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

Prepared for:

Sierra Vista, Arizona

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TABLE OF CONTENTS

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EXECUTIVE SUMMARY

The City of Sierra Vista, Arizona, contracted with TischlerBise to document land use assumptions, prepare the Infrastructure Improvements Plan (hereinafter referred to as the "IIP"), and update development fees within the Sierra Vista Service Area 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 IIP for each necessary public service is in the middle section of this document. The proposed 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 Sierra Vista's Infrastructure Improvements Plan and associated update to its development fees includes the following necessary public services: Fire Facilities, Parks and Recreational Facilities, Police Facilities, and Street Facilities.

This report includes all necessary elements required to be in full compliance with SB 1525 and assumes Sierra Vista reduces its construction sales tax rate of 2.45 percent to match the retail tax rate of 1.95 percent. If Sierra Vista does not reduce its construction sales tax rate to match the retail tax rate, the analysis will need to include a credit for the difference between the tax rates.

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 method 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 methods for calculating development fees and how those methods 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 method 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 method 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, methodology, and infrastructure cost components for each necessary public service. Maps for each service area are included in Appendix C.

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

Necessary Public Service	Service Area	Cost Recovery	Incremental Expansion	Plan-Based	Cost Allocation
Fire	Sierra Vista	Fire Facilities, Fire Apparatus	N/A	Development Fee Report	Population, Vehicle Trips
Parks and Recreational	Sierra Vista	Park Improvements	N/A	Development Fee Report	Population, Jobs
Police	Sierra Vista	Police Facilities	N/A	Development Fee Report	Population, Vehicle Trips
Street	Sierra Vista	N/A	N/A	Arterials, Improved Intersections, Development Fee Report	Vehicle Miles of Travel

Proposed Development Fees

Development fees for residential development will be assessed per unit, based on development type. Nonresidential development fees will be assessed per square foot of floor area, based on development type. Fees shown below represent the maximum allowable fees. Sierra Vista 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 Sierra Vista's LOS standards. All costs in the Development Fee Report are in current dollars with no assumed inflation rate over time. If cost estimates change significantly over time, development fees should be recalibrated.

Figure 2: Proposed Development Fees

Residential Development	Fees per Unit				
Development Type	Fire	Parks & Recreational	Police	Street	Total
Single Family	$745	$3,353	$529	$746	$5,373
Multi-Family	$412	$1,853	$293	$296	$2,854
All Other Types	$327	$1,471	$232	$260	$2,291

Nonresidential Development	Fees per Square Foot				
Development Type	Fire	Parks & Recreational	Police	Street	Total
Industrial	$0.27	$0.23	$0.33	$0.22	$1.05
Commercial	$1.38	$0.34	$1.64	$1.12	$4.48
Office & Other Services	$0.54	$0.42	$0.64	$0.43	$2.03
Hotel (per room)	$463	$83	$551	$366	$1,463
Nursing Home (per bed)	$169	$150	$202	$134	$655

Current Development Fees

Shown below, Figure 3 includes Sierra Vista's current development fees.

Figure 3: Current Development Fees

Residential Development	Fees per Unit				
Development Type	Fire	Parks & Recreational	Police	Street	Total
Single-Family Unit	$263	$624	$359	$1,981	$3,227
Multi-Family Unit	$155	$368	$212	$1,159	$1,894
Manufactured Housing	$163	$386	$222	$1,232	$2,003

Nonresidential Development	Fees per Square Foot				
Development Type	Fire	Parks & Recreational	Police	Street	Total
Industrial	$0.04	$0.00	$0.17	$0.77	$0.98
Commercial	$0.19	$0.00	$0.74	$3.14	$4.07
Office & Other Services	$0.09	$0.00	$0.34	$1.53	$1.96
Hotel (per room)	$39	$0	$153	$688	$880

Difference Between Proposed and Current Development Fees

The differences between the proposed and current development fees are displayed below in Figure 4.

Figure 4: Difference Between Proposed and Current Development Fees

Residential Development	Fees per Unit				
Development Type	Fire	Parks & Recreational	Police	Street	Total
Single Family	$482	$2,729	$170	($1,235)	$2,146
Multi-Family	$257	$1,485	$81	($863)	$960
All Other Types	$164	$1,085	$10	($972)	$288

Nonresidential Development	Fees per Square Foot				
Development Type	Fire	Parks & Recreational	Police	Street	Total
Industrial	$0.23	$0.23	$0.16	($0.55)	$0.07
Commercial	$1.19	$0.34	$0.90	($2.02)	$0.41
Office & Other Services	$0.45	$0.42	$0.30	($1.10)	$0.07
Hotel (per room)	$424	$83	$398	($322)	$583
Nursing Home (per bed)	N/A	N/A	N/A	N/A	N/A

FIRE FACILITIES IIP

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

> *"Fire and police facilities, including all appurtenances, equipment and vehicles. Fire and police facilities do not include a facility or portion of a facility that is used to replace services that were once provided elsewhere in the municipality, vehicles and equipment used to provide administrative services, helicopters or airplanes or a facility that is used for training police and firefighters from more than one station or substation."*

The Fire Facilities IIP includes components for fire facilities, fire apparatus, and the cost of preparing the Fire Facilities IIP and related Development Fee Report. The cost recovery methodology is used for fire facilities and fire apparatus. A plan-based methodology is used for the Development Fee Report.

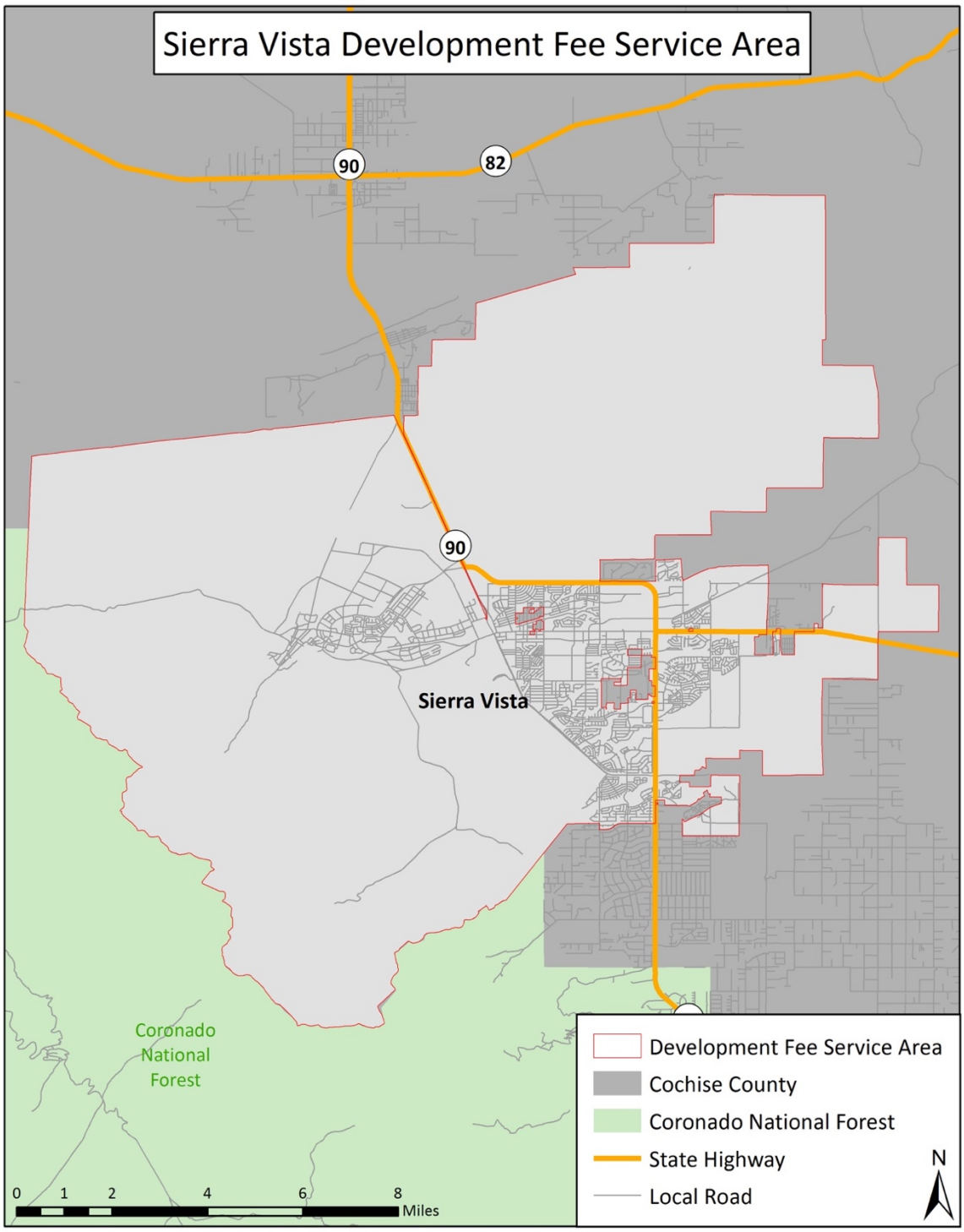
Proportionate Share

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 Fire Facilities IIP and development fees are assessed on both residential and nonresidential development based on calls for service. Based on calls for service data, residential development accounts for approximately 63 percent of demand for fire services and nonresidential development is responsible for the remaining 37 percent.

Service Area

Sierra Vista's Fire Department strives to provide a uniform response time citywide, and its fire stations operate as an integrated network. The service area for the Fire Facilities IIP is shown in Figure F1.

Figure F1: Fire Service Areas



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."*

Figure F2 displays the demand indicators for residential and nonresidential land uses. For residential development, the table displays the persons per housing unit. For nonresidential development, the table displays the average weekday vehicle trips generated per thousand square feet of floor area.

Figure F2: Ratio of Service Unit to Development Unit

Residential Development	
Development Type	Persons per Housing Unit[1]
Single Family	2.37
Multi-Family	1.31
All Other	1.04

Nonresidential Development			
Development Type	AWVTE per 1,000 Sq Ft[1]	Trip Rate Adjustment	AWVT per 1,000 Sq Ft[1]
Industrial	4.96	50%	2.48
Commercial	37.75	33%	12.46
Office & Other Services	9.74	50%	4.87
Hotel (per room)	8.36	50%	4.18
Nursing Home (per bed)	3.06	50%	1.53

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."*

Fire Facilities – Cost Recovery

The City of Sierra Vista, through the Sierra Vista Municipal Property Corporation, debt-financed the construction of Fire Station 3 in 2008 to provide capacity for existing and future development throughout Sierra Vista. In 2018, Sierra Vista issued an interfund loan to repay the fire share of the 2008 Series bond. Based on principal and interest paid prior to the interfund loan, and the outstanding fund balance, the total cost of Fire Station 3 is $7,243,529. Fire Station 3 includes 18,720 square feet of floor area and cost $387 per square foot ($7,243,529 / 18,720 square feet).

Shown below in Figure F3, Sierra Vista's existing fire facilities include 34,420 square feet of floor area and have capacity to serve development through 2029. Calls for service provide the proportionate share of demand for fire facilities from residential and nonresidential development. Sierra Vista's planned level of service for residential development is 0.4555 square feet per person (34,420 square feet X 63 percent residential share / 47,603 persons). The planned nonresidential level of service is 0.1608 square feet per vehicle trip (34,420 square feet X 37 percent nonresidential share / 79,219 vehicle trips). The cost for fire facilities is $176.26 per person (0.4555 square feet per person X $387 per square foot) and $62.21 per vehicle trip (0.1608 square feet per job X $387 per square foot).

Figure F3: Fire Facilities Cost Allocation

Description	Square Feet
Fire Station 1	8,500
Fire Station 2	7,200
Fire Station 3	18,720
Total	34,420

Cost Factors	
Fire Station 3 Cost	$7,243,529
Expansion Square Feet	18,720
Cost per Square Foot	$387

Level-of-Service (LOS) Standards	
Fire Station Square Feet	34,420
Residential	
Residential Share	63%
2029 Population	47,603
Square Feet per Person	0.4555
Cost per Person	$176.26
Nonresidential	
Nonresidential Share	37%
2029 Vehicle Trips	79,219
Square Feet per Vehicle Trip	0.1608
Cost per Vehicle Trip	$62.21

Source: Sierra Vista, Arizona

Fire Apparatus – Cost Recovery

The City of Sierra Vista, through the Sierra Vista Municipal Property Corporation, debt-financed the purchase of an aerial/tower truck in 2008 to serve existing and future development throughout Sierra Vista. In 2018, Sierra Vista issued an interfund loan to repay the fire share of the 2008 Series bond. Based on principal and interest paid prior to the interfund loan, and the outstanding fund balance, the total cost of the aerial/tower truck is $1,646,257. Development fees will be used to repay future development's share of costs related to the fire apparatus.

Figure F4 shows Sierra Vista Fire Department's existing inventory of six fire apparatus. As previously discussed, calls for service provide the proportionate share of demand to residential and nonresidential development. Sierra Vista's planned LOS for residential development is 0.00008 units per person (6.0 units X 63 percent residential share / 47,603 persons). The planned nonresidential level of service is 0.00003 units per vehicle trip (6.0 units X 37 percent nonresidential share / 79,219 vehicle trips). The cost for fire apparatus is $130.72 per person (0.00008 units per person X $1,646,257 per unit) and $46.13 per vehicle trip (0.00003 units per vehicle trip X $1,646,257 per unit).

Figure F4: Fire Apparatus Cost Allocation

Description	Units
Engine	4
Ladder Truck	1
Aerial/Tower Truck	1
Total	6

Cost Factors	
Aerial/Tower Truck Cost	$1,646,257

Level-of-Service (LOS) Standards	
Existing Apparatus	6
Residential	
Residential Share	63%
2029 Population	47,603
Units per Person	0.00008
Cost per Person	$130.72
Nonresidential	
Nonresidential Share	37%
2029 Vehicle Trips	79,219
Units per Vehicle Trip	0.00003
Cost per Vehicle Trip	$46.13

Source: Sierra Vista, Arizona

IIP and Development Fee Report – Plan-Based

The cost to prepare the Fire Facilities IIP and development fees totals $11,970. Sierra Vista 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 $7.42 per person and $2.43 per vehicle trip.

