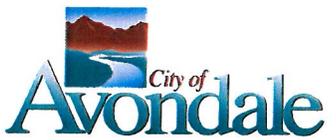


City of Avondale
TRANSPORTATION PLAN UPDATE
FINAL REPORT

Prepared for  City of Avondale

Prepared by  LEE ENGINEERING



EXPIRES 06-30-2015

November 2012

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EXECUTIVE SUMMARY

The Transportation Plan Update was developed as a continuation of the Avondale Transportation Plan 2006, utilizing similar methodologies and procedures to reflect the changing socioeconomic conditions of the community and identify the transportation needs of the City for the 2030 horizon year. The process utilized in this update provides the City administrators a snapshot of the existing transportation system and how it's currently functioning, the improvements and goals that are anticipated for the system, and how forecasted travel conditions are to be accommodated under current roadway design assumptions based on projected land use and socio-economic forecasts. The results of this process are provided to the City as a best estimate of how the transportation facilities are anticipated to accommodate the forecasted demands and what projects could be implemented to achieve acceptable travel operations. City officials will have to review identified improvement projects so they are able to make an informed judgment on where to best allocate limited funds and distribute across the different travel modes to meet the mobility demands of the entire City.

This Transportation Plan update is consistent with the City's General Plan 2030 and follows the goals set forth in that document driven by City Council meetings, meetings with City departments and staff, input from public outreach programs, and from the Technical Advisory Committee consisting of members of Stakeholder agencies from adjacent municipalities, Maricopa Association of Governments (MAG), Arizona Department of Transportation (ADOT), and the Maricopa County Department of Transportation (MCDOT).

This plan highlights the current state of the Avondale transportation system largely identified as the "Northern Planning Area" consisting of the majority of developed and developing areas of the City. The base roadway network for this area was developed from an inventory of transportation features currently present on the network today, identified from the Transportation Plan 2006 with updates provided by City staff pertaining to all transportation elements. Future year considerations of the roadway were identified through the latest Capital Improvement Plan (FY2013-2022), from the latest MAG Transportation Improvement Program listing for FY2011-2015, from developer driven projects likely to emerge in the near future, and from anticipated regional projects such as the construction of SR-30 north of the Gila River.

Existing and future projections of the land use component were provided by the City's Planning Division. The transformation and growth of the City can be highlighted by the change in area dedicated to agricultural land use, decreasing by almost 40 percent in the last 15 years. Demographic information obtained from the MAG Regional Transportation Plan (2010 Update) indicate population and employment projections have decreased since the last transportation plan. Although projected growth for the City has been revised downward, population is still projected to increase by 62 percent and employment increase by 158 percent between 2010 and 2030.

Future travel projections for the planning area were developed through a travel demand model incorporating land use estimates, socioeconomic projections, and the roadway network anticipated to be in-place. The results of the traffic model predict how well the proposed roadway system will accommodate the projected traffic demand. Project listings to meet the vehicular demands are provided to the City for their consideration in addressing operational and capacity constraints. The most pressing capacity restraint corridor segments are identified to be 107th Avenue and Dysart Road. Although these roadways are identified to be the most pressing, unknown constraints such as environmental issues, availability of right-of-way, or other factors must be considered by the City before these projects become programmed in full, in part, indirectly addressed through other projects, or shifted to a different time period based on funding constraints, if they are not currently funded at this time. A delicate balancing act between improvements and costs are difficult decisions administrations are always saddled with.

A recommended Truck Route Plan has been provided that continues to serve the existing truck routes and identifies other key links within the City that are anticipated to develop based on land use areas and new connections to regional facilities. Adoption of the Truck Route plan will help manage development and help constrain heavy vehicle traffic to appropriate travel corridors.

A long-range Transit Plan was developed based on the current state of services available and anticipated expansion of the program in the upcoming years. Used as a planning policy, this can guide Avondale toward achieving quality service over different running ways that are available. Although most of the high capacity/premium quality services are not foreseen within Avondale for the near future (i.e., commuter rail and light rail transit), immediate measures to improve the existing service times, routes and facilities can proceed through working together with Valley Metro and the community.

Currently, 75 directional bike lane miles are provided on the City collector and arterial roadway network. Continued implementation of bike lanes through the Complete Streets program and standard roadway cross-section design will increase connectivity to City facilities promoting bike travel as an alternative to the personal vehicle. Bike safety should continue to be a primary focus for the City, assessing conditions to minimize crash related issues as lane miles are added to the network.

Pedestrian facilities and connectivity are vital components to the overall transportation system. Consistent with the Livable Community goals of the General Plan 2030; implementation of a Complete Streets program and standards already in place for development and other improvement projects, the identification of gaps in the sidewalk system, and integration of planning efforts already under way will be invaluable to meet the visions and goals of the General Plan in conjunction with the Bike and Transit components of this update.

Advanced Traffic Management Systems will continue to evolve helping to reduce vehicle travel delays, improve maintenance, increase safety and provide real-time information to users of the transportation network. These management systems are a valuable component to agencies as an alternative to implementing costly improvement projects. Continued development of the systems aligned with regional goals and in coordination with the City's ITS Strategic Plan is a priority in communications and safety of existing and future facilities.

Construction costs for all transportation improvement projects identified for the 2030 scenario is estimated to be around \$270 million in 2010 dollars, excluding any specialized costs. Based on current environment conditions, it is unlikely that current funding sources can match the dollars needed to complete all projects and therefore will require strategies to preserve/maintain roadway elements that adequately serve the City's needs. Based on the project commitments identified in Table 2.1, a total of \$131.8 million is identified through 2022. Implementation of Intelligent Transportation Systems may help to offset projects timelines until future periods when funds become available. MAP-21 is the latest two-year Federal funding source that may provide an additional avenue to pursue funding for projects relating to capacity, safety, transit, pedestrian and other acceptable projects.

The following sections within the body of this report highlights project specific information to help meet the transportation goals of the City to provide both its residents and visitors multiple safe travel options to enjoy the amenities that the City and surrounding areas provide. All projects are not attainable and will require constant value engineering and consideration as to how to best implement projects in the most cost efficient manner to meet its needs. This plans update process has been guided by members of the City Council and key staff members of the City's Engineering Department along with other technical committee members both current and past. Continued implementation of the goals outlined by the City along with feedback from local residents will continue to ensure a transportation network that will meet the ever-changing social-economic conditions of the City.

Chapter 1: INTRODUCTION

The City of Avondale's Transportation Plan is important to the City and the community because it assesses transportation infrastructure elements that are needed to support and complement the City's updated General Plan 2030. The transportation system is the means for the City to function internally and as a part of the region. Transportation-related issues identified during the update process will guide City staff and decision-makers on planning the proper course of mitigation and/or future funding.

This report documents an update to the Transportation Plan for the City of Avondale that was adopted by the City Council in October 2006. Although five years is a typical interval for updating a transportation plan, the changes that have occurred in the last few years are cause enough to re-assess transportation demands, needs, and prioritization. The initial transportation plan was conducted at a time when transportation needs and expectations were at their pinnacle for the City and the region, and conversely the updated assessment reflects conditions dampened by the recent economic climate. Therefore, the updated assessment and resulting Transportation Plan will attempt to temper new conclusions and recommendations with the previous information.

The updated Transportation Plan was produced by Lee Engineering working in close coordination with the City's Development Services and Engineering Department and the collaborative General Plan update process. The Transportation Plan update effort was comprised of several focus areas including documenting existing conditions, interpreting future land use per the General Plan update, modeling the transportation system, and determining possible means to fund the identified transportation needs. Data and input were in the form of traffic count data from January/February 2011, existing roadway conditions from 2010/2011, existing land use information from the City and the County Assessor (2010/2011), crash data spanning four years (2006 through 2009), future land use designations from the City (General Plan update process), Maricopa Association of Governments (MAG) travel demand model data, the 2006 Transportation Plan, and other planning documents and information.

The updated Transportation Plan documents the findings and recommendations pertaining to the existing conditions (2010-2011) and the typical 20-year planning horizon of 2030. The previous Transportation Plan assessed an interim horizon year of 2010 given the conditions and trends at the time of the Plan's development. As noted during this update process, those expectations were not realized to their fullest leading to the decision that a five-year interim horizon year not be assessed as part of this update. Instead, the assessment of the existing conditions will serve as the determination for short-term transportation planning since near-future transportation demands are envisioned to be similar to existing conditions, only limited capital improvements are planned that would affect the operating capacity of the transportation system, and a future transportation plan update will be due at a time when new economic and transportation information is apparent.

Purpose

The updated City of Avondale Transportation Plan will continue to serve a variety of purposes. It is a vision-driven document that defines the short-term as well as reasonable long-term transportation system needs for the City. It is also a framework document that provides a comprehensive guide for defining and mitigating transportation related issues confronting the City currently or in the future.

Study Area

The study area focus for the Avondale Transportation Plan is the “Northern Planning Area,” which is the land within the City limits north of the Estrella Mountains. The general bounds of the study area includes Indian School Road in the north, Indian Springs Road in the south, 99th Avenue to the east, and Dysart Road on the west. Figure 1-1 shows the transportation planning area focus within the overall City planning boundary.

Report Organization

The reporting of the updated Avondale Transportation Plan is organized as follows:

Chapter 1: Introduction – presents an overview of the planning effort undertaken to update the Avondale Transportation Plan, purpose, study area and the report organization.

Chapter 2: Plan Development Process – describes the various elements that contributed toward the plan update process including vision and goals, key issues and programmed and planned improvements within the study area.

Chapter 3: Land Use and Socioeconomic Conditions – provides an overview of the existing land use and demographic data including population, dwelling units and employment projections.

Chapter 4: Street Plan – describes the existing roadway network, travel demand model, future roadway network conditions, roadway network alternatives, recommended roadway improvement projects, and roadway functional classification system.

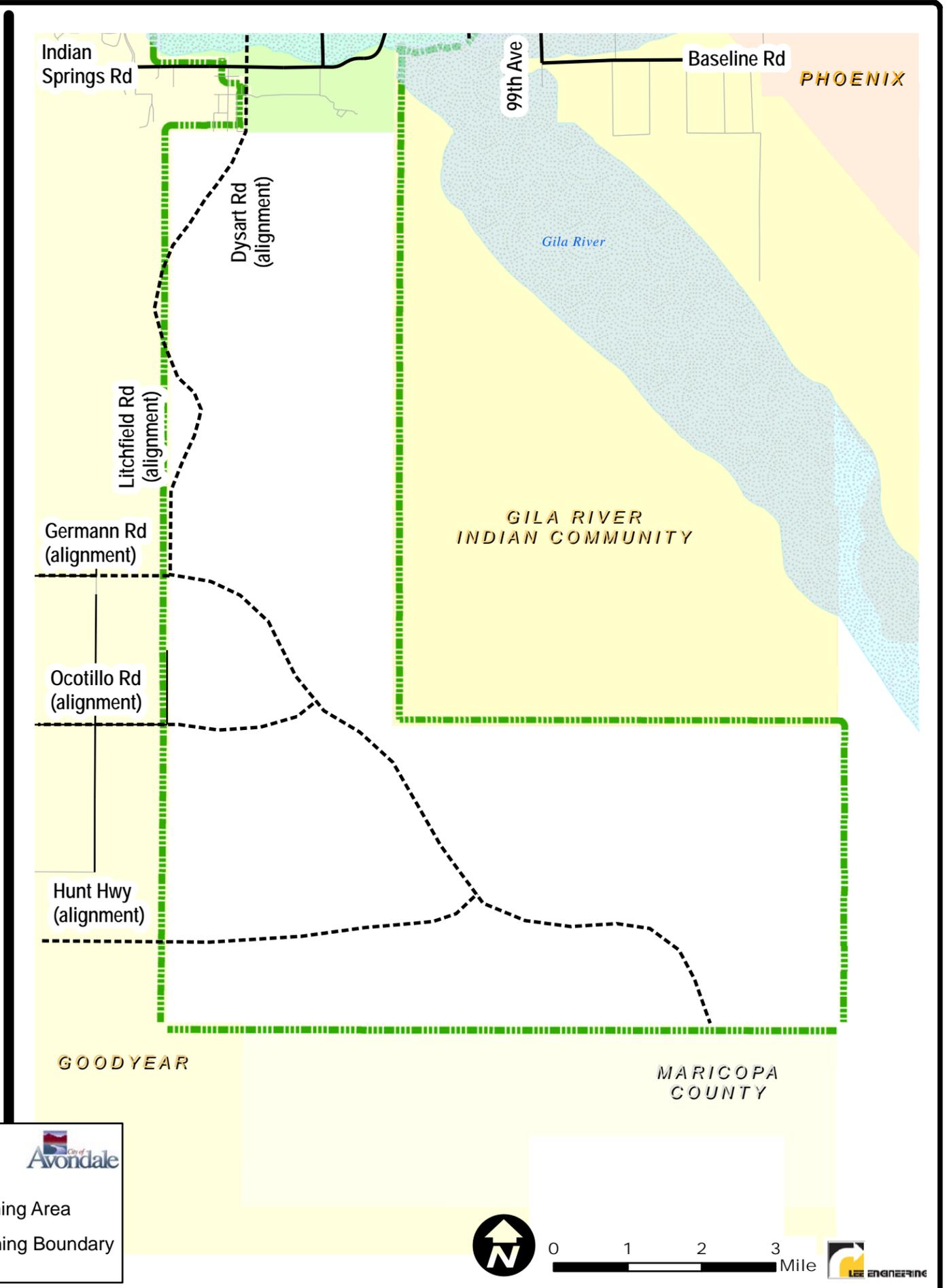
Chapter 5: Transit Plan – provides an overview on the City’s existing transit system and identifies future transit improvement projects and policies to enhance transit services.

Chapter 6: Bike Plan – describes existing bikeways and a prioritization of potential future projects to further support non-motorized transportation modes.

Chapter 7: Intelligent Transportation System Strategic Plan – documents the findings and recommendations of the Intelligent Transportation Systems (ITS) Strategic Plan that was completed separately in July 2010 and integrates essential information.

Chapter 8: Funding – summarizes the costs for realizing the proposed transportation improvement projects and identifies potential funding sources.

Chapter 9: Recommendations and Implementation Strategies – summarizes the major findings, recommendations, and implementation strategies of the updated Avondale Transportation Plan.



Planning Area & Boundary - North and South of Estrella Mountains

Chapter 2: PLAN DEVELOPMENT PROCESS

This section describes the various elements that contributed toward the plan development process including vision and goals, key issues, and the programmed and planned improvements influencing the study area.

Vision and Goals

Consistent with the City's General Plan 2030, the Transportation Plan envisions the City of Avondale to be a responsible community that is able to thrive by establishing a long-term commitment and dedication to a comprehensive transportation system that is sustainable, safe, efficient, and cost-effective to its citizens. The following is a summary of goals identified in the City's General Plan pertaining to its current and future transportation system:

- Provide a transportation system that is complementary to the existing and planned land uses.
- Promote Avondale in regional transportation issues.
- Provide a transportation system that serves the public in a safe, efficient, and cost-effective manner.
- Promote and support an integrated transportation system that mitigates congestion, fosters a sense of community, and preserves the environment.
- Develop a safe bicycle transportation system that provides connectivity throughout the City, including major public and private facilities, and to transit.
- Continue to make the street system accessible, safe, and convenient for bicycles and pedestrians.
- Increase recreational opportunities for bicyclists throughout Avondale.
- Become a recognized bicycling friendly city.
- Enhance public transit options for residents of Avondale, including supportive actions to accommodate travel by commuter rail and light rail.
- Require development and redevelopment within areas designated as Transit Oriented Development (TOD) on the General Plan land use map to facilitate and encourage the use of transit by visitors and residents.
- Promote and support the incorporation of commercial uses as a component of TOD.
- Promote and support the incorporation of healthy community design criteria into TOD development.

In its General Plan, the City has developed complementary policies for these goals in order to establish a comprehensive and integrated transportation system within the City.

Key Issues

The key issues affecting the City's transportation system, as identified in the 2006 Transportation Plan, included rapid population growth, rising traffic congestion, and new developments. Any short-term realization of these issues has subsided due to the current

economic climate. Nevertheless, these issues still have potential—especially within the 20 year scope of this Plan—but a renewed focus on issues such as supporting economic development, fostering travel choices, and preserving/sustaining transportation infrastructure now require attention.

Economic Development

Economic development is an important part of Avondale’s future. To be a sustainable community, access to new employment, services, and activity centers must be convenient to regional transportation routes. Although the areas adjacent to Interstate 10 (I-10) and Loop 101 have benefited from their proximity, a similar network of arterial and collector roadways will need to be systematically improved (or established) farther to the south (Lower Buckeye Road southward) where more development potential exists. Similar to the introduction of I-10 or Loop 101, sufficient access to/from the pending State Route 30 (SR-30) limited access freeway will be needed to support the associated land development. Also, new or improved roadways should complement possible transit service within the designated transit oriented development (TOD) areas.

With economic development, general growth will follow. The 2006 Plan relied on population estimates rising at a rate of about 4% per year, culminating in a 2030 estimate of about 161,000 people. Now, more modest re-estimations indicate the City will have a population of about 123,000 people by 2030. In order to achieve this population, the expected growth in the next 20 years would represent a 67% increase in the current population; so growth and associated congestion are still a key concern.

Multimodal Options

A transportation network which includes attractive transit and non-motorized modes of travel that is reliable, safe and connects residential areas to retail, employment, and recreation areas can produce positive health benefits for Avondale’s residents, workforce, and visitors. Since automobile use will still be seen as the prevalent mode, the extensiveness of the roadway network required to support that mode should also be used to facilitate pedestrian, bicycle, and transit connectivity through context sensitive strategies and consistent implementation of roadway standards. In addition, dedicated routes for pedestrians and bicyclists permit an overall interconnected system throughout the community thereby creating linkages between residential and commercial development, parks, schools, and open spaces.

To further support a diversified transportation system, the City will foster transit oriented development (TOD). In the City’s General Plan, the TOD land use categories accommodate the full range of urban development that include a mixture of housing, office, retail and/or other amenities integrated into a walkable neighborhood and located within a half-mile of quality public transportation. These land uses have been identified to further City efforts to reduce household driving, lower regional congestion, expand mobility choices that reduce dependence on the automobile, and accommodate more healthy and active lifestyles.

Preserving Transportation Infrastructure

In these times of fiscal constraint, it is important to fully utilize what is available to the best degree possible. With respect to the transportation infrastructure, this goal translates to improved roadway/intersection operations and maintenance of current facilities. Strategic implementation and use of intelligent transportation system (ITS) elements can improve traffic operations and thus postpone capital improvements aimed at providing additional capacity. Also, applying “complete streets” strategies where facilities for bicycles, pedestrians, and transit are recognized as important as vehicular travel will permit an increased overall capacity of the roadway. To effectively take advantage of roadways designed with all modes in mind requires land uses, such as transit-oriented development, that can accommodate all travel mode choices. Overall, a balance of funding between maintenance of existing roadway elements and new infrastructure where it is needed and most beneficial will be the challenge in the coming years.

Complete Streets Policy

In 2011 the MAG Bicycle and Pedestrian Committee completed management of the program to compile research and provide a regional Complete Streets Guide. This guide serves as a toolbox for implementing complete street projects leaving decisions for implementation and methods to the individual agency engineering and planning staffs at the approval of Council. It is advantageous to the City to follow such a process that can be developed by engineering staff using the MAG documents as a guiding resource. The lack of specific minimum and maximum requirements in the MAG document is a help in most cases. The idea of Complete Streets is consistent with the General Plan 2030 recently adopted. Adopting this policy will help ensure the City will meet the goals of the General Plan and Council by implementing measures such as adding bus bays, creating midblock pedestrian refuge islands where determined to be appropriate for current and future needs, ensuring sidewalks are not cut to save costs except in very rural areas, requiring bike lanes, and other efforts through value engineering that do not reduce multi-modal accommodations.

Programmed and Planned Improvements

Existing and previous plans, programs, reports, and studies pertaining to the study area were reviewed during the Plan update process. Information was gathered from the City’s General Plan 2030 development activity, and other relevant information such as traffic counts and the City’s Capital Improvement Plan (CIP).

Since the future year focus of this Transportation Plan is 2030—the same as the City’s General Plan—short- and long-term improvements will be considered together. The short-term improvements, which tend to be more local in nature, are more likely to occur so their inclusion is assumed. Table 2-1 shows the City of Avondale short-term (generally 2012-2022) roadway improvement projects and other similar adjacent city/agency projects.

Developer driven projects (identified separately) should be considered tentative noting the nature of these projects. Longer-term regional improvements considered are listed below:

- The approximately 14-mile State Route 30 (“I-10 Reliever”) grade-separated freeway is planned to be constructed through the City connecting SR-303 to the future South Mountain Loop 202 during Phase V (2026-2032) of the Regional Transportation Plan (RTP). For the purpose of this Plan, it will be assumed functional (with full diamond interchanges at 107th Avenue, Avondale Boulevard, and Dysart Road) as of 2030.
- A new interchange at I-10 and Fairway Drive was originally scheduled for completion within Phase IV of the RTP, but due to collaborative efforts a full-diamond interchange is now anticipated in 2015.
- New general purpose freeway lanes on Loop 101 and I-10 (east of Loop 101 and west of SR-303) and HOV direct connection ramps at the Loop 101/I-10 interchange.
- Super Grid bus system improvements in the form of regional grid routes on selected major arterials including Indian School Road, Thomas Road, McDowell Road, Van Buren Street, Buckeye Road, Lower Buckeye Road (partially), and Dysart Road (partially) within the City of Avondale.
- Construction of the Avondale City Center Transit Station within the planned TOD environment.
- Extension of the LRT to 79th Avenue in 2023.

Table 2-1. City Improvement Projects

City	Project Type	Year(s)	MAG TIP ID#	CIP ID#	Location	Description	Mi.	Lanes Before/After	Funding	Federal	Region	Local	Total
Avondale	Roadway	2012	AVN12-104	ST1178	Central Avenue: Van Buren Street south to Western Ave	Design multi-use path	1.0	4 4	Local	\$ -	\$ -	\$ 147,000	\$ 147,000
		2013-14	AVN14-107			Construct multi-use path	1.0	4 4	Local/CMAQ	\$ 1,077,405	\$ -	\$ 314,642	\$ 1,392,047
Avondale	Control	2013-22	-	ST1220	Pedestrian Ramps/Sidewalks Program (Citywide)	Various sidewalk improvements, ADA ramps	0.0	0 0	Local	\$ -	\$ -	\$ 950,000	\$ 950,000
Avondale	Roadway	2013	AVN09-904	-	Avondale School Crosswalk Enhancement	Design and Install various traffic calming and other infrastructure devices: raised crosswalks, sidewalks	0.1	0 0	SRTS	\$ 260,230	\$ -	\$ -	\$ 260,230
Avondale	Roadway	2018-22	AVN11-101	ST1166	Avondale Boulevard-Lower Buckeye to Miami	Add bike lane, curb & gutter & sidewalk on east-side of Avondale	0.2	4 4	Local	\$ -	\$ -	\$ 800,000	\$ 800,000
Avondale	Control	2018-22	-	ST1189	107th Ave and Lower Buckeye	Construct traffic signal	0.0	- -	Local	\$ -	\$ -	\$ 200,000	\$ 200,000
Avondale	Roadway	2012-14	AVN10-009	ST1148	Avondale & Buckeye Intersection	Improve Intersection Capacity	0.5	6 6	L/C/F	\$ -	\$ -	\$ -	\$ 2,062,000
Avondale	Control	2018-22	-	ST1170	Avondale Blvd and Lower Buckeye	Construct traffic signal and associated intersection improvements	0.0	2 2	Local	\$ -	\$ -	\$ 600,000	\$ 600,000
Avondale	Roadway	2016-18	AVN07-621	ST1021	Dysart Rd: Harrison Dr to Lower Buckeye Rd	Construct new 3 lane roadway	0.5	0 2	Local	\$ -	\$ -	\$ 2,500,000	\$ 2,500,000
Avondale	Roadway	2014-16	AVN13-104	ST1125	Avondale Blvd: McDowell to Thomas	Add a southbound lane	1.0	2 4	Local	\$ -	\$ -	\$ 1,000,000	\$ 1,000,000
Avondale	Roadway	2012-13	AVN13-901	ST1267	McDowell Rd: Avondale Blvd. to 99 th Ave	Fiber and Infrastructure	2.1	0 0	CMAQ	\$ 1,034,000	\$ -	\$ 154,000	\$ 1,188,000
Avondale	Control	2015-16	-	ST1186	Avondale Blvd and Thomas	Construct roundabout	0.0	- -	Local	\$ -	\$ -	\$ 800,000	\$ 800,000
Avondale	Control	2018-22	-	ST1248	Dysart and Lower Buckeye	Construct traffic signal	0.0	- -	Local	\$ -	\$ -	\$ 475,000	\$ 475,000
Avondale	Roadway	2018-22	-	ST1172	Roadway improvements along El Mirage and Lower Buckeye	Various intersection approach/leg widening	0.0	- -	Local	\$ -	\$ -	\$ 810,000	\$ 810,000
Avondale	Roadway	2018-22	AVN15-101	ST1224	107th Avenue & McDowell Roadway Improvements	Widen 107th Ave & McDowell Road	0.3	3 4	Local	\$ -	\$ -	\$ 1,900,000	\$ 1,900,000
Avondale	Control	2018-22	-	ST1127	107th Ave and Pierce	Construct traffic signal and associated intersection improvements	0.0	- -	Local	\$ -	\$ -	\$ 475,000	\$ 475,000
Avondale	Roadway	2018-22	AVN10-703	ST1146	Van Buren St: El Mirage to 122nd Ave (North half)	Add 1 westbound through lane, paving, curb and gutter.	0.5	2 3	Local	\$ -	\$ -	\$ 150,000	\$ 150,000
Avondale	Control	2018-22	-	ST1171	El Mirage and Lower Buckeye	Construct traffic signal and associated intersection improvements	0.0	2 2	Local	\$ -	\$ -	\$ 575,000	\$ 575,000
Avondale	Control	2018-22	-	ST1180	107th Ave and Dealer Dr	Construct traffic signal	0.0	- -	Local	\$ -	\$ -	\$ 475,000	\$ 475,000
Avondale	Control	2018-22	-	ST1181	107th Ave and Roosevelt St	Construct traffic signal	0.0	- -	Local	\$ -	\$ -	\$ 475,000	\$ 475,000
Avondale	Control	2015-16	-	ST1187	119th Ave and McDowell	Construct traffic signal	0.0	- -	Local	\$ -	\$ -	\$ 475,000	\$ 475,000
Avondale	Control	2018-22	-	ST1188	119th Ave and Lower Buckeye	Construct traffic signal	0.0	- -	Local	\$ -	\$ -	\$ 475,000	\$ 475,000
Avondale	Control	2018-22	-	ST1195	Central Ave and Lower Buckeye	Construct traffic signal	0.0	- -	Local	\$ -	\$ -	\$ 475,000	\$ 475,000

City	Project Type	Year(s)	MAG TIP ID#	CIP ID#	Location	Description	Mi.	Lanes Before/After	Funding	Federal	Region	Local	Total
Avondale	Control	2018-22	-	ST1229	Van Buren St and 103rd Ave	Construct traffic signal	0.0	- -	Local	\$ -	\$ -	\$ 475,000	\$ 475,000
Avondale	Control	2018-22	-	ST1265	Dysart/McDowell Intersection	Improvements add dual left turn lanes and extend medians	0.0	- -	Local	\$ -	\$ -	\$ 1,150,000	\$ 1,150,000
Avondale	Roadway	2012-13	-	ST1288	Citywide	Dynamic Message Signs	0.0	- -	CMAQ	\$ -	\$ -	\$ 100,000	\$ 100,000
Avondale	Roadway	2012-13	-	ST1261	City Center Area	Intersection and other associated improvements	0.0	- -	Local	\$ -	\$ -	\$ 1,500,000	\$ 1,500,000
Avondale	Roadway	2012-13	-	ST1267	McDowell Road	Intersection and other associated improvements	0.0	- -	Local	\$ -	\$ -	\$ 1,500,000	\$ 1,500,000
Avondale	Roadway	2012-13	AVN12-103	ST1287	McDowell Road	119 th Avenue to Avondale Blvd	0.5	4 6	Local	\$ -	\$ -	\$ 1,400,000	\$ 1,400,000
Avondale	Roadway	2012-22	-	ST1294	Citywide	ITS infrastructure	0.0	0 0	Local	\$ -	\$ -	\$ 1,800,000	\$ 1,800,000
Avondale	Transit	2012-17	-	TN1276	City Center Area	Avondale City Center Transit Center	0.0	0 0	Local	\$ -	\$ -	\$17,900,000	\$ 17,900,000
Short-Term Developer Funded Improvement Projects Anticipated													
Avondale	Roadway	-	AVN07-702	-	Van Buren St: 111th Ave to 107th Ave	Add 2 westbound lane	0.5	3 4	Private	\$ -	\$ -	\$ 900,000	\$ 900,000
Avondale	Roadway	-	AVN08-623	-	99th Avenue: 1/2 Mile north of McDowell Rd to Thomas	Construct 1 southbound lane	0.5	4 5	Private	\$ -	\$ -	\$ 2,100,000	\$ 2,100,000
Avondale	Roadway	-	AVN08-625	-	Van Buren St: 107th Ave to 105th Ave	Add 2 westbound through lane	0.5	2 4	Private	\$ -	\$ -	\$ 900,000	\$ 900,000
Avondale	Roadway	-	AVN08-801	-	99th Ave: Osborn Rd to Indian School Rd	Add 1 southbound lane (& dual turn lane)	0.5	4 5	Private	\$ -	\$ -	\$ 500,000	\$ 500,000
Avondale	Roadway	-	AVN08-802	-	107th Ave: Broadway Rd to Alta Vista Rd alignment	Add 1 southbound lane	0.8	2 3	Private	\$ -	\$ -	\$ 1,000,000	\$ 1,000,000
Avondale	Roadway	-	AVN08-806	-	Broadway Rd: Dysart Rd to Avondale Blvd	Construct new 4 lane roadway	2.0	0 4	Private	\$ -	\$ -	\$ 2,500,000	\$ 2,500,000
Avondale	Roadway	-	AVN08-807	-	Dysart Rd: Sunland Ave to 1/4 mile north of Broadway Rd	Add 1 northbound lane	1.0	2 3	Private	\$ -	\$ -	\$ 500,000	\$ 500,000
Avondale	Roadway	-	AVN08-808	-	Dysart Rd: Osborn Rd to Indian School Rd	Add 1 northbound lane	0.5	4 5	Private	\$ -	\$ -	\$ 1,000,000	\$ 1,000,000
Avondale	Roadway	-	AVN08-809	-	El Mirage Rd: Sunland Ave to 1/4 mile north of Broadway Rd	Widen roadway from 2 to 4 lanes	1.0	2 4	Private	\$ -	\$ -	\$ 1,000,000	\$ 1,000,000
Avondale	Roadway	-	AVN08-810	-	Indian School Rd: 103rd to 99th Ave	Add 1 eastbound lane	0.5	4 5	Private	\$ -	\$ -	\$ 500,000	\$ 500,000
Avondale	Roadway	-	AVN09-902	-	McDowell Road: East of 119th Avenue to Avondale Blvd	Add 1 westbound lane	0.5	4 5	Private	\$ -	\$ -	\$ 500,000	\$ 500,000
Avondale	Roadway	-	AVN10-813	-	99th Ave: Thomas Rd to Osborn Rd	Add 1 southbound lane (+dual turn lane)	0.5	4 5	Private	\$ -	\$ -	\$ 1,000,000	\$ 1,000,000
Avondale	Roadway	-	AVN10-904	-	McDowell Road: East of 119th Avenue to Avondale Blvd	Add 1 eastbound lane	0.5	4 5	Private	\$ -	\$ -	\$ 500,000	\$ 500,000
Avondale	Roadway	-	AVN14-105	-	El Mirage and Lower Buckeye Road	Widen El Mirage & Lower Buckeye Road	0.2	2 4	Private	\$ -	\$ -	\$ 810,000	\$ 810,000
Avondale	Roadway	-	AVN96-608	-	Thomas Rd: 103rd to 99th Ave	Add 1 westbound lane	0.5	2 3	Private	\$ -	\$ -	\$ 750,000	\$ 750,000

City	Project Type	Year(s)	MAG TIP ID#	CIP ID#	Location	Description	Mi.	Lanes Before/After	Funding	Federal	Region	Local	Total
Short-Term Improvements by Other Agencies													
Maricopa County	Roadway	2011	MMA09-608		MC-85: 107th Ave to 75th Ave	Widen roadway and construct intersection improvement with dual left turn lanes	2.0	4 / 5	Local	\$ -	\$ -	\$ 34,348,000	\$ 34,348,000
ADOT	Roadway	2012	DOT10-6C28		30 (I-10 Reliever): SR303L - SR202L, South Mountain	R/W Protection	14.0	0 / 0	RARF	\$ -	\$ 5,000,000	\$ -	\$ 5,000,000
Goodyear	Control	2012	GDY12-801		McDowell Rd: Sarival Rd to Litchfield Rd (limits to be changed)	Design and construct fiber-optic interconnection for traffic signals and video	3.0	4 / 6	CMAQ	\$ 588,809	\$ -	\$ 255,541	\$ 844,350
Maricopa County	Control	2012	MMA12-101		Various locations along MC85 from Aqua Fria Bridge West Terminal to 75th Ave	Design ITS traffic management capabilities along MC 85	5.5	0 / 0	Local	\$ -	\$ -	\$ 242,000	\$ 242,000
Phoenix	Roadway	2012	PHX08-716		91st Ave: Indian School Rd to Camelback Rd	Design reconstruction of roadway to 74ft section, adding 1 through lane in each direction	1.0	2 / 4	Local	\$ -	\$ -	\$ 705,000	\$ 705,000
Maricopa County	Control	2013	MMA13-904		McDowell Rd at Estrella Pkwy, MC85 at Estrella Pkwy	Install arterial DMS and associated conduit, pull boxes, fiber optic cable, communication equipment and electrical service equipment	0.0	0 / 0	CMAQ	\$ 700,000	\$ -	\$ 300,000	\$ 1,000,000
Phoenix	Roadway	2013	PHX10-733		91st Ave: Indian School Rd to Camelback Rd	Acquire right of way for reconstruction of roadway to 74ft section, adding 1 through lane in each direction	1.0	2 / 4	Local	\$ -	\$ -	\$ 808,500	\$ 808,500
Maricopa County	Control	2014	MMA14-102		Various locations along MC85 from Aqua Fria Bridge West Terminal to 75th Ave	Construct/Install ITS traffic management capabilities along MC 85	5.5	0 / 0	CMAQ	\$ 781,456	\$ -	\$ 363,000	\$ 1,144,456
Phoenix	Roadway	2015	PHX09-620		91st Ave: Indian School Rd to Camelback Rd	Reconstruct roadway to 74ft section, adding 1 through lane in each direction	1.0	2 / 4	Local	\$ -	\$ -	\$ 6,000,000	\$ 6,000,000
ADOT	Roadway	2015	-		I-10 at Fairway Drive	Construct I-10/Fairway Drive TI	0.0	0 / 0	Federal	\$ 23,000,000	\$ -	\$ -	\$ 23,000,000

sources: MAG TIP 2011 Update - FY2011-2015 (9/6/12) & City of Avondale Capital Improvement Plan (FY 2013-2022)

Chapter 3: LAND USE AND ECONOMIC CONDITIONS

The City of Avondale, located in the West Valley region of Maricopa County, was incorporated in December 1946. The City currently has a total planning area of about 94 square miles, with approximately 30 square miles situated north of the Gila River. As Avondale has grown, opportunities for residents to expand and enhance their knowledge, abilities, and career options have grown as well.

