Casa Grande Transit Development Plan

Connecting Casa Grande

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Transit Development Plan

Prepared for
The Sun Corridor Metropolitan Planning Organization and
The City of Casa Grande, Arizona

Approved by SCMPO Executive Board
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(Note: Appendix is bound separately)

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Prepared by: CivTech

CHAPTER 1

Introduction

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1. INTRODUCTION

Casa Grande is an urbanized area in central Arizona located mid-way between the State's largest metropolitan areas – Phoenix and Tucson. Casa Grande has a long history of being the crossroads of population movements and commerce, and has taken advantage of a western connection to southern California. The Transit Development Plan (TDP) is an undertaking to prepare the City for expansive growth accompanying economic advantages associated with the Sun Corridor, an emerging megapolitan area arising from the dynamic confluence of social and economic forces extending through the central portion of Arizona from Nogales on the Arizona-Mexico International Border to Prescott in Yavapai County.

1.1. History of Casa Grande Transit Planning

Over the past several years, a number of studies and reports addressing the provision of transit services in Casa Grande have been prepared. These studies and reports either directly or indirectly focused on the unique requirements associated with transit services and facilities necessary to satisfy regional travel demand, mobility, and growth/development. Central Arizona Regional Transit (CART) operates between Casa Grande, the City of Coolidge, and Town of Florence while the City of Maricopa Express Transit (COMET) operates a shuttle linking with CART in Casa Grande at the Banner Casa Grande Medical Center. With the continuing growth of Casa Grande, there is a need to give attention to expanding transit services, including assessing new methods of enhancing resident mobility and expediting commuter travel.

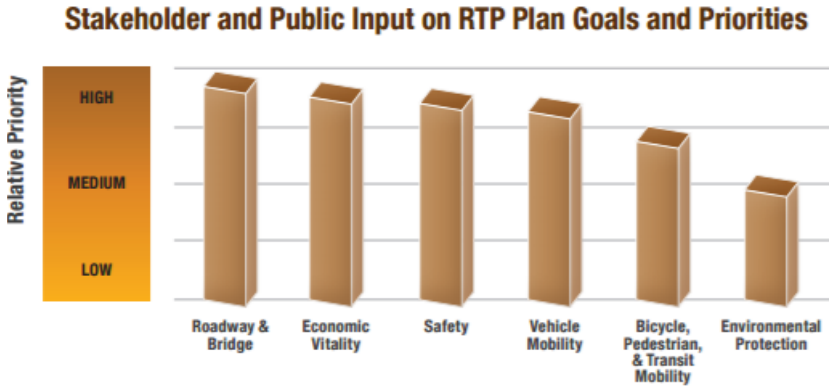
Transit-related studies, relevant to the City, that were reviewed for this Transit Development Plan (TDP) include:

- Pinal County *Small Area Transportation Study*, August 2006
- City of Casa Grande *Small Area Transportation Study*, July 2007
- Pinal County *Regionally Significant Routes for Safety and Mobility*, December 2008
- Arizona Department of Transportation *I-8 and I-10 / Hidden Valley Framework Study*, August 2009
- Pinal County *Transit Feasibility Study*, April 2011
- City of Eloy *Transit Feasibility Study*, Arizona Department of Transportation, May 2011
- City of Casa Grande *Downtown Traffic Circulation Study*, June 2011
- Central Arizona Governments *Regional Transportation Plan*, March 2015
- Maricopa Association of Governments and Valley Metro *Southeast Valley Transit System Study*, July 2015
- City of Maricopa *Area Transportation Plan*, December 2015
- Sun Corridor Metropolitan Planning Organization *Strategic Transportation Safety Plan*, March 2016
- Sun Corridor Metropolitan Planning Organization *Regional Transportation Plan* 2040, "Creating Connectivity," March 2016
- Pinal County *Pinal Regional Transportation Plan*, June, 2017
- City of Coolidge *Transit Plan 2016*, Arizona Department of Transportation, June 2016
- Central Arizona Governments and Sun Corridor Metropolitan Planning Organization *Human Services Transportation Coordination Plan 2017-2019,* March 2017

The *Small Area Transportation Study* (*SATS*), completed ten years ago, was initiated by the City of Casa Grande in conjunction with the Arizona Department of Transportation (ADOT). This study represented an update and expansion of the *Casa Grande Multimodal Transportation Study,* completed in 2001, and references the *Casa Grande Transit Feasibility Study*, completed in 2001. In addition, the Casa Grande *SATS* was coordinated with the Pinal County *SATS*, completed in 2006 (including a separate *Transit Element Report*, August 2006). These *SATS* reports note that options for implementing rideshare programs, a deviated fixed-route starter transit system, and a transit center had been recommended in the past.

The Sun Corridor Metropolitan Planning Organization's (SCMPO) *Regional Transportation Plan 2040* and preceding studies in Pinal County identified a desire to continue developing public transportation services in Pinal County. In the SCMPO *RTP 2040* process, stakeholder and public input indicated a medium-high priority for bicycle, pedestrian, and transit mobility goals (**Figure 1.1**). In the Pinal Regional Transportation Authority (RTA) *Regional Transportation Plan,* investment strategies to fund roadway and public transportation elements via a half-cent sales tax were identified. The *Public Transportation Element* of the Pinal *RTP* focuses on Park and Ride lots, Dial-a-Ride services, as well as funding for existing transit operations in the County. In total, 4.4 percent ($28,200,000) of the new sales tax revenue in Pinal County will fund transit investments.

Figure 1.1 | SCMPO RTP 2040 Stakeholder and Public Input



1.2. Basis for the Casa Grande Transit Development Plan

The population of the City of Casa Grande exceeded 50,000 people in the 2010 U.S. Census. According to the Arizona Office of Economic Opportunity, the population of Casa Grande will be 126,000 in 2050, a significant increase from the current population. Because Casa Grande is expected to become a major metropolitan area, and given its central location relative to the Sun Corridor megapolitan area, there is a need to plan for accommodating mobility challenges associated with expansive growth and assure adequate multimodal transportation infrastructure supports community goals.

Exceeding a population of 50,000 persons designates Casa Grande as an Urbanized Area, which requires establishment of a metropolitan planning organization (MPO) and definition of an appropriate planning region for Federal transportation funding purposes. The Sun Corridor MPO was established in 2013. The resultant MPO now provides transportation planning services within its designated metropolitan planning area (MPA) for Casa Grande, as well as the cities of Coolidge and Eloy and rural areas of Pinal County that are contiguous and likely to become urbanized within the next 20 years. Because Casa Grande is an Urbanized Area, through designation by the U.S. Census Bureau, the City qualifies for Federal Transit Administration (FTA) formula funding assistance to support public transportation services, systems, and facilities. This current planning activity, to conduct a transit development study and prepare a TDP for the City, is supported by planning assistance grant funds available through Section 5304 of the Fixing American's Surface Transportation (FAST) Act signed into law December 2015.

SCMPO, having completed a *Regional Transportation Plan 2040* (RTP) for the MPA, is preparing this TDP in conjunction with the City of Casa Grande to aid in determining the needs and priorities for transit projects within Casa Grande. The TDP will reflect an expansion of the previously completed Casa Grande *SATS*, identifying the potential for establishing a transit system to serve the City's transit demands associated with current development, future development, and regional connectivity. Development of the TDP has been coordinated with other critical State and County transportation planning activities as well as programs to improve transit services for elderly and mobility challenged individuals under the FTA's Section 5307, 5310, and 5311 Programs that provide assistance for various transportation providers.

1.3. Study Area

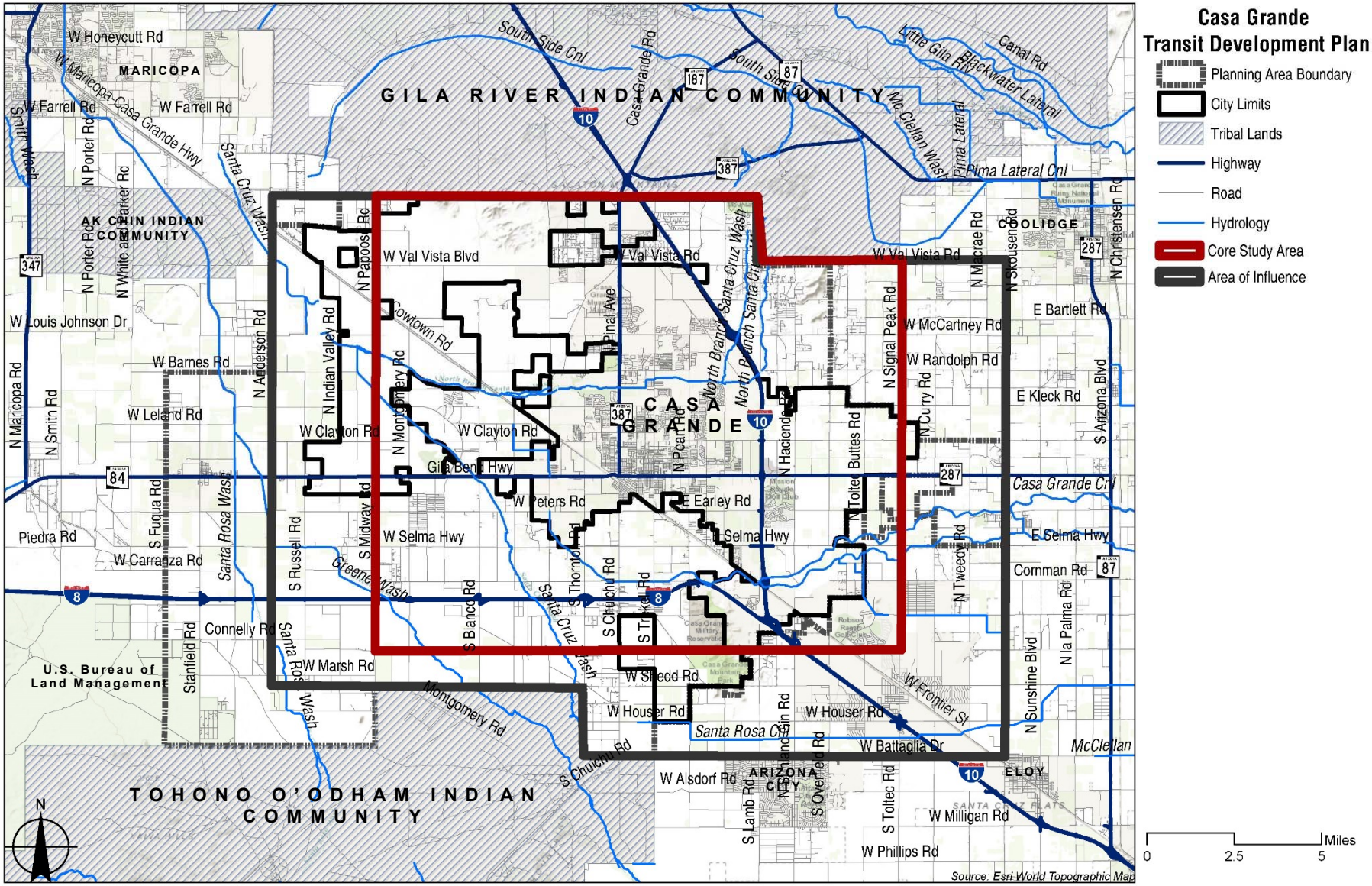
Figure 1.2 displays the study area for this transit planning action. The extent of potential transit needs and services over the planning period for the TDP (10 years) requires a planning area that fully recognizes potential growth in that period. Therefore, the study area adopted for the TDP closely reflects the study area adopted for the Casa Grande *SATS* to provide a reliable assessment of future transit needs and consistency with this previous transportation assessment. This area is identified as the Core Study Area (CSA). The boundaries for the CSA are shown in **Figure 1.2** and are defined as:

- Midway Road/Papoose Road on the West;
- Gila River Indian Community and Val Vista Road on the North;
- Signal Peak Road on the East; and
- Arica Road on the South.

To assure full and complete assessment of the future overall travel needs relative to the expanding Casa Grande urbanized area, an additional analysis zone identified as the Area of Influence (AOI) was established. The AOI recognizes that travel needs, including transit services, can extend beyond the CSA, especially relative to commutes to work (e.g., Express Bus services) or resident travel for shopping and entertainment opportunities not available in rural areas. The boundaries for the AOI are defined as:

- Anderson Road on the West;
- Gila River Indian Community and Val Vista Road on the North;
- Eleven Mile Corner Road on the East; and
- Battaglia Drive/Road and Tohono O'Odham Indian Community on the South.

Figure 1.2 | Boundaries of Study Areas



1.4. Overview of the Casa Grande Area

The City of Casa Grande, founded in 1879, has become a modern community with a still apparent rural heritage. It is the largest city both in size and population in Pinal County. The City is characterized by generally clear skies with hot summers and mild winters. It is governed by a Mayor, a six-member City Council, and a City Manager. The location of Casa Grande on the Union Pacific Railroad (UPRR) Sunset Route, the main east-west line from Texas to California, has created opportunities for industrial development with direct rail access, opportunities promoted by the Industrial Development Authority of Casa Grande. Banner Casa Grande Medical Center provides regional medical care for the western portion of Pinal County. Central Arizona College (CAC), with an enrollment of more than 5,000 students, is located in the northeast corner of the CSA with a smaller facility located in Downtown Casa Grande. CAC offers four Associate Degree programs.

1.4.1. Regional Location

The City of Casa Grande developed around the intersection of Arizona State Route (SR) 387, Pinal Avenue, and SR 84/SR 287, Gila Bend Highway/Florence Boulevard. The developed area now extends approximately 2.5 miles to the north and approximately five miles to the east along these two principal roadways. An area generally characterized by commercial/industrial development extends approximately one mile to the west and older residential development is present to the south approximately three-fourths of a mile. Casa Grande is strategically located in a central location within the Sun Corridor, a megapolitan region in Arizona extending approximately 250 miles from the U.S./Mexico International Border into Yavapai County. The Sun Corridor lies between the two largest metropolitan areas in the State – Phoenix and Tucson, and Casa Grande is situated within the sphere of influence of the Phoenix metropolitan area. Pinal County, wherein Casa Grande is located, is projected to grow to a population of approximately 1.1 million by the Year 2045, and the Sun Corridor is projected to grow from the population of 5.6 million in 2010 to more than 12 million in 2050. Casa Grande will be a major beneficiary of this anticipated growth.

1.4.2. Regional Connections

The center of the City is located approximately five miles northwest of the I-10 and I-8 Interchange, accessible via Main Street/Jimmie Kerr Boulevard. I-10 provides direct access to the Phoenix and Tucson metropolitan centers. Further, I-10 provides interstate connection between El Paso, Texas and Los Angeles, California. I-8 facilitates access to Yuma in Western Arizona and to San Diego in Southern California. The UPRR main line was recently modified to include two tracks, doubling the capacity of the railroad's freight services. Expectations are that this line will accommodate approximately 100 trains per day in the future. Grade separation of the UPRR at SR 347 through the City of Maricopa is in the design phase at this time. A concept to create a grade separation at the UPRR to accommodate north-south travel along the alignment of SR 387 (Pinal Avenue) in Casa Grande has been formally adopted and is likely to move forward in the future. This action will enhance the City's access to I-8 south of the downtown area.

Planning documentation to support and create an integrated major roadway system to accommodate future growth in Pinal County was completed in 2008. This planning activity, led by Pinal County and involving ADOT and municipal governments, produced a framework for "Regionally Significant Routes for Safety and Mobility" for major transportation improvements. The framework significantly enhances the regional connectivity of Casa Grande (**Figure 1.3)**. Additionally, the Pinal Regional Transportation Authority published the Regional Transportation Plan in June, 2017 (**Figure 1.4)**. A major new freeway facility, the West Pinal Freeway, will create east-west access into southwestern Maricopa County with continuing travel north to I-10, west of Phoenix, and Las Vegas, Nevada. This new freeway corridor is envisioned to be a multimodal travel corridor that would include rail freight service. A new north-south freeway also could be developed within the City along Montgomery Road, linking I-8 with the new West Pinal Freeway. The framework also identifies major transit corridors to enhance regional mobility and accessibility in support of projected expansive growth.

Figure 1.3 | Regionally Significant Routes for Safety and Mobility - 2017

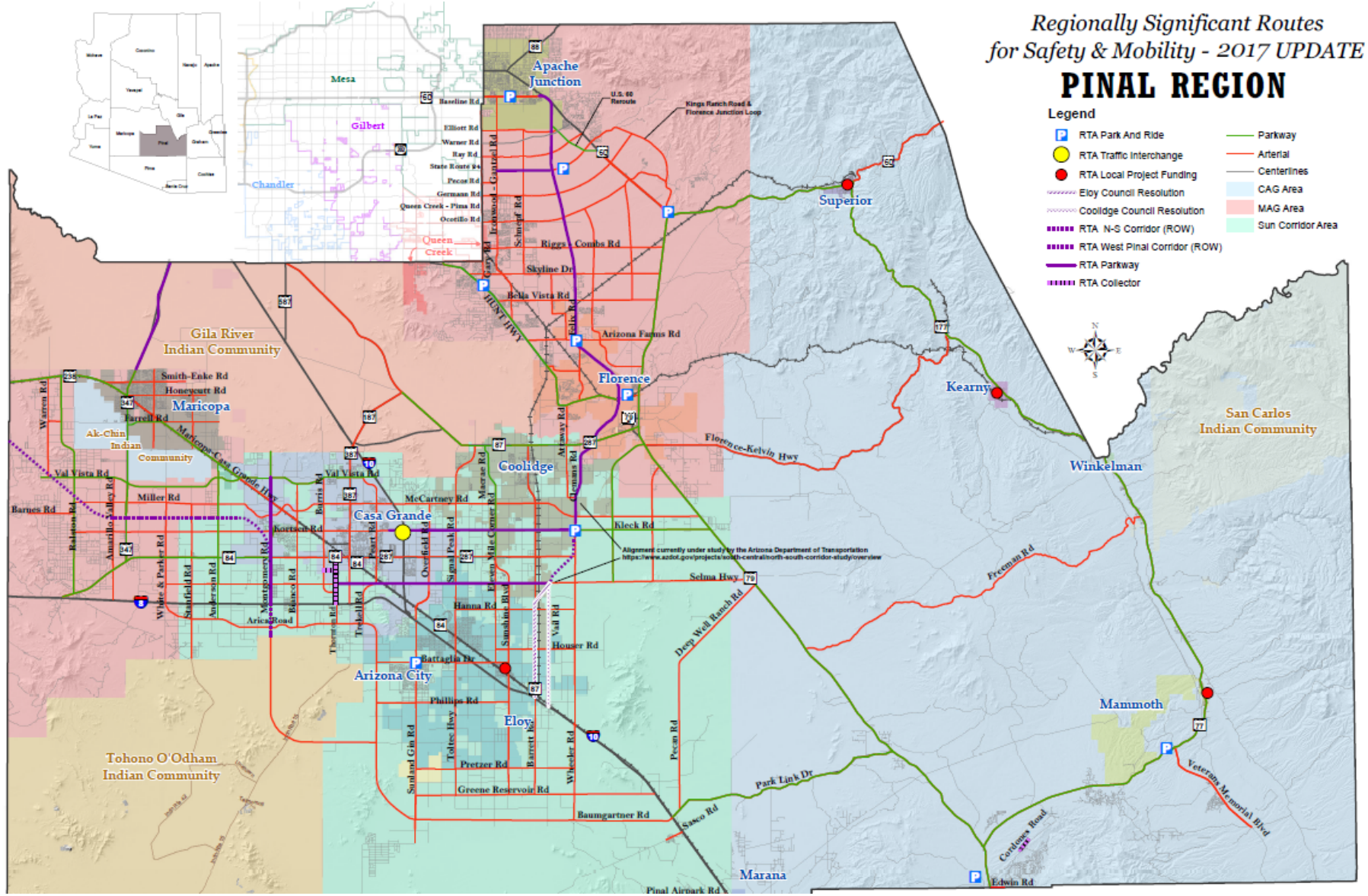
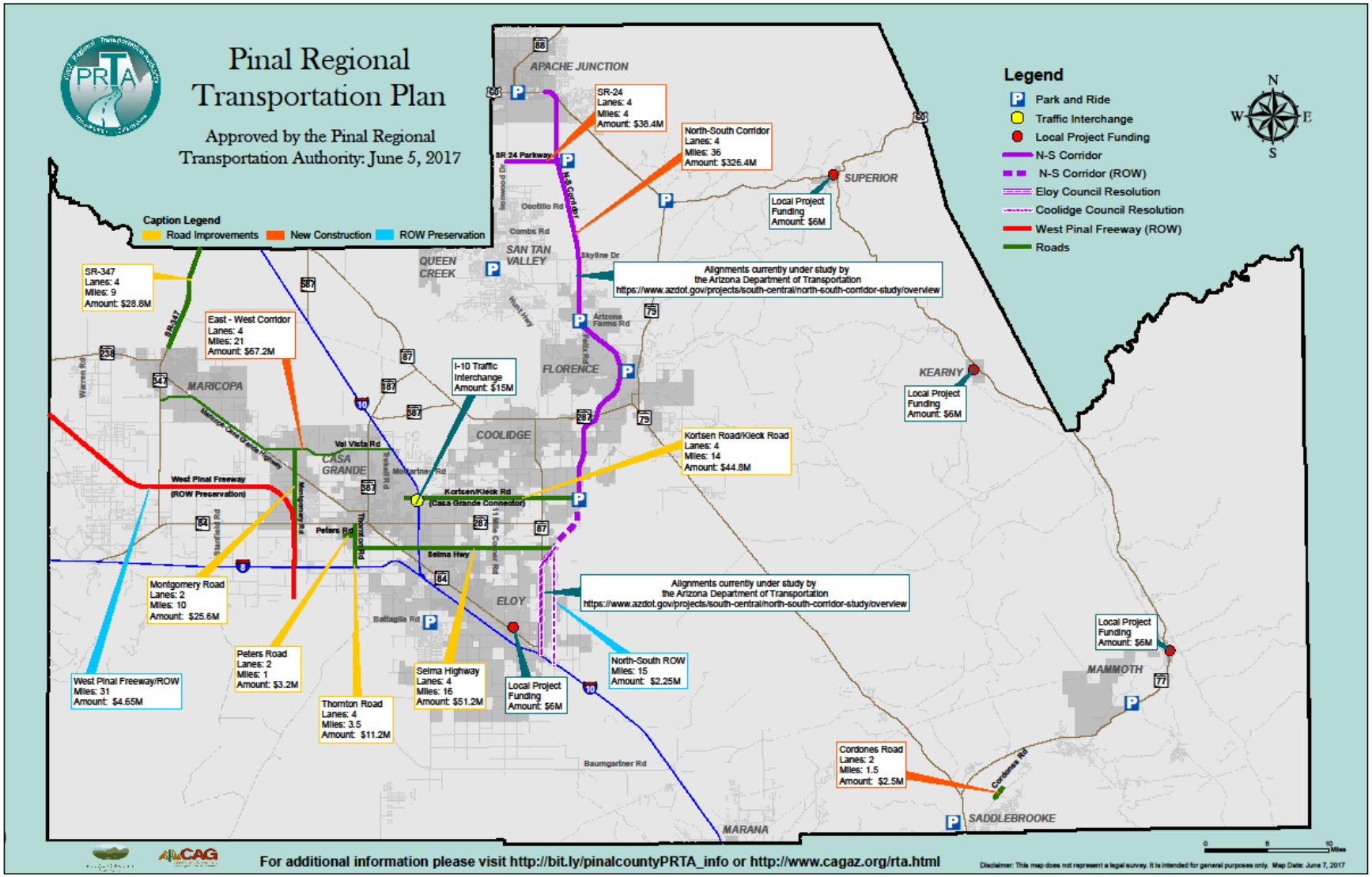


Figure 1.4 | Pinal RTA Regional Transportation Plan - 2016



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CHAPTER 2

Existing and Future Conditions

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2. EXISTING & FUTURE CONDITIONS

This section provides basic information regarding social and economic (socioeconomic) characteristics of the Core Study Area (CSA), which is the principal focus of this current transit planning action. It includes 2015 estimates of the general population and sensitive population groups based on the most recent decennial U.S. Census (2010). Sensitive population groups (or populations) consists of those persons residing in the community that are mobility challenged, due to disability, age, and/or low income, among other variables.

2.1. Existing Conditions

This section provides basic information regarding current social and economic (socioeconomic) characteristics of the CSA, which is the principal focus of this current transit planning action, as it provides an indication of current potential demand for transit service . It also provides a discussion of current land uses and employment within the City

2.1.1. Current Population

The City of Casa Grande has experienced steady population growth since 1990. The Casa Grande *SATS* (2007) reported the City population to be 25,224 in 2000, representing a 31 percent increase over the 19,187 reported in 1990.

The U.S Census identifies and tabulates data to create defined "urban" and "rural" areas. This is done to provide certain federal and state agencies with a basis for implementing programs with urban and rural criteria for allocation of resources. Casa Grande qualified in 2010 to be designated an Urbanized Area with a recognized population of 51,331. Based on this designation by the U.S. Census Bureau, Casa Grande was required under regulations associated with transportation funding at the federal level to form an MPO, resulting in creation of the SCMPO in 2013. The 2015 population of the City is 51,460, according to U.S. Census Bureau estimates (July 1, 2015), meaning the City is continuing to experience growth, although not at the rate of the previous decade.

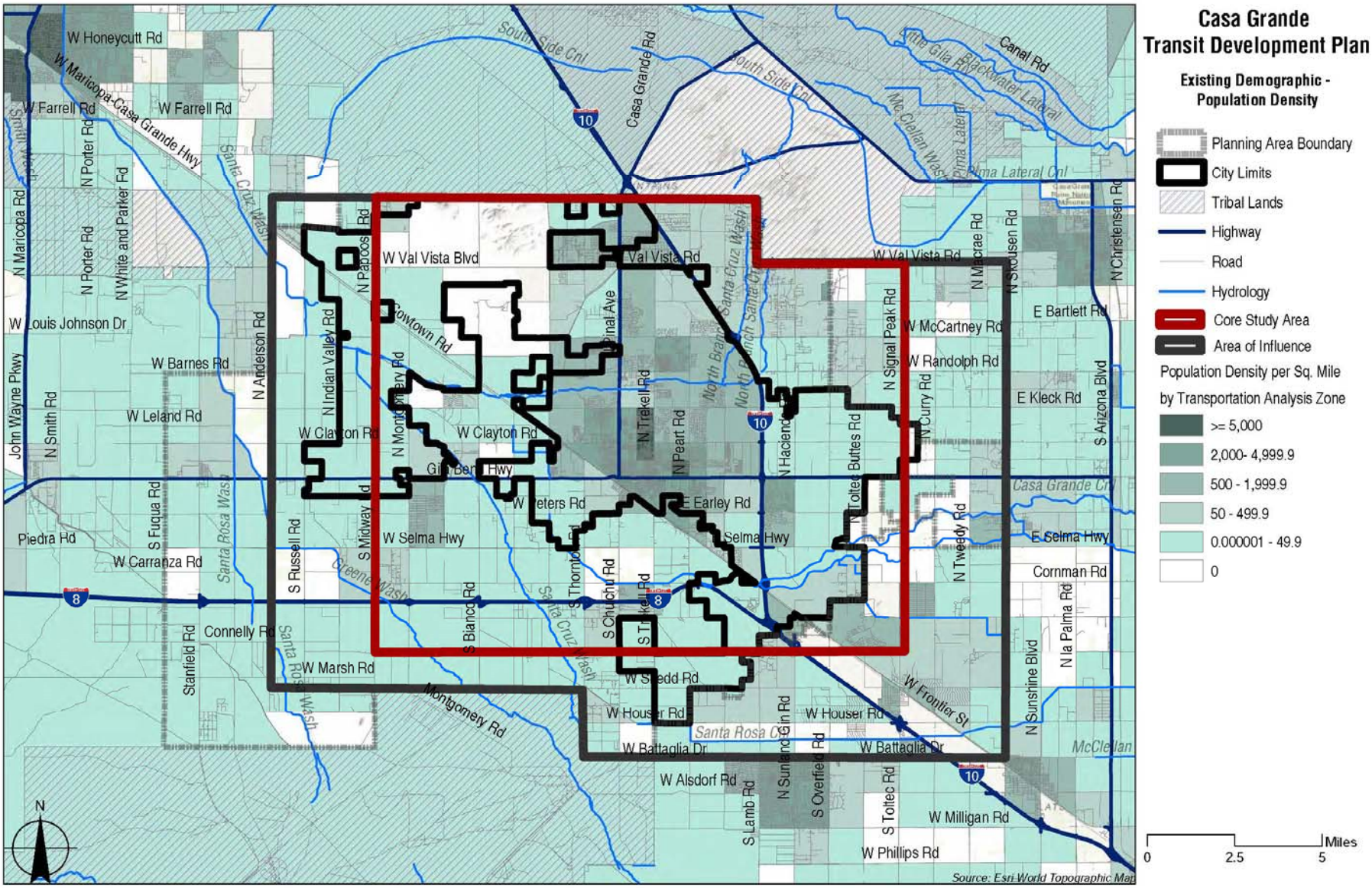
The travel demand model for the SCMPO region (managed by Maricopa Association of Governments) provides a snapshot of population concentrations within Transportation Analysis Zones (TAZ). Based on data provided in this model (**Table 2.1**), the incorporated area within the Casa Grande city limits has a population of 54,181 persons, representing 77.6% of the total population in the SCMPO region**. Figure 2.1** displays the existing population density as reported by in the travel demand model for the SCMPO region.

Table 2.1 | 2015 Population as Reported in the Travel Demand Model for the Core Study Area

	POPULATION		
Geographic Area	Casa Grande Incorporated Area	Pinal County Unincorporated Area	Total
2015	54,181	15,671	69,852
Percent	77.6%	22.4%	100%

NOTES:
Source: Maricopa Association of Governments.

Figure 2.1 | Existing Population Density



Sensitive Population Groups

Accounting for the presence of sensitive population groups is necessary in transportation planning to satisfy the requirements and principles of general civil rights and environmental justice (EJ) with regard to individuals who are mobility challenged due to disability, age, low income, and other factors. Title VI of the Civil Rights Act of 1964, as amended, and related statutes were passed to assure individuals residing in or visiting the United States are not subjected to discrimination on the basis of race, color, national origin, age, sex, disability, limited English proficiency, or low-income status under any program or activity receiving federal financial assistance. Recipients of federal assistance, therefore, are required to demonstrate compliance with the objectives of civil rights standards.

At this stage in the planning process, specific determinations of the potential disproportionately high and adverse impacts to low-income and minority populations would be problematic. However, some understanding of the potential for adverse impacts can be gleaned by applying comparative analyses that highlights the location and magnitude of sensitive populations relative to planned transit improvements. This advance planning action facilitates the design of specific projects and better understanding and definition of practicable mitigation measures or, even, alternatives to avoid or minimize potential impacts. This analysis generally is accomplished by comparing the presence of sensitive populations in the study or planning area with a specific criterion (e.g., income) or the presence of similar populations in a larger, encompassing constituency, such as a county, as well as the state wherein the study or planning area is located.

These same sensitive populations are also indicators of latent transit demand. Therefore, the study team examined concentrations of low-income, minority, and transportation disadvantaged populations to determine where latent transit demand may already be present. **Figure 2.2** is a map of the study area overlaid with the boundaries of the 42 Block Groups included in the analyses of sensitive population groups.

Low-Income Population

"Low-Income Population" is defined by a person living in a household (HH) where the median income is at or below the Department of Health and Human Services (HHS) poverty guideline and who lives in geographic proximity to the proposed program, policy or activity and, if circumstances warrant, geographically dispersed/transients who will be similarly affected. Tabulations from the 2015 U.S. Census household and income estimates provide information for median HH income, and the HHS Poverty Guidelines (09/03/2015) provide a gauge for assessing the number of HHs that are below the Poverty Guideline. The average size of HHs for all Block Groups is 2.7 persons per HH. The average median HH income for all Block Groups is $46,899. The average income to poverty ratio for all Block Groups is 2.80. Therefore, as a whole, the study area would not be considered to have the characteristics of poverty conditions. However, seven of the 42 Block Groups exhibit a poverty condition or a marginal poverty condition. **Figure 2.3** illustrates the median household by Block Group. The darkest shaded areas represent lowest income levels. In general:

- Block Group 402100-14063, which is located north of Interstate 8, east of S. Chuichu Road, and south of W. Jimmie Kerr Boulevard has a median HH income of $22,212 and an income to poverty ratio of 0.98. This means generally that the 458 HHs in this Block Group are subsisting on an income below the HHS Poverty Guideline of $22,586 for a HH consisting of 3.6 members.
- Block Group 402100-15002, which is located north of W. Main Avenue, west of SR 387 (Pinal Avenue), and south of west Cottonwood Lane has a median HH income of $21,851 and an income to poverty ratio of 0.92. This means generally that the 508 HHs in this Block Group are subsisting on an income below the HHS Poverty Guideline of $23,834 for a HH consisting of 3.9 members.
- There is a concentration of seven other Block Groups, generally located southwest of downtown Casa Grande, that should be considered in a marginal poverty condition for planning purposes.
- All other Block Groups have an income to poverty ratio of 1.51 and higher, which means above the poverty threshold and not in poverty, according to the official definition.

Figure 2.2 | Map of Block Groups Used for Sensitive Population Groups

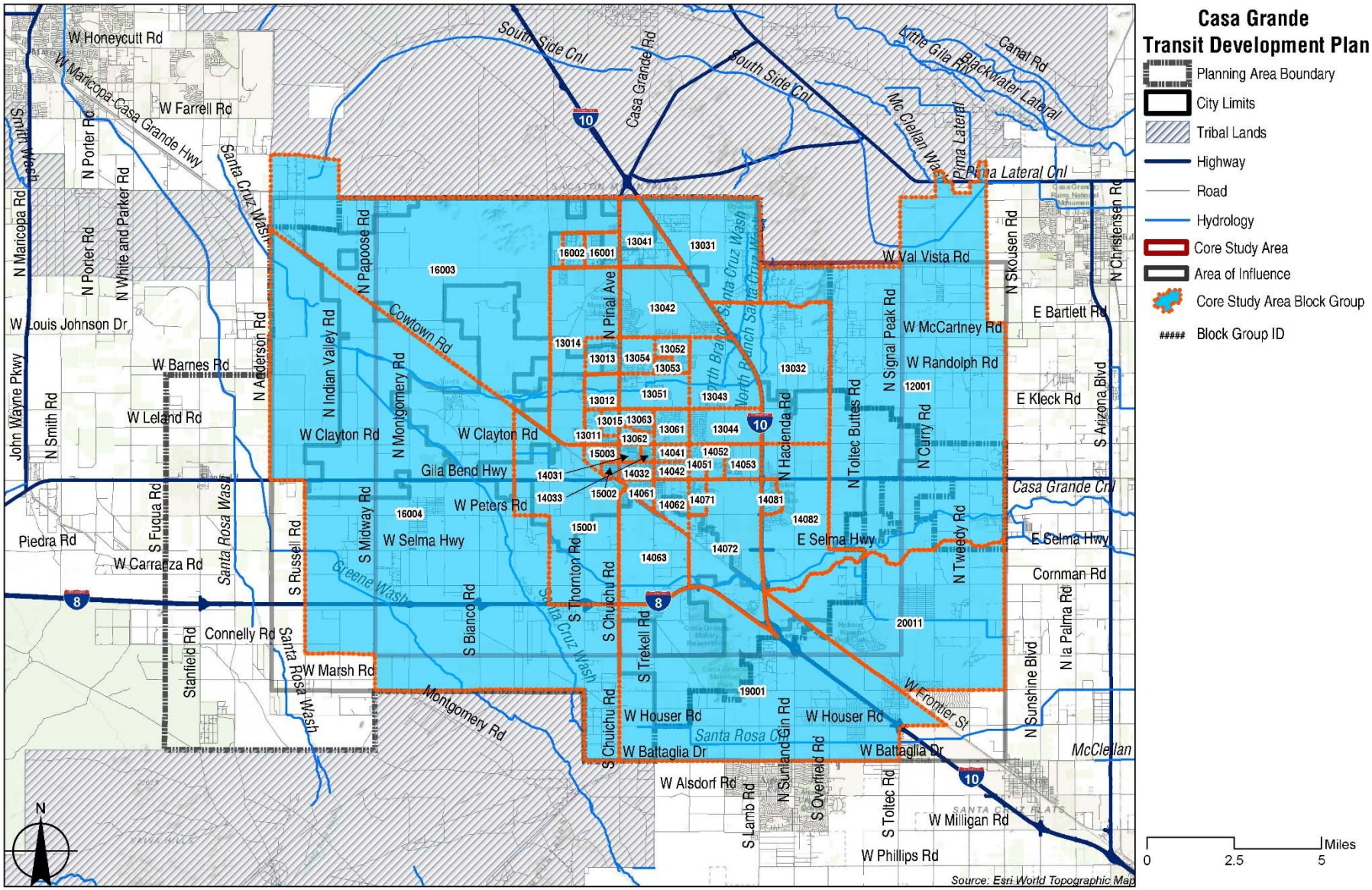
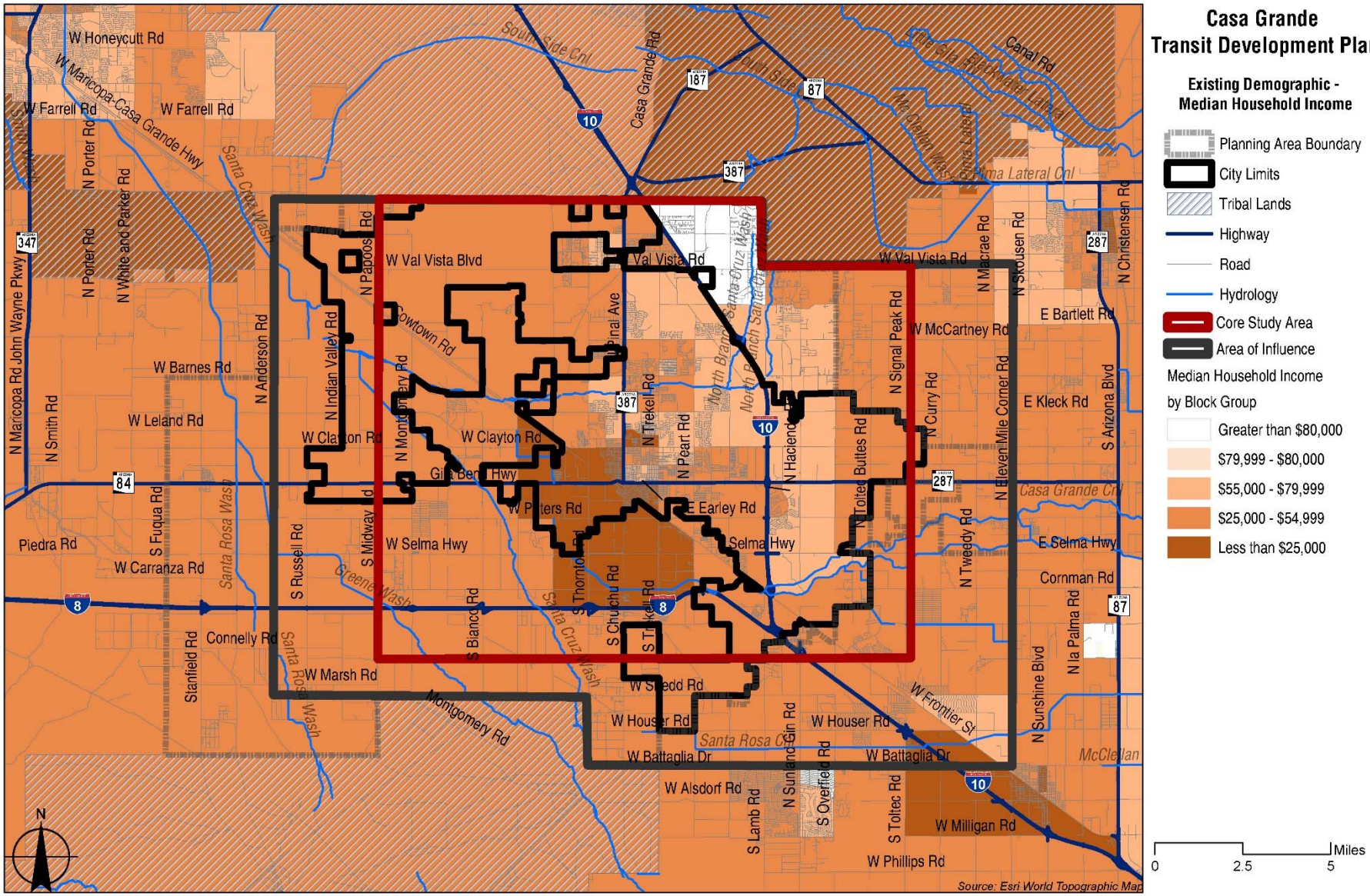


Figure 2.3 | Existing Median Household Income



Minority Population

"Minority Population" is defined as any readily identifiable groups of minority persons living in geographic proximity to the proposed program, policy or activity and, if circumstances warrant, geographically dispersed/transients who will be similarly affected by a proposed program, policy or activity. Minority populations refer to persons who are: African-American, Hispanic or Latino, Asian-American, American Indian and Alaskan Native, and Native Hawaiian and Other Pacific Islander.

There are seven Block Groups where the presence of African-Americans is more than double the average for Pinal County. Six of the Block Groups are in the Downtown area between Kortsen Road and Earley Road. The seventh location with a high concentration of African-Americans is north of Val Vista Road between SR 387 (Pinal Avenue) and Interstate 10.

One Block Group has a significant presence of American Indian & Alaskan Native (AIAN) individuals. This Block Group is located in the Downtown within the area bounded by SR 387 (Pinal Avenue), McMurray Boulevard, Trekell Road, and SR 287 (Florence Boulevard).

There are a number of Block Groups with high representation of the Asian-American population. Four Block Groups have more than double the average of Asian-Americans than the average for Pinal County. Two of the Block Groups would be considered suburban, or not within the immediate built-up urban environment. The third is associated with fringe development north of Kortsen Road and east of Peart Road. The fourth is Downtown in the Block Group bounded by Peart Road, McMurray Boulevard, Trekell Road, and Cottonwood Lane. The Asian-American population also is represented heavily in seven other Block Groups. The representation in these Block Groups is one and a half times the average for Pinal County.

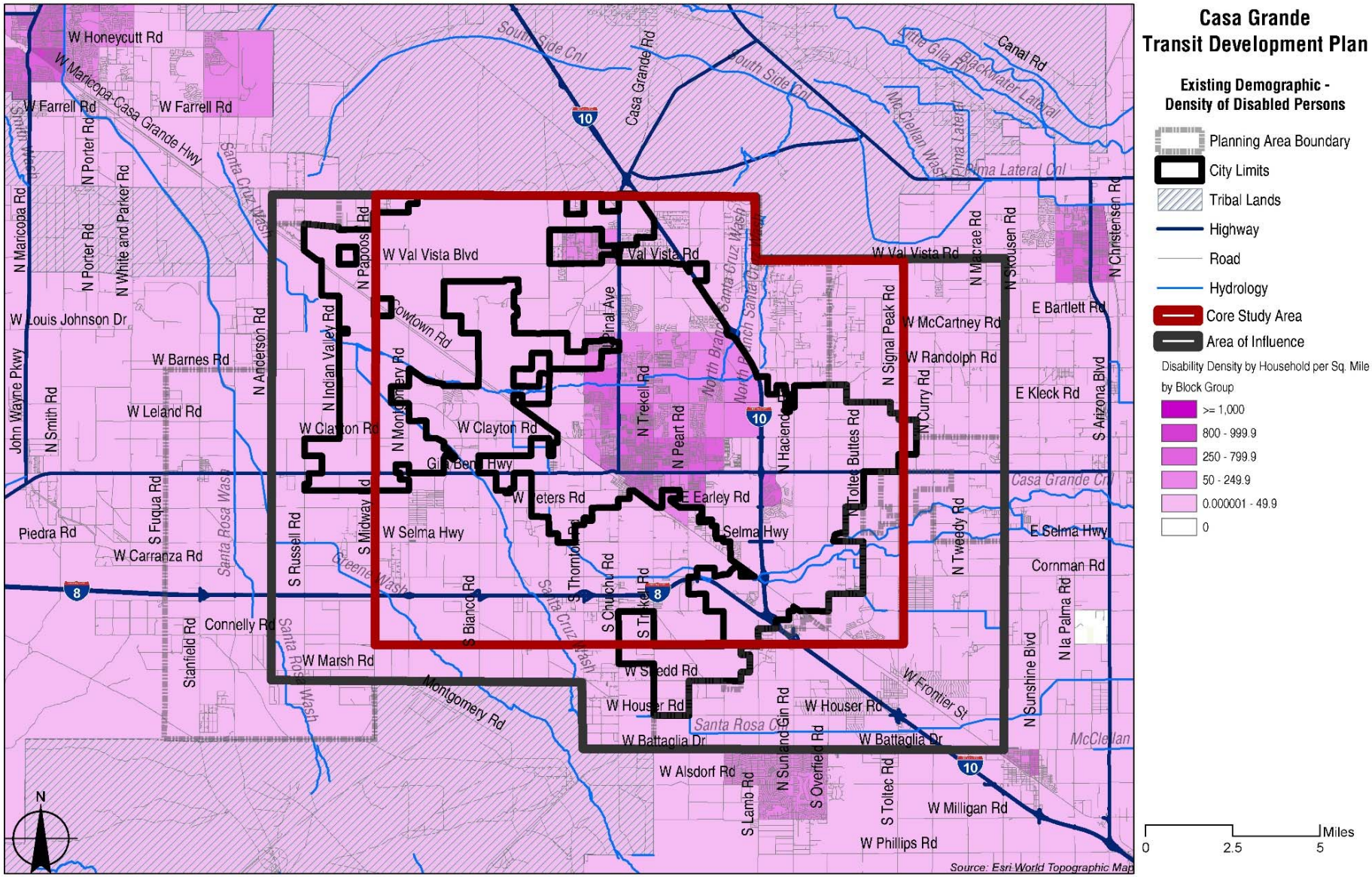
Native Hawaiian & Other Pacific Islander individuals are identified only in one Block Group, which is a large area in the northeast corner of the study area well east of Interstate 10.

The Hispanic or Latino population is strongly present in the study area, having a disproportionate presence in 27 of the 42 Block Groups associated with the study area. There are three Block Groups with more than double the average for Pinal County in north of the central city area between Rodeo Road and McCartney Road and Thornton Road and Peart Road. A concentration of Hispanic or Latino individuals is located in the northwest quadrant of the SR 387/SR 287 intersection in Downtown Casa Grande. The other three Block Groups with a high concentration of this population are located south of the Downtown area between Burris/Ethington Roads and Interstate 10.

Persons with Disabilities

Non-institutionalized civilians, who are 16 years of age and older, are considered to be disabled, if they report a mobility disability, a self-care limitation, or work-related disability. In the case of disabilities, the criterion for determining whether or not a particular Block Group would be adversely impacted rests on a comparison with Pinal County as a whole and the State of Arizona. Disabilities included, but are not limited to, difficulties associated with: hearing, vision, cognitive capabilities, ambulation, self-care, and independent living. **Figure 2.4** displays the density of disabled persons in and around the study area. Based on the information collected, the more populated central area of Casa Grande held the highest density of persons considered to be disabled.

