



# HEXAGON TRANSPORTATION CONSULTANTS, INC.

## Memorandum

**Date:** May 2, 2023  
**To:** Ms. Lillian Tsang, City of Sunnyvale  
**From:** Ollie Zhou, Huy Tran, and Katie Riutta  
**Subject:** Moffett Park Specific Plan Update Transportation Impact Fee Nexus Study

## Background

The Moffett Park Specific Plan (MPSP) was adopted by the Sunnyvale City Council in 2004 and amended in 2013. The MPSP study area comprises of approximately 1,156 acres and is generally bounded by SR 237 to the south, Caribbean Drive to the east and north, and Enterprise Way to the west. As proposed, the buildout of the MPSP Update project would consist of 20,000 residential units, approximately 27.389 million square feet (s.f.) of office, 4.602 million s.f. of industrial, 607,209 s.f. of hotel, 558,095 s.f. of retail, and 326,122 s.f., of institutional land uses. The non-residential land uses would total approximately 33.482 million s.f..

Hexagon Transportation Consultants, Inc. prepared a Transportation Impact Analysis Report (TIA) to analyze whether the studied MPSP Update would cause any deterioration in the transportation network on roads in the City of Sunnyvale and neighboring cities under the Background and Cumulative Conditions. Although a project's effect on level of service (LOS) is no longer considered an impact under California Environmental Quality Act (CEQA), City Council Policy 1.2.8 requires a LOS operational analysis to ensure intersection and roadway efficiency and to comply with the Santa Clara Valley Transportation Authority (VTA)'s Congestion Management Program (CMP) for both the near-term/background conditions and cumulative conditions. The TIA can be found in Appendix I in the *Moffett Park Specific Plan Draft Environmental Impact Report (EIR)*. Projects within the plan area shall contribute their fair share towards the cost of the identified improvements if an adverse intersection impact or freeway impact is triggered by the proposed MPSP Update.

This nexus study explains how the proposed MPSP Update will generate traffic that will adversely impact major intersections and CMP facilities and calculates an MPSP Update Transportation Impact Fee that developers within the MPSP will be required to pay for intersection and freeway improvements at these locations. The MPSP Update Transportation Impact Fee captures improvements that were above and beyond what was included in the Sunnyvale Citywide Transportation Fee; all developments within the MPSP area are still required to pay into the Citywide Transportation Impact Fee per the Sunnyvale Municipal Code Chapter 3.50.010.

## Legal Context

Impact fees are 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 development and the need for specific capital facilities and improvements. 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 pre-existing infrastructure needs or deficiencies.

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.

## Fair Share Contributions for Intersection Improvements

The MPSP Update's percent fair share contribution for intersection improvements where the intersections are impacted under the Background or both Background and Cumulative Conditions is calculated by the following equation, where the trips generated by the MPSP Update would be divided by the total growth in traffic from the Existing Conditions to Background with MPSP Update Conditions.

$$\% \text{ share} = \frac{(\text{Trips Generated by MPSP Update})}{(\text{Background with MPSP Update Traffic} - \text{Existing No Project Traffic})}$$

For the intersection impacted under only the Cumulative Conditions (Oakmead Parkway/Corvin Drive & Central Expressway), the total growth in traffic from the Background Conditions to Cumulative with MPSP Update Conditions would be divided by the total growth in traffic from the Existing Conditions to Cumulative with MPSP Update Conditions. This is an accepted methodology from the various jurisdictions (e.g., City of Santa Clara, County of Santa Clara, etc.) for calculating fair share contribution for an identified intersection improvement.

$$\% \text{ share} = \frac{(\text{Cumulative with MPSP Update Traffic} - \text{Background No Project Traffic})}{(\text{Cumulative with MPSP Update Traffic} - \text{Existing No Project Traffic})}$$

## Definition of Intersection Impacts at Signalized Intersections

The Cities of Sunnyvale, Mountain View, Cupertino, and Santa Clara, the County of Santa Clara, and Caltrans level of service standards for signalized intersections are all LOS D or better. Within the City of Sunnyvale, intersections on roadways considered to be "regionally significant" have a standard of LOS E. In the study area, signalized intersections within Sunnyvale along Mathilda Avenue, Caribbean Drive, El Camino Real, Sunnyvale-Saratoga Road, Central Expressway and Lawrence Expressway are considered regionally significant. The LOS standard for signalized intersections within the Cities of Sunnyvale, Mountain View, Cupertino and Santa Clara, the County of Santa Clara, and Caltrans which belong to the CMP network is LOS E or better.

Pursuant to Sunnyvale City Council Policy 1.2.8, the MPSP Update has an "adverse impact" on traffic conditions at a signalized intersection if for the study peak hour:

1. The level of service at the intersection drops below its respective level of service standard when project traffic is added; or
2. An intersection that operates below its level of service standard under no project conditions experiences an increase in critical-movement delay of four (4) or more seconds, and the critical volume-to-capacity ratio (V/C) is increased by 0.01 or more when project traffic is added.

The exception to this threshold is when the addition of project traffic reduces the amount of average control delay for critical movements (i.e., the change in average control delay for critical movements is negative). In this case, the threshold is when the project increases the critical V/C value by 0.01 or more.

In the TIA prepared for the MPSP Update, it was determined that the MPSP Update would generate an adverse intersection impact at the following intersections where improvements have not been included in the City of Sunnyvale Traffic Impact Fee (TIF). Table 1 provides a summary of the list of intersections impacted by the MPSP Update under the affected scenario, the improvements identified, the total cost of the improvements, and the MPSP Update's fair share contribution. When an intersection is projected to be impacted under both background plus MPSP Update and cumulative plus MPSP Update, the fair share contribution percentages under background plus MPSP Update would be used for the fee calculation because the improvements would already be needed under the background plus MPSP update scenario.

### **Ellis Street & Manila Avenue (Intersection #1)**

This intersection is an unsignalized intersection under the City of Mountain View's jurisdiction. Mountain View does not have an adopted level of service standard for unsignalized intersections. However, the City strives to maintain LOS D for unsignalized intersections. Under Background no MPSP Update conditions, the LOS would be an unacceptable LOS E during the AM peak hour and an acceptable LOS C during the PM peak hour. The addition of MPSP Update traffic would deteriorate traffic operations to an unacceptable LOS F during the AM peak hour and unacceptable LOS E during the PM peak hour. The intersection meets the signal warrant during the AM peak hour under all scenarios.

**Potential Improvement:** The *East Whisman Precise Plan Development (EWPP) Impact Fee Nexus Study*, approved by the Mountain View City Council in May 2022, identified a traffic signal at this location. Other lane geometry and multimodal improvements are also identified as part of the signalization improvement, including adding a second westbound left-turn lane with a 100-foot storage pocket. This would improve intersection operations and address the MPSP Update's impacts. Per the *EWPP Impact Fee Nexus Study*, the estimated cost to implement these improvements is \$1,900,000. The allocation of responsibility for the cost of this improvement is 10.2% for new development within the East Whisman Precise Plan (EWPP) Area and 89.8% for new development outside of the EWPP Area. Therefore, new development within the MPSP Area would contribute their fair share towards a total cost of \$1,706,200.

For this intersection, the MPSP Update traffic would trigger an adverse impact during both the AM and PM peak hours under Background conditions. The average trips generated by the MPSP Update that would travel through this intersection during the AM and PM peak hours are 304 vehicles, and the total growth in traffic from the Existing Conditions to Background with MPSP Update Conditions is 463. As a result, the MPSP Update's percent fair share for the AM and PM peak hours is 65.7%. The MPSP Update shall contribute 65.7% of new development outside of the EWPP Area's share of the improvement costs at this location, which is equivalent to \$1,130,000. With the improvements, the intersection would operate at acceptable LOS B+ during the AM and PM peak hours.

