



**2022 LAND USE ASSUMPTIONS AND  
INFRASTRUCTURE IMPROVEMENTS PLAN  
FOR  
STREETS, POLICE, AND  
PARKS/RECREATION FACILITIES**

*Prepared for:  
Town of Prescott Valley, Arizona*

May 2022



May 31, 2022

Mr. Ryan Judy  
Town Manager  
Town of Prescott Valley  
7501 E Skoog Blvd  
Prescott Valley, AZ 86314

Subject: 2022 Land Use Assumptions (LUA) and Infrastructure Improvements Plan (IIP) for Streets, Police, and Parks/Recreational Facilities Report

Dear Mr. Judy,

Raftelis is pleased to provide this 2022 LUA and IIP Report for Streets, Police, and Parks/Recreational Facilities to the Town of Prescott Valley.

This Report details the development of the Town's land use assumptions and infrastructure improvements plan for the 10-year planning period 2021 through 2030. The LUA includes projected housing units, population, jobs, floor area, as well as other demographic data. The IIP contains the required improvements needed to meet the growth projections over the 10-year period.

We would like to thank you and the entire staff engaged in this project for their assistance. Questions regarding this Report and the Study should be directed to me at the contact information below.

Sincerely,  
RAFTELIS



Todd Cristiano  
*Senior Manager*  
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## Introduction

Arizona Revised Statutes (ARS) §9-463.05 governs how Development Impact Fees (DIFs) are calculated for municipalities in Arizona. The enabling legislation calls for three integrated products: 1) Land Use Assumptions (LUA) for at least 10 years, 2) Infrastructure Improvements Plan (IIP), and 3) Development Impact Fees (DIFs). Because Arizona requires a two-phase adoption process, the LUA and IIP will be reviewed, refined, and approved before focusing on DIFs.

According to requirements of Arizona’s enabling legislation, DIFs may be only 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 by or on behalf of the municipality.

- Water Facilities
- Wastewater Facilities
- Storm Water, Drainage, and Flood Control Facilities
- Library Facilities
- Streets Facilities
- Fire and Police Facilities
- Parks and Recreational Facilities
- Any facility that was financed before June 1, 2011 and that meets the following requirements:
  1. DIFs were pledged to repay debt service obligations related to the construction of the facility.
  2. After August 1, 2014, any DIFs 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 Infrastructure Improvements Plan (IIP). For each necessary public service that is the subject of a development fee, Subsection 9-463.05(E) requires the following.

1. *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.*
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 as required in subsection B, paragraph 12 of this section.*

## **Qualified Professionals**

Qualified professionals must prepare the LUA, IIP and DIF, using generally accepted engineering, planning, and financial 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.” Raftelis is a financial consulting firm specializing in DIFs, infrastructure funding, user fees, cost of service studies, capital improvement plans, and utility rate studies. Raftelis has approximately 100 professionals located in major urban areas across America. Prescott Valley’s LUA and IIP were prepared by qualified professionals in Denver, CO.



## Land Use Assumptions

The Town of Prescott Valley will use the same land use assumptions for all types of infrastructure. In addition to population and housing unit projections, the IIP and DIFs for streets, police, and park/recreation facilities also require demographic data on nonresidential development, such as jobs and floor area. This document contains the land use assumptions for Prescott Valley's 2020 DIF update. The LUA and IIP must be updated every five years, making short-range projections the critical time frame. The IIP is limited to ten years, thus a very long-range "build-out" analysis may not be used to derive DIFs in Arizona.

ARS §9-463.05(T)(7) defines land use assumptions 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."*

Raftelis prepared current demographic **estimates** and future development **projections** for both residential and nonresidential development that are used in the IIP and calculation of DIFs. Current conditions in Fiscal Year (FY) 19-20 are used to document levels-of-service provided to existing development in Prescott Valley. Although long-range projections are necessary for planning infrastructure systems, a ten-year timeframe is critical for the LUA and IIP.

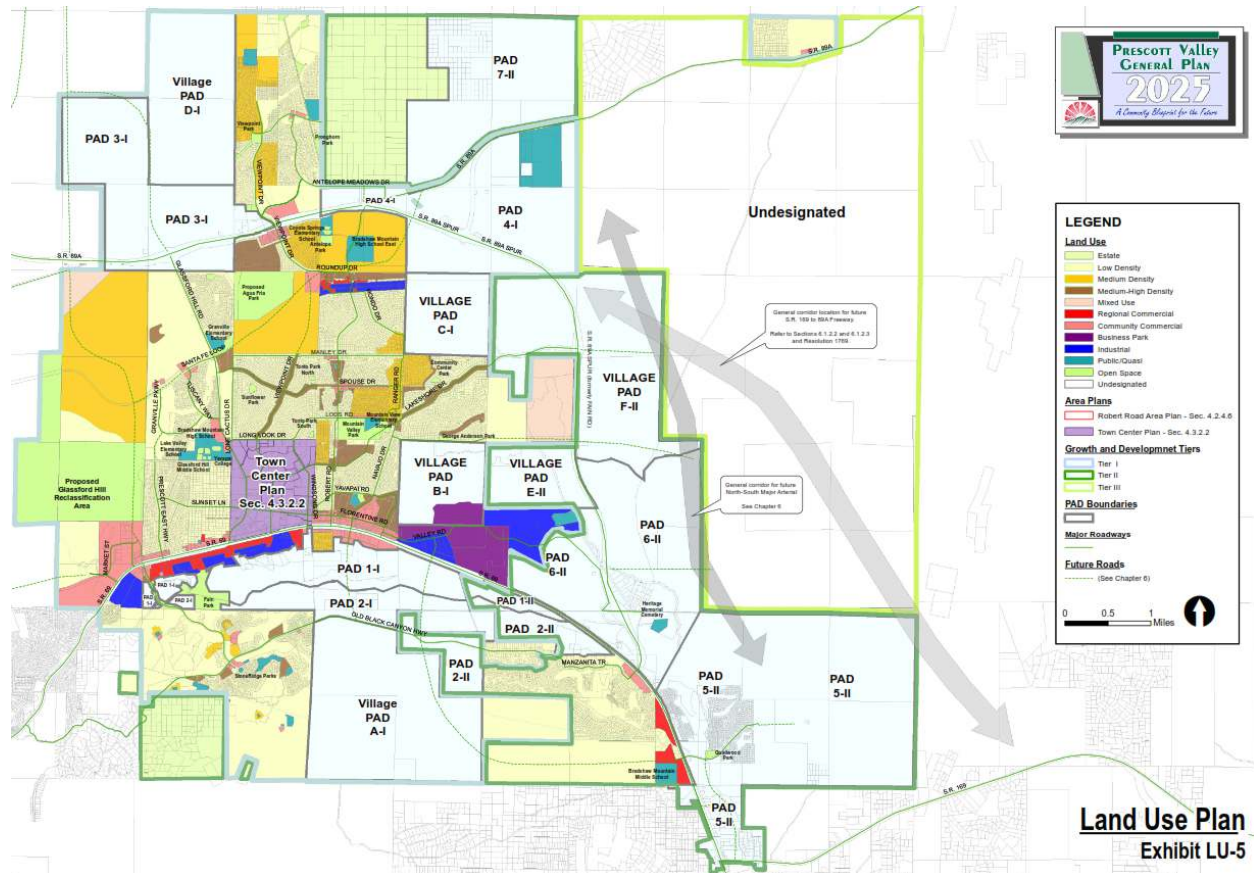
## Service Area

ARS §9-463.05(T)(9) defines "service area" as:

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

A town-wide service area is appropriate for Prescott Valley's streets, police, and parks/recreation facilities. Figure 1 indicates land uses, densities, and intensities of development as specified in the General Plan. The service area is defined as all land within the town limits of Prescott Valley, as modified over time.

**Figure 1 – Service Area Map**



**Summary of Growth Indicators**

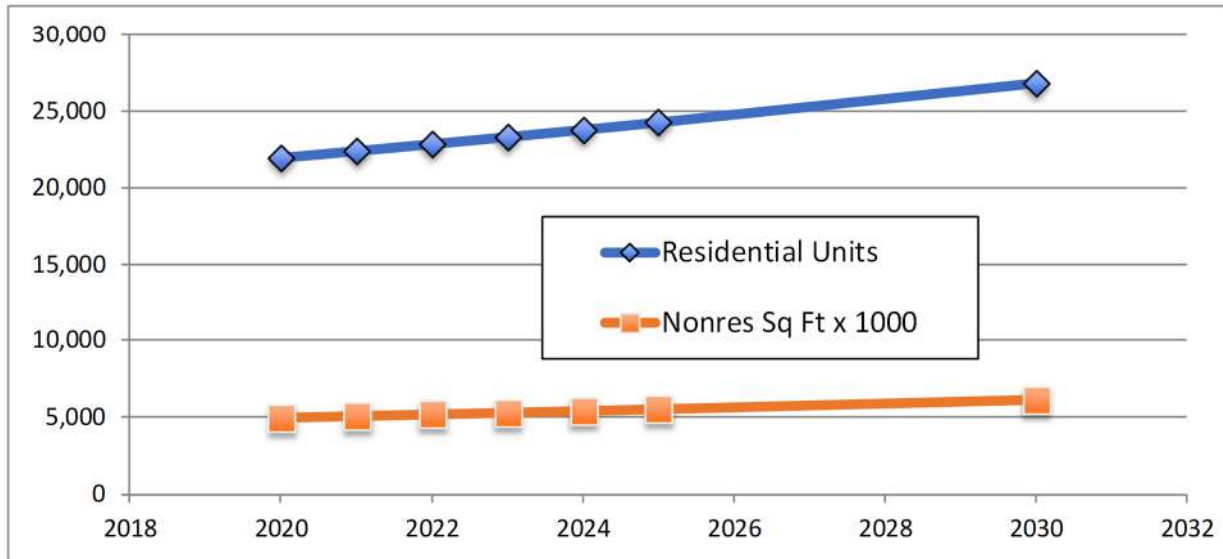
Development projections and growth rates for 2020 through 2030 are summarized in Figure 2. These projections will be used to estimate DIF revenue and to indicate the anticipated need for growth-related infrastructure. However, DIF methodologies are designed to reduce sensitivity to accurate development projections in the determination of the proportionate-share fee amounts. If actual development is slower than projected, DIF revenues will also decline, but so will the need for growth-related infrastructure. In contrast, if development is faster than anticipated, the Town will receive an increase in DIF revenue and will also accelerate capital improvements to keep pace with development.

