

Date: 6/9/2022
To: Trudi Ryan, Director of Community Development Department
 Jennifer Ng, Assistant Director of Department of Public Works
Cc: Shaunn Mendrin, Planning Officer
 Dennis Ng, Transportation and Traffic Manager
From: Lillian Tsang, Principal Transportation Engineer, Departments of Public Works
Subject: El Camino Real Specific Plan Transportation Impact Fee Nexus Study

Background

The proposed El Camino Real Specific Plan (ECRSP) study area comprises of approximately 350 acres along the 4-mile Sunnyvale El Camino Real frontage, with properties within ¼ mile on either side of the roadway centerline generally included in the study area. Currently, the ECRSP area consists of approximately 3.25-million square feet (sf) of commercial development and approximately 1,600 residential units. According to the Land Use and Transportation Element (LUTE) of the Sunnyvale General Plan, the ECRSP area has a buildout potential of 4.2-million sf of commercial development and 5,800 residential units. The proposed ECRSP studied a buildout potential of 3.98-million sf of commercial development and 8,500 residential units. As shown in Table 1, the ECRSP study represents an increase of 730,000 sf of commercial development and 6,900 residential units over existing conditions, or a decrease of 220,000 sf of commercial development in gross plan area and an increase of 2,700 residential units over the adopted LUTE.

Table 1: ECRSP Area Land Use Summary

	ECRSP Area Land Use Summary			Comparison	
	Existing Built	Current General Plan	Studied ECRSP	Studied ECRSP – Existing	Studied ECRSP – Current GP
Commercial Uses (estimated sf)	3,250,000	4,250,000	3,980,000	730,000	(220,000)
Residential Uses (estimated housing units)	1,600	5,800	8,500	6,900	2,700

The City contracted with Hexagon Transportation Consultant to prepare a Transportation Impact Analysis Report (TIA) to analyze whether the studied ECRSP would cause any deterioration in the transportation network on roads in City of Sunnyvale and neighboring cities under the 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 D** in the *El Camino Real Specific Plan Draft Subsequent 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 ECRSP.

Since only the cumulative conditions were evaluated in the ECRSP TIA, subsequent development projects when they come forward for development would still need to be studied under near-term/background conditions pursuant to VTA's CMP requirements. If an adverse impact is triggered by project trips to CMP facilities and major intersections are identified for the near-term/background conditions in the future, subsequent development projects will be required to make financial contributions towards improvements or construct physical improvements at the affected facilities.

This nexus study explains how the proposed ECRSP will generate traffic that will adversely impact major intersections and CMP facilities, and calculates a ECRSP Transportation Impact Fee that developers within the ECRSP will be required to pay for intersection and freeway improvements at these locations. The ECRSP Transportation Impact Fee captures improvements that were above and beyond what was included in the Sunnyvale Citywide Transportation Fee; all developments within the ECRSP 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 a 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 ECRSP's percent fair share contribution for intersection improvements is calculated by:

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

Where the trips generated by the ECRSP would be divided by the total growth in traffic from the Existing Conditions to Cumulative with ECRSP Conditions. This is an accepted methodology from the various jurisdictions (e.g., City of Mountain, County of Santa Clara, etc.) for calculating fair share contribution for an identified intersection improvement.

Definition of Intersection Impacts at Signalized Intersections

The Cities of Sunnyvale, Mountain View and Santa Clara and Caltrans has a level of service standard for signalized intersections of LOS D or better, and the County of Santa Clara has a level of service standard for signalized intersections of LOS E or better. Within the City of Sunnyvale, intersections on roadways considered to be “regionally significant” have a standard of LOS E or better. In the study area, signalized intersections within Sunnyvale along 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 which belong to the CMP network is LOS E or better.

Pursuant to Sunnyvale City Council Policy 1.2.8, the ECRSP 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 are 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 ECRSP, it was determined that the ECRSP would generate an adverse intersection impact at the following intersections. **Table 2** provides a summary of the list of intersections impacted by the ECRSP under the cumulative conditions, the improvements identified, the total cost of the improvements, and the intersection operations with the identified improvements.

Pastoria Avenue & El Camino Real (Intersection #5) [Congestion Management Program Intersection]

This intersection is a CMP intersection under Caltrans’ jurisdiction, therefore the LOS standard is LOS E or better. Under Cumulative no ECRSP conditions, the LOS would be an unacceptable LOS F during the PM peak hour. The addition of ECRSP traffic would deteriorate traffic operations and increase the critical-movement delay by 23 seconds and the critical V/C by 0.054, which meets the CMP’s adverse intersection impact criteria.

