

DRAFT Land Use Assumptions,
Infrastructure Improvements Plan,
and Development Fee Report

Prepared for:
Glendale, Arizona

April 26, 2022



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EXECUTIVE SUMMARY

The City of Glendale, Arizona, contracted with TischlerBise to document land use assumptions, prepare the Street Facilities Infrastructure Improvements Plan (hereinafter referred to as the “IIP”), and update street facilities development fees pursuant to Arizona Revised Statutes (“ARS”) § 9-436.05 (hereafter referred to as the “Enabling Legislation”). Municipalities in Arizona may assess development fees to offset infrastructure costs to a municipality for necessary public services. The development fees must be based on an Infrastructure Improvements Plan and Land Use Assumptions. The Street Facilities IIP located is in the middle section of this document, and the proposed street facilities development fees are displayed in the Development Fee Report in the next section.

Development fees are one-time payments used to construct system improvements needed to accommodate new development. The fee represents future development’s proportionate share of infrastructure costs. Development fees may be used for infrastructure improvements or debt service for growth related infrastructure. In contrast to general taxes, development fees may not be used for operations, maintenance, replacement, or correcting existing deficiencies. This update of Glendale’s Street Facilities Infrastructure Improvements Plan and associated update to its street facilities development fees includes all necessary elements required to be in full compliance with SB 1525.

ARIZONA DEVELOPMENT FEE ENABLING LEGISLATION

The Enabling Legislation governs how development fees are calculated for municipalities in Arizona.

Necessary Public Services

Under the requirements of the Enabling Legislation, development fees may only be used for construction, acquisition or expansion of public facilities that are necessary public services. “Necessary public service” means any of the following categories of facilities that have a life expectancy of three or more years and that are owned and operated on behalf of the municipality: water, wastewater, storm water, library, street, fire, police, and parks and recreational. Additionally, a necessary public service includes any facility that was financed before June 1, 2011, and that meets the following requirements:

1. Development fees were pledged to repay debt service obligations related to the construction of the facility.
2. After August 1, 2014, any development fees collected are used solely for the payment of principal and interest on the portion of the bonds, notes, or other debt service obligations issued before June 1, 2011, to finance construction of the facility.

Infrastructure Improvements Plan

Development fees must be calculated pursuant to an IIP. For each necessary public service that is the subject of a development fee, by law, the IIP shall include the following seven elements:

1. A description of the existing necessary public services in the service area and the costs to update, improve, expand, correct or replace those necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards, which shall be prepared by qualified professionals licensed in this state, as applicable.
2. An analysis of the total capacity, the level of current usage and commitments for usage of capacity of the existing necessary public services, which shall be prepared by qualified professionals licensed in this state, as applicable.
3. A description of all or the parts of the necessary public services or facility expansions and their costs necessitated by and attributable to development in the service area based on the approved Land Use Assumptions, including a forecast of the costs of infrastructure, improvements, real property, financing, engineering and architectural services, which shall be prepared by qualified professionals licensed in this state, as applicable.
4. A table establishing the specific level or quantity of use, consumption, generation or discharge of a service unit for each category of necessary public services or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including residential, commercial, and industrial.
5. The total number of projected service units necessitated by and attributable to new development in the service area based on the approved Land Use Assumptions and calculated pursuant to generally accepted engineering and planning criteria.
6. The projected demand for necessary public services or facility expansions required by new service units for a period not to exceed ten years.
7. A forecast of revenues generated by new service units other than development fees, which shall include estimated state-shared revenue, highway users revenue, federal revenue, ad valorem property taxes, construction contracting or similar excise taxes and the capital recovery portion of utility fees attributable to development based on the approved Land Use Assumptions and a plan to include these contributions in determining the extent of the burden imposed by the development.

Qualified Professionals

The IIP must be developed by qualified professionals using generally accepted engineering and planning practices. A qualified professional is defined as “a professional engineer, surveyor, financial analyst or planner providing services within the scope of the person’s license, education, or experience.” TischlerBise is a fiscal, economic, and planning consulting firm specializing in the cost of growth services. Our services include development fees, fiscal impact analysis, infrastructure financing analyses, user fee/cost of service studies, capital improvement plans, and fiscal software. TischlerBise has prepared over 800 development fee studies over the past 30 years for local governments across the United States.

Conceptual Development Fee Calculation

In contrast to project-level improvements, development fees fund growth-related infrastructure that will benefit multiple development projects, or the entire service area (usually referred to as system improvements). The first step is to determine an appropriate demand indicator for the particular type of infrastructure. The demand indicator measures the number of service units for each unit of development. For example, an appropriate indicator of the demand for parks is population growth and the increase in population can be estimated from the average number of persons per housing unit. The second step in the development fee formula is to determine infrastructure improvement units per service unit, typically called level-of-service (LOS) standards. In keeping with the park example, a common LOS standard is improved park acres per thousand people. The third step in the development fee formula is the cost of various infrastructure units. To complete the park example, this part of the formula would establish a cost per acre for land acquisition and/ or park improvements.

Evaluation of Credits/Offsets

Regardless of the methodology, a consideration of credits/offsets is integral to the development of a legally defensible development fee. There are two types of credits/offsets that should be addressed in development fee studies and ordinances. The first is a revenue credit/offset due to possible double payment situations, which could occur when other revenues may contribute to the capital costs of infrastructure covered by the development fee. This type of credit/offset is integrated into the fee calculation, thus reducing the fee amount. The second is a site-specific credit or developer reimbursement for dedication of land or construction of system improvements. This type of credit is addressed in the administration and implementation of the development fee program. For ease of administration, TischlerBise normally recommends developer reimbursements for system improvements.

DEVELOPMENT FEE REPORT

METHODOLOGY

Development fees for the necessary public services made necessary by new development must be based on the same level of service (LOS) provided to existing development in the service area. There are three basic methodologies used to calculate development fees. They examine the past, present, and future status of infrastructure. The objective of evaluating these different methodologies is to determine the best measure of the demand created by new development for additional infrastructure capacity. Each methodology has advantages and disadvantages in a particular situation and can be used simultaneously for different cost components.

Reduced to its simplest terms, the process of calculating development fees involves two main steps: (1) determining the cost of development-related capital improvements and (2) allocating those costs equitably to various types of development. In practice, though, the calculation of development fees can become quite complicated because of the many variables involved in defining the relationship between development and the need for facilities within the designated service area. The following paragraphs discuss basic methodologies for calculating development fees and how those methodologies can be applied.

Cost Recovery (past improvements) - The rationale for recoupment, often called cost recovery, is that new development is paying for its share of the useful life and remaining capacity of facilities already built, or land already purchased, from which new growth will benefit. This methodology is often used for utility systems that must provide adequate capacity before new development can take place.

Incremental Expansion (concurrent improvements) - The incremental expansion methodology documents current LOS standards for each type of public facility, using both quantitative and qualitative measures. This approach assumes there are no existing infrastructure deficiencies or surplus capacity in infrastructure. New development is only paying its proportionate share for growth-related infrastructure. Revenue will be used to expand or provide additional facilities, as needed, to accommodate new development. An incremental expansion cost method is best suited for public facilities that will be expanded in regular increments to keep pace with development.

Plan-Based (future improvements) - The plan-based methodology allocates costs for a specified set of improvements to a specified amount of development. Improvements are typically identified in a long-range facility plan and development potential is identified by a land use plan. There are two basic options for determining the cost per demand unit: (1) total cost of a public facility can be divided by total demand units (average cost), or (2) the growth-share of the public facility cost can be divided by the net increase in demand units over the planning timeframe (marginal cost).

DEVELOPMENT FEE COMPONENTS

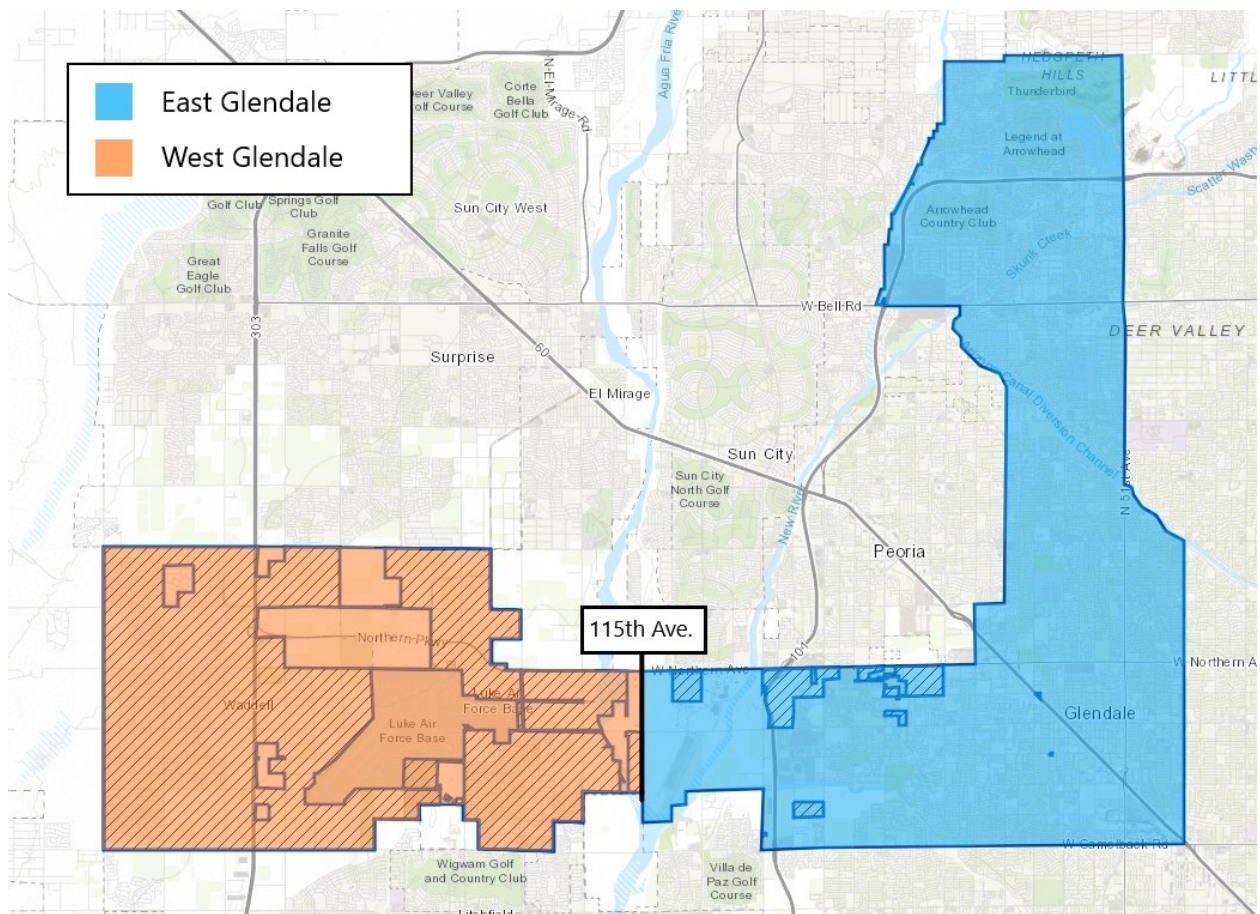
Figure 1 summarizes service areas, methodologies, and infrastructure cost components for each necessary public service.

Figure 1: Proposed Development Fee Service Areas, Methodologies, and Cost Components

Necessary Public Service	Service Area	Cost Recovery	Incremental Expansion	Plan-Based	Cost Allocation
Street Facilities	East Glendale	N/A	Street Improvements	Development Fee Report	Vehicle Miles Traveled
	West Glendale	N/A	Street Improvements	Development Fee Report	Vehicle Miles Traveled

Figure 2 shows the services areas used to develop the Street Facilities Infrastructure Improvements Plan.

Figure 2: Proposed Development Fee Service Areas



Calculations throughout this report are based on an analysis conducted using Excel software. Most results are discussed in the report using two, three, and four decimal places, which represent rounded figures. However, the analysis itself uses figures carried to their ultimate decimal places; therefore, the sums and products generated in the analysis may not equal the sum or product if the reader replicates the calculation with the factors shown in the report (due to the rounding of figures shown, not in the analysis).

PROPOSED DEVELOPMENT FEES

Development fees for residential development will be assessed per dwelling unit, based on the type of unit. Nonresidential development fees will be assessed per 1,000 square feet of floor area, per bed, or per room, based on the development type. The proposed fees represent the maximum allowable fees. Glendale may adopt fees that are less than the amounts shown; however, a reduction in development fee revenue will necessitate an increase in other revenues, a decrease in planned capital improvements, and/or a decrease in Glendale’s LOS standards. All costs in the Development Fee Report represent current dollars with no assumed inflation over time. If costs change significantly over time, development fees should be recalculated.

Figure 3: Proposed Development Fees – East Glendale

Residential Fees per Unit			
Development Type	Proposed Fees	Current Fees	Increase / Decrease
Single Family	\$4,270	\$3,635	\$635
Multi-Family	\$3,054	\$2,819	\$235

Nonresidential Fees per 1,000 Square Feet			
Development Type	Proposed Fees	Current Fees	Increase / Decrease
Industrial	\$745	\$634	\$111
Commercial	\$5,543	\$4,806	\$737
Office & Other Services	\$2,396	\$1,831	\$565
Institutional	\$3,297	\$2,422	\$875
Assisted Living (per bed)	\$575	N/A	N/A
Lodging (per room)	\$1,813	N/A	N/A

Figure 4: Proposed Development Fees – West Glendale

Residential Fees per Unit			
Development Type	Proposed Fees	Current Fees ¹	Increase / Decrease
Single Family	\$4,575	\$3,635	\$940
Multi-Family	\$3,271	\$2,819	\$452

Nonresidential Fees per 1,000 Square Feet			
Development Type	Proposed Fees	Current Fees ¹	Increase / Decrease
Industrial	\$798	\$634	\$164
Commercial	\$5,936	\$4,806	\$1,130
Office & Other Services	\$2,567	\$1,831	\$736
Institutional	\$3,533	\$2,422	\$1,111
Assisted Living (per bed)	\$617	N/A	N/A
Lodging (per room)	\$1,941	N/A	N/A

1. Negotiated on a case-by-case basis as the Streets In Lieu Fee (SILF)

STREET FACILITIES IIP

ARS § 9-463.05 (T)(7)(e) defines the facilities and assets that can be included in the Street Facilities IIP:

“Street facilities located in the service area, including arterial or collector streets or roads that have been designated on an officially adopted plan of the municipality, traffic signals and rights-of-way and improvements thereon.”

