

Final Report

Cupertino Transportation Impact Fee Nexus Study Update

The Economics of Land Use



Prepared for:
City of Cupertino

Prepared by:
Economic & Planning Systems, Inc.

and

Advanced Mobility Group



Economic & Planning Systems, Inc.
1330 Broadway
Suite 450
Oakland, CA 94612
510 841 9190 tel

*Oakland
Sacramento
Denver
Los Angeles*

www.epsys.com

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1. Study Overview and Results

Introduction

This Transportation Impact Fee Nexus Study Update (Nexus Update) provides the City of Cupertino (City) with the necessary technical documentation to support an update to the Citywide Transportation Impact Fee Program (TIF Program). Impact fees are one-time charges on new development collected and used by the City to cover the cost of capital facilities and infrastructure that are required to serve new growth.¹ The fees are typically collected upon issuance of a building permit or certificate of occupancy.

The City adopted an amended General Plan known as “General Plan: Community Vision 2015 - 2040” (The General Plan) on December 4, 2014. The General Plan specifically identifies the need to implement a TIF to fund needed transportation improvements necessary to accommodate and mitigate the impacts of future development in the City. To support the TIF program, the City prepared a Nexus Study in 2017 that provided a legal basis for requiring development impact fees consistent with Mitigation Fee Act (AB 1600/ Government Code Section 66000 et seq.). This Nexus Update revises the 2017 Nexus Study.

The revised Fee Program described in this Nexus Update continues to be based on growth projections and transportation infrastructure requirements identified in the General Plan and supporting documents (e.g., Environmental Impact Report). This Nexus Update quantifies the potential allocation of the proposed transportation improvements to new growth in the City and calculates the maximum allowable transportation impact fee schedule by land use category. The City may decide to adopt fees below the maximum supportable level based on economic or policy considerations. Such fee reductions should be considered in conjunction with the availability of alternative sources of capital improvement funding.

¹ New development includes any construction activity that requires a building permit and creates additional impacts on the City’s transportation infrastructure once completed (e.g., through additional travel demand or “trips”).

Legal Context

This Nexus Update is designed to provide the necessary technical analysis to support a schedule of transportation impact fees to be established by an Impact Fee Act Fee Ordinance and Resolution. The Mitigation Fee Act allows the City to adopt, by resolution, the Transportation Impact Fee consistent with the supporting technical analysis and findings provided in this Report. The Resolution approach to setting the fee allows periodic adjustments of the fee amount that may be necessary over time, without amending the enabling ordinance.

Impact fee revenue can be collected and used to cover the cost of constructing capital and infrastructure improvements required to serve new development and growth in the City. As such impact fees must be based on a reasonable nexus, or connection, between new growth and development and the need for a new facility or improvement. Impact fee revenue cannot be used to cover the operation and maintenance costs of these or any other facilities and infrastructure. In addition, impact fee revenue cannot be collected or used to cover the cost of existing needs/ deficiencies in the City transportation capital improvement network.

In establishing, increasing, or imposing a fee as a condition for the approval of a development project, Government Code 66001(a) and (b) state that the local agency must:

1. Identify the purpose of the fee;
2. Identify how the fee is to be used;
3. Determine how a reasonable relationship exists between the fee use and type of development project for which the fee is being used;
4. Determine how the need for the public facility relates to the type of development project for which the fee is imposed; and
5. Show the relationship between the amount of the fee and the cost of the public facility.

These statutory requirements have been followed in updating the existing TIF, as documented in subsequent chapters. **Chapter 4** summarizes the specific findings that explain or demonstrate this nexus update.

If the transportation impact fee is updated, this Nexus Update and the technical information it contains should be maintained and reviewed periodically by the City to ensure Impact Fee accuracy and to enable the adequate programming of funding sources. To the extent that transportation improvement requirements, costs, and development potential changes over time, the Fee Program will need to be further updated.

Maximum Allowable Fee Schedule

Table 1 shows the City’s updated maximum transportation impact fee schedule by land use consistent with nexus requirements and the associated analysis contained in this Technical Report. These updated transportation impact fees apply to new residential and nonresidential development and cover the transportation improvement costs required to support new development after existing deficiencies and known other funding sources have been taken into account. The fee estimates also include a 2 percent fee program administration fee, consistent with Mitigation Fee Act program administrative costs in many other California jurisdictions.² The fees apply to all new development, except those exempted by the Ordinance of other means, such as approved under the terms of a Development Agreement.³

The adoption of the recommended fee schedule would result in fee revenues of about \$105.9 million in today’s dollar terms assuming full build-out of the General Plan consistent with current land use designations. An additional \$179.9 million in revenues will be required from other funding sources to cover the full cost of the transportation facilities included in the fee calculations. In other words, the updated TIF is estimated to generate about 37 percent of the revenue needed to cover the future transportation improvements and facilities costs identified to mitigate growth impacts associated with build-out of the General Plan.

Table 1 Updated Maximum Allowable Transportation Impact Fee

Land Use	Current TIF	Maximum Proposed TIF
<u>Residential</u>		
Single-Family	\$6,238 / unit	\$10,573 / unit
Multifamily	\$3,868 / unit	\$6,556 / unit
<u>Non-residential</u>		
Retail	\$10.04 / sqft.	\$17.01 / sqft.
Office	\$17.57 / sqft.	\$29.78 / sqft.
Hotel	\$3,421 / room	\$5,797 / room
Other	\$6,298 / trip	\$10,675 / trip

² The 2 percent administration cost is designed to cover expenses for preparation of the development impact fee study and subsequent updates as well as the required reporting, auditing, collection and other annual administrative costs involved in overseeing the program. Development impact fee programs throughout California have applied similar administrative charges.

³ These individual Development Agreements specify the specific transportation improvements/ contributions to be made by these individual developments.

Key Issues and Assumptions

The results of this updated analysis are based on a variety of conditions and assumptions regarding facility costs, service standards, growth projections, and facility demand. Assumptions are covered in detail in later chapters, though some of the key issues are summarized below:

- **Future Development and Trips.** The updated fee calculations were based on residential and nonresidential development projections, and associated trip generation. The most recently approved General Plan remained the starting source for this information. In addition, the Cupertino Travel Demand model remained the primary tool to understand travel demand analysis.
- **Capital Improvement Program.** The list of transportation improvements included in the Fee Program continued to focus on projects identified in existing City planning documents and supporting studies. However, the City also expanded this list to include traffic calming projects as well as the proposed new Transit Center.
- **Cost Estimates.** Advanced Mobility Group (AMG) verified the revised cost estimates for all of the transportation improvement projects identified herein. The revised cost estimates were based on assumptions about the planned right-of-way, roadway cross-sections, and landscaping treatments for each corridor. Assumptions were based on similar existing corridors within the City of Cupertino and the City's roadway design standards, and have been reviewed and confirmed by City staff.
- **Cost Allocation.** Transportation analysis conducted by AMG (including Select Link Analysis) in 2017 was retained for this update. In addition, AMG advised on the travel demand assumptions for the new transportation projects. The 2017 assumptions along with the travel demand analysis of additional transportation projects were used to determine the portion of transportation improvements costs to be included in this fee program update. Only transportation improvement costs specifically required to support new development are included in the transportation impact fee calculation. In addition, while funding for the identified transportation improvement projects from other sources was subtracted from the gross cost estimates, grant funding obtained by the City was not because it addresses existing deficiencies.

Approval Process

The existing City TIF Ordinance allows the City Council to adopt a fee schedule consistent with supporting technical analysis and findings provided in this Report. The Ordinance approach to setting the TIF fee will allow periodic adjustments of the fee amount that may be necessary over time, without amending the enabling Ordinance. The TIF Ordinance clearly defines the TIF program policies and procedures. The TIF program policies and procedures may differ from other City development impact fees. As noted, the actual, updated fee levels by land use will need to be approved by the City Council but cannot exceed the updated maximum allowable fees calculated herein.

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2. Land Use and Growth Assumptions

This chapter documents the land use and growth assumptions and forecasts that underlie the updated TIF calculations. These factors drive the traffic generation and attraction in the City of Cupertino and, in turn, are critical factors in determining how to allocate the updated transportation improvement costs between existing and new development and between different land uses.

Land Use Assumptions and Forecast

The existing and future land use estimates used in the TIF are based on the General Plan: Community Vision 2015 – 2040, approved in December 2014. Specifically, the land use assumptions summarized in **Table 2** were derived from Table LU-1 of the Land Use and Community Design Element and are categorized as follows:

Table 2 General Plan Land Use Assumptions and Forecasts

Land Use	Year		Growth (2014 - 2040)
	2014	2040	
<u>Residential Units</u>			
Single-Family	15,117	16,172	1,055
Multifamily ¹	<u>6,295</u>	<u>7,122</u>	<u>827</u>
Subtotal	21,412	23,294	1,882
<u>Non-residential</u>			
Retail (1,000 Sq. Ft.)	3,632	4,431	799
Office (1,000 Sq. Ft.)	8,916	11,470	2,554
Hotel (rooms)	1,116	1,429	313

[1] Multifamily includes apartments, condos, duplexes and townhomes. The breakdown between single- and multi-family based on estimated from the Cupertino Travel Demand Model.

Sources: City of Cupertino Community Vision 2040, Table LU-1. Cupertino Travel Demand Model

- Single-Family Residential:** This category refers to detached single-family homes. Traffic impact fees for new single-family residential development are applied on a per unit basis.

- **Multifamily Residential:** This category covers apartments, townhomes, condos, duplexes and other multifamily housing in which walls are shared among units. Traffic impact fees for new construction of this type of residential development are applied on a per unit basis. The break-out between single-family and multifamily development is based on the Cupertino Travel Demand model.
- **Retail:** Retail development can include shopping centers, discount stores, nurseries, factory outlets, car sale lots, convenient stores, and specialty stores. Traffic impact fees for new construction of this type of development are applied on a square footage basis.
- **Office:** This category covers general offices, including professional and medical office development, government offices, and post offices. Traffic impact fees for this type of development are applied on a square footage basis.
- **Hotel:** This category includes hotels, motels, and other lodging facilities. Traffic impact fees for this type of development are applied on a per room basis.
- **Other:** This category is included as a catch-all to cover all other development activity in Cupertino that generates new travel demand or trips but is not included in one of the above categories. For example, it could include churches, private schools, entertainment venues (e.g., cinemas) and other development that is not easily categorized.

Travel Demand Assumptions and Forecasts

The land use forecasts documented above are used to estimate future travel demand, or trips, based on a variety of assumptions related to trip rates and lengths by land use category. These assumptions are summarized in **Table 3**.

Table 3 Trip Generation Assumptions

Land Use	Primary Trips ¹	Diverted Trips ¹	Total Excluding Pass-by ¹	Avg. Trip Length ²	Adjustment Factor ³	ITE Category	Avg. PM Trips ⁴	Trip Demand Factor ⁵
<u>Residential</u>								
Single-Family	86%	11%	97%	6.77	0.99	Single Family Detached (210)	1.00	0.99
Multifamily	86%	11%	97%	6.77	0.99	Apartment (220)	0.62	0.61
<u>Non-residential</u>								
Retail	47%	31%	78%	3.65	0.43	Shopping Center (820)	3.71	1.59
Office	77%	19%	96%	12.93	1.87	General Office Building (710)	1.49	2.79
Hotel	58%	38%	96%	6.25	0.90	Hotel (310)	0.60	0.54

[1] Percent of total trips. Primary trips are trips with no midway stops, or "links." Diverted trips are linked trips whose distance adds at least one mile to the primary trip. Pass-by trips are links that do not add more than one mile to the total trip. The proportions shown are based on San Diego Association of the Governments, Brief Guide of Vehicular Traffic Generation Rates for the San Diego Regions, April 2002 (see, https://www.sandag.org/uploads/publicationid/publicationid_1140_5044.pdf)

[2] In miles. Residential based on Home-Based "Total, personal travel", Retail based on "Home-Based Shop/Other", Hotel based on "Non-Home Based" trip lengths and Office based on "Home-Based Work High Income" trip length from City of Cupertino Travel Demand Model Year 2040 Travel forecasts.

[3] The trip adjustment factor equals the percent of non-pass-by trips multiplied by the average trip length and divided by the systemwide average trip length of 6.63 miles.

