

**PM<sub>2.5</sub> Project Assessment Form for Interagency Consultation**

**Attachment A  
Project Assessment Form for PM<sub>2.5</sub> Interagency Consultation**

<b>RTIP ID#</b> <i>(required)</i> 230650					
<b>TIP ID#</b> <i>(required)</i> SOL-110002					
<b>Air Quality Conformity Task Force Consideration Date</b> August 2012					
<b>Project Description</b> <i>(clearly describe project)</i> <p>The Solano Transportation Authority (STA) proposes to construct westbound and eastbound express lanes along approximately 18 miles of Interstate 80 (I-80) in Solano County.</p> <p>The project consists of a west segment and an east segment. The West Segment extends along I-80 from the Red Top Road interchange (postmile 11.4) to the Air Base Parkway interchange (postmile 19.2). In the West Segment, the existing HOV lanes in both the eastbound and westbound directions would be converted to HOV/express lanes. This would primarily involve restriping and the addition of electronic tolling equipment.</p> <p>The East Segment would extend from Air Base Parkway through the I-80/I-505 interchange in Vacaville. In the East Segment new HOV/express lanes in both the eastbound and westbound directions of I-80 would be constructed in the freeway median.</p>					
<b>Type of Project:</b> Change to existing Interstate highway. Under the current Bay Area Clean Air Plan HOV lanes are not considered Transportation Control Measures (TCMs) and therefore converting them into express lanes would not violate the clean air plan.					
<b>County</b> Solano County	<b>Narrative Location/Route &amp; Post miles</b> 04-SOL-80 (PM 11.2/29.3)  <b>Caltrans Projects – EA#</b> 04-4G080				
<b>Lead Agency:</b> Solano Transportation Authority (STA)					
<b>Contact Person</b> Janet Adams Deputy Executive Director/Director of Projects	<b>Phone#</b> 707.424.6010	<b>Fax#</b> 707.424.6074	<b>Email</b> jadams@STA-SNCL.com		
<b>Federal Action for which Project-Level PM Conformity is Needed</b> <i>(check appropriate box)</i>					
<b>Categorical Exclusion (NEPA)</b>	<input checked="" type="checkbox"/>	<b>EA or Draft EIS</b>	<b>FONSI or Final EIS</b>	<b>PS&amp;E or Construction</b>	<b>Other</b>
<b>Scheduled Date of Federal Action:</b> 2012					
<b>NEPA Delegation – Project Type</b> <i>(check appropriate box)</i>					
<b>Exempt</b>	<input checked="" type="checkbox"/>	<b>Section 6004 – Categorical Exemption</b>	<b>Section 6005 – Non-Categorical Exemption</b>		
<b>Current Programming Dates</b> <i>(as appropriate)</i>					
	<b>PE/Environmental</b>	<b>ENG</b>	<b>ROW</b>	<b>CON</b>	
<b>Start</b>	1/2011	8/2013		1/2016	
<b>End</b>	4/2014	5/2018		5/2018	

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### **Project Purpose and Need (Summary):** *(please be brief)*

I-80 is an inter-regional east-west corridor that connects the San Francisco and Sacramento metropolitan areas, passing through the counties of Alameda, Contra Costa, Solano, and Yolo. The portion of I-80 through the cities of Fairfield and Vacaville is the most heavily-traveled segment of the I-80 corridor within Solano County as it is utilized by commuters, public transit services, and for interstate and interregional goods movement. Such heavy traffic through the corridor results in frequent significant congestion in the general purpose lanes, particularly acute during the peak travel hours. The project is not designed to increase diesel truck traffic. The PSR specifically included the I-80 corridor in Solano County, including the above described West and East Segments from Fairfield to Vacaville being analyzed in this PEAR. Accordingly, this PEAR incorporates the following purpose and need as identified in the PSR for the regional backbone network:

#### **Need**

- Congestion currently exists in the general purpose lanes during peak periods on the I-80 corridor in Solano County and this level of congestion will continue to worsen as traffic demand increases.
- The existing HOV lane system on the I-80 corridor is characterized by gaps, limiting travel time savings and trip reliability for cars and transit vehicles.
- Available unused capacity in the existing HOV lane system needs to be utilized to enhance transportation system efficiency.
- There is limited funding available to close gaps in the existing HOV lane system without utilizing alternative financial mechanisms such as express lane tolling.

