METROPOLITAN
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# Summary of State Route 237 Express Lanes Phase 2 Project in Santa Clara County Categorical Exemption/Categorical Exclusion and Technical Analyses: Greenhouse Gas Emissions, Vehicle Miles Traveled, and Use by Low-Income Populations

**July 27, 2015**

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## Section 1: Overview

This report, prepared solely by the Metropolitan Transportation Commission (MTC), summarizes technical analyses of greenhouse gas emissions effects, vehicle miles traveled (VMT) effects, and use of express lanes by low-income populations of the State Route (SR) 237 Express Lanes Phase 2 Project (Project) from Mathilda Avenue to Zanker Road in the Santa Clara County (Figure 1).

The technical analyses were conducted for environmental review in accordance with the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). Caltrans approved the technical analyses as the CEQA and NEPA lead agency. The analyses follow the formats and procedures outlined in Caltrans' Standard Environmental Reference. The Categorical Exemption/Categorical Exclusion (CE/CE) determination signifies that the actions of the Project are of such a nature that they would not have a significant effect on the human environment either individually or cumulatively.

This summary was prepared by MTC in accordance with the Settlement Agreement dated June 18, 2014 among MTC and the Association of Bay Area Governments (ABAG), and Communities for a Better Environment and the Sierra Club. This summary is solely the work of the MTC. Caltrans was not involved in the production of this summary.

### 1.1 Project Description

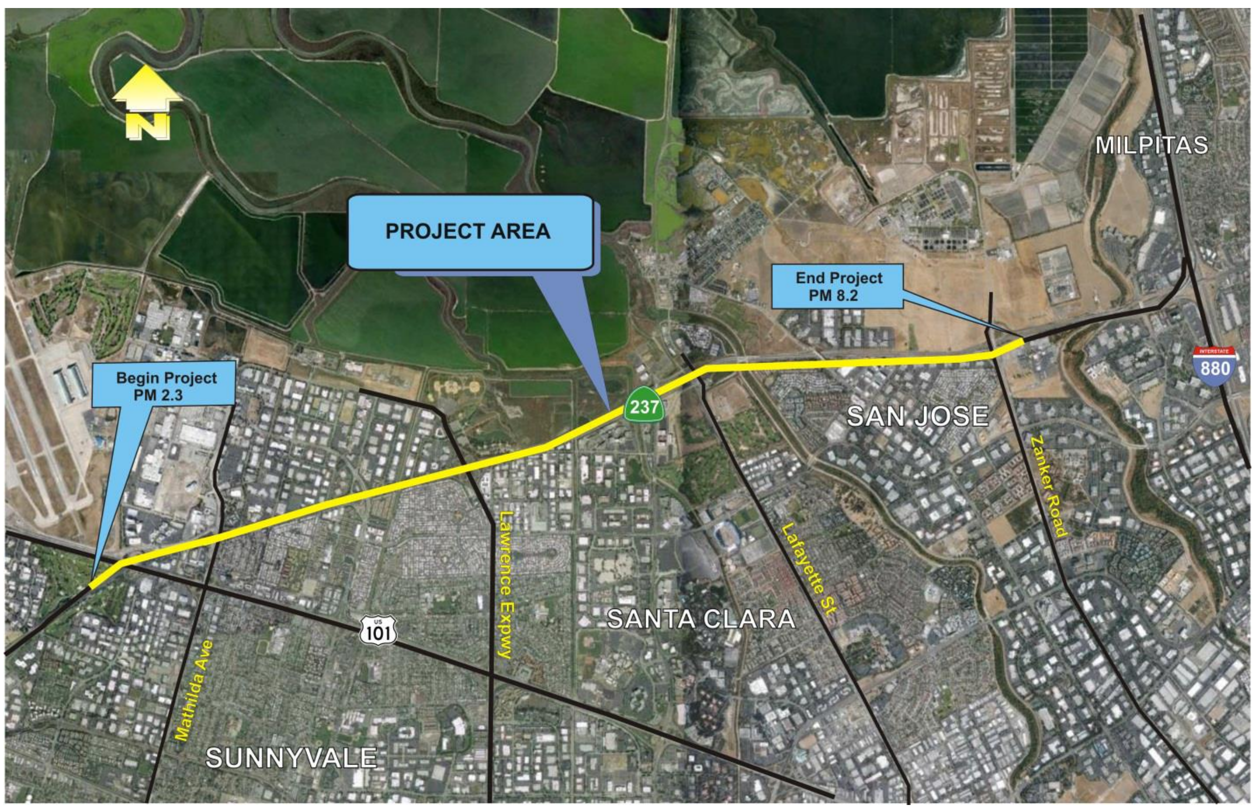
The Traffic Operations Analysis Report (TOAR) states that Sections 149.4-149.6 of the Streets and Highways Code, as amended through Assembly Bill 2032, provided the legislative framework for Santa Clara Valley Transportation Authority (VTA) to implement and operate express lanes within Santa Clara County. These express lanes, a form of roadway pricing, essentially allow solo commuters for a fee to use lanes that ordinarily would have been available for only carpoolers, transit, motorcycles, and vehicles with clean air stickers. The fees would change dynamically in response to existing congestion levels and available capacity in the carpool lanes.

