the designations are based on information provided by Westcor Partners. The second is that the designations in Scottsdale are based on existing zoning for the Project Area.

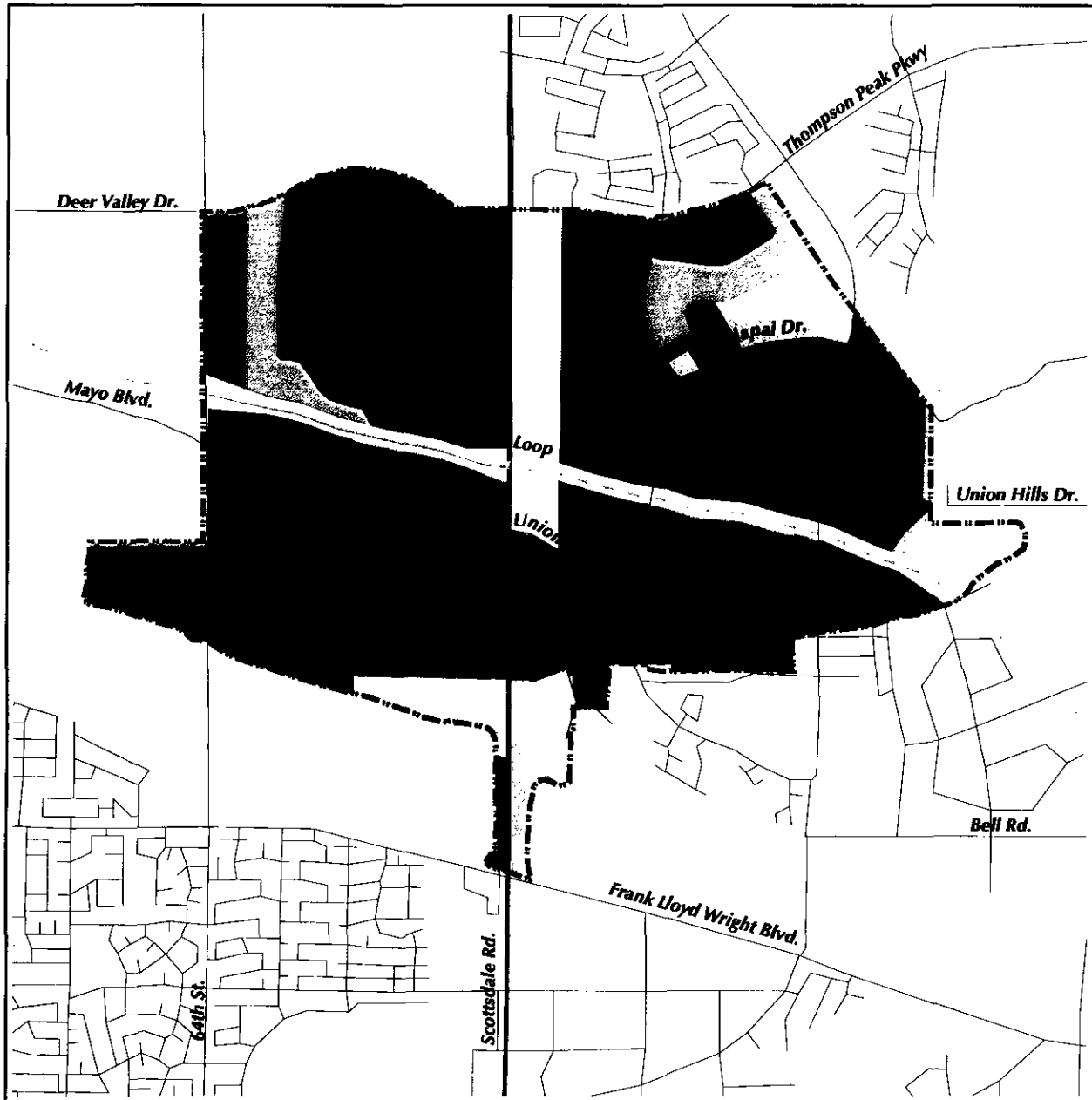
Table 3-3 presents a quadrant-by-quadrant description of the Scenario One land use assumptions. Figure 3-1 shows the land use designations assumed for Scenario One for the entire Study Area, while Figure 3-2 isolates the designations for the Project Area only.

Table 3-4 summarizes the holding capacity of Scenario One, based on the assumptions outlined in Table 3-1. It should be noted that, for purposes of the analysis presented in this report, the Project Area is expected to build out by 2020. Whereas Table 3-4 focuses on the entire Project Area, Appendix B, includes a table that disaggregates same holding capacity by quadrant. The quadrant-by-quadrant table applies the assumptions presented in Table 3-1 to the net developable acreage in each of the land use categories.

Table 3-3
Scenario One Project Area Land Use Description

Quadrant	Use Type	Description
Northwest (Phoenix North) *Regional Commercial*	Residential	• No residential uses within quadrant
	Commercial	• Paradise Ridge regional mall with approximately 3 million square feet and 5,000 employees on 390 acres. • Community commercial uses fronting 64th Street (55 acres, 430,000 square feet and 720 employees.
	Office	• No office uses within quadrant
	Resort	• No resort uses within quadrant, although golf course extends into area from resort to the north of Deer Valley/Thompson Peak
Southwest (Phoenix South) *Mixed (Residential, Commercial Employment)*	Residential	• Approximately 275 acres of high-density residential uses along east side of 64th Street. This includes the southwest quadrant of Chauncey Ranch. Buildout capacity of approximately 5,500 units and slightly over 8,000 residents.
	Commercial	• Three pockets of community commercial: high-end auto mall in southeast quadrant of Chauncey Ranch; southwest corner of Scottsdale/101, north of Mayo Boulevard (Westcor Parcel 4); and west of 64th Street at southern edge of quadrant.
	Office	• Mixed-use office/industrial on northern half of Chauncey Ranch property (southwest of Mayo/Scottsdale intersection). Approximately one million square feet of space, with around 2,400 employees. • Commercial office uses southwest of Scottsdale Road/Princess intersection, with approximately 550,000 square feet and 1,800 employees.
	Resort	• No resort uses within
Northeast (Scottsdale North) *Residential and Employment*	Residential	• High-density residential uses along 76th Street at northern edge of quadrant, consistent with City of Scottsdale current zoning and Grayhawk site plan for the area. Approximately 160 acres, 2,900 units, and 4,300 residents. • Low-density residential uses on Corrigan Trust property along western edge of quadrant, consistent with City of Scottsdale zoning. Approximately 90 acres accommodating just over 400 units and 1,000 residents.
	Commercial	• Community Commercial uses at northwest corner of Hayden/101 interchange, consistent with existing Scottsdale zoning. Approximately 475,000 square feet and 800 employees. • Neighborhood Commercial at northeast corner of Hualapai/76th Street. Approximately 27,000 square feet and 45 employees.
	Office	• Industrial Park (mixed office/retail/light industrial) along east side of Hayden and south and west sides of Hualapai. Capacity for almost 4 million square feet and 10,000 employees. • Approximately 55 acres of Commercial Office at northwest corner of Hayden/Hualapai intersection. 640,000 square feet of space and 2,000 employees.
	Resort	• No resort uses in quadrant.
Southeast (Scottsdale South) *Regional Commercial, Residential*	Residential	• High-density uses along south side of Union Hills Drive, north of the Princess. Approximately 57 acres with 1,000 units and 1,500 residents. • Low-density residential uses on Corrigan property at southwest corner Scottsdale Road and Loop 101. Approximately 20 acres with 90 units and 230 residents.
	Commercial	• Regional retail along Scottsdale Road. Approximately 165 acres with approximately 1.3 million square feet of space and 2,100 employees. • Community Commercial along west side of Scottsdale Road. Approximately 135 acres with 1 million square feet of space and 1,750 employees.
	Office	• Commercial Office area immediately west of Princess along Scottsdale Road. Approximately 35 acres with 415,000 square feet of space and 1,400 employees. • Industrial/Business Park north of Perimeter Center along Loop 101. Approximately 50 acres with 600,000 square feet and 1,500 employees.
	Resort	• No resort uses in quadrant.

Source: BRW, Inc., July 2001



SCOTTSDALE ROAD/LOOP101 MULTI-MODAL STUDY

Land Use
Scenario One
Figure 3-1

Land Use

- Low-Density Residential
- Medium-Density Residential
- High-Density Residential
- Neighborhood Commercial
- Community Commercial
- Regional Commercial
- Specialty Commercial
- Resort/Tourist Accomodation
- Commercial Office
- Commerce Park
- Industrial Park
- Mixed Use
- Public/Quasi-Public
- Parks/Open Space

Legend

- Project Area
- City Limits
- Streets
- Freeways
- Proposed Freeways

0 — 1 Miles

N

BRW

Source: Maricopa County Department of Transportation, 1999. Maricopa Association of Governments, July, 1997. BRW, Inc, July, 2001.

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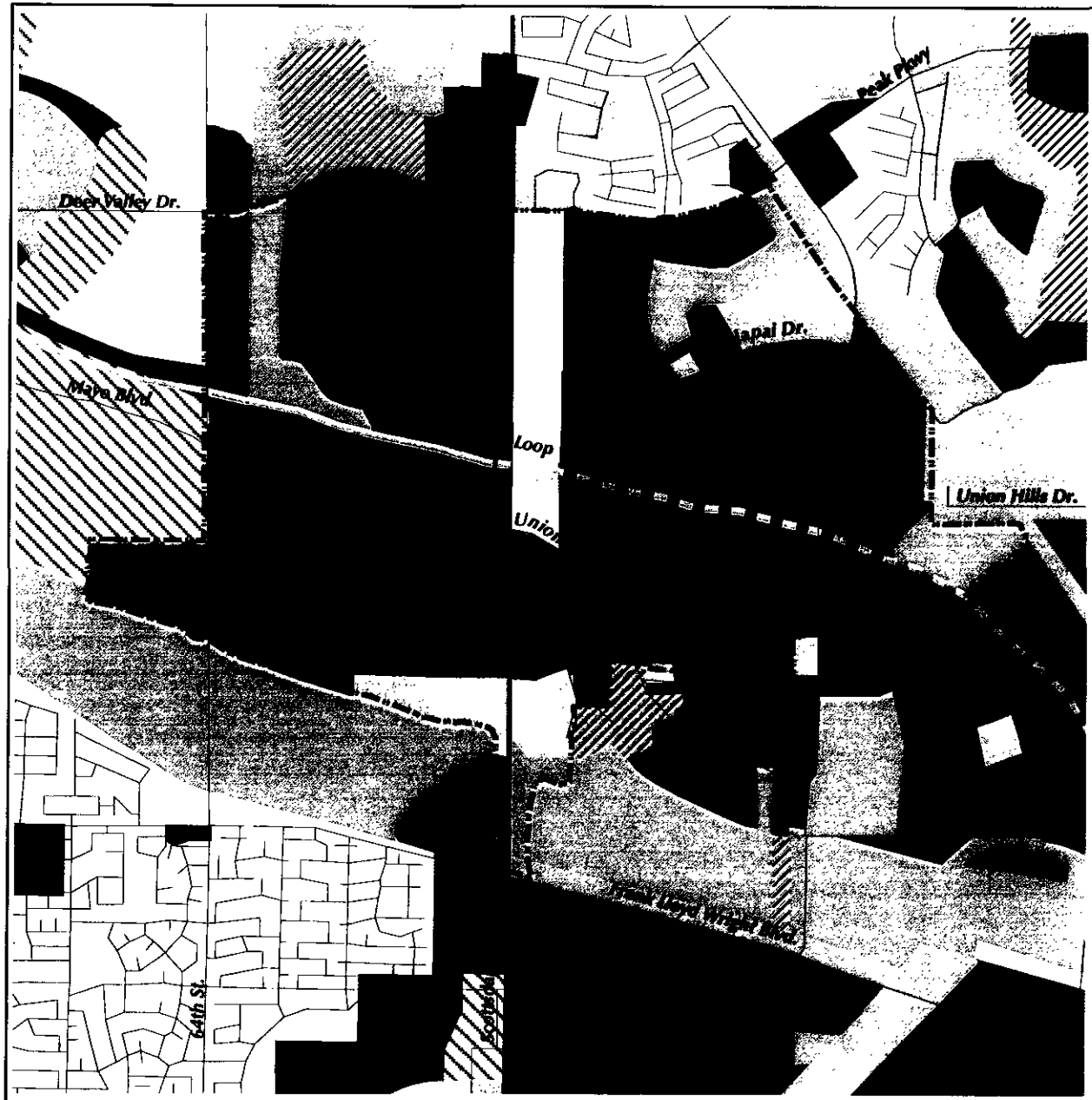

SCOTTSDALE ROAD/LOOP101 MULTI-MODAL STUDY

Land Use
Scenario One
Figure 3-2

Land Use

- Low-Density Residential
- Medium-Density Residential
- High-Density Residential
- Neighborhood Commercial
- Community Commercial
- Regional Commercial
- Specialty Commercial
- Resort/Tourist Accomodation
- Commercial Office
- Commerce Park
- Industrial Park
- Mixed Use
- Public/Quasi-Public
- Parks/Open Space

Legend

- Project Area
- City Limits
- Streets
- Freeways
- Proposed Freeways

0 1 Miles

N

BRW

Source: Maricopa County Department of Transportation, 1999. Maricopa Association of Governments, July, 1997.
BRW, Inc, July, 2001.

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Table 3-4
Scenario One Holding Capacity Summary at Buildout

Designation	Net Acreage*	Residential		Non-Residential	
		Dwelling Units	Residents**	Square Footage	Employees***
Residential					
Single-Family Residential	101.4	507	1,268	-	-
High-Density Residential	472.7	9,454	14,181	-	-
Subtotal	**574.1**	**9,961**	**15,449**	-	-
Commercial					
Neighborhood Commercial	4.2	-	-	36,000	60
Community Commercial	412.5	-	-	3,594,000	5,990
Regional Commercial	497.0	-	-	4,330,000	7,220
Specialty Commercial	-	-	-	-	-
Resort/Tourist Accommodation	-	-	-	-	-
Subtotal	**913.7**	-	-	**7,960,000**	**13,270**
Office/Employment					
Commercial Office	122.5	-	-	1,601,000	5,340
Commerce Park	-	-	-	-	-
Industrial Park	424.1	-	-	5,542,000	13,860
Subtotal	**546.6**	-	-	**7,143,000**	**19,200**
Project Area Total	**2,034.4**	**9,961**	**15,449**	**15,103,000**	**32,470**

*Reflects a reduction in total acreage to reflect developable land (i.e., without streets)
**Assumes 95% occupancy of residential units.
***Assumes 90% occupancy of commercial and office space.
Source: BRW, Inc, June 2001.

