



Streets Development Fee Study

Prepared for:
Oklahoma City, Oklahoma

FINAL

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Prepared by:



4701 Sangamore Road
Suite S240
Bethesda, MD 20816
301.320.6900
www.TischlerBise.com

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EXECUTIVE SUMMARY

Oklahoma City, Oklahoma, retained TischlerBise, Inc. to update its Streets Development Impact Fees to be imposed on new development to meet the new demands generated for transportation expansion. This report presents the methodologies and calculations used to generate current levels of service and maximum supportable impact fees. It is intended to serve as supporting documentation for the evaluation of development impact fees in Oklahoma City.

The purpose of this study is to demonstrate the City's compliance with Oklahoma Statutes as authorized by the Oklahoma Legislature. Consistent with the statutory authorization for development fees (Oklahoma Code 62-895), it is the intent of Oklahoma City to:

1. Collect impact fees to ensure that adequate public facilities are available to serve new growth and development;
2. Promote orderly growth and development by establishing uniform standards by which the City may require that those who benefit from new growth and development pay a proportionate share of the cost of new public facilities needed to serve new growth and development;
3. Ensure that those who benefit from new growth and development are required to pay no more than their proportionate share of the cost of public facilities needed to serve new growth and development and to prevent duplicate and ad hoc development requirements;

Development impact fees are one-time payments used to fund system improvements needed to accommodate new development. An impact fee represents all or a portion of new growth's fair share of capital facility needs. By law, impact fees can only be used for capital improvements, not operating or maintenance costs. Impact fees are subject to legal standards, which require fulfillment of three key elements: need, benefit and proportionality.

- First, to justify a fee for public facilities, it must be demonstrated that new development will create a need for capital improvements.
- Second, new development must derive a benefit from the payment of the fees.
- Third, the fee paid by a particular type of development should not exceed its proportional share of the capital cost for system improvements.

TischlerBise evaluated possible methodologies and documented appropriate demand indicators by type of development for the levels of service and fees. Local demographic data and improvement costs were used to identify specific capital costs attributable to growth. This report includes summary tables indicating the specific factors, referred to as level of service standards, used to derive the impact fees.

LEGAL FRAMEWORK

Both state and federal courts have recognized the imposition of impact fees as a legitimate form of land use regulation, provided the fees meet standards intended to protect against regulatory takings. Land use regulations, development exactions, and impact fees are subject to the Fifth Amendment prohibition on taking of private property for public use without just compensation. To comply with the Fifth Amendment, development regulations must be shown to substantially advance a legitimate governmental interest. In the case of impact fees, that interest is in the protection of public health, safety, and welfare by ensuring

development is not detrimental to the quality of essential public services. The means to this end are also important, requiring both procedural and substantive due process. Community input provides opportunities for comments and refinement to the impact fees.

There are three reasonable relationship requirements for impact fees that are closely related to “rational nexus”, or “reasonable relationship” requirements enunciated by a number of state courts. Although the term “dual rational nexus” is often used to characterize the standard by which courts evaluate the validity of impact fees under the U.S. Constitution, we prefer a more rigorous formulation that recognizes three elements: “need,” “benefit,” and “proportionality.” The dual rational nexus test explicitly addresses only the first two, although proportionality is reasonably implied, and was specifically mentioned by the U.S. Supreme Court in the *Dolan* case (*Dolan v. City of Tigard*, OR, 1994). Furthermore, the plaintiff in the 2024 *Sheetz v. El Dorado County* U.S. Supreme Court case argued that the El Dorado County, CA impact fee program failed to meet the Nollan/Dolan test. The U.S. Supreme Court remanded the case back to the California Supreme Court for further proceedings on a stricter interpretation of the rational nexus, specifically the extent impact fees can be “roughly proportionate.” Thus, it has been determined that State courts will make judgements on further cases. Individual elements of the nexus standard are discussed further in the following paragraphs.

All new development in a community creates additional demands on some, or all, public facilities provided by local government. If the capacity of facilities is not increased to satisfy that additional demand, the quality or availability of public services for the entire community will deteriorate. Impact fees may be used to recover the cost of development-related facilities, but only to the extent that the need for facilities is a consequence of development that is subject to the fees. The Nollan decision reinforced the principle that development exactions may be used only to mitigate conditions created by the developments upon which they are imposed. That principle clearly applies to impact fees. In this study, the impact of development on infrastructure needs is analyzed in terms of quantifiable relationships between various types of development and the demand for specific capital facilities, based on applicable level-of-service standards.

The requirement that exactions be proportional to the impacts of development was clearly stated by the U.S. Supreme Court in the *Dolan* case and is logically necessary to establish a proper nexus. Proportionality is established through the procedures used to identify development-related facility costs, and in the methods used to calculate impact fees for various types of facilities and categories of development. The demand for capital facilities is measured in terms of relevant and measurable attributes of development (e.g., a typical housing unit’s average weekday vehicle trips).

A sufficient benefit relationship requires that impact fee revenues be segregated from other funds and expended only on the facilities for which the fees were charged. Impact fees should be expended in a timely manner and the facilities funded by the fees must serve the development paying the fees. However, nothing in the U.S. Constitution or the state enabling legislation requires that facilities funded with fee revenues be available exclusively to development paying the fees. In other words, benefit may extend to a general area including multiple real estate developments. Procedures for the earmarking and expenditure of fee revenues are discussed near the end of this study. All of these procedural as well as substantive issues are intended to ensure that new development benefits from the impact fees they are required to pay. The authority and procedures to implement impact fees are separate from and complementary to the authority to require improvements as part of subdivision or zoning review.

As documented in this report, the City of Oklahoma City has complied with applicable legal precedents. Impact fees are proportionate and reasonably related to the capital improvement demands of new development. Specific costs have been identified using local data and current dollars. With input from City staff, TischlerBise identified service demand indicators for each type of infrastructure and calculated proportionate share factors to allocate costs by type of development. This report documents the formulas and input variables used to calculate the impact fees for each type of public facility. Impact fee methodologies also identify the extent to which new development is entitled to various types of credits to avoid potential double payment of growth-related capital costs.

OKLAHOMA DEVELOPMENT FEE ENABLING LEGISLATION

The following is a summary of several items in the Oklahoma Enabling Legislation §62-892.

Under the requirements of the Enabling Legislation, development fees may only be used for construction, acquisition, or expansion of “public infrastructure facilities” made necessary by new development. Public infrastructure system means any of the following, but not limited to, categories of capital improvements with a useful life of 10 years or more that result in an increase or expansion to the functional service capacity of that public infrastructure system (§62-892(A)):

- a. water systems, including supply, production, treatment, and distribution facilities
- b. wastewater systems, including collection, treatment, and disposal facilities
- c. street systems, including roads, streets, boulevards, bridges, sidewalks, bicycle routes, drainage, traffic signals and systems, traffic control devices and signage, traffic calming devices, landscaping associated with street rights-of-way, and any local components of county, state, or federal highways to the extent and to the proportionate cost that the local components are not funded by state or federal grants or other state or federal permanent funding sources
- d. storm water systems, including collection, retention, detention, treatment, channelization, disposal, discharge, flood control, and bank and shoreline protection facilities
- e. parks systems, including parks, open spaces, trails, bicycle paths, and natural recreation areas and related facilities
- f. public safety systems, including police, fire, emergency medical, and rescue facilities
- g. solid waste systems, including facilities
- h. public transportation systems, including facilities
- i. public capital improvement communications facilities

In determining the development fee, the municipality shall make a documented effort to quantify the projected impact from development and determine that the proposed development fee is reasonably and roughly proportional to the nature and extent of the impact of development. Development fees may only be imposed to recover or fund the costs of public infrastructure system capital improvements, including, but not limited to, the cost of real property interest acquisitions, rights-of-ways, capital improvements, design, construction, inspection, and capital improvement construction administration, related to one or more public infrastructure systems (§62-892(B)).

Lastly, a municipality may establish one or more benefit areas for the collection of development fees. “Benefit area” means a geographic area defined by a municipality in which a defined public infrastructure system provides service to developments within that benefit area. TischlerBise has determined five benefit areas for the Oklahoma City Streets Development Impact Fee, detailed in the body of this report.

GENERAL IMPACT FEE METHODOLOGY

Impact fees for public facilities made necessary by new development must be based on the same level of service provided to existing development in the benefit area. There are three basic methodologies used to calculate impact 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 impact fees involves two main steps: (1) determining the cost of growth-related capital improvements and (2) allocating those costs equitably to various types of development. In practice, though, the calculation of impact 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 benefit area. The following paragraphs discuss basic methods for calculating impact fees and how those methods can be applied.

- **Cost Recovery** (past improvements) - The rationale for recoupment, often called cost recovery, is that future development is paying for its share of the useful life and remaining capacity of facilities already built, or land already purchased, from which future development will benefit. This methodology is often used for utility systems that must provide adequate capacity before new development can take place.
- **Incremental Expansion** (concurrent improvements) - The incremental expansion methodology documents current level-of-service standards for each type of public facility, using both quantitative and qualitative measures. This approach assumes there are no existing infrastructure deficiencies or surplus infrastructure capacity. Future 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 future development. An incremental expansion methodology is best suited for public facilities that will be expanded in regular increments to keep pace with development.
- **Plan-Based** (future improvements) - The plan-based methodology allocates costs for a specified set of improvements to a specified amount of development. Improvements are typically identified in a long-range facility plan and development potential is identified by a land use plan. There are two basic options for determining the cost per service demand unit: (1) total cost of a public facility can be divided by total service demand units (average cost), or (2) the growth-share of the public facility cost can be divided by the net increase in service demand units over the planning timeframe (marginal cost).

Conceptual Impact Fee Calculation

In contrast to project-level improvements, impact fees fund growth-related infrastructure that will benefit multiple development projects, or the entire benefit area (usually referred to as system improvements). The first step is to determine an appropriate service demand indicator for the particular type of infrastructure. The service demand indicator measures the number of service units for each unit of development. For example, an appropriate indicator of the demand for roadways is vehicle miles of travel that can be determined by development type. The second step in the impact fee formula is to determine infrastructure improvement units per service demand unit, typically called level-of-service (LOS)

standards. In keeping with the roadway example, a common LOS standard is volume to capacity ratio. The third step in the impact fee formula is the cost of various infrastructure units. To complete the roadway example, this part of the formula would establish a construction cost per lane mile of road expansion.

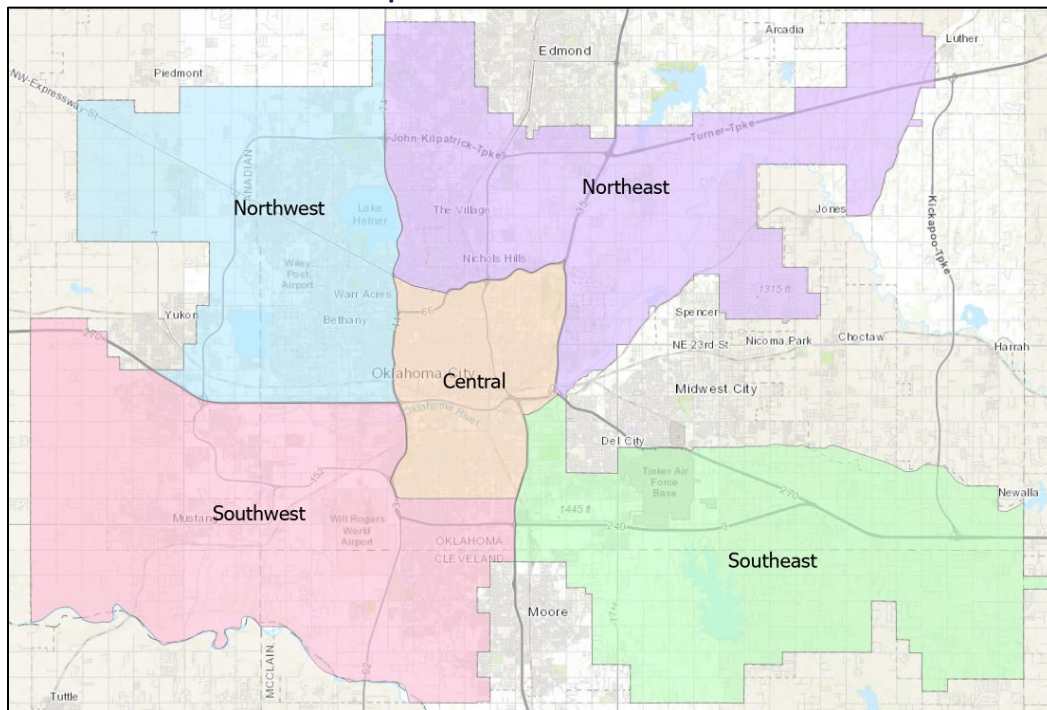
BENEFIT AREAS & ASSESSMENT AREAS

Importantly, the study and City's ordinance uses the term "benefit area(s)" in replace of the Oklahoma State Statues "service area(s)." These terms are synonymous and should be interpreted as the same.

Oklahoma City's current streets development fee program has 14 benefit areas along with four assessment areas to determine vehicle trip length (maps of the existing areas can be found in Appendix C). TischlerBise is recommending an adjustment to the benefit area boundaries because implementation of many small benefit areas is problematic. Administration is complicated and because funds collected within the benefit area must be spent within that area multiple benefit areas make it very difficult to accumulate sufficient revenue to fund any projects within a reasonable timeframe.

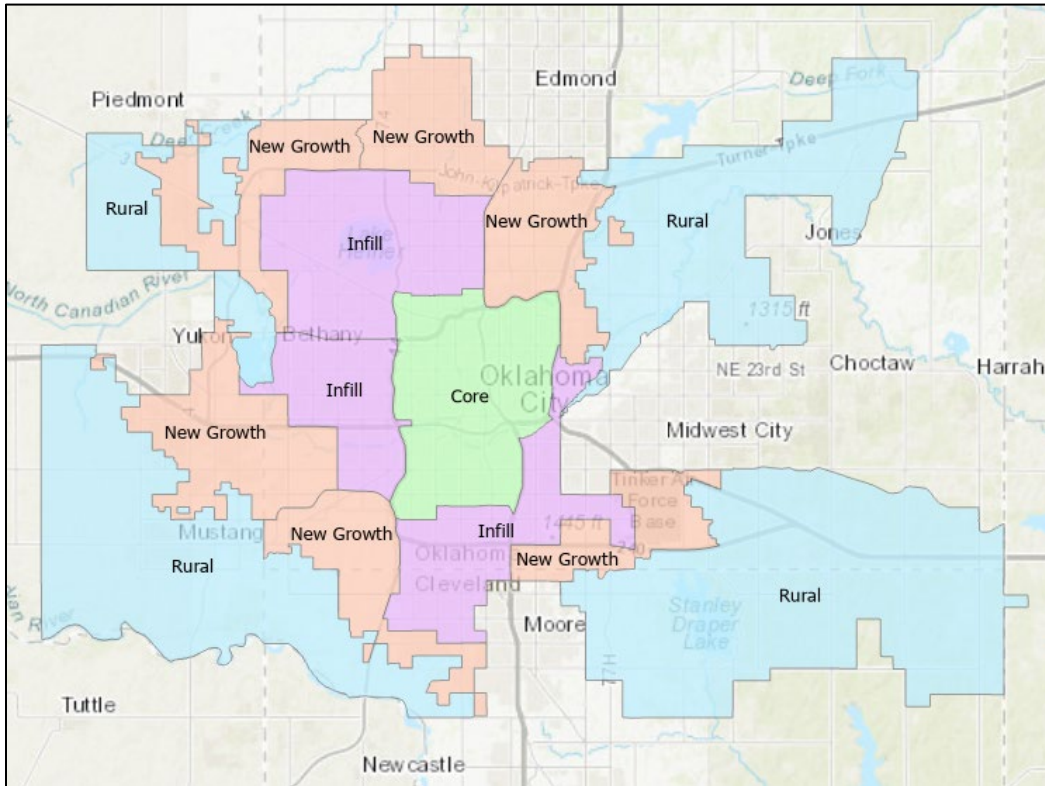
Shown below is the recommended new benefit area map. The Central benefit area is only slightly changed, while there are four grouping quadrants that combine several of the current areas. These boundaries still ensure a nexus between capital planning and benefit to the fee payor while broadening the revenue generation for future projects.

Figure 1. Recommended Streets Development Fee Benefit Areas



Additionally, TischlerBise recommends continuing the assessment areas, but keeping those boundaries separate from the benefit area boundaries. There are four categories of assessment areas: Core, Infill, New Growth, and Rural. Using the Association of Central Oklahoma Governments (ACOG) travel model, vehicle trip lengths are calculated for each assessment area. Trip lengths were found to be longer as development occurs further from the Core. Thus, demand on street infrastructure is greater for development that is further from the Core, resulting in a proportionately higher development fee.

Figure 2. Streets Development Fee Assessment Areas



MAXIMUM SUPPORTABLE STREETS DEVELOPMENT FEES

Maximum supportable development fees will be assessed per dwelling unit by square foot for residential development and per 1,000 square feet of floor area by land use for nonresidential development.

The maximum supportable fees represent the maximum allowable amount under this study. **Importantly, during the initial impact fee study (2016), Oklahoma City adopted fees lower than the maximum supportable amounts. The City plans to do the same with the updated report.** Following the finalization of this report, City staff and TischlerBise will meet with City leadership to discuss reductions from the maximum amounts and potential policies to alleviate impact fee burden on future development.

One policy option is to implement a mixed-use development (MXD) fee schedule in the transportation impact fee program. Detailed in the body of the report, based on surveys from the Institute of Transportation Engineers, MXD have lower vehicle trip generation because of “internal trip capture,” where the interaction between two or more land uses result in trips that are completed by other modes (particularly walking) rather than driving. Overall, there is a 29 percent reduction in vehicle trip demand, thus, an MXD fee would receive a 29 percent reduction. Additionally, the City is exploring implementing a transit-oriented development (TOD) policy which would apply a vehicle trip reduction factor to eligible developments.

Furthermore, Oklahoma Statute §62-895 L(1) allows municipal ordinances to include an exemption or reduction to the impact fees for projects that create desirable economic development, quality jobs, desirable land use that is in short supply, or affordable housing. Such a policy is at the discretion of the City Council.

Figure 3. Maximum Supportable Streets Development Fees – Core Assessment Area

Development Type	Core	
	Central	Northeast
Residential Square Footage (per dwelling unit)		
Under 1,000	\$839	\$1,836
1,000 to 1,499	\$1,050	\$2,299
1,500 to 1,999	\$1,310	\$2,870
2,000 to 2,499	\$1,505	\$3,298
2,500 to 2,999	\$1,657	\$3,636
3,000 to 3,499	\$1,787	\$3,920
3,500 to 3,999	\$1,899	\$4,161
4,000 or More	\$1,994	\$4,371
Nonresidential (per 1,000 square feet)		
Industrial	\$757	\$1,646
Warehousing/Distribution	\$280	\$605
Lodging (per room)	\$621	\$1,343
Office	\$1,096	\$2,379
Institutional	\$1,619	\$3,528
Customer-Oriented Low	\$1,739	\$3,775
Customer-Oriented Moderate	\$4,146	\$9,018
Customer-Oriented High	\$7,563	\$16,455

Figure 4. Maximum Supportable Streets Development Fees – Infill Assessment Area

Development Type	Infill				
	Central	Northeast	Northwest	Southeast	Southwest
Residential Square Footage (per dwelling unit)					
Under 1,000	\$911	\$1,993	\$2,220	\$2,289	\$2,105
1,000 to 1,499	\$1,139	\$2,495	\$2,781	\$2,865	\$2,635
1,500 to 1,999	\$1,420	\$3,114	\$3,469	\$3,574	\$3,288
2,000 to 2,499	\$1,633	\$3,576	\$3,987	\$4,107	\$3,778
2,500 to 2,999	\$1,799	\$3,943	\$4,394	\$4,527	\$4,165
3,000 to 3,499	\$1,939	\$4,252	\$4,738	\$4,883	\$4,491
3,500 to 3,999	\$2,059	\$4,516	\$5,030	\$5,183	\$4,769
4,000 or More	\$2,164	\$4,743	\$5,285	\$5,445	\$5,010
Nonresidential (per 1,000 square feet)					
Industrial	\$821	\$1,785	\$1,988	\$2,050	\$1,885
Warehousing/Distribution	\$304	\$656	\$730	\$753	\$690
Lodging (per room)	\$673	\$1,456	\$1,624	\$1,668	\$1,541
Office	\$1,189	\$2,580	\$2,884	\$2,977	\$2,730
Institutional	\$1,755	\$3,826	\$4,268	\$4,407	\$4,044
Customer-Oriented Low	\$1,885	\$4,096	\$4,574	\$4,698	\$4,334
Customer-Oriented Moderate	\$4,497	\$9,781	\$10,924	\$11,220	\$10,349
Customer-Oriented High	\$8,205	\$17,851	\$19,938	\$20,478	\$18,887

Figure 5. Maximum Supportable Streets Development Fees – New Growth Assessment Area

Development Type	New Growth			
	Northeast	Northwest	Southeast	Southwest
Residential Square Footage (per dwelling unit)				
Under 1,000	\$2,268	\$2,529	\$2,606	\$2,397
1,000 to 1,499	\$2,841	\$3,168	\$3,262	\$3,002
1,500 to 1,999	\$3,545	\$3,950	\$4,068	\$3,744
2,000 to 2,499	\$4,073	\$4,540	\$4,677	\$4,302
2,500 to 2,999	\$4,490	\$5,004	\$5,157	\$4,743
3,000 to 3,499	\$4,842	\$5,396	\$5,560	\$5,116
3,500 to 3,999	\$5,140	\$5,729	\$5,904	\$5,431
4,000 or More	\$5,402	\$6,018	\$6,201	\$5,706
Nonresidential (per 1,000 square feet)				
Industrial	\$2,032	\$2,263	\$2,336	\$2,145
Warehousing/Distribution	\$747	\$831	\$859	\$788
Lodging (per room)	\$1,658	\$1,850	\$1,900	\$1,753
Office	\$2,941	\$3,282	\$3,389	\$3,108
Institutional	\$4,360	\$4,861	\$5,016	\$4,606
Customer-Oriented Low	\$4,664	\$5,210	\$5,351	\$4,935
Customer-Oriented Moderate	\$11,138	\$12,440	\$12,776	\$11,787
Customer-Oriented High	\$20,329	\$22,702	\$23,317	\$21,508

Figure 6. Maximum Supportable Streets Development Fees – Rural Assessment Area

Development Type	Rural			
	Northeast	Northwest	Southeast	Southwest
Residential Square Footage (per dwelling unit)				
Under 1,000	\$3,063	\$3,414	\$3,518	\$3,237
1,000 to 1,499	\$3,838	\$4,276	\$4,407	\$4,053
1,500 to 1,999	\$4,786	\$5,333	\$5,495	\$5,055
2,000 to 2,499	\$5,501	\$6,130	\$6,316	\$5,809
2,500 to 2,999	\$6,063	\$6,757	\$6,960	\$6,405
3,000 to 3,499	\$6,537	\$7,284	\$7,507	\$6,906
3,500 to 3,999	\$6,943	\$7,736	\$7,969	\$7,333
4,000 or More	\$7,292	\$8,126	\$8,375	\$7,705
Nonresidential (per 1,000 square feet)				
Industrial	\$2,745	\$3,056	\$3,154	\$2,896
Warehousing/Distribution	\$1,008	\$1,123	\$1,159	\$1,063
Lodging (per room)	\$2,237	\$2,498	\$2,565	\$2,369
Office	\$3,968	\$4,434	\$4,574	\$4,199
Institutional	\$5,884	\$6,565	\$6,775	\$6,221
Customer-Oriented Low	\$6,299	\$7,035	\$7,225	\$6,665
Customer-Oriented Moderate	\$15,041	\$16,799	\$17,254	\$15,914
Customer-Oriented High	\$27,448	\$30,654	\$31,483	\$29,041

STREETS DEVELOPMENT FEE

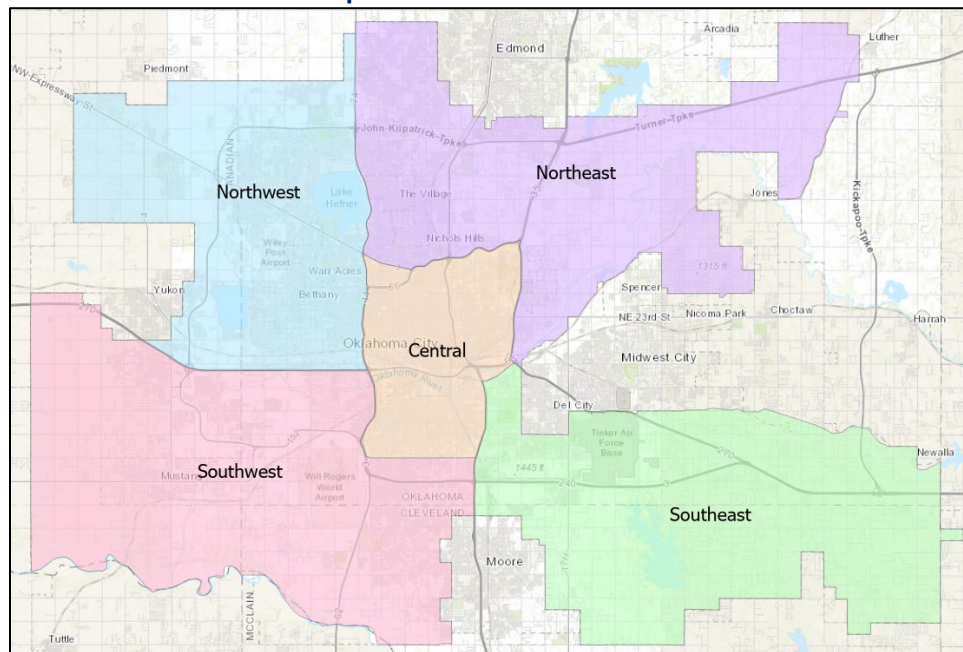
The following chapter details the calculations for the Streets Development impact fee. Further details on assumptions and analysis can be found in Appendix A. Service Units by Land Use and Appendix B. Land Use Assumptions. Importantly, the study and City's ordinance uses the term "benefit area(s)" in replace of the Oklahoma State Statues "service area(s)." These terms are synonymous and should be interpreted as the same.