In March 2012, VTA opened the SR 237 Express Connector Phase 1 project. That project converted the High Occupancy Vehicle (HOV) connectors between Interstate 880 (I-880) and SR 237 into express connectors. The limits of the SR 237 Express Connector Phase 1 project are from Dixon Landing Road on I-880 to North First Street on SR 237. The Project will convert the existing eastbound and westbound HOV lanes on SR 237 to Express Lanes between Mathilda Avenue and Zanker Road, a distance of approximately five miles. The conversion will entail restriping of the existing lanes, as well as the addition of signs and electronic tolling equipment. The conversion will have the effect of extending the express lanes that are currently in operation on SR 237 east of Zanker Road (Phase 1).

The Project seeks to provide congestion relief on SR 237 by allowing single-occupancy vehicles to take advantage of underused capacity of the existing HOV lanes for a toll. The project contains the following components:

- Installation of electronic toll system (ETS), consisting of advance express lane signs, express lane entrance signs, express lane toll rate signs/dynamic message signs, and toll readers/toll collection (gantries);
- Construction of California Highway Patrol observation areas and reconstruction of concrete barriers and metal beam guard railing in the freeway median;
- Re-striping of the existing lanes;
- Installation of signs and sign poles along the highway median and mounting of signs to existing sign poles;
- Installation of communication and electrical services and conduits for the tolling system from the existing communication/electrical services to the median areas;
- Installation of LED lighting at various locations.

Figure 1: SR 237 Project Area
(Figure 1-1 from the TOAR)




**1.2 Environmental Review**

As the lead agency, Caltrans found the project to qualify as a Categorical Exemption under CEQA and Categorical Exclusion under NEPA. The state clearing house number 2015068447 for the Notice of Exemption was approved on June 25, 2015.

**Section 2: Greenhouse Gas Emissions Effects**

This section summarizes the results of the technical analysis of greenhouse gas emissions as reported in the "Air Quality Conformity Analysis SR 237 Express Lanes Phase 2" (March 2014). The purpose of the Air Quality Conformity Analysis is to make an air quality conformity determination for the Project pursuant to Section 6005 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and is consistent with the FHWA's June 21, 2007 guidance on Project-Level Conformity Determinations and NEPA Assumption and Conformity Analysis Documentation checklist.

**2.1 Methodology**

The greenhouse gas analysis is located in Section 3.4 of the Air Quality Conformity Analysis. The Air Quality Conformity Analysis states that efforts devoted to greenhouse gas emissions reduction and climate change research and policy have increased dramatically in recent years. Efforts are primarily focused on emissions of GHG related to human activity that include carbon dioxide ($CO_2$), methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (1,1,1,2-tetrafluoroethane), and HFC-152a (difluorothane). In 2002, with the passage of Assembly Bill 1493, California launched an innovative and pro-active approach to dealing with greenhouse gas emissions and climate change at the state level.