[4] Trips per dwelling unit, room or per 1,000 building square feet. Based on Institute of Traffic Engineers, Trip Generation, 9th Edition (see: **Appendix B**)

[5] The trip demand factor is the product of the trip adjustment factor and the average PM trips.

Sources: San Diego Association of the Governments, Brief Guide of Vehicular Traffic Generation Rates for the San Diego Regions, April 2002; Institute of Traffic Engineers, Trip Generation, 9th Edition; Advanced Mobility Group.

Table 4 combines the travel demand assumptions presented in **Table 3** with the growth estimates summarized in **Table 2** to estimate the total growth in trips through build-out of the General Plan. As shown, this approach results in an estimated growth of 10,120 PM peak hour trips per day, which represents a 20 percent increase over existing levels.

Table 4 Trip Generation Projections

Land Use	Trip Demand Factor ¹	2014		2040		Growth (2014 - 2040)	
		Units	Trips	Units	Trips	Units	Trips
<u>Residential Units</u>							
Single-Family	0.99	15,117	14,973	16,172	16,018	1,055	1,045
Multifamily ²	0.61	<u>6,295</u>	<u>3,866</u>	<u>7,122</u>	<u>4,374</u>	<u>827</u>	<u>508</u>
Subtotal		21,412	18,839	23,294	20,392	1,882	1,553
<u>Non-residential</u>							
Retail (1,000 Sq. Ft.)	1.59	3,632	5,786	4,431	7,059	799	1,273
Office (1,000 Sq. Ft.)	2.79	8,916	24,872	11,470	31,997	2,554	7,125
Hotel (rooms)	0.54	1,116	<u>606</u>	1,429	<u>776</u>	313	<u>170</u>
Subtotal			31,264		39,832		8,568
Total			50,103		60,223		10,120

[1] PM Trips per dwelling unit, per 1,000 building square feet, or per hotel room (see Table 3)

[2] Includes apartments, condos, duplexes, and townhomes.

Sources: Cupertino General Plan: Community Vision 2015 - 2040; Advanced Mobility Group.

3. Transportation Improvements and Costs

This chapter describes the major roadway improvement projects required in the City of Cupertino as well as their cost estimates. The following chapter discusses the nexus-based cost allocations.

Project Selection Criteria

Development impact fees are derived from a list of specific capital improvement projects and associated costs that are needed in part or in full to accommodate new growth. Consequently, the capital improvements included in the fee program need to be described in sufficient detail to generate cost estimates. However, impact fee programs do not, in themselves, represent actual approval of a City plan or capital project (and as such do require clearance through the California Environmental Quality Act or CEQA).

Existing planning documents relied upon by the Consultant Team will include, without limitation, the approved General Plan: Community Vision 2015 – 2040, the 2016 Bicycle Transportation Plan, and other project related or area-specific planning documents.

The list of transportation projects identified in existing City planning documents will be further refined as follows:

- The TIF program will exclude any projects that are outside the City of Cupertino.
- The TIF program will exclude any projects where secured and dedicated funding source have already been established to cover the full cost.

Project List

As part of the Cupertino TIF and Nexus Study Update, the City and AMG prepared an updated conceptual improvement list, as shown in **Table 5**. The improvements included in the original list and maintained in this update cover the intersections/segments where significant impact(s) were identified in the General Plan: Community Vision 2015 – 2040 Draft Environmental Impact Report (December 2014). In addition, the projects identified in the City of Cupertino 2016 Bicycle Transportation Plan are also still included in the updated list, as shown in **Appendix A**.

This Update adds to the prior list of transportation improvements projects (1) traffic calming projects, and (2) a Transit Center. The Update also includes revised cost estimates for selected projects on the original list based on additional information provided by City staff.

Transportation projects that have been identified as mitigations in CEQA documents for specific projects (e.g., Apple Campus 2, Marina Plaza, the Hamptons) continue to be excluded from the TIF. The completion of mitigations identified in these project specific EIRs will be placed as a condition upon, and paid by, the developer separate from the TIF.

None of the projects included in the TIF addresses existing deficiencies. Rather, they are a response to new development and limited to intersections currently operating at a level of service (LOS) within City's acceptable standards, but are expected to deteriorate to levels below City standards with proposed new developments. The Citywide sidewalk and bicycle facility installations are also in response to new development and a need to encourage shifts to modes such as walking and biking so that the roadway system is not overtaxed.

Table 5 Summary of TIF Projects and Costs

TIF #	Project Name	Source	2020 Project Cost ¹
1	SR 85 NB Ramps and Stevens Creek Blvd.	Community Vision 2015 – 2040	\$536,000
2	Stelling Rd. and Stevens Creek Blvd.	Community Vision 2015 – 2040	\$1,318,000
3	Sunnyvale-Saratoga Rd. / De Anza Blvd. / Homestead Rd.	Community Vision 2015 – 2040	\$3,210,000
4	De Anza Blvd. and I-280 Ramps	Community Vision 2015 – 2040	\$1,840,000
5	De Anza Blvd. and Stevens Creek Blvd.	Community Vision 2015 – 2040	\$145,000
6	De Anza Blvd. and McClellan Rd. / Pacifica Dr.	Community Vision 2015 – 2040	\$9,707,000
7	Wolfe Rd. and Homestead Rd.	Community Vision 2015 – 2040	\$7,131,000
8	Wolfe Rd. and I-280 NB & SB Ramps	Community Vision 2015 – 2040	\$76,300,000
9	Wolfe Rd.-Miller/Ave. and Stevens Creek Blvd.	Community Vision 2015 – 2040	\$153,000
10	North Tantau Ave./Quail Ave. / Homestead Rd.	Community Vision 2015 – 2040	\$145,000
11	Tantau Ave. and Stevens Creek Blvd.	Community Vision 2015 – 2040	\$145,000
12	Monta Vista Sidewalk (Orange and Byrne)	Community Vision 2015 – 2040	\$5,146,076
13	Monta Vista Sidewalk (McClellan)	Community Vision 2015 – 2040	\$2,040,000
14	Bicycle Projects - Tier 1	Bicycle Transportation Plan	\$84,842,676
15	Bicycle Projects - Tier 2	Bicycle Transportation Plan	\$11,926,835
16	Bicycle Projects - Tier 3	Bicycle Transportation Plan	\$33,168,500
17	Traffic Calming Programs ²	City of Cupertino	\$7,500,000
18	Transit Center (SR 85 and Stevens Creek Blvd) ³	City of Cupertino	<u>\$40,596,488</u>
Total - Citywide Transportation Projects⁴			\$285,850,575

[1] See Appendix A for detailed project cost estimates.

[2] The cost of traffic calming programs accounts for 10 speedbumps (at a cost of \$30,000 each) per year for 25 years.

[3] This project is likely to be eligible for federal funding, which requires a local match of 11.47%. Therefore, the listed project cost represents 11.47% of total project costs, or the amount that the City is required to contribute towards the project.

[4] Even though the Department received grants, these grants are not accounted for in project costs because it is assumed the grant funding will be used to address existing infrastructure deficiencies.

Sources: City of Cupertino; Advanced Mobility Group

Facility Cost Estimates

The cost estimates shown in **Table 5** above are based on assumptions about the planned right-of-way, roadway cross-sections, and landscaping treatments for each corridor. Assumptions were based on similar existing corridors within the City of Cupertino and the City's roadway design standards, and have been reviewed and confirmed by City staff.

With regards to the two new projects, the cost methodology differs slightly from other projects. The cost of the traffic calming programs accounts for 10 speed bumps (which cost \$30,000 each) every year for 25 years. Secondly, the cost of the Transit Center included in the project list represents only 11.47 percent of the total estimated cost for this project. This is because the Transit Center is eligible to receive federal transportation grants, which require local entities to match 11.47 percent of project costs. Therefore, it is the matching amount that the City would be required to contribute that is included in this project list. Additional detailed cost estimate sheets for each project are attached to this report as **Appendix A**.

Lastly, it is important to note that the City's Transportation Division is likely to receive grant funding for some of the projects included in **Table 5**. However, the nexus analysis assumes these grants will be used to address existing deficiencies. As a result, grant funding is not deducted from the project list cost estimates.

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4. Nexus Analysis and Maximum Fee

This chapter presents the nexus analysis and calculations for the updated maximum allowable TIF based on the land use projections and transportation improvements described previously.

Overview of Updated Nexus Findings

A “nexus” or relationship between new development in City of Cupertino and transportation improvements and their costs must be established before incorporating transportation improvement costs into a transportation impact fee calculation. To determine the appropriate costs to include in the new transportation fee calculation, it is necessary to conduct a series of steps:

- **Identify Total Costs of Transportation Improvements.** The identification of the required transportation improvement projects and their associated costs is the first step (conducted in prior chapter).
- **Remove Existing Deficiencies.** Next, it is necessary to evaluate whether there is an existing deficiency at any of the project locations, and if so, the magnitude of that deficiency. Existing deficiencies are accounted for by reducing the project cost that is included in the Fee Program with funding required from other sources.
- **Determine Proportionate Allocation to New Development.** Once existing deficiencies are identified, it is necessary to determine the proportion of the remaining project cost that is attributable to new development in Cupertino, and therefore can be the subject of a fee program.
- **Account for Known Funding.** To the extent there is dedicated funding for any of the transportation improvements, this portion of costs should not be included in the transportation fee calculation. For this TIF calculation, funding from Measure B has been excluded.

The technical calculations described above and further detailed in subsequent sections establish the following updated nexus findings, consistent with the requirements of the Mitigation Fee Act.

Purpose

The updated fee will help maintain adequate levels of transportation service in Cupertino.

Use of Fee

Fee revenue will be used to fund City transportation improvements, including roadway, intersection, interchange, and traffic signal improvements, as well as the reimbursement of upfront investments from other City funds for transportation improvements required to serve future growth. The list of eligible transportation projects and costs are summarized in **Chapter 3** and further detailed in **Appendix A**.

Relationship

New development in the City of Cupertino will increase demands for and travel on the City's transportation network. Transportation fee revenue will be used to fund additional transportation capacity necessary to accommodate growth. New development will benefit from the increased transportation capacity.

Need

Each new development project will add to the incremental need for transportation capacity and improvements. The transportation improvements considered in this study are considered necessary to meet the City's future transportation needs.

Proportionality

The fee levels are tied to fair share cost allocations to new Citywide development based on the transportation model developed by VTA and adapted for this study purpose by AMG.

Travel Demand Model and Cost Allocation

Travel Demand Assumptions and Methodology

In order to allocate TIF program costs equitably, the City of Cupertino General Plan travel demand model was applied to this nexus study update. As was the case in the prior fee study, in this update, the City of Cupertino General Plan travel demand model was developed using the Santa Clara VTA countywide travel demand model with refined land use estimates for the City of Cupertino. The VTA model is a mathematical representation of travel demand based on the buildout of all of the cities within Santa Clara County, including Cupertino. The model uses socioeconomic data, such as number of jobs and households, for different geographic areas (transportation analysis zones) to predict the expected travel between places in the future.

The model is validated for the current socioeconomic data to predict current traffic volume, which is matched with the actual existing counts to calibrate the model. The calibrated model is then utilized to forecast future travel conditions based on the expected changes in the socioeconomic conditions in the future. The City of Cupertino General Plan model has 54 transportation analysis zones within the model to represent City. The 2040 socioeconomic data are generated by the ABAG and refined by VTA based on input from the City Planning Department. In the 2017 nexus study, this model to derive both average citywide and link-specific characteristics of vehicle travel demand including:

- Internal (trips that start and end in Cupertino).
- Internal/External (trips that have one end either beginning or ending in Cupertino).
- Through (trips that pass completely through Cupertino without stopping).

Only the trips starting or ending in Cupertino (i.e., Internal trips and Internal/External trips) would be responsible for the TIF program costs.

This model and its assumptions and projections continue to be used unchanged in this update because no major development or infrastructure updates have occurred in the City that would significantly change the regional travel model's results.

Table 6 illustrates the updated average citywide characteristics of vehicle travel demand. These methodologies would be applied to determine the percentage of the project costs that could be funded through the TIF program. Generally, two allocation methodologies were applied as follows:

- **Citywide Average.** The cost allocation would be based on the average citywide characteristics of vehicle travel demand, which were determined for all the roadway segments within the City of Cupertino boundary as an average. The City-wide average is used where the traffic model does not provide sufficient detailed to estimate the origin and destination of trips associated with a particular transportation facility or improvement. As shown in **Table 6**, this method would be applied for all the freeway interchange projects, sidewalk projects, bicycle projects, the traffic calming program, and the Transit Center.
- **Select Link.** The cost allocation would be based on link-specific characteristics of vehicle travel demand for the project-related links (I.e., all the approaching and departure roadway segments of the intersection). This methodology is applied where the traffic model can be used to estimate specific travel demand characteristics associated with particular transportation facilities and improvements. As shown in **Table 6**, this method is applied for all the City-owned intersection projects.

