

MAJOR ARTERIALS INFRASTRUCTURE IMPROVEMENTS PLAN

The City of Phoenix charges a Major Arterials impact fee to cover the cost of capacity-expanding major arterial roadways and associated bridges, culverts and storm drains in growth areas of the City.

GENERAL MAJOR ARTERIALS IMPACT FEE METHODOLOGY

In the past the major arterial impact fee program has been focused on the construction of streets, mostly in south Phoenix impact fee areas. As the southern impact fee area approaches completion, the northern area faces a different challenge, a need for bridges. To accommodate this challenge the major arterial impact fee program has changed to focus primarily on the construction of bridges in the north with the addition of a few key roadway segments. In the southern areas, Dobbins Road is the only identified need in the region to be funded by impact fees.

Major arterial street construction included in this IIP is limited to certain types of improvements that increase the capacity, safety, and efficiency of the major arterial street network. Grading, paving, and median construction (where designated) are included; plus, bridges, culverts and drainage facilities that are required to evacuate storm water from the street itself. Right-of-way acquisition is not included as most right-of-way will be dedicated directly by adjacent private development or in conjunction with an Arizona State Land Department property disposition. Any remaining right-of-way not obtained through these means will need to be purchased with other funds. Required improvements along a development's frontage such as: perimeter curb and gutter, landscaping, sidewalks, streetlights, and traffic signals located within the right of way are also not included in the Major Arterial impact fee.

The general methodology and process can be summarized as follows:

- **Determine the value of the existing major arterial network**, including culverts and bridges for each impact fee area.
- **Estimate the cost of new major arterial roadways, culverts and bridges** needed to service land that is projected to develop during the ten-year planning horizon (2020-29) for each impact fee area.
- **Estimate pass-through traffic demand for each impact fee area.** Pass-through traffic is measured as the percentage of vehicle trips on the major arterial network inside an impact fee area that do not begin (origin) or end (destination) inside the same impact fee area. Roadway capacity needed to serve pass-through traffic is not the responsibility of new development, and an adjustment is provided in the cost calculation to deduct for pass-through traffic.
- **Determine any Alternative Revenue Offsets (ARO).** The City must ensure that new development (new residents and businesses) are not charged twice for the same obligation to construct new infrastructure. There are two sources of potential offsets for the Major Arterial impact fee. First, funding sources used to repay debt incurred for growth-related street projects, and second, non-impact fee funding sources that are expected to help pay for future growth-related street projects. Since the "plan" cost is already being reduced for pass-through traffic, and the "pass-through" share of the cost will need to be made up with City funds, any offsets would only be for the portion of alternative revenue used for growth-related projects that exceeds the City's contribution to cover the pass-through percentage.