Land Use

Land use and a transportation system are co-dependent facets within a city. Land cannot be developed to its full potential without adequate access, yet the traffic generated by developed land can overburden the roadways that helped it prosper. Therefore, the development of a transportation plan is also a study in the dynamics of land use, the associated traffic demands, and the right balance of infrastructure needs versus development potential. The existing (2010) composition of the City's land within the northern planning area is shown in Table 3-1 below.

Table 3-1. Existing (2010) Land Use Conditions (Northern Planning Area)

Land Use Description	Percentage Share
Agriculture	18.86%
Vacant/Undeveloped	11.88%
Commercial	3.69%
Residential (sum of subcategories below)	25.25%
<i>Low Density Single Family Residential</i>	2.89%
<i>Medium Density Single Family Residential</i>	12.96%
<i>Medium High Density Single Family Residential</i>	4.41%
<i>Un-Subdivided Single Family Residential</i>	3.06%
<i>Multi-Family Residential</i>	1.47%
<i>Mobile Home Park</i>	0.46%
Transportation/Right-of-Way	14.37%
Employment/Industrial	6.20%
Open Space (Improved or Unimproved, excl. Public Parks)	13.44%
Public Parks	0.73%
Public Facilities	5.58%
TOTAL	100.00%

Source: City of Avondale Planning Division Existing Conditions Survey

The City has been experiencing a transformation from a bedroom community with agricultural roots to a viable suburban community. For instance, in the last 15 years agriculture land use has decreased by almost 40% as farmland transitioned to residential, commercial, and employment land uses. With the current share of agriculture being about

half of its former intensity, both the horizon years for the current General Plan and its predecessor have essentially forecasted the complete conversion of the agriculture land.

Demographic Data

Socioeconomic conditions within the City also affect the transportation system. The City of Avondale is still attracting new residents according to data presented in the MAG Regional Transportation Plan (2010 Update). The City’s resident population is ranked 10th in the metropolitan area according to 2009 population data. The annual growth rate since 2005 is ranked 8th in the region and the City’s growth (2005 to 2009) represented 8.5% of the overall growth in the MAG region. It is likely the current economic conditions will slow this growth, but the potential for a resumption of growth within the time frame of this Transportation Plan is very likely.

Table 3-2. City of Avondale Planning Area Socioeconomic Data

Demographic	2005	2010	2020	2030
Resident Population	70,160	76,238	105,989	123,265
Employment	12,315	20,599	37,776	53,083

Source: MAG Regional Transportation Plan (2009 Update), City of Avondale General Plan

The projected 2020 resident population by MAG in the table above is about 13% lower than the previous projection for the same horizon year cited in the previous Transportation Plan. Moreover, MAG projections (from 2003) for 2030 are about 24% higher than the current projection presented above. With the projected growth rate in employment of 158% from 2010 to 2030 outpacing the residential growth of only 62%, it shows Avondale’s continued transition to becoming a more self-reliant city as opposed to suburban community.

Chapter 4: STREET PLAN

This chapter describes the City's existing roadway network; the travel demand model used for forecasting traffic; future (for 2030) roadway network conditions; recommended roadway improvement projects; and roadway functional classification system.

The Street Plan establishes a roadway network for the City that provides connectivity within the City as well as across jurisdictional boundaries. Regional improvements proposed in the MAG RTP including further I-10 widening, an interchange at I-10 and Fairway Drive, and the SR-30 freeway north of the Southern Avenue alignment, are accounted for in the development of the Street Plan. The Plan also provides adequate access to the freeway system including I-10, Loop 101 and the future SR-30 (at planned interchanges at 107th Avenue, Avondale Boulevard, and Dysart Road).

Existing Roadway Network

A comprehensive inventory was compiled for roadway features in the study area including functional classification, roadway segment lengths, posted speed limits, and number of travel lanes (including bike lanes). The collection of traffic volume data was limited to Average Daily Traffic (ADT) counts taken in the first quarter of 2011. The network inventory for existing conditions (2010/2011) is summarized in Table 4-1.

Existing Functional Classification

Roadway network functional classification (i.e., the balance of mobility and access for a given roadway) in the project study area, as established by the previous Transportation Plan, is shown later in Figure 4-1. As established by the City's General Engineering Requirements Manual, which was drafted in 2008 after the completion of the prior Transportation Plan, there are four roadway classifications possible for City-controlled facilities:

- Arterial Street (6-lane cross-section)
- Phased Arterial Street (4- or 5-lane cross-section)
- Collector Street (with sub-classes of Major, Minor, and Industrial)
- Local Street

In addition, regionally significant roadways classified as Freeway or Road of Regional Significance (RRS) pass through the City. Either already existing or expected by 2030, I-10, Loop 101, and SR-30 will all be regional freeways that are a part of Avondale's roadway system. Existing RRS include MC-85 (Buckeye Road/Main Street), 99th Avenue (south of I-10), Dysart Road (north of MC-85), and Indian School Road.

A re-evaluation of roadway classification assignments within the City is part of this Transportation Plan. For example, existing and projected right-of-way limitations and no anticipated interchange with the SR-30 freeway likely means that significant portions of El Mirage Road will function as major collector rather than the previous arterial identification.

Table 4-1. Roadway Characteristics for the Existing Conditions

Corridor	Segment (north to south, west to east)		Total # Through Lanes	Posted Speed (mph)	Collected Avg. Speed	Functional Classification*	Length (mi.)	Lane- Miles	ADT	Bike Lanes	Route Designation	% Truck Traffic
99th Avenue	Indian School Rd	to Thomas Rd	4	50	-	Arterial	1	4.00	8,719	N	-	-
	Thomas Rd	to Encanto Blvd	4	45	54	Arterial	0.5	2.00	10,560	N	-	4.5%
	Encanto Blvd	to Roos. Irr. Canal	4	45	54	Arterial	0.25	1.00		N	-	4.5%
	Roos. Irr. Canal	to McDowell Rd	4/6	45		Arterial	0.25	1.25	N	-		
	McDowell Rd	to I-10	6	45	-	Arterial	0.2	1.20	-	N	-	-
	I-10	to Roosevelt St	6	45	-	Arterial	0.25	1.50	22,059	N	RRS	-
	Roosevelt St	to Van Buren St	6	45	-	Arterial	0.55	3.30		N	RRS	-
107th Avenue	Indian School Rd	to Garden Lakes Pkwy	4	35	42	Arterial	0.4	1.60	16,004	Y	-	2.1%
	Garden Lakes Pkwy	to Lakeshore Dr	4	35		Arterial	0.4	1.60		Y	-	
	Lakeshore Dr	to Thomas Rd	4	35		Arterial	0.2	0.80		Y	-	
	Thomas Rd	to Crystal Gardens Pkwy	2	35	-	Arterial	0.75	1.50	12,506	Y	-	-
	Crystal Gardens Pkwy	to McDowell Rd	4	35	-	Arterial	0.25	1.00	11,391	Y	-	-
	McDowell Rd	to I-10	3	45	-	Arterial	0.2	0.60	-	N	Truck	-
	I-10	to Roosevelt St	3	45	47	Arterial	0.3	0.90	17,574	N	Truck	6.7%
	Roosevelt St	to Van Buren St	2	45		Arterial	0.5	1.00		N	Truck	
	Van Buren St	to Roosevelt Pkwy	3	45	-	Arterial	0.25	0.75	12,944	Y	Truck	-
	Roosevelt Pkwy	to Buckeye Rd/MC-85	4	45	-	Arterial	0.75	3.00		Y	Truck	-
	Buckeye Rd/MC-85	to Durango St	3/4	40/45	-	Arterial	0.5	1.75	-	Y	Truck	-
	Durango St	to Lower Buckeye Rd	4	40/45	-	Arterial	0.5	2.00	7,172	Y	Truck	-
	Lower Buckeye Rd	to Miami Ave	2	45	-	Arterial	0.25	0.50	3,182	N	Truck	-
	Miami Ave	to Broadway Rd	2	45	-	Arterial	0.75	1.50		N	Truck	-
Broadway Rd	to Southern Ave	2	45	-	Arterial	1	2.00	-	N	Truck	-	
Southern Ave	to Gila River	2	45	-	Arterial	0.33	0.66	-	N	Truck	-	
Avondale Boulevard	Thomas Rd	to Virginia Ave	3	35	39	Arterial	0.25	0.75	8,922	N	-	1.4%
	Virginia Ave	to Encanto Blvd	2	35		Arterial	0.25	0.50		N	-	
	Encanto Blvd	to Palm Ln	2	35		Arterial	0.25	0.50		N	-	
	Palm Ln	to McDowell Rd	2	40		Arterial	0.25	0.50		N	-	
	McDowell Rd	to I-10	6	45	-	Arterial	0.3	1.80	X	N	-	-
	I-10	to Roosevelt St	6	45	-	Arterial	0.2	1.20	X	Y	-	-
	Roosevelt St	to City Center Way	6	45	-	Arterial	0.25	1.50	26,003	Y	-	-
	City Center Way	to Van Buren St	6	45	-	Arterial	0.25	1.50		Y	-	-
	Van Buren St	to Maricopa St	6	45	36	Arterial	0.75	4.50	20,141	Y	-	4.6%
	Maricopa St	to Buckeye Rd/MC-85	5	45		Arterial	0.25	1.25		Y	-	
	Buckeye Rd/MC-85	to Durango St	4	35/40	38	Arterial	0.5	2.00	9,059	Y	-	2.9%
	Durango St	to Lower Buckeye Rd	4	40		Arterial	0.5	2.00	-	Y	-	
	Lower Buckeye Rd	to Broadway Rd	4	50	-	Arterial	1	4.00	4,537	N	-	-
Broadway Rd	to Southern Ave	4	50	-	Arterial	1	4.00	-	N	-	-	
Southern Ave	to Indian Springs Rd	4	40	-	Arterial	1.1	4.40	-	N	-	-	
El Mirage Road	City Limits	to Indian School Rd	2	40	-	Arterial	0.75	1.50	6,192	N	-	-
	I-10	to Van Buren St	2	25	-	Arterial	0.5	1.00	-	N	-	-
	Buckeye Rd/MC-85	to Durango St	3/4	45	-	Arterial	0.5	1.75	3,459	partial	-	-
	Durango St	to Lower Buckeye Rd	3	45	-	Arterial	0.5	1.50	-	N	-	-
	Lower Buckeye Rd	to Miami Ave	3	45	-	Arterial	0.2	0.60	-	N	-	-
	Miami Ave	to Elwood St	2	45	-	Arterial	0.3	0.60	1,009	N	-	-
	Elwood St	to Broadway Rd	2	45	-	Arterial	0.5	1.00		N	-	-
	Broadway Rd	to Southern Ave	2	45	-	Arterial	1	2.00	-	N	-	-
	Southern Ave	to Vineyard Rd	2	40	-	Arterial	0.5	1.00	-	N	-	-
Vineyard Rd	to Indian Springs Rd	2	40	-	Arterial	0.65	1.30	-	N	-	-	
Dysart Road	Indian School Rd	to Osborn Rd	5/6	45	-	Arterial	0.5	2.75	24,118	Y	RRS	-
	Osborn Rd	to Thomas Rd	6	45	-	Arterial	0.5	3.00	26,908	Y	RRS	-
	Thomas Rd	to McDowell Rd	6	45	-	Arterial	1	6.00	31,259	Y	RRS	-
	McDowell Rd	to Rancho Santa Fe Blvd	6	40	37	Arterial	0.25	1.50	32,943	Y	RRS, Truck	7.5%
	Rancho Santa Fe Blvd	to I-10	6	40		Arterial	0.2	1.20		Y	RRS, Truck	
	I-10	to Van Buren St	6	40	-	Arterial	0.55	3.30	35,218	Y	RRS, Truck	-
	Van Buren St	to Western Ave	4	30/35	33	Arterial	1	4.00	18,983	N	RRS	2.7%
	Western Ave	to Buckeye Rd/MC-85	4	20		Arterial	0.1	0.40		N	RRS	
	Buckeye Rd/MC-85	to Whyman Ave	2	35	-	Arterial	0.65	1.30	2,838	Y	-	-
	127th Ave/Vermeersch	to Broadway Rd	2	40	-	Arterial	0.25	0.50	-	N	-	-
Broadway Rd	to Southern Ave	2	35-45	-	Arterial	1	2.00	-	N	-	-	
127th Ave/ Vermeersch	Lower Buckeye Rd	to Broadway Rd	2	40	38	Arterial	1	2.00	-	N	-	8.3%
Central Avenue	Van Buren St	to Western Ave	4	35	-	Major Coll.	1	4.00	8,023	N	-	-
	Western Ave	to Buckeye Rd/MC-85	4	35	-	Major Coll.	0.4	1.60	-	N	-	-
	Buckeye Rd/MC-85	to Lower Buckeye Rd	2	25	-	Major Coll.	0.6	1.20	3,240	N	-	-
Litchfield Road	Buckeye Rd/MC-85	to Lower Buckeye Rd	3	40	-	Arterial	0.25	0.75	1,025	N	Truck	-
	Lower Buckeye Rd	to Broadway Rd	2	45	-	Arterial	1	2.00		N	Truck	-

"-" no data available / not applicable
 * classifications per previous Transportation Plan
 segments with partial widening in place
 "X" - segments currently under construction at time of data collection

Table 4-1. Roadway Characteristics for the Existing Conditions (cont.)

Corridor	Segment (north to south, west to east)	Total # Through Lanes	Posted Speed (mph)	Collected Avg. Speed	Functional Classification*	Length (mi.)	Lane- Miles	ADT	Bike Lanes	Route Designation	% Truck Traffic
Indian School Road	Old Litchfield Rd to Dysart Rd	4	45	-	Arterial	1.4	5.60	14,653	Y	RRS	-
	Dysart Rd to El Mirage Rd	4	45	-	Arterial	1	4.00	20,380	partial	RRS	-
	El Mirage Rd to 111th Ave	4	45	50	Arterial	1.5	6.00	20,504	N	RRS	2.4%
	111th Ave to 107th Ave	4	45	-	Arterial	0.5	2.00	23,888	N	RRS	-
	107th Ave to 99th Ave	4	45	-	Arterial	1	4.00	28,766	N	RRS	-
Thomas Road	Litchfield Rd to Dysart Rd	4	35	-	Arterial	1	4.00	7,057	N	-	-
	Dysart Rd to Santa Fe Tr	4	35	-	Arterial	0.25	1.00	5,201	N	-	-
	Santa Fe Tr to Agua Fria River	2	35	-	Arterial	0.9	1.80	-	Y	-	-
	119th Ave to Avondale Blvd	2/4	35	33	Arterial	0.5	1.50	-	partial	-	0.4%
	Avondale Blvd to 111th Ave	3/4	45	-	Arterial	0.5	1.75	-	Y	-	0.7%
	111th Ave to 107th Ave	3/4	45	-	Arterial	0.5	1.75	9,884	Y	-	-
	107th Ave to 103rd Ave	4	45	46	Arterial	0.5	2.00	12,710	Y	-	1.4%
	103rd Ave to 99th Ave	2	45	-	Arterial	0.5	1.00	-	partial	-	-
	Dysart Rd to Rancho Santa Fe Blvd	4	40	35	Arterial	0.33	1.32	22,269	Y	-	4.7%
	Rancho Santa Fe Blvd to Friendship Park	4	40	-	Arterial	0.75	3.00	24,324	N	-	-
McDowell Road	Friendship Park to 119th Ave	4	40	-	Arterial	0.5	2.00	-	N	-	-
	119th Ave to Avondale Blvd	4	40	-	Arterial	0.5	2.00	25,893	N	-	-
	Avondale Blvd to 112th Ave	6	45	-	Arterial	0.4	2.40	19,178	N	-	-
	112th Ave to 107th Ave	4	45	-	Arterial	0.6	2.40	-	N	-	-
	107th Ave to 103rd Ave	5/6	45	46	Arterial	0.5	2.75	-	N	-	2.5%
	103rd Ave to 99th Ave	6	45	-	Arterial	0.5	3.00	23,209	N	-	-
	City Limit (La Jolla Blvd) to Central Ave	4	40	-	Arterial	0.25	1.00	-	N	-	-
	Central Ave to Dysart Rd	4	40	-	Arterial	0.5	2.00	27,674	Y	-	-
	Dysart Rd to Agua Fria River	4	40	42	Arterial	0.5	2.00	18,983	N	-	2.1%
	Agua Fria River to El Mirage Rd	4	45	-	Arterial	0.5	2.00	-	Y	-	-
Van Buren Street	El Mirage Rd to Avondale Blvd	4	45	-	Arterial	1	4.00	17,472	partial	-	-
	Avondale Blvd to 113th Ave (alignment)	3	45	41	Arterial	0.25	0.75	10,174	N	-	3.8%
	113th Ave (alignment) to 107th Ave	2	45	-	Arterial	0.75	1.50	-	N	-	-
	107th Ave to 103rd Ave	3	45	-	Arterial	0.5	1.50	10,475	N	-	-
	103rd Ave to 99th Ave	2	45	-	Arterial	0.5	1.00	-	N	-	-
	City Limits to Central Ave	4	25	22	Major Coll.	0.4	1.60	7,351	N	-	3.2%
	Central Ave to Dysart Rd	2	25	-	Minor Coll.	0.5	1.00	5,666	N	-	-
	Litchfield Rd to Central Ave	4	40	42	Arterial	0.6	2.40	11,583	N	RRS, Truck	5.5%
	Central Ave to Dysart Rd	4	40	-	Arterial	0.6	2.40	-	N	RRS, Truck	-
	Dysart Rd to El Mirage Rd	4	40/50	-	Arterial	1	4.00	17,822	N	RRS, Truck	-
Lower Buckeye Road	El Mirage Rd to Avondale Blvd	4	45/50	-	Arterial	1	4.00	17,676	N	RRS, Truck	-
	Avondale Blvd to 107th Ave	4	45	45	Arterial	1	4.00	17,099	N	RRS, Truck	4.7%
	Litchfield Rd to Central Ave	2	45	48	Arterial	0.5	1.00	5,075	N	-	5.2%
	Central Ave to Agua Fria River	2	45	-	Arterial	0.67	1.34	5,517	N	-	-
	Agua Fria River to 127th Ave/Vermeersch	2	45	-	Arterial	0.33	0.66	-	N	-	-
	127th Ave/Vermeersch to El Mirage Rd	2	35	-	Arterial	0.5	1.00	6,633	N	-	-
	El Mirage Rd to 121st Ave	3	45	43	Arterial	0.25	0.75	5,710	N	-	4.5%
	121st Ave to Avondale Blvd	2	45	-	Arterial	0.75	1.50	-	N	-	-
	Avondale Blvd to 11th Ave	3	45	-	Arterial	0.5	1.50	6,790	N	-	-
	11th Ave to 107th Ave	2	40	-	Arterial	0.5	1.00	-	N	-	-
Broadway Road	Dysart Rd to Avondale Blvd	unpaved	-	-	Arterial	2	-	-	-	-	-
	Avondale Blvd to 107th Ave	2	50	-	Arterial	1	2.00	2,504	N	-	-
Southern Avenue	Dysart Rd to El Mirage Rd	2	45	-	Arterial	1	2.00	-	N	-	-
	El Mirage Rd to Avondale Blvd	2	45	-	Arterial	1	2.00	-	N	-	-
	Avondale Blvd to 107th Ave	2	45	-	Arterial	1	2.00	-	N	-	-
Indian Springs Road	City Limits (133rd Ave) to El Mirage Rd	2	45	-	Arterial	1.3	2.60	-	N	-	-
	El Mirage Rd to Avondale Blvd	4	40	-	Arterial	0.6	2.40	-	N	-	-

"N" no data available / not applicable

* classifications per previous Transportation Plan segments with partial widening in place

Existing Traffic Data

Average Daily Traffic (ADT) data was collected along major corridors throughout the City as part of the City's annual program. The counts were collected during January and February of 2011. Since traffic demands at this time of year are comparable to the peak seasonal traffic volumes, no adjustment was made to generate annual average daily traffic (AADT). The reported ADT volumes (two-way) are shown as part of Figure 4-1. Speed data collected at several representative locations indicated several instances where the average recorded speed was at, or in excess of, the posted speed limit:

- 99th Avenue (Thomas Road to McDowell Road)
- 107th Avenue (Indian School Road to Thomas Road & south of I-10)
- Avondale Boulevard (Thomas Road to McDowell Road)
- Indian School Road (El Mirage Road to 107th Avenue)
- Thomas Road (107th Avenue to 99th Avenue)
- Main Street/Buckeye Road (east of Litchfield Road & El Mirage Road to Avondale Boulevard)

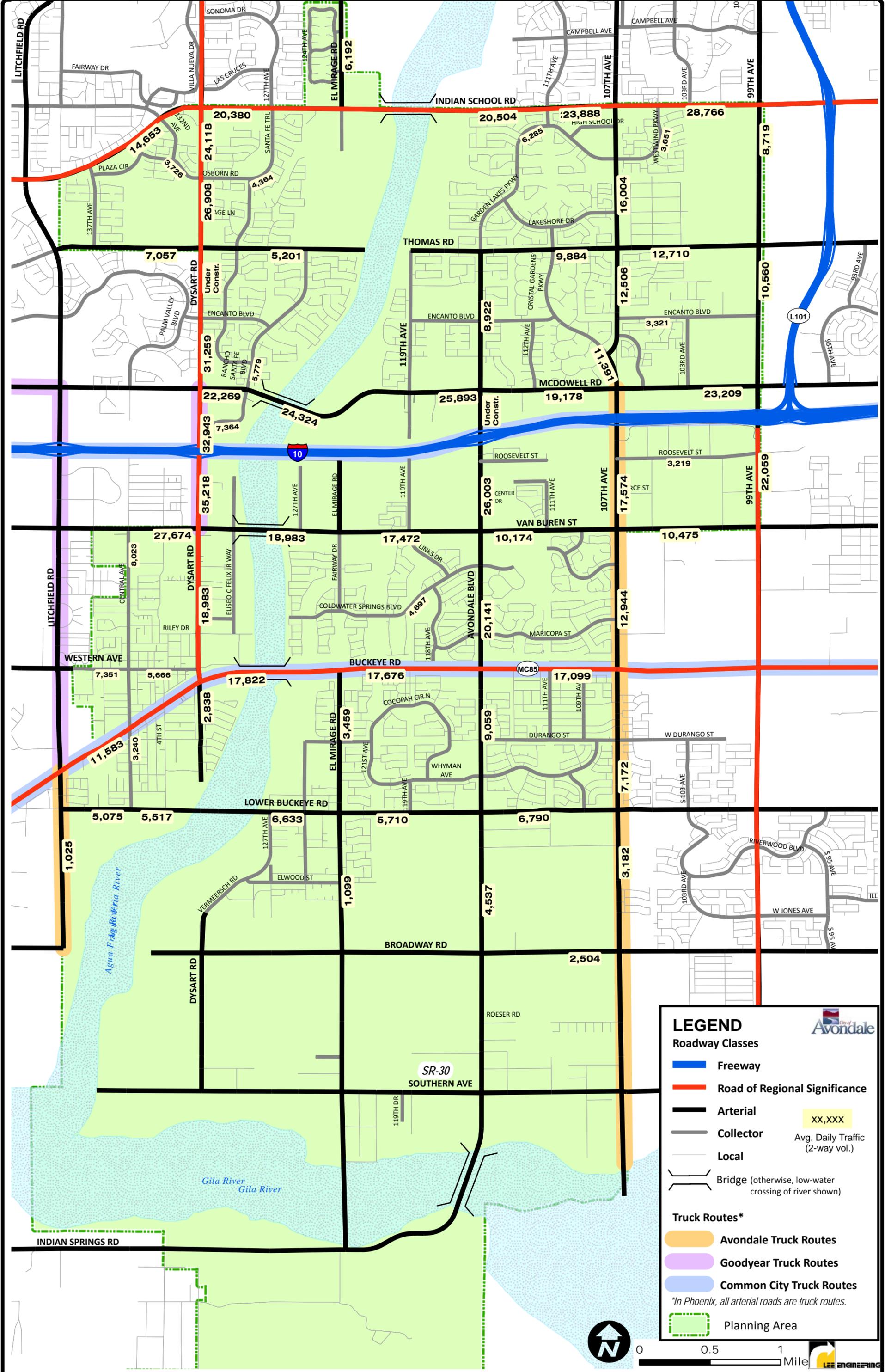
Although there may be other conditions for which the City has set the posted speed limits on these segments, continued monitoring of traffic conditions on these roadway segments is recommended.

Existing Truck Routes

Existing through truck routes within the City, as designated by the City Ordinance 23-14 (amended 12/18/06, after the completion of the previous Transportation Plan), are shown in Figure 4-1 and listed as follows:

1. Litchfield Road from MC-85/Buckeye Road to Broadway Road
2. 107th Avenue from its south terminus to McDowell Road

Figure 4-1 also shows the truck routes from the neighboring City of Goodyear and those common to the cities/transportation agencies (e.g., I-10 and MC-85). The City of Phoenix considers all of its arterials as permissible truck routes. As seen in the figure, there is a noticeable gap between truck route segments on Dysart Road between Van Buren Street and MC-85. Reasons for this missing connection include Agua Fria High School frontage on Dysart Road in this area, it is the eastern boundary of the Historic Avondale District, and a parallel truck route on Litchfield Road exists. Truck data from April 2011 shows the percentage of traffic consisting of heavy vehicles (i.e., trucks with three or more axles plus buses) ranges from about 5 to 8% on designated truck route roads/segments. These values also are the highest of the truck percentages recorded for all of the sampled roadways; so it appears that trucks are generally using the designated routes. Truck usage on Lower Buckeye was similar to truck-designated routes suggesting that it might be considered a truck route—although it parallels Buckeye Road (MC-85) which is considered a truck route based on it being a Road of Regional Significance and controlled by the County.



LEGEND

Roadway Classes

- Freeway
- Road of Regional Significance
- Arterial
- Collector
- Local
- Bridge (otherwise, low-water crossing of river shown)

Truck Routes*

- Avondale Truck Routes
- Goodyear Truck Routes
- Common City Truck Routes

*In Phoenix, all arterial roads are truck routes.

Planning Area

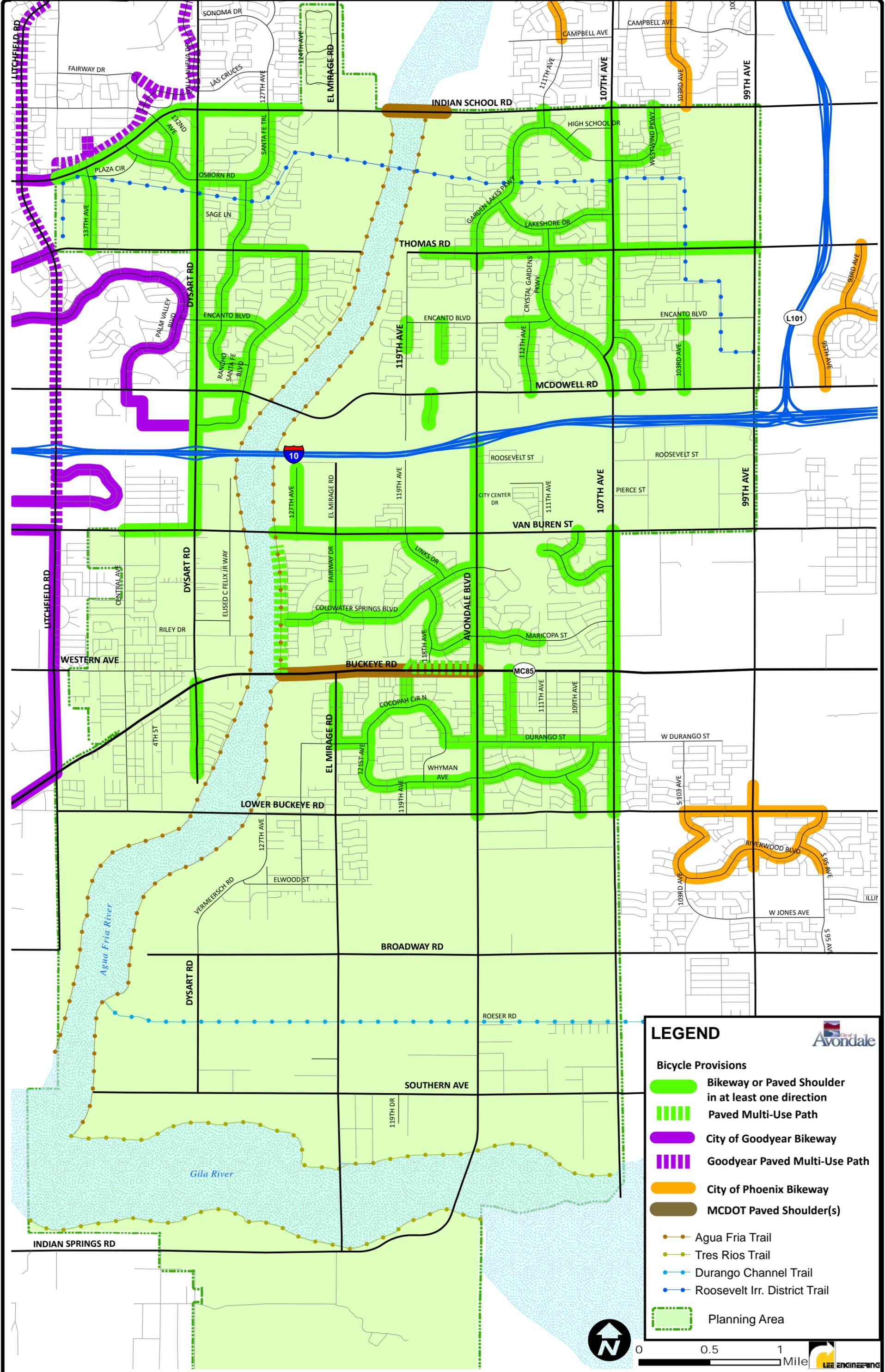
XX,XXX
Avg. Daily Traffic
(2-way vol.)

