

# CITY OF FREMONT

## COMPREHENSIVE DEVELOPMENT IMPACT FEE UPDATE

### TRAFFIC IMPACT FEE TECHNICAL REPORT

**MAY 17, 2021**



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# Executive Summary

This report documents an analysis of development impact fees needed to support future development in the City of Fremont through 2035.

This report is accompanied by a *Comprehensive Development Impact Fee Update Background Report*. The *Background Report* documents common assumptions to this report, and technical reports for the City's other impact fees that are also being comprehensively updated at this time. The *Background Report* also summarizes the analysis contained in this report, provides implementation guidelines and presents the findings required by the Mitigation Fee Act (Cal. Gov't Code Section 66000 *et seq.*).

**Table E.1** displays the maximum justified traffic impact fees based on the analysis contained in this report.

**Table E.1: Maximum Justified Traffic Impact Fee Schedule**

Land Use	A	B	C = A x B	D = C x 0.02	E = C + D
	Cost Per Trip	Trip Demand Factor	Base Fee	Admin Costs <sup>1</sup>	Total Fee
<i>Residential - By Number of Bedrooms</i>					
Studio	\$ 10,470	0.36	\$ 3,738	\$ 75	\$ 3,813
1 Bedroom	10,470	0.48	5,057	101	5,158
2 Bedrooms	10,470	0.72	7,507	150	7,657
3 Bedrooms	10,470	0.92	9,611	192	9,803
4+ Bedrooms	10,470	1.08	11,276	226	11,502
Each Bedroom Above 4	10,470	0.21	2,230	45	2,275
<i>Nonresidential - per 1,000 Sq. Ft. or per Hotel Room</i>					
Office	\$ 10,470	1.42	\$ 14,867	\$ 297	\$ 15,164
Retail/Service	10,470	2.78	29,107	582	29,689
Warehouse	10,470	0.48	5,026	101	5,127
Light Industrial	10,470	0.83	8,690	174	8,864
Research & Development	10,470	1.11	11,622	232	11,854
Business Park	10,470	1.26	13,192	264	13,456
Manufacturing	10,470	0.79	8,271	165	8,436
Hotel/Motel <sup>2</sup>	10,470	0.61	6,387	128	6,515
School, K-12 (all)	10,470	2.15	22,511	450	22,961
School, Vocational/trade/collegian	10,470	2.27	23,767	475	24,242
Hospital	10,470	0.97	10,156	203	10,359
Convalescent Home	10,470	0.86	9,004	180	9,184
Assisted Living/Congregate Care	10,470	0.20	2,094	42	2,136
Religious Facility	10,470	0.80	8,376	168	8,544

<sup>1</sup> Administrative cost of 2.0 percent for (1) legal, accounting, and other administrative support and (2) impact fee program administrative costs including revenue collection, revenue and cost accounting, mandated public reporting, and fee justification analyses.

<sup>2</sup> Fee per hotel room.

Sources: Tables 1 and 6; Willdan Financial Services.

# Traffic Impact Fee

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The purpose of the traffic impact fee is to fund the traffic facilities needed to serve new development. The maximum justified impact fee is presented based on the existing facilities standard of traffic facilities per PM peak hour trip. PM peak hour trips are defined as trips generated during the hour of highest volume of traffic entering and exiting the site during the PM on a weekday.

## Trip Generation by Land Use

This report uses PM peak hour trips as a basis for calculating the impact of new development upon the existing traffic facilities system. The reason for this is that while the City's existing roadways have the ability to accommodate additional vehicles during much of the day, it is during the PM peak period that additional trips are likely to impact traffic conditions. If traffic improvements can accommodate PM peak demand, they will be able to accommodate demand at other times. Especially in built-up areas, it is very difficult to widen existing streets to serve new PM peak trips. Therefore, in many cases, the City may find that the best way to accommodate new PM peak vehicular trip demand is to add facilities—such as bike lanes or walking trails that encourage drivers to convert their PM peak vehicular trips into alternative transportation methods, freeing up existing traffic lanes for the new PM peak vehicular trips.