Figure F5: IIP and Development Fee Report

Fee Component	Cost	Proportionate Share		Service Unit	5-Year Change	Cost per Service Unit
Fire	$11,970	Residential	63%	Population	1,016	$7.42
		Nonresidential	37%	Vehicle Trips	1,825	$2.43
Parks and Recreational	$14,963	Residential	96%	Population	1,016	$14.14
		Nonresidential	4%	Jobs	694	$0.86
Police	$11,970	Residential	50%	Population	1,016	$5.94
		Nonresidential	50%	Vehicle Trips	1,825	$3.25
Street	$20,947	All Development	100%	VMT	1,731	$12.10
Total	$59,850					

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."*

The *Land Use Assumptions* document projects an additional 2,076 persons and 3,650 vehicle trips over the next 10 years, as shown in Figure F6.

Fire Facilities

Shown in Figure F6, Sierra Vista's population is projected to increase by 2,076 persons by 2029, and nonresidential development is projected to generate an additional 3,650 vehicle trips during the same period. Using the planned 2029 LOS, future residential development will demand 946 square feet of existing fire facilities (0.4555 square feet per person X 2,076 additional persons), and future nonresidential development will demand 587 square feet of existing fire facilities (0.1608 square feet per vehicle trip X 3,650 additional vehicle trips). Based on $387 per square foot, future development's share of existing fire facilities is $592,940 (1,532 square feet X $387 per square foot).

Based on the planned 2029 LOS, existing residential development demands 20,739 square feet of existing fire facilities (0.4555 square feet per person X 45,527 persons), and existing nonresidential development demands 12,149 square feet of existing fire facilities (0.1608 square feet per vehicle trip X 75,569 vehicle trips). Therefore, existing development's share of Fire Station 3 is 17,188 square feet (18,720 total square feet – 1,532 square feet from future development) and $6,650,589 ($7,243,529 total cost - $592,940 future development share).

Figure F6: Projected Demand for Fire Facilities

Type of Infrastructure	Level of Service	Demand Unit	Cost per Unit
Fire Facilities	0.4555 Square Feet	per Person	$387
	0.1608 Square Feet	per Vehicle Trip	

Demand for Fire Facilities					
Year	Population	Vehicle Trips	Square Feet		
			Residential	Nonresidential	Total
2019	45,527	75,569	20,739	12,149	32,888
2020	45,696	75,934	20,816	12,207	33,023
2021	45,907	76,299	20,912	12,266	33,178
2022	46,119	76,664	21,009	12,325	33,333
2023	46,331	77,029	21,105	12,383	33,489
2024	46,543	77,394	21,202	12,442	33,644
2025	46,755	77,759	21,298	12,501	33,799
2026	46,967	78,124	21,395	12,559	33,954
2027	47,179	78,489	21,492	12,618	34,110
2028	47,391	78,854	21,588	12,677	34,265
2029	47,603	79,219	21,685	12,735	34,420
10-Yr Increase	2,076	3,650	946	587	1,532

Growth-Related Expenditures	$365,870	$227,071	$592,940

Fire Apparatus and Equipment

Shown in Figure F7, Sierra Vista's population is projected to increase by 2,076 persons by 2029, and nonresidential development is projected to generate an additional 3,650 vehicle trips during the same period. Using the planned 2029 LOS, future residential development will demand 0.2 units of existing fire apparatus (0.00008 units per person X 2,076 additional persons), and future nonresidential development will demand 0.1 units of existing fire apparatus (0.00003 units per vehicle trip X 3,650 additional vehicle trips). Based on $1,646,257 per unit, future development's share of existing fire apparatus is $439,749 (0.3 units X $1,646,257 per unit).

Based on the planned 2029 LOS, existing residential development demands 3.6 units of existing fire apparatus (0.00008 units per person X 45,527 persons), and existing nonresidential development demands 2.1 units of existing fire apparatus (0.00003 units per vehicle trip X 75,569 vehicle trips). Therefore, existing development's share of the aerial / tower truck is 0.7 units (1.0 aerial / tower truck – 0.3 units from future development) and $1,032,689 ($1,646,257 total cost - $439,749 future development share).

Figure F7: Projected Demand for Fire Apparatus

Type of Infrastructure	Level of Service	Demand Unit	Cost per Unit
Fire Apparatus	0.00008 Units	per Person	$1,646,257
	0.00003 Units	per Vehicle Trip	

Demand for Fire Apparatus					
Year	Population	Vehicle Trips	Units		
			Residential	Nonresidential	Total
2019	45,527	75,569	3.6	2.1	5.7
2020	45,696	75,934	3.6	2.1	5.8
2021	45,907	76,299	3.6	2.1	5.8
2022	46,119	76,664	3.7	2.1	5.8
2023	46,331	77,029	3.7	2.2	5.8
2024	46,543	77,394	3.7	2.2	5.9
2025	46,755	77,759	3.7	2.2	5.9
2026	46,967	78,124	3.7	2.2	5.9
2027	47,179	78,489	3.7	2.2	5.9
2028	47,391	78,854	3.8	2.2	6.0
2029	47,603	79,219	3.8	2.2	6.0
10-Yr Increase	2,076	3,650	0.2	0.1	0.3

Growth-Related Expenditures	$271,344	$168,405	$439,749

FIRE FACILITIES DEVELOPMENT FEES

Revenue Credit/Offset

A revenue credit/offset is not necessary for Fire Facilities development fees, because costs generated by projected development exceed revenues generated by projected development. Appendix A contains the forecast of revenues required by Arizona's Enabling Legislation (ARS § 9-463.05(E)(7)).

Fire Facilities Development Fees

Infrastructure components and cost factors for Fire Facilities development fees are summarized in the upper portion of Figure F8. The cost per service unit for Fire Facilities is $314.41 per person and $110.77 per vehicle trip.

Fire Facilities development fees for residential development are assessed according to the number of persons per housing unit. The single-family fee of $745 is calculated using a cost per service unit of $314.41 per person multiplied by a demand unit of 2.37 persons per housing unit.

Nonresidential development fees are calculated using vehicle trips as the service unit. The fee of $1.38 per square foot of commercial development is derived from a cost per service unit of $110.77 per vehicle trip, multiplied by a demand unit of 12.46 vehicle trips per 1,000 square feet, divided by 1,000.

Figure F8: Schedule of Fire Facilities Development Fees

Fee Component	Cost per Person	Cost per Trip
Fire Facilities	$176.26	$62.21
Fire Apparatus	$130.72	$46.13
Development Fee Report	$7.42	$2.43
Total	$314.41	$110.77

Residential Development	Fees per Unit			
Development Type	Persons per Housing Unit[1]	Proposed Fees	Current Fees	Increase / Decrease
Single Family	2.37	$745	$263	$482
Multi-Family	1.31	$412	$155	$257
All Other	1.04	$327	$163	$164

Nonresidential Development	Fees per Square Foot			
Development Type	Avg Weekday Vehicle Trips[1]	Proposed Fees	Current Fees	Increase / Decrease
Industrial	2.48	$0.27	$0.04	$0.23
Commercial	12.46	$1.38	$0.19	$1.19
Office & Other Services	4.87	$0.54	$0.09	$0.45
Hotel (per room)	4.18	$463	$39	$424
Nursing Home (per bed)	1.53	$169	N/A	N/A

1. See Land Use Assumptions

Fire Facilities Development Fee Revenue

Appendix A contains the forecast of revenues required by Arizona's Enabling Legislation (ARS § 9-463.05(E)(7)). Projected fee revenue shown in Figure F9 is based on the development projections in the *Land Use Assumptions* document and the updated Fire Facilities development fees. 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 is $1.04 million over the next 10 years, and the projected growth-related cost of fire infrastructure is $1.04 million. Existing development's share of $11.48 million includes expenditures related to fire facilities and fire apparatus which have been paid, in part, by annual payments to the original 2008 Series bond.

Figure F9: Projected Fire Facilities Development Fee Revenue

Fee Component	Growth Share	Existing Share	Total
Fire Facilities	$592,940	$7,967,594	$8,560,534
Fire Apparatus	$439,749	$3,511,267	$3,951,016
Development Fee Report	$11,970	$0	$11,970
Total	$1,044,659	$11,478,862	$12,523,520

		Single Family $745 per unit	Multi-Family $412 per unit	Industrial $0.27 per sq ft	Commercial $1.38 per sq ft	Office & Inst $0.54 per sq ft
Year		Hsg Unit	Hsg Unit	KSF	KSF	KSF
Base	2019	15,808	5,101	899	3,404	6,351
Year 1	2020	15,879	5,101	906	3,420	6,381
Year 2	2021	15,950	5,135	913	3,437	6,412
Year 3	2022	16,021	5,168	919	3,453	6,442
Year 4	2023	16,092	5,201	926	3,469	6,473
Year 5	2024	16,163	5,235	933	3,485	6,503
Year 6	2025	16,234	5,268	939	3,501	6,533
Year 7	2026	16,305	5,301	946	3,517	6,564
Year 8	2027	16,376	5,335	953	3,533	6,594
Year 9	2028	16,447	5,368	959	3,549	6,625
Year 10	2029	16,518	5,401	966	3,565	6,655
10-Year Increase		710	300	67	161	304
Projected Revenue		$522,812	$121,942	$18,201	$219,441	$162,262

Projected Fee Revenue	$1,044,659
Total Expenditures	$12,523,520
Existing Development Share	$11,478,862

PARKS AND RECREATIONAL FACILITIES IIP

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

> *"Neighborhood parks and recreational facilities on real property up to thirty acres in area, or parks and recreational facilities larger than thirty acres if the facilities provide a direct benefit to the development. Park and recreational facilities do not include vehicles, equipment or that portion of any facility that is used for amusement parks, aquariums, aquatic centers, auditoriums, arenas, arts and cultural facilities, bandstand and orchestra facilities, bathhouses, boathouses, clubhouses, community centers greater than three thousand square feet in floor area, environmental education centers, equestrian facilities, golf course facilities, greenhouses, lakes, museums, theme parks, water reclamation or riparian areas, wetlands, zoo facilities or similar recreational facilities, but may include swimming pools."*

The Parks and Recreational Facilities IIP includes components for park improvements and the cost of preparing the Parks and Recreational Facilities IIP and related Development Fee Report. The cost recovery methodology is used for park improvements. A 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 Parks and Recreational Facilities IIP and development fees will allocate the cost of necessary public services between residential and nonresidential based on daytime population. Based on 2017 estimates from the U.S. Census Bureau's OnTheMap web application, 7,292 inflow commuters traveled to Sierra Vista for work in 2017. The proportionate share is based on cumulative impact hours per year with residents potentially impacting parks and recreational facilities 8,760 hours per year (24 hours per day X 365 days). Inflow commuters potentially impact parks and recreational facilities 2,500 hours per year, assuming 10 hours per day, multiplied by five workdays per week, multiplied by 50 weeks per year. For parks and recreational facilities, residential development generates 96 percent of demand and nonresidential development generates the remaining four percent of demand.

Figure PR1: Parks and Recreational Proportionate Share

Development Type	Service Unit	Impact Hours per Year	Total Impact Hours per Year	Proportionate Share
Residential	45,359 residents[1]	8,760 hours	397,344,840	96%
Nonresidential	7,292 inflow commuters[2]	2,500 hours	18,230,000	4%
Total			415,574,840	100%

1. Arizona Office of Economic Opportunity, 2017

2. U.S. Census Bureau, OnTheMap 6.6 Application and LEHD Origin-Destination Employment Statistics, 2017

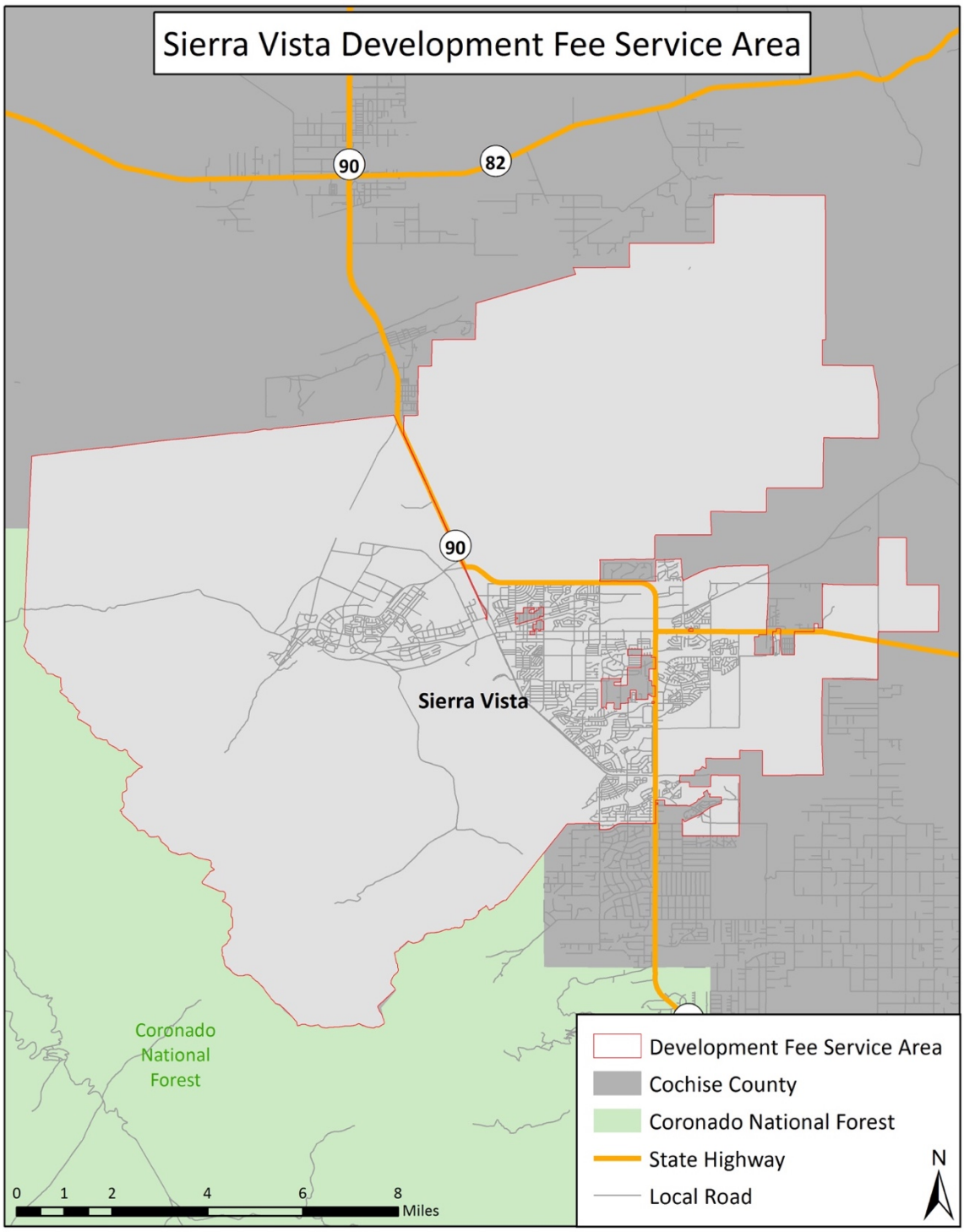
Residential Impact Hours: 24 hours per day x 365 days = 8,760 hours

Nonresidential Impact Hours: 10 hours per day x 5 days per week x 50 weeks per year = 2,500 hours

Service Area

Sierra Vista currently provides community and regional parks citywide. The service area for the Parks and Recreational Facilities IIP is shown in Figure PR2.