Table 6 TIF Travel Demand Assumptions

TIF #	Project Name	Cost Allocation Methodology	Trip Type ^{1, 2}				Share Allocated to New Development ³
			I-I	I-X	X-I	X-X	
1	SR 85 NB Ramps and Stevens Creek Blvd.	Citywide Avg.	5.7%	22.9%	21.5%	49.8%	50.2%
2	Stelling Road and Stevens Creek Blvd.	Select Link	13.1%	32.5%	39.9%	14.5%	85.5%
3	Sunnyvale-Saratoga Rd./De Anza Blvd. & Homestead Rd.	Select Link	2.3%	20.3%	24.5%	52.9%	47.1%
4	De Anza Blvd. and I-280 Ramps	Citywide Avg.	5.7%	22.9%	21.5%	49.8%	50.2%
5	De Anza Blvd. and Stevens Creek Blvd.	Select Link	9.9%	30.5%	33.4%	26.2%	73.8%
6	De Anza Blvd. and McClellan Road/Pacifica Dr.	Select Link	6.4%	25.9%	29.3%	38.4%	61.6%
7	Wolfe Road and Homestead Road	Select Link	1.1%	19.8%	18.7%	60.4%	39.6%
8	Wolfe Road and I-280 NB & SB Ramps ²	Citywide Avg.	5.7%	22.9%	21.5%	49.8%	50.2%
9	Wolfe Road-Miller/Ave. and Stevens Creek Blvd.	Select Link	7.1%	39.3%	31.5%	22.1%	77.9%
10	North Tantau Ave./Quail Ave. and Homestead Rd.	Select Link	0.1%	19.6%	19.2%	61.1%	38.9%
11	Tantau Avenue and Stevens Creek Blvd.	Select Link	3.3%	40.2%	34.8%	21.7%	78.3%
12	Monta Vista Sidewalk (Orange and Byrne)	Citywide Avg.	5.7%	22.9%	21.5%	49.8%	50.2%
13	Monta Vista Sidewalk (McClellan)	Citywide Avg.	5.7%	22.9%	21.5%	49.8%	50.2%
14	Bicycle Projects - Tier 1	Citywide Avg.	5.7%	22.9%	21.5%	49.8%	50.2%
15	Bicycle Projects - Tier 2	Citywide Avg.	5.7%	22.9%	21.5%	49.8%	50.2%
16	Bicycle Projects - Tier 3	Citywide Avg.	5.7%	22.9%	21.5%	49.8%	50.2%
17	Traffic Calming Program	Citywide Avg.	5.7%	22.9%	21.5%	49.8%	50.2%
18	Transit Center (SR 85 and Stevens Creek Blvd)	Citywide Avg.	5.7%	22.9%	21.5%	49.8%	50.2%

[1] I-I = trips that start and end in Cupertino, I-X = trips that originate in Cupertino and end elsewhere, X-I = trips that originate elsewhere but end in Cupertino, X-X = trips that pass-through Cupertino but do not end or originate there.

[2] Travel demand analysis is documented in AMG November, 2020 Memo provided in Appendix A.

[3] Excludes through trips (X-X), or those that do not originate or end in Cupertino.

Sources: City of Cupertino Travel Demand Model; Advanced Mobility Group

As shown, approximately 49.8 percent of the trips using Cupertino roadway facilities would pass through Cupertino completely without stopping. Therefore, approximately 50.2 percent of the project costs would be funded through the TIF program using the Citywide Average approach described above. This allocation percentage is applied for all the freeway interchange intersection projects, sidewalk projects, and bicycle projects.

As shown, for the Select Link analysis, the proportion of transportation improvement costs allocated to new development varies by facility or improvement. Generally, approximately 14.5 percent to 38.4 percent of the trips using the approaching or departure roadway segments of the intersection would pass through Cupertino without stopping. For the three intersections along Homestead Road on the north border of Cupertino, such percentage goes up to between 52.9 percent and 61.1 percent. In summary, approximately 38.9 percent to 85.5 percent of the project costs would be funded through the TIF program for the city-owned intersection projects.

TIF Cost Allocation

The TIF nexus analysis allocates costs based on (1) the amount attributable to new versus existing development, (2) the proportion of trips with at least one trip end in the City (i.e., excludes through trips), and (3) the amount covered by secured funding sources. As described in **Chapter 3**, none of the projects included in the TIF addresses existing deficiencies. Rather, they are a response to new development and limited to intersections currently operating at a level of service (LOS) within City's acceptable standards, but are expected to deteriorate to levels below City standards with proposed new developments. The Citywide sidewalk and bicycle facility installations are also in response to new development and a need to encourage shifts to modes such as walking and biking so that the roadway system is not overtaxed. Consequently, the entire TIF project list was selected to only include improvements attributable to new development.

The cost allocated to new development is based on the analysis described above and summarized in **Table 6**. In addition, the analysis assumes that the Santa Clara County Transportation Infrastructure Tax, approved by the voters in November 2016, and private developer funding will cover 100 percent of the costs for the Wolfe Road/I-280 interchange improvements. Consequently, the costs of these improvements, estimated to be about \$76.3 million, have been excluded from the TIF calculation.

Table 7 illustrates the net impact of the cost allocations described above. As shown, overall, this nexus analysis update allocates approximately \$105.9 million in transportation improvement cost to the TIF. This amount represents about 37 percent of the approximately \$285.9 million in future transportation infrastructure costs considered in this updated analysis.

Table 7 TIF Cost Allocation Assumptions and Calculation

Project Name	Total Project Cost ¹	Share Allocated to New Development	Cost Allocated To TIF Program
1 SR 85 NB Ramps and Stevens Creek Blvd.	\$536,000	50.2%	\$268,809
2 Stelling Road and Stevens Creek Blvd.	\$1,318,000	85.5%	\$1,126,890
3 Sunnyvale-Saratoga Rd./De Anza Blvd. & Homestead Rd.	\$3,210,000	47.1%	\$1,511,910
4 De Anza Blvd. and I-280 Ramps	\$1,840,000	50.2%	\$922,777
5 De Anza Blvd. and Stevens Creek Blvd.	\$145,000	73.8%	\$107,010
6 De Anza Blvd. and McClellan Road/Pacifica Dr.	\$9,707,000	61.6%	\$5,979,512
7 Wolfe Road and Homestead Road	\$7,131,000	39.6%	\$2,823,876
8 Wolfe Road and I-280 NB & SB Ramps ²	\$76,300,000	0.0%	\$0
9 Wolfe Road-Miller/Ave. and Stevens Creek Blvd.	\$153,000	77.9%	\$119,187
10 North Tantau Ave./Quail Ave. and Homestead Rd.	\$145,000	38.9%	\$56,405
11 Tantau Avenue and Stevens Creek Blvd.	\$145,000	78.3%	\$113,535
12 Monta Vista Sidewalk (Orange and Byrne)	\$5,146,076	50.2%	\$2,580,806
13 Monta Vista Sidewalk (McClellan)	\$2,040,000	50.2%	\$1,023,079
14 Bicycle Projects - Tier 1	\$84,842,676	50.2%	\$42,549,407
15 Bicycle Projects - Tier 2	\$11,926,835	50.2%	\$5,981,421
16 Bicycle Projects - Tier 3	\$33,168,500	50.2%	\$16,634,318
17 Traffic Calming Program	\$7,500,000	50.2%	\$3,761,321
18 Transit Center (SR 85 and Stevens Creek Blvd)	\$40,596,488	50.2%	\$20,359,524
Total - Citywide Transportation Projects	\$285,850,575	37.1%	\$105,919,788

[1] See Table 5 and Appendix A.

[2] Since the costs of these projects are to be covered entirely by Measure B, they are excluded from the traffic impact fee calculations removed from the Impact Fee Calculations.

Sources: City of Cupertino; Advanced Mobility Group; Economic & Planning Systems, Inc.

Maximum Fee Calculation

Table 8 shows the maximum supportable transportation impact fee per trip. The maximum fee per trip is calculated by dividing the aggregate fee program cost of \$105.9 million (see **Table 7**) by the total number of trips generated by new development, or 10,120 (see **Table 4**). The results in an average TIF per peak hour trip of \$10,466.

Table 8 Maximum Fee per Trip

Category	Formula	2020 Amount
Fee Program Share of Planned Transportation Facility Costs	a	\$105,919,788
Growth in PM Trips	b	10,120
Cost per Trip	= a / b	\$10,466

Sources: Economic & Planning Systems, Inc.; Advanced Mobility

Finally, **Table 9** calculates the updated maximum TIF for each land use category specified in the General Plan. The updated maximum allowable fee by land use will continue to include a 2 percent charge needed to cover the administrative cost of administering the TIF program. The updated maximum supportable fees are the fee levels that would generate sufficient fee revenues to cover the full TIF cost allocation of \$105.9 million. As discussed below, decisions to charge fees below the updated maximum fee will result in funding gaps that would need to be covered by other funding sources.

Table 9 Maximum TIF Schedule

Land Use	Cost Per Trip	Trip Demand Factor ¹	Raw Fee	Admin Charge ²	Total TIF per Unit
<u>Residential</u>					
Single-Family	\$10,466	0.99	\$10,366	2%	\$10,573 / unit
Multifamily	\$10,466	0.61	\$6,427	2%	\$6,556 / unit
<u>Non-residential</u>					
Retail	\$10,466	1.59	\$16.67	2%	\$17.01 / sqft.
Office	\$10,466	2.79	\$29.20	2%	\$29.78 / sqft.
Hotel	\$10,466	0.54	\$5,683	2%	\$5,797 / room
Other	\$10,466	1.00	\$10,466	2%	\$10,675 / trip

[1] PM Trips per dwelling unit, per 1,000 building square feet, or per hotel room.

[2] Administrative charge of 2.0 percent of "raw" TIF for legal, accounting, and other administrative costs (e.g. revenue collection, mandated public reporting, and Nexus Analysis).



APPENDICES

Appendix A-1: Methodology, Project List and Costs
Memorandum

Appendix A-2: Detailed Cost Estimates

Appendix B: Institute of Transportation Engineers
Common Trip Generation Rates



APPENDIX A-1: MEMORANDUM

DATE: NOVEMBER 1, 2020

TO: DAVID STILLMAN, TRANSPORTATION MANAGER

FROM: JOY BHATTACHARYA, ADVANCED MOBILITY GROUP (AMG)

RE: TECHNICAL MEMORANDUM – LAND USE PROJECTIONS, TRAFFIC ANALYSIS, COST ESTIMATES AND TRAVEL DEMAND MODEL ANALYSIS FOR CUPERTINO TRAFFIC IMPACT FEE (TIF)/NEXUS STUDY UPDATE

The City of Cupertino adopted an amended General Plan known as "General Plan: Community Vision 2015 - 2040." (The General Plan) on December 4, 2014. The City has also developed the TIF Program to fund the roadway infrastructure improvements that are necessary to mitigate impacts to accommodate future growth. To support the TIF program, the City approved a Nexus Study in 2017 that serves as the basis for requiring development impact fees under AB 1600 legislation. The City is currently updating the original Nexus Study to account for additional projects and cost estimates.

This memorandum summarizes the analysis and the findings for the following topics:

- Land use projections;
- Existing and future traffic analysis;
- Construction cost assumptions and methodology; and
- Travel demand model analysis.

LAND USE PROJECTIONS

For the purpose of the 2017 Nexus Study and this Update, City of Cupertino's land uses were categorized as follows:

Single Family Residential: Detached single-family homes. Traffic impact fees for new single-family residential development are applied on a per unit basis.

Apartment / Townhouse / Condo (Multi-Family): Multi-family housing in which walls are shared among units. Traffic impact fees for new construction of this type of residential development are applied on a per unit basis.

Retail: Retail development can include shopping centers, discount stores, nurseries, factory outlets, car sale lots, convenient stores, and specialty stores. Traffic impact fees for new construction of this type of development are applied on a square footage basis.