Figure 2.4 | Existing Density of Disabled Persons



Female Head of Households

Female head of household (female householders) are identified as females with no spouse present, regardless of whether any children younger than 18 years of age are present in the household. Female householders are especially sensitive in the framework of planning for public transit services. The 2009 National Household Travel Survey, re-released in 2014 by the Federal Highway Administration (FHWA), indicates "…families headed by single women are particularly vulnerable to poverty and deep poverty." Other relevant and important findings in this FHWA NHTS Brief can be summed in the following statement: "Poverty is a women's issue; female-headed families are more likely to be poor." Households that are poor generally have limited vehicle availability, fewer affordable transportation options, spend a higher proportion of income on transportation expenses, and, consequently, have the highest usage of less costly travel modes, specifically carpooling, "catch a ride" with someone, public transit, bicycle, and walking.

U.S. Census Bureau data reveal 15,740 female householders in the Block Groups identified for the study area. Of these, 5,875 are in Block Groups with a higher proportion of the female householders than the Pinal County average – 14.4 percent. These Block Groups account for one-half of the 42 Block Groups associated with the study area.

Young Population

Understanding locations of younger populations helps in determining additional sensitive population groups that may be mobility impaired, and therefore could potentially be future transit riders. The Block Groups have been specifically identified wherein the younger population (age 17 and younger) is predominately located near the City center. Twenty-five Block Groups within the study area have a concentrated demographic of people 17 and younger. **Figure 2.5** displays the density of youth (ages 17 years and younger). In the northeast quadrant of the intersection of SR 387 (Pinal Avenue) and W. O'Neil Drive, there are more than 2,000 persons under the age of 17. The northeast quadrant of N. Trekell Road and E. Rodeo Road shares a similarly high concentration. This demographic shares a resemblance with the age 65 and older group as both are found with the highest densities towards the center of the City.

Elderly Population

Elderly persons are defined as being individuals 60 years of age and over. A study sponsored by the FHWA in 2006 – Gearing Up for An Aging Population – highlights the fact that the "…Nation's population not only is aging but also comprises greater numbers of older adults continuing to drive into their 80s and beyond. These seniors are making more trips and driving more miles." The FHWA publication primarily is oriented to improving driver capabilities and roadways to minimize the risks associated with a growing population of older drivers. However, it is important to note that many elderly individuals, 60 years of age and older, find public transportation systems, especially systems offering only fixed-route bus service (where present), to be inconvenient, inefficiently designed, and poorly equipped to respond to their needs. Also, many older adults do not have direct experience or the confidence to use public transportation when it is provided. Serving this particular population group requires a collaborative structure perhaps involving State and County officials and agencies. The structure also should incorporate area agencies on aging, transportation providers, social service and health agencies (often the destinations of the elderly population), and seniors within the community.

Figure 2.6 illustrates the density of seniors 60 years of age and older. The density of seniors with potential mobility challenges, including seniors 75 years of age and older, is displayed in **Figure 2.7.** The northwest quadrant of the intersection of SR 287 (Florence Boulevard) and Interstate 10 has more than 95 percent of the population 60 years of age and older. The southeast quadrant of this same intersection also is worth noting, as close to 90 percent of the population is 60 years of age and older.

Figure 2.5 | Existing Density of Persons 17 years and Younger

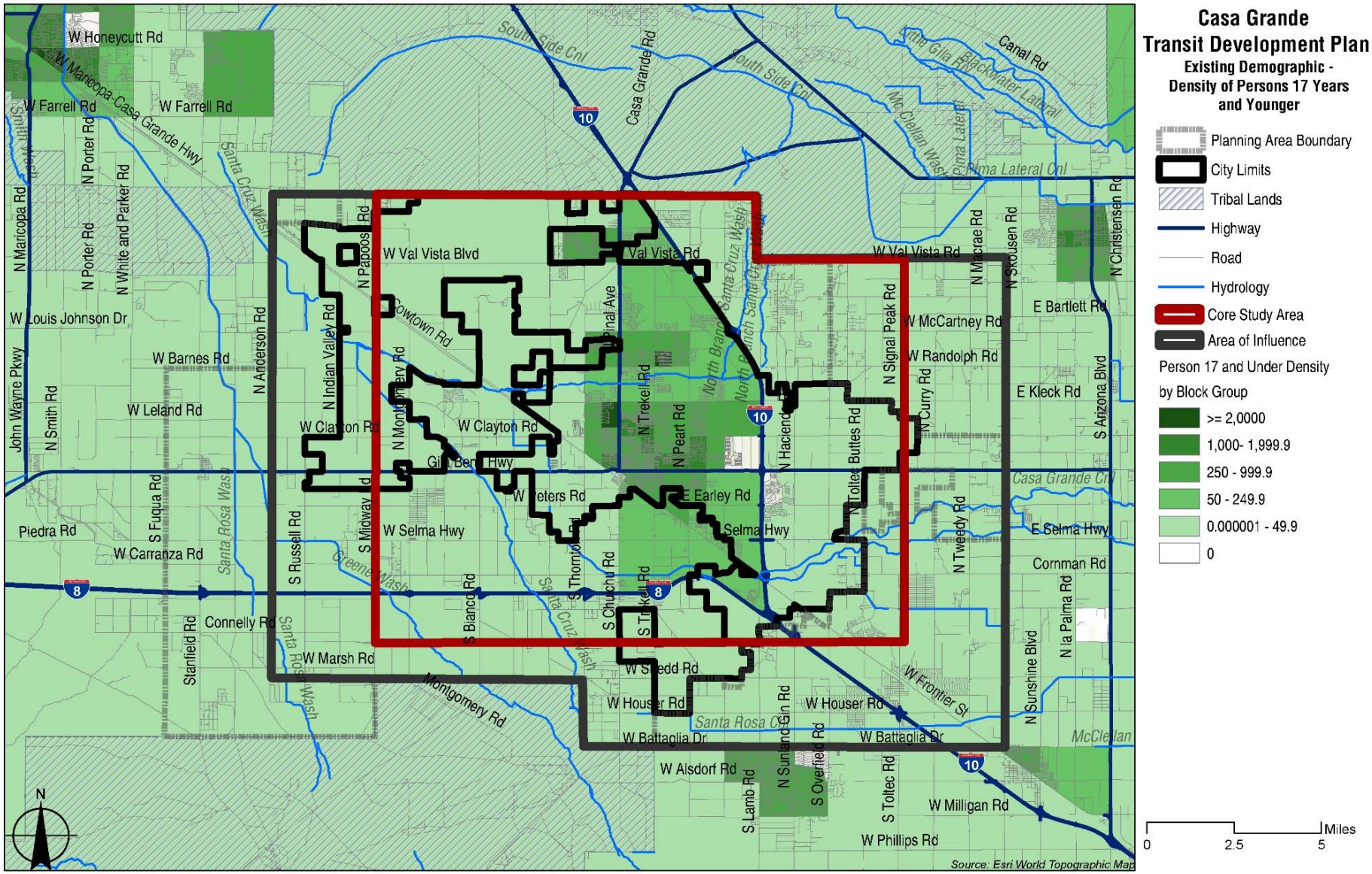


Figure 2.6 | Existing Density of Persons 60 Years and Older

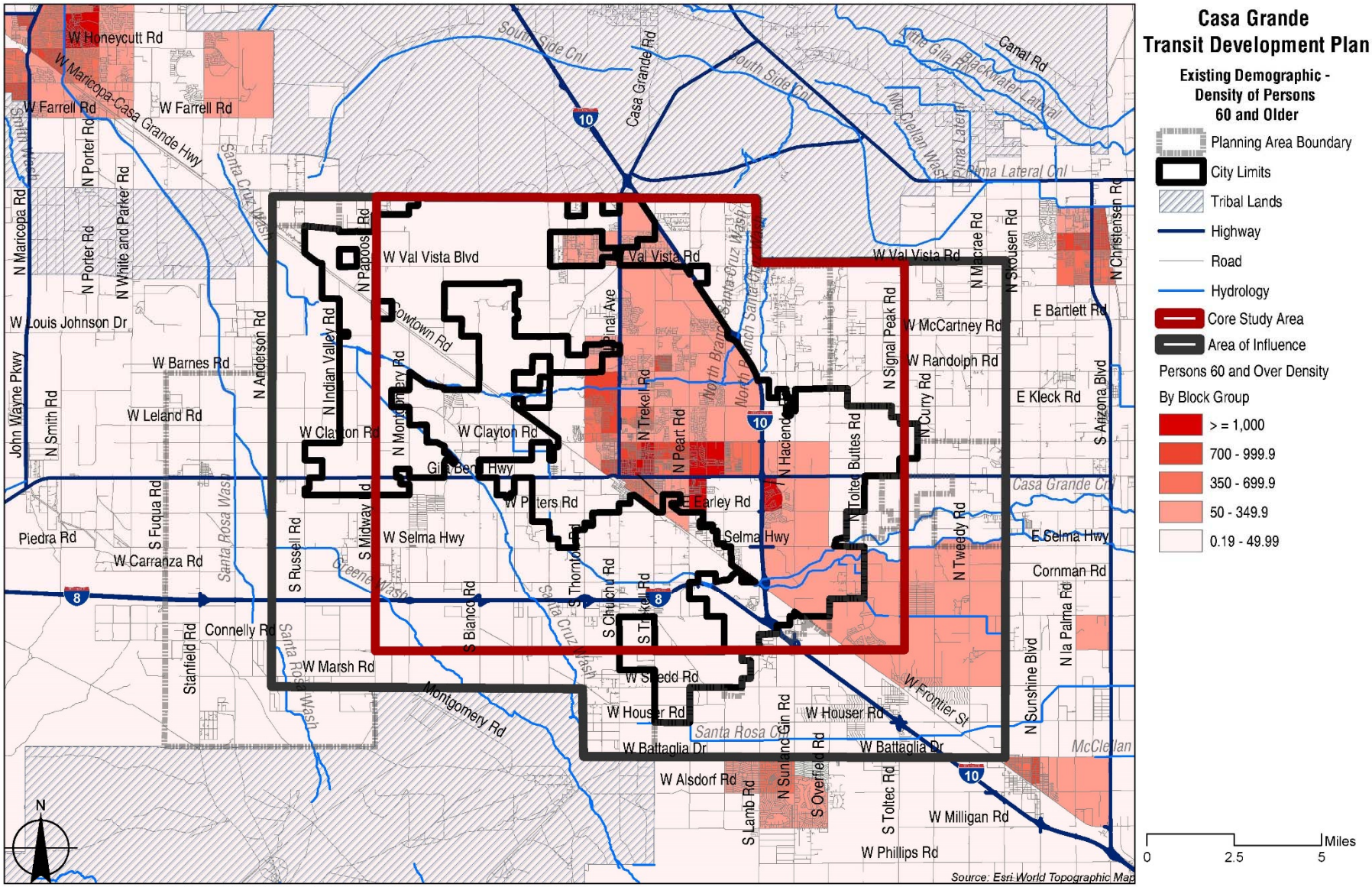
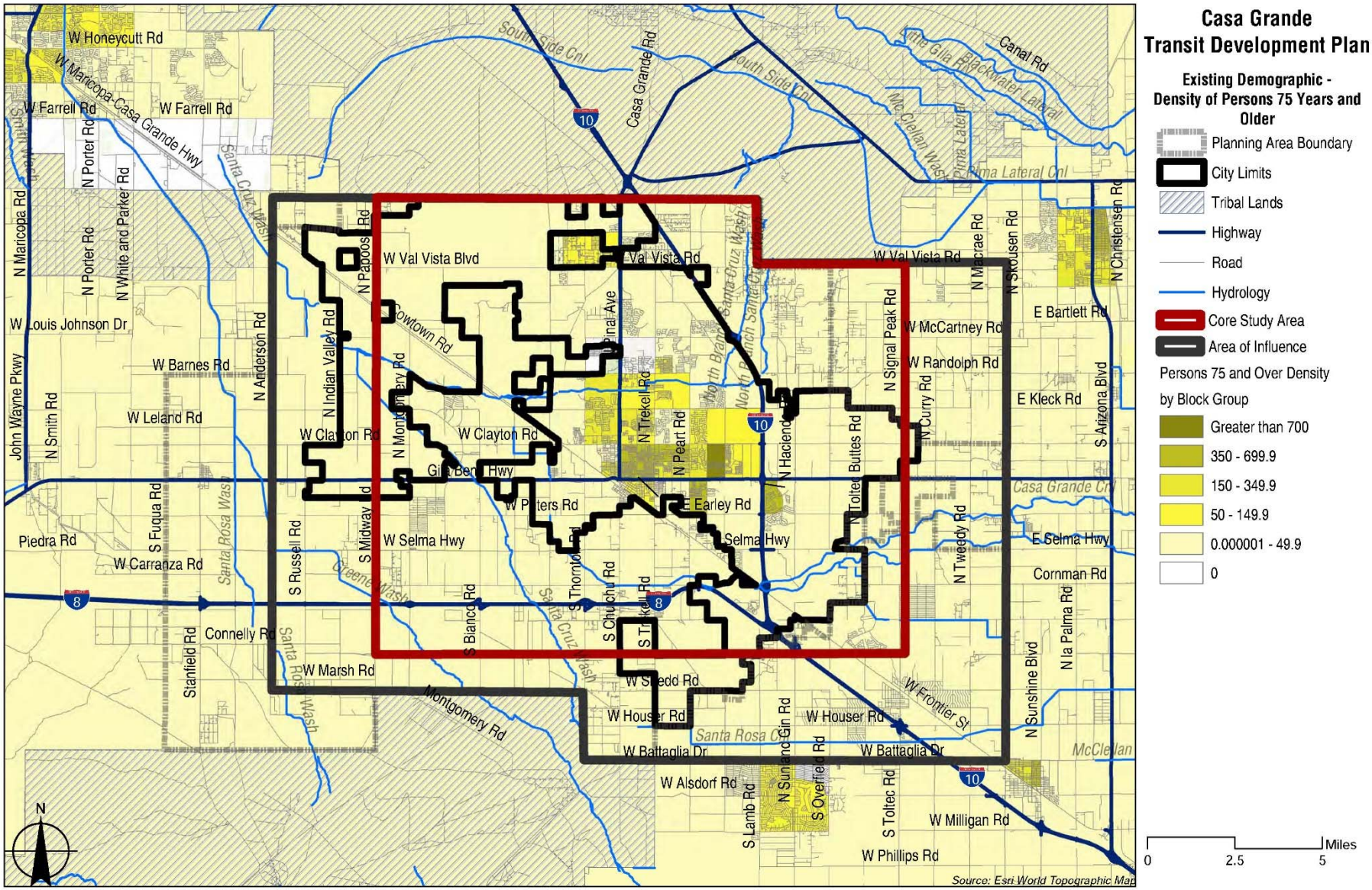


Figure 2.7 | Existing Density of Persons 75 Years and Older



Transportation Disadvantaged

Transportation disadvantaged, sometimes referred to as "transportation challenged," individuals generally are considered to be those persons unable to provide their own transportation or have difficulty accessing public transportation. Therefore, they are dependent upon others to obtain access to health care, employment, education, shopping, social activities, or other life-sustaining activities. The population of transportation disadvantaged persons consists of elderly, disabled, and low-income individuals. Arizona specifically identifies the elderly population and persons with disabilities, as well as female heads of households, as being sensitive to transportation decisions by the State and communities. Each of these groups is described in the sections that follow.

Zero or One Vehicle Households

Within the area of influence, there are households that either do not own a car or have access to just one car for the household**. Figure 2.8** displays the density of zero or one vehicle households. There is a pattern that shows a relation between the density of zero or one vehicle households and the location within the city. The relationship shows that the closer the proximity to the City center, the higher the density of households with limited access to vehicles.

Transportation to Work

In many developed cities, the need for alternative modes of transportation increases as the density of the population rises. While walking and bicycling are options, mass-transit alternatives must be functional to yield the most potential transit users. Understanding existing concentrations of people who are walking, bicycling, or using transit to get to work is a good foundation for understanding latent transit demand. **Figure 2.9** illustrates the density of persons who walk to work. The greatest concentration of persons who walk to work is located in the central city area. **Figure 2.10** illustrates the density of persons who bike to work, which reveals that the demographic is sparse and does not have a pattern within the CSA. There are two notable areas that both display a density of people who bike to work in the range of 50-99.9 per square mile; the uppermost section of southwest quadrant of Cottonwood Lane and Trekell Road, and the area within the roadway parameters of Pinal Avenue, Val Vista Boulevard, and I-10 highway. Public Transit is another option that the population of Casa Grande can use to get to work, although transit options are limited. Of the three mentioned modes of travel (walk, bike, and public transit), public transit has the least participation by residents (**Figure 2.11**).

Figure 2.8 | Existing Density of Zero or One Vehicle Households

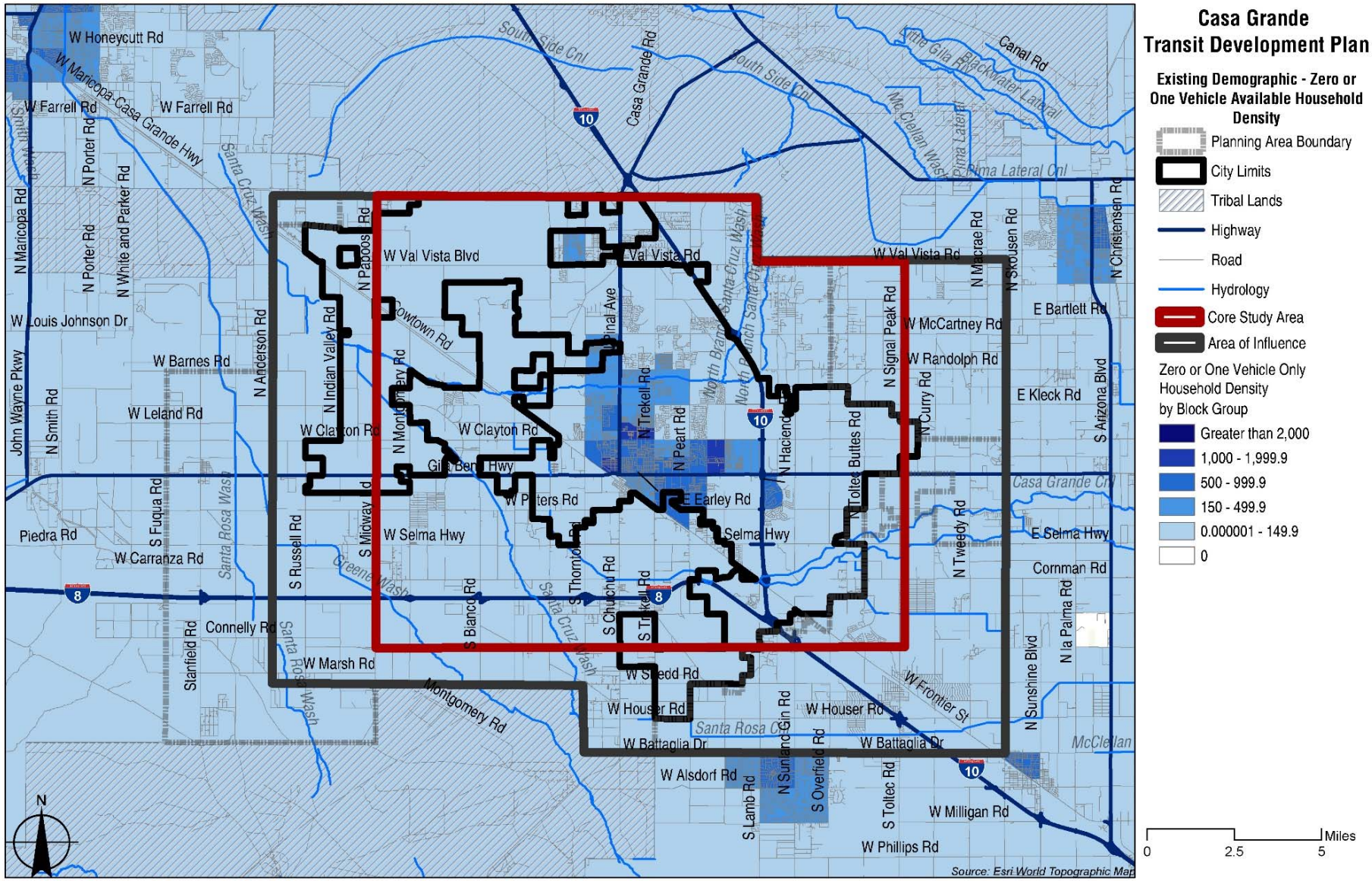


Figure 2.9 | Existing Density of Persons Who Walk to Work

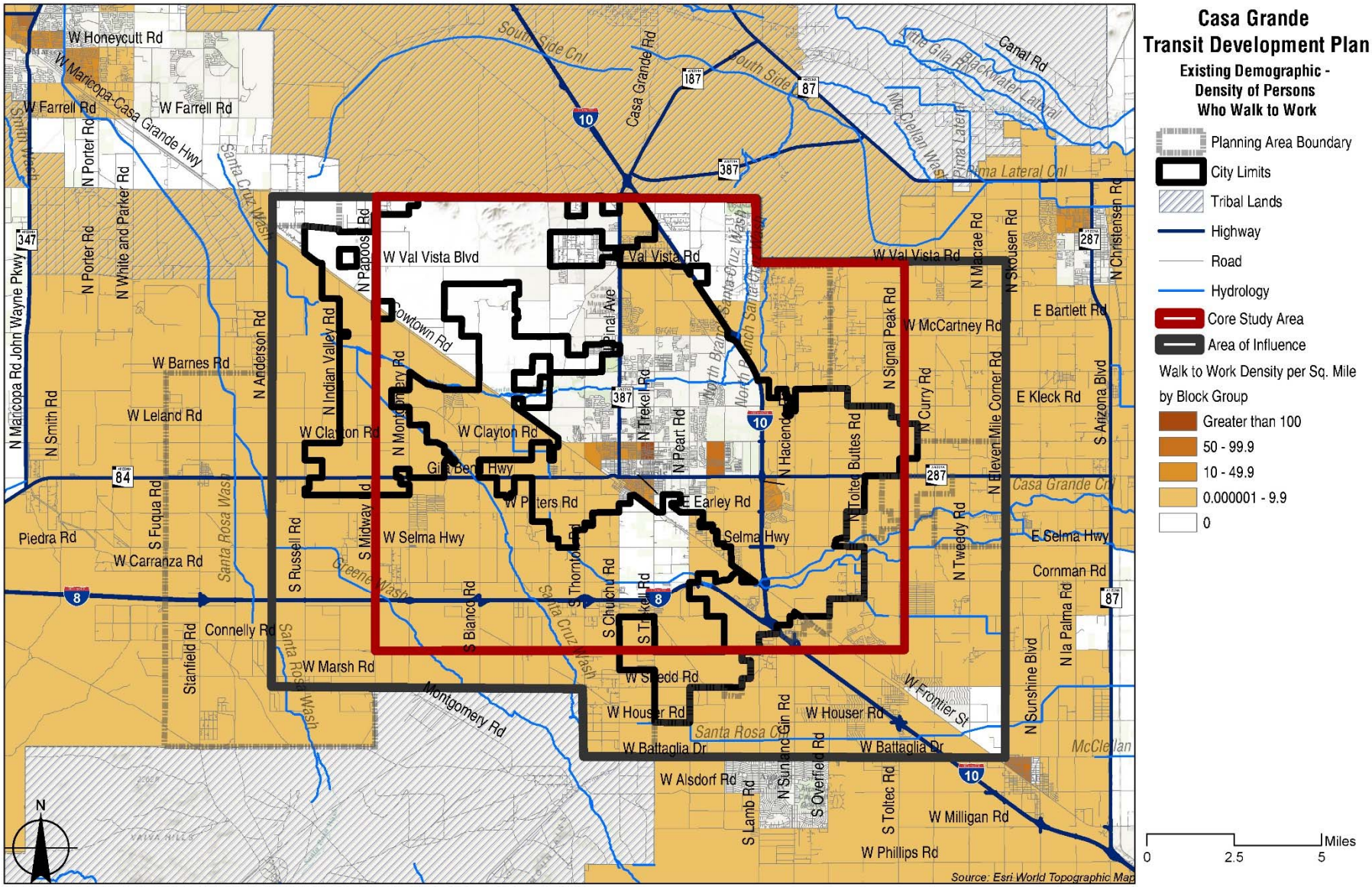


Figure 2.10 | Existing Density of Persons Who Bike to Work

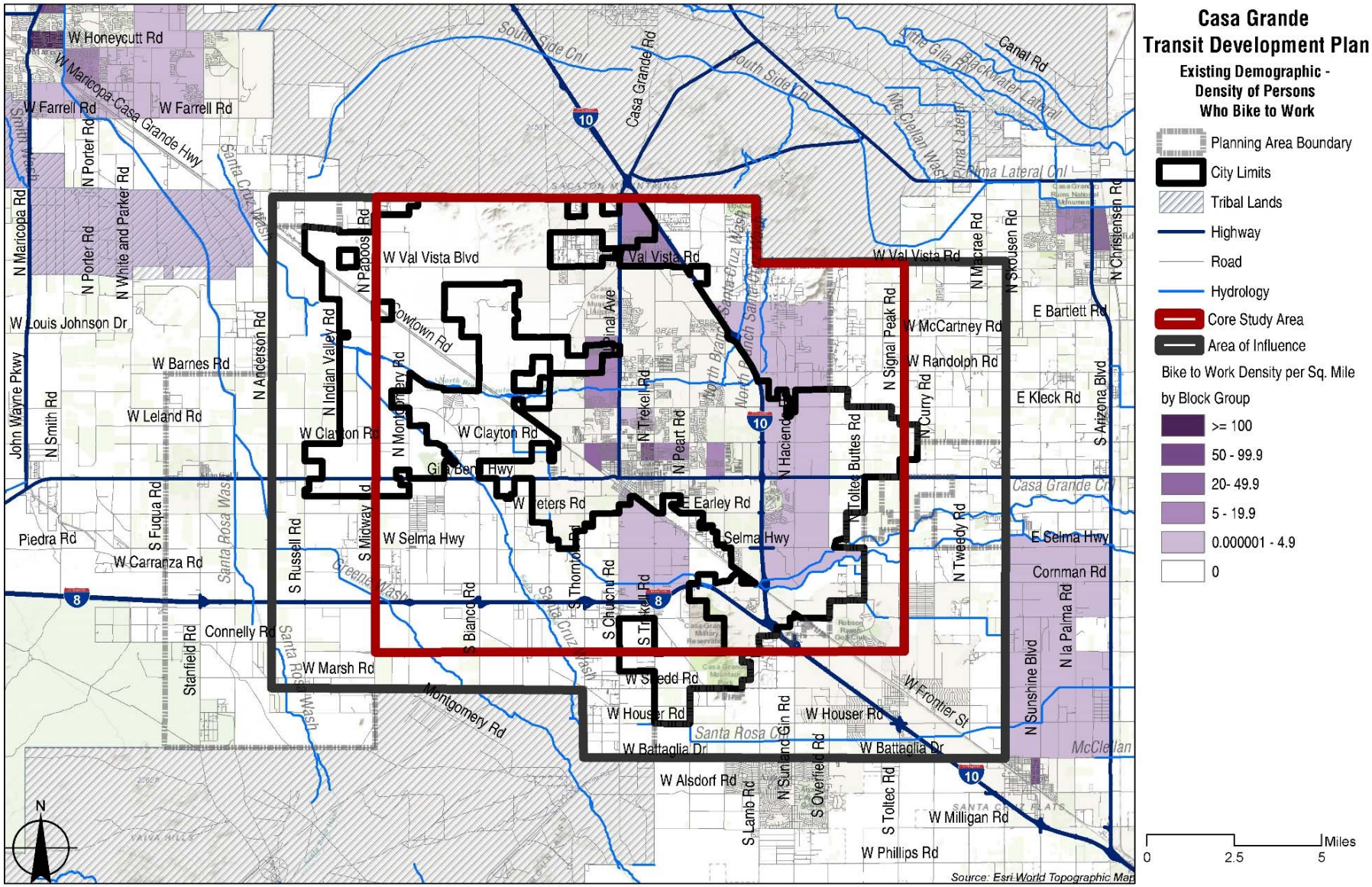
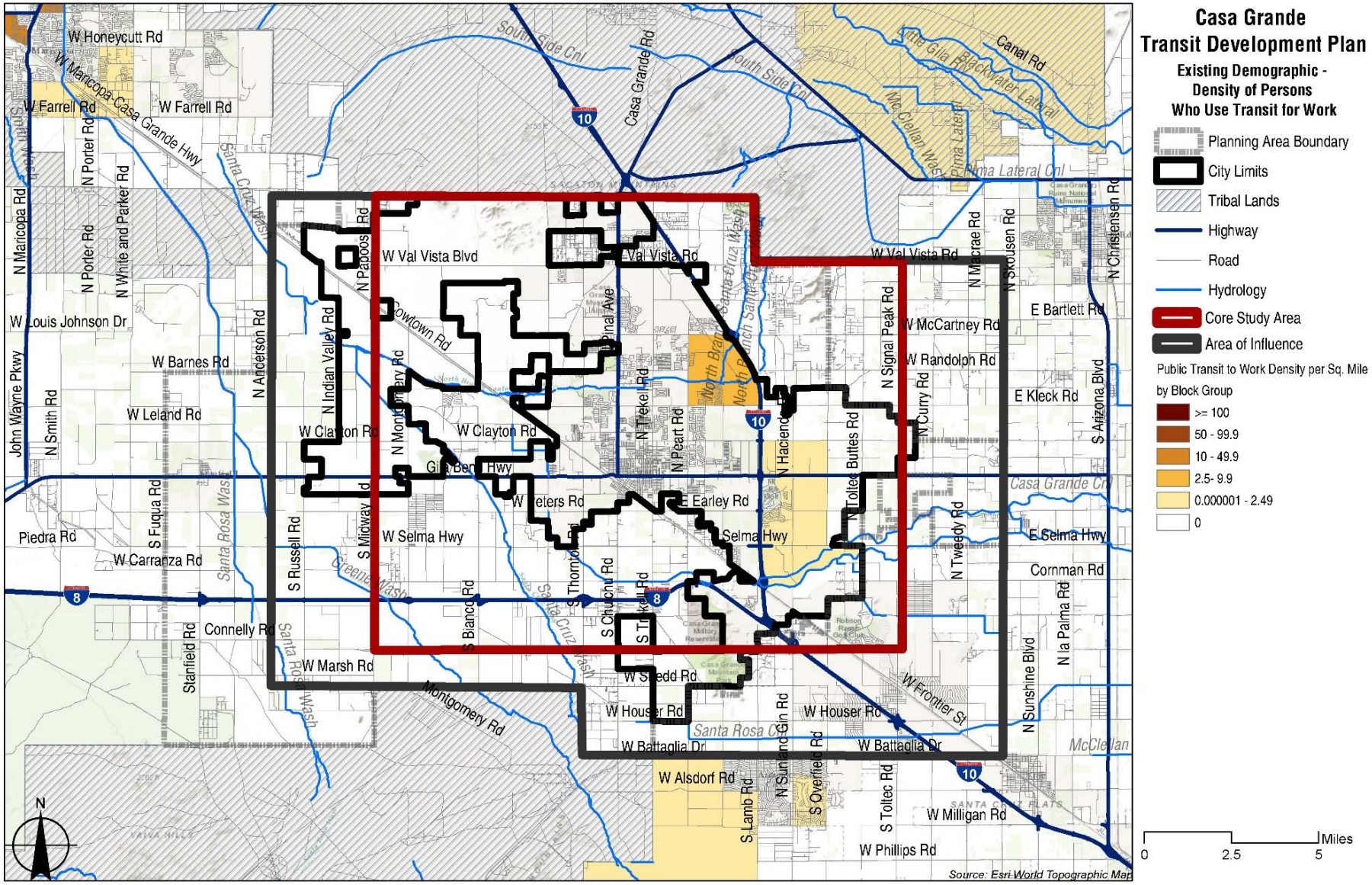


Figure 2.11 | Existing Density of Persons Who Use Transit for Work



2.1.2. Current Employment Patterns

Understanding concentrations of employment is important to understanding future transit demand destinations. Specifically, economic and labor studies have indicated that workforce participation is positively impacted by an increase in public transportation availability. Information collected from the travel demand model in the SCMPO region indicates there are 17,898 jobs within the project study area, of which 88% are within the Casa Grande city limits (**Table 2.2**).

Table 2.2 | 2015 Employment as Reported in the Travel Demand Model for the Core Study Area

	EMPLOYMENT		
Geographic Area	Casa Grande Incorporated Area	Pinal County Unincorporated Area	Total
2015	15,760	2,138	17,898
Percent	88%	12%	100%

NOTES:
Source: Maricopa Association of Governments.

Figure 2.12 displays the employment density per square mile as reported in MAG's travel demand model for the SCMPO region. **Figure 2.13** and **Table 2.3** summarize the major employers, number of employees, and employment clustering in the area. Currently in Casa Grande, the areas with the highest density of employment are located towards the center of the City and along major arterial highways. Of the 21 Major Employers (as defined by Casa Grande's Planning and Economic Development Departments), 18 are less than 2.5 miles from the intersecting SR 287 and SR 84 highways. Due to majority of the population residing in these areas, there is a direct coorelation between the population density and the employment locations. The notable areas with the highest density of all employment locations, including Major Employers, are located along Florence Boulevard from approximately Burris Road to I-10.

2.1.3. Current Land Uses and Major Destinations

Understanding community destinations is key in determining the purpose of a future transit trip. Each of these destinations typically have a strong correlation to transit use. For example, locations of civic facilities, recreational facilities, and community services are major destinations in the community. Likewise, commercial/retail establishments act as destinations in a community. **Figure 2.14** displays locations of parks and open spaces, commercial land uses, civic facilities, recreational facilities, and community services.

Casa Grande has a large amount of educational institutions spanning from pre-K to higher education institutions. Some public transit systems provide transportation services to students attending K-12 facilities and for employees of these institutions. Additionally, higher education institutions include adults who are working to expand their skillsets to grow their participation in the local economy. Higher education institutions like Central Arizona College allow students to attain traditional associates and bachelor's degrees but also to gain skills necessary for workforce development. **Figure 2.15** displays the locations of K-12 schools and higher education institutions.

Health and social services organizations are another key destination for public transit systems. These organizations often work closely with transportation disadvantaged populations. Whether it's a meeting with a doctor, a meeting to discuss affordable housing opportunities, or a meeting for workforce training and job placement, each of these organizations will be key destinations for the transportation disadvantaged population in Casa Grande. **Figure 2.16** displays the locations of health and social services organizations.

Figure 2.12 | Existing Employment Density

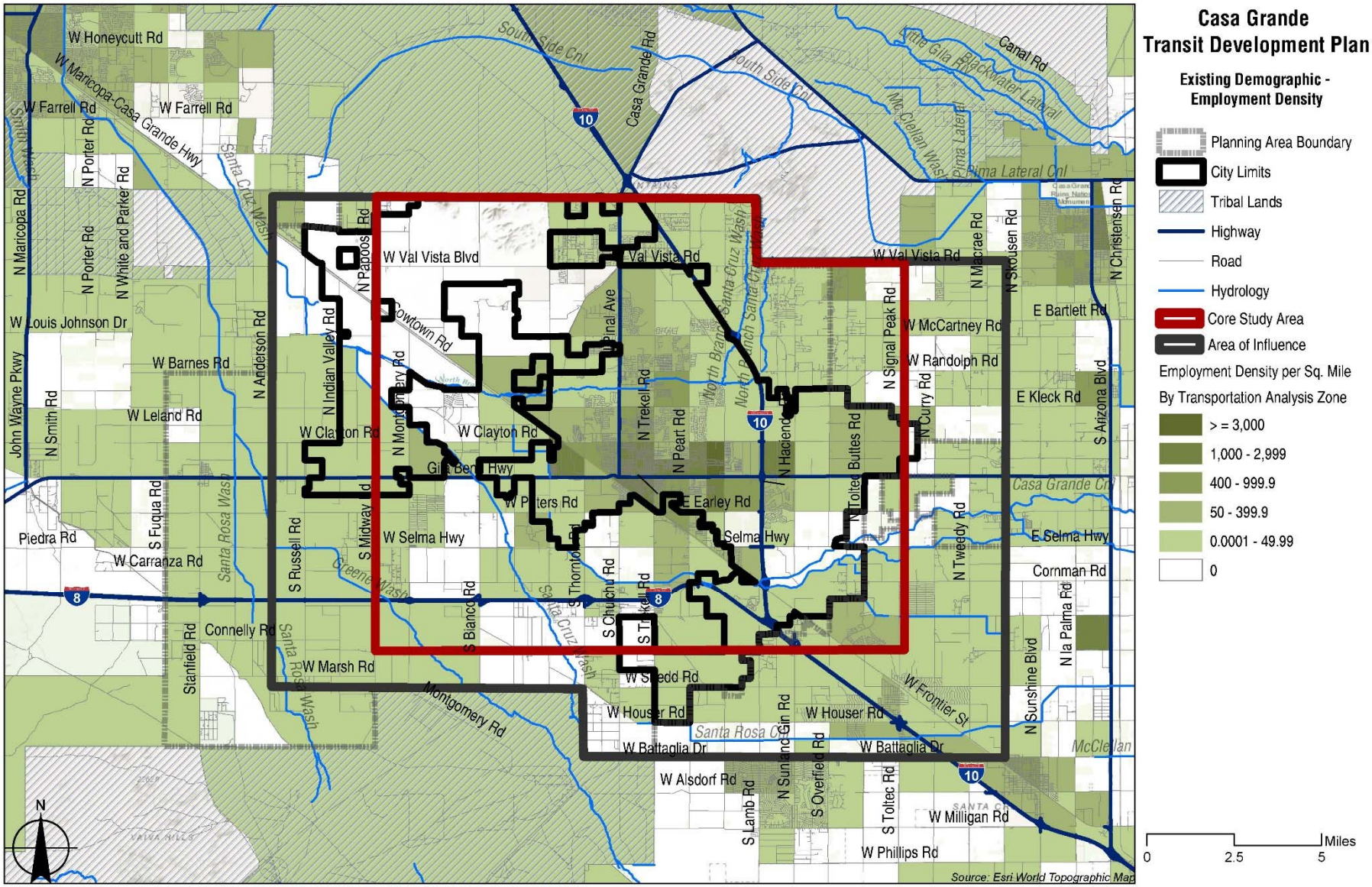


Figure 2.13 | Existing Major Employment Locations

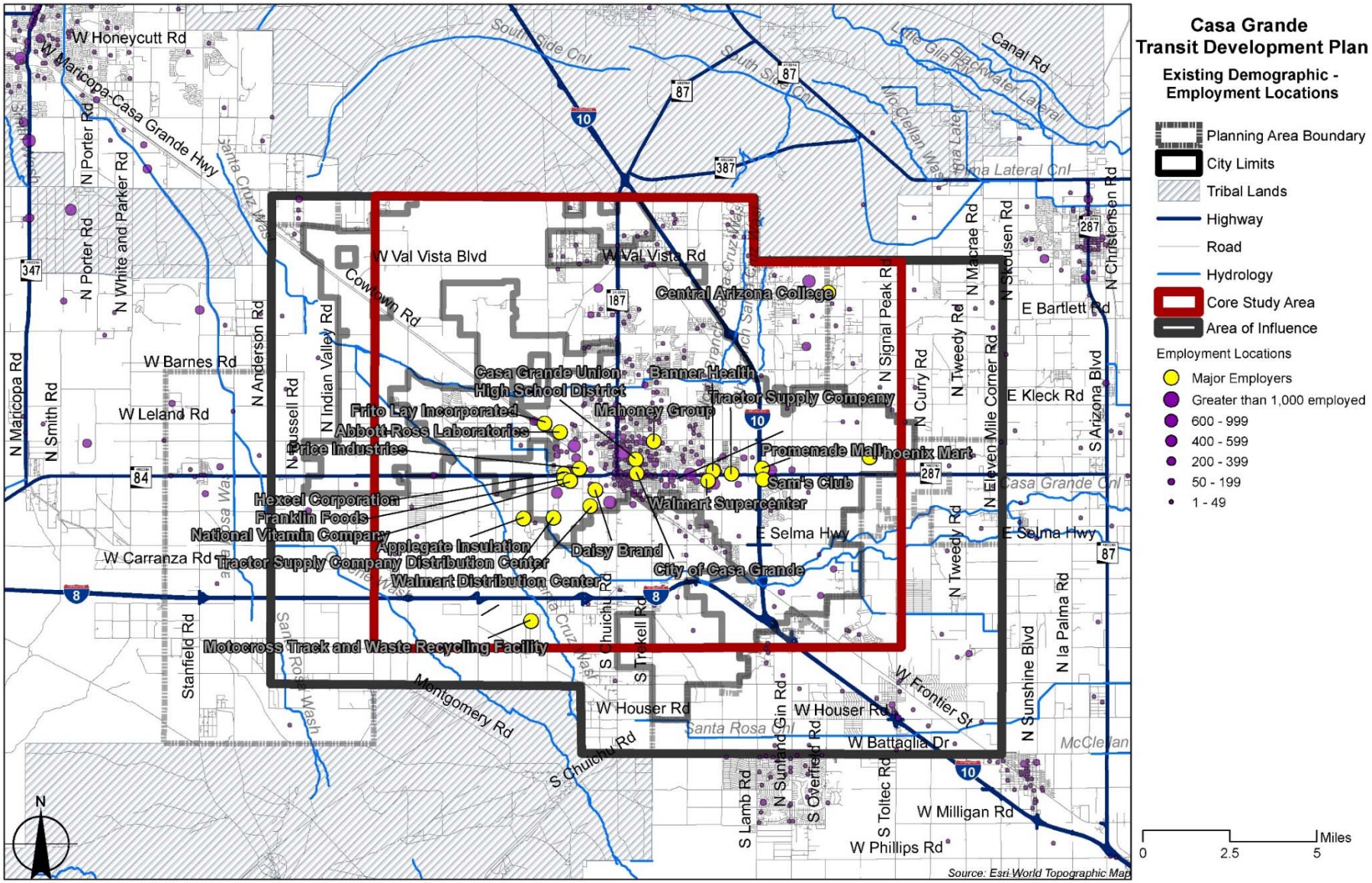


Table 2.3 | Major Employers

Company Name	# of Employees	Company Name	# of Employees
Casa Grande Elementary School District	957	Safeway	100
Banner Casa Grande Medical Center	625	Holiday Inn	99
Wal-Mart Distribution	600	Franklin Foods	65
US Customs and Border Protection	500	Monsanto	60
Abbott Ross Laboratories (Abbott Nutrition)	450	Graham Packaging	49
City of Casa Grande	433	Golden Eagle Distributing	41
Hexcel Corporation	345	ACO Polymer	40
Casa Grande Union High School District	318	Bull Moose Tube Company	27
Frito Lay	300	Cardinal IG	21
Fry's	300		
Wal-Mart Store	280		
Central Arizona College (within City)	265		
Price Industries	251		
Dillard's	200		
Pinal County	200		
National Vitamin Company	180		
Ehrmann's Arizona Dairy	150		
Lowe's	150		
Kohl's	123		
Casa Grande Valley Newspapers	118		
JC Penney	115		
Food City	100		

