



METROPOLITAN  
TRANSPORTATION  
COMMISSION

**Summary of I-80 Express Lanes Project in Solano County Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment and Technical Analyses: Greenhouse Gas Emissions, Vehicle Miles Traveled, and Use by Low-Income Populations**

October 16, 2015

Metropolitan Transportation Commission  
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Oakland, CA 94607

## **Section 1: Overview**

This report, prepared solely by the Metropolitan Transportation Commission (MTC), summarizes analyses of greenhouse gas (GHG) emissions effects, vehicle miles traveled (VMT) effects, and use of express lanes by low-income populations of the Interstate 80 (I-80) Express Lanes Project (Project). As lead agency, the California Department of Transportation (Caltrans) prepared the Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment (IS/EA) and technical studies in accordance with the California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA). Caltrans prepared the IS/EA and technical studies following the formats and procedures outlined in Caltrans' Standard Environmental Reference.

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**

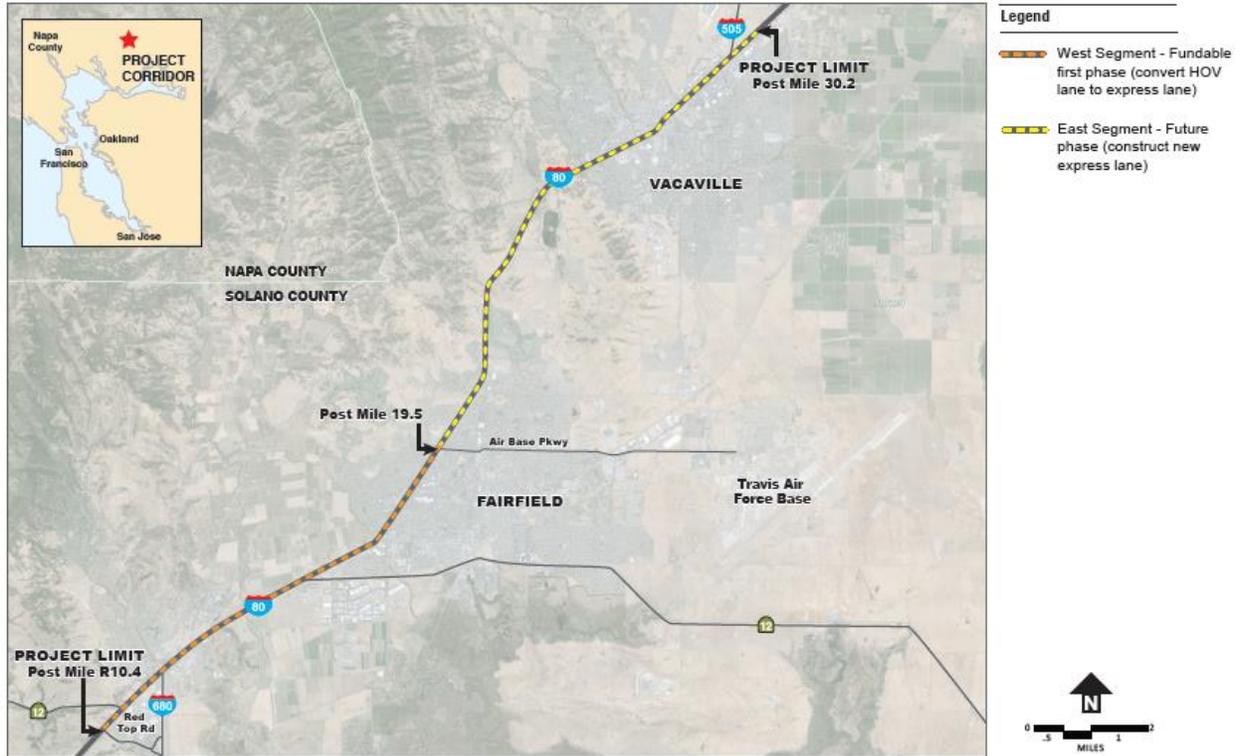
Caltrans has prepared an IS/EA, which examines the potential environmental impacts of the alternatives being considered for the Project located in Solano County, California. The IS/EA states that Caltrans, in cooperation with the Solano Transportation Authority (STA) and the Metropolitan Transportation Commission (MTC), proposes to provide High Occupancy Vehicle/High Occupancy Toll lanes (HOV/HOT or express lanes) in both westbound and eastbound directions of Interstate 80 (I-80) from west of Red Top Road to east of Interstate 505 (I-505), within Solano County. Two alternatives were considered in the environmental document: the Build Alternative and the No Build Alternative. The Build Alternative, referred to as the Project, proposes to construct approximately 18 miles of express lanes in the I-80 corridor through conversion of existing HOV lanes and highway widening for new express lanes. Additional improvements would consist of installation of static or dynamic signs, electronic toll equipment and toll collection; retrofit of existing California Highway Patrol (CHP) observation areas; mainline restriping and widening; and installation of ancillary components such as electrical power and communication conduits. The Project may be constructed in phases depending on funding. The first phase, the West Segment, would include the conversion of the existing HOV lanes in both the eastbound and westbound directions to a new express lane facility along I-80 from the Red Top Road interchange to the Air Base Parkway interchange. The second phase, the East Segment, would construct a new express lane in both the eastbound and westbound directions of I-80 from the Air Base Parkway interchange through the I-80/I-505 interchange. The total Project length is 20 miles because of the need to install express lanes signs and equipment 1 mile in advance of the actual express lane entrance (Figure 1).