### **Ellis Street & Fairchild Drive (Intersection #4)**

This intersection is under the City of Mountain View's jurisdiction, therefore the LOS standard is LOS D or better. Under Background no MPSP Update conditions, the LOS would be an acceptable LOS D during the PM peak hour. The addition of MPSP Update traffic would deteriorate traffic operations to an unacceptable LOS E, which meets the City of Mountain View's adverse intersection impact criteria.

MPSP Update Transportation Impact Fee Nexus Study

**Table 1**  
**MPSP Update Fair Share Contribution to Identified Intersection Improvements**

Peak Hour	Background No MPSP Update		Background + MPSP Update		Cumulative No MPSP Update		Cumulative + MPSP Update		Proposed Improvements	Est. Imp. Cost <sup>1</sup>	MPSP Project Traffic	Total Growth	MPSP Update Responsibility <sup>2</sup>		
	Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS	Avg. Delay (sec)	LOS					%	Amount <sup>3</sup>	
#1 - Ellis Street & Manila Avenue															
AM	48.8	E	>120	F	42.7	E	78.1	F	Signalization (Total project cost is \$1,900,000. New development outside of the EWPP Area have a fair share of 89.8%, which is \$1,706,200).	\$1,706,200	304	463	65.7%	\$1,130,000	
PM	22.0	C	38.6	E	23.2	C	26.8	D							
#4 - Ellis Street & Fairchild Drive															
AM	16.8	B	16.4	B	21.1	C+	19.7	B-	Widen the southbound approach to provide two through lanes. (Total project cost is \$2,900,000. New development outside of the EWPP Area have a fair share of 14.8%, which is \$429,200).	\$429,200	87	709	12.3%	\$60,000	
PM	50.6	D	64.8	E	92.4	F	93.2	F							
#10 - Innovation Way & 11th Avenue															
AM	27.4	D	>120	F	87.0	F	>120	F	Signalization and restripe the eastbound approach to provide one left-turn lane, one through lane, and one right-turn lane	\$1,750,000	340	389	87.4%	\$1,530,000	
PM	14.2	B	26.2	D	38.9	E	55.1	F							
#25 - Borregas Avenue & Java Drive															
AM	34.0	C-	61.1	E	33.6	C-	51.1	D-	Provide multimodal improvements including reducing the curb radius at the corners of this intersection, and converting the intersection to a protected intersection	\$3,000,000	541	769	70.4%	\$2,120,000	
PM	27.2	C	38.5	D+	29.2	C	29.8	C							
#29 - Crossman Avenue & Java Drive															
AM	19.7	B-	22.4	C+	20.2	C+	21.5	C+	Provide multimodal improvements including reducing the curb radius at the corners of this intersection, removing the pork chop islands, and converting the intersection to a protected intersection	\$3,500,000	1,209	1,384	87.4%	\$3,060,000	
PM	41.5	D	58.7	E+	43.3	D	50.6	D							
#30 - Crossman Avenue & Moffett Park Drive															
AM	16.6	B	28.5	C	16.2	B	16.2	B	Widen the southbound approach to include one left-turn, one through, and one right-turn lane	\$600,000	1,417	1,631	86.9%	\$530,000	
PM	19.8	B-	60.5	E	20.9	C+	31.7	C							
#39 - Lawrence Expressway & Persian Drive/Elko Drive															
AM	60.3	E	63.3	E	64.1	E	62.2	E	Provide multimodal improvements at this intersection including removing the pork chop islands on the west side of the intersection, and installing sidewalk along eastbound Persian Drive	\$1,500,000	741	1,228	60.3%	\$910,000	
PM	71.2	E	88.9	F	76.1	E-	77.6	E-							
#46 - Oakmead Parkway/Corvin Drive & Central Expressway <sup>4</sup>															
AM	88.0	F	85.0	F	77.9	E-	81.5	F	Widen the westbound approach to provide two left-turn lanes. Restripe the south receiving leg to allow for two receiving lanes and merge to one lane as the roadway narrows	\$2,290,000	479	1,959	24.5%	\$570,000	
PM	89.2	F	91.0	F	116.3	F	>120	F							
Total Fair Share Contribution for Identified Intersection Improvements														\$9,910,000	
Notes:															
Bold text indicates the intersection operates at an unacceptable level of service															
Text in box indicates an adverse intersection impact															
1. Estimated cost is total improvement cost, unless noted with the improvement															
2. MPSP Update's fair share contribution to the identified improvements in terms of percent and dollars															
3. Cost estimates were rounded up to the nearest \$10,000															
4. CMP Intersection															

**Potential Improvement:** The *East Whisman Precise Plan Development Impact Fee Nexus Study*, approved by the Mountain View City Council in May 2022, identified an improvement to widen southbound Ellis Street to include two through lanes with associated signal timing modifications to accommodate the dual right-turn lanes on the off-ramp from southbound US 101, modify the eastbound Fairchild Drive approach to allow right-turns onto Ellis Street, modify the westbound Fairchild Drive approach to a shared left-through and a 100-foot right-turn lane, and convert the northbound left-turn lane to a northbound through lane. There are already two receiving lanes on the south leg of the intersection. This would improve the north-south traffic

flow and address the MPSP Update's impacts. Per the *EWPP Impact Fee Nexus Study*, The estimated cost to implement these improvements is \$2,900,000. The allocation of responsibility for the cost of this improvement is 85.2% for new development within the EWPP Area and 14.8% for new development outside of the EWPP Area. Therefore, new development within the MPSP Area would contribute their fair share towards a total cost of \$429,200.

For this intersection, the MPSP Update traffic would trigger an adverse impact during the PM peak hour under Background conditions. The trips generated by the MPSP Update that would travel through this intersection during the PM peak hour are 87 vehicles, and the total growth in traffic from the Existing Conditions to Background with MPSP Update Conditions is 709. As a result, the MPSP Update's percent fair share for the PM peak hour is 12.3%. The MPSP Update shall contribute 12.3% of new development outside of the EWPP Area's share of the improvement costs at this location, which is equivalent to \$60,000. With the improvements, the intersection would operate at acceptable LOS B during the PM peak hour.

### **Innovation Way & 11th Avenue (Intersection #10)**

This intersection is an unsignalized intersection under the City of Sunnyvale's jurisdiction, therefore the LOS standard is LOS D or better. Under Background no MPSP Update conditions, the LOS would be an acceptable LOS D during the AM peak hour. The addition of MPSP Update traffic would deteriorate traffic operations to an unacceptable LOS F, which meets the City of Sunnyvale's adverse intersection impact criteria. The intersection meets the signal warrant during the AM peak hour under Background plus MPSP Update, Cumulative no MPSP Update, and Cumulative plus MPSP Update conditions and during the PM peak hour under all scenarios.

**Potential Improvement:** To reduce MPSP Update's adverse impact at this intersection, it would require signalizing this intersection. The intersection could retain its existing lane geometry, except the eastbound approach should be restriped to include one left-turn, one through, and one right-turn lane. This restriping would eliminate the existing dual right-turn lanes and improve pedestrian safety as vehicles on the inside right-turn lane may have difficulty seeing crossing pedestrians. The intersection would operate with protected phasing for the north/south legs, and split or permitted phasing for the east/west legs. This improvement will require the installation of signal poles, and likely upgrades to curb ramps. The estimated cost to implement these improvements is \$1,750,000.