Potential Improvement: To reduce ECRSP's adverse impact at this intersection, it would require restriping the southbound approach to include two left-turn lanes, one through lane and one right-turn lane. This improvement would not increase the pedestrian and bicycle exposure time to traffic at the intersection. No right-of-way acquisitions would be required. The estimated cost to implement these improvements is \$30,000.

For this intersection, the ECRSP traffic would trigger an adverse impact during the PM peak hour. The trips generated by the ECRSP that would travel through this intersection during the PM peak hour is 175 vehicles, and the total growth in traffic from the Existing Conditions to Cumulative with ECRSP Conditions is 3,872. As a result, the ECRSP percent fair share for the PM peak hour is 4.5%, and the ECRSP shall contribute 4.5% of the total improvement costs at this location, which is equivalent to \$1,350. The improvements will bring the operations at this intersection to slightly better than the Cumulative No ECRSP conditions during the PM peak hour. Although it would continue to operate at LOS F, however, the critical-movement delay will decrease by 22.3 seconds and the critical V/C will decrease by 0.052.

Mathilda Avenue & El Camino Real (Intersection #6) [Congestion Management Program Intersection]

This intersection is a CMP intersection under Caltrans' jurisdiction, therefore the LOS standard is LOS E or better. Under Cumulative no ECRSP conditions, the LOS would be an unacceptable LOS F during the AM peak hour. The addition of ECRSP traffic would deteriorate traffic operations and increase the critical-movement delay by 33.1 seconds and the critical V/C by 0.083, which meets the CMP's adverse intersection impact criteria.

Potential Improvement: To reduce ECRSP's adverse impact at this intersection, it would require a third left-turn lane for the eastbound approach. This improvement would require signal modification and new vehicle detection, restriping, and removal of the raised median on the eastbound approach, including relocation of several median streetlights and utilities (e.g. electrical boxes and inlet). No right-of-way acquisitions would be required. The estimated cost to implement these improvements is \$1,587,600.

For this intersection, the ECRSP traffic would trigger an adverse impact during the AM peak hour. The trips generated by the ECRSP that would travel through this intersection during the AM peak hour is 268 vehicles, and the total growth in traffic from the Existing Conditions to Cumulative with ECRSP Conditions is 3,131. As a result, the ECRSP percent fair share for the AM peak hour is 8.6%, and the ECRSP shall contribute 8.6% of the total improvement costs at this location, which is equivalent to \$136,534. The improvements will bring the operations at this intersection to LOS E- during the AM peak hour.

Sunnyvale Avenue & El Camino Real (Intersection #7)

This intersection is under Caltrans' jurisdiction, and it is on a regionally significant roadway, therefore the LOS standard is LOS E or better. Under Cumulative no ECRSP conditions, the LOS would be LOS E during the PM peak hour. The addition of ECRSP traffic would deteriorate traffic operations to LOS F, which meets the regional significant roadway's adverse intersection impact criteria.

Potential Improvement: To reduce ECRSP's adverse impact at this intersection, it would require reconfiguring the westbound approach to include a second left-turn lane. This improvement could potentially be accommodated within the existing right-of-way and would not increase the pedestrian and bicycle exposure time to traffic at the intersection. The estimated cost to implement these improvements is \$1,587,600.

For this intersection, the ECRSP traffic would trigger an adverse impact during the PM peak hour. The trips generated by the ECRSP that would travel through this intersection during the PM peak hour is 208 vehicles, and the total growth in traffic from the Existing Conditions to Cumulative with ECRSP Conditions is 3,004. As a result, the ECRSP percent fair share for the PM peak hour is 6.9%, and the ECRSP shall contribute 6.9% of the total improvement costs at this location, which is equivalent to \$109,544. The improvements will bring the operations at this intersection back to LOS E during the PM peak hour.

Ellis Street and Middlefield Road (Intersection #14)

This intersection is under the City of Mountain View's jurisdiction, therefore the LOS standard is LOS D or better. Under Cumulative no ECRSP conditions, the LOS would be an unacceptable LOS F during the PM peak hour. The addition of ECRSP traffic would increase the critical-movement delay by 12 seconds and the critical V/C ratio by 0.047, which meets the Mountain View's adverse intersection impact criteria.