BENEFIT AREAS & ASSESSMENT AREAS

Oklahoma City's current streets development fee program has 14 benefit areas along with four assessment areas to determine vehicle trip length (maps of the existing areas can be found in Appendix C). TischlerBise is recommending an adjustment to the benefit area boundaries because implementation of many small benefit areas is problematic. Administration is complicated and because funds collected within the benefit area must be spent within that area, multiple benefit areas make it very difficult to accumulate sufficient revenue to fund any projects within a reasonable timeframe. Additionally, the larger benefit areas are more consistent with arterial roadway capital planning compared to the smaller areas, ensuring the benefit nexus test.

Shown below is the recommended new benefit area map. The central benefit area is only slightly changed, while there are four grouping quadrants that combine several of the current areas. These boundaries still ensure a nexus between capital planning and benefit to the fee payor.

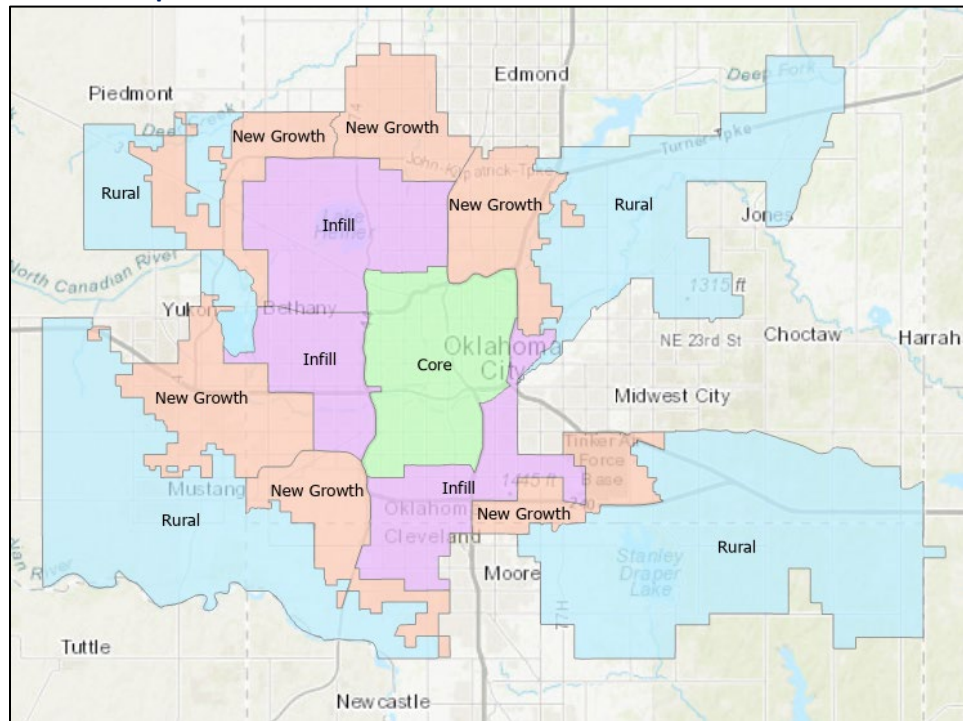
Figure 7. Recommended Streets Development Fee Benefit Areas



Additionally, TischlerBise recommends continuing the assessment areas, but keeping those boundaries separate from the benefit area boundaries. There are four categories of assessment areas: Core, Infill, New Growth, and Rural (Figure 8). Using the Association of Central Oklahoma Governments (ACOG) travel model, vehicle trip lengths are calculated for each assessment area. As expected and consistent with the current development fee program, vehicle trip lengths were found to be longer as development occurs further from the Core. Thus, demand on street infrastructure is greater for development that is further

from the Core. The trip lengths are included in the vehicle miles of travel factors resulting in a proportionate development fee.

Figure 8. Streets Development Fee Assessment Areas



SERVICE UNITS BY LAND USE

TischlerBise recommends using vehicle miles of travel (VMT) as the demand units for traditional roadway expansion infrastructure and development fees. Components used to determine VMT include average weekday vehicle trip generation rates, adjustments for commuting patterns and pass-by trips, and trip length weighting factors. TischlerBise recommends using person miles of travel (PMT) as the demand units for multimodal infrastructure and development fees. PMT is calculated from VMT and vehicle trip occupancy rates. A summary of the service units is provided below while details of the assumptions can be found in Appendix A. Service Units by Land Use and Appendix B. Land Use Assumptions.

Residential Service Units

The following figures list the inputs for the residential VMT calculation: trip ends, trip end adjustment factor, average trip length (miles), and trip length adjustment factor¹. All four inputs are combined to find the VMT per housing unit. For example, a housing unit under 1,000 square feet in the Northeast Benefit Area and Infill Assessment Area is estimated to generate 7.02 VMT (5.23 trip ends per housing unit x 0.55 trip end adjustment x 2.78 average miles per trip x 0.88 trip length adjustment = 7.02 VMT per unit).

¹ Trip End: the origin or destination of a trip.

Trip: has two ends.

Trip End Adjustment Factor: a metric used to calculate trip ends to total trips.

Trip Length Adjustment Factor: a metric used to calculate trip lengths (miles) by the purpose of the trip.

Figure 9. Northeast Benefit Area VMT per Residential Unit by Assessment Area

NE			Core		
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	2.78	81%	6.47
1,000 to 1,499	6.55	55%	2.78	81%	8.10
1,500 to 1,999	8.17	55%	2.78	81%	10.11
2,000 to 2,499	9.39	55%	2.78	81%	11.62
2,500 to 2,999	10.35	55%	2.78	81%	12.81
3,000 to 3,499	11.16	55%	2.78	81%	13.81
3,500 to 3,999	11.85	55%	2.78	81%	14.66
4,000 or More	12.45	55%	2.78	81%	15.40

Infill					
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	2.78	88%	7.02
1,000 to 1,499	6.55	55%	2.78	88%	8.79
1,500 to 1,999	8.17	55%	2.78	88%	10.97
2,000 to 2,499	9.39	55%	2.78	88%	12.60
2,500 to 2,999	10.35	55%	2.78	88%	13.89
3,000 to 3,499	11.16	55%	2.78	88%	14.98
3,500 to 3,999	11.85	55%	2.78	88%	15.91
4,000 or More	12.45	55%	2.78	88%	16.71

New Growth					
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	2.78	100%	7.99
1,000 to 1,499	6.55	55%	2.78	100%	10.01
1,500 to 1,999	8.17	55%	2.78	100%	12.49
2,000 to 2,499	9.39	55%	2.78	100%	14.35
2,500 to 2,999	10.35	55%	2.78	100%	15.82
3,000 to 3,499	11.16	55%	2.78	100%	17.06
3,500 to 3,999	11.85	55%	2.78	100%	18.11
4,000 or More	12.45	55%	2.78	100%	19.03

Rural					
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	2.78	135%	10.79
1,000 to 1,499	6.55	55%	2.78	135%	13.52
1,500 to 1,999	8.17	55%	2.78	135%	16.86
2,000 to 2,499	9.39	55%	2.78	135%	19.38
2,500 to 2,999	10.35	55%	2.78	135%	21.36
3,000 to 3,499	11.16	55%	2.78	135%	23.03
3,500 to 3,999	11.85	55%	2.78	135%	24.46
4,000 or More	12.45	55%	2.78	135%	25.69

Figure 10. Northwest Benefit Area VMT per Residential Unit by Assessment Area

NW

Infill					
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	3.07	88%	7.75
1,000 to 1,499	6.55	55%	3.07	88%	9.71
1,500 to 1,999	8.17	55%	3.07	88%	12.11
2,000 to 2,499	9.39	55%	3.07	88%	13.92
2,500 to 2,999	10.35	55%	3.07	88%	15.34
3,000 to 3,499	11.16	55%	3.07	88%	16.54
3,500 to 3,999	11.85	55%	3.07	88%	17.56
4,000 or More	12.45	55%	3.07	88%	18.45

New Growth

Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	3.07	100%	8.83
1,000 to 1,499	6.55	55%	3.07	100%	11.06
1,500 to 1,999	8.17	55%	3.07	100%	13.79
2,000 to 2,499	9.39	55%	3.07	100%	15.85
2,500 to 2,999	10.35	55%	3.07	100%	17.47
3,000 to 3,499	11.16	55%	3.07	100%	18.84
3,500 to 3,999	11.85	55%	3.07	100%	20.00
4,000 or More	12.45	55%	3.07	100%	21.01

Rural

Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	3.07	135%	11.92
1,000 to 1,499	6.55	55%	3.07	135%	14.93
1,500 to 1,999	8.17	55%	3.07	135%	18.62
2,000 to 2,499	9.39	55%	3.07	135%	21.40
2,500 to 2,999	10.35	55%	3.07	135%	23.59
3,000 to 3,499	11.16	55%	3.07	135%	25.43
3,500 to 3,999	11.85	55%	3.07	135%	27.01
4,000 or More	12.45	55%	3.07	135%	28.37

Figure 11. Southeast Benefit Area VMT per Housing Unit by Assessment Area

SE		Infill			
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	3.08	88%	7.78
1,000 to 1,499	6.55	55%	3.08	88%	9.74
1,500 to 1,999	8.17	55%	3.08	88%	12.15
2,000 to 2,499	9.39	55%	3.08	88%	13.96
2,500 to 2,999	10.35	55%	3.08	88%	15.39
3,000 to 3,499	11.16	55%	3.08	88%	16.60
3,500 to 3,999	11.85	55%	3.08	88%	17.62
4,000 or More	12.45	55%	3.08	88%	18.51

New Growth					
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	3.08	100%	8.86
1,000 to 1,499	6.55	55%	3.08	100%	11.09
1,500 to 1,999	8.17	55%	3.08	100%	13.83
2,000 to 2,499	9.39	55%	3.08	100%	15.90
2,500 to 2,999	10.35	55%	3.08	100%	17.53
3,000 to 3,499	11.16	55%	3.08	100%	18.90
3,500 to 3,999	11.85	55%	3.08	100%	20.07
4,000 or More	12.45	55%	3.08	100%	21.08

Rural					
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	3.08	135%	11.96
1,000 to 1,499	6.55	55%	3.08	135%	14.98
1,500 to 1,999	8.17	55%	3.08	135%	18.68
2,000 to 2,499	9.39	55%	3.08	135%	21.47
2,500 to 2,999	10.35	55%	3.08	135%	23.66
3,000 to 3,499	11.16	55%	3.08	135%	25.52
3,500 to 3,999	11.85	55%	3.08	135%	27.09
4,000 or More	12.45	55%	3.08	135%	28.47

Figure 12. Southwest Benefit Area VMT per Housing Unit by Assessment Area

SW				Infill	
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	2.91	88%	7.35
1,000 to 1,499	6.55	55%	2.91	88%	9.20
1,500 to 1,999	8.17	55%	2.91	88%	11.48
2,000 to 2,499	9.39	55%	2.91	88%	13.19
2,500 to 2,999	10.35	55%	2.91	88%	14.54
3,000 to 3,499	11.16	55%	2.91	88%	15.68
3,500 to 3,999	11.85	55%	2.91	88%	16.65
4,000 or More	12.45	55%	2.91	88%	17.49

New Growth					
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	2.91	100%	8.37
1,000 to 1,499	6.55	55%	2.91	100%	10.48
1,500 to 1,999	8.17	55%	2.91	100%	13.07
2,000 to 2,499	9.39	55%	2.91	100%	15.02
2,500 to 2,999	10.35	55%	2.91	100%	16.56
3,000 to 3,499	11.16	55%	2.91	100%	17.86
3,500 to 3,999	11.85	55%	2.91	100%	18.96
4,000 or More	12.45	55%	2.91	100%	19.92

Rural					
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	2.91	135%	11.30
1,000 to 1,499	6.55	55%	2.91	135%	14.15
1,500 to 1,999	8.17	55%	2.91	135%	17.65
2,000 to 2,499	9.39	55%	2.91	135%	20.28
2,500 to 2,999	10.35	55%	2.91	135%	22.36
3,000 to 3,499	11.16	55%	2.91	135%	24.11
3,500 to 3,999	11.85	55%	2.91	135%	25.60
4,000 or More	12.45	55%	2.91	135%	26.90

Central Benefit Area Residential Person Miles of Travel

While vehicle trip rates or vehicle miles of travel (VMT) are used as the demand unit for improvements purely addressing vehicle demand, using person miles of travel (PMT) more accurately captures development demand for multimodal expansion. The update to the Streets Development Fee program recommends applying a PMT approach to the Central Benefit Area to be consistent with a future focus of multimodal expansion rather than traditional roadway expansion.

PMT factors are calculated with VMT, vehicle share of trips, and trip occupancy factors. Vehicle share of trips is from the U.S. Census Bureau ACS data for the census tracts in the central area. The 2022 National Household Travel Survey indicates the average occupancy for a vehicle trip is 1.59 persons. For example, a housing unit less than 1,000 square feet in the Central Benefit Area and Core Assessment Area generates 8.21 PMT $[(5.35 \text{ VMT per housing unit} \times 0.96 \text{ vehicle share of trips} \times 1.59 \text{ vehicle trip occupancy}) + (1 - \text{vehicle share of trips})] = 8.21 \text{ PMT per housing unit}$.

Figure 13. Central Benefit Area VMT and PMT per Housing Unit – Core Assessment Area

Central			Core		
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	2.30	81%	5.35
1,000 to 1,499	6.55	55%	2.30	81%	6.70
1,500 to 1,999	8.17	55%	2.30	81%	8.36
2,000 to 2,499	9.39	55%	2.30	81%	9.61
2,500 to 2,999	10.35	55%	2.30	81%	10.59
3,000 to 3,499	11.16	55%	2.30	81%	11.42
3,500 to 3,999	11.85	55%	2.30	81%	12.13
4,000 or More	12.45	55%	2.30	81%	12.74

Square Footage of Dwelling Unit	VMT per Unit	Vehicle Share of Trips [1]	Vehicle Trip Occupancy [2]	Person Miles of Travel (PMT) [3]
Under 1,000	5.35	96%	1.59	8.21
1,000 to 1,499	6.70	96%	1.59	10.27
1,500 to 1,999	8.36	96%	1.59	12.81
2,000 to 2,499	9.61	96%	1.59	14.72
2,500 to 2,999	10.59	96%	1.59	16.21
3,000 to 3,499	11.42	96%	1.59	17.48
3,500 to 3,999	12.13	96%	1.59	18.57
4,000 or More	12.74	96%	1.59	19.50

[1] U.S. Census Bureau, 2022 5-Year Estimate American Community Survey

[2] 2022 National Household Travel Survey Results

[3] PMT = (VMT x Vehicle Share of Trips x Occupancy) + (1 - Vehicle Share of Trips)

Figure 14. Central Benefit Area VMT and PMT per Housing Unit – Infill Assessment Area

Central			Infill		
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit
Under 1,000	5.23	55%	2.30	88%	5.81
1,000 to 1,499	6.55	55%	2.30	88%	7.27
1,500 to 1,999	8.17	55%	2.30	88%	9.07
2,000 to 2,499	9.39	55%	2.30	88%	10.43
2,500 to 2,999	10.35	55%	2.30	88%	11.49
3,000 to 3,499	11.16	55%	2.30	88%	12.39
3,500 to 3,999	11.85	55%	2.30	88%	13.16
4,000 or More	12.45	55%	2.30	88%	13.83

Square Footage of Dwelling Unit	VMT per Unit	Vehicle Share of Trips [1]	Vehicle Trip Occupancy [2]	Person Miles of Travel (PMT) [3]
Under 1,000	5.81	96%	1.59	8.91
1,000 to 1,499	7.27	96%	1.59	11.14
1,500 to 1,999	9.07	96%	1.59	13.89
2,000 to 2,499	10.43	96%	1.59	15.97
2,500 to 2,999	11.49	96%	1.59	17.59
3,000 to 3,499	12.39	96%	1.59	18.96
3,500 to 3,999	13.16	96%	1.59	20.14
4,000 or More	13.83	96%	1.59	21.16

[1] U.S. Census Bureau, 2022 5-Year Estimate American Community Survey

[2] 2022 National Household Travel Survey Results

[3] PMT = (VMT x Vehicle Share of Trips x Occupancy) + (1 - Vehicle Share of Trips)

Nonresidential Service Units

The following figures list the inputs for the nonresidential VMT calculation: trip ends, trip end adjustment factor, trip length (miles), and trip length adjustment factor (see page 12 for definitions). Inputs are combined to find the VMT per 1,000 square feet. For example, industrial development in the Northeast Benefit Area and Infill Assessment Area is estimated to generate 6.29 VMT per 1,000 square feet (4.33 trip ends per 1,000 square feet x 0.55 trip end adjustment x 3.31 miles x 0.88 trip length adjustment).

Figure 15. Northeast Benefit Area Nonresidential VMT by Assessment Area

NE		Core			
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per KSF
Industrial	4.33	50%	3.31	81%	5.80
Warehousing/Distribution	1.59	50%	3.31	81%	2.13
Lodging (per room)	5.67	50%	2.06	81%	4.73
Office	11.08	50%	1.87	81%	8.38
Institutional	16.17	50%	1.90	81%	12.43
Customer-Oriented Low	21.00	38%	2.06	81%	13.30
Customer-Oriented Moderate	50.15	38%	2.06	81%	31.77
Customer-Oriented High	91.52	38%	2.06	81%	57.97

		Infill			
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per KSF
Industrial	4.33	50%	3.31	88%	6.29
Warehousing/Distribution	1.59	50%	3.31	88%	2.31
Lodging (per room)	5.67	50%	2.06	88%	5.13
Office	11.08	50%	1.87	88%	9.09
Institutional	16.17	50%	1.90	88%	13.48
Customer-Oriented Low	21.00	38%	2.06	88%	14.43
Customer-Oriented Moderate	50.15	38%	2.06	88%	34.46
Customer-Oriented High	91.52	38%	2.06	88%	62.89

		New Growth			
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per KSF
Industrial	4.33	50%	3.31	100%	7.16
Warehousing/Distribution	1.59	50%	3.31	100%	2.63
Lodging (per room)	5.67	50%	2.06	100%	5.84
Office	11.08	50%	1.87	100%	10.36
Institutional	16.17	50%	1.90	100%	15.36
Customer-Oriented Low	21.00	38%	2.06	100%	16.43
Customer-Oriented Moderate	50.15	38%	2.06	100%	39.24
Customer-Oriented High	91.52	38%	2.06	100%	71.62

		Rural			
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per KSF
Industrial	4.33	50%	3.31	135%	9.67
Warehousing/Distribution	1.59	50%	3.31	135%	3.55
Lodging (per room)	5.67	50%	2.06	135%	7.88
Office	11.08	50%	1.87	135%	13.98
Institutional	16.17	50%	1.90	135%	20.73
Customer-Oriented Low	21.00	38%	2.06	135%	22.19
Customer-Oriented Moderate	50.15	38%	2.06	135%	52.99
Customer-Oriented High	91.52	38%	2.06	135%	96.70

Figure 16. Northwest Benefit Area Nonresidential VMT by Assessment Area

NW					
Infill					
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per KSF
Industrial	4.33	50%	3.65	88%	6.94
Warehousing/Distribution	1.59	50%	3.65	88%	2.55
Lodging (per room)	5.67	50%	2.28	88%	5.67
Office	11.08	50%	2.07	88%	10.07
Institutional	16.17	50%	2.10	88%	14.90
Customer-Oriented Low	21.00	38%	2.28	88%	15.97
Customer-Oriented Moderate	50.15	38%	2.28	88%	38.14
Customer-Oriented High	91.52	38%	2.28	88%	69.61

New Growth					
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per KSF
Industrial	4.33	50%	3.65	100%	7.90
Warehousing/Distribution	1.59	50%	3.65	100%	2.90
Lodging (per room)	5.67	50%	2.28	100%	6.46
Office	11.08	50%	2.07	100%	11.46
Institutional	16.17	50%	2.10	100%	16.97
Customer-Oriented Low	21.00	38%	2.28	100%	18.19
Customer-Oriented Moderate	50.15	38%	2.28	100%	43.43
Customer-Oriented High	91.52	38%	2.28	100%	79.26

Rural					
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per KSF
Industrial	4.33	50%	3.65	135%	10.67
Warehousing/Distribution	1.59	50%	3.65	135%	3.92
Lodging (per room)	5.67	50%	2.28	135%	8.72
Office	11.08	50%	2.07	135%	15.48
Institutional	16.17	50%	2.10	135%	22.92
Customer-Oriented Low	21.00	38%	2.28	135%	24.56
Customer-Oriented Moderate	50.15	38%	2.28	135%	58.65
Customer-Oriented High	91.52	38%	2.28	135%	107.02

Figure 17. Southeast Benefit Area Nonresidential VMT by Assessment Area

SE					
Infill					
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VTM per KSF
Industrial	4.33	50%	3.67	88%	6.97
Warehousing/Distribution	1.59	50%	3.67	88%	2.56
Lodging (per room)	5.67	50%	2.28	88%	5.67
Office	11.08	50%	2.08	88%	10.12
Institutional	16.17	50%	2.11	88%	14.98
Customer-Oriented Low	21.00	38%	2.28	88%	15.97
Customer-Oriented Moderate	50.15	38%	2.28	88%	38.14
Customer-Oriented High	91.52	38%	2.28	88%	69.61

New Growth					
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VTM per KSF
Industrial	4.33	50%	3.67	100%	7.94
Warehousing/Distribution	1.59	50%	3.67	100%	2.92
Lodging (per room)	5.67	50%	2.28	100%	6.46
Office	11.08	50%	2.08	100%	11.52
Institutional	16.17	50%	2.11	100%	17.05
Customer-Oriented Low	21.00	38%	2.28	100%	18.19
Customer-Oriented Moderate	50.15	38%	2.28	100%	43.43
Customer-Oriented High	91.52	38%	2.28	100%	79.26

Rural					
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VTM per KSF
Industrial	4.33	50%	3.67	135%	10.72
Warehousing/Distribution	1.59	50%	3.67	135%	3.94
Lodging (per room)	5.67	50%	2.28	135%	8.72
Office	11.08	50%	2.08	135%	15.55
Institutional	16.17	50%	2.11	135%	23.03
Customer-Oriented Low	21.00	38%	2.28	135%	24.56
Customer-Oriented Moderate	50.15	38%	2.28	135%	58.65
Customer-Oriented High	91.52	38%	2.28	135%	107.02

Figure 18. Southwest Benefit Area Nonresidential VMT by Assessment Area

SW					
Infill					
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per KSF
Industrial	4.33	50%	3.46	88%	6.58
Warehousing/Distribution	1.59	50%	3.46	88%	2.41
Lodging (per room)	5.67	50%	2.16	88%	5.38
Office	11.08	50%	1.96	88%	9.53
Institutional	16.17	50%	1.99	88%	14.12
Customer-Oriented Low	21.00	38%	2.16	88%	15.13
Customer-Oriented Moderate	50.15	38%	2.16	88%	36.13
Customer-Oriented High	91.52	38%	2.16	88%	65.94

New Growth					
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per KSF
Industrial	4.33	50%	3.46	100%	7.49
Warehousing/Distribution	1.59	50%	3.46	100%	2.75
Lodging (per room)	5.67	50%	2.16	100%	6.12
Office	11.08	50%	1.96	100%	10.85
Institutional	16.17	50%	1.99	100%	16.08
Customer-Oriented Low	21.00	38%	2.16	100%	17.23
Customer-Oriented Moderate	50.15	38%	2.16	100%	41.15
Customer-Oriented High	91.52	38%	2.16	100%	75.09

Rural					
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per KSF
Industrial	4.33	50%	3.46	135%	10.11
Warehousing/Distribution	1.59	50%	3.46	135%	3.71
Lodging (per room)	5.67	50%	2.16	135%	8.27
Office	11.08	50%	1.96	135%	14.66
Institutional	16.17	50%	1.99	135%	21.72
Customer-Oriented Low	21.00	38%	2.16	135%	23.27
Customer-Oriented Moderate	50.15	38%	2.16	135%	55.56
Customer-Oriented High	91.52	38%	2.16	135%	101.39

Central Benefit Area Nonresidential Person Miles of Travel

While vehicle trip rates or vehicle miles of travel (VMT) are used as the demand unit for improvements purely addressing vehicle demand, using person miles of travel (PMT) more accurately captures development demand for multimodal expansion. The update to the Streets Development Fee program recommends applying a PMT approach to the Central Benefit Area to be consistent with a future focus of multimodal expansion rather than traditional roadway expansion.