Existing Roadway Classifications & Truck Routes

With existing active mining sites that will be operational until 2030 or later, located on Dysart Road between Broadway Road and Southern Avenue; at the southwest corner of Dysart Road and Southern Avenue; and at the southwest corner of El Mirage Road and Southern Avenue, the accessibility of the designated truck routes requires consideration. The designation on Litchfield Road, both north of MC-85 by Goodyear and south of MC-85 by Avondale, is sufficient to capture truck traffic on the west side of the Agua Fria River and route it to/from I-10. According to a recent truck routing study conducted for the County, trucks associated with sites on the east bank of the river (where the sites are wholly within Avondale) will be directed to use Dysart/Vermeersch Road to/from Lower Buckeye Road and its connection with the established truck route on Litchfield Road.

Existing Bike Facilities

A transportation network which includes non-motorized modes of travel that is safe and connects residential areas to retail, employment, and recreation areas can produce positive health benefits for Avondale’s residents, workforce, and visitors. Bicycling can serve recreational, commuting, and typical trip purposes if adequate facilities and connectivity are provided—especially when integrated into multi-modal planning (i.e., transit connectivity). When part of a daily routine, bicycling provides regular exercise, reduces stress, saves money, and preserves the environment. The current bicycle provisions within the City of Avondale are displayed in Figure 4-2.



LEGEND

Bicycle Provisions

- █ Bikeway or Paved Shoulder in at least one direction
- ▤ Paved Multi-Use Path
- █ City of Goodyear Bikeway
- ▤ Goodyear Paved Multi-Use Path
- █ City of Phoenix Bikeway
- █ MCDOT Paved Shoulder(s)
- Agua Fria Trail
- Tres Rios Trail
- Durango Channel Trail
- Roosevelt Irr. District Trail
- Planning Area

0 0.5 1 Mile

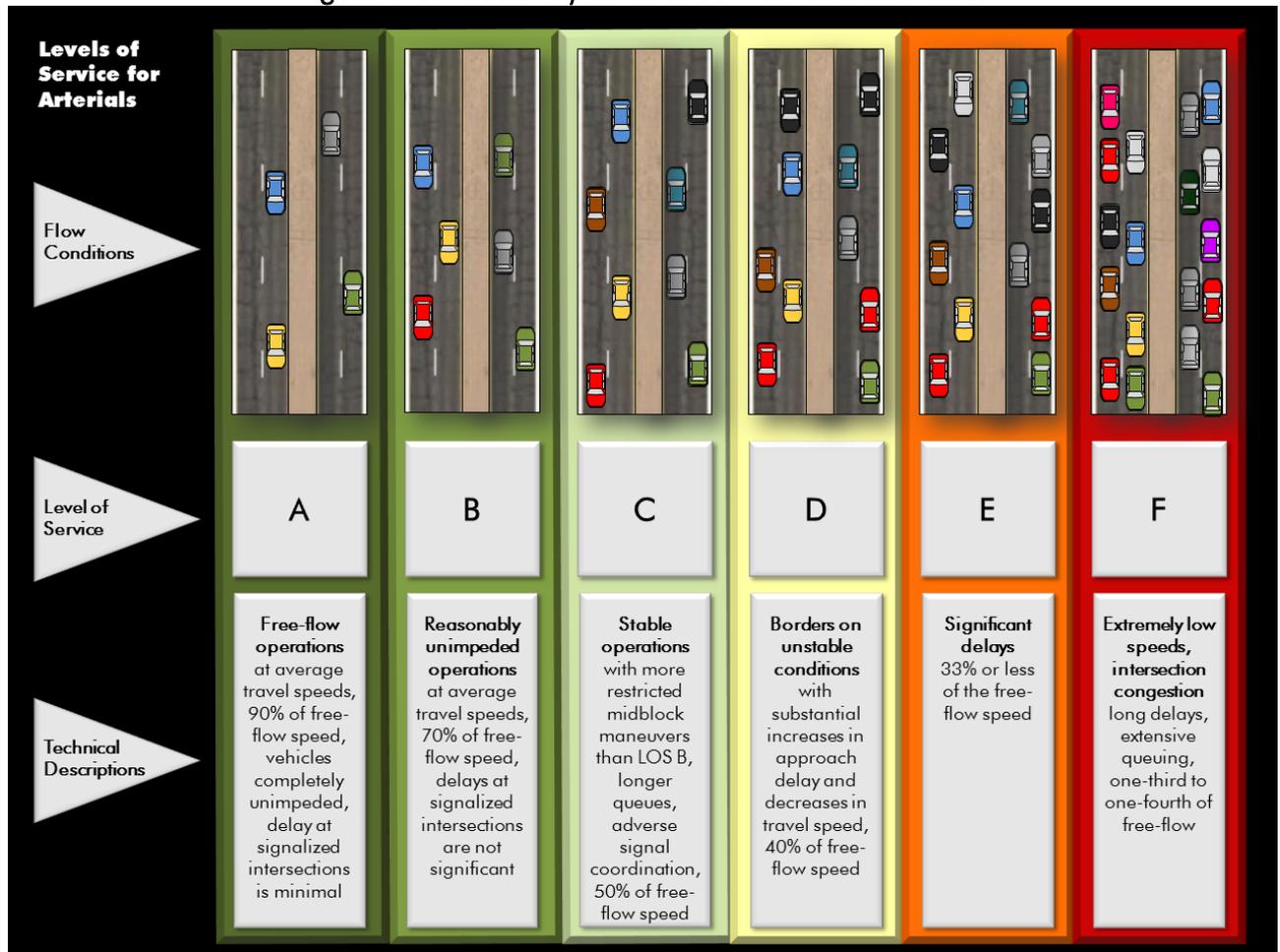
LEE ENGINEERING

Existing Bicycle Provisions

Roadway Analysis Methodology

Consistent with the 2006 Transportation Plan and industry standards, the levels of service (LOS) for roadway operations are based on average daily traffic volumes and planning level LOS determinations per general roadway segment characteristics. A graphical representation of roadway levels of service that range from LOS A to LOS F is presented below in Figure 4-3.

Figure 4-3. Roadway Level of Service Characteristics



Roadway characteristics, such as number of lanes, signal spacing, and traffic flow contribute to the resulting LOS. Threshold volume values for each LOS¹ are shown in Table 4-2 and are based on information presented in Florida Department of Transportation's *Quality/Level of Service Handbook* from 2002.

¹ The calculated LOS are intended to serve as a planning guideline and are not an exact determination of the actual operating level of service on a particular roadway segment. The actual functional capacity of roadway facilities also includes the ability of arterial intersections to process the peak hour components of daily traffic demand. As such, higher volumes, while maintaining acceptable LOS, as compared to the thresholds in Table 4-2 may be possible on the City's arterial segments.

Table 4-2. Roadway Level of Service Thresholds

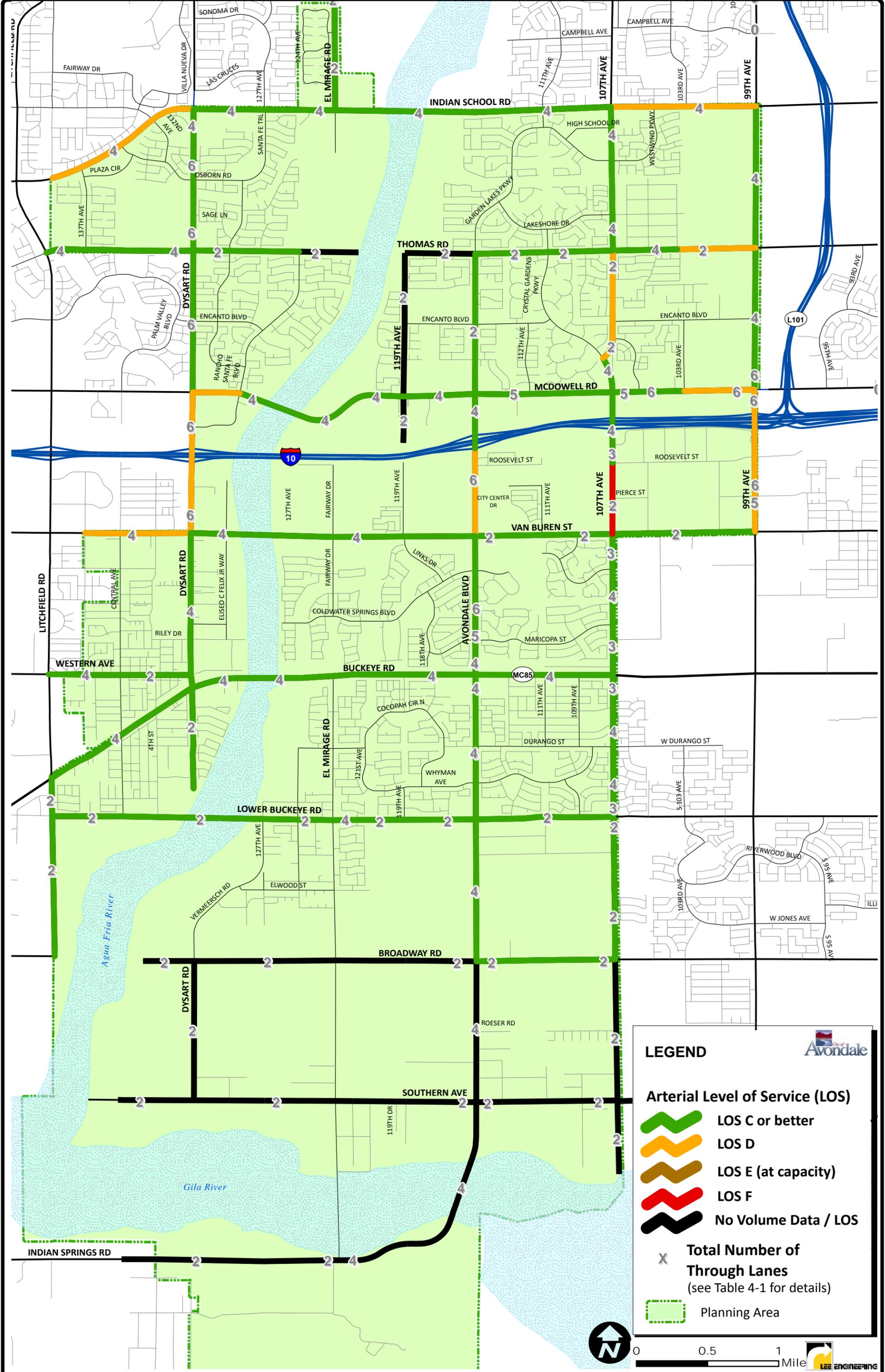
Roadway Class/Type	Total Number Through Lanes	Daily Volume Limit Yielding Shown Level of Service				
		A	B	C	D	E
I (Arterial)	2	*	4,200	13,800	16,400	16,900
<i>Arterials with speed limits of at least 45 MPH and a signal density of less than two signals per mile</i>	4	4,800	29,300	34,700	35,700	**
	6	7,300	44,700	52,100	53,500	**
II (Arterial)	2	*	1,900	11,200	15,400	16,300
<i>Arterials with speed limits of at least 35 MPH and a signal density from 2 to 4.5 signals per mile.</i>	4	*	4,100	26,000	32,700	34,500
	6	*	6,500	40,300	49,200	51,800
III (Arterial)	2	*	*	5,300	12,600	15,500
<i>Arterials with speed limits of at least 35 MPH and a signal density of at least 4.5 signals per mile.</i>	4	*	*	12,400	28,900	32,800
	6	*	*	19,500	44,700	49,300
Collector - Undivided (no Left Turn Lanes)	2	*	*	3,840	8,000	10,080
Collector - Undivided (with Left Turn Lanes)	2	*	*	4,800	10,000	12,600
Collector - Divided	4	*	*	11,100	21,700	25,200

* not achievable given roadway characteristics

** Not applicable as volumes generating levels of service less than LOS D are considered LOS F because of intersection capacity limitations

For roadways with a center two-way left-turn lane, there is some capacity increase realized from the presence of the lane even though it does not serve as a through lane. However, since arterial roadways typically have associated left-turn lane provisions (either in the form of a center two-way left-turn lane or turn lane pockets at intersections/access points) it is assumed that the above volume/level of service thresholds for arterials have accounted for this. Figure 4-4 displays the estimated existing levels of service for major roadways within the City from cross-referencing their characteristics with the information in Table 4-2.

Most of the major roadways within the City were classified as Class II arterials per the description shown above. Class I arterials included Indian School Road from El Mirage Road to 111th Avenue; Buckeye Road from Dysart Road to El Mirage Road; Lower Buckeye Road from Litchfield Road to 107th Avenue; and other isolated 1-mile segments within the area south of Lower Buckeye Road. Class III arterials included Indian School from Dysart Road to Litchfield Road; Dysart Road from McDowell Road to Van Buren Street; McDowell Road from Dysart Road to Rancho Santa Fe Boulevard; and 99th Avenue from McDowell Road to Van Buren Street.



Existing Levels of Service for Major Roadways

LEGEND

Arterial Level of Service (LOS)

- LOS C or better
- LOS D
- LOS E (at capacity)
- LOS F
- No Volume Data / LOS

X Total Number of Through Lanes
(see Table 4-1 for details)

Planning Area

0 0.5 1 Mile

Safety Analysis

Crash data was obtained for the City of Avondale for the four most recent and available consecutive years from January 2006 through December 2009. Although the data analyzed did not include crashes along I-10 within the City limits, crashes occurred at the I-10 traffic interchange ramps were included. Crash data showed that nearly 4,600 crashes were reported within the City study area for the four-year period.

The crash data was analyzed to identify high crash locations within the study area. The volume data used in the analysis represented a mixture of the available ADT counts from the corresponding years. High crash intersections and roadway segments were determined from the data and the following equations:

Intersection Collision Rate per Million Entering Vehicles (MEV) =

$$(C \times 1,000,000) / (V \times 365 \times N)$$

C = number of reported crashes, V - 24-hr total intersection entering volume, N = number of years

Segment Collision Rate per Million Vehicle Miles (MVMT) of travel =

$$(C \times 1,000,000) / (L \times \text{ADT} \times 365 \times N)$$

C = number of reported accidents, L = Length of segment in miles, N = number of years

High Crash Intersection Locations

Crash rates were computed for all intersection locations with a reported crash within the four-year period. The results for the top 15 intersections (so as to include locations with crash rates of about 1.0 and above) are shown in Table 4-3. As the information in the table indicates, the intersections with the highest frequency of reported crashes are near the top in computed crash rate. The crash rate of 1.91 at the Rancho Santa Fe Boulevard/McDowell Road signalized intersection matches the highest crash rate determined in the previous Transportation Plan—although the location with that rate then was different.

Table 4-3. High Crash Intersections in the City (2006-2009)

Intersection Location	Crash Frequency	Rate per Million Entering Vehicle (MEV)	Crash Rate in 2006 Transportation Plan
Rancho Santa Fe Blvd and McDowell Rd	90	1.91	Not in top 15
Dysart Rd and McDowell Rd	155	1.79	1.10
Dysart Rd and Van Buren St	125	1.60	1.90
Dysart Rd and I-10 Westbound OnRamp	81	1.49	1.20
107th Ave and Van Buren St	45	1.47	Not in top 15
Dysart Rd and Indian School Rd	88	1.40	0.70
Avondale Blvd and McDowell Rd	68	1.26	0.70
107th Ave and McDowell Rd	58	1.22	0.60
Dysart Rd and Rancho Santa Fe Blvd	72	1.17	0.90
Dysart Rd and Main St	52	1.15	1.90
99th Ave and Van Buren St	61	1.01	Not in top 15
El Mirage Rd and Indian School Rd	38	0.85	Not in top 15
Avondale Blvd and Van Buren St	50	0.77	Not in top 15
99th Ave and McDowell Rd	40	0.72	Not in top 15
Dysart Rd and Thomas Rd	41	0.70	0.80

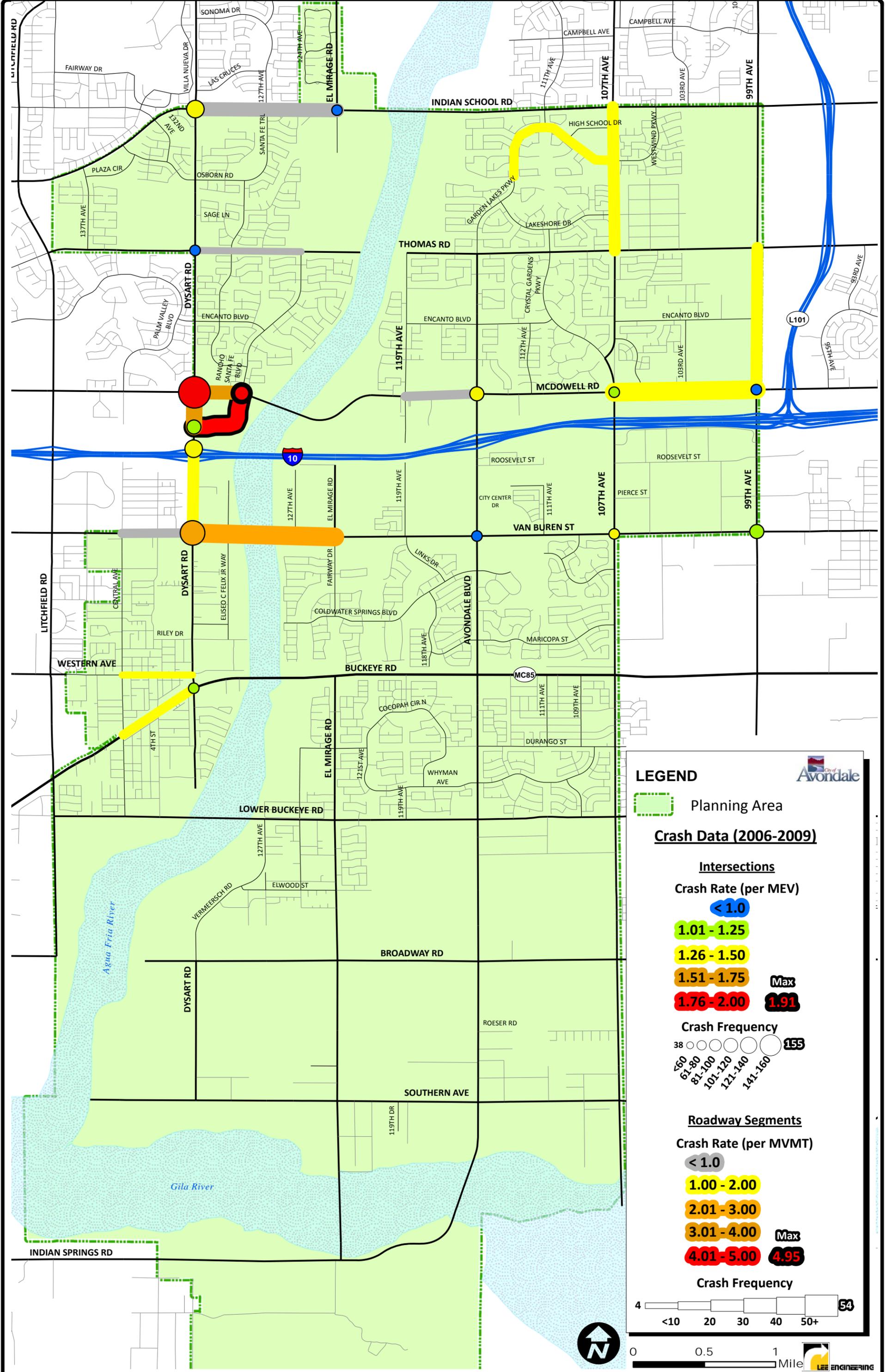
High Crash Roadway Segments

Roadway segment crash rates were computed for all roadways with a reported crash occurring away from an intersection. The segments were determined using a logical division of roadways based on intersections and/or roadway characteristics. Table 4-4 shows the results for the 15 roadway segments with the highest crash rates. The segment with the highest crash rate, Rancho Santa Fe Boulevard from Dysart Road to McDowell Road, has a crash rate nearly 50% greater than the next highest. The crash rate is mainly due to the segment's relatively low volume for the frequency of crashes occurred during the period—the frequency of crashes could be due to a variety of factors such as number of driveways, varied mixture of residential and commercial/retail traffic, cut-through traffic, and the curvilinear alignment of the roadway. The previously identified high crash roadway segment was Dysart Road from I-10 to Van Buren Street with a crash rate of 6.9 crashes per MVMT—that same segment is now estimated to have a 1.01 crash rate.

Table 4-4. High Crash Roadways in the City (2006-2009)

Roadway Segment	Length (mi.)	Crash Frequency	ADT	Rate per Million Vehicle Miles of Travel (MVMT)	Crash Rate in 2006 Transportation Plan
Rancho Santa Fe Blvd (Dysart Rd to McDowell Rd)	0.5	34	9,413	4.95	Not in top 15
McDowell Rd (Dysart Rd to Rancho Santa Fe Blvd)	0.33	35	21,671	3.35	4.10
Dysart Rd (McDowell Rd to Rancho Santa Fe Blvd)	0.25	44	37,094	3.25	5.50
Van Buren St (Dysart Rd to El Mirage Rd)	1	54	18,318	2.02	0.80
99th Ave (Thomas Rd to McDowell Rd)	1	26	12,561	1.42	Not in top 15
Western Ave (Central Ave to Dysart Rd)	0.5	7	6,894	1.39	3.50
McDowell Rd (107th Ave to 99th Ave)	1	51	25,689	1.36	Not in top 15
Main St (Central ave to Dysart Rd)	0.5	16	16,616	1.32	1.80
Garden Lakes Pkwy (107th Ave to Orange Blossom Ln)	1	11	6,415	1.17	Not in top 15
107th Ave (Indian School to Thomas Rd)	1	24	15,258	1.08	3.10
Dysart Rd (I-10 to Van Buren St)	0.5	28	38,150	1.01	6.90
McDowell Rd (119th Ave to Avondale Blvd)	0.5	18	25,356	0.97	Not in top 15
Thomas Rd (Dysart Rd to Rancho Santa Fe Blvd)	0.75	4	3,786	0.96	Not in top 15
Van Buren St (Central Ave to Dysart Rd)	0.5	19	27,617	0.94	Not in top 15
Indian School Rd (Dysart Rd to El Mirage Rd)	1	34	25,871	0.90	0.50

The crash data analysis results, for intersections and segments, are also presented in Figure 4-5. The results presented in Table 4-3, Table 4-4, and Figure 4-5 provide good information, but more importantly can guide efforts to conduct more detailed safety investigations and analysis.



LEGEND

Planning Area

Crash Data (2006-2009)

Intersections

Crash Rate (per MEV)

- < 1.0
- 1.01 - 1.25
- 1.26 - 1.50
- 1.51 - 1.75
- 1.76 - 2.00
- Max** 1.91

Crash Frequency

- 38
- 60
- 80
- 100
- 120
- 140
- 160
- Max** 153

Roadway Segments

Crash Rate (per MVMT)

- < 1.0
- 1.00 - 2.00
- 2.01 - 3.00
- 3.01 - 4.00
- Max** 4.95

Crash Frequency

4 < 10 20 30 40 50+ **54**

High Crash Intersections & Segments (2006-2009)

Short-Term Improvement Focus Based on Existing Conditions

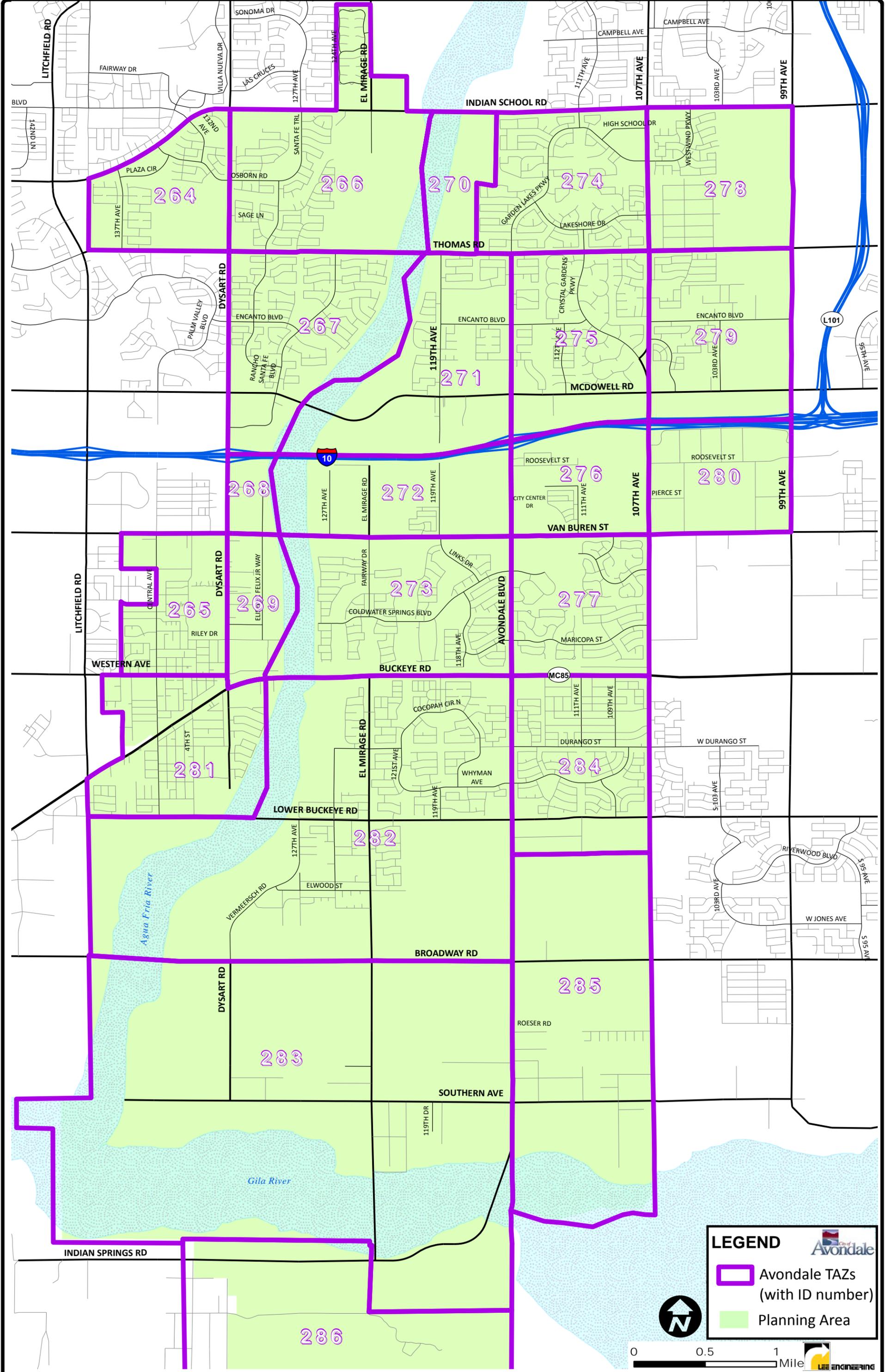
Based on the review of the current conditions, as represented by roadway levels of service, crash rates, and bicycle/truck routes, the following items are recommended to be considered:

- Improve roadway capacity along 107th Avenue from Roosevelt Street to Durango Street to match other localized improvements already in place. Enhancements should include associated bike lane extensions/connections, especially since this road serves as the City’s primary north-south truck route. This improved roadway segment may have a secondary benefit of relieving some of the traffic demand on 99th Avenue.
- If existing ROW allows, establish bike lanes in both directions on Dysart Road from Van Buren Street to Main Street so as to connect already established bike lanes north of I-10 and south of Main Street. This multi-modal provision may alleviate some of the vehicular demand along the route, especially considering the presence of the Agua Fria High School within the segment.
- Conduct a more specific safety assessment (including detailed analysis of crash types, causes, trends) along the Rancho Santa Fe Boulevard corridor and in the area of Dysart Road. The concentration of land use variety and intensity coupled with multiple driveway accesses require a comprehensive review of access control and/or other features affecting safety. The use and application of the Highway Safety Manual (HSM) would be an appropriate means of conducting the safety assessment and determining mitigation measures appropriate for the particular roadway conditions.
- Monitor the roadway segments identified with higher operating speeds, and paralleling equivalents segments, to determine if a more detailed speed/safety study and/or additional enforcement are needed.

Avondale Travel Demand Model

This section describes the travel demand modeling steps exercised during this planning process. To produce reliable model results, the regional model managed by the Maricopa Association of Governments (MAG) was the foundation of a customized model developed to represent reasonable roadway and land use conditions within the City of Avondale for the 2030 horizon. The study area encompassed approximately 51 square miles and was comprised of 23 traffic analysis zones (TAZs). The study area for the travel demand modeling of the City-specific roadway characteristics and land use information within the associated TAZs is shown in Figure 4-6.

The travel demand model inputs included land use data by TAZ, roadway network with functional characteristics (including transit), travel characteristics, traffic counts, and external trip information from the Maricopa Association of Governments (MAG) travel demand model. The primary model outputs are forecasted weekday daily traffic (vehicle) volumes by roadway segment. The model foundation was an already MAG-calibrated model of 2031 conditions, with respect to the land use and roadways outside of the City, as this was the closest year to the City’s planning horizon of 2030.



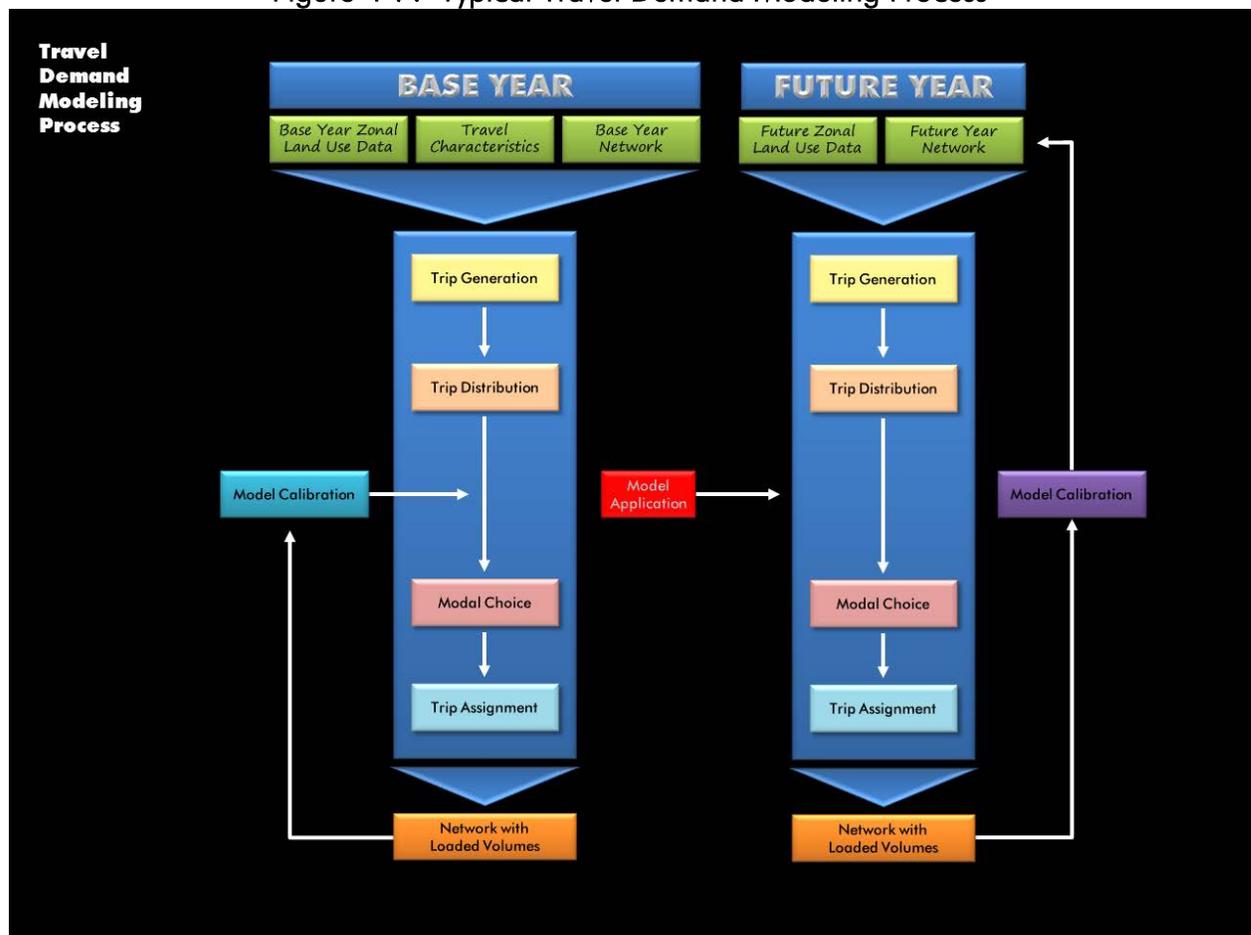
Modeled Traffic Analysis Zones (TAZs)

Travel Demand Modeling and Forecasting Methods

Travel demand modeling is comprised of a four-step process (see Figure 4-7 below) that includes trip generation, trip distribution, mode split, and traffic assignment:

1. The trip generation step estimates the number of personal trips attracted or generated to/by each TAZ within the study area based on the land use composition.
2. Trip distribution assesses the “weighting” of the productions/attractions associated with each TAZ and the paired combination of TAZs.
3. The mode choice step proportions the number of trips by transportation modes available between the TAZ pairs and TAZs comprised of transit oriented development and/or in proximity to transit service.
4. Traffic assignment is the final step where the vehicle trips, in this case, are applied to the road network. Iterations of this step are conducted so that subsequent assignments rely on the previous to better utilize available roadways/routes in order to reach network equilibrium.