3.1.2 Scenario Two: Updated General Plan Assumptions

The assumptions for Scenario Two differ from Scenario One only for the Scottsdale side of Scottsdale Road. On the Phoenix side, the designations are based on the Paradise Ridge Master Plan and information concerning Chauncey Ranch provided by Westcor Partners. The designations for the Scottsdale side of Scottsdale Road under Scenario Two reflect two significant shifts in emphasis. For the area north of the freeway (Northeast Quadrant), the emphasis is on intensive office and commercial development, with largest difference being the Corrigan Trust land along Scottsdale Road, which shifts from single-family residential under Scenario One to commercial and office uses under Scenario Two. The area south of the freeway becomes a high intensity commercial area that includes a combination of resort uses and entertainment-theme retail uses that would capitalize on the potential regional—and national—draw of the area.

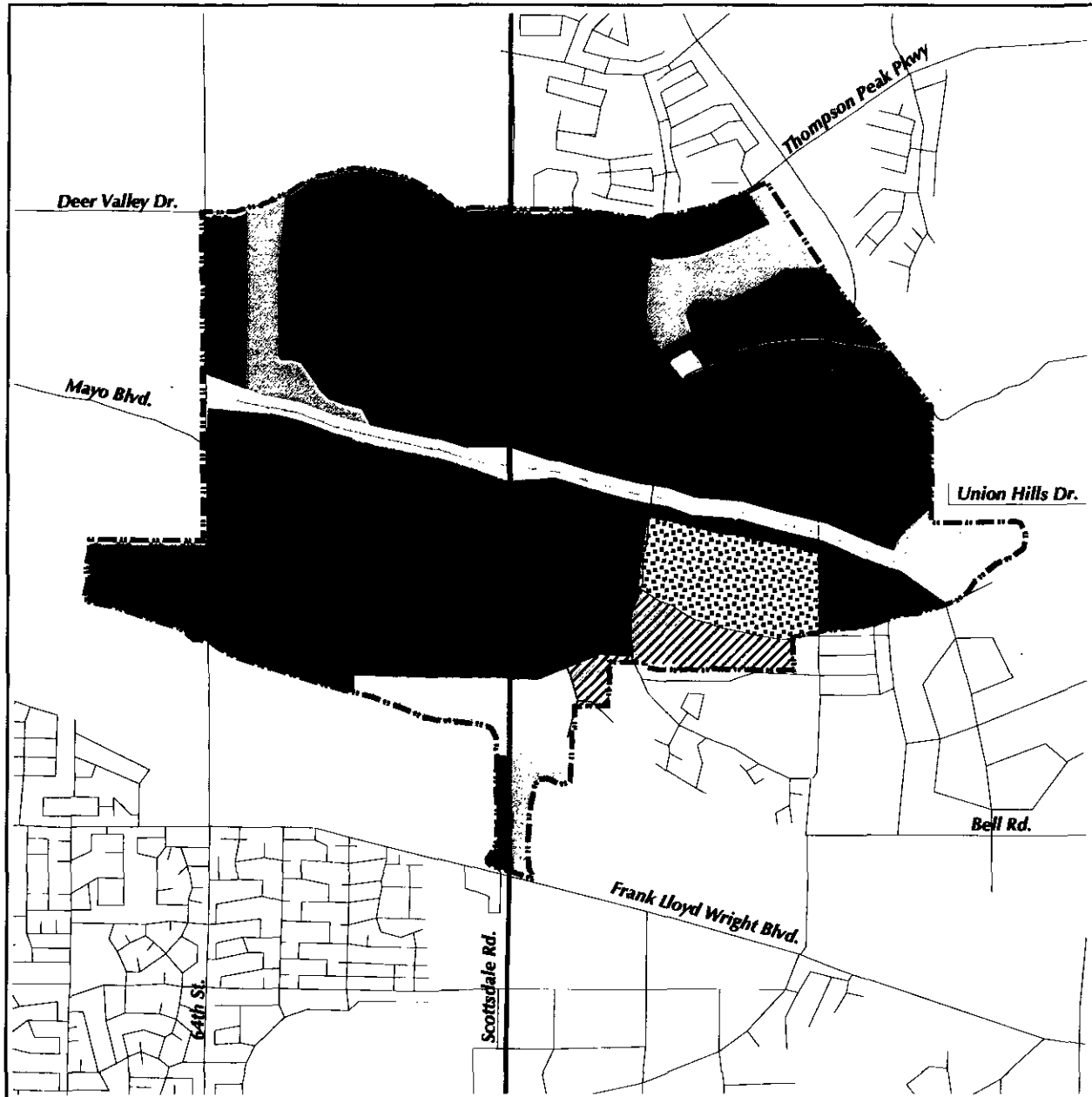
Table 3-5 presents a quadrant-by-quadrant description of the Scenario Two land use assumptions. Figure 3-3 shows the land use designations assumed for Scenario Two for the entire Study Area, while Figure 3-4 isolates the designations for the Project Area only.

Table 3-6 summarizes the holding capacity of Scenario Two, based on the assumptions outlined in Table 3-1. Appendix B disaggregates this holding capacity by quadrant. The quadrant-by-quadrant table applies the development density and intensity assumptions presented in Table 3-1 to the net developable acreage in each of the land use categories.

Table 3-5
Scenario Two Project Area Land Use Description

Quadrant	Use Type	Description
Northwest (Phoenix North) *Regional Commercial*	Residential	• No residential uses within quadrant
	Commercial	• Paradise Ridge regional mall with approximately 3 million square feet and 5,000 employees on 390 acres. • Community commercial uses fronting 64th Street (55 acres, 430,000 square feet and 720 employees.
	Office	• No office uses within quadrant
	Resort	• No resort uses within quadrant, although golf course extends into area from resort to the north of Deer Valley/Thompson Peak
Southwest (Phoenix South) *Mixed (Residential, Commercial Employment)*	Residential	• Approximately 275 acres of high-density residential uses along east side of 64th Street. This includes the southwest quadrant of Chauncey Ranch. Buildout capacity of approximately 5,500 units and slightly over 8,000 residents.
	Commercial	• Three pockets of community commercial: high-end auto mall in southeast quadrant of Chauncey Ranch; southwest corner of Scottsdale/101, north of Mayo Boulevard (Westcor Parcel 4); and west of 64th Street at southern edge of quadrant.
	Office	• Mixed-use office/industrial on northern half of Chauncey Ranch property (southwest of Mayo/Scottsdale intersection). Approximately one million square feet of space, with around 2,400 employees. • Commercial office uses southwest of Scottsdale Road/Princess intersection, with approximately 550,000 square feet and 1,800 employees.
	Resort	• No resort uses within
Northeast (Scottsdale North) *Residential and Employment*	Residential	• High-density residential uses along 76th Street at northern edge of quadrant, consistent with City of Scottsdale current zoning and Grayhawk site plan for the area. Approximately 240 acres, 4,300 units, and 6,500 residents.
	Commercial	• Community Commercial along east side of Scottsdale Road. Approximately 95 acres, 750,000 square feet and 1,300 employees. • Neighborhood Commercial at northeast corner of Hualapai/76th Street. Approximately 30,000 square feet and 50 employees.
	Office	• Commerce Park along northern side of Loop 101. Approximately 365 acres, with 5.7 million square feet of office space and 19,000 employees.
	Resort	• No resort uses in quadrant.
Southeast (Scottsdale South) *Resort and Entertainment Commercial*	Residential	• No residential uses in quadrant.
	Commercial	• Regional retail along Scottsdale Road, straddling Union Hills Drive. Approximately 160 acres with 1.3 million square feet of space and 2,100 employees. • Specialty Commercial (high-end retail and entertainment) along west side of Hayden Road, north of resorts. Approximately 115 acres with 900,000 square feet of space and 1,500 employees.
	Office	• Commercial Office area immediately west of Princess along Scottsdale Road. Approximately 37 acres with 435,000 square feet of space and 1,500 employees. • Commerce Park along southern edge of Loop 101 and north of Perimeter Center. Approximately 75 acres with 1.2 million square feet and 4,000 employees.
	Resort	• New resort immediately north of existing Princess. Approximately 70 acres, including 600-room hotel.

Source: BRW, Inc., July 2001



SCOTTSDALE ROAD/LOOP101 MULTI-MODAL STUDY

Land Use
Scenario Two

Figure 3-3

Land Use

- Low-Density Residential
- Medium-Density Residential
- High-Density Residential
- Neighborhood Commercial
- Community Commercial
- Regional Commercial
- Specialty Commercial
- Resort/Tourist Accomodation
- Commercial Office
- Commerce Park
- Industrial Park
- Mixed Use
- Public/Quasi-Public
- Parks/Open Space

Legend

- Project Area
- City Limits
- Streets
- Freeways
- Proposed Freeways

0 1 Miles

N

BRW

Source: Maricopa County Department of Transportation, 1999. Maricopa Association of Governments, July, 1997.
BRW, Inc, July, 2001.

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SCOTTSDALE ROAD/LOOP101 MULTI-MODAL STUDY

Land Use
Scenario Two
Figure 3-4

Land Use

- Low-Density Residential
- Medium-Density Residential
- High-Density Residential
- Neighborhood Commercial
- Community Commercial
- Regional Commercial
- Specialty Commercial
- Resort/Tourist Accomodation
- Commercial Office
- Commerce Park
- Industrial Park
- Mixed Use
- Public/Quasi-Public
- Parks/Open Space

Legend

- Project Area
- City Limits
- Streets
- Freeways
- Proposed Freeways

0 1 Miles

N

BRW

Source: Maricopa County Department of Transportation, 1999. Maricopa Association of Governments, July, 1997.
BRW, Inc, July, 2001.

v:/projects/State_Lands_MIS/projects/basemap.apr 7/30/01

Table 3-6
Scenario Two Holding Capacity Summary at Buildout

		Residential		Non-Residential	
Designation	**Net Acreage***	**Dwelling Units**	**Residents****	**Square Footage**	**Employees*****
Residential					
Single-Family Residential	-	-	-	-	-
High-Density Residential	494.0	9,880	14,820	-	-
Subtotal	**494.0**	**9,880**	**14,820**	-	-
Commercial					
Neighborhood Commercial	3.6	-	-	31,000	52
Community Commercial	308.6	-	-	2,689,000	4,480
Regional Commercial****	494.3	-	-	4,306,000	7,180
Specialty Commercial	103.6	-	-	903,000	1,510
Resort/Tourist Accommodation	62.8	-	-	410,000	680
Subtotal	**972.9**	-	-	**8,339,000**	**13,902**
Office/Employment					
Commercial Office	74.7	-	-	976,000	3,250
Commerce Park	412.4	-	-	7,186,000	23,950
Industrial Park	73.2	-	-	957,000	2,390
Subtotal	**560.3**	-	-	**9,119,000**	**29,590**
Project Area Total	**2,027.2**	**9,880**	**14,820**	**17,458,000**	**43,492**

*Reflects a reduction in total acreage to reflect developable land (i.e., without streets)
**Assumes 95% occupancy of residential units.
***Assumes 90% occupancy of commercial and office space.
****Includes High Intensity Commercial in Scottsdale
Source: BRW, Inc, June 2001.

3.2 ROADWAY NETWORK PERFORMANCE

This section summarizes forecasted roadway network performance under the development scenarios for the Project Area. The analysis is based on the Maricopa Association of Governments travel model, as well as other comparable traffic studies, including the Paradise Ridge traffic impact analysis.

3.2.1 Demographic Assumptions

Population and employment forecasts are critical because they underlie future land use, which in turn is the basis for trip generation. Table 3-7 compares the population employment estimates for the two scenarios under consideration with the demographic assumptions of the MAG travel demand model for year 2040, which for the purposes of this analysis, approximates buildout of the Project Area. It should be noted that, for practical purposes, buildout could happen anytime between 2020 and 2040, and is likely to occur closer to 2020 in the Project Area.

As Table 3-7 shows, the population and employment in the Project Area are projected to be roughly the same (within 10%) in Scenario One as in the adopted MAG 2040 forecasts. In Scenario Two, on the other hand, the employment projection is 60 percent greater than MAG's, while the population projection is 10 percent less. A comparison of the two scenarios shows Scenario One with slightly higher population, but Scenario Two with nearly 50 percent more employment.

Table 3-7
Year 2040 Population and Employment Projections: Project Area

Variable	MAG Model	Scenario One	Scenario Two
Population	16,478	16,905	14,820
Employment	29,973	32,470	43,492

3.2.2 Trip Generation

Table 3-8 summarizes the trip generation process used to compare Scenarios One and Two. Trip generation estimates were developed for three conditions: a typical weekday; the AM peak hour of adjacent street traffic; and the PM peak hour of adjacent street traffic. The analysis presented in Table 3-8 reflects a four-step process for deriving the trip generation characteristics of the two scenarios. These steps are described in the following paragraphs.

Unadjusted Base: The analysis depicted in Table 3-8 starts with a set of "unadjusted" trip generation numbers for each condition that were derived from typical trip rates for individual land uses (e.g., retail, office, residential, resort), in *Trip Generation*, 6th Edition (Institute of Transportation Engineers). These unadjusted trips established a baseline that was then adjusted to reflect internal capture of trips, pass-by trips, and reduction in trips resulting from transit use, as explained in the following paragraphs.

Internal Capture: "Internal capture" refers to the reduction in trips on the external roadway system due to the mixed-use nature of the development within the Project Area, or within each quadrant of the Project Area. In other words, some trips generated by each land use will originate from or be destined for other uses in the Project Area, rather than outside the Project Area. For this study, a 25 percent capture rate was assumed. This is the larger of the rates from two recent studies of proposed mixed-use projects in Phoenix (Paradise Ridge) and Scottsdale (Los Arcos). In this case, the Paradise Ridge traffic impact analysis, which focused on the same general area as this study, used the higher (25%) rate. This rate was applied to both scenarios.

enhancements, which are consistent with the assumptions made for the Paradise Ridge traffic impact analysis, all three of these streets would operate at a V/C ratio of below 1.0 and with levels of service LOS B, C, or LOS D. The only north-south arterial roadway in the Study Area with a capacity problem would thus be Scottsdale Road (at a V/C ratio of 1.2 and LOS F), and that problem would not exist if traffic were to divert to parallel arterials, which is likely because of the tendency of drivers to gravitate towards less congested routes. In fact, the diversion of trips from Scottsdale Road to the parallel arterials, particularly 64th Street and Hayden Road, is one of the principal tenets of Scenario Two, which emphasizes activity nodes located away from Scottsdale Road and accessed by parallel roadways.