As noted in the Air Quality Conformity Analysis, global climate change is a cumulative impact and an individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. According to *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate change in CEQA Documents* (March 5, 2007), an individual project may, however, contribute to a potential impact through its incremental change in emissions when combined with the contributions of all other sources of GHG[1]. Additionally, the analysis found that when assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines sections 15064(h) (1) and 15130). To make this determination, the incremental impacts of the Project must be compared with the effects of past, current, and probable future projects. The Air Quality Conformity Analysis found that to gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult, if not impossible, task.

Additionally, the Air Quality Conformity Analysis noted that climate change and greenhouse reduction is also a concern at the federal level; but that at this time no legislation or regulations have been enacted specifically addressing greenhouse gas emissions reductions and climate change. However, California, in conjunction with several environmental organizations and several other states, sued to force the U.S. Environmental Protection Agency (EPA) to regulate greenhouse gases as a pollutant under the Clean Air Act[2]. The court ruled that greenhouse gases do fit within the Clean Air Act's definition of a pollutant, and

1 This approach is supported by: Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents (March 5, 2007).
2 Massachusetts et al vs. Environmental Protection Agency (U.S. Supreme Court, July 26, 2007)

that the EPA does have the authority to regulate greenhouse gases. Despite the U.S. Supreme Court ruling, there are no enforceable federal regulations to date limiting greenhouse gas emissions. The EPA is investigating rule making that would apply to greenhouse emissions.

The Air Quality Conformity Analysis identified that the Project would involve standard construction techniques and require large-scale construction equipment and labor-intensive activities. The analysis identified general site activities as:

- Site preparation (clearing/grubbing) and mobilization of equipment and temporary construction facilities to the site;
- Barrier construction;
- Striping;
- Electrical component construction; and
- Demobilization of equipment and temporary facilities.

The Air Quality Conformity Analysis analyzed the expected construction emissions for the Project using the Sacramento Metropolitan Air Quality Management District's Roadway Construction Emissions Model (Version 7.1.4)[3]. The construction period of approximately six months was used in the analysis.

### 2.2 Analysis Results

Table 1 shows the anticipated construction-related $CO_2$ emissions from the Project.

Table 1. Construction-Related Emission Estimates for the Project[4]
(Table 2 from the Air Quality Conformity Analysis)

| | ROG | NOx | CO | $PM_{10}$ Dust | $PM_{10}$ Exhaust | $PM_{2.5}$ Dust | $PM_{2.5}$ Exhaust | $CO_2$ |
|---|---|---|---|---|---|---|---|---|
| Construction (lbs/day) | 7.8 | 38.0 | 32.7 | 20.0 | 3.0 | 4.2 | 2.7 | 4,854 |
| BAAQMD CEQA Threshold (lbs/day | 54 | 54 | NA | BMP | 82 | BMP | 54 | NA |

NA: Not available; lbs/day: pounds per day; BAAQMD: Bay Area Air Quality Management District; CEQA: California Environmental Quality Act; ROG: reactive organic gases; NOx: nitrogen oxides; CO: carbon monoxide; PM: particulate matter; $CO_2$: carbon dioxide.

The Air Quality Conformity Analysis states that the Project would improve traffic flow by converting the existing HOV lanes on SR 237 to express lanes, and found that an improvement in traffic flow, without

3 The Air Quality Conformity Analysis noted that the Sacramento Metropolitan Air Quality Management District's Roadway Construction Emissions Model is the standard model used to estimate construction emissions for San Francisco Bay Area roadway projects in state right-of-way.