PMT factors are calculated with VMT, vehicle share of trips, and trip occupancy factors. Vehicle share of trips is from the U.S. Census Bureau ACS data for the census tracts in the central area. The 2022 National Household Travel Survey indicates the average occupancy for a vehicle trip is 1.59 persons. For example, an industrial development in the Central Benefit Area generates 7.40 PMT per 1,000 square feet $[(4.82 \text{ VMT per 1,000 square feet} \times 0.96 \text{ vehicle share of trips} \times 1.59 \text{ vehicle trip occupancy}) + (1 - \text{vehicle share of trips})] = 7.40 \text{ PMT per 1,000 square feet}$.

Figure 19. Central Benefit Area Nonresidential VMT and PMT – Core Assessment Area

Central			Core		
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per KSF
Industrial	4.33	50%	2.75	81%	4.82
Warehousing/Distribution	1.59	50%	2.75	81%	1.77
Lodging (per room)	5.67	50%	1.72	81%	3.95
Office	11.08	50%	1.56	81%	6.99
Institutional	16.17	50%	1.58	81%	10.34
Customer-Oriented Low	21.00	38%	1.72	81%	11.11
Customer-Oriented Moderate	50.15	38%	1.72	81%	26.52
Customer-Oriented High	91.52	38%	1.72	81%	48.40

Development Type	VMT per KSF	Vehicle Share of Trips [1]	Vehicle Trip Occupancy [2]	Person Miles of Travel (PMT) [3]
Industrial	4.82	96%	1.59	7.40
Warehousing/Distribution	1.77	96%	1.59	2.74
Lodging (per room)	3.95	96%	1.59	6.07
Office	6.99	96%	1.59	10.72
Institutional	10.34	96%	1.59	15.83
Customer-Oriented Low	11.11	96%	1.59	17.01
Customer-Oriented Moderate	26.52	96%	1.59	40.55
Customer-Oriented High	48.40	96%	1.59	73.97

[1] U.S. Census Bureau, 2022 5-Year Estimate American Community Survey

[2] 2022 National Household Travel Survey Results

[3] PMT = (VMT x Vehicle Share of Trips x Occupancy) + (1 - Vehicle Share of Trips)

Figure 20. Central Benefit Area Nonresidential VMT and PMT – Infill Assessment Area

Central			Infill		
Development Type	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per KSF
Industrial	4.33	50%	2.75	88%	5.23
Warehousing/Distribution	1.59	50%	2.75	88%	1.92
Lodging (per room)	5.67	50%	1.72	88%	4.28
Office	11.08	50%	1.56	88%	7.59
Institutional	16.17	50%	1.58	88%	11.21
Customer-Oriented Low	21.00	38%	1.72	88%	12.05
Customer-Oriented Moderate	50.15	38%	1.72	88%	28.77
Customer-Oriented High	91.52	38%	1.72	88%	52.51

Development Type	VMT per KSF	Vehicle Share of Trips [1]	Vehicle Trip Occupancy [2]	Person Miles of Travel (PMT) [3]
Industrial	5.23	96%	1.59	8.03
Warehousing/Distribution	1.92	96%	1.59	2.97
Lodging (per room)	4.28	96%	1.59	6.58
Office	7.59	96%	1.59	11.63
Institutional	11.21	96%	1.59	17.16
Customer-Oriented Low	12.05	96%	1.59	18.44
Customer-Oriented Moderate	28.77	96%	1.59	43.98
Customer-Oriented High	52.51	96%	1.59	80.24

[1] U.S. Census Bureau, 2022 5-Year Estimate American Community Survey

[2] 2022 National Household Travel Survey Results

[3] PMT = (VMT x Vehicle Share of Trips x Occupancy) + (1 - Vehicle Share of Trips)

MIXED-USE SERVICE UNITS

Additionally, mixed-use development (MXD) has been determined to have a reduced demand and service units compared to traditional development. Based on surveys from the Institute of Transportation Engineers, MXD have lower vehicle trip generation because of “internal trip capture,” where the interaction between two or more land uses result in trips that are completed by other modes (particularly walking) rather than driving. The following figure lists the reduction from internal trip capture based on Institute for Transportation Engineers *Trip Generation Manual* and National Academies of Sciences, Engineering, and Medicine *Enhancing Internal Trip Capture Estimation for Mixed-Use Developments*. For MXD there is a 15.4 percent reduction in vehicle trips originating from the location and 13.4 percent reduction in vehicle trips ending at that location. Overall, there is a 29 percent (rounded) reduction in vehicle trip demand.

Figure 21. Mixed-Use Internal Trip Capture Rates

Internal Trip Capture Rates within a Mixed-Use Development		Origin	Destination
Office	Office	2%	2%
	Retail	22%	15%
	Residential	2%	-
Retail	Office	3%	4%
	Retail	30%	28%
	Residential	11%	9%
Residential	Office	-	3%
	Retail	38%	33%
	Residential	-	-
Average		15.4%	13.4%
			29%

Source: Institute for Transportation Engineers, *Trip Generation Manual* ;
National Academies of Sciences, Engineering, and Medicine 2011,
Enhancing Internal Trip Capture Estimation for Mixed-Use Developments .

The internal trip capture reduction (29 percent) is applied to the VMT rates of general development land uses to find VMT for mixed-use development. An example of the reduction is shown for residential development in the Northeast Infill Assessment Area.

Figure 22. Mixed-Use Development VMT Rates Example

NE		Infill					
Square Footage of Dwelling Unit	Trip Ends	Trip End Adj	Trip Length (miles)	Trip Length Adjustment	VMT per Unit	MXD Trip Reduction	MXD VMT per Unit
Under 1,000	5.23	55%	2.78	88%	7.02	29%	4.98
1,000 to 1,499	6.55	55%	2.78	88%	8.79	29%	6.24
1,500 to 1,999	8.17	55%	2.78	88%	10.97	29%	7.79
2,000 to 2,499	9.39	55%	2.78	88%	12.60	29%	8.95
2,500 to 2,999	10.35	55%	2.78	88%	13.89	29%	9.86
3,000 to 3,499	11.16	55%	2.78	88%	14.98	29%	10.64
3,500 to 3,999	11.85	55%	2.78	88%	15.91	29%	11.30
4,000 or More	12.45	55%	2.78	88%	16.71	29%	11.86

The reduced VMT represents a lower demand on transportation infrastructure, thus, a lower impact fee. The City plans to implement the MXD reduction by applying the 29 percent reduction in the fee calculation when administering the fee program. To be eligible for the mixed-use trip reduction a development must

follow Oklahoma City’s mixed-use definition in the zoning code and/or as defined in an impact fee ordinance update. The definition of mixed-use in the zoning code is as follows:

“Mixed-Use: The incorporation of more than one principal land use type within a single structure (i.e., a building with retail uses on the ground floor, and offices or residential on the upper floors), or a similar set of uses organized in close proximity and planned as a unified complimentary whole on a single site (horizontal mixed use).”

The City may wish to add specificity to its updated ordinance. An example comes from Peoria, AZ and Missoula, MT, which use the following qualifying language:

“Approved site plans containing two or more land uses where at least two uses include retail/commercial; office; residential; hotel/motel and each use is no less than 2,500 sq. ft.”

TRANSIT-ORIENTED DEVELOPMENT (TOD) SERVICE UNITS

It is recognized by transportation engineering experts that TOD results in reduced vehicle trip rates. However, quantifiable data supporting this effect is not as robust compared to travel surveys for general suburban development types. The Institute of Transportation Engineers (ITE) manual provides trip rates for a few TOD residential housing types. In Figure 23 the trip ends are compared for three multifamily housing types in a general suburban area and a TOD area. The results show a 15 percent reduction in trip ends when the residential development is in the TOD area.

Figure 23. ITE TOD Land Use Trip Ends

Land Use	ITE Code	Trip Ends	TOD [1] Trip Ends
Residential			
Multifamily Low-Rise	220	6.74	4.72
Multifamily Mid-Rise*	221	4.54	4.75
Multifamily High-Rise*	222	4.54	3.96
Average		5.27	4.48
TOD Trip End Reduction			15%

*Low sample size

[1] Half-mile walk of a rail transit station

Source: [Trip Generation](#), Institute of Transportation Engineers, 11th Edition (2021)

Additionally, in the ITE *Trip Generation Manual* the organization acknowledges that calculating trip generation for these development types are complicated and their published TOD trip rates are higher than when a local survey is completed. With that said, a 2008 study surveyed the vehicle trip generation for 17 residential TOD locations in four different cities. In *Vehicle Trip Reduction Impacts of Transit-Oriented Housing* the author found there to be a 44 percent reduction in vehicle trip generation compared to the trip rates in the ITE Manual.

Figure 24. Survey of Trip End Reduction for Residential TOD

Transit-Oriented Developments City & Number of Surveys	Surveyed Veh. Trip Rate	ITE Manual Rate
Philadelphia, PA (2 surveys)	4.92	6.72
Portland, OR (5 surveys)	3.99	6.72
San Francisco, CA (5 surveys)	3.41	6.55
Washington, DC (5 surveys)	2.52	6.72
Weighted Average	3.754	6.715
TOD Trip End Reduction		44%

Source: *Vehicle Trip Reduction Impacts of Transit-Oriented Housing*;
Robert Cervero; Journal of Public Transportation (Vol. 11, No. 3, 2008)

The surveyed cities all vary in composition including density, demographics, and vehicle mode share (which influence vehicle trips). Furthermore, it is assumed that the TOD developments surveyed in the study are also mixed-use areas. Thus, the 44 percent trip end reduction represents a “stacked effect” of TOD and MXD. In this case, TischlerBise approximates that the TOD trip reduction is the difference between the stacked effect and the 29 percent MXD reduction, resulting in a TOD trip reduction of 15 percent. This estimated 15 percent reduction for TOD development is consistent with the ITE studies as well.

After the MXD and TOD ordinances are approved, the City plans to implement the reductions by applying the percent reduction in the fee calculation when administering the fee program.

ARTERIAL ROADWAY LEVEL OF SERVICE

The existing level of service (LOS) is determined by comparing the vehicle miles of travel (VMT) to the vehicle miles of capacity (VMC). Under the incremental expansion methodology applied to the streets development impact fees, the resulting maximum supportable fee is determined by the current LOS. This approach ensures that the City is collecting revenues for transportation infrastructure expansion to provide today’s LOS to future residents. Generally, the incremental expansion approach cannot include a LOS that exceeds what is currently being provided. Also, if Oklahoma City commits to a lower LOS than the current LOS the impact fees should be adjusted downwards accordingly.

Figure 25 lists the total VMT and VMC on arterial road segments in each benefit area. Importantly, the VMT and VMC is calculated for each segment in the ACOG Travel Demand Model, and each roadway has multiple segments. Segments are used in the analysis to ensure that demand is captured for vehicles that only use a portion of the road. In this case, capacity for each segment is totaled as well. As a result, the VMT and VMC in Figure 25 are different than daily traffic totals from development.

The VMT is calculated based on the daily volume and roadway segment length. The VMC is calculated based on roadway length and capacity of the specific roadway segment based on the ACOG standard for level of service of C. As a result, the V/C level of service citywide is 0.618. Note: a higher V/C ratio represents more congestion. A V/C greater than 0.69 represents moderate congestion. A V/C greater than 0.99 represents serious congestion. In other words, a lower V/C represents a better level of service.

The recommended LOS for the impact fee study is 0.770 for all areas of the city. This is a lesser LOS than the citywide 0.618 V/C, however, in some areas of the city there is excess capacity and over time all areas will converge at 0.770. The uniform LOS ensures equity across the city along with not overcharging growth

for a higher LOS. Additionally, in this decision, the City has considered the burden on development if the impact fee was to be set at the existing LOS by benefit area.

Figure 25. Arterial Level of Service (V/C)

Benefit Area	Arterial Segment VMT [1]	Arterial Segment VMC [2]	Level of Service Volume/Capacity (V/C)
Central	15,986,843	25,290,000	0.632
Northeast	6,292,472	11,741,000	0.536
Northwest	8,565,757	11,120,000	0.770
Southeast	2,745,861	5,832,000	0.471
Southwest	7,672,342	12,737,000	0.602
Citywide	41,263,275	66,720,000	0.618
Committed Street Level of Service			0.770

[1] Source: ACOG Travel Demand Model; Arterial VMT represents daily traffic volume and distance on arterial roadway segments. A roadway has multiple segments and the VMT of each segment is totaled.

[2] Capacity is calculated based on number of lanes and ACOG capacity standards. A roadway has multiple segments and the capacity of each segment is totaled.

VMT = Vehicle Miles of Travel

VMC = Vehicle Miles of Capacity

ARTERIAL ROADWAY COST ANALYSIS

In Figure 26 street capital cost per VMT is calculated at the 0.770 V/C LOS. The calculation begins by combining the current LOS in each area with the capacity of a new arterial lane mile. The standard for capacity in Oklahoma City is 6,000 vehicle trips per day for an arterial lane. This results in added VMT per lane mile. Based on the V/C ratio (0.770) a new lane mile has a capacity of 4,620 VMT (6,000 vehicle trip capacity x 0.770 V/C = 4,620 VMT per lane mile).

Second, the anticipated construction cost from the City is multiplied by the VMT per lane mile. The City plans for \$3,125,000 to add a new lane during a road widening project. Improvements to existing lanes generally is not an impact fee eligible cost, thus, the applied construction cost is specific to growth. As a result, the construction cost per VMT is \$676 (\$3,125,000 per lane mile / 4,620 VMT per lane mile = \$676 per VMT).

Lastly, there is a portion of demand on the Oklahoma City transportation network that is not attributable to residential or nonresidential demand in the city. This is known as external-external trips, where a vehicle trip begins and ends outside of Oklahoma City but goes through the city boundary. Based on analysis of the ACOG Travel Demand Model, 4.4 percent of trips on Oklahoma City roadways are external-external trips. The external-external demand is factored in the fee calculation by reducing the cost per VMT. As a result, the net Oklahoma City cost per VMT is \$646 (\$676 per VMT x (1-0.044) = \$646 per VMT).

Figure 26. Cost per VMT at Committed Level of Service

Recommended Street Level of Service	
Arterial Lane Mile Capacity	6,000
Level of Service (V/C)	0.770
VMT Added @ LOS	4,620

Cost of Arterial Lane Mile [1]	\$3,125,000
VMT Added @ LOS	4,620
Cost per VMT	\$676

External-External % of Trips	4.4%
Ext - Ext Roadway Cost per VMT	\$30
Net Oklahoma City Cost per VMT	\$646

[1] Based on estimated roadway widening costs

MULTIMODAL LEVEL OF SERVICE AND COST ANALYSIS

The streets impact fee for the Central Benefit Area has been adjusted to address the transportation needs and capital planning for the area. Specifically, in the core area future pedestrian and bike improvements are needed along with some limited motor vehicle infrastructure improvements. Compared to arterial roadway expansion in the other areas detailed above.

Additionally, the City has committed to multimodal expansion in the area through MAPS 4 and other revenues that elevate the current level of service (LOS). Since there are commitments of other revenues to raise the current LOS, the development fee can include the future higher LOS. The following section details the LOS and costs for:

- Bike lanes
- Sidewalks
- Intersections

Bike Lanes

Oklahoma City currently collects a parks and recreation impact fee which assists with funding for recreational multiuse trails. In this case, the streets impact fee program is examining strictly bike lanes, excluding multiuse trails, to ensure there is no double collection.

In Figure 27 the level of service and cost analysis for bike lanes is detailed. Oklahoma City has prioritized bike lane expansion in the Central Benefit Area and the MAPS 4 initiative will fund further expansion through 2029. Over the next five years, there are 22.5 miles of bike lanes planned in the area. Currently there are 92.4 bike lane miles in the area. Thus, by 2029 it is anticipated that 114.9 bike lane miles will be available to residents in the Central Benefit Area.

Following the calculations in Figure 27, a level of service in 2029 is calculated by comparing the anticipated 114.9 miles to the 2029 projected person miles of travel (PMT) in the area. As a result, the level of service is 0.387 miles per 10,000 PMT (114.9 miles / 2,972,310 PMT = 0.387 miles per 10,000 PMT).

Furthermore, the capital cost per PMT is found by combining the level of service with the anticipated construction costs per mile. Oklahoma City budgets \$250,000 per bike lane mile. In this case, the construction cost per PMT is \$9.68 (0.387 miles per 10,000 PMT x \$250,000 per mile = \$9.68 per PMT).

Figure 27. Central Benefit Area Bike Lanes Level of Service & Cost Analysis

Central Benefit Area Bike Lane Expansion Plan	
5-Year Funded Bike Lanes (miles)	22.5
Current Bike Lanes	92.4
2029 Central Benefit Area Bike Lanes	114.9

Level of Service Analysis	
2029 Central Bike Lanes	114.9
2029 Central PMT	2,972,310
2029 Miles per 10,000 PMT	0.387

Cost Analysis	
2029 Miles per 10,000 PMT	0.387
Construction Cost per Mile	\$250,000
Construction Cost per PMT	\$9.68

Sidewalks

Figure 28 details the level of service and cost analysis for sidewalk infrastructure in designated Pedestrian Priority Areas (PPA). Oklahoma City has prioritized pedestrian infrastructure expansion in the Central Benefit Area and the MAPS 4 initiative will fund further expansion through 2029. In the MAPS 4 Master Plan and subsequent *bikewalkokc* plan (2024) six PPAs were identified for sidewalk expansion. Phase 1 totals 43 miles of sidewalk expansion planned in the PPAs. This is assumed to be accomplished over the next five years. Additionally, there are 543.2 existing miles of sidewalks in the area. Thus, by 2029 it is anticipated there will be 586.2 miles available to residents in the Central Benefit Area.

Following the calculations in Figure 28, a level of service in 2029 is calculated by comparing the anticipated 586.2 miles to the 2029 projected person miles of travel (PMT) in the area. As a result, the level of service is 1.972 miles per 10,000 PMT ($586.2 \text{ miles} / 2,972,310 \text{ PMT} = 1.972 \text{ miles per } 10,000 \text{ PMT}$).

Furthermore, the capital cost per PMT is found by combining the level of service with the anticipated construction costs. Oklahoma City budgets \$343,200 per mile for sidewalk construction. In this case, the construction cost per PMT is \$67.68 ($1.972 \text{ miles per } 10,000 \text{ PMT} \times \$343,200 \text{ per mile} = \$67.68 \text{ per PMT}$).

Figure 28. Central Benefit Area Sidewalk Level of Service & Cost Analysis

Central Benefit Area Pedestrian Priority Areas (PPA)	Phase 1 Miles
NE Classen Blvd. at NW 23rd St	10.6
Capital Hill District	5.2
S. Walker Ave. and S. Western Ave. Corridors	10
SW 29th St. District	6.9
SW 44th St. at S. Pennsylvania Ave.	5.2
Stockyards City	5.1
Total	43.0

Assumed Non-Impact Fee Expansion (miles)	43.0
Current Sidewalk Miles	543.2
2029 Central Benefit Area Sidewalk Miles	586.2

Level of Service Analysis

Central Benefit Area PPA Total Miles	586.2
2029 Central Benefit Area PMT	2,972,310
2029 Miles per 10,000 PMT	1.972

Cost Analysis

2029 Miles per 10,000 PMT	1.972
Cost per Linear Mile [1]	\$343,200
Construction Cost per PMT	\$67.68

[1] bikewalkokc cost estimate

Intersections

Over the next five years there are two intersection expansion projects planned in the central area. Listed in Figure 29, the projects are approximately \$3 million and are considered to be 100 percent growth-related and are scheduled to be built in 2028. Conservatively, the growth-related cost is compared to the ten-year projected increase in PMT to find a cost per PMT. As a result, there is a cost of \$29.99 per PMT (\$2,960,000 / 98,694 PMT = \$29.99 per PMT).

Figure 29. Planned Intersection Projects in Central Area

Intersection Project	Year	Cost	Growth's Share	Growth's Cost
S May Ave and SW 29th St	2028	\$1,460,000	100%	\$1,460,000
S Western Ave and SW 44th St	2028	\$1,500,000	100%	\$1,500,000
Total		\$2,960,000		\$2,960,000

Intersection Expansion Growth's Cost	\$2,960,000
10-Year Increase in PMT	98,694
Expansion Cost per PMT	\$29.99

FUTURE GROWTH-RELATED NEED FOR INFRASTRUCTURE EXPANSION

The following section details the 10-year growth-related lane mile needs and costs based on projected development in each benefit area and the level of service. Details on growth projections can be found in Appendix A and Appendix B while levels of service are detailed in the sections above. For example, based on the demand factors and growth projections in the Northeast Benefit Area there is a growth-related need of 55.5 new arterial lane miles over the next ten years to provide the current level of service to the projected demand. The growth-related capital cost of \$173.4 million is found by applying the current construction cost of \$3,125,000 per lane mile.

In total, there is a ten-year growth-related need of 223.9 new arterial lane miles citywide. At current construction costs, the citywide cost is approximately \$700 million over ten years (in current dollars).

Figure 30. Northeast 10-Year Growth-Related Arterial Lane Miles and Cost

Northeast Benefit Area	10-Years
New Arterial Lane Miles	55.5
Cost per Lane Mile	\$3,125,000
Total Growth Capital Cost	\$173,412,973

Figure 31. Northwest 10-Year Growth-Related Arterial Lane Miles and Cost

Northwest Benefit Area	10-Years
New Arterial Lane Miles	78.0
Cost per Lane Mile	\$3,125,000
Total Growth Capital Cost	\$243,621,999

Figure 32. Southeast 10-Year Growth-Related Arterial Lane Miles and Cost

Southeast Benefit Area	10-Years
New Arterial Lane Miles	20.4
Cost per Lane Mile	\$3,125,000
Total Growth Capital Cost	\$63,614,647

Figure 33. Southwest 10-Year Growth-Related Arterial Lane Miles and Cost

Southwest Benefit Area	10-Years
New Arterial Lane Miles	70.1
Cost per Lane Mile	\$3,125,000
Total Growth Capital Cost	\$219,015,545

Summarized in Figure 34, in the Central Benefit Area, over the next ten years there is a need for 23.5 miles of bike lanes and sidewalks and a growth-related cost of \$10.7 million (in current dollars). This is in addition to the existing expansion plans which are funded through other revenues and elevating the current level of service.

Figure 34. Central 10-Year Growth-Related Multimodal Miles and Cost

Central Benefit Area	Growth-Related Miles	Growth-Related Cost
Bike Lanes	4.0	\$1,000,000
Sidewalks	19.5	\$6,692,400
Intersections	-	\$2,960,000
10-Year Total	23.5	\$10,652,400

REVENUE CREDITS & OFFSETS

Evaluation of other revenues funding capital expansion is necessary to ensure the development fee is proportionate and there are no double charging scenarios. The analysis is broken up into street expansion and multimodal credits and offsets to be consistent with the fee calculations in previous sections of this report.

Street Expansion Credits & Offsets

First, the City is anticipating a future General Obligation (GO) bond to fund street infrastructure expansion. The GO bond will be serviced with property tax collection citywide. To avoid potential double payment for the improvements, a credit is necessary because new development that will pay the impact fee will also contribute to future payments on this remaining debt. Listed in Figure 35, this analysis assumes nearly \$316 million in roadway and intersection projects to be included in the GO bond. However, this may be an overestimate. **In this case, overestimating the project cost ensures that the development fee credit covers the double payment scenario. Also, this does not obligate the City to include \$316 million of road projects in the bond referendum.**

Figure 35. Future GO Bond Street Expansion Project Total

Potential Bond Projects	Total Project List
Road Expansion	\$256,557,885
Intersection Improvements	\$59,400,000
10-Year GO Bond Funding	\$315,957,885

The first offset is for future bond payments, it is estimated that \$316 million of the bond will fund a portion of the growth-related cost of the 10-year growth-related need (\$700 million). As a result, 45 percent (\$316 million / \$700 million = 45 percent) of the growth-related is covered by the bond. In this case, an offset for this amount is included in the final impact fee analysis. As stated before, the analysis may be overestimating the bond amount, but overestimating the bond ensures that the development fee offset covers all potential double payment scenarios. Importantly, this offset is for roadway expansions in the NW, NE, SW, SE benefit areas, while the Central Benefit Area is examining multimodal expansion projects and, therefore, uses a different methodology. So, in this case, the offset is for the NW, NE, SW, SE benefit areas.

In this case, future development can shoulder up to 68 percent of the growth-related costs for street expansions through impact fees.