As new development generates increased vehicle trips for the City's transportation network, additional capacity in the system will be needed to reduce congestion. Traditional capacity expanding improvements can be funded by this fee, as well as alternative modes of transportation. Trip generation by major land use category allow the analysis to incorporate different estimates of demand for transportation facilities. Trip generation rates are applied to development projections to allocate improvement costs by land use type. The trip generation rates used for this analysis are based on the most recent available data from the Institute of Transportation Engineers Trip Generation Manual (10<sup>th</sup> Edition), which is the commonly accepted trip rate assumption source among transportation engineers.

**Table 1** shows trip generation rate assumptions used in this analysis. Trip rates are used to estimated existing and future trip generation in Table 2, and to calculate the fee schedule in Table 7.

**Table 1: PM Peak Hour Trip Rates**

ITE Category		A PM Peak Hour Trips per Resident <sup>1</sup>	B Residents per Dwelling Unit	C = A x B PM Peak Hour Trip Rate
<i>Residential - per Dwelling Unit, by Bedroom</i>				
Studio	Single Family and Multifamily (210 and 220) <sup>1</sup>	0.3	1.19	0.36
1 Bedroom	Single Family and Multifamily (210 and 220) <sup>1</sup>	0.3	1.61	0.48
2 Bedrooms	Single Family and Multifamily (210 and 220) <sup>1</sup>	0.3	2.39	0.72
3 Bedrooms	Single Family and Multifamily (210 and 220) <sup>1</sup>	0.3	3.06	0.92
4+ Bedrooms	Single Family and Multifamily (210 and 220) <sup>1</sup>	0.3	3.59	1.08
Each Bedroom Above 4	Single Family and Multifamily (210 and 220) <sup>1</sup>	0.3	0.71	0.21
<i>Nonresidential - per 1,000 Square Feet or per Room (Hotel)</i>				
Office	General Office Building (710)			1.42
Retail/Service <sup>2</sup>	Shopping Center (820)			2.78
Warehouse <sup>3</sup>	Warehousing (150) and High-Cube Parcel Hub Warehouse (156)			0.48
Light Industrial	General Light Industrial (110)			0.83
Research & Development	R&D Center (760)			1.11
Business Park	Business Park (770)			1.26
Manufacturing	Manufacturing (140)			0.79
Hotel/Motel <sup>4</sup>	Hotel - per Room (310)			0.61
School, K-12 (all)	High School (530)			2.15
School, Vocational/trade/collegian	Junior/Community College (540)			2.27
Hospital	Hospital (610)			0.97
Convalescent Home	Nursing Home (620)			0.86
Assisted Living/Congregate Care	Congregate Care Facility (253)			0.20
Religious Facility	Church (560)			0.80

<sup>1</sup> Trip rate is based on the average PM peak hour trip rate per person (0.30 is the average of single family and multifamily PM Peak hour trips per person). Note that PM peak hour trip rates of 1.0 for single family units, and 0.67 for multifamily units (also from the ITE Trip Generation Manual, 10th Ed.), are used to estimate existing and future trips in Table 2 because estimates of existing and future development were not available by number of bedrooms.

<sup>2</sup> Some portion of traffic associated with retail uses is drawn from existing traffic on nearby streets. These vehicle trips are not considered "new," but are instead comprised of drivers who are already driving on the adjacent street system and choose to make an interim stop, and are referred to as "pass-by." A 34 percent pass-by reduction based on data published in the ITE Trip Generation Handbook was applied to the trip

<sup>3</sup> Trip rate is the average of the Warehouse (150) and High Cube Parcel Hub Warehouse (156) trip rates. This blended trip rate is used to reflect the anticipated mix of warehouse development types in the City.

<sup>4</sup> Trips per hotel room.

Source: Institute of Transportation Engineers, Trip Generation Manual, 10th Edition; Trip Generation Handbook, 3rd Edition; City of Fremont; Table 2.2 from the Comprehensive Development Impact Fee Update Background Report.