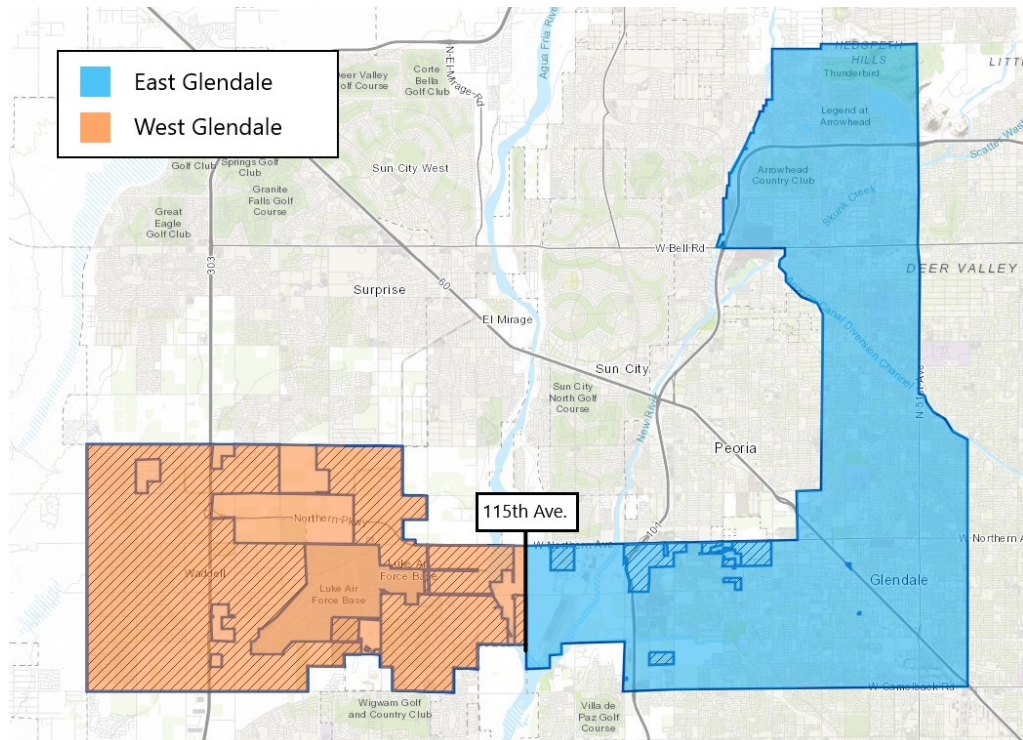
The Street Facilities IIP includes components for street improvements and the cost of preparing the Street Facilities IIP and related Development Fee Report. The incremental expansion methodology, based on the current level of service, is used to calculate the components for street improvements. The plan-based methodology is used for the Development Fee Report.

Proportionate Share

ARS § 9-463.05 (B)(3) states that the development fee shall not exceed a proportionate share of the cost of necessary public services needed to accommodate new development. The Street Facilities IIP and development fees will allocate the cost of necessary public services between residential and nonresidential development based on trip generation rates, trip adjustment factors, and trip lengths.

Service Area

Much of the land in Glendale west of 115th Avenue is undeveloped and is served by a limited street network, and the land in Glendale east of 115th Avenue is serviced by a comprehensive street network. Because the street network west of 115th Avenue currently serves very little existing development, there are large differences in service standards for street infrastructure between the two service areas. Due to these differences, there are two service areas for the Street Facilities IIP: East Glendale (east of 115th Avenue) and West Glendale (west of 115th Avenue).



RATIO OF SERVICE UNIT TO DEVELOPMENT UNIT

ARS § 9-463.05(E)(4) requires:

“A table establishing the specific level or quantity of use, consumption, generation or discharge of a service unit for each category of necessary public services or facility expansions and an equivalency or conversion table establishing the ratio of a service unit to various types of land uses, including residential, commercial and industrial.”

Glendale will use vehicle miles traveled (VMT) as the demand units for street facilities development fees. Components used to determine VMT include average weekday vehicle trip generation rates, adjustments for commuting patterns and pass-by trips, and trip length weighting factors.

Residential Trip Generation Rates

For residential development, TischlerBise uses trip generation rates published in Trip Generation, Institute of Transportation Engineers (ITE), 11th Edition (2021). The prototype for single-family development is Single-Family Detached Housing (ITE 210) which generates 9.43 average weekday vehicle trip ends per dwelling unit. The prototype for multi-family development is Multifamily Housing Low-Rise (ITE 220) which generates 6.74 average weekday vehicle trip ends per dwelling unit.

Nonresidential Trip Generation Rates

For nonresidential development, TischlerBise uses trip generation rates published in Trip Generation, Institute of Transportation Engineers (ITE), 11th Edition (2021). The prototype for industrial development is Industrial Park (ITE 130) which generates 3.37 average weekday vehicle trip ends per 1,000 square feet of floor area. Assisted living development uses Assisted Living (ITE 254) as a proxy and generates 2.60 average weekday vehicle trip ends per bed. For lodging development, the proxy is Hotel (ITE 310), and this type of development generates 7.99 average weekday vehicle trip ends per room. For office and other services development, the proxy is General Office (ITE 710), and it generates 10.84 average weekday vehicle trip ends per 1,000 square feet of floor area. Institutional development uses Government Office (ITE 730) and generates 22.59 average weekday vehicle trip ends per 1,000 square feet of floor area. The prototype for commercial development is Shopping Center (ITE 820) which generates 37.01 average weekday vehicle trips per 1,000 square feet of floor area.

Figure S1: Average Weekday Vehicle Trip Ends by Land Use

ITE Code	Land Use / Size	Demand Unit	Wkdy Trip Ends Per Dmd Unit ¹	Wkdy Trip Ends Per Employee ¹	Emp Per Dmd Unit	Sq Ft Per Emp
130	Industrial Park	1,000 Sq Ft	3.37	2.91	1.16	864
254	Assisted Living	bed	2.60	4.24	0.61	na
310	Hotel	room	7.99	14.34	0.56	na
710	General Office (avg size)	1,000 Sq Ft	10.84	3.33	3.26	307
730	Government Office	1,000 Sq Ft	22.59	7.45	3.03	330
820	Shopping Center (avg size)	1,000 Sq Ft	37.01	17.42	2.12	471

1. Trip Generation, Institute of Transportation Engineers, 11th Edition (2021).

Trip Rate Adjustments

To calculate street facilities development fees, trip generation rates require an adjustment factor to avoid double counting each trip at both the origin and destination points. Therefore, the basic trip adjustment factor is 50 percent. As discussed further in this section, the development fee methodology includes additional adjustments to make the fees proportionate to the infrastructure demand for particular types of development.

Commuter Trip Adjustment

Residential development has a larger trip adjustment factor of 64 percent to account for commuters leaving Glendale for work. According to the 2009 National Household Travel Survey (see Table 30) weekday work trips are typically 31 percent of production trips (i.e., all out-bound trips, which are 50 percent of all trip ends). As shown in Figure S2, the U.S. Census Bureau’s OnTheMap web application indicates 89 percent of resident workers traveled outside of Glendale for work in 2018. In combination, these factors ($0.31 \times 0.50 \times 0.89 = 0.14$) support the additional 14 percent allocation of trips to residential development.

Figure S2: Commuter Trip Adjustment

Trip Adjustment Factor for Commuters ¹	
Employed Residents	105,215
Residents Living and Working in Glendale	11,784
Residents Commuting Outside Glendale for Work	93,431
Percent Commuting out of Glendale	89%
Additional Production Trips ²	14%
Residential Trip Adjustment Factor	64%

1. U.S. Census Bureau, OnTheMap Application (version 6.8) and LEHD Origin-Destination Employment Statistics, 2018.

2. According to the National Household Travel Survey (2009)*, published in December 2011 (see Table 30), home-based work trips are typically 30.99 percent of “production” trips, in other words, out-bound trips (which are 50 percent of all trip ends). Also, LED OnTheMap data from 2018 indicate that 89 percent of Glendale’s workers travel outside the city for work. In combination, these factors ($0.3099 \times 0.50 \times 0.89 = 0.14$) account for 14 percent of additional production trips. The total adjustment factor for residential includes attraction trips (50 percent of trip ends) plus the journey-to-work commuting adjustment (14 percent of production trips) for a total of 64 percent.

*<http://nhts.ornl.gov/publications.shtml> ; Summary of Travel Trends - Table "Daily Travel Statistics by Weekday vs. Weekend"

Adjustment for Pass-By Trips

For commercial and institutional development, the trip adjustment factor is less than 50 percent because these types of development attract vehicles as they pass by on arterial and collector roads. For example, when someone stops at a convenience store on the way home from work, the convenience store is not the primary destination. For the average shopping center, ITE data indicate 34 percent of the vehicles that enter are passing by on their way to some other primary destination. The remaining 66 percent of attraction trips have the commercial site as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor is 66 percent multiplied by 50 percent, or approximately 33 percent of the trip ends.

East Glendale

This section includes calculations related to the East Service Area.

Estimated Average Weekday Vehicle Trips

Shown below in Figure S3, multiplying average weekday vehicle trip ends and trip adjustment factors (discussed on the previous page) by East Glendale’s existing development units provides the average weekday vehicle trips generated by existing development. As shown below, existing development in East Glendale generates 756,625 vehicle trips on an average weekday.

Figure S3: Average Weekday Vehicle Trips by Land Use – East Glendale

Development Type	Development Unit	ITE Code	Avg Wkday VTE	Trip Adjustment	2022 Dev Units	2022 Veh Trips
Single Family	HU	210	9.43	64%	56,796	342,775
Multi-Family	HU	220	6.74	64%	39,645	171,013
Industrial	KSF	130	3.37	50%	6,956	11,721
Commercial	KSF	820	37.01	33%	12,351	150,841
Office & Other Services	KSF	710	10.84	50%	9,882	53,558
Institutional	KSF	730	22.59	33%	3,584	26,717
Total						756,625

National Average Trip Length

To calculate street facilities development fees, it is necessary to determine the average trip length on East Glendale’s arterial network. To do this, the analysis uses national trip generation rates and average trip lengths from the 2017 National Household Travel Survey.

Figure S4: National Average Trip Lengths – East Glendale

Land Use	National Avg Trip Length (miles)
Residential	12.32
Industrial	7.70
Commercial/Retail	7.90
Office and Other	7.70
Institutional	7.70

Source: U.S. Department of Transportation, Federal Highway Administration, 2017 National Household Transportation Survey, adjusted for land use

Expected Vehicle Miles Traveled

The national average trip length should be adjusted to reflect actual local demand on the East Glendale’s arterial network. To do this, TischlerBise determines expected demand (VMT) on East Glendale’s complete street network by multiplying the national average trip lengths by average weekday vehicle trips. Based on this analysis, existing development in East Glendale generates an expected 8,229,881 VMT.

Figure S5: Expected Vehicle Miles Traveled – East Glendale

Land Use	Avg Weekday Vehicle Trips ¹	National Avg Trip Length (miles) ²	Expected VMT ³
Single Family	342,775	12.32	4,222,991
Multi-Family	171,013	12.32	2,106,876
Industrial	11,721	7.70	90,255
Commercial	150,841	7.90	1,191,642
Office & Other Services	53,558	7.70	412,398
Institutional	26,717	7.70	205,719
Total			8,229,881

1. Average weekday vehicle trips from Figure S3
2. 2017 National Household Transportation Survey
3. TischlerBise calculation, Average Weekday Vehicle Trips X National Average Trip Length

Local Adjustment Factor

Expected VMT reflects anticipated travel demand on the entire roadway system; therefore, it is necessary to calibrate demand to the arterial system. To calibrate demand on the arterial system, actual travel demand of 1,783,579 VMT, based on local traffic counts published by the Maricopa Association of Governments (Appendix E), is compared to expected travel demand of 8,229,881 VMT. The ratio between actual VMT and expected VMT provides the local adjustment factor used to adjust national average trip lengths by type of land use.

Figure S6: Local Adjustment Factor – East Glendale

Local Adjustment Factor	
Actual VMT on Arterials ¹	1,783,579
Expected VMT on Arterials	8,229,881
Actual to Expected VMT	0.22

1. TischlerBise analysis of trip counts published by MAG

Local Trip Lengths

Shown below in Figure S7, TischlerBise applies the local adjustment factor to the national average trip lengths to calculate the local trip lengths. The analysis will use the local trip lengths shown below to calculate vehicle miles traveled.

Figure S7: Local Trip Lengths – East Glendale

Land Use	National Avg Trip Length (miles)	Local Adjustment	Local Trip Length
Residential	12.32	0.22	2.67
Industrial	7.70	0.22	1.67
Commercial/Retail	7.90	0.22	1.71
Office and Other	7.70	0.22	1.67
Institutional	7.70	0.22	1.67

Source: 2017 NHTS and TischlerBise analysis; local adjustment from Figure S6

Local Vehicle Miles Traveled

Shown below are the demand indicators for residential and nonresidential land uses in East Glendale related to vehicle miles traveled (VMT). For residential development, the table displays VMT per housing unit. For nonresidential development, the table displays VMT generated per 1,000 square feet of floor area (per room for lodging, and per bed for assisted living).

Figure S8: Ratio of Service Unit to Development Unit – East Glendale

Residential Development				
Development Type	AWVTE per unit ¹	Trip Adjustment ¹	Average Trip Length (miles)	Avg Wkdy VMT per Unit
Single Family	9.43	64%	2.67	16.11
Multi-Family	6.74	64%	2.67	11.52

Nonresidential Development				
Development Type	AWVTE per 1,000 Sq Ft ¹	Trip Adjustment ¹	Average Trip Length (miles)	Avg Wkdy VMT per 1,000 Sq Ft ¹
Industrial	3.37	50%	1.67	2.81
Commercial	37.01	33%	1.71	20.91
Office & Other Services	10.84	50%	1.67	9.04
Institutional	22.59	33%	1.67	12.44
Assisted Living (per bed)	2.60	50%	1.67	2.17
Lodging (per room)	7.99	50%	1.71	6.84

1. See Land Use Assumptions

West Glendale

This section includes calculations related to the West Service Area.

Estimated Average Weekday Vehicle Trips

Shown below in Figure S9, multiplying average weekday vehicle trip ends and trip adjustment factors (discussed on the previous page) by West Glendale’s existing development units provides the average weekday vehicle trips generated by existing development. As shown below, existing development in West Glendale generates 50,349 vehicle trips on an average weekday.