4 *The Bay Area Air Quality Management District Adopted Air Quality CEQA Thresholds of Significance* (May 2011) do not establish numerical thresholds for certain types of emissions; rather, they call for implementing Best Management Practices as control measures. Control measures are presented in Section 2.2.6.4 of the Air Quality Conformity Analysis.

an increase in VMT, would result in long term greenhouse gas reduction benefits. The reduction in greenhouse gas emissions would support the strategies of Caltrans' Climate Action Program.

Caltrans and its parent agency, the California State Transportation Agency, have taken an active role in addressing greenhouse gas emission reduction and climate change. Recognizing that 98 percent of California's greenhouse gas emissions are from the burning of fossil fuels and 40 percent of all human made greenhouse gas emissions are from transportation, Caltrans has created and is implementing the Climate Action Program at Caltrans[5] that was published in December 2006.

5 This document can be found at: http://www.dot.ca.gov/docs/ClimateReport.pdf

## Section 3: Vehicle Miles Traveled (VMT) Effects

This section summarizes VMT estimates as reported in the "Final Traffic Operations Analysis Report: SR 237 Express Lanes Phase 2 Project" (January 2015). The Traffic Operations Analysis Report (TOAR) documents the existing and 20-year future conditions (with a 2035 horizon year) related to transportation with and without the express lanes on SR 237. Two alternatives, a No Build and a Continuous-Access Express Lane Build Alternative, were considered for both the westbound and eastbound directions. In the westbound direction, the Build Alternative consisted of converting the existing westbound SR 237 HOV lane to a continuous access express lane from the terminus of the existing Phase 1 express lane around the Lawrence Expressway interchange to the Fair Oaks Avenue interchange in Sunnyvale. In the eastbound direction, the Build Alternative consisted of converting the existing HOV lane on SR 237 into a continuous access express lane over its entire length starting in the vicinity of the Mathilda Avenue interchange in Sunnyvale to the start of the existing Phase 1 buffer just west of the Zanker Road on-ramp.

The TOAR includes VMT as one of the measures of effectiveness, but it is not the single focus of the report.

### 3.1 Methodology

The traffic analysis methodology is described in Chapter 2 and Appendix 2 of the TOAR. Two alternatives (Build and No Build) were considered for both the westbound and eastbound directions.

The traffic forecasts used in the TOAR are based on VTA's countywide model. The VTA model is a version of MTC's regional model and was developed to be consistent with methodologies used by MTC. The VTA model is a traditional four-step model including trip generation, trip distribution, mode choice, and transit and highway assignment. The model datasets used a 2013 base year and two horizon years (2015 and 2035). The 2013 base year model was developed from the 2009 validated countywide model. The model was updated with improvement projects that occurred between 2009 and 2013, and regional population, housing, and employment growth forecasts. The model used 2013 estimates of households, population, and jobs from the ABAG.

The operational analysis for the Project was conducted using the VISSIM[6] simulation modeling program. The SR 237 model covered a study area larger than the Project area. The study area for the VISSIM models ran from north of the Warren Avenue interchange on I-880 to west of the US-101 interchange on SR 237. The model network included the freeway mainline and all ramps within the study area and the signalized intersections along Calaveras Boulevard at the I-880 ramps, and the signalized intersection on McCarthy Boulevard and westbound SR 237/Calaveras Boulevard.

A set of VISSIM models was developed for both the AM (6 to 11 AM) and PM (3 to 8 PM) peak analysis periods. The VISSIM model was then used to evaluate benefits and impacts of each alternative for 2015

6 VISSIM is a microscopic simulation modeling software capable of analyzing the vehicle to vehicle interaction along the roadway network.

and 2035. These Measures of Effectiveness scenarios were run ten times in the VISSIM model and the final results are based on random seed assignment. Network VMT was one of the Measures of Effectiveness modeled, and is defined as the total VMT within the VISSIM model network over the entire peak period.

**3.2 Analysis Results**

The TOAR noted that the Project involves the conversion of existing HOV lanes to express lanes with no new capacity added; thus it anticipated that the impact would be largely limited to changes in lane choice on the freeway, with little or no impact on overall tripmaking. Additionally, the TOAR noted that the southbound-westbound portion of the project only involves the conversion of less than one mile of existing HOV lanes to express lane operation.