For this intersection, the MPSP Update traffic would trigger an adverse impact during the AM peak hour under Background conditions. The trips generated by the MPSP Update that would travel through this intersection during the AM peak hour are 340 vehicles, and the total growth in traffic from the Existing Conditions to Background with MPSP Update Conditions is 389. As a result, the MPSP Update's percent fair share for the AM peak hour is 87.4%. The MPSP Update shall contribute 87.4% of the total improvement costs at this location, which is equivalent to \$1,530,000. With the improvements, the intersection would operate at acceptable LOS C+ during the AM peak hour.

### **Borregas Avenue & Java Drive (Intersection #25)**

This intersection is an unsignalized intersection under the City of Sunnyvale's jurisdiction, therefore the LOS standard is LOS D or better. Under Background no MPSP Update conditions, the LOS would be an acceptable LOS C- during the AM peak hour. The addition of MPSP Update traffic would deteriorate traffic operations to an unacceptable LOS E, which meets the City of Sunnyvale's adverse intersection impact criteria.

**Potential Improvement:** There are no feasible at-grade intersection improvements. To reduce MPSP Update's adverse impact at this intersection, it would require multimodal improvements including reducing the curb radius at the corners of this intersection and converting the



intersection to a protected intersection. These improvements would improve safety for pedestrians and bicyclists by slowing right-turning vehicles' speed and reducing pedestrian and bicyclists' exposure to vehicles. Reducing the curb radius would require the removal of pavement and extending the pedestrian sidewalk at all four corners of the intersection to "square up" the intersection. New curb ramps will also be required. Signal pole relocation may be required as well. The estimated cost to implement these improvements is \$3,000,000.

For this intersection, the MPSP Update traffic would trigger an adverse impact during the AM peak hour under Background conditions. The trips generated by the MPSP Update that would travel through this intersection during the AM peak hour are 541 vehicles, and the total growth in traffic from the Existing Conditions to Background with MPSP Update Conditions is 769. As a result, the MPSP Update's percent fair share for the AM peak hour is 70.4%. The MPSP Update shall contribute 70.4% of the total improvement costs at this location, which is equivalent to \$2,120,000. While these improvements would not address the intersection's operational deficiency, they would encourage residents and employees to try alternative modes of transportation, such as walking, or biking, and reduce vehicular trip-making.

#### **Crossman Avenue & Java Drive (Intersection #29)**

This intersection is an unsignalized intersection under the City of Sunnyvale's jurisdiction, therefore the LOS standard is LOS D or better. Under Background no MPSP Update conditions, the LOS would be an acceptable LOS D during the PM peak hour. The addition of MPSP Update traffic would deteriorate traffic operations to an unacceptable LOS E+, which meets the City of Sunnyvale's adverse intersection impact criteria.

**Potential Improvement:** There are no feasible at-grade intersection improvements. To reduce MPSP Update's adverse impact at this intersection, it would require multimodal improvements including reducing the curb radius at the corners of this intersection, removing the pork chop islands, and converting the intersection to a protected intersection. These improvements would improve safety for pedestrians and bicyclists by slowing right-turning vehicles' speed and reducing pedestrian and bicyclists' exposure to vehicles. Reducing the curb radius and removing the pork chop islands would require the removal of pavement and extending the pedestrian sidewalk at the corners of the intersection to "square up" the intersection. New curb ramps and signal pole relocation will also be required. Signal pole relocation may be required as well. The estimated cost to implement these improvements is \$3,500,000.

For this intersection, the MPSP Update traffic would trigger an adverse impact during the PM peak hour under Background conditions. The trips generated by the MPSP Update that would travel through this intersection during the PM peak hour are 1,209 vehicles, and the total growth in traffic from the Existing Conditions to Background with MPSP Update Conditions is 1,384. As a result, the MPSP Update's percent fair share for the PM peak hour is 87.4%. The MPSP Update shall contribute 87.4% of the total improvement costs at this location, which is equivalent to \$3,060,000. While these improvements would not address the intersection's operational deficiency, they would encourage residents and employees to try alternative modes of transportation, such as walking, or biking, and reduce vehicular trip-making.

#### **Crossman Avenue & Moffett Park Drive (Intersection #30)**

This intersection is an unsignalized intersection under the City of Sunnyvale's jurisdiction, therefore the LOS standard is LOS D or better. Under Background no MPSP Update conditions, the LOS would be an acceptable LOS B- during the PM peak hour. The addition of MPSP Update traffic would deteriorate traffic operations to an unacceptable LOS E, which meets the City of Sunnyvale's adverse intersection impact criteria.

**Potential Improvement:** To reduce MPSP Update's adverse impact at this intersection, it would require widening the southbound approach to include one left-turn, one through, and one right-turn lane. Right-of-way acquisitions will be necessary. This improvement would require pavement widening by approximately 12 feet, signal pole relocation, and new curb ramps. The southbound lanes would be 11.5 feet wide and retain the existing length of 130 feet. The southbound bike lane would be 6 feet wide. The estimated cost to implement these improvements is \$600,000, including a design cost of \$118,000 and a potential right-of-way cost of \$180,000.

For this intersection, the MPSP Update traffic would trigger an adverse impact during the PM peak hour under Background conditions. The trips generated by the MPSP Update that would travel through this intersection during the PM peak hour are 1,417 vehicles, and the total growth in traffic from the Existing Conditions to Background with MPSP Update Conditions is 1,631. As a result, the MPSP Update's percent fair share for the PM peak hour is 86.9%. The MPSP Update shall contribute 86.9% of the total improvement costs at this location, which is equivalent to \$530,000. With the improvements, the intersection would operate at acceptable LOS D during the PM peak hour.

#### **Lawrence Expressway & Persian Drive/Elko Drive (Intersection #39)**

This intersection is under the County of Santa Clara's jurisdiction, therefore the LOS standard is LOS E or better. Under Background no MPSP Update conditions, the LOS would be an acceptable LOS E during the PM peak hour. The addition of MPSP Update traffic would deteriorate traffic operations to an unacceptable LOS F, which meets the County of Santa Clara's adverse intersection impact criteria.

**Improvement:** There are no feasible at-grade intersection improvements. To reduce MPSP Update's adverse impact at this intersection, it would require multimodal improvements at this intersection including removing the pork chop islands on the west side of the intersection and installing a sidewalk along eastbound Persian Drive. These improvements would improve safety for pedestrians and bicyclists by slowing right-turning vehicles' speed and reducing pedestrian and bicyclists' exposure to vehicles. Reducing the curb radius and removing the porkchop islands would require the removal of pavement and extending the pedestrian sidewalk at the corners of the intersection to "square up" the intersection. Signal pole relocation and new curb ramps will also be required. The estimated cost to implement these improvements is \$1,500,000.

For this intersection, the MPSP Update traffic would trigger an adverse impact during the PM peak hour under Background conditions. The trips generated by the MPSP Update that would travel through this intersection during the PM peak hour are 741 vehicles, and the total growth in traffic from the Existing Conditions to Background with MPSP Update Conditions is 1,228. As a result, the MPSP Update's percent fair share for the PM peak hour is 60.3%. The MPSP Update shall contribute 60.3% of the total improvement costs at this location, which is equivalent to \$910,000. While these improvements would not address the intersection's operational deficiency, they would encourage residents and employees to try alternative modes of transportation, such as walking, or biking, and reduce vehicular trip-making.