Figure PR2: Parks and Recreational Service Areas



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."*

Figure PR3 displays the demand indicators for residential and nonresidential land uses. For residential development, the table displays the number of persons per housing unit. For nonresidential development, the table displays the number of employees per thousand square feet of floor area.

Figure PR3: Ratio of Service Unit to Development Unit

Residential Development	
Development Type	Persons per Housing Unit[1]
Single Family	2.37
Multi-Family	1.31
All Other	1.04

Nonresidential Development	
Development Type	Jobs per 1,000 Sq Ft[1]
Industrial	1.63
Commercial	2.34
Office & Other Services	2.97
Hotel (per room)	0.58
Nursing Home (per bed)	1.05

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."*

Park Improvements – Cost Recovery

The City of Sierra Vista, through the Sierra Vista Municipal Property Corporation, debt-financed the construction of The Cove in 2000 and Cyr Center Park in 2008 to provide park improvements for existing and future development throughout Sierra Vista. In 2018, Sierra Vista issued an interfund loan to repay the park share of the 2000 Series bond and the 2008 Series bond. Based on principal and interest paid prior to the interfund loan, and the outstanding fund balance, the total cost of The Cove is $10,269,961 and the total cost of Cyr Center Park is $3,424,214. When combined, The Cove and Cyr Center Park include 30.8 acres of park improvements and cost $444,472 per acre ($13,694,175 / 30.8 acres).

Figure PR4: Park Improvements Costs

Description	Total Cost	Acres	Cost per Acre
Veterans (The Cove)	$10,269,961	20.0	$513,498
Cyr Center Park	$3,424,214	10.8	$316,764
Total	$13,694,175	30.8	$444,472

Source: Sierra Vista, Arizona

Shown below in Figure PR5, Sierra Vista currently provides 156.2 acres of park improvements in its community and regional parks – the analysis does not include neighborhood parks. Existing park improvements have capacity to serve development through 2029.

Figure PR5: Existing Park Improvements

Description	Acres
Veterans (The Cove)	30.0
Len Roberts Park	7.1
Hubert Tompkins Park	26.0
A.V. Anderson Park	16.4
Cyr Center Park	10.8
Domingo Paiz Sports Complex	66.0
Total	156.2

Shown below in Figure PR6, Sierra Vista currently provides 156.2 acres of park improvements that have capacity to serve development through 2029. Daytime population, shown in Figure PR1, provides the proportionate share of demand for park improvements from residential and nonresidential development. Sierra Vista's planned level of service for residential development is 0.0032 acres per person (156.2 acres X 96 percent residential share / 47,603 persons). The planned nonresidential level of service is 0.0003 acres per job (156.2 acres X four percent nonresidential share / 19,544 jobs). The cost for park improvements is $1,400.47 per person (0.0032 acres per person X $444,472 per acre) and $142.13 per job (0.0003 acres per job X $444,472 per acre).

Figure PR6: Park Improvements Cost Allocation

Cost Factors	
Cost per Acre	$444,472

Level-of-Service (LOS) Standards	
Existing Acres	156.2
Residential	
Residential Share	96%
2029 Population	47,603
Acres per Person	0.0032
Cost per Person	$1,400.47
Nonresidential	
Nonresidential Share	4%
2029 Jobs	19,544
Acres per Job	0.0003
Cost per Job	$142.13

Source: Sierra Vista, Arizona

Development Fee Report – Plan-Based

The cost to prepare the Parks and Recreational Facilities IIP and development fees totals $14,963. Sierra Vista plans to update its report every five years. Based on this cost, proportionate share, and five-year projections of new development from the *Land Use Assumptions* document, the cost is $14.14 per person and $0.86 per job.

Figure PR7: IIP and Development Fee Report

Fee Component	Cost	Proportionate Share		Service Unit	5-Year Change	Cost per Service Unit
Fire	$11,970	Residential	63%	Population	1,016	$7.42
		Nonresidential	37%	Vehicle Trips	1,825	$2.43
Parks and Recreational	$14,963	Residential	96%	Population	1,016	$14.14
		Nonresidential	4%	Jobs	694	$0.86
Police	$11,970	Residential	50%	Population	1,016	$5.94
		Nonresidential	50%	Vehicle Trips	1,825	$3.25
Street	$20,947	All Development	100%	VMT	1,731	$12.10
Total	$59,850					

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."*

As shown in the *Land Use Assumptions* document, Sierra Vista's population is expected to increase by an 2,076 persons and employment is expected to increase by 1,388 jobs over the next 10 years.

Park Improvements

Sierra Vista has enough capacity in its existing park improvements to serve development over the next ten years. Sierra Vista's population is projected to increase by 2,076 persons by 2029, and employment is projected to increase by 1,388 jobs during the same period. Using the planned 2029 LOS, future residential development will demand 6.5 acres of the park improvements (0.0032 acres per person X 2,076 additional persons), and future nonresidential development will demand 0.4 acres of park improvements (0.0003 acres per job X 1,388 additional jobs). Based on $444,472 per acre, future development's share of park improvements is $3,104,227 (7.0 acres X $444,472 per acre).

Based on the planned 2029 LOS, existing residential development demands 143.5 acres of park improvements (0.0032 acres per person X 45,527 persons), and existing nonresidential development demands 5.8 acres of park improvements (0.0003 acres per job X 18,156 jobs). Therefore, existing development's share of park improvements is 149.3 acres (156.2 total acres – 7.0 acres from future development) and $10,589,948 ($13,694,175 total cost - $3,104,227 future development share).

Figure PR8: Projected Demand for Park Improvements

Type of Infrastructure	Level of Service	Demand Unit	Cost per Acre
Park Improvements	0.0032 Acres	per Person	$444,472
	0.0003 Acres	per Job	

Demand for Park Improvements					
Year	Population	Jobs	Acres		
			Residential	Nonresidential	Total
2019	45,527	18,156	143.5	5.8	149.3
2020	45,696	18,295	144.0	5.9	149.8
2021	45,907	18,433	144.6	5.9	150.5
2022	46,119	18,572	145.3	5.9	151.3
2023	46,331	18,711	146.0	6.0	152.0
2024	46,543	18,850	146.7	6.0	152.7
2025	46,755	18,989	147.3	6.1	153.4
2026	46,967	19,127	148.0	6.1	154.1
2027	47,179	19,266	148.7	6.2	154.8
2028	47,391	19,405	149.3	6.2	155.5
2029	47,603	19,544	150.0	6.2	156.2
10-Yr Increase	2,076	1,388	6.5	0.4	7.0

Growth-Related Expenditures	$2,906,954	$197,273	$3,104,227

PARKS AND RECREATIONAL FACILITIES DEVELOPMENT FEES

Revenue Credit/Offset

A revenue credit/offset is not necessary for Parks and Recreational Facilities development fees, because costs generated by projected development exceed revenues generated by projected development. Appendix A contains the forecast of revenues required by Arizona's Enabling Legislation (ARS § 9-463.05(E)(7)).

Parks and Recreational Facilities Development Fees

Infrastructure components and cost factors for Parks and Recreational Facilities are summarized in the upper portion of Figure PR9. The cost per service unit for Parks and Recreational Facilities is $1,414.61 per person and $142.99 per job.

Parks and Recreational Facilities development fees for residential development are assessed according to the number of persons per housing unit. For example, the single-family fee of $3,353 is calculated using a cost per service unit of $1,414.61 per person multiplied by a demand unit of 2.37 persons per housing unit. Nonresidential development fees are calculated using jobs as the service unit. The fee of $0.34 per square foot of commercial development is derived from a cost per service unit of $142.99 per job, multiplied by a demand unit of 2.34 jobs per 1,000 square feet, divided by 1,000.

Figure PR9: Schedule of Parks and Recreational Facilities Development Fees

Fee Component	Cost per Person	Cost per Job
Park Improvements	$1,400.47	$142.13
Development Fee Report	$14.14	$0.86
Total	$1,414.61	$142.99

Residential Development	Fees per Unit			
Development Type	Persons per Housing Unit[1]	Proposed Fees	Current Fees	Increase / Decrease
Single Family	2.37	$3,353	$624	$2,729
Multi-Family	1.31	$1,853	$368	$1,485
All Other	1.04	$1,471	$386	$1,085

Nonresidential Development	Fees per Square Foot			
Development Type	Jobs per 1,000 Sq Ft[1]	Proposed Fees	Current Fees	Increase / Decrease
Industrial	1.63	$0.23	$0.00	$0.23
Commercial	2.34	$0.34	$0.00	$0.34
Office & Other Services	2.97	$0.42	$0.00	$0.42
Hotel (per room)	0.58	$83	$0	$83
Nursing Home (per bed)	1.05	$150	N/A	N/A

1. See Land Use Assumptions

PARKS AND RECREATIONAL FACILITIES DEVELOPMENT FEE REVENUE

Appendix A contains the forecast of revenues required by Arizona's Enabling Legislation (ARS § 9-463.05(E)(7)). Projected fee revenue shown in Figure PR10 is based on the development projections in the *Land Use Assumptions* document and the updated development fees for Parks and Recreational Facilities shown in Figure PR9. If development occurs at a more rapid rate than projected, the demand for infrastructure will increase and development fee revenue will increase at a corresponding rate. If development occurs at a slower rate than projected, the demand for infrastructure will also decrease, along with development fee revenue. Projected development fee revenue equals $3.12 million, and growth-related demand for park infrastructure equals $3.12 million. Existing development's share of $10.59 million includes expenditures related to park improvements which have been paid, in part, by annual payments to the original 2000 Series bond and 2008 Series bond.

Figure PR10: Projected Parks and Recreational Facilities Development Fee Revenue

Fee Component	Growth Share	Existing Share	Total
Park Improvements	$3,104,227	$10,589,948	$13,694,175
Development Fee Report	$14,963	$0	$14,963
Total	$3,119,190	$10,589,948	$13,709,138

Year		Single Family $3,353 per unit	Multi-Family $1,853 per unit	Industrial $0.23 per sq ft	Commercial $0.34 per sq ft	Office & Inst $0.42 per sq ft
		Hsg Unit	Hsg Unit	KSF	KSF	KSF
Base	2019	15,808	5,101	899	3,404	6,351
Year 1	2020	15,879	5,101	906	3,420	6,381
Year 2	2021	15,950	5,135	913	3,437	6,412
Year 3	2022	16,021	5,168	919	3,453	6,442
Year 4	2023	16,092	5,201	926	3,469	6,473
Year 5	2024	16,163	5,235	933	3,485	6,503
Year 6	2025	16,234	5,268	939	3,501	6,533
Year 7	2026	16,305	5,301	946	3,517	6,564
Year 8	2027	16,376	5,335	953	3,533	6,594
Year 9	2028	16,447	5,368	959	3,549	6,625
Year 10	2029	16,518	5,401	966	3,565	6,655
10-Year Increase		710	300	67	160	304
Projected Revenue		$2,368,465	$552,854	$15,531	$53,450	$128,752

Projected Fee Revenue	$3,119,052
Total Expenditures	$13,709,138
Existing Development Share	$10,590,086

POLICE FACILITIES IIP

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

> *"Fire and police facilities, including all appurtenances, equipment and vehicles. Fire and police facilities do not include a facility or portion of a facility that is used to replace services that were once provided elsewhere in the municipality, vehicles and equipment used to provide administrative services, helicopters or airplanes or a facility that is used for training firefighters or officers from more than one station or substation."*

The Police Facilities IIP includes components for police facilities and the cost of preparing the Police Facilities IIP and related Development Fee Report. The cost recovery methodology is used for police facilities. A 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 Police Facilities IIP and development fees are assessed on both residential and nonresidential development based on calls for service shown in Figure P1. Based on 2016-2018 calls for service data, residential development accounts for approximately 50 percent of demand for police services and nonresidential development is responsible for the remaining 50 percent.