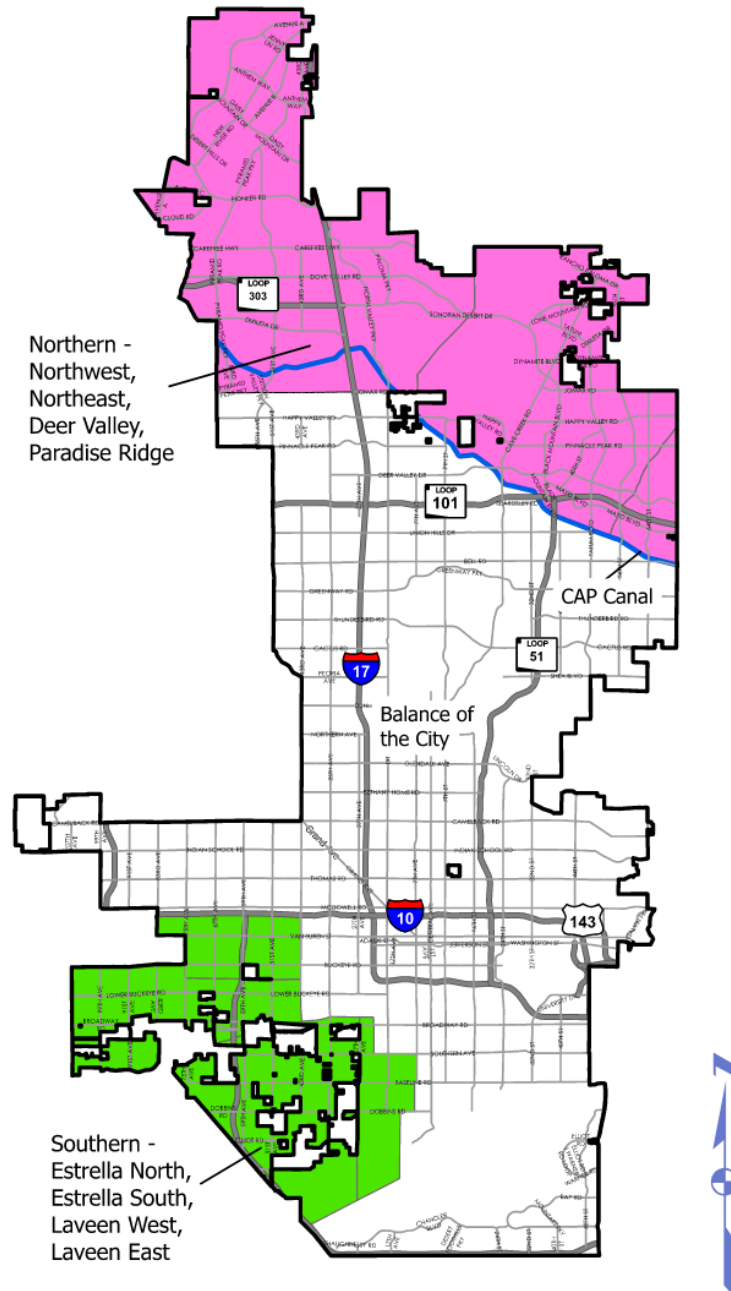
- **Calculate a net fee.** A net fee should be calculated by subtracting the offset amount from the gross fee.

MAJOR ARTERIALS IMPACT FEE AREAS

The 2025 Infrastructure Financing Plan uses the same Major Arterial impact fee areas as the previous plan, a Northern area comprised of the Northwest, Deer Valley, Northeast, and Paradise Ridge building blocks and a Southern area comprised of the Estrella North and South and Laveen East and West blocks.

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Figure 1: Major Arterial Impact Fee Areas



LEVEL OF SERVICE AND TEN-YEAR DEMAND FOR CAPACITY

For the Major Arterials impact fee, there is potential confusion between the level of service as discussed in terms of A.R.S. 9-463.05, which requires a level of service analysis for each necessary public service for which an impact fee is charged, and the transportation level of service term that is typically used as a measure of traffic flow on a scale of A through F. In this chapter, unless otherwise specified, references to service levels are associated with the former.

The primary intent of the Major Arterials impact fee methodology is to ensure new development contributes a proportionate share of the cost for the ultimate major arterial network. One way to test the recommended IIP against this objective is by comparing the ten-year projected gross fee with the buildout scenario gross fee. If the gross fee for the buildout scenario is lower than the fee for the ten-year scenario this indicated the amount of infrastructure necessary within the next ten years places a burden on new development over the ten year time frame and the costs should be spread onto future growth outside of the ten year timing.

ESTIMATED MAJOR ARTERIAL UNIT COSTS - ROADWAYS AND DRAINAGE FACILITIES

ESTIMATED UNIT COSTS FOR MAJOR ARTERIAL ROADWAYS:

The road construction component of the Major Arterial impact fee is limited to costs that provide additional vehicle capacity to the major arterial network. Common costs associated with roadway projects that are not included in the major arterial impact fee include, but are not limited to: **street lighting, signals, sidewalks, outside curb and gutter, frontage landscaping, right-of-way acquisition**. A detailed breakdown of road construction costs is available in the *Kimley-Horn 2025-2034 Transportation Infrastructure Financing Plan, July 23, 2024*.

Table 2: Major Arterial Road Construction Unit Costs

Cross Section (XSEC) Type				
Lane Configuration (1)	Standard City Cross Section (2)	Capacity (veh/day)	2023 Roadway Construction Cost (per mile)(3)	2025-2034 IFP Roadway Construction Cost (per mile)
6LD	A	55,000	\$6,743,058	\$7,702,370
6LD	B	55,000	\$6,132,542	\$7,004,998
4LU+	C	34,833	\$4,968,801	\$5,675,696
4LD	CM	34,833	\$5,102,477	\$5,828,390
4LU+	D	34,833	\$4,453,769	\$5,087,392

1. Kimley-Horn and Associates 2025-2034 Transportation Infrastructure Financing Plan, July 26, 2024

ESTIMATED UNIT COSTS FOR MAJOR ARTERIAL DRAINAGE FACILITIES:

The drainage facilities cost component of the Major Arterial impact fee is limited to bridges, culverts and storm drains associated with the major arterial road network. Costs shown below include soft costs such as design, construction management, mobilization, City administration, and permits. A detailed breakdown of road construction costs is available in the *Kimley-Horn 2025-2034 Transportation Infrastructure Financing Plan, July 23, 2024*.