#### **Oakmead Parkway/Corvin Drive & Central Expressway (Intersection #46) [Congestion Management Program Intersection]**

This intersection is a CMP intersection under the County of Santa Clara's jurisdiction, therefore the LOS standard is LOS E or better. Under Cumulative no MPSP Update conditions, the LOS would be an acceptable LOS E- during the AM peak hour. The addition of MPSP Update traffic would deteriorate traffic operations to an unacceptable LOS F, which meets the CMP's adverse intersection impact criteria.

**Potential Improvement:** The *Lawrence Station Area Plan Update TIA*, dated August 31, 2020, identified an improvement to widen westbound Central Expressway to include two left-turn lanes. The south receiving leg would require restriping to allow for two receiving lanes and merge to one lane as the roadway narrows. It is assumed that with the additional left turn, the intersection signal timing would also be optimized. This improvement will require partial median removal and pavement widening by approximately 12 feet to accommodate the third left-turn lane. Signal pole relocation and upgrades will be required as well. The estimated cost to implement these improvements is \$2,290,000.

For this intersection, the MPSP Update traffic would trigger an adverse impact during the AM peak hour under Cumulative conditions. The trips generated by the MPSP Update that would travel through this intersection during the AM peak hour are 479 vehicles, and the total growth in traffic from the Existing Conditions to Cumulative with MPSP Update Conditions is 1,959. As a result, the MPSP Update's percent fair share for the AM peak hour is 24.5%. The MPSP Update shall contribute 24.5% of the total improvement costs at this location, which is equivalent to \$570,000. With the improvements, the intersection would operate at acceptable LOS E during the AM peak hour.

## Fair Share Contributions for Freeway Improvements

The MPSP Update's percent fair share contribution for freeway improvements is calculated by:

$$\% \text{ share} = \frac{(\text{Trips Generated by MPSP Update})}{(\text{Cumulative Plus MPSP Update Traffic})}$$

Where the trips generated by the MPSP Update would be divided by the Cumulative Plus MPSP Update traffic volume.

The Santa Clara Valley Transportation Authority's Valley Transportation Plan (VTP) 2040 identifies freeway express lane projects on the following freeways. Additionally, freeway fair share contribution for impacted freeway segments was only calculated for segments with proposed improvements from VTP 2040.

- US 101 between Whipple Avenue in San Mateo County to Cochrane Road in Morgan Hill
- SR 237 between Mathilda Avenue and SR 85
- I-880 between the Alameda County Line at Dixon Landing Road and US 101
- SR 87 between SR 85 and US 101
- SR 85 between South San Jose and Mountain View

The existing HOV lanes on these freeway segments are proposed to be converted to express lanes. On US 101 along the identified segments, a second express lane is proposed to be implemented, for a total of two express lanes in each direction.

Within Santa Clara County, freeway segments are analyzed as prescribed in the Santa Clara County CMP technical guideline. For all freeway segments, the LOS standard is LOS E or better. VTA CMP guidelines define that a project would cause a freeway impact if the project would deteriorate freeway levels of service from an acceptable level (LOS E) to an unacceptable level (LOS F), or if the freeway already operates at an unacceptable level under Cumulative No Project Conditions (LOS F), the project would add traffic exceeding 1% of the freeway capacity. To determine the MPSP Update's potential freeway impacts, a select zone analysis within the Sunnyvale Travel Demand Forecast Model was performed to estimate the increase in MPSP Update traffic volume between the Cumulative no MPSP Update and Cumulative with MPSP Update conditions, and it was determined that MPSP Update would generate an adverse freeway impact for the following freeway segments.



### **US 101, northbound from Blossom Hill Road to SR 237 – AM Peak Hour**

During the AM peak hour, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between Blossom Hill Road and SR 237, which would meet the CMP's adverse freeway impact criteria during the AM peak hour.

**Potential Improvement:** Convert the existing HOV lane to express lane. Under VTP ID: H2, Convert HOV Lanes to Express Lanes on US 101 from Whipple Ave. in San Mateo County to Cochrane Rd. in Morgan Hill (34.70 miles in length), the directional improvement cost would be \$232,500,000. For the impacted segment between Blossom Hill Road and SR 237, the impacted length is 18.52 miles, therefore the Project Cost for the impact segment is \$124,090,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during the AM peak hour. The trips generated by the MPSP Update which would travel on this freeway segment during the AM peak hour are 274 vehicles, and the Cumulative with MPSP Update Conditions traffic are 9,526 vehicles. As a result, the MPSP Update shall contribute 2.9% of the total improvement costs for this project segment, which is equivalent to \$3,570,000.

### **US 101, northbound from SR 237 to Embarcadero Road – AM and PM Peak Hours**

During the AM and PM peak hours, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between SR 237 and Embarcadero Road, which would meet the CMP's adverse freeway impact criteria during the AM and PM peak hours.

**Potential Improvement:** Convert the existing HOV lane to express lane. Under VTP ID: H2, Convert HOV Lanes to Express Lanes on US 101 from Whipple Ave. in San Mateo County to Cochrane Rd. in Morgan Hill (34.70 miles in length), the directional improvement cost would be \$232,500,000. For the impacted segment between SR 237 and Embarcadero Road, the impacted length is 6.19 miles, therefore the Project Cost for the impact segment is \$41,480,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during both the AM and PM peak hours. The average trips generated by the MPSP Update which would travel on this freeway segment during the AM and PM peak hours are 552 vehicles, and the Cumulative with MPSP Update Conditions traffic are 17,877 vehicles. As a result, the MPSP Update shall contribute 3.1% of the total improvement costs for this project segment, which is equivalent to \$1,290,000.

### **US 101, southbound from Embarcadero Road to Oregon Expressway – AM and PM Peak Hours**

During the AM and PM peak hours, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between Embarcadero Road and Oregon Expressway, which would meet the CMP's adverse freeway impact criteria during the AM and PM peak hours.

**Potential Improvement:** Convert the existing HOV lane to express lane. Under VTP ID: H2, Convert HOV Lanes to Express Lanes on US 101 from Whipple Ave. in San Mateo County to Cochrane Rd. in Morgan Hill (34.70 miles in length), the directional improvement cost would be \$232,500,000. For the impacted segment between SR 237 and Embarcadero Road, the impacted length is 0.15 miles, therefore the Project Cost for the impact segment is \$1,010,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during both the AM and PM peak hours. The average trips generated by the MPSP Update which would travel on this freeway segment during the AM and PM peak hours are 326 vehicles, and the Cumulative with MPSP Update Conditions traffic are 15,238 vehicles. As a result, the MPSP Update shall contribute 2.1% of the total improvement costs for this project segment, which is equivalent to \$30,000.

#### **US 101, southbound from Oregon Expressway to Santa Clara Street – PM Peak Hour**

During the PM peak hour, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between Oregon Expressway and Santa Clara Street, which would meet the CMP's adverse freeway impact criteria during the PM peak hour.

**Potential Improvement:** Convert the existing HOV lane to express lane. Under VTP ID: H2, Convert HOV Lanes to Express Lanes on US 101 from Whipple Ave. in San Mateo County to Cochrane Rd. in Morgan Hill (34.70 miles in length), the directional improvement cost would be \$232,500,000. For the impacted segment between Embarcadero Road and Santa Clara Street, the impacted length is 16.31 miles, therefore the Project Cost for the impact segment is \$109,290,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during the PM peak hour. The trips generated by the MPSP Update which would travel on this freeway segment during the PM peak hour are 322 vehicles, and the Cumulative with MPSP Update Conditions traffic are 10,264 vehicles. As a result, the MPSP Update shall contribute 3.1% of the total improvement costs for this project segment, which is equivalent to \$3,430,000.