Figure S9: Average Weekday Vehicle Trips by Land Use – West Glendale

Development Type	Development Unit	ITE Code	Avg Wkday VTE	Trip Adjustment	2022 Dev Units	2022 Veh Trips
Single Family	HU	210	9.43	64%	732	4,418
Multi-Family	HU	220	6.74	64%	1,796	7,747
Industrial	KSF	130	3.37	50%	14,315	24,121
Commercial	KSF	820	37.01	33%	126	1,542
Office & Other Services	KSF	710	10.84	50%	72	393
Institutional	KSF	730	22.59	33%	1,627	12,128
Total						50,349

National Average Trip Length

To calculate street facilities development fees, it is necessary to determine the average trip length on West Glendale’s arterial network. To do this, the analysis uses national trip generation rates and average trip lengths from the 2017 National Household Travel Survey.

Figure S10: National Average Trip Lengths – West Glendale

Land Use	National Avg Trip Length (miles)
Residential	12.32
Industrial	7.70
Commercial/Retail	7.90
Office and Other	7.70
Institutional	7.70

Source: U.S. Department of Transportation, Federal Highway Administration, 2017 National Household Transportation Survey, adjusted for land use

Expected Vehicle Miles Traveled

The national average trip length should be adjusted to reflect actual local demand on the West Glendale’s arterial network. To do this, TischlerBise determines expected demand (VMT) on West Glendale’s complete street network by multiplying the national average trip lengths by average weekday vehicle trips. Based on this analysis, existing development in West Glendale generates an expected 444,195 VMT.

Figure S11: Expected Vehicle Miles Traveled – West Glendale

Land Use	Avg Weekday Vehicle Trips ¹	National Avg Trip Length (miles) ²	Expected VMT ³
Single Family	4,418	12.32	54,427
Multi-Family	7,747	12.32	95,446
Industrial	24,121	7.70	185,733
Commercial	1,542	7.90	12,179
Office & Other Services	393	7.70	3,024
Institutional	12,128	7.70	93,386
Total			444,195

1. Average weekday vehicle trips from Figure S10
2. 2017 National Household Transportation Survey
3. TischlerBise calculation, Average Weekday Vehicle Trips X National Average Trip Length

Local Adjustment Factor

Expected VMT reflects anticipated travel demand on the entire roadway system; therefore, it is necessary to calibrate demand to the arterial system. To calibrate demand on the arterial system, actual travel demand of 81,544 VMT, based on local traffic counts published by the Maricopa Association of Governments (Appendix E), is compared to expected travel demand of 441,195 VMT. The ratio between actual VMT and expected VMT provides the local adjustment factor used to adjust national average trip lengths by type of land use.

Figure S12: Local Adjustment Factor – West Glendale

Local Adjustment Factor	
Actual VMT on Arterials ¹	81,544
Expected VMT on Arterials	444,195
Actual to Expected VMT	0.18

1. TischlerBise analysis of trip counts published by MAG

Local Trip Lengths

Shown below in Figure S13, TischlerBise applies the local adjustment factor to the national average trip lengths to calculate the local trip lengths. The analysis will use the local trip lengths shown below to calculate vehicle miles traveled.

Figure S13: Local Trip Lengths – West Glendale

Land Use	National Avg Trip Length (miles)	Local Adjustment	Local Trip Length
Residential	12.32	0.18	2.26
Industrial	7.70	0.18	1.41
Commercial/Retail	7.90	0.18	1.45
Office and Other	7.70	0.18	1.41
Institutional	7.70	0.18	1.41

Source: 2017 NHTS and TischlerBise analysis; local adjustment from Figure S12

Local Vehicle Miles Traveled

Shown below are the demand indicators for residential and nonresidential land uses in West Glendale related to vehicle miles traveled (VMT). For residential development, the table displays VMT per housing unit. For nonresidential development, the table displays VMT generated per 1,000 square feet of floor area (per room for lodging, and per bed for assisted living).

Figure S14: Ratio of Service Unit to Development Unit – West Glendale

Residential Development				
Development Type	AWVTE per unit ¹	Trip Adjustment ¹	Average Trip Length (miles)	Avg Wkdy VMT per Unit
Single Family	9.43	64%	2.26	13.65
Multi-Family	6.74	64%	2.26	9.76

Nonresidential Development				
Development Type	AWVTE per 1,000 Sq Ft ¹	Trip Adjustment ¹	Average Trip Length (miles)	Avg Wkdy VMT per 1,000 Sq Ft ¹
Industrial	3.37	50%	1.41	2.38
Commercial	37.01	33%	1.45	17.71
Office & Other Services	10.84	50%	1.41	7.66
Institutional	22.59	33%	1.41	10.54
Assisted Living (per bed)	2.60	50%	1.41	1.84
Lodging (per room)	7.99	50%	1.45	5.79

1. See Land Use Assumptions

ANALYSIS OF CAPACITY, USAGE, AND COSTS OF EXISTING PUBLIC SERVICES

ARS § 9-463.05(E)(1) requires:

“A description of the existing necessary public services in the service area and the costs to upgrade, update, improve, expand, correct or replace those necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards, which shall be prepared by qualified professionals licensed in this state, as applicable.”

ARS § 9-463.05(E)(2) requires:

“An analysis of the total capacity, the level of current usage and commitments for usage of capacity of the existing necessary public services, which shall be prepared by qualified professionals licensed in this state, as applicable.”

As shown in Appendix E, the City of Glendale provided an inventory of arterial road segments including segment lengths and lane quantities. The analysis uses average daily traffic (ADT) counts published by the Maricopa Association of Governments. Multiplying each segment’s length by the number of lanes yields the number of lane miles per segment, and multiplying the traffic counts and segment lengths provides the average weekday vehicle miles traveled (VMT). Glendale’s existing roadway network supports 1,865,123 VMT on 459.2 lane miles of arterials.

East Glendale

Shown below, Figure S15 documents the capacity of East Glendale’s arterial network. Based on the Moving Glendale Ahead Transportation Plan, the arterial road network is designed to operate at Level of Service D or better. The Moving Glendale Ahead Transportation Plan suggests a mile segment of an arterial road operating at Level of Service D should maintain a daily volume ranging from 17,700 vehicles for a two-lane arterial (8,850 vehicles per lane) to 59,900 vehicles for a six-lane arterial (9,983 vehicles per lane). Applying these capacities to the East Glendale arterial network shown in Appendix E generates arterial capacity of 4,154,675 vehicle miles of capacity (VMC) and a weighted average of 9,947 vehicles per lane (4,154,675 VMC / 417.70 arterial lane miles).

The current daily volume on East Glendale’s arterial network is 1,783,579 VMT. The resulting VMC to VMT ratio is 2.33 (4,154,675 VMC / 1,783,579 VMT). The baseline VMC / VMT ratio for any incremental expansion method is 1.0 (i.e., VMC = VMT); therefore, the current ratio of 2.33 exceeds the current LOS ensuring new capacity built with development fee funds will not exceed the current LOS.

Figure S15: Arterial Network Capacity and Usage – East Glendale

Arterial Capacity Ratio	
Total Arterial Lane Miles	417.70
Capacity per Lane Mile ¹	9,947
Vehicle Miles of Capacity	4,154,675
Vehicle Miles Traveled	1,783,579
VMC / VMT Ratio	2.33

1. Weighted average based on capacities in Moving Glendale Ahead Transportation Plan, LOS D

Street Improvements – Incremental Expansion

Glendale provided a list of projects as a proxy for future growth-related street improvements in East Glendale. The eligible cost (excludes the cost to repair or replace existing lanes) of these proxy projects is \$51,591,620 for 12.60 lane miles. The list of proxy projects is representational of future growth-related street improvement projects, and it does not represent a plan-based approach.

Figure S16: Proxy Street Improvement Projects – East Glendale

Project	Location	Lane Miles	Eligible Cost
Ballpark Blvd	99th Ave Intersection - 600' Westward	0.24	\$571,761
83rd Avenue	Glendale Ave - Northern Ave	2.00	\$5,093,681
67th Avenue	Arrowhead Loop Rd - Deer Valley Rd (E)	0.80	\$3,413,533
Camelback Road	99th Ave - Loop 101	0.36	\$917,800
Intersection Improvements (4)	TBD	0.00	\$20,916,673
Greenway Rd/57th Ave	Greenway Rd/57th Ave	0.00	\$728,277
New River Road	Maryland Ave - Glen Harbor Blvd	3.20	\$7,457,387
New Collector Streets	TBD	6.00	\$12,492,508
Total		12.60	\$51,591,620

Source: City of Glendale, Arizona

Shown below in Figure S17, Glendale’s existing transportation development impact fee balance for East Glendale is \$18,433,112. Deducting the existing DIF balance from the eligible cost results in an adjusted cost of \$33,158,508. Based on the adjusted cost of these proxy projects, the adjusted cost is \$2,631,628 per lane mile (\$33,158,508 adjusted cost / 12.60 lane miles). TischlerBise will apply the adjusted cost per lane mile to the projected demand for additional lane miles over the next 10 years. Glendale may use development fees to construct the projects shown in Figure S16 or to construct other growth-related street improvements in East Glendale but should not use development fees to construct a developer’s share of half-street improvements.

Figure S17: Adjusted Cost per Lane Mile – East Glendale

Cost Factors	
Eligible Cost	\$51,591,620
DIF Balance	(\$18,433,112)
Adjusted Cost	\$33,158,508
÷ Lane Miles	12.60
Adjusted Cost per Lane Mile	\$2,631,628

Source: City of Glendale, Arizona

To allocate the proportionate share of demand for street improvements to residential and nonresidential development, this analysis uses trip generation rates, trip adjustment factors, trip length weighting factors, and average trip lengths shown in Figure S8. East Glendale’s existing LOS is 1.0054 lane miles per 10,000 VMT (417.70 lane miles / 2.33 capacity ratio / (1,783,579 VMT / 10,000 VMT)). Based on an adjusted cost of \$2,631,628 per lane mile, the street improvements cost in East Glendale is \$264.58 per VMT (417.70 lane miles / 2.33 capacity ratio / 1,783,579 VMT X \$2,631,628 per lane mile).

Figure S18: Level of Service – East Glendale

Level-of-Service (LOS) Standards	
Existing Lane Miles	417.70
÷ VMC / VMT Ratio	2.33
Adjusted Lane Miles	179.32
2022 VMT	1,783,579
Lane Miles per 10,000 VMT	1.0054
Cost per VMT	\$264.58

West Glendale

Figure S19 documents the capacity of West Glendale’s arterial network. Based on the Moving Glendale Ahead Transportation Plan, the arterial road network is designed to operate at Level of Service D or better. The Moving Glendale Ahead Transportation Plan suggests a mile segment of an arterial road operating at Level of Service D should maintain a daily volume ranging from 17,700 vehicles for a two-lane arterial (8,850 vehicles per lane) to 59,900 vehicles for a six-lane arterial (9,983 vehicles per lane). Applying these capacities to the West Glendale arterial network shown in Appendix E generates arterial capacity of 378,275 vehicle miles of capacity (VMC) and a weighted average of 9,115 vehicles per lane (378,275 VMC / 41.50 arterial lane miles).

The current daily volume on West Glendale’s arterial network is 81,544 VMT. The resulting VMC to VMT ratio is 4.64 (378,275 VMC / 81,544 VMT). The baseline VMC / VMT ratio for any incremental expansion method is 1.0 (i.e., VMC = VMT); therefore, the current ratio of 4.64 exceeds the current LOS ensuring new capacity built with development fee funds will not exceed the current LOS.

Figure S19: Arterial Network Capacity and Usage – West Glendale

Arterial Capacity Ratio	
Total Arterial Lane Miles	41.50
Capacity per Lane Mile ¹	9,115
Vehicle Miles of Capacity	378,275
Vehicle Miles Traveled	81,544
VMC / VMT Ratio	4.64

1. Weighted average based on capacities in Moving Glendale Ahead Transportation Plan, LOS D

Street Improvements – Incremental Expansion

Glendale provided a list of projects as a proxy for future growth-related street improvements in West Glendale. The eligible cost (excludes the cost to repair or replace existing lanes) of these proxy projects is \$30,994,516 for 8.80 lane miles. The list of proxy projects is representational of future growth-related street improvement projects, and it does not represent a plan-based approach.

Figure S20: Proxy Street Improvement Projects – West Glendale

Project	Location	Lane Miles	Eligible Cost
Bethany Home Rd/Sarival Ave	Bethany Home Rd/Sarival Ave	0.00	\$1,241,741
Sarival Ave/Glendale Ave	Sarival Ave/Glendale Ave	0.00	\$1,241,741
Sarival Ave/Northern Ave	Sarival Ave/Northern Ave	0.00	\$496,697
Sarival Ave/Olive Ave	Sarival Ave/Olive Ave	0.00	\$1,862,612
Sarival Ave/Peoria Ave	Sarival Ave/Peoria Ave	0.00	\$372,522
Intersection Improvements (4)	TBD	0.00	\$3,973,572
Sarival Ave	Bethany Home Rd - Glendale Ave (W)	0.20	\$367,076
Sarival Ave	Bethany Home Rd - Glendale Ave (E)	0.60	\$1,099,050
Sarival Ave	Glendale Ave - Northern Ave (W)	1.00	\$1,832,113
Sarival Ave	Glendale Ave - Northern Ave (E)	2.00	\$3,663,137
Incremental Lane Widening	TBD	5.00	\$14,844,254
Total		8.80	\$30,994,516

Source: City of Glendale, Arizona

Shown below in Figure S21, Glendale’s existing transportation development impact fee balance and streets in lieu fee balance for West Glendale is \$4,148,246. Deducting the existing DIF/SILF balance from the eligible cost results in an adjusted cost of \$26,846,270. Based on the adjusted cost of these proxy projects, the adjusted cost is \$3,050,712 per lane mile (\$26,846,270 adjusted cost / 8.80 lane miles). TischlerBise will apply the adjusted cost per lane mile to the projected demand for additional lane miles over the next 10 years. Glendale may use development fees to construct the projects shown in Figure S20 or to construct other growth-related street improvements in West Glendale but should not use development fees to construct a developer’s share of half-street improvements.

Figure S21: Adjusted Cost per Lane Mile – West Glendale

Cost Factors	
Eligible Cost	\$30,994,516
DIF/SILF Balance	(\$4,148,246)
Adjusted Cost	\$26,846,270
÷ Lane Miles	8.80
Adjusted Cost per Lane Mile	\$3,050,712

Source: City of Glendale, Arizona

To allocate the proportionate share of demand for street improvements to residential and nonresidential development, this analysis uses trip generation rates, trip adjustment factors, trip length weighting factors, and average trip lengths shown in Figure S14. West Glendale’s existing LOS is 1.0971 lane miles per 10,000 VMT (41.50 lane miles / 4.64 capacity ratio / (81,544 VMT / 10,000 VMT)). Based on an adjusted cost of \$3,050,712 per lane mile, the street improvements cost in West Glendale is \$334.69 per VMT (41.50 lane miles / 4.64 capacity ratio / 81,544 VMT X \$3,050,712 per lane mile).