Figure 4-7. Typical Travel Demand Modeling Process



Future Land Use

Land use information is used to determine the forecasted number of people and employment within the study area for the prescribed year. The modeled land uses and associated intensities (e.g., dwelling units per acre, floor-to-area ratios) within the City were based on the land uses presented within the City’s General Plan. In order to reasonably estimate the level of development within the transportation planning area in 2030, the population and employment estimates were regionally constrained by MAG’s respective 2030 forecasts. The land uses for the areas/TAZs surrounding the City (and throughout the valley) were represented by the information already modeled by MAG and representative of the expected conditions in 2030/2031. Table 4-5 shows future land use by type in the study area.

Table 4-5. Land Use Composition Comparison

Land Use	Characteristic ¹	2026 Forecast from Previous Transportation Plan	2030 Forecast from Current Transportation Plan	% Change
Single Family & Duplex	DU	30,840	19,173	-37.8%
Multi-Family	DU	5,460	21,365	291.3%
Retail (incl. service)	1,000 sq.ft.	5,932	4,094	-31.0%
Office (incl. hospitals)	1,000 sq.ft.	2,186	6,090	178.6%
Industrial/Warehouse	1,000 sq.ft.	5,365	3,585	-33.2%
Public (schools, colleges)	1,000 sq.ft.	1,963	2,578	31.3%
Land Area	Sq. Miles	51	51	0.0%

Notes:

1 - DU = dwelling units; square feet (sq. ft.) refers to building area

Review of the information in Table 4-5 highlights some distinct differences between the land use forecasts used in the 2006 Transportation Plan and the current forecasts. The sharp increase in multi-family housing, which includes condominiums, townhomes, TOD-associated housing, as well as traditional apartments, is representative of the City’s vision for more sustainable growth. The expected number of residential units at buildout within the Northern Planning Area according to the City’s General Plan 2030, is 60,372 dwelling units. According to Table 4-5, approximately 53% of the dwelling units considered for modeling purposes were multi-family, which is in line with the envisioned 58% share at buildout as presented in the City’s General Plan 2030. Overall, the number of residential dwelling units considered for the 2030 conditions represents about 67% of expected buildout capacity for the Northern Planning Area per the General Plan.

Another land use category showing a higher forecast in Table 4-5 is “Office.” Again, this is representative of the City’s Land Use Plan as reflected in the General Plan. Avondale is striving to become more self-sufficient, and fostering an environment that is attractive to employers is a key component. Other commercial land use types show decreased intensities which is reflective of the difference in economic climates from one transportation plan to the other. The increase in “Public” land uses (e.g., schools, colleges, trade schools) is correlated with the expected increase in population.

Future Roadway Network Analysis

Analysis of the 2030 traffic conditions required assumptions for land uses that are projected to be in place for that year as well as assumptions made for the projected 2030 roadway network. The City land use assumptions were identified in the previous section of this report while the roadway network projected for 2030 was based on the following information/assumptions:

- Planned City of Avondale (and other adjacent cities) capital improvement projects expected in the near-term;
- Regional improvements expected in the next 20 years—e.g., SR-30 (and three City-associated interchanges), I-10/Fairway Drive interchange, I-10/Loop 101 widening; and
- Roadway system improvements/assumptions:
 - Establishment of the basic 4-lane arterial roadway network generally along section-lines (El Mirage Road was generally considered a four-lane/major collector) within the currently undeveloped/sparsely developed areas of the City, including the Dysart Road connection (bridge) between Lower Buckeye and Broadway Roads and extension (low water crossing) south of SR-30;
 - Camelback Road widening to six through lanes within the study influence area, including its bridge over the Agua Fria River;
 - 99th Avenue widening to six through lanes from Indian School Road southward to match the same cross-section near McDowell Road;
 - Development-based ½-mile collector roadway network within the existing sparsely developed area of the City south of Lower Buckeye Road; and
 - Limited sections of six-lane arterial roadways associated with the future SR-30 interchanges—except for Avondale Boulevard which continues as a 6-lane arterial north to McDowell Road.

The assumed 2030 base roadway network indicating the number of lanes and levels of service for the major roadways within the City is presented in Figure 4-8. Table 4-6 presents the results in a tabular form so that the information can be compared to the existing 2010 conditions (see Table 4-1).

Table 4-6. Projected Roadway Characteristics for 2030 Conditions

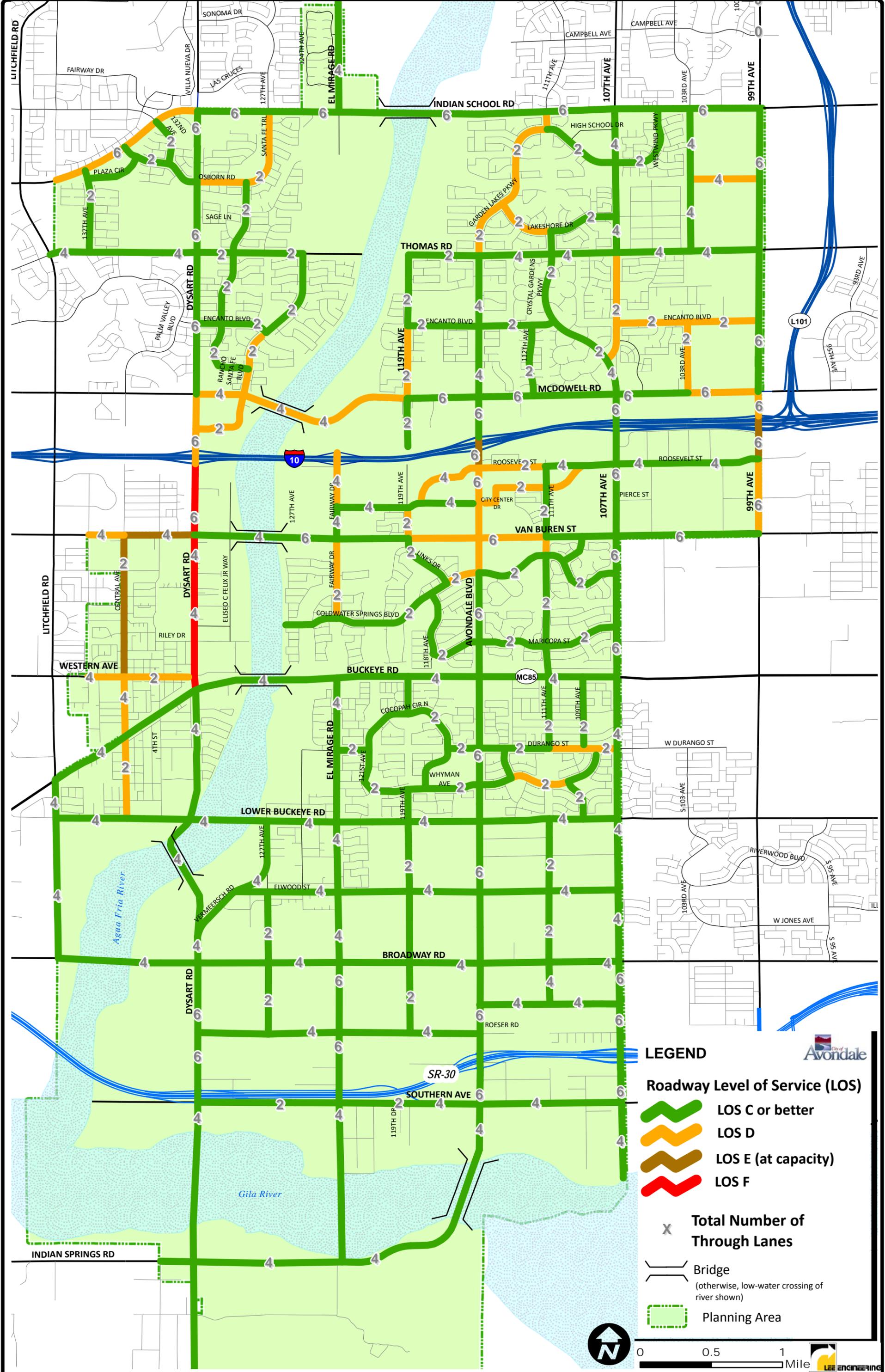
Corridor	Segment (north to south, west to east)		Total # Through Lanes	Functional Classification	Length (mi.)	Forecasted ADT	Forecasted LOS
99th Avenue	Indian School Rd	to Thomas Rd	6	Arterial	1	18,370	C
	Thomas Rd	to Encanto Blvd	6	Arterial	0.5	20,280	C
	Encanto Blvd	to Roos. Irr. Canal	6	Arterial	0.25	16,780	C
	Roos. Irr. Canal	to McDowell Rd	6	Arterial	0.25		
	McDowell Rd	to I-10	6	Arterial	0.2	43,540	D
	I-10	to Roosevelt St	6	Arterial	0.25	48,960	E
	Roosevelt St	to Van Buren St	6	Arterial	0.55	26,140	D
107th Avenue	Indian School Rd	to Garden Lakes Pkwy	4	Arterial	0.4	19,070	C
	Garden Lakes Pkwy	to Lakeshore Dr	4	Arterial	0.4	20,760	C
	Lakeshore Dr	to Thomas Rd	4	Arterial	0.2		
	Thomas Rd	to Crystal Gardens Pkwy	2	Arterial	0.75	12,960	D
	Crystal Gardens Pkwy	to McDowell Rd	4	Arterial	0.25	15,680	C
	McDowell Rd	to I-10	6	Arterial	0.2	32,350	C
	I-10	to Roosevelt St	6	Arterial	0.3	31,300	C
	Roosevelt St	to Van Buren St	6	Arterial	0.5	22,700	C
	Van Buren St	to Roosevelt Pkwy	6	Arterial	0.25	14,490	C
	Roosevelt Pkwy	to Buckeye Rd/MC-85	6	Arterial	0.75	25,190	C
	Buckeye Rd/MC-85	to Durango St	4	Arterial	0.5	17,830	C
	Durango St	to Lower Buckeye Rd	4	Arterial	0.5	14,870	C
	Lower Buckeye Rd	to Miami Ave	4	Arterial	0.25	6,860	C
	Miami Ave	to Broadway Rd	4	Arterial	0.75	6,900	C
	Broadway Rd	to Southern Ave	6	Arterial	1	6,970	C
Southern Ave	to Gila River	4	Arterial	0.33	5,500	B	
Avondale Boulevard	Thomas Rd	to Virginia Ave	4	Arterial	0.25	11,590	C
	Virginia Ave	to Encanto Blvd	4	Arterial	0.25		
	Encanto Blvd	to Palm Ln	4	Arterial	0.25	17,100	C
	Palm Ln	to McDowell Rd	4	Arterial	0.25		
	McDowell Rd	to I-10	6	Arterial	0.3	20,750	C
	I-10	to Roosevelt St	6	Arterial	0.2	47,210	E
	Roosevelt St	to City Center Dr	6	Arterial	0.25	34,890	D
	City Center Dr	to Van Buren St	6	Arterial	0.25	29,790	D
	Van Buren St	to Maricopa St	6	Arterial	0.75	37,500	D
	Maricopa St	to Buckeye Rd/MC-85	6	Arterial	0.25	25,270	C
	Buckeye Rd/MC-85	to Durango St	6	Arterial	0.5	19,720	C
	Durango St	to Lower Buckeye Rd	6	Arterial	0.5		
	Lower Buckeye Rd	to Broadway Rd	6	Arterial	1	16,760	C
	Broadway Rd	to Southern Ave	6	Arterial	1	7,720	C
Southern Ave	to Indian Springs Rd	4	Arterial	1.1	8,270	C	
El Mirage Road (Fairway Drive)	City Limit (Highland Ave)	to Indian School Rd	4	Arterial	0.75	18,710	C
	I-10	to Corporate Dr	4	Major Coll.	0.25	14,890	D
	Corporate Dr	to Van Buren St	4	Major Coll.	0.25	10,720	C
	Buckeye Rd/MC-85	to Durango St	4	Major Coll.	0.5	8,570	C
	Durango St	to Lower Buckeye Rd	4	Major Coll.	0.5		
	Lower Buckeye Rd	to Miami Ave	4	Major Coll.	0.2	10,550	C
	Miami Ave	to Elwood St	4	Major Coll.	0.3		
	Elwood St	to Broadway Rd	4	Major Coll.	0.5	9,410	C
	Broadway Rd	to Southern Ave	6	Arterial	1	5,370	B
	Southern Ave	to Vineyard Rd	4	Arterial	0.5	6,770	C
Vineyard Rd	to Indian Springs Rd	4	Arterial	0.65			
Dysart Road	Indian School Rd	to Osborn Rd	6	Arterial	0.5	25,590	C
	Osborn Rd	to Thomas Rd	6	Arterial	0.5	28,940	C
	Thomas Rd	to McDowell Rd	6	Arterial	1	33,850	C
	McDowell Rd	to Rancho Santa Fe Blvd	6	Arterial	0.25	35,670	D
	Rancho Santa Fe Blvd	to I-10	6	Arterial	0.2	41,700	D
	I-10	to Van Buren St	6	Arterial	0.55	49,420	F
	Van Buren St	to Buckeye Rd/MC-85	4	Arterial	1.1	35,020	F
	Buckeye Rd/MC-85	to Lower Buckeye Rd	4	Arterial	0.9	16,140	C
	Lower Buckeye Rd	to Broadway Rd	4	Arterial	1.1	4,870	C
	Broadway Rd	to Southern Ave	6	Arterial	1	8,270	C
Southern Ave	to Indian Springs Rd	4	Arterial	1	4,500	C	
127th Ave/ Vermeersch	Lower Buckeye Rd	to Broadway Rd	4	Arterial	1	11,400	C
Central Avenue	Van Buren St	to Western Ave	2	Minor Coll.	1	11,140	E
	Western Ave	to Buckeye Rd/MC-85	4	Major Coll.	0.4	9,600	D
	Buckeye Rd/MC-85	to Lower Buckeye Rd	2	Minor Coll.	0.6	4,750	D
Litchfield Road	Buckeye Rd/MC-85	to Lower Buckeye Rd	4	Arterial	0.25	15,460	C
	Lower Buckeye Rd	to Broadway Rd	4	Arterial	1	8,680	C

North-South Corridors

Table 4-6. Projected Roadway Characteristics for 2030 Conditions (cont.)

Corridor	Segment (north to south, west to east)		Total # Through Lanes	Functional Classification	Length (mi.)	Forecasted ADT	Forecasted LOS
Indian School Road	Old Litchfield Rd	to Dysart Rd	6	Arterial	1.4	23,740	D
	Dysart Rd	to El Mirage Rd	6	Arterial	1	26,620	C
	El Mirage Rd	to 111th Ave	6	Arterial	1.5	22,240	B
	111th Ave	to 107th Ave	6	Arterial	0.5	27,410	C
	107th Ave	to 99th Ave	6	Arterial	1	34,510	C
Thomas Road	Litchfield Rd	to Dysart Rd	4	Arterial	1	16,820	C
	Dysart Rd	to Santa Fe Tr	4	Arterial	0.25	8,550	C
	Santa Fe Tr	to Agua Fria River	2	Arterial	0.9	4,280	C
	119th Ave	to Avondale Blvd	2	Arterial	0.5	3,460	C
	Avondale Blvd	to 111th Ave	4	Arterial	0.5	11,200	C
	111th Ave	to 107th Ave	4	Arterial	0.5	19,970	C
	107th Ave	to 103rd Ave	4	Arterial	0.5	22,570	C
McDowell Road	103rd Ave	to 99th Ave	4	Arterial	0.5	22,740	C
	Dysart Rd	to Rancho Santa Fe Blvd	4	Arterial	0.33	26,710	D
	Rancho Santa Fe Blvd	to 119th Ave	4	Arterial	1.25	31,720	D
	119th Ave	to Avondale Blvd	6	Arterial	0.5	28,120	C
	Avondale Blvd	to 112th Ave	6	Arterial	0.4	26,860	C
	112th Ave	to 107th Ave	6	Arterial	0.6	25,280	C
	107th Ave	to 103rd Ave	6	Arterial	0.5	23,160	C
Van Buren Street	103rd Ave	to 99th Ave	6	Arterial	0.5	27,410	D
	City Limit (La Jolla Blvd)	to Central Ave	4	Arterial	0.25	26,430	D
	Central Ave	to Dysart Rd	4	Arterial	0.5	32,850	E
	Dysart Rd	to Agua Fria River	4	Arterial	0.5	20,750	C
	Agua Fria River	to El Mirage Rd	6	Arterial	0.5	20,620	C
	El Mirage Rd	to Avondale Blvd	6	Arterial	1	25,630	D
	Avondale Blvd	to 113th Ave (alignment)	6	Arterial	0.25	22,800	D
	113th Ave (alignment)	to 107th Ave	6	Arterial	0.75	19,460	C
Western Avenue	107th Ave	to 103rd Ave	6	Arterial	0.5	22,870	C
	103rd Ave	to 99th Ave	6	Arterial	0.5	20,620	C
Main St/Buckeye Rd (MC-85)	City Limit	to Central Ave	4	Major Coll.	0.4	13,130	D
	Central Ave	to Dysart Rd	2	Minor Coll.	0.5	8,640	D
	Litchfield Rd	to Central Ave	4	Arterial	0.6	24,120	C
	Central Ave	to Dysart Rd	4	Arterial	0.6	19,340	C
	Dysart Rd	to El Mirage Rd	4	Arterial	1	18,000	B
Lower Buckeye Road	El Mirage Rd	to Avondale Blvd	4	Arterial	1	19,960	C
	Avondale Blvd	to 107th Ave	4	Arterial	1	21,230	C
	Litchfield Rd	to Central Ave	4	Arterial	0.5	7,540	C
	Central Ave	to Agua Fria River	4	Arterial	0.67	8,050	C
	Agua Fria River	to 127th Ave/Vermeersch	4	Arterial	0.33	14,360	C
	127th Ave/Vermeersch	to El Mirage Rd	4	Arterial	0.5	12,610	C
	El Mirage Rd	to 121st Ave	4	Arterial	0.25	14,620	C
Broadway Road	121st Ave	to Avondale Blvd	4	Arterial	0.75	16,630	C
	Avondale Blvd	to 111th Ave	4	Arterial	0.5	12,580	C
	111th Ave	to 107th Ave	4	Arterial	0.5	15,660	C
	Litchfield Rd	to Dysart Rd	4	Arterial	1	10,500	C
Southern Avenue	Dysart Rd	to El Mirage Rd	4	Arterial	1	7,620	C
	El Mirage Rd	to Avondale Blvd	4	Arterial	1	12,990	C
	Avondale Blvd	to 107th Ave	4	Arterial	1	6,270	C
	Dysart Rd	to El Mirage Rd	2 (1-way)	Arterial	1	2,690	C
Indian Springs Road	El Mirage Rd	to 119th Ave (alignment)	2 (1-way)	Arterial	0.5	4,080	C
	119th Ave (alignment)	to Avondale Blvd	4	Arterial	0.5	8,160	C
	Avondale Blvd	to 107th Ave	4	Arterial	1	2,090	B
Indian Springs Road	Dysart Rd	to El Mirage Rd	4	Arterial	1.3	4,420	C
	El Mirage Rd	to Avondale Blvd	4	Arterial	0.6	6,350	C

East-West Corridors



2030 Levels of Service for City Roadways

From review of Figure 4-8, the projected roadway system in 20 years will be able to accommodate a majority of the forecasted traffic demand in a reasonable manner. There are only six distinct roadway segments forecasted to be at LOS E or F in 2030. These poor level of service roadway segments are either caused by the attractiveness of the roadway segment to travelers, proximity to future development areas, change in arterial class/type (different capacity thresholds per Table 4-2), and/or the segment is operating at LOS D in 2010 and has experienced background traffic growth. The two roadway segments projected to operate at LOS F involve Dysart Road from I-10 to Buckeye Road/Main Street. Two of the four roadway segments operating at LOS E are associated with the Dysart Road/Central Avenue corridor while the other two segments are associated with I-10 interchange areas.

Since the future roadway analysis results are based on assumed roadway characteristics, more specific assessments of some established arterial corridors where additional lanes were assumed were conducted to determine the benefit of the additional lanes:

North-South Corridors

99th Avenue: For the portion of this corridor from Indian School Road to McDowell Road, the assumed six through lanes achieves a level of service (LOS C), improving from a LOS D condition as a four-lane roadway.

107th Avenue: The assumption of six total through lanes for the segment from McDowell Road to MC 85 greatly improves the expected level of service (from LOS E/F to C).

Avondale Boulevard: Two roadway segments along this corridor from Encanto Boulevard to Palm Lane and from I-10 to Roosevelt Street would likely fail if the additional lanes were not constructed (the I-10 to Roosevelt Street segment has been recently been improved).

El Mirage Road: Almost every segment along this corridor has a projected improved level of service because of the assumed additional through lanes.

Dysart Road: There are only a select number of segments (i.e., south of Buckeye Road/Main Street) where additional lanes were assumed as part of the 2030 forecast, and only the segment immediately south of Buckeye Road/Main Street is projected to see an improved level of service because of the additional lanes.

Vermeersch Road: This roadway from Lower Buckeye Road to Broadway Road is expected to improve from LOS D to LOS C because of the additional two through lanes assumed in the future condition.

Central Avenue: South of Western Avenue, there were no assumed changes in the number of through lanes because of this area being already established (i.e., constrained right-of-way). Between Van Buren Street and Western Avenue, the City is planning a reduction in the number of through lanes (from four to two) which drops the level of service from a potential

LOS D to LOS E. However, multimodal travel and aesthetics are improved with the roadway change.

Litchfield Road: The change in total through lanes from two to four for this corridor (within the City of Avondale) is not expected to improve its level of service (i.e., remains at LOS C).

East-West Corridors

Indian School Road: For the segment from Old Litchfield Road to Dysart Road (which is categorized as a Class III Arterial per Table 4-2) the additional two through lanes (for a total of six) is not expected to improve the roadway level of service (LOS D). Farther east, the additional lanes do have a benefit, improving the level of service one or two grades depending on the particular segment between Dysart Road and 99th Avenue.

Thomas Road: For the most part, a similar number of through lanes are assumed for the future conditions as the existing; the exceptions are from 111th Avenue to 107th Avenue and from 103rd Avenue to 99th Avenue where the additional through lanes would greatly improve expected levels of service (LOS F to LOS C).

McDowell Road: Due to space/bridge constraints, the segment of McDowell Road from Dysart Road to the Agua Fria River and east to 119th Avenue was maintained with four total through lanes and had a resulting forecasted LOS D. For the individual segment east of Dysart Road, the potential of two additional through lanes would not improve the forecasted level of service. The six total through lanes assumed east of the 119th Avenue does change the service level to LOS C rather than LOS D.

Van Buren Street: From the City's east boundary to 111th Avenue, this corridor would improve in level of service (from LOS D/F to LOS C) because of the assumed additional lanes (from a total to two/three to six in this case). Higher forecasted volumes on the six-lane segment between 111th and 119th Avenue result in LOS D while LOS C is realized from 119th to the Agua Fria Bridge. Bridge widening is not expected across the Agua Fria and therefore the existing four-lane roadway to the west will result in LOS C across the bridge to Dysart Road, LOS E to Central Avenue, and LOS D west of Central to La Jolla.

Western Avenue & Main Street/Buckeye Road (MC-85): There were no assumed additional lanes for these roadways in the future conditions.

Lower Buckeye Road: About half of the segments comprising this corridor are expected to benefit (i.e., improved level of service) from the four total through lanes assumed in place by 2030 from its mostly two lane existing condition.

Broadway Road: Since most of this corridor is unpaved presently, the assumed four total through lanes is certainly an improvement. However, it appears (based on the forecasted

demands at this time), that all of its segments could function at LOS C or D with only an assumption of two total through lanes.

Southern Avenue/Indian Springs Road: These corridors do not appear to gain much in level of service by operating with four total through lanes, but the potential need for this capacity should be preserved as development occurs along the corridors and/or in association with the construction of SR-30.

South of Buckeye Road, the ½-mile spaced collector roadway network is presumed to consist primarily of two-lane cross-sections (i.e., minor collector classification). There are three Major Collector roadways considered within this area: El Mirage Road from Buckeye Road to Broadway, Elwood Street from Vermeersch Road to 107th Avenue, and Roeser Road (alignment) from Dysart Road to 107th Avenue. These roadways, along with the other roadways in this section of the City, are projected to operate acceptably, but would probably operate at LOS D (still satisfactory) if only assumed/built to provide two total through lanes instead of four. Again, with the uncertainty of the actual development types within this future growth area of the City, it would be prudent to reserve right-of-way to permit the construction of these roadways at a Major Collector classification.

The development of the assumed land uses will be volatile over the next 20 years, and the specific developments within the land use designations may vary considerably from the estimated intensities. Therefore, the actual travel demand in 2030 may be more muted or intense than conveyed by the presented forecasts. Even though the reasonably assumed roadway characteristics appear to accommodate the forecasted demand in 2030, ultimately the constructed roadways must embrace a “complete streets” planning strategy so that all modes of travel can be utilized in the future, which maximizes the effectiveness of the roadway. Later chapters within this document will show how a proactive approach to expanding the network of bicycle provisions and transit services (e.g., bus, light rail, commuter rail) will provide opportunities for more diversified travel within the City. Similarly, implementing a wide-spread Intelligent Transportation System can help maximize the usefulness (and safety) of the roadways through efficient traffic operations monitoring and incident response.

Recommended Roadway Improvement Projects

Roadway Improvement Projects for Recommended for Consideration

Based on the functionality, importance, and level of service for existing roadways coupled with their forecasted operation and importance, the following roadways should be the focus of near-term programming considerations or considered when funds become available to include in the City’s Improvement Project list:

- *107th Avenue*
This roadway shows existing signs of capacity constraint—Roosevelt to Van Buren Street. With 107th Avenue providing one of the City's few connections to I-10 (albeit as a half-diamond with frontage road connections to 99th Avenue); it will logically be under constant pressure to accommodate travel demand. Moreover, its improvement could alleviate some demand on 99th Avenue which is (will be) at LOS D/E. Similarly, consideration to extend the 6-lane cross-section further south to MC 85 would help alleviate future traffic demand off of Avondale Boulevard identified south of Van Buren Street.
- *Dysart Road*
With this roadway already being at its ultimate cross-section in the vicinity of I-10, widening to accommodate the current and forecasted demands is not viable. Fortunately, multi-modal options have been established north of I-10 (and some south of I-10) suggesting that with their preservation and completion/extension (south of I-10), other demand-alleviating travel modes will be better utilized in the future.

Roadway Improvement Projects for 2030

The following roadway projects are organized by corridor and are based on the associated needs and benefits derived from the analysis of the forecasted traffic conditions in 2030. This listing is not comprehensive with respect to providing the roadway characteristics presented in Figure 4-8, but instead highlights the projects that are higher priority which would benefit from advanced programming.

- *Dysart Road – Van Buren Street to Main Street/Buckeye Road*
With this roadway segment being right-of-way constrained and projected to be heavily used in the future, widening to accommodate the forecasted demands is not viable. There are existing multi-modal options that have been established north of I-10, and there is an immediate consideration to establish these multi-modal provisions in full from I-10 to Van Buren Street. Therefore, a related effort to continue this “complete street” strategy within the five-lane cross-section of Dysart Road south of Van Buren Street is a future need.
- *Van Buren Street – Dysart Road to City Limit*
Complementary to the effort to improve traffic conditions through diversified travel modes on Dysart Road, this segment of Van Buren Street would also benefit from a similar strategy (which has already been initiated by a recent City bike lane project) as it is also right-of-way constrained.
- *Van Buren Street – 119th Avenue to 99th Avenue*
In support of planned development at the City Center site and to continue roadway improvements started and progressing east from the Agua Fria River, this segment of Van Buren Street should be constructed to its ultimate cross-section of six total through

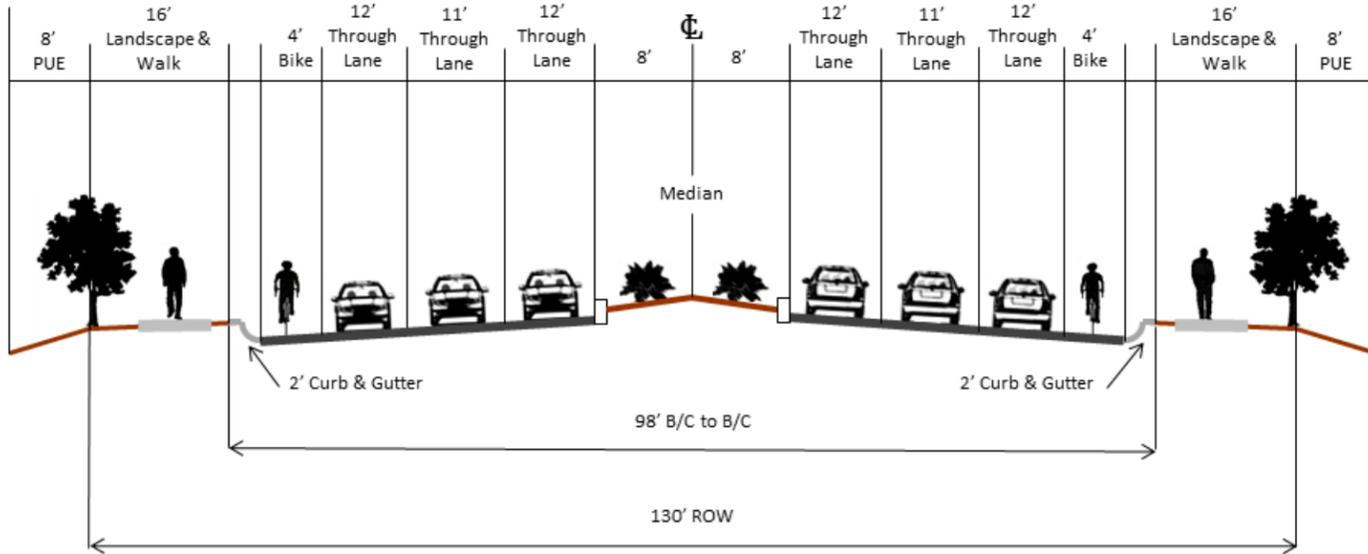
lanes (and associated provisions for multi-modal travel). The resulting high capacity connection between Avondale Boulevard and 107th Avenue may also permit some dispersion of traffic demand on Avondale Boulevard in favor of 107th Avenue.

- *El Mirage Road (Fairway Drive) – I-10 Interchange to Van Buren Street*
In anticipation of the accelerated programming/construction of the full diamond interchange at El Mirage Road/Fairway Drive and I-10, this segment that would provide access to/from the interchange and Corporate Drive/Van Buren Street needs a cross-section with four total through lanes established by 2016 (or concurrent with interchange work). Similarly, the Corporate Drive/Roosevelt Street connection to/from Avondale Boulevard to the east would need to be viable.
- *Indian School Boulevard – 111th Avenue to 99th Avenue*
The forecasted traffic demands along this roadway suggest its need for programming of its widening from four total through lanes to six total through lanes. Other segments west of 111th Avenue would also need widening, although the benefit from the additional lanes is not as significant.
- *Thomas Road – between Avondale Boulevard and 99th Avenue*
In conjunction with the improvement of Avondale Boulevard to include four total through lanes north of McDowell Road, Thomas Road should be also widened to four total through lanes from Avondale Boulevard to 107th Avenue and from 103rd Avenue to 99th Avenue (i.e., segments that would not be able to accommodate the forecasted demands in their current configurations).
- *Lower Buckeye Road – El Mirage Road to 107th Avenue*
Of the corridor/roadway segments within the portion of the City south of Buckeye Road, this segment of Lower Buckeye Road appears to be the first priority for widening to four total through lanes aside from roadway segments tied to development-specific needs that could arise within other areas.
- *Avondale Boulevard – Overall Corridor*
With this being the north-south “backbone” of the City, continued efforts to keep its improvements ahead of the tide of demand will be a constant task. Since it has already benefited from current and recent improvements, furthering those provisions will attract new development (and associated traffic) which can be adequately accommodated—leaving time to improve other corridors/segments to the same capacity levels with other improvement projects.