Figure P1: Police Calls for Service

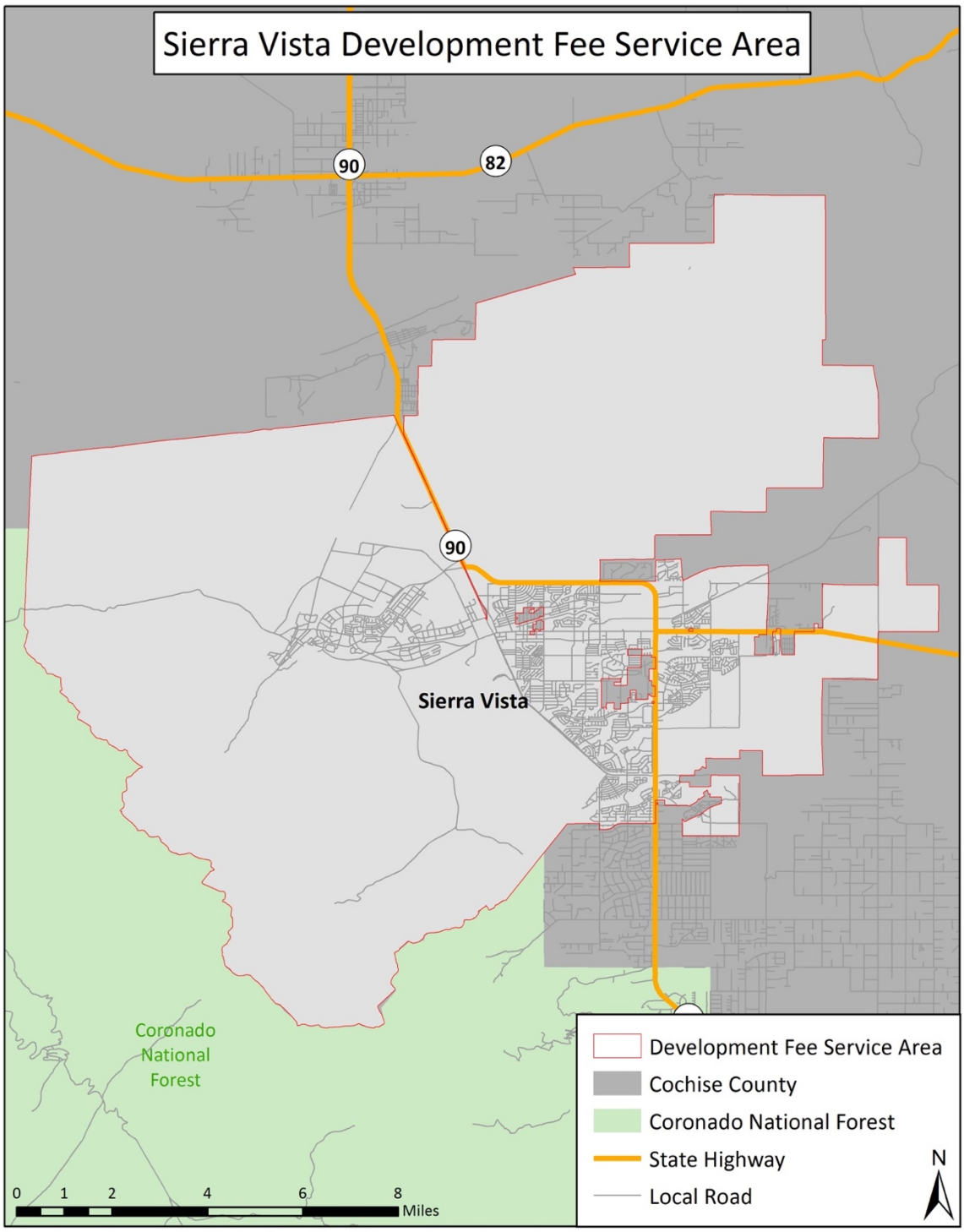
Development Type	2016	2017	2018	Total	Share
Residential	16,360	17,522	15,993	49,875	50%
Nonresidential	15,544	16,575	16,946	49,065	50%
Total	31,904	34,097	32,939	98,940	100%

Source: Sierra Vista Police Department

Service Area

Sierra Vista's Police Department strives to provide a uniform response time citywide. The service area for the Police Facilities IIP is shown below in Figure P2.

Figure P2: Police Service Area



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."*

Figure P3 displays the demand indicators for residential and nonresidential land uses. For residential development, the table displays the persons per housing unit. For nonresidential development, the table displays average weekday vehicle trips generated per thousand square feet of floor area.

Figure P3: Ratio of Service Unit to Development Unit

Residential Development	
Development Type	Persons per Housing Unit[1]
Single Family	2.37
Multi-Family	1.31
All Other	1.04

Nonresidential Development			
Development Type	AWVTE per 1,000 Sq Ft[1]	Trip Rate Adjustment	AWVT per 1,000 Sq Ft[1]
Industrial	4.96	50%	2.48
Commercial	37.75	33%	12.46
Office & Other Services	9.74	50%	4.87
Hotel (per room)	8.36	50%	4.18
Nursing Home (per bed)	3.06	50%	1.53

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."*

Police Facilities – Cost Recovery

The City of Sierra Vista, through the Sierra Vista Municipal Property Corporation, debt-financed the expansion of its police station in 2008 to serve existing and future development throughout Sierra Vista. In 2018, Sierra Vista issued an interfund loan to repay the police share of the 2008 Series bond. Based on principal and interest paid prior to the interfund loan, and the outstanding fund balance, the total cost of the police station expansion is $8,560,534. The police station expansion includes 17,000 square feet of floor area and cost $504 per square foot ($8,560,534/ 17,000 square feet).

Sierra Vista currently provides 40,778 square feet of police facilities with capacity to serve development through 2029. Calls for service, shown in Figure P1, provides the proportionate share of demand for police facilities from residential and nonresidential development. Sierra Vista's planned level of service for residential development is 0.4318 square feet per person (40,778 square feet X 50 percent residential share / 47,603 persons). The planned nonresidential level of service is 0.2553 square feet per vehicle trip (40,778 square feet X 50 percent nonresidential share / 79,219 vehicle trips). The cost for police facilities is $217.45 per person (0.4318 square feet per person X $504 per square foot) and $128.54 per vehicle trip (0.2553 square feet per vehicle trip X $504 per square foot).

Figure P4: Police Facilities Cost Allocation

Cost Factors	
Police Station Expansion Cost	$8,560,534
Expansion Square Feet	17,000
Cost per Square Foot	$504

Level-of-Service (LOS) Standards	
Police Station Square Feet	40,778
Residential	
Residential Share	50%
2029 Population	47,603
Square Feet per Person	0.4318
Cost per Person	$217.45
Nonresidential	
Nonresidential Share	50%
2029 Vehicle Trips	79,219
Square Feet per Vehicle Trip	0.2553
Cost per Vehicle Trip	$128.54

Source: Sierra Vista, Arizona

Development Fee Report – Plan-Based

The cost to prepare the Police Facilities IIP and related Development Fee Report totals $11,970. Sierra Vista 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 $5.94 per person and $3.25 per vehicle trip.

Figure P5: IIP and Development Fee Report

Fee Component	Cost	Proportionate Share		Service Unit	5-Year Change	Cost per Service Unit
Fire	$11,970	Residential	63%	Population	1,016	$7.42
		Nonresidential	37%	Vehicle Trips	1,825	$2.43
Parks and Recreational	$14,963	Residential	96%	Population	1,016	$14.14
		Nonresidential	4%	Jobs	694	$0.86
Police	$11,970	Residential	50%	Population	1,016	$5.94
		Nonresidential	50%	Vehicle Trips	1,825	$3.25
Street	$20,947	All Development	100%	VMT	1,731	$12.10
Total	$59,850					

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."*

Police Facilities

Over the next 10 years, Sierra Vista's population is projected to increase by 2,076 persons, and nonresidential development is projected to generate an additional 3,650 vehicle trips during the same period. Using the planned 2029 LOS, future residential development will demand 896 square feet of existing police facilities (0.4318 square feet per person X 2,076 additional persons), and future nonresidential development will demand 932 square feet of existing police facilities (0.2553 square feet per vehicle trip X 3,650 additional vehicle trips). Based on $504 per square foot, future development's share of existing police facilities is $920,582 (1,828 square feet X $504 per square foot).

Based on the planned 2029 LOS, existing residential development demands 19,660 square feet of existing police facilities (0.4318 square feet per person X 45,527 persons), and existing nonresidential development demands 19,290 square feet of existing police facilities (0.2553 square feet per vehicle trip X 75,569 vehicle trips). Therefore, existing development's share of the police station expansion is 15,172 square feet (17,000 total square feet – 1,828 square feet from future development) and $7,639,953 ($8,560,534 total cost - $920,582 future development share).

Figure P6: Projected Demand for Police Facilities

Type of Infrastructure	Level of Service	Demand Unit	Cost per Unit
Police Facilities	0.4318 Square Feet	per Person	$504
	0.2553 Square Feet	per Vehicle Trip	

Demand for Police Facilities					
Year	Population	Vehicle Trips	Square Feet		
			Residential	Nonresidential	Total
2019	45,527	75,569	19,660	19,290	38,950
2020	45,696	75,934	19,732	19,383	39,116
2021	45,907	76,299	19,824	19,477	39,300
2022	46,119	76,664	19,915	19,570	39,485
2023	46,331	77,029	20,007	19,663	39,670
2024	46,543	77,394	20,098	19,756	39,854
2025	46,755	77,759	20,190	19,849	40,039
2026	46,967	78,124	20,281	19,943	40,224
2027	47,179	78,489	20,373	20,036	40,409
2028	47,391	78,854	20,464	20,129	40,593
2029	47,603	79,219	20,556	20,222	40,778
10-Yr Increase	2,076	3,650	896	932	1,828

Growth-Related Expenditures	$451,356	$469,225	$920,582

POLICE FACILITIES DEVELOPMENT FEES

Revenue Credit/Offset

A revenue credit/offset is not necessary for Police Facilities development fees, because costs generated by projected development exceed revenues generated by projected development. Appendix A contains the forecast of revenues required by Arizona's Enabling Legislation (ARS § 9-463.05(E)(7)).

Police Facilities Development Fees

Infrastructure components and cost factors for Police Facilities are summarized in the upper portion of Figure P7. The cost per service unit for Police Facilities is $223.39 per person and $131.80 per vehicle trip.

Police Facilities development fees for residential development are assessed according to the number of persons per housing unit. For example, the single-family fee of $529 is calculated using a cost per service unit of $223.39 per person multiplied by a demand unit of 2.37 persons per housing unit.

Nonresidential development fees are calculated using vehicle trips as the service unit. The fee of $1.64 per square foot of commercial development is derived from a cost per service unit of $131.80 per vehicle trip, multiplied by a demand unit of 12.46 vehicle trips per 1,000 square feet, divided by 1,000.

Figure P7: Schedule of Police Facilities Development Fees

Fee Component	Cost per Person	Cost per Trip
Police Facilities	$217.45	$128.54
Development Fee Report	$5.94	$3.25
Total	$223.39	$131.80

Residential Development	Fees per Unit			
Development Type	Persons per Housing Unit[1]	Proposed Fees	Current Fees	Increase / Decrease
Single Family	2.37	$529	$359	$170
Multi-Family	1.31	$293	$212	$81
All Other	1.04	$232	$222	$10

Nonresidential Development	Fees per Square Foot			
Development Type	Avg Weekday Vehicle Trips[1]	Proposed Fees	Current Fees	Increase / Decrease
Industrial	2.48	$0.33	$0.17	$0.16
Commercial	12.46	$1.64	$0.74	$0.90
Office & Other Services	4.87	$0.64	$0.34	$0.30
Hotel (per room)	4.18	$551	$153	$398
Nursing Home (per bed)	1.53	$202	N/A	N/A

1. See Land Use Assumptions

Police 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 P8 is based on the development projections in the *Land Use Assumptions* document and the updated Police Facilities development fees. 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 is $0.93 million over the next 10 years, and the projected growth-related cost of police infrastructure is $0.93 million. Existing development's share of $7.64 million includes expenditures related to police facilities which have been paid, in part, by annual payments to the original 2008 Series bond.

Figure P8: Projected Revenue from Police Facilities Development Fees

Fee Component	Growth Share	Existing Share	Total
Police Facilities	$920,582	$7,639,953	$8,560,534
Development Fee Report	$11,970	$0	$11,970
Total	$932,552	$7,639,953	$8,572,504

Year		Single Family $529 per unit Hsg Unit	Multi-Family $293 per unit Hsg Unit	Industrial $0.33 per sq ft KSF	Commercial $1.64 per sq ft KSF	Office & Inst $0.64 per sq ft KSF
Base	2019	15,808	5,101	899	3,404	6,351
Year 1	2020	15,879	5,101	906	3,420	6,381
Year 2	2021	15,950	5,135	913	3,437	6,412
Year 3	2022	16,021	5,168	919	3,453	6,442
Year 4	2023	16,092	5,201	926	3,469	6,473
Year 5	2024	16,163	5,235	933	3,485	6,503
Year 6	2025	16,234	5,268	939	3,501	6,533
Year 7	2026	16,305	5,301	946	3,517	6,564
Year 8	2027	16,376	5,335	953	3,533	6,594
Year 9	2028	16,447	5,368	959	3,549	6,625
Year 10	2029	16,518	5,401	966	3,565	6,655
10-Year Increase		710	300	67	161	304
Projected Revenue		$370,896	$86,494	$21,626	$260,738	$192,798

Projected Fee Revenue	$932,552
Total Expenditures	$8,572,504
Existing Development Share	$7,639,953

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 arterials, improved intersections, and the cost of professional services for preparing the Street Facilities IIP and related Development Fee Report. The plan-based methodology is used for arterials, improved intersections, and the related Development Fee Report.