The costs for culverts and bridges have been evaluated based on detailed estimates provided by the Street Transportation department or estimated based on an average square foot cost of the bridge. All costs are listed in the *Kimley-Horn 2025-2034 Transportation Infrastructure Financing Plan, July 23, 2024*.

MAJOR ARTERIAL NETWORK – EVALUATION AND SELECTION

EVALUATION OF THE MAJOR ARTERIAL NETWORK:

Kimley-Horn developed an inventory and analyzed existing and planned major arterial streets from the City's adopted Street Classification Map within each impact fee area (Kimley-Horn and Associates, *2025-2034 Transportation Infrastructure Financing Plan, July 25, 2024*). The following information was collected and analyzed for each subdivided segment of each major arterial street:

- Existing and ultimate roadway cross-section and segment length.
- Roadway capacity (vehicle-miles) for existing, planned (2020-2029), and ultimate.
- Percent 'physically' and 'functionally' complete.
- Estimated existing roadway value (based on unit costs presented later in this chapter)
- Estimated future roadway cost (based on unit costs presented later in this chapter)

SELECTION OF MAJOR ARTERIAL ROADWAYS:

The maps on the following pages provide a visual representation of the planned roadway and bridge improvements for this IIP.

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Figure 4: Northern Area Planned Road & Bridge Improvements, 2025-2034