Table 3-10
North-South Arterial Capacity Analysis: Year 2040

Roadway	2040 Volume (MAG projection)	MAG 2040 Network Assumptions			Proposed Mitigated Network		
		Lanes	Capacity	V/C (LOS)	Lanes	Capacity	V/C (LOS)
Hayden Rd.	48,000	4	35,000	1.37 (F)	6	55,000	0.87 (D)
Scottsdale Rd.	66,000	6	55,000	1.20 (F)	6	55,000	1.20 (F)*
64th St.	40,000	4	35,000	1.14 (F)	6	55,000	0.73 (C)
56th St.	38,000	4	35,000	1.09 (F)	6	55,000	0.69 (B)
Tatum Blvd.	48,000	6	55,000	0.87 (D)	6	55,000	0.87 (D)
Total	**240,000**	**24**	**215,000**	**1.12**	**30**	**275,000**	**0.87**

*In the absence of diversion to parallel, uncongested routes.

Sources: MAG 2040 North Valley Partnership Base Network 1b, 6/14/01; 1994 Highway Capacity Manual; Florida Department of Transportation 1995 LOS Manual; BRW, Inc., October 2001.

Figure 3-5 shows the recommended Project Area roadway network based on the analysis presented above and in Appendix A. It should be noted that specific roadway improvement and mitigation needs will have to be reviewed in future, more detailed studies. These studies must determine whether adequate performance at signalized intersections can be achieved with the number of newly generated trips estimated above. This determination will require a network assignment of site-generated trips and a capacity analysis of each intersection under buildout conditions.

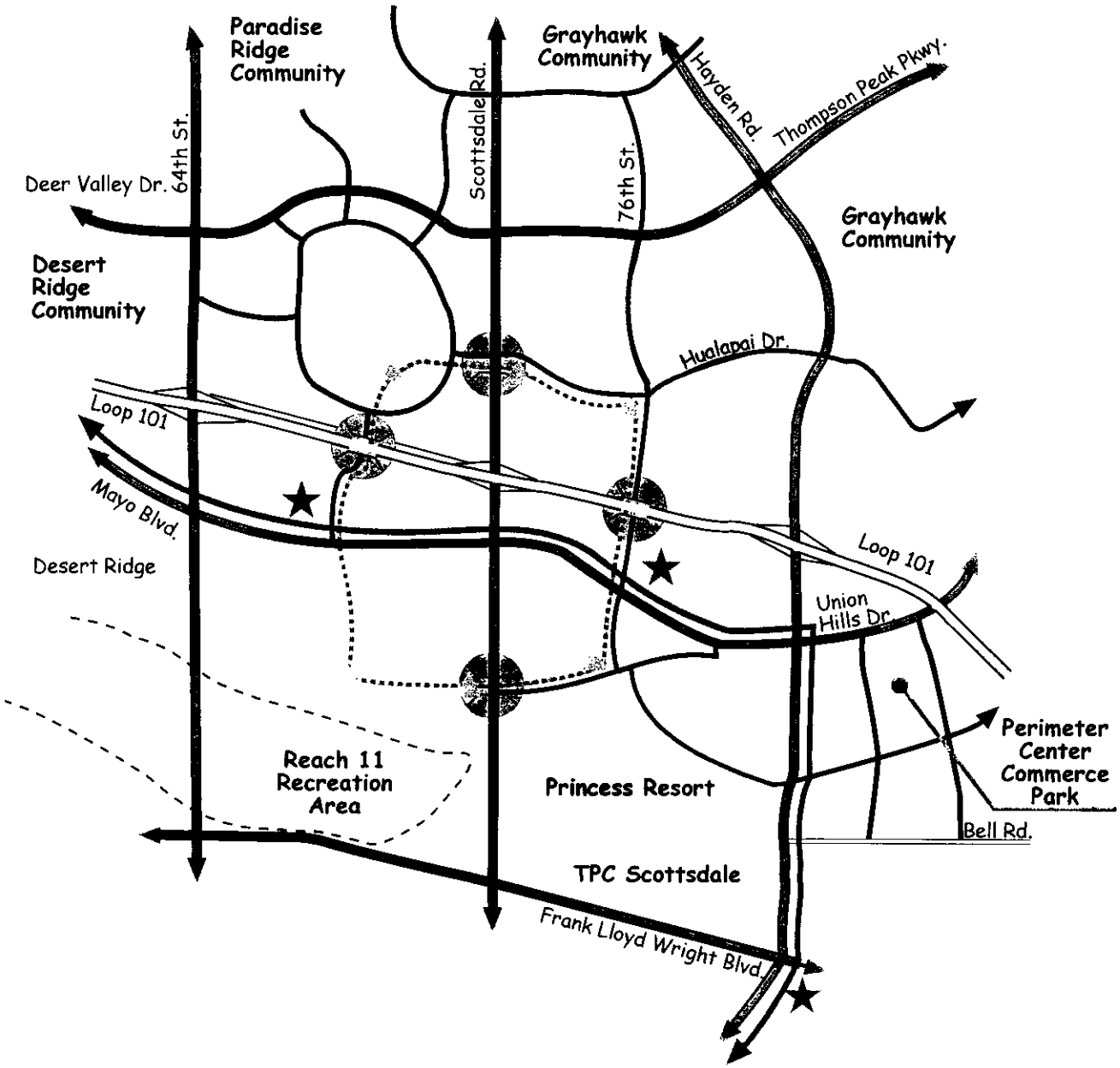
3.3 Regional Transit Access

One of the objectives of this study is to evaluate how to accommodate regional travelers destined for the Study Area or Project Area. As noted in Section 2.4 of this report, several efforts are underway to evaluate regional transit projects that could eventually benefit the Study Area and the Project Area. For purposes of the Multi-Modal Study, the most important of these are the Scottsdale/Tempe North/South Corridor Study, which is evaluating a corridor along Scottsdale Road, and the City of Phoenix' Transit 2000 Program, which is considering a variety of improvements that could eventually serve several directions of travel.

SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Conceptual Transportation System

Figure 3-5



Legend

- *8 Lanes Plus 2 HOV Lanes*
- *6 Lanes*
- *4 Lanes*
- *2 Lanes*
- *Light Rail Transit Connection*
- *Regional Transit Center/Station*
- *At-Grade and /or Elevated Local Circulator Transit*
- *Local Transit Station/Stop*
- *Grade Separation*

N

The Scottsdale/Tempe Study has narrowed its focus to three technology/alignment scenarios for its primary study area, which terminates at Indian Bend Road:

- Light Rail Transit (LRT) on a Scottsdale Road alignment
- Bus Rapid Transit (BRT) on a Scottsdale Road alignment
- Express bus service using high-occupancy vehicle (HOV) lanes on the Pima Freeway

Only one of the first two options will be selected, while the third could function with either of the others, assuming transfer connections from LRT or BRT service on Scottsdale Road to the express bus service on the freeway. The earliest any option would be in service for the primary study area would be 2010. Improvements to serve the secondary study area, which extends north to the southern edge of the Project Area, would probably not be completed until at least 2015. So far, the Scottsdale/Tempe Study has considered only very general options for the secondary area. These include bringing LRT or BRT service either directly up Scottsdale Road to Bell Road or up Scottsdale Road and then over to Greenway-Hayden Road through the Airpark to Frank Lloyd Wright Boulevard. Either route could conceivably extend into the Project Area.

The other major evaluation of transit services that could benefit the Study Area is being conducted as part of the Transit 2000 Program in Phoenix. Two aspects of that program are relevant. The first is the potential extension of light rail transit up the Squaw Peak Freeway. This extension, as depicted in conceptual Transit 2000 materials, would continue along Cactus Road through Paradise Valley Mall and then up Tatum Boulevard to the Desert Ridge Village Center. It is conceivable that at some point this extension could be linked with the Scottsdale/Tempe North/South line via an east-west connection south of the Pima Freeway, perhaps along Mayo Boulevard. Such a connection would provide very direct service to the Project Area.

The second aspect of the Transit 2000 Program that could benefit the Project Area is the BRT program. While no specific services are being considered that would extend into the Study Area, it is possible that future east-west service could provide improved regional access to emerging activity centers in the Study Area, including in the Project Area (e.g., Paradise Ridge and new commercial and office development at the Pima Freeway-Hayden Road interchange).

Any of the regional transit services described above would benefit the Project Area under either scenario. The mix and location of uses described under Scenario Two would, however, be more transit-supportive and would result in travel patterns that might ease congestion compared with Scenario One. The transit supportiveness would result primarily from a mix of uses in Scottsdale that would be more likely to attract transit riders. Specifically, the emphasis on development of activity centers oriented to nodes off Hayden Road would support transit ridership more than another large-scale commercial project (or regional mall) might. Similarly, the mix of uses in the Scottsdale part of the Project Area would concentrate travel activity during the peak commute periods, so the potential benefit of having transit services available would be greater for those who travel to and from the Project Area. As noted above under the discussion of trip generation (and indicated in Table 3-8), the transit-oriented configuration of development under Scenario Two would have a significant trip reduction benefit, compared with Scenario One. Under either scenario, the primary benefit of additional transit access would be to offer travelers, including commuters, a way to avoid congestion, as well as an alternative to driving their cars.

A final issue to consider when evaluating regional transit services is finance, which relates to timing. All of the regional services described above could be supported by a combination of federal and local funds. The federal share would come from the "New Starts" program, which supports new transit projects or extension of existing projects throughout the country. The New Starts funding process is competitive, so there is no assurance that either the Scottsdale/Tempe North/South project or the Phoenix Transit 2000

provide reliable service, consistent travel times, and travel speeds competitive with those achieved by private automobiles.

Neighborhood circulator service is a relative newcomer to the Phoenix metropolitan area. While the need for such service has long been recognized, funding to operate it has not become available until recently. In early 2001, the City of Tempe initiated its first neighborhood route as part of its Tempe in Motion program funded by a half-cent sales tax. This route, known as "neighborhood FLASH," crosses the city in a generally east-west direction between 5th Street and Apache Boulevard, using primarily collector streets. The free service operates every 15 minutes, seven days a week from 7:00 AM to 8:00 PM. The 22-foot buses, fueled by electricity and liquefied natural gas, stop wherever requested in residential neighborhoods, but elsewhere only at signed stops. Tempe expects to implement additional neighborhood circulators if the first route is successful.

Phoenix has also established local circulator service in the Ahwatukee/Desert Foothills area as part of its Transit 2000 program. The free Ahwatukee Local EXplorer (ALEX) began service in November 2000 with 7-day service operating at 30-minute intervals. The 24-foot long buses, which accommodate 16 passengers, operate along a 40-mile round trip route that passes within a half-mile of approximately 80 percent of the 76,000 people who live in Ahwatukee Foothills.

Other established circulator bus routes in the metro area include DASH and FLASH, which serve the central business districts of Phoenix and Tempe, respectively, as well as ASU rather than neighborhoods. Downtown Scottsdale has a seasonal "RoundUp" service and Glendale now operates two circulators known as GUS (Glendale Urban Shuttle) and Professor GUS. Each of these services is free or charges a nominal fare.

As the major projects in the Study Area begin to build out and the prospective ridership base develops, neighborhood circulator systems will become increasingly effective alternatives for movement between the major activity centers in the area. There appears to be an excellent opportunity to introduce high-quality east-west linkages, particularly along Deer Valley Road/Thompson Peak Parkway and Mayo Boulevard, both of which will link major activity centers. Circulators could also connect new development in the Project Area with existing activity centers to the south in the Airpark area (e.g., the Promenade and Kierland).

Either of the scenarios under consideration in this report would be conducive to the successful development of a system of neighborhood circulators. Scenario Two could, however, be slightly better suited, since it would result in a more balanced mix and spatial distribution of uses.

3.4.2 Local/Site Circulator Systems

Local or site circulators serve smaller areas than neighborhood circulators. Such systems typically serve major activity centers where internal travel would otherwise require additional automobile trips (which can overload on-site roads and parking facilities) or excessive walk distances. A well-designed system can substantially reduce the degree of internal traffic and parking congestion. Such a system must meet the following criteria:

- Serve destinations that generate the majority of internal trips.
- Offer travel times competitive with those that can be achieved by driving or walking.
- Keep waits short by operating frequently or on demand.
- Operate whenever activities (office work, shopping, entertainment) are occurring at the site.
- Provide convenient and secure access to parking facilities.
- Provide convenient transfers to transit services that carry passengers to and from the site.

Squaw Peak extension would be successful in attracting funds. It is unlikely that local sources alone could support the necessary capital investment.

One of the factors that the federal government considers in reviewing requests for New Starts funding is local financial capacity. In other words, does the local entity requesting assistance have a stable and secure source of funding to match the federal contribution? In the case of Phoenix, the Transit 2000 sales tax has been earmarked for 24 miles of LRT, which could include an extension into the Study Area, but not until at least 2016. BRT service, which will also be funded by Transit 2000 revenues, could come to the Study Area sooner. In the case of Scottsdale/Tempe service, no local source has yet been identified for the City of Scottsdale.

As noted above, the transit-oriented pattern of development assumed under Scenario Two would increase the viability of transit services to the Study Area compared with Scenario One. This increased viability would enhance the overall feasibility of transit as a partial solution to the congestion problems that are anticipated for the area.

3.4 Local Circulation

The above discussion of regional transit access addresses how travelers might get to the Study Area via new regional transit services. This section addresses how these travelers, or those arriving by other modes (including the automobile) might circulate through the area once they arrive. Following are discussions of how three aspects of the local circulation system might operate. The first is the neighborhood circulator system, which would distribute travelers from the regional transit services to their destinations, as well as between their destinations and other activity centers in the Study Area; the second is the site circulator system, which would move travelers among the activity nodes in the Project Area; and the third is the pathway system that would provide connections between the neighborhood and site circulator systems and local destinations. Figure 3-6 is a conceptual depiction of the how the neighborhood and local circulator systems might connect with the regional systems discussed above.