Figure 36. Potential Bond Funding of Growth-Related Projects

Oklahoma City	
Projected Bond Funding for Roadways	\$315,957,885
10-Year Roadway Growth-Related Cost	\$699,665,164
Bond Funding Portion of Growth Cost	45%

The second credit is for the projected property tax payments (principal and interest) for the next ten years. This ensures that revenues from future development stay at or below the 55 percent threshold shown above. In Figure 37, future payments are compared to projected citywide VMT. To account for the time value of money, annual payments per VMT are discounted using a net present value formula based on a recent 2023 bond issuance, 4.07 percent. The total net present value of future payments is \$36.57 per

VMT. Importantly, this credit is for roadway expansions in the NW, NE, SW, SE benefit areas, while the Central Benefit Area is anticipating multimodal expansion projects and, therefore, uses a different methodology. In this case, the credit is for the NW, NE, SW, SE benefit areas.

Figure 37. Credit for Future General Obligation Bond Debt Payments

Year	Estimated Bond Payments	Citywide VMT	Collection per VMT
2025	\$39,090,610	8,200,864	\$4.77
2026	\$39,090,610	8,307,280	\$4.71
2027	\$39,090,610	8,414,647	\$4.65
2028	\$39,090,610	8,522,983	\$4.59
2029	\$39,090,610	8,632,277	\$4.53
2030	\$39,090,610	8,742,641	\$4.47
2031	\$39,090,610	8,853,965	\$4.42
2032	\$39,090,610	8,966,347	\$4.36
2033	\$39,090,610	9,079,751	\$4.31
2034	\$39,090,610	9,194,258	\$4.25
Total	\$390,906,100		\$45.06
		Discount Rate	4.07%
		Total Credit	\$36.57

Multimodal Credits & Offsets

The third credit is for sales tax collection that funds multimodal expansion projects and is applied to just the Central Benefit Area. MAPS 4 is projected to generate \$72.5 million from 2020 to 2028 for bike and sidewalk projects. Shown in Figure 38, there is an assumed \$9 million in sales tax collection annually from 2025 to 2028 for multimodal expansion which is collected citywide. Future payments are compared to projected citywide PMT. To account for the time value of money, annual collection per PMT is discounted using a net present value formula based on a recent 2023 bond issuance, 4.07 percent. The total net present value of future collection is \$3.06 per PMT.

Figure 38. Credit for Future Multimodal Sales Tax Collection

Year	Proj. Sales Tax Collection	Citywide PMT	Collection per PMT
2025	\$9,067,500	10,485,365	\$0.86
2026	\$9,067,500	10,615,504	\$0.85
2027	\$9,067,500	10,746,797	\$0.84
2028	\$9,067,500	10,879,259	\$0.83
Total	\$36,270,000		\$3.38
		Discount Rate	4.07%
		Total Credit	\$3.06

Current Impact Fee Fund Balance Offset

Lastly, the City has existing Streets Impact Fee Fund balances that will fund a portion of future capital plans. To account for this revenue, the fund balance is compared to the 10-year growth-related cost to fund its share of the plans. For example, the Northeast Benefit Area has a \$9 million balance which represents 5.2 percent of the 10-year growth-related cost. This percentage is applied in the impact fee calculation as an offset.

In the Central Benefit Area, a portion of the current fund balance has been earmarked for projects that future impact fee collection will not be funding. In this case, only the remaining unencumbered balance is used for the credit.

Figure 39. Existing Streets Development Fee Fund Balance Credit

Benefit Area	Impact Fee Fund Balances	10-Year Growth Cost	% Fund Balance of Cost
Central [1]	\$204,731	\$10,652,400	1.9%
Northeast	\$9,007,804	\$173,412,973	5.2%
Northwest	\$11,742,382	\$243,621,999	4.8%
Southeast	\$2,291,191	\$63,614,647	3.6%
Southwest	\$10,494,144	\$219,015,545	4.8%

[1] A portion of the current fund balance has been earmarked for projects that future impact fee collection will not be funding. In this case, only the remaining unencumbered balance is used for the credit.

MAXIMUM SUPPORTABLE STREETS DEVELOPMENT FEES

The following section summarizes the inputs for the fee calculation. The inclusion of service areas, assessment areas, and land use types has resulted in a number of maximum supportable permutations. A few examples are provided to help illustrate the calculations.

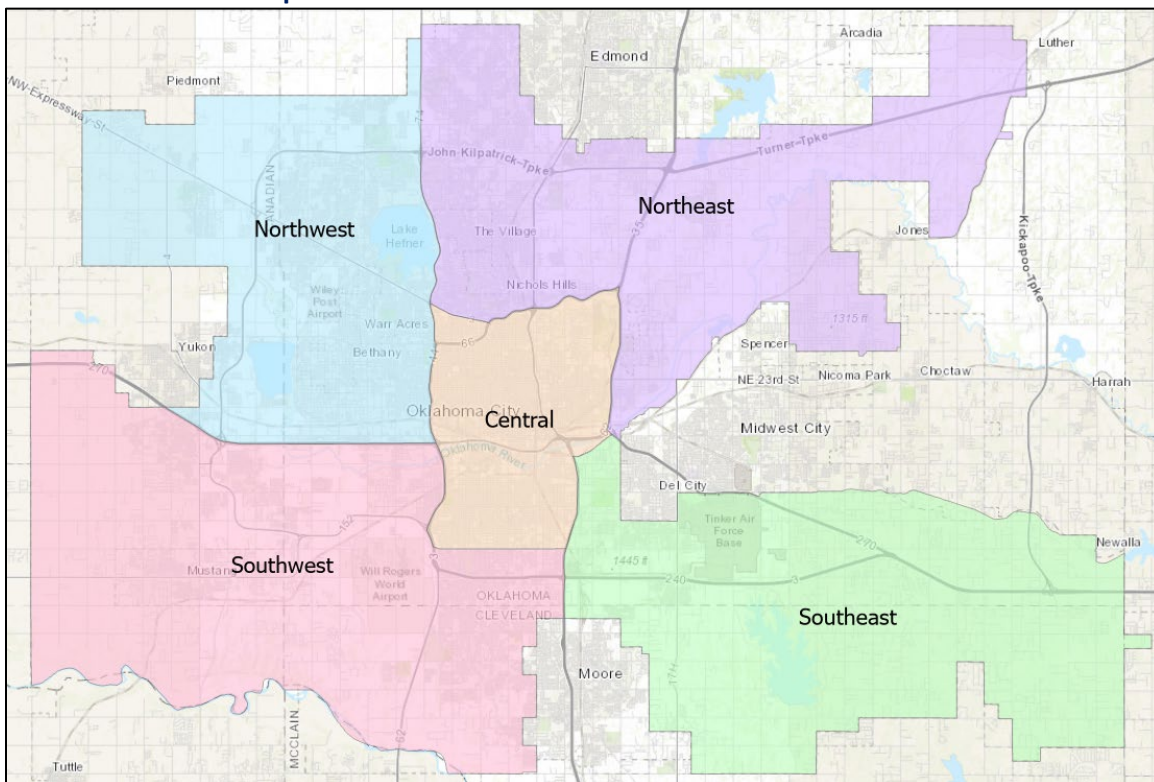
The maximum supportable fees represent the maximum allowable amount under this study. **Importantly, during the initial impact fee study (2016), Oklahoma City adopted fees lower than the maximum supportable amounts. The City plans to do the same with the updated report.** Following the finalization of this report, City staff and TischlerBise will meet with City leadership to discuss reductions from the maximum amounts and potential policies to alleviate impact fee burden on future development.

One policy option is to implement a mixed-use development (MXD) fee schedule in the transportation impact fee program. Detailed in the body of the report (page 23), MXD have lower vehicle trip generation because of “internal trip capture.” Overall, there is a 29 percent reduction in vehicle trip demand, thus, an MXD fee would receive a 29 percent reduction. The City has also discussed implementing a TOD policy which would apply a trip reduction factor to the demand factor and resulting impact fee.

Furthermore, Oklahoma Statute §62-895 L(1) allows municipal ordinances to include an exemption or reduction to the impact fees for projects that create desirable economic development, quality jobs, desirable land use that is in short supply, or affordable housing. Such a policy is at the discretion of the City Council.

For reference, below is a map of the service areas.

Figure 40. Service Area Map



Northeast Service Area

The cost components for Northeast Service Area are listed at the upper portion of Figure 41. As a result of the credits, the net cost per VMT is \$283.85.

The streets development fee in the area is based on the VMT per housing unit by square footage and 1,000 square feet of nonresidential floor area. For example, the maximum supportable fee for a 2,100 square foot housing unit in the Core Assessment Area is \$3,298 (\$283.85 per VMT x 11.62 VMTs per unit = \$3,298 per housing unit, rounded).

Figure 41. Northeast Service Area Streets Development Fee (1)

Northeast

Fee Component	Cost per VMT
Roadway Expansion	\$646.00
Gross Total	\$646.00
Future Bond Portion of Need (45%)	(\$291.99)
Future Bond Payment Credit	(\$36.57)
Credit for Fund Balance (5.2%)	(\$33.59)
Net Total	\$283.85

Core Assessment Area

Square Feet of Dwelling Unit	VMT per Unit	Maximum Supportable Fee	Current Fees	Increase/Decrease
Residential (per housing unit)				
Under 1,000	6.47	\$1,836	\$288	\$1,548
1,000 to 1,499	8.10	\$2,299	\$400	\$1,899
1,500 to 1,999	10.11	\$2,870	\$560	\$2,310
2,000 to 2,499	11.62	\$3,298	\$720	\$2,578
2,500 to 2,999	12.81	\$3,636	\$880	\$2,756
3,000 to 3,499	13.81	\$3,920	\$1,040	\$2,880
3,500 to 3,999	14.66	\$4,161	\$1,200	\$2,961
4,000 or More	15.40	\$4,371	\$1,360	\$3,011

Core Assessment Area

Development Type	VMT per KSF	Maximum Supportable Fee	Current Fees	Increase/Decrease
Nonresidential (per 1,000 square feet)				
Industrial	5.80	\$1,646	\$350	\$1,296
Warehousing/Distribution	2.13	\$605	\$350	\$255
Lodging (per room)	4.73	\$1,343	\$1,030	\$313
Office	8.38	\$2,379	\$1,030	\$1,349
Institutional	12.43	\$3,528	\$1,030	\$2,498
Customer-Oriented Low	13.30	\$3,775	\$920	\$2,855
Customer-Oriented Moderate	31.77	\$9,018	\$1,270	\$7,748
Customer-Oriented High	57.97	\$16,455	\$2,190	\$14,265

Figure 42. Northeast Service Area Streets Development Fee (2)

Infill Assessment Area

Square Feet of Dwelling Unit	VMT per Unit	Maximum Supportable Fee	Current Fees	Increase/Decrease
Residential (per housing unit)				
Under 1,000	7.02	\$1,993	\$342	\$1,651
1,000 to 1,499	8.79	\$2,495	\$475	\$2,020
1,500 to 1,999	10.97	\$3,114	\$665	\$2,449
2,000 to 2,499	12.60	\$3,576	\$855	\$2,721
2,500 to 2,999	13.89	\$3,943	\$1,045	\$2,898
3,000 to 3,499	14.98	\$4,252	\$1,235	\$3,017
3,500 to 3,999	15.91	\$4,516	\$1,425	\$3,091
4,000 or More	16.71	\$4,743	\$1,615	\$3,128

Infill Assessment Area

Development Type	VMT per KSF	Maximum Supportable Fee	Current Fees	Increase/Decrease
Nonresidential (per 1,000 square feet)				
Industrial	6.29	\$1,785	\$400	\$1,385
Warehousing/Distribution	2.31	\$656	\$400	\$256
Lodging (per room)	5.13	\$1,456	\$1,170	\$286
Office	9.09	\$2,580	\$1,170	\$1,410
Institutional	13.48	\$3,826	\$1,170	\$2,656
Customer-Oriented Low	14.43	\$4,096	\$1,050	\$3,046
Customer-Oriented Moderate	34.46	\$9,781	\$1,460	\$8,321
Customer-Oriented High	62.89	\$17,851	\$2,510	\$15,341

New Growth Assessment Area

Square Feet of Dwelling Unit	VMT per Unit	Maximum Supportable Fee	Current Fees	Increase/Decrease
Residential (per housing unit)				
Under 1,000	7.99	\$2,268	\$405	\$1,863
1,000 to 1,499	10.01	\$2,841	\$563	\$2,279
1,500 to 1,999	12.49	\$3,545	\$788	\$2,758
2,000 to 2,499	14.35	\$4,073	\$1,013	\$3,061
2,500 to 2,999	15.82	\$4,490	\$1,238	\$3,253
3,000 to 3,499	17.06	\$4,842	\$1,463	\$3,380
3,500 to 3,999	18.11	\$5,140	\$1,688	\$3,453
4,000 or More	19.03	\$5,402	\$1,913	\$3,490

New Growth Assessment Area

Development Type	VMT per KSF	Maximum Supportable Fee	Current Fees	Increase/Decrease
Nonresidential (per 1,000 square feet)				
Industrial	7.16	\$2,032	\$490	\$1,542
Warehousing/Distribution	2.63	\$747	\$490	\$257
Lodging (per room)	5.84	\$1,658	\$1,390	\$268
Office	10.36	\$2,941	\$1,390	\$1,551
Institutional	15.36	\$4,360	\$1,390	\$2,970
Customer-Oriented Low	16.43	\$4,664	\$1,240	\$3,424
Customer-Oriented Moderate	39.24	\$11,138	\$1,730	\$9,408
Customer-Oriented High	71.62	\$20,329	\$2,970	\$17,359

Figure 43. Northeast Service Area Streets Development Fee (3)

Rural Assessment Area

Square Feet of Dwelling Unit	VMT per Unit	Maximum Supportable Fee	Current Fees	Increase/ Decrease
Residential (per housing unit)				
Under 1,000	10.79	\$3,063	\$405	\$2,658
1,000 to 1,499	13.52	\$3,838	\$563	\$3,276
1,500 to 1,999	16.86	\$4,786	\$788	\$3,999
2,000 to 2,499	19.38	\$5,501	\$1,013	\$4,489
2,500 to 2,999	21.36	\$6,063	\$1,238	\$4,826
3,000 to 3,499	23.03	\$6,537	\$1,463	\$5,075
3,500 to 3,999	24.46	\$6,943	\$1,688	\$5,256
4,000 or More	25.69	\$7,292	\$1,913	\$5,380

Rural Assessment Area

Development Type	VMT per KSF	Maximum Supportable Fee	Current Fees	Increase/ Decrease
Nonresidential (per 1,000 square feet)				
Industrial	9.67	\$2,745	\$730	\$2,015
Warehousing/Distribution	3.55	\$1,008	\$730	\$278
Lodging (per room)	7.88	\$2,237	\$1,480	\$757
Office	13.98	\$3,968	\$1,480	\$2,488
Institutional	20.73	\$5,884	\$1,480	\$4,404
Customer-Oriented Low	22.19	\$6,299	\$1,240	\$5,059
Customer-Oriented Moderate	52.99	\$15,041	\$1,730	\$13,311
Customer-Oriented High	96.70	\$27,448	\$2,970	\$24,478

Northwest Service Area

The following details the maximum supportable fees for the Northwest Service Area.

Figure 44. Northwest Service Area Streets Development Fee (1)

Northwest

Fee Component	Cost per VMT
Roadway Expansion	\$646.00
Gross Total	\$646.00
Future Bond Portion of Need (45%)	(\$291.99)
Future Bond Payment Credit	(\$36.57)
Credit for Fund Balance (4.8%)	(\$31.01)
Net Total	\$286.43

Infill Assessment Area

Square Feet of Dwelling Unit	VMT per Unit	Maximum Supportable Fee	Current Fees	Increase/ Decrease
Residential (per housing unit)				
Under 1,000	7.75	\$2,220	\$342	\$1,878
1,000 to 1,499	9.71	\$2,781	\$475	\$2,306
1,500 to 1,999	12.11	\$3,469	\$665	\$2,804
2,000 to 2,499	13.92	\$3,987	\$855	\$3,132
2,500 to 2,999	15.34	\$4,394	\$1,045	\$3,349
3,000 to 3,499	16.54	\$4,738	\$1,235	\$3,503
3,500 to 3,999	17.56	\$5,030	\$1,425	\$3,605
4,000 or More	18.45	\$5,285	\$1,615	\$3,670

Infill Assessment Area

Development Type	VMT per KSF	Maximum Supportable Fee	Current Fees	Increase/ Decrease
Nonresidential (per 1,000 square feet)				
Industrial	6.94	\$1,988	\$400	\$1,588
Warehousing/Distribution	2.55	\$730	\$400	\$330
Lodging (per room)	5.67	\$1,624	\$1,170	\$454
Office	10.07	\$2,884	\$1,170	\$1,714
Institutional	14.90	\$4,268	\$1,170	\$3,098
Customer-Oriented Low	15.97	\$4,574	\$1,050	\$3,524
Customer-Oriented Moderate	38.14	\$10,924	\$1,460	\$9,464
Customer-Oriented High	69.61	\$19,938	\$2,510	\$17,428

Figure 45. Northwest Service Area Streets Development Fee (2)

New Growth Assessment Area

Square Feet of Dwelling Unit	VMT per Unit	Maximum Supportable Fee	Current Fees	Increase/Decrease
Residential (per housing unit)				
Under 1,000	8.83	\$2,529	\$405	\$2,124
1,000 to 1,499	11.06	\$3,168	\$563	\$2,606
1,500 to 1,999	13.79	\$3,950	\$788	\$3,163
2,000 to 2,499	15.85	\$4,540	\$1,013	\$3,528
2,500 to 2,999	17.47	\$5,004	\$1,238	\$3,767
3,000 to 3,499	18.84	\$5,396	\$1,463	\$3,934
3,500 to 3,999	20.00	\$5,729	\$1,688	\$4,042
4,000 or More	21.01	\$6,018	\$1,913	\$4,106

New Growth Assessment Area

Development Type	VMT per KSF	Maximum Supportable Fee	Current Fees	Increase/Decrease
Nonresidential (per 1,000 square feet)				
Industrial	7.90	\$2,263	\$490	\$1,773
Warehousing/Distribution	2.90	\$831	\$490	\$341
Lodging (per room)	6.46	\$1,850	\$1,390	\$460
Office	11.46	\$3,282	\$1,390	\$1,892
Institutional	16.97	\$4,861	\$1,390	\$3,471
Customer-Oriented Low	18.19	\$5,210	\$1,240	\$3,970
Customer-Oriented Moderate	43.43	\$12,440	\$1,730	\$10,710
Customer-Oriented High	79.26	\$22,702	\$2,970	\$19,732

Rural Assessment Area

Square Feet of Dwelling Unit	VMT per Unit	Maximum Supportable Fee	Current Fees	Increase/Decrease
Residential (per housing unit)				
Under 1,000	11.92	\$3,414	\$405	\$3,009
1,000 to 1,499	14.93	\$4,276	\$563	\$3,714
1,500 to 1,999	18.62	\$5,333	\$788	\$4,546
2,000 to 2,499	21.40	\$6,130	\$1,013	\$5,118
2,500 to 2,999	23.59	\$6,757	\$1,238	\$5,520
3,000 to 3,499	25.43	\$7,284	\$1,463	\$5,822
3,500 to 3,999	27.01	\$7,736	\$1,688	\$6,049
4,000 or More	28.37	\$8,126	\$1,913	\$6,214

Rural Assessment Area

Development Type	VMT per KSF	Maximum Supportable Fee	Current Fees	Increase/Decrease
Nonresidential (per 1,000 square feet)				
Industrial	10.67	\$3,056	\$730	\$2,326
Warehousing/Distribution	3.92	\$1,123	\$730	\$393
Lodging (per room)	8.72	\$2,498	\$1,480	\$1,018
Office	15.48	\$4,434	\$1,480	\$2,954
Institutional	22.92	\$6,565	\$1,480	\$5,085
Customer-Oriented Low	24.56	\$7,035	\$1,240	\$5,795
Customer-Oriented Moderate	58.65	\$16,799	\$1,730	\$15,069
Customer-Oriented High	107.02	\$30,654	\$2,970	\$27,684

Southeast Service Area

The following details the maximum supportable fees for the Southeast Service Area.

Figure 46. Southeast Service Area Streets Development Fee (1)

Southeast

Fee Component	Cost per VMT
Roadway Expansion	\$646.00
Gross Total	\$646.00
Future Bond Portion of Need (45%)	(\$291.99)
Future Bond Payment Credit	(\$36.57)
Credit for Fund Balance (3.6%)	(\$23.26)
Net Total	\$294.18

Infill Assessment Area

Square Feet of Dwelling Unit	VMT per Unit	Maximum Supportable Fee	Current Fees	Increase/ Decrease
Residential (per housing unit)				
Under 1,000	7.78	\$2,289	\$342	\$1,947
1,000 to 1,499	9.74	\$2,865	\$475	\$2,390
1,500 to 1,999	12.15	\$3,574	\$665	\$2,909
2,000 to 2,499	13.96	\$4,107	\$855	\$3,252
2,500 to 2,999	15.39	\$4,527	\$1,045	\$3,482
3,000 to 3,499	16.60	\$4,883	\$1,235	\$3,648
3,500 to 3,999	17.62	\$5,183	\$1,425	\$3,758
4,000 or More	18.51	\$5,445	\$1,615	\$3,830

Infill Assessment Area

Development Type	VMT per KSF	Maximum Supportable Fee	Current Fees	Increase/ Decrease
Nonresidential (per 1,000 square feet)				
Industrial	6.97	\$2,050	\$400	\$1,650
Warehousing/Distribution	2.56	\$753	\$400	\$353
Lodging (per room)	5.67	\$1,668	\$1,170	\$498
Office	10.12	\$2,977	\$1,170	\$1,807
Institutional	14.98	\$4,407	\$1,170	\$3,237
Customer-Oriented Low	15.97	\$4,698	\$1,050	\$3,648
Customer-Oriented Moderate	38.14	\$11,220	\$1,460	\$9,760
Customer-Oriented High	69.61	\$20,478	\$2,510	\$17,968

Figure 47. Southeast Service Area Streets Development Fee (2)

New Growth Assessment Area

Square Feet of Dwelling Unit	VMТ per Unit	Maximum Supportable Fee	Current Fees	Increase/Decrease
Residential (per housing unit)				
Under 1,000	8.86	\$2,606	\$405	\$2,201
1,000 to 1,499	11.09	\$3,262	\$563	\$2,700
1,500 to 1,999	13.83	\$4,068	\$788	\$3,281
2,000 to 2,499	15.90	\$4,677	\$1,013	\$3,665
2,500 to 2,999	17.53	\$5,157	\$1,238	\$3,920
3,000 to 3,499	18.90	\$5,560	\$1,463	\$4,098
3,500 to 3,999	20.07	\$5,904	\$1,688	\$4,217
4,000 or More	21.08	\$6,201	\$1,913	\$4,289

New Growth Assessment Area

Development Type	VMТ per KSF	Maximum Supportable Fee	Current Fees	Increase/Decrease
Nonresidential (per 1,000 square feet)				
Industrial	7.94	\$2,336	\$490	\$1,846
Warehousing/Distribution	2.92	\$859	\$490	\$369
Lodging (per room)	6.46	\$1,900	\$1,390	\$510
Office	11.52	\$3,389	\$1,390	\$1,999
Institutional	17.05	\$5,016	\$1,390	\$3,626
Customer-Oriented Low	18.19	\$5,351	\$1,240	\$4,111
Customer-Oriented Moderate	43.43	\$12,776	\$1,730	\$11,046
Customer-Oriented High	79.26	\$23,317	\$2,970	\$20,347

Rural Assessment Area

Square Feet of Dwelling Unit	VMТ per Unit	Maximum Supportable Fee	Current Fees	Increase/Decrease
Residential (per housing unit)				
Under 1,000	11.96	\$3,518	\$405	\$3,113
1,000 to 1,499	14.98	\$4,407	\$563	\$3,845
1,500 to 1,999	18.68	\$5,495	\$788	\$4,708
2,000 to 2,499	21.47	\$6,316	\$1,013	\$5,304
2,500 to 2,999	23.66	\$6,960	\$1,238	\$5,723
3,000 to 3,499	25.52	\$7,507	\$1,463	\$6,045
3,500 to 3,999	27.09	\$7,969	\$1,688	\$6,282
4,000 or More	28.47	\$8,375	\$1,913	\$6,463

Rural Assessment Area

Development Type	VMТ per KSF	Maximum Supportable Fee	Current Fees	Increase/Decrease
Nonresidential (per 1,000 square feet)				
Industrial	10.72	\$3,154	\$730	\$2,424
Warehousing/Distribution	3.94	\$1,159	\$730	\$429
Lodging (per room)	8.72	\$2,565	\$1,480	\$1,085
Office	15.55	\$4,574	\$1,480	\$3,094
Institutional	23.03	\$6,775	\$1,480	\$5,295
Customer-Oriented Low	24.56	\$7,225	\$1,240	\$5,985
Customer-Oriented Moderate	58.65	\$17,254	\$1,730	\$15,524
Customer-Oriented High	107.02	\$31,483	\$2,970	\$28,513

Southwest Service Area

The following details the maximum supportable fees for the Southwest Service Area.