The Project is listed in the MTC's 2013 Regional Transportation Plan (RTP), and MTC's financially constrained 2013 Transportation Improvement Program (TIP). The IS/EA states that the purpose of the Project is to provide an immediate benefit to the traveling public by maximizing the use of the existing

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freeway infrastructure and expanding capacity in a limited/constrained right-of-way (ROW) to move vehicles through the corridor efficiently.

Figure 1: I-80 Project Location  
(Figure S-1 from the IS/EA)



The IS/EA states that under the No Build Alternative, none of the project features described above would be constructed, and the freeway travel lanes along the I-80 corridor would remain as they currently exist, no bridges structures would be widened and traffic volumes would continue to increase. Other planned and approved transportation improvements along local routes may be implemented by local agencies or under other projects.

### 1.2 Environmental Review

As the lead agency under NEPA and CEQA, Caltrans did not identify any significant adverse impacts. The state clearing house number for the IS/EA posted on July 20, 2015 is 2015072037 and is available at: <http://www.dot.ca.gov/dist4/envdocs.htm>.

## **Section 2: Greenhouse Gas Emissions Effects**

This section summarizes the results of the analysis of greenhouse gas emissions (GHG) as reported in the “I-80 Express Lanes Project Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment” (July 2015) and the “Air Quality Report for the Interstate 80 Express Lanes Project” (January 2014). The Air Quality Report assesses the potential air quality impacts for the I-80 Express Lanes Project construction and operational phases and recommends control measures for air quality where necessary. The IS/EA and Air Quality Report are collectively referred to in the GHG Emissions Effects section as “the documents.”

### **2.1 Methodology**

The GHG analysis methodology is described in Section 2.5 of the IS/EA and Chapters 4 and 5 of the Air Quality Report. The documents state that efforts devoted to GHG emissions reduction and climate change research and policy have increased dramatically in recent years. These efforts are primarily concerned with emissions of GHG related to human activity that include carbon dioxide (CO<sub>2</sub>), methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (1,1,1,2-tetrafluoroethane), and HFC-152a (difluoroethane). In 2002, with the passage of Assembly Bill 1493, California launched an innovative and pro-active approach to dealing with GHG emissions and climate change at the state level.

The documents state that the Project is located within two different air basins within the jurisdictional boundaries of the Bay Area Air Quality Management District (BAAQMD) and Yolo-Solano Air Quality Management District (YSAQMD). The BAAQMD and YSAQMD monitor pollutants of concern, known as criteria pollutants, and air quality conditions throughout the San Francisco Air Basin and Sacramento Valley Air Basin. These air basins effectively make up the air quality study area for the Project.