During the next ten years, Prescott Valley expects to increase by an average of 487 housing units per year (compound average annual growth rate of 2.02%). In comparison, Prescott Valley’s average annual increase was 541 housing units per year during calendar years 2015 through 2020. Over the next ten years, Prescott Valley expects to add an average of 115,000 square feet of nonresidential floor area per year (compound growth rate of 2.10% per year). According to the Town’s building permit records, actual nonresidential construction average 113,000 square feet per year from 2015 through 2020.

**Figure 2 – Chart of Projected Development**

Prescott Valley AZ

	Year							2020 to 2030 Average Annual	
	2020	2021	2022	2023	2024	2025	2030	Increase	Compound Growth Rate
Residential Units	21,970	22,414	22,867	23,329	23,800	24,281	26,836	487	2.02%
Nonres Sq Ft x 1000	4,995	5,100	5,207	5,315	5,429	5,541	6,148	115	2.10%



**Service Units by Type of Residential Development**

The 2010 census did not obtain detailed information using a “long-form” questionnaire. Instead, the U.S. Census Bureau switched to a continuous monthly mailing of surveys, known as the American Community Survey (ACS), which is limited by sample-size constraints. For example, data on Single Family detached housing units are now combined with attached single units (commonly known as townhouses). According to the U.S. Census Bureau, a household is a housing unit that is occupied by year-round residents. Development fees often use per capita standards and persons per housing unit, or persons per household, to derive proportionate-share fee amounts. Raftelis recommends that fees for residential development in the Town of Prescott Valley be imposed according to the number of year-round residents per housing unit. Figure 3 lists Prescott Valley’s most recent multipliers by type of housing.

**Figure 3: Persons per Housing Unit by Units in Structure**

Units in Structure	Persons	Housing Units	Persons per Housing Unit	Housing Mix
<b>Single Family</b> (detached and attached)	32,186	14,226	<b>2.26</b>	72%
<b>Multifamily</b> (mobile home and all other residential)	10,771	5,652	<b>1.91</b>	28%
<b>Subtotal</b>	<b>42,957</b>	<b>19,878</b>	<b>2.16</b>	

Source: 2014-2018 ACS Tables B25024 and B25033, U.S. Census Bureau.

Rather than use national multipliers, custom tabulations of demographic data by bedroom range can be created from individual survey responses provided by the American Community Survey (ACS), in files known as Public Use Microdata Samples (PUMS). PUMS files, for areas of at least 100,000 persons, are available from the U.S. Census Bureau’s website. In comparison to the national averages provided by the Institute of Transportation Engineers (ITE), Prescott Valley has fewer person per housing unit but more vehicles available per housing unit. Applying Prescott Valley’s housing mix to ITEs national multipliers yields an expected average of 3.39 persons per housing unit. However, Prescott Valley’s average is only 2.16 persons per housing unit. In contrast, the ITE national average is only 1.37 vehicles available per housing unit, compared to Prescott Valley’s average of 1.62 vehicles available per housing unit.

The Town of Prescott Valley will continue the current approach of imposing impact fees by type of housing, using the two categories shown above in Figure 3. The only multiplier from Figure 4 that is used in the 2020 update is the weighted average trip generation rate of 8.32 Average Weekday Vehicle Trip Ends (AWVTE) per dwelling unit.

**Figure 4 – Service Units by Bedroom Range**

**2018 Public Use Microdata Sample (PUMS)**

Bedroom Range	Persons (1)	Vehicles Available (1)	Housing Units (1)	Prescott Valley Hsg Mix	Unadjusted Persons/HU	Adjusted Persons/HU (2)	Unadjusted VehAvl/HU	Adjusted VehAvl/HU (2)
0-1	457	420	474	10%	0.96	<b>1.11</b>	0.89	0.88
2	2,210	1,960	1,425	30%	1.55	<b>1.80</b>	1.38	1.36
3	4,504	4,046	2,229	47%	2.02	<b>2.35</b>	1.82	1.80
4+	1,587	1,324	588	12%	2.70	<b>3.14</b>	2.25	2.22
Total	8,758	7,750	4,716		1.86	<b>2.16</b>	1.64	1.62

**National Averages (ITE 2017)**

ITE Code	AWVTE per Person	AWVTE per Veh Avl	AWVTE per Dwelling Unit	Prescott Valley Hsg Mix	Persons per Hshld	Veh Avl per Hshld
220 & 221 MF	1.84	5.10	<b>5.44</b>	28%	2.96	1.07
210 SFD	2.65	6.36	<b>9.44</b>	72%	3.56	1.48
Wgtd Avg	2.42	6.01	<b>8.32</b>		3.39	1.37

**AWVTE per Housing Unit by Bedroom Range**

Bedroom Range	AWVTE per Housing Unit Based on Persons (3)	AWVTE per Housing Unit Based on Veh Avl (4)	AWVTE per Housing Unit (5)
0-1	2.69	5.29	4.44
2	4.36	8.17	6.96
3	5.69	10.82	9.18
4+	7.60	13.34	11.64
Total	5.23	9.74	8.32

(1) American Community Survey (ACS), Public Use Microdata Sample for AZ PUMA 500 (2018 Five-Year unweighted data).  
 (2) Adjusted multipliers are scaled to make the average PUMS values match control totals for Prescott Valley. Vehicles Available in Prescott Valley is from table B25046, ACS 2018 5-year data.  
 (3) Adjusted persons per household multiplied by national weighted average trip rate per person.  
 (4) Adjusted vehicles available per household multiplied by national weighted average trip rate per vehicle available.  
 (5) Average of trip rates based on persons and vehicles available per household.

### Service Units by Type of Nonresidential Development

In addition to data on residential development, the calculation of DIFs requires data on nonresidential development. Raftelis uses the term “jobs” to refer to employment by place of work. In Figure 5, gold shading indicates nonresidential development prototypes that will be used to allocate costs. 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). The prototype for future Industrial development is Light Industrial (ITE land use 110). For Office/Services, General Office (ITE 710) is the prototype for future development in Prescott Valley. The prototype for Retail/Restaurant, including all eating/drinking places, is a Shopping Center (ITE code 820).

**Figure 5 – Nonresidential Trip Rates and Jobs by Type of Development**

ITE Code	Land Use / Size	Demand Unit	Weekday Trip Ends Per Demand Unit*	Weekday Trip Ends Per Employee*	Employees Per Demand Unit	Square Feet Per Employee
110	Light Industrial	1,000 Sq Ft	4.96	3.05	1.63	615
150	Warehousing	1,000 Sq Ft	1.74	5.05	0.34	2,902
310	Hotel	room	8.36	14.34	0.58	N/A
520	Elementary School	student	1.89	21.00	0.09	N/A
530	High School	student	2.03	22.25	0.09	N/A
565	Day Care Center	student	4.09	21.38	0.19	N/A
610	Hospital	1,000 Sq Ft	10.72	3.79	2.83	354
620	Nursing Home	1,000 Sq Ft	6.64	2.91	2.28	438
710	General Office	1,000 Sq Ft	9.74	3.28	2.97	337
770	Business Park	1,000 Sq Ft	12.44	4.04	3.08	325
820	Shopping Center (avg size)	1,000 Sq Ft	37.75	16.11	2.34	427

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

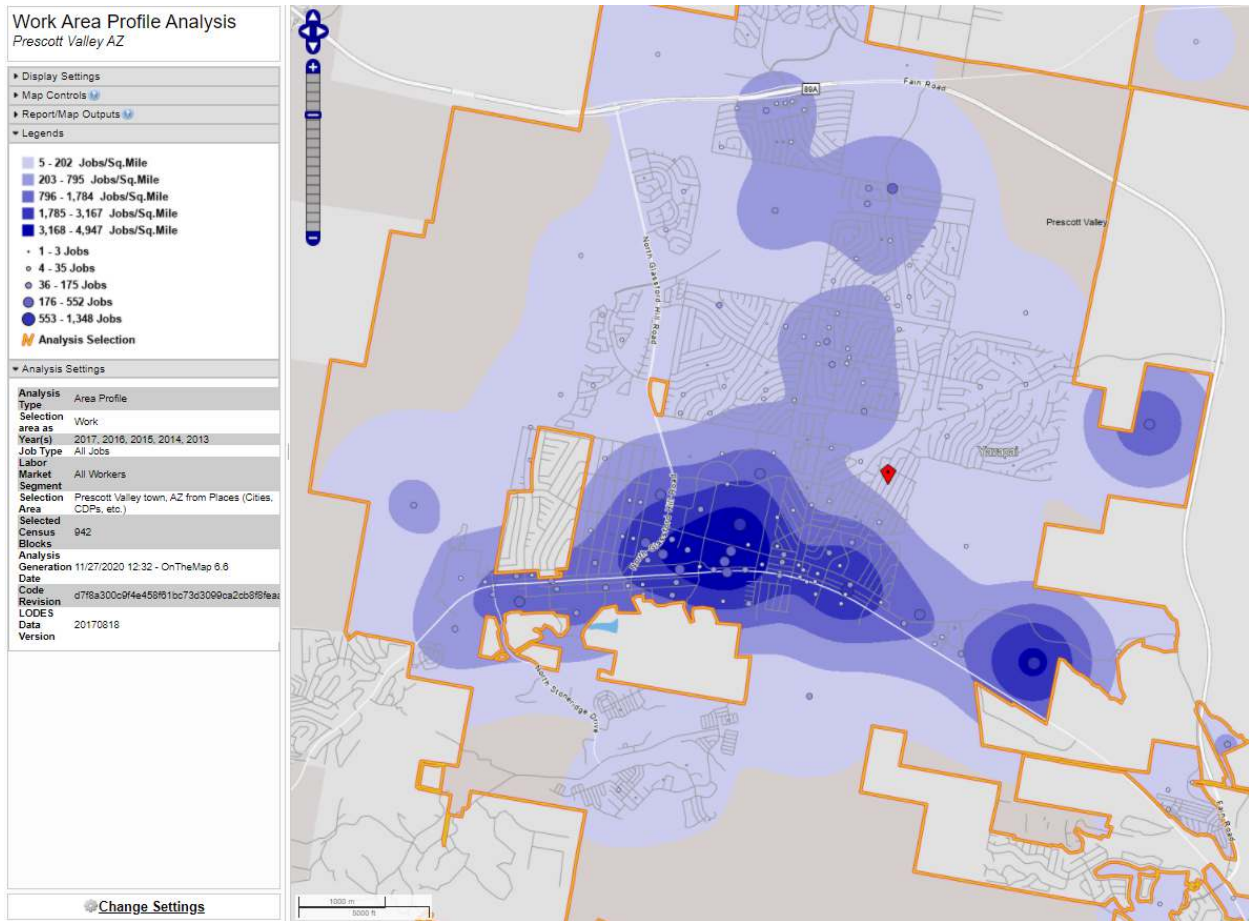
Prescott Valley jobs in 2017 (see Figure 6) are from the U.S. Census Bureau’s website (<https://onthemap.ces.census.gov/>). Each row is an industry sector, as reported by the North American Industry Classification System. Subtotals and percentages for Prescott Valley’s three types of nonresidential development are shown at the bottom of the table.