#### **Purpose**

- Optimize capacity in the existing I-80 corridor to better meet current and future traffic demands.
- Close the gaps within the existing HOV lanes on I-80 increasing travel time savings and reliability for all users as well as HOVs and transit.
- Maximize the efficiency of freeway facilities by better utilizing available unused capacity in the existing HOV lanes.
- Provide a funding mechanism through express lanes to accelerate implementation of the regional network of HOV and express lanes.

### **Surrounding Land Use/Traffic Generators** *(especially effect on diesel traffic)*

I-80 is a major route east west route for commuters and trucks between Sacramento and the bay area. Land use along the I-80 corridor within the project limits includes urban, residential, retail, commercial and agricultural uses.

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**Brief summary of assumptions and methodology used to conduct the AADT counts, truck percentages, etc.**  
*(please keep this concise – specifics may include date of when traffic counts were conducted, studies where truck percentages were derived)*

The AADT and truck percentages are taken from the Traffic Forecast for PM 2.5 Analysis memo prepared by Parsons Brinkerhoff<sup>1</sup>. The project forecasts were prepared with model runs using the Solano-Napa Travel Demand Model.

Three analysis years were evaluated.

Year 2015 represents the possible opening year for the West Segment only. Since the West Segment would convert an existing HOV lane to an HOV/express lane this segment may be implemented as a first phase.

Year 2020 represents the possible opening year of both the West and East Segments.

Year 2040 represents the planning horizon for the project.

References Cited:

<sup>1</sup> Traffic Forecast for PM 2.5 Analysis. Prepared for I-80 Express Lanes Project Team by Parson Brinckerhoff. August 14, 2012

**Opening Year: If facility is a highway or street, Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility**

Opening Year: West Segment 2015 – See Attached Table

East Segment 2020 – See Attached Table

**RTP Horizon Year / Design Year: If facility is a highway or street, Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility**

Horizon Year: 2040 – See Attached Table

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**Opening Year: If facility is an interchange(s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT**

Not Applicable; see above for highway facility

**RTP Horizon Year / Design Year: If facility is an interchange (s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT**

Not Applicable; see above for highway facility

**Opening Year: If facility is a bus, rail or intermodal facility/terminal/transfer point, # of bus arrivals for Build and No Build, % and # of bus arrivals will be diesel buses**

Not Applicable; see above for highway facility

**RTP Horizon Year / Design Year: If facility is a bus, rail or intermodal facility/terminal/transfer point, # of bus arrivals for Build and No Build, % and # of bus arrivals will be diesel buses**

Not Applicable; see above for highway facility

**Describe potential traffic redistribution effects of congestion relief (*impact on other facilities*)**

The results of the *Traffic Forecast Report I-80 Express lanes Project* (July 2012) indicate that building the project would increase traffic volumes on I-80 between 0.2% and 1.6% in 2020 and between 0.7 and 3.5% in 2040, with no degradation of the LOS during the Am and PM peak traffic periods. This increase is the result of congestion relief in the general purpose lanes, making I-80 a more attractive route. This draws some traffic off parallel routes, including the arterial street system in Fairfield and the roads connecting Fairfield and Vacaville.

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Comments/Explanation/Details *(please be brief)*

The proposed project is within a nonattainment area for federal PM<sub>2.5</sub> standards. Therefore, according to 40 CFR Part 93, a hotspot analysis is required for conformity purposes. However, EPA does not require hotspot analyses, qualitative or quantitative, for projects that are not listed in Section 93.123(b)(1) as a project of air quality concern (POAQC). Five types or categories of projects qualify as a POAQC. The following discussion evaluates whether the proposed project falls into any of these five POAQC categories.

The project does not qualify as a POAQC for the following reasons:

1. The project would not have a significant number of or increase in the number of diesel vehicles (40 CFR Section 93.123(b)(1)).