Figure 48. Southwest Service Area Streets Development Fee (1)

Southwest

Fee Component	Cost per VMT
Roadway Expansion	\$646.00
Gross Total	\$646.00
Future Bond Portion of Need (45%)	(\$291.99)
Future Bond Payment Credit	(\$36.57)
Credit for Fund Balance (4.8%)	(\$31.01)
Net Total	\$286.43

Infill Assessment Area

Square Feet of Dwelling Unit	VMT per Unit	Maximum Supportable Fee	Current Fees	Increase/ Decrease
Residential (per housing unit)				
Under 1,000	7.35	\$2,105	\$342	\$1,763
1,000 to 1,499	9.20	\$2,635	\$475	\$2,160
1,500 to 1,999	11.48	\$3,288	\$665	\$2,623
2,000 to 2,499	13.19	\$3,778	\$855	\$2,923
2,500 to 2,999	14.54	\$4,165	\$1,045	\$3,120
3,000 to 3,499	15.68	\$4,491	\$1,235	\$3,256
3,500 to 3,999	16.65	\$4,769	\$1,425	\$3,344
4,000 or More	17.49	\$5,010	\$1,615	\$3,395

Infill Assessment Area

Development Type	VMT per KSF	Maximum Supportable Fee	Current Fees	Increase/ Decrease
Nonresidential (per 1,000 square feet)				
Industrial	6.58	\$1,885	\$400	\$1,485
Warehousing/Distribution	2.41	\$690	\$400	\$290
Lodging (per room)	5.38	\$1,541	\$1,170	\$371
Office	9.53	\$2,730	\$1,170	\$1,560
Institutional	14.12	\$4,044	\$1,170	\$2,874
Customer-Oriented Low	15.13	\$4,334	\$1,050	\$3,284
Customer-Oriented Moderate	36.13	\$10,349	\$1,460	\$8,889
Customer-Oriented High	65.94	\$18,887	\$2,510	\$16,377

Figure 49. Southwest Service Area Streets Development Fee (2)

New Growth Assessment Area

Square Feet of Dwelling Unit	VMT per Unit	Maximum Supportable Fee	Current Fees	Increase/Decrease
Residential (per housing unit)				
Under 1,000	8.37	\$2,397	\$405	\$1,992
1,000 to 1,499	10.48	\$3,002	\$563	\$2,440
1,500 to 1,999	13.07	\$3,744	\$788	\$2,957
2,000 to 2,499	15.02	\$4,302	\$1,013	\$3,290
2,500 to 2,999	16.56	\$4,743	\$1,238	\$3,506
3,000 to 3,499	17.86	\$5,116	\$1,463	\$3,654
3,500 to 3,999	18.96	\$5,431	\$1,688	\$3,744
4,000 or More	19.92	\$5,706	\$1,913	\$3,794

New Growth Assessment Area

Development Type	VMT per KSF	Maximum Supportable Fee	Current Fees	Increase/Decrease
Nonresidential (per 1,000 square feet)				
Industrial	7.49	\$2,145	\$490	\$1,655
Warehousing/Distribution	2.75	\$788	\$490	\$298
Lodging (per room)	6.12	\$1,753	\$1,390	\$363
Office	10.85	\$3,108	\$1,390	\$1,718
Institutional	16.08	\$4,606	\$1,390	\$3,216
Customer-Oriented Low	17.23	\$4,935	\$1,240	\$3,695
Customer-Oriented Moderate	41.15	\$11,787	\$1,730	\$10,057
Customer-Oriented High	75.09	\$21,508	\$2,970	\$18,538

Rural Assessment Area

Square Feet of Dwelling Unit	VMT per Unit	Maximum Supportable Fee	Current Fees	Increase/Decrease
Residential (per housing unit)				
Under 1,000	11.30	\$3,237	\$405	\$2,832
1,000 to 1,499	14.15	\$4,053	\$563	\$3,491
1,500 to 1,999	17.65	\$5,055	\$788	\$4,268
2,000 to 2,499	20.28	\$5,809	\$1,013	\$4,797
2,500 to 2,999	22.36	\$6,405	\$1,238	\$5,168
3,000 to 3,499	24.11	\$6,906	\$1,463	\$5,444
3,500 to 3,999	25.60	\$7,333	\$1,688	\$5,646
4,000 or More	26.90	\$7,705	\$1,913	\$5,793

Rural Assessment Area

Development Type	VMT per KSF	Maximum Supportable Fee	Current Fees	Increase/Decrease
Nonresidential (per 1,000 square feet)				
Industrial	10.11	\$2,896	\$730	\$2,166
Warehousing/Distribution	3.71	\$1,063	\$730	\$333
Lodging (per room)	8.27	\$2,369	\$1,480	\$889
Office	14.66	\$4,199	\$1,480	\$2,719
Institutional	21.72	\$6,221	\$1,480	\$4,741
Customer-Oriented Low	23.27	\$6,665	\$1,240	\$5,425
Customer-Oriented Moderate	55.56	\$15,914	\$1,730	\$14,184
Customer-Oriented High	101.39	\$29,041	\$2,970	\$26,071

Central Service Area

The cost components for Central Service Area are listed at the upper portion of Figure 50. As a result of the credit, the net cost per PMT is \$102.25.

The streets development fee in the area is based on the PMT per housing unit by square footage and 1,000 square feet of nonresidential floor area. For example, the fee for a 2,100 square foot housing unit in the Core Assessment Area is \$1,505 (\$102.25 per PMT x 14.72 PMTs per unit = \$1,505 per housing unit, rounded).

Figure 50. Central Service Area Streets Development Fees (1)

Fee Component	Cost per PMT
Bike Lane Expansion	\$9.68
Sidewalk Expansion	\$67.68
Intersection Expansion	\$29.99
Gross Total	\$107.35
Credit for Fund Balance (1.9%)	(\$2.04)
MAPS 4 Credit	(\$3.06)
Net Total	\$102.25

Core Assessment Area

Square Feet of Dwelling	PMT per Unit	Maximum Supportable Fee	Current Fees	Increase/Decrease
Residential (per dwelling unit)				
Under 1,000	8.21	\$839	\$288	\$551
1,000 to 1,499	10.27	\$1,050	\$400	\$650
1,500 to 1,999	12.81	\$1,310	\$560	\$750
2,000 to 2,499	14.72	\$1,505	\$720	\$785
2,500 to 2,999	16.21	\$1,657	\$880	\$777
3,000 to 3,499	17.48	\$1,787	\$1,040	\$747
3,500 to 3,999	18.57	\$1,899	\$1,200	\$699
4,000 or More	19.50	\$1,994	\$1,360	\$634

Core Assessment Area

Development Type	PMT per KSF	Maximum Supportable Fee	Current Fees	Increase/Decrease
Nonresidential (per 1,000 square feet)				
Industrial	7.40	\$757	\$350	\$407
Warehousing/Distribution	2.74	\$280	\$350	(\$70)
Lodging (per room)	6.07	\$621	\$1,030	(\$409)
Office	10.72	\$1,096	\$1,030	\$66
Institutional	15.83	\$1,619	\$1,030	\$589
Customer-Oriented Low	17.01	\$1,739	\$920	\$819
Customer-Oriented Moderate	40.55	\$4,146	\$1,270	\$2,876
Customer-Oriented High	73.97	\$7,563	\$2,190	\$5,373

Figure 51. Central Service Area Streets Development Fees (2)

Infill Assessment Area

Square Feet of Dwelling Unit	PMT per Unit	Maximum Supportable Fee	Current Fees	Increase/ Decrease
Residential (per housing unit)				
Under 1,000	8.91	\$911	\$342	\$569
1,000 to 1,499	11.14	\$1,139	\$475	\$664
1,500 to 1,999	13.89	\$1,420	\$665	\$755
2,000 to 2,499	15.97	\$1,633	\$855	\$778
2,500 to 2,999	17.59	\$1,799	\$1,045	\$754
3,000 to 3,499	18.96	\$1,939	\$1,235	\$704
3,500 to 3,999	20.14	\$2,059	\$1,425	\$634
4,000 or More	21.16	\$2,164	\$1,615	\$549

Infill Assessment Area

Development Type	PMT per KSF	Maximum Supportable Fee	Current Fees	Increase/ Decrease
Nonresidential (per 1,000 square feet)				
Industrial	8.03	\$821	\$400	\$421
Warehousing/Distribution	2.97	\$304	\$400	(\$96)
Lodging (per room)	6.58	\$673	\$1,170	(\$497)
Office	11.63	\$1,189	\$1,170	\$19
Institutional	17.16	\$1,755	\$1,170	\$585
Customer-Oriented Low	18.44	\$1,885	\$1,050	\$835
Customer-Oriented Moderate	43.98	\$4,497	\$1,460	\$3,037
Customer-Oriented High	80.24	\$8,205	\$2,510	\$5,695

STREETS DEVELOPMENT FEE REVENUE

Projected fee revenue shown in the following figures for each benefit area is based on the development projections and the updated maximum supportable streets development fees. Averages are calculated for each development type since there is a variety of maximum fee amounts as a result of the assessment areas and residential fee by size. Importantly, the incremental expansion methodology applied in the street impact fee calculation captures the growth cost at the current level of service. Since there are credits included in the fee calculations there is a funding gap for each area, however, the credits are for other capital revenues which will fill the funding gap.

Furthermore, if the City were to adopt the fees at lower than the maximum, other revenues will need to be raised to continue the current level of service.

Northeast Benefit Area

Projected development fee revenue equals \$73.3 million compared to \$173.4 million in growth-related costs. The remaining balance of \$100 million is the result of the credits included in the fee analysis for other revenues, which will provide funding for the gap. 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.

Figure 52. Northeast Benefit Area Projected Revenue

Infrastructure Costs for Transportation Facilities

	Total Cost	Growth Cost
10-Year Roadway Need	\$173,412,973	\$173,412,973
Total Expenditures	\$173,412,973	\$173,412,973

Projected Development Impact Fee Revenue

		Single Family \$4,217 per unit	Multifamily \$2,131 per unit	Retail \$7,420 per KSF	Office \$2,761 per KSF	Industrial \$1,909 per KSF	Institutional \$4,093 per KSF
Year		Housing Units	Housing Units	KSF	KSF	KSF	KSF
Base	2024	49,138	15,408	12,521	10,152	17,679	8,076
1	2025	49,831	15,625	12,769	10,323	18,017	8,261
2	2026	50,534	15,846	13,016	10,495	18,357	8,447
3	2027	51,247	16,070	13,264	10,666	18,696	8,632
4	2028	51,972	16,297	13,511	10,837	19,035	8,817
5	2029	52,707	16,527	13,759	11,008	19,374	9,002
6	2030	53,453	16,761	14,006	11,180	19,713	9,188
7	2031	54,210	16,998	14,254	11,351	20,052	9,373
8	2032	54,978	17,239	14,501	11,522	20,392	9,558
9	2033	55,758	17,484	14,749	11,693	20,730	9,743
10	2034	56,549	17,732	14,996	11,865	21,069	9,929
Ten-Year Increase		7,411	2,324	2,475	1,712	3,391	1,853
Projected Revenue		\$31,248,482	\$4,951,282	\$18,364,660	\$4,727,207	\$6,471,248	\$7,582,487
						10-Year Projected Revenue	\$73,345,000
						10-Year Total Expenditures	\$173,413,000
						10-Year Non-Impact Fee Funding	\$100,068,000

Figure 53. Northwest Benefit Area Projected Revenue

Infrastructure Costs for Transportation Facilities

	Total Cost	Growth Cost
10-Year Roadway Need	\$243,621,999	\$243,621,999
Total Expenditures	\$243,621,999	\$243,621,999

Projected Development Impact Fee Revenue

		Single Family \$4,699 per unit	Multifamily \$2,375 per unit	Retail \$8,287 per KSF	Office \$3,083 per KSF	Industrial \$2,126 per KSF	Institutional \$4,565 per KSF
Year		Housing Units	Housing Units	KSF	KSF	KSF	KSF
Base	2024	64,891	20,348	16,211	8,722	24,109	7,681
1	2025	66,400	20,821	16,325	8,801	24,265	7,767
2	2026	67,931	21,301	16,440	8,880	24,421	7,852
3	2027	69,485	21,788	16,554	8,959	24,578	7,938
4	2028	71,061	22,283	16,668	9,038	24,735	8,023
5	2029	72,662	22,784	16,782	9,117	24,891	8,108
6	2030	74,286	23,294	16,896	9,196	25,048	8,194
7	2031	75,934	23,811	17,010	9,275	25,204	8,280
8	2032	77,607	24,335	17,125	9,354	25,360	8,365
9	2033	79,305	24,867	17,239	9,433	25,517	8,450
10	2034	81,028	25,408	17,353	9,512	25,673	8,536
Ten-Year Increase		16,137	5,060	1,142	790	1,564	855
Projected Revenue		\$75,827,763	\$12,014,970	\$9,465,204	\$2,436,242	\$3,325,285	\$3,901,278
10-Year Projected Revenue						\$106,971,000	
10-Year Total Expenditures						\$243,622,000	
10-Year Non-Impact Fee Funding						\$136,651,000	

Figure 54. Southeast Benefit Area Projected Revenue

Infrastructure Costs for Transportation Facilities

	Total Cost	Growth Cost
10-Year Roadway Need	\$63,614,647	\$63,614,647
Total Expenditures	\$63,614,647	\$63,614,647

Projected Development Impact Fee Revenue

		Single Family \$4,842 per unit	Multifamily \$2,448 per unit	Retail \$8,511 per KSF	Office \$3,183 per KSF	Industrial \$2,193 per KSF	Institutional \$4,712 per KSF
Year		Housing Units	Housing Units	KSF	KSF	KSF	KSF
Base	2024	19,905	6,242	4,037	1,084	22,333	4,745
1	2025	20,099	6,302	4,130	1,148	22,461	4,815
2	2026	20,294	6,364	4,224	1,213	22,589	4,885
3	2027	20,494	6,426	4,317	1,278	22,717	4,955
4	2028	20,696	6,489	4,411	1,342	22,845	5,025
5	2029	20,900	6,554	4,504	1,407	22,973	5,095
6	2030	21,109	6,619	4,597	1,472	23,101	5,165
7	2031	21,320	6,685	4,691	1,536	23,229	5,235
8	2032	21,534	6,753	4,784	1,601	23,357	5,305
9	2033	21,751	6,821	4,878	1,665	23,485	5,374
10	2034	21,972	6,890	4,971	1,730	23,613	5,444
Ten-Year Increase		2,067	648	934	647	1,280	699
Projected Revenue		\$10,008,414	\$1,585,980	\$7,953,457	\$2,057,943	\$2,807,851	\$3,294,752
10-Year Projected Revenue						\$27,708,000	
10-Year Total Expenditures						\$63,615,000	
10-Year Non-Impact Fee Funding						\$35,907,000	

Figure 55. Southwest Benefit Area Projected Revenue

Infrastructure Costs for Transportation Facilities

	Total Cost	Growth Cost
10-Year Roadway Need	\$219,015,545	\$219,015,545
Total Expenditures	\$219,015,545	\$219,015,545

Projected Development Impact Fee Revenue

		Single Family \$4,454 per unit	Multifamily \$2,251 per unit	Retail \$7,851 per KSF	Office \$2,919 per KSF	Industrial \$2,015 per KSF	Institutional \$4,325 per KSF
Year		Housing Units	Housing Units	KSF	KSF	KSF	KSF
Base	2024	61,331	19,232	13,846	4,564	29,345	7,843
1	2025	62,408	19,569	14,068	4,718	29,648	8,009
2	2026	63,501	19,912	14,290	4,871	29,953	8,175
3	2027	64,610	20,259	14,512	5,025	30,257	8,342
4	2028	65,735	20,612	14,734	5,178	30,561	8,507
5	2029	66,877	20,970	14,956	5,332	30,865	8,674
6	2030	68,036	21,334	15,177	5,485	31,169	8,840
7	2031	69,212	21,703	15,399	5,639	31,473	9,006
8	2032	70,406	22,077	15,621	5,792	31,777	9,172
9	2033	71,617	22,457	15,843	5,946	32,081	9,338
10	2034	72,847	22,842	16,065	6,100	32,385	9,504
Ten-Year Increase		11,516	3,610	2,219	1,536	3,040	1,661
Projected Revenue		\$51,292,264	\$8,126,110	\$17,424,687	\$4,482,457	\$6,126,408	\$7,184,257
10-Year Projected Revenue						\$94,636,000	
10-Year Total Expenditures						\$219,016,000	
10-Year Non-Impact Fee Funding						\$124,380,000	

The maximum supportable impact fees in the Central Benefit Area are projected to generate \$9 million in revenue while there is a \$10.6 million growth-related cost over the next ten years. The funding gap is the result of the credits included in the analysis for other revenues. Additionally, the non-impact fee funding amount (\$22 million) represents the existing funding and projects which are addressing the current level of service in the area from the current MAPS 4 initiative.

Figure 56. Central Benefit Area Streets Development Fee Revenue

Infrastructure Costs for Transportation Facilities

	Total Cost	Growth Cost
Bike Lane Expansion	\$6,625,000	\$1,000,000
Sidewalk Expansion	\$21,450,000	\$6,692,400
Intersection Expansion	\$2,960,000	\$2,960,000
Total Expenditures	\$31,035,000	\$10,652,400

Projected Development Impact Fee Revenue

		Single Family \$1,657 per unit	Multifamily \$839 per unit	Retail \$2,943 per KSF	Office \$1,096 per KSF	Industrial \$757 per KSF	Institutional \$1,619 per KSF
Year		Housing Units	Housing Units	KSF	KSF	KSF	KSF
Base	2024	50,800	20,699	22,546	32,779	28,811	21,457
1	2025	51,023	20,790	22,606	32,834	28,875	21,545
2	2026	51,249	20,882	22,667	32,889	28,939	21,633
3	2027	51,479	20,975	22,727	32,944	29,004	21,722
4	2028	51,712	21,070	22,787	32,999	29,069	21,810
5	2029	51,948	21,167	22,847	33,055	29,134	21,898
6	2030	52,189	21,264	22,907	33,110	29,198	21,987
7	2031	52,432	21,364	22,968	33,165	29,263	22,075
8	2032	52,680	21,464	23,028	33,220	29,327	22,163
9	2033	52,930	21,567	23,088	33,275	29,392	22,252
10	2034	53,185	21,670	23,148	33,330	29,457	22,340
Ten-Year Increase		2,385	971	602	551	646	883
Projected Revenue		\$3,951,945	\$814,669	\$1,771,203	\$603,631	\$488,960	\$1,429,658
10-Year Projected Revenue							\$9,060,000
10-Year Total Expenditures							\$31,035,000
10-Year Non-Impact Fee Funding							\$21,975,000

CAPITAL IMPROVEMENT PLANS

The following figures lists preliminary roadway and intersections improvement plans. A portion of the lists may be funded through other sources including a future bond referendum. However, the remaining growth-related projects or the growth-related portion of projects will be impact fee eligible. The two plans total \$644.3 million.

Figure 57. Roadway Widening Projects

Roadway Widening Project	Budget Estimate	Future Bond Ranking
Along N Rockwell Ave from NW 150th St to NW 164th St	\$12,132,500	1
Along NW Expressway from N Morgan Rd to N County Line Rd	\$10,215,000	2
Along N Morgan Rd from John Kilpatrick Turnpike Off ramp 0.35 miles to JKT On ramp	\$12,132,500	3
Along N Council Rd from W Memorial Rd to NW 150th St	\$11,766,500	4
Along W Memorial Rd (WB) from N Council Rd to N Rockwell Ave	\$8,028,500	5
Along W Reno Ave from Cemetery Rd to Czech Hall Rd	\$12,132,500	6
Along S Sara Rd from SW 15th St to W Reno Ave	\$6,132,500	7
Along SW 29th St from S Czech Hall Rd to S Mustang Rd	\$12,132,500	8
Along SW 29th St from Mustang Rd to Sara Rd	\$12,132,500	9
Along SW 29th St from S Sara Rd to S Morgan Rd	\$12,882,500	10
Along SW 29th St from S Morgan Rd to S County Line Rd	\$12,132,500	11
Along SW 29th St from S Council Rd to S Rockwell Ave	\$12,132,500	12
Along NW 150th St from N Rockwell Ave to N MacArthur Blvd	\$11,885,000	13
Along N County Line Rd from N Memorial Rd to NW 122nd St (OTA Interchange)	\$12,382,500	14
Along N County line Rd from NW 150th St to N Memorial Rd (OTA Interchange)	\$12,382,500	15
Along NW 122nd St from N Morgan Rd to N County line Rd	\$12,187,000	16
Along SW 149th St from S Portland Ave to S May Ave	\$11,382,500	17
Along SW 149th St from S Meridian Ave to S Portland Ave	\$11,382,500	18
Along S Cemetery Rd from SW 15th St to W Reno Ave	\$10,215,000	19
Along S Cemetery Rd from SW 29th St to SW 15th St	\$10,215,000	20
Along W Hefner Rd from NW Expressway to N Countyline Rd	\$12,382,500	21
Along N County Line Rd from NW 122nd St to W Hefner Rd	\$12,132,500	22
Along N County Line Rd from W Hefner Rd to NW Expressway	\$6,055,000	23
Along SW 74th St from S Western Ave to S Santa Fe Ave	\$12,382,500	24
Along W-I-240 Service Rd from S Pennsylvania Ave to S Western Ave	\$12,382,500	25
Along W Hefner Rd from Piedmont Rd to S Mustang Rd	\$9,287,000	26
Along W Hefner Rd from S Mustang Rd to S Sara Rd	\$9,287,000	27
Along W Hefner Rd from S Sara Rd to S Morgan Rd	\$9,287,000	28
Along SW 44th St from S County Line Rd to S Council Rd	\$12,382,500	29
Along County Line Rd from SW 15th St to SW 29th St	\$12,382,500	30
Along 1-35 Service Rd from SE 89th St to SE 74th St	\$12,382,500	31
Along SW 59th St from S Mustang, Rd to S Sara Rd	\$12,382,500	32
Along NW 10th St from N Mustang Rd to N Sara Rd	\$12,382,500	33
Along NW 164th St from N MacArthur Blvd to N Meridian Ave	\$12,382,500	34
Along S Cemetery Rd from SW 44th St to SW 29th St	\$12,382,500	35
Along S Cemetery Rd from SW 59th to SW 44th St	\$12,382,500	36
Along N Pennsylvania Ave from W Memorial Rd to NW 150th St	\$15,478,000	37

Figure 58. Roadway Widening Projects cont.

Roadway Widening Project	Budget Estimate	Future Bond Ranking
Along S Western Ave from SW 89th St to SW 74th St	\$15,478,000	38
Along S Western Ave from SW 74th St to SW 59th St	\$15,478,000	39
Along N May Ave from W Memorial Rd to NW 150th St	\$15,478,000	40
Along S Western Ave from SW 59th St to SW 44th St	\$15,478,000	41
Along S Western Ave from SW 104th St to SW 89th St	\$15,478,000	42
Along SW 59th St from S Czech Hall Rd to S Mustang Rd	\$12,382,500	43
Along SW 164th St from S Western Ave to Santa Fe Ave	\$12,382,500	44
Along S Czech Hall Rd from SW 29th St to SW 15th St	\$12,382,500	45
Along S Pennsylvania Ave from SW 149th St to SW 134th St	\$12,382,500	46
Along S Pennsylvania Ave from SW 164th St to SW 149th St	\$12,382,500	47
Total \$563,021,000		

Figure 59. Intersection Improvement Projects

Intersection Project	Budget Estimate	Future Bond Ranking
Streetlight Program	\$2,500,000	1
W Britton Rd and N Western Ave	\$5,088,500	2
S Klein Ave, SW 3rd St and Exchange Ave	\$5,088,500	3
N Morgan Rd and John Kilpatrick Turnpike Off ramps	\$8,703,000	4
NW Expressway & N Piedmont Rd (Add left and right turn lanes)	\$1,500,000	5
S Cemetery Rd and SW 29th St (Potential Roundabout)	\$1,500,000	6
S Anderson Rd and SE 29th St (Potential Roundabout)	\$2,988,000	7
Fenwick Boulevard and NW 164 Street (Potential 3 way signalized intersection)	\$1,696,000	8
Hidden Creek Boulevard and NW 122 Street (Potential 3 way signalized intersection)	\$1,696,000	9
W Sheridan Ave and N Dewey Ave (Add signal)	\$1,250,000	10
Redbreast Drive/Gambels Trail Drive and NW 150 Street	\$1,696,000	11
NW 39th Expressway and Portland Avenue	\$800,000	12
SW 104th and S Western Ave (Add right turn lanes)	\$1,159,500	13
SW 107th St and S Western Ave (Add signals)	\$1,000,000	14
SE 104th St and S Sunnyslane Rd (Potential roundabout)	\$1,500,000	15
Greenfield Center Drive and W Reno Avenue	\$2,120,500	16
Traditions Lake Parkway/Oakmond Road and NW 150 St	\$2,120,500	17
I-35 Northbound and Southbound Service Roads and Hefner Rd (Potential Roundabouts)	\$5,000,000	18
N Sooner Rd and NE 36th St (East Node) (Potential Roundabout)	\$2,735,000	19
N Sooner Rd and NE 36th St (West Node) (Potential Roundabout)	\$2,735,000	20
SE 44th St and S Anderson Rd (Potential Roundabout)	\$2,988,000	21
S County Line Rd and SW 44th St (Potential signalize intersection)	\$1,256,500	22
N Sara Rd and NW Expressway (Add left and right turn lanes to Sara Rd)	\$2,279,000	23
I-240 and Eastern Ave (Analyze Intersection and identify potential Improvements that may include signalize the intersection adding dedicated left and right turn lanes as warranted)	\$1,739,000	24
S Sooner Rd and Doolittle Ave (Extend northbound right turn lane to increase storage capacity and limit "backups")	\$550,000	25

Figure 60. Intersection Improvement Projects cont.