**Figure 6 – Work Area Profile**

<i>Industry Classification</i>	<i>2017 Jobs</i>	<i>General Type</i>
Agriculture, Forestry, Fishing and Hunting	42	Industrial
Mining, Quarrying, and Oil and Gas Extraction	0	Industrial
Utilities	3	Industrial
Construction	556	Industrial
Manufacturing	1,064	Industrial
Wholesale Trade	1,204	Industrial
Retail Trade	1,178	Retail/Restaurant
Transportation and Warehousing	145	Industrial
Information	105	Office/Services
Finance and Insurance	124	Office/Services
Real Estate and Rental and Leasing	161	Office/Services
Professional, Scientific, and Technical Services	365	Office/Services
Management of Companies and Enterprises	5	Office/Services
Administration & Support, Waste Management and	388	Office/Services
Educational Services	1,508	Office/Services
Health Care and Social Assistance	1,787	Office/Services
Arts, Entertainment, and Recreation	208	Office/Services
Accommodation and Food Services	1,303	Retail/Restaurant
Other Services (excluding Public Administration)	326	Office/Services
Public Administration	311	Office/Services
<b>Total Jobs</b>	<b>10,783</b>	
<b>Subtotals by Type of Nonresidential Development</b>		
Industrial	3,014	28.0%
Office/Services	5,288	49.0%
Retail/Restaurant	2,481	23.0%
<b>Total Jobs</b>	<b>10,783</b>	<b>100.0%</b>



The map below indicates the general location and concentration of jobs within Prescott Valley (dark blue indicates more jobs per square mile).



Prescott Valley assumes jobs located with the town will match Yavapai County’s projected job growth rate of 2.1% per year, as published by Arizona Office of Economic Opportunity (see Figure 7). Given the common practice of providing projections in five or ten-year increments to correspond with decennial census counts, Raftelis extended land use assumptions to 2040. Jobs were converted to floor area estimates using national averages published by the Institute of Transportation Engineers (ITE), as shown above in Figure5.

**Figure 7 – Prescott Valley Land Use Assumptions**

Prescott Valley AZ	FY18-19 Base Yr										Compound	
FY begins July 1st	2017	2018	2019	2020	2021	2022	2023	2024	2025	2030	2040	Annual Growth
<b>Population</b>												
Prescott Valley Year-Round Population	44,453	45,703	46,515	47,455	48,414	49,392	50,390	51,409	52,448	57,966	70,804	2.02%
<b>Housing Units</b>										4,422		
Persons per Housing Unit	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	
Prescott Valley Housing Units	19,878	21,535	21,970	22,414	22,867	23,329	23,800	24,281	24,281	26,836	32,780	2.02%
<b>Jobs (place of work)</b>										4,422	442.2	
Industrial Jobs	3,014	3,077	3,142	3,208	3,275	3,344	3,414	3,486	3,559	3,949	4,861	
Office/Services Jobs	5,288	5,399	5,513	5,628	5,747	5,867	5,990	6,116	6,244	6,928	8,529	
Retail/Restaurant Jobs	2,481	2,533	2,586	2,641	2,696	2,753	2,810	2,870	2,930	3,251	4,001	
Total Jobs in Prescott Valley	10,783	11,009	11,241	11,477	11,718	11,964	12,215	12,472	12,733	14,128	17,391	2.10%
Jobs-Housing Ratio			0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.53	0.53	
<b>Nonresidential Floor Area (square feet in thousands = KSF)</b>										4,866		
Industrial KSF	1,853	1,892	1,932	1,973	2,014	2,056	2,099	2,144	2,188	2,428	2,989	
Office/Services KSF	1,781	1,818	1,857	1,895	1,935	1,976	2,017	2,060	2,103	2,333	2,872	
Retail/Restaurant KSF	1,059	1,081	1,104	1,127	1,151	1,175	1,199	1,225	1,250	1,387	1,707	
Total KSF in Prescott Valley	4,693	4,791	4,893	4,995	5,100	5,207	5,315	5,429	5,541	6,148	7,568	
<b>Annual Increases in Prescott Valley</b>												
Population	959	978	998	1,019	1,039	1,059	1,079	1,099	1,119	1,139	1,159	
Housing Units	444	453	462	471	481	491	501	511	521	532	543	
Jobs	241	246	251	257	261	266	271	276	281	291	301	
Industrial KSF	41	42	43	44	45	46	47	48	49	50	51	
Office/Services KSF	40	41	41	42	43	44	45	46	47	48	49	
Retail/Restaurant KSF	24	24	24	25	25	26	26	27	27	28	29	
Total Nonresidential KSF	105	107	108	110	111	112	113	114	115	117	119	



## Street Facilities IIP

ARS § 9-463.05(T)(7)(e) defines the facilities and assets which 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.”*

Prescott Valley’s IIP is based on improvements to arterial streets needed to accommodate vehicular travel, plus the cost of preparing the LUA/IIP/DIF study and conducting the impact fee audit required by the State of Arizona. The streets fee is derived from trip generation rates, trip rate adjustment factors, average trip length weighting factors, and lane capacity. Each component is described below.

Development fees in Prescott Valley exclude costs to upgrade, update, improve, expand, correct or replace necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards.

### Existing Infrastructure

Lane miles of major arterials are used to derive existing infrastructure standards in Prescott Valley. A lane mile is a rectangular area that is one travel lane wide and a mile long. As shown in Figure S1, the Town currently has 52.1 lane miles of major arterials. The far-right column below indicates Average Daily Trips (ADT) on each arterial segment, and the weighted average of 4200 ADT per lane.

**Figure S1: Major Arterials in Prescott Valley**

Road	Status	Segment	2017 Traffic	Centerline Miles	Lanes	Lane Miles	ADT per Lane
Glassford Hill Rd.	Existing	69/Tuscany	27,420	1.7	6	10.2	4,570
Glassford Hill Rd.	Existing	Tuscany/89A	24,464	2.0	4	8.0	6,116
Lakeshore Dr.	Existing	Glassford/Robert	13,040	1.0	4	4.0	3,260
Viewpoint Dr.	Existing	Skoog/Prong Rnch Pkwy	12,828	3.2	2	6.4	6,414
Navajo Dr.	Existing	69/Superstition	8,531	1.2	4	4.8	2,133
Lake Valley Rd.	Existing	69/Lakeshore	7,323	0.7	3	2.1	2,441
Antelope Meadows Drive	Existing	Park View/Coyote Springs	6,500	1.8	2	3.6	3,250
Santa Fe Loop	Existing	Jasper/Glasford	5,413	0.9	2	1.8	2,707
Pronghorn Ranch Parkway	Existing	West end/Ant. Mdws.	5,188	0.7	2	1.4	2,594
Stoneridge Dr.	Existing	69/OBC Hwy	4,995	1.7	2	3.4	2,498
Lakeshore Dr.	Existing	Robert/Navajo	4,769	0.9	2	1.8	2,385
Lakeshore Dr.	Existing	Navajo/89A	2,055	2.3	2	4.6	1,028
Total =>			122,526	18.1		52.1	
Weighted Average Based on ADT (rounded) =>							4,200

### Forecast of Service Units

Prescott Valley will use average weekday Vehicle Miles of Travel (VMT) as the service units for documenting existing infrastructure standards and allocating the cost of future improvements. Raftelis created an aggregate travel model to convert development units within Prescott Valley to vehicle trips and vehicle miles of travel. The top portion of Figure S2 summarizes the input variables for the travel model. Trip generation rates, expressed as average weekday Vehicle Trip Ends (VTE), are from the Institute of Transportation Engineers (ITE), with the residential rate customized based on demographic

data for Prescott Valley (see the Land Use Assumptions for additional information). HU is an abbreviation for housing unit. KSF is an abbreviation for square feet of nonresidential floor area, expressed in thousands. Each input variable is described further below.

Currently, there are approximately 52 lane miles of major arterials in Prescott Valley. All local and collector streets are project-level improvements. The Town will continue to require project level improvements, such as turn lanes and signals for ingress/egress, during the development review and approval process. A typical vehicle trip, such as a person leaving their home and traveling to work, generally begins on a local street that connects to a collector street, which connects to an arterial road and eventually to a state or interstate highway. This progression of travel up and down the functional classification chain limits the average trip length determination, for the purpose of development fees, to the following question, “What is the average vehicle trip length on system improvements (i.e., facilities funded by development fees)?”