Figure S22: Level of Service – West Glendale

Level-of-Service (LOS) Standards	
Existing Lane Miles	41.50
÷ VMC / VMT Ratio	4.64
Adjusted Lane Miles	8.95
2022 VMT	81,544
Lane Miles per 10,000 VMT	1.0971
Cost per VMT	\$334.69

Development Fee Report – Plan-Based

The cost to prepare the Street Facilities IIP and related Development Fee Report totals \$49,440. Glendale plans to update its report every five years. Based on this cost, proportionate share, and five-year projections of new residential and nonresidential development from the *Land Use Assumptions* document, the cost is \$0.49 per VMT.

Figure S23: IIP and Development Fee Report

Necessary Public Service	Cost	Proportionate Share	Service Unit	5-Year Change	Cost per Service Unit
Street Facilities	\$49,440	All Development 100%	VMT	100,706	\$0.49

PROJECTED DEMAND FOR SERVICES AND COSTS

ARS § 9-463.05(E)(5) requires:

“The total number of projected service units necessitated by and attributable to new development in the service area based on the approved land use assumptions and calculated pursuant to generally accepted engineering and planning criteria.”

ARS § 9-463.05(E)(6) requires:

“The projected demand for necessary public services or facility expansions required by new service units for a period not to exceed ten years.”

East Glendale

As shown in the *Land Use Assumptions* document, East Glendale’s housing stock is expected to increase by 4,384 units and nonresidential floor area is expected to increase by 6,025,000 square feet over the next 10 years. Based on the trip generation factors shown in Figure S8, projected development generates an additional 115,663 VMT over the next 10 years. Shown below, Glendale will need to construct approximately 11.60 lane miles of street improvements over the next 10 years to maintain the existing levels of service in East Glendale. The growth-related cost of the Street Facilities IIP is \$30,601,660 (\$2,631,628 per lane mile X 11.60 lane miles) for street improvements in East Glendale.

Figure S24: Projected Travel Demand – East Glendale

East Glendale		Base	1	2	3	4	5	10	10-Year
		2022	2023	2024	2025	2026	2027	2032	Increase
Development	Single Family Units	56,796	57,051	57,306	57,561	57,686	57,812	58,296	1,500
	Multi-Family Units	39,645	39,879	40,114	40,348	40,666	40,984	42,529	2,884
	Industrial KSF	6,956	7,128	7,299	7,470	7,651	7,831	8,607	1,650
	Commercial KSF	12,351	12,477	12,604	12,731	12,842	12,953	13,439	1,088
	Office & Other Services KSF	9,882	10,149	10,416	10,682	10,983	11,283	12,829	2,947
	Institutional KSF	3,584	3,626	3,667	3,709	3,735	3,761	3,923	339
Avg Weekday Vehicle Trips	Single-Family Trips	342,775	344,314	345,853	347,391	348,149	348,907	351,827	9,052
	Multi-Family Trips	171,013	172,024	173,035	174,047	175,419	176,791	183,455	12,442
	Residential Trips	513,788	516,338	518,888	521,438	523,568	525,697	535,282	21,494
	Industrial Trips	11,721	12,010	12,299	12,587	12,891	13,195	14,502	2,781
	Commercial Trips	150,841	152,388	153,935	155,482	156,840	158,197	164,130	13,289
	Office & Other Services Trips	53,558	55,005	56,452	57,899	59,528	61,156	69,533	15,975
	Institutional Trips	26,717	27,027	27,338	27,649	27,845	28,041	29,248	2,531
	Nonresidential Trips	242,837	246,430	250,024	253,617	257,103	260,589	277,413	34,576
Total Vehicle Trips	756,625	762,768	768,912	775,055	780,671	786,287	812,695	56,070	
VMT	Vehicle Miles Traveled (VMT)	1,783,579	1,796,451	1,809,322	1,822,194	1,833,757	1,845,319	1,899,241	115,663
Need	Additional Lane Miles		1.3	1.3	1.3	1.2	1.2	1.0	11.6
	Growth-Related Cost		\$3,405,580	\$3,405,580	\$3,405,580	\$3,059,199	\$3,059,199	\$2,544,462	\$30,601,660

West Glendale

As shown in the *Land Use Assumptions* document, West Glendale’s housing stock is expected to increase by 1,549 units and nonresidential floor area is expected to increase by 16,150,000 square feet over the next 10 years. Based on the trip generation factors shown in Figure S14, projected development generates an additional 61,349 VMT over the next 10 years. Shown below, Glendale will need to construct approximately 6.70 lane miles of street improvements over the next 10 years to maintain the existing levels of service in West Glendale. The growth-related cost of the Street Facilities IIP is \$20,532,783 (\$3,050,712 per lane mile X 6.70 lane miles) for street improvements in West Glendale.

Figure S25: Projected Travel Demand – West Glendale

West Glendale		Base	1	2	3	4	5	10	10-Year
		2022	2023	2024	2025	2026	2027	2032	Increase
Development	Single Family Units	732	873	1,013	1,154	1,294	1,435	2,137	1,405
	Multi-Family Units	1,796	1,844	1,892	1,940	1,940	1,940	1,940	144
	Industrial KSF	14,315	16,515	18,715	20,915	23,115	25,315	30,315	16,000
	Commercial KSF	126	146	166	186	206	226	276	150
	Office & Other Services KSF	72	72	72	72	72	72	72	0
	Institutional KSF	1,627	1,627	1,627	1,627	1,627	1,627	1,627	0
Avg Weekday Vehicle Trips	Single-Family Trips	4,418	5,266	6,114	6,962	7,810	8,657	12,897	8,479
	Multi-Family Trips	7,747	7,954	8,161	8,368	8,368	8,368	8,368	621
	Residential Trips	12,165	13,220	14,275	15,330	16,178	17,026	21,266	9,101
	Industrial Trips	24,121	27,828	31,535	35,242	38,949	42,656	51,081	26,960
	Commercial Trips	1,542	1,786	2,030	2,274	2,519	2,763	3,374	1,832
	Office & Other Services Trips	393	393	393	393	393	393	393	0
	Institutional Trips	12,128	12,128	12,128	12,128	12,128	12,128	12,128	0
	Nonresidential Trips	38,184	42,135	46,086	50,037	53,989	57,940	66,976	28,792
	Total Vehicle Trips	50,349	55,355	60,361	65,367	70,167	74,966	88,241	37,893
VMT	Vehicle Miles Traveled (VMT)	81,544	89,525	97,505	105,485	112,997	120,509	142,893	61,349
Need	Additional Lane Miles		0.9	0.9	0.9	0.8	0.8	0.5	6.7
	Growth-Related Cost		\$2,670,934	\$2,670,934	\$2,670,934	\$2,514,204	\$2,514,204	\$1,498,315	\$20,532,783

STREET FACILITIES DEVELOPMENT FEES

East Glendale

Revenue Credit/Offset

A revenue credit/offset is not necessary for street facilities development fees in East Glendale, because costs generated by projected development exceed revenues generated by projected development. Appendix A includes a detailed explanation of the revenue credit/offset for facilities development fees.

Street Facilities Development Fees

Infrastructure components and cost factors for facilities development fees are summarized in the upper portion of Figure S26. The cost per service unit in East Glendale is \$265.07 per VMT.

Street facilities development fees for residential development are assessed according to VMT generated per housing unit. For example, the single-family fee of \$4,270 is calculated using a cost per service unit of \$265.07 per VMT multiplied by a demand unit of 16.11 average weekday VMT per housing unit.

Nonresidential development fees are calculated using VMT as the service unit. The fee of \$5,543 per 1,000 square feet of commercial development is derived from a cost per service unit of \$265.07 per VMT multiplied by a demand unit of 20.91 average weekday VMT per 1,000 square feet.

Figure S26: Street Facilities Development Fees – East Glendale

Fee Component	Cost per VMT
Street Improvements	\$264.58
Development Fee Report	\$0.49
Total	\$265.07

Residential Fees per Unit				
Development Type	Avg Wkdy VMT per Unit ¹	Proposed Fees	Current Fees	Increase / Decrease
Single Family	16.11	\$4,270	\$3,635	\$635
Multi-Family	11.52	\$3,054	\$2,819	\$235

Nonresidential Fees per 1,000 Square Feet				
Development Type	Avg Wkdy VMT per 1,000 Sq Ft ¹	Proposed Fees	Current Fees	Increase / Decrease
Industrial	2.81	\$745	\$634	\$111
Commercial	20.91	\$5,543	\$4,806	\$737
Office & Other Services	9.04	\$2,396	\$1,831	\$565
Institutional	12.44	\$3,297	\$2,422	\$875
Assisted Living (per bed)	2.17	\$575	N/A	N/A
Lodging (per room)	6.84	\$1,813	N/A	N/A

1. See Land Use Assumptions

Street Facilities Development Fee Revenue

Appendix A contains revenue forecasts required by Arizona’s Enabling Legislation (ARS § 9-463.05(E)(7)). Projected fee revenue shown in Figure S27 is based on the development projections in the *Land Use Assumptions* document and the updated street facilities development fees for East Glendale. If development occurs faster than projected, the demand for infrastructure will increase along with development fee revenue. If development occurs slower than projected, the demand for infrastructure will decrease and development fee revenue will decrease at a similar rate. Projected development fee revenue equals \$30,628,001 and projected expenditures equal \$30,631,971.

Figure S27: Street Facilities Development Fees Revenue – East Glendale

Fee Component	Growth Share	Existing Share	Total
Street Improvements	\$30,601,660	\$0	\$30,601,660
Development Fee Report	\$30,311	\$0	\$30,311
Total	\$30,631,971	\$0	\$30,631,971

		Single Family \$4,270 per unit	Multi-Family \$3,054 per unit	Industrial \$745 per sq ft	Commercial \$5,543 per sq ft	Office & Other \$2,396 per sq ft	Institutional \$3,297 per sq ft
Year		Hsg Unit	Hsg Unit	KSF	KSF	KSF	KSF
Base	2022	56,796	39,645	6,956	12,351	9,882	3,584
Year 1	2023	57,051	39,879	7,128	12,477	10,149	3,626
Year 2	2024	57,306	40,114	7,299	12,604	10,416	3,667
Year 3	2025	57,561	40,348	7,470	12,731	10,682	3,709
Year 4	2026	57,686	40,666	7,651	12,842	10,983	3,735
Year 5	2027	57,812	40,984	7,831	12,953	11,283	3,761
Year 6	2028	57,937	41,303	8,011	13,064	11,584	3,788
Year 7	2029	58,063	41,621	8,192	13,175	11,884	3,814
Year 8	2030	58,189	41,939	8,372	13,286	12,185	3,840
Year 9	2031	58,242	42,234	8,489	13,363	12,507	3,882
Year 10	2032	58,296	42,529	8,607	13,439	12,829	3,923
10-Year Increase		1,500	2,884	1,650	1,088	2,947	339
Projected Revenue		\$6,400,820	\$8,798,887	\$1,228,244	\$6,025,736	\$7,055,888	\$1,118,425

Projected Fee Revenue	\$30,628,001
Total Expenditures	\$30,631,971

West Glendale

Revenue Credit/Offset

A revenue credit/offset is not necessary for street facilities development fees in West Glendale, because costs generated by projected development exceed revenues generated by projected development. Appendix A includes a detailed explanation of the revenue credit/offset for facilities development fees.

Street Facilities Development Fees

Infrastructure components and cost factors for facilities development fees are summarized in the upper portion of Figure S28. The cost per service unit in West Glendale is \$335.18 per VMT.

Street facilities development fees for residential development are assessed according to VMT generated per housing unit. For example, the single-family fee of \$4,575 is calculated using a cost per service unit of \$335.18 per VMT multiplied by a demand unit of 13.65 average weekday VMT per housing unit.

Nonresidential development fees are calculated using VMT as the service unit. The fee of \$5,936 per 1,000 square feet of commercial development is derived from a cost per service unit of \$335.18 per VMT multiplied by a demand unit of 17.71 average weekday VMT per 1,000 square feet.

Figure S28: Street Facilities Development Fees – West Glendale

Fee Component	Cost per VMT
Street Improvements	\$334.69
Development Fee Report	\$0.49
Total	\$335.18

Residential Fees per Unit				
Development Type	Avg Wkdy VMT per Unit ¹	Proposed Fees	Current Fees ²	Increase/Decrease
Single Family	13.65	\$4,575	\$3,635	\$940
Multi-Family	9.76	\$3,271	\$2,819	\$452

Nonresidential Fees per 1,000 Square Feet				
Development Type	Avg Wkdy VMT per 1,000 Sq Ft ¹	Proposed Fees	Current Fees ²	Increase/Decrease
Industrial	2.38	\$798	\$634	\$164
Commercial	17.71	\$5,936	\$4,806	\$1,130
Office & Other Services	7.66	\$2,567	\$1,831	\$736
Institutional	10.54	\$3,533	\$2,422	\$1,111
Assisted Living (per bed)	1.84	\$617	N/A	N/A
Lodging (per room)	5.79	\$1,941	N/A	N/A

1. See Land Use Assumptions

2. Negotiated on a case-by-case basis as the Streets In Lieu Fee (SILF)

Street Facilities Development Fee Revenue

Appendix A contains revenue forecasts required by Arizona’s Enabling Legislation (ARS § 9-463.05(E)(7)). Projected fee revenue shown in Figure S29 is based on the development projections in the *Land Use Assumptions* document and the updated street facilities development fees for West Glendale. If development occurs faster than projected, the demand for infrastructure will increase along with development fee revenue. If development occurs slower than projected, the demand for infrastructure will decrease and development fee revenue will decrease at a similar rate. Projected development fee revenue equals \$20,542,290 and projected expenditures equal \$20,551,912.