- ❖ Transportation conformity guidance coauthored by the EPA and FHWA define a significant volume of diesel truck traffic as facilities within greater than 125,000 annual average daily traffic (AADT) and 8 percent or more of such AADT as diesel truck traffic or approximately 10,000 trucks. The latest truck counts for I-80 in the project vicinity show that truck traffic constitutes between 3.4 and 5.1 percent of the total AADT, which ranges from 108,977 to 183,596 AADT<sup>1</sup>. The average daily number of trucks would be between 4,163 and 6,186, well below the approximate 10,000 trucks stated above.
- ❖ The percentage of trucks will remain the same with the project as without the project. The traffic volumes will increase due growth in the area, but there will be no change in the truck percentages, and therefore, would not result in a significant increase in the number of diesel vehicles.

2. The maximum percentage of diesel vehicles in the project area is 6.6 percent and would not increase as a result of the project (40 CFR 93.123(b)(1)(ii)).

- ❖ As described above under "Describe potential traffic redistribution effects of congestion relief," the project would improve operations and would reduce congestion and delay at the two intersections within the project alignment, however, the project would not result in substantial redistribution of traffic or changes in the percentage of truck trips through the site.<sup>1</sup>

3. The project is not a new bus or rail terminal or transfer point (40 CFR Section 93.123(b)(1)(iii)).

4. The project is not an expansion of an existing bus or rail terminal or transfer point (40 CFR Section 93.123(b)(1)(iv)).

5. There is no state implementation plan for PM<sub>2.5</sub>, and therefore, the project is not identified in an implementation plan as an area of potential violation (40 CFR Section 93.123(b)(1)(v)).

- ❖ Pursuant to federal air quality guidelines, a plan will be prepared by December 2012. The nearest known violations of the PM<sub>2.5</sub> and PM<sub>10</sub> standards were recorded in 2010 in Vallejo, which is approximately 20 miles southeast of the project area.

Therefore, the proposed project meets the Clean Air Act requirements and 40 CFR 93.116 without any explicit hotspot analysis. The proposed project would not create a new, or worsen an existing, PM<sub>2.5</sub> violation.

References Cited:

<sup>1</sup> Draft STA HOT Lanes Draft forecasts 10-Jul-2012. I-80 Express Lanes Project. Prepared for Caltrans, Solano Transportation Authority, and Mark Thomas & Company by Parson Brinckerhoff. July 2012.

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**Peak Hour Level of Service for 2015 No-Project**

Post Mile	Location	Dir	Network		Express Lane		General Purpose Lanes	
			Express Lanes	General Purpose Lanes	Level of Service		Level of Service	
					AM (7-8)	PM (4-5)	AM (7-8)	PM (4-5)
11.4	Red Top Road	EB	1	4	A	A	B	C
13.99	East of Suisun Valley Road	EB	1	5	A	A	B	C
18.07	Travis Blvd	EB	1	4	A	A	B	C
11.4	Red Top Road	WB	1	4	A	A	C	B
13.99	East of Suisun Valley Road	WB	1	5	B	A	C	C
18.07	Travis Blvd	WB	1	4	B	A	C	C

**Peak Hour Level of Service for 2015 with West Segment of Project**

Post Mile	Location	Dir	Network		Express Lane		General Purpose Lanes	
			Express Lanes	General Purpose Lanes	Level of Service		Level of Service	
					AM (7-8)	PM (4-5)	AM (7-8)	PM (4-5)
11.4	Red Top Road	EB	1	4	A	A	B	C
13.99	East of Suisun Valley Road	EB	1	5	A	A	B	C
18.07	Travis Blvd	EB	1	4	A	A	B	C
11.4	Red Top Road	WB	1	4	A	A	C	B
13.99	East of Suisun Valley Road	WB	1	5	B	A	C	C
18.07	Travis Blvd	WB	1	4	B	A	C	C

**Peak Hour Level of Service for 2020 No-Project**

Post Mile	Location	Dir	Network		Express Lane		General Purpose Lanes	
			Express Lanes	General Purpose Lanes	Level of Service		Level of Service	
					AM (7-8)	PM (4-5)	AM (7-8)	PM (4-5)
11.4	Red Top Road	EB	1	4	A	A	B	C
13.99	East of Suisun Valley Road	EB	1	5	A	B	B	C
18.07	Travis Blvd	EB	1	4	A	B	B	C
23.96	East of Pena Adobe Road	EB	0	4			C	D
11.4	Red Top Road	WB	1	4	A	A	C	B
13.99	East of Suisun Valley Road	WB	1	5	C	A	D	C
18.07	Travis Blvd	WB	1	4	C	A	C	C
23.96	East of Pena Adobe Road	WB	0	4			D	C