With 52.1 lane miles of major arterial streets in Prescott Valley and a lane capacity standard of 4,200 vehicles per lane per day, existing major streets have approximately 218,820 vehicle miles of capacity (i.e., 4,200 vehicles per lane over the entire 52.1 lane miles). To derive the average utilization (i.e., average trip length expressed in miles) of arterial streets, we divide vehicle miles of capacity by vehicle trips attracted to development in Prescott Valley. As shown below, development in Prescott Valley currently attracts 131,328 average weekday vehicle trips. Dividing 218,820 vehicle miles of capacity by existing average weekday vehicle trips yields an un-weighted average trip length of approximately 1.66 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 1.53 miles.

**Figure S2 – Travel Demand Model**

Input Variables by Development Type	ITE Code	Weekday VTE	Development Unit	Trip Adjustment	Trip Length Wtg Factor			
Residential	210/220/221	8.32	HU	59%	1.14			
Industrial	110	4.96	KSF	50%	0.90			
Office/Services	710	9.74	KSF	50%	0.90			
Retail/Restaurant	820	37.75	KSF	22%	0.75			
Average Trip Length (miles)		1.53						
Vehicles per Lane per Day		4,200	=< Weighted Average on Prescott Valley Arterials					
Year->	Base	1	2	3	4	5	10	10-Year Increase
Prescott Valley AZ	2020	2021	2022	2023	2024	2025	2030	
Residential Housing Units	21,970	22,414	22,867	23,329	23,800	24,281	26,836	4,866
Industrial KSF	1,973	2,014	2,056	2,099	2,144	2,188	2,428	455
Office/Services KSF	1,895	1,935	1,976	2,017	2,060	2,103	2,333	438
Retail/Restaurant KSF	1,127	1,151	1,175	1,199	1,225	1,250	1,387	260
Residential Trips	107,846	110,026	112,250	114,517	116,829	119,191	131,733	
Industrial Trips	4,893	4,995	5,099	5,206	5,317	5,426	6,021	
Office/Services Trips	9,229	9,423	9,623	9,823	10,032	10,242	11,362	
Retail/Restaurant Trips	9,360	9,559	9,758	9,958	10,174	10,381	11,519	
Total Inbound Vehicle Trips	131,328	134,003	136,730	139,503	142,352	145,240	160,635	29,307
Vehicle Miles of Travel (VMT)	218,291	222,730	227,256	231,862	236,584	241,379	266,923	48,631
Arterial Lane Miles	52.0	53.0	54.1	55.2	56.3	57.5	63.6	11.6
Growth Share of 2030 VMT =>								18%
Growth Cost per Lane Mile =>								\$2,268,000
Growth Cost of Arterials Over Ten Years =>								\$26,308,800

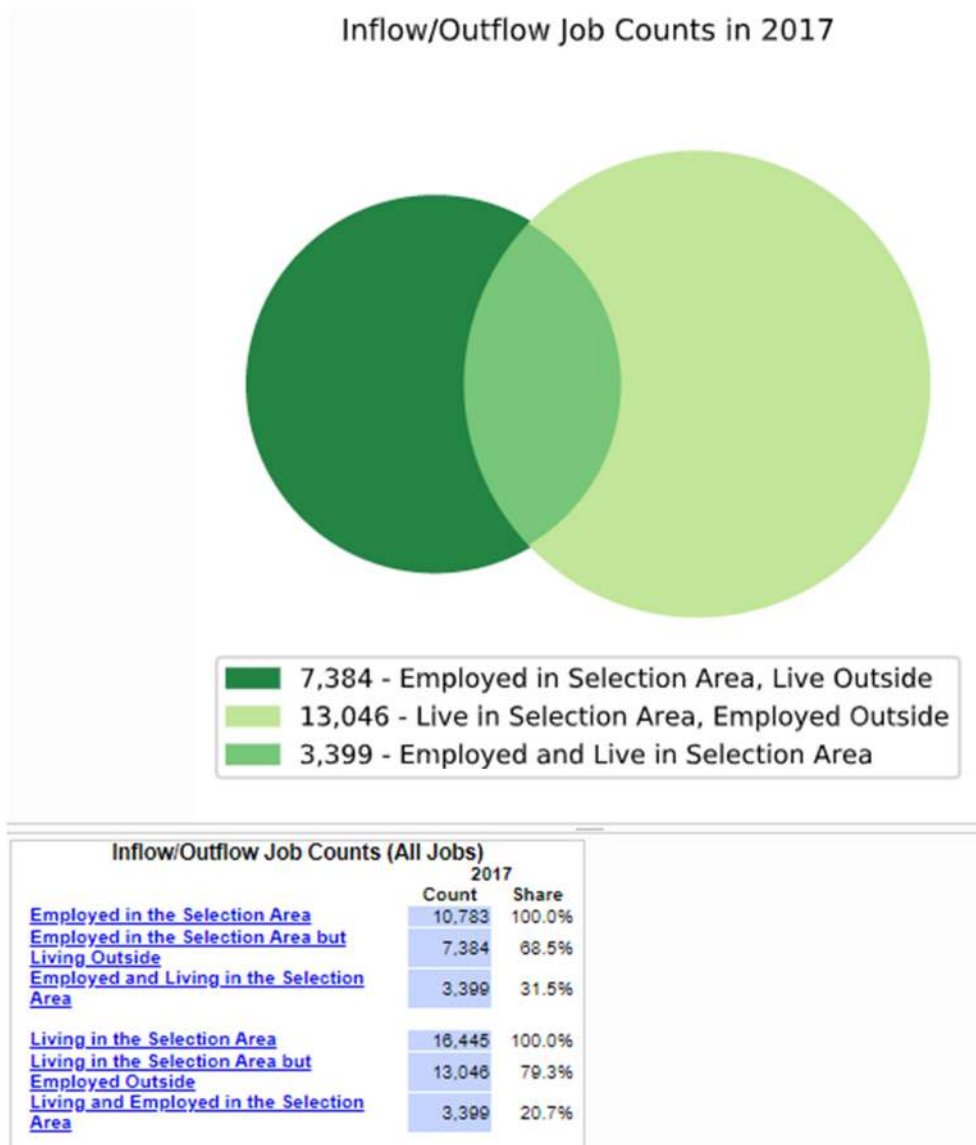
## Trip Generation Rates

Prescott Valley development fees for streets are derived using average weekday VTE. Trip generation rates are from the reference book Trip Generation published by the Institute of Transportation Engineers (ITE 2017). A VTE represents a vehicle either entering or exiting a development (as if a traffic counter were placed across a driveway). To calculate street 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%. As discussed further below, the fee methodology includes additional adjustments to make the fees proportionate to the infrastructure demand for a particular type of development.

## Adjustments for Commuting Patterns and Pass-By Trips

Residential development has a larger trip adjustment factor of 59% to account for commuters leaving Prescott Valley for work. In other words, residential development is assigned all inbound trips plus 9% of outbound trips to account for job locations outside of Prescott Valley, calculated as follows. According to the National Household Travel Survey weekday work trips are typically 22.8% of production trips (i.e., all out-bound trips). As shown in Figure S3, the Census Bureau's web application OnTheMap indicates that approximately 79.3% of resident workers traveled outside Prescott Valley for work in 2017. In combination, these factors ( $0.50 \times 0.228 \times 0.793 = 0.09$ ) support the additional 9% allocation of trips to residential development.

**Figure S3 - Inflow/Outflow Analysis**



For commercial development, the trip adjustment factor is less than 50% because retail development attracts vehicles as they pass by on arterial 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 an average shopping center, ITE data indicate 34% of the vehicles that enter are passing by on their way to some other primary destination. The remaining 66% of attraction trips have the shopping center as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor for an average size shopping center is 66% multiplied by 50%, or approximately 33% of the trip ends. However, building permit records over the past six years indicate the average size nonresidential building in Prescott Valley only has 7,000 square feet of building space. Given the smaller nonresidential buildings, Raftelis recommends a trip adjustment factor of 22%, as documented in Appendix B.

### Trip Length Weighting Factor by Type of Land Use

The transportation impact fee methodology includes a percentage adjustment, or weighting factor, to account for trip length variation by type of land use. As shown in Figure S4, vehicle trips from residential development are approximately 114% of the average trip length. The residential trip length adjustment factor includes trips to work, social and recreational purposes, and home. Conversely, shopping trips associated with commercial development are roughly 75% of the average trip length, while other nonresidential development typically accounts for trips that are 90% of the average for all trips.

**Figure S4: Average Trip Length Weighting Factors**

Trip purpose summary	Travel Day Vehicle Trip Length		Percent of Trips	Average Trip Length	Weighting Factor
	Trips	Mean Miles			
Home	205,743	9.93	Residential		
Work	92,392	11.98	Residential		
Social/Recreational	52,877	12.60	Residential		
<b>Subtotal</b>	<b>351,012</b>		<b>Subtotal</b>	<b>57%</b>	<b>10.87</b>
Shopping/Errands	134,048	7.08	Commercial		
Meals	43,347	7.49	Commercial		
<b>Subtotal</b>	<b>177,395</b>		<b>Subtotal</b>	<b>29%</b>	<b>7.18</b>
School/Daycare/Religious activity	16,288	9.11	Other		
Medical/Dental services	11,568	10.14	Other		
Transport someone	44,991	7.25	Other		
Something else	10,045	11.95	Other		
<b>Subtotal</b>	<b>82,892</b>		<b>Subtotal</b>	<b>14%</b>	<b>8.59</b>
<b>All</b>	<b>611,299</b>	<b>9.55</b>			

Source: Federal Highway Administration, 2017 National Household Travel Survey  
 Tabulation created on the NHTS website at <http://nhts.ornl.gov>

### Lane Capacity

As documented in Figure S1 above, major arterials in Prescott Valley average 4,200 vehicles per lane per day.