The documents state that the EMFAC2011 emission factors were developed using the latest version of the CT-Emfac model. CT-Emfac provides composite emission rates based on vehicle mix, speed year, and area (i.e., County). The model was run using the procedures described in the UC Davis Methodology for the Solano County. Under the UC Davis Methodology, daily traffic volumes were split between peak and off-peak hours, and emissions were calculated for each of these periods using average travel speeds for each period. Changes to GHG emissions were modeled using estimates of northbound peak period and off-peak period traffic volumes and speeds derived from data provided by Parsons Brinckerhoff Traffic Consultants. VMT and travel time were calculated from the traffic volumes, speed and travel distance. GHG emissions were predicted both without and with the Pavley and Low Carbon Fuel Standard (LCFS) requirements.

The documents state that the Sacramento Metropolitan Air Quality Management District’s Roadway Construction Emissions Model (Version 6.3.2) was used for estimating average daily construction period emissions. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction.

## **2.2 Analysis Results**

The documents state that the net difference between the existing and build scenarios shows that even with an increase in vehicular traffic with the project, GHG emissions are predicted to decrease due mostly to the Pavley and LCFS requirements. The Project's slightly higher traffic volumes and speed will result in slightly higher GHG emissions when compared to the No-Build scenario. The Project's effect on GHG emissions is reported in Section 2.5 of the IS/EA and Chapter 5 of the Air Quality Report.

### **2.2.1 Context**

The documents state that global climate change is a cumulative impact and that an individual project does not generate enough GHG emissions to significantly influence global climate change. The documents further note that 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<sup>1</sup>. In assessing cumulative impacts, the documents state that 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 documents stated that the incremental impacts of the Project must be compared with the effects of past, current, and probable future projects.

The proposed Project is listed in the 2013 Plan Bay Area financially constrained Regional Transportation Plan (RTP) which contains GHG reduction targets. FHWA and FTA made a regional conformity determination for the 2013 RTP. The Project is also included in MTC's financially constrained 2015 Regional Transportation Improvement Program (RTIP). The MTC 2015 RTIP was determined to conform by FHWA and FTA on December 15, 2014.

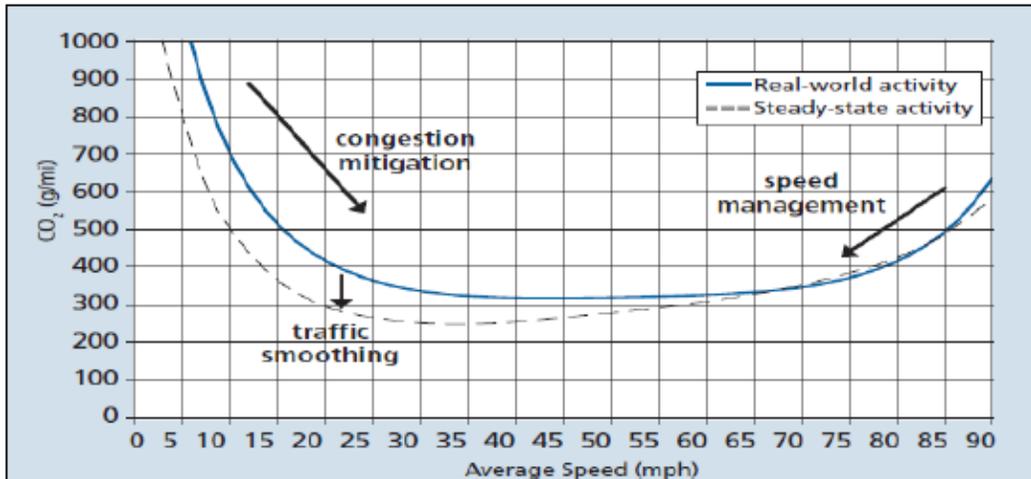
The documents state that Caltrans has created and is implementing a Climate Action Program to reduce GHG emissions by making California's transportation system more efficient. The highest levels of CO<sub>2</sub> from mobile sources, such as automobiles, occur at stop-and-go speeds (0-25 mph) and speeds over 55 mph; the most severe emissions occur from 0-25 mph (see Figure 2). To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors, GHG emissions, particularly CO<sub>2</sub>, may be reduced.