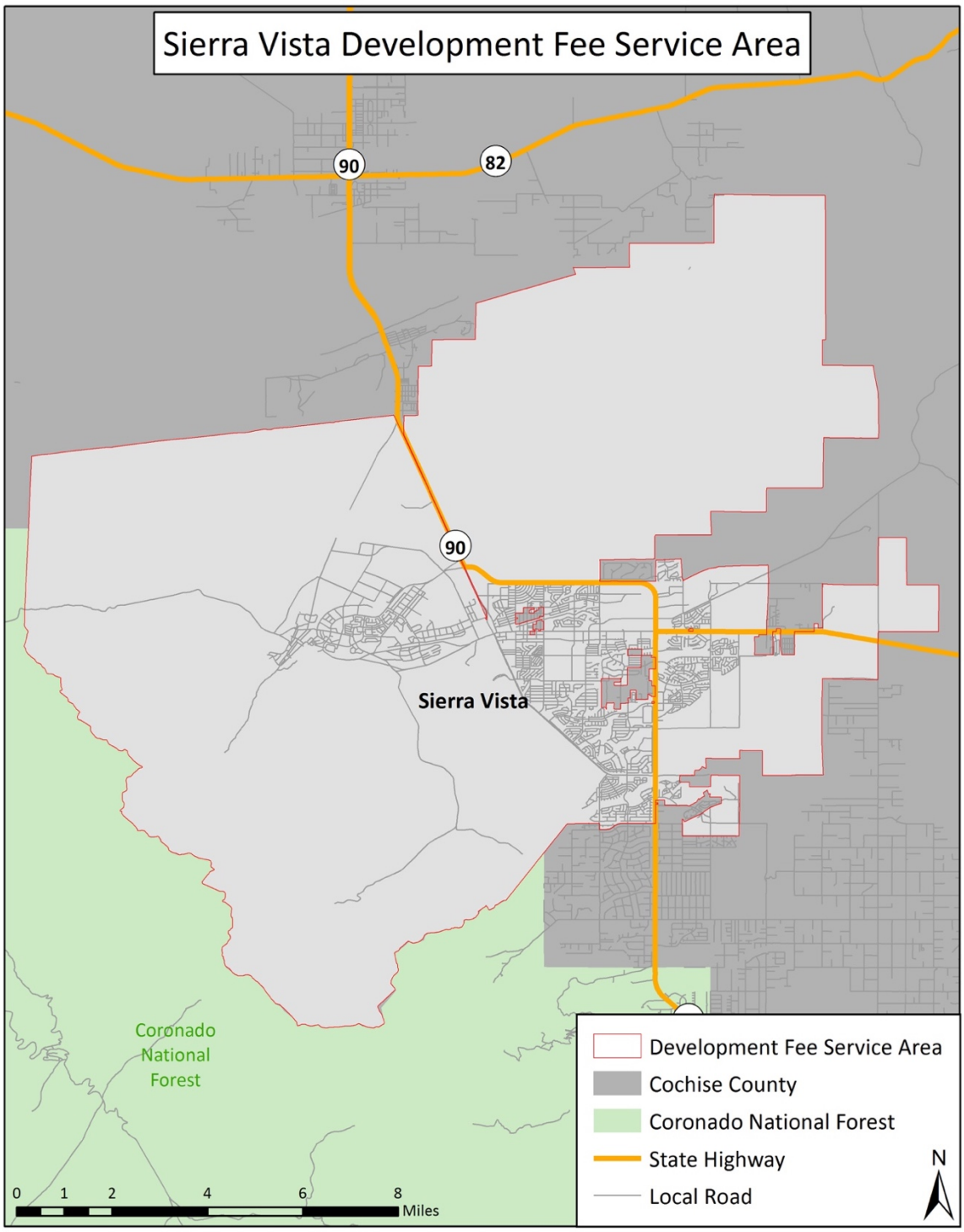
Proportionate Share

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 provide necessary public services to the development. Trip generation rates and trip adjustment factors are used to determine the proportionate impact of residential, commercial, office, and industrial land uses on Sierra Vista's street network.

Service Area

As shown below in Figure S1, Sierra Vista plans to collect development fees for necessary public services within the Development Fee Service Area.

Figure S1: Street Service Area



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."*

Figure S2 displays the demand indicators for residential and nonresidential land uses. For residential development, the table displays VMT generated per housing unit. For nonresidential development, the table displays VMT generated per thousand square feet of floor area.

Figure S2: Ratio of Service Unit to Development Unit

Residential Development					
Development Type	Avg Weekday Vehicle Trip Ends	Trip Adjustment	Trip Length Wt Factor	Average Trip Length (miles)	Avg Wkdy VMT per Unit
Single Family	9.17	58%	117%	0.45	2.77
Multi-Family	3.64	58%	117%	0.45	1.10
All Other	3.20	58%	117%	0.45	0.97

Nonresidential Development					
Development Type	AWVTE per 1,000 Sq Ft[1]	Trip Adjustment	Trip Length Weight Factor	Average Trip Length (miles)	Avg Wkdy VMT per 1,000 Sq Ft[1]
Industrial	4.96	50%	73%	0.45	0.81
Commercial	37.75	33%	75%	0.45	4.16
Office & Other Services	9.74	50%	73%	0.45	1.58
Hotel (per room)	8.36	50%	73%	0.45	1.36
Nursing Home (per bed)	3.06	50%	73%	0.45	0.50

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."*

The existing public services included in the Street Facilities IIP are 157.4 lane miles of arterials and 31 improved intersections.

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."*

The daily lane capacity used in this analysis is 7,000, which is the roadway capacity of a four-lane arterial, and results in an existing level of service of 1.429 arterial lane miles per 10,000 vehicle miles of travel.

LEVEL OF SERVICE AND RATIO OF SERVICE UNIT TO LAND USE

Service Units

Sierra Vista will use vehicle miles of travel (VMT) as the service units for documenting existing level-of-service standards and allocating the costs of future improvements. Components used to determine the service units and input variables are discussed, including trip generation rates, adjustments for commuting patterns and pass-by trips, and trip length weighting factors.

Trip Rate Adjustments

Sierra Vista's Street Facilities Development Fees use average weekday vehicle trip generation rates from the reference book *Trip Generation* published by the Institute of Transportation Engineers (ITE 2017) as the basis for the VMT calculation. A vehicle trip end represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway). 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 below, the development fee methodology includes additional adjustments to make the fees proportionate to the infrastructure demand for particular types of development.

Adjustment for Commuting Patterns

Residential development has a trip adjustment factor of 58 percent to account for commuters leaving Sierra Vista for work. According to the 2009 National Household Travel Survey, 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 S3, the Census Bureau's web application OnTheMap indicates 54 percent of resident workers traveled outside Sierra Vista for work in 2017. In combination, these factors (0.31 x 0.50 x 0.54 = 0.08) support the additional eight percent allocation of trips to residential development.

Figure S3: Inflow / Outflow Analysis

Trip Adjustment Factor for Commuters[1]	
Employed Residents	13,332
Residents Living and Working in Sierra Vista	6,184
Residents Commuting Outside Sierra Vista for Work	7,148
Percent Commuting out of Sierra Vista	54%
Additional Production Trips[2]	8%
Residential Trip Adjustment Factor	58%

1. U.S. Census Bureau, OnTheMap Application (version 6.6) and LEHD Origin-Destination Employment Statistics, 2017.

2. According to the National Household Travel Survey (2009)*, published in December 2011, 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 2017 indicate that 54 percent of Sierra Vista's workers travel outside the city for work. In combination, these factors (0.3099 x 0.50 x 0.54 = 0.08) account for 8 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 (8 percent of production trips) for a total of 58 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.

Trip Length Weighting Factor by Type of Land Use

The Street Facilities Development Fees methodology includes a percentage adjustment, or weighting factor, to account for trip length variation by type of land use. As documented in the 2017 National Household Travel Survey, vehicle trips from residential development are approximately 117 percent of the average trip length. The residential trip length adjustment factor includes data on home-based work trips, social, and recreational purposes. Conversely, shopping trips associated with commercial development are roughly 75 percent of the average trip length while other nonresidential development typically accounts for trips that are 73 percent of the average for all trips.

Average Trip Length

With 157.4 lane miles of arterials with four or more lanes and a lane capacity standard of 7,000 vehicles per lane per day, existing major arterials have approximately 1,101,566 vehicle miles of capacity (i.e. 7,000 vehicles per lane over the entire 157.4 lane miles). To derive the average utilization (i.e., average trip length expressed in miles) of the major streets, divide vehicle miles of capacity by vehicle trips attracted to development in Sierra Vista. As shown in Figure S5, citywide development in Sierra Vista currently attracts 172,877 average weekday vehicle trips. Dividing 1,101,566 vehicle miles of capacity by existing average weekday vehicle trips yields an unweighted-average trip length of approximately 6.37 miles. However, the calibration of average trip length includes the same adjustment factors used in the development fee calculations (i.e. journey-to-work commuting, commercial pass-by adjustment, and average trip length adjustment by type of land use). With these refinements, the weighted-average trip length is 6.485 miles.

PROJECTED DEMAND FOR SERVICES AND COSTS

TischlerBise created an aggregate travel model to convert development units within Sierra Vista to project vehicle trips and vehicle miles of travel. Figure S4 summarizes the input variables used in the aggregate travel demand model.

Figure S4: Input Variables for Travel Demand Model

Development Type	Development Unit	ITE Code	Weekday VTE	Trip Adj	Trip Length Wt Factor
Single Family	HU	210	9.17	58%	117%
Multi-Family	HU	221	3.64	58%	117%
All Other	HU	240	3.20	58%	117%
Industrial	KSF	110	4.96	50%	73%
Commercial	KSF	820	37.75	33%	75%
Office & Other Services	KSF	710	9.74	50%	73%

Avg Trip Length (miles)	6.485
Vehicle Capacity Per Lane	7,000

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."*

Projected citywide development in Sierra Vista over the next 10 years, and the corresponding need for additional street facilities, is shown in Figure S5. Trip generation rates and trip adjustment factors convert projected development into vehicle miles of travel. As shown in Figure S5, future development in Sierra Vista will generate 50,998 additional vehicle miles of travel.

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."*

The travel demand model inputs are used to derive the level of service in vehicle miles of travel and future demand for street facilities. A vehicle mile of travel is a measurement unit equal to one vehicle traveling one mile. In the aggregate, VMT is the product of vehicle trips multiplied by the average trip length. Based on estimates shown in Figure S5, existing infrastructure standards using an average trip length of 6.485 miles are 1.429 lane miles per 10,000 VMT (157.4 arterial lane miles / (1,106,566 VMT / 10,000)), 0.281 improved intersections per 10,000 VMT (31 improved intersections / (1,106,566 VMT / 10,000), and 0.202 miles of multi-use paths per 10,000 VMT (22.3 miles of multi-use paths / (1,106,566 VMT / 10,000).

Projected Travel Demand

As shown on the lower right side of Figure S5, future development citywide generates an additional 50,998 VMT over the next 10 years. To maintain the existing infrastructure standards, Sierra Vista needs 7.3 additional lane miles of arterials and 1.4 additional improved intersections to accommodate projected development over the next 10 years.

Figure S5: Projected Travel Demand

Development Type	Development Unit	ITE Code	Weekday VTE	Trip Adj	Trip Length Wt Factor
Single Family	HU	210	9.17	58%	117%
Multi-Family	HU	221	3.64	58%	117%
All Other	HU	240	3.20	58%	117%
Industrial	KSF	110	4.96	50%	73%
Commercial	KSF	820	37.75	33%	75%
Office & Other Services	KSF	710	9.74	50%	73%

Avg Trip Length (miles)	6.485
Vehicle Capacity Per Lane	7,000

		Base	1	2	3	4	5	10	10-Year
		2019	2020	2021	2022	2023	2024	2029	Increase
Development	Single-Family Units	15,808	15,879	15,950	16,021	16,092	16,163	16,518	710
	Multi-Family Units	5,101	5,101	5,135	5,168	5,201	5,235	5,401	300
	All Other Units	1,327	1,327	1,327	1,327	1,327	1,327	1,327	0
	Industrial KSF	899	906	913	919	926	933	966	67
	Commercial KSF	3,404	3,420	3,437	3,453	3,469	3,485	3,565	161
	Office & Other Services KSF	6,351	6,381	6,412	6,442	6,473	6,503	6,655	304
Avg Weekday Vehicle Trips	Single-Family Trips	84,074	84,452	84,829	85,207	85,585	85,962	87,850	3,776
	Multi-Family Trips	10,770	10,770	10,841	10,911	10,981	11,052	11,404	633
	All Other Trips	2,463	2,463	2,463	2,463	2,463	2,463	2,463	0
	Residential Trips	97,308	97,686	98,133	98,581	99,029	99,477	101,717	4,410
	Industrial Trips	2,230	2,247	2,263	2,280	2,296	2,313	2,396	166
	Commercial Trips	42,410	42,610	42,810	43,011	43,211	43,411	44,413	2,003
	Office & Other Services Trips	30,929	31,077	31,225	31,373	31,522	31,670	32,410	1,481
	Nonresidential Trips	75,569	75,934	76,299	76,664	77,029	77,394	79,219	3,650
	Total Vehicle Trips	**172,877**	**173,619**	**174,432**	**175,245**	**176,058**	**176,871**	**180,937**	**8,060**
VMT	**Vehicle Miles of Travel (VMT)**	**1,101,566**	**1,106,185**	**1,111,338**	**1,116,491**	**1,121,645**	**1,126,798**	**1,152,564**	**50,998**
	Annual Increase		4,619	5,153	5,153	5,153	5,153	5,153	
Demand	Arterial Lane Miles	157.4	158.0	158.8	159.5	160.2	161.0	164.7	7.3
	Annual Increase		0.66	0.74	0.74	0.74	0.74	0.74	0.7
	Improved Intersections	31.0	31.1	31.3	31.4	31.6	31.7	32.4	1.4
	Annual Increase		0.13	0.15	0.15	0.15	0.15	0.15	0.1

Adjusted Travel Demand

Since Sierra Vista plans to construct only 0.50 lane miles of arterials and 1.0 improved intersection within the next ten years, TischlerBise adjusted the travel demand model to generate demand for 0.50 lane miles of arterials by adjusting the average trip length downward to 0.445 miles. This generates 3,499 vehicle miles of travel on the planned arterial improvements. Based on this adjustment, Sierra Vista needs 0.50 additional lane miles of arterials and 1.0 additional improved intersection to accommodate projected development over the next 10 years. Based on estimates shown in Figure S6, infrastructure standards using an average trip length of 0.445 miles are 1.429 lane miles per 10,000 VMT (10.8 arterial lane miles / (75,589 VMT / 10,000)) and 4.101 improved intersections per 10,000 VMT (31 improved intersections / (75,589 VMT / 10,000).