Figure 2.14 | Existing Major Destinations

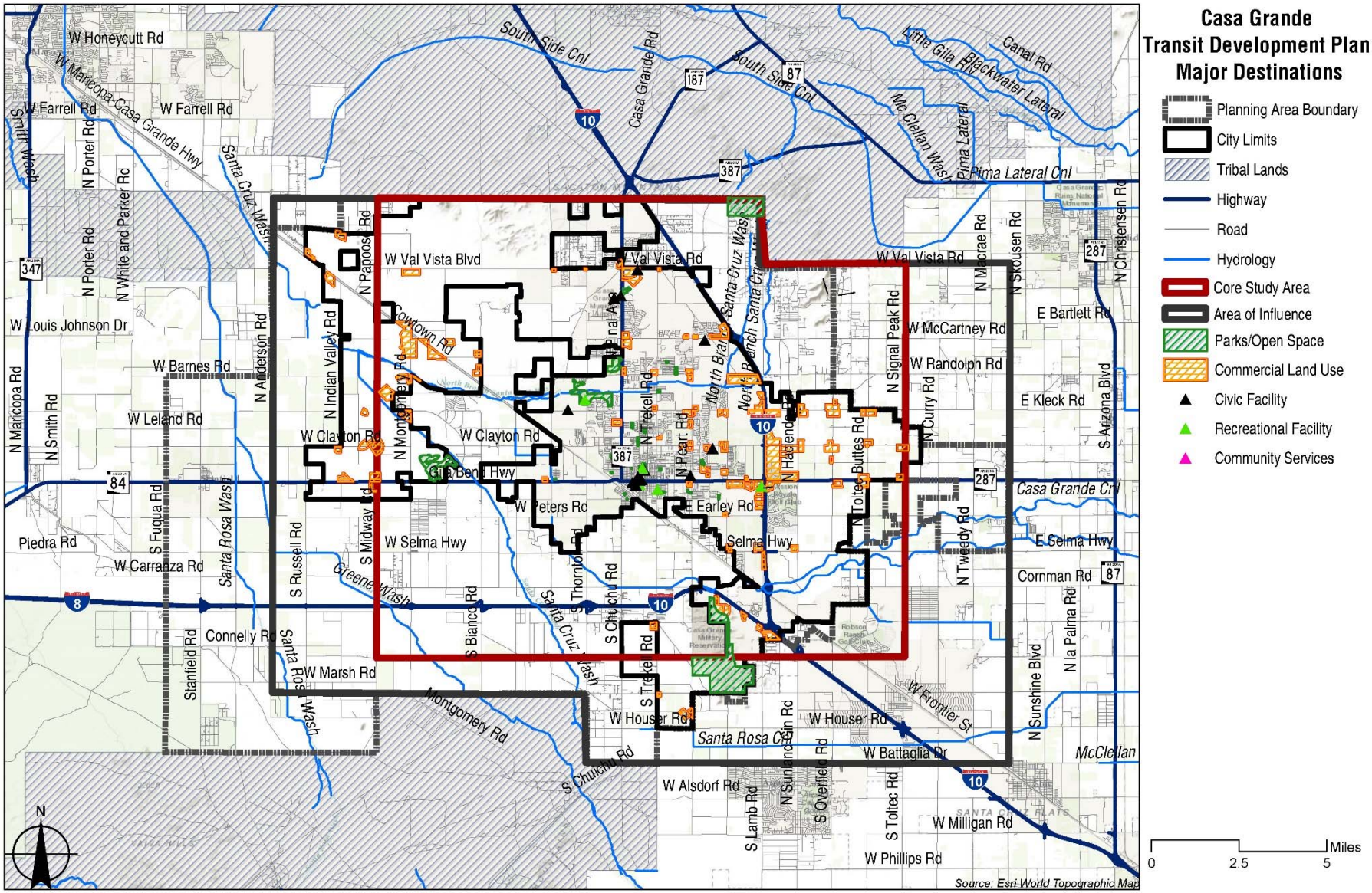


Figure 2.15 | Existing Educational Facility Locations

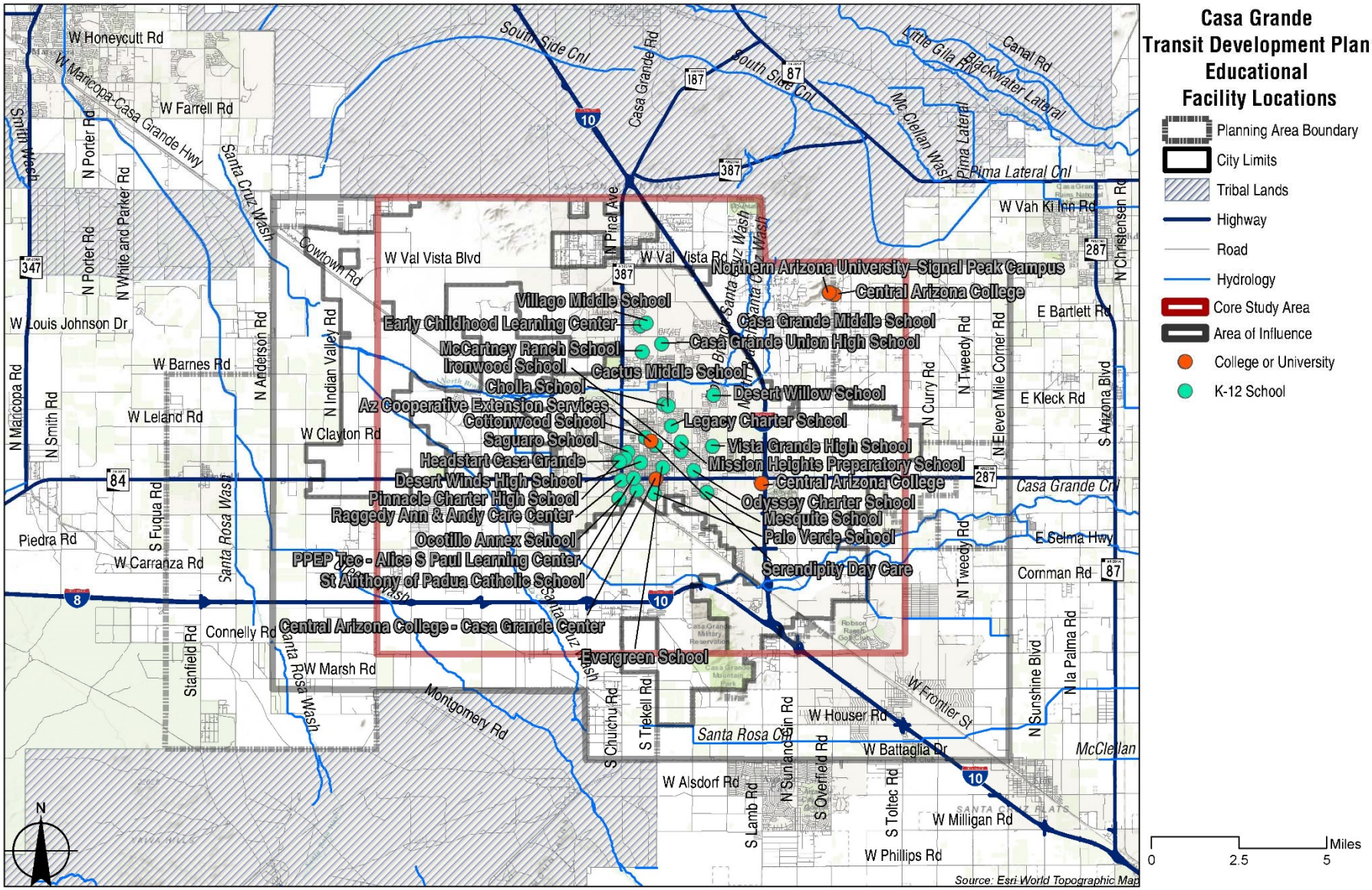
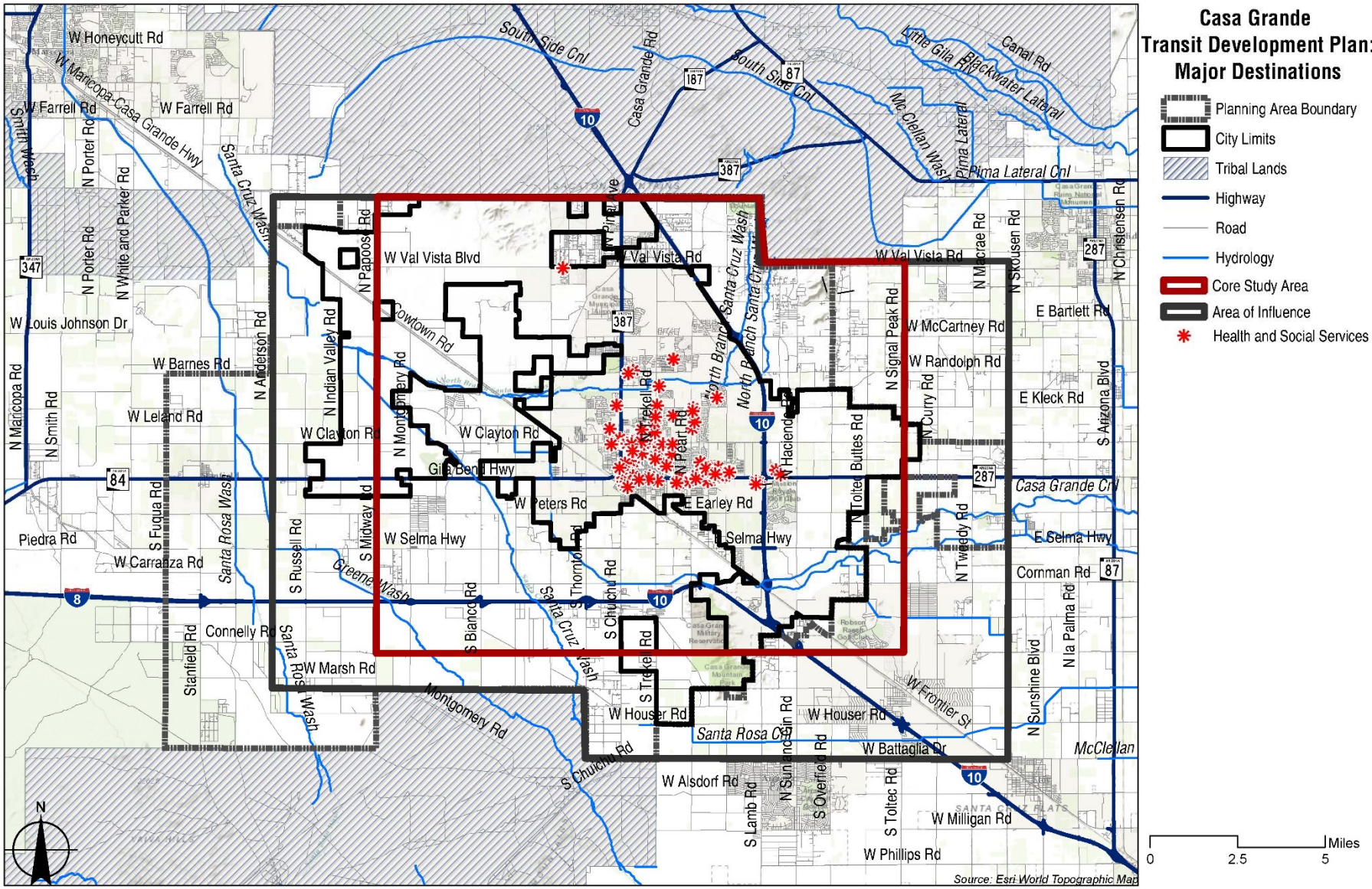


Figure 2.16 | Existing Health and Social Services Organization Locations



2.2. Future Conditions

Understanding projected changes in population and employment are important for proactive transportation planning. Locations of future population and employment concentrations allow transportation planners to determine where future investments should be made. In this section the projected population and employment changes for the Casa Grande area are examined.

2.2.1. Future Population

Casa Grande has the unique capability to grow quickly due to geographic proximity with two other major cities and connectivity to several interstate highways. Phoenix, AZ is located 45 miles to the north of Casa Grande and Tucson, AZ is located 70 miles to the south. These two cities are connected by Interstate 10 (I-10), which runs through Casa Grande and connects at a junction with Interstate 8 (I-8) just to the south of the city. Additionally, a proposed Interstate 11 (I-11) corridor and the Union Pacific Railway transcontinental corridor will further increase connectivity to Casa Grande. Casa Grande has become a full-service urbanized area with manufacturing, retail trade, government, and tourism-related employment which was spurred by affordable land, available water, public utilities, and close access to many other major metropolitan markets. **Table 2.4** summarizes the anticipated population growth for the incorporated city limits of Casa Grande as well as the area of Pinal County depicted in **Figure 2.17. Figure 2.17** shows the anticipated population growth for Casa Grande from 2015 to 2030. The population growth trend shows the growth to be north/northwest of the current population density illustrated in **Figure 2.1**. These population growth projections are aligned with the control totals in conformity with the State Demographer. The consultant team also worked with the City of Casa Grande staff to geographically distribute the population in locations where new development is anticipated to occur. In total, the area is anticipated to witness a 138% population increase between now and Year 2030.

2.2.2. Future Employment

The Sun Corridor is anticipated to grow significantly over the next 50 years. Significant employment growth is projected for this region within this TDP planning horizon (Year 2030). These employment growth projections utilized information contained in MAG's Travel Demand Model for the SCMPO region and adjusted for additional input provided by the City of Casa Grande staff. Table 2.4 summarizes the anticipated employment growth for the incorporated city limits of Casa Grande as well as the area of Pinal County depicted in **Figure 2.18**. **Figure 2.18** displays the anticipated change in employment density from Year 2015 through Year 2030. There are several areas that are projected to experience growth. In the northwest corner of Signal Peak Road and Florence Boulevard there is an expected employment growth range of 1,000 to 2,999 jobs. Also, one highly notable area that is expected to have employment growth greater than 3,000 jobs is located at the interchange of I-10 and I-8. Based on the employment projections, it appears that the trend in growth is to the south and east of the central areas. These locations also have a closer proximity to existing transit services. In total, the study area is anticipated to experience a 230% increase in jobs between now and Year 2030.

Table 2.4 | Population and Employment Change as Reported in the MAG Travel Demand Model for the Core Study Area.

	POPULATION			EMPLOYMENT		
Geographic Area	Casa Grande Incorporated Area	Pinal County Unincorporated Area	Total	Casa Grande Incorporated Area	Pinal County Unincorporated Area	Total
2015	54,181	15,671	69,852	15,760	2,138	17,898
2025	64,764	17,401	82,165	28,570	4,062	32,632
2030	77,143	18,938	96,081	36,096	4,984	41,080
Change 2015-2030	142%	121%	138%	229%	233%	230%

NOTES:
Source: Maricopa Association of Governments.

Figure 2.17 | Change in Population Density 2015-2030

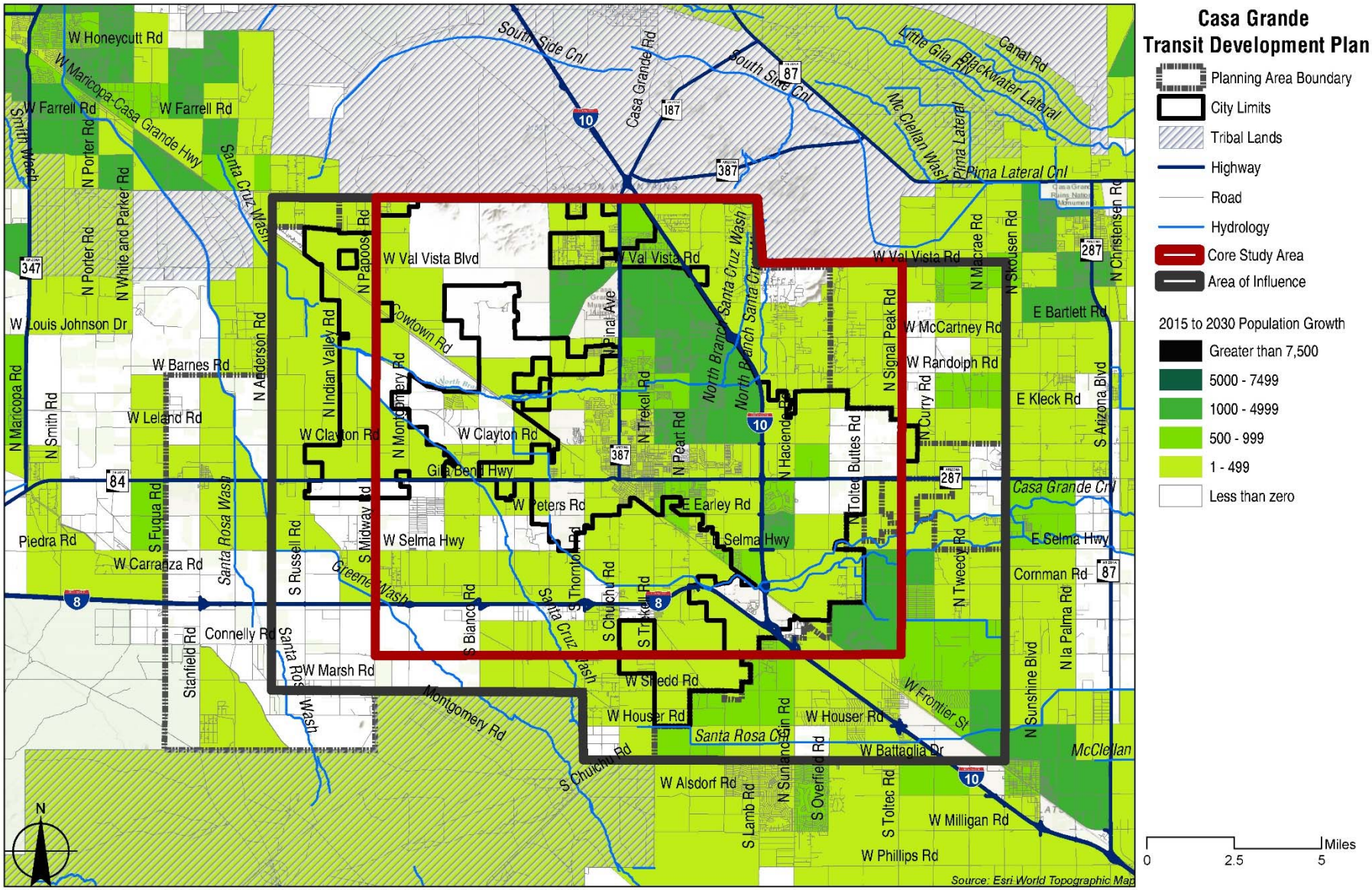
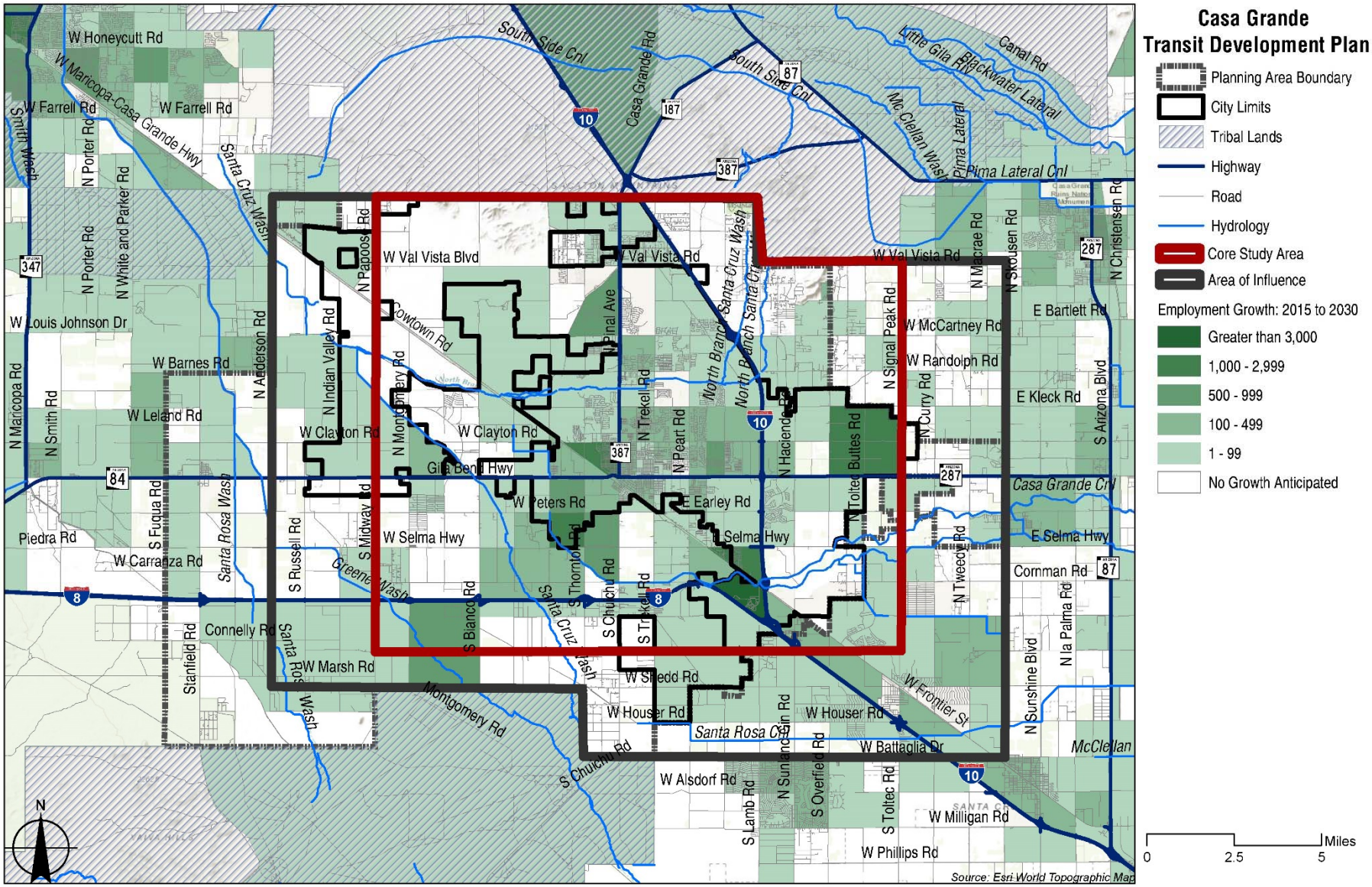


Figure 2.18 | Change in Employment Density 2015-2030



2.3. Transportation Service Providers

Within Casa Grande there is limited existing transit options for residents and visitors to make connections within the city limits. The transit service that exists today has a more regional service function and is primarily oriented to providing access to Coolidge, Florence, Maricopa, and Central Arizona College (CAC). There are numerous specialized transit service organizations that provide rides upon demand (in response to 24-hour advance reservations). This section presents information about these various transportation service providers.

2.3.1. Transit Providers

The Federal Transit Administration (FTA) has three transit funding programs that will be addressed in the Casa Grande project. Each one of the programs has a list of eligibility guidelines based on differing factors such as population, size of project, and type of project. The FTA Formula Grant Programs were defined in the SCMPO *RTP 2040* as follows:

- **Section 5311 – Rural Areas:** This program provides capital, planning, and operating assistance to states to support public transportation in rural areas with populations less than 50,000. Currently, the Cotton Express and Central Arizona Regional Transit use this funding program. See *Section 7.1.1* for descriptions of the current Section 5311 service providers in Casa Grande.
- **Section 5310 – Enhanced Mobility of Seniors and Individuals with Disabilities:** This program is intended to enhance mobility for seniors and persons with disabilities by providing funds for programs to serve the special needs of transit-dependent populations. See *Section 7.1.2* for a description of the current Section 5310 service providers in Casa Grande.
- **Section 5307 – Urbanized Areas:** This program provides grants to urbanized areas (over 50,000 population) for public transportation, capital, planning, job access, and reverse commute projects as well as operating expenses in certain circumstances. This may be a future source of transit funding in the Casa Grande area.

According to the Arizona Department of Transportation (ADOT), *MPO & COG Guidelines and Procedures Manual,* COG/MPO liaisons provide technical assistance to potential applicants and existing subrecipients receiving transit funds to assist with activities such as project planning and preparation of applications, project management and improvement, and compliance with federal requirements.

Formula Grants for Rural Areas (Section 5311)

According to the FTA website (www.fta.dot.gov), the program (49 U.S.C. 5311) provides the Formula Grants for Rural Areas which provides capital, planning, and operating assistance to states to support public transportation in rural areas with populations of less than 50,000, where many residents often rely on public transit to reach their destinations. The program also provides funding for state and national training and technical assistance through the Rural Transportation Assistance Program (RTAP). Eligible recipients include states and federally recognized Indian Tribes. Subrecipients may include state or local government authorities, nonprofit organizations, and operators of public transportation or intercity bus service. Eligible activities include planning, capital, operating, job access and reverse commute projects, and the acquisition of public transportation services. There are two 5311 public transit systems operating within Casa Grande (CART and COMET), but neither is operated by the City of Casa Grande. Each system connects the City to other communities; therefore, the services operate more as regional connectors rather than providing local service.

Central Arizona Regional Transit

The Central Arizona Regional Transit (CART) bus system is operated by the City of Coolidge. CART buses operate on Eastbound and Westbound routes, each connecting central Casa Grande with central Florence via Coolidge (**Figure 2.19**). The routing within Casa Grande and the CSA connects some major points of interest in the City to support local travel as well as the regional connection to Coolidge and Florence, including:

Westbound –

- CAC and Northern Arizona University (NAU) – Signal Peak Campus (Ovefield and Woodruff roads)
- Pinal County Government Complex (Trekell Road)
- Greyhound Bus Station

Eastbound –

- Banner Casa Grande Medical Center (Florence Boulevard)
- CAC Satellite Campus (Camino Mercado and Florence Boulevard)
- Promenade Shopping Center (Florence Boulevard)

The CART regional route service stops at five designated bus stops in Casa Grande (Figure 2.19). Additionally, arrangements can be made in advance through a central dispatch operation to have a bus stop on the route at a location not designated as a bus stop. As displayed in Table 2.5

Table 2.5, travel time between Casa Grande and Florence is approximately 2.5 hours, so the time between buses (i.e., scheduled headway) ranges between two and three hours. Another branch of the CART bus system, called Cotton Express, is both a Deviated Fixed Route and On Demand service currently operating only in the City of Coolidge.

Cotton Express

In the City of Coolidge, Cotton Express is a bus system that provides a deviated fixed route and DR option for commuters who need assistance with their transportation efforts. Prospective passengers must make reservations through dispatch 24 hours in advance in order for the bus to deviate off of the original route. The bus drivers are trained to assist passengers and the busses are accessible to those in need of a deploy ramp for wheelchairs. There is a Red and Blue Route currently, and deviated services are provided Monday through Friday from 7:00 am to 5:00 pm. Passengers are expected to be at the bus stops 5 minutes prior to the scheduled times on fixed routes, and there is a separate fare charge for Demand Response and Deviated Routes.

City of Maricopa Express Transit

The City of Maricopa Express Transit (COMET) bus service operates in several different modes. This fixed-route system operates primarily through the neighborhoods within the City of Maricopa. The service operates on a route deviation basis, allowing vehicle operators to deviate up to one-quarter mile from the fixed route to pick-up/drop-off a rider unable to get to one of the eleven scheduled bus stops. The route deviation service operates in a circular pattern around the core of the city, servicing city business and agencies, as well providing a bus stop at Ak-Chin Casino/UltraStar. Buses circulate on one-hour headways, making three trips, in the morning (7:00 am – 10:00 am) and three in the afternoon (2:00 pm – 5:00 pm). Scheduling and stops for this limited, fixed route service with route deviation is presented in **Table 2.6**.

Figure 2.19 | CART Existing Transit Fixed Route Service

Table 2.5 | CART Schedule

CART Schedule

Times posted in this schedule are estimates only, please arrive at least 5 minutes before these estimated times to ensure you will not miss your boarding.

WESTBOUND ROUTE							AM Commuter		PM Commuter		
Florence Pool / City Complex	-	7:17	10:27	1:35	4:37	7:41	-	6:46	-	5:09	-
Pinal County Complex-Florence	-	7:20	10:30	1:37	4:39	7:43	-	6:48	-	5:11	-
Adamsville Rd @ Main St	-	7:26	10:36	1:44	4:46	7:46	-	6:51	-	5:14	-
Transit Terminal	5:15	7:50	11:00	2:08	5:10	8:15	5:05	7:07	-	5:30	7:09
Martin Valley	5:27	8:10	11:10	2:18	5:20	-	5:15	-	-	5:40	6:57
Central Arizona College	5:35	8:15	11:20	2:33	5:35	-	5:21	-	-	5:46	6:50
Kortsen Rd/Trekell Rd (Greyhound Stop)	5:45	8:35	11:45	2:53	5:55	-	5:31	-	-	-	6:35
Pinal County Complex-Casa Grande	5:50	8:59	12:09	3:17	6:19	-	5:35	-	-	-	6:27
Florence Blvd/Trekell Rd	5:57	9:08	12:18	3:26	6:28	-	5:40	-	-	-	6:20

EASTBOUND ROUTE							AM Commuter		PM Commuter	
Banner Casa Grande Medical Center	6:05	9:13	12:28	3:35	6:34	-	5:50	-	-	6:08
Promenade Mall	6:15	9:23	12:33	3:45	6:44	-	5:55	-	-	6:01
Central Arizona College	6:25	9:35	12:43	3:55	6:54	-	6:10	-	-	-
Martin Valley	6:30	9:40	12:48	4:06	6:59	-	6:14	-	-	-
Transit Terminal	6:48	9:58	1:06	4:18	7:11	-	6:20	-	4:25	-
Stewart St / Orlando St	7:09	10:18	1:27	4:29	7:33	-	6:38	-	4:43	-
Pinal County Courts-Florence	7:13	10:22	1:31	4:33	7:37	-	6:42	-	5:05	-

NOTES: Source: Central Arizona Regional Transit (CART).

Table 2.6 | COMET Route Deviation Service Schedule

AM Stop Locations	AM Trip #1	AM Trip #2	AM Trip #3
Fry's	7:00	8:00	9:00
Basha's	7:03	8:03	9:03
Pinal County Public Health Clinic / Library	7:10 / 7:11	8:10 / 8:11	8:10 / 8:11
Legacy School	7:15	8:15	9:15
Central AZ College	7:20	8:20	9:20
Walmart	7:30	8:30	9:30
Harrah's Ak-Chin Casino / UltraStar Multitainment Center	7:40	8:40	9:40
Copper Sky Rec Center	7:50	8:50	9:50
Sun Life Medical	7:51	8:51	9:51
COPA Senior Center	7:55	8:55	9:55
Sun Life Woman's Center	7:56	8:56	9:56

PM Stop Locations	PM Trip #1	PM Trip #2	PM Trip #3
Fry's	2:00	3:00	4:00
Basha's	2:03	3:03	4:03
Pinal County Public Health Clinic / Library	2:10 / 2:11	3:10 / 3:11	4:10 / 4:11
Legacy School	2:15	3:15	4:15
Central AZ College	2:20	3:20	4:20
Walmart	2:30	3:30	4:30
Harrah's Ak-Chin Casino / UltraStar Multitainment Center	2:40	3:40	4:40
Copper Sky Rec Center	2:50	3:50	4:50
Sun Life Medical	2:51	3:51	4:51
COPA Senior Center	2:55	3:55	4:55
Sun Life Woman's Center	2:56	3:56	4:56

NOTES: Source: Local Transportation, City of Maricopa Express Transit (COMET), City of Maricopa, Retrieved 01/29/17.

The COMET system also operates scheduled, reservation-based regional transit services to Casa Grande and Chandler. Although this service technically is a Demand Response (DR) service, this round-trip, or circulator, is scheduled for operation from 9:00 am to 5:00 pm every Tuesday with service to Chandler Regional Hospital and every Thursday to Banner Casa Grande Medical Center and any point within a five-mile radius of the facility. The additional service option makes all locations noted above for the CART system accessible. Although it is reservation-based, the flexibility of the service to provide access to other points within five miles makes the Banner Casa Grande Medical Center location available for connection to the CART and provides an opportunity for Maricopa residents to access the County seat, Florence, and any County functions not otherwise available at the County Government complex in Casa Grande on Cottonwood Lane. Additionally, the Chandler Regional Hospital is serviced by Valley Metro Route 96, thus allowing connection to the Valley Metro transit system. One-hour service headways on this regional circulator require riders to plan carefully to ensure they can make a trip and accomplish their mission within the scheduled pick up times. COMET bus service operates in several different modes. The Demand Response (DR) modes operate as Local, Local-Limited, and Regional services. The Regional DR mode was discussed in the previous section, as it provides a service beyond the traditional definition for DR services, which usually are oriented to special needs individuals, direct pick-up/drop-off at place of residence, and access to nearby community resources. The Local COMET DR service is reservation-based and operates anywhere within the City of Maricopa. This is a curbside service that operates 9:00 am to 5:00 pm Monday, Wednesday, and Friday. The Local-Limited COMET DR service, also reservation-based, is offered between 9:30 am and 1:30 pm on the alternate days – Tuesday and Thursday. Service is provided in the same manner as the Local COMET DR operations.

2.3.2. Enhanced Mobility of Seniors and Individuals with Disabilities (5310)

According to the FTA website (www.fta.dot.gov), this program (49 U.S.C. 5310) provides formula funding to states for the purpose of assisting private nonprofit groups in meeting the transportation needs of older adults and people with disabilities when the transportation service provided is unavailable, insufficient, or inappropriate to meeting these needs. Funds are apportioned based on each state's share of the population for these two groups. The program aims to improve mobility for seniors and individuals with disabilities by removing barriers to transportation service and expanding transportation mobility options. This program supports transportation services planned, designed, and carried out to meet the special transportation needs of seniors and individuals with disabilities in all areas – large urbanized (over 200,000), small urbanized (50,000-200,000), and rural (under 50,000). There are specialized transit providers which serve the Casa Grande area that are branches of the above program. These providers include Horizon Human

Services, Gila River Indian Community, Pinal County – On-The-Go Express, Cenpatico, Pinal-Gila Council for Senior Citizens, Dorothy Powell Senior Center, Pinal Hispanic Council, Eloy Senior Center, Toltec Community Center and Senior Center, Achieve Health Services, and Against Abuse.

2.4. Other Transportation Service Providers

There are several non-traditional, but convenient transit services available in Casa Grande that assist with the transportation needs of residents. These transportation options serve people who need assistance due to their social, financial, and/or physical situations.

2.4.1. Ride-Hail/Ride-Share

Due to the growing population and demand for more transit options in Casa Grande, companies that offer transit services have begun to become more popular. The traditional "ride-hail" system refers to taxicab and some shuttle services. "Ride-hail" would be used by a customer who can obtain a taxi/shuttle-bus by "hailing" or flagging-down the prospective vehicle while the vehicle is driving. **Table 2.7** provides a list of taxi/shuttle transit services available in the Casa Grande area.

Table 2.7 | Taxi/Shuttle Transit Services Available in Casa Grande

Taxi/Shuttle Provider		
Budget Airport Transportation	Metropolitan Shuttle	Casa Grande VIP & Shuttle
A-1 Airport Shuttle	Platinum Ride Limousines	Grande Express Transportation
Central Arizona Transport Shuttle	US Coachways	Arizona Corporate Coach
$55 to Airport TEXT & GO	Price 4 Limo & Party Bus	Arrow Stage Lines
Ridesaver	Superior Transportation Group	Empire Charters
Del Ray Transportation	El Paso-Los Angeles Limousine Express Inc.	Arizona Motor Coach
Goldstar Executive Transportation Services	Tour West America	Divine Transportation
Need A Ride AZ	Carey/Phoenix Limousine	First Transit
CATS	Greyhound Bus Lines	All Aboard America

NOTES: Source: Sun Corridor Metropolitan Planning Organization.

"Ride-share" refers to companies like Uber and Lyft that allow the customer to use a cell phone application to call for a ride and the vehicle will use GPS coordinates to locate the customer. Uber and Lyft are "ride-share" services available in Casa Grande. Uber currently has a limited number of drivers which means there are times when the option to use Uber is not available to people who are in need of a ride. According to the Lyft website, Casa Grande is now able to use services as they are included in the Phoenix area parameter. It is anticipated that as the population grows in Casa Grande, so will the number of Uber and Lyft drivers

2.4.2. Private Neighborhood Operators

Retirement communities often offer assistance with transportation for their residents. For instance, the Garnet of Casa Grande community provides a weekly bus shuttle service from 7:00 am to 8:00 pm that assists residents with travel to doctor appointments on Mondays, Tuesdays and Thursdays; while also providing shopping and recreation options on Wednesdays and Fridays. The same shuttle service also provides Sunday church transport. The cost of these services is included in the monthly rent of residents. If the resident of the retirement center wishes to travel outside the selected timeframes, they would be responsible for getting their own means of transportation. Refer to **Figure 2.8** for the list of retirement communities that have private transportation services for their residents.

Table 2.8 | Retirement Communities with Private Transit

Retirement Community		
Garnet of Casa Grande	**Caliche Senior Living**	**Kachina Apartments**
Villas By Mary T	**Cypress Point Retirement Community**	

NOTES: Source: Sun Corridor Metropolitan Planning Organization.

2.5. Transit Demand

Compiling information provided in previous sections, a Transit Demand Model (TDM) was developed to better understand where there is latent demand for transit use in the community. Appropriately prioritizing where people are most likely to use transit is an effective way to prioritize implementation and funding. Over the last decade, many communities have adopted computer-based analytical procedures to determine locations with low and high transit trip capabilities. This model is designed to identify locations with a latent demand for transit use by analyzing the overlap between infrastructure, land use types, and population information. Due to the changing characteristics in the area, three separate TDMs were developed, one under current conditions (Year 2015) and two under future conditions (Year 2025 and 2030). Each of these models is further described in the sections that follow.

2.5.1. Current Conditions - Transit Demand Model

The TDM combines a trip attractor submodel with a trip generator submodel. The attractor submodel identifies destinations within the study area that are primary destinations for transit activity. The generator submodel identifies areas where socioeconomic characteristics indicate the population is more likely to use transit. The attractor and generator submodels visually display the information about active travel origins and destinations to allow the identification of potential linkages for transit facilities within the Study Area.

Table 2.9 and **Table 2.10** present the trip attractor and trip generator inputs used to generate the TDM, as well as the primary data source for each input. The categories for each input receive a score on a point ranking system based on previous research and discussion between the project team, TTAC members, and City staff. Listed in **Table 2.9**, trip attractors are defined as a given area or feature that are inclined to attract transit trips. Listed in **Table 2.10**, trip generators are defined in terms of population groups and employment types anticipated to generate transit.

Table 2.9 | Attractor Submodel Input Sources

Model Input	Source
K-12 Schools	City of Casa Grande GIS
Parks and Recreational	City of Casa Grande GIS
Commercial Destinations	City of Casa Grande GIS
Civic Facilities	City of Casa Grande GIS
Higher Education	City of Casa Grande GIS
Health Services	City of Casa Grande GIS
Transit Stops	Wilson & Company
Major Employers	City of Casa Grande GIS and U.S. Census On The Map

NOTES: Source: Wilson & Company, Inc. Engineers & Architects

Table 2.10 | Generator Submodel Input Sources

Model Input	Source
Population Density	Maricopa Association of Governments Travel Demand Model
Employment Density	Maricopa Association of Governments Travel Demand Model
Walk Mode Density by Block Group	2015 ACS 5-Year Estimates Table B08301 (American Fact Finder) joined to Block Group shapefile (TIGER/Line)
Bike Mode Density by Block Group	2015 ACS 5-Year Estimates Table B08301 (American Fact Finder) joined to Block Group shapefile (TIGER/Line)
Transit Mode Density by Block Group	2015 ACS 5-Year Estimates Table B01003 (American Fact Finder) joined to Block Group shapefile (TIGER/Line)
Density of Children (17 and Under) per Acre by Block Group	2015 ACS 5-Year Estimates Table B01001 (American Fact Finder) joined to Block Group shapefile (TIGER/Line)
Density of Seniors (65 and older) per Acre by Block Group	2015 ACS 5-Year Estimates Table B01001 (American Fact Finder) joined to Block Group shapefile (TIGER/Line)
Median Household Income by Block Group	2015 ACS 5-Year Estimates Table B19013 (American Fact Finder) joined to Block Group shapefile (TIGER/Line)
Density of People with Disability per Acre by Block Group	2015 ACS 5-Year Estimates Table B22010 (American Fact Finder) joined to Block Group shapefile (TIGER/Line)
Density of Zero and One-Vehicle Households by Block Group	2015 ACS 5-Year Estimates Table B25044 (American Fact Finder) joined to Block Group shapefile (TIGER/Line)

NOTES: Source: Wilson & Company, Inc. Engineers & Architects

Each of the data sets listed in **Table 2.9** and **Table 2.10** were geospatially mapped. A score was assigned based upon distance from attractors. **Table 2.11** displays the trip attractor inputs with the associated distance-based point values for each of the inputs. Locations within a closer proximity to the trip attractor are assigned a higher point value because more people are likely to walk or bike 1/8 of a mile compared to 1/2 of a mile. **Table 2.12** shows the trip generator inputs which are divided into three different categories and ranked on a point system based on the level of effect on transit trips.

Table 2.11 | Attractor Submodel Scoring

Attractor	Points				
Distance to Attractor	**1/8 Mile**	**1/4 Mile**	**1/3 Mile**	**1/2 Mile**	**Weight**
K-12 Schools	4	3	2	1	1
Parks and Recreational	4	3	2	1	1
Commercial Destinations	4	3	2	1	2
Civic Facilities	4	3	2	1	3
Higher Education	4	3	2	1	4
Health Services	4	3	2	1	4
Transit Stops	4	3	2	1	4
Major Employers	4	3	2	1	4

NOTES: Source: Wilson & Company, Inc. Engineers & Architects

Table 2.12 | Generator Submodel Scoring

Category	Inputs	Point Values			Weight
		Min	Mean	Max	
Population	Population Density	1	2	3	**2**
	17 and Younger Density	1	2	3	1
	65 and Older Density	1	2	3	**2**
	Disability Density	1	2	3	**2**
Employment	Median Household Income	1	2	3	**2**
	Employment Density	1	2	3	**2**
Transportation	Zero Vehicle Households Density	1	2	3	**2**
	Walk Mode Density	1	2	3	**2**
	Bike Mode Density	1	2	3	**2**
	Transit Mode Density	1	2	3	**2**

NOTES: Source: Wilson & Company, Inc. Engineers & Architects

Current Transit Demand Model Results

Figure 2.20 displays the attractor submodel results, illustrating the locations within the study area inclined to attract or act as destinations for transit trips. Areas adjacent and north of Highway 287 (Florence Boulevard), in between Highway 387 (Pinal Avenue) and I-10 show the highest likelihood to attract trips made by transit.

Figure 2.21 displays the generator submodel results, identifying locations prone to generate or act as origins for transit trips. Transit trips are most likely to be generated in the more populated central area of the City and radiating outward from the major highways within Casa Grande; north of Highway 287 (Florence Boulevard), east of Highway 387 (Pinal Avenue) and west of I-10. **Figure 2.21** also shows more of the area within Casa Grande is prone to generate transit trips in comparison to **Figure 8.1** that display areas inclined to attract transit users.

The Transit Demand Model shown in **Figure 2.22** is a composite map combining the trip attractors and generators submodel. Areas in red and purple indicate the highest latent demand for transit use. The results of the Current Conditions TDM indicate there is latent transit demand along Florence Boulevard (from Burris Road to Hacienda Road) and Pinal Avenue (from the northern city limits to Peters Road) Additionally, latent transit demand is present in an approximately 35 square mile area between McCartney Road and Peters Road and Burris Road and I-10.

Figure 2.20 | Current Conditions - Transit Demand Attractor Submodel

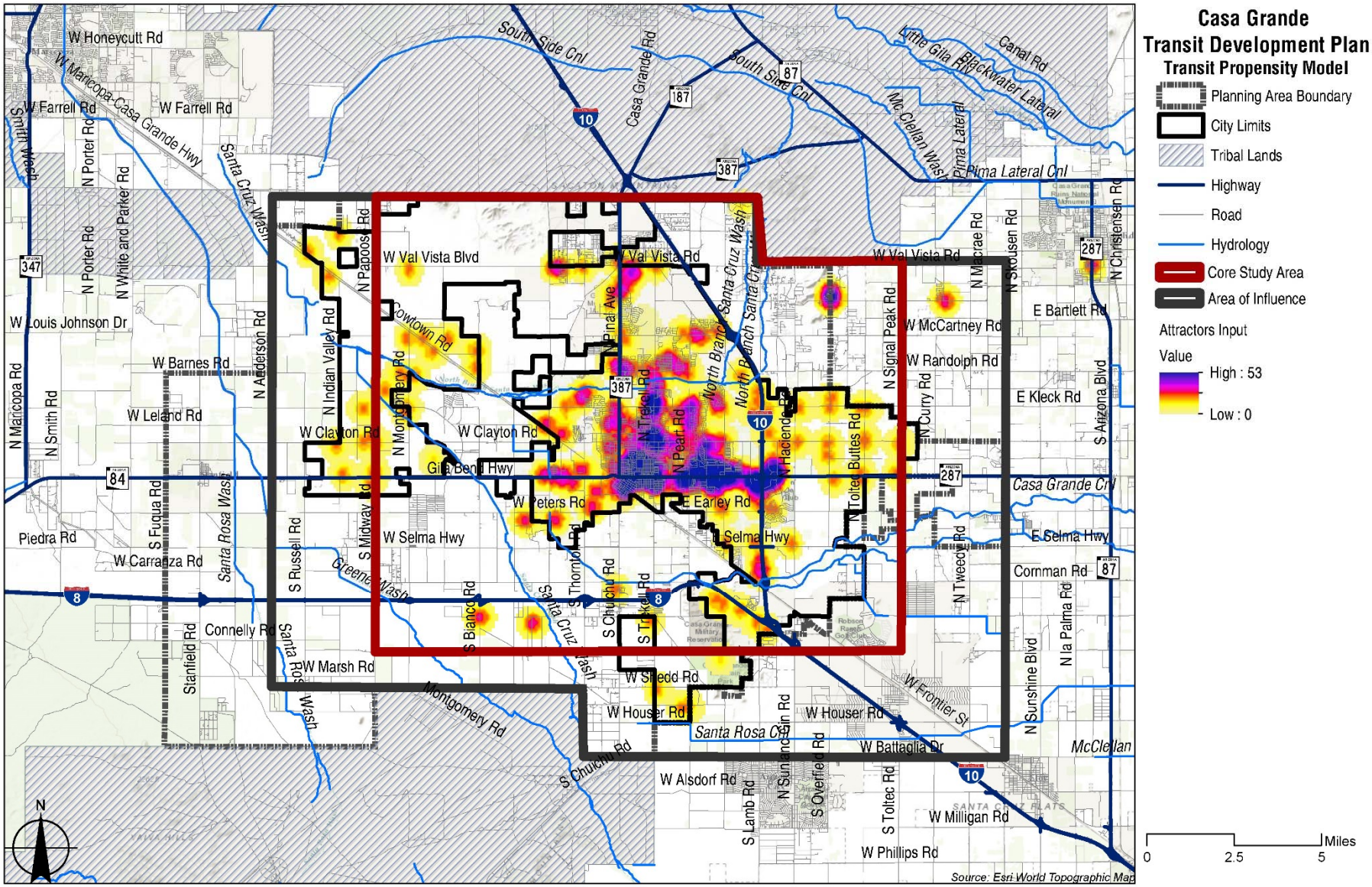


Figure 2.21 | Current Conditions - Transit Demand Generator Submodel

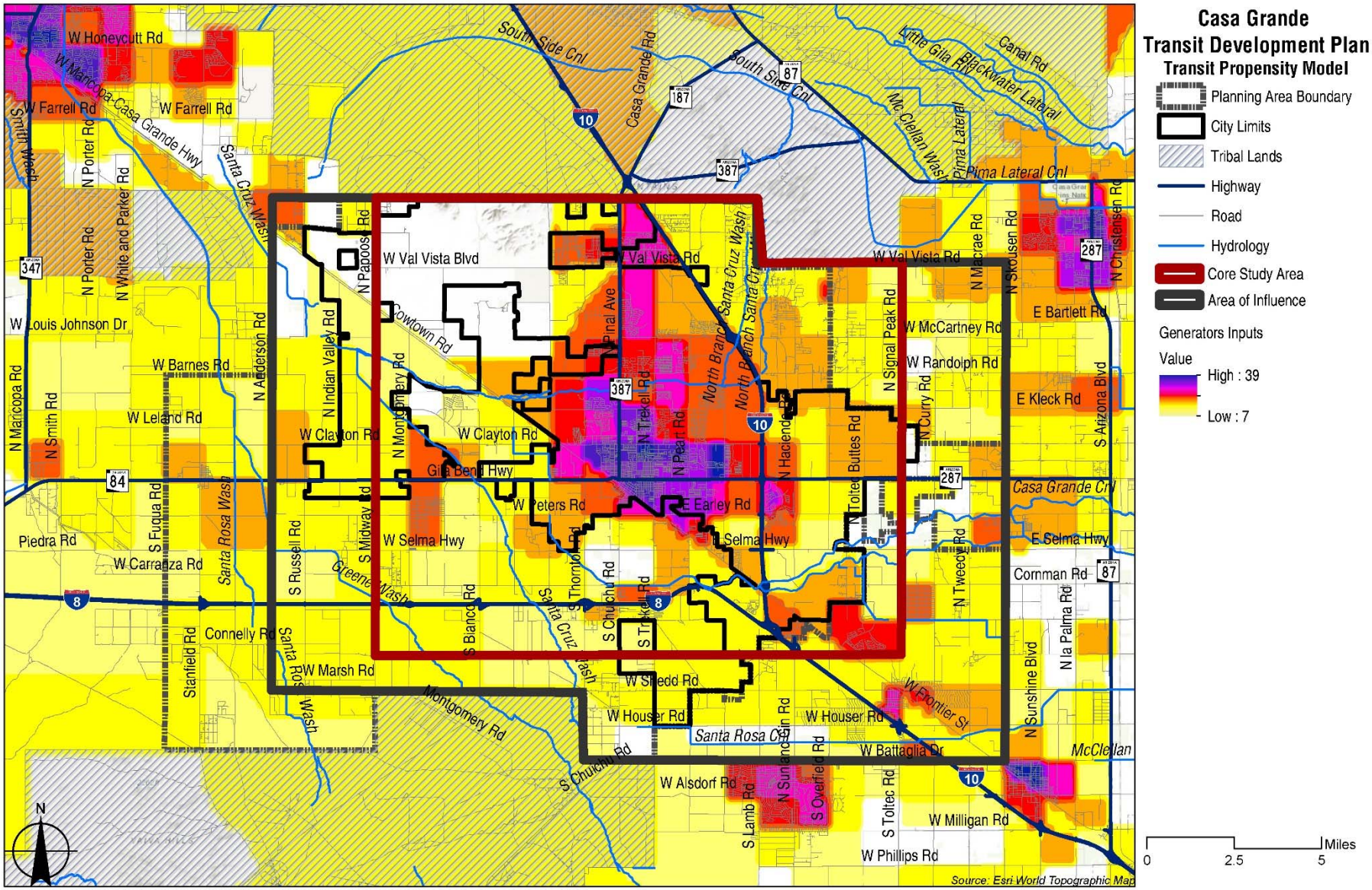
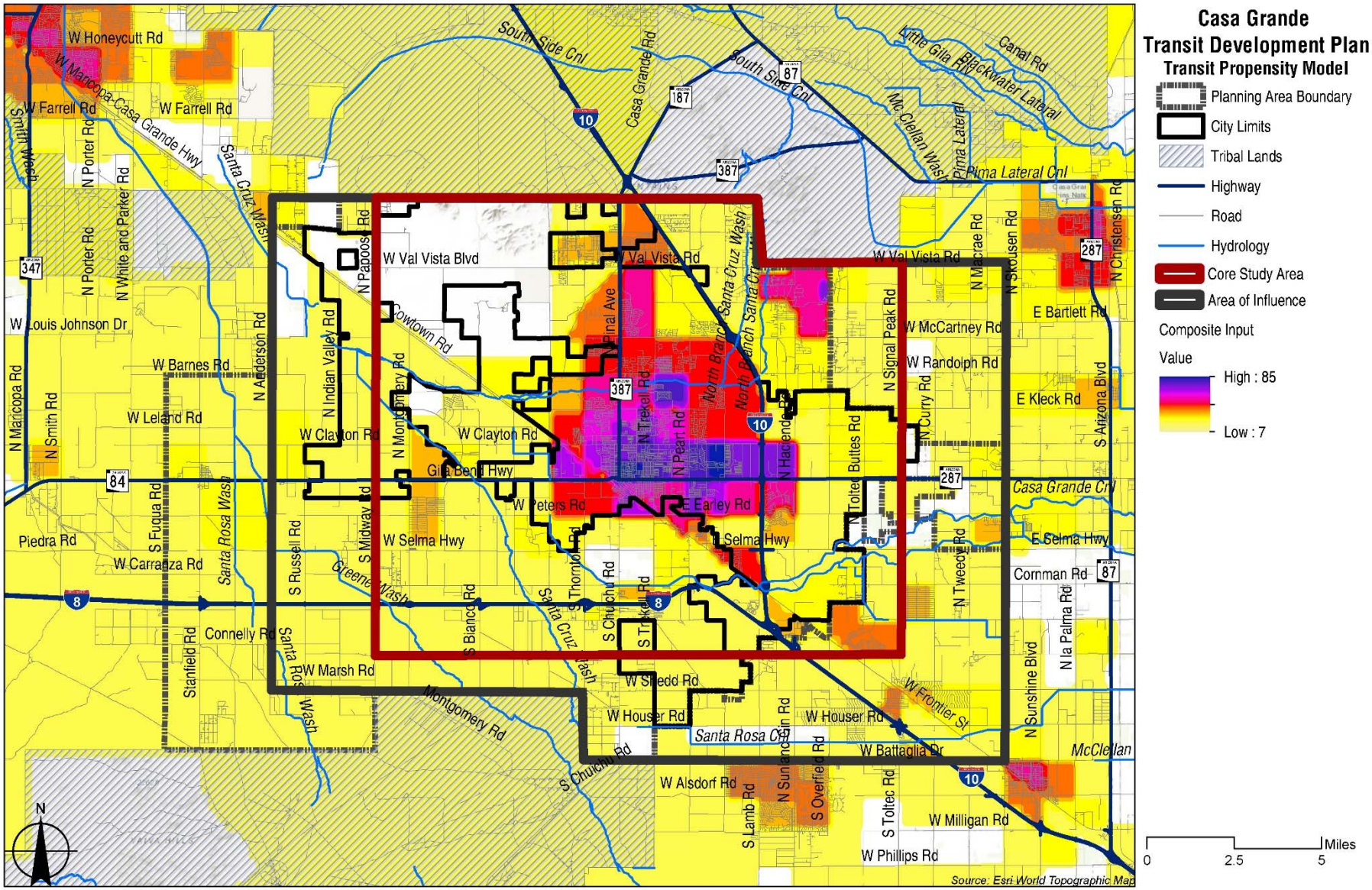


Figure 2.22 | Current Conditions - Transit Demand Map (Composite Results) – Year 2015 and 2017



2.5.2. Future Conditions - Transit Demand Model

Trip behavior in Casa Grande will change over time with the increase of population and employment trends associated with anticipated future development and increased connectivity with surrounding metropolitan cities. Casa Grande is experiencing growth of industrial, agricultural, warehousing, commercial, and service activity centers, in addition to housing. New jobs are expected to develop at a significantly rapid rate. MAG's travel demand model projections indicate employment will witness a 230% increase between now and Year 2030. Likewise, population is expected to increase by 138% in that same timeframe.