Figure 2: Possible Effect of Traffic Operation Strategies in Reducing On-Road CO<sub>2</sub> Emissions (Figure 4 in the Air Quality Impact Assessment)<sup>2</sup>

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<sup>1</sup> This approach is supported by the AEP: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the South Coast Air Quality Management District (Chapter 6: The CEQA Guide, April 2011) and the US Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).

<sup>2</sup> Traffic Congestion and Greenhouse Gases: Matthew Barth and Kanok Boriboonsomsin (TR News 268 May-June 2010) <http://onlinepubs.trb.org/onlinepubs/trnews/trnews268.pdf>



### 2.2.2 Operational Phase

The IS/EA states that average peak period and off-peak period emission calculations were combined to generate an average daily emission total. Table 1 shows the Project GHG emissions expressed in metric tons per day of CO<sub>2</sub> and are presented with and without Pavley and LCFS requirements. The Project will help relieve congestion in the traffic peak hour periods during the day. The net difference between the existing (2010) and build scenarios (Project in 2020 and 2040) shows that even with the Project, GHG emissions are predicated to decrease due mostly to the Pavley and LCFS requirements.

The IS/EA states that assuming Pavley reductions apply to future emission rates, daily CO<sub>2</sub> GHG emissions were computed to decrease by approximately 205<sup>3</sup> metric tons per day under the 2020 Build Alternative conditions, as compared to existing conditions. The documents state that further in the future (i.e. year 2040), the reduction due to the Project would be less at 37 metric tons per day, because traffic would increase substantially from planned growth. The documents state that when compared to the No Build Alternative conditions, the Project would have slightly higher emissions. This is because there would be higher traffic demand for the facility, as seen by the increased VMT associated with the Build Condition (Project) relative to the future No Build Alternative.

Table 1: CO<sub>2</sub> Emissions in Metric Tons per Day  
 (Table 2.5-1 in the IS/EA)

CO <sub>2</sub> Emissions	Existing (2010)	2020 No Build	2020 Build	2040 No Build	2040 Build
CO <sub>2</sub> without Pavley	1,432	1,620	1,625	1,915	2,039
CO <sub>2</sub> with Pavley	1,427	1,222	1,225	1,306	1,390

Source: Caltrans, 2014a; Caltrans, 2014q

<sup>3</sup> MTC understands that Caltrans will update this number in the final environmental document.

The IS/EA noted that there are limitations and uncertainties with modeling GHG emissions. Although EMFAC can calculate CO<sub>2</sub> emissions from mobile sources, the model does have limitations when it comes to accurately reflecting changes in CO<sub>2</sub> emissions due to impacts on traffic. Although work by EPA and the CARB is underway on modal-emission models, neither agency has yet approved a modal emissions model that can be used to conduct more accurate modeling. CARB is currently not using EMFAC to create its inventory of GHG emissions.

### **2.2.3 Construction Phase**

The documents state that construction emissions would not be significant with the implementation of feasible control measures as specified in the BAAQMD CEQA Guidelines (2012) and the Yolo-Solano Air Quality Management District's Handbook for Assessing and Mitigating Air Quality Impacts (2007). The documents state that GHG emissions are estimated to be 1408 metric tons of CO<sub>2</sub> over the course of the entire construction project. Currently Caltrans has not adopted GHG significance thresholds that apply to construction activities.

The documents also state that, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events. Measures to reduce construction emissions are listed in Section 2.5.5 of the IS/EA and Chapter 6 of the Air Quality Report.

### **CEQA Conclusion**

The documents state that both the future with Project and future no build show increases<sup>4</sup> in CO<sub>2</sub> emissions over the existing levels; the future with Project CO<sub>2</sub> emissions are higher than the future no build emissions. In addition, there are limitations with EMFAC and with assessing what a given CO<sub>2</sub> emissions increase means for climate change. Therefore, the documents state that it is Caltrans determination that in the absence of further regulatory or scientific information related to greenhouse gas emissions and CEQA significance, it is too speculative to make a determination regarding significance of the Project's direct impact and its contribution on the cumulative scale to climate change. Caltrans is committed to implementing measures to help reduce the potential effects of the project, and the measures are outlined in Section 2.5.5 of the IS/EA and Chapter 6 of the Air Quality Report.