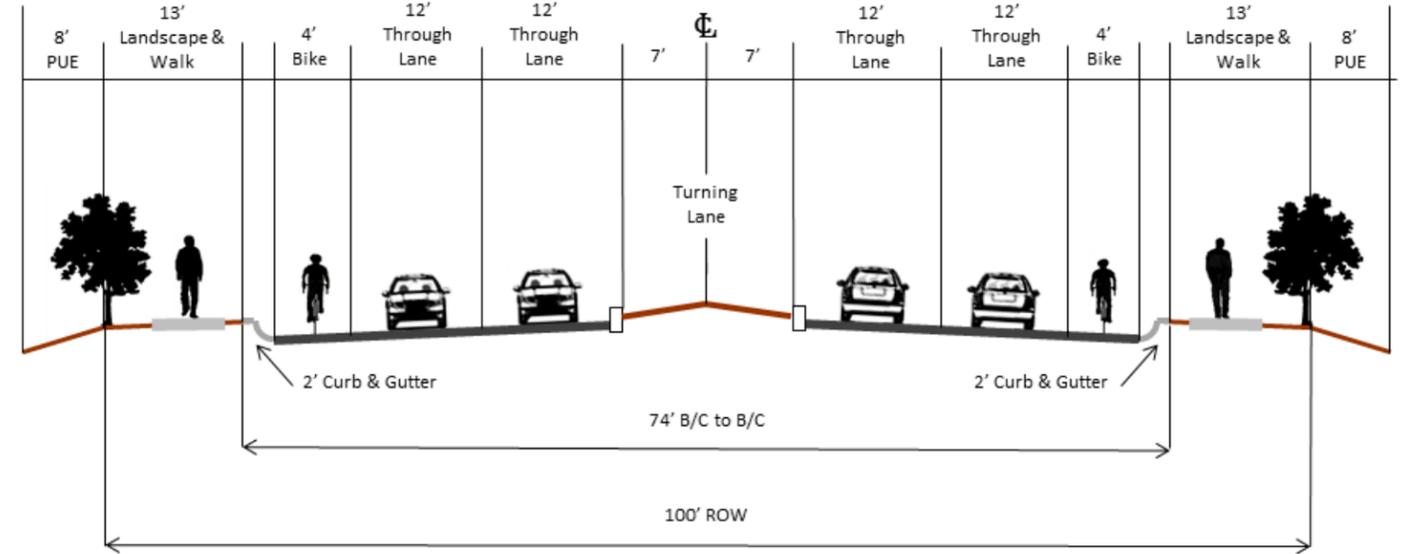
Recommended Street Functional Classification System

Proper classification of existing and future roadways provides the framework for ensuring that the City's roadway system will be properly designed to best accommodate the future travel demands via all modes (i.e., a "complete street"). Construction (or re-construction) of the roadway as part of step-by-step improvements or development-generated shall abide by the functional classification of the roadways, thereby adding or extending the required characteristics one component at a time. Figure 4-9 shows the recommended functional classification of the City's major roadways. The designations are based on how they serve the City presently, future travel demand, and intended functionality relating to their associated development patterns. The standard cross-sections corresponding with the shown roadway classifications are shown on the following page.

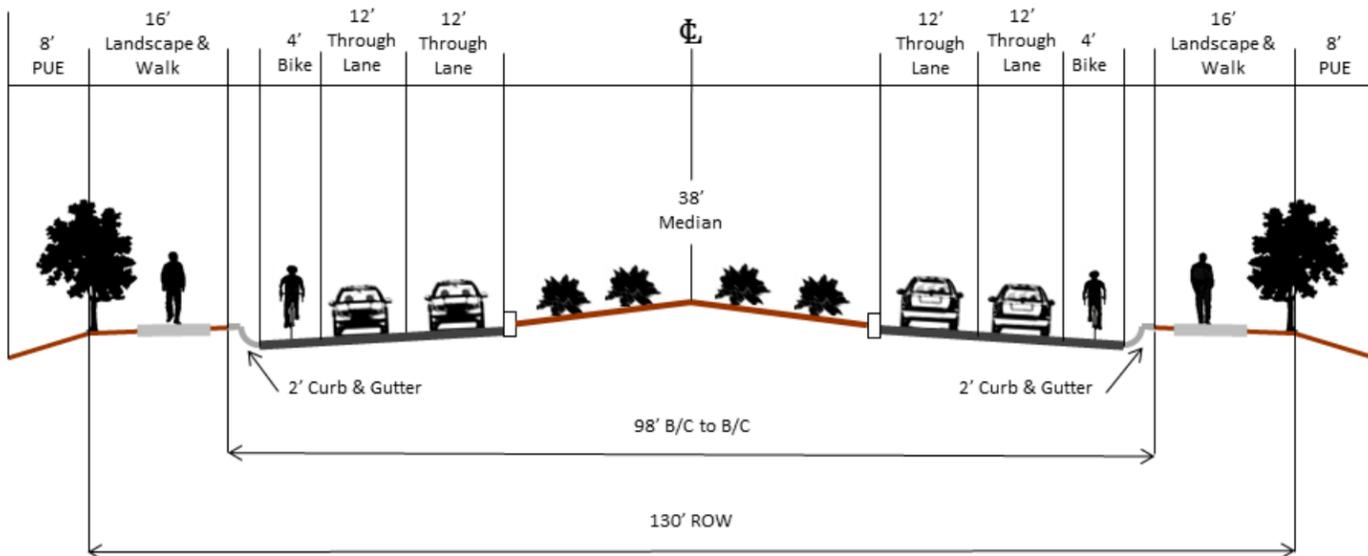
6-Lane Arterial – 130' Right of Way



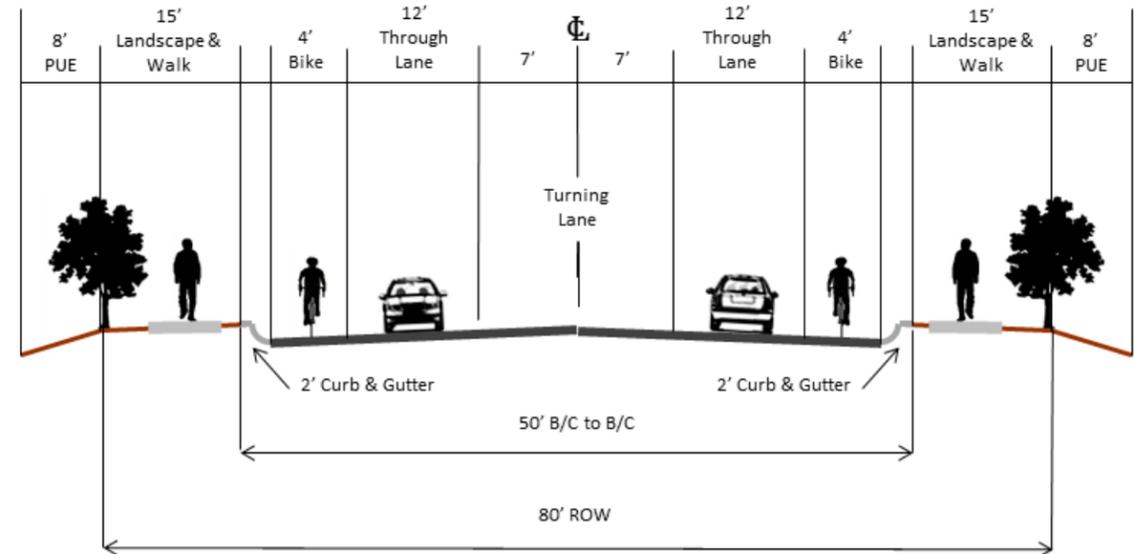
Major Collector – 100' Right of Way

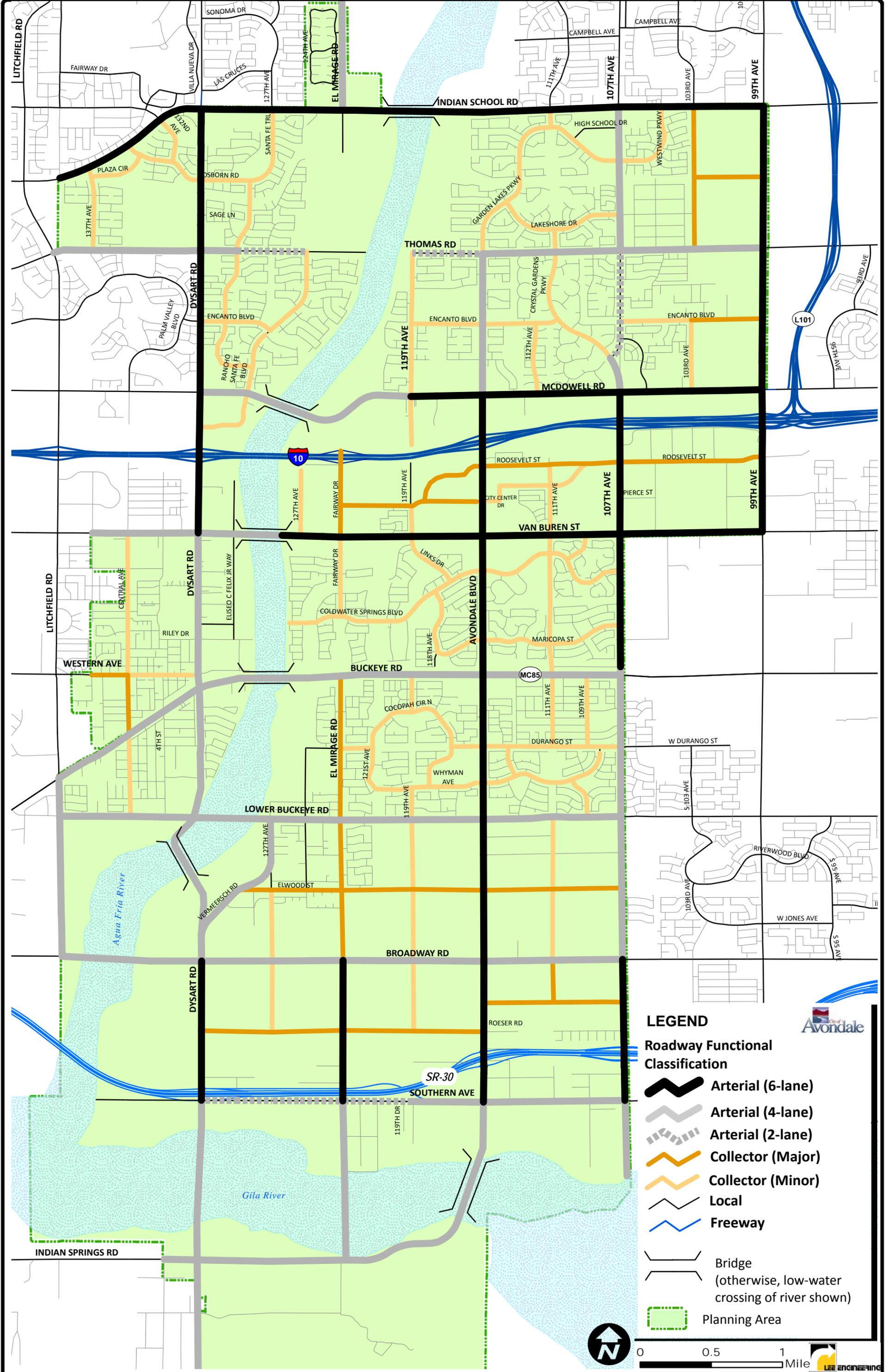


4-Lane Arterial – 130' Right of Way



Minor Collector – 80' Right of Way

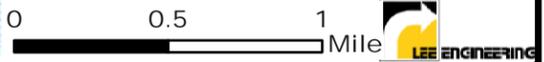




LEGEND

Roadway Functional Classification

- Arterial (6-lane)
- Arterial (4-lane)
- Arterial (2-lane)
- Collector (Major)
- Collector (Minor)
- Local
- Freeway
- Bridge (otherwise, low-water crossing of river shown)
- Planning Area



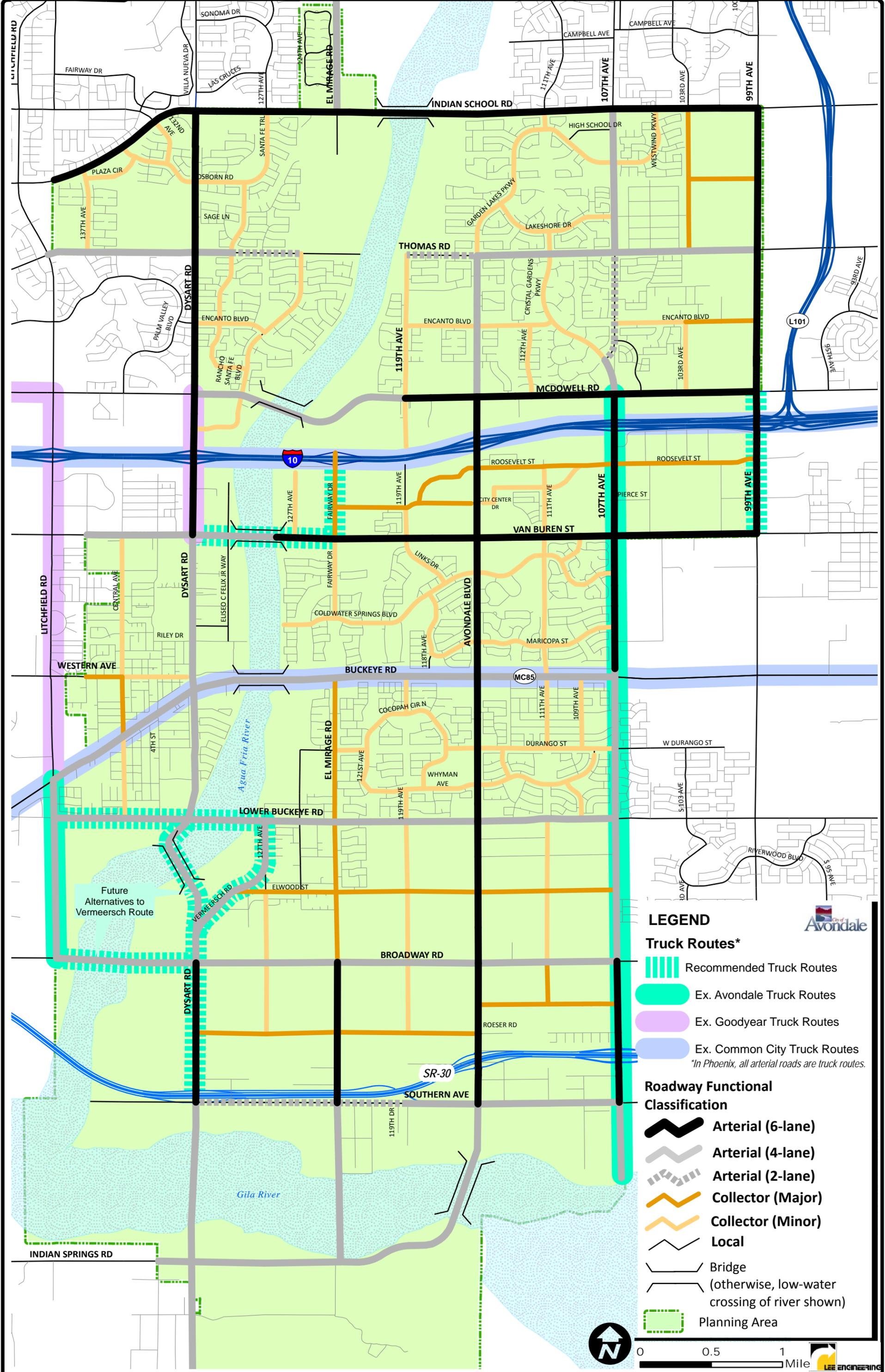
Future Roadway Functional Classifications

Recommended Truck Route Plan

The truck routes for the City were developed to limit commercial, industrial, and mining generated traffic to particular roadways suited for the vehicle types/loads and to minimize impacts on the quality of life of affected residents. Designating truck routes also is intended to reduce risks to local traffic, reduce congestion along arterials, and avoid truck use of lesser class roadways.

The City's truck traffic is composed of two types: 1) local commercial delivery trucks that transport commercial goods to and from the businesses in the City, and 2) heavy truck hauling generated by industrial/warehouse uses sand and gravel pits located along Agua Fria River and Salt River. The City currently does not have a designated east-west truck route within the City. Because of the higher class and regional significance status, Buckeye Road/MC-85 (a County facility) likely meets the needs of the heavy truck traffic. City of Phoenix designates all the north-south and east-west arterials adjoining the City of Avondale as truck routes. The City of Goodyear has designated Litchfield Road near the City of Avondale as a truck route.

The existing Truck Routes (by City Code) previously identified will need to continue serving as designated truck routes within the City. In addition, other key linkages of recommended new designations are presented in Figure 4-10. These new truck segments are recommended based on attempting to balance the following factors: likely truck access needs, proximity to existing/future residential versus concentrated commercial/industrial areas, truck route network connections within the City and adjacent areas; and adequate connectivity to available freeway interchanges. While local commercial truck traffic could be permitted on non-designated City streets, it is recommended that heavy truck use of those roads be limited to non-peak hours and non-through traffic. The City should restrict the heavy truck movements only along the established truck routes through appropriate signage, enforcement and education efforts.



LEGEND

Truck Routes*

- Recommended Truck Routes
- Ex. Avondale Truck Routes
- Ex. Goodyear Truck Routes
- Ex. Common City Truck Routes

**In Phoenix, all arterial roads are truck routes.*

Roadway Functional Classification

- Arterial (6-lane)
- Arterial (4-lane)
- Arterial (2-lane)
- Collector (Major)
- Collector (Minor)
- Local
- Bridge
- (otherwise, low-water crossing of river shown)
- Planning Area

Recommended Truck Route Plan

Street Plan Recommendations

The following summary of recommendations is intended to provide guidance for future City planning and improvement programming purposes:

- Begin programming improvement projects that will address the short-term needs concerning safety and roadway infrastructure as identified within this chapter. It may be that a common improvement project may address mutual concerns along a particular segment. Abiding by Maricopa Association of Governments guidelines for developing complete streets will ensure maximized benefit from expended improvement funding.
- Assess the status of right-of-way availability along the arterial roadway network per Figure 4-9. Begin long-term acquisition process for major roadway classifications.
- Work with future developers to establish future roadways, in the form of the ½-mile grid system of collector roadways within the City south of Lower Buckeye Road, or the extension/widening of existing roadways and corridors to promote multi-modal connectivity.
- Perform due diligence investigations and pre-design for at least one future bridge crossing of the Agua Fria River associated with the extension/connection of Dysart Road (preferred) or the widening/improvement of Lower Buckeye Road's existing two-lane low-water crossing.
- Take advantage of partially improved corridors/segments to complete gaps within the roadway and/or multi-modal networks within the City.
- Initiate long-term programming of roadway improvements for prescribed corridors/segments as identified within the 2030 travel demand analysis section of this chapter. Coordinate acquisition of additional roadway right-of-way for planned dedicated/fixed transit in appropriate locations (as cross-referenced with information from the next chapter).
- Coordinate with MCDOT to perform comprehensive widening of Indian School Road to six total through lanes from Dysart Road to 99th Avenue including Indian School Road Bridge over the Agua Fria River.
- Support current Arizona Department of Transportation process to establish the full-diamond interchange at I-10 and El Mirage Road (Fairway Drive) by a planned horizon year of 2015.

Chapter 5: TRANSIT PLAN

An integrated local and regional public transit system, ultimately relying on a network of “complete” streets, would accommodate a portion of the future travel demand in an affordable and environmentally friendly manner. The transit plan for the City of Avondale is built upon a theme in the City’s goals to provide a multi-modal transportation system that supports the land use element. In support of that is a desire to create transit hubs/corridors and ensure that transit services are accessible to City residents having employment opportunities outside of the City. Conversely, providing connection to adjacent municipalities improves non-resident population to reach employment and activity centers within the City. This is the core philosophy of transit-oriented development, which has been woven into the land uses envisioned in the General Plan.

Existing Public Transportation Services

The existing transit system for Avondale is comprised of transit routes, a neighborhood circulator (Avondale ZOOM), and “unofficial” park and ride facilities. Valley Metro/RPTA (Regional Public Transportation Authority) provides the ZOOM value transportation services for the City of Avondale as contracted through the City of Phoenix. The City of Phoenix and Valley Metro/RPTA assist the City of Avondale with developing and promoting a wide variety of alternative travel modes including bus and dial-a-ride services, carpools, vanpools, and bicycles. Although, no public rail (light or heavy) service is available in the City at this time, the planning for access to these modes is essential and has already begun.

Existing Transit Routes

Local Routes: 3-Van Buren; 17A-McDowell-Avondale; 41-Indian School; and Avondale ZOOM

Funding shortfalls have caused Valley Metro to reduce services throughout the region. As part of that reduction plan Route 29A (Thomas-Avondale) was eliminated in July 2010. This loss eliminated service on Avondale Road north of the Avondale Civic Center to Thomas Road and the Desert Sky Mall Transit Center. Routes 17A and 29A function(ed) as westward extensions to routes 17 and 29, which provide more frequent service and connect through the metropolitan area to the east on McDowell Road and Thomas Road, respectively. Route 41, Indian School, provides 60-minute service to the northeast corner of the city limits (107th Avenue and Indian School Road). It connects with the Desert Sky Mall Transit Center Monday through Saturday, and provides through service to Hayden Road in the east valley. Avondale ZOOM is the recently initiated (July 2011) neighborhood circulator (previously Route 131) generally connecting the Southwest Valley YMCA and Estrella Mountain Community College with the Gateway Pavilions (99th Avenue/McDowell area) by way of various neighborhoods of the City. The ZOOM service has recently included Saturday service.

The numbered local routes all offer service on 60-minute headways each weekday generally between 5:00 am and 7:00 pm, while Avondale ZOOM runs on 30-minute headways from about 5:30 am to 9:00 pm. Except for the circulator, the other routes provide Saturday service as well on 60-minute headways. It is Avondale’s goal to shorten the Valley Metro headway times to 30 minutes during weekday time periods.

Express Services: 562-Goodyear Express and 563 Buckeye Express

These are limited express service routes with the Goodyear Express providing three trips during the AM and PM peak periods and the Buckeye Express providing two peak period trips that utilize the I-10 corridor. The service times are staggered, effectively halving the headways. Routes 562 and 563 have no stops in the city and offer non-stop service between the Goodyear Park-and-Ride and downtown Phoenix. Their scheduled travel time is 40 to 50 minutes.

There is also the I-10W RAPID bus route that offers residents high speed, high quality downtown bus service with the route’s western extent located at Desert Sky Mall Transit Center in the City of Phoenix. This route provides frequent morning and afternoon peak period service (about 13-minute headways) and connects with the 79th Avenue Park-and-Ride facility east of Avondale. This park-and-ride facility is geographically positioned to function as a convenient intercept for Avondale residents.

Rural Connector: 685-Phoenix-Gila Bend Rural Connector

This route provides basic public transportation service from the rural area southwest of Avondale to metropolitan Phoenix. Route 685 has its eastern terminal at Desert Sky Mall Transit Center where it provides connection to four regional routes. Functionally, the route is not of much service to Avondale residents.

Paratransit: Dial-A-Ride Services

Avondale contracts through the City of Phoenix to provide residents with a Dial-A-Ride Service. This service is in compliance with federal regulations. The City of Avondale offers an Americans with Disabilities Act (ADA) Service to eligible persons who, because of a disability, cannot use Valley Metro fixed-route bus service.

Medical Taxi: Voucher Program

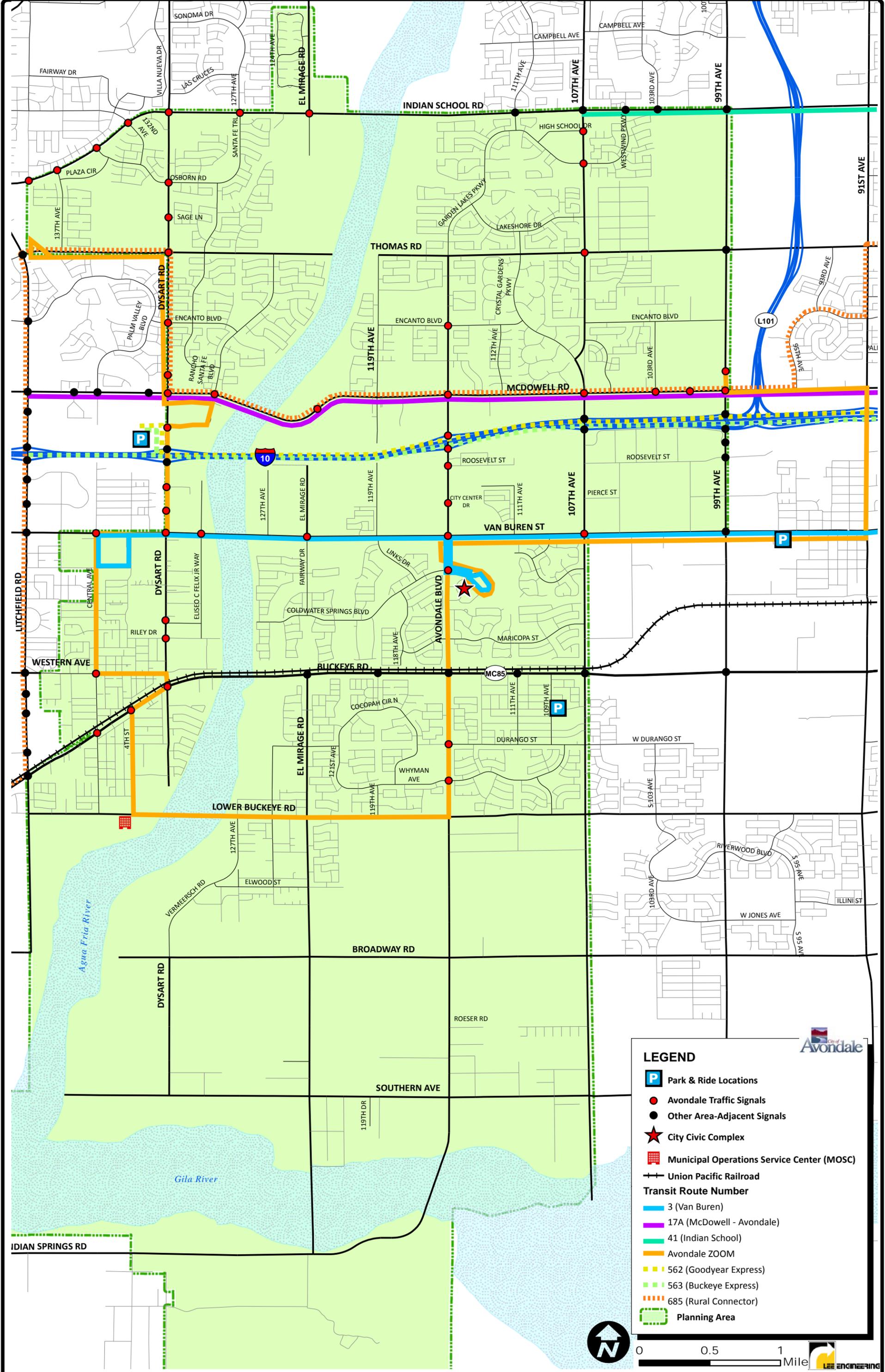
The City of Avondale provides a voucher program to residents who receive qualifying physician ordered repetitive medical treatments and therapy. The participant calls one of a list of participating independent companies to schedule their own rides and the City reimburses the cost of the ride up to a specific dollar amount.

Table 5-1 and the following Figure 5-1 summarize the characteristics and routes of the existing transit services in and around the City of Avondale.

Table 5-1. Existing Transit Services In/Around Avondale

Route Number	Description	Weekday				Saturday				Sunday	
		Trips/Day	Headway (min.)	Direction	Span of Service	Trips/Day	Headway (min.)	Direction	Span of Service		
Local Bus Routes											
3	Van Buren	15	60	EB	5:08a-8:41p	15	60	EB	5:00a-8:30p	N o A v o n d a l e S t o p s S e r v i c e	
		15	60	WB	5:00a-8:21p	15	60	WB	5:30a-7:51p		
17A	McDowell-Avondale	15	60	EB	5:58a-9:49p	14	60	EB	5:46a-7:15p		
		15	60	WB	5:09a-8:47p	14	60	WB	6:00a-7:29p		
41	Indian School	15	60	EB	5:58a-8:04p	14	60	EB	6:02a-8:45p		
		15	60	WB	5:38a-8:47p	14	60	WB	6:26a-8:26p		
ZOOM	Avondale's Neighborhood Circulator	30	30	EB	5:35a-9:09p	20	30	EB	6:13a-6:39p		
		30	30	WB	5:25a-8:55p	20	30	WB	5:55a-6:25p		
Express Service											
562	Goodyear-Downtown Express	3	30	EB (in)	6:10a-7:55a	No Service					
		3	20	WB (out)	4:25p-5:50p						
563	Buckeye-Downtown Express	2	70	EB (in)	5:30a-7:35a	No Service					
		2	75	WB (out)	4:05p-6:25p						
RAPID Service											
I-10 West	I-10 West RAPID	12	15 (avg)	EB (in)	5:20a-8:52a	No Service					
		13	13 (avg)	WB (out)	3:22p-6:36p						
Rural Connector											
685	Phoenix-Gila Bend Rural Connector	5	184 (avg)	NB (in)	2:10a-5:35p	2	240	NB	7:00a-2:00p		
		5	206 (avg)	SB (out)	5:15a-10:10p	2	240	SB	11:00a-6:00p		

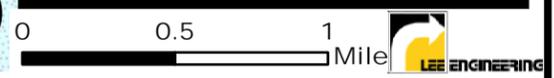
Note: transit service, days of operation, and schedules are subject to change



Existing Transit Services in Avondale



- LEGEND**
- Park & Ride Locations
 - Avondale Traffic Signals
 - Other Area-Adjacent Signals
 - City Civic Complex
 - Municipal Operations Service Center (MOSC)
 - Union Pacific Railroad
 - Transit Route Number**
 - 3 (Van Buren)
 - 17A (McDowell - Avondale)
 - 41 (Indian School)
 - Avondale ZOOM
 - 562 (Goodyear Express)
 - 563 (Buckeye Express)
 - 685 (Rural Connector)
 - Planning Area



Existing Route Performance in Avondale

The Regional Public Transportation Authority (RPTA, or Valley Metro) keeps daily, monthly, and annual statistics on the entire regional system of routes. Included are data related to boardings by jurisdiction. Thus, boarding information is available for bus stops within Avondale. A specific on-board interview (or travel behavior) study was not available at the time of compiling this information.

Table 5-2 provides a summary of boarding data for those bus routes with stops in Avondale: 3, 17A, and ZOOM (formerly 131 START). The sum of the average daily boardings was 824 in April 2012, a 51% increase over a year earlier and 168% increase from 2009. Daily boarding averages ranged from 175 on Route 17A to 439 on ZOOM. The productivity for these three routes ranged from a high of 1.3 boardings per revenue mile (Route 3) to a low of 0.5 (ZOOM). The average bus route boardings per revenue mile for the valley-wide system (weekday ridership) was 2.55 reflecting the fact that almost all of the Avondale routes are in the lowest quartile of overall system performance.

Table 5-2. Existing (2012) Transit Service Performance in Avondale

Route Number	Description	Weekday Boardings in Avondale					Boardings / Rev. Mile (April '12)
		Average Daily Boardings					
		April 2012	April 2011	April 2010	April 2009	Change from 2009 to 2012	
3	Van Buren	210	203	30	37	467.6%	1.3
17A	McDowell-Avondale	175	147	121	81	116.0%	0.9
ZOOM^	Avondale Circulator	439	194 (July '11)	118	136	222.8%	0.5
Totals*		824	544	399	308	167.5%	

* Totals from 2009 and 2010 include boardings for Route 29A which was discontinued summer 2010

^ Route 131 START before July 2011

Source: Valley Metro Monthly Ridership Reports

Avondale ZOOM started in July 2011, in which it accommodated about 1,000 riders during its only one week of service in that month. By the end of August, its monthly ridership was about 5,500. Currently (per April 2012 data), ridership levels are at about 9,200 riders per month. However, its boardings per revenue mile is comparable with the other City routes at about 0.5.