Office: General offices, including professional and medical office development, government offices, and post offices. Traffic impact fees for this type of development are applied on a square footage basis.

Hotel: Traffic impact fees for this type of development are applied on a per room basis.

The land uses projected in the General Plan and the General Plan travel demand model, as shown in **Table 1** below, were applied to the 2017 Nexus Study. Given the minimal amount of new City growth that has occurred since completion of the 2017 Nexus Study, the Update relies on the same land use projections.

Table 1 Citywide Development Allocation Between 2014 and 2040

	2014	2040
Households (units)	21,412	23,294
<i>Single Family (units)</i>	15,117	16,172
<i>Multi-Family (units)</i>	6,295	7,122
Retail (ksf)	3,632	4,431
Office (ksf)	8,916	11,470
Hotel (rooms)	1,116	1,429

Note: ksf = 1,000 square footage

Source: City of Cupertino Community Vision 2040, Table LU-1.

EXISTING AND FUTURE TRAFFIC ANALYSIS

The existing and future peak-hour levels of service were provided at 41 intersections in the General Plan Draft Environmental Impact Report (DEIR). The intersections where significant impact(s) were identified in the General Plan DEIR but not in CEQA documents for other relevant studies (e.g. Apple Campus 2, Marino Plaza, and the Hamptons) are listed in **Table 2**.

Table 2 Intersection level of Service

Int No.	Intersection	Jurisdiction	LOS Standard	A.M. Peak Hour				P.M. Peak Hour			
				Ex LOS		General Plan Build Out LOS		Ex LOS		General Plan Build Out LOS	
				Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	SR 85 NB Ramps and Stevens Creek Boulevard	Cupertino	D	42.8	D	65.1	E	19.5	B-	21.5	C+
2	Stelling Road and Stevens Creek Boulevard	Cupertino	E+	42.4	D	47.7	D	32.9	C-	88.2	F
3	Sunnyvale- Saratoga Road/De Anza Boulevard and Homestead Road	Cupertino	D	43.2	D	101.5	F	37.2	D+	181.4	F
4.1	De Anza Boulevard and I-280 NB Ramps	Cupertino	D	33.9	C-	100	F	33	C-	162.2	F
4.2	De Anza Boulevard and I-280 SB Ramps	Cupertino	D	34.2	C-	110.9	F	18.9	B-	99.9	F
5	De Anza Boulevard and Stevens Creek Boulevard	Cupertino	E+	37.4	D+	53.6	D-	43.1	D	160.4	F
6	De Anza Boulevard and McClellan Road/Pacifica Drive	Cupertino	D	29	C	39.3	D	48.9	D	108.8	F
7	Wolfe Road and Homestead Road	Cupertino	D	28.1	C	39.6	D	31.4	C	105.2	F
8	Wolfe Road and I- 280 NB Ramp	Cupertino	D	12.8	B	113.2	F	12.7	B	70.3	E
9	Wolfe Road and I- 280 SB Ramp	Cupertino	D	11.9	B+	86	F	8.4	A	85.7	F
10	Wolfe Road- Miller/Avenue and Stevens Creek Boulevard	Cupertino	D	37.4	D+	57.8	E+	38	D+	54.6	D-
11	North Tantau Avenue/Quail Avenue and Homestead Road	Cupertino	D	35.7	D+	67.7	E	34.2	C-	56.7	E+
12	Tantau Avenue and Stevens Creek Boulevard	Cupertino	D	36.6	D+	58.1	E+	37.9	D+	85.3	F

CONSTRUCTION COST ASSUMPTIONS AND METHODOLOGY

As part of the Cupertino TIF and Nexus Study Update, a TIF project list has been proposed, as illustrated in Figures 1 and 2.

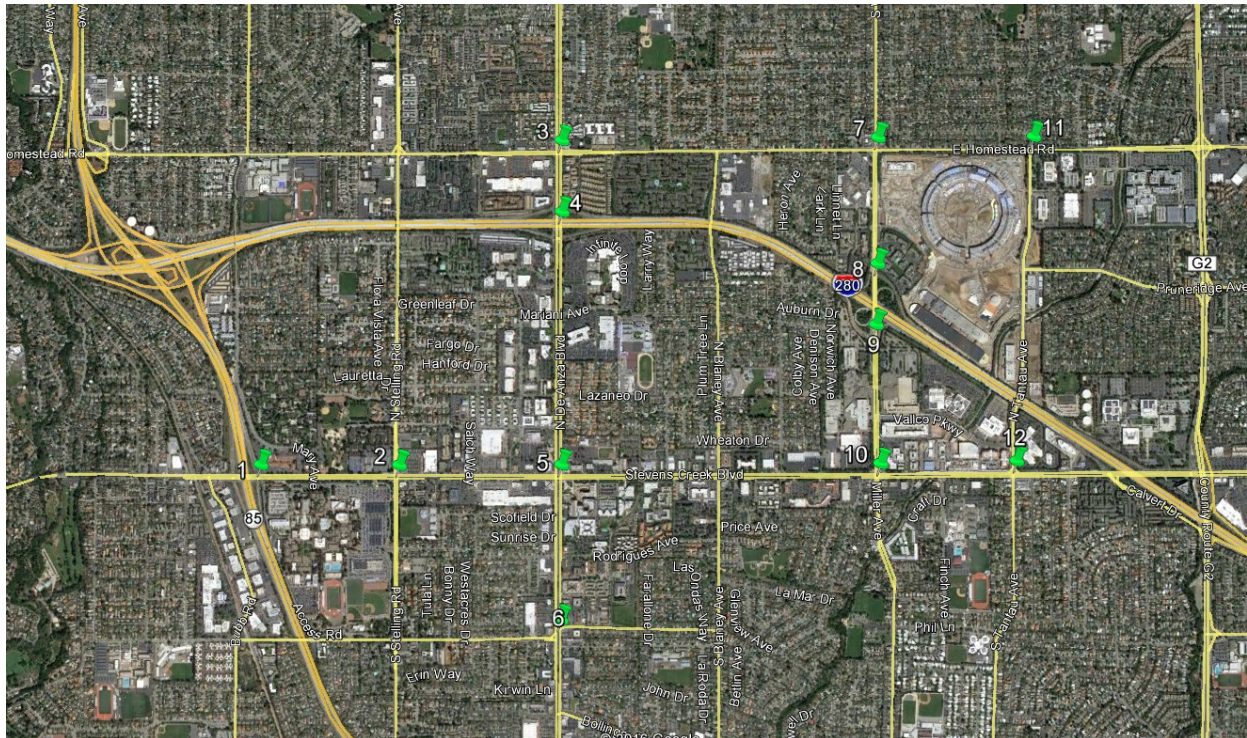


Figure 1 TIF Transportation Projects

The projects included in the list cover the intersections / segments where significant impact(s) were identified in the General Plan DEIR (December 2014). In addition, the projects identified in the City of Cupertino 2016 Bicycle Transportation Plan are also included in the list as are traffic calming projects and a proposed regional transit center at SR 85 and Stevens Creek Blvd..

The list of transportation projects identified in these existing planning documents was further refined as follows:

- The TIF program excluded any projects that are outside the City of Cupertino
- The TIF program excluded any projects where secured and dedicated funding source have already been established to cover the full cost (e.g. projects identified as mitigation in CEQA documents for Apple Campus 2, Marina Plaza, and the Hamptons).

A cost estimate was conducted for each proposed TIF project. The cost includes all of the elements and activities necessary to complete the project (e.g. engineering, property acquisition, construction).

Table 3 shows the proposed TIF projects along with the cost estimates. Appendix A-2 illustrates the cost estimate details for each proposed TIF project.

As part of the Project No. 4 in **Table 3**, a significant impact was identified at the intersection of De Anza Boulevard and I-280 SB Ramps in the General Plan DEIR under the 2040 plus Project conditions. However, no mitigation measures were provided in the DEIR. By using the volumes provided in the DEIR, the mitigation measures for this intersection was developed and included as part of the overall cost estimates.

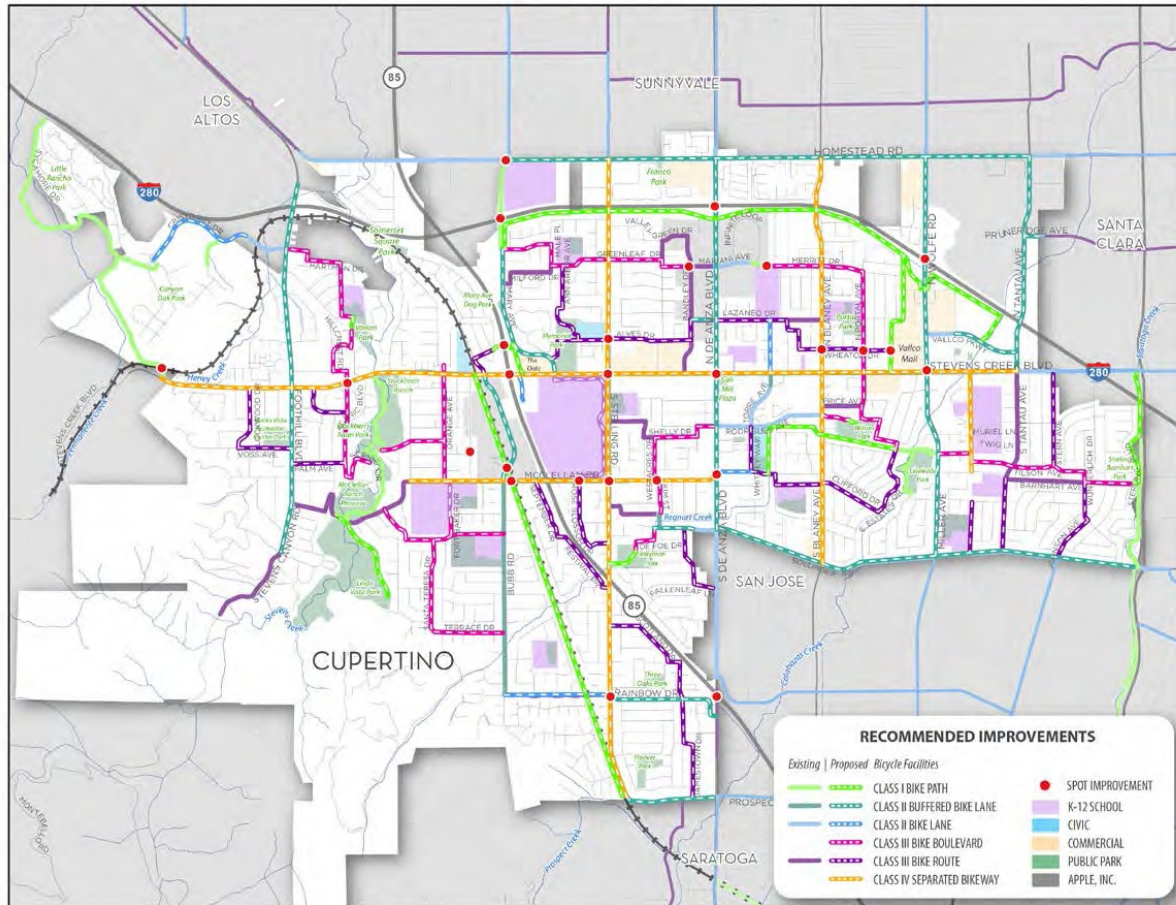


Figure 2 TIF Bicycle Projects

Table 3 – Cupertino TIF & Nexus Study Update Project List

Project No.	Intersection	Description / Source	Construction Cost
1	SR 85 NB Ramps and Stevens Creek Boulevard ¹	Add an exclusive northbound left-turn lane. Community Vision 2015 - 2040	\$536,000
2	Stelling Road and Stevens Creek Boulevard ¹	Add a second exclusive eastbound left-turn lane; right-turns would share the bike lane. Community Vision 2015 - 2040	\$1,318,000
3	Sunnyvale-Saratoga Road/De Anza Boulevard and Homestead Road ¹	Widen De Anza Blvd to 4 lanes in each direction or install triple left-turn lanes. Community Vision 2015 - 2040	\$3,210,000
4	De Anza Boulevard and I-280 Ramps ¹	De Anza Boulevard and I-280 NB Ramps: Restripe De Anza Blvd in the SB direction to provide room for right-turn vehicles to be separated from through traffic; paint a bike box at the front of lane. Community Vision 2015 - 2040 De Anza Boulevard and I-280 SB Ramps: Add a second eastbound left-turn lane and two additional eastbound right-turn lanes on the I- 280 SB off-ramp. Community Vision 2015 - 2040	\$1,840,000
5	De Anza Boulevard and Stevens Creek Boulevard ¹	Restripe westbound Stevens Creek to provide room for right turn vehicles to be separated from through traffic; paint a bike box at the front of the lane. Community Vision 2015 - 2040	\$145,000
6	De Anza Boulevard and McClellan Road/Pacifica Drive ¹	Realign (currently offset) such that McClellan Rd and Pacifica Dr legs are across from each other; double left-turn lanes may be required to be added to De Anza Blvd. Community Vision 2015 - 2040	\$9,707,000
7	Wolfe Road and Homestead Road ¹	Add a third southbound through lane and a southbound exclusive right-turn lane; add a third westbound though lane, an addition of a westbound exclusive right-turn lane, and an additional westbound exclusive right-turn lane; add an additional eastbound through lane, an additional eastbound receiving lane on Homestead, and a second eastbound exclusive left-turn lane. Community Vision 2015 - 2040	\$7,131,000
8	Wolfe Road and I-280 NB Ramp ²	Add a third northbound through lane and extended north of the interchange; may pursue a redesign of the interchange to go from a partial cloverleaf design to a diamond design. Community Vision 2015 - 2040	\$38,150,000