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<sup>4</sup> MTC understands that Caltrans will correct this statement in the final environmental document.

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

This section summarizes VMT estimates as reported in the “I-80 Express Lanes Project Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment” (July 2015). The “Final Traffic Operations Analysis Report (TOAR): I-80 Express Lanes Project” (July 2014) did not report the Project’s VMT. A summary of where VMT is mentioned in the IS/EA is provided.

The IS/EA states that improved freeway operations would result in an increase in VMT and related increases in vehicle emissions for the Project when compared to the No Build Alternative conditions. This is because there would be higher traffic demand for the facility, as seen by the increased VMT associated with the Project relative to the future No Build Alternative.

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

This section summarizes information on the use of the Project by low-income populations as reported in the “I-80 Express Lanes Project Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment” (July 2015) and the “I-80 Express Lanes Project Community Impact Assessment” (June 2014). The purpose of the Community Impact Assessment (CIA) is to consider how the Project would affect the people, institutions, neighborhoods, communities, organizations and larger social and economic systems of the community study area (study area). All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898.<sup>5</sup> The IS/EA and the CIA are collectively referred to in this section as “the documents.” The summary focuses on portions of the IS/EA and CIA that relate to the use of the Project by low-income populations.

### **4.1 Methodology**

#### **4.1.1 Identification of Low-Income Populations**

The CIA was prepared pursuant to the Caltrans Standard Environmental Reference, including Environmental Handbook Volume 4, Community Impact Assessment (Caltrans 2011). The detailed methodology can be found in Section 3 of the CIA. The documents identify the study area by census tract block groups that encompass or are adjacent to the I-80 corridor, with the Project limits (Figure 3). The study area encompasses 36 block groups within 19 census tracts listed in Table 2. The information presented for the study area was obtained from the US Census data for the applicable census tracts and census block groups. Figure 3 shows the boundaries of each block group within the vicinity of the study area.

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<sup>5</sup> EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law.

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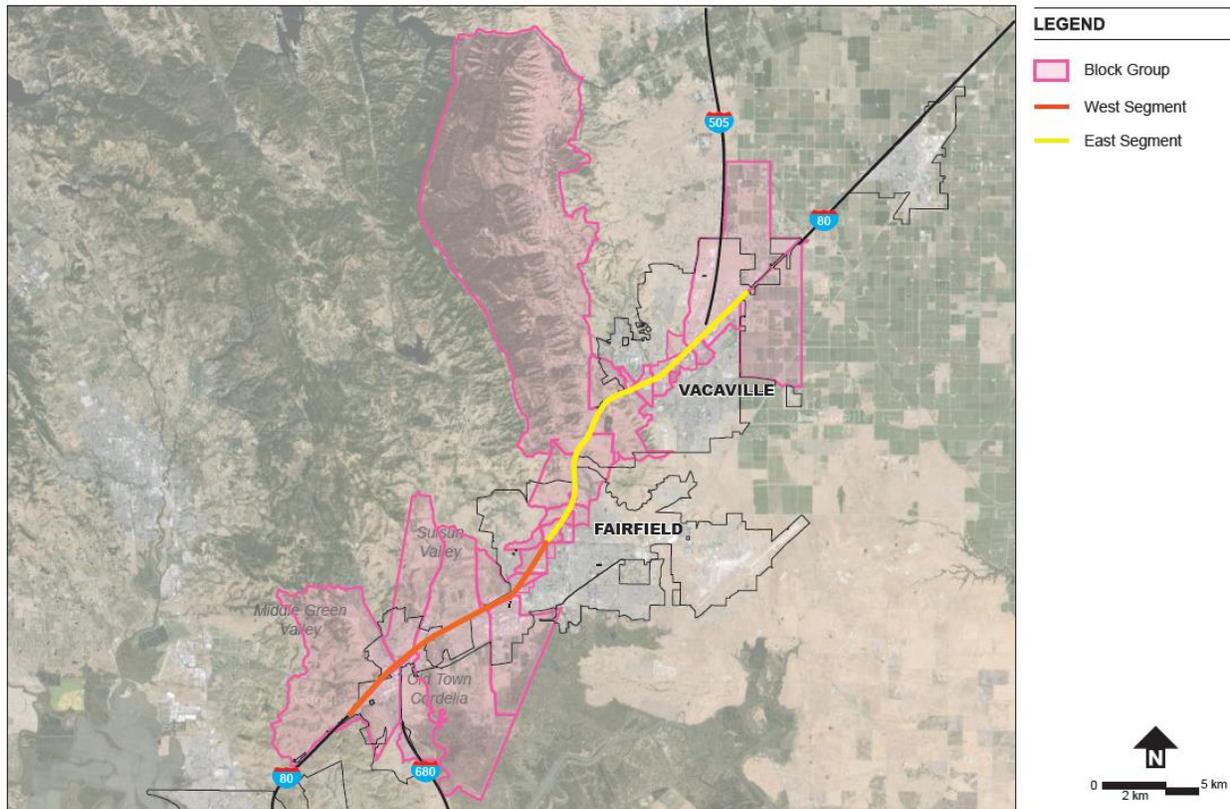
Table 2: Study Area Census Tracts and Block Groups  
(Table 2 from the CIA)