Potential Improvement: To reduce the ECRSP's adverse impact at this intersection, it would require reconfiguring the eastbound approach to include a second left-turn lane. This improvement could potentially be accommodated within the existing right-of-way and would not increase the pedestrian and bicycle exposure time to traffic at the intersection. The estimated cost to implement these improvements is \$330,000.

With the proposed improvement, the intersection would improve to LOS E under cumulative conditions during the PM peak. The ECRSP shall contribute its fair share towards the cost of the identified improvement. For this intersection, the ECRSP traffic would trigger an adverse impact during the PM peak hour. The trips generated by the ECRSP that would travel through this intersection during the PM peak hour is 21 vehicles, and the total growth in traffic from the Existing Conditions to Cumulative with ECRSCP Conditions is 1,236. As a result, the ECRSP's percent fair share for the PM peak hour is 1.6%. The ECRSP shall contribute 1.6% of the total improvement costs at this location, which is equivalent to \$5,226. The improvements will bring the operations at this intersection to LOS E during the PM peak hour.

Fair Oaks Avenue and Arques Avenue (Intersection #42)

This intersection is under the City of Sunnyvale's jurisdiction, therefore the LOS standard is LOS D or better. Under Cumulative no ECRSP conditions, the LOS would be an unacceptable LOS F during the AM peak hour. The addition of ECRSP traffic would deteriorate traffic operations and increase the critical-movement delay by 12.8 seconds and the critical V/C by 0.032, which meets the City of Sunnyvale's adverse intersection impact criteria.

Potential Improvement: To reduce ECRSP's adverse impact at this intersection, it would require reconfiguring the eastbound and westbound approaches to include a separate right-turn lane. One eastbound receiving lane would need to be eliminated. This improvement can be accommodated within the existing right-of-way. However, the eastbound and westbound through movements would be offset with their receiving lanes and would require lane extensions to delineate the travel path for the eastbound and westbound through movements. The eastbound improvements were identified in the Sunnyvale Transportation Impact Fee (TIF) already; the estimated cost to implement the improvements for the westbound direction is \$390,000.

For this intersection, the ECRSP traffic would trigger an adverse impact during the AM peak hour. The trips generated by the ECRSP that would travel through this intersection during the AM peak hour is 56 vehicles, and the total growth in traffic from the Existing Conditions to Cumulative with ECRSP Conditions is 2,552. As a result, the ECRSP percent fair share for the AM peak hour is 2.2%. The ECRSP shall contribute 2.2% of the total improvement costs at this location, which is equivalent to \$8,558. With the improvements, the intersection would operate at acceptable LOS E during the AM peak hour.

Wolfe Road and Reed Avenue (Intersection #45)

This intersection is under the City of Sunnyvale's jurisdiction, therefore the LOS standard is LOS D or better. Under Cumulative no ECRSP conditions, the LOS would be an acceptable LOS D during the PM peak hour. The addition of ECRSP 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 ECRSP's adverse impact at this intersection, it would require restriping the westbound approach with 1 left-turn lane, 1 through lane, and 1 right-turn lane. This improvement would not increase the pedestrian and bicycle exposure time to traffic at the intersection. No right-of-way acquisitions would be required. The estimated cost to implement these improvements is \$30,000.

For this intersection, the ECRSP traffic would trigger an adverse impact during the PM peak hour. The trips generated by the ECRSP that would travel through this intersection during the PM peak hour is 39 vehicles, and the total growth in traffic from the Existing Conditions to Cumulative with ECRSP Conditions is 2,358. As a result, the ECRSP percent fair share for the PM peak hour is 1.7%. The ECRSP shall contribute 1.7% of the total improvement costs at this location, which is equivalent to \$496. With the improvements, the intersection would operate at acceptable LOS D during the PM peak hour.

Lawrence Expressway and Benton Avenue (Intersection #54)

This intersection is under the County of Santa Clara's jurisdiction and the LOS standard is LOS E or better. Under Cumulative no ECRSP conditions, the LOS would be an unacceptable LOS F at this intersection during the PM peak hour. The addition of ECRSP traffic would increase the critical-movement delay by 11.2 seconds and the critical V/C ratio by 0.023 during the PM peak hour, which would meet the County of Santa Clara's adverse intersection impact criteria.