Figure S29: Street Facilities Development Fees Revenue – West Glendale

Fee Component	Growth Share	Existing Share	Total
Street Improvements	\$20,532,783	\$0	\$20,532,783
Development Fee Report	\$19,129	\$0	\$19,129
Total	\$20,551,912	\$0	\$20,551,912

		Single Family \$4,575 per unit	Multi-Family \$3,271 per unit	Industrial \$798 per sq ft	Commercial \$5,936 per sq ft	Office & Other \$2,567 per sq ft	Institutional \$3,533 per sq ft
Year		Hsg Unit	Hsg Unit	KSF	KSF	KSF	KSF
Base	2022	732	1,796	14,315	126	72	1,627
Year 1	2023	873	1,844	16,515	146	72	1,627
Year 2	2024	1,013	1,892	18,715	166	72	1,627
Year 3	2025	1,154	1,940	20,915	186	72	1,627
Year 4	2026	1,294	1,940	23,115	206	72	1,627
Year 5	2027	1,435	1,940	25,315	226	72	1,627
Year 6	2028	1,575	1,940	26,315	236	72	1,627
Year 7	2029	1,716	1,940	27,315	246	72	1,627
Year 8	2030	1,856	1,940	28,315	256	72	1,627
Year 9	2031	1,997	1,940	29,315	266	72	1,627
Year 10	2032	2,137	1,940	30,315	276	72	1,627
10-Year Increase		1,405	144	16,000	150	0	0
Projected Revenue		\$6,423,452	\$471,074	\$12,757,794	\$889,970	\$0	\$0

Projected Fee Revenue	\$20,542,290
Total Expenditures	\$20,551,912

APPENDIX A: FORECAST OF REVENUES OTHER THAN FEES

ARS § 9-463.05(E)(7) requires:

“A forecast of revenues generated by new service units other than development fees, which shall include estimated state-shared revenue, highway users revenue, federal revenue, ad valorem property taxes, construction contracting or similar excise taxes and the capital recovery portion of utility fees attributable to development based on the approved land use assumptions, and a plan to include these contributions in determining the extent of the burden imposed by the development as required in subsection B, paragraph 12 of this section.”

ARS § 9-463.05(B)(12) states,

“The municipality shall forecast the contribution to be made in the future in cash or by taxes, fees, assessments or other sources of revenue derived from the property owner towards the capital costs of the necessary public service covered by the development fee and shall include these contributions in determining the extent of the burden imposed by the development. Beginning August 1, 2014, for purposes of calculating the required offset to development fees pursuant to this subsection, if a municipality imposes a construction contracting or similar excise tax rate in excess of the percentage amount of the transaction privilege tax rate imposed on the majority of other transaction privilege tax classifications, the entire excess portion of the construction contracting or similar excise tax shall be treated as a contribution to the capital costs of necessary public services provided to development for which development fees are assessed, unless the excess portion was already taken into account for such purpose pursuant to this subsection.”

Glendale does not have a higher-than-normal construction excise tax rate; therefore, the required offset described above is not applicable. Shown in Figure A1 is the required forecast of non-development fee revenue from identified sources that can be attributed to future development over a period of five years. These funds are available for capital investments; however, the City of Glendale directs these revenues to non-development fee eligible capital needs including maintenance, repair, and replacement.

Figure A1: Revenue Projections

WE WILL DEVELOP THIS PRIOR TO ADVERTISEMENT OF THE DEVELOPMENT FEE REPORT.

APPENDIX B: PROFESSIONAL SERVICES

As stated in Arizona’s development fee enabling legislation, “a municipality may assess development fees to offset costs to the municipality associated with providing necessary public services to a development, including the costs of infrastructure, improvements, real property, engineering and architectural services, financing and professional services required for the preparation or revision of a development fee pursuant to this section, including the relevant portion of the infrastructure improvements plan” (see ARS § 9-463.05.A). Because development fees must be updated at least every five years, the cost of professional services is allocated to the projected increase in service units, over five years (see Figure B1). Qualified professionals must develop the IIP, using generally accepted engineering and planning practices. A qualified professional is defined as “a professional engineer, surveyor, financial analyst or planner providing services within the scope of the person’s license, education or experience”.

Figure B1: Cost of Professional Services

Necessary Public Service	Cost	Proportionate Share	Service Unit	5-Year Change	Cost per Service Unit
Street Facilities	\$49,440	All Development 100%	VMT	100,706	\$0.49

APPENDIX C: LAND USE DEFINITIONS

RESIDENTIAL DEVELOPMENT

As discussed below, residential development categories are based on data from the U.S. Census Bureau, American Community Survey. Development fees will be assessed to all new residential units. One-time development fees are determined by site capacity (i.e., number of residential units).

Single Family:

1. Single-family detached is a one-unit structure detached from any other house, that is, with open space on all four sides. Such structures are considered detached even if they have an adjoining shed or garage. A one-family house that contains a business is considered detached as long as the building has open space on all four sides.
2. Single-family attached (townhouse) is a one-unit structure that has one or more walls extending from ground to roof separating it from adjoining structures. In row houses (sometimes called townhouses), double houses, or houses attached to nonresidential structures, each house is a separate, attached structure if the dividing or common wall goes from ground to roof.
3. Mobile home includes both occupied and vacant mobile homes, to which no permanent rooms have been added. Mobile homes used only for business purposes or for extra sleeping space and mobile homes for sale on a dealer's lot, at the factory, or in storage are not counted in the housing inventory.

Multi-Family:

1. Includes units in structures containing two or more housing units, further categorized as units in structures with "2, 3 or 4, 5 to 9, 10 to 19, 20 to 49, and 50 or more apartments."
2. Includes any living quarters occupied as a housing unit that does not fit the other categories (e.g., houseboats, railroad cars, campers, and vans). Recreational vehicles, boats, vans, railroad cars, and the like are included only if they are occupied as a current place of residence.

NONRESIDENTIAL DEVELOPMENT

The proposed general nonresidential development categories (defined below) can be used for all new construction. Nonresidential development categories represent general groups of land uses that share similar average weekday vehicle trip generation rates and employment densities (i.e., jobs per thousand square feet of floor area).

Assisted Living: Establishments primarily providing either routine general protective oversight, assistance with activities necessary for independent living to mentally or physically limited persons, or establishments providing care for persons who are unable to care for themselves. By way of example, assisted living includes assisted living facilities, nursing homes, rest homes, chronic care homes, and convalescent homes.

Commercial: Establishments primarily selling merchandise, eating/drinking places, entertainment, and lodging uses. By way of example, commercial includes shopping centers, supermarkets, pharmacies, restaurants, bars, nightclubs, automobile dealerships, and movie theaters.

Industrial: Establishments primarily engaged in the processing or production of goods, along with warehousing, transportation, communications, and utilities. By way of example, industrial includes manufacturing plants, distribution warehouses, trucking companies, utility substations, power generation facilities, and telecommunications buildings.

Institutional: Public and quasi-public buildings providing educational, social assistance, or religious services. By way of example, institutional includes schools, universities, churches, and public buildings

Lodging: Establishments providing sleeping accommodations that may include supporting facilities such as restaurants, cocktail lounges, meeting and banquet rooms or convention facilities, limited recreational facilities (pool, fitness room), and/or other retail and service shops. By way of example, lodging includes hotels, motels, resorts, and hostels.

Office and Other Services: Establishments providing management, administrative, professional, or business services; personal and health care services. By way of example, office and other services includes offices, health care, and business services.

APPENDIX D: LAND USE ASSUMPTIONS

Arizona’s Development Fee Act requires the preparation of Land Use Assumptions, which are defined in Arizona Revised Statutes § 9-463.05(T)(6) as:

“projections of changes in land uses, densities, intensities and population for a specified service area over a period of at least ten years and pursuant to the General Plan of the municipality.”

The estimates and projections of residential and nonresidential development in this Land Use Assumptions document are for all areas within Glendale’s city limits. The current demographic estimates and future development projections will be used in the Infrastructure Improvements Plan (IIP) and in the calculation of development fees. Current demographic data estimates for 2022 are used in calculating levels of service (LOS) provided to existing development in the City of Glendale. Arizona’s Enabling Legislation requires fees to be updated at least every five years and limits the IIP to a maximum of 10 years.

SUMMARY OF GROWTH INDICATORS

Key land use assumptions for the City of Glendale Development Fee Report are population, housing units, employment, and nonresidential floor area projections. TischlerBise projects housing units in East Glendale using 2020 – 2035 projections published by the Maricopa Association of Governments (MAG). For housing units in West Glendale, TischlerBise uses projections provided by Glendale’s Development Services Department. TischlerBise derives population estimates and projections by converting housing units to population using persons per housing unit factors. For nonresidential development in East Glendale, TischlerBise projects employment using 2020 – 2035 projections published by the Maricopa Association of Governments (MAG). Multiplying employment projections by employment density factors published by the Institute of Transportation Engineers (ITE) provides nonresidential floor area. For nonresidential development in West Glendale, TischlerBise uses projections provided by Glendale’s Office of Economic Development. The projections contained in this document provide the foundation for the Development Fee Report. These metrics are the service units and demand indicators used in the Development Fee Report.

Development projections summarized in Figure D10 are used to estimate development fee revenue and to indicate the anticipated need for growth-related infrastructure. Development fee methodologies are designed to reduce sensitivity to development projections in the determination of the proportionate share fee amounts. If actual development is slower than projected, fee revenue will decline, but so will the need for growth-related infrastructure. In contrast, if development is faster than anticipated, fee revenue will increase, but Glendale will also need to accelerate infrastructure improvements to keep pace with the actual rate of development.

During the next 10 years, residential development projections indicate a resident population increase of 15,389 persons in an additional 5,933 housing units, and nonresidential development projections indicate an employment increase of 33,687 jobs in approximately 22,175,000 square feet of floor area.

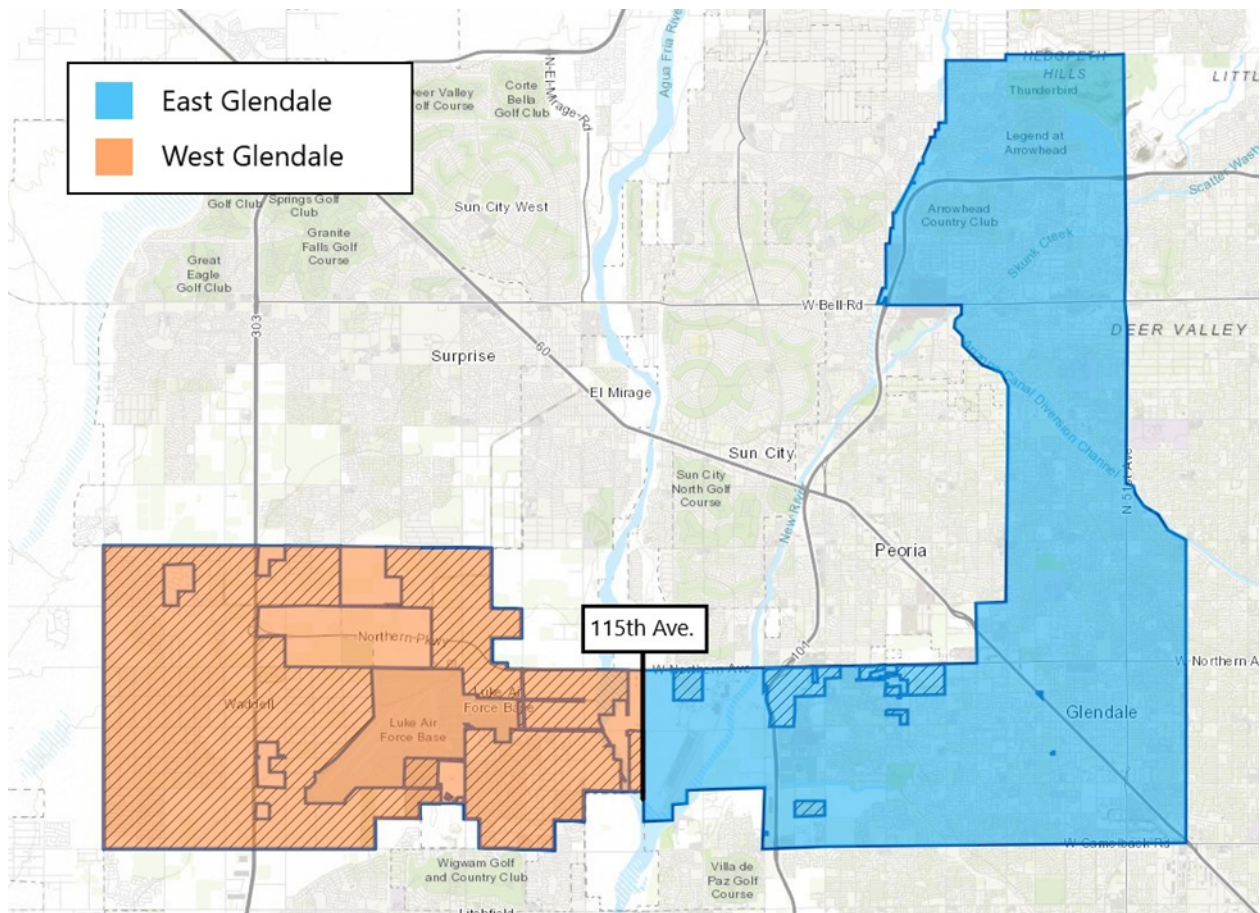
SERVICE AREAS

ARS § 9-63.05 defines “service area” as follows:

“Any specified area within the boundaries of a municipality in which development will be served by necessary public services or facility expansions and within which a substantial nexus exists between the necessary public services or facility expansions and the development being served as prescribed in the infrastructure improvements plan.”

Much of the land in Glendale west of 115th Avenue is undeveloped. Since the street network west of 115th Avenue currently serves limited existing development, there are large differences in service standards for street infrastructure between areas east of 115th Avenue and areas west of 115th Avenue. As a result, TischlerBise recommends having 115th Avenue serve as the border between the two service areas for street facilities development fees.

Figure D1: Proposed Development Fee Service Areas



RESIDENTIAL DEVELOPMENT

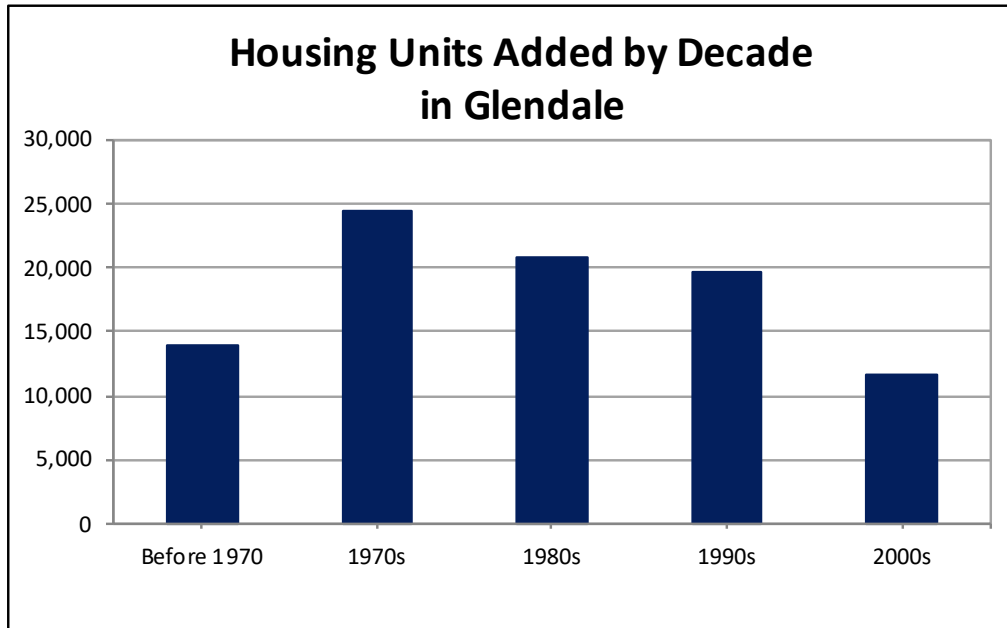
This section details current estimates and future projections of residential development.