Solano County	
City of Vacaville	City of Fairfield
Block Group 4, Census Tract 2529.03	Block Group 1, Census Tract 2522.01
Block Group 3, Census Tract 2529.04	Block Group 4, Census Tract 2522.01
Block Group 2, Census Tract 2529.04	Block Group 2, Census Tract 2522.02
Block Group 1, Census Tract 2529.11	Block Group 3, Census Tract 2522.02
Block Group 2, Census Tract 2529.11	Block Group 1, Census Tract 2523.05
Block Group 1, Census Tract 2531.01	Block Group 2, Census Tract 2523.05
Block Group 2, Census Tract 2531.01	Block Group 2, Census Tract 2523.06
Block Group 5, Census Tract 2531.01	Block Group 2, Census Tract 2523.11
Block Group 6, Census Tract 2531.01	Block Group 3, Census Tract 2523.11
Block Group 1, Census Tract 2531.05	Block Group 1, Census Tract 2523.12
Block Group 5, Census Tract 2531.05	Block Group 2, Census Tract 2523.12
Block Group 1, Census Tract 2531.07	Block Group 1, Census Tract 2523.13
Block Group 1, Census Tract 2531.08	Block Group 2, Census Tract 2523.13
Block Group 3, Census Tract 2531.08	*Block Group 3, Census Tract 2523.13
Block Group 3, Census Tract 2532.05	Block Group 1, Census Tract 2523.14
--	Block Group 2, Census Tract 2523.14
--	Block Group 3, Census Tract 2524.01
--	Block Group 4, Census Tract 2524.01
--	Block Group 2, Census Tract 2524.02
--	Block Group 1, Census Tract 2526.04
--	Block Group 2, Census Tract 2526.04

Source: US Census, 2010

\*Note: block group is located within both Fairfield and Vacaville city boundaries.

Figure 3: Study Area Block Groups  
(Figure 2 from the CIA)



An important distinction made for the CIA is that the scopes of work proposed in the West and East Segments are not identical. In order to understand impacts relating to road widening (East Segment), the CIA analyzes the Project's potential on a more focused scale, using block group data for the study area. Tract-level data is provided for informational purposes, and is a more appropriate comparison for the scope of work proposed in the West Segment.<sup>6</sup>

The documents state that low-income is defined in accordance with EO 12898 and agency guidance as a person with household median income at or below the US Department of Health and Human Service poverty guidelines. The documents state that communities are generally considered to be low income or minority if they meet at least one of the following criteria: 1) the low-income population is greater than 25 percent of the total population of the community, or minority population is greater than 50 percent of the total population of the community; 2) the low-income or minority population is more than 10 percentage points higher than the city or county average.

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<sup>6</sup> A census tract is a geographic region within a county. The census tract is broken into smaller block groups, which provide specific data for a more refined geography. Block groups are generally the size of several city blocks, and are therefore useful for representing the characteristics of a community.