Figure S6: Adjusted Travel Demand

Development Type	Development Unit	ITE Code	Weekday VTE	Trip Adj	Trip Length Wt Factor
Single Family	HU	210	9.17	58%	117%
Multi-Family	HU	221	3.64	58%	117%
All Other	HU	240	3.20	58%	117%
Industrial	KSF	110	4.96	50%	73%
Commercial	KSF	820	37.75	33%	75%
Office & Other Services	KSF	710	9.74	50%	73%

Avg Trip Length (miles)	0.445
Vehicle Capacity Per Lane	7,000

		Base	1	2	3	4	5	10	10-Year
		2019	2020	2021	2022	2023	2024	2029	Increase
Development	Single-Family Units	15,808	15,879	15,950	16,021	16,092	16,163	16,518	710
	Multi-Family Units	5,101	5,101	5,135	5,168	5,201	5,235	5,401	300
	All Other Units	1,327	1,327	1,327	1,327	1,327	1,327	1,327	0
	Industrial KSF	899	906	913	919	926	933	966	67
	Commercial KSF	3,404	3,420	3,437	3,453	3,469	3,485	3,565	161
	Office & Other Services KSF	6,351	6,381	6,412	6,442	6,473	6,503	6,655	304
Avg Weekday Vehicle Trips	Single-Family Trips	84,074	84,452	84,829	85,207	85,585	85,962	87,850	3,776
	Multi-Family Trips	10,770	10,770	10,841	10,911	10,981	11,052	11,404	633
	All Other Trips	2,463	2,463	2,463	2,463	2,463	2,463	2,463	0
	Residential Trips	97,308	97,686	98,133	98,581	99,029	99,477	101,717	4,410
	Industrial Trips	2,230	2,247	2,263	2,280	2,296	2,313	2,396	166
	Commercial Trips	42,410	42,610	42,810	43,011	43,211	43,411	44,413	2,003
	Office & Other Services Trips	30,929	31,077	31,225	31,373	31,522	31,670	32,410	1,481
	Nonresidential Trips	75,569	75,934	76,299	76,664	77,029	77,394	79,219	3,650
	Total Vehicle Trips	**172,877**	**173,619**	**174,432**	**175,245**	**176,058**	**176,871**	**180,937**	**8,060**
VMT	**Vehicle Miles of Travel (VMT)**	**75,589**	**75,906**	**76,260**	**76,614**	**76,967**	**77,321**	**79,089**	**3,499**
	Annual Increase		317	354	354	354	354	354	
Demand	Arterial Lane Miles	10.8	10.8	10.9	10.9	11.0	11.0	11.3	0.5
	Annual Increase		0.05	0.05	0.05	0.05	0.05	0.05	0.0
	Improved Intersections	31.0	31.1	31.3	31.4	31.6	31.7	32.4	1.4
	Annual Increase		0.13	0.15	0.15	0.15	0.15	0.15	0.1

ARS § 9-463.05(E)(3) requires:

> *"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."*

Arterials – Plan-Based

Shown below in Figure S7, Sierra Vista plans to construct 0.50 lane miles of arterials over the next ten years at a cost of $600,000. As shown in Figure S5, maintaining the existing level of service of 1.429 lane miles per 10,000 VMT requires construction of 7.3 additional lane miles over the next 10 years. Since Sierra Vista plans to construct only 0.50 lane miles during this period, the level of service provided to future development will be less than the existing level of service.

Based on 2029 VMT of 79,089 shown in Figure S6, and 11.3 lane miles of arterials on the planned network, the planned level of service equals 1.429 lane miles per 10,000 VMT (11.3 lane miles / (79,089 VMT / 10,000)). Shown below in Figure S7, Sierra Vista plans to construct 0.50 lane miles of arterials within the next ten years at a cost of $0.60 million – this results in a cost of $1,200,000 per lane mile. Allocating this cost to the planned level of service results in a cost of $171.43 per VMT (11.3 lane miles / 79,089 VMT X $1,200,000 per lane mile).

Figure S7: Arterials

Cost Factors	
Cost of Planned Lane Miles	$600,000
Planned Lane Miles	0.50
Cost per Lane Mile	$1,200,000

Level-of-Service (LOS) Standards	
2029 Lane Miles	11.3
2029 VMT	79,089
Lane Miles per 10,000 VMT	1.429
Cost per VMT	$171.43

Source: Sierra Vista, Arizona

Improved Intersections – Plan-Based

Shown below in Figure S8, Sierra Vista plans to construct 1.0 improved intersection over the next ten years at a cost of $300,000. As shown in Figure S5, maintaining the existing level of service of 4.101 improved intersections per 10,000 VMT requires construction of 1.4 additional improved intersections over the next 10 years. Since Sierra Vista plans to construct only 1.0 improved intersection during this period, the level of service provided to future development will be less than the existing level of service. Allocating this cost to the 10-year VMT increase results in a cost of $85.73 per VMT (1.0 improved intersection / 3,499 VMT X $300,000 per improved intersection).

Figure S8: Improved Intersections

Cost Factors	
Cost per Improved Intersection	$300,000

Level-of-Service (LOS) Standards	
Planned Improved Intersections	1.0
10-Year VMT Increase	3,499
Imp. Intersections per 10,000 VMT	2.858
Cost per VMT	$85.73

Source: Sierra Vista, Arizona

Development Fee Report – Plan-Based

The cost to prepare the Street Facilities IIP and related Development Fee Report totals $20,947. Sierra Vista plans to update its report every five years. Based on this cost, proportionate share, and five-year projections of new development from the *Land Use Assumptions* document, the cost is $12.10 per VMT.

Figure S9: IIP and Development Fee Report

Fee Component	Cost	Proportionate Share		Service Unit	5-Year Change	Cost per Service Unit
Fire	$11,970	Residential	63%	Population	1,016	$7.42
		Nonresidential	37%	Vehicle Trips	1,825	$2.43
Parks and Recreational	$14,963	Residential	96%	Population	1,016	$14.14
		Nonresidential	4%	Jobs	694	$0.86
Police	$11,970	Residential	50%	Population	1,016	$5.94
		Nonresidential	50%	Vehicle Trips	1,825	$3.25
Street	$20,947	All Development	100%	VMT	1,731	$12.10
Total	$59,850					

STREET FACILITIES DEVELOPMENT FEES

Revenue Credit/Offset

A revenue credit/offset is not necessary for the Street Facilities development fees, because costs generated by projected development exceed revenues generated by projected development. Appendix A contains the forecast of revenues required by Arizona's Enabling Legislation (ARS § 9-463.05(E)(7)).

Street Facilities Development Fees – Interchange Service Area

Infrastructure standards and cost factors for Street Facilities are summarized in the upper portion of Figure S10. The cost per service unit is $269.25 per VMT.

Street Facilities development fees for residential development are assessed according to VMT generated per unit. The single-family fee of $746 is calculated using a cost per service unit of $269.25 per VMT multiplied by 2.77 VMT per single-family unit.

Nonresidential development fees are calculated using VMT as the service unit. The fee of $1.12 per square foot of commercial development is derived from a cost per service unit of $269.25 per VMT multiplied by 4.16 VMT per 1,000 square feet / 1,000.

Figure S10: Schedule of Street Facilities Development Fees

Fee Component	Cost per VMT
Arterials	$171.43
Improved Intersections	$85.73
Development Fee Report	$12.10
Total	$269.25

Residential Development	Fees per Unit			
Development Type	Avg Wkdy VMT per Unit[1]	Proposed Fees	Current Fees	Increase / Decrease
Single Family	2.77	$746	$1,981	($1,235)
Multi-Family	1.10	$296	$1,159	($863)
All Other Types	0.97	$260	$1,232	($972)

Nonresidential Development	Fees per Square Foot			
Development Type	Avg Wkdy VMT per 1,000 Sq Ft[1]	Proposed Fees	Current Fees	Increase / Decrease
Industrial	0.81	$0.22	$0.77	($0.55)
Commercial	4.16	$1.12	$3.14	($2.02)
Office & Other Services	1.58	$0.43	$1.53	($1.10)
Hotel (per room)	1.36	$366	$688	($322)
Nursing Home (per bed)	0.50	$134	N/A	N/A

1. See Land Use Assumptions

Street Facilities Development Fee Revenue

Appendix A contains the forecast of revenues required by Arizona's Enabling Legislation (ARS § 9-463.05(E)(7)). Projected fee revenue shown in Figure S11 is based on the development projections in the *Land Use Assumptions* document and the updated Street Facilities development fees shown in Figure S10. If development occurs at a faster rate than projected, the demand for infrastructure will increase along with development fee revenue. If development occurs at a slower rate than projected, the demand for infrastructure will decrease and development fee revenue will decrease at a similar rate. Projected development fee revenue is $0.92 million over the next 10 years, and the projected growth-related cost of street infrastructure is $0.92 million.

Figure S11: Projected Street Facilities Development Fee Revenue

Fee Component	Growth Share	Existing Share	Total
Arterials	$599,911	$0	$599,911
Improved Intersections	$300,000	$0	$300,000
Development Fee Report	$20,947	$0	$20,947
Total	$920,858	$0	$920,858

Year		Single Family $746 per unit	Multi-Family $296 per unit	Industrial $0.22 per sq ft	Commercial $1.12 per sq ft	Office & Inst $0.43 per sq ft
		Hsg Unit	Hsg Unit	KSF	KSF	KSF
Base	2019	15,808	5,101	899	3,404	6,351
Year 1	2020	15,879	5,101	906	3,420	6,381
Year 2	2021	15,950	5,135	913	3,437	6,412
Year 3	2022	16,021	5,168	919	3,453	6,442
Year 4	2023	16,092	5,201	926	3,469	6,473
Year 5	2024	16,163	5,235	933	3,485	6,503
Year 6	2025	16,234	5,268	939	3,501	6,533
Year 7	2026	16,305	5,301	946	3,517	6,564
Year 8	2027	16,376	5,335	953	3,533	6,594
Year 9	2028	16,447	5,368	959	3,549	6,625
Year 10	2029	16,518	5,401	966	3,565	6,655
10-Year Increase		710	300	67	161	304
Projected Revenue		$517,482	$86,572	$14,205	$175,959	$126,640

Projected Fee Revenue	$920,858
Total Expenditures	$920,858
Existing Development Share	$0

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."*

REVENUE PROJECTIONS

Sierra Vista does not have a higher than normal construction excise tax rate; therefore, the required offset described above is not applicable. The required forecast of non-development fee revenue from identified sources that can be attributed to future development over the next 10 years is summarized below. These funds are available for capital investments; however, the City of Sierra Vista directs these revenues to non-development fee eligible capital needs including maintenance, repair, and replacement.

Only revenue generated by future development that is dedicated to growth-related capital improvements needs to be considered in determining the extent of the burden imposed by future development. Offsets against development fees are warranted in the following cases: (1) future development will be paying taxes or fees used to retire debt on existing facilities serving existing development; (2) future development will be paying taxes or fees used to fund an existing deficiency, or (3) future development will be paying taxes or fees that are dedicated to be used for growth-related improvements. The analysis provided in this report did not identify the need for offsets against the fees. Projected revenues generated by future development are shown below.

Figure A1: Revenue Projections of Future Development

APPENDIX B: PROFESSIONAL SERVICES

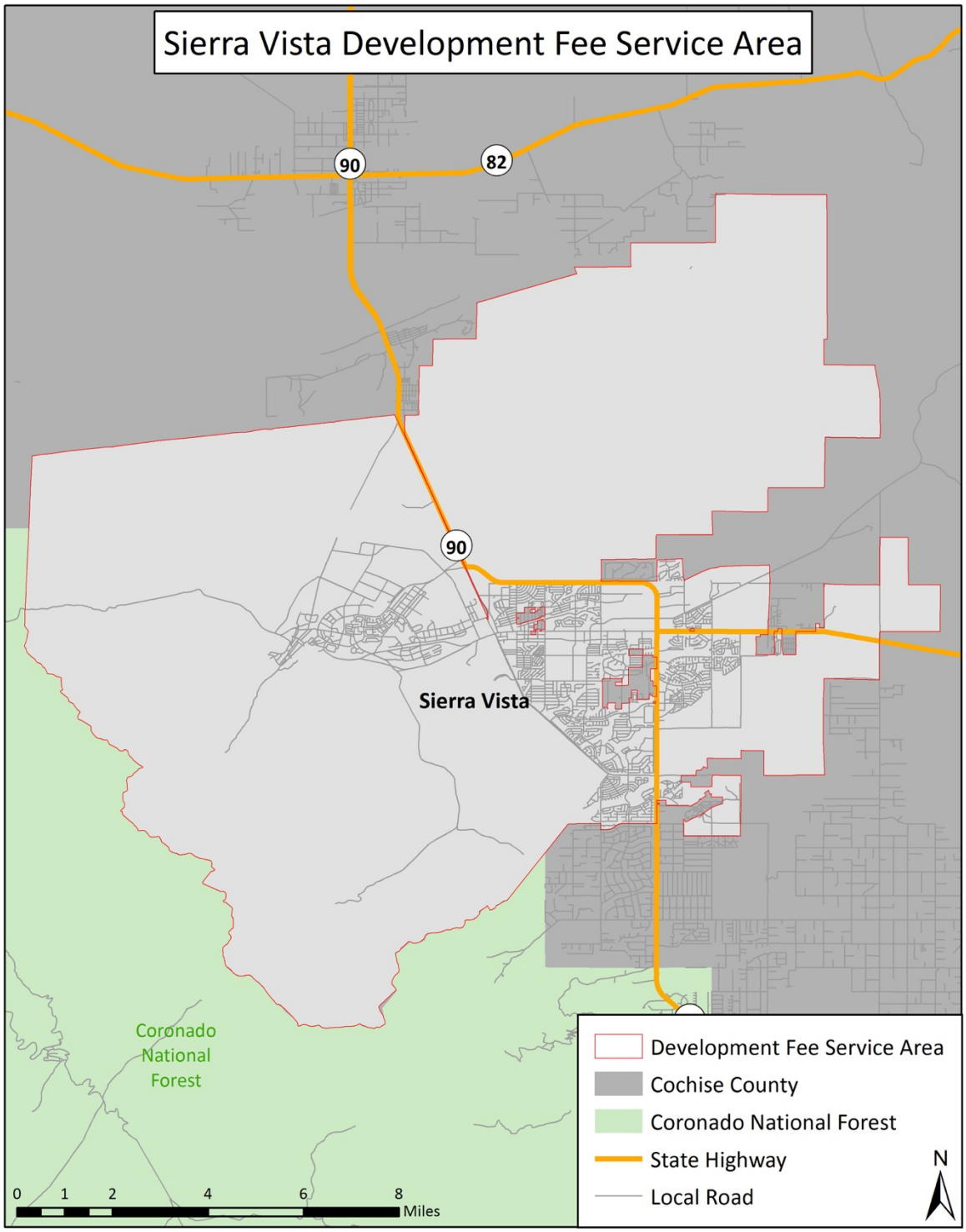
As stated in Arizona's development fee enabling legislation, "a municipality may assess development fees to offset costs to the municipality associated with providing necessary public services to a development, including the costs of infrastructure, improvements, real property, engineering and architectural 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

Fee Component	Cost	Proportionate Share		Service Unit	5-Year Change	Cost per Service Unit
Fire	$11,970	Residential	63%	Population	1,016	$7.42
		Nonresidential	37%	Vehicle Trips	1,825	$2.43
Parks and Recreational	$14,963	Residential	96%	Population	1,016	$14.14
		Nonresidential	4%	Jobs	694	$0.86
Police	$11,970	Residential	50%	Population	1,016	$5.94
		Nonresidential	50%	Vehicle Trips	1,825	$3.25
Street	$20,947	All Development	100%	VMT	1,731	$12.10
Total	$59,850					

APPENDIX C: LAND USE ASSUMPTIONS

The estimates and projections of residential and nonresidential development in this *Land Use Assumptions* document are for areas within the boundaries of the City of Sierra Vista, Arizona. The map below illustrates the Sierra Vista Development Fee Service Area.