Potential Improvement: The County of Santa Clara has identified a future project to provide a grade separation at this intersection in the *County of Santa Clara Expressway Plan 2040*. This would improve the north-south flow of traffic and potentially address the ECRSP's impacts. The estimated cost to implement this improvement is \$79,380,000. The County of Santa Clara and the Cities of Sunnyvale and Santa Clara will be partners for implementing this improvement, and will be responsible for a total of 20% of the improvement costs as local match. The three jurisdictions will look for grant funding opportunity for the remaining 80% of the improvement costs. The City of Sunnyvale will be responsible for the one-third of the 20% local match, which would be equivalent to \$5,292,000.

For this intersection, the ECRSP traffic would trigger an adverse impact during the PM peak hour. The trips generated by the ECRSP that would travel through this intersection during the PM peak hour is 35 vehicles, and the total growth in traffic from the Existing Conditions to Cumulative with ECRSP Conditions is 4,315. As a result, the ECRSP's percent fair share for the PM peak hour is 0.8%. The ECRSP shall contribute 0.8% of Sunnyvale's share of the improvement costs at this location, which is equivalent to \$42,925. With the improvements, the location will be grade separated.

Lawrence Expressway and Homestead Road (Intersection #55) [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 ECRSP conditions, the LOS would be an unacceptable LOS F at this intersection during the PM peak hour. The addition of ECRSP traffic would increase the critical-movement delay by 11.2 seconds and the critical V/C ratio by 0.028 during the PM peak hour, which would meet the CMP's adverse intersection impact criteria.

Potential Improvement: The County of Santa Clara has identified a future project to provide a grade separation at this intersection in the *County of Santa Clara Expressway Plan 2040*. This would improve the north-south flow of traffic and potentially address the ECRSP's impacts. The estimated cost to implement this improvement is \$132,000,000. The County of Santa Clara and the Cities of Sunnyvale and Santa Clara will be partners for implementing this improvement, and will be responsible for a total of 20% of the improvement costs as local match. The three jurisdictions will look for grant funding opportunity for the remaining 80% of the improvement costs. The City of Sunnyvale will be responsible for the one-third of the 20% local match, which would be equivalent to \$8,800,000.

For this intersection, the ECRSP traffic would trigger an adverse impact during the PM peak hour. The trips generated by the ECRSP that would travel through this intersection during the PM peak hour is 63 vehicles, and the total growth in traffic from the Existing Conditions to Cumulative with ECRSP Conditions is 4,018. As a result, the ECRSP's percent fair share for the PM peak hour is 1.6%. The ECRSP shall contribute 1.6% of Sunnyvale's share of the improvement costs at this location, which is equivalent to \$137,979. With the improvements, the location will be grade separated.

Lawrence Expressway and Pruneridge Avenue (Intersection #56)

This intersection is under the County of Santa Clara's jurisdiction and the LOS standard is LOS E or better. Under Cumulative no ECRSP conditions, the LOS would be an unacceptable LOS F at this intersection during the AM peak hour. The addition of ECRSP traffic would increase the critical-movement delay by 11.2 seconds and critical V/C ratio by 0.037, which would meet the County of Santa Clara's adverse intersection impact criteria.

Potential Improvement: The County of Santa Clara has identified a future project to provide a grade separation at this intersection in the *County of Santa Clara Expressway Plan 2040*. This would improve the north-south flow of traffic and potentially address the ECRSP's impacts. The estimated cost to implement this improvement is \$79,380,000. The County of Santa Clara and the City of Santa Clara will be partners for implementing this improvement, and will be responsible for a total of 20% of the improvement costs as local match. The two jurisdictions will look for grant funding opportunity for the remaining 80% of the improvement costs. Developments in the City of Sunnyvale will provide its fair share contribution based on one-half of the 20% local match, which would be equivalent to \$7,938,000.

For this intersection, the ECRSP traffic would trigger an adverse impact during the AM peak hour. The trips generated by the ECRSP that would travel through this intersection during the AM peak hour is 41 vehicles, and the total growth in traffic from the Existing Conditions to Cumulative with ECRSP Conditions is 3,481. As a result, the ECRSP's percent fair share for the AM peak hour is 1.2%. The ECRSP shall contribute 1.2% of Sunnyvale's share of the improvement costs at this location, which is equivalent to \$93,492. With the improvements, the location will be grade separated.

Fair Share Contributions for Freeway Improvements

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

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

Where the trips generated by the ECRSP would be divided by the cumulative plus ECRSP traffic volume.