Intersection Project	Budget Estimate	Future Bond Ranking
N Santa Fe Ave and NW 150th St (Addition of additional right and left turn lanes)	\$3,829,500	26
I-44 & N Eastern Ave/ NE 63rd St (adding left and right turn lanes to add capacity)	\$3,609,000	27
I-44 Southbound at SW 119th St-West Terminal (Add turn lanes)	\$2,028,500	28
I-44 Northbound at SW 119th St East Terminal (Add turn lanes)	\$1,884,000	29
N MacArthur Blvd and I-40 (add a southbound right turn lane and a westbound right turn bay)	\$750,000	30
N May Ave and NW 140th St (increase the length of all turn lanes to add capacity)	\$1,550,000	31
SW 29th St and S May Ave (Add additional right turn lanes)	\$1,460,000	32
N May Ave from NW 59th St to NW 63rd St (widen to add capacity)	\$1,550,000	33
W Britton Rd and N May Ave (Add right turn lanes)	\$1,450,000	34
I-240 and May Ave.(Add shared left turn, right turn, and through lanes)	\$1,000,000	35
S Meridian Ave and I-40 (Add southbound right turn lane and channelize west bound right turn lane)	\$500,000	36
SW 15th St and S Mustang Rd (Add right turn lanes along S Mustang Rd)	\$1,250,000	37
N Pennsylvania Ave and NW 122nd St (add additional left and right turn lanes)	\$2,173,500	38
NW 23rd St and N Portland Ave (Add right turn lanes)	\$1,087,000	39
NW 27th St and N Portland Ave (Add signals)	\$1,087,000	40
SW 54th and S Portland Ave (Add eastbound and westbound right turn lanes on SW 54th St)	\$1,250,000	41
N Meridian Ave and NW 23rd St (add right turn lanes)	\$1,087,000	42
NW 122nd St and N Rockwell Ave (Add left and right turn lanes)	\$2,000,000	43
NW 19th St & N MacArthur Blvd	\$1,000,000	44
SW 44th St at S Western Ave (Add right turn lanes)	\$1,500,000	45
Lake Hefner Parkway Southbound off ramp and NW 63rd St (Add additional right and left turn lanes)	\$1,500,000	46
SE 59th St and S Sooner Rd (Add dual southbound left turn lanes and a westbound right turn lane)	\$1,260,500	47
SW 59th St and S Independence Ave/S Land Ave	\$1,000,000	48
N Kelley Ave and NE 63rd St (add right turn lane and increase length of current turn lanes to increase capacity)	\$1,637,000	49
N May Avenue and NW 19 Street	\$2,120,500	50
Total \$101,252,500		

APPENDIX A. SERVICE UNITS BY LAND USE

Following Oklahoma Statute §62-895 this report uses “service units” to determine the proportionality of street infrastructure expansion costs by land use. Vehicle miles of travel (VMT) has been determined to be an appropriate indicator for the Northeast, Northwest, Southeast, and Southwest Benefit Areas. While person miles of travel (PMT) has been determined to be an appropriate indicator for the Central Benefit Area. The following sections details the inputs and assumptions to calculate VMT and PMT.

Residential Vehicle Trips by Housing Type

The resulting fee analysis for residential development is based on the square footage of the dwelling unit. However, growth projections examine development by single family and multifamily. In this case, custom trip rates are calculated by housing type below.

A customized trip rate is calculated for the single family and multifamily units in Oklahoma City. In Figure 61, the most recent data from the U.S. Census American Community Survey is inputted into equations provided by the ITE to calculate the vehicle trip ends—the out-bound or in-bound leg of a vehicle trip—per housing unit factor. A single-family unit is estimated to generate 9.30 trip ends and a multifamily unit is estimated to generate 3.90 trip ends on an average weekday. (Both custom trip rates are less than the national average.)

Figure 61. Customized Residential Trip End Rates by Housing Type

Tenure by Units in Structure	Vehicles Available (2)	Households by Structure Type (2)			Vehicles per HH by
		Single Family	Multifamily	Total	
Owner-occupied	335,497	158,763	1,854	160,617	2.09
Renter-occupied	150,518	48,995	60,196	109,191	1.38
Total	486,015	207,758	62,050	269,808	1.80
Housing Units (3) =>		222,891	75,724	298,615	
Persons per Housing Unit =>		2.50	1.46	2.24	

Housing Type	Persons in Households (4)	Trip Ends (5)	Vehicles by Type of Unit	Trip Ends (6)	Average Trip Ends	Local Trip Ends per Unit	National Trip Ave. (7)	Difference from Ave.
Single Family*	556,922	1,551,470	399,163	2,601,557	2,076,514	9.30	9.43	-1%
Multifamily	110,895	253,869	86,852	342,490	298,179	3.90	4.54	-14%
Total	667,817	1,805,339	486,015	2,944,047	2,374,693	8.80		

* Includes Single Family Detached, Single Family Attached, and Manufactured Homes

1. Vehicles available by tenure from Table B25046, American Community Survey, 2021 5-Year Estimates.
2. Households by tenure and units in structure from Table B25032, American Community Survey, 2021 5-Year Estimates.
3. Housing units from Table B25024, American Community Survey, 2021 5-Year Estimates.
4. Total population in households from Table B25033, American Community Survey, 2021 5-Year Estimates.
5. Vehicle trips ends based on persons using formulas from ITE *Trip Generation*. For single family housing, the fitted curve equation is $\text{EXP}(0.89 \cdot \text{LN}(\text{persons}) + 1.72)$ [ITE 2017]. To approximate the average population of the ITE studies, persons were divided by 557 and the equation result multiplied by 1,000. For multifamily housing, the fitted curve equation is $(2.29 \cdot \text{persons}) - 81.02$ [ITE 2017].
6. Vehicle trip ends based on vehicles available using formulas from ITE *Trip Generation*. For single family housing, the fitted curve equation is $\text{EXP}(0.99 \cdot \text{LN}(\text{vehicles}) + 1.93)$ [ITE 2017]. To approximate the average number of vehicles in the ITE studies, vehicles available were divided by 1,551 and the equation result multiplied by 1,551. For multifamily housing (ITE 220), the fitted curve equation is $(3.94 \cdot \text{vehicles}) + 293.58$ [ITE 2012].
7. *Trip Generation*, Institute of Transportation Engineers, 11th Edition (2021).

Residential Vehicle Trips Adjustment Factors

As stated above, a vehicle trip end is the out-bound or in-bound leg of a vehicle trip. As a result, so as not to double count trips, a standard 50 percent adjustment is applied to trip ends to calculate a vehicle trip. For example, the out-bound trip from a person's home to work is attributed to the housing unit and the trip from work back home is attributed to the employer.

However, an additional adjustment is necessary to capture City residents' work bound trips that are outside of the city. The trip adjustment factor includes two components. According to the National Household Travel Survey, home-based work trips are typically 31 percent of out-bound trips (which are 50 percent of all trip ends). Also, utilizing the most recent data from the Census Bureau's web application "OnTheMap", 33 percent of Oklahoma City workers travel outside the city for work. In combination, these factors account for 5 percent of additional commuting trips ($0.31 \times 0.50 \times 0.33 = 0.05$). Shown in Figure 62, the total adjustment factor for residential housing units includes attraction trips (50 percent of trip ends) plus the journey-to-work commuting adjustment (5 percent of production trips) for a total of 55 percent.

Figure 62. Residential Trip Adjustment Factor for Commuters

<i>Trip Adjustment Factor for Commuters</i>	
Employed Oklahoma City Residents (2021)	272,960
Residents Working in the City (2021)	183,083
Residents Commuting Outside of the City for Work	89,877
Percent Commuting Out of the City	33%
Additional Production Trips	5%
Standard Trip Adjustment Factor	50%
Residential Trip Adjustment Factor	55%

Source: U.S. Census, OnTheMap Application, 2021

Nonresidential Vehicle Trips

For vehicle trip projections, TischlerBise uses data published in Trip Generation, Institute of Transportation Engineers, 11th Edition (2021). The prototype for retail development is Shopping Center (ITE 820). The prototype for office development is General Office (ITE 710). The prototype for industrial development, Light Industrial (ITE 110). Institutional development uses Hospital (ITE 610).

Figure 63. Institute of Transportation Engineers (ITE) Nonresidential Vehicle Trip Rates

Employment Industry	ITE Code	Land Use	Demand Unit	Wkdy Trip Ends Per Dmd Unit	Wkdy Trip Ends Per Employee
Retail	820	Shopping Center	1,000 Sq Ft	37.01	17.42
Office	710	General Office	1,000 Sq Ft	10.84	3.33
Industrial	110	Light Industrial	1,000 Sq Ft	4.87	3.10
Institutional	610	Hospital	1,000 Sq Ft	10.77	3.77

Source: *Trip Generation*, Institute of Transportation Engineers, 11th Edition (2021)

For nonresidential land uses, the standard 50 percent adjustment is applied to office, industrial, and institutional development. A lower vehicle trip adjustment factor is used for retail because this type of development attracts vehicles as they pass-by on arterial roads. For example, when someone stops at a convenience store on their way home from work, the convenience store is not their primary destination.

In Figure 64, the Institute for Transportation Engineers' land use code, daily vehicle trip end rate, and trip adjustment factor is listed for each land use.

Figure 64. Daily Vehicle Trip Factors

Land Use	ITE Codes	Daily Vehicle Trip Ends	Trip Adj. Factor	Daily Trips
Residential (per housing unit)				
Single Family	210	9.30	55%	5.12
Multifamily	220	3.90	55%	2.15
Nonresidential (per 1,000 square feet)				
Retail	820	37.01	38%	14.06
Office	710	10.84	50%	5.42
Industrial	110	4.87	50%	2.44
Institutional	610	10.77	50%	5.39

Source: [Trip Generation](#), Institute of Transportation Engineers, 11th Edition (2021); National Household Travel Survey, 2009

Demand Indicators by Dwelling Size

Impact fees must be proportionate to the demand for infrastructure. Because averages per household, for both persons and vehicle trip ends, have a strong, positive correlation to the number of bedrooms, TischlerBise recommends residential fee schedules that increase by unit size. Custom tabulations of demographic data by bedroom range can be created from individual survey responses provided by the U.S. Census Bureau in files known as Public Use Microdata Samples (PUMS). PUMS files are only available for areas of at least 100,000 persons. There are six Public Use Microdata Areas (PUMA) included in the Oklahoma City analysis. Portions of the City were in other PUMAs that were not included since the majority of the area was in another city (i.e. the City of Edmond).

Cells shaded yellow below are survey results for PUMAs. Unadjusted persons per housing unit by bedrooms, derived from the PUMA data, are adjusted upward to match the control totals for Oklahoma City (2.24), as shown above in Figure 96.

Figure 65. Persons by Bedroom Range

Bedroom Range	Persons ¹	Vehicles Available ¹	Housing Units ¹	Housing Mix	Unadjusted Persons/HU	Adjusted Persons/HU ²	Unadjusted Veh Avl/HU	Adjusted Veh Avl/HU ²
0-1	1,649	1,250	1,429	11%	1.15	1.17	0.87	0.89
2	4,918	3,835	2,817	21%	1.75	1.77	1.36	1.38
3	15,486	12,858	6,674	50%	2.32	2.35	1.93	1.96
4+	7,169	5,550	2,321	18%	3.09	3.13	2.39	2.43
Total	29,222	23,493	13,241		2.21	2.24	1.77	1.80

1. American Community Survey, Public Use Microdata Sample for OKC PUMAs (2017-2022 5-Year).
2. Adjusted multipliers are scaled to make the average PUMS values match control totals for OKC, based on American Community Survey (2017-2022 5-Year).

Persons by Dwelling Size

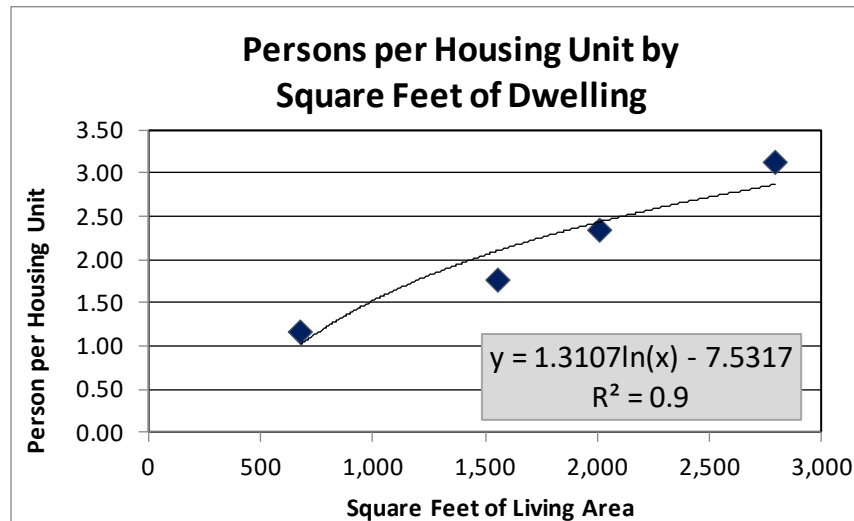
Average floor area and number of persons by bedroom range are plotted in Figure 66 with a logarithmic trend line derived from new construction building permit history in Oklahoma City from 2019-2024. Dwellings with one bedroom or less average 678 square feet of floor area, two-bedroom dwellings average 1,555 square feet, three-bedroom dwellings average 2,010 square feet, and dwellings with four or more bedrooms average 2,795 square feet. Using the trend line formula shown in the chart,

TischlerBise derived the estimated average number of persons, by dwelling size, using eight size thresholds.

As shown in the upper-right corner of the table below, the smallest floor area range (under 1,000 square feet) has an estimated average of 1.46 persons per dwelling. The largest floor area range (4,001 square feet or more) has an estimated average of 3.42 persons per dwelling.

Figure 66. Persons by Dwelling Size

Actual Averages per Hsg Unit			Fitted-Curve Values	
Bedrooms	Square Feet	Persons	Sq Ft Range	Persons
0-1	678	1.17	Under 1,000	1.46
2	1,555	1.77	1,000 to 1,499	1.81
3	2,010	2.35	1,500 to 1,999	2.26
4+	2,795	3.13	2,000 to 2,499	2.59
Average persons per housing unit are derived from 2022 ACS PUMS data for the area that includes OKC. Square footage for dwelling units by number of bedrooms is derived from building permit data of new housing construction between 2019-2024.			2,500 to 2,999	2.85
			3,000 to 3,499	3.07
			3,500 to 3,999	3.25
			4,000 or More	3.42



Trip Generation by Dwelling Size

Rather than rely on one methodology, the recommended trip generation rates shown at the bottom of Figure 67, shaded gray, are an average of trip rates based on persons and vehicles available for all types of housing units. In Oklahoma City, the average housing unit is expected to yield 8.19 average weekday vehicle trip ends (AWVTE), compared to the national weighted average of 8.21 trip ends per household.

Figure 67. Average Weekday Vehicle Trip Ends by Bedroom Range

Bedroom Range	Persons ¹	Vehicles Available ¹	Housing Units ¹	Housing Mix	Unadjusted Persons/HU	Adjusted Persons/HU ²	Unadjusted Veh Avl/HU	Adjusted Veh Avl/HU ²
0-1	1,649	1,250	1,429	11%	1.15	1.17	0.87	0.89
2	4,918	3,835	2,817	21%	1.75	1.77	1.36	1.38
3	15,486	12,858	6,674	50%	2.32	2.35	1.93	1.96
4+	7,169	5,550	2,321	18%	3.09	3.13	2.39	2.43
Total	29,222	23,493	13,241		2.21	2.24	1.77	1.80

National Averages According to ITE (Trip Generation Manual, 11th Edition, 2021)

ITE Code	AWVTE per Person	AWVTE per Veh Available	AWVTE per Household	Housing Mix	Persons per Household	Veh Avl per Household
221 Apt	1.84	5.10	4.54	25%	2.47	0.89
210 SFD	2.65	6.36	9.43	75%	3.56	1.48
Wgtd Avg	2.45	6.05	8.21		3.29	1.33

Recommended AWWTE per Dwelling Unit by Bedroom Range

Bedroom Range	AWVTE per HU Based on Persons ³	AWVTE per HU Based on Veh Available ⁴	AWVTE per Housing Unit ⁵
0-1	2.87	5.38	4.13
2	4.34	8.35	6.35
3	5.76	11.86	8.81
4+	7.67	14.70	11.19
Total	5.49	10.89	8.19

1. American Community Survey, Public Use Microdata Sample for OKC PUMAs (2017-2022 5-Year).
2. Adjusted multipliers are scaled to make the average PUMS values match control totals for OKC, based on American Community Survey (2017-2022 5-Year).
3. Adjusted persons per housing unit multiplied by national weighted average trip rate per person.
4. Adjusted vehicles available per housing unit multiplied by national weighted average trip rate per vehicle available.
5. Average of trip rates based on persons and vehicles available per housing unit.

AWVTE per Dwelling by House Type

ITE Code	AWVTE per HU Based on Persons ³	AWVTE per HU Based on Veh Available ⁴	AWVTE per Housing Unit ⁵	Persons/HU	Veh Avl/HU
221 Apt	3.58	6.96	5.27	1.46	1.15
210 SFD	6.13	10.83	8.48	2.50	1.79
All Types	5.49	10.90	8.20	2.24	1.80

Vehicle Trip Ends by Dwelling Size

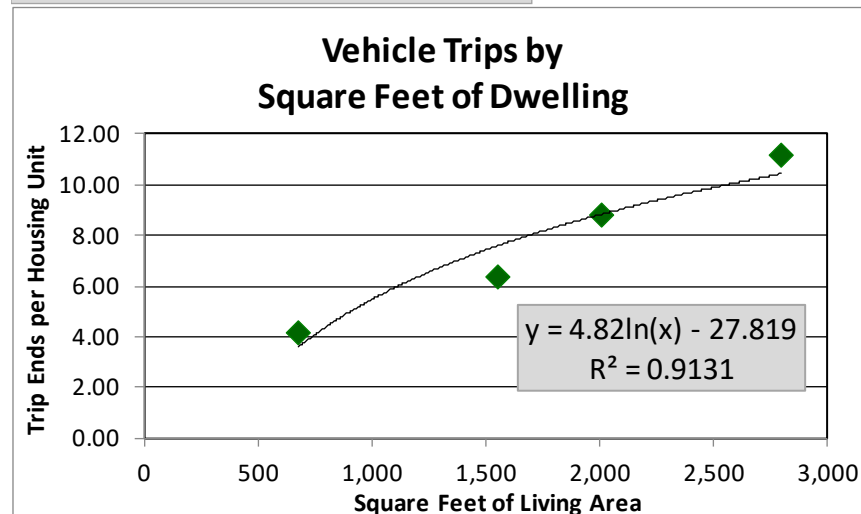
To derive AWWTE by dwelling size, TischlerBise matched trip generation rates and average floor area, by bedroom range, as shown in Figure 68, with a logarithmic trend line derived with 2019 to 2024 new construction in Oklahoma City building permit data. Using the trend line formula shown in the chart, TischlerBise derived the estimated average weekday vehicle trip ends, by dwelling size, using eight size thresholds.

As shown in the upper-right corner of the table below, the smallest floor area range (under 1,000 square feet) generates an estimated average of 5.23 trip ends per dwelling. The largest floor area range (4,000 square feet or more) generates an estimated average of 12.45 trip ends per dwelling.

Figure 68. Vehicle Trip Ends by Dwelling Size

Actual Averages per Hsg Unit			Fitted-Curve Values	
Bedrooms	Square Feet	Trip Ends	Sq Ft Range	Trip Ends
0-1	678	4.13	Under 1,000	5.23
2	1,555	6.35	1,000 to 1,499	6.55
3	2,010	8.81	1,500 to 1,999	8.17
4+	2,795	11.19	2,000 to 2,499	9.39
			2,500 to 2,999	10.35
			3,000 to 3,499	11.16
			3,500 to 3,999	11.85
			4,000 or More	12.45

Vehicle trips by dwelling size are derived from 2022 ACS PUMS data for the area that includes OKC. Square footage for dwelling units by number of bedrooms is derived from building permit data of new housing construction between 2019-2024.



BENEFIT AREA ARTERIAL TRIP LENGTHS

Arterial trip lengths are determined for each benefit area through a few calculations. First, Figure 69 lists the national average trip length based on the purpose of the trip. This represents the trip length on all roadway classification. The Oklahoma City Street Development Fee focuses capital expansion on arterial roads. Thus, it is necessary to adjust the trip length for just demand on the arterial roadway network.

Figure 69. National Average Trip Length

Land Use	National Average Trip Length (miles)
Single Family	9.75
Multifamily	8.62
Commercial/Retail	7.03
Office and Other	6.39
Industrial	11.28
Institutional	6.48

Source: U.S. DOT FHA 2017 National Household Transportation Survey

Central Benefit Area Arterial Trip Length

Expected VMT is calculated based on the estimated vehicle trips in the Central Benefit Area and the national average trip length. There are 984,686 vehicle trips and an expected VMT of 7,820,606.

Figure 70. Expected Vehicle Miles of Travel – Central Benefit Area

Land Use	Ave Weekday Vehicle Trips [1]	National Average Trip Length (miles) [2]	Expected VMT
Single Family	259,842	9.75	2,533,460
Multifamily	44,399	8.62	382,722
Retail	317,082	7.03	2,229,087
Office	177,663	6.39	1,135,269
Industrial	70,154	11.28	791,338
Institutional	115,545	6.48	748,729
Total	984,686		7,820,606

[1] TischlerBise analysis

[2] Source: U.S. DOT FHA 2017 National Household Transportation Survey

However, the ACOG Travel Demand Model indicates there is 1,910,108 VMT on the central arterial roadway network. As a result, a local adjustment factor is found (0.244). This factor is included in the VMT calculation for development in the central area.

Figure 71. Actual vs Expected VMT – Central Benefit Area

Local Adjustment Factor	
Actual VMT on Arterials [1]	1,910,108
Expected VMT	7,820,606
Actual to Expected VMT	0.244

[1] ACOG Travel Demand Model

These factors are summarized in Figure 72 and combined to find the local arterial trip length by land use.

Figure 72. Local Trip Length – Central Benefit Area

Land Use	National Average Trip Length (miles) [1]	Local Adj Factor [2]	Local Arterial Trip Length
Single Family	9.75	0.244	2.38
Multifamily	8.62	0.244	2.10
Retail	7.03	0.244	1.72
Office	6.39	0.244	1.56
Industrial	11.28	0.244	2.75
Institutional	6.48	0.244	1.58

[1] Source: U.S. DOT FHA 2017 National Household Transportation Survey

[2] TischlerBise analysis

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

Figure 73. Development Type VMT – Central Benefit Area

Development Type	AWVTE per Unit	Trip Adj.	Ave. Trip Length	VMT per Unit
Single Family	9.30	55%	2.38	12.17
Multifamily	3.90	55%	2.10	4.50

Development Type	AWVTE per KSF	Trip Adj.	Ave. Trip Length	VMT per KSF
Retail	37.01	38%	1.72	24.19
Office	10.84	50%	1.56	8.46
Industrial	4.87	50%	2.75	6.70
Institutional	10.77	50%	1.58	8.51

Northeast Benefit Area Arterial Trip Length

Based on the estimated vehicle trips in the Northeast Benefit Area and the national average trip length the expected VMT is calculated. There are 602,051 vehicle trips and an expected VMT of 5,092,431.

Figure 74. Expected Vehicle Miles of Travel – Northeast Benefit Area

Land Use	Ave Weekday Vehicle Trips [1]	National Average Trip Length (miles) [2]	Expected VMT
Single Family	251,341	9.75	2,450,573
Multifamily	33,050	8.62	284,892
Retail	176,098	7.03	1,237,966
Office	55,024	6.39	351,605
Industrial	43,047	11.28	485,575
Institutional	43,491	6.48	281,819
Total	602,051		5,092,431

[1] TischlerBise analysis

[2] Source: U.S. DOT FHA 2017 National Household Transportation Survey

However, the ACOG Travel Demand Model indicates there are 1,492,033 VMT on the northeast arterial roadway network. As a result, a local adjustment factor is found (0.293). This factor is included in the VMT calculation for development in the northeast area.

Figure 75. Actual vs Expected VMT – Northeast Benefit Area

Local Adjustment Factor	
Actual VMT on Arterials	1,492,033
Expected VMT	5,092,431
Actual to Expected VMT	0.293

These factors are summarized in Figure 76 and combined to find the local arterial trip length by land use.