## Growth in Trip Demand Through 2035

Based on the trip rate assumptions shown in Table 1, and the growth projections in Table 2.1 of the *Background Report*, **Table 2** calculates the projected travel demand growth in the City between the base year and 2035. These PM peak hour trip estimates are calculated by multiplying the PM peak hour trip rates per dwelling unit or per 1,000 building square feet by the development projections from Table 2.1 of the *Background Report*. Note that Table 2 uses PM Peak hour trip rates of 1.0 for single family units, and 0.67 for multifamily units, consistent with the trip rates per dwelling unit from the ITE Trip Generation Manual, because estimates of existing and future development were not available by number of bedrooms. Table 2 contains fewer land use categories than Table 1, because the estimates of existing and future development used in

the analysis are generalized. The additional land use categories in Table 2 enable the calculation of a more detailed fee schedule to capture land uses that generate trips at different rates.

**Table 2: Land Use Scenario and Total Trips**

Land Use	PM Peak Hour Trip Rate <sup>1</sup>	2020		Growth 2020 to 2035		Total - 2035	
		Units / 1,000 SF	Trips	Units / 1,000 SF	Trips	Units / 1,000 SF	Trips
<i>Residential - Dwelling Units</i>							
Single Family	1.00	54,900	54,900	10,500	10,500	65,400	65,400
Multifamily	0.67	22,400	15,008	3,800	2,546	26,200	17,554
Subtotal		77,300	69,908	14,300	13,046	91,600	82,954
<i>Nonresidential - 1,000 Sq. Ft.</i>							
Commercial	1.42	9,100	12,922	583	828	9,683	13,750
Industrial	0.83	41,300	34,279	19,164	15,906	60,464	50,185
Subtotal		50,400	47,201	19,747	16,734	70,147	63,935
Total			117,109		29,780		146,889
			80%		20%		100%

<sup>1</sup> Uses PM Peak hour trip rate of 1.0 for single family units, and 0.67 for multifamily units, consistent with the trip rates per dwelling unit from the ITE Trip Generation Manual. These rates per dwelling unit are used because the data regarding existing and future dwelling units does not differentiate by number of bedrooms. The commercial trip rate used is the "office" trip rate and the industrial trip rate used is the "light industrial" trip rate shown in Table 1.

Sources: *Comprehensive Development Impact Fee Update Background Report*, Table 2.1; Table 1, Willdan Financial Services

## Existing Traffic Facilities Inventory

**Table 3** summarizes the City’s existing roadway inventory in 2020. The inventory is limited to arterial and collector streets that provide connectivity between neighborhoods and activity centers within the City, and that provide connectivity to neighboring cities and regional transportation facilities. Note that the Traffic Impact Fee is designed to new development’s share of traffic improvements throughout the City that will be used by trips associated with new development. These citywide traffic improvements (and the development impacts that make them necessary) are different from traffic improvements and local street improvements in the immediate vicinity of a new development that are needed to allow traffic from a development to disburse to the larger street grid and that are often dedicated or funded by landowners as a condition of development or subdivision.

The City provided recent transportation facility construction cost bids that were used to inform the cost assumptions for use in this analysis. These cost assumptions reflect recent City experience with transportation capital projects.

**Table 3: Existing Roadway Inventory**

Roadway Type	Area (SF)	Length (LF)	Pavement	Curb and Gutter	Sidewalk	Total Replacement Cost
Roadways						
6 Lane Arterial	1,298,506	14,071	109,561 tons	56,284 lf	140,710 sf	
4 Lane Arterial	8,883,439	139,444	749,540 tons	278,888 lf	1,394,440 sf	
3 Lane Arterial	4,380,282	93,666	369,586 tons	187,332 lf	936,660 sf	
2 Lane Arterial	18,921,298	499,568	1,596,485 tons	999,136 lf	4,995,680 sf	
1 Lane Arterial	236,293	8,726	19,937 tons	17,452 lf	87,260 sf	
4 Lane Collector	488,626	8,450	32,982 tons	16,900 lf	84,500 sf	
3 Lane Collector	317,606	6,347	21,438 tons	12,694 lf	63,470 sf	
2 Lane Collector	21,146,413	568,331	1,427,383 tons	1,136,662 lf	5,683,310 sf	
1 Lane Collector	<u>78,896</u>	<u>2,279</u>	<u>5,325</u> tons	<u>4,558</u> lf	<u>22,790</u> sf	
Total	55,751,359	1,340,882	4,332,239	2,709,906	13,408,820	-
Unit Cost <sup>1</sup>			<u>\$ 150</u>	<u>\$ 55</u>	<u>\$ 20</u>	
Total Replacement Cost			\$ 649,835,799	\$ 149,044,830	\$ 268,176,400	\$ 1,067,057,029