3.4.1 Neighborhood Circulator Systems

Neighborhood circulator systems typically use full-size or smaller buses to connect residential areas with commercial activity centers and regional transit facilities. Medium and small buses are particularly useful for serving neighborhood streets and pulling into shopping centers where large buses may be unwelcome because of their size and obtrusiveness. Within the larger Study Area and its vicinity, such circulators could connect Desert Ridge, Paradise Ridge, Grayhawk, DC Ranch, the Promenade, and the Princess, as well as new activity centers developed in Scottsdale. Neighborhood circulator routes would link these master-planned communities and mixed-use developments with the following types of transit facilities and services:

- Line-haul local bus routes (e.g., Bell Road, Scottsdale Road) at transit centers or other transfer points.
- Bus rapid transit routes at park-and-ride lots or other stations.
- Light rail transit routes at park-and-ride lots or other stations.
- Other neighborhood circulators serving adjacent communities.
- Dial-a-ride systems serving rural areas incapable of supporting fixed-route bus service.

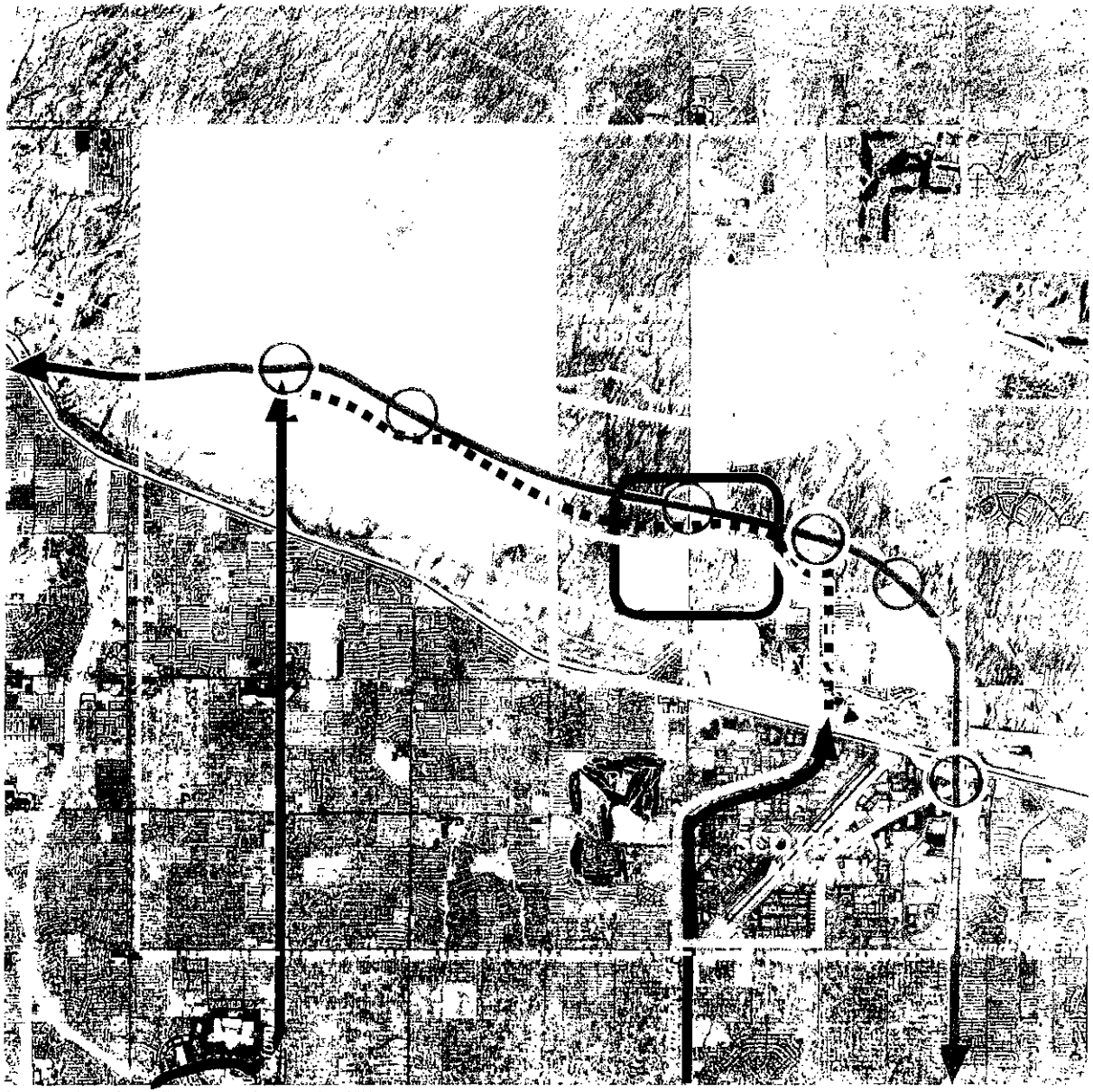
Neighborhood circulator buses typically operate in mixed traffic on surface streets, but the routes often avoid the more congested arterials. In designing a system to serve the Study Area, it is important to consider ways to move buses in and out of congested commercial nodes quickly and efficiently. Exclusive entry and exit lanes, queue jumpers, and signal priority treatments may be necessary at bottleneck locations. While neighborhood circulators are not a rapid or high-capacity transit system, they need to

- Offer a one-seat ride with a limited number of stops.
- Operate with a high degree of reliability, suffering minimal unscheduled delay due to traffic conditions.
- Offer a comfortable ride, preferably with a seat for most or all passengers.
- Avoid exposing users to physical discomfort (e.g., summer heat and direct sunlight) while they wait for a vehicle.

Two transit modes have been widely used to serve internal trips within medium- to high-density activity centers. The first is a circulator bus service, usually operating in mixed traffic, as described in the section on neighborhood circulator systems. The second is automated guideway transit (AGT), also known as "people movers." AGT uses driverless trains on a rail guideway (conventional or monorail) to operate between a limited number of stations. As with light rail, trains can be single-car or multi-car. Unlike light rail, AGT systems are proprietary and must be purchased as a package from one of the suppliers currently in the market. Also unlike light rail, AGT requires an exclusive guideway with full separation from all other traffic. This allows fast and very reliable service, but also entails high costs for guideway construction and maintenance. In high-density activity centers with heavy passenger demand throughout the day, operating cost per passenger can be relatively low, because the driverless operation minimizes labor costs. AGT can operate on an elevated structure, underground or at-grade in a protected right-of-way. The guideway may be configured as a shuttle, a loop or a collapsed (pinched) loop.

Some AGT systems, such as Vancouver's SkyTrain, provide line-haul urban transit service. In this country, however, AGT is used primarily to serve travel demand within high-intensity activity centers. Of approximately 40 U.S systems operating in June 2000, the majority serve airports or leisure destinations (casinos, theme parks, zoos). Few, if any, serve the type of mixed-use retail/office/hotel/recreation site planned for the Project Area. Perhaps the closest analogue is the Las Colinas urban business center in Irving, Texas, where an AGT system has operated on and off since 1989. The 0.74-mile, dual-track shuttle has four stations, with vehicles running at an average speed of 18 miles per hour. However, Las Colinas is primarily an office complex, although it contains a substantial retail element. No ridership figures are available for this system.

Another AGT system serves the Pearlridge Mall in Hawaii. This is a short (0.23-mile) single-lane shuttle with just two stations, one at either end. The average operating speed is only four miles per hour. Daily ridership in 1995 was approximately 4,000. (Ridership on AGT systems tends to be highest at airports, which have a large base of captive riders.)



Source: Maricopa County Department of Transportation, 1999.
BRW, Inc., June 2001.

SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Regional Transit and Neighborhood Circulator System

Figure 3-6

Legend

- *Study Area*
- *Project Area*
- *Potential LRT Extensions*
- *Potential LRT Connector Loop*
- *Potential BRT/Express Bus Service*
- *Potential Neighborhood Circulator Spine*
- *Potential Local Circulator Route*
- *Multi-Modal Connection*
- *Freeway Interchange*

1 0 1 Miles

N

BRW

Table 3-11 gives a rough comparison of the performance of the circulator bus and AGT modes with respect to several criteria. Criteria on which both modes perform equally well are not included.

Table 3-11
Comparison of Bus and AGT Modes for Local Circulation

Criterion	Performance	
	Bus	AGT
Ability to serve large number of destinations	Good	Fair
Flexibility to change routing & stops in response to demand	Good	Poor
Competitive travel times	Fair	Excellent
Reliability	Fair	Excellent
Comfort (climate control for waiting riders)	Poor	Good
Capital costs	Good	Poor
Operating cost per rider (low to moderate travel demand)	Fair	Poor
Operating cost per rider (high travel demand)	Fair	Good
Visibility to potential users	Fair	Excellent
Overall attractiveness to employees, shoppers & visitors	Fair	Excellent
Rapid implementation	Good	Poor

Source: BRW, Inc., July 2001.

The viability of different approaches to site circulation is related to a variety of factors, with cost being the greatest consideration. Such systems in the Project Area would likely have to be privately financed, so the developer of any particular project would have to conclude that the investment is worthwhile. If an on-site system were presented as part of an overall transportation demand management program, it is conceivable that off-site mitigation obligations could be reduced, which could make the investment attractive. As Table 3-11 indicates, the AGT approach would be considerably more costly than a shuttle bus system. The investment in AGT would be unprecedented in the Phoenix metro area, and would probably occur only if the project were of such a scale to ensure a high level of ridership. While this is possible, it is much more likely that investors in development in the Project Area would support the development of shuttle bus systems.

As depicted in Figure 3-6, the local circulator envisioned to serve the Project Area would tie together the four quadrants of the area. The system would connect the core activity centers of the Paradise Ridge regional center; an activity node at Mayo Boulevard near 68th Street south of the freeway; an activity node near Hualapai Drive and Mayo Boulevard in Scottsdale south of the freeway; and an activity node at Hualapai Drive and 76th Street north of the freeway. This route might also stop at smaller, secondary nodes along the way. As preliminarily conceived, this would require approximately four linear miles of service. At an estimated capital cost of between $50 and $75 million per mile, AGT technology would require between $200 and $300 million to complete the loop. This does not include the full cost of grade separation at key points in the route, specifically crossings of the freeway and Scottsdale Road.

As noted above, AGT equipment is proprietary, so a single vendor would have to be selected to provide service to the entire area. This would require coordinated planning, design, acquisition, and construction of the system. This could be difficult because, also as noted above, such systems are typically privately financed by the beneficiaries of the service (e.g., new development in the Project Area). The difficulties might arise because the different quadrants of the Project Area are likely to develop at different times over the next 20+ years.

Obviously, a shuttle bus local circulator would be considerably less expensive and much simpler to develop. Service would be activated as demand warrants and partial service could be instituted and then extended fairly simply. For the four-mile route described above, assuming enough vehicles to provide 10-

minute headways with two-way service, the capital cost would be approximately $1.5 million ($300,000 x 5 buses, including a spare). Operations and maintenance costs would be additional. Grade separations at the freeway would also have to be constructed, although the service could use at-grade crossings at Scottsdale Road.

In addition to the bus circulator and AGT technologies, both of which have been applied widely, a third technology has been employed in limited cases to serve similar site or local circulation functions. It is a smaller scale adaptation of light rail technology that emulates older streetcar systems. Compared to full LRT, streetcars use smaller and lighter vehicles, operate in mixed traffic, stop more frequently, and hence offer much lower capacity and travel speed. As a result, the capital cost for streetcar systems is considerably lower than full-scale LRT, at between $10 and $20 million per mile. Currently, the only domestic application of this technology is in Portland, Oregon's Central City, where a 2.4-mile connects major activity centers. The streetcar system also intersects the MAX Light Rail Transit system, providing excellent intermodal ridership opportunities.

As Section 2.4.2 of this report indicates, the Scottsdale/Tempe North/South Transit Corridor Study is considering the use of a streetcar operation similar to Portland's, particularly in downtown Scottsdale. The streetcar could serve as an interim technology until ridership demand warrants the higher capacity light rail technology.

Another approach to developing the local circulator system would be to phase development of the system by starting with a shuttle bus-based system, then transitioning to either an AGT-based system when demand warrants the additional investment—and the private resources are available to finance the capital improvements or a streetcar system—or to a contemporary streetcar system. In the latter case, it is conceivable that some of the vehicles from the Scottsdale-Tempe system could be "handed-down" to the curtail some of the capital costs associated with development of the circulator system. That strategy would, however, work only if system development were carefully coordinated.

Under any of these local circulator scenarios, grade separation would be required at the freeway (68th Street and 76th Street/Hualapai Drive) and would be highly desirable at Scottsdale Road (Paradise Ridge Mall entryway and Princess Drive). The two freeway crossings would cross under the freeway in large box culverts (approximately 35 feet wide). At 68th Street, the new structure would have to be retrofitted under the freeway, at an estimated cost of roughly $1.0 million, including structural and right-of-way improvements. This would amount to approximately $5,700 per linear foot. According to ADOT plans, a new roadway is being planned to cross under the freeway at 76th Street/Hualapai Drive. These plans would have to be adapted to accommodate additional width for an AGT guideway, while a circulator shuttle bus could use the already-planned roadway.

New grade-separated crossings of Scottsdale Road (for any of the local circulator technologies) would consist of bridges to allow the local circulator to cross Scottsdale Road without affecting north-south traffic. These 35-foot wide bridges would cost approximately $1.0 million apiece for structural work, roadway improvements, and contingencies. At 175 feet long, the cost per linear foot would be approximately $5,700.

3.4.3 Pedestrian and Bicycle Pathway System

As described in Section 2.4 of this report, accommodation of bike and pedestrian travel is being provided in a variety of ways in the Study Area. For instance, Desert Ridge, Grayhawk, and DC Ranch have all incorporated extensive pathway networks into their projects in the interest of promoting alternative means of access to their activity centers, as well as providing recreational opportunities. The Reach 11 Recreation Area is also being planned for an extensive network of trails and pathways. While the Reach 11 facilities

are expected to be exclusively recreational, they could tie into the pathways or trails of adjacent urban projects. In designing new development within the Project Area efforts should be made not only to provide non-motorized internal circulation within developments, but also to link different projects with one another. This could include grade-separated crossings to avoid conflicts with automobile traffic.

Of particular importance is the role that pedestrian and bicycle pathways will play in completing the overall circulation network in the Study Area, particularly within the Project Area. For transit users, the quality and convenience of the pathways is particularly crucial, since all transit riders are pedestrians for at least part of their trip. As conceived (see Figure 3-6), the transit system will eventually provide opportunities for convenient access to the entire Project Area, with no point being more than ¼-mile from some mode of transit service. This proximity alone will not, however, ensure that all potential riders can make their way comfortably to the transit stops. Site planning and design features will have to incorporate direct pathways to and from the stops and nearby attractions.

While either of the scenarios considered in this report should be designed to accommodate a pedestrian and bicycle circulation system to facilitate non-motorized movement in the Project Area, Scenario Two would be particularly well-suited for pedestrian-oriented design because of its transit focus.