The Santa Clara Valley Transportation Authority's Valley Transportation Plan (VTP) 2040 identifies freeway express lane projects on the following freeways:

- US 101 between Whipple Avenue in San Mateo County to Cochrane Road in Morgan Hill
- SR 237 between N. First Street and Mathilda Avenue
- I-880 between the Alameda County Line at Dixon Landing Road and US 101

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 ECRSP's potential freeway impacts, a select zone analysis within the Sunnyvale Travel Demand Forecast Model was performed to estimate the increase in ECRSP traffic volume between the Cumulative no ECRSP and Cumulative with ECRSP conditions, and it was determined that ECRSP would generate an adverse freeway impact for the following freeway segments.

SR 237, eastbound from Great America Parkway to North First Street – Mixed Flow Lanes – AM Peak hour

During the AM peak hour, this freeway segment would operate at LOS F under the Cumulative no ECRSP conditions. The addition of ECRSP traffic would increase the V/C ratio by 1.01% between Great America Parkway to North First 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: H3, Convert HOV Lanes to Express Lanes on SR 237 between North First Street and Mathilda Avenue (3.86-mile in length), the directional improvement cost would be \$10,000,000. For the impacted segment between Great American Parkway and North First Street, the impacted length is 1.1 mile, therefore the Project Cost for the impact segment is \$2,849,741.

The ECRSP 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 ECRSP traffic would trigger an adverse impact during the AM peak hour. The trips generated by the ECRSP which would travel on this freeway segment during the AM peak hour is 64 vehicles, and the Cumulative with ECRSP Conditions traffic is 6,356 vehicles. As a result, the ECRSP shall contribute 1.01% of the total improvement costs for this project segment, which is equivalent to \$28,695.

SR 237, eastbound from Fair Oaks Avenue to Lawrence Expressway – Mixed Flow Lanes – AM Peak hour

During the AM peak hour, this freeway segment would operate at LOS F under the Cumulative no ECRSP conditions. The addition of ECRSP traffic would increase the V/C ratio by 1.02% between Fair Oaks Avenue and Lawrence 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: H3, Convert HOV Lanes to Express Lanes on SR 237 between North First Street and Mathilda Avenue (3.86-mile in length), the directional improvement cost would be \$10,000,000. For the impacted segment between Fair Oaks Avenue and Lawrence Expressway, the impacted length is 0.6 mile, therefore the Project Cost for the impact segment is \$1,632,124.

The ECRSP 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 ECRSP traffic would trigger an adverse impact during the AM peak hour. The trips generated by the ECRSP which would travel on this freeway segment during the AM peak hour is 65 vehicles, and the Cumulative with ECRSP Conditions traffic is 6,352 vehicles. As a result, the ECRSP shall contribute 1.02% of the total improvement costs for this project segment, which is equivalent to \$16,702.

SR 85, northbound from Central Expressway to Moffett Boulevard – Mixed Flow Lanes – AM Peak hour

During the AM peak hour, this freeway segment would operate at LOS F under the Cumulative no ECRSP conditions. The addition of ECRSP traffic would increase the V/C ratio by 1.41% between Central Expressway and Moffett Boulevard, 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 (23.97-mile in length), the directional improvement cost would be \$90,500,000. For the impacted segment between Central Expressway and Moffett Boulevard, the impacted length is 0.76 mile, therefore the Project Cost for the impact segment is \$2,869,420.

The ECRSP 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 ECRSP traffic would trigger an adverse impact during the AM peak hour. The trips generated by the ECRSP which would travel on this freeway segment during the AM peak hour is 87 vehicles, and the Cumulative with ECRSP Conditions traffic is 6,154 vehicles. As a result, the ECRSP shall contribute 1.41% of the total improvement costs for this project segment, which is equivalent to \$40,565.

SR 237, westbound from Zanker Road to Lawrence Expressway – Mixed Flow Lanes – PM Peak hour

During the PM peak hour, this freeway segment would operate at LOS F under the Cumulative no ECRSP conditions. The addition of ECRSP traffic would increase the V/C ratio by 0.73% between Zanker Road and Lawrence 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: H3, Convert HOV Lanes to Express Lanes on SR 237 between North First Street and Mathilda Avenue (3.86-mile in length), the directional improvement cost would be \$10,000,000. For the impacted segment between Zanker Road and Lawrence Expressway, the impacted length is 3.4 mile, therefore the Project Cost for the impact segment is \$8,782,383.

The ECRSP 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 ECRSP traffic would trigger an adverse impact during the PM peak hour. The trips generated by the ECRSP which would travel on this freeway segment during the PM peak hour is 56 vehicles, and the Cumulative with ECRSP Conditions traffic is 7,742 vehicles. As a result, the ECRSP shall contribute 0.73% of the total improvement costs for this project segment, which is equivalent to \$64,009.