Future Transit Demand Model Results

The Future Conditions TDM utilizes much of the same information as the Current Conditions Transit Demand Model (TDM) (Section 8.1). The Future Conditions TDM utilizes projected employment and population growth to determine where new population and employment concentrations are likely to be developed and how that impacts latent transit demand.

Figure 2.23 displays the Transit Demand Model for Year 2025. **Figure 2.24** displays the Transit Demand Model for Year 2030. Both figures illustrate locations of latent demand for transit use where existing and future development are combined. Areas in red and purple indicate the highest latent demand for transit use. These figures show the latent demand for transit will continue to increase to the south and east of the CSA, generally following the I-10 corridor. Additionally, transit demand is anticipated to increase toward the City of Coolidge and City of Eloy. Comparatively a lack of projected growth between the City of Maricopa and City of Casa Grande result in lower demand between these two cities, although demand is anticipated to increase in the City of Maricopa.

Figure 2.23 | Future Conditions - Transit Demand Map (Composite Results) - Year 2025

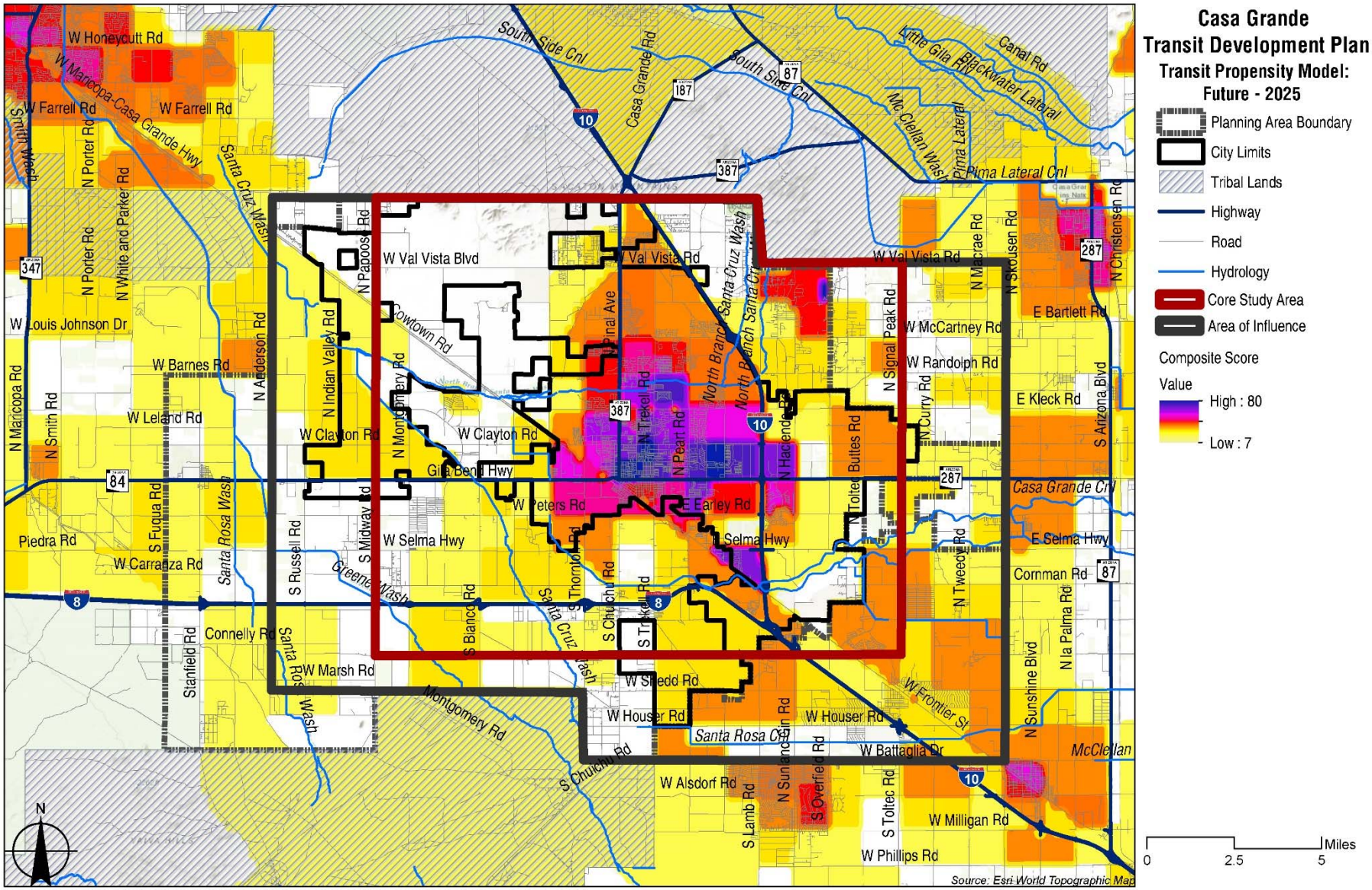
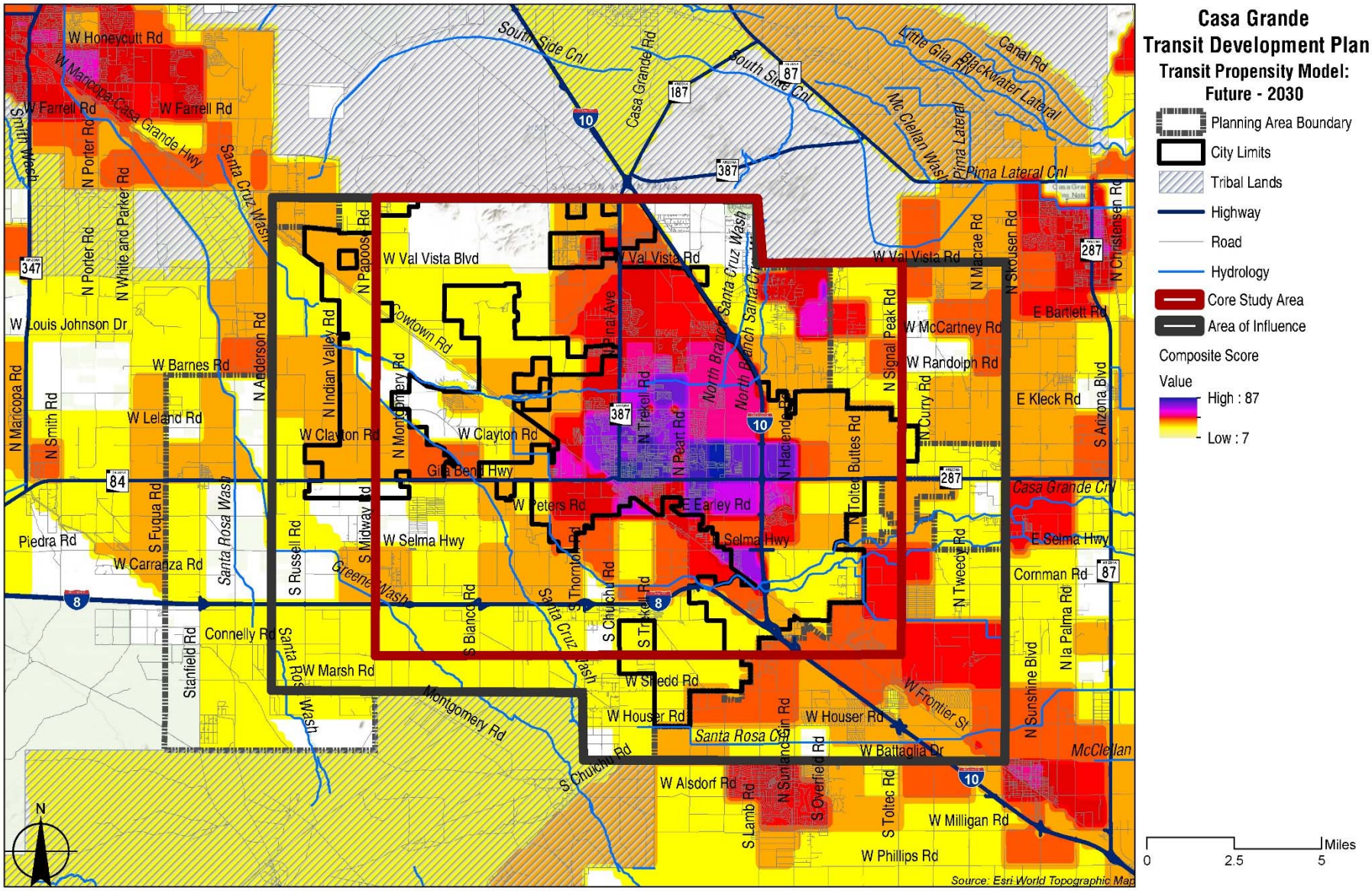


Figure 2.24 | Future Conditions - Transit Demand Map (Composite Results) - Year 2030



Casa Grande Transit Development Plan

Connecting Casa Grande

CHAPTER 3

Preliminary Service Alternatives

CONTENTS

List of Figures

3. INTRODUCTION

The purpose of this task is to identify the priority areas, origins, and destinations in Casa Grande for transit service within a five year horizon. Casa Grande is eligible to receive formula grant funding from the Federal Transit Administration for public transit. If these funds are not utilized in an approved program, the funds are reallocated to other eligible grantees in Arizona. The Public Outreach Survey (summarized in the Current and Future Conditions working paper) identified a need for public transit in the community. This overall effort is an attempt to determine the areas of highest need, the best approaches to meet that need, and provide mechanisms to deliver the service as expeditiously as possible.

3.1. Service Alternatives

This task focuses on a larger set of possible transit alternatives for consideration as part of an initial transit operations strategy for Casa Grande. Alternatives selected for initial investigation were selected based on the findings of the Current and Future Conditions Analysis, public and stakeholder feedback, and field investigation of the community. Alternatives selected were chosen due to the transit propensity, land uses, and public input.

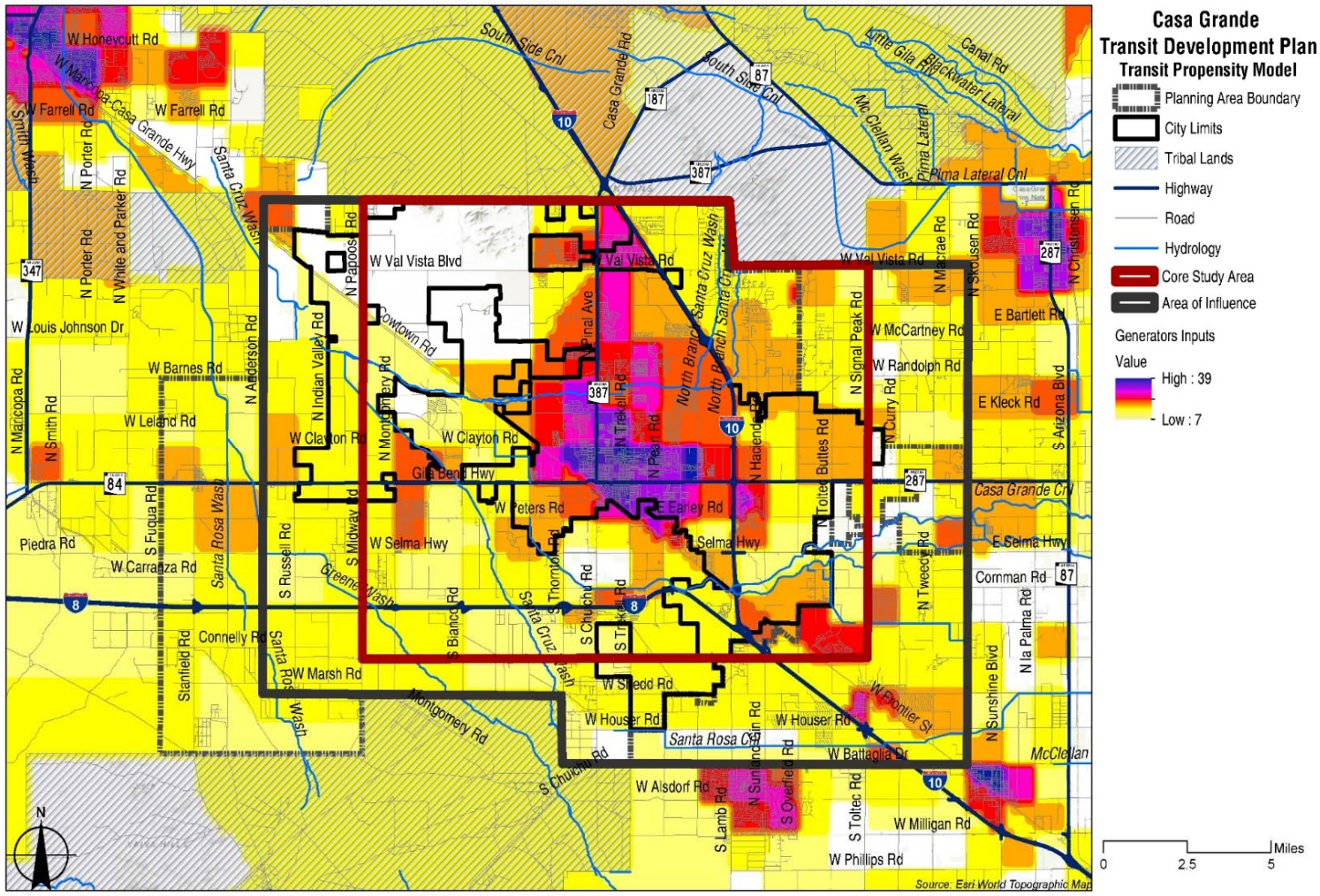
3.1.1. Initial Service Alternatives Development

Chapter 2, Current and Future Conditions, identified a number of locational factors that contribute to transit demand. These include locations of:

- Persons over 75 years of age
- Persons over 60 years of age
- Persons 17 and under
- Disabled persons
- Zero vehicle households
- Persons who walk or bike to work
- Employment density
- Health and social service organizations

From this analysis, a summary of transit demand was developed, combining both trip generators and attractors for current conditions. This is shown on **Figure 3.1** below.

Figure 3.1 - Current Transit Demand Map

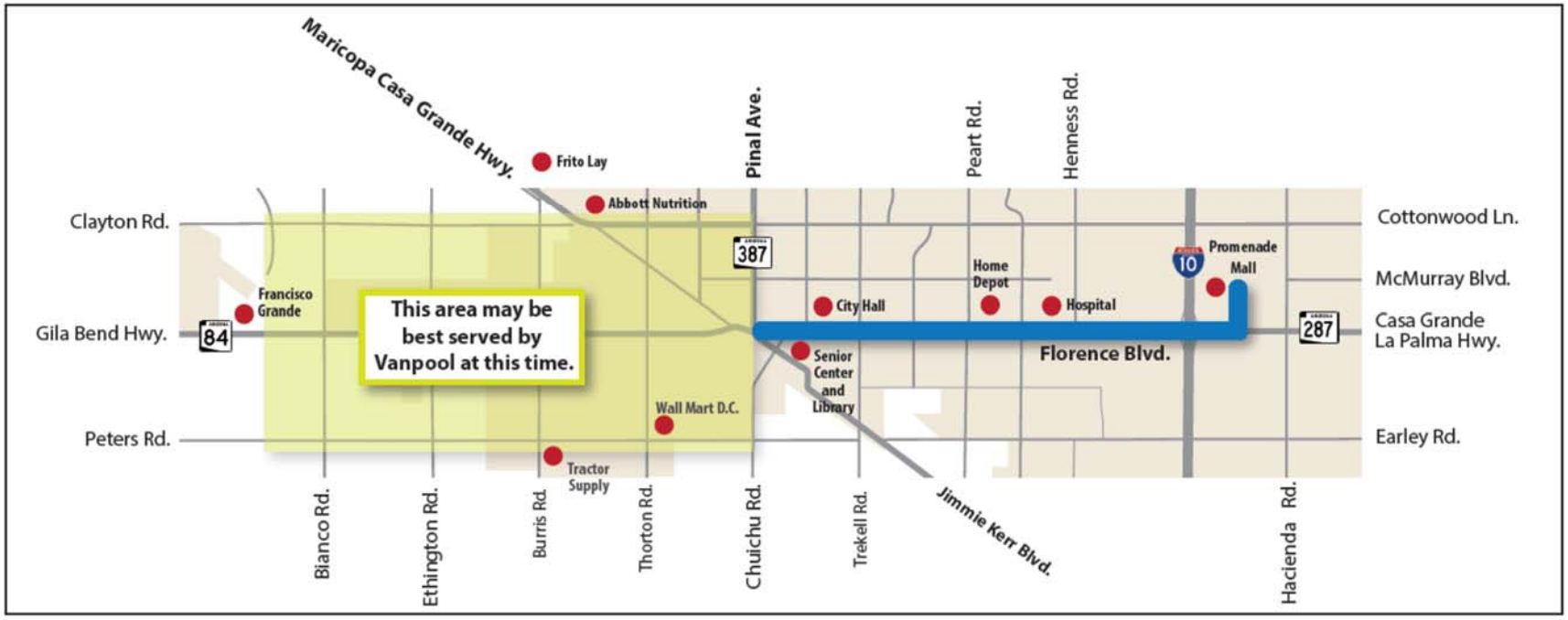


Following completion of existing and future conditions analysis, work focused on identification of primary corridors to evaluate transit demand in Casa Grande. Selection of corridors was guided by information from the *Current and Future Conditions Report*, discussions with the Transit Technical Advisory Committee, local staff, comments from the first public meeting, outreach to stakeholder groups, and the public opinion survey. The various Heat maps in Chapter 2 that indicated areas of current demand were consulted to guide corridor identification.

Corridor One

The first corridor to emerge from this effort was Florence Boulevard, running between Promenade Mall and Pinal Avenue. This corridor is the retail and service heart of Casa Grande and was in the core of the highest demand area indicated in the Heat Maps. A route on this corridor would directly serve the Banner Hospital and other medical services, City Hall, the Dorothy Powell Senior Center, Peart Park, the Library, and Promenade Mall. The route could begin with thirty minute headway, 12 hour a day service Monday through Friday, pending funding availability. As ridership grows, hours can be extended and Saturday service offered. The proposed route is shown in **Figure 3.2**.

Figure 3.2 - Florence Boulevard Alternative



Large employers are located along both sides of Florence Boulevard west of Pinal Avenue. While this area does not have the population density to support all-day transit service, an alternative approach, such as a vanpool program or the encouragement of carpools, could be used to address employee mobility needs. Employers and passengers can cover some or all of the cost of the vanpool. The vanpool target area (shaded in yellow) is shown in Figure 3.2.

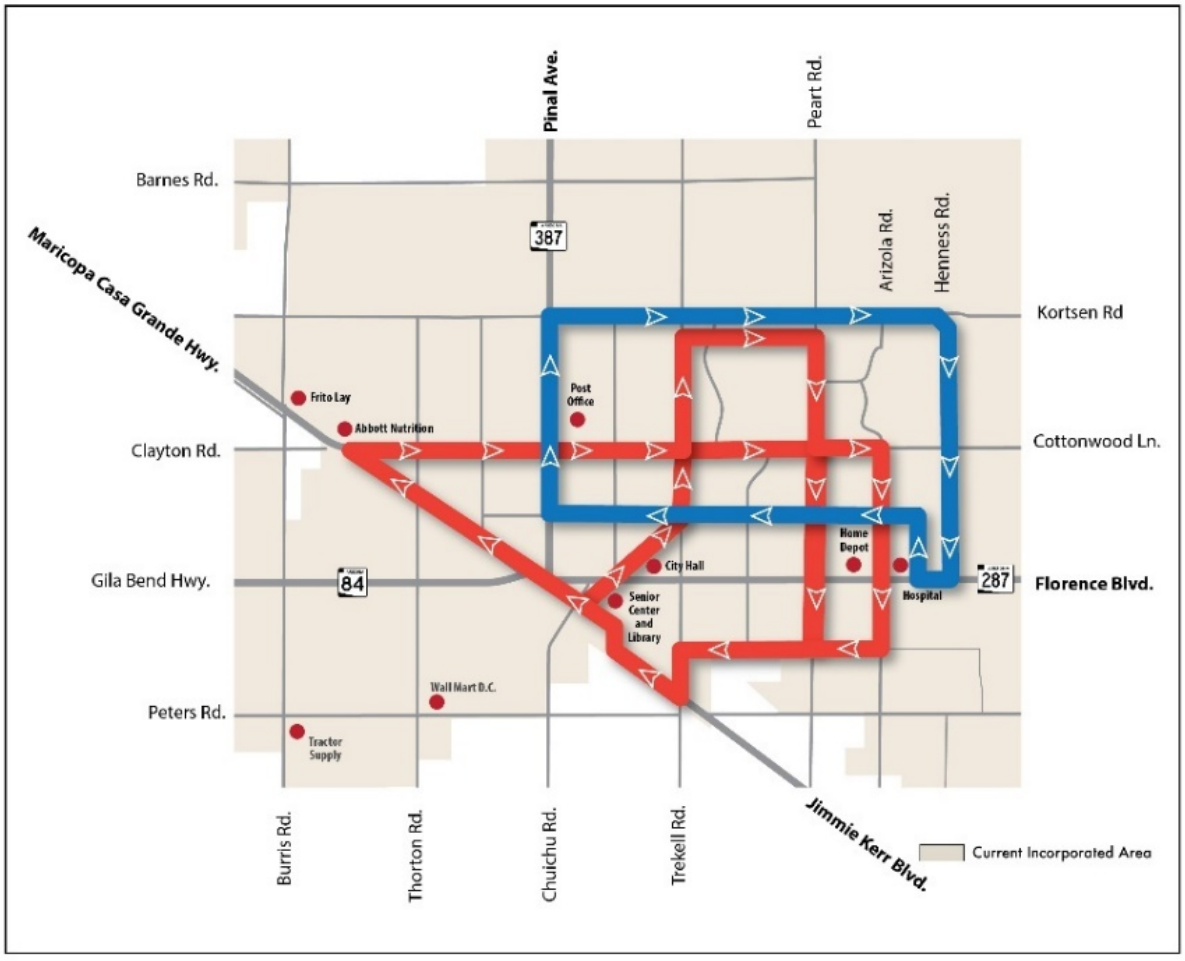
Corridor Two

The second fixed route alternative to emerge was the Pinal Avenue corridor. This north/south alignment runs from Florence Boulevard to Val Vista Boulevard. It serves the airport area, the Paul Mason Sports Center, Casa Grande Union High School on West McCartney Road, and the City's public safety facility on West Val Vista Road. This is a corridor with significant new development, but without much residential density and a predominance of vacant land. Due to the lower populations, the exact northern termination of this route needs special consideration and may need to be adjusted based on more detailed forecast of demand to reach destinations in the corridor. The proposed route is shown in **Figure 3.3**.

Figure 3.3 - Pinal Avenue Alternative

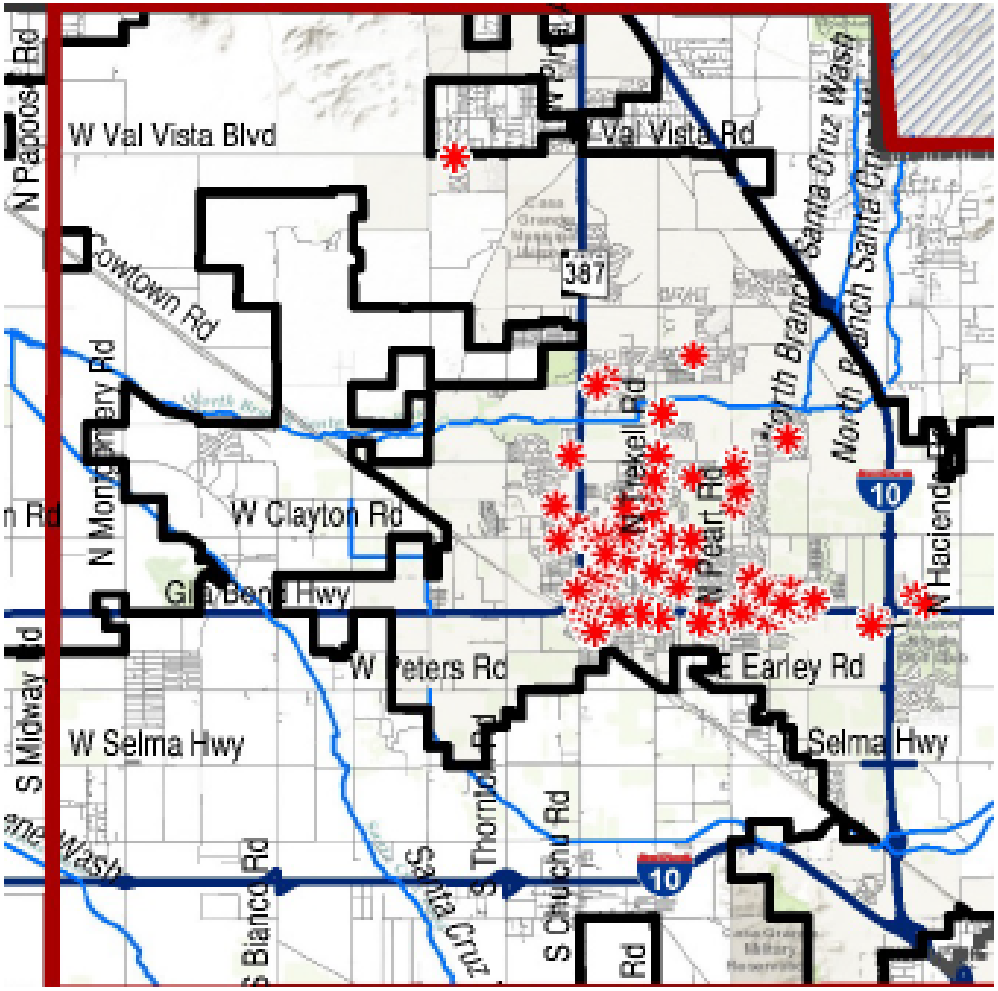
There are a number of destinations in the historic downtown area and to the immediate north that could be effectively served by transit. A third alternative, focusing on downtown and health services, was developed to focus on these areas and connecting them to service on Florence Boulevard. The service alternative to address this area is an overlapping loop shown in **Figure 3.4**.

Figure 3.4 - Downtown and Service Area Alternative



Conversations with Banner Casa Grande Medical Center management indicated the strong perception of mobility needs of a large number of the patients, which suggests the same demand from other medical providers. The first working paper identified other medical and social service offices in this area that patients could access via transit. These locations are shown below in **Figure 3.5**.

Figure 3.5 - Health and Social Service Office Locations

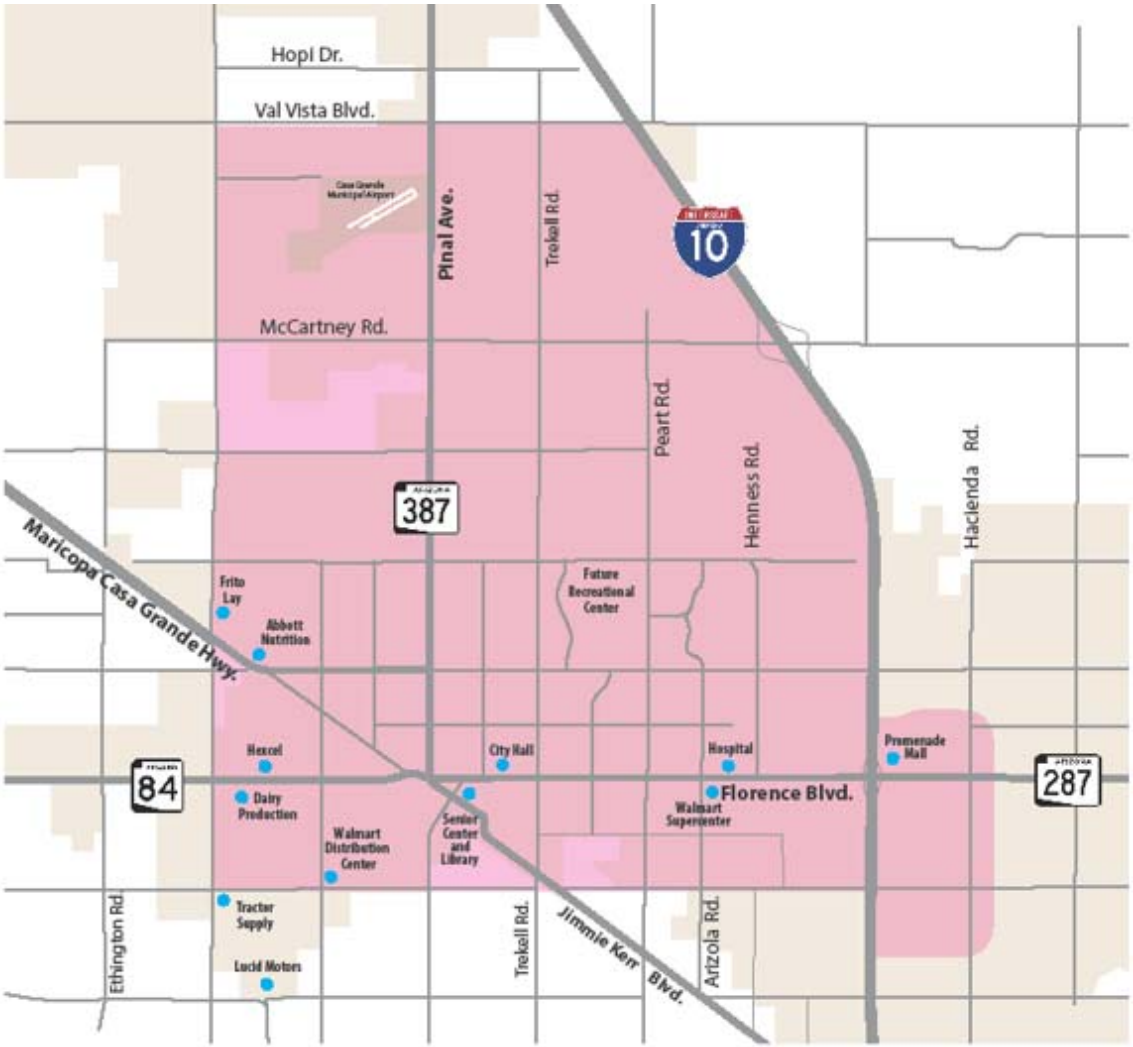


The Downtown and Service Area loops serve the majority of the medical service providers identified in **Figure 3.5**, and also provides access to the historic downtown area south of Florence Boulevard, helping to provide passenger access to the area and contributing to the downtown revitalization goals of the City.

Service Option Four

The Americans with Disabilities Act (ADA) requires that complimentary paratransit be provided within a ¾ mile radius of fixed route service. Additionally, paratransit service, or demand response service is often provided for seniors or those with a disability in areas with low density or low demand. The initial proposed service area for the demand responsive service in Casa Grande is shown on **Figure 3.6**.

Figure 3.6 - Demand Response Service Area



3.1.2. Stakeholder Outreach

The initial alternatives were presented to the TTAC at the March 28, 2017 meeting. Also, a number of outreach workshops were scheduled to obtain input from various stakeholder groups. These workshops were held with the following groups:

- Employers and Retail
- Human and Social Service Agencies
- Education and Schools
- Transit Providers
- Municipal and Tribal Agencies

At these meetings, study goals were presented along with preliminary concepts to address service needs. Input received includes the need to continue regional service to Central Arizona College, service to the Banner Casa Grande Medical Center and other medical destinations, major retailers, and the Dorothy Powell Senior Center. The lack of regional service to the Phoenix and Tucson metropolitan areas was also noted.

A number of existing and future stakeholders were interviewed to understand their mobility needs. Stakeholders included major employers in Casa Grande as well as pending future developments that will generate significant employee and visitor traffic. These included the following:

Attesa: Attesa is a new development that will be located one-half mile south of I-8 between Montgomery and Bianco Roads. Automobile racetracks and events will be the central focus of this development. The 2,360-acre development will include two road racing courses and a karting track. The development will also include residential, commercial and industrial properties, a hotel, convention center, and 6,000-foot private runway. Attesa will host race events and will also provide track time for testing. After completion, the project is estimated to provide 15,000 jobs. Opening is anticipated for 2020. The consultant team and staff met with project developer Patrick Johnson. As a considerable portion of the workforce will be local residents, they are interested in transit options for the workforce.

Dreamport Villages: Study team members met with Jack Gilmore, LA, planning consultant for the Dreamport Villages project. The northern portion of this project will include a major destination resort and theme park. The southern portion of the 1,800-acre development will focus on residential development. The project will require new service interchanges to I-10 and I-8 and is working to negotiate an Amtrak station. The first phase of the project is expected to generate 8 million visitors each year and create 5,000 jobs. At buildout, the project is expected to draw 30 million annual visitors, 85% of which are expected to come from the north. The development is expected to use an internal shuttle system to move visitors between activities. External transit service will be needed to accommodate workforce commuting as the project matures. The first phase is expected to open within five years. It is noteworthy that visitor demand will add significant traffic to the I-10 corridor unless other modal options are explored.

PhoenixMart: Team members met with Marshall Stahl and Mark Dunnett of Arizona Sourcing, representing the PhoenixMart development. The project is currently under construction. Rather than a traditional retail center, PhoenixMart will be a 1.75 million square foot business-to-business sourcing center for manufacturers and distributors. The facility is located three miles east of I-10 on SR 287. PhoenixMart is billed as an international gateway for promoting American business offerings to domestic and international markets. PhoenixMart will feature more than 1,800 manufacturers with categories including: Home and Hotel, Industrial and Automotive, Electronics and Accessories, Food and Beverage, Office and Recreation, and Fashion and Variety.

Most clients will fly to Arizona airports and drive to the location. No traditional retail traffic will occur. At buildout, the facility will employ up to 400 workers to manage and maintain the site. Most are expected to reside locally. Another 3,600 employees of the vendors will work at the project and may be locally based, and possible transit patrons, or commute from other central Arizona communities.

Lucid Motors: Team members met with Jackob Anderson and Amber Leuer of Saint Holdings representing Lucid Motors. Lucid is planning a manufacturing facility in Casa Grande to produce electric powered automobiles. Lucid will locate in the Central Arizona Commerce Park, south of Peters Road and Thornton Road. There are plans for an

automotive parts manufacturer to also locate to this center. The site will be rail served by an extension of an existing Union Pacific spur line. It is expected that the project will ramp up over a 5-7year period, with an initial 750-1,000 jobs expanding to several thousand depending on market conditions. Most of these workers are expected to reside in the local area, so workforce transit options would be of interest.

City of Coolidge: Team members met with Mike Meyer, transit manager for the City of Coolidge, who is also a member of the Transit Technical Advisory Committee for the study. Coolidge operates the Cotton Express, a local transit service in Coolidge and the Central Arizona Regional Transit (CART) service which operates between Coolidge, Florence, Central Arizona College, and Casa Grande. Primary destinations in Casa Grande are the Promenade Mall and Banner Casa Grande Medical Center. CART also provides linkage to the Greyhound station in Casa Grande. Mr. Meyer indicated that CART would welcome the opportunity to reduce mileage within Casa Grande if local service was initiated that would facilitate the connection. The local connection would need to be made first because of the funding stream used by CART for the intercity service to connect with Greyhound. If Greyhound relocates close to I-10, this would facilitate such an adjustment. CART could then reallocate those saved resources to expand service elsewhere.

Promenade Mall: Team members met with Kevin Kepner, Randi Cohen, and Francine Moore of Macerich, the owner of Promenade Mall. The mall is currently served by CART. Casa Grande transit service would be welcomed by Macerich. The firm has a long history of working with Valley Metro to accommodate transit centers at regional malls in the Phoenix metro area. The mall tenant mix is being adjusted as there are currently several vacancies. Macerich staff indicated that employees may generate more ridership than shoppers.

Hexcel: Hexcel is a leading producer of carbon fiber and resin composite materials used in aerospace and industrial applications. Hexcel has 120 employees at this location. Robert Seifried of Hexcel indicated that they had not heard of commute problems as an issue for employees.

Banner Casa Grande Medical Center: A study team member met with Rona Curphy, the Chief Executive Officer at Banner Casa Grande Regional Hospital. The hospital served over 123,000 patients in 2015 including over 50,000 emergency room visits. It serves as the major medical center serving central Pinal County. The hospital has 706 employees and 443 physicians.

Hospital representatives project an annual growth rate of 2% in the future. Over 60% of patients reside in Casa Grande, with most of the balance coming from other Pinal County communities. Most employees reside in the Casa Grande area, although a number of physicians commute from Maricopa and Pima Counties.

The hospital has a bus stop for Central Arizona Regional Transit (CART) at the front door. Ms. Curphy indicated that they had contributed to CART in the past and would favorably consider support of a Casa Grande transit system as well. She said that there was significant demand for service, especially from emergency room patients who arrived by ambulance and had no way home. Employees might also welcome the service. She shared that the emergency room was busier on weekends, so if service began, and patronage supported expansion, weekend service would be most welcome.

Francisco Grande: Duane Eitel met with Tim Alai, general manager of the Francisco Grande Resort. Tim indicated that the resort has 135 employees during the winter season and 108 during the summer off-peak season. They do provide some courtesy shuttle service for guests. Mr. Alai indicated that they did not need transit service at this time but might in the future as the area develops. A nearby charter school may contribute to this future demand.

Abbott: Abbott has 400 employees in Casa Grande. They recently added a new product line and have potential to add another in the next 5-10 years. They work two twelve-hour shifts. They indicated that 64% of the work force resides in Casa Grande, 17% in other Pinal County communities, and over 11% in the Phoenix metro area. They indicated a strong interest from their employees for vanpools, which would be helpful for recruitment. They may be interested in providing some subsidy for such efforts. They also indicated that they recently had to expand recruitment efforts to include the Phoenix metro area.

Walmart Distribution Center: Team members met with Walmart Distribution Center staff to discuss transit interest. Walmart representatives identified 650 current employees and stated that little growth is expected in the next five years but expect 15-20% growth over the next ten years. Walmart employees work two shifts seven days a week, with 75% of the workforce coming from Casa Grande. The balance is largely coming from Maricopa, Coolidge, Eloy, and Arizona City. Walmart DC staff would be interested in

regional vanpool and rideshare options and also commented on observing shoppers arriving at retail locations from taxis, especially during holiday season. They did state that their work force had not expressed concerns about their commutes.

Holiday Inn: Study team members met with Melissa Flores, manager of the Holiday Inn at the northwest corner of Pinal Avenue and Florence Boulevard. The hotel has 176 rooms and 70 employees for both the hotel and restaurant. She stated that the workforce was local and had high turnover. A number of employees live within walking distance and some experience problems with the weather when walking, which causes some reliability problems. Ms. Flores said that local transit would be most welcome. They do not provide guest shuttle services and have had poor success working with taxi services. Guests have expressed the need for trips to Promenade Mall, Walmart, and some to the skydiving center in Eloy. They have a ballroom/conference facility with seating for 300 people. Work shifts are from 7am to 3 pm and 3pm to 11pm, with 90% of their work force on the day shift.

3.1.3. Online Mapping

The initially identified Service Alternatives were uploaded into an interactive mapping tool and shared with the public from May 25, 2017 – June 24, 2017. In the online map, users could view the proposed routes and offer comments on each alternative by writing a general comment or pinpointing on the map an area of interest. Once the location was marked on the map, users could place specific comments regarding the marked location.
The survey also provided useful demographic data. Additionally, the survey was available in 103 different languages. Survey respondents were entered into a drawing for a $50 VISA gift card at the close of the comment period. The online mapping tool resulted in 72 responses. Findings from this outreach effort are summarized below.

Supportive Comments included:

- More service in the downtown area, to capture Life on Main, social service agencies, and neighborhoods nearby.
- More service to the neighborhoods adjacent to Pinal.
- Wanting a route that serves businesses on Florence Blvd., but transit that serves the community (neighborhoods) should be a goal that carries as much, if not more, weight.
- Service needs to include senior complexes such as Ironwood Village, Mary T, Palm Creek, and or adding door-to-door for those with disabilities that should call in advance to reserve a ride.
- The "response area" needs to provide services to lower income residents who need these services for school, employment, medical care, and to shop for necessities. This is a large part of our city's population!
- Residents in every area of Casa Grande would benefit from public transport.
- Downtown loop would serve more people.
- Having routes beyond Florence Blvd. and the downtown area is needed as well.
- The city needs to service the areas that the CART doesn't, not try to compete with them.
- Fry's market place on Pinal to give service to the northwest area.

Non-supportive Comments included:

- No need, we have taxi, Uber, and Lyft.
- We don't need more transit options for this small town.
- Option A does not equally provide all city residents transportation to the retail and service locations. Only those living in the vicinity of Florence Blvd. are given the opportunity to utilize the transit. This underserves the community's residents who need this service the most.
- Option A loop seems to cater more to the Businesses than to the people.
- A bus that drives solely back and forth on Florence Blvd. is not a good use of resources.

3.2. Alternatives Refinement

After the stakeholder group workshops, one-on-one interviews were conducted, and public opinion gathered, the initial alternatives were reviewed, including extensive field review time driving the service corridors and surrounding neighborhoods. After this review and discussions with various stakeholders, it was decided that the Pinal Avenue corridor should be deferred and not be included in the short-range set of options but retained as a potential service option in the long-range transit plan. The corridor has significant amounts of vacant land and limited direct access to residential areas. New retail development is occurring in the corridor, but the intensity of land use and projected ridership in the corridor is not yet adequate to justify this as part of an initial service area.

Florence Boulevard: This route remains the primary service corridor based on the location of a preponderance of retail, service, recreation, and public agency destinations along the route. The City of Casa Grande is building a new recreation center on the west side of Peart Road at Prickly Pear Drive south of Kortsen Road. When this facility is open and fully operational, a route deviation could serve the facility and provide connections between the facility and the Dorothy Powell Senior Center, City Hall, the Library, and other destinations along Florence Boulevard. The revised route would operate between Promenade Mall and Pinal Avenue (with the future deviation north on Peart Road to serve the recreation center), and operate five days per week, twelve hours per day, with service every 30 minutes, depending on funding availability. Three vehicles will be required to operate this route at a 30-minute frequency. If ridership justifies it, expansion of the service hours, Saturday service, or both could be considered in subsequent years. The revised corridor is shown in **Figure 3.7**.