#### 4.1.2 Data Sources

The documents state that the 2000 US Census data for poverty data at the block group geographical level was the best available data at the time the CIA was prepared and therefore used for the analysis in the CIA. The 2013 Association of Bay Area Government's (ABAG) Projections, which are the basis for regional planning activities by Caltrans, were used for future conditions. The documents state that median household income was examined at the city level and population below poverty was examined at the block group level. The documents state that MTC conducted an outreach and engagement effort to assess how low-income and minority residents view express lanes. The outreach efforts are summarized in Section 3 of the CIA.

#### 4.2 Analysis Results

##### 4.2.1 Existing Conditions

The documents state that the percentage of low-income persons for the combined study area is 6.3 percent, which is slightly higher than that of the City of Vacaville, but lower than Solano County and City of Fairfield's poverty levels. Tract-level data for the study area is provided in addition to block group data in Table 3 to provide a broader comparison of the regional community. The median household income was slightly lower at the tract level than the block groups and the percent below poverty is slightly higher (Table 3).

Table 3: Median Household Income and Population Below Poverty Level (%), 2000  
(Table 15 from the CIA)

Geographic Area	Median Household Income (2000)	Percent Individuals Below Poverty Level
Solano County	\$54,099	8.3%
City of Vacaville	\$57,667	6.1%
City Fairfield	\$51,151	9.3%
Study Area Tracts	\$55,135	7.2%
Study Area Block Groups	\$57,614	6.3%

Source: US Census, 2000; Dataset P053, DP-3, P089

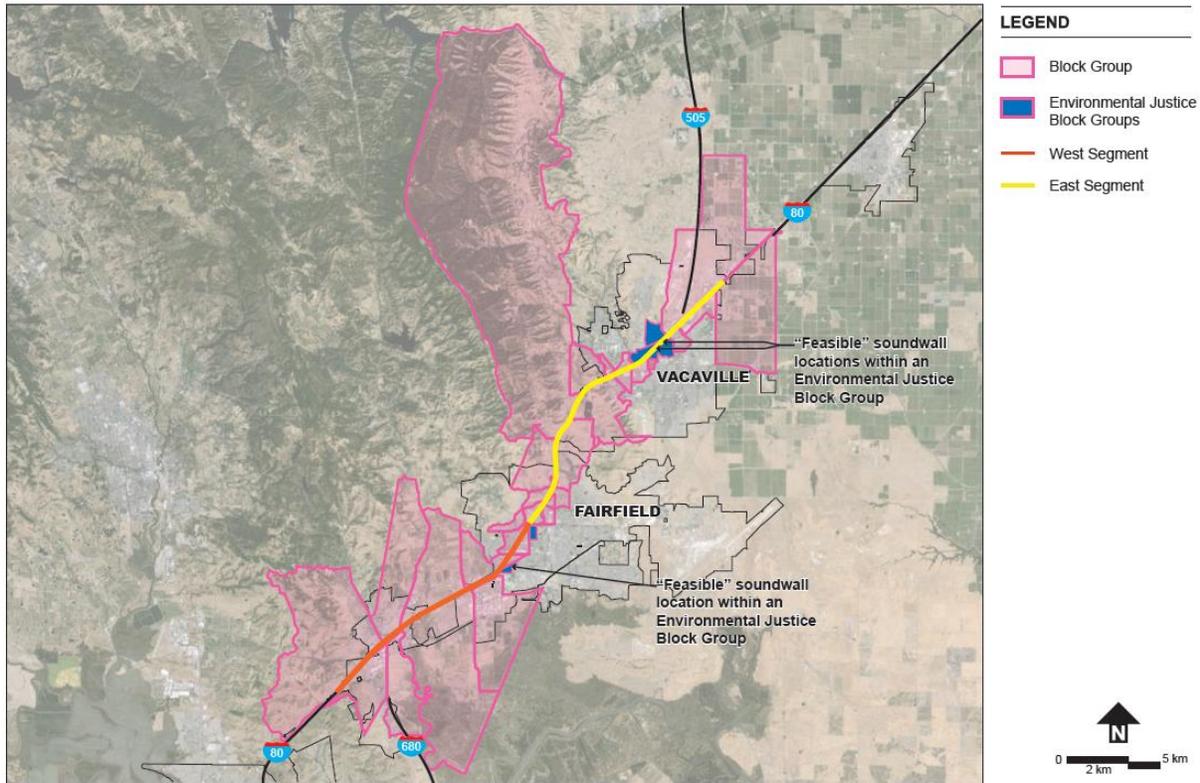
The documents state that the study area contains five block groups in which the low-income population exceeds the city averages by more than 10 percent, which qualifies them as environmental justice communities based on income. These include three block groups in Vacaville and two block groups in Fairfield (Table 4 and Figure 4).