When aggregating the statistics on a city-wide basis, April ridership numbers (2012 and earlier) for Avondale show the following:

	<u>Boardings</u>	<u>Revenue Miles</u>	<u>Boardings per Revenue-Mile</u>
April 2012	18,463	29,333	0.63
April 2011	12,101	15,770	0.77
April 2010	9,723	19,613	0.50
April 2009	8,546	21,940	0.39
April 2008	9,236	23,159	0.40

In April 2012, boardings were up about 53% from a year earlier and by 100% for the same month in 2008. Valley Metro statistics for April indicate system-wide boardings for the entire valley increased less than one percent between 2011 and 2012. The performance figures for services in Avondale generally are consistent with experiences of a suburban community located at the outlying portions of routes. The system of routes in Avondale provides relatively good transit availability to city residents for basic travel. However, with most of the region's major employment centers located away from the City's future transit service improvements need to focus on higher quality services being available and directly connected to these major activity areas.

Park and Ride

There are two park-and-ride facilities that service the Avondale area and they include:

- **Goodyear Park-and-Ride**, a dedicated facility located southwest of McDowell Road and Dysart Road (nearest cross streets are Park Valley Road and Cornerstone Boulevard). The facility has a capacity of approximately 400 parking spaces and it serves two routes, 562-Goodyear-Downtown Express and 563-Buckeye-Downtown Express.
- **79th Avenue/I-10 Park-and-Ride**, a dedicated facility located at the southeast corner of McDowell Road and 79th Avenue with direct access to the I-10. There are 607 parking spaces and the facility serves three routes: 17, 17A, and I-10W RAPID.

Recommended Short-term Transit Enhancements

The 2006 Transportation Plan included a series of recommended transit projects over the short term (2006-2010) and a generalized longer range transit concept. The recommended short range projects were:

- **Extension of then-existing services to/from the cities of Phoenix and Glendale**—Routes 3, 13, 17, and 70. The current Routes 3 and 17A reflect the implementation of the recommendations. The Routes 13 and 70 have not been extended as proposed.

- **Initiation of two loop routes within the city**, one would connect Dysart Road corridor with the Gateway Pavilions shopping area at 99th Avenue, serve the Civic Center, and use portions of Buckeye Road, Avondale Boulevard, McDowell Road, Thomas Road, Indian School Road, 99th and 107th Avenues. The second loop would operate in a square-like fashion on: Dysart Road, Lower Buckeye Road, 107th Avenue, and McDowell Road. To some extent, the current Avondale ZOOM circulator serves these areas/needs.
- **Expanded dial-a-ride coverage.**
- **Participation with MAG, and the cities of Phoenix, Goodyear, Glendale and Buckeye to promote regional service connections**—services would include commuter rail service along the UPRR corridor and light rail transit within the City. The City was also advised to proactively investigate opportunities for identifying and acquiring property for a future commuter station and park-and-facility along the railroad.
- In addition to the service recommendations the Plan advised **regular updates to the Avondale Area Transit Plan** and **on-going improvements to transit passenger amenities** within the city.

With the progress already made by the City in implementing some of the above (e.g., Avondale ZOOM), and given the budget-constrained prospect of additional dial-a-ride coverage and long-range outlook for commuter rail/light rail, there are not any critical short-term transit needs. Re-establishment of the discontinued Route 29A may be a short-term consideration since it was the City's highest utilized route at the time it was operating. Also, the City should participate fully in the current Southwest Valley Local Transit System Study administered by the Maricopa Association of Governments.

Relevant Local and Regional Transit Plans

The following information was reviewed for context and preparation of the City's updated Transit Plan:

Previous Transportation Plan (October 2006)

The Plan included a series of recommended transit projects over the short term (as discussed previously) and a generalized longer range transit concept.

Avondale City Center Specific Plan (August 2008)

This Specific Plan, adopted in August 2008, is designed to provide for a mixed-use, pedestrian-oriented character of Avondale's future City Center. The City Center generally extends from the I-10 Freeway on the north, to the Civic Center on the south, 119th Avenue on the west and 111th/113th Avenue on the east. The Plan is centered around the intersection of Avondale Boulevard and Van Buren Street.

According to the Plan, "The City Center's street system has also been designed to incorporate transit service within the City Center development by maintaining service of existing transit

routes, as well as accommodating new bus routes as proposed in the City' Transportation Plan. Development of the City Center is expected to be an area of transit demand and may promote the expansion of existing services."

With regard to specific actions devoted to future transit, the Plan includes precise locations and general design standards for bus stops on Van Buren Street (111th Avenue, Avondale Boulevard, 119th Avenue), Avondale Boulevard (Van Buren Street and Corporate Drive), and Civic Center Drive.

Annual Report on the Implementation of Proposition 400 (September 2009)

The most relevant aspect of this annual report to future Avondale transportation improvements was the recognition that there would be significant delays to local and express bus service improvements due to the reduction in revenues: "many routes are delayed beyond the expiration of the tax in FY 2026...also, very few new capital facilities, such as park-and-ride lots, are funded through FY 2026."

Transit Circulator (ZOOM)

As a result of a prior Transit Circulator Study (May 2010), ZOOM buses started service on July 25, 2011 as they expanded upon the prior Route 131 (START). The circulator route provides better service with increased headways (30 minutes) and connectivity between major activity centers such as Estrella Mountain Community College, Estrella High School, Avondale Civic Center, Universal Technical Institute, and the Gateway Pavilions shopping area in the northeast part of the City. The circulator will also serve as vital linkage between the overall transit grid and future high capacity transit routes traversing the City.

Avondale City Center Transit Center

In mid-2010 planning was completed for selection of a transit center site, with a park-and-ride facility, to be located in the northern part of the future City Center area, a block east of Avondale Boulevard and just south of Roosevelt Street. The selected site is bordered by 114th Avenue, Roosevelt Street, Park Boulevard (new north-south spine street in between 113th and 114th), and Corporate Drive. Based upon serving four routes: 17, 17A, 560 (not currently active) and the I-10W RAPID, the study concludes demand for about 175 to 200 parking spaces will be needed through 2020. Land acquisition and design of this project is progressing, Phase 1 construction of the transit center is scheduled to begin in 2013.

Regional Transportation Plan (RTP) (2006 Update)

The 2006 RTP identified two HCT corridors in Avondale, one a westward extension of the I-10 West LRT corridor (i.e., from the vicinity of 79th Avenue) to the vicinity of Avondale Boulevard, and a second along the UPRR corridor through Avondale to Buckeye. In the RTP both corridors were identified as "eligible high capacity corridors." The RTP allocated funding for corridor studies in order to evaluate the potential cost-effectiveness of commuter rail in existing railroad corridors, such as the UPRR.

Regional Transportation Plan (RTP) (2010 Update)

The public transit element of the RTP update contains plans and programs for continuing expansion of regional bus service and light rail transit (LRT) facilities. The regional transit system includes local services, mostly funded through local revenues, regional grid services, bus rapid transit (BRT)/express services, high capacity transit corridors (LRT and commuter rail) and rural connector routes. A summary of the RTP's transit services within the city are reflected in Table 5-3.

Local Bus Services. The local bus routes in the RTP's 2030 Bus Service Network are shown on major arterials within the city:

- East-west arterials—(from north to south) Indian School Road, Thomas Road, McDowell Road, Van Buren Street, Buckeye Road, and Lower Buckeye Road.
- North-south arterials—(from west to east) Litchfield Road, Dysart Road, Avondale Boulevard, and 99th Avenue.

The current Routes 3, 17A, and ZOOM, provide service along portions of most of these arterials today—the exceptions being Indian School, Thomas, Buckeye Road, and 99th Avenue.

Regional Grid Bus Services. The regional super grid services are planned for these seven arterial streets in the Avondale area:

- Three north-south arterials—(from west to east) Litchfield Road, Dysart Road, and 99th Avenue.
- Five east-west arterials—(from north to south) Indian School Road, Thomas Road, McDowell/McKellips Roads, Van Buren Street, and Buckeye Road.

Table 5-3. Future Transit Services & Facilities in RTP and Local Plans In/Around Avondale

Route	Description	Service Limits	In Service	FY 2011-2015	FY 2016-2020	FY 2021-2025	FY 2026-2031	Not Scheduled
Local Bus Routes								
ZOOM	Circulator	Thomas Road & Litchfield Road-Gateway Pavilions	x					
Super Grid								
T42	99th Avenue	Buckeye Road-Bell Road					x	
T48	Buckeye Road	Litchfield Road-44th/Washington LRT					x	
T52	Dysart Road	Desert Sky Transit Center-Camelback/Litchfield Roads					x	
T58	Indian School	Litchfield Road-Granite Reef/Camelback Roads					x	
T59	Litchfield Road	Lower Buckeye Road-Bell Road						x
T61	McDowell/McKellips Roads	Litchfield Road-Future Loop 202 (Red Mountain) Park-n-Ride Facility	x	x				
T68	Thomas Road	Dysart Road (Estrella Mountain Community College)-Pima Road					x	
T70	Van Buren Street	Litchfield Road-Curry Road	x			x		
Express/BRT								
T6	Avondale Express	Dysart Road Park-n-Ride Facility-State Capitol			x			
T8	Buckeye Express	West Buckeye Park-n-Ride Facility-State Capitol	x	x				
T14	Loop 303 Express	Arrowhead Towne Center-Desert Sky Transit Center					x	
T19	Goodyear/Downtown Express	Goodyear Park-Ride Facility-State Capitol	x					
Light Rail Transit/High Capacity Transit								
	Yuma West High Capacity Transit	Central Phoenix-Buckeye (Union Pacific Railroad Phoenix Subdivision)						x
T81	I-10 West High Capacity Transit	Westward from (future proposed) 79th/83rd Avenue LRT Station						x
Rural Route								
	Gila Bend Connector	Center	x	x				
Transit Capital Facilities								
	Avondale City Center Transit Center/Park-n-Ride Facility							x

x - indicates in service today, in a similar form as proposed

X - indicates that service or project is contained in the Regional Transportation Plan or a City Plan for implementation

Sources: Regional Transportation Plan 2010 Update; City of Avondale Transit Circulator Study; Avondale Transit Center Site Selection

Express/Bus Rapid Transit (BRT) Services. The RTP proposes two BRT routes along the I-10 West freeway corridor: the Avondale Express and the Goodyear-Downtown Express. Both of these routes plus the Buckeye-Downtown Express are in operation today as a precursor to expanded services in the future.

Light Rail Transit (LRT) Services/High Capacity Transit (HCT). The two HCT corridors identified in the 2006 RTP in Avondale, one a westward extension to the I-10 West LRT corridor and the second along the UPRR corridor are not shown on the HCT plan in the 2010 Update. However, commuter rail planning has targeted the UPRR corridor

for additional planning as witnessed by completion of the Yuma West Corridor Development Plan, as discussed below.

Park-and-Ride Facilities/Transit Centers. There are no regionally financed park-and-ride facilities or transit centers proposed in the draft RTP within the city limits of Avondale. However, the City expects the work being done as part of the Avondale City Center Transit Center project will be part of the RTP based upon its location, land use densities, and future transit needs.

Yuma West Commuter Rail Corridor (May 2010)

The Yuma West corridor is designated as an “eligible high capacity route” by the Regional Transportation Plan. The corridor would assume future use of the existing Union Pacific Railroad (UPRR, Phoenix Subdivision) right-of-way for high capacity transit (i.e., BRT, LRT, or commuter rail). While not scheduled for transit development, the RTP recognizes that the corridor is an urban linear right-of-way opportunity that should be preserved for future transit. Re-establishment of a rail connection, i.e., the Wellton Branch, between the Phoenix metropolitan area and Yuma would be one of many steps needed to support the “Golden Triangle” vision of interconnecting Phoenix, Los Angeles, and Las Vegas via high-speed rail. Potential byproducts of this overall vision would be additional opportunities for passenger rail service, assistance with commodity distribution, and manufacturing at the State level.

Advance planning for the corridor has been initiated with completion of the Yuma West Commuter Rail Corridor Development Plan (May 2010). The study involved an evaluation of the practicality and potential cost-effectiveness of using the existing UPRR right-of-way for commuter rail service. The corridor segment extended 44 miles from downtown Phoenix to Arlington (14 miles west of Buckeye), passing through Avondale.

Proposed Avondale Station. Within Avondale one station was included in the corridor development plan at Avondale Boulevard and Buckeye Road. The concept for the station proposed these functions be included: park-and-ride, kiss-and-ride, and bus transfer bays. Two adjacent stations would be three miles away: one at 91st Avenue and Harrison Street (Tolleson) and one at Litchfield and Buckeye Roads (Goodyear Airport). Thus, the southern part of Avondale would be well-served with high speed-high capacity commuter rail service connection to downtown Phoenix.

From the Avondale station the estimated trip time, including station dwell times, would be about 30 minutes. Ridership forecasts (year 2030) for the Avondale station ranged from 40 to 350 depending upon how the commuter rail line would be interlined with other possible commuter rail line in the region. The combination of the three stations (Goodyear Airport-Avondale-Tolleson) resulted in boarding estimates ranging from 240 to 880. In most of the scenarios tested the Goodyear Airport station had more boardings projected than the other two stations.

Proposed Operating Plan. The proposed operating plan for the line would entail three stages, with an initial stage of 30-minute headways in the weekday peak periods to Buckeye (30 miles from downtown Phoenix). The second phase would add off-peak service to the same line. The ultimate plan would have 30-minute peak headways, 60-minute off-peak headways, and extend service to Arlington west of Buckeye.

Commuter Rail Supportive Efforts. Related to the UPRR corridor, City policy and planning efforts should focus on preserving the right-of-way for transportation purposes and circulating a land use plan for the entire length through the city. Within the targeted station areas (especially around Avondale Boulevard and the Litchfield Road-Dysart Road segment) various policy and planning steps should be scheduled:

- to work with the city’s regional transportation partners to identify the specific right-of-way needs for a high capacity transit route and associated station areas, and ensure (through policy actions) that any future development would not encroach on this right-of-way.
- to identify suitable parcels for the station sites and related transit/access functions.
- to facilitate land use and urban design actions—to be adopted as part of the City General Plan, and included in subsequent planning and zoning documents—that would be supportive of future transit usage.

Southwest Valley Local Transit System Study (ongoing)

The purpose of the MAG-sponsored Southwest Valley Local Transit System Study (SWVLTSS) is to identify opportunities and strategies for improving the existing transit service in the Southwest Valley and develop a short, mid, and long range local transit plan that effectively provides circulation within the southwest valley and also connects to the regional transit system. The study area includes portions of the City of Phoenix, City of Avondale, City of Goodyear, City of Tolleson, City of Litchfield Park, Town of Buckeye and surrounding unincorporated portions of Maricopa County.

Proposed 2030 Transit Plan

Basis for Providing High Quality Transit Service in Avondale

In guiding transit development in Avondale, the importance of the Long Range Transit Plan as a **policy document** cannot be overstated. Once adopted as part of the Transportation Plan, this Long Range Transit Plan will provide the policy guidance to ensure **high quality** public transportation can be offered to Avondale residents in the future. Thus, the essence of the Plan is to give direction to the programming and development of on-going transportation improvements toward achieving the quality of service envisioned by the long range plan.

With regard to transit’s quality of service in Avondale, it will largely depend upon the “running way” available for the various routes—e.g., tracks for rail transit, lanes for freeways, and streets for bus transit. An exclusive running way as offered by light rail transit or commuter rail in its own right-of-way results in a higher level of service being provided to the passengers.

For a bus route to emulate this exclusivity in its running ways (i.e., on freeways and streets), then various priority treatments—for transit—are needed on those freeways and streets. Thus, this focus on transit quality results in a Plan that depends upon how the freeways and streets in and around Avondale are “managed and operated”—not just today but in the longer term. Guiding the Plan is a transit functional classification hierarchy of the transportation network as shown in Table 5-4 and described further below. While railroad rights-of-way and the I-10 freeway is part of the network, the focus is on the City’s street network because most of Avondale’s future transit services will use city streets.

Transit Operations Characteristics

Following is the recommended hierarchy of transportation management and transit operations characteristics for the future transportation network in Avondale:

1. High Capacity Transit (HCT)/Premium Transit Quality
2. Major Transit Quality
3. Express
4. Local/Circulator/Feeder

High Capacity Transit (HCT)/Premium Transit Quality—includes commuter rail (CR), bus rapid transit (BRT), and light rail transit (LRT). These services cater to longer trip lengths, offer higher quality and higher capacity service, and provide significant regional connectivity. Aside from any rail transit facilities, these services would be on the freeways and major arterials. They would reflect a “Transit First” policy and provide linkages among all transit centers and major station stops in Avondale. Average route speed would be relatively high and stop spacing will range from medium (BRT and LRT) to long (CR).

Recommended HCT services in Avondale include three facilities:

- Commuter Rail along the Yuma West UPRR—this HCT facility would take advantage of the existing railroad rights-of-way, and have a primary Avondale station at the railroad’s intersection with Avondale Boulevard (and Buckeye Road).
- LRT along a corridor integrated with the City Center development (and generally paralleling Van Buren Street/McDowell Road) and its associated transit center. North-south connections (and associated crossings of I-10 and the Agua Fria River) would be to/from transit centers along Dysart Road (existing) and 99th Avenue (future/eventual western terminal of the HCT I-10 west corridor—i.e., from the vicinity of 79th/83rd Avenue).
- BRT on the I-10—this HCT service could develop over time in combination with increased freeway express bus service.

Table 5-4. Transit Functional Classification of Avondale Transportation Network

		TRANSIT FUNCTIONAL CLASSIFICATION				
		High Capacity Transit/ Premium Transit Quality	Major Transit Quality	Express	Circulator/Feeder	Local
Transit Service Type		Commuter Rail, Light Rail Transit, Bus Rapid Transit	Super Grid Bus, Modern Streetcar	Express Bus	Local Bus, Circulator Bus, Feeder Bus, Demand-Responsive	
Freeway/Street Functional Classification		Rail R/W, Freeways and Major Arterials	Major and Minor Arterials	Freeways	Major and Minor Roadways	Collectors and Local
Recommended Avondale Transportation Facilities		UPRR, I-10, Van Buren, Dysart/Van Buren/ Roosevelt/99th Ave Corridor (LRT)	Indian School, McDowell, Buckeye, Dysart, Avondale Blvd, 99th Ave	I-10	Thomas, Roosevelt, Lower Buckeye, Broadway, Litchfield, Dysart, El Mirage, Avondale, 107th	Not Applicable
Transportation Management and Operations Characteristics	Transit Priority	"Transit First" policy: extensive application of dedicated/exclusive lanes; queue bypasses; traffic signal priority	Some intersections with traffic signal priority	"Transit First" policy: extensive application of dedicated/exclusive/ HOV lanes on freeway itself and ramps	Any congested intersections would have traffic signal priority	None
	Pedestrian Linkages	Convenient, well designed paths should be available in all directions from each stop to adjacent neighborhoods and activities		None	Standard sidewalk connections should be available from each stop to adjacent neighborhoods and activities	
Transit Operations Characteristics	Average Route Speed (between stops)	High: equivalent or better than street traffic	Medium: generally equivalent to street traffic	High: better than freeway traffic	Low to Medium: some stretches of arterial runs equivalent to street traffic, but most stretches slower	Low: slower than street traffic
	Station/Stops	High quality design; passenger amenities available; generally no closer than one mile apart	Shelters at most stops; modest passenger amenities at high demand stops	None	Shelters at some primary stops	Bench at some stops
	Intelligent Transportation Systems Technology	Real-time bus status shown on a sign/monitor at each station/stop	Real-time bus status shown on a sign/monitor at high demand stops	N/A	None	

Major Transit Quality—includes bus (or streetcar) on major arterial streets with a range of service enhancements possibly based upon application of traffic priority measures (e.g., traffic signal priority, queue jumpers). These services focus on a range of trip lengths from long to short. However, they provide sufficiently high quality service which should be attractive to commuters having longer trip lengths. These services have medium stop spacing, and average speeds are constrained by normal street speed limits and the number of bus stops along the route. In the overall transit system they function both as a line haul and a feeder to the HCT and express bus services. Super Grid services within the Phoenix region would fit within this category.

The arterial streets recommended for major transit quality actions are: Indian School Road, McDowell Road, Van Buren Street, Buckeye Road, Dysart Road (Western to Indian School), Avondale Boulevard (Lower Buckeye to McDowell), and 99th Avenue.

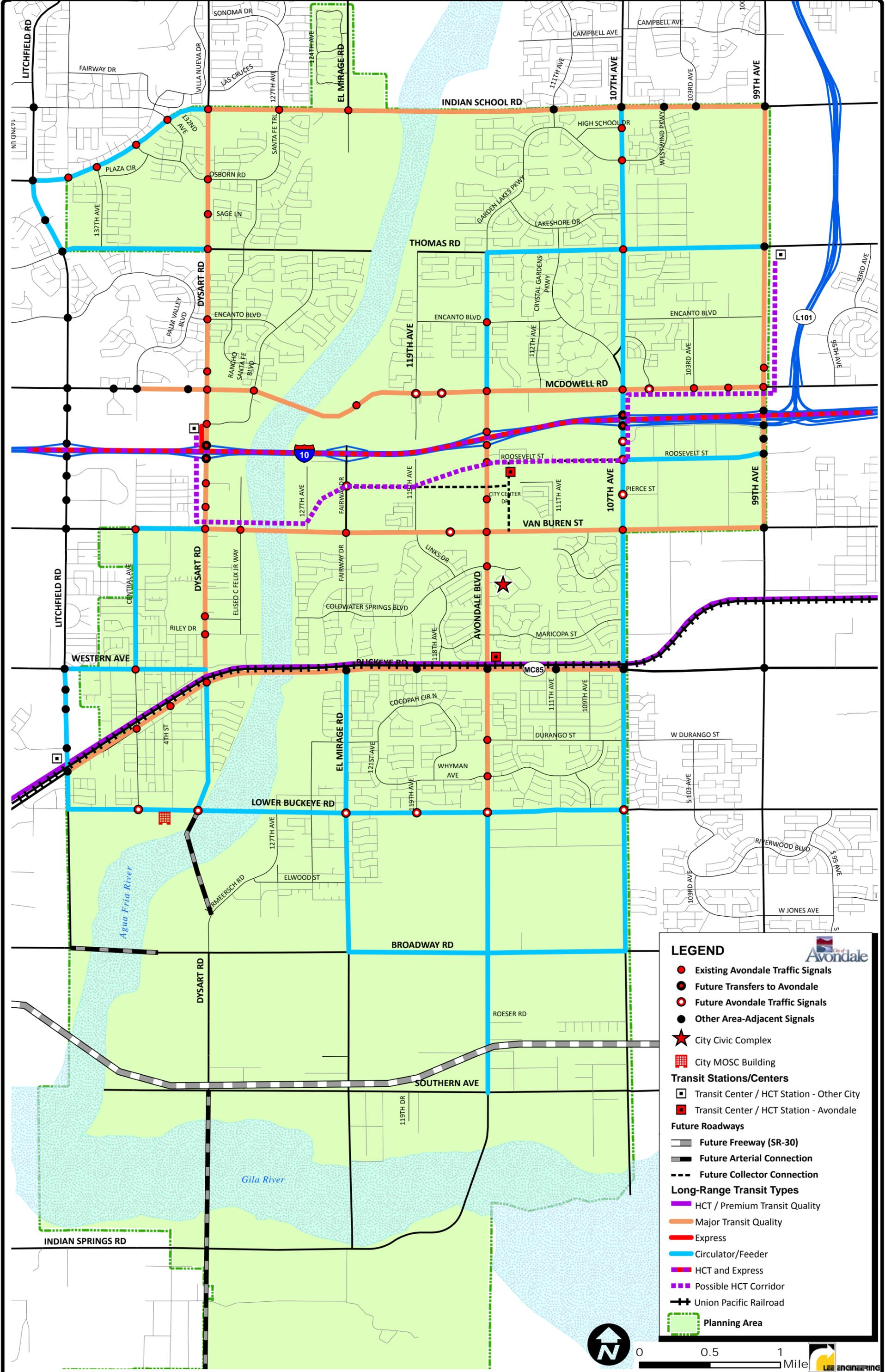
Express—includes non-stop or minimum stop bus-on-freeway services. These services also cater to longer trip lengths and offer high quality, high speed service, but with connectivity normally limited to downtown Phoenix.

I-10 is the only freeway section within the city limits recommended for express bus services by 2030.

Local/Circulator/Feeder—includes bus services providing neighborhood circulation, community circulation and connections, and demand responsive (i.e., dial-a-ride) services. These services are generally lower productivity services that cater to short, non-work purpose, intra-community trips. Like line haul services, local/circulation services can provide a useful feeder function to HCT services.

The arterial streets recommended for circulator/feeder functions are: Indian School (western portion), Thomas Road, Roosevelt Street (in concert with possible LRT), Lower Buckeye Road, Litchfield Road (Lower Buckeye to Western), Dysart Road (Lower Buckeye to Western), El Mirage Road (south of Buckeye), Avondale Boulevard (from future SR-30 to Lower Buckeye to support planned Employment and Commercial Corridor, and McDowell to Thomas), and 107th Avenue. Depending upon the realized land uses developed in the area of the future SR-30 freeway, there may be cause to add some street segments (in addition to the planned route along Avondale Boulevard) as “circulator/feeder” south of Lower Buckeye Road. However, the demand for HCT or express transit along the SR-30 corridor would appear to be unlikely by 2030 (even though it was considered in earlier RTPs).

A plan view of the resulting recommended Long Range Transit Plan for Avondale depicting these transportation facilities by transit functional classification is shown on Figure 5-2. The recommended facilities were also listed within Table 5-4.



LEGEND

- Existing Avondale Traffic Signals
- Future Transfers to Avondale
- Future Avondale Traffic Signals
- Other Area-Adjacent Signals
- ★ City Civic Complex
- City MOSC Building
- Transit Stations/Centers**
- Transit Center / HCT Station - Other City
- Transit Center / HCT Station - Avondale
- Future Roadways**
- ▬ Future Freeway (SR-30)
- ▬ Future Arterial Connection
- ▬ Future Collector Connection
- Long-Range Transit Types**
- ▬ HCT / Premium Transit Quality
- ▬ Major Transit Quality
- ▬ Express
- ▬ Circulator/Feeder
- ▬ HCT and Express
- ▬ Possible HCT Corridor
- ▬ Union Pacific Railroad
- ▬ Planning Area

Long-Range Transit Plan in Avondale

Significantly, this Plan places more emphasis on managing the city’s transportation facilities in order to eventually provide high quality transit service to City residents. Given the 20-year outlook, the specific routings are not as critical as is preserving and providing the opportunity for future high quality transit service. Implementation of this Plan, through policy and programming actions, will allow for provision of high quality transit services as demand warrants. Implementation of the Plan will be coordinated with the findings of the current Southwest Valley Local Transit System Study being administered by MAG.

Terminal/Stop Facilities

Terminal/Stop facilities include transit centers, park-and-ride facilities, stations, and bus stops (with and without amenities, such as shelters). Transit centers are more like “hubs” where multiple routes come together and foster connectivity. Park-and-ride spaces are normally provided with these centers. However, there can also be stand-alone park-and-ride facilities that serve a single route or two, and do not function as a hub.

The proposed Long-Range Transit Plan for 2030 indicates four major transit points within, or adjacent to, the City of Avondale:

- A Transit Center within the City Center (as proposed in the *2010 Transit Center Study*). This station could also serve as a future HCT station for a connection to the planned I-10 West HCT/LRT extension.
- Two other HCT stations would be relied on by the City—the existing transit center (Park-and-Ride facility) in Goodyear near Dysart and McDowell Roads and a prospective one near 99th Avenue and Thomas Road (as the interim terminus of the HCT I-10 west corridor). Both of these locations would be accessible via proposed Major Transit Quality lines within the City.
- A fourth HCT station would serve the future commuter rail line on the UPRR at the intersection with Avondale Boulevard. This station would require bus transfer/loading zones and park-and-ride facilities. There would also be two adjoining commuter rail stations, one in Tolleson at 91st Avenue to the east and the other in the vicinity of the Goodyear Airport to the west.

Chapter 6: BIKE PLAN

Bikeways and pedestrian facilities accommodate non-motorized modes of transportation, and the option to choose those modes, within the City. The proposed Bike Plan for the City of Avondale is consistent with the goals and objectives set forth in the Bicycling Element of the City's General Plan and furthers the prospect of providing a network of "complete streets." The proposed plan guides the effort to create a system of bikeways that can attract users through lesser travel operating costs, healthier living, and environmental consciousness. While immediate needs may determine near-term improvements, the Plan assumes and the system relies on a comprehensive network of bicycle and pedestrian provisions coupled with amenities/attractions like parks, schools, community centers, commercial areas, employment centers, and transit routes.

Existing Bikeways

A bikeway (bike lane) is defined in the City's General Engineering Requirements Manual as: "an integral section of a roadway that is marked for exclusive bicycle use...Located on each side of the roadway bike lanes are always one-way in the direction of the traffic flow." Additionally, bikeways may be comprised of "shared streets, bike lanes, or multiuse paths in any combination," and designated by signing or by placement on a map. The previously presented Figure 4-2 showed the current bicycle provisions within the City, which included bike lanes and paved shoulders. There are currently about 74.5 miles of directional bikeways within the City—an increase of about 13% in the last six years. These bikeways generally are associated with three sub-networks located along Avondale Boulevard, along 107th Avenue, and along Dysart Road in the vicinity of I-10 and farther north.

Bikeway Improvement Projects

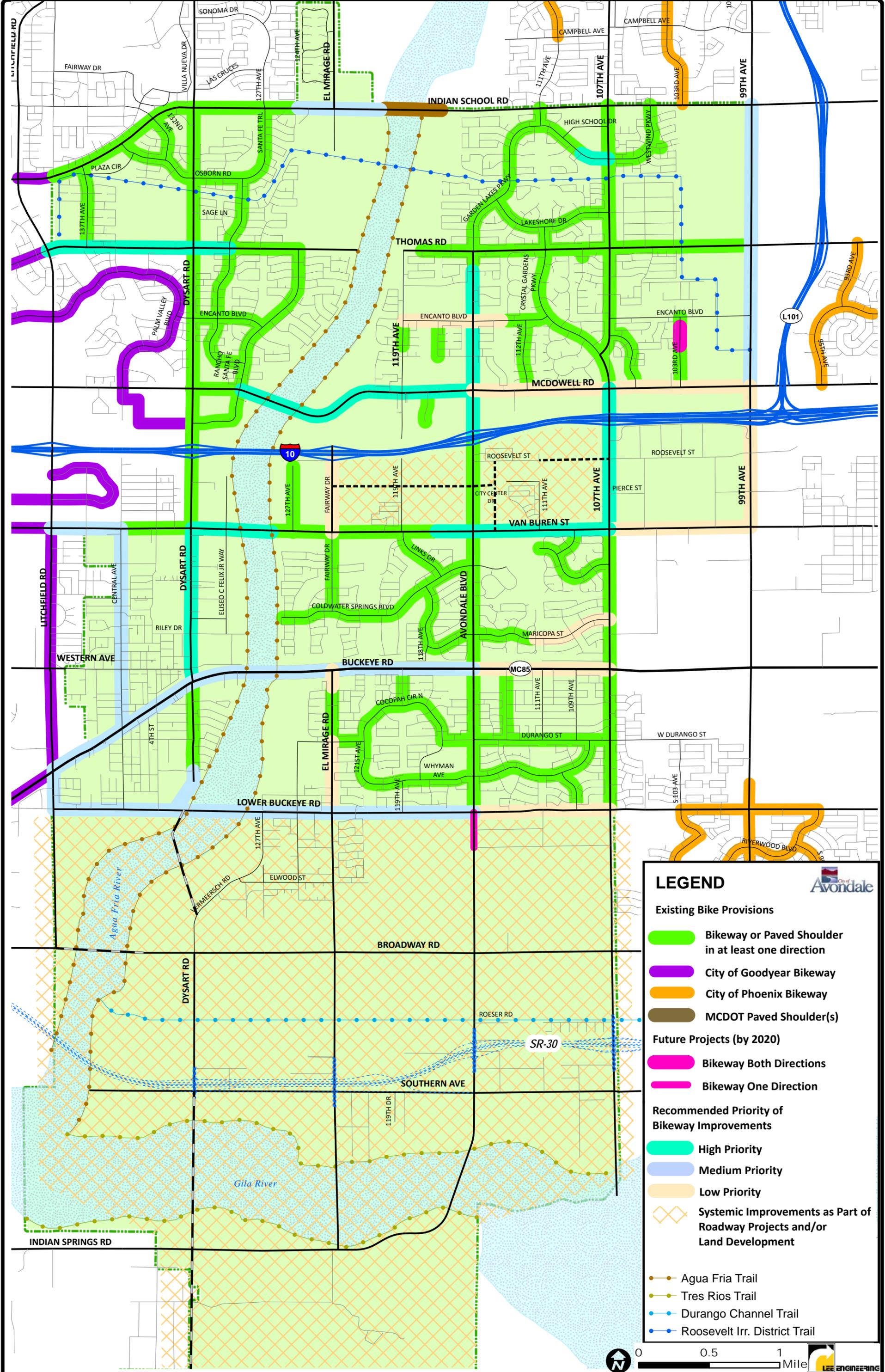
There are several planned improvement projects which could implement sections of bikeways as part of roadway improvement projects. In addition, the City has recently updated their pavement preservation program. Generally, the expansion of bikeways will rely on being a part of other roadway widening/improvement and pavement preservation projects. Providing multimodal accommodations along with the roadway construction (i.e., towards implementing a "complete street") does permit for multimodal choices and contributes to the overall implementation of the bikeway system.