Table 3 provides a summary of the list of freeway segments impacted by the ECRSP, the improvements identified in the VTP, the total cost of the improvements, and ECRSP's fair share contribution. ECRSP 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.

Table 2: ECRSP Fair Share Contribution to Identified Intersection Improvements

Peak Hour	Cumulative No ECRSP		Cumulative + ECRSP				Cumulative + ECRSP + Improvements				Proposed Improvements	Est. Imp. Cost ¹	ECRSP Update Responsibility ²	
	Avg. Del. (sec)	LOS	Avg. Del. (sec)	LOS	Incr. Crit. Del. (sec)	Incr. Crit. V/C	Avg. Del. (sec)	LOS	Incr. Crit. Del. (sec)	Incr. Crit. V/C			%	Amount
Pastoria Avenue & El Camino Real ³											Restripe southbound approach to provide 2 left-turn lanes, 1 through lane, and 1 right-turn lane	\$30,000	4.5%	\$1,350
AM	69.4	E	72.3	E	n/a	n/a	n/a	n/a	n/a	n/a				
PM	94.0	F	110.3	F	23.0	0.054	85.5	F	-22.3	-0.052				
Mathilda Avenue & El Camino Real ³											Third eastbound left-turn lane, signal modification, removal of raised median	\$1,587,600	8.6%	\$136,534
AM	84.3	F	97.7	F	33.1	0.083	77.4	E-	-6.2	-0.018				
PM	71.3	E	76.2	E-	n/a	n/a	n/a	n/a	n/a	n/a				
Sunnyvale Avenue & El Camino Real											Restripe to provide a second westbound left-turn lane	\$1,587,600	6.9%	\$109,544
AM	44.7	D	46.2	D	n/a	n/a	n/a	n/a	n/a	n/a				
PM	71.3	E	85.1	F	19.0	0.053	60.6	E	-23.2	-0.08				
Ellis Street & Middlefield Road											Reconfigure eastbound approach to provide a second left-turn lane	\$330,000	1.6%	\$5,226
AM	88.2	F	88.9	F	1.5	0.003	n/a	n/a	n/a	n/a				
PM	82.1	F	91.8	F	12.0	0.047	69.2	E	-21.0	-0.108				
Fair Oaks Avenue & Arques Avenue											Restripe to provide a separate eastbound and westbound right-turn lane, and eliminate one eastbound receiving lane. This improvement can be	\$390,000	2.2%	\$8,558
AM	91.4	F	97.1	F	12.8	0.032	68.5	E	n/a	n/a				
PM	112.2	F	109.7	F	-10	-0.020	n/a	n/a	n/a	n/a				

Peak Hour	Cumulative No ECRSP		Cumulative + ECRSP				Cumulative + ECRSP + Improvements				Proposed Improvements	Est. Imp. Cost ¹	ECRSP Update Responsibility ²		
	Avg. Del. (sec)	LOS	Avg. Del. (sec)	LOS	Incr. Crit. Del. (sec)	Incr. Crit. V/C	Avg. Del. (sec)	LOS	Incr. Crit. Del. (sec)	Incr. Crit. V/C			%	Amount	
accommodated within the existing right-of-way. The eastbound improvement is already included in the Sunnyvale Transportation Impact Fee. The estimated improvement cost is only for the westbound improvement.															
Wolfe Road & Reed Avenue												Restripe the westbound approach to provide 1 left-turn lane, 1 through lane, and 1 right-turn lane.	\$30,000	1.7%	\$496
	AM	64.7	E	66.3	E	2.3	0.007	n/a	n/a	n/a	n/a				
	PM	54.8	D-	56.2	E+	3.2	0.018	47.8	D	-11.8	-0.050				
Lawrence Expressway & Benton Street ⁴												Grade Separation (Total project cost is \$5,292,000, of which 20% of is the local match from County of Santa Clara and Cities of Sunnyvale and Santa Clara. The city's fair share is 33% of the local match, which is \$5,292,000).	\$5,292,000	0.8%	\$42,925
	AM	>120	F	>120	F	-19	-0.035	n/a	n/a	n/a	n/a				
	PM	>120	F	>120	F	15.0	0.023	n/a	n/a	n/a	n/a				