### Infrastructure Improvements Plan for Streets

Prescott Valley staff provided the list of improvements and planning-level cost estimates in Figure S5. The need for improvements is consistent with the General Plan, traffic studies by the Metropolitan Planning Organization, and quantitative measures, like volume to capacity ratios. The ten-year plan for street improvements will benefit town-wide development because vehicles flow from larger travel sheds to congestion areas where improvements are needed to eliminate bottlenecks.

As shown in Figure S5, the IIP for Prescott Valley includes improvements at intersections, such as traffic signals and turn lanes on the connecting arterial segments. The total ten-year growth cost of street facilities is approximately \$13.4 million, or \$2,268,000 per lane mile.

**Figure S5 – Ten-Year Plan for Street Improvements**

Priority	Project Name/Description	Estimated Cost	Growth Share	Growth Cost	Lane Miles
1	Viewpoint Dr/Pronghorn Ranch Parkway Intersection	\$2,530,000	75%	\$1,897,500	
2	Antelope Meadows Drive Free Flow Right onto Pronghorn Ranch Parkway	\$200,000	75%	\$150,000	0.1
3	Glassford Hill Road 3 <sup>rd</sup> Lane (Long Look Drive to Hwy 89A)	\$10,667,400	75%	\$8,000,550	4.0
4	Santa Fe Loop Road (Glassford Hill Drive to Jasper Development 2 <sup>nd</sup> Lane)	\$4,441,900	75%	\$3,331,425	1.8
Total		\$17,839,300		\$13,379,475	5.9
		Growth Cost per Lane Mile (rounded) =>		\$2,268,000	

## Police Facilities IIP

ARS § 9-463.05(T)(7)(f) defines the fire and police facilities eligible for development fee funding.

*“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.”*

Police development fees in Prescott Valley exclude costs to upgrade, update, improve, expand, correct or replace necessary public services to meet existing needs/usage, and stricter safety, efficiency, environmental or regulatory standards. Also excluded from the Prescott Valley development fees are police vehicles and equipment used to provide administrative services.

### Service Area

All developed areas within the Town of Prescott Valley are served by an integrated public safety system. Prescott Valley’s service area for police development fees includes the entire town.

### Proportionate Share

ARS § 9-463.05(B)(3) states the development fee shall not exceed a proportionate share of the cost of necessary public services needed to serve new development. In Prescott Valley, police infrastructure standards, projected needs, and development fees are based on both residential and nonresidential development. As stated in ARS §9.463.05(E)(4), DIFs must be proportionate to various types of land uses.

*“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.”*

Given these requirements, Raftelis recommends using functional population to allocate capital costs of police facilities to residential and nonresidential development. In 2017, the U.S. Census Bureau’s commuting data indicates 3,399 persons lived and worked in Prescott Valley, 13,046 outflow commuters went to work outside the town and 7,384 inflow commuters travel to jobs within Prescott Valley. Functional population is like the U.S. Census Bureau’s definition of daytime population (based on people living and working in a jurisdiction), with the addition of journey-to-work data and weighting factors (i.e., demand hours per day) to account for time spent at residential and nonresidential locations. Residents who do not work are assigned 20 hours per day to residential development and 4 hours per day to nonresidential development (annualized averages for assumed time spent shopping, dining, obtaining personal services, going to school/church, etc.). Residents who work in Prescott Valley are assigned 14 hours to residential development and 10 hours to nonresidential development. Residents who work outside Prescott Valley are assigned 14 hours to residential development. Inflow commuters are assigned 10 hours to nonresidential development. Based on 2017 population and job data for Prescott Valley, the cost allocation for residential development is 78%, while nonresidential development accounts for 22% of the demand for infrastructure.

**Figure P1 – Functional Population**

	<b>Service Units in 2017</b>		<u>Demand</u>	<u>Person</u>
			<u>Hours/Day</u>	<u>Hours</u>
<b>Residential</b>				
Population*	44,453			
63.0% Residents Not Working		28,008	20	560,160
37.0% Working Residents**		16,445		
20.7% Resident Workers**			14	47,586
79.3% Outflow Commuters**			14	182,644
Residential Subtotal				<u>790,390</u>
			<b>Residential Share =&gt;</b>	<b>78%</b>
<b>Nonresidential</b>				
Residents Not Working		28,008	4	112,032
Jobs in Prescott Valley**	10,783			
31.5% Resident Workers**			10	33,990
68.5% Inflow Commuters			10	73,840
Nonresidential Subtotal				<u>219,862</u>
			<b>Nonresidential Share =&gt;</b>	<b>22%</b>
			<b>Total</b>	<b><u><u>1,010,252</u></u></b>

\* 2017 Prescott Valley population estimate from U.S. Census Bureau.

\*\* 2017 Prescott Valley Inflow/Outflow, OnTheMap web application, U.S. Census Bureau data for all jobs.

### Current Use and Available Capacity

In Prescott Valley, police building space was recently expanded to accommodate projected development through 2030. To ensure police development fees in Prescott Valley are based on the same level of service provided to existing development, infrastructure standards are derived using projected service units in 2030. Figure P2 indicates the allocation of police building space to residential and nonresidential development, along with 2030 service units in Prescott Valley.

For police development fees, Prescott Valley will use a cost factor of \$338 per square foot, which includes \$3.5 million for the building plus interest payments from 2021 through 2030. Based on projected service units in 2030, the standard in Prescott Valley is 0.32 square feet of police building per resident. For nonresidential development, Prescott Valley’s standard is 0.18 square feet of police building per average weekday vehicle trip to nonresidential development.

Development fees will be used to expand the fleet of police vehicles with a useful life of at least three years. Figure P2 lists the Town’s current police vehicles and current LOS standards. The current number of police vehicles were allocated to residential and nonresidential development in Prescott Valley. Every additional 1,000 residents will require Prescott Valley to purchase 0.97 additional police vehicles. Every 1,000 average weekday vehicle trips to nonresidential development will require Prescott Valley to purchase 0.55 additional police vehicles.



**Figure P2 – Existing Police Infrastructure Standards**

<i>Buildings</i>	<i>Square Feet</i>
Police Headquarters	23,944

Source: Prescott Valley FY18-19 CAFR, page 135.

<b>Buildings Standards</b>	<i>Residential</i>	<i>Nonresidential</i>
Proportionate Share	78%	22%
Growth Indicator	<i>Population</i>	<i>Average-Weekday, Inbound, Primary Vehicle Trips to Nonres Dev</i>
2030 Service Units	57,966	28,902
Square Feet per Service Unit	0.32	0.18

<i>Vehicles</i>	<i>Count</i>	<i>Average Acquisition Cost</i>
Police Vehicles	59	\$69,000

Source: Prescott Valley staff.

<b>Police Vehicle Standards</b>	<i>Residential</i>	<i>Nonresidential</i>
Proportionate Share	78%	22%
Growth Indicator	<i>Population</i>	<i>Average-Weekday, Inbound, Primary Vehicle Trips to Nonres Dev</i>
2020 Service Units	47,455	23,481
Vehicles per thousand Service Units	0.97	0.55

To maintain the current infrastructure standard over the next ten years, Prescott Valley will need to expand the police fleet by 13 vehicles, at an estimated cost of \$897,000. The Town Police Department has estimated that a new fully equipped police vehicle costs approximately \$69,000, including information technology, communications, and safety equipment.

**Figure P3 – Projected Need for Police Infrastructure**

**Police Building Standards and Capital Costs**

Buildings - Residential	0.32	Sq Ft per person
Buildings - Nonresidential	0.18	Sq Ft per trip
Building Cost Factor (\$3.5 M principal plus 2021-2030 interest)	\$338	per square foot

		<b>Infrastructure Needed</b>		
		<i>Population</i>	<i>Vehicle Trips to Nonresidential Dev</i>	<i>Police Buildings (sq ft)</i>
<i>Year</i>	<i>Year</i>			
Base	2020	47,455	23,481	19,569
Year 1	2021	48,414	23,977	19,969
Year 2	2022	49,392	24,480	20,376
Year 3	2023	50,390	24,986	20,789
Year 4	2024	51,409	25,523	21,215
Year 5	2025	52,448	26,049	21,646
Year 6	2026	53,508	26,596	22,087
Year 7	2027	54,589	27,153	22,537
Year 8	2028	55,692	27,729	22,997
Year 9	2029	56,817	28,314	23,467
Year 10	2030	57,966	28,902	23,944
<i>Ten-Yr Increase</i>		10,511	5,421	4,375

Growth Cost of Police Buildings => \$1,481,000

**Police Vehicle Standards and Capital Costs**

Vehicles - Residential	0.97	per 1,000 persons
Vehicles - Nonresidential	0.55	per 1,000 vehicle trips
Average Cost with Accessories	\$69,000	per vehicle

		<b>Infrastructure Needed</b>		
		<i>Population</i>	<i>Vehicle Trips to Nonresidential Dev</i>	<i>Police Vehicles</i>
<i>Year</i>	<i>Year</i>			
Base	2020	47,455	23,481	59
Year 1	2021	48,414	23,977	60
Year 2	2022	49,392	24,480	61
Year 3	2023	50,390	24,986	63
Year 4	2024	51,409	25,523	64
Year 5	2025	52,448	26,049	65
Year 6	2026	53,508	26,596	67
Year 7	2027	54,589	27,153	68
Year 8	2028	55,692	27,729	69
Year 9	2029	56,817	28,314	71
Year 10	2030	57,966	28,902	72
<i>Ten-Yr Increase</i>		10,511	5,421	13

Growth Cost of Police Vehicless => \$897,000

### Police Infrastructure Improvements

Prescott Valley will primarily use police impact fee revenue for principal and interest payments on the recently completed Police Headquarters. Annual debt service payments are listed in Figure P4.