Project No.	Intersection	Description / Source	Construction Cost
9	Wolfe Road and I-280 SB Ramp ²	Add a third northbound through lane; may pursue a redesign of the interchange to go from a partial cloverleaf design to a diamond design. Community Vision 2015 - 2040	\$38,150,000
10	Wolfe Road- Miller/Avenue and Stevens Creek Boulevard ¹	Restripe the westbound leg to provide room so that right turn vehicles could be separated from through vehicles; paint a bike box at the front of the lane. Community Vision 2015 - 2040	\$153,000
11	North Tantau Avenue/Quail Avenue and Homestead Road ¹	Restripe the southbound leg to provide a separate left turn lane; require the removal of on-street parking near the intersection. Community Vision 2015 - 2040	\$145,000
12	Tantau Avenue and Stevens Creek Boulevard ¹	Add a separate left-turn lane to northbound Tantau Ave. Community Vision 2015 - 2040	\$145,000
13	Monte Vista Sidewalk (Orange and Byrne) ³	Community Vision 2015 - 2040	\$5,146,076
14	Monte Vista Sidewalk (McClellan) ³	Community Vision 2015 - 2040	\$2,040,000
15	Bicycle Projects Tier 1 ⁴	Bicycle Transportation Master Plan	\$84,842,676
16	Bicycle Projects Tier 2 ⁴	Bicycle Transportation Master Plan	\$11,926,835
17	Bicycle Projects Tier 3 ⁴	Bicycle Transportation Master Plan	\$33,168,500
18	Traffic Calming Programs ³	Ten (10) speed-bumps (at a cost of \$30,000 each). City of Cupertino	\$7,500,000
19	Transit Center (SR 85 and Stevens Creek Blvd) ⁵	Cost estimates represent the median of two potential Transit Center scenarios provided by City of Cupertino ⁵	\$40,596,488
Total			\$285,850,575

Notes:

1. Based on AMG’s ballpark opinion of cost estimate using the industry standards (Caltrans and Bay Area Cities in the past 5 years).
2. Based on cost estimates included in the I-280 and Wolfe Road Alternative Analysis Study Report, October 4, 2016.
3. Cost estimated provided by City of Cupertino.
4. Based on cost estimates included in the City of Cupertino 2016 Bicycle Transportation Plan, Appendix F, with updates to selected items provided by City staff in 2020.
5. Cost estimate provided by AMG. This project is likely to be eligible for federal funding, which requires a local match of 11.47%. Therefore, the listed project cost represents 11.47% of total project costs, or the amount that the City is required to contribute towards the project.

TRAVEL DEMAND MODEL ANALYSIS

In order to allocate TIF program costs equitably, the City of Cupertino General Plan travel demand model is applied to this nexus Study Update. Specifically, the model is used to derive both average citywide or link-specific characteristics of vehicle travel demand including:

- Internal (trips that start and end in Cupertino)
- Internal/External (trips that have one end either beginning or ending in Cupertino)
- Through (trips that pass completely through Cupertino without stopping)

Only the trips starting or ending in Cupertino (i.e. Internal trips and Internal/External trips) would be responsible for the TIF program costs.

The cost allocation methodology suggested for each proposed TIF project is listed in **Table 4**. These methodologies would be applied to determine the percentage of the project costs that could be funded through the TIF program. Generally, two allocation methodologies were suggested as follows:

- **Citywide Average** - the cost allocation would be based on the average citywide characteristics of vehicle travel demand, which were determined for all the roadway segments within the City of Cupertino boundary as an average. As shown in **Table 4**, this method would be applied for all the freeway interchange intersection projects and bicycle projects.
- **Select Link** - the cost allocation would be based on link-specific characteristics of vehicle travel demand for the project-related links (i.e. all the approaching and departure roadway segments of the intersection). As shown in **Table 4**, this method would be applied for all the city-owned intersection projects.

Table 4 – Cupertino TIF & Nexus Study Update Project Cost Allocation Methodology

Project No.	Project	Suggested Cost Allocation Methodology
1	SR 85 NB Ramps and Stevens Creek Boulevard	Citywide Average
2	Stelling Road and Stevens Creek Boulevard	Select Link
3	Sunnyvale-Saratoga Road/De Anza Boulevard and Homestead Road	Select Link
4	De Anza Boulevard and I-280 Ramps	Citywide Average
5	De Anza Boulevard and Stevens Creek Boulevard	Select Link
6	De Anza Boulevard and McClellan Road/Pacifica Drive	Select Link
7	Wolfe Road and Homestead Road	Select Link
8	Wolfe Road and I-280 NB Ramp	Citywide Average
9	Wolfe Road and I-280 SB Ramp	Citywide Average
10	Wolfe Road-Miller/Avenue and Stevens Creek Boulevard	Select Link
11	North Tantau Avenue/Quail Avenue and Homestead Road	Select Link
12	Tantau Avenue and Stevens Creek Boulevard	Select Link
13	Monte Vista Sidewalk (Orange and Byrne) ³	Citywide Average
14	Monte Vista Sidewalk (McClellan) ³	Citywide Average

Project No.	Project	Suggested Cost Allocation Methodology
13	Bicycle Projects Tier 1	Citywide Average
14	Bicycle Projects Tier 2	Citywide Average
15	Bicycle Projects Tier 3	Citywide Average
16	Traffic Calming Programs	Citywide Average
17	Transit Center (SR 85 and Stevens Creek Blvd)	Citywide Average

Table 5 illustrates the average citywide characteristics of vehicle travel demand. As shown, approximately 49.8% of the trips using Cupertino roadway facilities would pass through Cupertino completely without stopping. Therefore, in average, approximately 50.2% of the project costs would be funded through the TIF program. This allocation percentage would be applied for all the freeway interchange intersection projects and bicycle projects.

Table 5 Citywide Average Trip Allocation

	I-I	I-X	X-I	X-X	Share Allocated to New Development
Citywide Average	5.7%	22.9%	21.5%	49.8%	50.0%

Notes: I-I trips = internal trips, I-X trips = trips beginning in Cupertino, X-I trips = trips ending in Cupertino, X-X trips = through trips

Table 6 illustrates the link-specific characteristics of vehicle travel demand for the city-owned intersection projects. As shown, generally, approximately 14.5% to 38.4% of the trips using the approaching or departure roadway segments of the intersection would pass through Cupertino without stopping. For the three intersections along Homestead Road on the north border of Cupertino, such percentage goes up to between 52.9% and 61.1%. In summary, approximately 38.9% to 85.5% of the project costs would be funded through the TIF program for the city-owned intersection projects.

Table 6 Select Link Trip Allocation

Project No.	I-I	I-X	X-I	X-X	Share Allocated to New Development
2	13.1%	32.5%	39.9%	14.5%	85.5%
3	2.3%	20.3%	24.5%	52.9%	47.1%
5	9.9%	30.5%	33.4%	26.2%	73.8%
6	6.4%	25.9%	29.3%	38.4%	61.6%
7	1.1%	19.8%	18.7%	60.4%	39.6%
10	7.1%	39.3%	31.5%	22.1%	77.9%
11	0.1%	19.6%	19.2%	61.1%	38.9%
12	3.3%	40.2%	34.8%	21.7%	78.3%

Notes: I-I trips = internal trips, I-X trips = trips beginning in Cupertino, X-I trips = trips ending in Cupertino, X-X trips = through trips



APPENDIX A-2:
Detailed Cost Estimates



ENGINEER'S ESTIMATE:

Project Name: Sunnyvale-Saratoga Road/De Anza Boulevard and Homestead Road Add 2 Lanes

Prepared by: J. Bhattacharya

Date: October 20, 2016

Item	Work Description	Unit	Qty.	Unit Price	Total Price
1	Mobilization	LS	1	\$ 45,000.00	\$45,000
2	Traffic control	LS	1	\$ 45,000.00	\$45,000
3	Demolition, clearing & grubbing	LS	1	\$ 45,000.00	\$45,000
4	Remove existing AC	SF	1,000	\$ 5.00	\$5,000
5	Install new curb ramps	EA	4	\$ 4,100.00	\$16,400
6	New PCC curb & gutter	LF	2,000	\$ 37.00	\$74,000
7	New AC	SF	24,000	\$ 10.00	\$240,000
8	New PCC S/W	SF	10,000	\$ 11.00	\$110,000
9	Storm Drain Improvements	LS	1	\$ 40,000.00	\$40,000
10	Roadway Excavation	LS	1	\$ 30,000.00	\$30,000
11	Striping & Signing	LS	1	\$ 15,000.00	\$15,000
12	Traffic signal modifications	LS	1	\$380,270.00	\$380,270
13	Irrigation & Landscaping Modifications	LS	1	\$ 35,000.00	\$35,000
14	Relocate luminaire	EA	6	\$ 5,000.00	\$30,000
15	Relocate utilities	LS	1	\$ 10,000.00	\$10,000
16	Right-of-way take	SF	6,000	\$ 250.00	\$1,500,000
	SUBTOTAL (CONSTRUCTION):				\$1,120,670
	SUBTOTAL (WITH ROW):				\$2,620,670

Subtotal-- Bid Items

\$2,620,670

Construction Contingency (assume 15%)	15%	\$168,100.50
Testing, Staking	5%	\$56,033.50
Construction Management	13%	\$145,687.10
Subtotal: Construction		\$369,821.10

Design	12%	\$134,480.40
Engineering Studies	3%	\$33,620.10
Environmental	3%	\$33,620.10
Construction Engineering	1.5%	\$16,810.05
		\$218,530.65

TOTAL PROJECT **\$3,209,022**

Proposed CIP Budget Amount **\$3,210,000**

Total Design & Admin \$588,351.75

Assumptions:

- NB lane is 400' long; SB lane is 600' long
- New curb & gutter, sidewalk, and curb ramp to be installed
- Traffic signal modification
- Right-of-way take



ENGINEER'S ESTIMATE:
Project Name: De Anza Boulevard and Stevens Creek
Boulevard Right-Turn Lane

Prepared by: J. Bhattacharya

Date: September 30, 2016

Item	Work Description	Unit	Qty.	Unit Price	Total Price
1	Mobilization	LS	1	\$ 15,000.00	\$15,000
2	Traffic control	LS	1	\$ 15,000.00	\$15,000
3	Striping & Signing	LS	1	\$ 15,000.00	\$15,000
4	Traffic signal modification	LS	1	\$50,000.00	\$50,000
SUBTOTAL:					\$95,000

Subtotal-- Bid Items **\$95,000**

Construction Contingency (assume 15%)	15%	\$14,250.00
Testing, Staking	5%	\$4,750.00
Construction Management	13%	\$12,350.00
Subtotal: Construction		\$31,350.00

Design	12%	\$11,400.00
Engineering Studies	3%	\$2,850.00
Environmental	3%	\$2,850.00
Construction Engineering	1.5%	\$1,425.00
		\$18,525.00