To prioritize the needs for implementing a complete bikeway system within the City, a scoring methodology was followed to rank certain segments of the incomplete system. The score, which tops out at 16, has four components contributing a maximum of four points each (partial points possible):

- Connection Type:
 - 1—The segment provides limited connectivity; its implementation is generally only for the overall good of the complete system.
 - 2—The segment would link other bikeways within a neighborhood sub-system (or transit element)
 - 3—The segment represents a minor gap that would effectively complete a larger sub-system or network of bikeways.
 - 4—The segment provides a critical linkage between networks of bikeways.
- Implementation Effort:
 - 1—Little to no provisions in place to implement bikeways.
 - 2—Some provision already in place—e.g., edge striping.
 - 3—Partial improvements, including incomplete bikeways are present.
 - 4—Only minor additions/improvements needed to provide bikeways.
- Associated Projects:
 - 1—Requires future bikeway only project.
 - 2—Part of a current bikeway only/related project.
 - 3—Requires future inclusion with a larger roadway improvement project.
 - 4—Part of a current/planned roadway improvement project.
- Associated Area:
 - 1—No particular associations (i.e., the segment is needed for overall system completion).
 - 2—Near to a planned infill development district or other equally active area.
 - 3—Near a recreational amenity.
 - 4—Near a community facility.

Based on this scoring methodology, the provisions already existing, and the development plan per the General Plan, the potential developable segments were scored and are presented in Figure 6-1. Additional consideration was given to areas near transit service/stops and locations/segments with bicycle-related crash history. The top segments scored 12.5 out 16 and both involved 107th Avenue and providing connections of already established sub-networks of bike lanes. Segments scoring 10 or more points were considered “high priority,” which would equate with implementing within the next five years. The next range of scores (7 up to 10) were considered “medium priority,” with an expected outlook of no more than 10 years. Low priority projects may take as long as 15 years to complete, although could be implemented sooner if opportune roadway improvement projects should occur (either at the City’s discretion or as part of land development).

The City’s Standard Details pertaining to roadway cross-sections all include a provision for four-foot bike lanes in each direction of roadways other than local streets. On-street bike lanes will be provided as part of all new roadway improvement projects.



LEGEND

City of Avondale

Existing Bike Provisions

- Bikeway or Paved Shoulder in at least one direction
- City of Goodyear Bikeway
- City of Phoenix Bikeway
- MCDOT Paved Shoulder(s)

Future Projects (by 2020)

- Bikeway Both Directions
- Bikeway One Direction

Recommended Priority of Bikeway Improvements

- High Priority
- Medium Priority
- Low Priority
- Systemic Improvements as Part of Roadway Projects and/or Land Development

● Agua Fria Trail
 ● Tres Rios Trail
 ● Durango Channel Trail
 ● Roosevelt Irr. District Trail

Recommended Bicycle System Improvements

Bike Plan Recommendations

The following recommendations are proposed to enhance the utilization of bicycling as a travel mode within the City:

- Require all newly constructed and improved roadways on arterial- and collector-class roadways and all pavement preservation projects to conform to standard cross-sections, which include bike lane provisions, and supporting guidelines to develop overall complete streets.
- Adopt a complete streets policy to accommodate multi-modal transportation needs when designing and improving all new and existing streets. Use current MAG “Complete Streets Guide” and other approved industry accepted guidelines.
- Develop a Bike Master Plan
- Work with developers to provide bicycle-friendly amenities and connections and/or integrate similar aspects into City projects as appropriate.
- Review public buildings for bicycle-friendly amenities—work with City facilities, parks, and police divisions.
- Strive to achieve a Bike Friendly Community rating through the League of American Bicyclists.
- Coordinate efforts and potential projects with information presented in the recently adopted “Parks, Recreation and Trails Master Plan” and with an ultimate goal of a bikeway network that connects to the City’s system of parks.
- Implement a roadway re-striping program to include provisions for bike lanes when and where feasible.
- Coordinate with adjacent jurisdictions to achieve continuity of bike lanes across jurisdictional boundaries.

Chapter 7: ADVANCED TRAFFIC MANAGEMENT SYSTEM

An Advanced Traffic Management System (ATMS) results from the marriage of a roadway system and implemented Intelligent Transportation Systems (ITS) which include a variety of technology such as traffic detectors, monitoring cameras, and communication systems to permit traffic monitoring, optimized traffic signal timing, control over traffic flow, and increased maintenance efficiency by receiving real-time information from the field. The City has already developed an ITS Strategic Plan (July 2010) which is summarized within this chapter.

Purpose of the ITS Strategic Plan

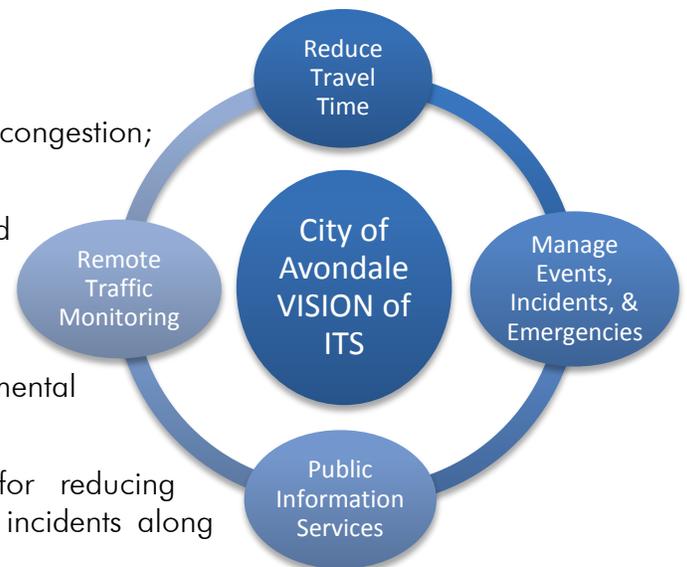
The Avondale ITS Strategic Plan is a tool for implementing a system of transportation strategies based on a set of known opportunities. It is a document that presents the existing state of the City's Intelligent Transportation Systems (ITS) and defines the interim, as well as long-term, ITS needs for the City. These needs are discussed and explained in terms of a regional ITS context. In addition, the plan's purpose is to establish the need for ITS investments in the City, to identify priorities to direct ITS investment, and to identify specific projects to be deployed to address needs.

The City's Vision of ITS

ITS incorporates information and communications technology with transportation infrastructure to manage vehicles, loads, and routes to improve safety and reduce vehicle wear, transportation delay, and fuel consumption. Real-time information is used to assimilate and manage the components of a conventional transportation system.

ITS can allow the City to:

- Alert motorists and transit operators of congestion; improve safety
- Provide real-time transit arrival and departure information to passengers
- Detect and respond to traffic incidents
- Reduce corridor congestion, environmental pollutants, and fuel consumption
- Participate in Regional ITS efforts for reducing response time to, and recovery from, incidents along Interstate 10.



ITS Inventory

In order to formulate a plan for implementing future ITS elements within the City, an accounting of its current inventory of intelligent transportation related infrastructure that is operated and maintained is required. The various infrastructure items are discussed below, as they apply to the City of Avondale.

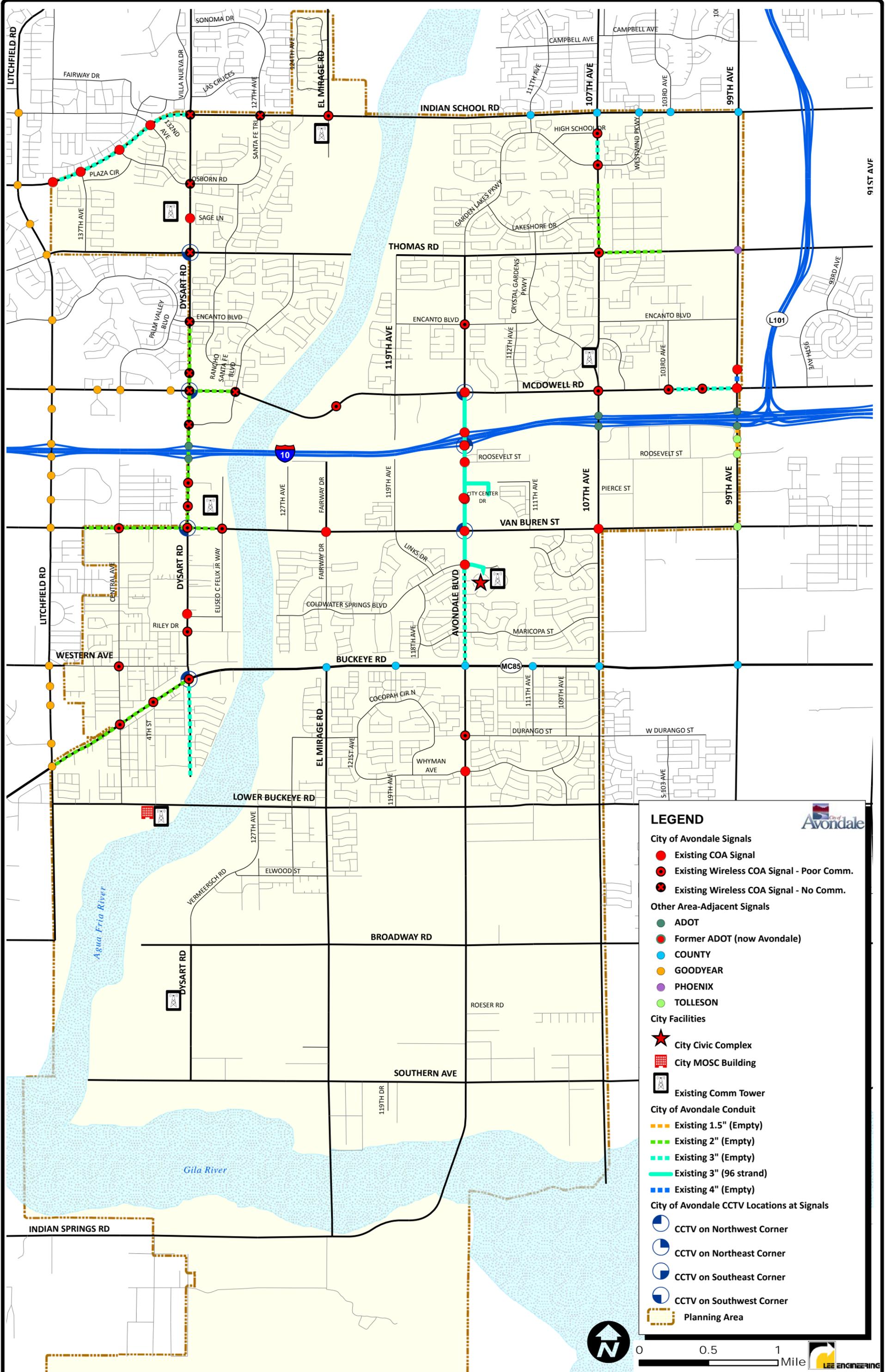
Traffic Signal System

There are a total of 72 traffic signals that operate within or at the border of the City limits. The City controls 46 of these traffic signals, while the rest are operated by other jurisdictions. ADOT controls six (6) traffic signals at three of the four interchanges along I-10 within Avondale. MCDOT operates ten (10) traffic signals: five (5) along Indian School Road and five (5) along Buckeye Road (MC-85). The traffic signal at 99th Avenue and Thomas Road is operated by the City of Phoenix; the City of Tolleson has jurisdictional control over three (3) signals along 99th Avenue south of I-10; and the City of Goodyear operates two (2) traffic signals: one (1) at Litchfield Road and Buckeye Road (MC-85) and another at Litchfield Road and Thomas Road. Although the City has existing conduit in place along some roadway segments, no physical communication medium (fiber optic or otherwise) is in place at this time, except along Avondale Road between McDowell Road and the City Civic complex. Therefore, communication to/from the majority of traffic signal systems is facilitated by wireless communications via line-of-sight between adjacent signalized intersections and between city buildings and water distribution sites throughout the City. Figure 7-1 shows the existing ITS infrastructure including traffic signal interconnect conduit, wireless communication, and Closed Circuit Television (CCTV) locations in the study area.



Space has been identified adjacent to the Civic Center complex for establishing a permanent Traffic Operations Center (TOC) within a building yet to be constructed. Until that time, an interim TOC has been built within space dedicated in the City's existing Municipal Operations Service Center (MOSC) at the southwest corner of Lower Buckeye Road and 4th Street. Existing control of and communication (when functioning) with the City's wirelessly connected traffic signals will continue from its ad hoc location within the City's traffic operations shop until the permanent TOC is established.

The creation of a formal TOC, in either its interim or permanent location, allows for the efficient gathering and dissemination of information, at a degree not possible currently, so that City staff can effectively assess and respond to the needs and conditions of the City's transportation system. For instance, the larger physical area of the TOC allows for multiple personnel to view (via wall-mounted video display), discuss, and respond to traffic conditions (e.g., construction zones) or incidents that may be occurring. The technology of the TOC also makes administering special traffic signal timing (as directed by a signal technician or police officer) and/or collecting traffic volume data routine tasks. The TOC also serves as a gateway for enabling regional communication, collaboration, and operational connectivity.



LEGEND

City of Avondale Signals

- Existing COA Signal
- Existing Wireless COA Signal - Poor Comm.
- Existing Wireless COA Signal - No Comm.

Other Area-Adjacent Signals

- ADOT
- Former ADOT (now Avondale)
- COUNTY
- GOODYEAR
- PHOENIX
- TOLLESON

City Facilities

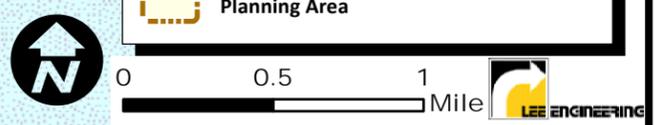
- ★ City Civic Complex
- City MOSC Building
- Ⓜ Existing Comm Tower

City of Avondale Conduit

- Existing 1.5" (Empty)
- Existing 2" (Empty)
- Existing 3" (Empty)
- Existing 3" (96 strand)
- Existing 4" (Empty)

City of Avondale CCTV Locations at Signals

- ⊙ CCTV on Northwest Corner
- ⊙ CCTV on Northeast Corner
- ⊙ CCTV on Southeast Corner
- ⊙ CCTV on Southwest Corner
- Ⓜ Planning Area



Existing City ITS Infrastructure

Traffic Signal Controllers and Coordination

The City of Avondale primarily uses Naztec 2070 “LITE” controllers and Type 332 cabinets at its signalized intersections. Naztec’s ATMS.now is the name of the software used to run and interface with the controllers. Several intersections controlled by the City do not communicate with a central system. These intersections run time of day plans and are unable to send an alarm if they are not working properly. The City uses Cisco equipment for its wireless communication. It is unlicensed and there have been over 59 reported competing frequencies. Avondale has an integrated communication system which makes it more difficult to give other agencies permission to access its transportation devices.

Approximately one half of Avondale’s intersections use video detection. The remaining intersections have a mixture of loop detection and no detection.

Communications

Over the years, the City has implemented some sections of underground conduit for future communications use. As indicated previously in Figure 7-1, the locations, extents, and conduit sizes vary. Current communication with the City’s traffic signals is facilitated by a network of city buildings/water distribution sites and wireless radios installed at 29 of the City’s 46 signals. However, all of the wireless traffic signals have communication conflicts rendering them isolated from the system. Further, overall degradation of the system over the years has rendered it useless and in need of replacement/upgrade.

Regionally, as part of the Arizona Department of Transportation Regional Community Network (RCN), a fiber communication network between MAG member agencies is being implemented to allow traffic operation centers and public safety agencies to better communicate and respond more efficiently to transportation related issues. At this time ADOT is proposing to extend the communications network to the west valley, including Avondale, with the FY2015 TIP as part of the FMS extension project.

Emergency Vehicle Preemption

Most of the City traffic signals employ preemption sensors that permit cycling of the signal phasing to provide green lights corresponding with the approaching emergency vehicle. The City will be implementing the use of the 2097 Detector and LED Confirmation Light assembly for new installations of the emergency pre-emption equipment. Additionally, the controller cards within the signal cabinets are accessible by laptop computer to assist with efficient trouble-shooting of bad detectors and chips.

CCTV Cameras

Five of the City’s 46 traffic signals have closed-circuit television (CCTV) cameras installed for remote viewing by City technicians and safety/emergency services personnel (although overall communications degradation is negating access/use). The CCTVs are located at major intersections where traffic congestion and the potential for incidents is the greatest. The cameras are able to pan, tilt, and zoom to show traffic conditions, near-by incidents, or traffic

signal indications. The cameras run over Internet Protocol (IP) and do not rely on the Camera Cameleon™ software utilized by most agencies in the Valley (e.g., ADOT), and in general need to be upgraded as most are six or more years old. As shown previously in Figure 7-1, some cameras are associated with traffic signals that do not have adequate communication to the central system.

Dynamic Message Signs

The City owns four portable Dynamic Message Signs (DMS) which are used for traffic control relating to work zones, special events, and other applicable needs. The usefulness of these signs could be enhanced by adding remote access capability and an integrated CCTV camera.

Dynamic Message Signs provide a number of benefits to the motoring public. DMS allow display of real-time information to help motorists to make informed travel route choices. Appropriate messages at critical roadway points offer drivers alternative paths to their destination helping to reduce overall travel time and roadway congestion while improving air quality and saving fuel. Safety is improved by warning motorists of approaching incidents to avoid sudden lane changes and awareness to reduce secondary collisions. Advance warnings relating to upcoming road work or special events allow motorists time to pre-plan upcoming activities well in advance of condition changes. Messages could also be provided for special events such as parking conditions, lane control features, speed limit reductions, and providing special information dissemination as needed such as Amber Alerts.

Connection to the regional backbone would allow information to be shared well in advance of an incident between municipalities on regional facilities from a single office location or the ability to post a continuation of messages along the travel corridor to better inform motorists of conditions. Potential for placing DMS on arterial roadways or other City streets controlled specifically by the City could allow messaging aimed more specifically to local residents. Some specific examples of continuing or enhancing DMS that may benefit City residents directly is by informing motorists to the appropriate travel times to the Phoenix area using alternative routes such as I-10, MC-85, and/or the future SR-30, posting travel times based on different travel modes or lane designations, notifying motorists of upcoming special events within the City, helping direct traffic to parking areas for special events at PIR, at the City Center, or other major event locations helping to avoid congestion along City streets.

ITS Related Issues

The following are some of the transportation related issues that the City is currently facing, which would be resolved through effective ITS deployment.

Traffic Signal Coordination

Most of Avondale's traffic signals along its corridors are coordinated. Traffic signal controllers not connected to the central system experience time drift which can cause inefficient or improper coordination. Likewise, a breakdown in communication can also

affect coordination. Lack of signal coordination results in undue delays and increased travel times, as well as hinders seamless traffic operations. With the City currently utilizing wireless communications to most of its traffic signals, reliability is an issue and a concern since the communications utilize line-of-sight which can be hindered by new developments, landscape growth, and congested communication bandwidth.

Traveler Information Dissemination

The City currently does not have the means to broadcast or distribute traffic-related information in a real-time context. Permanent dynamic message signs along with enhanced website-based information would be two ITS elements that could help bridge this information dissemination gap. Utilizing the regional 511 telephone system and “www.az511.com” website would improve traveler information dissemination in the City.

Event Traffic Management

The Phoenix International Raceway (PIR) is located within the City’s planning area (south of Gila River) so event-related traffic is a periodic concern. Routes to and from PIR typically consist of City roadways. Even though traffic is currently managed by the PIR event staff, with County oversight, that responsibility could easily transfer to the City in future years. The REACT group at the County reroutes and detours event traffic using portable signs, barricades, and cones. Major event intersections are directed by police. ADOT-operated DMS provide route information to drivers. Other events could include closures, restrictions, or incidents involving I-10 which divides the City, having the potential to divert large volumes of traffic onto parallel roadways traversing through the City.

Limited Resources

As is seemingly the case with all municipalities, especially of late, scarcity of funding sources magnifies the significance of arriving at cost-effective decisions regarding implementation of capital improvements. This is particularly troubling for the City of Avondale since its existing infrastructure basis is isolated and limited. However, use of City staff for planning, designing, installing, and maintaining ITS elements can prove to be very cost-effective (or time-saving) and beneficial to improving staff efficiencies, retention, and training.

Assessment of ITS Needs

Identification

Given the City’s emerging ITS infrastructure, many of the possible ITS elements are available for consideration within the City over the next 20 years. The City’s ITS needs were identified based on meetings conducted during the development of the ITS Strategic Plan that involved City of Avondale staff, representatives from other agencies and the desired goals.

Prioritization of Needs

Although the identified ITS needs may be desirable to have immediately, funding, base infrastructure needs, and interim remedies, will dictate their implementation priority. Re-establishing communication with certain traffic signals and enhancing the amount of data that

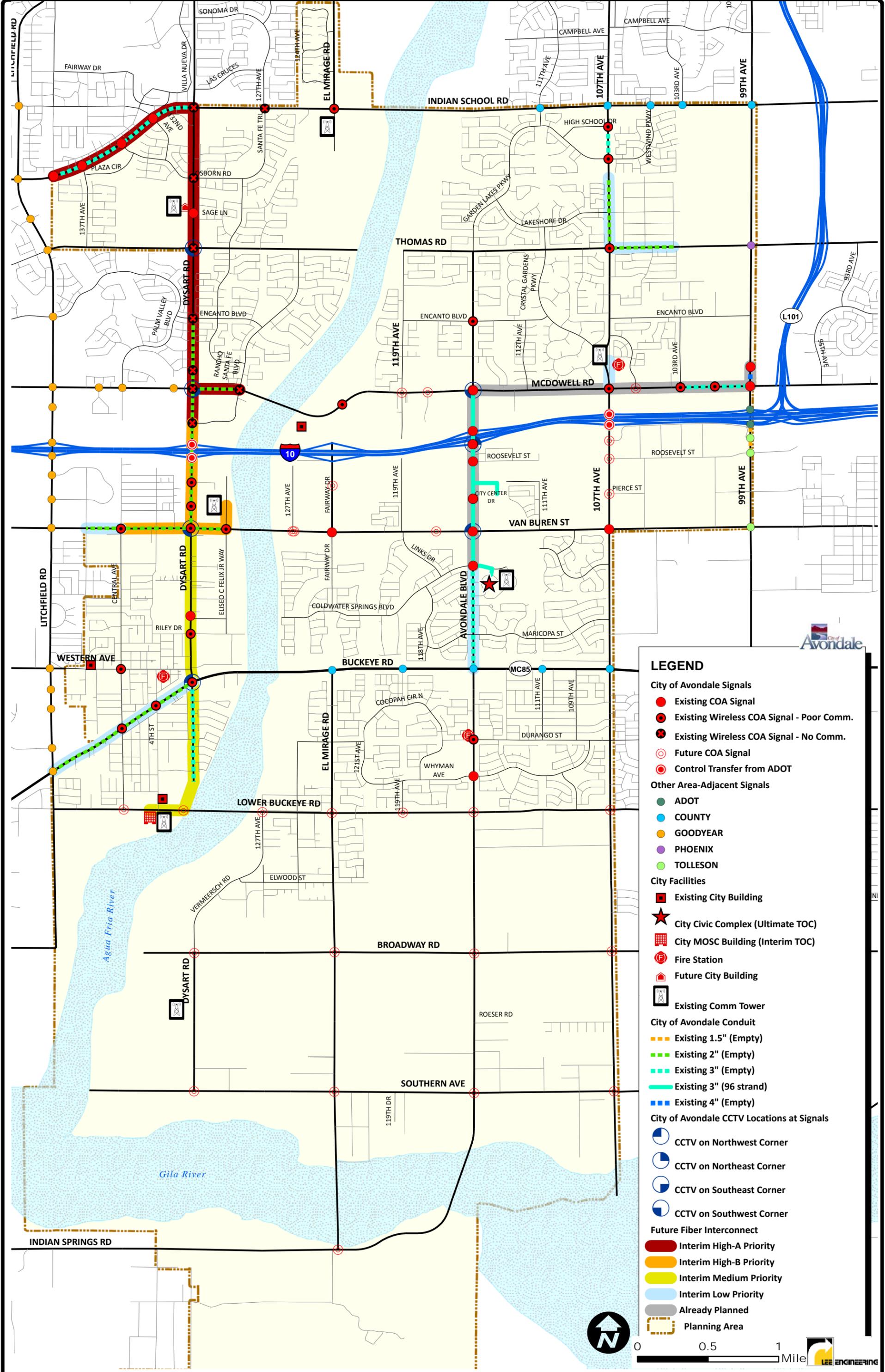
can be exchanged are immediate priorities for the City. Within the interim phase of implementing a complete ITS Strategic Plan, there are communication-specific priorities (see Figures 7-2 and 7-3 on the following pages). The remaining ITS needs are prioritized within the Long-Term phase of the plan (see Tables 7-1 and 7-2 below). As needed, the City may exercise discretion in adhering to the prioritized projects as unforeseen project/funding opportunities arise in the course of other events.

Table 7-1. Long-Term Medium Priority Needs

Description	
Expanded video surveillance	Use of driver feedback signs
Data collection stations & data extraction / storage	Incident management system (enhanced)
Dynamic message signs (permanent)	Interagency incident management
Automatic incident detection (enhanced)	AVL equipment for emergency vehicles
Interagency data sharing / coordination (enhanced)	Dynamic route mapping for emergency dispatch center

Table 7-2. Long-Term Low Priority Needs

Description	
Enhanced traffic control capabilities	Use of CCTV for remote monitoring (enhanced)
Use of probe vehicles for data gathering	Mobile access to incident management data (enhanced)
Dynamic detour routing	Flood detection (enhanced)
Real-time construction information	Work zone traffic management
Web-based traveler information (enhanced)	AVL equipment for maintenance vehicles
Transit signal priority / real-time arrival / departure information	



LEGEND

City of Avondale Signals

- Existing COA Signal
- Existing Wireless COA Signal - Poor Comm.
- Existing Wireless COA Signal - No Comm.
- Future COA Signal
- Control Transfer from ADOT

Other Area-Adjacent Signals

- ADOT
- COUNTY
- GOODYEAR
- PHOENIX
- TOLLESON

City Facilities

- Existing City Building
- ★ City Civic Complex (Ultimate TOC)
- City MOSC Building (Interim TOC)
- Ⓜ Fire Station
- Future City Building
- Ⓜ Existing Comm Tower

City of Avondale Conduit

- Existing 1.5" (Empty)
- Existing 2" (Empty)
- Existing 3" (Empty)
- Existing 3" (96 strand)
- Existing 4" (Empty)

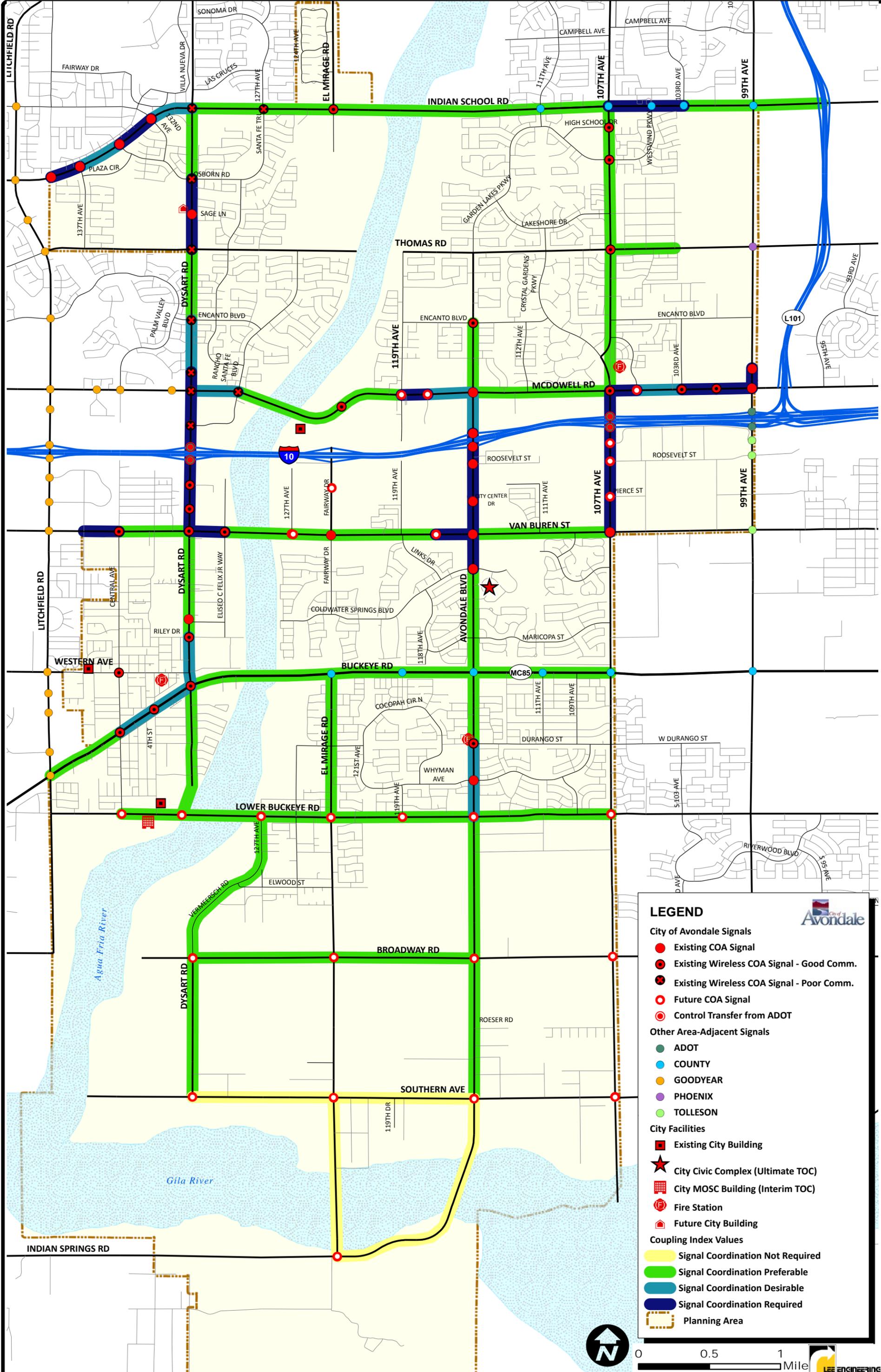
City of Avondale CCTV Locations at Signals

- Ⓜ CCTV on Northwest Corner
- Ⓜ CCTV on Northeast Corner
- Ⓜ CCTV on Southeast Corner
- Ⓜ CCTV on Southwest Corner

Future Fiber Interconnect

- Interim High-A Priority
- Interim High-B Priority
- Interim Medium Priority
- Interim Low Priority
- Already Planned
- Planning Area

Interim Phase ITS Priorities



LEGEND

City of Avondale Signals

- Existing COA Signal
- Existing Wireless COA Signal - Good Comm.
- ⊗ Existing Wireless COA Signal - Poor Comm.
- Future COA Signal
- Control Transfer from ADOT

Other Area-Adjacent Signals

- ADOT
- COUNTY
- GOODYEAR
- PHOENIX
- TOLLESON

City Facilities

- Existing City Building
- ★ City Civic Complex (Ultimate TOC)
- City MOSC Building (Interim TOC)
- Ⓜ Fire Station
- 🏠 Future City Building

Coupling Index Values

- Signal Coordination Not Required
- Signal Coordination Preferable
- Signal Coordination Desirable
- Signal Coordination Required
- Planning Area

Long-Term Priority Communication Links



Funding Sources

The City will not be able to bear the capital and design costs associated with the ITS projects to be implemented. Since many ITS projects can effect reduction in emissions or improve safety, Federal funding is available upon request and approval of the particular project. Also, since ITS can benefit other City divisions (police, emergency services, information technology), there is a real opportunity to share funding burdens—making ITS projects a cost-effective improvement endeavor. The table below provides further information about potential funding sources that may be available to the City for implementing its Intelligent Transportation System.