Figure 76. Local Trip Length – Northeast Benefit Area

Land Use	National Average Trip Length (miles) [1]	Local Adj Factor [2]	Local Arterial Trip Length
Single Family	9.75	0.293	2.86
Multifamily	8.62	0.293	2.53
Retail	7.03	0.293	2.06
Office	6.39	0.293	1.87
Industrial	11.28	0.293	3.31
Institutional	6.48	0.293	1.90

[1] Source: U.S. DOT FHA 2017 National Household Transportation Survey

[2] TischlerBise analysis

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

Figure 77. Development Type VMT – Northeast Benefit Area

Development Type	AWVTE per Unit	Trip Adj.	Ave. Trip Length	VMT per Unit
Single Family	9.30	55%	2.86	14.63
Multifamily	3.90	55%	2.53	5.43

Development Type	AWVTE per KSF	Trip Adj.	Ave. Trip Length	VMT per KSF
Retail	37.01	38%	2.06	28.97
Office	10.84	50%	1.87	10.14
Industrial	4.87	50%	3.31	8.06
Institutional	10.77	50%	1.90	10.23

Northwest Benefit Area Arterial Trip Length

Based on the estimated vehicle trips in the Northwest Benefit Area and the national average trip length the expected VMT is calculated. There are 750,894 vehicle trips and an expected VMT of 6,447,489.

Figure 78. Expected Vehicle Miles of Travel – Northwest Benefit Area

Land Use	Ave Weekday Vehicle Trips [1]	National Average Trip Length (miles) [2]	Expected VMT
Single Family	331,917	9.75	3,236,195
Multifamily	43,646	8.62	376,232
Retail	227,990	7.03	1,602,772
Office	47,273	6.39	302,074
Industrial	58,704	11.28	662,186
Institutional	41,363	6.48	268,030
Total	750,894		6,447,489

[1] TischlerBise analysis

[2] Source: U.S. DOT FHA 2017 National Household Transportation Survey

However, the ACOG Travel Demand Model indicates there are 2,089,402 VMT on the Northwest arterial roadway network. As a result, a local adjustment factor is found (0.324). This factor is included in the VMT calculation for development in the northwest area.

Figure 79. Actual vs Expected VMT – Northwest Benefit Area

Local Adjustment Factor	
Actual VMT on Arterials	2,089,402
Expected VMT	6,447,489
Actual to Expected VMT	0.324

These factors are summarized in Figure 80 and combined to find the local arterial trip length by land use.

Figure 80. Local Trip Length – Northwest Benefit Area

Land Use	National Average Trip Length (miles) [1]	Local Adj Factor [2]	Local Arterial Trip Length
Single Family	9.75	0.324	3.16
Multifamily	8.62	0.324	2.79
Retail	7.03	0.324	2.28
Office	6.39	0.324	2.07
Industrial	11.28	0.324	3.65
Institutional	6.48	0.324	2.10

[1] Source: U.S. DOT FHA 2017 National Household Transportation Survey

[2] TischlerBise analysis

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

Figure 81. Development Type VMT – Northwest Benefit Area

Development Type	AWVTE per Unit	Trip Adj.	Ave. Trip Length	VMT per Unit
Single Family	9.30	55%	3.16	16.16
Multifamily	3.90	55%	2.79	5.98

Development Type	AWVTE per KSF	Trip Adj.	Ave. Trip Length	VMT per KSF
Retail	37.01	38%	2.28	32.07
Office	10.84	50%	2.07	11.22
Industrial	4.87	50%	3.65	8.89
Institutional	10.77	50%	2.10	11.31

Southeast Benefit Area Arterial Trip Length

Based on the estimated vehicle trips in the Southeast Benefit Area and the national average trip length the expected VMT is calculated. There are 257,777 vehicle trips and an expected VMT of 2,323,701.

Figure 82. Expected Vehicle Miles of Travel – Southeast Benefit Area

Land Use	Ave Weekday Vehicle Trips [1]	National Average Trip Length (miles) [2]	Expected VMT
Single Family	101,814	9.75	992,687
Multifamily	13,389	8.62	115,414
Retail	56,769	7.03	399,086
Office	5,873	6.39	37,527
Industrial	54,381	11.28	613,413
Institutional	25,552	6.48	165,574
Total	257,777		2,323,701

[1] TischlerBise analysis

[2] Source: U.S. DOT FHA 2017 National Household Transportation Survey

However, the ACOG Travel Demand Model indicates there are 756,135 VMT on the Southeast arterial roadway network. As a result, a local adjustment factor is found (0.325). This factor is included in the VMT calculation for development in the southeast area.

Figure 83. Actual vs Expected VMT – Southeast Benefit Area

Local Adjustment Factor	
Actual VMT on Arterials	756,135
Expected VMT	2,323,701
Actual to Expected VMT	0.325

These factors are summarized in Figure 84 and combined to find the local arterial trip length by land use.

Figure 84. Local Trip Length – Southeast Benefit Area

Land Use	National Average Trip Length (miles) [1]	Local Adj Factor [2]	Local Arterial Trip Length
Single Family	9.75	0.325	3.17
Multifamily	8.62	0.325	2.80
Retail	7.03	0.325	2.28
Office	6.39	0.325	2.08
Industrial	11.28	0.325	3.67
Institutional	6.48	0.325	2.11

[1] Source: U.S. DOT FHA 2017 National Household Transportation Survey

[2] TischlerBise analysis

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

Figure 85. Development Type VMT – Southeast Benefit Area

Development Type	AWVTE per Unit	Trip Adj.	Ave. Trip Length	VMT per Unit
Single Family	9.30	55%	3.17	16.21
Multifamily	3.90	55%	2.80	6.01

Development Type	AWVTE per KSF	Trip Adj.	Ave. Trip Length	VMT per KSF
Retail	37.01	38%	2.28	32.07
Office	10.84	50%	2.08	11.27
Industrial	4.87	50%	3.67	8.94
Institutional	10.77	50%	2.11	11.36

Southwest Benefit Area Arterial Trip Length

Based on the estimated vehicle trips in the Southwest Benefit Area and the national average trip length the expected VMT is calculated. There are 688,114 vehicle trips and an expected VMT of 6,020,940.

Figure 86. Expected Vehicle Miles of Travel – Southwest Benefit Area

Land Use	Ave Weekday Vehicle Trips [1]	National Average Trip Length (miles) [2]	Expected VMT
Single Family	313,708	9.75	3,058,654
Multifamily	41,253	8.62	355,598
Retail	194,727	7.03	1,368,930
Office	24,737	6.39	158,070
Industrial	71,454	11.28	806,003
Institutional	42,235	6.48	273,685
Total	688,114		6,020,940

[1] TischlerBise analysis

[2] Source: U.S. DOT FHA 2017 National Household Transportation Survey

However, the ACOG Travel Demand Model indicates there are 1,846,014 VMT on the Southwest arterial roadway network. As a result, a local adjustment factor is found (0.307). This factor is included in the VMT calculation for development in the southwest area.

Figure 87. Actual vs Expected VMT – Southwest Benefit Area

Local Adjustment Factor	
Actual VMT on Arterials	1,846,014
Expected VMT	6,020,940
Actual to Expected VMT	0.307

These factors are summarized in Figure 88 and combined to find the local arterial trip length by land use.

Figure 88. Local Trip Length – Southwest Benefit Area

Land Use	National Average Trip Length (miles) [1]	Local Adj Factor [2]	Local Arterial Trip Length
Single Family	9.75	0.307	2.99
Multifamily	8.62	0.307	2.65
Retail	7.03	0.307	2.16
Office	6.39	0.307	1.96
Industrial	11.28	0.307	3.46
Institutional	6.48	0.307	1.99

[1] Source: U.S. DOT FHA 2017 National Household Transportation Survey

[2] TischlerBise analysis

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

Figure 89. Development Type VMT – Southwest Benefit Area

Development Type	AWVTE per Unit	Trip Adj.	Ave. Trip Length	VMT per Unit
Single Family	9.30	55%	2.99	15.29
Multifamily	3.90	55%	2.65	5.68

Development Type	AWVTE per KSF	Trip Adj.	Ave. Trip Length	VMT per KSF
Retail	37.01	38%	2.16	30.38
Office	10.84	50%	1.96	10.62
Industrial	4.87	50%	3.46	8.43
Institutional	10.77	50%	1.99	10.72

TRIP LENGTH ADJUSTMENT BY ASSESSMENT AREA

Along with variation in trip length by benefit area to account for only arterial usage, the Streets Development Fee includes a trip length adjustment within the benefit area based on assessment area (Figure 90). This is done to account for the fact that average trip lengths increase the farther one goes from the core of the city. The update to the fee program includes an analysis of trip origin-destination with the 2015 ACOG model (the most recent available model). The trip length adjustment factor is included with the other vehicle trip demand factors to calculate the maximum impact fee.

Figure 90. Adjustment by Assessment Area

Assessment Area	Trip Length Adj. Factor
Core	81%
Infill	88%
New Growth	100%
Rural	135%

Source: Analysis of 2015 ACOG
Travel Demand Model

EXPANDING NONRESIDENTIAL LAND USES

Currently, the Streets Development Fee includes five nonresidential development types. The development types represent a number of different subcategories of development and the trip rate for the five umbrella categories are the average of the subcategories.

Figure 91. Current Nonresidential Development Types

Current Development Types
Industrial
Office/Institutional/Lodging
Customer-Oriented Low
Customer-Oriented Moderate
Customer-Oriented High

TischlerBise recommends expanding the number of development types in the fee schedule. Oklahoma City has been experiencing a variety of industrial development and, nationally, industrial development has been evolving to meet market demands. Available through the Institute of Transportation Engineers, the Warehousing/Distribution development type can be included to address the unique demand from that development type compared to general industrial development.

Also, office, institutional, and lodging can be expanded into separate categories. This would provide a better nexus between the development and demand on the street network. Lastly, the current customer-oriented structure is a unique approach to commercial and retail development which TischlerBise is recommending not changing but updating with the current ITE trip rates (2021).

Figure 92. Recommended Nonresidential Fee Schedule Development Types

Recommended Dev. Types
Industrial
Warehousing/Distribution
Lodging (per room)
Office
Institutional
Customer-Oriented Low
Customer-Oriented Moderate
Customer-Oriented High

The following figures list land uses that fall within the nonresidential categories. Additionally, the ITE (Institute of Transportation Engineers) code for the land use is included.

Figure 93. Nonresidential Land Use Categories

Land Use Category	ITE Code
Industrial	
General Light Industrial	110
General Heavy Industrial	120
Industrial Park	130
Manufacturing	140
Warehousing/Distribution	
Warehousing	150
Mini Warehouse (Self-Storage)	151
High-Cube Transload and Short-Term Storage Warehouse	154
High-Cube Fulfillment Center Warehouse	155
Lodging	
Hotel (per room)	310
Motel (per room)	320
Office	
General Office	710
Corporate Headquarters	714
Single Tenant Office Building	715
Office Park	750
Research & Development Center	760
Business Park	770
Institutional	
Elementary School	520
Middle/Jr. High School	522
High School	530
Junior/Community College	540
University/College	550
Church	560
Hospital	610

Figure 94. Nonresidential Land Use Categories cont.

Land Use Category	ITE Code
Customer-Oriented Low	
Golf Course	430
Miniature Golf Course	431
Golf Driving Range	432
Bowling Alley	437
Ice Skating Rink	465
Health/Fitness Club	492
Athletic Club	493
Recreational Community Center	495
Government Office Building	730
Building Materials & Lumber Store	812
Hardware/Paint Store	816
Factory Outlet Center	823
Car Sales	841
Tire Store	848
Tire Superstore	849
Discount Club	861
Discount Home Furnishing Superstore	869
Furniture Store	890
Hair Salon	918
Automobile Care Center	942
Self-Service Car Wash	947
Automated Car Wash	948
Customer-Oriented Moderate	
Daycare Center	565
Clinic	630
Medical-Dental Office	720
Free-Standing Discount Superstore (Includes Grocery)	813
Specialty Retail Center (Small Strip Shopping Center)	814
Free-Standing Discount Store	815
Nursery (Garden Center)	817
Nursery (Wholesale)	818
Shopping Center	820
Automobile Parts Sales	843
Home Improvement Superstore	862
Electronics Superstore	863
Apparel Store	876
Arts & Crafts Store	879
Quick Lubrication Vehicle Shop	941

Figure 95. Nonresidential Land Use Categories cont.

Land Use Category	ITE Code
Customer-Oriented High	
Movie Theater	444
Multiplex Movie Theater	445
Library	590
U.S. Post Office	732
Supermarket	850
Convenience Market (Open 24 Hours)	851
Convenience Market with Gasoline Pumps	853
Discount Supermarket	854
Pharmacy/Drugstore without Drive-Through	880
Pharmacy/Drugstore with Drive-Through	881
Bank	912
Quality Restaurant	931
High Turnover (Sit-Down) Restaurant	932
Fast Food Restaurant without Drive-Through	933
Fast Food Restaurant with Drive-Through	934
Gasoline/Service Station	944
Gasoline/Service Station with Convenience Market	945

APPENDIX B. LAND USE ASSUMPTIONS

Growth projections are necessary in a development fee report. The projections establish the need for infrastructure improvements and revenue estimates for the resulting fee program. Additionally, current levels of service are calculated with base year demand estimates. In this case, the base year is 2024 and growth projections are prepared for the next ten years.

RESIDENTIAL DEVELOPMENT

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

Persons per Housing Unit

The resulting fee analysis for residential development is based on the square footage of the dwelling unit. However, growth projections examine development by single family and multifamily. In this case, assumptions such as persons per housing unit are examined by housing type.

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 (PPHH) to derive proportionate share fee amounts. When PPHU is used in the fee calculations, infrastructure standards are derived using year-round population. When PPHH 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 Oklahoma City be imposed according to PPHU.

Occupancy calculations require data on population and the types of units by structure. The U.S. Census Bureau conducts continuous monthly mailing of surveys, known as the American Community Survey (ACS), which has limitations due to sample-size constraints. For example, data on detached housing units are now combined with attached single units (commonly known as townhouses, which share a common sidewall, but are constructed on an individual parcel of land).

Figure 96 below shows the occupancy estimates for Oklahoma City based on 2017-2022 American Community Survey 5-Year Estimates. Single family units averaged 2.50 persons per housing unit and multifamily units averaged 1.46 persons per housing unit. The average occupancy for all housing units in Oklahoma City was 2.24 persons per housing unit.

Figure 96. Persons per Housing Unit

Housing Type	Persons	House-holds	Persons per Household	Housing Units	Persons per Housing Unit	Housing Mix	Vacancy Rate
Single Family	556,922	207,758	2.68	222,891	2.50	75%	7%
Multifamily	110,895	62,050	1.79	75,724	1.46	25%	18%
Subtotal	667,817	269,808	2.48	298,615	2.24		10%
Group Quarters	12,965						
TOTAL	680,782						

Source: U.S. Census Bureau, 2022 5-Year Estimate American Community Survey

Note: Single unit includes detached and attached (i.e. townhouse) and mobile homes

Housing Building Trend

Figure 97 lists the residential building trend in Oklahoma City over the last four years. Since 2020 there has been over 16,000 housing units constructed or about an average of 4,000 annually. The majority (87

percent) was in single family development. Housing construction spiked in 2021 with approximately 1,000 housing units more than 2020 and 2022.

Figure 97. Citywide Building Permit Trend

Citywide

Housing Type	2020	2021	2022	2023	Total	Average
Single Family [1]	3,687	4,134	3,243	3,023	14,087	3,522
Multifamily [2]	181	752	685	574	2,192	548
Total	3,868	4,886	3,928	3,597	16,279	4,070

[1] Includes single family detached, single family attached, and mobile homes

[2] Includes all other housing types

Annual housing construction is totaled by benefit area with GIS analysis. Shown in Figure 98, the northwest area has seen the most amount of housing activity, while the southeast has seen the least.

Figure 98. Benefit Area Building Permit Trend

Central

Housing Type	2020	2021	2022	2023	Total	Average
Single Family [1]	86	161	120	129	496	124
Multifamily [2]	41	315	38	159	553	138
Total	127	476	158	288	1,049	262

Northeast

Housing Type	2020	2021	2022	2023	Total	Average
Single Family [1]	624	634	530	382	2,170	543
Multifamily [2]	55	251	395	168	869	217
Total	679	885	925	550	3,039	760

Northwest

Housing Type	2020	2021	2022	2023	Total	Average
Single Family [1]	1,690	1,892	1,299	1,397	6,278	1,570
Multifamily [2]	52	64	114	111	341	85
Total	1,742	1,956	1,413	1,508	6,619	1,655

Southeast

Housing Type	2020	2021	2022	2023	Total	Average
Single Family [1]	134	218	164	204	720	180
Multifamily [2]	16	97	0	16	129	32
Total	150	315	164	220	849	212

Southwest

Housing Type	2020	2021	2022	2023	Total	Average
Single Family [1]	1,153	1,229	1,130	911	4,423	1,106
Multifamily [2]	17	25	138	120	300	75
Total	1,170	1,254	1,268	1,031	4,723	1,181

[1] Includes single family detached, single family attached, and mobile homes

[2] Includes all other housing types

Lastly, Figure 99 lists the 4-year average for each benefit area and compares it to the citywide average. From 2020, 70 percent of housing development has occurred in either the Northwest or Southwest Benefit Area. The Central and Southeast Benefit Areas accounted for less than 10 percent of the growth.

Figure 99. Benefit Area Share of Residential Growth

Benefit Area	4-Year Ave Housing Units	Percent of Total
Central	262	6.4%
Northeast	760	18.7%
Northwest	1,655	40.7%
Southeast	212	5.2%
Southwest	1,181	29.0%
Total	4,070	100%

Residential Estimates

Base year (2024) residential estimates are found with the combination of Oklahoma City estimates and the ACOG Travel Model. First, the City estimates a citywide population of 734,706 residents. The citywide population is broken down by benefit area based on the area's proportion of the citywide population in the ACOG model. Housing units are estimated based on the PPHU factor and housing type split from the U.S. Census ACS data.

Figure 100. Base Year Population and Housing Units

Oklahoma City, OK	Base Year 2024	Oklahoma City, OK	Base Year 2024
Central Benefit Area		Southeast Benefit Area	
Population	160,157	Population	58,569
Single Family	50,800	Single Family	19,905
Multifamily	20,699	Multifamily	6,242
Total Units	71,499	Total Units	26,147
Northeast Benefit Area		Southwest Benefit Area	
Population	144,583	Population	180,461
Single Family	49,138	Single Family	61,331
Multifamily	15,408	Multifamily	19,232
Total Units	64,546	Total Units	80,563
Northwest Benefit Area		Citywide	
Population	190,935	Population [1]	734,705
Single Family	64,891	Single Family	246,065
Multifamily	20,348	Multifamily	81,929
Total Units	85,239	Total Units	327,994

[1] Citywide population from City estimates

Note: Benefit Area population is based on area's proportion in the ACOG Travel Model.

Note: Benefit Area housing units are estimated with U.S. Census Bureau ACS housing mix split.

Residential Projections

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.

TischlerBise utilizes the City's citywide annual growth rate assumption of 1.49 percent to projected population growth over the next ten years. The growth rate represents the average annual increase in Oklahoma City population since 1990. The benefit area population increase is based on its proportion of the 4-year residential building trend (Figure 99). Housing development is based on the population increase in each benefit area, PPHU factors, and housing mix split from the U.S. Census ACS data.

Shown in Figure 101, the City is projected to grow by 15.9 percent over the next ten years or 116,771 new residents. This represents 52,129 housing units, the majority being single-family. The Northwest Benefit Area is projected to have the greatest growth rate of 24.9 percent over the ten-year horizon, adding approximately 47,000 new residents. Additionally, all but the Central Benefit Area are projected to grow by at least 10 percent, whereas the Central area is projected to grow by only 4.7 percent.

Figure 101. Residential Development Projections

Oklahoma City, OK	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase
Central Benefit Area												
Population	160,157	160,860	161,573	162,297	163,032	163,778	164,535	165,303	166,082	166,873	167,676	7,519
Annual Growth Rate		0.4%	0.4%	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	4.7%
Single Family	50,800	51,023	51,249	51,479	51,712	51,948	52,189	52,432	52,680	52,930	53,185	2,385
Multifamily	20,699	20,790	20,882	20,975	21,070	21,167	21,264	21,364	21,464	21,567	21,670	971
Total Units	71,499	71,813	72,131	72,454	72,782	73,115	73,453	73,796	74,144	74,497	74,855	3,356
Northeast Benefit Area												
Population	144,583	146,622	148,691	150,791	152,922	155,085	157,280	159,507	161,767	164,061	166,389	21,806
Annual Growth Rate		1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	15.1%
Single Family	49,138	49,831	50,534	51,247	51,972	52,707	53,453	54,210	54,978	55,758	56,549	7,411
Multifamily	15,408	15,625	15,846	16,070	16,297	16,527	16,761	16,998	17,239	17,484	17,732	2,324
Total Units	64,546	65,456	66,380	67,317	68,269	69,234	70,214	71,208	72,217	73,242	74,281	9,735
Northwest Benefit Area												
Population	190,935	195,374	199,879	204,451	209,091	213,800	218,579	223,429	228,351	233,346	238,416	47,481
Annual Growth Rate		2.3%	2.3%	2.3%	2.3%	2.3%	2.2%	2.2%	2.2%	2.2%	2.2%	24.9%
Single Family	64,891	66,400	67,931	69,485	71,061	72,662	74,286	75,934	77,607	79,305	81,028	16,137
Multifamily	20,348	20,821	21,301	21,788	22,283	22,784	23,294	23,811	24,335	24,867	25,408	5,060
Total Units	85,239	87,221	89,232	91,273	93,344	95,446	97,580	99,745	101,942	104,172	106,436	21,197
Southeast Benefit Area												
Population	58,569	59,138	59,715	60,301	60,895	61,498	62,110	62,731	63,362	64,002	64,651	6,082
Annual Growth Rate		1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	10.4%
Single Family	19,905	20,099	20,294	20,494	20,696	20,900	21,109	21,320	21,534	21,751	21,972	2,067
Multifamily	6,242	6,302	6,364	6,426	6,489	6,554	6,619	6,685	6,753	6,821	6,890	648
Total Units	26,147	26,401	26,658	26,920	27,185	27,454	27,728	28,005	28,287	28,572	28,862	2,715
Southwest Benefit Area												
Population	180,461	183,629	186,844	190,107	193,418	196,778	200,188	203,649	207,162	210,726	214,344	33,883
Annual Growth Rate		1.8%	1.8%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	1.7%	18.8%
Single Family	61,331	62,408	63,501	64,610	65,735	66,877	68,036	69,212	70,406	71,617	72,847	11,516
Multifamily	19,232	19,569	19,912	20,259	20,612	20,970	21,334	21,703	22,077	22,457	22,842	3,610
Total Units	80,563	81,977	83,413	84,869	86,347	87,847	89,370	90,915	92,483	94,074	95,689	15,126
Citywide												
Population [1]	734,705	745,623	756,702	767,947	779,358	790,939	802,692	814,619	826,724	839,008	851,476	116,771
Annual Growth Rate		1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	15.9%
Single Family	246,065	249,761	253,509	257,315	261,176	265,094	269,073	273,108	277,205	281,361	285,581	39,516
Multifamily	81,929	83,107	84,305	85,518	86,751	88,002	89,272	90,561	91,868	93,196	94,542	12,613
Total Units	327,994	332,868	337,814	342,833	347,927	353,096	358,345	363,669	369,073	374,557	380,123	52,129

[1] Citywide population based on City growth rate assumption.
Note: Benefit area population is based on area's proportion of building permit 4-year average.
Note: Benefit area housing units are estimated with U.S. Census Bureau ACS housing mix split.

NONRESIDENTIAL DEVELOPMENT

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

Nonresidential Base Year Estimates

Based on the ACOG employment projections between 2020 and 2045, base year (2024) total employment is estimated at 489,000 jobs. Total employment is broken down by industry using ESRI Business Analyst NAICS estimates. The retail, office, industrial, and institutional sectors have over 100,000 jobs each with institutional (healthcare and education) representing the highest share.

A parcel GIS layer is used to determine the commercial floor area of the employment sectors. There are nearly 300 million square feet of nonresidential floor area in Oklahoma City. The greatest share is in the industrial sector with 122.3 million square feet.

Figure 102. Citywide Base Year Nonresidential Estimates

Employment Sector	Base Year Jobs [1]	Base Year Floor Area (Sq. Ft.) [2]
Retail	110,473	69,160,964
Office	129,154	57,300,806
Industrial	104,290	122,275,416
Institutional*	144,865	50,702,750
Total	488,782	299,439,936

[1] Total job estimated with ACOG TAZ model. Sector estimates based on ESRI Business Analyst percentages.

[2] OKC parcel data. *ITE employee density factor applied for Institutional to account for sq. ft. of public buildings not recorded.

The ACOG TAZ model is used to estimate employment at the benefit area level. In the base year, over a third of the citywide employment is in the Central Benefit Area.