TOTAL PROJECT **\$144,875**

Proposed CIP Budget Amount **\$145,000**

Total Design & Admin \$49,875.00

Assumptions:
 Right-turn lane is 350' long
 Striping includes Green Lanes and Bike Box Signal
 Modification include equipment upgrades



ENGINEER'S ESTIMATE:

Project Name: Wolfe Road and Homestead Road Add 5 Lanes

Prepared by: J. Bhattacharya

Date: October 20, 2016

Item	Work Description	Unit	Qty.	Unit Price	Total Price
1	Mobilization	LS	1	\$ 75,000.00	\$75,000
2	Traffic control	LS	1	\$ 75,000.00	\$75,000
3	Demolition, clearing & grubbing	LS	1	\$ 60,000.00	\$60,000
4	Remove existing AC	SF	1,100	\$5.00	\$5,500
5	Install new curb ramps	EA	8	\$4,100.00	\$32,800
6	New PCC curb & gutter	LF	1,800	\$37.00	\$66,600
7	New AC	SF	30,600	\$10.00	\$306,000
8	New PCC S/W	SF	9,000	\$11.00	\$99,000
9	Roadway Excavation	LS	1	\$ 50,000.00	\$50,000
10	Striping & Signing	LS	1	\$ 15,000.00	\$15,000
11	Traffic signal modifications	LS	1	\$ 300,000.00	\$300,000
12	Irrigation & Landscaping Modifications	LS	1	\$ 30,000.00	\$30,000
13	Relocate luminaire	EA	7	\$ 5,000.00	\$35,000
14	Relocate utilities	LS	1	\$ 100,000.00	\$100,000
15	Right-of-way take	SF	15,900	\$ 250.00	\$3,975,000
	SUBTOTAL (CONSTRUCTION):				\$1,249,900
	SUBTOTAL (WITH ROW):				\$5,224,900

Subtotal-- Bid Items \$6,474,800

Construction Contingency (assume 15%)	15%	\$187,485.00
Testing, Staking	5%	\$62,495.00
Construction Management	13%	\$162,487.00
Subtotal: Construction		\$412,467.00

Design	12%	\$149,988.00
Engineering Studies	3%	\$37,497.00
Environmental	3%	\$37,497.00
Construction Engineering	1.5%	\$18,748.50
		\$243,730.50

TOTAL PROJECT \$7,130,998

Proposed CIP Budget Amount \$7,131,000

Total Design & Admin \$656,197.50

Assumptions:

- SB Right-Lane 300'; WB Thru-Lane 350'; WB Right-Lane 200'; EB Thru-Lane 300'; EB Left-Lane 400' New curb & gutter, sidewalk, and curb ramp to be installed
- Traffic signal modification
- Right-of-way take

ENGINEER'S ESTIMATE:



Project Name: Wolfe Road and I-280 NB Ramp Diamond Interchange

Prepared by: J. Bhattacharya

Date: October 20, 2016

Item	Work Description	Unit	Qty.	Unit Price	Total Price
1	Diamond Interchange	LS	1	\$ 38,150,000.00	\$38,150,000
SUBTOTAL:					\$38,150,000

Subtotal-- Bid Items **\$38,150,000**

Construction Contingency (assume 15%)	15%	
Testing, Staking	5%	
Construction Management	13%	
Subtotal: Construction		

Design	12%	
Engineering Studies	3%	
Environmental	3%	
Construction Engineering	1.5%	

TOTAL PROJECT **\$38,150,000**

Proposed CIP Budget Amount **\$38,150,000**

Total Design & Admin \$0.00

Assumptions:
 Estimate for Partial Cloverleaf = \$76.3 Million (from I-280 Wolfe Alter Analysis Report 10/4/16)

ENGINEER'S ESTIMATE:



Project Name: Wolfe Road and I-280 SB Ramp Diamond Interchange

Prepared by: J. Bhattacharya

Date: October 20, 2016

Item	Work Description	Unit	Qty.	Unit Price	Total Price
1	Diamond Interchange	LS	1	\$ 38,150,000.00	\$38,150,000
SUBTOTAL:					\$38,150,000

Subtotal-- Bid Items **\$38,150,000**

Construction Contingency (assume 15%)	15%	
Testing, Staking	5%	
Construction Management	13%	
Subtotal: Construction		

Design	12%	
Engineering Studies	3%	
Environmental	3%	
Construction Engineering	1.5%	

TOTAL PROJECT **\$38,150,000**

Proposed CIP Budget Amount **\$38,150,000**

Total Design & Admin \$0.00

Assumptions:
 Estimate for Partial Cloverleaf = \$76.3 Million (from I-280 Wolfe Alter Analysis Report 10/4/16)



ENGINEER'S ESTIMATE:
Project Name: Wolfe Road-Miller/Avenue and Stevens Creek
Boulevard Right-Turn Lane

Prepared by: J. Bhattacharya

Date: October 20, 2016

Item	Work Description	Unit	Qty.	Unit Price	Total Price
1	Mobilization	LS	1	\$ 15,000.00	\$15,000
2	Traffic control	LS	1	\$ 15,000.00	\$15,000
3	Striping & Signing	LS	1	\$ 20,000.00	\$20,000
4	Traffic signal modification	LS	1	\$50,000.00	\$50,000
SUBTOTAL:					\$100,000

Subtotal-- Bid Items **\$100,000**

Construction Contingency (assume 15%)	15%	\$15,000.00
Testing, Staking	5%	\$5,000.00
Construction Management	13%	\$13,000.00
Subtotal: Construction		\$33,000.00

Design	12%	\$12,000.00
Engineering Studies	3%	\$3,000.00
Environmental	3%	\$3,000.00
Construction Engineering	1.5%	\$1,500.00
		\$19,500.00

TOTAL PROJECT **\$152,500**

Proposed CIP Budget Amount **\$153,000**

Total Design & Admin \$52,500.00

Assumptions:
 Right-turn lane is 450' long
 Striping includes Green Lanes and Bike Box Signal
 Modification include equipment upgrades

ENGINEER'S ESTIMATE:

Project Name: North Tantau Avenue/Quail Avenue and Homestead Road Left-Turn Lane

Prepared by: J. Bhattacharya

Date: October 20, 2016

Item	Work Description	Unit	Qty.	Unit Price	Total Price
1	Mobilization	LS	1	\$ 15,000.00	\$15,000
2	Traffic control	LS	1	\$ 15,000.00	\$15,000
3	Striping & Signing	LS	1	\$ 15,000.00	\$15,000
4	Signal Modifications	LS	1	\$ 50,000.00	\$50,000
	SUBTOTAL:				\$45,000

Subtotal-- Bid Items **\$95,000**

Construction Contingency (assume 15%)	15%	\$14,250.00
Testing, Staking	5%	\$4,750.00
Construction Management	13%	\$12,350.00
Subtotal: Construction		\$31,350.00

Design	12%	\$11,400.00
Engineering Studies	3%	\$2,850.00
Environmental	3%	\$2,850.00
Construction Engineering	1.5%	\$1,425.00
		\$18,525.00

TOTAL PROJECT **\$144,875**

Proposed CIP Budget Amount **\$145,000**

Total Design & Admin \$49,875.00

Assumptions:
 Left Turn lane can be added in existing pavement width Signal
 Modifications for southbound movement



ENGINEER'S ESTIMATE:

Project Name: Tantau Avenue and Stevens Creek Boulevard Left-Turn Lane

Prepared by: J. Bhattacharya

Date: October 20, 2016

Item	Work Description	Unit	Qty.	Unit Price	Total Price
1	Mobilization	LS	1	\$ 15,000.00	\$15,000
2	Traffic control	LS	1	\$ 15,000.00	\$15,000
3	Striping & Signing	LS	1	\$ 15,000.00	\$15,000
4	Signal Modifications	LS	1	\$ 50,000.00	\$50,000
SUBTOTAL:					\$95,000

Subtotal-- Bid Items **\$95,000**

Construction Contingency (assume 15%)	15%	\$14,250.00
Testing, Staking	5%	\$4,750.00
Construction Management	13%	\$12,350.00
Subtotal: Construction		\$31,350.00

Design	12%	\$11,400.00
Engineering Studies	3%	\$2,850.00
Environmental	3%	\$2,850.00
Construction Engineering	1.5%	\$1,425.00
		\$18,525.00

TOTAL PROJECT **\$144,875**

Proposed CIP Budget Amount **\$145,000**

Total Design & Admin \$49,875.00

Assumptions:
Left Turn Lane can be placed in existing width. Signal modifications to add left turn lane signal head.

Cupertino Transit Center - Programming Level Cost Estimates for Traffic Impact Fee Nexus Study

Transit Center Option A (Low) - Cupertino Transit Center

		Costs
Transit Center Structure	Building with pedestrian waiting area and indoor facilities	\$5,000,000
Site Work	Demolition, clearing, earthwork, site utilities, utility relocation, ground water treatments, pedestrian/bike access accommodations, landscaping, bus accessways, loading and unloading platforms, bicycle parking etc.	\$10,000,000
Transit Amenities	Bus Shelters, benches, trash receptacles etc. at bus loading/unloading zones. Digital transit pass kiosks	\$1,500,000
Bicycle Amenities	e-bicycle lockers, bicycle maintenance and repair area, locker room with showers for regional bicycle commuters	\$1,000,000
Traffic signal Improvements	Transit Signal prioritization at all intersections in the vicinity	\$750,000
Real-Time Information	Real-time bus arrival information	\$1,000,000
Right-of-way		
Professional Services	Administration, Design and construction management Costs - 30%	\$5,775,000
Unallocated Contingencies	Program wide contingencies including professional services - 35%	\$8,758,750
Total Cost		\$33,783,750

Transit Center Option A (High) - Cupertino Transit Center

		Costs
Transit Center Structure	Building with pedestrian waiting area and indoor facilities	\$9,000,000
Site Work	Demolition, clearing, earthwork, site utilities, utility relocation, ground water treatments, pedestrian/bike access accommodations, landscaping, bus accessways, loading and unloading platforms, bicycle parking etc.	\$18,000,000
Transit Amenities	Bus Shelters, benches, trash receptacles etc. at bus loading/unloading zones. Digital transit pass kiosks	\$3,000,000
Bicycle Amenities	e-bicycle lockers, bicycle maintenance and repair area, locker room with showers for regional bicycle commuters	\$2,000,000
Traffic signal Improvements	Transit Signal prioritization at all intersections in the vicinity	\$2,500,000
Real-Time Information	Real-time bus arrival information	\$2,500,000
Right-of-way		
Professional Services	Administration, Design and construction management Costs - 40%	\$14,800,000
Unallocated Contingencies	Program wide contingencies including professional services - 35%	\$18,130,000
Total Cost		\$69,930,000

Cupertino Transit Center - Programming Level Cost Estimates for Traffic Impact Fee Nexus Study

Transit Center Option B (Low) - Cupertino Station

		Costs
Freeway Cap-Ramp Approaches	Physical Structure of the freeway cap with ramp approaches	\$300,000,000
Transit Center Structure	Building with pedestrian waiting area and indoor facilities	\$7,000,000
Site Work	Demolition, clearing, earthwork, site utilities, utility relocation, ground water treatments, pedestrian/bike access accommodations, landscaping, bus accessways, loading and unloading platforms, bicycle parking etc.	\$50,000,000
Transit Amenities	Bus Shelters, benches, trash receptacles etc. at bus loading/unloading zones. Digital transit pass kiosks	\$2,500,000
Bicycle Amenities	e-bicycle lockers, bicycle maintenance and repair area, locker room with showers for regional bicycle commuters	\$2,000,000
Traffic signal Improvements	Transit Signal prioritization at all intersections in the vicinity	\$1,000,000
Real-Time Information	Real-time bus arrival information	\$1,000,000
Right-of-way		
Professional Services	Administration, Design and construction management Costs - 30%	\$109,050,000
Unallocated Contingencies	Program wide contingencies including professional services - 35%	\$165,392,500
Total Cost		\$637,942,500