**Peak Hour Level of Service for 2020 with East and West Segment of Project**

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Post Mile	Location	Dir	Network		Express Lane		General Purpose Lanes	
			Express Lanes	General Purpose Lanes	Level of Service		Level of Service	
					AM (7-8)	PM (4-5)	AM (7-8)	PM (4-5)
11.4	Red Top Road	EB	1	4	A	A	B	C
13.99	East of Suisun Valley Road	EB	1	5	A	A	B	C
18.07	Travis Blvd	EB	1	4	B	B	B	C
23.96	East of Pena Adobe Road	EB	0	4	A	A	C	D
11.4	Red Top Road	WB	1	4	A	B	C	B
13.99	East of Suisun Valley Road	WB	1	5	C	C	D	C
18.07	Travis Blvd	WB	1	4	C	C	C	C
23.96	East of Pena Adobe Road	WB	0	4	B	C	C	C

**Peak Hour Level of Service for 2040 No-Project**

Post Mile	Location	Dir	Network		Express Lane		General Purpose Lanes	
			Express Lanes	General Purpose Lanes	Level of Service		Level of Service	
					AM (7-8)	PM (4-5)	AM (7-8)	PM (4-5)
11.4	Red Top Road	EB	1	4	A	C	B	C
13.99	East of Suisun Valley Road	EB	1	5	A	D	C	D
18.07	Travis Blvd	EB	1	4	A	C	C	D
23.96	East of Pena Adobe Road	EB	0	4			C	E
11.4	Red Top Road	WB	1	4	B	B	C	C
13.99	East of Suisun Valley Road	WB	1	5	D	B	D	D
18.07	Travis Blvd	WB	1	4	C	B	D	C
23.96	East of Pena Adobe Road	WB	0	4			E	D

**Peak Hour Level of Service for 2040 with East and West Segment of Project**

Post Mile	Location	Dir	Network		Express Lane		General Purpose Lanes	
			Express Lanes	General Purpose Lanes	Level of Service		Level of Service	
					AM (7-8)	PM (4-5)	AM (7-8)	PM (4-5)
11.4	Red Top Road	EB	1	4	A	C	B	C
13.99	East of Suisun Valley Road	EB	1	5	A	C	C	D
18.07	Travis Blvd	EB	1	4	B	C	B	D
23.96	East of Pena Adobe Road	EB	1	4	A	C	C	E
11.4	Red Top Road	WB	1	4	B	B	C	C
13.99	East of Suisun Valley Road	WB	1	5	C	B	D	D
18.07	Travis Blvd	WB	1	4	C	B	D	C
23.96	East of Pena Adobe Road	WB	1	4	C	B	D	C

**Forecast AADT and Truck AADT, Year 2015**

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<b>Post</b>	<b>Location</b>	2015 No-Project			2015 Phase 1 Project		
<b>Mile</b>		AADT	Truck AADT	Pct. Trucks	AADT	Truck AADT	Pct. Trucks
11.4	Red Top Road	117,507	6,011	5.1%	117,720	6,022	5.1%
13.99	East of Suisun Valley Road	193,669	6,525	3.4%	193,896	6,533	3.4%
18.07	Travis Blvd	125,922	4,375	3.5%	126,425	4,393	3.5%