Figure 103. Benefit Area Base Year Employment Estimates

Benefit Area Total Jobs	Base Year 2024	Percent of Total
Central	160,581	33%
Northeast	93,512	19%
Northwest	88,936	18%
Southeast	54,940	11%
Southwest	90,814	19%

Total Jobs 488,783 100%

Source: ACOG TAZ employment database

Nonresidential Projections

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

Citywide

To project nonresidential development in Oklahoma City, TischlerBise uses available employment projections from the ACOG traffic analysis zone model. Over the next ten years employment is projected to increase by 13 percent, or 65,000 new jobs. There is a relatively even split of employment growth between the sectors, while industrial sectors are estimated to have the highest growth rate over the next ten years.

Figure 104. Nonresidential Development Projections – Citywide

Oklahoma City, OK	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase	Ten-Year Growth %
Jobs [1]													
Retail	110,473	112,037	113,602	115,166	116,730	118,294	119,858	121,422	122,986	124,552	126,116	15,643	14%
Office	129,154	130,860	132,566	134,271	135,977	137,682	139,388	141,094	142,799	144,505	146,211	17,057	13%
Industrial	104,290	105,846	107,401	108,957	110,512	112,067	113,624	115,179	116,734	118,291	119,845	15,555	15%
Institutional	144,865	146,569	148,271	149,975	151,677	153,381	155,085	156,789	158,492	160,194	161,898	17,033	12%
Total Jobs	488,782	495,312	501,840	508,369	514,896	521,424	527,955	534,484	541,011	547,542	554,070	65,288	13%
Nonresidential Floor Area (1,000 square feet) [2]													
Retail	69,161	69,898	70,635	71,371	72,108	72,845	73,581	74,318	75,055	75,792	76,529	7,368	11%
Office	57,301	57,825	58,348	58,872	59,395	59,919	60,443	60,966	61,490	62,014	62,537	5,236	9%
Industrial	122,275	123,267	124,257	125,248	126,239	127,229	128,221	129,212	130,202	131,194	132,184	9,909	8%
Institutional	50,703	51,299	51,895	52,491	53,087	53,683	54,280	54,876	55,472	56,068	56,664	5,962	12%
Total Floor Area	299,440	302,288	305,135	307,983	310,829	313,676	316,525	319,372	322,219	325,068	327,914	28,474	10%

[1] Source: ACOG TAZ employment database

[2] Source: Trip Generation, Institute of Transportation Engineers, 11th Edition (2021)

Benefit Areas

Total job growth by benefit area is detailed in Figure 105. The largest share of employment growth is projected to be in the northeast and southwest areas. Furthermore, although the largest employment center is in the Central Benefit Area, the area has the smallest employment growth rate.

Figure 105. Nonresidential Development Projections – Benefit Areas

Benefit Area Total Jobs	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase	Ten-Year Growth %
Central	160,581	161,241	161,902	162,563	163,224	163,885	164,546	165,207	165,868	166,529	167,190	6,609	4%
Northeast	93,512	95,658	97,803	99,947	102,092	104,237	106,382	108,527	110,672	112,817	114,961	21,449	23%
Northwest	88,936	89,925	90,915	91,905	92,894	93,884	94,874	95,864	96,854	97,843	98,833	9,897	11%
Southeast	54,940	55,751	56,561	57,371	58,181	58,991	59,801	60,610	61,420	62,230	63,040	8,098	15%
Southwest	90,814	92,738	94,661	96,584	98,508	100,431	102,354	104,277	106,200	108,124	110,047	19,233	21%
Total Jobs	488,783	495,313	501,842	508,370	514,899	521,428	527,957	534,485	541,014	547,543	554,071	65,286	13%

Source: ACOG TAZ employment database

Vehicle Trip & Vehicle Miles of Travel Projections

Vehicle trip and vehicle miles of travel (VMT) projections are used to illustrate the possible future pace of service demands, revenues, and expenditures. Additionally, in Appendix A. Service Units by Land Use is an extensive summary of the demand factors used to determine vehicle trip rates and VMT. 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. The Streets Development Impact Fee expands arterial roadways; thus, the analysis examines demand only on arterial roads. The VMT would be much greater if other roadway classifications were included.

Citywide

The vehicle trip and VMT totals are calculated by combining the vehicle trip end factors, the trip adjustment factors, vehicle trip length (miles) and the residential and nonresidential assumptions for housing stock and floor area. Citywide, in the base year, residential land uses account for 1.43 million vehicle trips and nonresidential land uses account for 1.38 million vehicle trips in the base year (Figure 106). By combining the trip length factors there is a total of 8.09 million citywide arterial VMT.

Through 2034, it is projected that daily vehicle trips will increase by 417,400 trips (15 percent) with the majority of the growth being generated by single family (48 percent) and retail (25 percent) development. VMT is projected to increase by 15 percent as well, or approximately 1.09 million VMT.

Figure 106. Vehicle Trip & VMT Projections – Citywide

Development Type	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase
Single Family Units	245,939	249,635	253,383	257,188	261,049	264,967	268,945	272,979	277,075	281,232	285,452	39,513
Multifamily Units	82,055	83,233	84,431	85,645	86,878	88,128	89,399	90,689	91,996	93,323	94,670	12,615
Retail KSF	69,161	69,898	70,635	71,371	72,108	72,845	73,581	74,318	75,055	75,792	76,529	7,368
Office KSF	57,301	57,825	58,348	58,872	59,395	59,919	60,443	60,966	61,490	62,014	62,537	5,236
Industrial KSF	122,275	123,267	124,257	125,248	126,239	127,229	128,221	129,212	130,202	131,194	132,184	9,909
Institutional KSF	50,703	51,299	51,895	52,491	53,087	53,683	54,280	54,876	55,472	56,068	56,664	5,962
Single Family Trips	1,257,978	1,276,883	1,296,054	1,315,517	1,335,266	1,355,306	1,375,654	1,396,288	1,417,239	1,438,502	1,460,087	202,109
Multifamily Trips	176,008	178,535	181,104	183,709	186,353	189,035	191,761	194,528	197,331	200,178	203,067	27,059
Residential Subtotal	1,433,986	1,455,418	1,477,159	1,499,225	1,521,619	1,544,341	1,567,415	1,590,815	1,614,570	1,638,680	1,663,154	229,168
Retail Trips	972,666	983,026	993,393	1,003,753	1,014,113	1,024,473	1,034,833	1,045,193	1,055,553	1,065,926	1,076,286	103,620
Office Trips	310,570	313,409	316,248	319,085	321,923	324,760	327,599	330,438	333,275	336,114	338,952	28,382
Industrial Trips	297,741	300,154	302,566	304,980	307,392	309,804	312,219	314,631	317,042	319,458	321,868	24,127
Institutional Trips	273,034	276,246	279,454	282,665	285,873	289,085	292,296	295,508	298,718	301,926	305,137	32,103
Nonresidential Subtotal	1,854,011	1,872,835	1,891,660	1,910,482	1,929,301	1,948,121	1,966,947	1,985,769	2,004,588	2,023,423	2,042,243	188,232
Total Vehicle Trips	3,287,997	3,328,253	3,368,819	3,409,707	3,450,920	3,492,462	3,534,361	3,576,585	3,619,158	3,662,102	3,705,397	417,400
Arterial VMT	8,091,262	8,195,794	8,301,238	8,407,640	8,514,994	8,623,317	8,732,691	8,843,020	8,954,385	9,066,828	9,180,316	1,089,053

VMT by Benefit Areas

The base year and 10-year projection of VMT in each benefit area is listed in Figure 107. Currently, there is similar VMT in the Central, Northwest, and Southwest Benefit Areas while the Southeast has the lowest. Based on the vehicle trip factors, VMT factors, and growth projections in the benefit areas, the 2034 VMT is calculated. As a result, the northwest area is estimated to have the greatest share of the citywide future VMT. The southwest and northeast areas have a significant share of the citywide future VMT increase as well. While the Central Benefit Area is projected to have the lowest increase in VMT and seven percent of the citywide VMT increase.

Figure 107. VMT Base Year and Projections by Benefit Areas

Benefit Area	2024 VMT	2034 VMT	VMt Increase	% of Citywide Increase
Central	1,909,683	1,974,147	64,464	6%
Northeast	1,493,227	1,749,601	256,374	23%
Northwest	2,089,438	2,449,609	360,171	33%
Southeast	755,379	849,427	94,048	9%
Southwest	1,847,681	2,171,474	323,793	29%
Citywide	8,095,409	9,194,258	1,098,849	100%

The following figures detail the annual VMT projections by benefit area.

Figure 108. Northeast VMT & Arterial Lane Mile Projection

Development Type	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase
Single Family Units	49,138	49,831	50,534	51,247	51,972	52,707	53,453	54,210	54,978	55,758	56,549	7,411
Multifamily Units	15,408	15,625	15,846	16,070	16,297	16,527	16,761	16,998	17,239	17,484	17,732	2,324
Retail KSF	12,521	12,769	13,016	13,264	13,511	13,759	14,006	14,254	14,501	14,749	14,996	2,475
Office KSF	10,152	10,323	10,495	10,666	10,837	11,008	11,180	11,351	11,522	11,693	11,865	1,712
Industrial KSF	17,679	18,017	18,357	18,696	19,035	19,374	19,713	20,052	20,392	20,730	21,069	3,391
Institutional KSF	8,076	8,261	8,447	8,632	8,817	9,002	9,188	9,373	9,558	9,743	9,929	1,853
Single Family Trips	251,341	254,886	258,481	262,128	265,837	269,596	273,412	277,284	281,212	285,202	289,248	37,907
Multifamily Trips	33,050	33,516	33,990	34,470	34,957	35,450	35,952	36,461	36,978	37,503	38,035	4,985
<i>Residential Subtotal</i>	<i>284,391</i>	<i>288,401</i>	<i>292,471</i>	<i>296,599</i>	<i>300,794</i>	<i>305,047</i>	<i>309,364</i>	<i>313,745</i>	<i>318,190</i>	<i>322,705</i>	<i>327,283</i>	<i>42,892</i>
Retail Trips	176,098	179,575	183,059	186,537	190,021	193,499	196,983	200,461	203,945	207,423	210,907	34,809
Office Trips	55,024	55,953	56,881	57,808	58,737	59,665	60,594	61,522	62,449	63,377	64,306	9,281
Industrial Trips	43,047	43,873	44,699	45,524	46,350	47,176	48,002	48,827	49,654	50,479	51,304	8,256
Institutional Trips	43,491	44,488	45,487	46,484	47,481	48,478	49,477	50,474	51,471	52,468	53,467	9,976
<i>Nonresidential Subtotal</i>	<i>317,660</i>	<i>323,888</i>	<i>330,127</i>	<i>336,353</i>	<i>342,588</i>	<i>348,818</i>	<i>355,055</i>	<i>361,283</i>	<i>367,518</i>	<i>373,746</i>	<i>379,983</i>	<i>62,323</i>
Total Vehicle Trips	602,051	612,289	622,598	632,952	643,382	653,865	664,419	675,028	685,708	696,452	707,267	105,216
Arterial VMT	1,493,227	1,518,069	1,543,100	1,568,269	1,593,647	1,619,178	1,644,904	1,670,790	1,696,875	1,723,141	1,749,601	256,374
Arterial Lane Miles	485.8	491.1	496.6	502.0	507.5	513.0	518.6	524.2	529.9	535.5	541.3	55.5

Figure 109. Northwest VMT & Arterial Lane Mile Projection

Development Type	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase
Single Family Units	64,891	66,400	67,931	69,485	71,061	72,662	74,286	75,934	77,607	79,305	81,028	16,137
Multifamily Units	20,348	20,821	21,301	21,788	22,283	22,784	23,294	23,811	24,335	24,867	25,408	5,060
Retail KSF	16,211	16,325	16,440	16,554	16,668	16,782	16,896	17,010	17,125	17,239	17,353	1,142
Office KSF	8,722	8,801	8,880	8,959	9,038	9,117	9,196	9,275	9,354	9,433	9,512	790
Industrial KSF	24,109	24,265	24,421	24,578	24,735	24,891	25,048	25,204	25,360	25,517	25,673	1,564
Institutional KSF	7,681	7,767	7,852	7,938	8,023	8,108	8,194	8,280	8,365	8,450	8,536	855
Single Family Trips	331,917	339,636	347,467	355,416	363,477	371,666	379,973	388,402	396,960	405,645	414,458	82,541
Multfamily Trips	43,646	44,661	45,691	46,735	47,797	48,872	49,966	51,075	52,199	53,340	54,500	10,854
<i>Residential Subtotal</i>	<i>375,564</i>	<i>384,297</i>	<i>393,158</i>	<i>402,151</i>	<i>411,274</i>	<i>420,538</i>	<i>429,939</i>	<i>439,477</i>	<i>449,158</i>	<i>458,985</i>	<i>468,958</i>	<i>93,394</i>
Retail Trips	227,990	229,593	231,203	232,806	234,416	236,019	237,628	239,231	240,841	242,444	244,054	16,063
Office Trips	47,273	47,700	48,130	48,557	48,987	49,414	49,842	50,271	50,699	51,128	51,556	4,283
Industrial Trips	58,704	59,086	59,466	59,848	60,229	60,609	60,991	61,372	61,752	62,134	62,514	3,809
Institutional Trips	41,363	41,823	42,282	42,744	43,204	43,664	44,124	44,586	45,046	45,505	45,965	4,603
<i>Nonresidential Subtotal</i>	<i>375,330</i>	<i>378,202</i>	<i>381,081</i>	<i>383,955</i>	<i>386,836</i>	<i>389,706</i>	<i>392,585</i>	<i>395,461</i>	<i>398,338</i>	<i>401,211</i>	<i>404,089</i>	<i>28,758</i>
Total Vehicle Trips	750,894	762,499	774,239	786,106	798,110	810,244	822,523	834,938	847,496	860,196	873,047	122,153
Arterial VMT	2,089,438	2,123,558	2,158,088	2,193,023	2,228,376	2,264,145	2,300,360	2,336,997	2,374,083	2,411,614	2,449,609	360,171
Arterial Lane Miles	503.9	511.3	518.7	526.3	534.0	541.7	549.5	557.5	565.5	573.6	581.8	78.0

Figure 110. Southeast VMT & Arterial Lane Mile Projection

Development Type	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase
Single Family Units	19,905	20,099	20,294	20,494	20,696	20,900	21,109	21,320	21,534	21,751	21,972	2,067
Multifamily Units	6,242	6,302	6,364	6,426	6,489	6,554	6,619	6,685	6,753	6,821	6,890	648
Retail KSF	4,037	4,130	4,224	4,317	4,411	4,504	4,597	4,691	4,784	4,878	4,971	934
Office KSF	1,084	1,148	1,213	1,278	1,342	1,407	1,472	1,536	1,601	1,665	1,730	647
Industrial KSF	22,333	22,461	22,589	22,717	22,845	22,973	23,101	23,229	23,357	23,485	23,613	1,280
Institutional KSF	4,745	4,815	4,885	4,955	5,025	5,095	5,165	5,235	5,305	5,374	5,444	699
Single Family Trips	101,814	102,806	103,804	104,827	105,860	106,904	107,973	109,052	110,146	111,256	112,387	10,573
Multifamily Trips	13,389	13,518	13,651	13,784	13,919	14,058	14,198	14,339	14,485	14,631	14,779	1,390
<i>Residential Subtotal</i>	<i>115,203</i>	<i>116,324</i>	<i>117,455</i>	<i>118,611</i>	<i>119,779</i>	<i>120,962</i>	<i>122,170</i>	<i>123,391</i>	<i>124,632</i>	<i>125,887</i>	<i>127,166</i>	<i>11,963</i>
Retail Trips	56,769	58,081	59,399	60,710	62,029	63,340	64,652	65,970	67,281	68,600	69,911	13,142
Office Trips	5,873	6,224	6,573	6,924	7,274	7,625	7,976	8,325	8,676	9,026	9,377	3,504
Industrial Trips	54,381	54,692	55,004	55,316	55,628	55,939	56,251	56,563	56,875	57,186	57,498	3,118
Institutional Trips	25,552	25,929	26,305	26,681	27,057	27,434	27,811	28,188	28,565	28,940	29,317	3,766
<i>Nonresidential Subtotal</i>	<i>142,574</i>	<i>144,925</i>	<i>147,282</i>	<i>149,631</i>	<i>151,987</i>	<i>154,339</i>	<i>156,690</i>	<i>159,046</i>	<i>161,398</i>	<i>163,752</i>	<i>166,104</i>	<i>23,530</i>
Total Vehicle Trips	257,777	261,249	264,736	268,242	271,766	275,301	278,860	282,438	286,029	289,640	293,269	35,492
Arterial VMT	755,379	764,545	773,751	783,023	792,348	801,707	811,146	820,636	830,174	839,769	849,427	94,048
Arterial Lane Miles	330.6	332.6	334.6	336.6	338.6	340.6	342.7	344.7	346.8	348.9	351.0	20.4

Figure 111. Southwest VMT & Arterial Lane Mile Projection

Development Type	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase
Single Family Units	61,331	62,408	63,501	64,610	65,735	66,877	68,036	69,212	70,406	71,617	72,847	11,516
Multifamily Units	19,232	19,569	19,912	20,259	20,612	20,970	21,334	21,703	22,077	22,457	22,842	3,610
Retail KSF	13,846	14,068	14,290	14,512	14,734	14,956	15,177	15,399	15,621	15,843	16,065	2,219
Office KSF	4,564	4,718	4,871	5,025	5,178	5,332	5,485	5,639	5,792	5,946	6,100	1,536
Industrial KSF	29,345	29,648	29,953	30,257	30,561	30,865	31,169	31,473	31,777	32,081	32,385	3,040
Institutional KSF	7,843	8,009	8,175	8,342	8,507	8,674	8,840	9,006	9,172	9,338	9,504	1,661
Single Family Trips	313,708	319,217	324,808	330,480	336,235	342,076	348,004	354,019	360,127	366,321	372,612	58,904
Multfamily Trips	41,253	41,976	42,711	43,456	44,213	44,981	45,761	46,553	47,355	48,170	48,996	7,743
<i>Residential Subtotal</i>	<i>354,961</i>	<i>361,192</i>	<i>367,519</i>	<i>373,936</i>	<i>380,447</i>	<i>387,057</i>	<i>393,766</i>	<i>400,572</i>	<i>407,482</i>	<i>414,491</i>	<i>421,608</i>	<i>66,648</i>
Retail Trips	194,727	197,847	200,967	204,093	207,213	210,333	213,453	216,573	219,693	222,820	225,939	31,213
Office Trips	24,737	25,569	26,401	27,233	28,067	28,899	29,731	30,563	31,394	32,226	33,060	8,323
Industrial Trips	71,454	72,194	72,935	73,675	74,415	75,155	75,897	76,636	77,376	78,118	78,858	7,403
Institutional Trips	42,235	43,131	44,024	44,919	45,813	46,708	47,601	48,497	49,390	50,285	51,180	8,945
<i>Nonresidential Subtotal</i>	<i>333,154</i>	<i>338,741</i>	<i>344,327</i>	<i>349,921</i>	<i>355,508</i>	<i>361,095</i>	<i>366,681</i>	<i>372,268</i>	<i>377,854</i>	<i>383,449</i>	<i>389,037</i>	<i>55,884</i>
Total Vehicle Trips	688,114	699,933	711,846	723,857	735,955	748,151	760,447	772,841	785,335	797,940	810,646	122,532
Arterial VMT	1,847,681	1,878,780	1,910,158	1,941,817	1,973,740	2,005,952	2,038,459	2,071,253	2,104,348	2,137,759	2,171,474	323,793
Arterial Lane Miles	598.8	605.5	612.3	619.1	626.0	633.0	640.1	647.2	654.3	661.6	668.8	70.1

VMT is transformed into PMT based on occupancy rates and vehicle mode share, detailed in Appendix A. Service Units by Land Use.

Figure 112. Central VMT & PMT Projection

Development Type	Base Year 2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total Increase
Single Family Units	50,800	51,023	51,249	51,479	51,712	51,948	52,189	52,432	52,680	52,930	53,185	2,385
Multifamily Units	20,699	20,790	20,882	20,975	21,070	21,167	21,264	21,364	21,464	21,567	21,670	971
Retail KSF	22,546	22,606	22,667	22,727	22,787	22,847	22,907	22,968	23,028	23,088	23,148	602
Office KSF	32,779	32,834	32,889	32,944	32,999	33,055	33,110	33,165	33,220	33,275	33,330	551
Industrial KSF	28,811	28,875	28,939	29,004	29,069	29,134	29,198	29,263	29,327	29,392	29,457	646
Institutional KSF	21,457	21,545	21,633	21,722	21,810	21,898	21,987	22,075	22,163	22,252	22,340	883
Single Family Trips	259,842	260,983	262,139	263,315	264,507	265,714	266,947	268,190	269,458	270,737	272,041	12,199
Multfamily Trips	44,399	44,595	44,792	44,991	45,195	45,403	45,611	45,826	46,040	46,261	46,482	2,083
<i>Residential Subtotal</i>	<i>304,241</i>	<i>305,577</i>	<i>306,931</i>	<i>308,306</i>	<i>309,702</i>	<i>311,117</i>	<i>312,558</i>	<i>314,015</i>	<i>315,498</i>	<i>316,998</i>	<i>318,523</i>	<i>14,282</i>
Retail Trips	317,082	317,930	318,778	319,626	320,467	321,315	322,163	323,011	323,858	324,700	325,548	8,466
Office Trips	177,663	177,961	178,259	178,559	178,856	179,156	179,454	179,752	180,051	180,349	180,649	2,985
Industrial Trips	70,154	70,311	70,467	70,626	70,782	70,941	71,097	71,255	71,412	71,569	71,727	1,573
Institutional Trips	115,545	116,020	116,495	116,971	117,446	117,923	118,398	118,873	119,350	119,825	120,300	4,755
<i>Nonresidential Subtotal</i>	<i>680,444</i>	<i>682,222</i>	<i>683,999</i>	<i>685,781</i>	<i>687,552</i>	<i>689,334</i>	<i>691,112</i>	<i>692,891</i>	<i>694,672</i>	<i>696,442</i>	<i>698,223</i>	<i>17,779</i>
Total Vehicle Trips	984,686	987,799	990,929	994,088	997,254	1,000,452	1,003,670	1,006,906	1,010,170	1,013,441	1,016,746	32,061
Arterial VMT	1,909,683	1,915,912	1,922,182	1,928,515	1,934,872	1,941,296	1,947,771	1,954,288	1,960,868	1,967,468	1,974,147	64,464
Arterial PMT	2,923,911	2,933,447	2,943,046	2,952,742	2,962,475	2,972,310	2,982,223	2,992,201	3,002,274	3,012,379	3,022,605	98,694

APPENDIX C. MAP OF EXISTING BENEFIT AREAS AND ASSESSMENT AREAS

Oklahoma City's current street development fee program has 14 benefit areas.

Figure 113. Current Streets Development Fee Benefit Areas

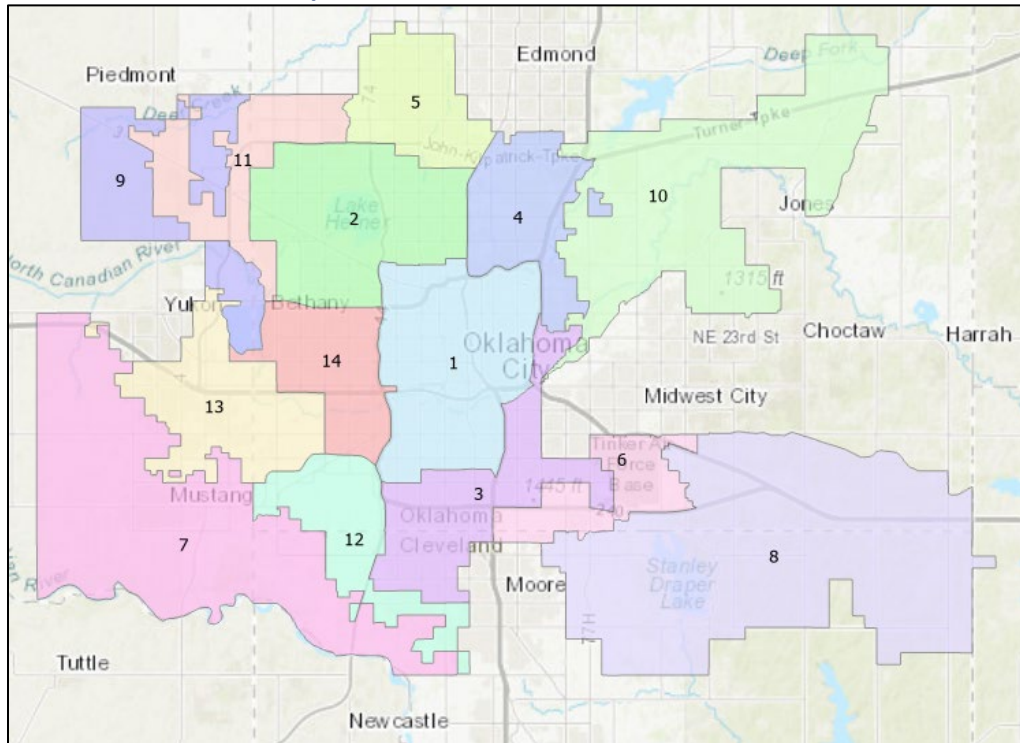


Figure 114. Streets Development Fee Assessment Areas