4.0 PREFERRED SCENARIO AND SUPPORTING RECOMMENDATIONS

This section first presents BRW's recommendation for the land use scenario that best balances the interests of the State Land Department with those of the Cities of Scottsdale and Phoenix. It then outlines a set of policy and program recommendations that will help ensure the establishment of a land use and transportation framework to support the development of the proposed scenario.

4.1. RECOMMENDED LAND USE/DEVELOPMENT SCENARIO

Section 3.0 of this report describes two scenarios for future development of the Project Area. The distinction between the scenarios focus on the Scottsdale side of Scottsdale Road, which is where the most flexibility to modify planned land uses exists. As noted in Section 3.0, Scenario One is largely reflective of the existing general plans for the Cities of Scottsdale and Phoenix, both of which anticipate a significant amount of retail commercial development (roughly equivalent to a regional mall in each city). Scenario Two uses the City draft general plans currently under review as a point of departure. Both plans designate the core of the Project Area as mixed-use, so BRW made assumptions about the type of uses that would provide the mix. In the case of Phoenix, Scenario Two assumes the use mix proposed for the Paradise Ridge project. In Scottsdale, Scenario Two assumes a mix of intensive offices north of the proposed Loop 101/Hayden Road interchange and visitor-oriented uses south of the interchange, including new resort and entertainment-related commercial. The new entertainment-related commercial would have a "super-regional" draw that capitalizes on the transportation access, proximity to high-end resorts, and upper-income demographics of North Scottsdale.

4.1.1 Recommendation

BRW recommends that ASLD work with the Cities of Scottsdale and Phoenix and prospective developers to pursue Scenario Two. In arriving at this recommendation, BRW prepared a Site Analysis to address Project Area land use and circulation issues. This analysis used the land use assumptions depicted in Figure 3-3 and the circulation system assumptions outlined in Figure 3-6 as a point of departure to develop more refined concepts and to better understand the potential character of development and circulation in the Project Area. This section describes the process used for this analysis, as well as the results of the analysis.

Land Use

The first step in evaluating the land use and circulation dynamics of the Project Area was a basic diagnosis of the uses assumed for the area under Scenario Two. Table 3-5 describes the detailed land use assumptions from which a general characterization of the function of each of the four quadrants can be derived. Table 4-1 presents these characterizations and Figure 4-1 depicts the same graphically.

the entertainment-oriented commercial uses to the northeast and retail commercial uses to the northwest. The synergy is similar to that in the northeast quadrant, where residential and employment uses converge at an activity node at the intersection of Hualapai Drive and 76th Street.

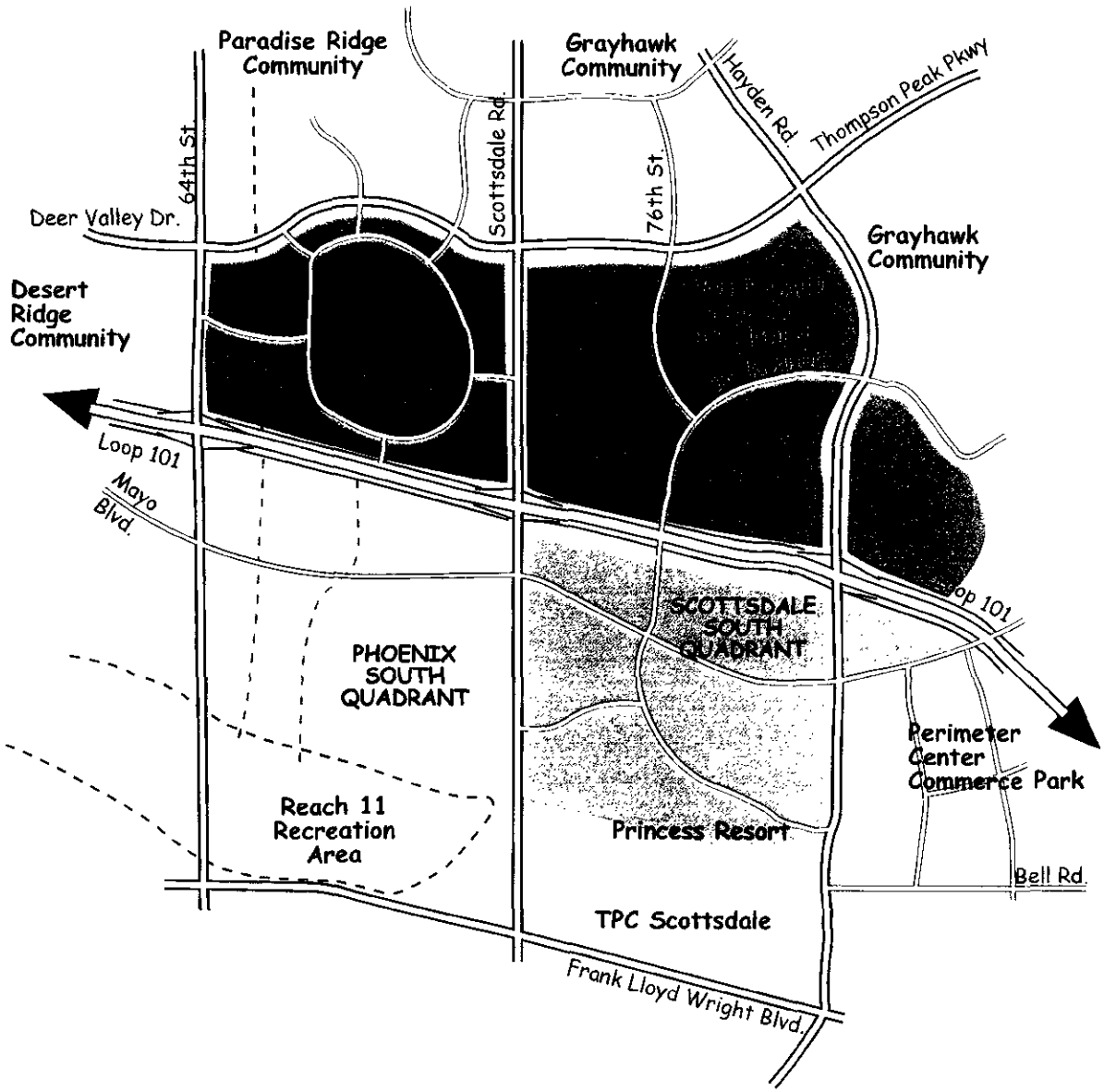
Circulation/Transportation

The third step in the analysis was essentially a "connect-the-dots" exercise. The literal connecting line among the dots would be the local circulator system. As shown in Figure 4-3, the circulator system would run along or parallel to secondary roadways (e.g., 68th Street, Hualapai Drive) that could be designed primarily as pedestrian and transit linkages among the Project Area's four quadrants.

While the focus of this study is on establishing multi-modal transportation opportunities, especially non-automobile travel modes, the function of the roadway network is an essential aspect of the analysis. As noted earlier, the Study Area has five critical north-south arterials: Tatum, 56th Street, 64th Street, Scottsdale Road, and Hayden Road. In addition, three east-west roadways provide play critical roles in moving traffic to, from, and within the Project Area: Deer Valley Road/Thompson Peak Parkway, Loop 101, and Mayo Boulevard. These eight facilities will carry the bulk of traffic to and through the area. BRW recommends that the seven surface arterials be planned, designed, and constructed as six-lane facilities, with appropriate reservation of right-of-way for turning capacity at major intersections. Increasing the design capacity of the roadways that parallel Scottsdale Road (i.e., 64th Street and Hayden Road) will help avoid overburdening Scottsdale Road, which is one of the objectives of this study. In addition, BRW recommends widening of the SR 101 Pima Freeway to eight general-purpose lanes plus two HOV lanes to accommodate projected traffic volumes at level of service D in 2040.

BRW further recommends that sufficient right-of-way be reserved or acquired in the Mayo Boulevard and Hayden Road corridors to accommodate a light rail transit alignment. Such an alignment would require between 25 and 30 feet for an at-grade system and less for an elevated system. It is conceivable that the system could be grade-separated in some segments (e.g., major road crossings) and at-grade in others. The specific right-of-way options and needs should be evaluated in conjunction with the Scottsdale-Tempe North-South Study and in Phoenix in conjunction with discussions concerning extending the Transit 2000 LRT system up the Squaw Peak Parkway. In doing so, the additional expense of elevating the system (two to three times higher capital costs) should be considered.

Finally, with respect to the roadway network, one of the principal assumptions underlying the Scenario Two recommendation is that much of the travel within the Project Area will take place on secondary roadways (i.e., collectors and below). This includes the local circulator transit system. To promote local travel on the secondary network, BRW strongly encourages the Cities of Phoenix and Scottsdale to implement policies that facilitate strong pedestrian and transit orientation on collector and local streets. In particular, organization of development around nodes similar to those depicted in Figure 4-2 would foster this orientation, increasing the likelihood of creating vital activity centers while increasing the viability of transit services.



SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Project Development Quadrants

Figure 4-1

Legend

- Phoenix North Quadrant Regional/Commercial
- Phoenix South Quadrant Residential/Commercial Employment
- Scottsdale North Quadrant Residential/Employment Commercial
- Scottsdale South Quadrant Entertainment/Resort Commercial

BRW

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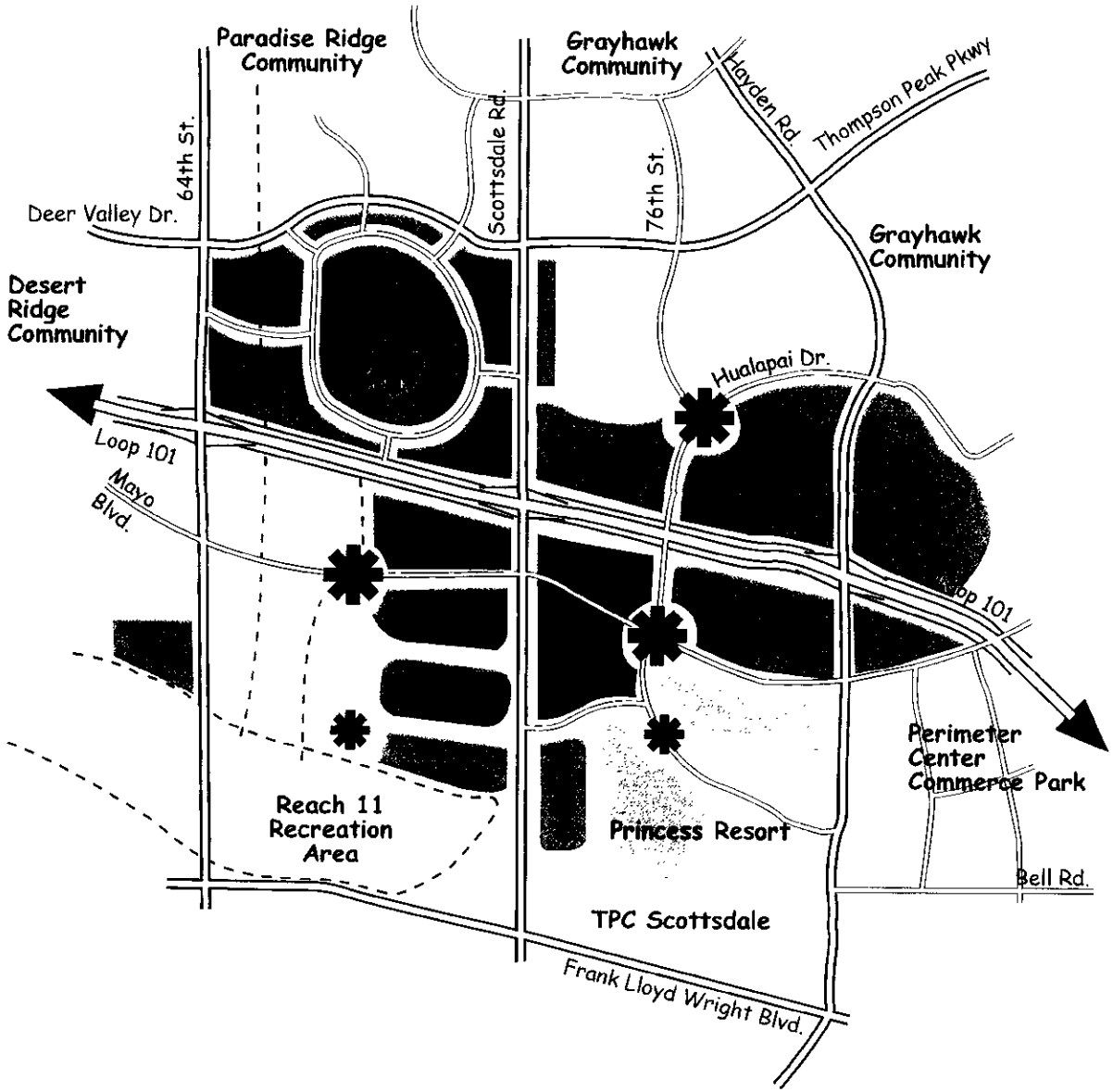

SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Generalized Land Use Concept and Activity Nodes

Figure 4-2

Legend

- High Intensity Commercial
- Commercial
- Residential
- Employment
- Specialty Entertainment
- Resort
- Activity Nodes