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."*

Arizona's enabling legislation requires fees to be updated at least every five years and limits the Infrastructure Improvements Plan ("IIP") to a maximum of 10 years. The City of Sierra Vista retained TischlerBise to analyze the impacts of development on its capital facilities and to calculate updated development fees based on that analysis. TischlerBise prepared current development estimates and future development projections for both residential and nonresidential development for use in the IIP and the calculation of development fees. Current demographic data estimates for 2019 are used in calculating the levels of service ("LOS") that the City provides to existing development.

SUMMARY OF GROWTH INDICATORS

The Development Fee Report will be informed by key Land Use Assumptions ("LUA") regarding current and projected population, residential and nonresidential development, and employment. These projections are summarized in Figure C1.

Data utilized in this analysis include building permit records provided by the City of Sierra Vista staff, housing and person counts from the U.S. Census Bureau's 2013-2017 American Community Survey 5-year estimates, and demographic data from the Cochise College Center for Economic Research and the Arizona Office of Economic Opportunity ("OEO"). The study uses 2019 as the base year and projects growth through 2029 for a 10-year timeframe.

The projected long-range increase in residential development is based on permit data from 2015-2018 and input from City staff; development of single family units is expected to keep pace with the recent historical average of 71 units per year, while pipeline development projects can be expected to add 300 new multifamily units to the City's housing stock between 2021 and 2029. To forecast population growth, we converted these annual housing unit increases to population using Persons per Housing Unit ("PPHU") factors from the U.S. Census. This results in a projected average annual population growth rate of 0.45 percent during the study's 10-year timeframe. Because TischlerBise recommends a three- to five- year update cycle for development fees, this analysis does not vary the PPHU ratio over time, nor assume any change to the residential vacancy rate in Sierra Vista.

For nonresidential development, we utilized nonresidential building permit data from the previous four years (2015-2018) to forecast the future development by land use type. Assuming historical trends continue, approximately 266,000 square feet ("sf") of new nonresidential development will occur between 2019-2024; within the full 10-year timeframe, the cumulative increase in nonresidential floor area is projected to be approximately 532,000 sf. Nonresidential floor area projections were then converted to employment based on average square foot per job multipliers from the Institute of Transportation Engineers ("ITE"), resulting in an average annual employment growth rate of 0.74 percent and a cumulative increase of 1,388 jobs during the study period.

The projections contained in this document will be used to estimate development fee revenue and to indicate the anticipated need for growth-related infrastructure; they will function as the service units and demand indicators in the Development Fee Report. However, 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 the City will also need to accelerate infrastructure improvements to keep pace with the actual rate of development.

Figure C1: Development Projections Summary

Sierra Vista, Arizona	2019	2020	2021	2022	2023	2024	2025	2029	10-Year
	Base Year	1	2	3	4	5	6	10	Increase
Population	**45,527**	**45,696**	**45,907**	**46,119**	**46,331**	**46,543**	**46,755**	**47,603**	**2,076**
Housing Units									
Single Family	15,808	15,879	15,950	16,021	16,092	16,163	16,234	16,518	710
Multi-Family	5,101	5,101	5,135	5,168	5,201	5,235	5,268	5,401	300
All Other Units	1,327	1,327	1,327	1,327	1,327	1,327	1,327	1,327	0
Total Housing Units	**22,236**	**22,307**	**22,412**	**22,516**	**22,620**	**22,725**	**22,829**	**23,246**	**1,010**
Employment									
Industrial	1,754	1,765	1,776	1,787	1,797	1,808	1,819	1,863	109
Commercial	5,633	5,670	5,708	5,746	5,783	5,821	5,859	6,009	377
Office & Other Services	10,769	10,859	10,950	11,040	11,130	11,220	11,311	11,672	902
Total Employment	**18,156**	**18,295**	**18,433**	**18,572**	**18,711**	**18,850**	**18,989**	**19,544**	**1,388**
Nonres. Floor Area (x1,000)									
Industrial	899	906	913	919	926	933	939	966	67
Commercial	3,404	3,420	3,437	3,453	3,469	3,485	3,501	3,565	161
Office & Other Services	6,351	6,381	6,412	6,442	6,473	6,503	6,533	6,655	304
Total Nonres. Floor Area	**10,655**	**10,708**	**10,761**	**10,814**	**10,867**	**10,920**	**10,974**	**11,186**	**532**

RESIDENTIAL DEVELOPMENT

This section details current estimates and future projections of residential development including population and housing units.

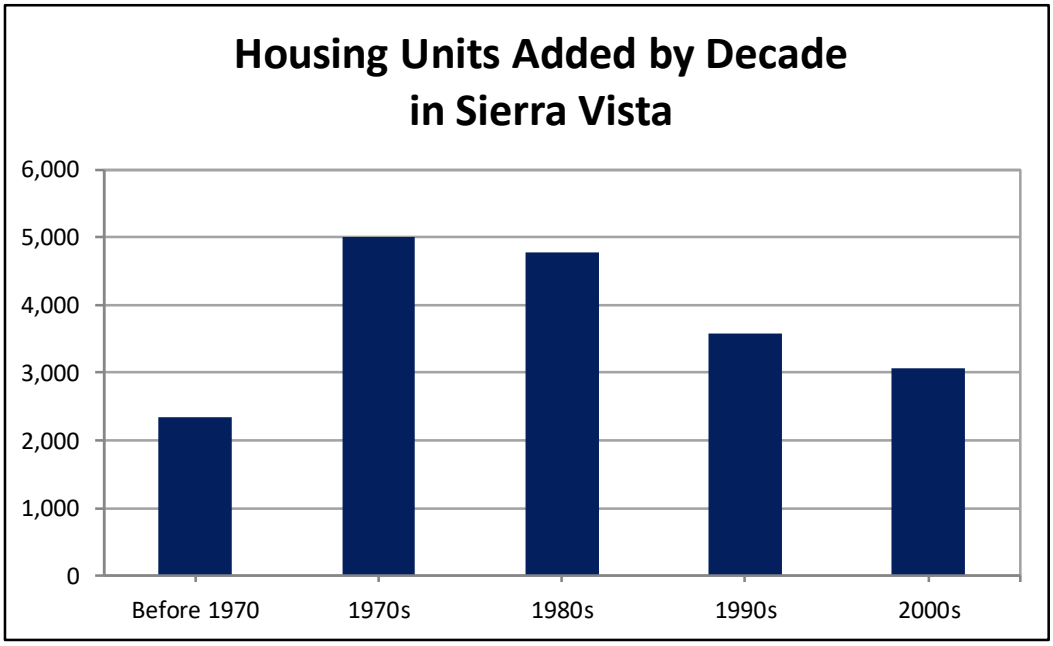
Recent Residential Construction

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 C2 indicates the estimated number of housing units added by decade according to data obtained from the U.S. Census Bureau. In the previous decade, Sierra Vista's housing inventory increased by an average of 306 units per year.

Figure C2: Housing Units by Decade

Census 2010 Housing Units	18,742
Census 2000 Housing Units	15,685
New Housing Units 2000 to 2010	3,057

Sierra Vista added an average of 306 housing units per year



Source: U.S. Census Bureau, Census 2010 Summary File 1, Census 2000 Summary File 1, 2013-2017 5-Year American Community Survey (for 1990s and earlier, adjusted to yield total units in 2000).

Housing Unit Size

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 Sierra Vista be imposed according to the number of persons per housing unit. This methodology assumes some portion of the housing stock will be vacant during the course of a year. According to the U.S. Census Bureau American Community Survey, Sierra Vista's 2017 vacancy rate was 14.8 percent.

PPHU calculations require data on population and types of housing units by structure. The 2010 U.S. 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). For development fees in Sierra Vista, detached stick-built units and attached units are included in the "Single-Family Units" category. The second residential category includes duplexes and all other structures with two or more units on an individual parcel of land. This category is referred to as "Multi-Family Units." Mobile homes and all other units are included in the "All Other Units" category.

Figure C3 below shows occupancy estimates for Sierra Vista based on 2013-2017 American Community Survey 5-Year Estimates. Single-family units average 2.37 PPHU, multi-family units average 1.31 PPHU, and all other units average 1.04 PPHU. The average occupancy for all housing units is 2.05 PPHU.

Figure C3: Persons per Housing Unit

Housing Type	Persons	Households	Housing Units	Persons per Housing Unit	Housing Mix	Vacancy Rate
Single-Family Units[1]	33,719	13,048	14,202	**2.37**	71.0%	8.10%
Multi-Family Units[2]	6,042	3,372	4,613	**1.31**	23.1%	26.90%
All Other Units	1,248	633	1,197	**1.04**	6.0%	47.10%
Total	41,009	17,053	20,012	**2.05**	100.0%	14.80%

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates, Tables B25024, B25032, B25033.

1. Includes detached and attached (i.e. townhouses) units.
2. Includes dwellings in structures with two or more units.

Population and Residential Development Estimates

TischlerBise used the State of Arizona Office of Economic Employment ("OEO") 2018 population estimate of 45,359 for Sierra Vista in this analysis.

To estimate the number of residential units in Sierra Vista in 2018, we first categorized population by housing type using the Persons by Housing Type percentages depicted in Figure C3 (82 percent single-family, 15 percent multi-family, 3 percent all other). These percentages were applied to the OEO 2018 population estimate, as depicted in the first and second columns in Figure 4 below. We then converted population to housing units using the PPHU factors shown in Figure C3 (2.37 single-family, 1.31 multi-family, and 1.04 all other units), resulting in an estimated total of 22,160 housing units. Population and housing unit estimates for 2018 are summarized below in Figure C4.

Figure C4: 2018 Population and Housing Unit Estimates

	Population		Housing Units	
Housing Type	Persons (#)	Percent (%)	Units (#)	Percent (%)
Single-Family Units[1]	37,296	82.2%	15,737	71.0%
Multi-Family Units[2]	6,683	14.7%	5,101	23.0%
All Other Units	1,380	3.0%	1,327	6.0%
Total	45,359	100.0%	22,165	100.0%

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates

1. Includes detached and attached (i.e. townhouses) units.
2. Includes dwellings in structures with two or more units.

Population and Residential Development Projections

To project residential development from the 2018 estimates forward to 2019 through 2029, we first forecasted residential development based on historical permit data and input from City staff. From 2015-2018, the City's single-family housing unit inventory grew by an average of 71 single-family units per year. Per discussions with City staff, the analysis projects future single-family development at 71 units per year and future multi-family development at 300 units from 2021-2029 – an average of 33 multi-family housing units each year. As depicted in Figure C5 below, this results in five-year and 10-year cumulative increases of 522 and 1,010 housing units, respectively.

To project population, we applied PPHU factors shown in Figure C3 (2.37 single-family, 1.31 multi-family, and 1.04 all other units) to housing unit projections. This results in an average annual population increase of approximately 168 persons in 2019 and 2020 (71 single-family units x 2.37 PPHU), and an average annual population increase of approximately 212 persons from 2021-2029 ((71 single-family units x 2.37 PPHU) + (33 multi-family units x 1.31 PPHU)). The five-year cumulative increase is 1,060 persons; the 10-year cumulative increase is 2,076 persons.

Figure C5: Residential Projections

Sierra Vista, Arizona	2019	2024	2029	10-Year
	Base Year	5	10	Increase
Population	**45,527**	**46,543**	**47,603**	**2,076**
Housing Units				
Single Family	15,808	16,163	16,518	710
Multi-Family	5,101	5,235	5,401	300
All Other Units	1,327	1,327	1,327	0
Total Housing Units	**22,236**	**22,725**	**23,246**	**1,010**

This analysis assumes the current average housing unit size and housing unit mix will remain constant. 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.

NONRESIDENTIAL DEVELOPMENT

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

Employment Estimates

TischlerBise uses 2017 Institute of Transportation Engineers ("TE) employment multipliers as a proxy for nonresidential floor area (Figure C6). The prototype for Industrial development is Light Industrial (ITE 110) with an average of 615 square feet per employee. For Commercial development, Shopping Center (ITE 820) is a reasonable proxy with 427 square feet per employee. The prototype for development falling within the Office and Other Services category is General Office (ITE 701), with an average of 337 square feet per employee.

Figure C6: The Institute of Transportation Engineers, Employee and Building Area Ratios

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	4.96	3.05	1.63	615
130	Industrial Park	1,000 Sq Ft	3.37	2.91	1.16	864
140	Manufacturing	1,000 Sq Ft	3.93	2.47	1.59	628
150	Warehousing	1,000 Sq Ft	1.74	5.05	0.34	2,902
254	Assisted Living	bed	2.60	4.24	0.61	na
310	Hotel	room	8.36	14.34	0.58	na
520	Elementary School	1,000 Sq Ft	19.52	21.00	0.93	1,076
530	High School	1,000 Sq Ft	14.07	22.25	0.63	1,581
540	Community College	student	1.15	14.61	0.08	na
610	Hospital	1,000 Sq Ft	10.72	3.79	2.83	354
620	Nursing Home	bed	3.06	2.91	1.05	na
710	General Office (average size)	1,000 Sq Ft	9.74	3.28	2.97	337
715	Single Tenant Office	1,000 Sq Ft	11.25	3.77	2.98	335
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
820	Shopping Center (average size)	1,000 Sq Ft	37.75	16.11	2.34	427

1. Trip Generation, Institute of Transportation Engineers, 10th Edition (2017).

Nonresidential Square Footage Estimates

For employment, TischlerBise used the Esri Business Analyst 2018 estimate of 18,017 total jobs in Sierra Vista.[1] Sierra Vista staff provided floor area estimates, by land use type, resulting in a total nonresidential floor area estimate of 10,601,310 sf, as shown in Figure C7 below.