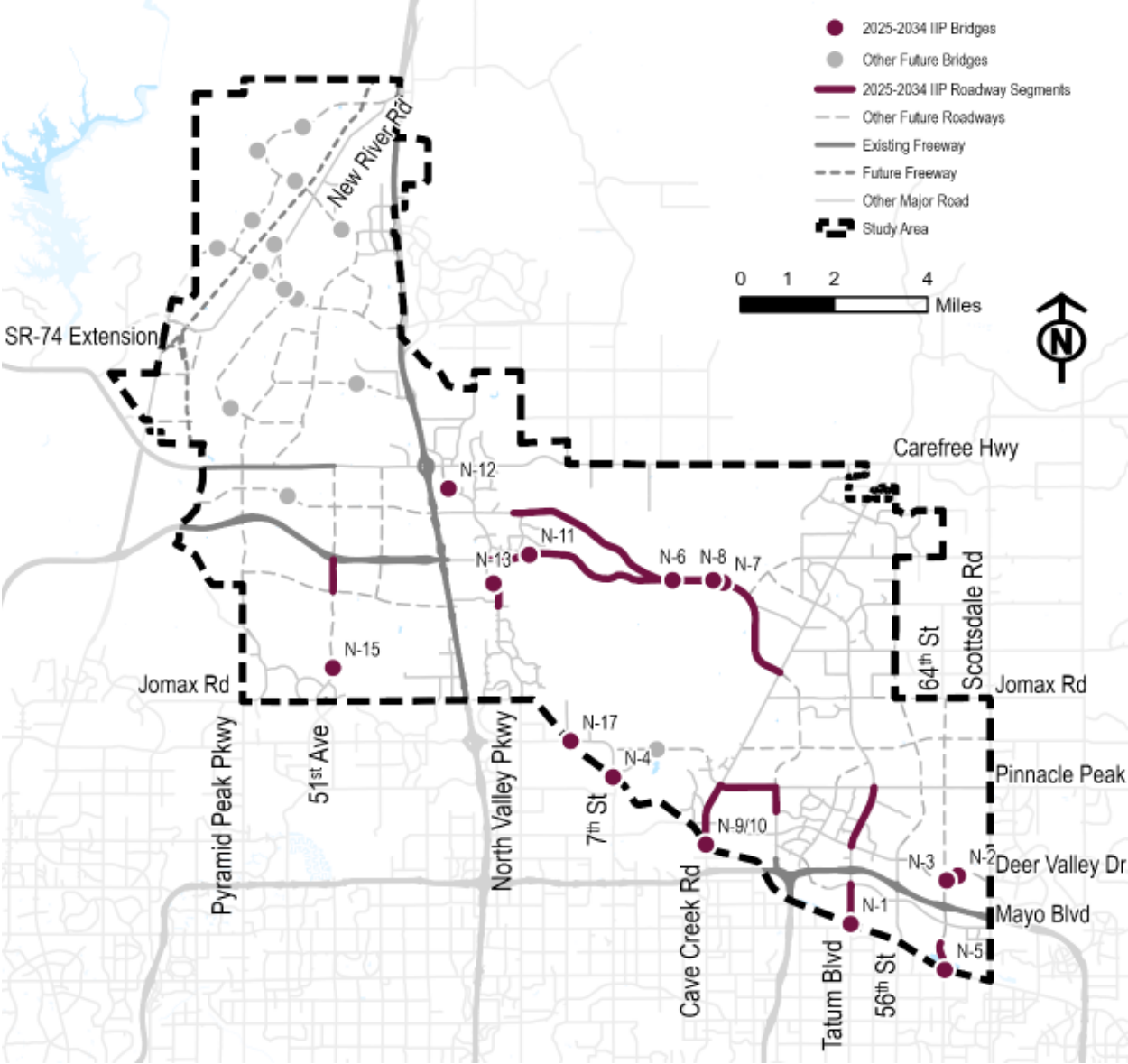
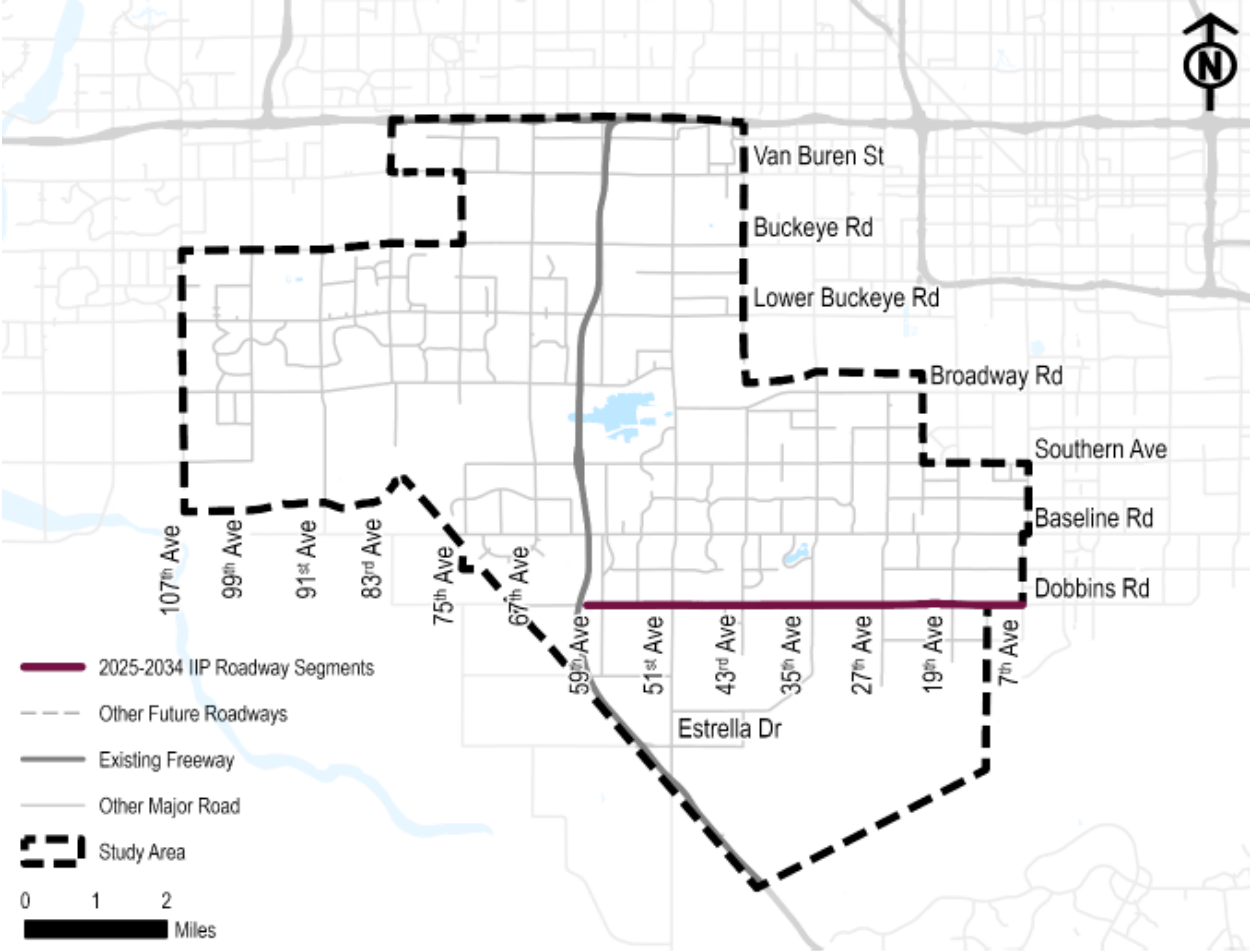