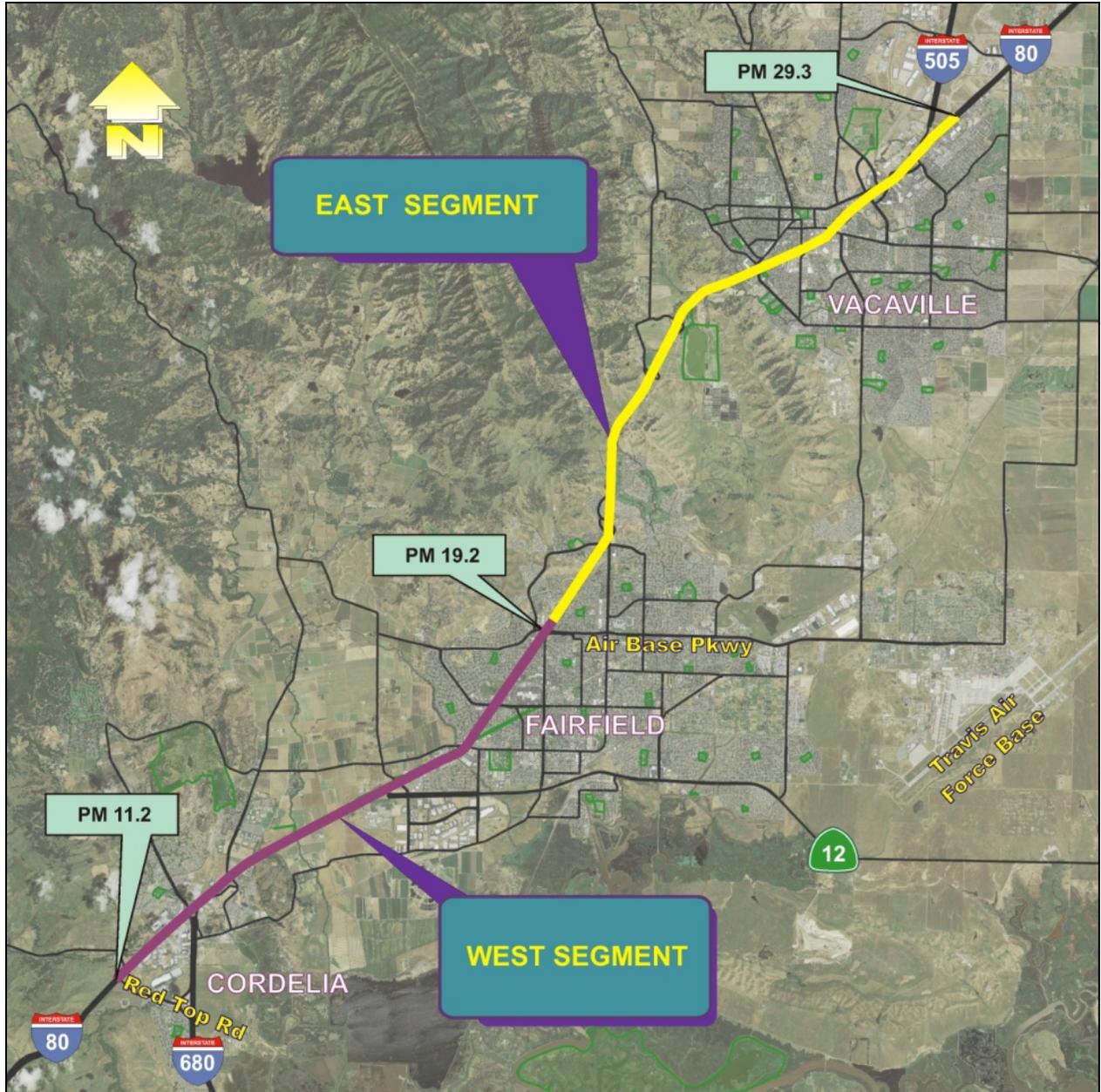
**Forecast AADT and Truck AADT, Year 2020**

<b>Post</b>	<b>Location</b>	2020 No-Project			2020 Project		
<b>Mile</b>		AADT	Truck AADT	Pct. Trucks	AADT	Truck AADT	Pct. Trucks
11.4	Red Top Road	126,600	6,480	5.1%	126,900	6,490	5.1%
13.99	East of Suisun Valley Road	204,700	6,900	3.4%	205,100	6,910	3.4%
18.07	Travis Blvd	132,000	4,590	3.5%	134,100	4,660	3.5%
23.96	East of Pena Adobe Road	181,800	6,580	3.6%	182,700	6,620	3.6%

**Forecast AADT and Truck AADT, Year 2040**

<b>Post</b>	<b>Location</b>	2040 No-Project			2040 Project		
<b>Mile</b>		AADT	Truck AADT	Pct. Trucks	AADT	Truck AADT	Pct. Trucks
11.4	Red Top Road	165,900	8,490	5.1%	167,100	8,550	5.1%
13.99	East of Suisun Valley Road	253,800	8,550	3.4%	256,000	8,630	3.4%
18.07	Travis Blvd	162,400	5,640	3.5%	165,900	5,760	3.5%
23.96	East of Pena Adobe Road	216,600	7,840	3.6%	224,200	8,120	3.6%