Figure 3.7 - Revised Florence Boulevard

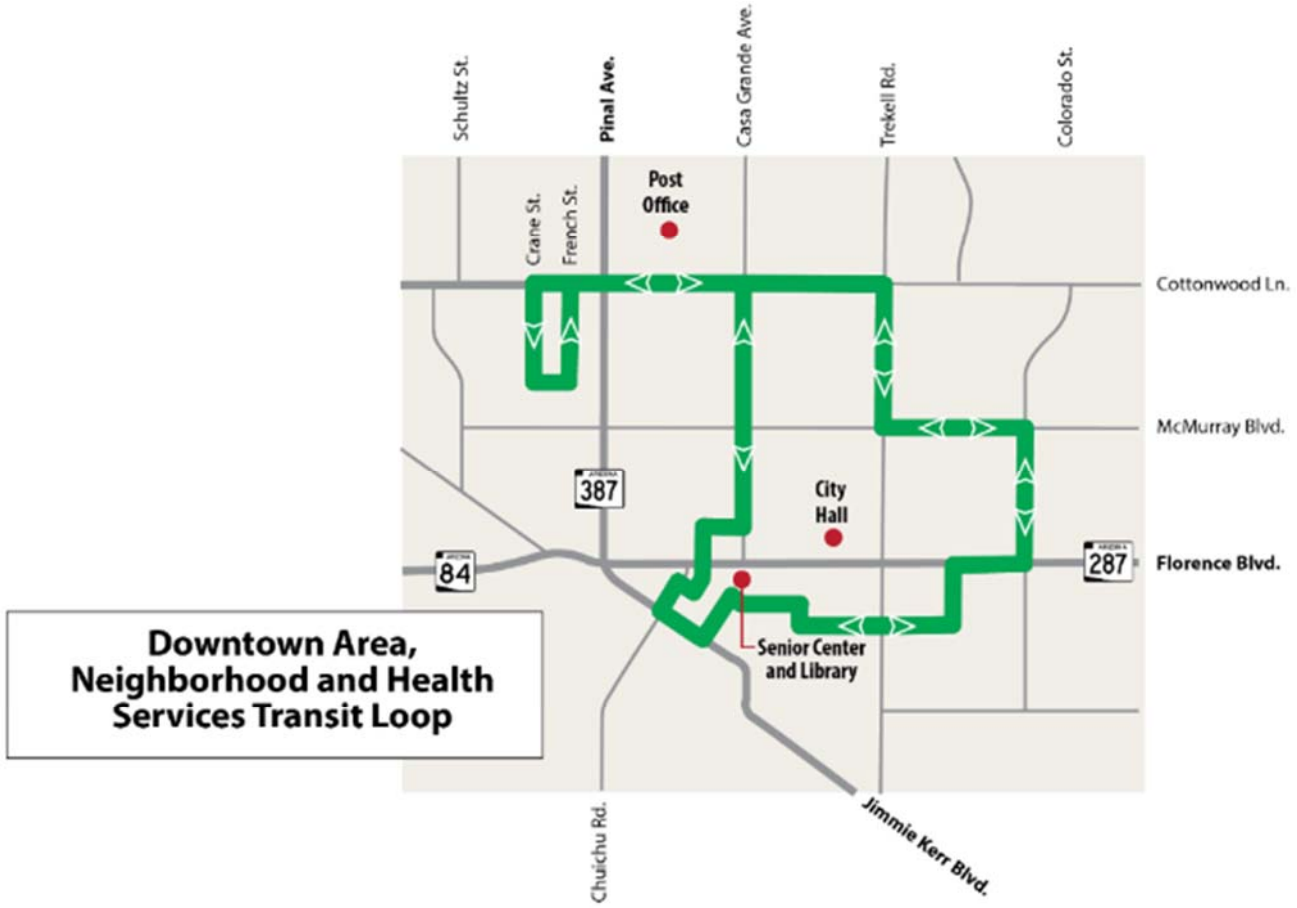
Downtown Area, Neighborhood, and Social Service Loop: This route experienced the most revision as a result of public input, stakeholder input, further service evaluation, and growth projections. Considerable field review of the area was used to select the most potentially productive route segments. The alignment consists of a loop with two vehicles, one running a clockwise route and one running a counterclockwise route over the same alignment.

This route provides access to a number of key destinations including:

- Peart Park
- The Main Library
- Dorothy Powell Senior Center
- AHCCCS Office
- Municipal Court
- Casa Grande Food Bank
- Greater Casa Grande Chamber of Commerce
- St. Vincent DePaul Society
- Boys and Girls Club
- Horizon Human Services
- Desert Winds High School
- Seeds of Hope
- West Side Park

The route will operate 12 hours a day, Monday through Friday, and will provide 30-minute service, pending funding availability. Two vehicles, one running in each direction, will be required to maintain the thirty-minute service frequency plus one additional vehicle to provide Deviated Flex Route demand. The revised downtown area, neighborhood, and health services loop is shown in **Figure 3.8** below.

Figure 3.8 - Revised Downtown Area, Neighborhood, and Health Services Loop

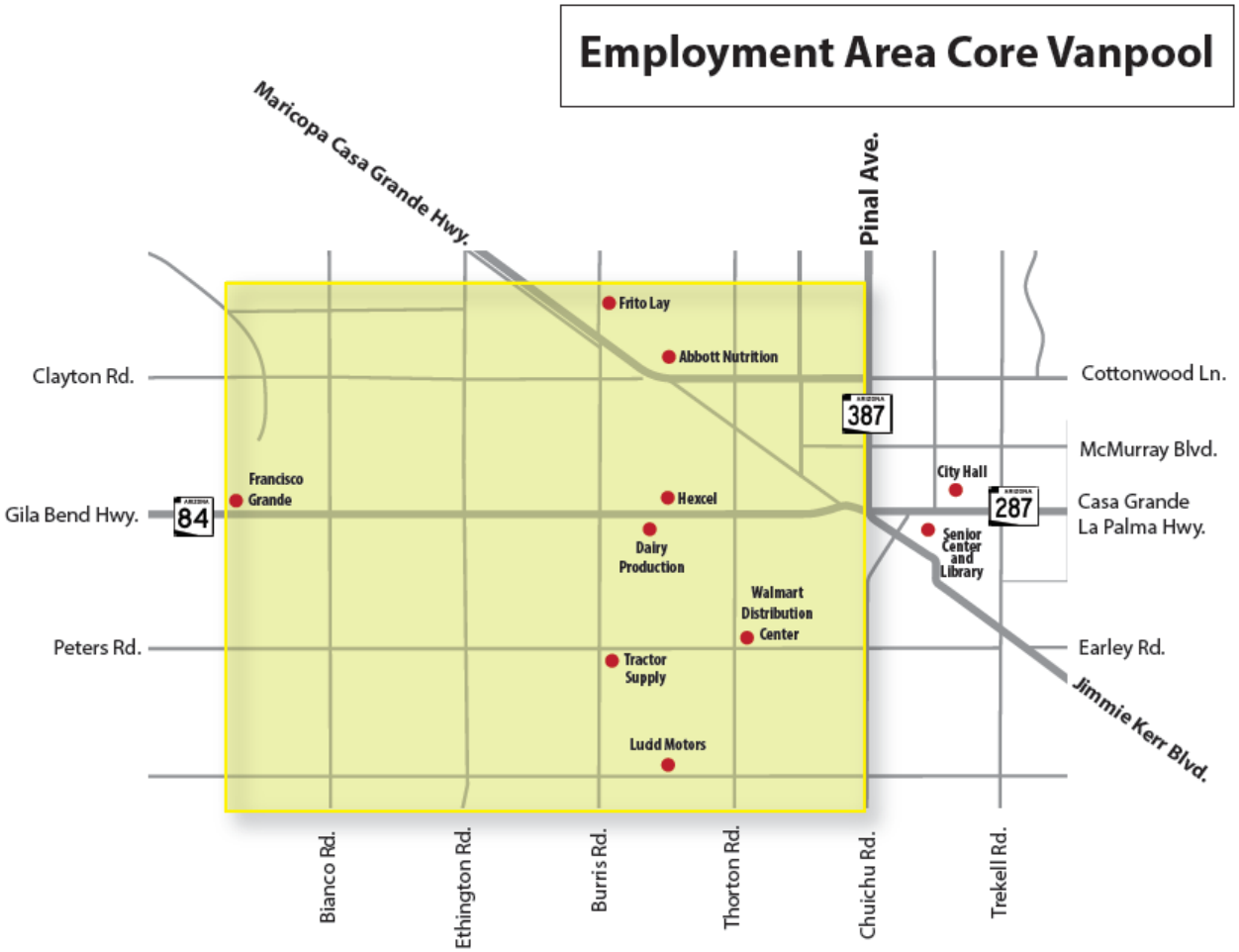


Employment Area Core Vanpool: The major employment core area west of Pinal Avenue does not currently have the residential density that is adequate to support fixed route transit service. Discussions with employers have indicated that demand for commuter transit service is low. One way to address short term mobility needs in this area is with vanpool service. Members of the study team met with representatives from VRide, a company that operates vanpools for Valley Metro in the Phoenix area, SunTran in Tucson, YCAT in Yuma, and NAIPTA in Flagstaff. VRide operates over 6,500 vanpools across the nation. In some locales, like the public agencies mentioned above, the transit agency subsidizes the vanpool to some degree. VRide staff indicated that even without a public subsidy, vanpools can be cheaper for the participants than single occupant vehicle commuting.

VRide was recently acquired by Enterprise, the car rental company. VRide noted that the combined expertise of their ride matching software and Enterprise's fleet purchasing and maintenance experience will result in a more efficient service.

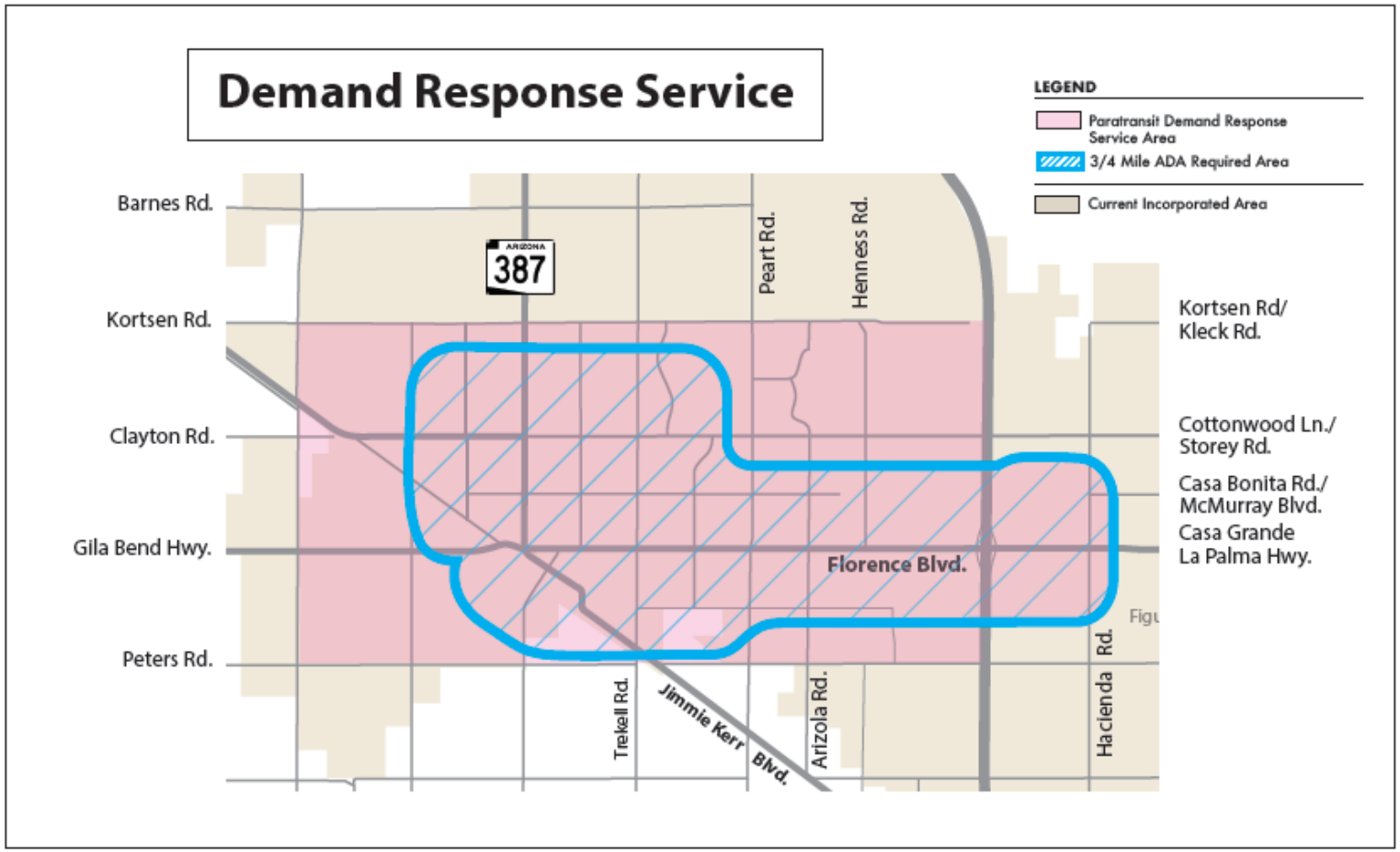
Casa Grande's role in vanpool development could be limited to marketing and outreach or could include some level of subsidy. This might serve as an economic development incentive to attract more employers to Casa Grande. **Figure 3.9** shows the proposed vanpool service area.

Figure 3.9 - Vanpool Service Area



Demand Response: Most communities that provide transit also provide for demand response service for both ADA eligible riders and ambulatory seniors with an expanded service area where no fixed route or very limited fixed route service exists. This also helps communities comply with the earlier mentioned complementary paratransit requirements of the ADA. Upon final review for the demand response service area, it was determined that to keep the larger overall demand response service area previously considered would require a budget that was not sustainable. The service area was reduced as shown in **Figure 3.10** which also shows the service area for "complementary paratransit" required by the ADA.

Figure 3.10 - Revised Demand Response Service Area



3.3. Preliminary Alternative

The revisions discussed above and shown in **Figures 3.7, 3.8, 3.9** and **3.10** constitute the Preliminary Alternative scenario that will be moved forward for further detailed analysis in the Short-Range Transit Plan and the Finance Analysis tasks. The combined services in the Preliminary Alternative are shown together in

Figure 3.11 and **Figure 3.12**. The latter is an option for Florence Boulevard service, incorporating a Cottonwood Lane loop segment. This was proposed by a member of the Transit Technical Advisory Committee.

Figure 3.11 – Preliminary Alternative

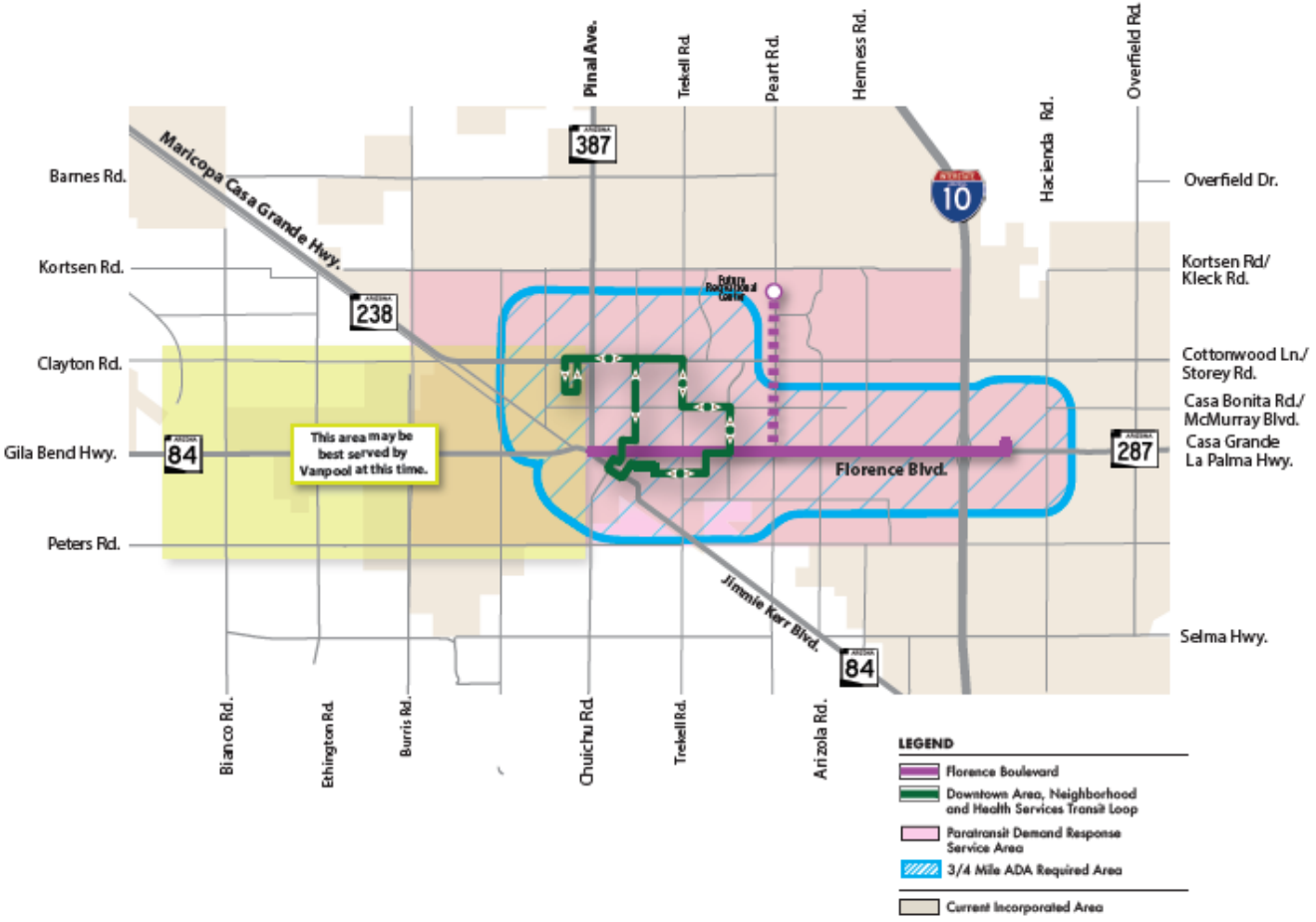
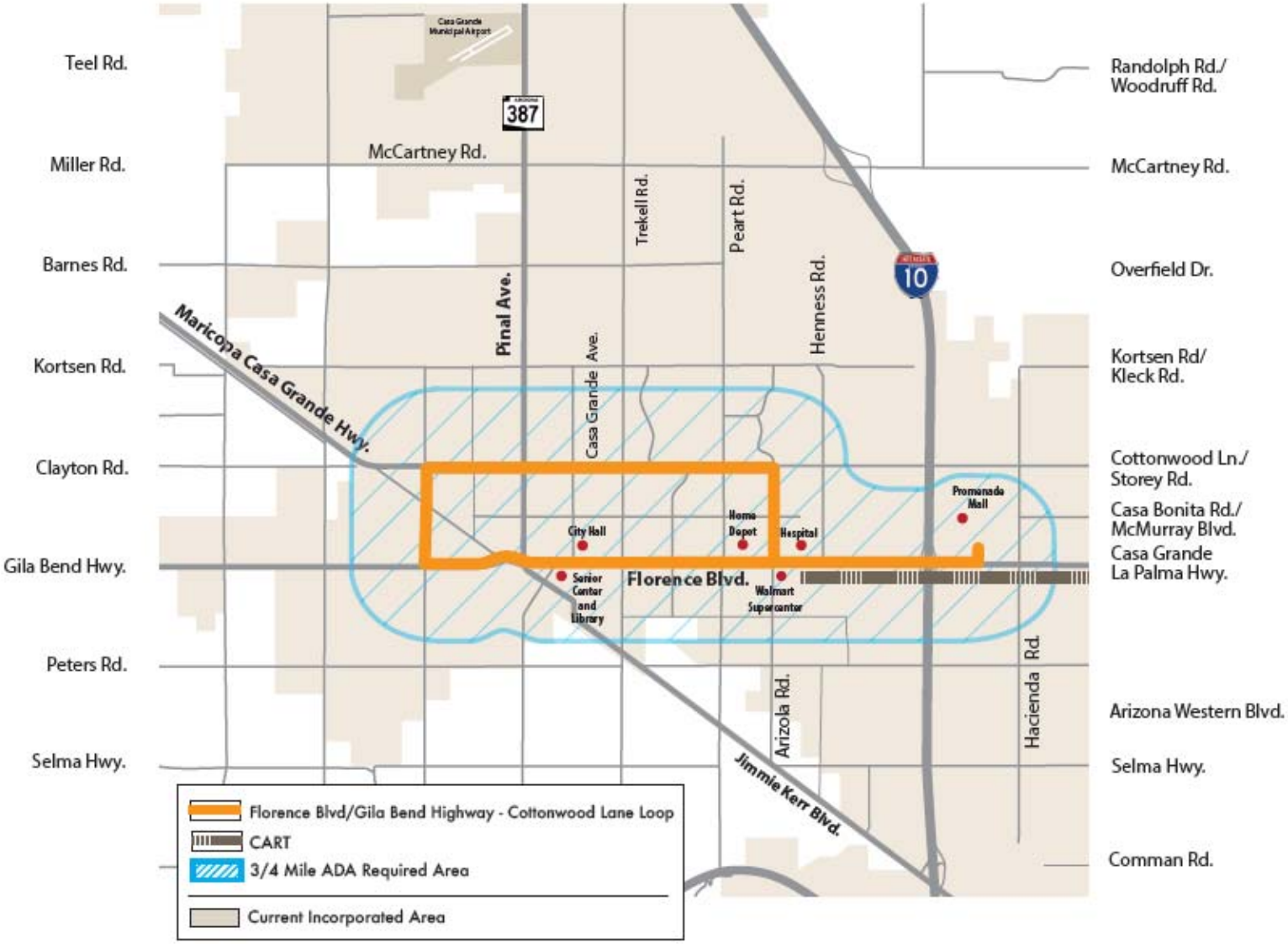


Figure 3.12 - Preliminary Alternative Florence Boulevard/Cottonwood Lane Option


Teel Rd.
Miller Rd.
Barnes Rd.
Kortsen Rd.
Clayton Rd.
Gila Bend Hwy.
Peters Rd.
Selma Hwy.
Randolph Rd./
Woodruff Rd.
McCartney Rd.
Overfield Dr.
Kortsen Rd/
Kleck Rd.
Cottonwood Ln./
Storey Rd.
Casa Bonita Rd./
McMurray Blvd.
Casa Grande
La Palma Hwy.
Arizona Western Blvd.
Selma Hwy.
Comman Rd.
Casa Grande Municipal Airport
387
McCartney Rd.
Trekell Rd.
Peart Rd.
Henness Rd.
10
Pinal Ave.
Casa Grande Ave.
Maricopa Casa Grande Hwy.
Florence Blvd.
City Hall
Home Depot
Hospital
Promenade Mall
Senior Center and Library
Walmart Supercenter
Arizola Rd.
Hacienda Rd.
Jimmie Kerr Blvd.
Florence Blvd/Gila Bend Highway - Cottonwood Lane Loop
CART
3/4 Mile ADA Required Area
Current Incorporated Area

3.4. Multimodal Relationships

All transit users are pedestrians for a portion of their travel, if only for a brief distance at the beginning and end of their trips. Bicycling is also a useful way to address the "first mile/last mile" issue where bikes can be used to bridge the gap between a trip origin at a residence and a bus stop a few blocks or even a mile or more from the rider's trip origin. It will be a recommendation of this study (detailed in the subsequent working paper) that all vehicles used in service shall have bicycle racks installed on the front. High activity bus stops should also include a rack where bikes can be locked.

3.5. Operational Approach

Discussions with the TTAC, the Study team, and Casa Grande staff have leaned toward a turnkey contract operator for the service. Such an arrangement is the norm in the Phoenix metro area and a number of other communities. While some transit services are provided using public employees, the market is strongly moving in the direction of private operators on contract to the public agency. A contract operator allows the City to make service adjustments, schedule changes, adjustments to rolling stock characteristics, and does not require the City to invest in capital and additional employees. Initial service period expansion or reduction of service, changes in service hours, and other changes can be addressed through contract amendments with the contract operator. Solicitation for an operator can be conducted to include performance standards, marketing assistance, adequate liability protection, and indemnification to protect the City from claims. Possible contributions to such a collaborative effort include possible use of city fuel, storage space, and maintenance as well as space for dispatch and call center if available.

Casa Grande Transit Development Plan

Connecting Casa Grande

CHAPTER 4

Short Range Transit Plan

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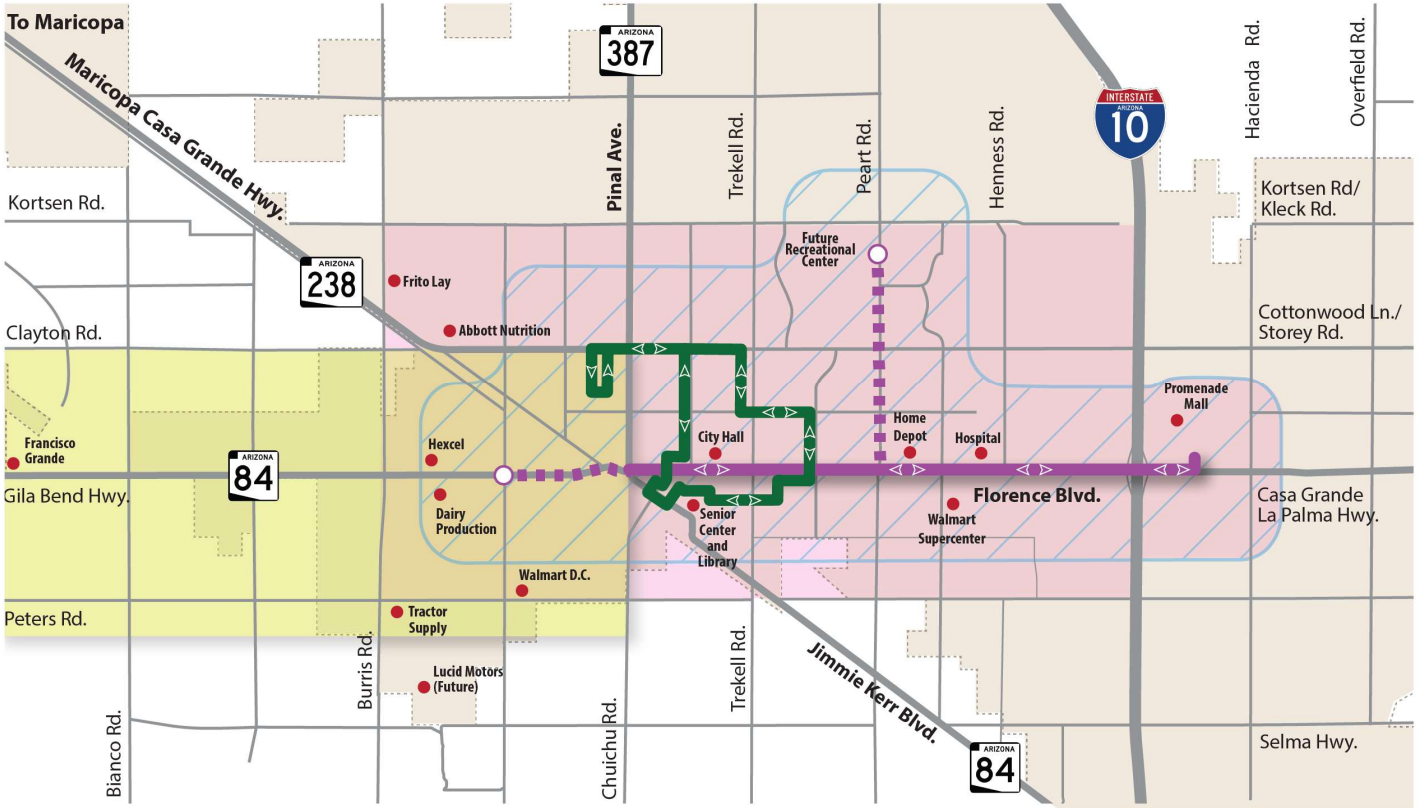
List of Figures

4. INTRODUCTION

The Short-Range Transit Plan focuses on the operational parameters required to implement the preliminary alternative, or other alternatives selected, and priority steps to achieve operational status within a five-year horizon. The Short-Range Transit Plan includes a prioritization of which services should be implemented first and which services could be added based on successful implementation of the preliminary services. This task also includes an evaluation of additional alternatives introduced during, and in response to, the City Council briefing on August 21, 2017. All options could be implemented as a publicly operated service or as a turn-key service using a selected private or external public operator.

The Preliminary Alternative from Chapter #3 is shown in **Figure 4.1**.

Figure 4.1 – Preliminary Alternative



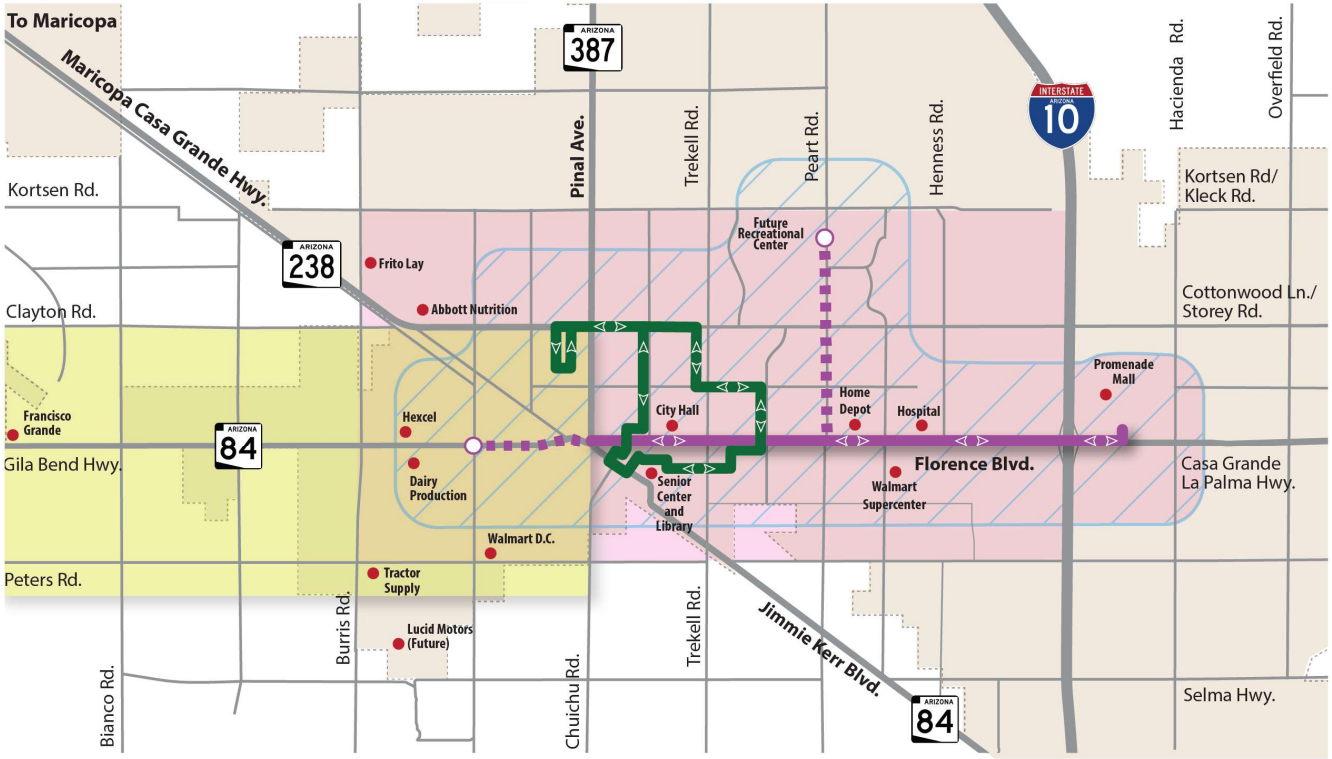
4.1. Additional Alternatives for Consideration

During the City Council Study Session on August 21, 2017, several new alternatives were introduced. These were:

- A Maximize Federal Share Alternative
- A Maximize In-Kind Contribution Alternative
- An All Demand Response Alternative
- An All Voucher Service Alternative
- A Florence Boulevard-Cottonwood Lane Loop
- A Multi-Loop Concept

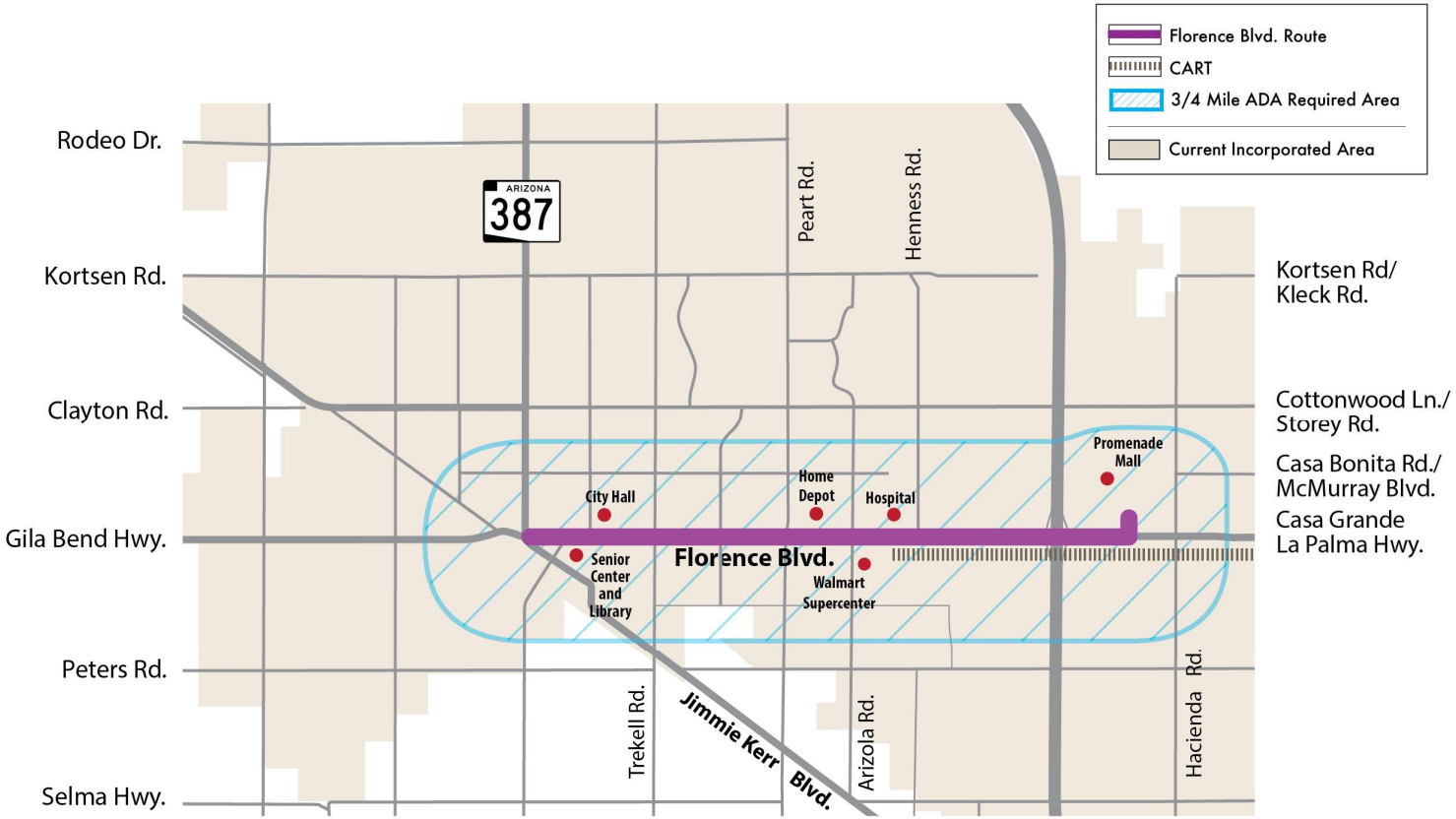
The Maximize Federal Share Alternative retained the Florence Boulevard Route with the future extension to the future recreation center, the Downtown and Service Area Route, a vanpool program with no public subsidy, and a flex route option for the two above fixed routes. The Demand Response Service was eliminated. A Flex Route alternative could be used instead of complimentary paratransit. While this option makes deviations open to all, the number of deviations per day can be limited and the fare increased. This alternative is shown in **Figure 4.2**.

Figure 4.2 – Maximize Federal Share Alternative



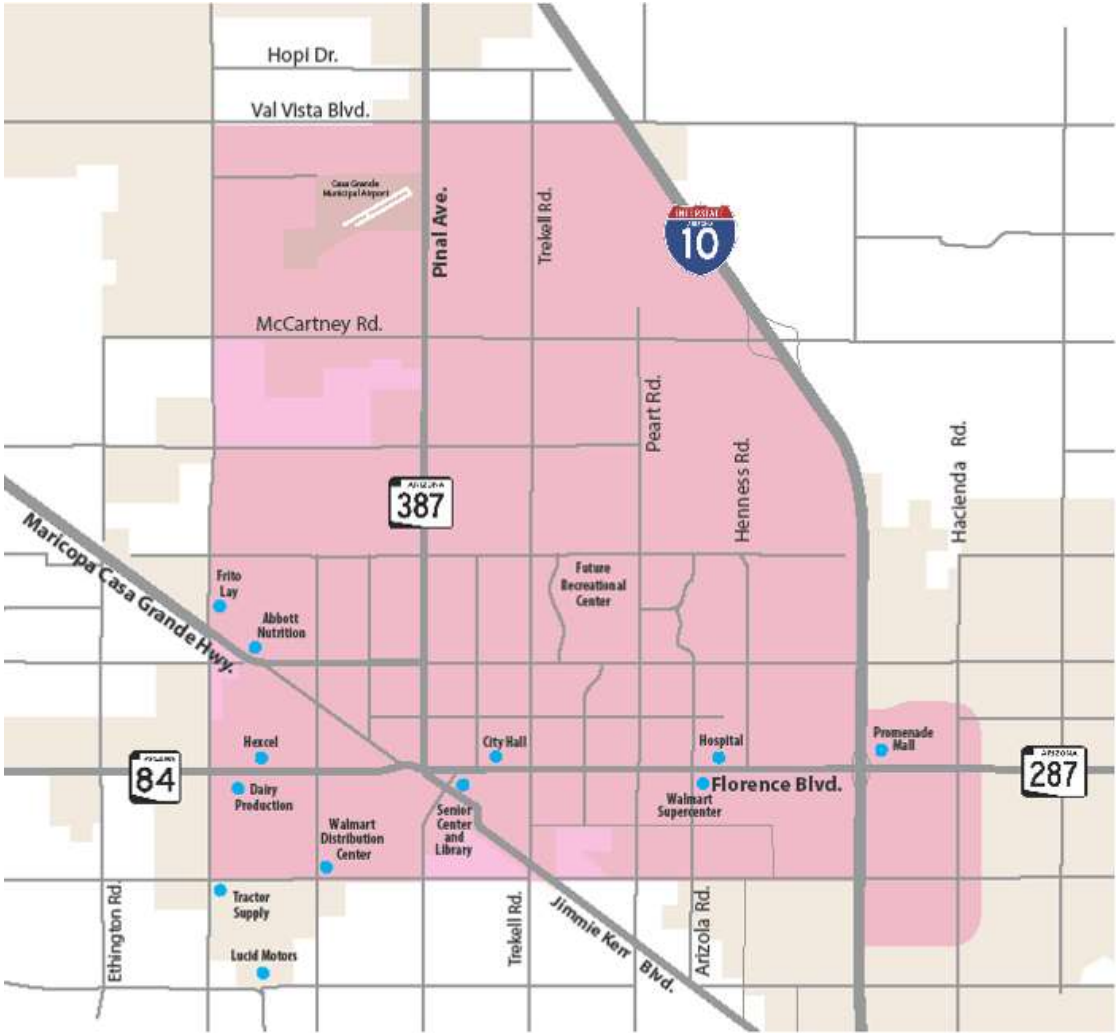
The Maximize In-Kind Contribution Alternative retains only the Florence Boulevard Route and the requisite ADA Complimentary Paratransit Service (or flex route option) for that route. The option loses the Downtown and Service Area Route. The Vanpool option could continue as it is an employer/employee funded route subsidy. This option is shown in **Figure 4.3**.

Figure 4.3 – Maximize In-Kind Contribution Alternative



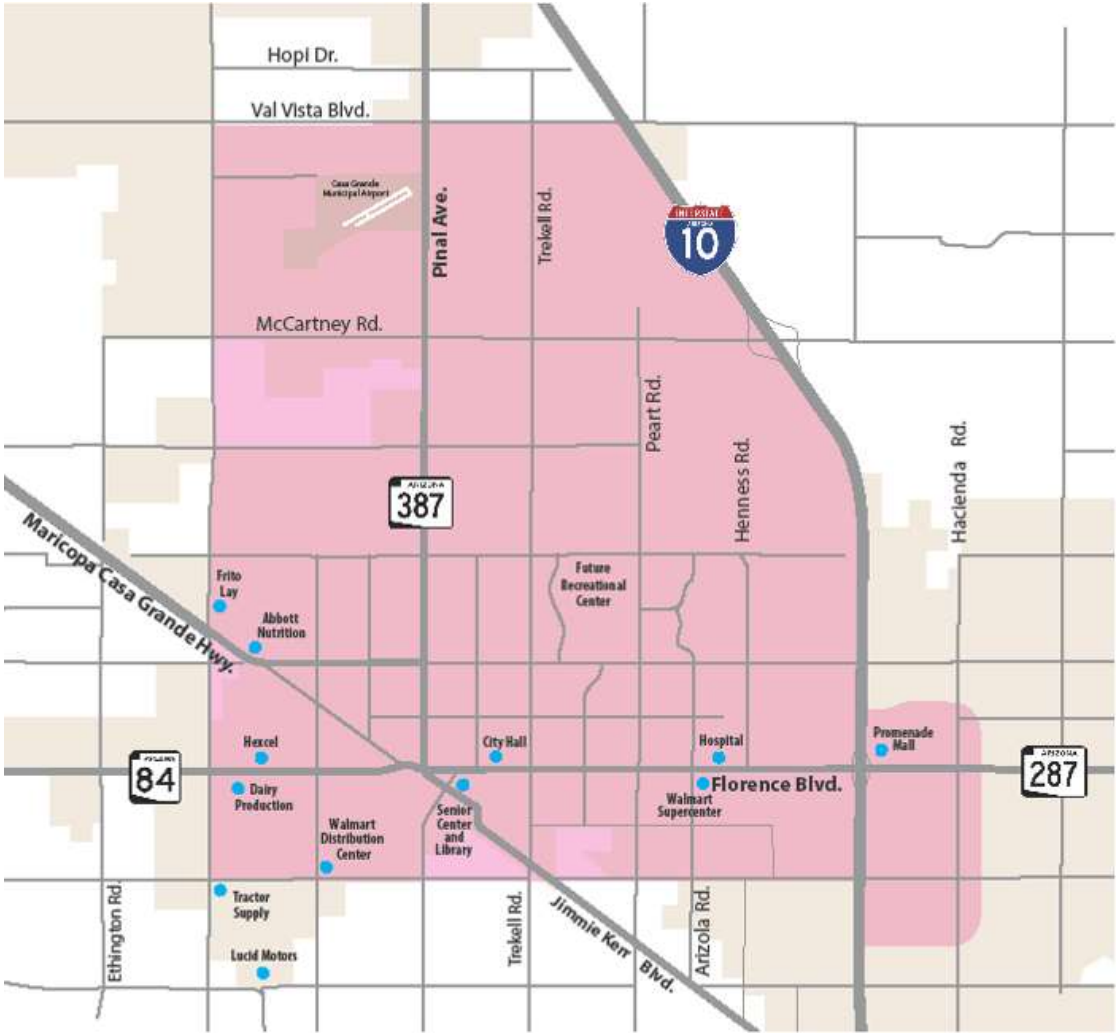
The All Demand Response Alternative would rely on passenger activated pick up and drop off service rather than fixed route service. This would be provided by wheelchair accessible vehicles and would not require the same seating capacity as fixed route as passenger loads would be less, typically 2-3 passengers per trip. The proposed service area for the All Demand Response Option is shown in **Figure 4.4**.

Figure 4.4 – All Demand Responses Option



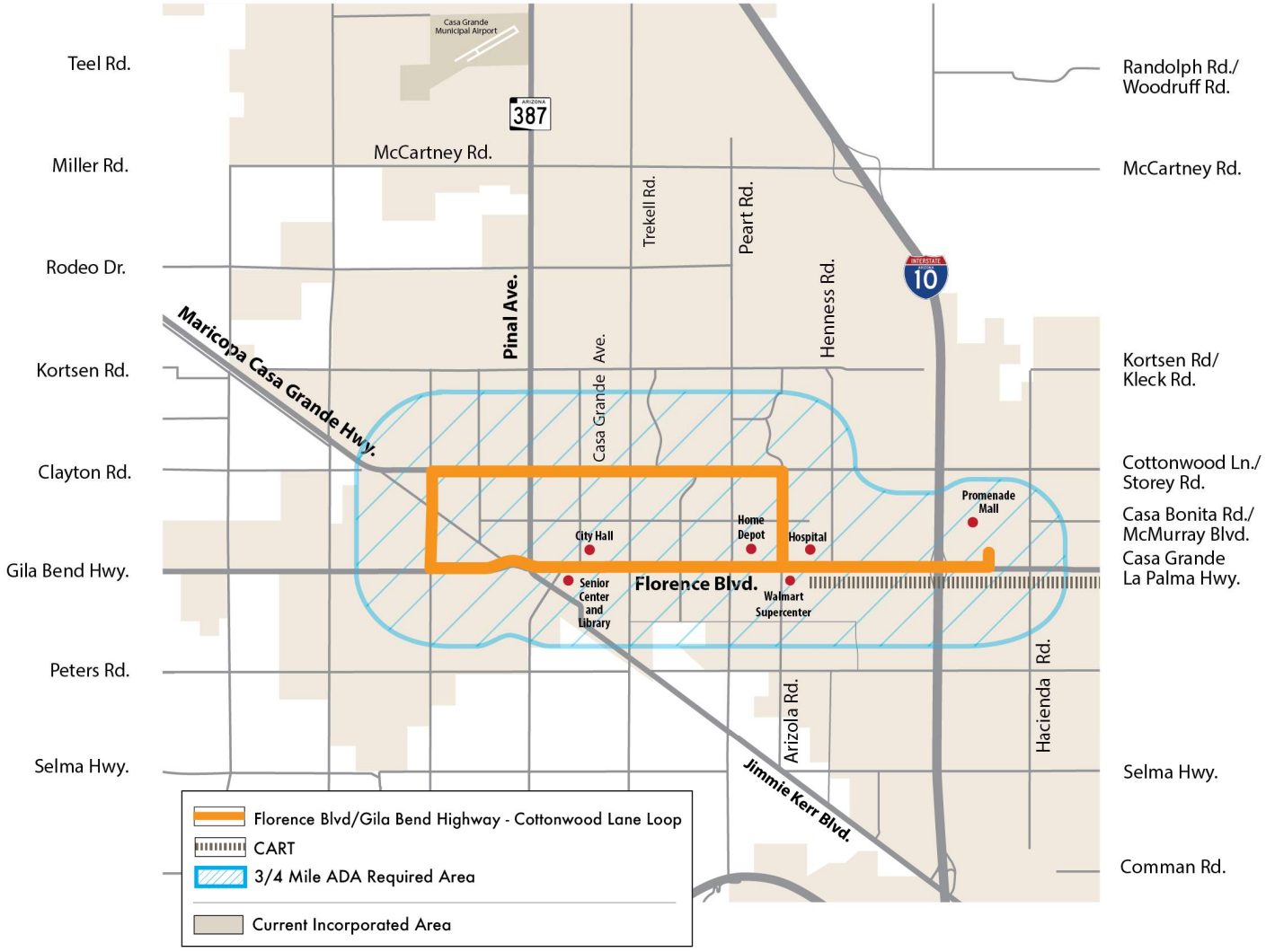
An All Voucher System would use taxi, Uber, Lyft, and any other potential private providers to provide rides to Casa Grande residents with vouchers purchased by passengers much like transit fares. The vouchers would then be redeemed by the vendor. Management oversight efforts would need to be taken to assure an adequate number of wheelchair accessible vehicles are available to meet the demand of disabled passengers. This concept is typically considered in larger urban areas with a larger inventory of private transport providers and typically targeted to seniors and those with disabilities only. Federal funds would not be approved for this approach if it was the only element of a transit system. The proposed All Voucher System Service Area is shown in **Figure 4.5**.