The TOAR reported that the VISSIM model results revealed little or no differences in operational performance between the alternatives. The TOAR also stated that this finding was not unexpected due to the Project merely converting existing HOV lanes to express lanes, no additional capacity added, and the limited existing capacity during peak hours.

**3.2.1 Near-Term (2015) VMT Forecasts**

The TOAR summarized the VMT findings along with other performance measures. 2015 VMT forecasts for the AM and PM peak periods for southbound to westbound are shown in Appendix A, Table 6-1 and Table 6-4, respectively and for the AM and PM peak periods for eastbound to northbound are shown in Appendix A, Table 6-7 and Table 6-10, respectively. The TOAR found negligible differences between alternatives.

**3.2.2 Long-Term (2035) VMT Forecasts**

The TOAR summarized the VMT findings along with other performance measures. 2035 VMT forecasts for the AM and PM peak periods for southbound to westbound are shown in Appendix A, Table 7-1 and Table 7-4, respectively. The TOAR states the Build Alternative yields a slight increase in VMT (827 miles) for the 2035 AM peak period, southbound to westbound. For the AM and PM peak periods for eastbound to northbound are shown in Appendix A, Table 7-7 and Table 7-10, respectively. The TOAR found negligible differences between alternatives.

**Section 4: Use of Express Lanes by Low-Income Populations**

The technical analyses do not address the use of express lanes by low-income individuals.

**Appendix A: Measures of Effectiveness from the TOAR**

**Table 6-1: 2015 AM Peak Period Network Performance Measure – Southbound to Westbound**

| Performance Measure | Alt 0: No Build | Alt 1: Build Continuous Access | Alt 1 – Alt 0 | |
|---|---|---|---|---|
| | | | DIFF | % DIFF |
| Total Distance Traveled (VMT) (mi) | 509,950 | 509,833 | -117 | 0% |
| Total Travel Time (VHT) (hr) | 18,910 | 18,922 | 13 | 0% |
| Total Delay (VHD) (hr) | 9,898 | 9,913 | 15 | 0% |
| Average Delay per Vehicle (sec) | 381 | 381 | 1 | 0% |
| Average Speed (mph) | 27 | 27 | 0 | 0% |

Source: DKS Associates, 2014

**Table 6-4: 2015 PM Peak Period Network Performance Measure– Southbound to Westbound**

| Performance Measure | Alt 0: No Build | Alt 1: Build Continuous Access | Alt 1 – Alt 0 | |
|---|---|---|---|---|
| | | | DIFF | % DIFF |
| Total Distance Traveled (VMT) (mi) | 399,112 | 399,100 | -13 | 0% |
| Total Travel Time (VHT) (hr) | 8,513 | 8,526 | 13 | 0% |
| Total Delay (VHD) (hr) | 1,210 | 1,222 | 13 | 1% |
| Average Delay per Vehicle (sec) | 47 | 48 | 1 | 1% |
| Average Speed (mph) | 47 | 47 | 0 | 0% |

Source: DKS Associates, 2014

**Table 6-7: 2015 AM Peak Period Network Performance Measure– Eastbound to Northbound**

| Performance Measure | Alt 0: No Build | Alt 1: Build Continuous Access | Alt 1 – Alt 0 | |
|---|---|---|---|---|
| | | | DIFF | % DIFF |
| Total Distance Traveled (VMT) (mi) | 375,971 | 375,956 | -14 | 0% |
| Total Travel Time (VHT) (hr) | 8,543 | 8,576 | 33 | 0% |
| Total Delay (VHD) (hr) | 1,783 | 1,815 | 32 | 2% |
| Average Delay per Vehicle (sec) | 84 | 85 | 1 | 2% |
| Average Speed (mph) | 44 | 44 | 0 | 0% |