BRW

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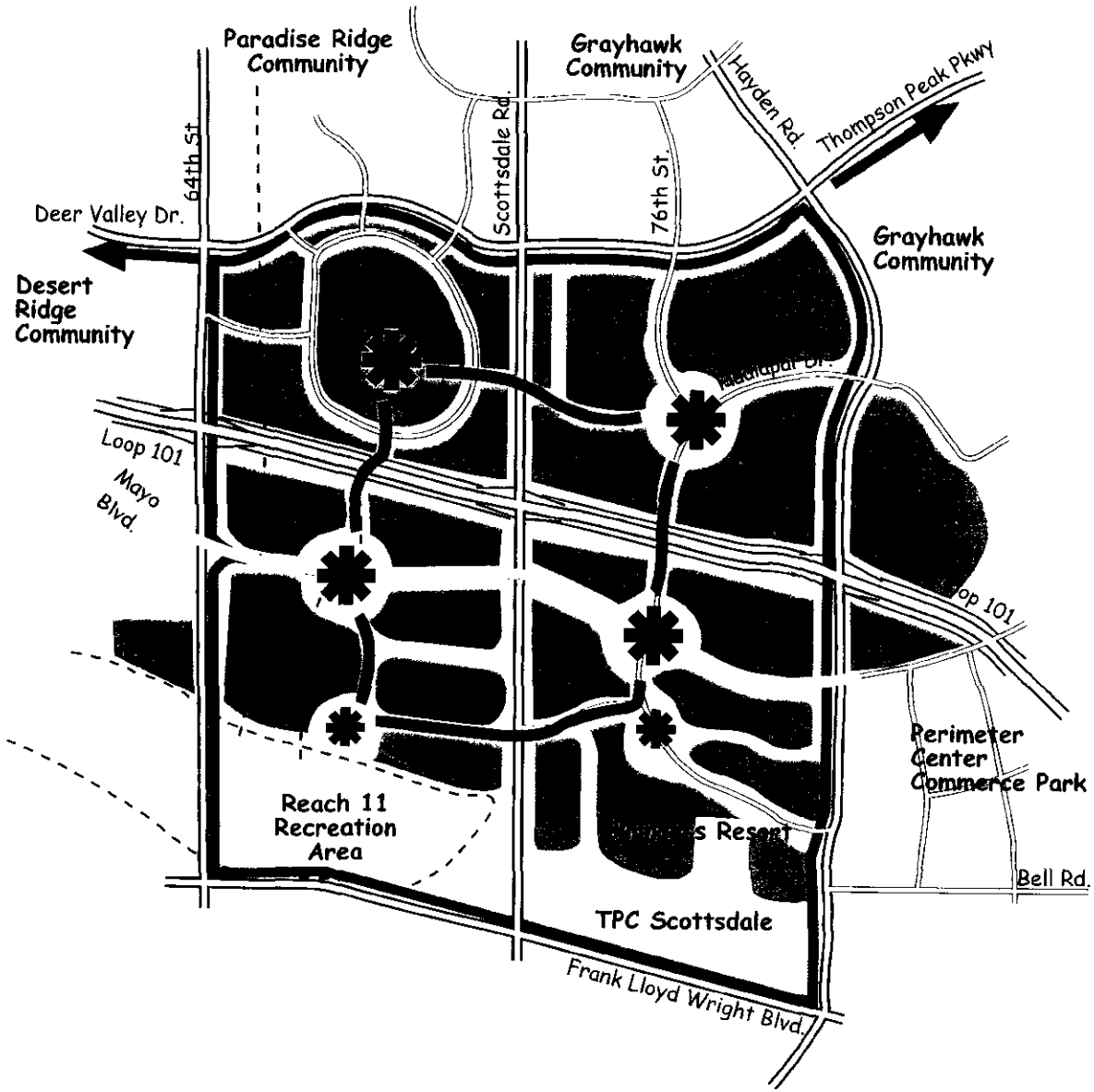
SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Conceptual Transit Plan

Figure 4-3



Legend

- Automated Guideway Transit
- Neighborhood Transit/ Neighborhood Circulator
- Regional Transit (Express Bus Bus Rapid Transit, Light Rail Transit)
- Activity Nodes

BRW

N

4.1.2 Phasing

One of the key challenges in the planning of the Project Area will be to ensure that the phasing of development and the transportation system to serve that development are coordinated. The challenge is complicated by the fact that timeframes for the two are often influenced by different factors. The following paragraphs describe the assumptions for phasing of both land use and transportation improvements.

Land Use

While public agency actions influence the timing of development by establishing the land use regulatory framework, private sector market demand is the primary determinant of when and where development will occur. There has been a considerable amount of discussion over the past several years concerning development within the Project Area. This study relies on two sources to establish the basis for its discussion of development phasing: the Paradise Ridge project and a forecast of development demand for the Sonoran Regional Core in Scottsdale.

As noted earlier in this report, almost all of the Project Area within Phoenix (i.e., west of Scottsdale Road) is within boundaries of the Paradise Ridge project (the exception being Chauncey Ranch). As part of its project planning, the planners of Paradise Ridge, Landmark Land Company, have made assumptions about the phasing of its development. ASLD has applied these assumptions to its estimates of development potential for the Phoenix North and Phoenix South quadrants of the Project Area (see Table 3-6). These assumptions provided the basis for ASLD's assumptions concerning the phasing of development on the Phoenix side of Scottsdale Road, as shown in Table 4-2.

No unified development plan has been prepared for the Scottsdale side of Scottsdale Road, so no estimates of the phasing of development over time have been prepared. The City of Scottsdale did, however, commission a market study focusing on the Airpark Area and the Sonoran Regional Core in 1999. That study, *Analysis and Forecast of the Economic Base of Scottsdale*, was completed by Gruen Gruen + Associates in June 1999. It concluded that there would continue to be a strong market for commercial and office uses in the area through 2020, with an even pace of development over the 2000 through 2020 period. The report's findings generally support this study's estimates of the amount of development that would be supported in the Scottsdale part of the Project Area. Based on these findings, Table 4-3 indicates how much development might occur in two development phases through 2020 (i.e., 2000 to 2010 and 2010 to 2020). As the table indicates, roughly half of the new development will occur in each period.

Figure 4-4 depicts the general phasing assumptions for the Project Area based on the assumptions described above. Note that for the Scottsdale side of Scottsdale Road, development is assumed to occur first within the core areas of the two "villages," then in the areas along Scottsdale Road. This is consistent with the assumption expressed elsewhere in this report that development should radiate out from the activity nodes at the center of the Project Area quadrants, rather than starting at Scottsdale Road. This should help alleviate congestion on Scottsdale Road by "training" traffic to gravitate towards the parallel arterials.

Table 4-2
Phoenix Development Phasing Assumptions

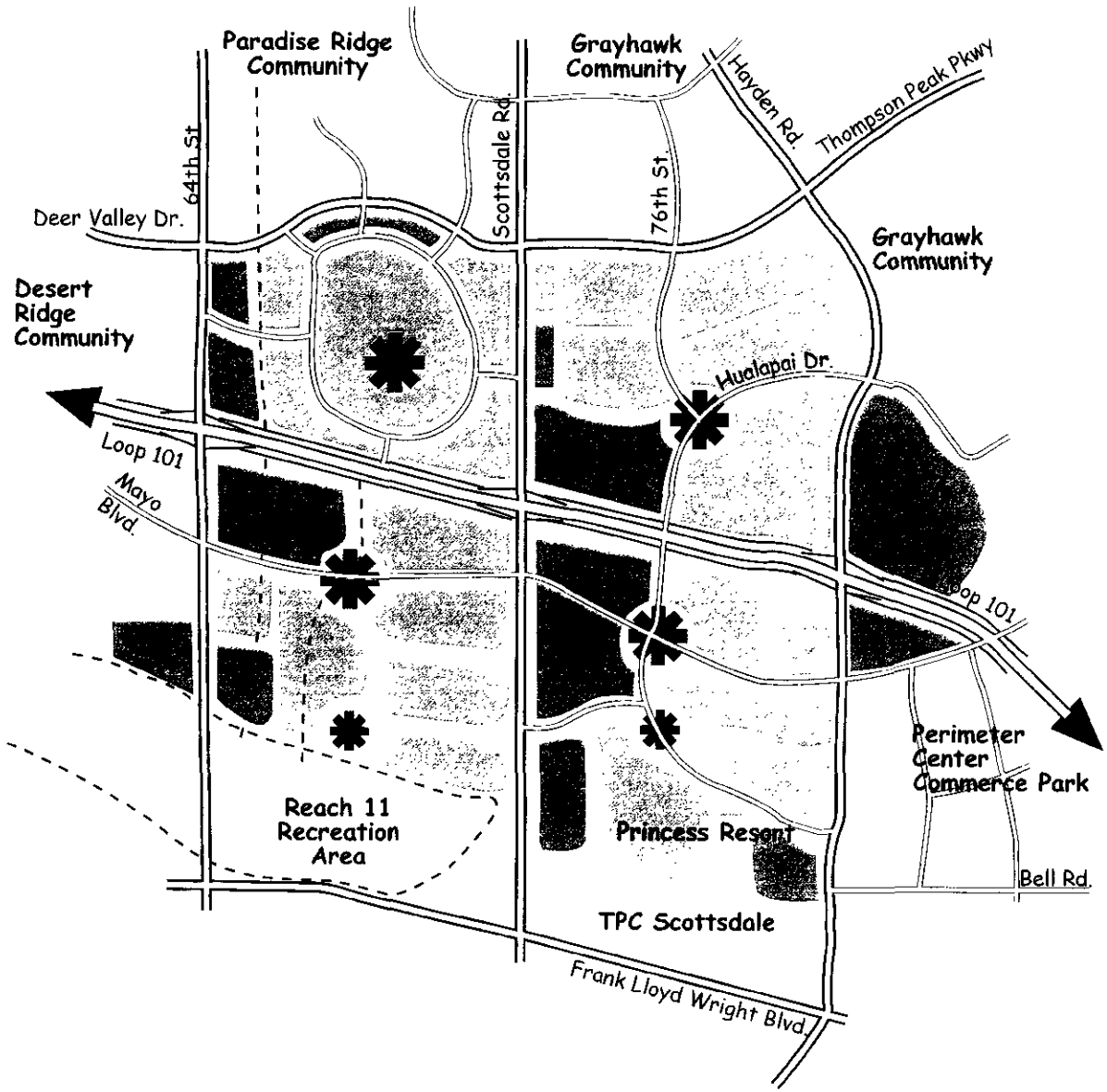
	North			South			Total		
	Dwelling Units	Square Footage	Rooms	Dwelling Units	Square Footage	Rooms	Dwelling Units	Square Footage	Rooms
2000-2010									
High-Density Residential				5,548			5,548		
Neighborhood Commercial									
Community Commercial		429,000			887,000			1,316,000	
Regional Commercial		3,037,000						3,037,000	
Specialty Commercial									
Resort/Tourist Accommodation									
Commercial Office					541,000			541,000	
Commerce Park									
Industrial Park					957,000			957,000	
Subtotal		**3,466,000**		**5,548**	**2,385,000**		**5,548**	**5,851,000**	
2011-2020									
High-Density Residential									
Neighborhood Commercial									
Community Commercial					756,000			756,000	
Regional Commercial									
Specialty Commercial									
Resort/Tourist Accommodation									
Commercial Office									
Commerce Park									
Industrial Park									
Subtotal					**756,000**			**756,000**	
Total									
High-Density Residential				5,548			5,548		
Neighborhood Commercial									
Community Commercial		429,000			1,643,000			2,072,000	
Regional Commercial		3,037,000						3,037,000	
Specialty Commercial									
Resort/Tourist Accommodation									
Commercial Office					541,000			541,000	
Commerce Park									
Industrial Park					957,000			957,000	
Total		**3,466,000**		**5,548**	**3,141,000**		**5,548**	**6,607,000**	

Source: BRW, Inc., October 2001

Table 4-3
Scottsdale Development Phasing Assumptions

	North			South			Total		
	Dwelling Units	Square Footage	Rooms	Dwelling Units	Square Footage	Rooms	Dwelling Units	Square Footage	Rooms
2000-2010									
Low-Density Residential									
High-Density Residential	2,166						2,166		
Neighborhood Commercial		16,000						16,000	
Community Commercial		309,000						309,000	
Regional Commercial*									
Specialty Commercial					452,000			452,000	
Resort/Tourist Accommodation					205,000	300		205,000	300
Commercial Office					217,000			217,000	
Commerce Park		3,003,000			592,000			3,595,000	
Industrial Park									
Subtotal	**2,166**	**3,328,000**			**3,851,000**	**300**	**2,166**	**4,794,000**	**300**
2011-2020									
Low-Density Residential									
High-Density Residential	2,166						2,166		
Neighborhood Commercial		15,000						15,000	
Community Commercial		308,000						308,000	
Regional Commercial*					1,269,000			1,269,000	
Specialty Commercial					451,000			451,000	
Resort/Tourist Accommodation					205,000	300		205,000	300
Commercial Office					217,000			217,000	
Commerce Park		3,000,000			591,000			3,591,000	
Industrial Park									
Subtotal	**2,166**	**3,323,000**			**3,489,000**	**300**	**2,166**	**6,056,000**	**300**
Total									
Low-Density Residential									
High-Density Residential	4,332						4,332		
Neighborhood Commercial		31,000						31,000	
Community Commercial		617,000						617,000	
Regional Commercial*					1,269,000			1,269,000	
Specialty Commercial					903,000			903,000	
Resort/Tourist Accommodation					410,000	600		410,000	600
Commercial Office					434,000			434,000	
Commerce Park		6,003,000			1,183,000			7,186,000	
Industrial Park									
Total	**4,332**	**6,651,000**			**4,199,000**	**600**	**4,332**	**10,850,000**	**600**