Figure 4.5 – All Voucher System



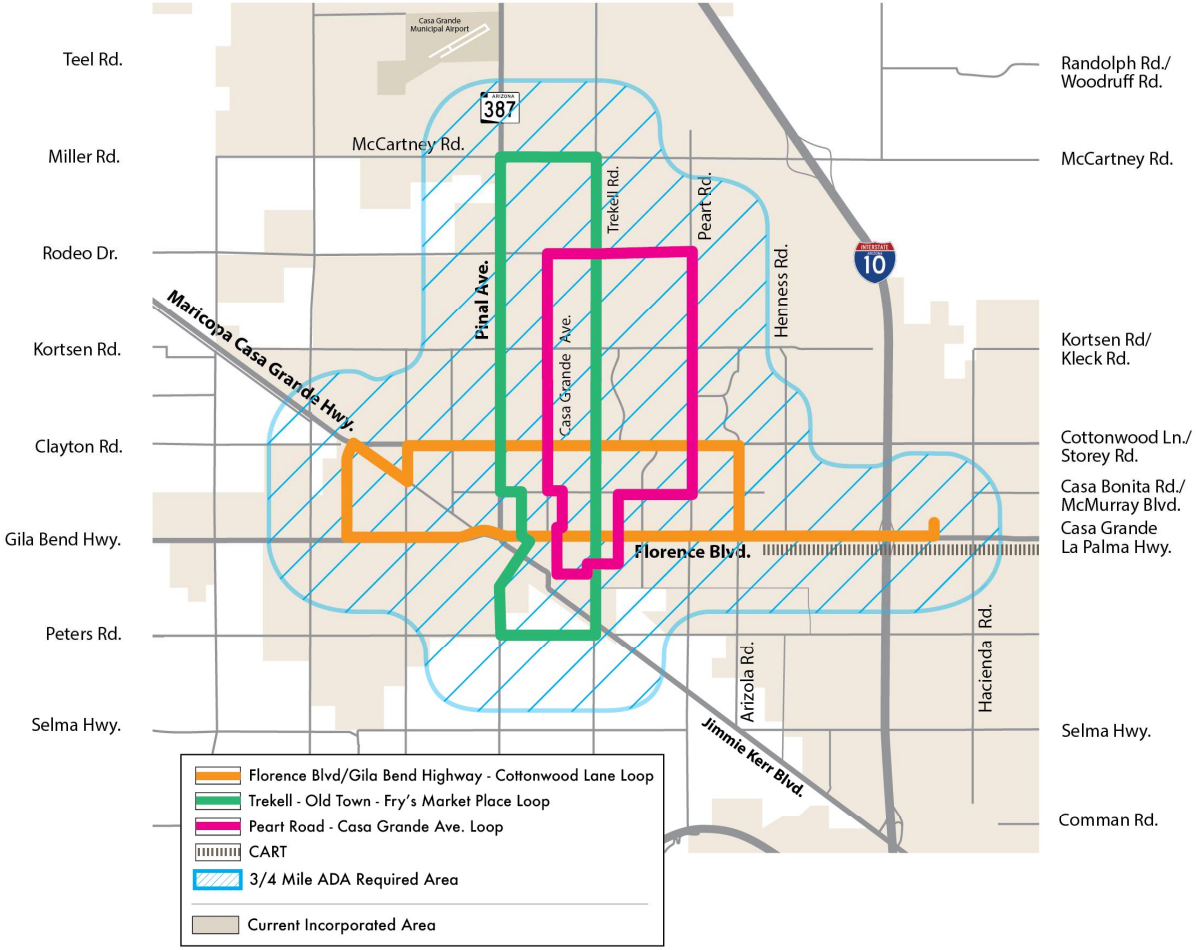
A Florence Boulevard – Cottonwood Lane Loop was introduced by the Transit Technical Advisory Committee (TTAC) for this project. The concept provides some access to retail and service destinations as well as residential areas north of Florence Boulevard. The loop portion of this proposed route extends west to Thornton Road. This route is shown in Figure 4.8 – Recommended Proposed Service Alternative Option A**Figure 4.6**.

Figure 4.6 – Florence Boulevard – Cottonwood Lane Loop



A Multi-Loop option was also introduced by the TTAC. This concept includes the Florence Boulevard - Cottonwood Lane Route and also two additional loops, one operating on Pinal Avenue and Trekell Road, and one on Casa Grande Avenue and Peart Road. To be effective, these loops would need to be carefully timed to permit transfers between routes. This option is shown in **Figure 4.7.**

Figure 4.7 – Multi-Loop Option



4.2. Implementation Strategies Over the Initial Five Years

This section covers operational questions to be answered and decisions to be made prior to service start up. It also introduces Americans with Disabilities Act (ADA) compliance and potential van pool activities.

4.2.1. Fleet Ownership

There are several approaches to the acquisition of vehicles for transit service in Casa Grande. One option is for the City to acquire vehicles and place them in operation with either public staff or a private operator. In either case, the equipment can be acquired with Federal Transit Administration (FTA) Section 5307 funds available to Casa Grande.

Another option is for the operator to provide the vehicles. Private operators can amortize the cost of contract vehicles over time, an option which the City does not have. If the operator provides the vehicles as part of an operations contract, federal funds can be used at a higher match rate using federal "Capital Cost of Contracting" guidelines, which provide a higher federal match (80%) than federal operating subsidy (50%).

Additionally, should the City opt to discontinue the service, a private operator would be left owning fleet vehicles instead of the city. Were the city to own the vehicles, they would likely be sold at some loss.

4.2.2. Route Interdependencies

The Florence Boulevard route provides direct access to the Promenade Mall, Banner Casa Grande Medical Center, the Dorothy Powell Senior Center, City Hall, the Casa Grande Public Library, and the majority of the retail centers in the community. Both the CART regional service and the COMET service from the City of Maricopa can connect to the Florence Boulevard spine service at the Banner Casa Grande Regional Medical Center. The downtown and health services route provides access to residential areas with high transit potential, neighborhood parks, and a large number of smaller health service and social service destinations. The latter route will feed the Florence Boulevard Route with riders making connections to regional retail and service destinations. These two routes are therefore interdependent. For the ridership to grow to support the system and be successful, these two routes should begin service concurrently.

4.2.3. ADA Paratransit Requirements

The Americans with Disabilities Act (ADA) requires that when fixed route service is provided by, or on behalf of, a public agency, "Complementary Paratransit" shall also be provided within a ¾ mile radius of the fixed route. This ensures that persons with disabilities can access the transit routes by means of a demand response service. Because of this regulation, the paratransit required component needs to be included in any initial operating service with a fixed route component, unless the service is operated as a flex route service with the vehicle deviating off route to pick up passengers with advance reservation.

4.2.4. Van Pool Options

Three of the employers interviewed by the study team indicated interest in vanpool service. Abbott indicated that they were recruiting from the Phoenix metropolitan area, and other employers indicated interest in regional vanpool service. Valley Metro, the regional transit agency in Maricopa County, indicated that they would sponsor vanpools that both originated and ended their daily round trips in Maricopa County. Valley Metro purchases the vans and then vanpool members pay a monthly rate to cover insurance, fuel, and maintenance. The rate is based on the seating capacity and features of the vehicle, and the amount of monthly mileage. For 100 miles per weekday commute the cost of the van would be between $507 and $840 per month, depending on vehicle capacity (8 to 15 passengers). VRide/Enterprise, who capitalizes the Valley Metro system, has other pricing structures for vanpools with less public investment and also includes a pricing structure with no public or employer investment. Vanpools can be phased in to the program later in the short-range period, depending upon the interest of various employers and their employees to fund and utilize the service.

4.3. Projected Ridership and Community Support

Ridership is typically much lower for demand response type service, as it penetrates residential areas to pick up riders, rather than concentrating on arterial roadway corridors closer to large trip generators. Projected demand in Section 3.1 is for a deviated flex route option.

4.3.1. Projected Demand

The demand estimation approach uses a mode split analysis evaluating what percentage of the population would use transit as a means of travel. With this technique, the total number of predicted trips per weekday is estimated using factors from the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. Using the 12,456 households in the capture area of the Preliminary Service Alternative, 100,894 trips would be generated on a typical weekday in the area. Assuming a one percent mode split (The Phoenix metro area has just over a 2% mode split for example) annual transit boarding's in Casa Grande would be about 257,000. This is within the range of ridership found in peer cities such as Sierra Vista and Show Low/Pinetop-Lakeside.

4.3.2. Peer Comparisons

Within Arizona, the closest comparable small urban area with transit is Sierra Vista. Vista Transit has grown to five service routes. The most recent available data from the National Transit Database (NTD) for 2014 reports that Vista Transit had 161,552 unlinked trips for fixed route service and 9,825 unlinked trips for their demand response service. Farebox recovery was 10% of operating cost. While this is an impressive illustration of what service in Casa Grande could achieve in the future, Vista Transit has also been in operation since 1994 when it operated as rural funded service. Sierra Vista's population and public service area (a portion of Sierra Vista is part of a military reservation) is comparable to Casa Grande. Vista Transit started as a deviated route service and by 2003, had grown to four weekday routes and two weekend routes. Ridership grew to 140,000 in 2000 and over 170,000 annual boardings today. Transit Dependent ridership dropped from 50% to 35% by 2014, and elderly riders dropped from 50% of boardings to 35%, as more and younger choice riders were attracted to the service.

Four Seasons Connections in Show Low and Pinetop-Lakeside Arizona provides service in those communities and to the nearby Hon-Dah Casino. The system has been in operation since 1996 and is operated by a private contractor. Several years after operations began in Show Low and Pinetop-Lakeside, a commuter connector service was added, providing service to Taylor, Snowflake, and Holbrook. As Holbrook is the county seat, public service jobs there generate commuter service from communities to the south. The capture area has a population of just over 107,000. Ridership is just over 200,000 annually.

In nearby Coolidge, with a population of 12,578, the Cotton Express local service generates 27,000 passenger boardings per year, and the Central Arizona Regional Transit (CART), which connects to Florence, Central Arizona College, and Casa Grande, currently has 27,000 annual boardings. Coolidge service began operations in 1990.

A peer analysis was done to calculate ridership estimates for Casa Grande based on comparisons by both population and number of households in peer transit services. The data on the following page summarizes the findings.

	Casa Grande	Sierra Vista	Show Low(1)	Coolidge(2)
Homes	12,456	19,756	9,108	3,947
Unlinked Annual Boardings		171,377	200,000	26803
Total Population	54,000	52,745	25,455	12,578
Capture Population	46,000	45,166	30,000	22,578

(1) Includes Pinetop Lakeside, Snowflake, Taylor
(2) 26,803 local boardings and 29,312 CART boardings

Casa Grande Ridership Estimates When Using Peer Comparison Data - POPULATION				CG Projected Ridership
Sierra Vista	Using Capture Population and Annual Ridership	3.794381	Annual ridership per person in capture population	174,542
Show Low	Using Capture Population and Annual Ridership	6.666667	Annual ridership per person in capture population	306,667
Coolidge	Using Total Population and Annual Ridership	2.130943	Annual passenger boardings per person within city populatio	115,071
Average				198,760
CONCLUSION:	**The Casa Grande Transit System could expect between 116,000 and 307,000 annual unlinked boardings**			

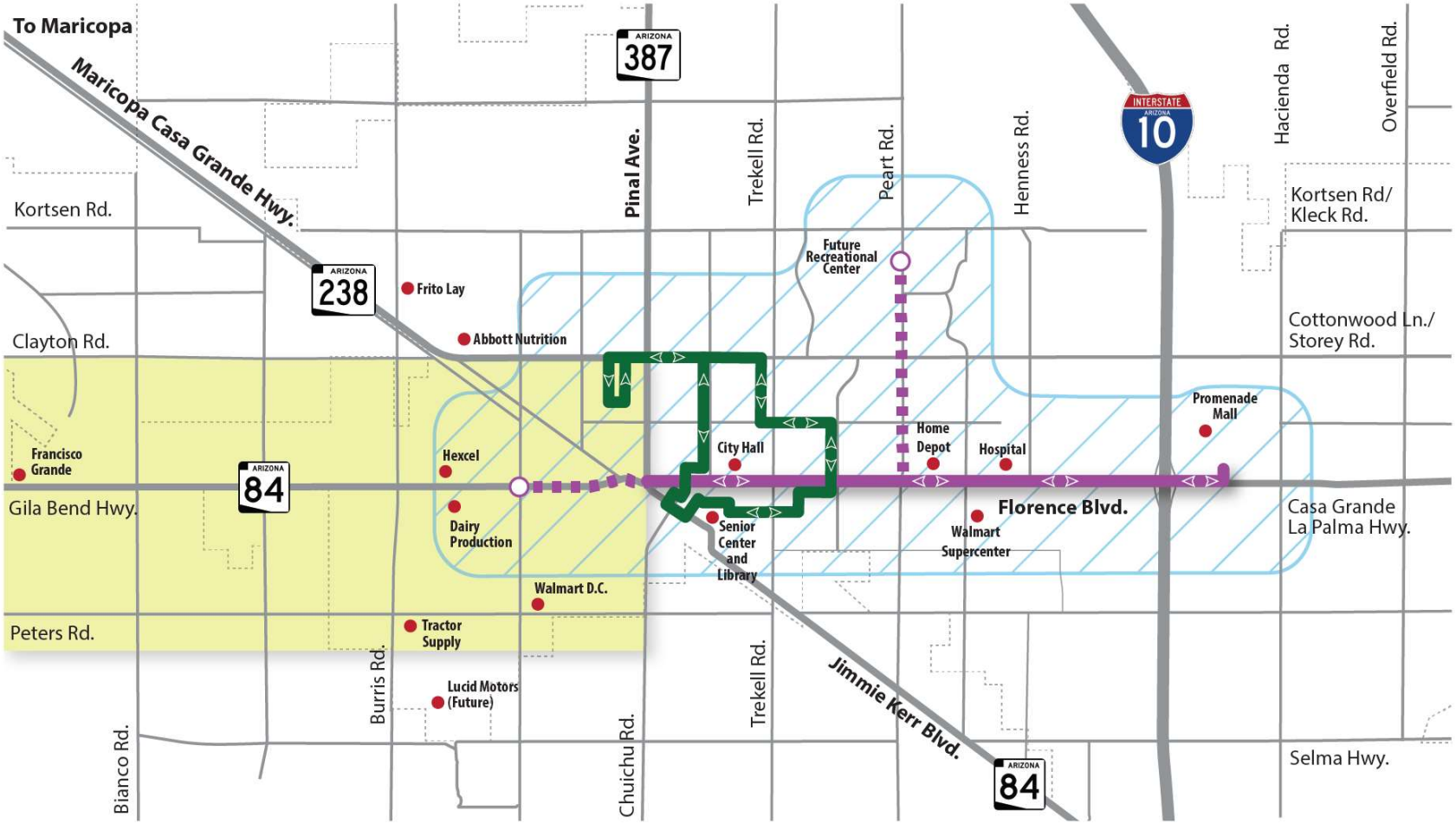
Casa Grande Ridership Estimate When Using Peer Comparison Data - HOUSEHOLDS				CG Projected Ridership
Sierra Vista	Not enough comparable data to draw a conclusion	8.674681	Annual ridership per household in capture population	108,052
Show Low	Using Capture Population and Annual Ridership	21.95872	Annual ridership per household in capture population	273,518
Coolidge	Using Total Population and Annual Ridership	6.790727	Annual passenger boardings household within City populatio	84,585
Average				155,385
CONCLUSION:	**The Casa Grande Transit System could expect between 85,000 and 274,000 annual unlinked boardings**			

Based on these peer comparisons, the Casa Grande Preliminary Alternative annual boardings should grow to between 150,000 and 200,000 within five years, with an initial year conservative boarding level estimate of at least 75,000. The preliminary estimates have been based on achieving conservative boarding levels growing from this start.

4.3.3. Recommended Alternative

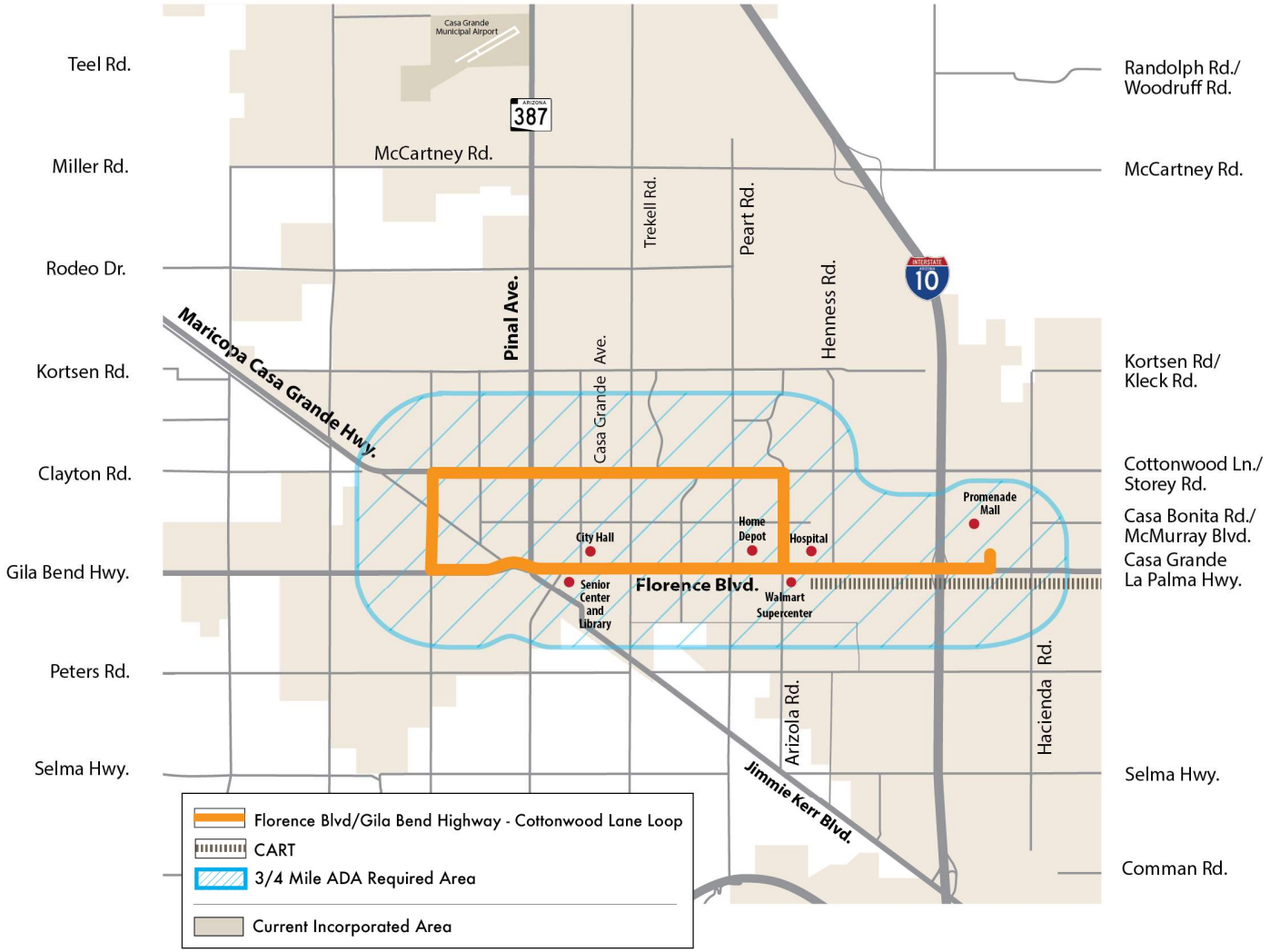
Based on service analysis, input from the public, input from the TTAC and ADOT staff, it is recommended that the preliminary alternative to move forward is the Florence Boulevard Spine Route and the Downtown and Service Area Loop, both operating as deviated flex route service. This is shown in **Figure 4.8**, and is the same as the Maximize Federal Share alternative shown above.

Figure 4.8 – Recommended Proposed Service Alternative Option A



An alternative also moved forward for consideration is to serve the western portion of Florence Boulevard be using the Florence Cottonwood Loop shown in **Figure 4.6**, illustrated below as **Figure 4.9**.

Figure 4.9 – Recommended Proposed Service Alternative Option B



4.4. Service Period

The services proposed are initially recommended to operate twelve hours per day, five days per week. This gives the following service parameters:

Florence Blvd Route: Three vehicles in service on the route with an estimated 200 miles per day per vehicle. Annual service for 255 days per year (excluding six holidays) yields 102,000 service miles per year within 6,120 vehicle revenue hours. Thirty minute headways to be provided.

Downtown and Health Services Route: Three vehicles in service on the route with an estimated 175 miles per day per vehicle. Annual service for 255 days per year yields 89,250 service miles per year within 6,120 vehicle revenue hours. Thirty minute headways to be provided.

ADA Complementary Paratransit Requirements: Based on comments received from TTAC members and ADOT transit staff, it is recommended that service in Casa Grande be operated as a flex route service, rather than adding a second demand response service to meet ADA requirements. This decision will not impact overall costs, as flex route deviation should not exceed the cost of additional rolling stock and drivers to operate alternative complimentary paratransit service. One additional vehicles to accommodate flex demand and one spare will suffice for this demand.

4.5. Stops

Scheduled stops for the Florence Boulevard Route are recommended at the following locations:

Westbound Florence Boulevard	**Eastbound Florence Boulevard**
Promenade Mall	Peart Park (0.5 mile)
LA Fitness (1.4 miles)	Trekell Road (0.6 mile)
Henness Road (0.3 mile)	Pueblo Drive (0.2 mile)
Via de Ciela (0.1 mile)	Colorado Street (0.3 mile)
Banner Health (0.2 mile)	Sunshine Child Center (0.6 mile)
Arizola Avenue (0.2 mile)	Arizola Avenue (0.4 mile)
Home Depot (0.4 mile)	Walmart (0.2 mile)
Lowes (0.2 mile)	Banner Health (0.1 mile)
Food City (0.7 mile)	Camino Del Norte (1.0 mile)
City Hall (0.6 mile)	Promenade Mall (0.9 mile)
Holiday Inn (0.6 mile)	

Designated stops on or near the downtown and social service loop include:

- Casa Grande Library
- Dorothy Powell Senior Center
- Evergreen Elementary School
- New Life Pregnancy Center
- Safeway Center
- Pinal County Supervisors Office
- Wellness Center
- O'Neill Park
- West Side Park
- Seeds of Hope
- Family Medical Center
- Center Park Apartments
- Casa Verde High School
- Casa Grande Municipal Court
- Casa Grande Food Court
- Family Medical Center
- Center Park Apartments
- Casa Verde High School

On both routes, "courtesy stops" should be permitted, traffic conditions and safety allowing, where riders wish to be picked up or dropped off. Conditions along the downtown and social service loop should allow more latitude for courtesy stop, as traffic will be less than along Florence Boulevard.

4.6. Stop Improvements

Stop improvements were discussed as part of the Preferred Alternative section of the study. During the initial few years of service, stop locations should be clearly identified with bus stop signs. Stops should not be installed in areas without sidewalks, as persons with mobility limitations will find it difficult to access the stop. As service is in operation, it will become apparent where boardings justify the expense of expanded stop facilities.

Bus pullout bays do not exist today in Casa Grande. They should not be built until it is clear where the stops with the highest number of boardings are located. In the interim, right turn lanes into activity centers on Florence Boulevard could be used as interim stops. It is not unusual in the Phoenix metro area to see right turn only signs that also include the text "*EXCEPT BUSES"* as shown in **Figure 4.10** – Shared Turn Lane Sign

Figure 4.10 – Shared Turn Lane Sign

4.7. Fare Policies

Fares should be comparable to other similar systems. Cotton Express, the local service in Coolidge, charges $1 for a one-way trip, or $2 for an all-day pass. Monthly passes are also available. Vista Transit in Sierra Vista charges $1.25 for a fixed route trip, and $2 for demand response. All day passes are $3. Discounts for seniors, disabled, and students are available. Casa Grande could start with fares of $1 per trip, $2 for an all-day pass, and $1.50 for demand response/deviated service trips or $3 for all day demand response/deviated service. A transfer agreement should be attempted with Central Arizona Regional Transit, where both agencies agree to honor each other's all day passes. A similar agreement could be made with the City of Maricopa's Comet service. Monthly fares might be considered after the service has been in operation for some time and initial ridership is known.

4.8. Interagency Coordination

The Transit Technical Advisory Committee for this study includes representatives from Pinal County, the City of Maricopa, the City of Coolidge/CART, and the Arizona Department of Transportation. Regional Coordination will continue as part of the Mobility Management Plan of the Sun Corridor Metropolitan Planning Organization (SCMPO). Agency staff and consultant team members also met with the Maricopa Association of Governments in Phoenix to share planning details and recommendations.

4.9. Service Procurement

Financial cost projections for a number of operation options will be presented in the financial component of this study. In the event that the city opts for a turn-key contracted option to provide the service, it is recommended that a Request for Proposal (RFP) procurement process be used to select an operator. This provides some latitude for the city to make a selection, as compared with an Invitation to Bid, which usually prompts selection of the lowest cost respondent.

Casa Grande Transit Development Plan

Connecting Casa Grande

CHAPTER 5

Financial Plan

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5. INTRODUCTION

The City of Casa Grande and the Sun Corridor Metropolitan Planning Organization (MPO) are developing a transit development plan for the City of Casa Grande. This financial plan will identify estimated costs for the route network developed in the short-term transit plan through three different options, a turnkey option, a partial turnkey option, and a public service option. This paper will document projected annualized costs for the preliminary option using each of the three service delivery options.

5. COSTING THE SHORT-TERM PLAN

5.1. Cost

5.1.1. Elements Being Costed

Sun Corridor MPO and City staff worked with the Transit Technical Advisory Committee (TTAC) and consultants to develop a short-term transit plan that was consistent with the current and short-term transportation needs of Casa Grande. The associated options of that plan include:

- Two fixed routes with thirty-minute headways, one along Florence Blvd and one circulator that connects housing and services in the more densely populated areas near downtown.
- A complementary paratransit service that provides required demand response service within ¾ mile of the fixed routes; **or**,
- An alternative Flex Route Deviation concept for the fixed routes in lieu of complementary paratransit.

A Deviated Flex Route concept was selected as the preliminary alternative moving forward. These proposed routes would operate twelve hours per day, five days per week with a thirty minute headway. Initial year ridership is very conservatively estimated at 75,000 boardings. Six vehicles with a seventeen passenger capacity would be used.

Since the City has not had a transit system, the development of a system would require capitalization should the City decide to operate and manage the system as a public or a partial turnkey service. Another option that reduces the City's upfront financial expense is hiring a private contractor to run the system. A private contractor can manage some or all aspects of the system, as will be shown in the costing approach in future sections of this report.

Other alternatives were evaluated and have been presented as viable options available to the City of Casa Grande. Should one of the alternatives not costed herein move forward for consideration by the City, a detailed cost evaluation will be required to determine the federal funding needs and the City matching fund needs.

5.1.2. Management Types Being Costed

The short-term transit plan was costed using three different management strategies:

- Full Turnkey: a full turnkey system uses a third party private contractor to operate and maintain the transit system. This includes using third party provided vehicles. Note: Some agencies choose to transition to a partial turnkey option after an initial period of successful operation.
- Partial Turnkey: a partial turnkey system uses a third party private contractor to provide some portions of the operations of the transit system. In this scenario, the contractor provides service and maintenance, and the City purchases the vehicles.
- Full Public System: in a full public system the City provides all operations and capital.

5.1.3. Costing Assumptions

Costing Budget Items

In the development of the cost model, costs were assigned using the following sub items:

- *Labor: Salaries and Wages:* Salaries for bus operators, maintenance staff, dispatchers and management staff.
- *Vehicles:* For service and backup.
- *Fuel:* Fuel for buses and staff vehicles.
- *Maintenance:* All vehicle maintenance costs except labor.
- *Premiums for Insurance:* Vehicle insurance.
- *Facilities:* Office space (and potentially maintenance space) for contract operator.
- *Miscellaneous Expenses:* Rollup of expenses not allocated to other items.
- *Allocations and Profit:* For turnkey and partial turnkey systems, profit and overhead provided to private sector providers.

As the Short Range Transit Plan document selected a deviated flex route approach as the preferred operational approach, Complementary Paratransit and Demand Response Only options were not included in the final version of this financial plan. **Table 1** shows projected full public system costs for the preliminary alternative.

Table 1 – Typical Annualized Full Public System Costs

DEVIATED FLEX ROUTE			
	Total Cost	**Local Share**	**Federal Share**
Labor Salaries and Wages			
Subtotal	$470,823.00	$235,412.00	$235,411.00
Vehicles (six vehicles amortized over a 5-year life)			
Subtotal	$96,000.00	$19,200.00	$76,800.00
Fuel			
Subtotal	$91,800	$45,900	$45,900
Maintenance			
Subtotal	$41,280	$8,257.00	$33,024.00
Insurance			
Subtotal	$74,010	$37.005.00	$37,005.00
Facilities			
Subtotal	$0	$0	$0
Administrative and Management Costs			
Subtotal	$77,651.11	$38,826.00	$ 38,825.00
GRAND TOTAL	**$851,566.00**	$384,601.00	$466,965.00

5.2. Partial Turnkey Budget Items

The fixed route cost assumptions for the preliminary alternative short-term transit plan, partial turnkey, were based on a per mile cost of operating similar systems. The vehicle costs were developed using 2017 sample costs in Arizona. The per mile cost was then sub-allocated to each of the budgetary units. **Table 2** shows projected costs for a partial turnkey approach. Under this scenario, the fleet will be provided by the City of Casa Grande and operating, maintenance and daily operations duties will be handled by the contractor.

Table 2 – Typical Annualized Partial Turnkey System Costs

DEVIATED FLEX ROUTE			
	Total Cost	**Local Share**	**Federal Share**
Labor			
Subtotal	$470,823.00	235,412.00	$235,411.00
Vehicles (6 20 passenger buses amortized over 5-year life)			
Subtotal	$96,000.00	$19,200.00	$76,800.00
Fuel			
Subtotal	$91,800.00	$45,900	$45,900
Maintenance			
Subtotal	$41,281.00	$8,257.00	$33,024.00
Insurance (including performance bond for contractor)			
Subtotal	$103,277.00	$51,639	$51,639.00
Miscellaneous			
Subtotal	$2,484.00	$1,242.00	$1,242.00
Overhead and Profit			
Subtotal	$40,335.00	$20,168.00	$20,167.00
Grand Total	**$846,000.00**	$381,818.00	$464,183.00

5.3. Full Turnkey Budget Items

The full turnkey budget items were developed using the same breakout categories as the partial turnkey and full public operation alternatives so the same line items could be compared. Table 3 shows the budget breakdown details of a full turnkey approach.

Table 3 – Typical Annualized Full Turnkey System Costs

DEVIATED FLEX ROUTE			
	Total Cost	**Local Share**	**Federal Share**
Labor			
Subtotal	$470,823.00	$235,412.00	$235,411.00
Vehicles (6 20 passenger buses amortized over three year contract)			
Subtotal	$100,900.00	$20,180.00	$80,720.00
Fuel			
Subtotal	$91,800.00	$45,900	$45,900.00
Preventive Maintenance			
Subtotal	$41,281.00	$8,257.00	$33,024.00
Insurance (including performance bond)			
Subtotal	$103,277.00	$51,639.00	$51,638.00
Facilities			
Subtotal	$37,421.00	$7,484.00	$29,937.00
Overhead and Profit			
Subtotal	$91,354.00	$45,677.00	$45,677
Grand Total	**$936,856.00**	$414,549	$522,307.00

5.4. Availability of Federal Funding

The costing model uses the most recent FTA 5307 funding allocation for Casa Grande. The amount identified for fiscal year 2017 is $843,032.

The local to federal share of project costs changes based on the project type. All FTA funding programs require some form of local match to support the funding provided by the federal government. Operating costs, including annual costs for items such as fuel and drivers must be matched by the local entity at 50% of the net (after fare revenues) operating budget. Capital costs, such as the purchase of vehicles or the construction of transit facilities, are matched by the FTA at 80% of their costs. This means that the local entity must provide 20% of the cost of capital for items such as vehicles. The FTA Capital Cost of Contracting rule, (CCOC) allows local transit programs to fund turnkey operators at the 80/20 match for some costs if the turnkey operator is providing vehicles and/or maintenance. This is an option for agencies that choose to use a third-party contractor for some or all of their service. **Table 4** provides an overview of the various local to federal shares used in the cost model.

Table 4 – Federal Match Share for Various Funding Types

Management Type	Cost Type	Federal	Local
Turnkey	Capital Cost of Contracting	80%	20%
Turnkey	Operating	50%	50%
Turnkey	Preventative Maintenance	80%	20%
Partial Turnkey	Operating	50%	50%
Partial Turnkey	Preventative Maintenance	80%	20%
Partial Turnkey	Capital – purchase of vehicles	80%	20%
Full Public	Capital – purchase of vehicles	80%	20%
Full Public	Preventative Maintenance	80%	20%
Full Public	Operating	50%	50%

5.5. Regional Funding

In November, 2017, voters in Pinal County Approved Propositions 416 and 417. Proposition 416 approved the Pinal Regional Transportation Plan and Proposition 417 authorized a one-half cent sales tax to fund the plan. This tax is expected to raise $641.2 million over the twenty-year life of the program.

From this fund, $20,000,000 is designated for public transit operating funds and Park and Ride facilities in the county. This $1 million per year will provide some additional revenues to offset operating costs for eligible services. It has been estimated, in the detailed route cost figures to follow, that $100,000 per year could be obtained by the City of Casa Grande to help offset the federal local match requirements.

5.6. Operational Option Comparison

The cost assumptions for the short-term transit plan using turnkey management were developed based on current costs of operating similar systems. The current contract rate for similar operations in Arizona is $65.00 per vehicle service hour. This rate is consistent for either fixed route or demand response type services.

A comparison of the three operating management options is shown in **Table 5**.

Table 5 – Operational Management Option Comparisons

	FULL TURNKEY		OPERATIONS TURNKEY/ PUBLIC OWNED CAPITAL		FULL PUBLIC SERVICE	
	Federal Funds	Local Funds	Federal Funds	Local Funds	Federal Funds	Local Funds
CCOC and Capital 80/20	$110,657.00	$ 27,664.00	$ 76,800.00	$ 19,200.00	$ 76,800.00	$ 19,200.00
Operations 50/50	$378,626.00	$378,628.00	$354,359.00	$354,361.00	$357,141.00	$357,143.00
Preventative Maintenance 80/20	$ 33,024.00	$ 8,257.00	$ 33,024.00	$ 8,257.00	$ 33,024.00	$ 8,257.00
GRAND TOTAL	**$522,307.00**	**$414,549.00**	**$464,183.00**	**$381,818.00**	**$466,965.00**	**$384,601.00**

In reviewing the three options – public operations, partial turn key operations, and total turnkey operations, the full turnkey option requires the most local public subsidy but not the public ownership of vehicles. The partial turnkey option and the full public service options require public purchase of the vehicles in advance of service startup. In a number of cases, new service began as a full turnkey approach, transitioning to partial turnkey as the public agency purchased vehicles (sometimes from the contractor) once the system had demonstrated good public support. Tables 1-3 show annualized costs. In order for fleet availability to be in place prior to service startup, purchase cost would need to be allocated prior to service startup (All costs are paid by the public agency and then reimbursed by the FTA). To provide level comparisons, Tables 1-3 are annualized with vehicle costs amortized over the life of the contract (typically three years) for the full turnkey option and amortized over the life of the vehicles (typically five years) for the full public option and partial turnkey options. The alternative option of a Florence Boulevard/Cottonwood Lane Loop, introduced by a TTAC member, has less mileage and would cost between $550,000 and $609,000 annually, depending on management option.

5.6.1. Alternative Refinement

As noted above, capital costs were annualized in order to provide a level comparison between operational approaches. As the partial turnkey and full public operation alternatives will require advance purchase of vehicles, the first year's grant funding could be dedicated to fleet and capital equipment acquisition. In discussions with ADOT Multimodal Planning Division staff, another alternative was identified. Federal Transit Administration grant funds have been available to Casa Grande for several years. In the event that prior years' funding has not yet been reallocated to other Arizona grantees, it might be possible to obtain previous year funding to acquire equipment and current (FY 19 year available after October 1, 2018) year funds to cover operating and maintenance expenses. If this is achieved, a partial turnkey approach could be immediately implemented with the additional year's funds used to acquire fleet and other equipment.

Deviated Flex Route service has been identified as the most cost-effective way to address ADA demand. Once operational experience has demonstrated the levels of demand for route deviation, it might be possible to shift the service to provide Complimentary Paratransit Service in lieu of Deviated Flex Route service. If this is done, FTA funds are available to cover the cost of ADA paratransit service at a 90% federal level. ADOT staff suggests that this could be a viable option once demand is identified from operating Deviated Flex Route service during an initial operating period.

Short term options were shown to the public in May of 2017 and the City Council was briefed in August of 2017. Based on those briefings and input from the council and the Transit Technical Advisory Committee, additional alternatives were added to the short-range options. Thirty-four options or variations were reviewed. These included:

- Autonomous Vehicles
- All Voucher System
- Demand Response Only
- Vanpooling
- Fixed Route Service with Complimentary Paratransit and Demand Response
- Fixed Route with Complimentary Paratransit
- Flex Fixed Route with Route Deviation

Vanpooling was determined to be an alternative that could be financially underwritten by employers and employees without public subsidy. The demand response and voucher options were deleted from the short-term program alternatives as overall projected ridership and the cost per rider were notably higher than the Deviated Flex Route alternative.

5.6.2. Long-Range Cost Projections

The Long-Range Plan working paper outlined a number of expansion options to be considered in years 5-10 of operation in Casa Grande. These routes are designed to serve major new employment and recreation centers as well as continued development and infill in the community core. Details of these routes are contained in the long range working paper, but cost projections are included here to complete the financial analysis. Costs were calculated in 2018 dollars.

The five Long Range Options are described below:

Southwest Area Route: Employment growth in the west and southwest industrial areas will continue and increase. Pending new employment centers in this area include Lucid Motors (2,200 projected jobs) and the Attesa Motorsports Complex (projected 6,000 jobs). Serving these employment sites, support activities that will follow, and other employers including Hexcel, the Tractor Supply Distribution Center, Walmart Distribution Center and dairy producers justify service extension into this area. Service to these areas is proposed as peak period service primarily, with midday runs during the lunch period from 11am to 1pm. *The Southwest Corridor is envisioned as a commuter express route and is therefore exempt from ADA Complimentary Paratransit or route deviation requirements*. This route with peak period and midday service is projected to have an annual cost of $265,200 in current dollars.

Southeast Corridor Route: The Dreamport Villages project, near the intersection of Interstate Highways 8 and 10, is proposing a destination resort, a major theme park, residential areas and open space. The project is expected to generate 6,000 jobs during the first phase of construction, with 15,000 direct and indirect jobs at completion. Additionally, the development is expected to experience annual visitor levels of over 15 million. The proposed route extension is expected to start as a peak period commuter service expanding to all day service as visitor levels to Dreamport Villages warrant increased transit frequency. This route is projected to cost $198,900 per year at startup *as a commuter express route exempt from ADA Complimentary Paratransit or route deviation requirements*. Cost will increase to $397,800 as the area is completed and the route is expanded to all day 30-minute service with route deviation.

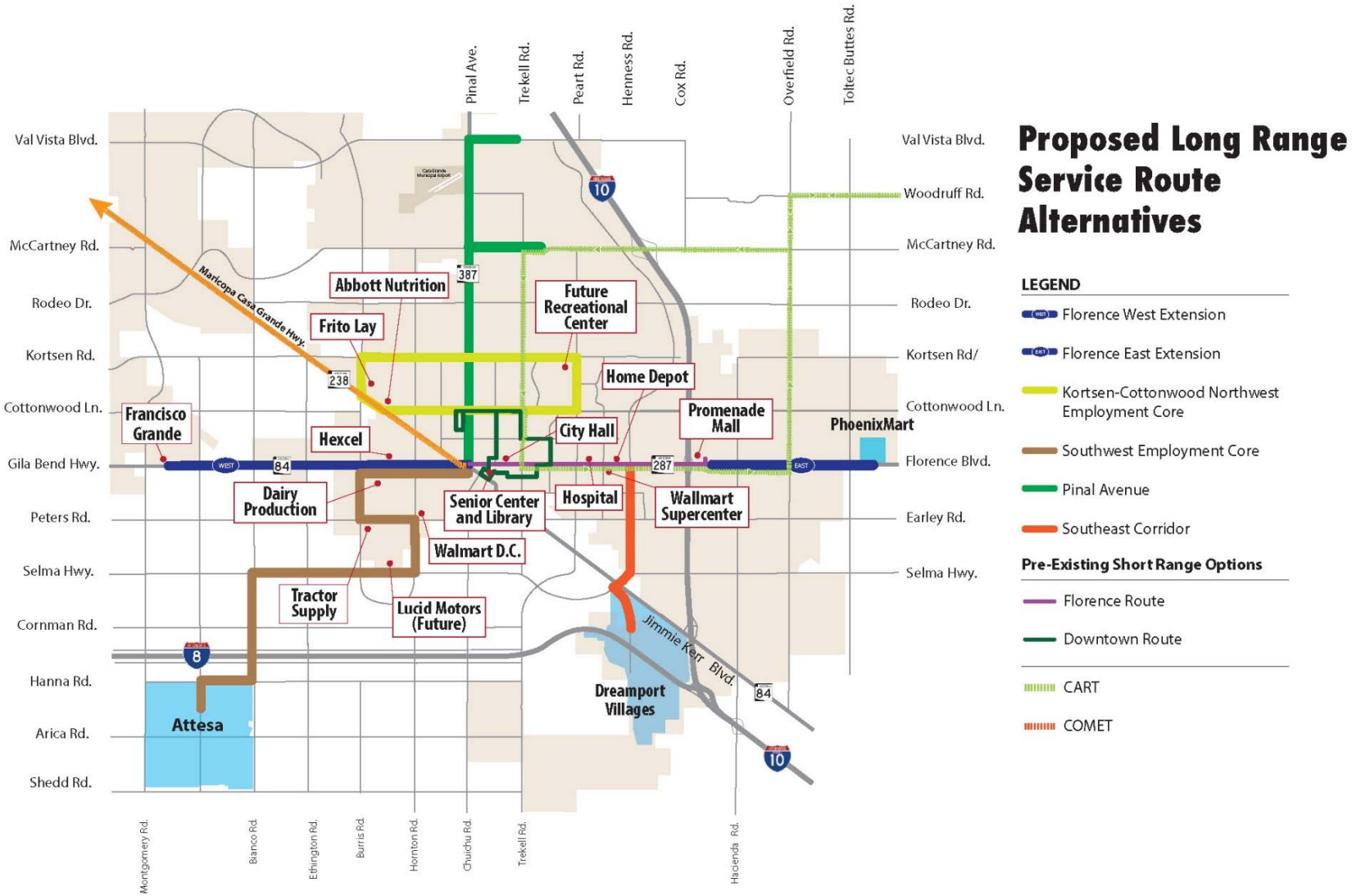
Pinal Avenue: Service in the Pinal Avenue corridor was considered in the service alternatives evaluated during the short-range planning process. It was determined that the amount of vacant land in the corridor and the current lack of major activity centers did not support inclusion in the initial menu of service for short range implementation. Within a ten-year window, continued development should justify service in this corridor including connections to the Public Safety Facility on Val Vista Road, the Casa Grande Union High School on McCartney Road, and the Casa Grande Municipal Airport area. This is envisioned to be thirty-minute headway service, twelve hours per weekday to match the service levels of the spine service on Florence Boulevard and on the Downtown and Service Area Loop. This service route is projected to cost $397,800 annually in current dollars. *This cost includes Deviated Flex Route service.*

Kortsen-Cottonwood Loop: Since the core area of Casa Grande will continue to grow in population and employment, extension of service along the arterial grid roadways north of Florence Boulevard will be needed. Ultimately, as development warrants, service could be expanded along the arterial grid depending on where growth and demand occurs. During the horizon of this study, extending service north to Cottonwood Lane and Kortsen Road between Burris Road and Peart Road supports the northern segment of the Downtown and Service Area Loop, and also connects employment along Maricopa Casa Grande Highway connecting a portion of the employment core to destinations to the east. This route is projected to cost $397,800 annually in current dollars, *including Deviated Flex Route service* costs.

Florence Boulevard Spine Extensions: With the emergence of the PhoenixMart project east of I-10, additional employment will likely require the extension of the Florence Boulevard spine service eastward to that location. PhoenixMart management and operations will provide an estimated 400 jobs to service and manage the facility. The expected vendors who will lease space within PhoenixMart are projected to generate an additional 3,600 jobs. To the west, extension of the Florence Boulevard spine service to the Francisco Grande Hotel and Golf Resort and a nearby charter school will likely be warranted within a ten-year horizon. Annual cost of the Florence Boulevard extensions with thirty-minute headways is projected to cost $596,700 in current dollars, *inclusive of Deviated Flex Route* costs.

In total, these five potential future routes will have a gross cost of $1,856,400 rising to $2,055,300 as the Southeast Corridor route expands to all day service, in addition to the continued cost of the continuation of the short-term service costs. Not all of these routes are expected to begin at the same time but phased as development occurs and demand warrants. Revenues generated by new development should significantly help offset the costs. **Figure 1** is a map showing the above suggested routes.

Figure 5.1 - Long Range Routes



CHAPTER 6

Long Range Transit Plan

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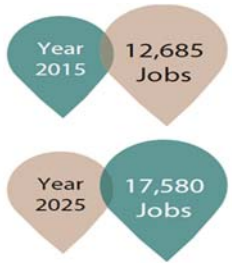
6. INTRODUCTION

The Long-Range vision looks forward beyond the five-year short-range focus to cover a ten-year period. Transit service options are quickly changing to adjust to autonomous vehicles, connected vehicles, and the evolution of private entrepreneurial service providers such as Lyft and Uber. The Future Conditions Working Paper provided a look ahead to show major new developments currently underway or pending in Casa Grande as well as projected population and employment growth. This task will focus on transit service expansion and geographical extension to serve residents, employers, and retail and service centers in a growing Casa Grande.

The focus on a ten-year horizon makes a basic assumption that core area service along Florence Boulevard between Promenade Mall and Pinal Avenue and the Downtown and Service Area loop are already in place. Florence Boulevard is the spine of the community, and is a key to interconnected service to new and emerging destinations. The Downtown and Service Center Loop provides service to a number of destinations not on Florence Boulevard and to the historic downtown area while also serving as a feeder route to the Florence Boulevard route.