Figure 5: Southern Area Planned Road & Bridge Improvements, 2025-2034



POTENTIAL GROSS IMPACT FEES PER EDU, MAJOR ARTERIALS

PASS-THROUGH TRAFFIC ADJUSTMENT:

New development is only responsible for the share of the costs attributable to traffic with an origin or destination inside the impact fee area. An adjustment is included in the fee calculation to account for “pass-through” traffic that puts a demand on the major arterial network, but the demand is not associated with development within the impact fee area. The pass-through traffic adjustment is calculated as 100% minus the pass-through percentage (i.e., the percentage of traffic in the service area with neither an origin or destination in the service area). Pass-through traffic percentages of 28% and 22% for the Northern and Southwest impact fee areas, respectively, were prepared by Kimley-Horn. A detailed description of how the pass-through percentages were determined is available in the Kimley-Horn and Associates, 2023 *Origin-Destination Analysis*, March 1, 2024.

ESTIMATED COST AND GROSS FEE OF PLANNED MAJOR ARTERIAL IMPROVEMENTS:

The following tables provide the total estimated cost of planned roadways, culverts, bridges, and storm drains recommended for this ten-year IIP. The amounts displayed below are derived from the Major Arterial unit costs presented earlier in this chapter and the selected major arterial roadways and associated drainage facilities for each impact fee area. Detailed descriptions and cost estimates for each individual improvement are available in the *Kimley-Horn Study: 2025-2034 Transportation Infrastructure Financing Plan*, July 26, 2024.

Two calculations were made to determine an equitable cost for construction, a 10-year timeline and a buildout timeline. The lower gross fee of the two scenarios indicates a more equitable cost for development by demonstrating the spread of costs over time. If the 10-year timeline is a higher cost it indicates the burden of infrastructure would be placed on development over the next 10 years and should be spread to development beyond that time frame.

Table 6: Northern Impact Fee Area, Estimated Cost of Planned Facilities, 10-Year Timeline

NORTHERN SERVICE AREA 2025-2034 PLANNED		AMOUNT
2025-2034 Planned Major Arterial Roadway Cost		\$80,756,068
2025-2034 Planned Major Arterial Culvert Cost		\$21,472,030
2025-2034 Planned Major Arterial Bridge Cost		\$208,573,118
Total Cost - 2025-2034 Planned Major Arterial Network		\$310,801,215
NORTHERN SERVICE AREA GROSS FEE CALCULATION		AMOUNT
Existing & 2025-2034 Planned Major Arterial Network Value		\$310,801,215
Adjustment for Pass-Through Traffic		73%
Major Arterial Network Value, Adjusted for Pass-Through Traffic		\$225,952,483
2034 Northern Area EDU		36,098
Northern Service Area Gross Fee per EDU		\$6,259

1. Adjustment for Pass-Through Traffic factors the cost to only apply to traffic with an origin or destination in the service area. This is calculated as 100% minus the pass-through percentage (i.e., the percentage of traffic in the service area with neither an origin or destination in the service area). A pass-through percentage of 27% in the Northern service area was calculated by Kimley-Horn in October 2023 based on Replica origin-destination data.