Recent Residential Construction

Development fees require an analysis of current levels of service. For residential development, current levels of service are determined using estimates of population and housing units. Shown below, Figure D2 indicates the estimated number of housing units added by decade according to data obtained from the U.S. Census Bureau. In the previous decade, Glendale’s housing stock grew by an average of 141 housing units per year.

Figure D2: Housing Units by Decade

Census 2010 Housing Units	90,505	Glendale's housing stock grew by an average of 141 housing units per year from 2010 to 2020.
Census 2020 Housing Units	91,912	
New Housing Units 2010 to 2020	1,407	



Source: U.S. Census Bureau, Census 2020 Summary File 1, Census 2010 Summary File 1, 2015-2019 5-Year American Community Survey (for 2000s and earlier, adjusted to yield total units in 2010).

Persons per Housing Unit

According to the U.S. Census Bureau, a household is a housing unit occupied by year-round residents. Development fees often use per capita standards and persons per housing unit (PPHU) or persons per household (PPH) to derive proportionate share fee amounts. When PPHU is used in the fee calculations, infrastructure standards are derived using year-round population. When PPH is used in the fee calculations, the development fee methodology assumes a higher percentage of housing units will be occupied, thus requiring seasonal or peak population to be used when deriving infrastructure standards. TischlerBise recommends that development fees for residential development in Glendale be imposed according to the number of persons per housing unit.

Occupancy calculations require data on population and the types of units by structure. The 2010 census did not obtain detailed information using a “long-form” questionnaire. Instead, the U.S. Census Bureau switched to a continuous monthly mailing of surveys, known as the American Community Survey (ACS), which has limitations due to sample-size constraints. For example, data on detached housing units are now combined with attached single units (commonly known as townhouses, which share a common sidewall, but are constructed on an individual parcel of land). For development fees in Glendale, detached units, attached units, and mobile home units are included in the “Single-Family” category. The “Multi-Family” category includes duplexes and all other structures with two or more units on an individual parcel of land.

Figure D3 below shows the occupancy estimates for Glendale based on 2015-2019 American Community Survey 5-Year Estimates. Single-family units averaged 3.15 persons per housing unit, and multi-family units averaged 2.06 persons per housing unit. The average occupancy for all housing units in Glendale was 2.85 persons per housing unit.

Figure D3: Persons per Housing Unit

Housing Type	Persons	Households	Persons per Household	Housing Units	Persons per Housing Unit	Housing Mix	Vacancy Rate
Single-Family ¹	199,345	59,391	3.36	63,368	3.15	72.7%	6.28%
Multi-Family ²	49,016	21,674	2.26	23,820	2.06	27.3%	9.01%
Total	248,361	81,065	3.06	87,188	2.85	100.0%	7.02%

Source: U.S. Census Bureau, 2015-2019 American Community Survey 5-Year Estimates, Tables B25024, B25032, B25033.

- 1. Includes detached, attached (i.e. townhouses), and mobile home units.
- 2. Includes dwellings in structures with two or more units or a boat, RV, van, etc.

Residential Estimates

East Glendale

Based on estimates provided by Glendale’s Development Services Department, there were 55,470 single-family units and 38,759 multi-family units in East Glendale in 2021. There were an additional 1,326 single-family units and 886 multi-family units under construction in 2021. The 2022 estimate for East Glendale includes 56,796 single-family units and 39,645 multi-family units.

West Glendale

TischlerBise estimates there are 732 single-family units and 1,796 multi-family units located in West Glendale in 2022. These units are located at Luke Air Force Base.

Residential Projections

For this study, the analysis assumes the occupancy factors shown in Figure D3 will remain constant throughout the 10-year projection period. Population and housing unit projections are used to illustrate the possible future pace of service demands, revenues, and expenditures. To the extent these factors change, the projected need for infrastructure will also change. If development occurs at a more rapid rate than projected, the demand for infrastructure will increase at a corresponding rate. If development occurs at a slower rate than projected, the demand for infrastructure will also decrease.

East Glendale

To project residential development in East Glendale from 2022 through 2032, TischlerBise uses MAG housing unit projections for 2020, 2025, 2030, and 2035. To project interim years, the five-year increase is distributed equally. For example, the average annual increase from 2020 to 2025 is 255 single-family units. Adding those 255 units to the 2022 estimate of 56,796 single-family units results in a 2023 estimate of 57,051 single-family units in East Glendale.

To convert housing units to population, occupancy factors shown in Figure D3 are applied to the housing unit projections shown in Figure D4. For example, the 10-year increase of 1,500 single-family units multiplied by 3.15 persons per housing unit equals 4,724 persons in new single-family units. Based on these assumptions, the 10-year projections for East Glendale include an increase of 10,666 persons and 4,384 housing units.

Figure D4: Residential Development Projections – East Glendale

East Glendale	2022	2023	2024	2025	2026	2027	2032	10-Year Increase
	Base Year	1	2	3	4	5	10	
Population								
Single Family	180,946	181,749	182,552	183,355	183,751	184,146	185,671	4,724
Multi-Family	82,625	83,107	83,590	84,073	84,729	85,384	88,566	5,942
Resident Population	263,571	264,857	266,143	267,429	268,480	269,530	274,237	10,666
Housing Units								
Single Family	56,796	57,051	57,306	57,561	57,686	57,812	58,296	1,500
Multi-Family	39,645	39,879	40,114	40,348	40,666	40,984	42,529	2,884
Total	96,441	96,930	97,420	97,909	98,353	98,796	100,825	4,384

West Glendale

Glendale’s Development Services Department projects construction of 1,405 single-family units over the next 10 years and 144 multi-family units over the next three years. To convert housing units to population, occupancy factors shown in Figure D3 are applied to the housing unit projections shown at the bottom of Figure D5. For example, the 10-year increase of 1,405 single-family units multiplied by 3.15 persons per housing unit equals 4,426 persons in new single-family units. Based on these assumptions, the 10-year projections for West Glendale include an increase of 4,722 persons and 1,549 housing units. There is no expected increase in housing units at Luke Air Force Base.

Figure D5: Residential Development Projections – West Glendale

West Glendale	2022	2023	2024	2025	2026	2027	2032	10-Year Increase
	Base Year	1	2	3	4	5	10	
Population								
Single Family	1,952	2,395	2,837	3,280	3,722	4,165	6,378	4,426
Multi-Family	1,555	1,654	1,753	1,852	1,852	1,852	1,852	297
Resident Population	3,507	4,048	4,590	5,131	5,574	6,017	8,229	4,722
Housing Units								
Single Family	732	873	1,013	1,154	1,294	1,435	2,137	1,405
Multi-Family	1,796	1,844	1,892	1,940	1,940	1,940	1,940	144
Total	2,528	2,717	2,905	3,094	3,234	3,375	4,077	1,549

NONRESIDENTIAL DEVELOPMENT

This section details current estimates and future projections of nonresidential development including jobs and nonresidential floor area.

Nonresidential Square Footage Estimates

TischlerBise uses the term jobs to refer to employment by place of work. In Figure D6, gray shading indicates the nonresidential development prototypes used by TischlerBise to derive employment densities. For nonresidential development, TischlerBise uses data published in Trip Generation, Institute of Transportation Engineers, 11th Edition (2021). The prototype for industrial development, Industrial Park (ITE 130), has 864 square feet of floor area per employee. Institutional development uses Government Office (ITE 730) and has 330 square feet of floor area per employee. For office & other services development, the proxy is General Office (ITE 710); it has 307 square feet of floor area per employee. The prototype for commercial development is Shopping Center (ITE 820), which has 471 square feet of floor area per employee.

Figure D6: Nonresidential Demand Units

ITE Code	Land Use / Size	Demand Unit	Wkdy Trip Ends Per Dmd Unit ¹	Wkdy Trip Ends Per Employee ¹	Emp Per Dmd Unit	Sq Ft Per Emp
110	Light Industrial	1,000 Sq Ft	4.87	3.10	1.57	637
130	Industrial Park	1,000 Sq Ft	3.37	2.91	1.16	864
140	Manufacturing	1,000 Sq Ft	4.75	2.51	1.89	528
150	Warehousing	1,000 Sq Ft	1.71	5.05	0.34	2,953
254	Assisted Living	bed	2.60	4.24	0.61	na
310	Hotel	room	7.99	14.34	0.56	na
520	Elementary School	student	2.27	22.50	0.10	na
525	High School	student	1.94	21.95	0.09	na
565	Day Care	student	4.09	21.38	0.19	na
610	Hospital	1,000 Sq Ft	10.77	3.77	2.86	350
710	General Office (avg size)	1,000 Sq Ft	10.84	3.33	3.26	307
720	Medical-Dental Office	1,000 Sq Ft	36.00	8.71	4.13	242
730	Government Office	1,000 Sq Ft	22.59	7.45	3.03	330
750	Office Park	1,000 Sq Ft	11.07	3.54	3.13	320
770	Business Park	1,000 Sq Ft	12.44	4.04	3.08	325
820	Shopping Center (avg size)	1,000 Sq Ft	37.01	17.42	2.12	471

1. Trip Generation, Institute of Transportation Engineers, 11th Edition (2021).

Nonresidential Estimates

Based on data published by Esri Business Analyst, the 2021 employment estimate includes 81,970 jobs. Converting jobs to nonresidential floor area using the square feet per employee multipliers shown in Figure D6, the 2021 floor area estimate includes 34,577,073 square feet.

Figure D7: Nonresidential Estimates – 2021

Nonresidential Category	2021 Jobs ¹	Percent of Total Jobs	Square Feet per Job ²	2021 Estimated Floor Area ³	Jobs per 1,000 Sq. Ft. ²
Industrial ⁴	8,531	10%	864	7,370,784	1.16
Commercial ⁵	26,221	32%	471	12,350,091	2.12
Office & Other Service ⁶	31,554	38%	307	9,687,078	3.26
Institutional ⁷	15,664	19%	330	5,169,120	3.03
Total	81,970	100%		34,577,073	

1. Esri Business Analyst, 2021.
2. Trip Generation, Institute of Transportation Engineers, 11th Edition (2021).
3. TischlerBise calculation (2021 jobs X square feet per job).
4. Major sectors include Manufacturing, Wholesale Trade.
5. Major sectors include Retail Trade, Accommodation & Food Services.
6. Major sectors include Health Care, Other Services.
7. Major sectors include Public Administration, Educational Services.

Nonresidential Projections

Employment and floor area projections are used to illustrate the possible future pace of service demands, revenues, and expenditures. To the extent these factors change, the projected need for infrastructure will also change. If development occurs at a more rapid rate than projected, the demand for infrastructure will increase at a corresponding rate. If development occurs at a slower rate than projected, the demand for infrastructure will also decrease.

East Glendale

To project nonresidential development in East Glendale from the 2021 Esri estimate to the 2022 base year, and then through 2032, TischlerBise uses compound annual growth rates calculated from MAG employment projections for 2020 to 2025, 2025 to 2030, and 2030 to 2035. For 2020 to 2025, the compound annual growth rate is 2.4 percent for industrial, 1.0 percent for commercial, 2.7 percent for office and other services, and 1.2 percent for institutional. Applying these growth rates to the 2021 Esri estimates results in a 2022 base year estimate of 8,051 industrial jobs, 26,222 commercial jobs, 32,188 office and other services jobs, and 10,860 institutional jobs. For the 2022 base year, the East Glendale employment estimate includes 77,321 jobs. TischlerBise repeats this calculation to project employment from 2022 to 2032. Over the next 10 years, East Glendale employment growth includes 14,850 jobs.

To convert employment to floor area, employment multipliers shown in Figure D6 are applied to the employment projections shown in Figure D8. For example, the 10-year increase of 2,310 commercial jobs multiplied by 471 square feet per job equals approximately 1,088,000 square feet of commercial floor area. Based on these assumptions, the 10-year projections for East Glendale include an additional 6,025,000 square feet of nonresidential floor area.

Figure D8: Nonresidential Development Projections – East Glendale

East Glendale	2022	2023	2024	2025	2026	2027	2032	10-Year Increase
	Base Year	1	2	3	4	5	10	
Employment								
Industrial	8,051	8,250	8,448	8,646	8,855	9,064	9,962	1,910
Commercial	26,222	26,491	26,760	27,029	27,265	27,501	28,532	2,310
Office & Other Services	32,188	33,057	33,927	34,796	35,775	36,754	41,788	9,601
Institutional	10,860	10,987	11,113	11,239	11,319	11,398	11,889	1,029
Total	77,321	78,784	80,247	81,710	83,213	84,717	92,171	14,850
Nonres. Floor Area (x1,000)								
Industrial	6,956	7,128	7,299	7,470	7,651	7,831	8,607	1,650
Commercial	12,351	12,477	12,604	12,731	12,842	12,953	13,439	1,088
Office & Other Services	9,882	10,149	10,416	10,682	10,983	11,283	12,829	2,947
Institutional	3,584	3,626	3,667	3,709	3,735	3,761	3,923	339
Total	32,772	33,379	33,986	34,592	35,210	35,829	38,798	6,025

West Glendale

To project nonresidential development in West Glendale from the 2021 Esri estimate to the 2022 base year, and then through 2032, TischlerBise uses development projections provided by Glendale’s Office of Economic Development. For 2021, Luke Air Force Base accounted for the majority of jobs and nonresidential floor area located in West Glendale. Adding industrial development completed or under construction in 2021 to the 2021 estimate provides a 2022 base year estimate of 16,141,000 square feet of nonresidential floor area in West Glendale.