**Figure P4 – Debt Service for Police Building**

Fiscal Year Ending	Private Placement 2017 (Police Building)		Total
	Principal	Interest	
2021	\$210,000	\$65,895	
2022	\$215,000	\$61,065	
2023	\$220,000	\$56,120	
2024	\$225,000	\$51,060	
2025	\$230,000	\$45,885	
2026	\$235,000	\$40,595	
2027	\$240,000	\$35,190	
2028	\$245,000	\$29,670	
2029	\$250,000	\$24,035	
2030	\$260,000	\$18,285	
	<b>\$2,330,000</b>	<b>\$427,800</b>	<b>\$2,757,800</b>

## Parks/Recreation Facilities IIP

ARS § 9-463.05(T)(7)(g) defines parks and recreation facilities eligible for development fee funding.

*“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 Town of Prescott Valley used the incremental expansion cost method to derive development impact fees for park improvements and trails. Parks/recreation development fees in Prescott Valley exclude costs to upgrade, update, improve, expand, correct or replace necessary public services to meet existing needs and usage and stricter safety, efficiency, environmental or regulatory standards.

### Service Area

Prescott Valley’s service area for parks/recreation development fees includes the entire incorporated area.

### Proportionate Share

ARS § 9-463.05(B)(3) states the development fee shall not exceed a proportionate share of the cost of necessary public services needed to serve new development. In Prescott Valley, parks/recreation infrastructure standards, projected needs, and development fees are based on both residential and nonresidential development. As shown in Figure PR1, Raftelis used daytime population to allocate costs. Daytime population includes estimated residents and inflow commuters in 2017 (latest year available). Potential demand days per year assume residents might use parks everyday of the year, but inflow commuters will only use parks four days per week over 48 weeks per year (i.e., two weeks of vacation and two weeks of holidays). Based on cumulative demand days, residential development accounts for 92% of the demand for parks/recreation facilities, with 8% assigned to nonresidential development.

**Figure PR1 – Daytime Population**

<b>Cost Allocation Factors for Parks</b>	<i>Residential</i>	<i>Nonresidential</i>	
2017 Daytime Population	44,453	7,384	
	Residents	Inflow Commuters	
Potential Demand Days per Year	365	192	<i>Total</i>
Cumulative Demand Days	16,225,345	1,417,728	17,643,073
Proportionate Share	92%	8%	

### Current Use and Standards for Parks/Recreation Facilities

In Prescott Valley, parks/recreation facilities are fully utilized and there is no surplus capacity for future development. Prescott Valley has determined that police building space will require expansion to accommodate future development. As shown in Figure PR2, the Town’s current standard is 3.1 acres of improved parks per 1,000 residents and 1.1 acres per 1,000 jobs. These standards exclude parks less than two acres that might not provide town-wide benefit. To accommodate new development over the next ten years, Prescott Valley will improve an additional 35.9 acres of parks at an estimated cost of approximately \$7.7 million. The cost factor of \$215,000 per acre for park improvements is based on projects listed in the IIP (see Figure PR 4).

**Figure PR2 – Existing Park Improvements Standards and Growth Needs**

<i>Location</i>	<i>Improved Acres*</i>
American Legion Park	2.5
Antelope Park	10.0
Bob Edwards Park	9.5
Community Center Park	4.5
Fain Park (developed area)	2.5
George Andersen Park	5.5
Granville Park	4.0
Mountain Valley Park	69.0
Pronghorn Park	5.8
Quailwood Park	5.9
Santa Fe Station	9.0
Sunflower Park	4.5
Tonto Park South	2.2
Trailhead Park	2.0
Urban Forest / Yavapai Lakes	12.0
Viewpoint Park	12.5
Total =>	161.3

*\*Source: Prescott Valley staff (excludes parks less than two acres that might not provide town-wide benefit).*

**Cost Allocation Factors for Parks**

	<i>Residential</i>	<i>Nonresidential</i>	
2017 Daytime Population	44,453 Residents	7,384 Inflow Commuters	
Potential Demand Days per Year	365	192	<i>Total</i>
Cumulative Demand Days	16,225,345	1,417,728	17,643,073
Proportionate Share	92%	8%	
2020 Service Units	47,455 Persons	11,477 Jobs	
Acres per 1,000 Service Units	3.1	1.1	

**Projected Need for Park Improvements**

	<i>Year</i>	<i>Population</i>	<i>Jobs</i>	<i>Improved Acres</i>
Base	2020	47,455	11,477	161.3
Year 1	2021	48,414	11,718	164.6
Year 2	2022	49,392	11,964	167.9
Year 3	2023	50,390	12,215	171.3
Year 4	2024	51,409	12,472	174.8
Year 5	2025	52,448	12,733	178.3
Year 6	2026	53,508	13,001	182.0
Year 7	2027	54,589	13,274	185.7
Year 8	2028	55,692	13,553	189.4
Year 9	2029	56,817	13,837	193.3
Year 10	2030	57,966	14,128	197.2

*Ten-Yr Increase*                      10,511                      2,651                      35.9  
 Improvements Cost per Acre =>                      \$215,000  
 Growth Cost of Parks =>                      \$7,718,500

An inventory of trails, both inside and outside Right-Of-Way (ROW), is shown in Figure PR3. Prescott Valley will fund trail improvements inside ROW using street impact fees. Trails outside ROW will be funded by parks/recreation impact fees. Trails outside ROW total 17.3 miles and have a weighted average cost of \$55 per linear foot. Over the next ten years, Prescott Valley will add approximately 20,300 linear feet of trails outside ROW, at an estimated cost of \$1.1 million.

**Figure PR3 – Existing Trails Standards and Growth Needs**

ROW	Trail Name	Linear Feet	Miles	Surface	\$/LF	Estimated Cost
Inside	ANTELOPE MEADOWS MUP	11,575	2.19	Concrete	\$150	\$1,736,000
Inside	BISON LANE MUP	4,378	0.83	Concrete	\$150	\$657,000
Inside	BRADSHAW MOUNTAIN MUP	5,075	0.96	Asphalt	\$80	\$406,000
Inside	CENTRAL CORE MUP	6,069	1.15	Asphalt	\$80	\$485,000
Inside	CIVIC CENTER MUP	2,344	0.44	Concrete	\$150	\$352,000
Inside	FLORENTINE MUP	989	0.19	Concrete	\$150	\$148,000
Inside	GLASSFORD MUP	2,074	0.39	Asphalt	\$80	\$166,000
Inside	GRANVILLE FAIRWAY MUP	6,018	1.14	Concrete	\$150	\$903,000
Inside	GRANVILLE PARKWAY MUP	4,768	0.90	Concrete	\$150	\$715,000
Inside	IRON KING TRAIL	5,544	1.05	Concrete	\$150	\$832,000
Inside	LAKE VALLEY MUP	2,224	0.42	Concrete	\$150	\$334,000
Inside	LONE CACTUS MUP	4,320	0.82	Concrete	\$150	\$648,000
Inside	NAVAJO MUP	7,155	1.36	Concrete	\$150	\$1,073,000
Inside	PARK VIEW MUP	3,300	0.62	Concrete	\$150	\$495,000
Inside	PINE VIEW MUP	2,850	0.54	Concrete	\$150	\$427,000
Inside	POWERS MUP	2,394	0.45	Concrete	\$150	\$359,000
Inside	PRESCOTT EAST MUP	1,832	0.35	Concrete	\$150	\$275,000
Inside	SR 69 MUP	13,075	2.48	Asphalt	\$80	\$1,046,000
Inside	STONERIDGE DRIVE MUP	9,575	1.81	Concrete	\$150	\$1,436,000
Inside	STONERIDGE TRAIL EAST	1,956	0.37	Asphalt	\$80	\$157,000
Inside	STONERIDGE TRAIL WEST	2,140	0.41	Asphalt	\$80	\$171,000
Inside	TUSCANY WAY	4,253	0.81	Concrete	\$150	\$638,000
<b>Inside Total</b>		<b>103,909</b>	<b>19.68</b>			<b>\$13,459,000</b>
Outside	BMHS MUP	1,520	0.29	Concrete	\$150	\$228,000
Outside	CALVARY TRAIL	4,881	0.92	Gravel	\$10	\$49,000
Outside	CANYON TRAIL	3,665	0.69	Gravel	\$10	\$37,000
Outside	CENTRAL CORE MUP	8,312	1.57	Concrete	\$150	\$1,247,000
Outside	CHAPEL TRAIL	435	0.08	Gravel	\$10	\$4,000
Outside	GLASSFORD HILL SUMMIT TRAIL	12,656	2.40	Gravel	\$10	\$127,000
Outside	IRON KING TRAIL	16,474	3.12	Native	\$1	\$16,000
Outside	LUCKY DRAW MUP	3,841	0.73	Concrete	\$150	\$576,000
Outside	LYNX CREEK LOOP	4,795	0.91	Gravel	\$10	\$48,000
Outside	MOUNTAIN SOUTH	9,564	1.81	Asphalt	\$80	\$765,000
Outside	NORTHEAST GRANVILLE MUP	4,996	0.95	Gravel	\$10	\$50,000
Outside	OLD BLACK CANYON MUP	5,656	1.07	Concrete	\$150	\$848,000
Outside	OVERLOOK TRAIL	537	0.10	Gravel	\$10	\$5,000
Outside	PIPELINE MUP	10,782	2.04	Asphalt	\$80	\$863,000
Outside	PIPELINE MUP	638	0.12	Concrete	\$150	\$96,000
Outside	SHORELINE TRAIL	1,762	0.33	Gravel	\$10	\$18,000
Outside	STONERIDGE CLUBHOUSE MUP	792	0.15	Asphalt	\$80	\$63,000
Outside	STONERIDGE MUP	88	0.02	Asphalt	\$80	\$7,000
<b>Outside Total</b>		<b>91,392</b>	<b>17.31</b>			<b>\$5,047,000</b>
<b>Grand Total</b>		<b>195,301</b>	<b>36.99</b>			<b>\$18,506,000</b>

Source: Prescott Valley staff.