Table 4: Environmental Justice Block Groups-Low Income  
 (Table 16 from the CIA)

City of Vacaville	Percent Low Income	City of Fairfield	Percent Low Income
Block Group 1, Census Tract 2531.05	17.4%	Block Group 3, Census Tract 2524.02	30.1%
Block Group 2, Census Tract 2532.02	17.0%	Block Group 1, Census Tract 2526.05	21.2%
Block Group 3, Census Tract 2532.02	27.9%		

Note: These block groups were 10 percentage points higher than city average of where they are located (shown in Table 2). Source: Circlepoint, 2013; US Census 2000

Figure 4: Environmental Justice Communities  
 (Figure 8 from the CIA)



#### 4.2.2 Impact Analysis Results<sup>7</sup>

<sup>7</sup>Because low-income falls under the environmental justice definition, all environmental justice impact results from the documents are listed in the summary. The documents analyze all environmental justice census track block groups and do not separately analyze impacts or use by low-income and minority populations.

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The documents state that there are 9 census block groups in study area where minority and/or low-income populations exceed the city averages by more than 10 percent (Table 5). Because these environmental justice block groups have substantially higher minority/low-income populations than their respective city averages, additional review of the Project’s effects on these communities was conducted as part of the analysis. The review found that, there are no Project effects that would be more severe or greater in magnitude in the 9 block groups when compared to the rest of the adjacent communities.

Table 5: Environmental Justice Block Groups  
(Table 2.1-13 from the IS/EA)

<b>Environmental Justice Block Groups</b>	<b>Environmental Justice Qualification</b>	<b>Land Use Impact</b>
Block Group 3, Census Tract 2532.05	Race	None
Block Group 1, Census Tract 2531.05	Race and Income	None
Block Group 1, Census Tract 2531.01	Race	None
Block Group 2, Census Tract 2526.04	Race	None
Block Group 4, Census Tract 2524.01	Race	None
Block Group 2, Census Tract 2532.02	Income	None
Block Group 3, Census Tract 2532.02	Income	None
Block Group 3, Census Tract 2524.02	Income	None
Block Group 1, Census Tract 2526.05	Income	None

Source: Caltrans, 2014d

The documents state that the Project would not remove any existing transportation options; instead, it would add an HOV/express lane for optional use by motorists. Changes to motorist access would not negatively impact communities in the study area, nor would they negatively impact environmental justice communities. Traffic within the study area currently experiences a high level of congestion during peak commute hours. The No-Build Alternative would result in further increased congestion on I-80, thereby diminishing regional access.

The documents state that the Project would add an HOV/express lane that could be used by transit busses thereby reducing congestion and improving operations of bus transit in the study area. These changes would have a positive effect on surrounding communities, including environmental justice communities. The documents state that the No-Build Alternative would not make any changes to transit stops or operations within the study area. Worsening congestion would continue to slow travel times for bus transit.

The documents state that the results from MTC’s outreach and engagement effort found that the express lane network would not change the way in which low-income residents currently travel, and,

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therefore, does not provide an additional benefit to them, nor does it penalize them. Despite perceptions about whether or not the express lane network will effectively reduce congestion, the majority of focus group participants and intercept survey respondents are willing to pay a moderate fee to use an express lane, at least some of the time.

The documents state that the No-Build Alternative would make no physical or operational improvements to I-80, within the Project limits; therefore, there would be no direct effect on minority populations. However, worsening traffic congestion in the study area could hinder access to housing, businesses, community facilities, and the provision of emergency services for minority residences, as well as the overall community.

The documents state that the Project would not disproportionately have high and adverse effects on any minority or low-income populations as per EO 12898 regarding environmental justice. No avoidance, minimization, and/or mitigation measures would be required.