*Includes High Intensity Commercial
Source: BRW, Inc., October 2001



SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

General Development Phasing

Figure 4-4

Legend

- Phase 1 - 2000 - 2010
- Phase 2 - 2011 - 2020
- Activity Nodes

BRW

N

Transportation

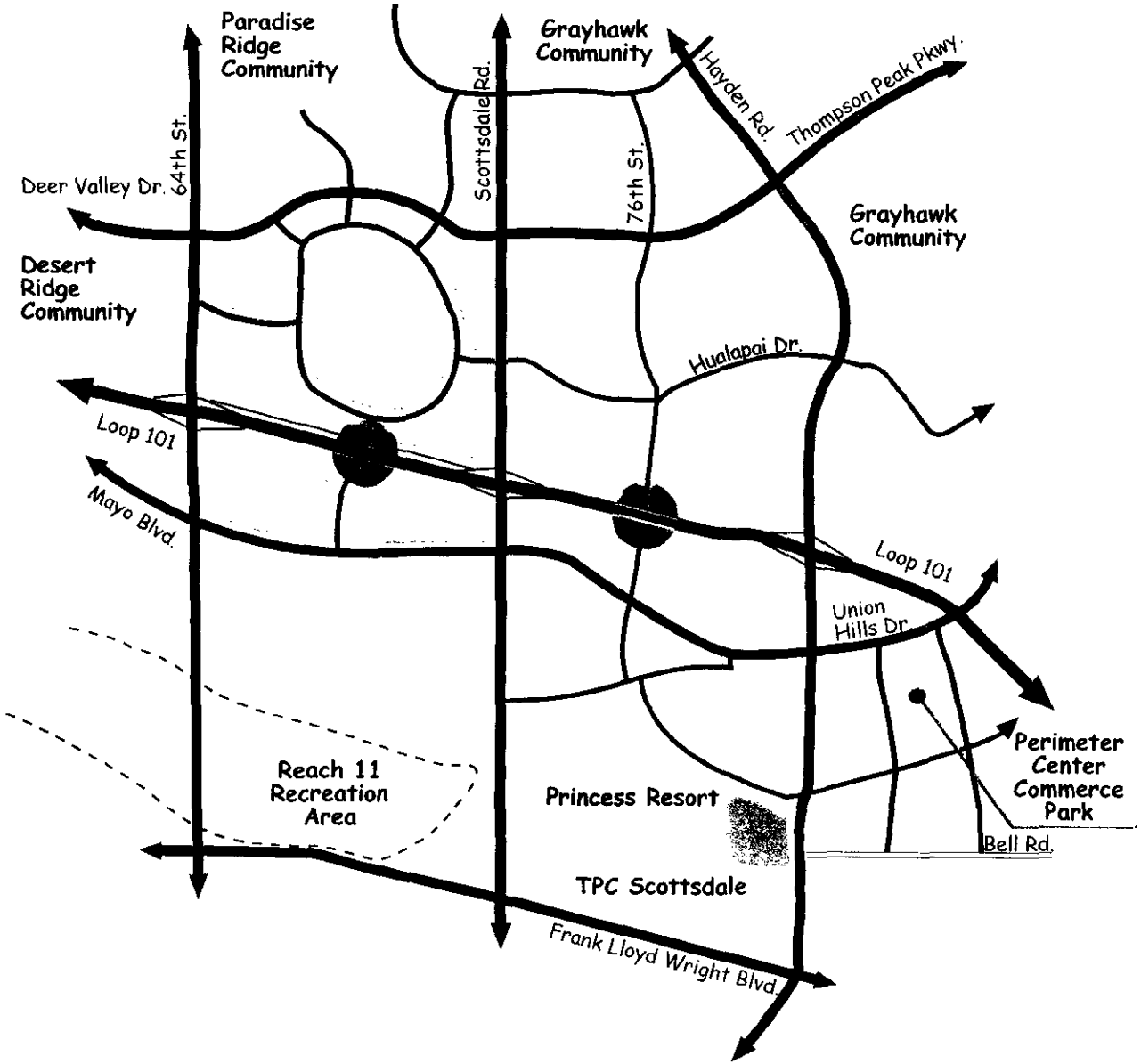
The transportation system that will ultimately serve the Project Area consists of a combination of regional and local facilities, including both roadway and transit system improvements. These improvements will be warranted not only by development within the Project Area, but also by development elsewhere that relies on the same facilities. To determine the timing of roadway improvements, the MAG regional travel model was employed. The results of the model focus on regional demand and thus help to establish the phasing of capacity enhancements for the arterial and freeway network. Local roadway improvements are a primarily a function of local development, so they are keyed directly to the phasing of development within the Project Area.

As with roadway improvement timing, the timing of transit system improvements is affected by a variety of factors. Regional system improvements are affected by funding availability and the status of associated system improvements. For instance, the LRT system extensions will be tied to the development of the Scottsdale/Tempe North/South and the Central Phoenix/East Valley projects. Local transit improvements, such as the neighborhood and site circulator systems, however, will be tied directly to the level of development within the Project Area

Table 4-4 lists the major transportation facilities in the Project Area and indicates the assumed phasing of capacity improvements for each. Figure 4-5 illustrates graphically the transportation system that will be in place in 2010, Figure 4-6 shows the system in 2020, and Figure 4-7 shows the system improvements necessary to serve full buildout of the Project Area.

Table 4-4
Project Area Transportation Phasing

	2010	2020	Beyond 2020
Roadways (Number of Lanes)			
Scottsdale Road	6	6	6
64th Street	4	6	6
Hayden Road	4	6	6
Frank Lloyd Wright Blvd	6	6	6
Loop 101	6	6	8 + 2 HOV
Deer Valley/Thompson Peak	4	6	6
76th Street	2	2	2
Mayo Boulevard	4	6	6
Hualapai Drive	2	2	2
Paradise Ridge Mall Loop	2	2	2
Princess Drive	2	2	2
Transit			
Regional Express Bus / BRT	•	•	•
Regional Fixed Guideway (LRT)		•	•
Site Circulator (Bus)	•		
Site Circulator (AGT) / Streetcar		•	•
Source: BRW, Inc., October 2001			



SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Transportation Phasing

Phase I - Years 2000 Thru 2010

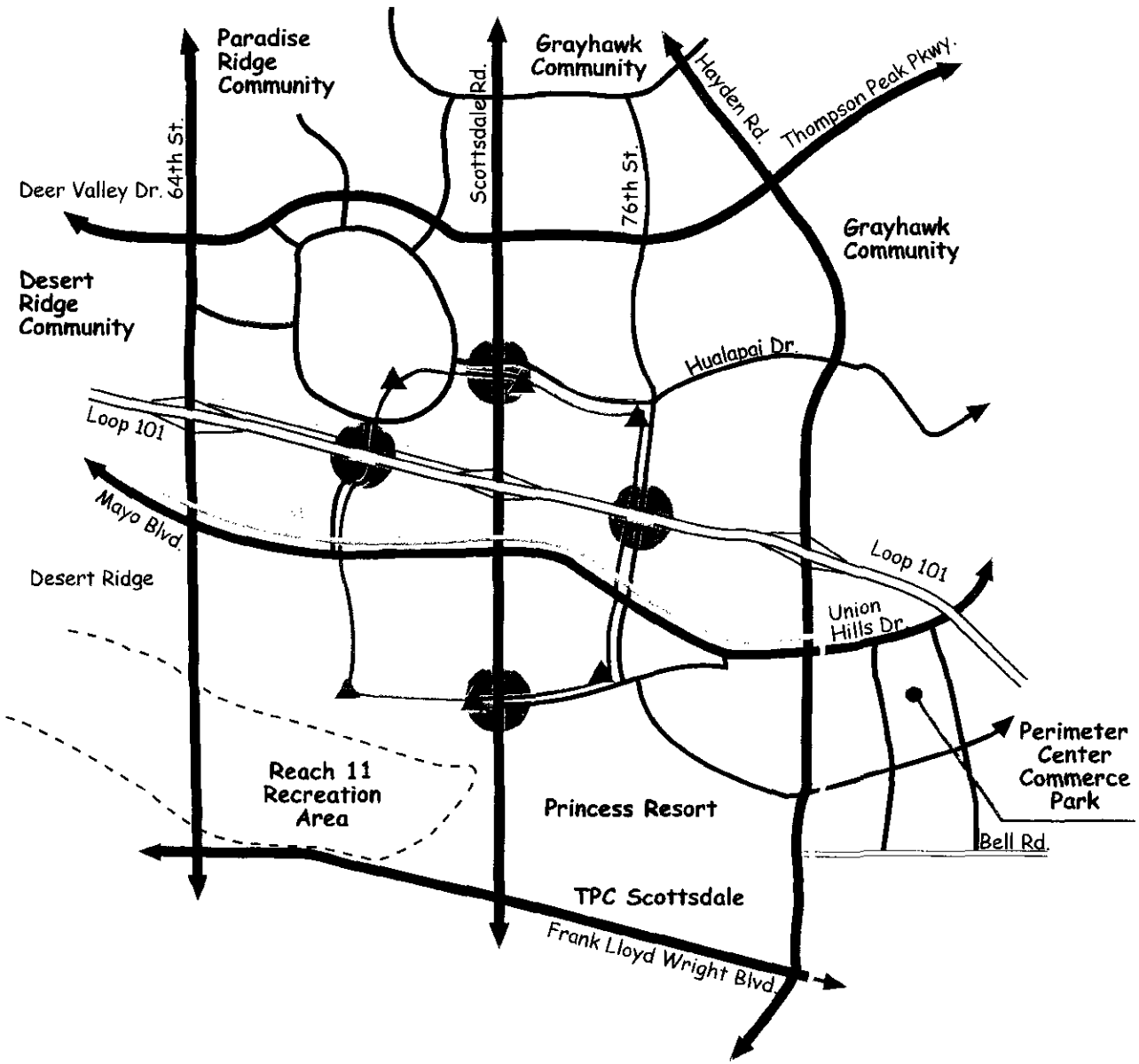
Figure 4-5

Legend

- 8 Lanes
- 6 Lanes
- 4 Lanes
- 2 Lanes
- Regional Transit Connection
- Regional Transit Station/Center
- Grade Separation

BRW

N



SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Transportation Phasing

Phase II - Years 2010 Thru 2020

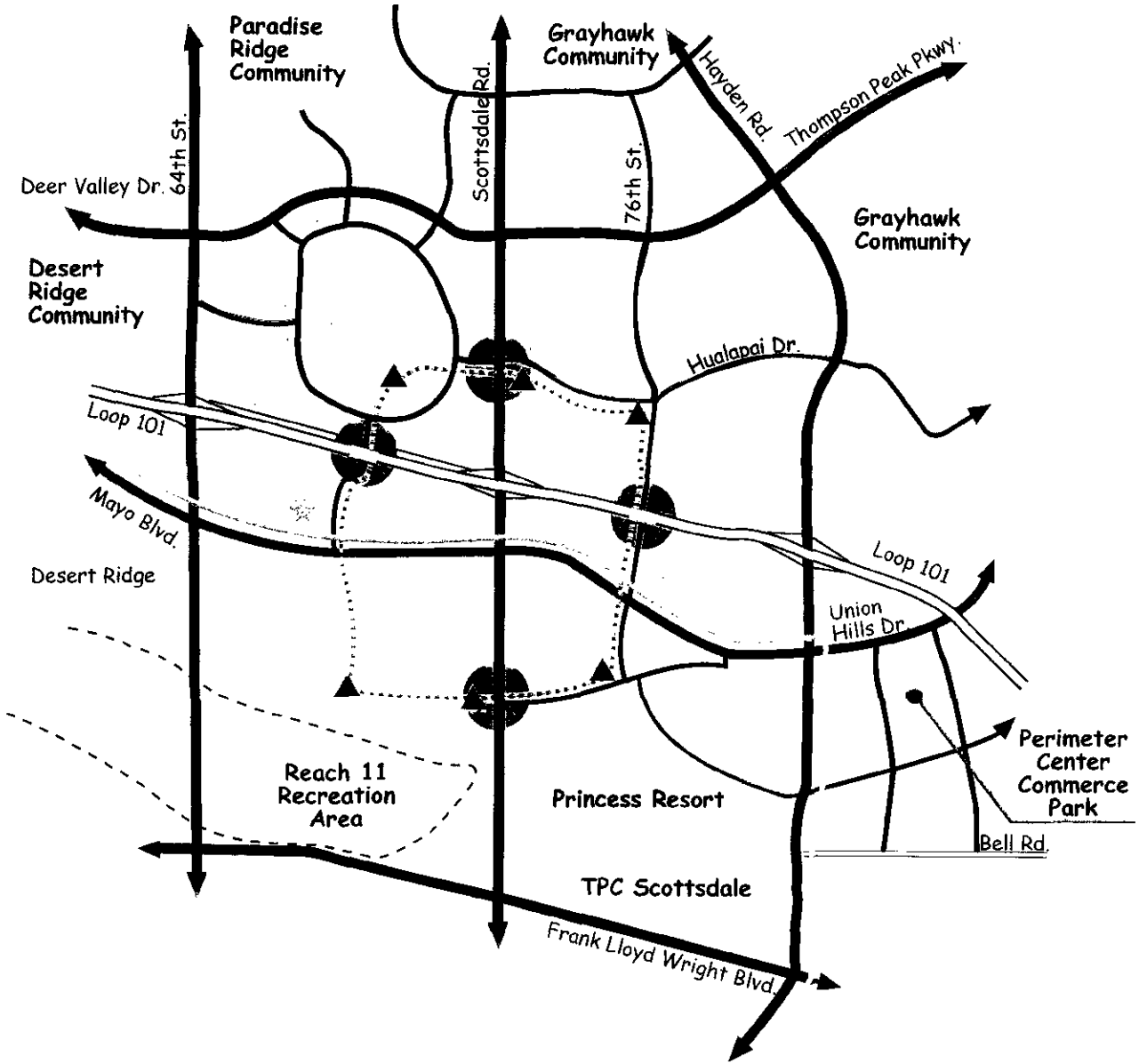
Figure 4-6

Legend

- 8 Lanes
- 6 Lanes
- 4 Lanes
- 2 Lanes
- Regional Transit Connection
- Regional Transit Center/Station
- Local Circulator Transit
- Local Transit Station/Stop
- Grade Separation

BRW

N



SCOTTSDALE ROAD/LOOP 101 MULTI-MODAL STUDY

Transportation Phasing

Phase III - Beyond 2020

Figure 4-7

Legend

- 8 Lanes Plus 2 HOV Lanes
- 6 Lanes
- 4 Lanes
- 2 Lanes
- Light Rail Transit Connection
- Regional Transit Center/Station
- At-Grade and /or Elevated Local Circulator Transit
- Local Transit Station/Stop
- Grade Separation

BRW

N

4.2 POLICY AND PROGRAM RECOMMENDATIONS

There are several initiatives that ASLD could take in promoting the balanced development of its property as well as the establishment of a balanced multi-modal transportation network to serve the Project Area. Following are recommendations for working with the Cities of Scottsdale and Phoenix to establish a joint commitment to development of the Project Area that would be beneficial to all involved (i.e., a win-win solution).

4.2.1 Transportation Plan Updates

As described in Section 2.4 of this report, several transportation plans and programs are relevant to the Study Area and Project Area. Following are BRW's recommendations for working with the Cities and regional agencies in promoting a well-balanced, multi-modal transportation system that addresses the full range of regional and local travel needs.

Scottsdale/Tempe North/South Transit Corridor Study

As noted in Section 3.3 of this report, there are two outstanding issues concerning the Scottsdale/Tempe North/South Transit Corridor Study as it relates to the Project Area. The first is the phasing of the analysis and resulting system development. The Study is currently focusing on the part of the corridor south of Indian Bend Road, with the segment between Indian Bend Road and Frank Lloyd Wright Boulevard constituting the secondary study area. The Project Area is not even programmed for analysis as part of the Study. Furthermore, the Study assumes that no improvements are likely to be implemented within the current study area until 2010, with no date estimated for services in the secondary or north (including the Project Area).

The second outstanding issue concerning the North/South Study is financing. As pointed out in Section 3.3 of this report, there is currently no local source of funding identified to support the financing of the improvements that will eventually be recommended in the Study. Without such a financial source, the City of Scottsdale will not be able to compete for the federal financing that would be necessary to support the development of system improvements, particularly fixed-guideway transit improvements (e.g., light rail).