Transit Center Option B (High) - Cupertino Station

		Costs
Freeway Cap-Ramp Approaches	Physical Structure of the freeway cap with ramp approaches	\$500,000,000
Transit Center Structure	Building with pedestrian waiting area and indoor facilities	\$12,000,000
Site Work	Demolition, clearing, earthwork, site utilities, utility relocation, ground water treatments, pedestrian/bike access accommodations, landscaping, bus accessways, loading and unloading platforms, bicycle parking etc.	\$90,000,000
Transit Amenities	Bus Shelters, benches, trash receptacles etc. at bus loading/unloading zones. Digital transit pass kiosks	\$4,500,000
Bicycle Amenities	e-bicycle lockers, bicycle maintenance and repair area, locker room with showers for regional bicycle commuters	\$3,500,000
Traffic signal Improvements	Transit Signal prioritization at all intersections in the vicinity	\$3,500,000
Real-Time Information	Real-time bus arrival information	\$3,000,000
Right-of-way		
Professional Services	Administration, Design and construction management Costs - 40%	\$246,600,000
Unallocated Contingencies	Program wide contingencies including professional services - 35%	\$302,085,000
Total Cost		\$1,165,185,000

Cupertino Transit Center - Programming Level Cost Estimates for Traffic Impact Fee Nexus Study

Summary of Transit Center Costs

Design Option	Amount
Transit Center Option A	
Low	\$33,783,750
High	\$69,930,000
Transit Center Option B	
Low	\$637,942,500
High	\$1,165,185,000
Median	\$353,936,250
Local Match	11.47%
Amount Allocated To Fee Program	\$40,596,488

Cupertino Traffic Impact Fee & Nexus Study Bicycle Projects and Cost Estimates

Project No.	Project	Location	Start	End	Notes	Miles	Rounded Cost	Source	
Tier 1									
1	Class IV Protected Bikeway	Stevens Creek Blvd	Foothill Blvd	Tantau Ave	--	3.43	\$8,320,000	City of Cupertino	
2	Class IV Protected Bikeway	McClellan Rd	Byrne Ave	De Anza Blvd	--	1.43	\$8,882,676	City of Cupertino	
3	Grade Separated Crossing Study	Highway 85 Crossing	Grand Ave	Mary Ave	--	0	\$20,000,000	Bicycle Transportation Plan; City of Cupertino	
4	Class IV Separated Bikeway	Finch Ave	Phil Ln	Stevens Creek Blvd	--	0.45	\$1,090,000	Bicycle Transportation Plan; City of Cupertino	
5	Class I Path	I-280 Channel Bike Path	Mary Ave/Meteor Dr	Tantau Ave/Vallco Pkwy	--	2.87	\$45,200,000	City of Cupertino	
6	Bike Blvd. Implementation Phase 1						\$1,350,000	City of Cupertino	
Subtotal								\$84,842,676	
Tier 2									
8	Class II Buffered Bike Lane	De Anza Blvd	Homestead Rd	Bollinger Rd	--	1.73	\$242,000	Cupertino Bicycle Transportation Plan	
9	Class IV Separated Bikeway	Stelling Rd	Prospect Rd	250 South of McClellan Rd	--	1.45	\$580,000	Bicycle Transportation Plan; City of Cupertino	
10	Class IV Separated Bikeway	Stelling Rd	250 South of McClellan Rd	Alves Dr	--	0.71	\$1,714,000	Bicycle Transportation Plan; City of Cupertino	
11	Class IV Separated Bikeway	Blaney Ave	Bollinger Rd	Homestead Rd	--	1.91	\$766,000	Bicycle Transportation Plan; City of Cupertino	
12	Class IV Separated Bikeway	Stevens Creek Blvd	Foothill Blvd	St Joseph Ave	--	0.62	\$248,000	Bicycle Transportation Plan; City of Cupertino	
13	Class IV Separated Bikeway	Stelling Rd	Alves Dr	Homestead Rd	--	0.84	\$248,000	Bicycle Transportation Plan; City of Cupertino	
14	Class I Path	Amelia Ct/Varian Way Connector	Amelia Ct	Varian Way	--	0.05	\$100,000	Cupertino Bicycle Transportation Plan	
15	Grade Separated Crossing Study	Carmen Rd	Stevens Crk. Blvd - South Side	Stevens Crk. Blvd - North Side	--	0	\$4,063,335	City of Cupertino	
16	Class II Bike Lane	Vista Dr	Forest Ave	SBTlvedvens Creek	--	0.24	\$15,000	Cupertino Bicycle Transportation Plan	
17	Class II Buffered Bike Lane	Bollinger Rd	De Anza Blvd	Lawrence Expy	--	2	\$278,000	Cupertino Bicycle Transportation Plan	
18	Class II Buffered Bike Lane	Mary Ave	Stevens Creek Blvd	Meteor Dr	--	0.71	\$165,000	City of Cupertino	
19	Class II Buffered Bike Lane	Miller Ave	Bollinger Rd	Calle de Barcelona	--	0.48	\$67,000	Cupertino Bicycle Transportation Plan	
20	Configure Intersection	Infinite Loop	Merritt Dr	--	Improve signage/stripping to delineate bike/ped space in connector	0	\$2,000	Cupertino Bicycle Transportation Plan	
21	Class II Buffered Bike Lane	Homestead Rd	Mary Ave	Wolfe Rd	--	1.97	\$276,000	Cupertino Bicycle Transportation Plan	
22	Class II Buffered Bike Lane	Prospect Rd	De Anza Blvd	Stelling Rd	--	0.42	\$59,000	Cupertino Bicycle Transportation Plan	
23	Configure Intersection	McClellan Rd	Rose Blossom Dr	--	Facilitate through bike travel to De Anza	0	\$20,000	Cupertino Bicycle Transportation Plan	
24	Trail Crossing	Homestead Rd	Mary Ave	--	Redesign intersection of Homestead at Mary to better facilitate bicycles exiting Mary Ave bridge path	0	\$10,000	Cupertino Bicycle Transportation Plan	
25	Class III Bike Route	Hyde Ave Bike Route (#6)	Hyde Ave at Shadygrove Dr	Hyde Ave at Bollinger Rd	--	0.24	\$500	Cupertino Bicycle Transportation Plan	
26	Class I Path	Regnart Creek Path	Pacifica Dr	Estates Dr	--	0.83	\$3,063,000	City of Cupertino	
27	Reconfigure wall/fence	Wheaton Dr	Perimeter Rd	--	Connect bike blvd to proposed bike path on Perimeter road, requires creating gap in existing wall	0	\$10,000	Cupertino Bicycle Transportation Plan	
Subtotal								\$11,926,835	

Cupertino Traffic Impact Fee & Nexus Study Bicycle Projects and Cost Estimates

Project No.	Project	Location	Start	End	Notes	Miles	Rounded Cost	Source
Tier 3								
28	Class II Bike Lane	Rainbow Dr	Bubb Rd	Stelling Rd	--	0.5	\$33,000	Cupertino Bicycle Transportation Plan
29	Class I Path	Perimeter Rd	Stevens Creek Blvd	I-280 Channel Bike Path	--	0.59	\$470,000	Cupertino Bicycle Transportation Plan
30	Class III Bike Route	Mary Ave to Vallco Mall Bike Route (#7)	Memorial Park	End of Wheaton Dr	--	1.77	\$4,000	Cupertino Bicycle Transportation Plan
31	Class III Bike Route	Tantau Ave Bike Route (#9)	Tantau Ave at Bollinger Rd	Tantau Ave at Barnhart Ave	--	0.41	\$500	Cupertino Bicycle Transportation Plan
32	Class III Bike Route	Rose Blossom/Huntridge BikeRoute (#8)	Rose Blossom Dr at McClellan Rd	Huntridge Ln at De Anza Blvd	--	0.41	\$1,000	Cupertino Bicycle Transportation Plan
33	Class I Path	Wilson Park	Rodrigues Ave	Wilson Park Path	--	0.03	\$50,000	Cupertino Bicycle Transportation Plan
34	Class III Bike Boulevard	Stevens Creek Bike Blvd (#6)	San Fernando Ave at Orange Ave	Carmen Rd at Stevens Creek Blvd	--	1.12	\$47,000	Cupertino Bicycle Transportation Plan
35	Configure Intersection	Blaney Ave	Wheaton Dr	--	Enhance bicycle crossing across Wheaton	0	\$50,000	Cupertino Bicycle Transportation Plan
36	Class II Buffered Bike Lane	Foothill Blvd	Stevens Creek Blvd	McClellan Rd	--	0.55	\$77,000	Cupertino Bicycle Transportation Plan
37	Configure Intersection	Stelling Rd	Rainbow Dr	--	Study removal of slip lanes, study potential for protected intersection	0	\$150,000	Bicycle Transportation Plan; City of Cupertino
38	Class II Buffered Bike Lane	Homestead Rd	Wolfe Rd	Tantau Ave	--	0.49	\$69,000	Cupertino Bicycle Transportation Plan
39	Class II Buffered Bike Lane	Wolfe Rd	Stevens Creek Blvd	I-280 Channel Bike Path	--	0.4	\$56,000	Cupertino Bicycle Transportation Plan
40	Class I Path	Jollyman Park	Stelling Rd	Dumas Dr	--	0.15	\$119,000	Cupertino Bicycle Transportation Plan
41	Reconfigure wall/fence	Imperial Ave	Alcazar Ave	--	Create gap in fence to connect bike routes	0	\$20,000	Cupertino Bicycle Transportation Plan
42	Class II Buffered Bike Lane	Foothill Blvd	Stevens Creek Blvd	I-280 N Offramp	--	0.96	\$135,000	Cupertino Bicycle Transportation Plan
43	Class III Bike Boulevard	Foothill to Stevens Creek Bike Blvd (#3)	Foothill Blvd at Starling Dr	Carmen Rd at Stevens Creek Blvd	--	0.99	\$50,000	Cupertino Bicycle Transportation Plan
44	Class II Buffered Bike Lane	Lazaneo Dr	Bandley Dr	De Anza Blvd	--	0.09	\$13,000	Cupertino Bicycle Transportation Plan
45	Class II Buffered Bike Lane	Wolfe Rd	Perimeter Rd	Homestead Rd	--	0.62	\$86,000	Cupertino Bicycle Transportation Plan
46	Class II Buffered Bike Lane	Bubb Rd	McClellan Rd	Stevens Creek Blvd	--	0.53	\$74,000	Cupertino Bicycle Transportation Plan
47	Grade Separated Crossing Study	UPRR West Cupertino Crossing	Hammond Snyder Loop Trail	Stevens Creek Blvd	--	0	\$15,000,000	Bicycle Transportation Plan; City of Cupertino
48	Bike/Ped Bridge Enhancement	Mary Ave Ped Bridge	I280	--	Improved signage/stripping to delineate bike/ped space on Mary Ave bridge	0	\$20,000	Cupertino Bicycle Transportation Plan
49	Class I Path	Development Bike Path	SBTlvedvens Creek	Mary Ave	--	0.13	\$102,000	Cupertino Bicycle Transportation Plan
50	Class II Buffered Bike Lane	Miller Ave	Calle de Barcelona	Stevens Creek Blvd	--	0.39	\$54,000	Cupertino Bicycle Transportation Plan
51	Class II Buffered Bike Lane	Tantau Ave	Stevens Creek Blvd	Pruneridge Ave	--	0.65	\$91,000	Cupertino Bicycle Transportation Plan
52	Trail Crossing	McClellan Rd	Union Pacific Railroad Path	--	Coordinate crossing with signal.	0	\$10,000	Cupertino Bicycle Transportation Plan
53	Class II Bike Lane	Pacifica Dr	De Anza Blvd	Torre Ave	--	0.17	\$11,000	Cupertino Bicycle Transportation Plan
54	Enhance Fwy. interchange	Wolfe Rd	I-280 Overpass	--	Add green paint to interchange approaches, stripe bike lane through interchange intersection	0	\$15,000,000	Bicycle Transportation Plan; City of Cupertino
55	Class I Path	Aquino Creek Trail	Sterling/Barnhart Park	Calvert Dr	--	0.37	\$294,000	Cupertino Bicycle Transportation Plan
56	Class I Path	Aquino Creek Trail	South of I280	Stevens Creek Blvd	--	0.17	\$138,000	Cupertino Bicycle Transportation Plan
57	Class II Buffered Bike Lane	Vallco Pkwy	Tantau Ave	Perimeter Rd	--	0.3	\$42,000	Cupertino Bicycle Transportation Plan