<sup>1</sup> Based on bids submitted for recent Public Works department projects.

Source: City of Fremont.



**Table 4** lists the City’s streetlight, traffic signals and bridge inventory. All facilities are owned by the City. Unit costs to value the replacement cost of these facilities were provided by the City for use in this analysis, based on recent project bids, and US Department of Transportation data.

**Table 4: Streetlight, Signals and Bridge Inventory**

	Quantity	Units	Unit Cost	Total Replacement Cost
<u>Existing Street Light Inventory</u>				
LED Street Lights <sup>1</sup>	16,117	each	\$ 20,000	\$ 322,340,000
<u>Existing Signal/Communication Inventory</u>				
Modern Signal <sup>2</sup>	80	each	\$ 750,000	\$ 60,000,000
Old Signal	102	each	500,000	76,500,000
Signal Interconnect	158,400	Linear feet	100	15,840,000
Fiber Optic	79,200	Linear feet	150	11,880,000
Subtotal				\$ 164,220,000
<u>Existing Bridge Inventory</u>				
26 City of Fremont Maintained Bridges <sup>3</sup>	5,672	Linear feet	\$ 203	\$ 46,056,640
Total Replacement Cost				\$ 532,616,640

<sup>1</sup> Based on PWC 8374 Bids

<sup>2</sup> Based on PWC 8959 Bids

<sup>3</sup> Based on US DOT FHA bridge replacement costs 2017. Assumes 40 foot width.

Source: City of Fremont.

## PM Period Pass-through Trips

The City’s roadway inventory is also used by pass-through traffic in addition to traffic that originates or terminates within the City’s boundaries. For example, significant numbers of vehicles drive through Fremont between Interstates 680 and 880. Pass-through trips neither originate nor terminate within the City, and therefore any new such trips are not the responsibility of new development. Prior to calculating the City’s existing investment per PM peak hour trip, pass-through trips must be added to the estimate of total base year trips using the City’s roadway system to accurately consider existing demand for transportation facilities.

**Table 5** displays an estimate of pass-through trips in the PM period which use the City’s transportation facilities to travel between Interstate 880 (I-880) and Interstate 680 (I-680). These estimates come from a memorandum to the Alameda County Transportation Commission (CTC) which identifies the travel patterns between the I-880 and I-680 as it passes through the Cities of Fremont and Milpitas. Note that while the study examined East-West connectors in both cities, Table 5 only lists the pass-through trips on the Fremont connectors.

Also shown in Table 5, is an estimate of PM peak hour pass-through trips on Mission Blvd. from I-680 traveling North back to I-680. Based on discussions with City traffic engineering staff, trips on the connectors shown in Table 5, including on Mission Blvd. comprise most of the pass-through trips in Fremont, and that any additional pass-through trips (such as north to south) are not a

significant contributor. Refer to **Appendix Table A.1** for the calculation of pass-through trips on Mission Blvd.

Trip generation rates used to estimate PM peak hour trips in Tables 1 and 2 are based on the highest trip generation during one hour in the afternoon. The pass-through trips figures in Table 5 include all pass-through trips between 2 pm and 8 pm. This will underestimate the City's local investment per PM peak hour trip, since the costs will be divided by local trips within the PM peak hour, but pass-through trips generated over six hours.