Given these two outstanding issues, BRW recommends that ASLD commit to the following:

- **Redefinition of Study Area(s)/Time Frames:** At very least, ASLD should encourage the City of Scottsdale to extend its secondary study area northward, perhaps to Pinnacle Peak Road. Such an extension would make sense given the magnitude of development proposed for the area and the imminent completion of SR 101 through the area. ASLD should also encourage the City to advance the analysis of the northern part of the corridor, which would be particularly important for thorough evaluation of express bus/BRT service options on SR 101.
- **ASLD Involvement in North/South Study Process:** ASLD should track the progress of the North/South Study and ensure that its interests are being addressed as they relate to the Project Area. The Study currently has a "Sponsors' Committee" that consists of representatives of affected agencies. If the Study Area were redefined, then ASLD would become an affected agency, and thus would be justified in requesting direct involvement in the Study process, as opposed to participation as commenting stakeholder.
- **East-West LRT Connector:** In conjunction with consideration of a north-south on Scottsdale Road /Hayden Road, ASLD should encourage the City of Scottsdale to consider planning for an east-west connection with the City of Phoenix's potential Squaw Peak Corridor LRT extension.

- **State Financial Participation:** All current transit projects in the region are assuming that all funds to match potential federal contributions would come from local sources (e.g., sales taxes). If the State were to become involved financially, the viability of transit improvements benefiting the Project Area would be increased and the timing could be advanced. ASLD should support some type of State involvement in supporting the planning for and development of regionally important transportation projects.
- **Regional Transportation Sales Tax Reauthorization:** In 1985, the State authorized a regional half-cent sales tax to support the development of the regional freeway system, with a small amount set aside for support of transit services. That tax is scheduled to "sunset" in 2005, when the regional freeway system whose development it helped finance will be essentially complete. There is a emerging movement in the region to support the reauthorization the tax, with the revenues dedicated to the development of a more extensive regional transit system, including rail. ASLD should support the reauthorization.

City of Phoenix Transit 2000

ASLD's interests in the City of Phoenix' Transit 2000 Program are similar to its interests in the Scottsdale/Tempe North/South Study. This is particularly true as it relates to timing; as it stands, the earliest that Transit 2000 Program light rail transit improvements might directly benefit the Study Area would be 2016. The other aspect of the Transit 2000 Program that could benefit the Study Area and Project Area is the BRT Program, which is not currently considering extensions into either area.

- **LRT Extension:** The City of Phoenix has identified the Squaw Peak Corridor as a potential third-phase extension of the light rail transit system to be funded by the Transit 2000 sales tax. This corridor, which is preliminarily defined as extending northeast through Paradise Mall to the vicinity of the SR 101-Tatum Boulevard interchange, will be evaluated relative to other corridors in Phoenix with respect to travel demand. If it were selected, it would not develop until 2016, according to the City's current estimates. To benefit the Study Area and Project Area, ASLD should encourage the City to select this corridor as the preferred extension. In addition, ASLD should encourage the City to begin investigating an east-west LRT connection with the Scottsdale-Tempe North-South Corridor.
- **BRT Service:** The City's Transit 2000 BRT Program is currently evaluating only north-south routes in the northern part of Phoenix. ASLD should encourage the City to consider cooperating with the City of Scottsdale to establish an east-west BRT route on SR 101, when it is completed. Such a route would address the region's increasing suburb-to-suburb commute patterns. Since the BRT system is expected to develop relatively quickly (within three years), the Project Area could be planned to incorporate the availability of services. Accordingly, ASLD should be encouraging prospective developers to coordinate with the City of Phoenix to integrate infrastructure that would accommodate BRT service connections.
- **Neighborhood Circulator:** Two elements of the City's Transit 2000 Program could support the development of the neighborhood circulator system described in this study. The first is the Local Bus Program, which supports line haul routes on major streets. The second is a Neighborhood Bus Program that is intended to provide localized services between neighborhoods and nearby activity centers. Because the neighborhood service outlined in this report is essentially a hybrid of local and neighborhood bus routes, either Transit 2000 Program could assist in developing the system. Since such bus service is generally initiated in response to demand, and most of the Project Area development that will be served is not expected to take place for at least a few years, this is a fairly low priority action.

MAG Programs

As discussed in Section 2 of this report, MAG is responsible for planning and programming major regional transportation system investments. As part of its planning program, MAG is in the process of evaluating a variety transportation and land use issues through its Regional Transportation Plan (RTP) Update. Since the

Study Area is one of the major growth centers in the region, MAG will be evaluating issues related to development in the area as part of the RTP Update.

- **RTP Focus on Project Area:** ASLD should encourage MAG to make multi-modal transportation improvements in the Project Area a high priority. This can be done generally through participating in MAG's ongoing outreach program for the project. More importantly, ASLD should coordinate with MAG to ensure that the results of the Multi-Modal Study are reflected in MAG's efforts. Among the issues MAG is evaluating are questions of urban form and regional travel tendencies, both of which are relevant to the Study Area and Project Area. ASLD should work with the Cities of Scottsdale and Phoenix to emphasize the importance of the Project Area as an emerging urban activity center that is in the path of increasingly active suburb-to-suburb commute shed. This should include granting high priority to the regional roadway improvements outlined in Section 3.2 of this report.

4.2.2 General Plan Updates

As noted in Sections 2 and 3 of this report, the Cities of Phoenix and Scottsdale are both updating their general plans to comply with the requirements of the State's Growing Smarter Plus statutes. Both cities are in the process of completing public review of draft plans, including both policy content and land use maps. As the review in Section 2 of this report indicates, the draft plans both contain strong commitments to multi-modal transportation system development. Both also identify the Project Area as a key growth area. Accordingly, they are both consistent with ASLD's interests in seeing the Project Area develop with a progressive mix of land use and transportation strategies.

- **Support and Monitor City General Plan Processes:** ASLD's interests in the Project Area are well represented in the draft plans that Phoenix and Scottsdale are reviewing. As part of the formal review process, ASLD should formally express its support for the general principles reflected in the draft plans. ASLD should also indicate its preferences for the mixed-use designations that the draft plans apply to the Project Area (e.g., support of Scenario Two mix and spatial arrangement of uses). There is some question about whether or not it would actually benefit ASLD to replace the mixed-use designations on the plan maps with designations that approximate Scenario Two. On one hand the mixed-use designations provide significant flexibility in planning for specific new uses; on the other, if the designations were made more precise, ASLD would have a greater level of certainty concerning the expectations of the Cities.

  In addition to monitoring the land use aspects of the general plans, ASLD should track the circulation elements to ensure that they are consistent with the assumptions of this study. In particular, in Phoenix, ASLD should support the extension of 64th Street as a six-lane arterial across the CAP Canal. ASLD should also support the development of an 64th Street interchange on Loop 101. The other critical improvements that ASLD should support are grade-separated crossings of the freeway at 68th Street in Phoenix and Hualapai Drive in Scottsdale. These crossings would be necessary to accommodate the local circulator system that would connect the four quadrants of the Project Area.

4.2.3 Private Development Interests

ASLD will continue to work with private development interests considering acquisition and development of State Trust Lands in the Project Area. These ongoing discussions provide an opportunity for ASLD to suggest some of the transportation and development principles expressed in this study.

- **Reservation of Rights-of-Way for Regional Transit Services:** ASLD should use this report as the basis for communicating its preferences for development of State Trust Land in terms of mixed-use development and associated multi-modal transportation improvements. This should include ensuring that adequate rights-of-way are maintained to support future transit projects (in cooperation with Cities). This is

particularly the case with the Deer Valley Road/Thompson Peak Parkway and Hayden Road corridors, which are identified as potential light rail transit alignment. Such an alignment would require between 25 and 30 feet for an at-grade system and less for an elevated system.

- **Local Circulator System Planning:** ASLD should begin discussions with prospective developers of State Trust property to promote the early planning of a local circulator system. Since it is likely that the system will be privately financed and operated, private sector interests will have to be involved in its conception, planning, and design. This will include determining what type of technology is selected. As noted in this report, an automated guideway transit (AGT) technology would be very expensive, so the amount and value of development being served would have to be very high to support the costs. An interim, or alternative, approach would be to develop a shuttle bus service, which would be dramatically less expensive. Under any circumstances, ASLD should work with private sector development interests to ensure that they are aware of the Department's expectations concerning the development of the local circulator system, including potential financial contributions.
- **Site Design Principles:** ASLD should promote project site design methods that support multi-modal transportation and ease contributions to congestion. This should include requesting that prospective developers plan for well-connected local service road networks that include bike and pedestrian pathways. It should also include following some of the development principles reflected in the land use concepts presented in Section 4.0 of this report, including site design that orients development to pedestrian- and transit-oriented activity nodes along the secondary road network.
- **Prospective Developers of Entertainment Commercial:** One of the key land use features of the recommended scenario is the approximately 100 acres of land set aside for a complex of entertainment-related commercial uses in southwest quadrant of the Project Area. ASLD should work with the City of Scottsdale to attract the interest of developers of such projects elsewhere.

4.3 Implementation of Policy and Program Recommendations

Table 4-5 outlines each of the action items summarized above and assigns a priority to each action listed, as well as brief summary of the timeframe for action. Implementation of these actions will allow ASLD to work with the Cities and Scottsdale to more clearly define the future of the Project Area and to develop specific plans for development of the area.

Table 4-5
Implementation of Recommended Actions

Activity	Priority	Timeframe
Scottsdale/Tempe North/South Transit Corridor Study		
Redefinition of Study Area(s)/Time Frames: Work with Scottsdale staff to extend corridor north to Project Area and to accelerate time frame for extension of service.	▪ High	▪ Immediate ▪ Study will continue through the end of 2001.
ASLD Involvement in North/South Study Process: Participate as member of "sponsors' committee."	▪ Medium	▪ If possible, ongoing through the end of the study process.
East-West LRT Connector: Begin planning for an east-west LRT connection between the Tempe-Scottsdale corridor and the potential City of Phoenix extension up the Squaw Peak Expressway.	▪ Low	▪ The connector would be a long-term improvement (probably beyond 20 years)
Increased State Financial Participation: Encourage State involvement in financing local (non-Federal) share of transit projects	▪ Medium	▪ Ongoing
Reauthorization of regional transportation sales tax	▪ Medium	▪ Existing tax sunsets in 2005. Effort underway.
City of Phoenix Transit 2000		
Promote Squaw Peak Expressway LRT Extension: Promote extension of LRT system up SR 51, across Cactus, and up Tatum to Desert Ridge.	▪ High	▪ Immediate ▪ Decisions probably won't take place for several years.
Promote BRT Service on SR 101: Promote extension of City's BRT system into Study Area.	▪ High	▪ Immediate ▪ Initial service expected to be active by 2003, with extensions following
Pursue Funding for Neighborhood Circulator: Target City's local and neighborhood bus programs as potential funding sources for neighborhood circulator.	▪ Low	▪ Demand for the circulator will come with development.
MAG Programs		
Regional Transportation Plan (RTP) Focus on Project Area: Encourage MAG to reflect principles of this study in its RTP efforts.	▪ Medium	▪ Current phase (through end of 2001) focusing on urban form. ▪ Next phase will focus on regional transportation system planning recommendations (early 2002).
City General Plan Updates		
Support and Monitor City General Plan Implementation Processes: Promote implementation of plans consistent with the land use and transportation recommendations of this report.	▪ High	▪ Both Cities have adopted their updated plans. ▪ Public votes on both plans are scheduled for March.
Private Development Interests		
Reservation of Rights-of-Way for Regional Transit Services: Ensure that new roadways in Study Area account for needs of regional transit services, particularly light rail transit.	▪ High	▪ As discussion with prospective developers occurs.
Local Circulator System Planning: Begin discussions with prospective developers concerning local circulator technology and financing.	▪ Medium	▪ As discussion with prospective developers occurs.
Site Design Principles: Encourage prospective developers to incorporate transit- and pedestrian-supportive design, with a focus on activity nodes.	▪ Medium	▪ As discussion with prospective developers occurs.
Prospective Developers of Entertainment Commercial: Evaluate interest in theme-oriented entertainment commercial uses in Southwest Quadrant of the Project Area.	▪ High	▪ Immediate ▪ Ongoing

5.0 STUDY CONCLUSIONS

This report calls for an ambitious, but realistic, combination of land use and transportation improvements for the Scottsdale Road-Loop 101 Project Area over the next 20+ years. Ultimately, the development of the Project Area will require the involvement of a broad variety of public and private interests. Achievement of the type of land use pattern and associated transportation system improvements recommended in this report will require the establishment of a common vision for the Project Area among these interests. It will also require a commitment to extensive coordination as the area develops. The biggest challenge will be to ensure that the timing of transportation improvements keeps pace with development. Often, transportation infrastructure, particularly transit services, lags behind development. If necessary rights-of-way and/or funding commitments are not secured at the time of initial development, the possibility of developing the type of balanced transportation system described in this report could be compromised. On the other hand, ongoing commitment to the principles outlined in this report could result in the emergence of the Project Area as a signature development of national, if not international, prominence.

Responses to Key Questions

As noted at the beginning of this report, three key questions were posed at the initiation of this Study. Following are succinct responses to these questions, based on the results of the evaluations and analyses conducted as part of the Study, and as reported in more detail in the body of this report.

1. Will planned transportation infrastructure, when fully implemented, be adequate to maximize commercial development on ASLD land?

The trip generation analysis presented in Section 3.2.2 of this report concludes that with roadway and transit system improvements in place, the transportation system will support the travel demand generated by buildout of the Project Area.

2. What changes are needed to the planned transportation infrastructure to support full development of the scenarios evaluated?

Section 3.0 of this report describes Study Area roadway and transit system improvements that will support development of the recommended scenario. Section 4.0 focuses on multi-modal services and functions in the Project Area.

3. At what level of development of the Study Area will multi-modal connections or linkages be feasible and practical?

As Section 3.3 of this report indicates, regional high-capacity transit service (light rail), as currently programmed, will not reach the Study Area until at least 2015, although express bus service on Loop 101 could be provided as development demand emerges. With full development of the Project Area as recommended, the regional transit system improvements would be viable and would position the Project Area to compete successfully for funding to complete improvements as development occurs (i.e., by 2020).

Neighborhood and local transit services could be developed as demand warrants. This report assumes that local site circulation service will start as a bus circulator route that is eventually replaced by a people mover system consisting of either automated guideway transit (AGT) technology or a contemporary urban streetcar system similar to that being considered for Downtown Scottsdale as part of the Scottsdale/Tempe North/South High Capacity Transit Study. While the financing implications and the construction logistics of the two technologies would differ considerably, either could be achieved at full buildout of the Project Area.