6.1. Growth in Current Demand Areas

In addition to growth at the periphery, commercial and employment activity in the community core will continue to grow. The Florence Boulevard corridor employment is projected to grow from 12,685 jobs in 2015 to 17,580 jobs in 2025. City wide, employment is projected to grow 130% between now and 2030, while population is projected to increase by 38% during the same time period. This disparity between employment growth and population growth strongly suggested an increase in regional mobility demand, as considerable workforce will be commuting into the Casa Grande area from external destinations. Growth projections reviewed are from Maricopa Association of Governments (MAG). Socioeconomic Data has been adjusted by the consultant team in consultation with Casa Grande planning staff.

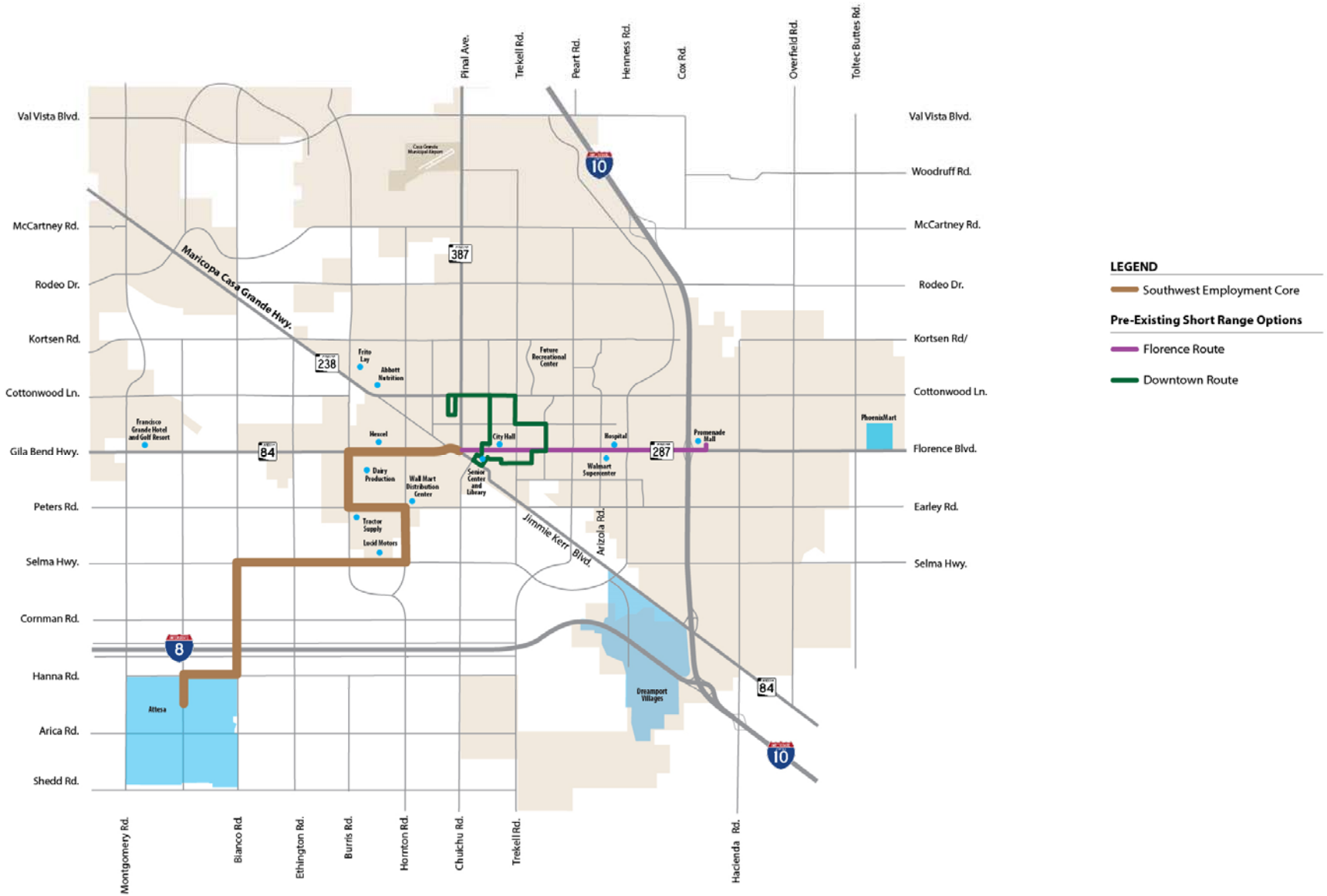


6.2. Growth for New and Emerging Areas

Employment growth in the west and southwest industrial areas will continue and increase. In addition to current major employers including Frito Lay, Abbott, Hexcel, and the Walmart Distribution Center, pending new employment centers in this area include Lucid Motors (2,000 projected jobs) and the Attesa Motorsports Complex (projected 15,000 jobs at buildout). Serving these employment sites, support activities that will follow, and other employers including the Tractor Supply Distribution Center and dairy producers justify service extension into this area as these businesses start to develop. Service to these areas is proposed as peak period service primarily, with midday runs during the lunch period. **Figure 6.1** shows the proposed routing in this area connecting to the spine service along Florence Boulevard.

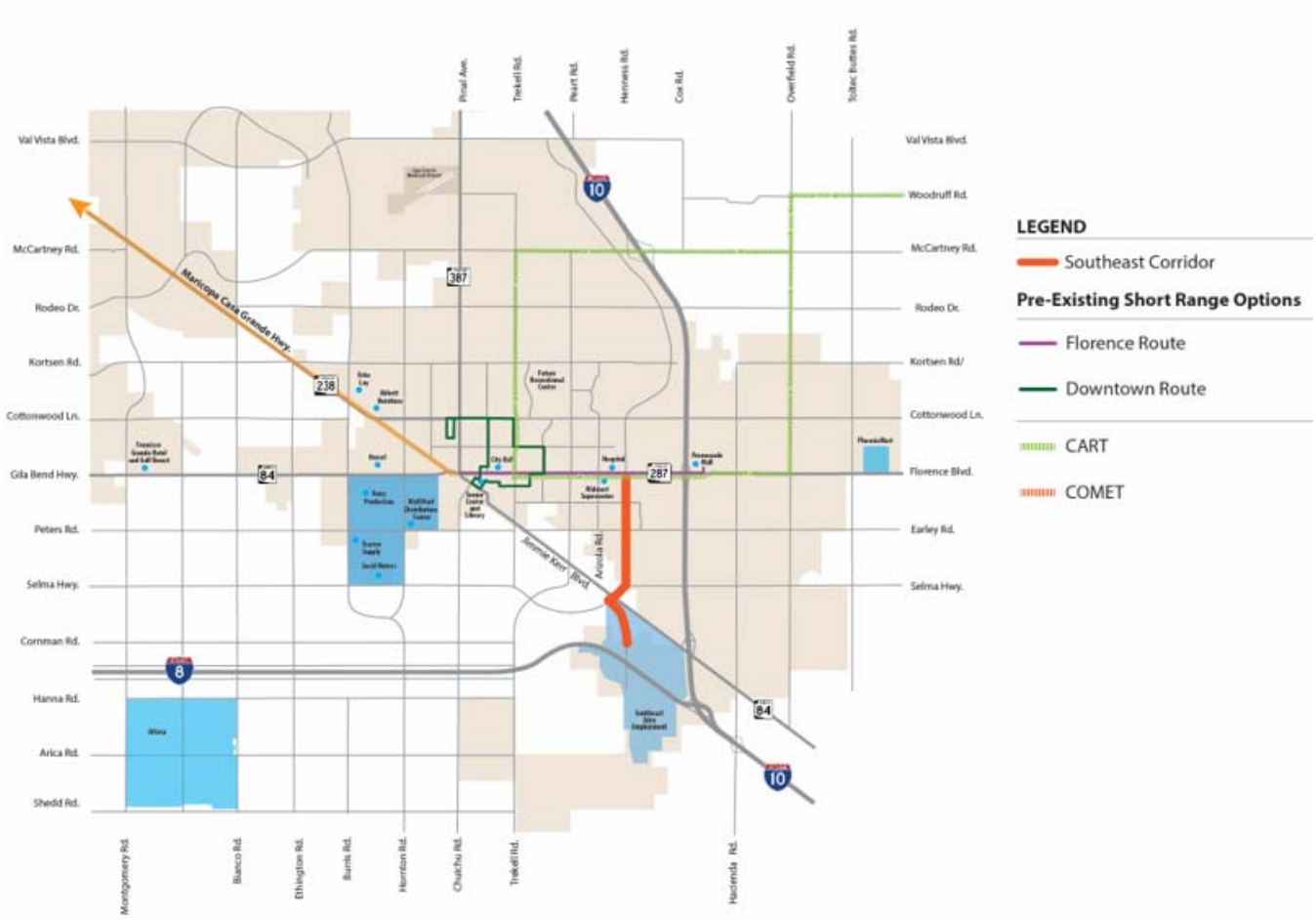
The Southwest Corridor is envisioned as a commuter express route, and is therefore exempt from ADA Complimentary Paratransit or route deviation requirements. This route with peak period and midday service is projected to have an annual cost of $265,200 in current dollars.

Figure 6.1 – Proposed Southwest Corridors Service



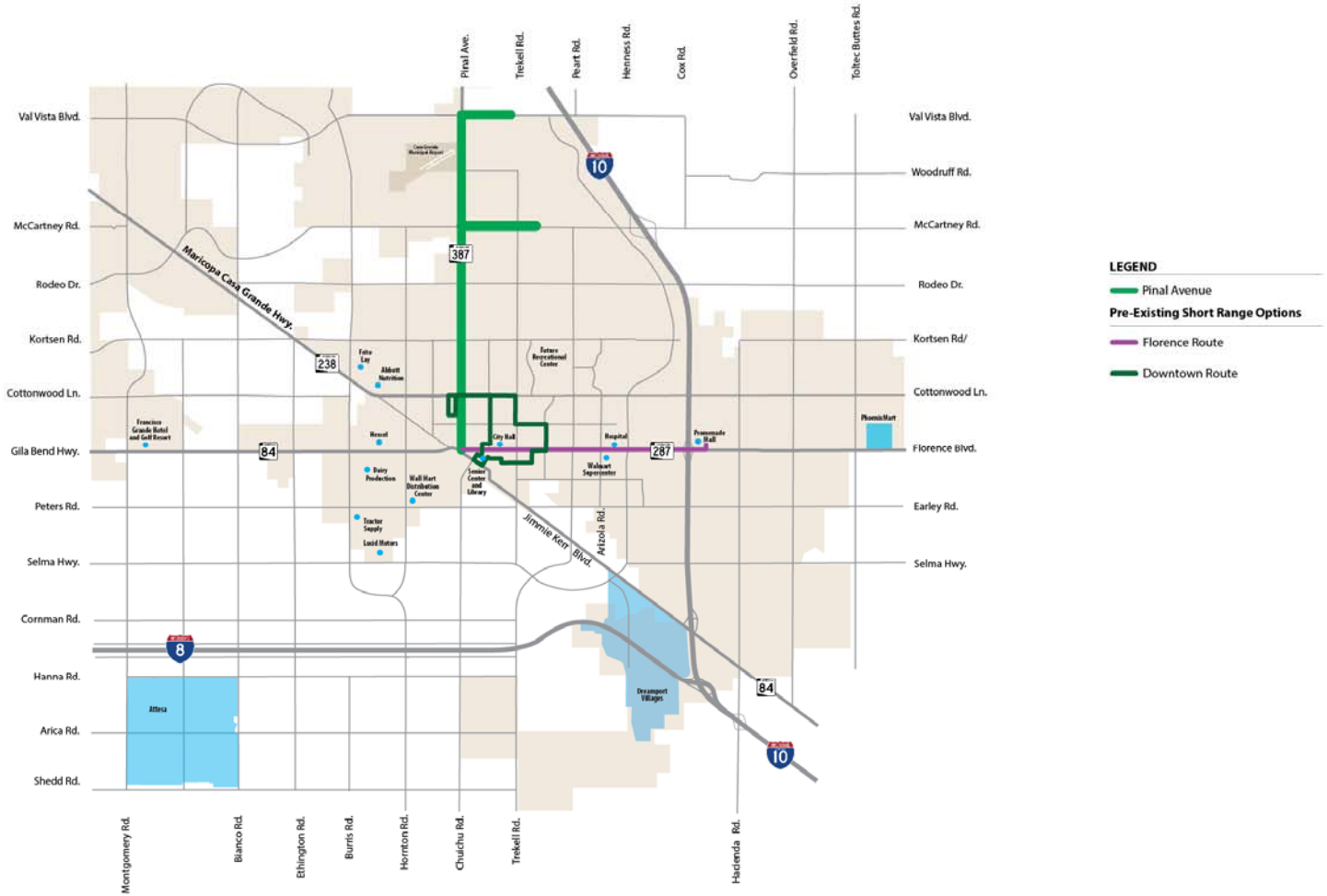
The Dreamport Villages project, near the intersection of Interstate Highways 8 and 10, is proposing a destination resort, a major theme park, residential areas and open space. The project is expected to generate 7,000 jobs during the first phase, with 15,000 direct and indirect jobs at completion. Additionally, the development is expected to experience annual visitor levels of over 15 million. The site will generate travel demand from workers, contractors during construction, and visitors. The project will not only generate external travel but also internal circulation needs, which are expected to be served with an internal shuttle service. Providing a transit linkage from this area to the Florence Boulevard corridor is essential. If the developer is successful in negotiating an Amtrak station, additional transit demand to the site would be anticipated. The proposed route extension is expected to start as a peak period commuter service expanding to all day service as visitor levels to Dreamport Villages warrant increased transit frequency. This Southeast Corridor route is projected to cost $198,900 per year at startup and increase to $397,800 as the area is completed. Both figures are current dollars. **Figure 6.2** shows the proposed transit connection to this project and ancillary development activities expected to follow in the Southeast Corridor area.

Figure 6.2 – Proposed Southeast Corridor Transit Service



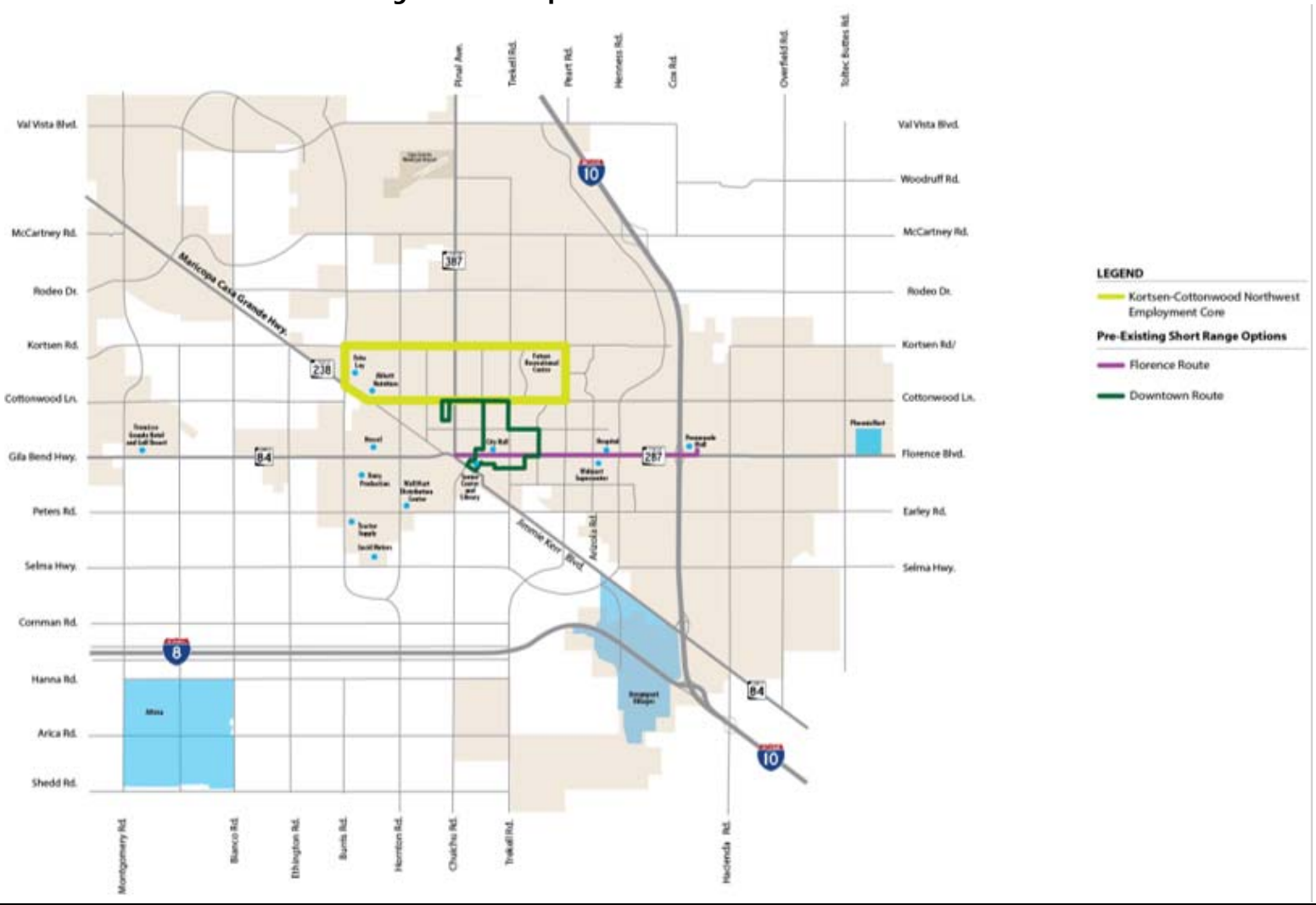
Service in the Pinal Avenue corridor was considered in the service alternatives evaluated during the short-range planning process. It was determined that the amount of vacant land in the corridor and the current lack of major activity centers did not support inclusion in the initial menu of service for short range implementation. Within a ten-year window, continued development should justify service in this corridor including connections to the Public Safety Facility on Val Vista Road, the Casa Grande Union High School on McCartney Road, and the Casa Grande Municipal Airport area. This is envisioned to be thirty-minute headway service, twelve hours per weekday to match the service levels of the spine service on Florence Boulevard and on the Downtown and Service Area loop. This service route is projected to cost $596,700 annually in current dollars. This cost includes Flex Route Deviation service to meet ADA requirements. The Pinal Avenue service corridor is shown in **Figure 6.3.**

Figure 6.3 – Proposed Pinal Avenue Service



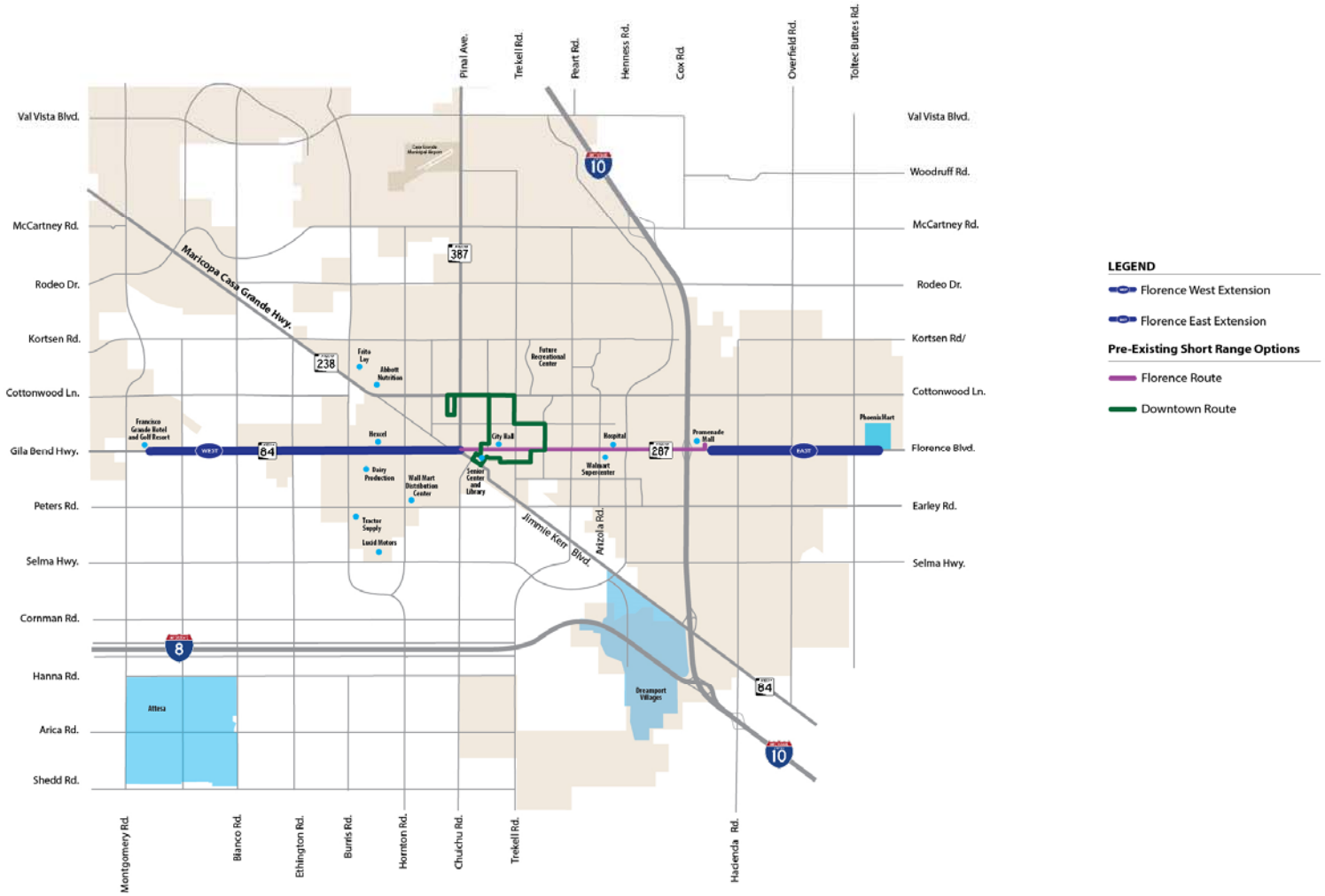
Since the core area of Casa Grande will continue to grow in population and employment, extension of service along the arterial grid roadways north of Florence Boulevard will be needed. Service could be expanded along the arterial grid depending on where growth and demand occurs. During the ten-year horizon of this study, extending service north to Cottonwood Lane and Kortsen Road between Burris Road and Peart Road supports the northern segment of the Downtown and Service route. This extension would also connect employment along Maricopa Casa Grande Highway to a portion of the employment core and destinations to the east. This route is projected to cost $397,800 annually in current dollars, including route deviation costs. This proposed service route is shown in **Figure 6.4.**

Figure 6.4 – Proposed Kortsen-Cottonwood Service



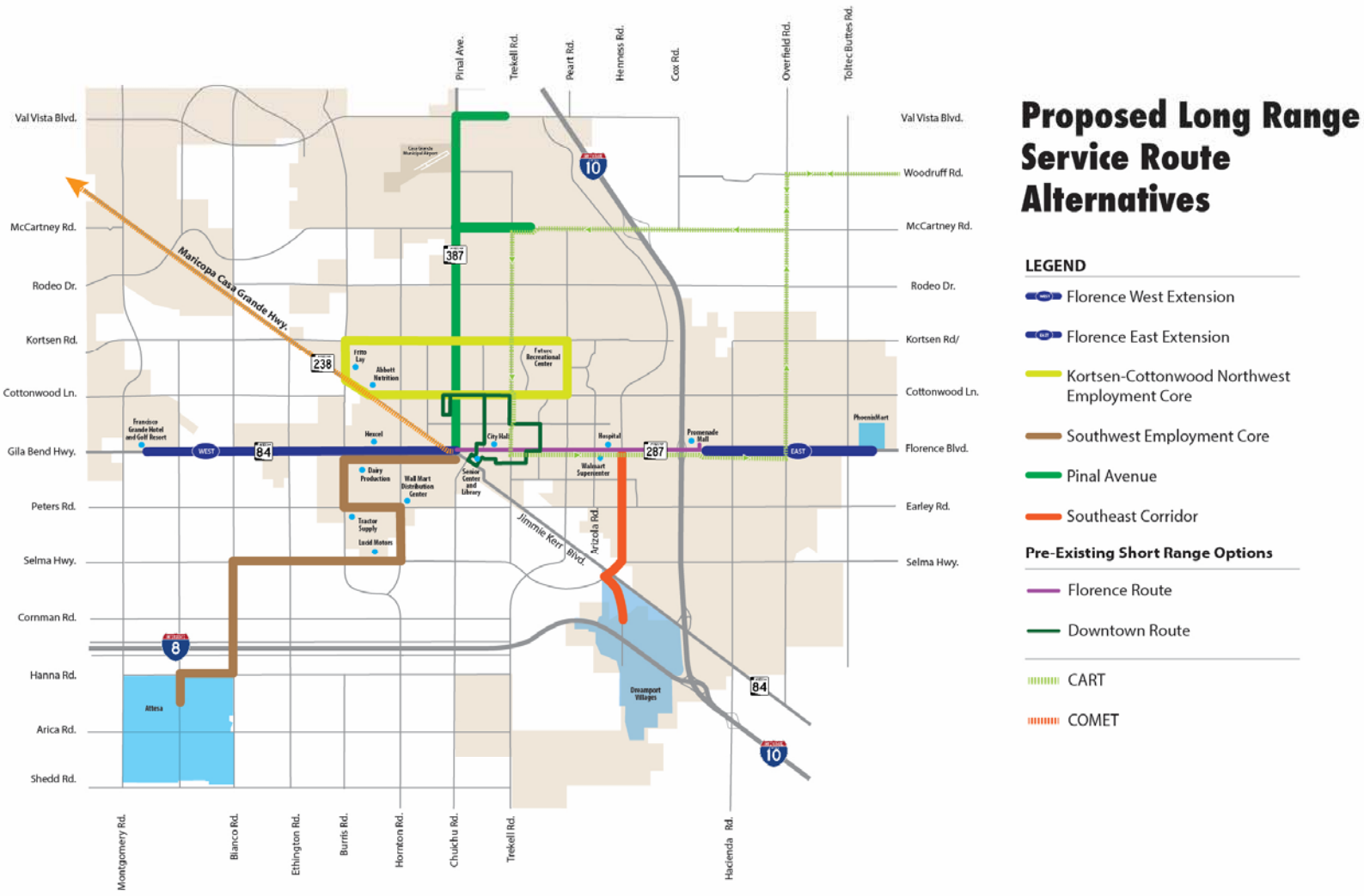
With the emergence of the PhoenixMart project east of I-10, additional employment will likely require the extension of the Florence Boulevard spine service eastward to that location. PhoenixMart management and operations will provide an estimated 400 jobs to service and manage the facility. The expected vendors who will lease space within PhoenixMart are projected to generate an additional 3,600 jobs. To the west, extension of the Florence Boulevard spine service to the Francisco Grande Hotel and Golf Resort and a nearby charter school will likely be warranted within a ten-year horizon. Annual cost of the Florence Boulevard extensions is projected to cost $596,700 in current dollars, inclusive of route deviation costs. **Figure 6.5** shows the proposed extensions of this spine service to the west and the east.

Figure 6.5 – Proposed East and West Extensions of Florence Boulevard Spine Service



The combined proposed ten-year horizon services are shown together, along with the priority short range service, in **Figure 6.6.**

Figure 6.6 - Proposed Ten Year Horizon Transit Service



6.3. Air Quality Conformity

Air Quality Conformity is reviewed here as part of a transit planning effort, to understand how additional air quality control measures may affect the demand for transit service in Casa Grande. Western Pinal County is a moderate nonattainment area for particulate pollution. It was redesignated as a PM_{10} moderate nonattainment area in 2012 by the U.S. Department of Environmental Quality. The Arizona Department of Environmental Quality (ADEQ) is responsible for leading development of a State Implementation Plan (SIP) to achieve conformity with federal air quality regulations. Particulate pollution is only one of many covered by federal regulations but it is the only air quality issue currently facing western Pinal County. The nonattainment area will need to meet attainment by the end of 2018. If attainment is not achieved, the Maricopa Association of Governments (MAG), who is the planning agency for air quality conformity on behalf of SCMPO, may then do two one-year extensions to avoid reclassification from a moderate to serious category. If improvements are not adequate, the EPA may require that the region review and consider "Best Available Control Measures" to address the nonconformity.

In the Phoenix metropolitan area, vehicular operations on paved roads is a larger contributor to particulate emissions than in western Pinal County. In the Phoenix metropolitan area, one of the control measures instituted was the requirement that major employers (those with over 50 employees) develop a travel reduction program. These typically include compressed work weeks, support for car and van pools, and support for public transportation. Based on a summary review of the issues in western Pinal County, it does not appear likely that such measures would be forthcoming in the short term. In the long term, however, particulate pollution caused by dirt road driving and agricultural activities may diminish as urbanization expands, only to be replaced by increased automobile travel on paved roads as a result of urban development.

6.4. Pinal Regional Transportation Plan

In November, 2017, voters in Pinal County approved Propositions 416 and 417. Proposition 416 approved the Pinal Regional Transportation Plan and Proposition 417 authorized a one-half cent sales tax to fund the plan. This tax is expected to raise $641.2 million over the twenty-year life of the program.

From this fund, $20,000,000 is designated for public transit operating funds and Park and Ride facilities in the county. This $1 million per year will provide some additional revenues to offset operating costs for eligible services.

Discussions with ADOT transit staff have raised the issue of establishing an intergovernmental public transportation authority in Pinal County to oversee, coordinate, and provide both intracommunity and regional transit services. Northern Arizona Intergovernmental Public Transportation Authority (NAIPTA) in Coconino County and Yuma County Intergovernmental Public Transportation Authority (YCIPTA) are examples of other areas in the state that have done so. It is recommended that this concept be further explored as this effort in Casa Grande moves forward.

A step in the direction of creating a regional public transportation authority in Pinal County is a possible collaboration with the City of Coolidge to operate transit service in Casa Grande. It is recommended that discussions with Coolidge occur and explore possible cost savings and service efficiency from a joint operation of both cities' services.

6.5. Emerging Technologies

There are several emerging technologies that may influence how transit is provided in Casa Grande. The primary ones are Autonomous Vehicles (AV), which can be independently operated and Connected Vehicles (CV), which have internal devices that connect to other vehicles or to infrastructure communications. A large number of firms are now entering the research and development of such technology. These are not limited to traditional automotive firms, but include companies like Apple, Microsoft, and Google. Waymo vehicles (part of the Google enterprise) are being tested in the Chandler area today and Uber autonomous vehicles are being tested in Tempe and Scottsdale.

The cost of such vehicles is currently quite high. The "Ollie" vehicle produced by Local Motors in Chandler is priced at about $250,000. Vehicles require radar sensors, Laser mapping, infrared sensing, GPS and a number of other hardware and software improvements that add over one hundred thousand dollars to the vehicle cost. The cost of emerging technology is expected to decrease over time as production competition increases and the technology becomes more available to the marketplace.

It is unknown how quickly the technology will advance or when the cost of purchasing the technology will decrease to compete with the cost of human operated vehicles. Current projections suggest it will take between 3 and 13 years before fully driverless vehicles are available for purchase. **Figure 7** shows aggressive and conservative projections for when autonomous vehicles will capture 50% of the market.

The most aggressive option shows that a 50% share could be reached by 2030, and the conservative option suggests beyond 2050. Summarily, it is still some years off. The technology should be watched and when marketability is close, restrict fleet purchases to preserve future options.

At the national level, considerable research has been done to identify policies promoting autonomous and connected vehicles. Primary resources are National Cooperative Highway Research Program (NCHRP) Research Report # 845: *Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Agencies*, and a companion paper: *Strategies to Advance Automated and Connected Vehicles* produced by the Transportation Research Board (TRB). The latter report discusses eighteen policy and planning strategies in detail that should be considered by legislatures, state and local transportation agencies. These are:

- Enact legislation to legalize AV testing
- Enact legislation to stimulate CV or AV testing
- Modify driver training standards and curricula
- Increase public awareness of benefits and risks
- Subsidize shared AV use
- Implement transit benefits for shared AV use
- Implement a parking incentive for shared AV use
- Implement location efficient mortgages for those purchasing homes in areas where shared AV fleets would be more likely to operate
- Develop supportive land use and parking policies
- Consider road use pricing with discounts for AVs and CVs
- Implement no-fault insurance
- Require motorists to carry more insurance
- Subsidize CV equipment
- Invest in CV Infrastructure
- Grant AVs and CVs access to dedicated lanes
- Grant Signal Priority to CVs
- Priority reserved parking to AVs and CVs
- Implement new contractual mechanisms with private sector providers to incentivize market development of AV and CV technologies

Until competition and technological advancements lower the price of vehicles with these new technologies, there will be a disconnect between upper income households who can afford the technology, and lower incomes households who cannot. Issues such as insurance costs for safer autonomous vehicles and traditional older vehicles may create social friction.

6.6. Entrepreneurial Rideshare Opportunity

Rideshare options such as Uber and Lyft have penetrated the marketplace in recent years. The City of Phoenix is working with Lyft to provide suburban passengers rides from their homes to the nearest bus stop. The passenger is responsible for the first $3 of the fare, the gratuity, and all fare in excess of $18. The city's liability is then up to $15 per trip, cheaper to the City than the cost of a demand response trip. This is an inexpensive way to extend the reach of the transit service into low ridership areas.

The market for such service is expected to grow. In Casa Grande, there are a very limited number of Uber or Lyft operators. Those who appreciate the opportunity to use their vehicle, combined with cellphone technology, to augment their income are primarily younger residents of metropolitan areas. These entrepreneurial options may well be the early market supporters of CV technology.

With the dramatic increase in employment projected for Casa Grande, it is possible that more commuters to jobs in Casa Grande may elect to participate in such rideshare activities as a way to offset commute costs. Casa Grande should monitor Uber and Lyft vendors in the area to understand when an adequate supply is present to use this resource as a mobility option in their transit planning process.

As is the case with an all voucher service system, the use of these entrepreneurial options to build a transit service as a stand-alone option would not be approved for federal funding. There are questions about adequate ADA accessibility of the available vehicles. Federal transit regulations also require drug testing of drivers and mechanics as well as a number of other requirements that the part time Uber or Lyft driver would not wish to be burdened with. At best, this option could be used, as Phoenix is doing, to address a small portion of the mobility need in lower density fringe areas of the community.

CHAPTER 6

Long Range Transit Plan

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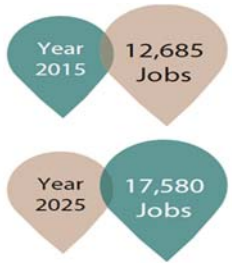
6. INTRODUCTION

The Long-Range vision looks forward beyond the five-year short-range focus to cover a ten-year period. Transit service options are quickly changing to adjust to autonomous vehicles, connected vehicles, and the evolution of private entrepreneurial service providers such as Lyft and Uber. The Future Conditions Working Paper provided a look ahead to show major new developments currently underway or pending in Casa Grande as well as projected population and employment growth. This task will focus on transit service expansion and geographical extension to serve residents, employers, and retail and service centers in a growing Casa Grande.

The focus on a ten-year horizon makes a basic assumption that core area service along Florence Boulevard between Promenade Mall and Pinal Avenue and the Downtown and Service Area loop are already in place. Florence Boulevard is the spine of the community, and is a key to interconnected service to new and emerging destinations. The Downtown and Service Center Loop provides service to a number of destinations not on Florence Boulevard and to the historic downtown area while also serving as a feeder route to the Florence Boulevard route.

6.1. Growth in Current Demand Areas

In addition to growth at the periphery, commercial and employment activity in the community core will continue to grow. The Florence Boulevard corridor employment is projected to grow from 12,685 jobs in 2015 to 17,580 jobs in 2025. City wide, employment is projected to grow 130% between now and 2030, while population is projected to increase by 38% during the same time period. This disparity between employment growth and population growth strongly suggested an increase in regional mobility demand, as considerable workforce will be commuting into the Casa Grande area from external destinations. Growth projections reviewed are from Maricopa Association of Governments (MAG). Socioeconomic Data has been adjusted by the consultant team in consultation with Casa Grande planning staff.

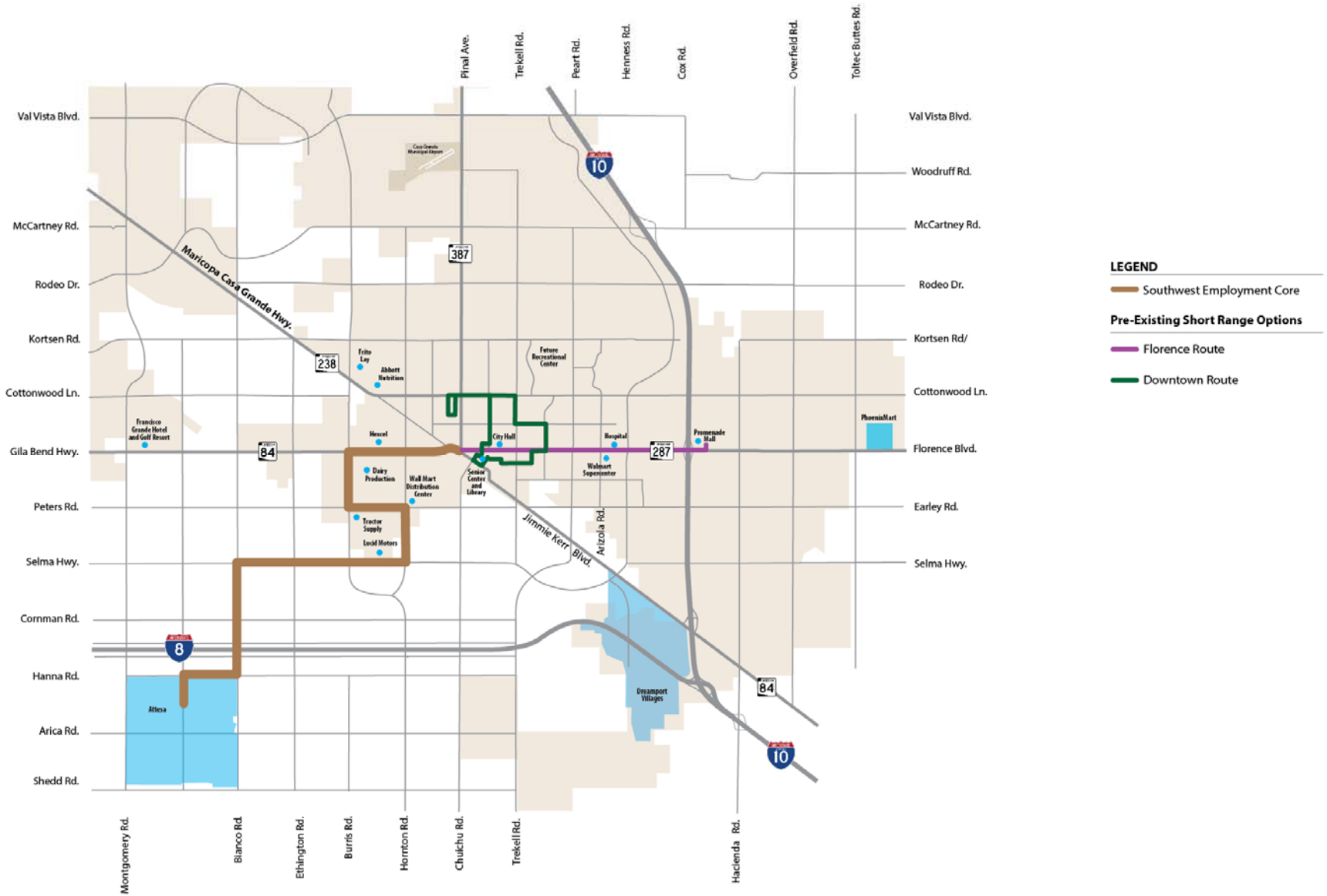


6.2. Growth for New and Emerging Areas

Employment growth in the west and southwest industrial areas will continue and increase. In addition to current major employers including Frito Lay, Abbott, Hexcel, and the Walmart Distribution Center, pending new employment centers in this area include Lucid Motors (2,000 projected jobs) and the Attesa Motorsports Complex (projected 15,000 jobs at buildout). Serving these employment sites, support activities that will follow, and other employers including the Tractor Supply Distribution Center and dairy producers justify service extension into this area as these businesses start to develop. Service to these areas is proposed as peak period service primarily, with midday runs during the lunch period. **Figure 6.1** shows the proposed routing in this area connecting to the spine service along Florence Boulevard.

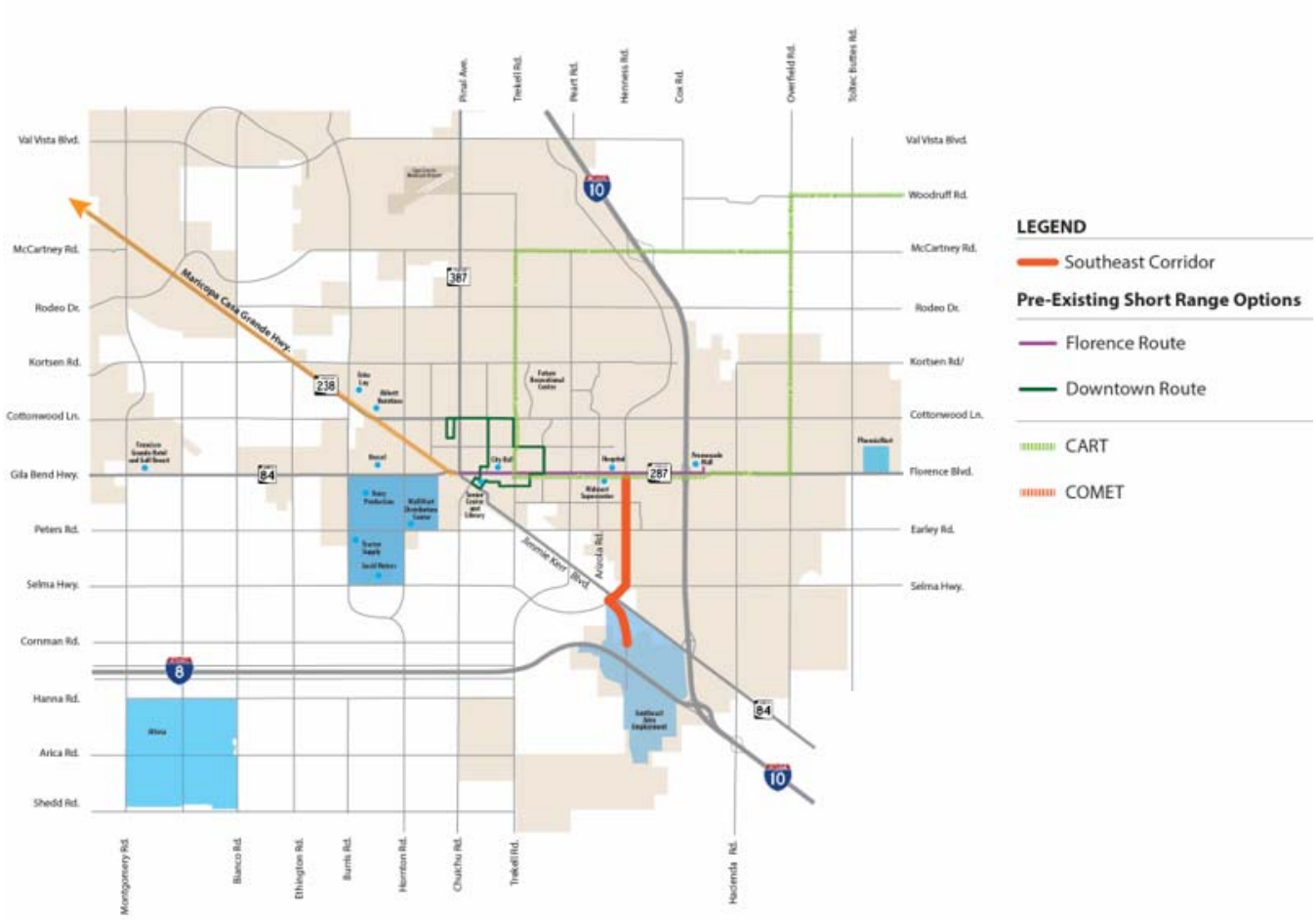
The Southwest Corridor is envisioned as a commuter express route, and is therefore exempt from ADA Complimentary Paratransit or route deviation requirements. This route with peak period and midday service is projected to have an annual cost of $265,200 in current dollars.

Figure 6.1 – Proposed Southwest Corridors Service



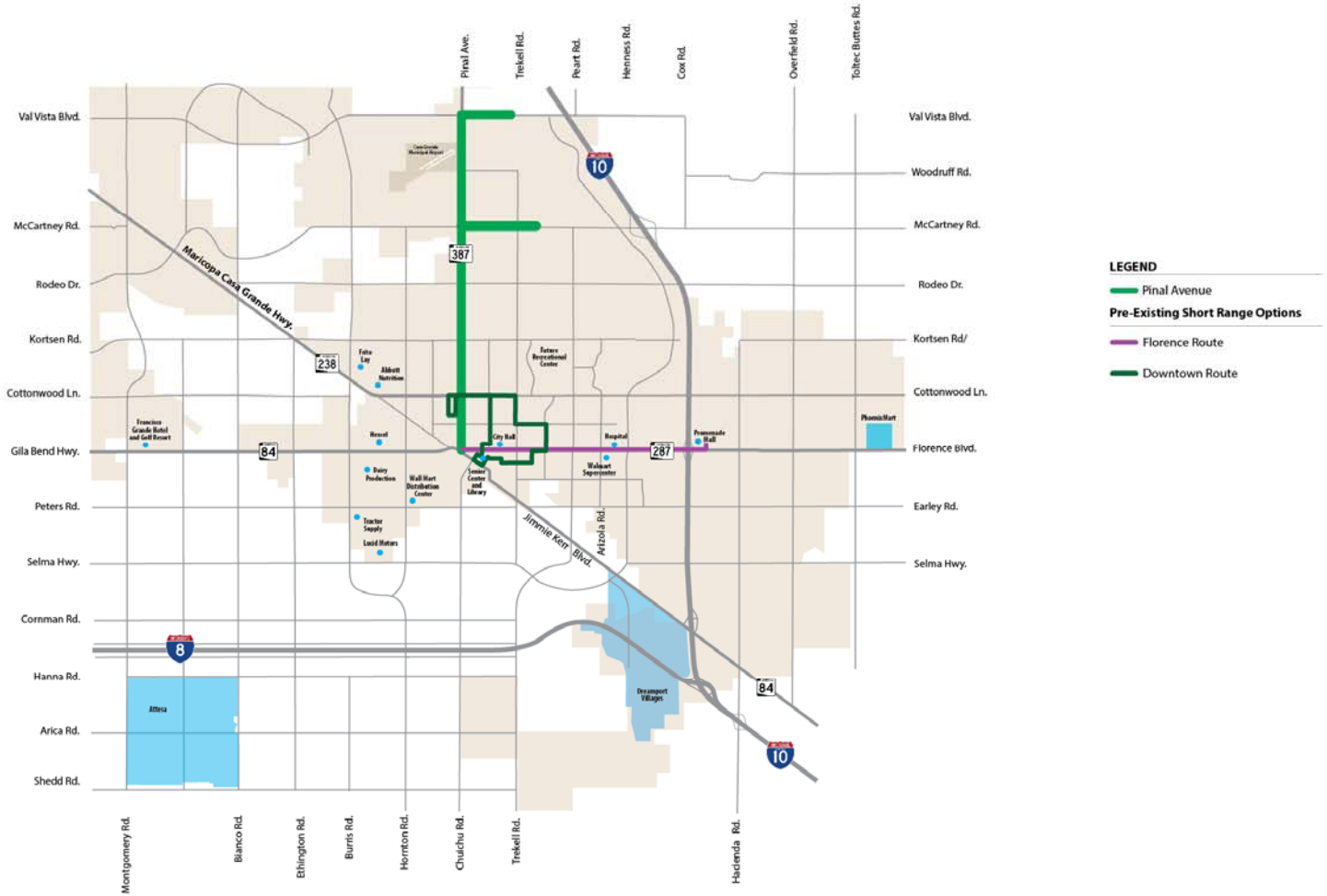
The Dreamport Villages project, near the intersection of Interstate Highways 8 and 10, is proposing a destination resort, a major theme park, residential areas and open space. The project is expected to generate 7,000 jobs during the first phase, with 15,000 direct and indirect jobs at completion. Additionally, the development is expected to experience annual visitor levels of over 15 million. The site will generate travel demand from workers, contractors during construction, and visitors. The project will not only generate external travel but also internal circulation needs, which are expected to be served with an internal shuttle service. Providing a transit linkage from this area to the Florence Boulevard corridor is essential. If the developer is successful in negotiating an Amtrak station, additional transit demand to the site would be anticipated. The proposed route extension is expected to start as a peak period commuter service expanding to all day service as visitor levels to Dreamport Villages warrant increased transit frequency. This Southeast Corridor route is projected to cost $198,900 per year at startup and increase to $397,800 as the area is completed. Both figures are current dollars. **Figure 6.2** shows the proposed transit connection to this project and ancillary development activities expected to follow in the Southeast Corridor area.