Peak Hour	Cumulative No ECRSP		Cumulative + ECRSP				Cumulative + ECRSP + Improvements				Proposed Improvements	Est. Imp. Cost ¹	ECRSP Update Responsibility ²		
	Avg. Del. (sec)	LOS	Avg. Del. (sec)	LOS	Incr. Crit. Del. (sec)	Incr. Crit. V/C	Avg. Del. (sec)	LOS	Incr. Crit. Del. (sec)	Incr. Crit. V/C			%	Amount	
Lawrence Expressway & Homestead Road ³⁴											Grade Separation (Total project cost is \$132 million, of which 20% of is the local match from County of Santa Clara and Cities of Sunnyvale and Santa Clara. The city's fair share is 33% of the local match, which is 8,800,000).	\$8,800,000	1.6%	\$137,979	
	AM	>120	F	>120	F	-8.4	-0.011	n/a	n/a	n/a					n/a
	PM	>120	F	>120	F	11.2	0.028	n/a	n/a	n/a					n/a
Lawrence Expressway & Pruneridge Avenue ⁴											Grade Separation (Total project cost is \$79,380,000, of which 20% of is the local match from County of Santa Clara. Developments in Sunnyvale will contribute toward 50% of County's local match, which is \$7,938,000).	\$7,938,000	1.2%	\$93,496	
	AM	>120	F	>120	F	9.5	0.037	n/a	n/a	n/a					n/a
	PM	>120	F	>120	F	4.4	0.006	n/a	n/a	n/a					n/a
Total Fair Share Contribution for Identified Intersection Improvements														\$536,108	
Notes:															
Bold text indicates the intersection operates at an unacceptable level of service															
Text in box indicates an adverse intersection impact															

Peak Hour	Cumulative No ECRSP		Cumulative + ECRSP				Cumulative + ECRSP + Improvements				Proposed Improvements	Est. Imp. Cost ¹	ECRSP Update Responsibility ²	
	Avg. Del. (sec)	LOS	Avg. Del. (sec)	LOS	Incr. Crit. Del. (sec)	Incr. Crit. V/C	Avg. Del. (sec)	LOS	Incr. Crit. Del. (sec)	Incr. Crit. V/C			%	Amount

- (1) Estimated cost is total improvement cost, unless the City's share is noted with the improvement.
- (2) ECRSP's fair share contribution to the identified improvements in terms of % and dollars
- (3) CMP Intersection
- (4) The proposed improvement is not fully funded; City of Sunnyvale will coordinate with the County of Santa Clara on developing a funding agreement and implementation plan.

Table 3: ECRSP Fair Share Contribution to Identified Freeway Improvements

ECRSP Impacted Freeway Segment	Peak Hour	Lane Type	ECRSP Project Trips	Cumulative with ECRSP Freeway Volume	Proposed Improvements	Est. Directional Imp. Cost for the entire VTA Project Limits ¹	Length (mile)		ECRSP Responsibility ²	
							VTA Project Length	Impacted Length	%	Amount
Eastbound SR 237 between Great American Parkway and North First Street	AM	Mixed Flow	64	6,356	VTP ID: H3, Convert HOV Lanes to Express Lanes on SR 237 between North First Street and Mathilda Avenue	\$10,000,000	3.86	1.1	1.01%	\$28,695
Eastbound SR 237 between Fair Oaks Avenue and Lawrence Expressway	AM	Mixed Flow	65	6,352	VTP ID: H3, Convert HOV Lanes to Express Lanes on SR 237 between North First Street and Mathilda Avenue	\$10,000,000	3.86	0.6	1.02%	\$16,702
Northbound SR 85 between Central Expressway and Moffett Boulevard	AM	Mixed Flow	87	6,154	VTP ID: H1 Convert HOV Lanes to Express Lanes and construction a second express lane in each direction	\$90,500,000	23.97	0.76	1.41%	\$40,565

ECRSP Impacted Freeway Segment	Peak Hour	Lane Type	ECRSP Project Trips	Cumulative with ECRSP Freeway Volume	Proposed Improvements	Est. Directional Imp. Cost for the entire VTA Project Limits ¹	Length (mile)		ECRSP Responsibility ²	
							VTA Project Length	Impacted Length	%	Amount
Westbound SR 237 between Zanker Road and Lawrence Expressway	PM	Mixed Flow	56	7,742	VTP ID: H3, Convert HOV Lanes to Express Lanes on SR 237 between North First Street and Mathilda Avenue	\$10,000,000	3.86	3.4	0.73%	\$64,009
Total Fair Share Contribution for Identified Freeway Improvements									\$149,971	
Notes: (1) Estimated cost of the identified improvements by direction for the entire VTA Project Limits (2) ECRSP's fair share contribution to the identified improvements in terms of % and dollars										