Glendale’s Office of Economic Development projects an additional 11,000,000 square feet of industrial development over the next five years and an additional 5,000,000 square feet of industrial development from 2027 to 2032. Glendale’s Office of Economic Development projects an additional 100,000 square feet of commercial development over the next five years and an additional 50,000 square feet of commercial development from 2027 to 2032. Based on these assumptions, the 10-year projections for West Glendale include an additional 16,150,000 square feet of nonresidential floor area.

To convert floor area to employment, employment multipliers shown in Figure D6 are applied to the floor area projections shown in Figure D9. For example, the 10-year increase of 16,000,000 square feet of industrial development divided by 864 square feet per job equals approximately 18,519 industrial jobs. Over the next 10 years, West Glendale employment growth includes 18,837 jobs.

Figure D9: Nonresidential Development Projections – West Glendale

West Glendale	2022	2023	2024	2025	2026	2027	2032	10-Year Increase
	Base Year	1	2	3	4	5	10	
Employment								
Industrial	5,327	7,874	10,420	12,966	15,513	18,059	23,846	18,519
Commercial	268	310	353	395	438	480	586	318
Office & Other Services	236	236	236	236	236	236	236	0
Institutional	4,930	4,930	4,930	4,930	4,930	4,930	4,930	0
Total	10,761	13,350	15,939	18,528	21,116	23,705	29,598	18,837
Nonres. Floor Area (x1,000)								
Industrial	14,315	16,515	18,715	20,915	23,115	25,315	30,315	16,000
Commercial	126	146	166	186	206	226	276	150
Office & Other Services	72	72	72	72	72	72	72	0
Institutional	1,627	1,627	1,627	1,627	1,627	1,627	1,627	0
Total	16,141	18,361	20,581	22,801	25,021	27,241	32,291	16,150

DEVELOPMENT PROJECTIONS

Provided below is a summary of development projections. Development projections are used to illustrate a possible future pace of demand for service units and cash flows resulting from revenues and expenditures associated with those demands.

Figure D10: Development Projections Summary – Total

Glendale, Arizona	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Increase
	Base Year	1	2	3	4	5	6	7	8	9	10	
Population												
Single Family	182,898	184,144	185,390	186,635	187,473	188,311	189,149	189,987	190,825	191,437	192,048	9,150
Multi-Family	84,180	84,761	85,343	85,925	86,580	87,235	87,891	88,546	89,201	89,809	90,418	6,238
Resident Population	267,078	268,905	270,733	272,560	274,053	275,547	277,040	278,533	280,026	281,246	282,466	15,389
Housing Units												
Single Family	57,528	57,923	58,319	58,714	58,980	59,246	59,512	59,779	60,045	60,239	60,433	2,905
Multi-Family	41,441	41,723	42,006	42,288	42,606	42,924	43,243	43,561	43,879	44,174	44,469	3,028
Total	98,969	99,647	100,325	101,003	101,587	102,171	102,755	103,339	103,923	104,413	104,902	5,933
Employment												
Industrial	13,379	16,123	18,868	21,612	24,367	27,122	28,489	29,855	31,221	32,514	33,807	20,429
Commercial	26,490	26,801	27,113	27,424	27,703	27,981	28,238	28,496	28,753	28,936	29,119	2,629
Office & Other Services	32,424	33,293	34,163	35,032	36,011	36,990	37,969	38,947	39,926	40,975	42,024	9,601
Institutional	15,790	15,917	16,043	16,169	16,249	16,328	16,408	16,488	16,567	16,693	16,819	1,029
Total	88,082	92,134	96,186	100,238	104,330	108,422	111,104	113,785	116,467	119,118	121,769	33,687
Nonres. Floor Area (x1,000)												
Industrial	21,272	23,643	26,014	28,386	30,766	33,146	34,327	35,507	36,687	37,805	38,922	17,650
Commercial	12,477	12,623	12,770	12,917	13,048	13,179	13,300	13,421	13,543	13,629	13,715	1,238
Office & Other Services	9,954	10,221	10,488	10,755	11,055	11,356	11,656	11,957	12,257	12,579	12,902	2,947
Institutional	5,211	5,252	5,294	5,336	5,362	5,388	5,415	5,441	5,467	5,509	5,550	339
Total	48,913	51,740	54,566	57,393	60,231	63,070	64,698	66,326	67,954	69,522	71,089	22,175

East Glendale

Figure D11: Development Projections Summary – East Glendale

East Glendale	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Increase
	Base Year	1	2	3	4	5	6	7	8	9	10	
Population												
Single Family	180,946	181,749	182,552	183,355	183,751	184,146	184,542	184,937	185,333	185,502	185,671	4,724
Multi-Family	82,625	83,107	83,590	84,073	84,729	85,384	86,039	86,694	87,349	87,958	88,566	5,942
Resident Population	263,571	264,857	266,143	267,429	268,480	269,530	270,581	271,632	272,682	273,460	274,237	10,666
Housing Units												
Single Family	56,796	57,051	57,306	57,561	57,686	57,812	57,937	58,063	58,189	58,242	58,296	1,500
Multi-Family	39,645	39,879	40,114	40,348	40,666	40,984	41,303	41,621	41,939	42,234	42,529	2,884
Total	96,441	96,930	97,420	97,909	98,353	98,796	99,240	99,684	100,127	100,476	100,825	4,384
Employment												
Industrial	8,051	8,250	8,448	8,646	8,855	9,064	9,272	9,481	9,690	9,826	9,962	1,910
Commercial	26,222	26,491	26,760	27,029	27,265	27,501	27,737	27,973	28,209	28,370	28,532	2,310
Office & Other Services	32,188	33,057	33,927	34,796	35,775	36,754	37,733	38,711	39,690	40,739	41,788	9,601
Institutional	10,860	10,987	11,113	11,239	11,319	11,398	11,478	11,558	11,637	11,763	11,889	1,029
Total	77,321	78,784	80,247	81,710	83,213	84,717	86,220	87,723	89,226	90,699	92,171	14,850
Nonres. Floor Area (x1,000)												
Industrial	6,956	7,128	7,299	7,470	7,651	7,831	8,011	8,192	8,372	8,489	8,607	1,650
Commercial	12,351	12,477	12,604	12,731	12,842	12,953	13,064	13,175	13,286	13,363	13,439	1,088
Office & Other Services	9,882	10,149	10,416	10,682	10,983	11,283	11,584	11,884	12,185	12,507	12,829	2,947
Institutional	3,584	3,626	3,667	3,709	3,735	3,761	3,788	3,814	3,840	3,882	3,923	339
Total	32,772	33,379	33,986	34,592	35,210	35,829	36,447	37,065	37,684	38,241	38,798	6,025

West Glendale

Figure D12: Development Projections Summary – West Glendale

West Glendale	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	10-Year Increase
	Base Year	1	2	3	4	5	6	7	8	9	10	
Population												
Single Family	1,952	2,395	2,837	3,280	3,722	4,165	4,607	5,050	5,493	5,935	6,378	4,426
Multi-Family	1,555	1,654	1,753	1,852	1,852	1,852	1,852	1,852	1,852	1,852	1,852	297
Resident Population	3,507	4,048	4,590	5,131	5,574	6,017	6,459	6,902	7,344	7,787	8,229	4,722
Housing Units												
Single Family	732	873	1,013	1,154	1,294	1,435	1,575	1,716	1,856	1,997	2,137	1,405
Multi-Family	1,796	1,844	1,892	1,940	1,940	1,940	1,940	1,940	1,940	1,940	1,940	144
Total	2,528	2,717	2,905	3,094	3,234	3,375	3,515	3,656	3,796	3,937	4,077	1,549
Employment												
Industrial	5,327	7,874	10,420	12,966	15,513	18,059	19,216	20,374	21,531	22,688	23,846	18,519
Commercial	268	310	353	395	438	480	502	523	544	565	586	318
Office & Other Services	236	236	236	236	236	236	236	236	236	236	236	0
Institutional	4,930	4,930	4,930	4,930	4,930	4,930	4,930	4,930	4,930	4,930	4,930	0
Total	10,761	13,350	15,939	18,528	21,116	23,705	24,884	26,062	27,241	28,420	29,598	18,837
Nonres. Floor Area (x1,000)												
Industrial	14,315	16,515	18,715	20,915	23,115	25,315	26,315	27,315	28,315	29,315	30,315	16,000
Commercial	126	146	166	186	206	226	236	246	256	266	276	150
Office & Other Services	72	72	72	72	72	72	72	72	72	72	72	0
Institutional	1,627	1,627	1,627	1,627	1,627	1,627	1,627	1,627	1,627	1,627	1,627	0
Total	16,141	18,361	20,581	22,801	25,021	27,241	28,251	29,261	30,271	31,281	32,291	16,150

VMT PROJECTIONS

Figure D13: VMT Projections Summary – East Glendale

East Glendale		Base	1	2	3	4	5	6	7	8	9	10	10-Year
		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Increase
Development	Single Family Units	56,796	57,051	57,306	57,561	57,686	57,812	57,937	58,063	58,189	58,242	58,296	1,500
	Multi-Family Units	39,645	39,879	40,114	40,348	40,666	40,984	41,303	41,621	41,939	42,234	42,529	2,884
	Industrial KSF	6,956	7,128	7,299	7,470	7,651	7,831	8,011	8,192	8,372	8,489	8,607	1,650
	Commercial KSF	12,351	12,477	12,604	12,731	12,842	12,953	13,064	13,175	13,286	13,363	13,439	1,088
	Office & Other Services KSF	9,882	10,149	10,416	10,682	10,983	11,283	11,584	11,884	12,185	12,507	12,829	2,947
	Institutional KSF	3,584	3,626	3,667	3,709	3,735	3,761	3,788	3,814	3,840	3,882	3,923	339
Avg Weekday Vehicle Trips	Single-Family Trips	342,775	344,314	345,853	347,391	348,149	348,907	349,664	350,422	351,180	351,503	351,827	9,052
	Multi-Family Trips	171,013	172,024	173,035	174,047	175,419	176,791	178,162	179,534	180,906	182,181	183,455	12,442
	Residential Trips	513,788	516,338	518,888	521,438	523,568	525,697	527,827	529,957	532,086	533,684	535,282	21,494
	Industrial Trips	11,721	12,010	12,299	12,587	12,891	13,195	13,499	13,803	14,107	14,305	14,502	2,781
	Commercial Trips	150,841	152,388	153,935	155,482	156,840	158,197	159,555	160,913	162,271	163,200	164,130	13,289
	Office & Other Services Trips	53,558	55,005	56,452	57,899	59,528	61,156	62,785	64,413	66,042	67,788	69,533	15,975
	Institutional Trips	26,717	27,027	27,338	27,649	27,845	28,041	28,237	28,433	28,629	28,938	29,248	2,531
	Nonresidential Trips	242,837	246,430	250,024	253,617	257,103	260,589	264,076	267,562	271,048	274,231	277,413	34,576
	Total Vehicle Trips	756,625	762,768	768,912	775,055	780,671	786,287	791,903	797,518	803,134	807,915	812,695	56,070
VMT	Vehicle Miles Traveled (VMT)	1,783,579	1,796,451	1,809,322	1,822,194	1,833,757	1,845,319	1,856,882	1,868,445	1,880,007	1,889,624	1,899,241	115,663

Figure D14: VMT Projections Summary – West Glendale

West Glendale		Base	1	2	3	4	5	6	7	8	9	10	10-Year
		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Increase
Development	Single Family Units	732	873	1,013	1,154	1,294	1,435	1,575	1,716	1,856	1,997	2,137	1,405
	Multi-Family Units	1,796	1,844	1,892	1,940	1,940	1,940	1,940	1,940	1,940	1,940	1,940	144
	Industrial KSF	14,315	16,515	18,715	20,915	23,115	25,315	26,315	27,315	28,315	29,315	30,315	16,000
	Commercial KSF	126	146	166	186	206	226	236	246	256	266	276	150
	Office & Other Services KSF	72	72	72	72	72	72	72	72	72	72	72	0
	Institutional KSF	1,627	1,627	1,627	1,627	1,627	1,627	1,627	1,627	1,627	1,627	1,627	0
Avg Weekday Vehicle Trips	Single-Family Trips	4,418	5,266	6,114	6,962	7,810	8,657	9,505	10,353	11,201	12,049	12,897	8,479
	Multi-Family Trips	7,747	7,954	8,161	8,368	8,368	8,368	8,368	8,368	8,368	8,368	8,368	621
	Residential Trips	12,165	13,220	14,275	15,330	16,178	17,026	17,874	18,722	19,570	20,418	21,266	9,101
	Industrial Trips	24,121	27,828	31,535	35,242	38,949	42,656	44,341	46,026	47,711	49,396	51,081	26,960
	Commercial Trips	1,542	1,786	2,030	2,274	2,519	2,763	2,885	3,007	3,129	3,252	3,374	1,832
	Office & Other Services Trips	393	393	393	393	393	393	393	393	393	393	393	0
	Institutional Trips	12,128	12,128	12,128	12,128	12,128	12,128	12,128	12,128	12,128	12,128	12,128	0
	Nonresidential Trips	38,184	42,135	46,086	50,037	53,989	57,940	59,747	61,554	63,361	65,168	66,976	28,792
	Total Vehicle Trips	50,349	55,355	60,361	65,367	70,167	74,966	77,621	80,276	82,931	85,586	88,241	37,893
VMT	Vehicle Miles Traveled (VMT)	81,544	89,525	97,505	105,485	112,997	120,509	124,986	129,463	133,940	138,416	142,893	61,349