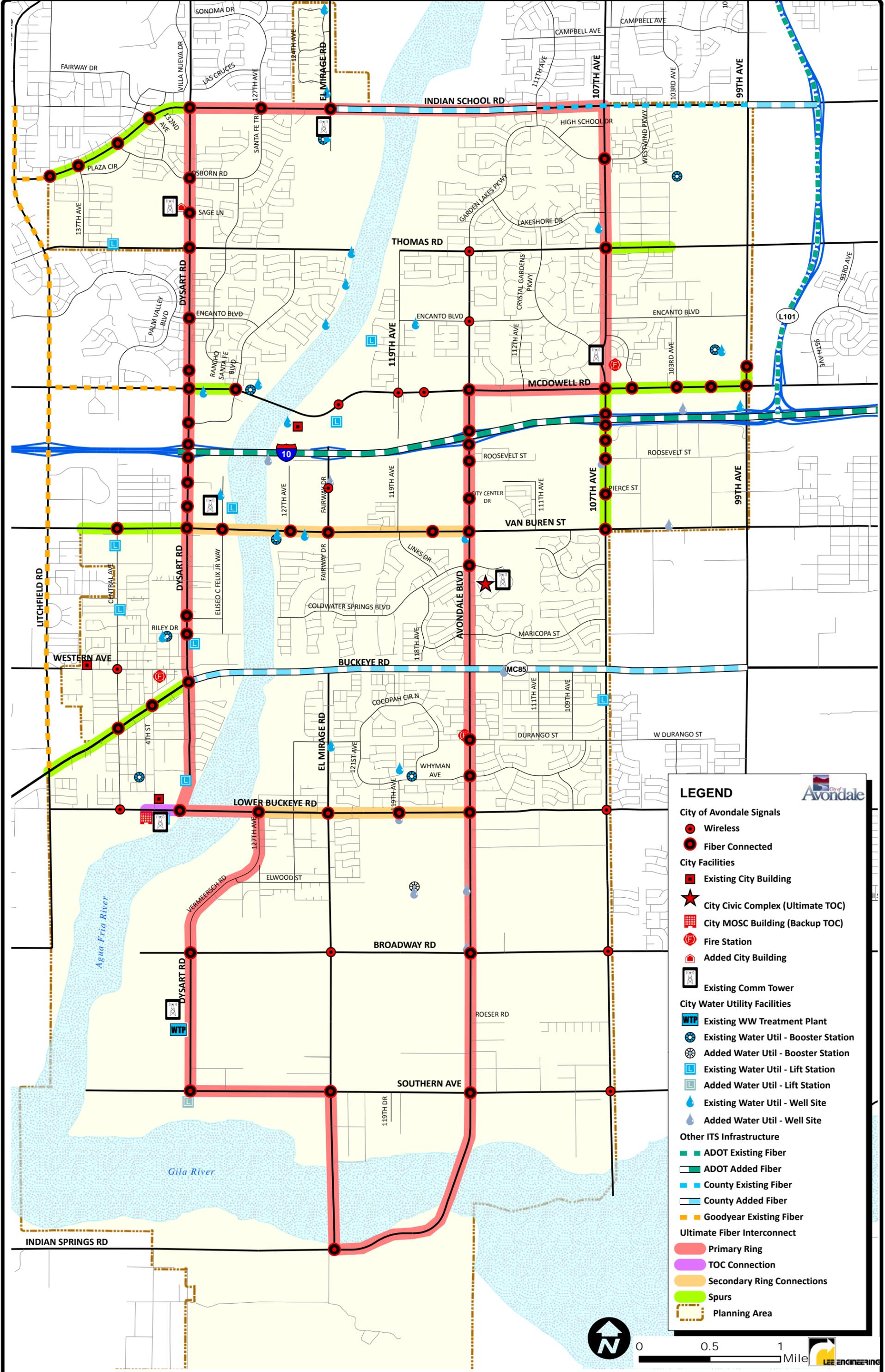
Table 7-3. Revenue Sources for ITS

Revenue Sources	Description
Highway User Revenue Fund (HURF)	The State of Arizona taxes motor fuels and collects a variety of fees and charges relating to the registration and operation of motor vehicles on the public highways of the state. These collections include gasoline and use fuel taxes, motor carrier fees, vehicle license tax, motor vehicle registration fees, and other miscellaneous fees. These revenues are deposited into the HURF and then distributed to the cities, towns, counties, and the State Highway Fund. The City of Avondale can request this funding through the Maricopa Association of Governments (MAG) Transportation Improvement Program (TIP).
Vehicle License Tax (VLT) [the approximately 55% of monies not deposited in the HURF]	Owners of vehicles that are registered for operation on the highways of Arizona pay the VLT. It is an ad valorem tax based on the assessed value of the vehicle. The VLT revenue is distributed to the HURF (~45%), Cities/Towns and Counties (~55%).
Local Transportation Assistance Fund (LTAF)	The LTAF is funded from state lottery proceeds up to \$23 million per year. The funds are distributed to cities and towns on the basis of population. The LTAF funding is in the form of multistate lottery game and instant bingo game monies along with a portion of the State Highway Fund’s VLT monies. The State Treasurer’s office distributes the funds to the RPTA, MPOs, and cities, towns, and counties not represented by a RPTA or MPO.
Congestion Mitigation & Air Quality Program (CMAQ)	Provides funds for various types of projects to improve air quality, by reducing transportation related emissions in non-attainment and maintenance areas under the Clean Air Act. Funding requests require project-specific information pertaining to expected change in travel speed, daily traffic volumes, and project length/area.
Local Transportation Excise Tax	Cities can adopt additional transportation excise taxes ranging between .2% and .5%. The City of Avondale does not have a transportation excise tax in place.
Private Funds	These funds are provided by private land developers usually expended as part of a land development project.

Implementation Plan

Based on the assessed ITS needs and priorities coupled with the existing state of infrastructure, an implementation schedule was developed. Table 7-4 on the next page shows the prospective projects, their approximate schedules, and anticipated costs. Figure 7-4 then shows the ultimate ITS communication structure envisioned for the City of Avondale.

It is noted that the most recent rendition of the regional ITS Strategic Plan is near completion. The Avondale ITS Plan should be revisited to align with the regional goals to be set forward as Avondale plays a vital role in the communications and safety of the I-10 corridor and other existing and future regional facilities.



LEGEND

City of Avondale Signals

- Wireless
- Fiber Connected

City Facilities

- Existing City Building
- City Civic Complex (Ultimate TOC)
- City MOSC Building (Backup TOC)
- Fire Station
- Added City Building
- Existing Comm Tower

City Water Utility Facilities

- Existing WW Treatment Plant
- Existing Water Util - Booster Station
- Added Water Util - Booster Station
- Existing Water Util - Lift Station
- Added Water Util - Lift Station
- Existing Water Util - Well Site
- Added Water Util - Well Site

Other ITS Infrastructure

- ADOT Existing Fiber
- ADOT Added Fiber
- County Existing Fiber
- County Added Fiber
- Goodyear Existing Fiber

Ultimate Fiber Interconnect

- Primary Ring
- TOC Connection
- Secondary Ring Connections
- Spurs
- Planning Area

Ultimate ITS Communication Structure

Chapter 8: FUNDING

Knowing the future transportation needs of the City, as identified in the preceding chapters is only part of the process. Obtaining the funding to bring the improvements to fruition is a difficult task in and of itself—especially during these times of fiscal constraint. This chapter will estimate the gross estimated costs to implement the envisioned transportation system and the possible funding sources. The following chapter will synthesize this information with specific improvement projects to delineate an implementation plan that meters the financial burden of realizing the City’s future transportation system.

Summary of Improvement Costs

Based on the information and transportation system needs identified in previous chapters, a summary of the estimated transportation improvement costs is presented in Table 8-1. The cost estimates presented within the table rely on information from current City capital improvement program projects, past estimates, and other sources. Although specific projects will encounter specialized costs such as utility relocations, atypical complications concerning right-of-way acquisition, etc., generally the construction cost estimate considered to improve one lane-mile of arterial roadway was \$1,500,000. One lane-mile of major collector roadway was estimated to cost about \$1,000,000, and one lane-mile of minor collector roadway was estimated to cost about \$750,000. If bridge construction/widening is involved, then the construction estimate is doubled. The \$100,000 per bike lane-mile cost estimate used for bike lanes (presumed in both directions) that are not associated with a related roadway widening project (which would already include bike lane provisions) was assumed to cover projects where only striping and/or minor widening/curb work was required.

Table 8-1. Summary of Improvement Costs

Roadway/Improvement Type	Highlighted Projects from Chapter 4	Overall Lane-Miles to be Constructed	Estimated Construction Cost for Projects / Overall (1,000s)
Arterial	31	99.6	\$46,500 / \$149,400
Major Collector	3.0	48.2	\$3,000 / \$48,200
Minor Collector	0.0	8.8	\$0 / \$6,600
River Bridges (new)	0	1	\$0 / \$15,000
Bike Lanes not expected to be associated with roadway projects	4.0	16.5	\$400 / \$1,650
Fairway Dr./I-10 Interchange	n/a	n/a	\$23,000
ITS Deployment*	n/a	n/a	\$2,156
Transit Improvements**	n/a	n/a	\$23,736
Total Estimated Cost (2010 dollars) ^			\$49,900 / \$269,742

* interim- and high-priority improvements only (does not include ultimate TMC cost)

** ultimate transit costs (capital and O&M) based on data from TCRP Report 78 and avg. pass.-miles per capita (26.9) and the \$17.9M for the Avondale City Center Transit Center.

^ additional costs not identified include right-of-way acquisition costs, design, O&M, and/or contingencies

Funding Sources

In the City's 2006 Transportation Plan, almost half of the anticipated funding (49%) was expected from private development—which at the time was reasonable. The outlook today is much different, however. Funding scarcity is wide-spread today with the governmental sources all facing the same fiscal constraints.

The following list of funding/revenue sources, covering the federal, state, and local levels are presented as possible mechanisms for funding the City's transportation needs since they may not be viable at present, but may be in the future. Moreover, each source has disbursement/administrative authorities that vary between the State Highway Agency, ADOT, and MAG. Accompanying each listing is an example project that could benefit from the funding source, although this information is not intended as a specific funding plan for any one project or recommended component of the City's overall transportation system.

Federal Funding Sources

- Surface Transportation Program (STP)
The STP provides flexible funding that may be used by States and localities for projects on any Federal-aid highway, including the National Highway System, bridge projects on any public road, transit capital projects, and intracity and intercity bus terminals and facilities.

City project example: the I-10/Fairway Drive interchange construction (ADOT project)

- Congestion Mitigation & Air Quality Program (CMAQ)
The CMAQ program was conceived to support surface transportation projects and other related efforts that contribute air quality improvements and provide congestion relief. Eligible uses of these funds include: ITS improvements, bicycle and pedestrian projects, PM-10 dust mitigation, and traffic flow improvements in the form of added turn lanes, park-and-ride lots, transit service expansions, etc.

City project example: adding turn lanes to a congested arterial roadway or general improvement to traffic flow, including the encouragement of non-motorized or multi-modal travel

- Community Development Block Grant (CDBG) Program
The CDBG program is a flexible program that provides communities with resources to address a wide range of unique community development needs (although the future focus may shift to employment/economic development of sustainable programs). Beginning in 1974, the CDBG program is one of the longest continuously run programs at the Department of Housing and Urban Development (HUD).

City project example: constructing sidewalk extensions/connections or bike lanes to improve community mobility and interaction

- Federal Transit Authority (FTA)
FTA sponsors two types of grant programs: formula grant programs are funded to States based on formulas of population, and discretionary grant programs are awarded based on meeting application requirements and selected based on selected criteria specific to each. Each grant program is referred to by name and most also by a number that correlates to the section number of Title 49 of the United States Code (e.g., 5307, 5309, etc.).

5307: Allocates federal resources for transportation-related projects and operating assistance to states and urbanized areas. The City already receives this grant money, although its share may diminish with the agglomeration of urbanized areas (UZA).

5309 (b)(2): Fixed Guideway Modernization (new rail and bus rapid transit systems)

5310: Transportation for Elderly Persons and Persons with Disabilities

5317: New Freedoms Program (workforce integration for people with disabilities)

City project example: preparing for light rail and/or commuter rail within the City

- Highway Safety Improvement Program (HSIP)
The overall purpose of this program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads through the implementation of infrastructure-related highway safety improvements.

City project example: possible mitigation measures determined from the outcome of the recommended safety evaluations for the specific roadways/intersections discussed in Chapter 4

- Federal Bridge Program
The bridge program provides federal assistance to repair or replace aging bridge infrastructure.

City project example: within the next 20 years, possible replacement of one of the five existing bridges within the City limits (although two are associated with County-controlled roadways at this time).

- Pedestrian/Bicycle Projects
Depending on the context of the project pertaining to pedestrian or bicycle provisions there are a number of federal funding sources that could be investigated: National Highway System, STP (the State allocations for Transportation Enhancement Activities and Hazard Elimination and Railway-Highway Crossing programs), CMAQ, Recreational Trails Program, National Scenic Byways Program, Job Access and Reverse Commute Grants, Discretionary Livability Funding, the CDC's Nutrition and Physical Activity Program, and Safe Routes to Schools.

City project example: any applicable location depending on the funding source requirements

- ITS Funding Sources (please refer to Table 7-3 in Chapter 7)
- MAP-21, Moving Ahead for Progress in the 21st Century Act, was signed into law at the Federal level as a two-year funding source of transportation programs for FY 2013 and 2014 (total program funding of over \$105B), continuing/modifying/expanding upon some of the programs listed above for highways, transit, bike, and pedestrian programs while adding to funds for Transportation Alternative projects such as recreational trails, safe routes to school, and other projects. MAP-21 may allow for the acceleration of funding to projects currently identified although it is unknown as to the true impact that this new act may have to Avondale's investments and still requires vetting on all State agency levels.

City project example: any transportation project relating to capacity, safety, transit, pedestrian, and others.

State Shared Revenue Sources

- Highway User Revenue Fund (HURF)

The State of Arizona taxes motor fuels and collects a variety of fees and charges relating to the registration and operation of motor vehicles on the public highways of the state. These collections include gasoline taxes, use fuel taxes, motor carrier taxes, vehicle license taxes (VLT), motor vehicle registration fees, and other miscellaneous fees. These revenues are deposited in the Arizona Highway User Revenue Fund (HURF) and are then distributed to the cities, towns and counties (27.5% of total would be the portion from which Avondale would receive distributions) and to the State Highway Fund (about 50% of the total). These taxes represent a primary source of revenues available to the state for highway construction, improvements and other related expenses.

City project example: a roadway bridge widening

- Vehicle License Tax (VLT)

A vehicle license tax is assessed for each vehicle registered in Arizona based on the assessed value of the vehicle. Those taxes comprise the monies that are distributed to the HURF (which receives about 45% of the total VLT), State Highway Fund, State General Fund, cities/towns, counties, and Location Transportation Assistance Fund.

City project example: an arterial road widening

- Local Transportation Assistance Fund (LTAF)

The transportation fund is part of a state implementation plan, as required by the Clean Air Act, to meet the national ambient air quality standards. In 1993, the plan was developed, including using lottery monies to put in the transportation fund. But in 2010, the Governor repealed that provision and eliminated the fund for budgeting reasons. In September 2011, the Center for Law in the Public Interest won a court ruling that only applies to Maricopa County, since it is the only region that includes a Clean Air Act court order, which will restore the LTAF. This re-instatement translates to about \$16.2 million per year for Maricopa County cities and towns beginning in September 2011.

City project example: expansion/increased frequency of the Avondale ZOOM or other element of the overall long-range transit plan

Regional Funding Sources

- Half-Cent County-Wide Sales Tax

In 2004, County voters approved the extension of the levy of the Maricopa County Transportation Excise Tax for an additional 20 years. It is also known as the "1/2 cent sales tax," and is levied upon business activities in Maricopa County, including retail

sales, contracting, utilities, rental of real and personal property, restaurant and bar receipts, and other activities. The collections from the tax are administered by the State as follows:

- 56.2% for freeways and routes on the state highway system, including design, right-of-way, construction, maintenance and debt service for projects included in the regional transportation plan for Maricopa County; and
- 10.5% to the Maricopa County RARF for major arterial streets and intersection improvements, including debt service, capital expense and implementation studies
- 33.3% to a public transportation fund (with a split between bus and light rail) to be used solely for capital costs, maintenance and operation of public transportation classifications along with capital costs and utility relocation costs associated with a light rail public transit system.

City project example: roadway/intersection improvements involving a Road of Regional Significance

Local Funding Sources

Pay-as-you-go financing is the major form of local funding source. The revenue of this fund generally comes from four sources, described as follows:

- **Development Fees**, which are collected from developers by the City to provide services such as fire, police, library, parks, water, sewer, transportation, and general governmental assessments.
- **Sales Tax**, which is collected through the 2.5% transaction privilege (sales) tax to finance the cost of various City services such as police, fire, parks and recreation, streets, mass transit, etc.
- **Operating Funds Transfers**, which are the operating funds the City transfers to supplement their five-year capital budget to help address the impact of current residents on public infrastructure.
- **Replacement Funds**, which are used to replace or maintain capital items (e.g., vehicles, major equipment).

In times of fiscal constraint, combining improvement efforts can be an effective use of limited funding amounts and sources. Also, a strategy employed in this economic environment is to preserve/maintain what is functioning and already adequately serving the City's needs. Implementation of ITS measures is one way of addressing both of these financial positions. ITS improvements not only offer traffic communications/monitoring capabilities—a means to ensure adequate sufficient roadway operations/provisions are being maintained (and roadway capacities preserved)—but these projects can also be a critical benefit to police and emergency services and their related priorities. Other improvement/funding partnerships may be possible involving neighboring cities/agencies, private sector entities, non-profit groups, and academic institutions.

Chapter 9: RECOMMENDATIONS & IMPLEMENTATION STRATEGIES

This section summarizes the major findings, recommendations, and strategic implementation policies of the Avondale Transportation Plan from the previous sections of the report. The recommendations to be implemented will be categorized as immediate (within a year), near-term (between 1 and 10 years), mid-term (10 to 15 years), and long-term (15 to 20 years).

Findings and Recommendations

Traffic Circulation

Vehicular travel, especially by personal vehicle, is a prominent aspect of today's roadway systems. Despite efforts, stemming from the environment, the economy, or physical health, it is likely that the personal vehicle will still be the primary concern of a future roadway system. The findings below indicate the magnitude of the need and how best to address it, within reasonable means. However, further below are the findings and recommendations for the transit and bicycle components, and the inherent goal of developing "complete streets," (as documented in MAG's *Complete Streets Guide*) which should be considered as well.

Findings

- Generally, the existing roadways within the City are accommodating the current traffic demands. Only one segment of roadway (107th Avenue from Roosevelt Street to Van Buren Street) is identified as operating at a poor level of service (LOS). Other roadways generally in the area of the City's roadway interchanges with I-10 show signs of potential degradation (e.g., Dysart Road and 99th Avenue).
- Projected future land use within the City, according to the General Plan but reasonably constrained to 2030 expectations, will result in some marked increases in office development and multi-family dwelling units (transit-oriented residential). Other land use categories such as retail and industrial will increase, but are forecasted to be shy of their expected totals presented in the previous City Transportation Plan.
- The forecasted traffic demands for 2030 are reasonably accommodate by the anticipated/assumed roadway system. Some satisfactory existing traffic operations are exacerbated by the additional demands culminating from 20 years of general growth and development-specific influences, but most roadway segments would be considered acceptable as they are projected to be at LOS D or better.

Recommendations (Immediate, 0-1 year)

- Move to adopt the recommended truck route plan for the City.
- Develop (refine) and adopt a complete streets policy, determining which elements should be applied to each roadway segment.

Recommendations (Near-Term, 1-10 years)

- 107th Avenue – reconstruct/widen the roadway to arterial roadway standards (and ultimate 6-lane capacity) from McDowell Road to Van Buren Street. As part of implementing the standard roadway cross-section, provisions for bicyclists and pedestrians will be included. Consider extension of 6-lane cross-section southward to MC-85. This project is currently not identified in the City’s CIP listing.
- Avondale Boulevard – Improve undeveloped segments from McDowell Road to Thomas Road to provide four total through lanes. This project is identified in the City’s CIP listing (ST1125).
- Avondale Boulevard – complete the generally implemented six-lane arterial cross-section from McDowell Road to Buckeye Road while ensuring that provisions for all modes of travel have been fully implemented and available to roadway users. This project is identified in the City’s CIP listing (ST1148).
- Central Avenue – monitor corridor/intersection operations to ensure pending lane reduction has the desired effects.
- Dysart Road – introduce/enhance multi-modal provisions in the form of proper bike lanes, pedestrian accommodations, and transit amenities from Osborn Road to Buckeye Road as a means of counteracting increasing vehicular traffic demands and extending existing provisions.
- El Mirage Road/Fairway Drive – prepare this roadway for providing four total through lanes in support of (or in parallel with) the accelerated construction planning for the full diamond interchange at I-10. Similarly, the Corporate Drive/Roosevelt Street connection to/from Avondale Boulevard to the east will need to be viable. The I-10/Fairway TI is currently identified in the City’s CIP listing for 2015.
- Van Buren Street – in sequence with the multi-modal improvements along the Dysart Road corridor, continue the same type of provisions (or enhancements) along Van Buren Street from Dysart Road westward.
- Dysart Road – only upon successful completion of previous related projects, and only when prompted by development along the Agua Fria River: improve connectivity of roadway by implementing standard four-lane roadway cross-section south of Buckeye Road/Main Street and including a potential bridge or low-water river crossing across the Agua Fria River. Alternatively, the Dysart Road improvements could terminate at an interim location at Lower Buckeye Road and a bridge could be constructed for Lower Buckeye Road. This project is identified in the City’s CIP listing (ST1021).

Recommendations (Mid-Term, 10-15 years)

- 99th Avenue – in the area of I-10 and to Van Buren, investigate options with the City of Phoenix for improving traffic flow and/or intersection operations if newly constructed I-10/El Mirage interchange or other area improvements do not improve interchange operation. This project is currently not identified in the City’s CIP listing.
- Thomas Road – Investigate possibility of expanding/re-striping roadway to provide a continuity of four through lanes between Avondale Boulevard and 99th Avenue.

Project should be conducted at the same time as the Avondale reconstruction (from McDowell Road to Thomas Road) or soon thereafter.

Recommendations (Long-Term, 15-20 years)

- 99th Avenue – implement 6-lane arterial cross-section from Indian School Road to McDowell Road in conjunction with planned development of land within the City of Phoenix on the east side of the roadway.
- 107th Avenue – investigate possibility of expanding/re-striping roadway to provide a continuity of four total through lanes south of Buckeye Road.
- Avondale Boulevard – implement an additional lane in each direction along the corridor beginning in the area of Buckeye Road and continuing southward in order to spur development and to continue serving as a main artery for moving traffic through the City.
- El Mirage Road – Implement new/additional lanes from Buckeye Road to Broadway Road to provide standard major collector cross-section.
- Indian School Road – in cooperation with MCDOT, implement six-lane arterial cross-section from 99th Avenue to the Agua Fria River; determine whether six total through lanes can be carried across the bridge through re-striping only.
- Litchfield Road – continue established roadway cross-section north of Buckeye Road/Main Street as a four-lane arterial roadway south of Buckeye Road/Main Street within the City limits.
- McDowell Road – implement consistent six-lane arterial cross-section from Avondale Boulevard to 99th Avenue with provisions for all roadway users. If coordinated with site development west of Avondale Boulevard, then also include 119th Avenue.
- McDowell Road – continue previous improvement to provide a six-lane arterial cross-section from Avondale Boulevard (or 119th Avenue) west to the Agua Fria Bridge.
- Van Buren Street – current and planned roadway widening to establish the standard six-lane arterial cross-section is needed to support and accommodate the City Center traffic. Initial improvements should start at the Avondale Boulevard intersection along the City Center East frontage and then progress to the City Center West frontage. A subsequent project should continue the improvements in both directions until reaching the Agua Fria River bridge on the west side and 99th Avenue on the east side.
- Vermeersch Road – reconstruct to four-lane arterial cross-section standard (or sooner if coordinated with adjacent development).
- Overall roadway system – acquire and preserve roadway right-of-way to accommodate buildout of standard collector and arterial cross-sections per the prescribed roadway classifications presented in this plan.
- Establish access control standards, working with ADOT as needed, to ensure realized collector roadway network in the area of SR-30 is compatible with development and freeway accessibility/operations.
- Improvements of roadway segments at the periphery of the City should be coordinated, to the extent possible, with adjacent cities/agencies to provide for fluid

improvements (and possible cost-sharing) so that road users perceive a more immediate realization of comprehensive corridor improvements.

Transit

The vehicular demand needs discussed above are what they are in part because of the transit elements considered within the City over the next 20 years. Therefore, the establishment of an effective transit system within the City, by building upon what has already been started, is essential. The General Plan's discussion of transit-oriented development and orientation of higher-intensity land uses within the transportation system that provides multi-modal travel options are fundamental steps in the right direction.

Findings

- The relatively low performance figures for suburban dependent on connectivity to employment centers in Avondale generally are consistent with poor service levels and are usually attributed to 60 minute service.
- The system of routes in Avondale provides basic transit availability to city residents.
- With most of the region's major employment centers located away from the city, future transit service improvements need to focus on higher quality services being available and directly connected to these major activity areas.
- Residents need more reasonable access to express service. Driving westward to ultimately travel east or travelling into Phoenix or another City is not typical of good service.

Recommendations

- Work with Valley Metro to re-establish Route 29A as it performed well when in operation and its route is within an underserved area of the City.
- Reinforce current user base by enhancing existing, or introducing new, transit amenities at established bus stops.
- Work with Valley Metro to establish 30-minute service for bus routes and increasing ridership levels.
- Establishment of a transit center as part of City Center East site that not only caters to the types of trips well-served by transit, but also can lay the groundwork for possible extension of light rail to the City.
- Related to the UPRR corridor, City policy and planning efforts should focus on preserving the right-of-way for transportation purposes and promoting a land use plan for the entire length through the city. Within the targeted station areas (especially around Avondale Boulevard and the Litchfield Road-Dysart Road segment) various policy and planning steps should be scheduled:
 - to work with the city's regional transportation partners to identify the specific right-of-way needs for a high capacity transit route and associated station areas, and ensure—through policy actions—that any future development would not encroach on this right-of-way.

- to identify suitable parcels for the station sites and related transit and access functions.
- to facilitate land use and urban design actions—to be adopted as part of the City General Plan, and included in subsequent planning and zoning documents—that would be supportive of future transit usage.
- Adopt or abide by the transit functional classifications presented and described in Chapter 5 of this plan; and identify/preserve the prescribed transit routes and station locations identified in the Long Range Transit Plan within Chapter 5.

Bike Lanes

Bike lanes, like the transit system, provide road users additional options for their travel needs which then translates into less vehicular demand on the City's roadways.

Findings

- The City has established sub-networks for bikeways which can be systematically connected and expanded. There are currently about 75 directional miles of bike lanes provided on collector and arterial roadways within the City.
- The inclusion of bike lane provisions in the standard roadway cross-sections ensures that future wide-spread improvements to roadways (whether existing or new) will also be extending the bike lane provisions throughout the City.

Recommendations

- Continue to require partial or full buildout of roadway cross-sections to be per City standards so that adequate pavement/provisions are implemented to permit bike lanes and adjacent sidewalks.
- Incorporate introduction of bike lanes as part of roadway re-striping efforts, to the extent permissible based on the specific geometry (lane widths) of the subject roadway or segment.
- Communicate with adjacent city/agency efforts on implementation of bike lanes/bikeways so that a coordinated effort can result in a more immediate realization of the bikeway network and/or interconnection of sub-networks.
- Program bike lane improvements in conjunction with roadway improvements and pavement preservation projects as possible, otherwise follow prescribed Bicycle Improvement Plan presented in Chapter 6 as funding and opportunities become available.

Safety

Safety is an important element of the Transportation Plan since it pertains to the welfare of the traveling public but the analysis of crash characteristics can be indicative of improvements needed that would also benefit overall traffic operations.

Findings

- Crash data from January 2006 through December 2009 for reported incidents within the City limits (and not occurring on the mainline lanes of I-10) amounted to approximately 4,600 crashes over the four-year period. In the previous Transportation Plan, which concerned a three-year analysis period, there were 2,240 crashes reported. Although the comparison of the crash rates per year suggests an increase in crash frequency, there was also a commensurate increase in the volume of traffic occurring within the City.
- Most of the intersections and roadway segments exhibiting crash rates within the upper quartile of data set occurred on, or spurred from, Dysart Road. The most crashes over the four-year period (155) occurred at the intersection of Dysart Road and McDowell Road. The intersection with the highest crash rate occurs at McDowell Road and Rancho Santa Fe Boulevard (1/4-mile east of Dysart Road). The roadway segment with the highest crash rate occurs on Rancho Santa Fe Boulevard as it connects Dysart Road to McDowell Road.

Recommendations

- Conduct a more specific safety assessment (including detailed analysis of crash types, causes, trends) along the Rancho Santa Fe Boulevard corridor and in the area of Dysart Road. The concentration of land use variety and intensity coupled with multiple driveway accesses require a comprehensive review of access control and/or other features affecting safety. The use and application of the Highway Safety Manual (HSM) would be an appropriate means of conducting the safety assessment and determining mitigation measures appropriate for the particular roadway conditions.
- Consider geometric improvements and/or signal control modifications at the intersections exhibiting higher crash rates since some of the crashes may be a result of inadequate capacity/inefficient operations.

Advanced Traffic Management Systems

Advanced Traffic Management Systems, or Intelligent Transportation Systems (ITS), are a complementary means of getting the most out of the roadway infrastructure and system that serves the City. Therefore, ITS can improve the efficiency and safety of the transportation system and its users by providing the City with enhanced means of monitoring and addressing traffic needs.

Findings

- There are four main ITS issues facing the City: traffic signal communication/coordination, traveler information dissemination, event management, and limited resources to implement ITS improvements.
- Establishment of a fiber-optic backbone/ring system is needed to facilitate future functionality and usefulness of ITS elements.

Recommendations

- The delineation and prioritization of the ITS improvements are presented as part of Chapter 7, which is excerpted from the City’s ITS Strategic Plan (July 2010) and includes a proposed implementation plan.

Implementation

The various elements that make up the Transportation Plan are intertwined such that implementation is not a simple process. Selection to move forward with roadway widening/construction projects will be inherently biased to receive most of the funding. However, as indicated above, improving transit, bicycle, pedestrian, and ITS elements have an additional benefit to the roadway system and the accommodation of the prominent vehicular demands. So as not to lose sight of this interdependence of the elements making up the City’s transportation network, funding and monies should be sought in a comprehensive manner. Given that some federal funding and grants are specifically earmarked for certain projects (like transit or bicycle), they should be pursued in conjunction with other funding directed to overall roadway construction/improvement.

Projects that can combine improvements to more than one of the transportation system elements are understandably more desirable than carrying out separate projects that may only improve one transportation element for one particular roadway/segment at a time. In lieu of projects pertaining to multiple elements, the City should deliberately program improvement projects that at least address all elements in a logical fashion—perhaps proportioned within each iteration of the 5-year capital improvement program (see Table 9-1 below).

Table 9-1. Suggested Improvement Implementation Plan

Timeframe	Transportation Plan Element	Improvement Project Type
Within the next fiscal year	Roadways: Transit: Bicycle: Safety: ATMS:	Address “Immediate” Recommendations Amenity enhancement, functional classification adoption Look for opportunity to incorporate into other project Conduct recommended safety study Follow specific implementation plan
Within next 5 years	Roadways: Transit: Bicycle: Safety: ATMS:	Address “Near-Term” Recommendations Re-establish discontinued transit route; implement an element of the plan Complete 50% of the high priority bike lane projects Follow-up on prior mitigation, perform updated comprehensive crash history assessment Follow specific implementation plan

Timeframe	Transportation Plan Element	Improvement Project Type
Within next 10 years	Roadways: Transit: Bicycle: Safety: ATMS:	Address “Mid-Term” Recommendations* Secure station site for major/high capacity transit service, preserve right-of-way for potential light rail route* Complete remaining high priority projects; complete “gaps” in network created by various developer and/or roadway projects Address new/different safety issues identified* Follow specific implementation plan
Within next 15 years	Roadways: Transit: Bicycle: Safety: ATMS:	Address “Long-Term” Recommendations* Complete the implementation of the Long Range Transit Plan* Complete newly determined high priority projects while expanding the overall bike/pedestrian network* Address new/different safety issues identified* Follow specific implementation plan*

* likely influenced by future updates of this Transportation Plan (or other applicable Plan/study)