Total Fair Share Contribution for ECRSP

As shown in Tables 2 and 3, the ECRSP's fair share contribution for intersection improvements is **\$536,108**, and the ECRSP's fair share contribution for freeway improvements is **\$149,971**. To address the adverse impacts triggered by the proposed developments in the ECRSP, the developments shall pay their fair share amount toward the identified intersection and freeway improvements. The contribution to the identified freeway improvements will be through the VTA's Voluntary Freeway Contribution Program.

From the Sunnyvale Travel Demand Forecasting Model, it was estimated that the studied ECRSP, with an increase of 730,000 sf of commercial development and 6,900 residential units over existing conditions, would generate 6,611 additional vehicle trips during the PM peak hour. The project trips generated during the PM peak hour are used to determine the fair share contribution for ECRSP since the improvements identified are to address the adverse impacts triggered during the AM and PM peak hours, and the commercial land uses typically has 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 ECRSP study area. The improvement cost per proposed ECRSP PM peak hour vehicle trip is summarized in Table 4 for intersection improvements and freeway improvements.

Table 4: Improvement Cost per Proposed ECRSP PM Peak Hour Vehicle Trip

	Intersection Improvements	Freeway Improvements
Fair Share Improvement Costs for ECRSP	\$ 536,108	\$ 149,971
ECRSP PM Peak Hour Trip	6,611 ¹	
Cost/Trip	\$ 81.09	\$22.69

¹ Per Sunnyvale Travel Demand Forecasting Model

The fair share improvement costs are further derived for each land use type being proposed as part of the ECRSP, using trip generation rates from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual 11th Edition* (see Table 5). The trip generation rate for residential uses is peak-hour trips per dwelling unit, therefore the fair share cost per dwelling unit is determined; the trip generation rate for commercial uses is peak-hour trips per 1,000 sf of building space, therefore the fair share cost per 1,000 sf 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.

Table 5: ECRSP Transportation Impact Fee per Land Use Type

Land Use	ITE Code ²	PM Peak Hour Trip Rate ²	Unit	ECRSP Transportation Impact Fee		
				Intersection	Freeway	Total
			Per Trip Cost	\$ 81.09	\$22.69	\$ 103.78
Residential	221	0.39	Per dwelling unit	\$ 31.63	\$ 8.85	\$ 40.48
Office ¹	710	1.44	Per 1,000 sf	\$ 116.77	\$ 32.67	\$ 149.44
Retail ¹ /Commercial	820	3.4	Per 1,000 sf	\$ 275.72	\$ 77.13	\$ 352.85
Hotel ¹	310	0.59	Per Room	\$ 47.85	\$ 13.38	\$ 61.23

¹ Commercial Uses consists of office, retail, hotel and other commercial land uses

² Per *Institute of Transportation Engineers Trip Generation Manual 11th Edition*

All ECRSP Traffic Impact Fees shall be calculated on net new land uses.

Residential Land Use

All residential dwelling units shall pay **\$31.63 per dwelling unit** toward the identified intersection improvements and **\$8.85 per dwelling unit** toward the identified freeway improvements (through the VTA's Voluntary Freeway Contribution Program), for a total ECRSP Transportation Impact Fee of **\$40.48 per dwelling unit**.

Office Land Use

All office land uses shall pay **\$116.77 per 1,000 sf of building space** toward the identified intersection improvements and **\$32.67 per 1,000 sf of building space** toward the identified freeway improvements (through the VTA's Voluntary Freeway Contribution Program), for a total ECRSP Transportation Impact Fee of **\$149.44 per 1,000 sf of building space**.

Retail/Commercial Land Use

All retail/commercial land uses shall pay **\$275.72 per 1,000 sf of building space** toward the identified intersection improvements and **\$77.13 per 1,000 sf of building space** toward the identified freeway improvements (through the VTA's Voluntary Freeway Contribution Program), for a total ECRSP Transportation Impact Fee of **\$352.85 per 1,000 sf of building space**.

Hotel Land Use

All hotel land uses shall pay **\$47.85 per room** toward the identified intersection improvements and **\$13.38 per room** toward the identified freeway improvements (through the VTA's Voluntary Freeway Contribution Program), for a total ECRSP Transportation Impact Fee of **\$61.23 per room**.