#### **SR 85, northbound from I-280 to El Camino Real – AM Peak Hour**

During the AM peak hour, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between I-280 and El Camino Real, which would meet the CMP's adverse freeway impact criteria during the AM peak hour.

**Potential Improvement:** Convert the existing HOV lane to express lane and construct a second express lane. Under VTP ID: H1, Convert HOV Lanes to Express Lanes and construct a second express lane in each direction on SR 85 (27.00 miles in length), the directional improvement cost would be \$90,500,000. For the impacted segment between I-280 and El Camino Real, the impacted length is 3.23 miles, therefore the Project Cost for the impact segment is \$10,830,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during the AM peak hour. The trips generated by the MPSP Update which would travel on this freeway segment during the AM peak hour are 64 vehicles, and the Cumulative with MPSP Update Conditions traffic are 6,396 vehicles. As a result, the MPSP Update shall contribute 1.0% of the total improvement costs for this project segment, which is equivalent to \$110,000.

### **SR 85, southbound from SR 237 to Homestead Road – PM Peak Hour**

During the PM peak hour, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between SR 237 and Homestead Road, which would meet the CMP's adverse freeway impact criteria during the PM peak hour.

**Potential Improvement:** Convert the existing HOV lane to express lane and construct a second express lane. Under VTP ID: H1, Convert HOV Lanes to Express Lanes and construct a second express lane in each direction on SR 85 (27.00 miles in length), the directional improvement cost would be \$90,500,000. For the impacted segment between SR 237 and Homestead Road, the impacted length is 3.30 miles, therefore the Project Cost for the impact segment is \$11,070,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during the PM peak hour. The trips generated by the MPSP Update which would travel on this freeway segment during the PM peak hour are 82 vehicles, and the Cumulative with MPSP Update Conditions traffic are 6,339 vehicles. As a result, the MPSP Update shall contribute 1.3% of the total improvement costs for this project segment, which is equivalent to \$150,000.

### **SR 87, northbound from SR 85 to Almaden Expressway – AM Peak Hour**

During the AM peak hour, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between SR 85 and Almaden Expressway, which would meet the CMP's adverse freeway impact criteria during the AM peak hour.

**Potential Improvement:** Convert the existing HOV lane to express lane. Under VTP ID: H4, Convert HOV Lanes to Express Lanes on SR 87 from SR 85 to US 101 (9.00 miles in length), the directional improvement cost would be \$17,500,000. For the impacted segment between SR 85 and Almaden Expressway, the impacted length is 3.12 miles, therefore the Project Cost for the impact segment is \$6,070,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during the AM peak hour. The trips generated by the MPSP Update which would travel on this freeway segment during the AM peak hour are 59 vehicles, and the Cumulative with MPSP Update Conditions traffic are 5,315 vehicles. As a result, the MPSP Update shall contribute 1.1% of the total improvement costs for this project segment, which is equivalent to \$70,000.

### **SR 87, northbound from Almaden Expressway to I-280 – AM and PM Peak Hours**

During the AM and PM peak hours, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between Almaden Expressway and I-280, which would meet the CMP's adverse freeway impact criteria during the AM and PM peak hours.

**Potential Improvement:** Convert the existing HOV lane to express lane. Under VTP ID: H4, Convert HOV Lanes to Express Lanes on SR 87 from SR 85 to US 101 (9.00 miles in length), the directional improvement cost would be \$17,500,000. For the impacted segment between Almaden Expressway and I-280, the impacted length is 1.84 miles, therefore the Project Cost for the impact segment is \$3,580,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during both the AM and PM peak hours. The average trips generated by the MPSP Update which would travel on this freeway segment during the AM and PM peak hours are 122 vehicles, and the Cumulative with MPSP Update Conditions traffic are 11,422 vehicles. As a result, the MPSP Update shall contribute 1.1% of the total improvement costs for this project segment, which is equivalent to \$40,000.

#### **SR 87, northbound from I-280 to Taylor Street – AM Peak Hour**

During the AM peak hour, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between I-280 and Taylor Street, which would meet the CMP's adverse freeway impact criteria during the AM peak hour.

**Potential Improvement:** Convert the existing HOV lane to express lane. Under VTP ID: H4, Convert HOV Lanes to Express Lanes on SR 87 from SR 85 to US 101 (9.00 miles in length), the directional improvement cost would be \$17,500,000. For the impacted segment between I-280 and Taylor Street, the impacted length is 1.90 miles, therefore the Project Cost for the impact segment is \$3,700,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during the AM peak hour. The trips generated by the MPSP Update which would travel on this freeway segment during the AM peak hour are 111 vehicles, and the Cumulative with MPSP Update Conditions traffic are 5,447 vehicles. As a result, the MPSP Update shall contribute 2.0% of the total improvement costs for this project segment, which is equivalent to \$80,000.

#### **SR 87, northbound from Skyport Drive to US 101 – AM Peak Hour**

During the AM peak hour, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between Skyport Drive and US 101, which would meet the CMP's adverse freeway impact criteria during the AM peak hour.

**Potential Improvement:** Convert the existing HOV lane to express lane. Under VTP ID: H4, Convert HOV Lanes to Express Lanes on SR 87 from SR 85 to US 101 (9.00 miles in length), the directional improvement cost would be \$17,500,000. For the impacted segment between Skyport Drive and US 101, the impacted length is 0.67 miles, therefore the Project Cost for the impact segment is \$1,310,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during the AM peak hour. The trips generated by the MPSP Update which would travel on this freeway segment during the AM peak hour are 148 vehicles, and the Cumulative with MPSP Update Conditions traffic are 4,445 vehicles. As a result, the MPSP Update shall contribute 3.3% of the total improvement costs for this project segment, which is equivalent to \$50,000.

### **SR 87, southbound from US 101 to Almaden Expressway – PM Peak Hour**

During the PM peak hour, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between US 101 and Almaden Expressway, which would meet the CMP's adverse freeway impact criteria during the PM peak hour.

**Potential Improvement:** Convert the existing HOV lane to express lane. Under VTP ID: H4, Convert HOV Lanes to Express Lanes on SR 87 from SR 85 to US 101 (9.00 miles in length), the directional improvement cost would be \$17,500,000. For the impacted segment between US 101 and Almaden Expressway, the impacted length is 5.67 miles, therefore the Project Cost for the impact segment is \$11,030,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during the PM peak hour. The trips generated by the MPSP Update which would travel on this freeway segment during the PM peak hour are 99 vehicles, and the Cumulative with MPSP Update Conditions traffic are 6,168 vehicles. As a result, the MPSP Update shall contribute 1.6% of the total improvement costs for this project segment, which is equivalent to \$180,000.

### **SR 237, eastbound from SR 85 to Sylvan Avenue – AM Peak Hour**

During the AM peak hour, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between SR 85 and Sylvan Avenue, which would meet the CMP's adverse freeway impact criteria during the AM peak hour.

**Potential Improvement:** Build new express lanes. Under VTP ID: H5, Build new Express Lanes on SR 237 from Mathilda Avenue to SR 85 (2.67 miles in length), the directional improvement cost would be \$40,500,000. For the impacted segment between SR 85 and Sylvan Avenue, the impacted length is 0.63 miles, therefore the Project Cost for the impact segment is \$9,560,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during the AM peak hour. The trips generated by the MPSP Update which would travel on this freeway segment during the AM peak hour are 219 vehicles, and the Cumulative with MPSP Update Conditions traffic are 3,275 vehicles. As a result, the MPSP Update shall contribute 6.7% of the total improvement costs for this project segment, which is equivalent to \$640,000.