Figure 6.2 – Proposed Southeast Corridor Transit Service



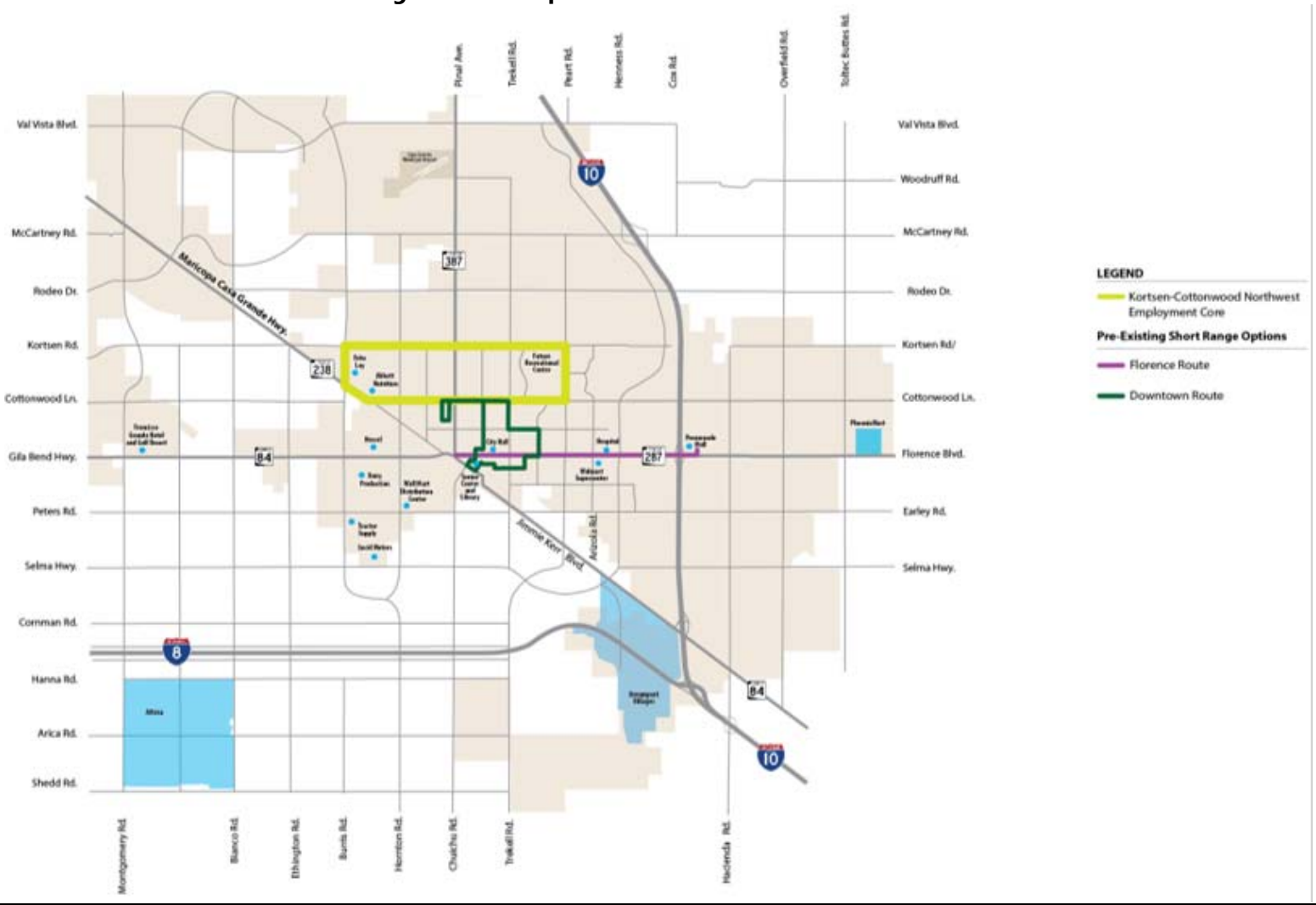
Service in the Pinal Avenue corridor was considered in the service alternatives evaluated during the short-range planning process. It was determined that the amount of vacant land in the corridor and the current lack of major activity centers did not support inclusion in the initial menu of service for short range implementation. Within a ten-year window, continued development should justify service in this corridor including connections to the Public Safety Facility on Val Vista Road, the Casa Grande Union High School on McCartney Road, and the Casa Grande Municipal Airport area. This is envisioned to be thirty-minute headway service, twelve hours per weekday to match the service levels of the spine service on Florence Boulevard and on the Downtown and Service Area loop. This service route is projected to cost $596,700 annually in current dollars. This cost includes Flex Route Deviation service to meet ADA requirements. The Pinal Avenue service corridor is shown in **Figure 6.3.**

Figure 6.3 – Proposed Pinal Avenue Service



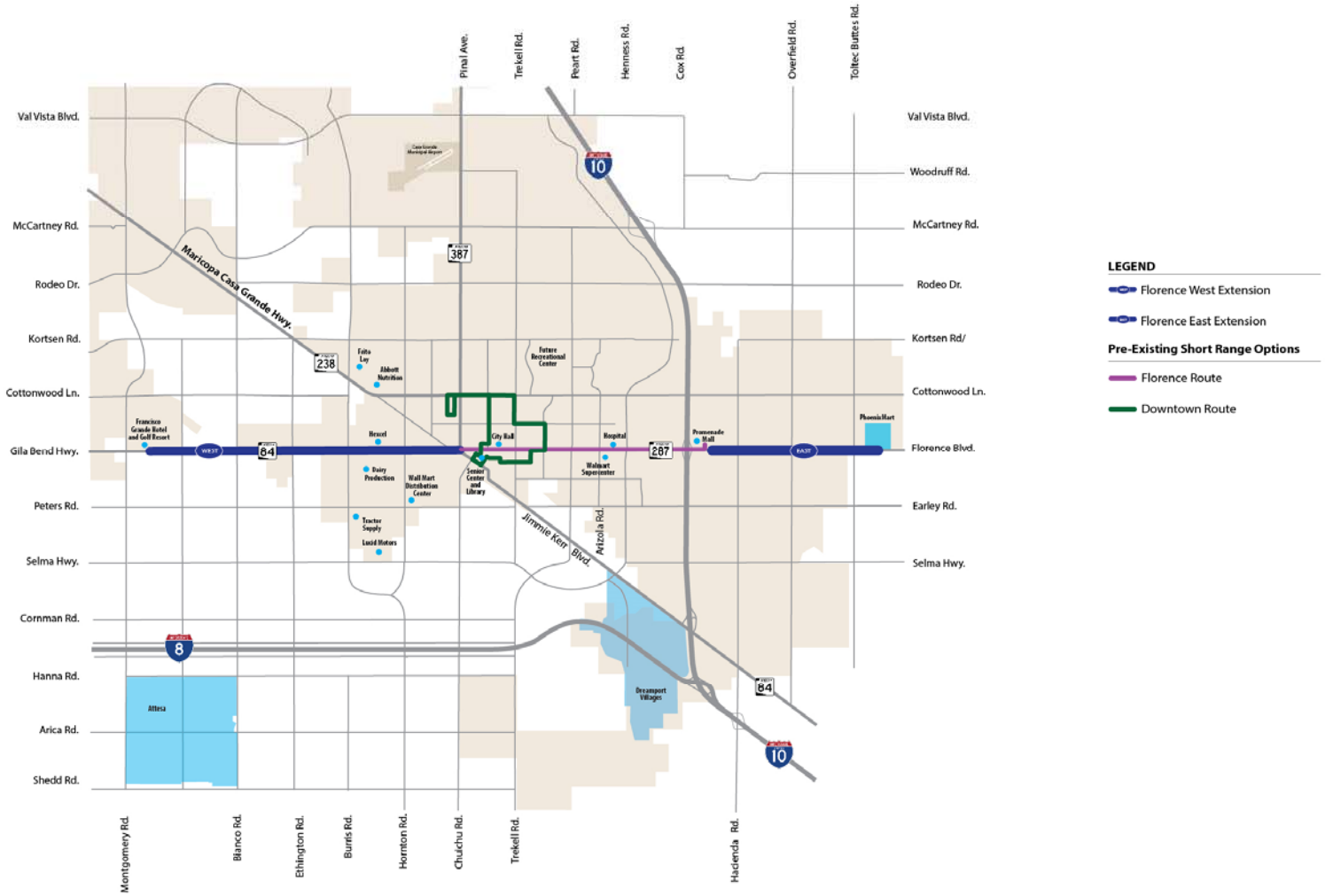
Since the core area of Casa Grande will continue to grow in population and employment, extension of service along the arterial grid roadways north of Florence Boulevard will be needed. Service could be expanded along the arterial grid depending on where growth and demand occurs. During the ten-year horizon of this study, extending service north to Cottonwood Lane and Kortsen Road between Burris Road and Peart Road supports the northern segment of the Downtown and Service route. This extension would also connect employment along Maricopa Casa Grande Highway to a portion of the employment core and destinations to the east. This route is projected to cost $397,800 annually in current dollars, including route deviation costs. This proposed service route is shown in **Figure 6.4.**

Figure 6.4 – Proposed Kortsen-Cottonwood Service



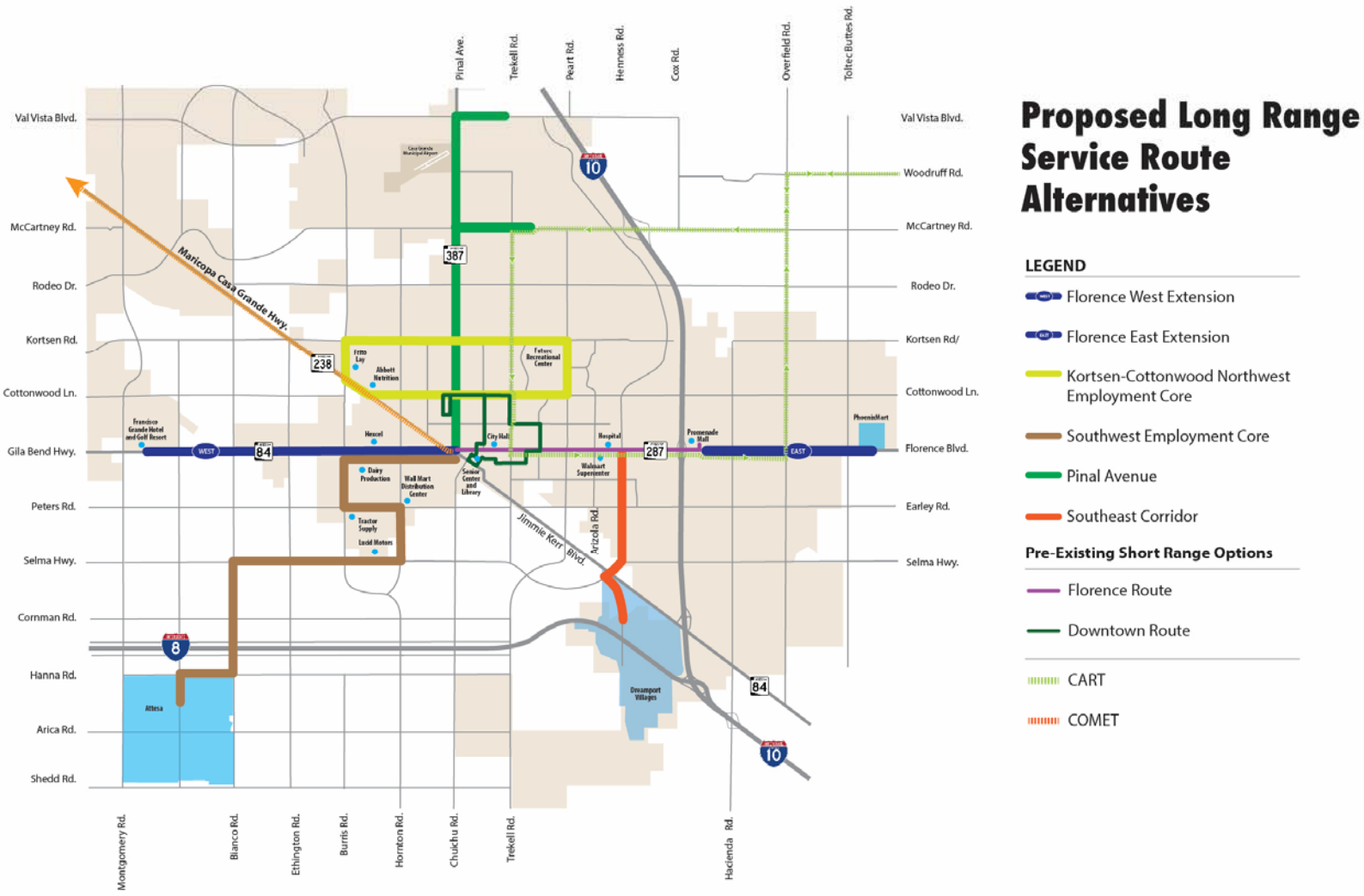
With the emergence of the PhoenixMart project east of I-10, additional employment will likely require the extension of the Florence Boulevard spine service eastward to that location. PhoenixMart management and operations will provide an estimated 400 jobs to service and manage the facility. The expected vendors who will lease space within PhoenixMart are projected to generate an additional 3,600 jobs. To the west, extension of the Florence Boulevard spine service to the Francisco Grande Hotel and Golf Resort and a nearby charter school will likely be warranted within a ten-year horizon. Annual cost of the Florence Boulevard extensions is projected to cost $596,700 in current dollars, inclusive of route deviation costs. **Figure 6.5** shows the proposed extensions of this spine service to the west and the east.

Figure 6.5 – Proposed East and West Extensions of Florence Boulevard Spine Service



The combined proposed ten-year horizon services are shown together, along with the priority short range service, in **Figure 6.6.**

Figure 6.6 - Proposed Ten Year Horizon Transit Service



6.3. Air Quality Conformity

Air Quality Conformity is reviewed here as part of a transit planning effort, to understand how additional air quality control measures may affect the demand for transit service in Casa Grande. Western Pinal County is a moderate nonattainment area for particulate pollution. It was redesignated as a PM_{10} moderate nonattainment area in 2012 by the U.S. Department of Environmental Quality. The Arizona Department of Environmental Quality (ADEQ) is responsible for leading development of a State Implementation Plan (SIP) to achieve conformity with federal air quality regulations. Particulate pollution is only one of many covered by federal regulations but it is the only air quality issue currently facing western Pinal County. The nonattainment area will need to meet attainment by the end of 2018. If attainment is not achieved, the Maricopa Association of Governments (MAG), who is the planning agency for air quality conformity on behalf of SCMPO, may then do two one-year extensions to avoid reclassification from a moderate to serious category. If improvements are not adequate, the EPA may require that the region review and consider "Best Available Control Measures" to address the nonconformity.

In the Phoenix metropolitan area, vehicular operations on paved roads is a larger contributor to particulate emissions than in western Pinal County. In the Phoenix metropolitan area, one of the control measures instituted was the requirement that major employers (those with over 50 employees) develop a travel reduction program. These typically include compressed work weeks, support for car and van pools, and support for public transportation. Based on a summary review of the issues in western Pinal County, it does not appear likely that such measures would be forthcoming in the short term. In the long term, however, particulate pollution caused by dirt road driving and agricultural activities may diminish as urbanization expands, only to be replaced by increased automobile travel on paved roads as a result of urban development.

6.4. Pinal Regional Transportation Plan

In November, 2017, voters in Pinal County approved Propositions 416 and 417. Proposition 416 approved the Pinal Regional Transportation Plan and Proposition 417 authorized a one-half cent sales tax to fund the plan. This tax is expected to raise $641.2 million over the twenty-year life of the program.

From this fund, $20,000,000 is designated for public transit operating funds and Park and Ride facilities in the county. This $1 million per year will provide some additional revenues to offset operating costs for eligible services.

Discussions with ADOT transit staff have raised the issue of establishing an intergovernmental public transportation authority in Pinal County to oversee, coordinate, and provide both intracommunity and regional transit services. Northern Arizona Intergovernmental Public Transportation Authority (NAIPTA) in Coconino County and Yuma County Intergovernmental Public Transportation Authority (YCIPTA) are examples of other areas in the state that have done so. It is recommended that this concept be further explored as this effort in Casa Grande moves forward.

A step in the direction of creating a regional public transportation authority in Pinal County is a possible collaboration with the City of Coolidge to operate transit service in Casa Grande. It is recommended that discussions with Coolidge occur and explore possible cost savings and service efficiency from a joint operation of both cities' services.

6.5. Emerging Technologies

There are several emerging technologies that may influence how transit is provided in Casa Grande. The primary ones are Autonomous Vehicles (AV), which can be independently operated and Connected Vehicles (CV), which have internal devices that connect to other vehicles or to infrastructure communications. A large number of firms are now entering the research and development of such technology. These are not limited to traditional automotive firms, but include companies like Apple, Microsoft, and Google. Waymo vehicles (part of the Google enterprise) are being tested in the Chandler area today and Uber autonomous vehicles are being tested in Tempe and Scottsdale.

The cost of such vehicles is currently quite high. The "Ollie" vehicle produced by Local Motors in Chandler is priced at about $250,000. Vehicles require radar sensors, Laser mapping, infrared sensing, GPS and a number of other hardware and software improvements that add over one hundred thousand dollars to the vehicle cost. The cost of emerging technology is expected to decrease over time as production competition increases and the technology becomes more available to the marketplace.

It is unknown how quickly the technology will advance or when the cost of purchasing the technology will decrease to compete with the cost of human operated vehicles. Current projections suggest it will take between 3 and 13 years before fully driverless vehicles are available for purchase. **Figure 7** shows aggressive and conservative projections for when autonomous vehicles will capture 50% of the market.

The most aggressive option shows that a 50% share could be reached by 2030, and the conservative option suggests beyond 2050. Summarily, it is still some years off. The technology should be watched and when marketability is close, restrict fleet purchases to preserve future options.

At the national level, considerable research has been done to identify policies promoting autonomous and connected vehicles. Primary resources are National Cooperative Highway Research Program (NCHRP) Research Report # 845: *Advancing Automated and Connected Vehicles: Policy and Planning Strategies for State and Local Transportation Agencies*, and a companion paper: *Strategies to Advance Automated and Connected Vehicles* produced by the Transportation Research Board (TRB). The latter report discusses eighteen policy and planning strategies in detail that should be considered by legislatures, state and local transportation agencies. These are:

- Enact legislation to legalize AV testing
- Enact legislation to stimulate CV or AV testing
- Modify driver training standards and curricula
- Increase public awareness of benefits and risks
- Subsidize shared AV use
- Implement transit benefits for shared AV use
- Implement a parking incentive for shared AV use
- Implement location efficient mortgages for those purchasing homes in areas where shared AV fleets would be more likely to operate
- Develop supportive land use and parking policies
- Consider road use pricing with discounts for AVs and CVs
- Implement no-fault insurance
- Require motorists to carry more insurance
- Subsidize CV equipment
- Invest in CV Infrastructure
- Grant AVs and CVs access to dedicated lanes
- Grant Signal Priority to CVs
- Priority reserved parking to AVs and CVs
- Implement new contractual mechanisms with private sector providers to incentivize market development of AV and CV technologies

Until competition and technological advancements lower the price of vehicles with these new technologies, there will be a disconnect between upper income households who can afford the technology, and lower incomes households who cannot. Issues such as insurance costs for safer autonomous vehicles and traditional older vehicles may create social friction.

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Casa Grande Transit Development Plan

Connecting Casa Grande

CHAPTER 7

Performance Standards

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7. INTRODUCTION

Public Agency Transit Providers develop performance standards for a number of reasons. Performance standards provide a measurement tool for city councils and other decision makers to gauge how the service is doing and make informed decisions on how public resources are being expended. In addition, recipients of Federal Transit Administration (FTA) Urbanized Area Formula Program (5307) funds are required to submit data to the National Transit Database (NTD). These reports are public and provide information on how public transit services are performing. In 2012, during reauthorization of the federal surface transportation programs, the Federal Transit Administration was directed to develop a rule establishing a process to require that grantees provide data for a series of four performance measures. The rule took effect in 2018. The four performance measurements are:

Rolling Stock: The percentage of revenue vehicles (by type) that exceed the useful life benchmark (ULB).

Equipment: The percentage of non-revenue service vehicles (by type) that exceed the ULB.

Facilities: The percentage of facilities (by group) that are rated less than 3.0 on the Transit Economic Requirements Model (TERM) Scale (described below).

Infrastructure: The percentage of track segments (by mode) that have performance restrictions. Track segments are measured to the nearest 0.01 of a mile.

Facility condition assessments reported to the NTD have one overall TERM rating per facility. Agencies are not required to use the TERM model for conducting condition assessments but must report the facility condition assessment as a TERM rating score explained in **Table 7.1** below:

Table 7.1 – TERM Rating Explanation

TERM Rating	Condition	Description
Excellent	4.8–5.0	No visible defects, near-new condition.
Good	4.0–4.7	Some slightly defective or deteriorated components.
Adequate	3.0–3.9	Moderately defective or deteriorated components.
Marginal	2.0–2.9	Defective or deteriorated components in need of replacement.
Poor	1.0–1.9	Seriously damaged components in need of immediate repair.

This data is to be provided to the FTA as part of the NTD report. Transit Asset data is only reported for assets that the public agency/FTA grantee has direct capital responsibility for. Private operator fleet vehicles are not included in the report if the city chooses a full turnkey option.

7.1. National Transit Database (NTD)

The NTD collects financial information, service provision and consumption data, and operational characteristics. Data collected includes:

- Annual Passenger Miles
- Annual Passenger Trips
- Annual Revenue Hours
- Annual Revenue Miles
- Fleet Size
- Average Age of Fleet
- Percent Spare Vehicles
- Vehicles Available for Maximum Service
- Type of Service (fixed route, demand response, fixed guideway)
- Source of Operating Funds
- Summary of Operating Expenses
- Source of Capital Funds
- Operating Expense per Vehicle Revenue Mile
- Operating Expense per Vehicle Revenue Hour
- Operating Expense per Passenger Mile
- Operating Expense per Unlinked Passenger Trip
- Unlinked Trips per Vehicle Revenue Hour
- Unlinked Trips per Vehicle Revenue Mile
- Farebox Recovery Ratio (percentage of operating costs covered by fares)

Unlinked trips, also known as boardings, are one person getting on one vehicle in one direction. If a one-way trip from home to a destination requires a transfer between routes, then it counts as two unlinked trips. It could also be seen as one linked trip. Linked trips (those where several boardings are combined to complete a passenger's trip) are not included in the NTD as boardings are easy to numerically track, but linked trips are not. As an example of NTD reporting, the 2014 NTD report for Vista Transit in Sierra Vista, Arizona is shown in **Figure 7.1.**

Figure 7.1 - Sierra Vista NTD Report as Sample

http://www.vistatransit.org/
1011 N Coronado Drive
Sierra Vista, AZ 85635-6334

City of Sierra Vista
2016 Annual Agency Profile

Operations Manager : Mr. Richard Cayer

General Information

Urbanized Area (UZA) Statistics - 2010 Census
Sierra Vista, AZ
30 **Square Miles**
52,745 **Population**
480 **Pop. Rank out of 498 UZAs**

Other UZAs Served
0 Arizona Non-UZA

Service Area Statistics
152 **Square Miles**
45,166 **Population**

Service Consumption
156,673 **Annual Unlinked Trips (UPT)**

Service Supplied
211,038 **Annual Vehicle Revenue Miles (VRM)**
19,529 **Annual Vehicle Revenue Hours (VRH)**

Database Information
NTDID: 90239
Reporter Type: Reduced Reporter

Financial Information

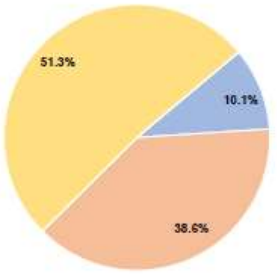
Sources of Operating Funds Expended

Fare Revenues	$110,406	10.1%
Local Funds	$422,494	38.6%
State Funds	$0	0.0%
Federal Assistance	$561,748	51.3%
Other Funds	$0	0.0%
Total Operating Funds Expended	$1,094,648	100.0%

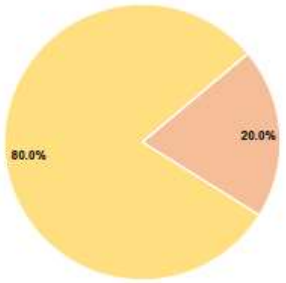
Sources of Capital Funds Expended

Fare Revenues	$0	0.0%
Local Funds	$3,996	20.0%
State Funds	$0	0.0%
Federal Assistance	$15,982	80.0%
Other Funds	$0	0.0%
Total Capital Funds Expended	$19,978	100.0%

Operating Funding Sources



Capital Funding Sources



Modal Characteristics

Operation Characteristics

Mode	Vehicles Operated at Maximum Service: Directly Operated	Vehicles Operated at Maximum Service: Purchased Transportation	Operating Expenses	Fare Revenues	Uses of Capital Funds	Annual Unlinked Trips	Annual Vehicle Revenue Miles	Annual Vehicle Revenue Hours	Average Fleet Age in Years*
Demand Response	3	-	$240,823	$18,299	$0	8,265	47,178	6,225	5.8
Bus	5	-	$853,825	$92,107	$19,978	148,408	163,860	13,304	5.9
Total	8	-	$1,094,648	$110,406	$19,978	156,673	211,038	19,529	

Performance Measures

Service Efficiency

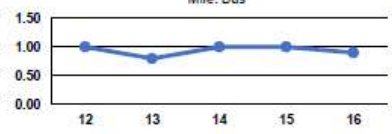
Mode	Operating Expenses per Vehicle Revenue Mile	Operating Expenses per Vehicle Revenue Hour
Demand Response	$5.10	$38.69
Bus	$5.21	$64.18
Total	$5.19	$56.05

Service Effectiveness

Mode	Operating Expenses per Unlinked Passenger Trip	Unlinked Trips per Vehicle Revenue Mile	Unlinked Trips per Vehicle Revenue Hour
Demand Response	$29.14	0.2	1.3
Bus	$5.75	0.9	11.2
Total	$6.99	0.7	8.0

Operating Expense per Vehicle Revenue Mile: Bus

Unlinked Passenger Trips per Vehicle Revenue Mile: Bus



Operating Expense per Vehicle Revenue Mile: Demand Response

Unlinked Passenger Trips per Vehicle Revenue Mile: Demand Response

Notes:
*Demand Response - Taxi (DT) and non-dedicated fleets do not report fleet age data.

7.2. Effectiveness Standards

Performance standards can be grouped into two general categories: *Efficiency* and *Effectiveness*. Efficiency gauges how well the service is being operated, with minimal waste of time and resources. It could be described as "How well are we doing things". Effectiveness gauges if the service is meeting the public's needs, and if it is operating in the places and times of highest needs. It could be described as "Are we doing the right things". Both of these categories are valuable in measuring how the service is addressing public needs and if doing so with the most effective use of public resources.

Most of the NTD data is based on efficiency rather than effectiveness. However, a successful transit operation that meets the public needs and builds support should meet effectiveness standards as well. In addition to the NTD effectiveness categories of passengers per hour and per mile, and cost per trip, other effectiveness standards should be set and measured as well. These include:

- Service connectivity between routes
- Service frequency
- Zero vehicle households served
- Low income populations served
- Elderly and disabled populations served
- Youth served
- Activity centers served
- High employment areas served
- High population density areas served
- Boardings by stop

7.3. Quality Performance Measures

Transit Service, in addition to its primary mission of mobility, is a public service of the municipality or other public agency responsible for its operation. As such, it is a visible representative of the city, much like other municipal services. The impression made on both passengers and other motorists reflects on the City of Casa Grande. This is true whether the service is provided by city employees, employees of another public agency, or by employees of a private operator under contract to the city. Specific performance measures recommended to focus on quality are:

- Cleanliness of Buses – Establish a wash cycle for fleet.
- Cleanliness of Bus Stops – Litter should be removed on a regular basis.
- Responsiveness of Agency – Emails and phone calls promptly returned.
- Quality Operators – Uniformed, courteous, safe and well trained.
- Passenger Assistance Techniques – Operators trained in safe operation of wheelchairs, lifts, ramps, and securement devices.
- Information Services – Schedules, flyers, and website information should be clean, clear, and easy to read with *san serif* fonts.
- On Board Survey – An on-board survey should be done annually to identify travel patterns and frequency, assess rider satisfaction, and identify future service improvements.
- On Time Performance – Buses keep on schedule and are rarely late, and never early.
- Marketing Plan Development – A marketing plan should be developed including advertising techniques, public outreach efforts, and all opportunities to enhance the visibility of the service throughout the community.

7.4. Peer Performance Standards

Both Coolidge and Sierra Vista have posted performance standards. These are located in recent planning documents done for both agencies. Both agencies followed the NTD format described previously. Additionally, Sierra Vista included measurements that could prove beneficial to other systems as well. One was an identification of passenger boardings per stop, with both high and low ridership boarding stops identified. This information highlights which route segments are the most productive and which are the least. This information will be helpful in identifying future route adjustments. The other measurement added by Sierra Vista was an inventory of passenger amenities at stops. All of their stops have signs, 79% have benches, and 60% have shelters. Quantifying the number of boardings per stop helps determine priority of bench and shelter placement.

It is recommended that Casa Grande use the quality performance measures described above as well as the additional performance measurements used by Sierra Vista. The Sierra Vista measurements will help Casa Grande prioritize installation of passenger amenities at stops based on patronage levels at the stops.

7.5. New Service Startup Standards

Starting up a new transit service prompts a number of performance goals to be met prior to service commencement and during the first year of operation. These include:

- Development of a graphics scheme for vehicles.
- Identification of stop locations.
- Placement of bus stop signs at all stops.
- Development and printing of service schedules.
- Creation of a service website.
- Evaluation of the value of advertising on and in the vehicles and shelters.
- Establishment of a dedicated phone line for service requests and questions.
- Initial prioritization of stops that warrant passenger amenities such as seating and shelters. Some stops such as the Promenade Mall and the Banner Casa Grande Medical Center may warrant installation of these improvements prior to service startup.
- Development of a prioritization program for future installation of passenger amenities at other locations based on the number of boardings by location.

7.6. System Upgrade Trigger Points

The simplest factor in the need to increase service frequency is when ridership on some or all of the routes reach the seating capacity of the vehicle. While having standees on some urban area routes is not unusual, especially during peak periods, it does pose a safety concern. A lack of seating is a key trigger point for frequency improvements. The City should discuss steps with the operator to determine if frequency increases or larger capacity rolling stock is appropriate.

Installation of pullout bays, as further discussed in Chapter 8, is more dependent on externalities than ridership metrics. Pullouts can be quite expensive to construct if not done during initial roadway construction or subsequent widening. Externalities include available right of way, potential private property redevelopment, back of curb at stop locations, and major capital improvement projects. If larger construction will occur along the roadway, it is more cost effective to consider pullout construction at that time.

The future service routes outlined in Chapter 6, Long Range Transit Plan, are largely based on the rate of new development coming to Casa Grande. This can be either infill north of Florence Boulevard or new employment and visitor demand to the south. In neither case will the trigger point for expanding the services as outlined in Chapter 6 be demand on the short-range service routes, but rather the rate of land development.

7.7. Further Incorporation of Transit

In addition to the standards and measurements discussed, transit should be incorporated into the planning, review, and entitlement process for new developments in Casa Grande. New retail, service, and employment land uses should evaluate how transit service could meet some of the new project's mobility needs. Incorporation of transit planning into the project review process might help influence site design, transit stop locations, and even impact the quantity of on-site parking required if the project is contiguous to a bus route. Some new developments (such as Dreamport Villages and Attesa) may generate enough on-site employment to warrant new transit service just to address that need.

Transit should also be incorporated into street transportation planning in Casa Grande. Bus pullout bays and passenger amenities are more easily accommodated when new roadways are being designed and built rather than adding them to a mature area after the infrastructure is already in place.

7.8. Conclusions and Further Recommendations

When the City of Casa Grande makes a decision to provide public transportation services, and takes steps to retain a turnkey operator, the establishment of performance standards should be included in the Request for Proposals. Collection of the data is typically the responsibility of the operator. To assure accuracy of the data, Casa Grande staff should plan to monitor "ride alongs" from time to time. Ride alongs help validate the data, incidental observations, and provide an opportunity for input from both drivers and passengers which are often quite valuable. The performance data should be regularly analyzed and can further refine and improve transit for the City of Casa Grande.

Casa Grande Transit Development Plan

Connecting Casa Grande

CHAPTER 8

Infrastructure Needs and Timing

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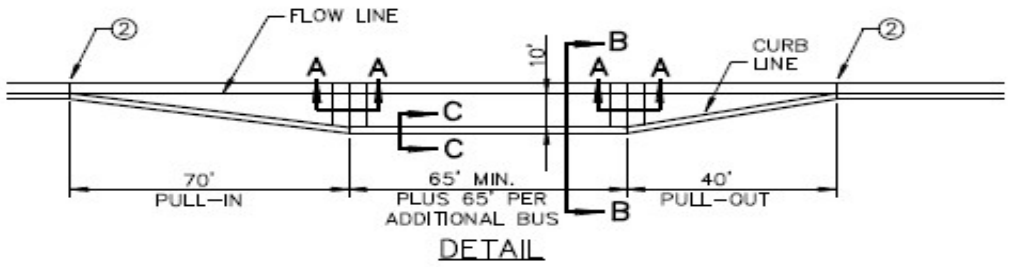
8. INTRODUCTION

Transit Infrastructure is a helpful tool to promote transit use. Seating, shelters, and improved boarding platforms provide safer and more comfortable locations for riders to wait for a pickup. While rain and snow are not issues in central Arizona, shade is important.

8.1. Infrastructure Approach

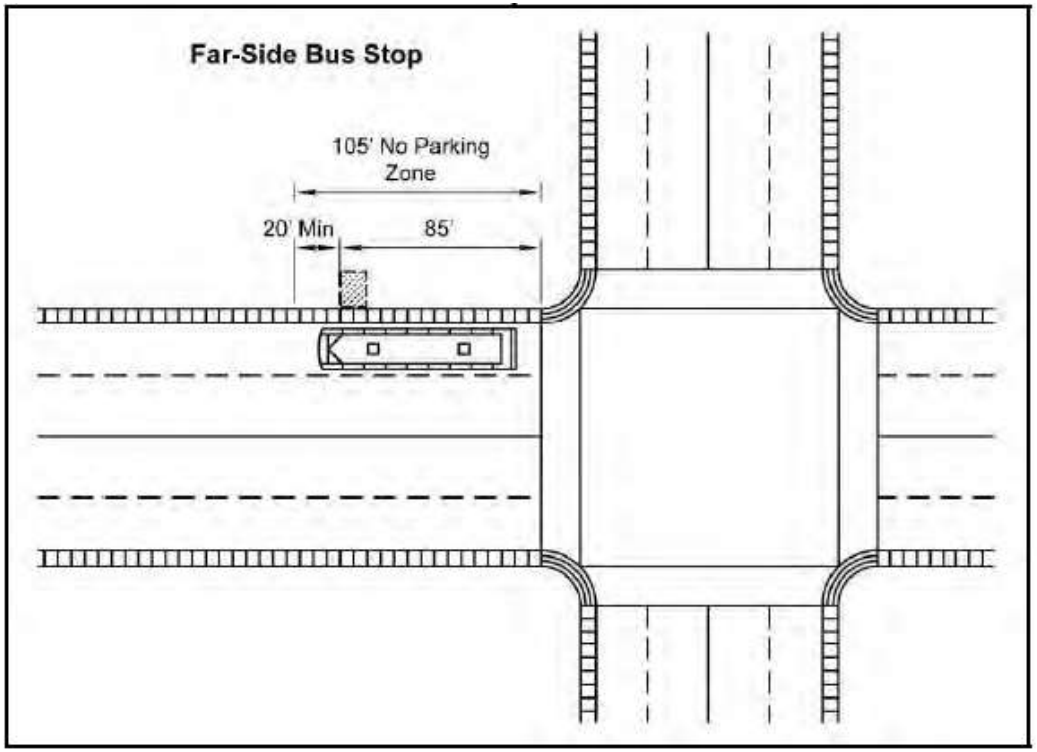
More mature transit systems provide a variety of passenger amenities in addition to rolling stock. These include bus stop signs, seating, shelters, trash receptacles, and wayfinding information. Bus pullout bays included as part of the roadway cross section can accommodate transit vehicles during stops without impeding traffic flow in through lanes. The construction of pullout bays is more cost effective during roadway construction or widening than retrofitting for existing roadways. During development of the short range and long-range transit plan working papers, standards and proposed locations were presented along with a palette of concepts for other infrastructure. It has been recommended by the study team that bus stop signs be installed prior to commencement of service, but that other "back of curb" amenities be deferred until an initial operating period demonstrates ridership activity at specific service points. This allows the City time to spend resources for transit amenities at locations where they will be best utilized. This also allows flexibility during the initial operating period to adjust stop locations. **Figure 8.1** shows the recommended design for a bus pullout bay. Far side stops are preferred as they do not create sight distance problems for pedestrians, and do not impede right turn movements at intersections. **Figure 8.2** shows the preferred location of a far side stop.

Figure 8.1 – Bus Pullout Bay Design



Source: MAG Standard Details for Public Works Construction

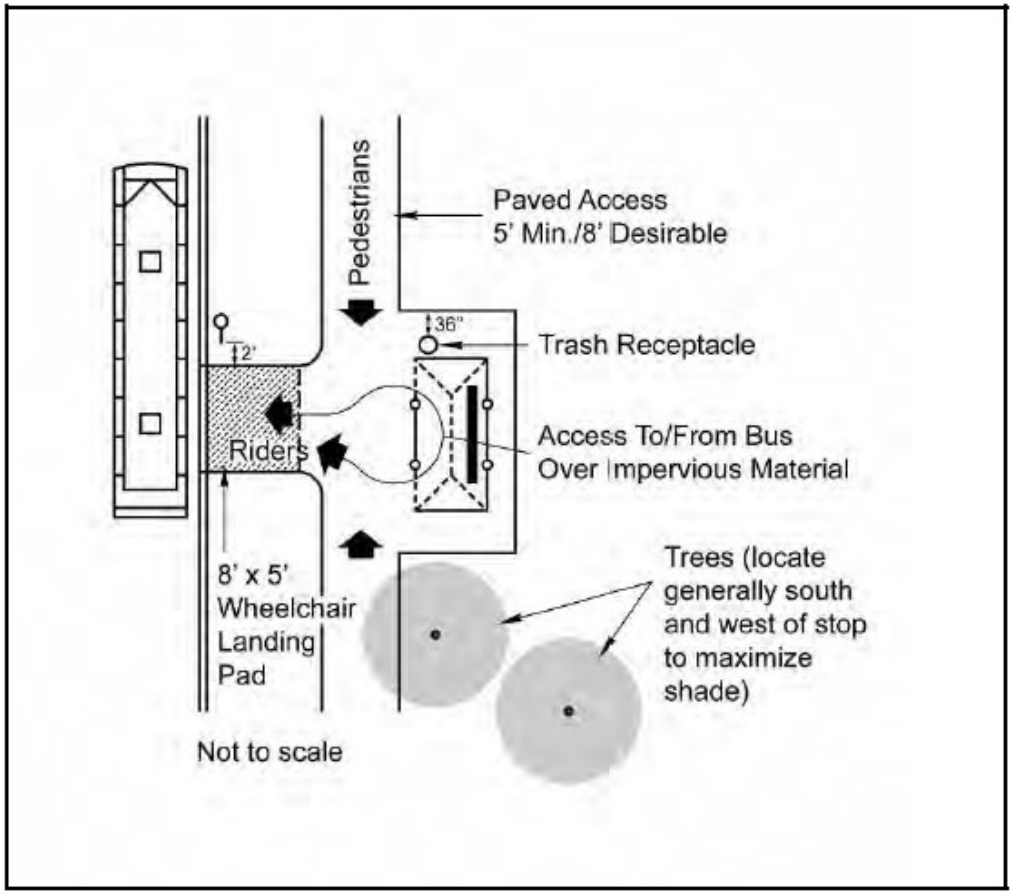
Figure 8.2 – Far Side Stop Details



Source: RPTA/Valley Metro Bus Stop Program and Standards Design Guidelines

Where possible, stops with an above average number of boardings should include shelter, seating, and landscaping as shown in **Figure 8.3**.

Figure 8.3 – Transit Stop Layout



Source: RPTA/Valley Metro Bus Stop Program and Standards Design Guidelines

Adequate sidewalks are also important for transit operations, especially for accommodating passengers with mobility aids, such as canes, walkers, wheelchairs, and scooters. While vehicles used for the service must be wheelchair accessible, this does not help riders where sidewalks do not exist or if there are rough and uneven surfaces. As noted earlier, all transit trips include some pedestrian activity. This can be challenging for seniors and those needing mobility aids. As new development occurs in the community, the developer should be expected to install frontage improvements, including sidewalks. It is recommended that the City mandate that new development not only install sidewalks, but also bus stop signs, seating, shelter, and pullout bays if a project fronts at a designated service stop. As an incentive for such improvements, developments may be given

small reductions in on-site parking requirements if they are adjacent to stops and provide needed infrastructure. If possible, the City should allocate some resources to help complete sidewalks where gaps occur.

Park and Ride lots or designated spaces in existing private lots are another option to provide amenities for riders without investing in permanent infrastructure. The Preferred Alternative for initial service suggests that potential locations be considered at Promenade Mall, near the hospital, and near the junctions of the Florence Boulevard and Downtown area routes. A Park and Ride location proximal to the planned Kortsen Road and I-10 service interchange has already been planned. A location near Peart Park would serve as a transfer location for the library and the Dorothy Powell Senior Center would provide access to drinking fountains, restrooms, seating, and shade. The Promenade Mall has an abundant supply of parking but finding space near the Banner Casa Grande Medical Center could be more of a challenge. Medical facilities are significant generators of traffic and parking space is highly utilized. The pending relocation of the Greyhound Station may provide the opportunity to develop shared parking that would service CART, Greyhound and Casa Grande transit users. The possibility of parking at a future Amtrak station at the Dreamport Village development is another option which will be considered as long-range transit corridors are investigated in following working papers.

8.2. Stop Improvements

Stop improvements were discussed as part of the Preferred Alternative section of the study. Sop locations should be clearly identified with bus stop signs. Stops should not be installed in areas without sidewalks, as persons with mobility limitations will find it difficult to access the stop. As service is in operation, it will become apparent where boardings justify the expense of expanded stop facilities. Bus stop signs should be installed prior to commencement of service.

Bus pullout bays do not exist today in Casa Grande. They should not be built until it is clear where the stops with the highest number of boardings are located. In the interim, right turn lanes into activity centers on Florence Boulevard could be used as interim stops. It is not unusual in the Phoenix metro area to see right turn only signs that also include the text "*EXCEPT BUSES"* as shown in **Figure 8.4**.

Figure 8.4 – Shared Turn Lane Sign

After an initial service period, other stop improvements can be added, prioritizing the stops with the highest boarding volumes and those where the bus operators observe challenges faced by disabled passengers. Seating at stops should be securely fastened to concrete surface to prevent tipping and theft. Wooden bench components are not recommended as they do not weather well in the central Arizona climate. Concrete benches are strong but very hot. Metal is very popular; but metal seating should have a rubberized coating to facilitate cleaning and moderate the heat. Benches are now available with the seating area constructed from recycled plastic. Shelters built of steel tubing and expanded metal mesh are popular and permit air flow. Shelters could be painted with city colors and feature a recognizable color scheme. It is possible to add solar panels to power lighting when operating hours are expanded into the evening.

Some communities sell advertising on shelters and use the revenue to offset maintenance costs. If this is entertained, the city should consider if the current sign codes support the inclusion of advertising on shelters. It is difficult justifying a restriction on off-site advertising (billboards) to the private sector while allowing it on city facilities. **Figure 8.5** shows a bench with recycled plastic (left) and with covered metal (right). **Figure 8.6** shows commercially available shelters with integrated seating and advertising.

Figure 8.5 – Bench Options

Figure 8.6 – Typical Shelter Designs

8.3. Park and Ride Facility Needs

The short term preferred alternative suggests that there are not a substantial number of park and ride needs in the service area. One exception is Promenade Mall. The city might be able to negotiate some space where regional travelers may wish to access local transit. Parking is more limited at City Hall, the Casa Grande Library, and the Dorothy Powell Senior Center. Additional locations will likely emerge as long-range needs are evaluated, especially around major new developments. A Park and Ride Facility is also being planned adjacent to the future service interchange at Kortsen Road and I-10.

8.4. Transit Center

Planning has recently been done on a project to improve Fifth Street between Peart Park and the Casa Grande Library. As this project moves forward, and includes park improvements as well, the project could consider a small transit center to provide a location for people to transfer between routes and perhaps rest for a while and access the nearby public facilities. A location for bus stops and driver breaks east of the library and east of Drylake Street would be ideal. The park, the library, and the Dorothy Powell Senior Center offer available seating, restrooms, and drinking fountains. The initial concept Fifth Street sketch is shown in **Figure 8.7.**

Figure 8.7 – Potential Fifth Street Improvements

8.5. Timing for Installation of Infrastructure Improvements

Installation of signs at stop locations should be done prior to commencement of service operations. Installation of seating, shelters, improved boarding platforms, and other street furniture should be delayed until ridership and boarding information can assist with a prioritization of locations for improvements. This may take a year or more. When service expansion is warranted, a similar approach should be used.

When long range service expansion is considered, prompted by construction of major new employment and activity centers, installation of "back of curb" amenities should be completed by the developers.