APPENDIX E: ARTERIAL INVENTORY

EAST GLENDALE

Street	Section	Miles	Lanes	Ln Miles	ADT ¹	VMT	Capacity ²	VMC
51st Ave	Btwn Camelback Rd & Bethany Home Rd	1.0	5.0	5.0	20,221	20,221	49,850	49,850
51st Ave	Btwn Bethany Home Rd & Glendale Ave	1.0	5.0	5.0	19,212	19,212	49,850	49,850
51st Ave	Btwn Glendale Ave & Northern Ave	1.0	5.0	5.0	20,838	20,838	49,850	49,850
51st Ave	Btwn Northern Ave & Olive Ave	1.0	5.0	5.0	19,558	19,558	49,850	49,850
51st Ave	Btwn Olive Ave & Peoria Ave	1.0	5.0	5.0	22,947	22,947	49,850	49,850
51st Ave	Btwn Peoria Ave & Cactus Rd	1.0	5.0	5.0	17,311	17,311	49,850	49,850
59th Ave	Btwn Camelback Rd & Bethany Home Rd	1.0	4.0	4.0	17,239	17,239	39,800	39,800
59th Ave	Btwn Bethany Home Rd & Glendale Ave	1.0	4.0	4.0	14,922	14,922	39,800	39,800
59th Ave	Btwn Glendale Ave & Northern Ave	1.0	5.0	5.0	20,225	20,225	49,850	49,850
59th Ave	Btwn Northern Ave & Olive Ave	1.0	5.0	5.0	16,153	16,153	49,850	49,850
59th Ave	Btwn Olive Ave & Peoria Ave	1.0	5.0	5.0	18,685	18,685	49,850	49,850
59th Ave	Btwn Peoria Ave & Cactus Rd	1.0	5.0	5.0	18,211	18,211	49,850	49,850
59th Ave	Btwn Cactus Rd & Thunderbird Rd	1.0	5.0	5.0	21,412	21,412	49,850	49,850
59th Ave	Btwn Thunderbird Rd & Greenway Rd	1.0	5.0	5.0	21,671	21,671	49,850	49,850
59th Ave	Btwn Greenway Rd & Bell Rd	0.9	5.0	4.5	20,738	18,664	49,850	44,865
59th Ave	Btwn Bell Rd & Union Hills Dr	1.1	4.0	4.4	19,014	20,915	39,800	43,780
59th Ave	Btwn Union Hills Dr & Loop 101	1.0	6.0	6.0	19,568	19,568	59,900	59,900
59th Ave	Btwn Loop 101 & Deer Valley Rd	1.0	4.0	4.0	15,941	15,941	39,800	39,800
59th Ave	Btwn Deer Valley Rd & Pinnacle Peak Rd	1.3	2.0	2.6	12,408	16,130	17,700	23,010
67th Ave	Btwn Camelback Rd & Bethany Home Rd	1.0	4.0	4.0	19,904	19,904	39,800	39,800
67th Ave	Btwn Bethany Home Rd & Glendale Ave	1.0	4.0	4.0	20,345	20,345	39,800	39,800
67th Ave	Btwn Glendale Ave & Northern Ave	1.0	4.0	4.0	17,815	17,815	39,800	39,800
67th Ave	Btwn Northern Ave & Olive Ave	1.0	4.0	4.0	25,123	25,123	39,800	39,800
67th Ave	Btwn Olive Ave & Peoria Ave	1.0	4.0	4.0	21,422	21,422	39,800	39,800
67th Ave	Btwn Peoria Ave & Cactus Rd	1.0	4.0	4.0	19,223	19,223	39,800	39,800

Street	Section	Miles	Lanes	Ln Miles	ADT ¹	VMT	Capacity ²	VMC
67th Ave	Btwn Cactus Rd & Thunderbird Rd	1.0	4.0	4.0	18,430	18,430	39,800	39,800
67th Ave	Btwn Thunderbird Rd & Greenway Rd	1.0	4.0	4.0	15,580	15,580	39,800	39,800
67th Ave	Btwn Greenway Rd & Bell Rd	0.9	4.0	3.6	24,547	22,092	39,800	35,820
67th Ave	Btwn Bell Rd & Union Hills Dr	1.0	4.0	4.0	17,139	17,139	39,800	39,800
67th Ave	Btwn Union Hills Dr & Loop 101	1.1	6.0	6.6	21,965	24,162	59,900	65,890
67th Ave	Btwn Loop 101 & Deer Valley Rd	1.0	4.0	4.0	25,945	25,945	39,800	39,800
67th Ave	Btwn Deer Valley Rd & Pinnacle Peak Rd	1.0	4.0	4.0	25,026	25,026	39,800	39,800
75th Ave	Btwn Camelback Rd & Bethany Home Rd	1.0	4.0	4.0	13,947	13,947	39,800	39,800
75th Ave	Btwn Bethany Home Rd & Glendale Ave	1.0	4.0	4.0	15,980	15,980	39,800	39,800
75th Ave	Btwn Glendale Ave & Northern Ave	1.0	4.0	4.0	9,502	9,502	39,800	39,800
75th Ave	Btwn Bell Rd & Union Hills Dr	1.0	4.0	4.0	34,047	34,047	39,800	39,800
75th Ave	Btwn Beardsley Rd & Deer Valley Rd	1.0	4.0	4.0	29,340	29,340	39,800	39,800
83rd Ave	Btwn Camelback Rd & Bethany Home Rd	0.9	4.0	3.6	18,682	16,814	39,800	35,820
83rd Ave	Btwn Bethany Home Rd & Glendale Ave	1.1	4.0	4.4	13,612	14,973	39,800	43,780
83rd Ave	Btwn Glendale Ave & Northern Ave	1.0	2.0	2.0	9,555	9,555	17,700	17,700
83rd Ave	Btwn Bell Rd & Union Hills Dr	1.1	4.0	4.4	21,542	23,696	39,800	43,780
83rd Ave	Btwn Union Hills Dr & Beardsley Rd	1.0	6.0	6.0	21,428	21,428	59,900	59,900
91st Ave	Btwn Camelback Rd & Bethany Home Rd	1.0	5.0	5.0	6,327	6,327	49,850	49,850
91st Ave	Btwn Bethany Home Rd & Glendale Ave	1.0	6.0	6.0	6,294	6,294	59,900	59,900
99th Ave	Btwn Camelback Rd & Bethany Home Rd	1.0	4.0	4.0	7,323	7,323	39,800	39,800
99th Ave	Btwn Bethany Home Rd & Glendale Ave	1.0	4.0	4.0	4,888	4,888	39,800	39,800
99th Ave	Btwn Glendale Ave & Northern Ave	1.0	2.0	2.0	2,655	2,655	17,700	17,700
Bell Rd	Btwn 51st Ave & 59th Ave	1.0	6.0	6.0	28,819	28,819	59,900	59,900
Bell Rd	Btwn 59th Ave & 67th Ave	0.9	6.0	5.4	31,543	28,389	59,900	53,910
Bell Rd	Btwn 67th Ave & 75th Ave	1.0	6.0	6.0	37,254	37,254	59,900	59,900
Bell Rd	Btwn 75th Ave & 83rd Ave	1.0	8.0	8.0	47,077	47,077	80,100	80,100
Bell Rd	Btwn 83rd Ave & Loop 101 Fwy	0.2	7.0	1.4	50,162	10,032	70,000	14,000
Bethany Home Rd	Btwn 43rd Ave & 51st Ave	1.0	5.0	5.0	16,684	16,684	49,850	49,850

DRAFT Land Use Assumptions, Infrastructure Improvements Plan, and Development Fee Report

Glendale, Arizona

Street	Section	Miles	Lanes	Ln Miles	ADT ¹	VMT	Capacity ²	VMC
Bethany Home Rd	Btwn 51st Ave & 59th Ave	1.0	4.0	4.0	18,111	18,111	39,800	39,800
Bethany Home Rd	Btwn 59th Ave & 67th Ave	0.9	4.0	3.6	18,258	16,432	39,800	35,820
Bethany Home Rd	Btwn 67th Ave & 75th Ave	1.0	4.0	4.0	14,152	14,152	39,800	39,800
Bethany Home Rd	Btwn 75th Ave & 83rd Ave	1.0	4.0	4.0	9,811	9,811	39,800	39,800
Cactus Rd	Btwn 51st Ave & 59th Ave	1.0	5.0	5.0	19,427	19,427	49,850	49,850
Cactus Rd	Btwn 59th Ave & 67th Ave	0.9	5.0	4.5	20,036	18,032	49,850	44,865
Camelback Rd	Btwn 43rd Ave & 51st Ave	1.0	5.0	5.0	24,500	24,500	49,850	49,850
Camelback Rd	Btwn 51st Ave & 59th Ave	1.0	4.0	4.0	22,856	22,856	39,800	39,800
Camelback Rd	Btwn 59th Ave & 67th Ave	0.9	4.0	3.6	20,437	18,393	39,800	35,820
Camelback Rd	Btwn 67th Ave & 75th Ave	1.0	4.0	4.0	22,051	22,051	39,800	39,800
Camelback Rd	Btwn 75th Ave & 83rd Ave	1.0	4.0	4.0	21,350	21,350	39,800	39,800
Camelback Rd	Btwn 83rd Ave & 91st Ave	1.0	4.0	4.0	22,328	22,328	39,800	39,800
Camelback Rd	Btwn 91st Ave & 99th Ave	1.0	5.0	5.0	28,664	28,664	49,850	49,850
Cardinals Way	Btwn 83rd Ave & 91st Ave	1.0	4.0	4.0	22,355	22,355	39,800	39,800
Deer Valley Rd	Btwn 67th Ave & 75th Ave	1.0	4.0	4.0	10,956	10,956	39,800	39,800
Glendale Ave	Btwn 43rd Ave & 51st Ave	1.0	4.0	4.0	22,180	22,180	39,800	39,800
Glendale Ave	Btwn 51st Ave & 59th Ave	1.0	4.0	4.0	15,449	15,449	39,800	39,800
Glendale Ave	Btwn 59th Ave & 67th Ave	0.9	4.0	3.6	19,062	17,156	39,800	35,820
Glendale Ave	Btwn 67th Ave & 75th Ave	1.0	6.0	6.0	18,372	18,372	59,900	59,900
Glendale Ave	Btwn 75th Ave & 83rd Ave	1.0	6.0	6.0	17,963	17,963	59,900	59,900
Glendale Ave	Btwn 83rd Ave & 91st Ave	1.0	6.0	6.0	18,851	18,851	59,900	59,900
Glendale Ave	Btwn 91st Ave & 99th Ave	1.0	6.0	6.0	18,018	18,018	59,900	59,900
Glendale Ave	Btwn 99th Ave & Glen Harbor Blvd	1.2	4.0	4.8	18,929	22,715	39,800	47,760
Greenway Rd	Btwn 51st Ave & 59th Ave	1.0	5.0	5.0	15,860	15,860	49,850	49,850
Greenway Rd	Btwn 59th Ave & 67th Ave	0.9	4.0	3.6	12,075	10,868	39,800	35,820
Northern Ave	Btwn 43rd Ave & 51st Ave	1.0	5.0	5.0	22,442	22,442	49,850	49,850
Northern Ave	Btwn 51st Ave & 59th Ave	1.0	5.0	5.0	23,754	23,754	49,850	49,850
Northern Ave	Btwn 59th Ave & 67th Ave	0.9	4.0	3.6	17,570	15,813	39,800	35,820

Street	Section	Miles	Lanes	Ln Miles	ADT ¹	VMT	Capacity ²	VMC
Olive Ave	Btwn 43rd Ave & 51st Ave	1.0	5.0	5.0	23,293	23,293	49,850	49,850
Olive Ave	Btwn 51st Ave & 59th Ave	1.0	5.0	5.0	22,610	22,610	49,850	49,850
Olive Ave	Btwn 59th Ave & 67th Ave	0.9	5.0	4.5	24,061	21,655	49,850	44,865
Peoria Ave	Btwn 43rd Ave & 51st Ave	1.0	5.0	5.0	21,291	21,291	49,850	49,850
Peoria Ave	Btwn 51st Ave & 59th Ave	1.0	5.0	5.0	23,721	23,721	49,850	49,850
Peoria Ave	Btwn 59th Ave & 67th Ave	0.9	5.0	4.5	21,539	19,385	49,850	44,865
Thunderbird Rd	Btwn 51st Ave & 59th Ave	1.0	4.0	4.0	24,745	24,745	39,800	39,800
Thunderbird Rd	Btwn 59th Ave & 67th Ave	0.9	5.0	4.5	21,247	19,122	49,850	44,865
Union Hills Dr	Btwn 51st Ave & 59th Ave	1.0	6.0	6.0	16,766	16,766	59,900	59,900
Union Hills Dr	Btwn 59th Ave & 67th Ave	1.0	4.0	4.0	14,491	14,491	39,800	39,800
Union Hills Dr	Btwn 67th Ave & 75th Ave	1.0	4.0	4.0	15,561	15,561	39,800	39,800
Union Hills Dr	Btwn 75th Ave & 83rd Ave	1.0	4.0	4.0	15,026	15,026	39,800	39,800
Total		91.8		417.7	1,835,566	1,783,579		4,154,675

1. Maricopa Association of Governments

2. Moving Glendale Ahead Transportation Plan, LOS D

WEST GLENDALE

Street	Section	Miles	Lanes	Ln Miles	ADT ¹	VMT	Capacity ²	VMC
Bethany Home Rd	Btwn Cotton Ln & Sarival Ave	1.0	2.0	2.0	609	609	17,700	17,700
Cotton Ln	Btwn Camelback Rd & Bethany Home Rd	1.0	2.0	2.0	1,057	1,057	17,700	17,700
Glendale Ave	Btwn Reems Rd & Alsup Rd	0.5	2.0	1.0	554	277	17,700	8,850
Glendale Ave	Btwn Alsup Rd & Sarival Ave	0.5	2.0	1.0	857	429	17,700	8,850
Glendale Ave	Btwn Sarival Ave & Cotton Ln	1.0	2.0	2.0	3,645	3,645	17,700	17,700
Litchfield Rd	Btwn Glendale Ave & Northern Ave	1.0	4.0	4.0	12,359	12,359	39,800	39,800
Litchfield Rd	Btwn Missouri Ave & Glendale Ave	1.5	4.0	6.0	18,294	27,441	39,800	59,700
Northern Ave	Btwn Litchfield Rd & Cotton Ln	4.0	2.0	8.0	2,803	11,212	17,700	70,800
Peoria Ave	Btwn 115th Ave & Reems Rd	0.8	2.0	1.5	2,921	2,191	17,700	13,275
Reems Rd	Btwn Glendale Ave & Northern Ave	1.0	2.0	2.0	598	598	17,700	17,700
Reems Rd	Btwn Northern Ave & Olive Ave	1.0	2.0	2.0	3,771	3,771	17,700	17,700
Reems Rd	Btwn Olive Ave & Peoria Ave	1.0	2.0	2.0	9,999	9,999	17,700	17,700
Sarival Ave	Btwn Bethany Home Rd & Northern Ave	2.0	2.0	4.0	2,141	4,282	17,700	35,400
Sarival Ave	Btwn Northern Ave & Northern Pkwy	0.5	2.0	1.0	2,052	1,026	17,700	8,850
Sarival Ave	Btwn Northern Pkwy & Olive Ave	0.5	2.0	1.0	2,260	1,130	17,700	8,850
Sarival Ave	Btwn Olive Ave & Peoria Ave	1.0	2.0	2.0	1,519	1,519	17,700	17,700
Total		18.3		41.5	65,439	81,544		378,275

1. Maricopa Association of Governments

2. Moving Glendale Ahead Transportation Plan, LOS D