Figure C7: Estimated Employment and Nonresidential Floor Area by Land Use Type

Nonresidential Category	2018 Jobs[1]	Percent of Total Jobs	Square Feet per Job	2018 Estimated Floor Area[2]	Jobs per 1,000 Sq. Ft.
Industrial[3]	1,743	10%	512	892,509	1.95
Commercial[4]	5,595	31%	606	3,388,268	1.65
Office & Other Services[5]	10,679	59%	592	6,320,534	1.69
Total	18,017	100%		10,601,310	

1. Esri Business Analyst, 2018
2. Sierra Vista Business Inventory App (Updated 05/29/2019)
3. Major sectors are Manufacturing and Construction
4. Major sectors are Retail Trade, Accommodation and Food Services
5. Major sectors are Educational Services and Health Control

Nonresidential Floor Area and Employment Projections

Future employment growth and nonresidential development in Sierra Vista are projected based on information provided by City staff and an analysis of past trends. We first projected nonresidential development using historical averages. TischlerBise obtained nonresidential permit data from the City for the years 2015-2018 and calculated average annual nonresidential development by land use type in terms of square footage. These historical annual averages are depicted below in Figure C8.

Figure C8: Average Annual Nonresidential Development by Land Use Type

Land Use Type	2015-2018	
	Total (sf)	Average (sf)
Industrial/Warehousing	26,796	6,699
Commercial / Shopping Center	64,317	16,079
Office and Other Services	121,654	30,414

Source: TischlerBise calculation

[1] Note that TischlerBise uses the term "jobs" to refer to employment by place of work.

Based on conversations with City staff, we assumed that historical nonresidential development trends would remain relatively constant through 2029. We therefore added the average annual square footage figures shown in Figure C8 to the 2018 estimates depicted in Figure C7 to arrive at 2019 nonresidential development projections. The same square footage figures (6,699 square feet for Industrial/Warehousing; 16,079 square feet for Commercial/Shopping Center; and 30,414 square feet for Office and Other Services) were added in a cumulative fashion to each subsequent year thereafter. This results in a five-year cumulative increase of 265,959 nonresidential square feet, and a 10-year cumulative increase of 531,918 square feet, as shown in Figure C9.

To project future employment, TischlerBise applied the employment multipliers shown in Figure 6 to the projected increase in nonresidential floor area. For example, dividing the average annual projection of industrial floor area (6,699 sf) by the employment multiplier of 615 square feet per employee results in an average annual increase of approximately 11 industrial sector jobs. If nonresidential development trends continue as projected, the City should expect to add nearly 1,400 jobs from 2019-2019.

Figure C9: Nonresidential Projections

Sierra Vista, Arizona	2019	2024	2029	10-Year
	Base Year	5	10	Increase
Employment				
Industrial	1,754	1,808	1,863	109
Commercial	5,633	5,821	6,009	377
Office & Other Services	10,769	11,220	11,672	902
Total Employment	**18,156**	**18,850**	**19,544**	**1,388**
Nonres. Floor Area (x1,000)				
Industrial	899	933	966	67
Commercial	3,404	3,485	3,565	161
Office & Other Services	6,351	6,503	6,655	304
Total Nonres. Floor Area	**10,655**	**10,920**	**11,186**	**532**

AVERAGE WEEKDAY VEHICLE TRIPS

Average Weekday Vehicle Trips are used as a measure of demand by land use. Vehicle trips are estimated using average weekday vehicle trip ends from the reference book, *Trip Generation, 10th Edition*, published by the ITE in 2017. A vehicle trip end represents a vehicle entering or exiting a development (as if a traffic counter were placed across a driveway).

Trip Rate Adjustments

Sierra Vista's Street Facilities Development Fees use average weekday vehicle trip generation rates from the reference book *Trip Generation* published by the Institute of Transportation Engineers (ITE 2017) as the basis for the VMT calculation. A vehicle trip end represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway). 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 below, the development fee methodology includes additional adjustments to make the fees proportionate to the infrastructure demand for particular types of development.

Adjustment for Commuting Patterns

Residential development has a trip adjustment factor of 58 percent to account for commuters leaving Sierra Vista for work. According to the 2009 National Household Travel Survey, 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 C10, the Census Bureau's web application OnTheMap indicates 54 percent of resident workers traveled outside Sierra Vista for work in 2017. In combination, these factors (0.31 x 0.50 x 0.54 = 0.08) support the additional eight percent allocation of trips to residential development.

Figure C10: Inflow / Outflow Analysis

Trip Adjustment Factor for Commuters[1]	
Employed Residents	13,332
Residents Living and Working in Sierra Vista	6,184
Residents Commuting Outside Sierra Vista for Work	7,148
Percent Commuting out of Sierra Vista	54%
Additional Production Trips[2]	8%
Residential Trip Adjustment Factor	58%

1. U.S. Census Bureau, OnTheMap Application (version 6.6) and LEHD Origin-Destination Employment Statistics, 2017.

2. According to the National Household Travel Survey (2009)*, published in December 2011, 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 2017 indicate that 54 percent of Sierra Vista's workers travel outside the city for work. In combination, these factors (0.3099 x 0.50 x 0.54 = 0.08) account for 8 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 (8 percent of production trips) for a total of 58 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.

Estimated Residential Vehicle Trip Rates

As an alternative to simply using the national average trip generation rate for residential development, the Institute of Transportation Engineers (ITE) publishes regression curve formulas that may be used to derive custom trip generation rates, using local demographic data. Key independent variables needed for the analysis (i.e. vehicles available, housing units, households and persons) are available from American Community Survey data for Sierra Vista. Customized average weekday trip generation rates by type of housing are shown in Figure C11. A vehicle trip end represents a vehicle either entering or exiting a development, as if a traffic counter were placed across a driveway. The custom trip generation rates for Sierra Vista vary slightly from the national averages. For example, single-family residential development is expected to produce 9.17 average weekday vehicle trip ends per dwelling, which is lower than the national average of 9.44 (see ITE code 210). Similarly, multi-family residential development is expected to produce 3.64 average weekday vehicle trip ends per dwelling, which is also lower than the national average of 6.65. Manufactured homes, however, are expected to produce 3.20 average weekday vehicle trip ends. This is lower than the national average of 4.99 for mobile home parks.

Figure C11: Average Weekday Vehicle Trips Ends by Housing Unit Type

		Households by Structure Type[2]				
Tenure by Units in Structure	Vehicles Available[1]	Single-Family	Multi-Family	All Other	Total	Vehicles per HH by Tenure
Owner-Occupied	19,419	9,360	49	398	9,409	2.06
Renter-Occupied	11,085	4,300	3,344	235	7,644	1.45
Total	30,504	13,660	3,393	633	17,053	1.79

Units in Structure	Persons in Households[3]	Trip Ends[4]	Vehicles by Type of Unit	Trip Ends[5]	Average Trip Ends	Housing Units[6]	Trip Ends per Housing Unit
Single-Family	33,719	94,012	25,554	166,541	130,276	14,202	**9.17**
Multi-Family	6,042	13,755	4,950	19,798	16,777	4,613	**3.64**
All Other	1,248	2,777	1,162	4,873	3,825	1,197	**3.20**
Total	41,009	110,544	31,666	191,212	150,878	20,012	7.54

1. Vehicles available by tenure from Table B25046, American Community Survey, 2013-2017 5-Year Estimates.

2. Households by tenure and units in structure from Table B25032, American Community Survey, 2013-2017 5-Year Estimates.

3. Total population in households from Table B25033, American Community Survey, 2013-2017 5-Year Estimates.

4. Vehicle trips ends based on persons using formulas from Trip Generation (ITE 2017). For single-family housing (ITE 210), the fitted curve equation is EXP(0.89*LN(persons)+1.72). To approximate the average population of the ITE studies, persons were divided by 61 and the equation result multiplied by 61. For multi-family housing (ITE 221), the fitted curve equation is (2.29*persons)-81.02.

5. Vehicle trip ends based on vehicles available using formulas from Trip Generation (ITE 2017). For single-family housing (ITE 210), the fitted curve equation is EXP(0.99*LN(vehicles)+1.93). To approximate the average number of vehicles in the ITE studies, vehicles available were divided by 99 and the equation result multiplied by 99. For multi-family housing (ITE 221), the fitted curve equation is (3.94*vehicles)+293.58.

6. Housing units from Table B25024, American Community Survey, 2013-2017 5-Year Estimates.

Functional Population

TischlerBise recommends functional population to allocate the cost of certain facilities to residential and nonresidential development. As shown in Figure C12, functional population accounts for people living and working in a jurisdiction. OnTheMap is a web-based mapping and reporting application that shows where workers are employed and where they live. It describes geographic patterns of jobs by their employment locations and residential locations as well as the connections between the two locations. OnTheMap was developed through a unique partnership between the U.S. Census Bureau and its Local Employment Dynamics (LED) partner states.

Residents who do not work are assigned 20 hours per day to residential development and four hours per day to nonresidential development (annualized averages). Residents who work in Sierra Vista are assigned 14 hours to residential development and 10 hours to nonresidential development. Residents who work outside Sierra Vista are assigned 14 hours to residential development. Inflow commuters are assigned 10 hours to nonresidential development. Based on 2015 functional population data for Sierra Vista, residential development accounts for 76 percent of functional population while nonresidential development accounts for 24 percent of functional population.

Figure C12: Functional Population

Demand Units in 2017					
Residential				Demand Hours/Day	Person Hours
	Population	43,824			
	Residents Not Working		30,492	20	609,840
	Employed Residents		13,332		
	Employed in Sierra Vista		6,184	14	86,576
	Employed outside Sierra Vista		7,148	14	100,072
				Residential Subtotal	796,488
				Residential Share	**76%**
Nonresidential					
	Non-Working Residents		30,492	4	121,968
	Jobs Located in Sierra Vista		13,476		
	Residents Employed in Sierra Vista		6,184	10	61,840
	Non-Resident Workers (inflow commuters)		7,292	10	72,920
				Nonresidential Subtotal	256,728
				Nonresidential Share	**24%**
				Total	1,053,216

Source: U.S. Census Bureau, OnTheMap 6.6 Application and LEHD Origin-Destination Employment Statistics, 2017

DEVELOPMENT PROJECTIONS

Provided below is a summary of the citywide development projections used in the Development Fee Report. Base year estimates for 2019 are used in the development fee calculations. 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 C13: Development Projections Summary

Sierra Vista, Arizona	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	10-Year
	Base Year	1	2	3	4	5	6	7	8	9	10	Increase
Population	**45,527**	**45,696**	**45,907**	**46,119**	**46,331**	**46,543**	**46,755**	**46,967**	**47,179**	**47,391**	**47,603**	**2,076**
Housing Units												
Single Family	15,808	15,879	15,950	16,021	16,092	16,163	16,234	16,305	16,376	16,447	16,518	710
Multi-Family	5,101	5,101	5,135	5,168	5,201	5,235	5,268	5,301	5,335	5,368	5,401	300
All Other Units	1,327	1,327	1,327	1,327	1,327	1,327	1,327	1,327	1,327	1,327	1,327	0
Total Housing Units	**22,236**	**22,307**	**22,412**	**22,516**	**22,620**	**22,725**	**22,829**	**22,933**	**23,038**	**23,142**	**23,246**	**1,010**
Employment												
Industrial	1,754	1,765	1,776	1,787	1,797	1,808	1,819	1,830	1,841	1,852	1,863	109
Commercial	5,633	5,670	5,708	5,746	5,783	5,821	5,859	5,896	5,934	5,972	6,009	377
Office & Other Services	10,769	10,859	10,950	11,040	11,130	11,220	11,311	11,401	11,491	11,581	11,672	902
Total Employment	**18,156**	**18,295**	**18,433**	**18,572**	**18,711**	**18,850**	**18,989**	**19,127**	**19,266**	**19,405**	**19,544**	**1,388**
Nonres. Floor Area (x1,000)												
Industrial	899	906	913	919	926	933	939	946	953	959	966	67
Commercial	3,404	3,420	3,437	3,453	3,469	3,485	3,501	3,517	3,533	3,549	3,565	161
Office & Other Services	6,351	6,381	6,412	6,442	6,473	6,503	6,533	6,564	6,594	6,625	6,655	304
Total Nonres. Floor Area	**10,655**	**10,708**	**10,761**	**10,814**	**10,867**	**10,920**	**10,974**	**11,027**	**11,080**	**11,133**	**11,186**	**532**

APPENDIX D: LAND USE DEFINITIONS

RESIDENTIAL DEVELOPMENT

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

Single-Family Units:

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.

Multi-Family Units:

1. **2+ units (duplexes and apartments)** are 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."

All Other Units:

1. **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.
2. **Boat, RV, Van, Etc.** 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 within Sierra Vista. 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).

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

Hotel: A place of lodging that provides sleeping accommodations and 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.

Industrial: Establishments primarily engaged in the production, transportation, or storage of goods. By way of example, *Industrial* includes manufacturing plants, distribution warehouses, trucking companies, utility substations, power generation facilities, and telecommunications buildings.

Nursing Home: A nursing home is any facility whose primary function is to provide care for persons who are unable to care for themselves. Examples of such facilities include rest homes and chronic care and convalescent homes. Skilled nurses and nursing aides are present 24 hours a day at these sites.

Office & Other Services: Establishments providing management, administrative, professional, or business services, personal and health care services, public and quasi-public buildings providing educational, social assistance, or religious services. By way of example, *Office & Other Services* includes banks, business offices, hospitals, medical offices, veterinarian clinics, schools, universities, churches, daycare facilities, and government buildings.