Table 7: Northern Impact Fee Area, Estimated Cost of Planned Facilities, Buildout Timeline

NORTHERN SERVICE AREA 2025-2060 PLANNED	AMOUNT
2025-2060 Planned Major Arterial Roadway Cost	\$90,307,007
2025-2060 Planned Major Arterial Culvert Cost	\$21,472,030
2025-2060 Planned Major Arterial Bridge Cost	\$467,431,752
Total Cost - 2025-2060 Planned Major Arterial Network	\$579,210,788
NORTHERN SERVICE AREA GROSS FEE CALCULATION	AMOUNT
Existing & 2025-2060 Planned Major Arterial Network Value	\$579,210,788
Adjustment for Pass-Through Traffic	73%
Major Arterial Network Value, Adjusted for Pass-Through Traffic	\$421,086,243
2060 Northern Area EDU	180,753
2060 Northern Service Area Gross Fee per EDU	\$2,330
2035 Northern Service Area Gross Fee per EDU	\$6,259
Equity Adjustment Needed?	Yes
Final 2025 Northern Area Maximum Gross Fee per EDU	\$2,330

Table 8: Southwest Impact Fee Area, Estimated Cost of Planned Facilities, 10-Year Timeline

SOUTHWEST SERVICE AREA 2025-34 PLANNED	AMOUNT
2025-34 Planned Major Arterial Roadway Cost	\$18,332,497
2025-34 Planned Major Arterial Bridge Cost	\$0
Total Cost - 2025-34 Planned Major Arterial Network	\$18,332,497
SOUTHWEST SERVICE AREA GROSS FEE CALCULATION	AMOUNT
Existing & 2025-34 Planned Major Arterial Network Value	\$18,332,497
Adjustment for Pass-Through Traffic	79%
Major Arterial Network Value, Adjusted for Pass-Through Traffic	\$14,501,005
2034 Southwest Area EDU	17,806
Southwest Area Gross Fee per EDU	\$814

1. Adjustment for Pass-Through Traffic factors the cost to only apply to traffic with an origin or destination in the service area. This is calculated as 100% minus the pass-through percentage (i.e., the percentage of traffic in the service area with neither an origin or destination in the service area). A pass-through percentage of 21% in the Southwest service area was calculated by Kimley-Horn in October 2023 based on Replica origin-destination data.

Table 9: Southwest Impact Fee Area, Estimated Cost of Planned Facilities, Buildout Timeline

SOUTHWEST SERVICE AREA 2025-60 PLANNED	AMOUNT
2025-60 Planned Major Arterial Roadway Cost	\$97,813,796
2025-60 Planned Major Arterial Bridge Cost	\$0
Total Cost - 2025-60 Planned Major Arterial Network	\$97,813,796
SOUTHWEST SERVICE AREA GROSS FEE CALCULATION	AMOUNT
Existing & 2025-60 Planned Major Arterial Network Value	\$97,813,796
Adjustment for Pass-Through Traffic	79%
Major Arterial Network Value, Adjusted for Pass-Through Traffic	\$77,370,712
2060 Southwest Area EDU	113,376
2060 Southwest Area Gross Fee per EDU	\$682
2035 Southwest Area Gross Fee per EDU	\$814
Equity Adjustment Needed?	Yes
Fund Balance Adjustment	\$1,139
Final 2025 Southwest Area Maximum Gross Fee per EDU	\$0

ALTERNATIVE REVENUE OFFSETS, MAJOR ARTERIALS

Before determining an actual impact fee schedule, offsets must be taken into consideration, in accordance with A.R.S 9-463.05, Section E.7. An offset is applied for any alternative revenue dedicated to paying for a portion of the same improvements funded by impact fees. There are three sources of potential offsets for the Major Arterial impact fee. First, funding sources used to repay debt incurred for growth-related street projects. Second, funding sources that are expected to help pay for future growth-related street projects. For example, the City also funds major arterial street improvement projects facilities through municipal bonds and AHUR (Arizona Highway User Revenue) tax revenue. Last, any existing fund balances that are sufficient to cover the cost of the impact fee program.

OFFSETS FOR DEBT REPAYMENT:

To account for future revenue streams that will be used to pay principal and interest on outstanding debt associated with previous major arterial capacity expansions of the type included in the IIP (anywhere in the City), records of past projects and associated outstanding bonds were scrutinized to identify any ongoing debt service. Only a limited amount of relevant outstanding debt was found, and the per EDU amount was very small in comparison to the large obligations associated with the City's 'pass-through traffic' portion of costs that are removed from the gross impact fee calculation.