### **SR 237, eastbound from US 101 to Mathilda Avenue – AM and PM Peak Hours**

During the AM and PM peak hours, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between US 101 and Mathilda Avenue, which would meet the CMP's adverse freeway impact criteria during the AM and PM peak hours.

**Potential Improvement:** Build new express lanes. Under VTP ID: H5, Build new Express Lanes on SR 237 from Mathilda Avenue to SR 85 (2.67 miles in length), the directional improvement cost would be \$40,500,000. For the impacted segment between US 101 and Mathilda Avenue, the impacted length is 0.53 miles, therefore the Project Cost for the impact segment is \$8,040,000.



The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during the AM and PM peak hours. The average trips generated by the MPSP Update which would travel on this freeway segment during the AM and PM peak hours are 609 vehicles, and the Cumulative with MPSP Update Conditions traffic are 11,178 vehicles. As a result, the MPSP Update shall contribute 5.4% of the total improvement costs for this project segment, which is equivalent to \$440,000.

#### **SR 237, westbound from Mathilda Avenue to US 101 – AM and PM Peak Hours**

During the AM and PM peak hours, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by 1% between Mathilda Avenue and US 101, which would meet the CMP's adverse freeway impact criteria during the AM and PM peak hours.

**Potential Improvement:** Build new express lanes. Under VTP ID: H5, Build new Express Lanes on SR 237 from Mathilda Avenue to SR 85 (2.67 miles in length), the directional improvement cost would be \$40,500,000. For the impacted segment between US 101 and SR 85, the impacted length is 0.53 miles, therefore the Project Cost for the impact segment is \$1,990,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during both the AM and PM peak hours. The average trips generated by the MPSP Update which would travel on this freeway segment during the AM and PM peak hours are 766 vehicles, and the Cumulative with MPSP Update Conditions traffic are 10,051 vehicles. As a result, the MPSP Update shall contribute 7.6% of the total improvement costs for this project segment, which is equivalent to \$160,000.

#### **SR 237, westbound from US 101 to SR 85 – PM Peak Hour**

During the PM peak hour, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between US 101 and SR 85, which would meet the CMP's adverse freeway impact criteria during the PM peak hour.

**Potential Improvement:** Build new express lanes. Under VTP ID: H5, Build new Express Lanes on SR 237 from Mathilda Avenue to SR 85 (2.67 miles in length), the directional improvement cost would be \$40,500,000. For the impacted segment between US 101 and SR 85, the impacted length is 2.14 miles, therefore the Project Cost for the impact segment is \$32,470,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during the PM peak hour. The trips generated by the MPSP Update which would travel on this freeway segment during the PM peak hour are 319 vehicles, and the Cumulative with MPSP Update Conditions traffic are 4,132 vehicles. As a result, the MPSP Update shall contribute 7.7% of the total improvement costs for this project segment, which is equivalent to \$2,510,000.

### **I-880, northbound from SR 237 to Dixon Landing Road – PM Peak Hour**

During the PM peak hour, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by greater than 1% between SR 237 and Dixon Landing Road, which would meet the CMP's adverse freeway impact criteria during the PM peak hour.

**Potential Improvement:** Convert the existing HOV lane to express lane. Under VTP ID: H7, Convert HOV Lanes to Express Lanes on I-880 between the Alameda County Line (Dixon Landing Road) and US 101 (6.40 miles in length), the directional improvement cost would be \$11,500,000. For the impacted segment between SR 237 and Dixon Landing Road, the impacted length is 2.00 miles, therefore the Project Cost for the impact segment is \$3,600,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during the PM peak hour. The trips generated by the MPSP Update which would travel on this freeway segment during the PM peak hour are 242 vehicles, and the Cumulative with MPSP Update Conditions traffic are 10,784 vehicles. As a result, the MPSP Update shall contribute 2.2% of the total improvement costs for this project segment, which is equivalent to \$90,000.

### **I-880, southbound from Dixon Landing Road to SR 237 – AM Peak Hour**

During the AM peak hour, this freeway segment would operate at LOS F under the Cumulative no MPSP Update conditions. The addition of MPSP Update traffic would increase the V/C ratio by 1% between Dixon Landing Road and SR 237, which would meet the CMP's adverse freeway impact criteria during the AM peak hour.

**Potential Improvement:** Convert the existing HOV lane to express lane. Under VTP ID: H7, Convert HOV Lanes to Express Lanes on I-880 between the Alameda County Line (Dixon Landing Road) and US 101 (6.40 miles in length), the directional improvement cost would be \$11,500,000. For the impacted segment between Dixon Landing Road and SR 237, the impacted length is 2.00 miles, therefore the Project Cost for the impact segment is \$3,600,000.

The MPSP Update shall participate in VTA's Voluntary Freeway Contribution Program and contribute its fair share towards the cost of the identified improvement. For this freeway segment, the MPSP Update traffic would trigger an adverse impact during the AM peak hour. The trips generated by the MPSP Update which would travel on this freeway segment during the AM peak hour are 278 vehicles, and the Cumulative with MPSP Update Conditions traffic are 11,687 vehicles. As a result, the MPSP Update shall contribute 2.4% of the total improvement costs for this project segment, which is equivalent to \$90,000.

Table 2 provides a summary of the list of freeway segments impacted by the MPSP Update, the improvements identified in the VTP, the total cost of the improvements, and MPSP Update's fair share contribution. MPSP Update shall require future projects to participate in VTA's Voluntary Freeway Contribution Program and contribute their fair share payments towards the VTA's Express Lane Projects along SR 237 and SR 85.