Source: DKS Associates, 2014

**Table 6-10: 2015 PM Peak Period Network Performance Measure– Eastbound to Northbound**

| Performance Measure | Alt 0: No Build | Alt 1: Build Continuous Access | Alt 1 – Alt 0 | |
|---|---|---|---|---|
| | | | DIFF | % DIFF |
| Total Distance Traveled (VMT) (mi) | 493,577 | 494,287 | 709 | 0% |
| Total Travel Time (VHT) (hr) | 20,791 | 20,494 | -297 | -1% |
| Total Delay (VHD) (hr) | 11,634 | 11,324 | -309 | -3% |
| Average Delay per Vehicle (sec) | 474 | 460 | -14 | -3% |
| Average Speed (mph) | 24 | 24 | 0 | 2% |

Source: DKS Associates, 2014

**Table 7-1: 2035 AM Peak Period Network Performance Measure– Southbound to Westbound**

| Performance Measure | Alt 0: No Build | Alt 1: Build Continuous Access | Alt 1 – Alt 0 | |
|---|---|---|---|---|
| | | | DIFF | % DIFF |
| Total Distance Traveled (VMT) (mi) | 506,666 | 507,493 | 827 | 0% |
| Total Travel Time (VHT) (hr) | 26,151 | 26,027 | -124 | 0% |
| Total Delay (VHD) (hr) | 17,045 | 16,908 | -136 | -1% |
| Average Delay per Vehicle (sec) | 602 | 597 | -5 | -1% |
| Average Speed (mph) | 19 | 20 | 0 | 1% |

Source: DKS Associates, 2014

**Table 7-4: 2035 PM Peak Period Network Performance Measure– Southbound to Westbound**

| Performance Measure | Alt 0: No Build | Alt 1: Build Continuous Access | Alt 1 – Alt 0 | |
|---|---|---|---|---|
| | | | DIFF | % DIFF |
| Total Distance Traveled (VMT) (mi) | 465,273 | 465,259 | -14 | 0% |
| Total Travel Time (VHT) (hr) | 11,597 | 11,621 | 25 | 0% |
| Total Delay (VHD) (hr) | 3,152 | 3,177 | 25 | 1% |
| Average Delay per Vehicle (sec) | 108 | 109 | 1 | 1% |
| Average Speed (mph) | 40 | 40 | 0 | 0% |

Source: DKS Associates, 2014

**Table 7-7: 2035 AM Peak Period Network Performance Measure– Eastbound to Northbound**

| Performance Measure | Alt 0: No Build | Alt 1: Build Continuous Access | Alt 1 – Alt 0 | |
|---|---|---|---|---|
| | | | DIFF | % DIFF |
| Total Distance Traveled (VMT) (mi) | 471,459 | 471,405 | -54 | 0% |
| Total Travel Time (VHT) (hr) | 12,805 | 12,945 | 140 | 1% |
| Total Delay (VHD) (hr) | 4,385 | 4,522 | 137 | 3% |
| Average Delay per Vehicle (sec) | 163 | 168 | 5 | 3% |
| Average Speed (mph) | 37 | 36 | 0 | -1% |

Source: DKS Associates, 2014

**Table 7-10: 2035 PM Peak Period Network Performance Measure– Eastbound to Northbound**

| Performance Measure | Alt 0: No Build | Alt 1: Build Continuous Access | Alt 1 – Alt 0 | |
|---|---|---|---|---|
| | | | DIFF | % DIFF |
| Total Distance Traveled (VMT) (mi) | 479,909 | 480,326 | 417 | 0% |
| Total Travel Time (VHT) (hr) | 30,781 | 30,869 | 87 | 0% |
| Total Delay (VHD) (hr) | 21,832 | 21,913 | 81 | 0% |
| Average Delay per Vehicle (sec) | 854 | 857 | 3 | 0% |
| Average Speed (mph) | 16 | 16 | 0 | 0% |

Source: DKS Associates, 2014