Cupertino Traffic Impact Fee & Nexus Study Bicycle Projects and Cost Estimates

Project No.	Project	Location	Start	End	Notes	Miles	Rounded Cost	Source	
58	Class II Bike Lane	Dr/Stevens Creek Blvd Connector	Campus Dr	Stevens Creek Blvd	--	0.11	\$7,000	Cupertino Bicycle Transportation Plan	
59	Class III Bike Route	Stevens Creek Blvd Bike Route (#5)	Grand Ave at Alhambra Ave	Peninsula Ave at Stevens Creek Blvd	--	0.19	\$1,000	Cupertino Bicycle Transportation Plan	
60	Class II Buffered Bike Lane	Rainbow Dr	De Anza Blvd	Stelling Rd	--	0.57	\$79,000	Cupertino Bicycle Transportation Plan	
61	Class III Bike Route	Civic Center to Creekside Park Bike Route (#2)	Torre Ave at Rodrigues Ave	Estates Dr at Creekside Park Path	--	1.24	\$3,000	Cupertino Bicycle Transportation Plan	
62	Class III Bike Route	Garden Gate Elementary to Memorial Park Bike Route (#4)	Ann Arbor Dr at Greenleaf Dr	Memorial Park	--	0.42	\$1,500	Cupertino Bicycle Transportation Plan	
63	Enhance Fwy. interchange	De Anza Blvd	Greenleaf Dr	--	Add green paint to interchange approaches, stripe bike lane through interchange intersection	0	\$40,000	Cupertino Bicycle Transportation Plan	
64	Trail Crossing	Bubb Rd	Union Pacific Railroad Path	--	Coordinate crossing with signal.	0	\$10,000	Cupertino Bicycle Transportation Plan	
65	Enhance Fwy. interchange	Stevens Creek Blvd	Hwy 85 Overpass	--	Add green paint to interchange approaches, stripe bike lane through interchange intersection	0	\$40,000	Cupertino Bicycle Transportation Plan	
66	Class II Buffered Bike Lane	Tantau Ave	Pruneridge Ave	Homestead Rd	--	0.37	\$52,000	Cupertino Bicycle Transportation Plan	
67	Enhance Fwy. interchange	De Anza Blvd	I-280 Overpass	--	Add green paint to interchange approaches, stripe bike lane through interchange intersection	0	\$40,000	Cupertino Bicycle Transportation Plan	
68	Class II Buffered Bike Lane	Stevens Canyon Rd	McClellan Rd	Rancho Deep Cliff Dr	--	0.23	\$33,000	Cupertino Bicycle Transportation Plan	
69	Class II Buffered Bike Lane	Bollinger Rd	200 feet East of Westlynn Way	De Foe Dr	--	0.18	\$26,000	Cupertino Bicycle Transportation Plan	
70	Class I Path	Linda Vista Park/Deep Cliff Golf Course	Linda Vista Park Parking Lot off Linda Vista	McClellan Rd	--	0.46	\$366,000	Cupertino Bicycle Transportation Plan	
71	Class II Buffered Bike Lane	Pruneridge Ave	Tantau Ave	City Limits - East	--	0.07	\$9,000	Cupertino Bicycle Transportation Plan	
72	Configure Intersection	Portal Ave	Wheaton Dr	--	2015 Bike Plan Update, study roundabout conversion	0	\$150,000	Cupertino Bicycle Transportation Plan	
73	Class II Bike Lane	Cristo Rey Dr	150 feet East of Cristo Rey Pl	Roundabout	--	0.57	\$37,000	Cupertino Bicycle Transportation Plan	
74	Class III Bike Route	Westlynn/Fallenleaf Bike Route (#11)	Bollinger Rd at Westlynn Way	Fallenleaf Ln at De Anza Blvd	--	0.37	\$1,000	Cupertino Bicycle Transportation Plan	
75	Class III Bike Route	Foothill Blvd Bike Route (#3)	Palm Ave at Scenic Blvd	Lockwood Dr at Stevens Creek	--	0.81	\$1,500	Cupertino Bicycle Transportation Plan	
76	Class III Bike Route	Union Pacific to Hwy 85 Bike Route (#10)	September Dr at McClellan Rd	Jamestown Dr at Prospect Rd	--	1.48	\$5,000	Cupertino Bicycle Transportation Plan	
Subtotal								\$33,168,500	



Appendix B:
Institute of Transportation Engineers Common Trip
Generation Rates

INSTITUTE OF TRANSPORTATION ENGINEERS COMMON TRIP GENERATION RATES (PM Peak Hour)

(Trip Generation Manual, 9th Edition)

Code	Description	Unit of Measure	Trips Per Unit
PORT AND TERMINAL			
30	Truck Terminal	Acres	6.55
90	Park and Ride Lot with Bus Service	Parking Spaces	0.62
INDUSTRIAL			
110	General Light Industrial	1,000 SF	0.97
120	General Heavy Industrial	Acres	2.16
130	Industrial Park	1,000 SF	0.85
140	Manufacturing	1,000 SF	0.73
150	Warehousing	1,000 SF	0.32
151	Mini-Warehouse	1,000 SF	0.26
152	High-Cube Warehouse	1,000 SF	0.12
170	Utilities	1,000 SF	0.76
RESIDENTIAL			
210	Single-Family Detached Housing	Dwelling Units	1.00
220	Apartment	Dwelling Units	0.62
221	Low-Rise Apartment	Dwelling Units	0.58
230	Residential Condominium / Townhouse	Dwelling Units	0.52
240	Mobile Home Park	Dwelling Units	0.59
251	Senior Adult Housing - Detached	Dwelling Units	0.27
252	Senior Adult Housing - Attached	Dwelling Units	0.25
253	Congregate Care Facility	Dwelling Units	0.17
254	Assisted Living	Beds	0.22
255	Continuing Care Retirement Community	Dwelling Units	0.16
LODGING			
310	Hotel	Rooms	0.60
320	Motel	Rooms	0.47
330	Resort Hotel	Rooms	0.42
RECREATIONAL			
411	City Park	Acres	0.19
412	County Park	Acres	0.09
413	State Park	Acres	0.07
415	Beach Park	Acres	1.30
416	Campground / Recreation Vehicle Park	Camp Sites	0.27
417	Regional Park	Acres	0.20
420	Marina	Berths	0.19
430	Golf Course	Acres	0.30
431	Miniature Golf Course	Holes	0.33

Code	Description	Unit of Measure	Trips Per Unit
432	Golf Driving Range	Tees / Driving Positions	1.25
433	Batting Cages	Cages	2.22
435	Multi-Purpose Recreational Facility	Acres	5.77
437	Bowling Alley	1,000 SF	1.71
441	Live Theater	Seats	0.02
443	Movie Theater without Matinee	1,000 SF	6.16
444	Movie Theater with Matinee	1,000 SF	3.80
445	Multiplex Movie Theater	1,000 SF	4.91
452	Horse Race Track	Acres	4.30
454	Dog Race Track	Attendance Capacity	0.15
460	Arena	Acres	3.33
473	Casino / Video Lottery Establishment	1,000 SF	13.43
480	Amusement Park	Acres	3.95
488	Soccer Complex	Fields	17.70
490	Tennis Courts	Courts	3.88
491	Racquet / Tennis Club	Courts	3.35
492	Health / Fitness Club	1,000 SF	3.53
493	Athletic Club	1,000 SF	5.96
495	Recreational Community Center	1,000 SF	1.45
INSTITUTIONAL			
520	Elementary School	1,000 SF	1.21
522	Middle School / Junior High School	1,000 SF	1.19
530	High School	1,000 SF	0.97
536	Private School (K-12)	Students	0.17
540	Junior / Community College	1,000 SF	2.54
560	Church	1,000 SF	0.55
565	Daycare Center	1,000 SF	12.46
566	Cemetery	Acres	0.84
571	Prison	1,000 SF	2.91
580	Museum	1,000 SF	0.18
590	Library	1,000 SF	7.30
591	Lodge / Fraternal Organization	Members	0.03
MEDICAL			
610	Hospital	1,000 SF	0.93
620	Nursing Home	1,000 SF	0.74
630	Clinic	1,000 SF	5.18
640	Animal Hospital / Veterinary Clinic	1,000 SF	4.72

Code	Description	Unit of Measure	Trips Per Unit
OFFICE			
710	General Office Building	1,000 SF	1.49
714	Corporate Headquarters Building	1,000 SF	1.41
715	Single Tenant Office Building	1,000 SF	1.74
720	Medical-Dental Office Building	1,000 SF	3.57
730	Government Office Building	1,000 SF	1.21
732	United States Post Office	1,000 SF	1.22
733	Government Office Complex	1,000 SF	2.85
750	Office Park	1,000 SF	1.48
760	Research and Development Center	1,000 SF	1.07
770	Business Park	1,000 SF	1.29
RETAIL			
812	Building Materials and Lumber Store	1,000 SF	4.49
813	Free-Standing Discount Superstore	1,000 SF	4.35
814	Variety Store	1,000 SF	6.82
815	Free Standing Discount Store	1,000 SF	4.98
816	Hardware / Paint Store	1,000 SF	4.84
817	Nursery (Garden Center)	1,000 SF	6.94
818	Nursery (Wholesale)	1,000 SF	5.17
820	Shopping Center	1,000 SF	3.71
823	Factory Outlet Center	1,000 SF	2.29
826	Specialty Retail Center	1,000 SF	2.71
841	New Car Sales	1,000 SF	2.62
842	Recreational Vehicle Sales	1,000 SF	2.54
843	Automobile Parts Sales	1,000 SF	5.98
848	Tire Store	1,000 SF	4.15
850	Supermarket	1,000 SF	9.48
851	Convenience Market (Open 24 Hours)	1,000 SF	52.41
852	Convenience Market (Open 15-16 Hours)	1,000 SF	34.57
853	Convenience Market with Gasoline Pumps	1,000 SF	50.92
854	Discount Supermarket	1,000 SF	8.34
857	Discount Club	1,000 SF	4.18
860	Wholesale Market	1,000 SF	0.88
861	Sporting Goods Superstore	1,000 SF	1.84
862	Home Improvement Superstore	1,000 SF	2.33
863	Electronics Superstore	1,000 SF	4.50
864	Toy / Children's Superstore	1,000 SF	4.99
866	Pet Supply Superstore	1,000 SF	3.38
867	Office Supply Superstore	1,000 SF	3.40
875	Department Store	1,000 SF	1.87

Code	Description	Unit of Measure	Trips Per Unit
876	Apparel Store	1,000 SF	3.83
879	Arts and Craft Store	1,000 SF	6.21
880	Pharmacy / Drugstore without Drive-Through Window	1,000 SF	8.4
881	Pharmacy / Drugstore with Drive-Through Window	1,000 SF	9.91
890	Furniture Store	1,000 SF	0.45
896	DVD/Video Rental Store	1,000 SF	13.60
SERVICES			
911	Walk-In Bank	1,000 SF	12.13
912	Drive-In Bank	1,000 SF	24.30
918	Hair Salon	1,000 SF	1.93
925	Drinking Place	1,000 SF	11.34
931	Quality Restaurant	1,000 SF	7.49
932	High-Turnover (Sit-Down) Restaurant	1,000 SF	11.15
933	Fast Food Restaurant without Drive-Through Window	1,000 SF	26.15
934	Fast Food Restaurant with Drive-Through Window	1,000 SF	33.84
935	Fast Food Restaurant with Drive-Through Window and No Indoor Seating	1,000 SF	153.85
936	Coffee / Donut Shop without Drive-Through Window	1,000 SF	40.75
937	Coffee / Donut Shop with Drive-Through Window	1,000 SF	42.8
938	Coffee / Donut Shop with Drive-Through Window and No Indoor Seating	1,000 SF	75
940	Bread / Donut / Bagel Shop with Drive-Through Window	1,000 SF	18.99
941	Quick Lubrication Vehicle Shop	Service Bays	5.19
942	Automobile Care Center	1,000 SF	3.11
943	Automobile Parts and Service Center	1,000 SF	4.46
944	Gasoline / Service Station	Fueling Positions	13.87
945	Gasoline / Service Station with Convenience Market	Fueling Positions	13.51
946	Gasoline / Service Station with Convenience Market and Car Wash	Fueling Positions	13.94
947	Self Service Car Wash	Stalls	5.54
948	Automated Car Wash	1,000 SF	14.12
950	Truck Stop	1,000 SF	13.63

Note: All land uses in the 800 and 900 series are entitled to a "passby" trip reduction of 60% if less than 50,000 ft² or a reduction of 40% if equal to or greater than 50,000 ft².

* Approximated by 10% of Weekday average rate.