MPSP Update Transportation Impact Fee Nexus Study

**Table 2**  
**MPSP Update Fair Share Contribution to Identified Freeway Improvements**

Freeway	Dir.	Segment	Impacted Peak Hour	MPSP Project Traffic	Cumulative + MPSP Freeway Volume*	Proposed Improvements	Est. Directional Imp. Cost for the entire VTA Project Limits <sup>1</sup>	Length (miles)		Project Cost for Impacted Segment	MPSP Responsibility <sup>2</sup>	
								VTA Project Length	Impacted Length		%	Amount <sup>3</sup>
US 101	NB	From Blossom Hill Road to SR 237	AM	274	9,526	VTP ID: H2, Convert HOV lanes to express lanes on US 101 between Whipple Avenue in San Mateo County and Cochrane Road in Morgan Hill	\$232,500,000	34.70	18.52	\$124,090,000	2.9%	\$3,570,000
US 101	NB	From SR 237 to Embarcadero Road	AM & PM	552	17,877	VTP ID: H2, Convert HOV lanes to express lanes on US 101 between Whipple Avenue in San Mateo County and Cochrane Road in Morgan Hill	\$232,500,000	34.70	6.19	\$41,480,000	3.1%	\$1,290,000
US 101	SB	From Embarcadero Road to Oregon Expressway	AM & PM	326	15,238	VTP ID: H2, Convert HOV lanes to express lanes on US 101 between Whipple Avenue in San Mateo County and Cochrane Road in Morgan Hill	\$232,500,000	34.70	0.15	\$1,010,000	2.1%	\$30,000
US 101	SB	From Oregon Expressway to Santa Clara Street	PM	322	10,264	VTP ID: H2, Convert HOV lanes to express lanes on US 101 between Whipple Avenue in San Mateo County and Cochrane Road in Morgan Hill	\$232,500,000	34.70	16.31	\$109,290,000	3.1%	\$3,430,000
SR 85	NB	From I-280 to El Camino Real	AM	64	6,396	VTP ID: H1, Convert HOV lanes to express lanes between South San Jose and Mountain View	\$90,500,000	27.00	3.23	\$10,830,000	1.0%	\$110,000
SR 85	SB	From SR 237 to Homestead Road	PM	82	6,339	VTP ID: H1, Convert HOV lanes to express lanes between South San Jose and Mountain View	\$90,500,000	27.00	3.30	\$11,070,000	1.3%	\$150,000
SR 87	NB	From SR 85 to Almaden Expressway	AM	59	5,315	VTP ID: H4, Convert HOV lanes to express lanes between SR 85 and US 101	\$17,500,000	9.00	3.12	\$6,070,000	1.1%	\$70,000
SR 87	NB	From Almaden Expressway to I-280	AM & PM	122	11,422	VTP ID: H4, Convert HOV lanes to express lanes between SR 85 and US 101	\$17,500,000	9.00	1.84	\$3,580,000	1.1%	\$40,000
SR 87	NB	From I-280 to Taylor Street	AM	111	5,447	VTP ID: H4, Convert HOV lanes to express lanes between SR 85 and US 101	\$17,500,000	9.00	1.90	\$3,700,000	2.0%	\$80,000
SR 87	NB	From Skyport Drive to US 101	AM	148	4,445	VTP ID: H4, Convert HOV lanes to express lanes between SR 85 and US 101	\$17,500,000	9.00	0.67	\$1,310,000	3.3%	\$50,000
SR 87	SB	From US 101 to Almaden Expressway	PM	99	6,168	VTP ID: H4, Convert HOV lanes to express lanes between SR 85 and US 101	\$17,500,000	9.00	5.67	\$11,030,000	1.6%	\$180,000
SR 237	EB	From SR 85 to Sylvan Avenue	AM	219	3,275	VTP ID: H5, Build new express lanes on SR 237 between Mathilda Avenue and SR 85	\$40,500,000	2.67	0.63	\$9,560,000	6.7%	\$640,000
SR 237	EB	From US 101 to Mathilda Avenue	AM & PM	609	11,178	VTP ID: H5, Build new express lanes on SR 237 between Mathilda Avenue and SR 85	\$40,500,000	2.67	0.53	\$8,040,000	5.4%	\$440,000
SR 237	WB	From Mathilda Avenue to US 101	AM & PM	766	10,051	VTP ID: H5, Build new express lanes on SR 237 between Mathilda Avenue and SR 85	\$10,000,000	2.67	0.53	\$1,990,000	7.6%	\$160,000
SR 237	WB	From US 101 to SR 85	PM	319	4,132	VTP ID: H5, Build new express lanes on SR 237 between Mathilda Avenue and SR 85	\$40,500,000	2.67	2.14	\$32,470,000	7.7%	\$2,510,000
I-880	NB	From SR 237 to Dixon Landing Road	PM	242	10,784	VTP ID: H7, Convert HOV lanes to express lanes on I-880 between the Alameda County Line (Dixon Landing Road) and US 101	\$11,500,000	6.40	2.00	\$3,600,000	2.2%	\$90,000
I-880	SB	From Dixon Landing Road to SR 237	AM	278	11,687	VTP ID: H7, Convert HOV lanes to express lanes on I-880 between the Alameda County Line (Dixon Landing Road) and US 101	\$11,500,000	6.40	2.00	\$3,600,000	2.4%	\$90,000
Total Fair Share Contribution for Identified Freeway Improvements \$12,930,000												
<b>Notes:</b> (1) Estimated cost of the identified improvements by direction for the entire VTA project limits (2) MPSP's fair share contribution to the identified improvements in terms of % and dollar (3) Cost estimates were rounded up to the nearest \$10,000												

## East Channel Trail Crossings and East Channel Diagonal Crossing Improvements

As discussed in the TIA, under cumulative conditions, a series of Transportation Demand Management (TDM) measures that can reduce the peak hour driving mode share down to 50% is needed so that the Moffett Park vehicular gateways' demands would be reduced enough that the demand can be served by the available capacity. To facilitate the mode shift to non-driving modes of travel, the MPSP has identified a list of active transportation improvements to encourage biking and walking. The MPSP identifies an active transportation project for the planned multi-use trail that would run between the Bay Trail and Homestead Road. This proposed trail would need a grade-separated crossing at SR 237 and an at-grade crossing with the installation of a signal at Caribbean Drive, both of which would be vital for the planned trail to be connected into Moffett Park and help the MPSP achieve its 50% driving mode split. Therefore, future MPSP projects shall contribute their fair share towards this improvement. The two crossings combined would cost approximately \$155,000,000, of which \$62,000,000 (40%) would come from external sources such as federal/state grants, and the remaining 60% (\$93,000,000) would come from a combination of fair share contribution from MPSP and City funds. The fair-share contribution for this improvement from MPSP, calculated based on the growth within the MPSP area and city-wide growth when comparing the background and cumulative + MPSP scenarios during the PM peak hour, is approximately 67.7% of the remaining 60% of the improvement costs, or \$62,960,000.

In addition, the MPSP also plans for a diagonal multi-use facility that would stretch approximately from the Mathilda Avenue and Innovation Way intersection diagonally across Moffett Park to approximately the intersection at Caribbean Drive and Twin Creeks driveway. This diagonal facility is an important component of the MPSP's park-once policy as it will facilitate pedestrians, bicyclists, and a transit circulator to conveniently and efficiently travel within the Moffett Park area without needing to drive. This is an important facility to ensure roadways within Moffett Park will not be adversely affected by vehicular traffic. As this diagonal facility crosses the East Channel, a grade-separated crossing would also be needed for the continuity of the diagonal facility. Therefore, future MPSP projects shall contribute their fair share towards this crossing improvement. The estimated cost for this improvement is \$50,000,000, of which \$20,000,000 (40%) would come from external sources such as federal/state grants, and the remaining 60% (\$30,000,000) would come from a combination of fair share contribution from MPSP and City funds. Since this improvement will benefit only Moffett Park developments, future MPSP projects' fair-share contribution will be 100% of the remaining 60% of the improvement costs, or \$30,000,000.

## Total Fair Share Contribution for MPSP Update

As shown in Tables 1 and 2 and as indicated in the discussion above, the MPSP Update's fair share contribution for intersection, freeway, East Channel Trail crossings, and East Channel-diagonal crossing improvements are \$9,910,000 and \$12,930,000, \$62,960,000, and \$30,000,000, respectively. To address the adverse impacts triggered by the proposed developments in the MPSP Update, the developments shall pay their fair share amount toward the above-identified improvements. The contribution to the identified freeway improvements will be through the VTA's Voluntary Freeway Contribution Program.

The MPSP buildout would add approximately 12,844,000 s.f. of office, 20,000 housing units, 500 hotel rooms, and 500,000 s.f. of retail above and beyond the existing MPSP land use plus already approved projects. The MPSP buildout would also reduce the R&D land use by approximately 2,844,000 s.f.. Based on the Institute of Transportation Engineers' (ITE) *Trip Generation Manual 11<sup>th</sup> Edition* trip

generation rates, it was estimated that these land uses would generate 29,277 additional vehicle trips during the PM peak hour (see Table 3). The project trips generated during the PM peak hour are used to determine the fair share contribution for MPSP Update to stay consistent with the overall citywide TIF, which also uses the PM peak hour trip generation. Also, the improvements identified are to address the adverse impacts triggered during the AM and PM peak hours and to facilitate the necessary mode splits during the peak hours. Commercial land uses typically have a higher trip generation during the PM peak hour, whereas the trips generated for residential land use are similar during both the AM and PM peak hours. Therefore, the PM peak hour trip generation would be more representative in determining the fair share costs for all proposed land use types within the MPSP Update study area. The improvement cost per proposed MPSP PM peak hour vehicle trip is summarized in Table 4.