OFFSETS FOR FUTURE EXPENDITURES ON GROWTH-RELATED MAJOR ARTERIALS:

To account for future revenue streams like Arizona Highway Users Revenue (AHUR) that will potentially fund future facilities, the Capital Improvement Plan was examined to identify future major-arterial expansions of the type included in the IFP (anywhere in the City) that would utilize means other than impact fees. Staff could find no capacity-adding, growth-related projects in the City's five-year CIP, and AHUR-funding is now devoted entirely to street rehabilitation and repair (particularly repaving), improvements related to pedestrian access, bike lanes and ADA requirements, and signage and signals. While some capacity-adding, growth-related projects over the next twenty years are likely, the per EDU amount would be dwarfed by the large future obligations associated with the City's 'pass-through traffic' portion of costs that are removed from the gross impact fee calculation.

OFFSETS FOR FUND BALANCES:

The fund balance of the northern impact fee area is not sufficient to fund the cost of the northern infrastructure plan. Any existing funds will be incorporated into the program to assist funding ongoing improvements. The southern fund balance is sufficient to fund the cost of the entire southern impact fee plan and will result in an offset equal to the net impact fee.

POTENTIAL NET IMPACT FEES, MAJOR ARTERIALS

Table 10: Potential Major Arterial Net Impact Fee per Equivalent Demand Unit (EDU)

Impact Fee Areas	Gross Fee per EDU	Fund Balance Adjustment	Potential Net Fee per EDU
Northern	\$2,330	\$0	\$2,330
Southwest	\$682	\$682	\$0

Table 11: Potential Major Arterial Net Impact Fee per Development Unit by Land Use Category

Land Use Category	Unit	EDU Factor	Adjusted Net Fee (Northern)	Adjusted Net Fee (Southwest)
Single Family	Dwelling	1.00	\$2,330	\$0
Multifamily	Dwelling	0.67	\$1,561	\$0
Com. / Retail	1,000 Sq Ft	1.22	\$2,843	\$0
Office	1,000 Sq Ft	0.61	\$1,421	\$0
Industrial	1,000 Sq Ft	0.32	\$746	\$0
Manufacturing	1,000 Sq Ft	0.38	\$885	\$0
Public / Institutional	1,000 Sq Ft	0.44	\$1,025	\$0
Mini-Warehouse	1,000 Sq Ft	0.09	\$280	\$0
Hotel (Lodging)	Room	0.35	\$839	\$0

1. EDU Factors are from Kimley-Horn Study: 2025-2034 Transportation Infrastructure Financing Plan, July 26, 2024

SUMMARY OF PLANNED IMPROVEMENTS, 2020-2029

A.R.S. 9-463.05 requires that impact fees collected must be spent on either:

1. New projects that serve new development or
2. To repay debt (interest and principal) incurred to fund the construction of projects that serve new development.

The City is prohibited from spending impact fee funds on operations, maintenance, repairs, or replacement.

For the purpose of this analysis, the following assumptions have been made:

- That all of the projected number of projected EDUs will be developed in the ten-year planning period 2025-2034, and that all EDUs will pay net fees that are consistent with single family dwellings.
- That all of the future improvements identified in this IIP will be built within the ten-year planning period 2025-2034.

A summary of the planned improvements and costs for the ten-year planning period 2025-2034 for the impact fee service areas are shown in the following tables. The tables provide a summary of planned facilities that are eligible to be funded by the Major Arterials impact fee collections, as calculated within this Chapter.

Table 12: Northern Impact Fee Area (Major Arterials), Planned Improvements and Costs, 2025-2034

Planned Improvement	Total Cost
Major Arterial Roadways	\$80,756,068
Culverts	\$21,472,030
Bridges	\$208,801,215
Subtotal	\$310,801,215
Planned Net Impact Fee Revenue	\$84,108,340
Anticipated Need for Alternative Funding	\$226,692,875

Table 13: Southwest Impact Fee Area (Major Arterials), Planned Improvements and Costs, 2025-2034

Planned Improvement	Total Cost
Major Arterial Roadways	\$18,332,497
Subtotal	\$18,332,497
Planned Net Impact Fee Revenue	\$0
Fund Balance	\$18,332,497
Anticipated Need for Alternative Funding	\$0