Weighted Average \$/LF for Outside ROW => \$55

**Cost Allocation Factors for Trails**

	<i>Residential</i>	<i>Nonresidential</i>	
2017 Daytime Population	44,453 Residents	7,384 Inflow Commuters	
Potential Demand Days per Year	365	192	<i>Total</i>
Cumulative Demand Days	16,225,345	1,417,728	17,643,073
Proportionate Share	92%	8%	
2020 Service Units	47,455 Persons	11,477 Jobs	
Linear Feet per Service Unit	1.8	0.6	

**Projected Need for Trails**

	<i>Year</i>	<i>Population</i>	<i>Jobs</i>	<i>Linear Feet</i>
Base	2020	47,455	11,477	91,392
Year 1	2021	48,414	11,718	93,245
Year 2	2022	49,392	11,964	95,134
Year 3	2023	50,390	12,215	97,063
Year 4	2024	51,409	12,472	99,032
Year 5	2025	52,448	12,733	101,039
Year 6	2026	53,508	13,001	103,088
Year 7	2027	54,589	13,274	105,177
Year 8	2028	55,692	13,553	107,309
Year 9	2029	56,817	13,837	109,483
Year 10	2030	57,966	14,128	111,704

*Ten-Yr Increase*      10,511                      2,651                      20,312

Trail Cost per Linear Foot =>      \$55

Growth Cost of Parks => **\$1,117,171**



## Parks/Recreation Improvements

Figure PR4 lists potential parks/recreation improvements over the next ten years. Based on projected needs shown above, Prescott Valley expects to spend approximately \$7.7 million on park improvements and \$1.1 million on additional trails outside ROW.

**Figure PR4 – Parks/Recreation Projects Over Ten Years**

**Park Improvements**

Priority	Project Name/Description	Acreage	Estimated Cost	Growth Share	Growth Cost	
1	Santa Fe Park (FY 20-21)	2.0	\$100,000	100%	\$100,000	
2	2nd Spray Pad (Antelope or Bob Edwards)		\$350,000	100%	\$350,000	
3	Pickleball Courts (Antelope Park)		\$450,000	100%	\$450,000	
4	Field Lighting (Antelope Park)		\$500,000	100%	\$500,000	
5	Trailhead Park (Jasper)	5.7	\$1,099,200	100%	\$1,099,200	
6	Agua Fria Park Phase 1	30.0	\$5,783,160	100%	\$5,783,160	
7	Agua Fria Park Phase 2	8.3	\$1,591,510	100%	\$1,591,510	
8	Impact Fee Audits		\$11,400	100%	\$11,400	
Total		45.9	\$9,885,270		\$9,885,270	Cost per Acre \$215,000

**Trail Improvements**

Priority	Project Name/Description	Linear Feet	Estimated Cost	Growth Share	Growth Cost
1	Summit Trail Ramadas		\$60,000	100%	\$60,000
2	Pave NE Granville Trail	4,996	\$400,000	100%	\$400,000
3	Other Trails Outside ROW	11,945	\$657,000	100%	\$657,000
Total		16,941	\$1,117,000		\$1,117,000

## Appendix A – Forecast of Revenues

Arizona’s enabling legislation mandates a “required offset” for “excess” construction contracting excise taxes, as stated in ARS § 9-463.05(B)(12)).

*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.*

Prescott Valley does not charge a construction excise tax at a rate higher than the rate applicable for other types of business activities. Therefore, no such offset is required.

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.”*

The required forecast of non-development fee revenue that might be used for growth-related improvements is shown in Figure A1. The forecast of revenues was provided by staff.

**Figure A1 – Ten-Year Revenue Projections**

	Projected									
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
State Share d Revenue	13,515,917	13,666,043	13,956,490	14,520,445	15,215,970	15,934,866	16,539,245	16,971,057	17,382,762	17,811,041
Highway Users Revenue	3,937,500	3,940,213	4,071,319	4,282,214	4,483,178	4,653,439	4,817,633	4,972,394	5,099,353	5,228,912
Federal Revenue	3,780,447	1,506,003	1,447,040	1,380,350	1,102,604	1,601,997	1,645,247	1,813,687	1,863,777	1,956,297
Ad Valorem Property Taxes	-	-	-	-	-	-	-	-	-	-
Construction Contracting TPT	2,522,520	1,510,425	1,747,239	2,144,904	2,457,833	2,708,261	2,889,215	3,008,835	3,129,587	3,204,197
Capital Recovery Utility Fees	-	-	-	-	-	-	-	-	-	-
<b>Total Projected Revenues</b>	<b>23,756,384</b>	<b>20,622,684</b>	<b>21,222,088</b>	<b>22,327,913</b>	<b>23,259,585</b>	<b>24,898,563</b>	<b>25,891,340</b>	<b>26,765,973</b>	<b>27,475,479</b>	<b>28,200,447</b>

## Appendix B: Pass-by Trip Adjustment Factors by Commercial Building Size

For commercial developments, trip generation rates are only one of the steps needed to determine traffic impacts. Because commercial developments attract vehicles passing by on adjacent streets, pass-by trip percentages reduce trip generation rates to proportionately assess travel demand. The following meta-analysis documents a methodology for deriving pass-by trip percentages based on the floor area of a commercial development. A fitted curve equation is provided using data from traffic studies published in the second edition of [Trip Generation Handbook](#) (ITE, 2004). The recommended methodology is suitable for impact fees, which are derived using average characteristics of the transportation system.

### Purpose

Transportation impact fees typically rely on trip generation rates published by the Institute of Transportation Engineers (ITE). For shopping centers, trip generation rates are derived from a formula using floor area as the independent variable. The fitted curve is a logarithmic equation that yields declining vehicle trip rates per thousand square feet as shopping center size increases. However, trip generation alone does not provide a complete evaluation of traffic impacts due to pass-by and diverted trips to commercial developments. Because diverted trips still increase vehicle miles of travel, transportation impact fees apply pass-by trip adjustments or derive the “percentage of new trips” associated with new development (Oliver, 1991; Tindale, 1991). This Appendix provides a methodology for deriving pass-by trip percentages from the floor area of commercial development. The analysis of pass-by trip percentages from traffic studies reported in [Trip Generation Handbook](#) (ITE, 2004) indicates a similar relationship to the trip generation formula for shopping centers, specifically the decline in pass-by trip percentages as commercial floor area increases.

### Literature Review

The literature review below is discussed in chronological order beginning with the 1991 version of [Trip Generation](#). In Table VII-1, pass-by trip percentages were reported for 67 shopping centers ranging in size from 44,000 to 1,200,000 square feet. These data indicate a decline in pass-by trip percentages as shopping center size increases. During 1991 and 1992, ITE also published four journal articles on the topic of pass-by trips and how these adjustments could be applied in the calculation of impact fees.

In March of 1991, Moussavi and Gorman examined how pass-by trip percentages were influenced by building size and the average daily traffic on adjacent streets. Their findings regarding the relationship between average daily trips on adjacent streets and pass-by percentages are not relevant to general impact fee formulas that estimate average travel characteristics for an entire service area. Although limited to an analysis of only 12 sites, their regression analysis did confirm that floor area is a strong predictor of pass-by trips for discount stores, but not grocery stores. Because traditional grocery stores and the modern-day version known as “discount supermarkets” tend to attract more primary trips than other comparably sized stores, this study excludes these development types.

In April of 1991, William Oliver discussed how to determine average trip length from survey data and then use the results in transportation impact fees. A key concept from this article is the idea that impact fees should only assess for the percentage of new trips attributable to new development, after accounting for internal trip capture, diverted and pass-by trips. The methodologies described by Oliver are useful for individual impact fee assessments of large-scale development, but they do not address more universal adjustments for pass-by trips, which is the focus of this research.

In May of 1991, Steven Tindale provided a detailed discussion of various technical issues related to transportation impact fees, including trip capture. Tindale’s article advocates original data collection to establish trip rates, lengths, and percentage of new trips. However, due to time and budget constraints, most jurisdictions derive impact fees using input variables readily available from regional, State or national sources such as Trip Generation.

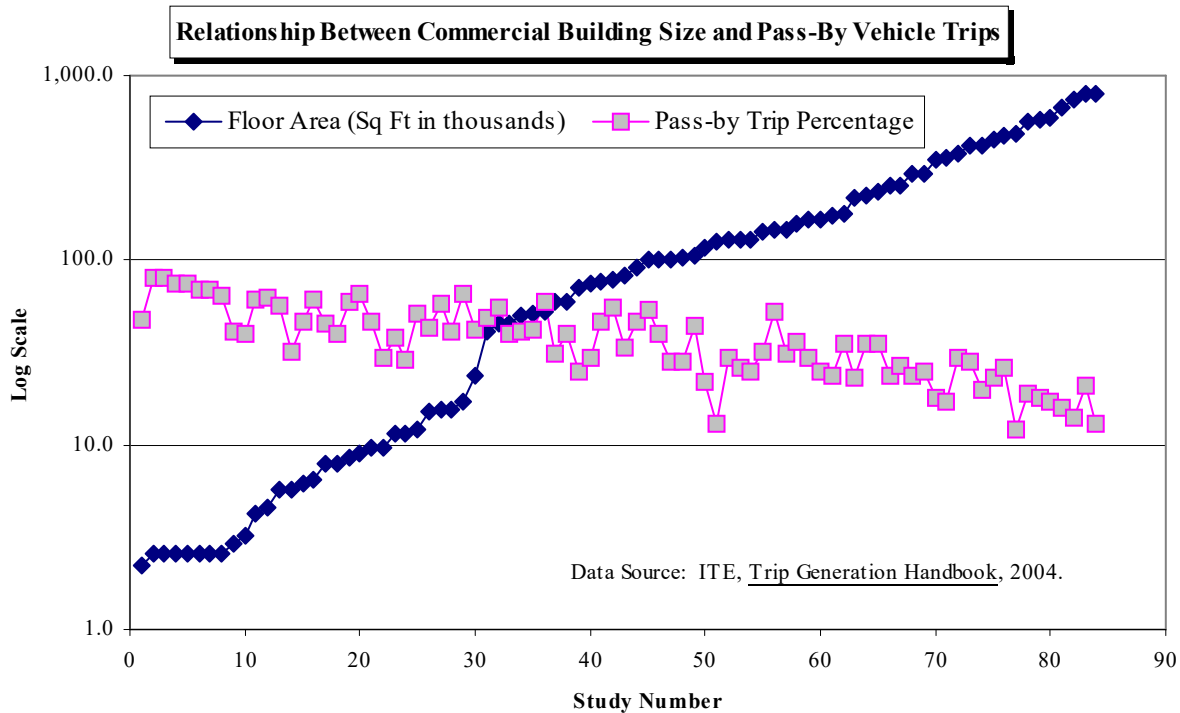
In May of 1992, Moussavi and Gorman provide a follow-up “refinement” to their 1991 article. One of the suggested refinements incorporated into the research presented below, was to use logarithmic, rather than linear regression.