The fair share improvement costs are further derived for each land use type being proposed as part of the MPSP Update, using trip generation rates from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual 11<sup>th</sup> Edition* (see Table 5). The trip generation rate for commercial uses is peak-hour trips per 1,000 s.f. of building space, therefore the fair share cost per 1,000 s.f. is determined; the trip generation rate for hotel uses is peak-hour trips per hotel room, therefore the fair share cost per hotel room is determined. Based on the 2017 TIF study, a 50% pass-by trip reduction is assumed for retail land use. Additionally, office trip generation rate is based on ITE rate for trips per employee with the assumption of 4 employees per 1,000 s.f..

Pursuant to AB 602, nexus studies adopted after July 1, 2022 for housing development projects must calculate the amount of fees based on the square footage of proposed units rather than the number of units. The ITE *Trip Generation Manual* does not provide a trip rate on a per-square footage basis. Per City staff, recent residential developments in the City of Sunnyvale have an average of approximately 828 square feet per unit. This average unit size was used to convert the ITE's trip-per-unit rate to a trip-per-1,000 square foot rate. The fair share cost for residential development is determined by multiplying the total square footage of residential units in the project by the fee per 1,000 square feet.

### **Residential Land Uses**

All residential uses shall pay \$159.09 per 1,000 s.f. of unit size toward the identified intersection improvements, \$207.57 per 1,000 s.f. of unit size toward the identified freeway improvements (through the VTA's Voluntary Freeway Contribution Program), \$1,010.73 per 1,000 s.f. of unit size toward the East Channel grade-separated crossings, and \$481.61 per 1,000 s.f. of unit size toward the East Channel diagonal crossing for a total MPSP Update Transportation Impact Fee of \$1,859.00 per 1,000 s.f. of dwelling unit size.

### **Office Land Uses**

All office land uses shall pay \$609.28 per 1,000 s.f. of building space toward the identified intersection improvements, \$794.95 per 1,000 s.f. of building space toward the identified freeway improvements (through the VTA's Voluntary Freeway Contribution Program), \$3,870.88 per 1,000 s.f. of building space toward the East Channel grade-separated crossings, and \$1,844.46 per 1,000 s.f. of building space toward the East Channel diagonal crossing for a total MPSP Update Transportation Impact Fee of \$7,119.57 per 1,000 s.f. of building space.



**Table 3**  
**MPSP Land Use Growth Project Trips**

Land Use	ITE Code <sup>1</sup>	Size	PM Peak Hour	
			Rate <sup>1</sup>	Total Trips
<b>Growth (Project Buildout - Existing+Pipeline)</b>				
Residential	221	20,000 Dwelling Units	0.39	7,800
Office <sup>2</sup>	710	12,843,994 Square Feet	1.80	23,119
Research and Development	760	-2,843,994 Square Feet	0.98	-2,787
Hotel	310	500 Rooms	0.59	295
Retail/Commercial <sup>3</sup>	820	500,000 Square Feet	1.70	850
<b>Total</b>				<b>29,277</b>

<sup>1</sup> ITE Trip Generation Manual, 11<sup>th</sup> Edition 2021.

<sup>2</sup> Office trip generation rate is based on ITE rate for trips per employee with the assumption of 4 employees per 1,000 s.f.

<sup>3</sup> Retail rate is reduced by 50 percent to account for pass-by trips.

**Table 4**  
**Improvement Cost per Proposed MPSP Update Peak Hour Vehicle Trip**

	Intersection	Freeway	East Channel Trail Crossings	East Channel Diagonal Crossing
Fair Share Improvement Costs for MPSP	\$9,910,000	\$12,930,000	\$62,960,000	\$30,000,000
MPSP PM Peak-Hour Trips <sup>1</sup>	29,277	29,277	29,277	29,277
Cost per Trip	\$338.49	\$441.64	\$2,150.49	\$1,024.70

<sup>1</sup>Per Institute of Transportation Engineers Trip Generation Manual 11<sup>th</sup> Edition

**Table 5**  
**MPSP Update Transportation Impact Fee per Land Use Type**

Land Use	ITE Code <sup>1</sup>	PM Peak Hour Trip Rate <sup>1</sup>	Unit	MPSP Transportation Impact Fee				
				Intersection	Freeway	East Channel Trail Crossings	East Channel Diagonal Crossing	Total
			<b>Per PM Trip Cost</b>	<b>\$338.49</b>	<b>\$441.64</b>	<b>\$2,150.49</b>	<b>\$1,024.70</b>	<b>\$3,955.32</b>
Residential	221	0.47 per 1,000 s.f.		\$159.09	\$207.57	\$1,010.73	\$481.61	\$1,859.00
Office <sup>2</sup>	710	1.80 per 1,000 s.f.		\$609.28	\$794.95	\$3,870.88	\$1,844.46	\$7,119.57
Research and Development	760	0.98 per 1,000 s.f.		\$331.72	\$432.81	\$2,107.48	\$1,004.21	\$3,876.22
Hotel	310	0.59 per room		\$199.71	\$260.57	\$1,268.79	\$604.57	\$2,333.64
Retail/Commercial <sup>3</sup>	820	1.70 per 1,000 s.f.		\$575.43	\$750.79	\$3,655.83	\$1,741.99	\$6,724.04

<sup>1</sup>Per Institute of Transportation Engineers Trip Generation Manual 11<sup>th</sup> Edition

<sup>2</sup> Office trip generation rate is based on ITE rate for trips per employee with the assumption of 4 employees per 1,000 s.f.

<sup>3</sup> Retail rate is reduced by 50 percent to account for pass-by trips.

## Research and Development Land Uses

All research and development land uses shall pay \$331.72 per 1,000 s.f. of building space toward the identified intersection improvements, \$432.81 per 1,000 s.f. of building space toward the identified freeway improvements (through the VTA's Voluntary Freeway Contribution Program), \$2,107.48 per 1,000 s.f. of building space toward the East Channel grade-separated crossings, and \$1,004.21 per 1,000 s.f. of building space toward the East Channel diagonal crossing for a total MPSP Update Transportation Impact Fee of \$3,876.22 per 1,000 s.f. of building space.

### **Hotel Land Uses**

All hotel land uses shall pay \$199.71 per room toward the identified intersection improvements, \$260.57 per room toward the identified freeway improvements (through the VTA's Voluntary Freeway Contribution Program), \$1,268.79 per room toward the East Channel grade-separated crossings, and \$604.57 per room toward the East Channel diagonal crossing for a total MPSP Update Transportation Impact Fee of \$2,333.64 per room.

### **Retail/Commercial Land Uses**

All retail/commercial land uses shall pay \$575.43 per 1,000 s.f. of building space toward the identified intersection improvements, \$750.79 per 1,000 s.f. of building space toward the identified freeway improvements (through the VTA's Voluntary Freeway Contribution Program), \$3,655.83 per 1,000 s.f. of building space toward the East Channel grade-separated crossings, and \$1,741.99 per 1,000 s.f. of building space toward the East Channel diagonal crossing for a total MPSP Update Transportation Impact Fee of \$6,724.04 per 1,000 s.f. of building space. It should be noted that this category uses ITE Land Use Code 820 to establish trips per 1,000 s.f.. Actual developments may not fit the ITE Land Use Code 820 description.