**Table 5: PM Period Pass-through Trips**

Connector	I-680 to I-880	I-880 to I-680	Total
Auto Mall Parkway	910	1,920	2,830
South Grimmer Boulevard	50	720	770
SR-262	6,090	5,630	11,720
Warren Avenue	110	740	850
Subtotal	7,160	9,010	16,170
Mission Blvd - See Appendix Table A.1			19,514
Total			35,684

Sources: Draft Memorandum, SR-262 (Mission Boulevard) Cross Connector Project – Local Street Analysis, Fehr & Peers, November 8, 2019; Appendix Table A.1, Willdan Financial Services.

## Fee per Trip Demand Unit

**Table 6** displays the calculation of the cost per trip demand unit by dividing the existing traffic facility replacement costs shown in Tables 3 and 4 by existing PM peak hour trip demand from Tables 2 and 5.

**Table 6: Existing Facility Standard Cost per Trip**

<i>Facility Replacement Cost</i>	
Roadways	\$ 1,067,057,029
Street lights	322,340,000
Signal/Communications	164,220,000
Bridges	46,056,640
Total Replacement Cost	\$ 1,599,673,669
City of Fremont PM Peak Hour Trips	117,109
Pass-through Trips	35,684
Total PM Peak Hour Trips	152,793
Cost per Trip	\$ 10,470

Sources: Tables 2 through 5; Willdan Financial Services.

## Use of Fee Revenue

Traffic Facilities Fee revenues will be used to fund the acquisition, construction and improvement of road and transportation improvements that expand the ability of the City's transportation infrastructure to meet the needs of new development. Revenues will not be used to remedy existing deficiencies.

While the existing traffic facilities inventory is primarily comprised of traditional transportation facilities (roads, signals, etc.) the intent of this impact fee is that the City may wish to transition to alternative modes of transportation and methods of managing travel demand. Alternate modes of transportation divert some existing and new trips from vehicles and therefore effectively increase service capacity in the same way that traditional roadway improvements would. This is therefore an acceptable use of fee revenue and can be used to maintain the City's investment in traffic facilities per trip generated. Expenditures on capacity expanding transportation facilities of any mode will alleviate congestion on traditional facilities and will accommodate future transportation demand from new development.

## Fee Schedule

Based on the cost per trip calculated in Table 6 above, **Table 7** shows the traffic impact fee schedule, by land use. The fee for a given land use is calculated by multiplying the cost per trip by the trip rate for that land use from Table 1.

The total fee includes a two percent (2%) administrative charge to fund costs that include: a standard overhead charge applied to all City programs for legal, accounting, and other departmental and administrative support, and fee program administrative costs including revenue collection, revenue, and cost accounting, mandated public reporting, and fee justification analyses.

In Willdan's experience with impact fee programs, two percent of the base fee is a conservative estimate of cost of fee program administration. Per the City's finance department, two percent of total project costs is a conservative estimate of anticipated administration costs.

**Table 7: Maximum Justified Traffic Impact Fee Schedule**

Land Use	A	B	C = A x B		D = C x 0.02	E = C + D
	Cost Per Trip	Trip Demand Factor	Base Fee	Admin Costs <sup>1</sup>	Total Fee	
<i>Residential - By Number of Bedrooms</i>						
Studio	\$ 10,470	0.36	\$ 3,738	\$ 75	\$ 3,813	
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<sup>1</sup> Administrative cost of 2.0 percent for (1) legal, accounting, and other administrative support and (2) impact fee program administrative costs including revenue collection, revenue and cost accounting, mandated public reporting, and fee justification analyses.

<sup>2</sup> Fee per hotel room.

Sources: Tables 1 and 6; Willdan Financial Services.

# Appendix

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**Appendix Table A.1: Mission Blvd PM Peak Hour Pass Through Trips**

	PM Peak Hour % Fremont	PM Peak Hour % Other	Average Weekday PM Peak Hour Trips (2pm to 8pm)	Pass Through Trips
Origin: EB Mission Blvd Weekday East of Warm Springs	42%	58%	15,990	9,274
Origin: WB Mission Blvd Weekday East of Warm Springs	28%	72%	14,222	10,240
Total				19,514

Sources: Traffic Data Service Traffic Counts, December, 2019; City of Fremont; Willdan Financial Service.