The second edition of Trip Generation (ITE, 2004) provides a data plot of average pass-by trip percentage based on gross leasable floor area of a shopping center. The fitted curve equation shown in Figure 5.5 of ITE’s 2004 publication indicates a fitted logarithmic curve with an R-squared value of 0.37. The analysis presented below in Figure C3 improves the “goodness” of fit, yielding an R-squared value of approximately 0.64.

**Analysis**

The general relationship between commercial building size and pass-by vehicle trips is illustrated in Figure B1. When commercial floor area, measured in thousands of square feet, is plotted on a log scale and rank-ordered, we see that increasing commercial building size decreases the pass-by trip percentage. In other words, small retail establishments, like a convenience store have higher pass-by trip percentages than large regional shopping malls.

Figure B1



To improve the correlation between commercial building size and pass-by trip percentage, this Appendix used the following criteria. First, the number of interviews reported by a traffic study had to have at least 96 interviews, which ensures a maximum error of 10% in the mean at a 95% level of confidence (see Appendix B in Meyer and Miller, 2001). Second, the traffic study had to report a specific floor area of at least 1,000 square feet, rather than a floor area range. Third, traffic surveys included in the database are not older than 1989. The studies prior to 1989 include very large shopping centers of approximately one million square feet, which are rarely constructed in the current real estate market. Fourth, for consistency this analysis only includes PM-peak hour data.

Figure B2 provides a summary of the pass-by trip database, indicating types of development, the number of studies for each type, average floor area (in thousands of square feet) and average pass-by trip percentage. Shopping centers account for almost half of the studies and had the largest floor area, averaging 280,000 square feet. In total, the 84 studies analyzed had an average floor area of 159,000 square feet and an average of 39% pass-by trips.

Figure B2

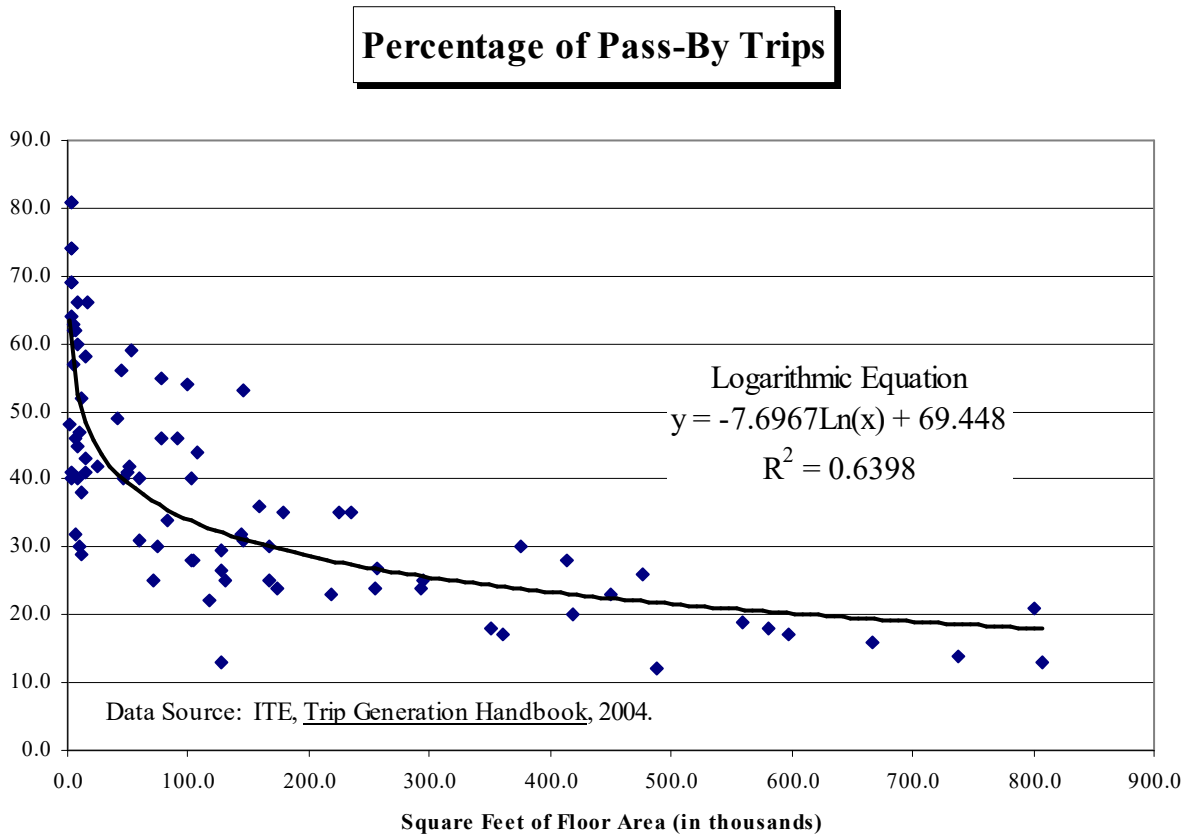
**Summary of Pass-By Trips Database**

<i>ITE Code</i>	<i>Description</i>	<i># of Studies</i>	<i>AvgSqFt (thousands)</i>	<i>AvgPass-By Trip Pct</i>
813	Free-Standing Discount Superstore	8	151	28
815	Free-Standing Discount Store	3	128	23
820	Shopping Center	40	280	31
843	Automobile Parts Sales	1	15	43
851	Convenience Market	4	3	72
853	Convenience Market w Gas Pumps	4	3	68
862	Home Improvement Superstore	3	99	48
863	Electronics Superstore	1	46	40
880	Pharmacy/Drugstore w/o Window	3	10	47
881	Pharmacy/Drugstore w Drive-Through	3	14	49
890	Furniture Store	2	33	46
931	Quality Restaurant	2	7	54
932	High-Turnover Restaurant	7	8	44
934	Fast-Food with Drive-Through	3	3	48
TOTAL		84	159	39

Studies in the database meet the following criteria: 1) PM-peak data; 2) Traffic survey in 1989 or afterwards; 3) Floor area at least 1,000 square feet; 4) Sample size of at least 96 interviews, which ensures a maximum error of 10% in the mean at a 95% level of confidence.

Figure B3 indicates a scatter plot of floor area versus percentage of pass-by trips. The best trend-line correlation between pass-by trips and floor area is a logarithmic curve with the equation  $(-7.6967 \cdot \ln(\text{KSF})) + 69.448$ . The R-squared value for this curve is 0.6398, indicating the floor area accounts for approximately 64% of the variation in pass-by trip percentage.

Figure B3



The fitted curve equation allows a specific pass-by trip estimate for any size commercial building. To illustrate the change in trip generation rates and pass-by trips by size of commercial development, Figure B4 provides data for six building-size thresholds ranging from 3,000 to 100,000 square feet of floor area.

Figure B4

**Trip Rates and Adjustment Factors by Size Threshold**

Floor Area in thousands (KSF)	<i>Shopping Centers</i> (ITE 820 Weekday*)		Pass-by Trips**	Trip Adj Factor***
	Trip Ends	Rate/KSF		
3	554	184.65	61%	20%
6	887	147.91	56%	22%
12	1,422	118.49	50%	25%
25	2,342	93.69	45%	28%
50	3,752	75.05	39%	31%
100	6,012	60.12	34%	33%

\* Trip Generation, ITE, 2017.  
 \*\* Based on data published by ITE in Trip Generation Handbook (2004), the best trendline correlation between pass-by trips and floor area is a logarithmic curve with the equation  $((-7.6967 * \text{LN}(\text{KSF})) + 69.448)$ .  
 \*\*\* To convert trip ends to vehicle trips, the standard adjustment factor is 50%. Due to pass-by trips, commercial trip adjustment factors are lower, as derived from the following formula  $(0.50 * (1 - \text{passby pct}))$ .

To avoid double counting the same vehicle trip at both the origin and destination points, transportation impact fees typically convert trip ends to trips using a standard adjustment factor of 50%. For commercial development, trip adjustment factors are less than 50% because retail development and some services (like banks) attract vehicles as they pass by on arterial and collector roads. As shown above, for a small-size commercial development with 12,000 square feet of floor area, an average of 50% of the vehicles that enter are passing by on their way to some other primary destination. The remaining 50% of attraction trips have the commercial development as their primary destination. Because attraction trips are half of all trips, the trip adjustment factor is 50% multiplied by 50%, or approximately 25% of the trip ends.



## Conclusions

The methodology presented above significantly improves the “goodness” of fit between the independent variable of commercial floor area and the dependent variable of pass-by trip percentage. Commercial trip adjustment factors may be derived for any size commercial building using the recommended logarithmic regression, thus avoiding the use of a simple average pass-by trip percentage for an individual ITE land use code. The recommended methodology also avoids the small sample-size problem that currently exists for most of the ITE land use codes that only provide pass-by data for a limited number of traffic studies. The recommended use of pass-by trip adjustment factors by size of commercial development will improve transportation impact fees that are intended to proportionately allocate the cost of growth-related infrastructure to new development.

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