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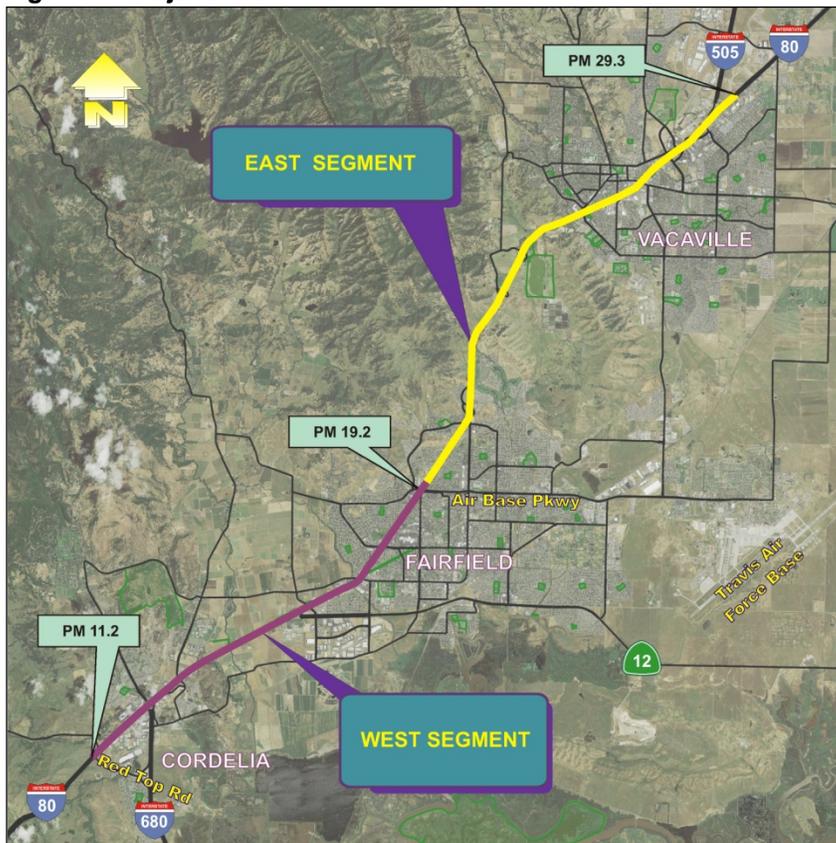


**To:** I-80 Express Lanes Project Team  
**From:** Greg Erhardt, Parsons Brinckerhoff  
**Date:** August 14, 2012  
**Subject:** Traffic Forecasts for PM 2.5 Analysis

This technical memorandum presents traffic forecasts to be used for the PM 2.5 analysis of the I-80 Express Lanes Project in Solano County. Figure 1 shows the project area.

The no-project condition includes an existing high-occupancy vehicle (HOV) lane in the west segment from Red Top Road to Air Base Parkway. The occupancy requirement for this lane is assumed to continue at its current HOV 2+ level. The project includes converting the HOV lane in the west segment to high-occupancy/toll (HOT) operations, and constructing an additional HOT lane in the east segment, continuing through the I-505 interchange.

**Figure 1: Project Area**



The analysis begins with a reporting of observed annual average daily traffic (AADT), truck AADT and percent trucks, as shown in Table 1. These data are taken from the Existing Conditions Report for the I-80 Express Lanes Project. The data were collected from January 1, 2010 to September 30, 2010 at Performance Measurement System (PeMS) detectors in the corridor.

**Table 1: Observed AADT and Truck AADT for Year 2010**

Post Mile	Location	2010		
		AADT	Truck AADT	Pct. Trucks
11.4	Red Top Road	108,977	5,575	5.1%
13.99	East of Suisun Valley Road	183,596	6,186	3.4%
18.07	Travis Blvd	119,817	4,163	3.5%
23.96	East of Pena Adobe Road	164,545	5,960	3.6%

Source: Existing Conditions Report for the I-80 Express Lanes Project, Parsons Brinckerhoff, 2012

Forecasts were prepared using the Solano-Napa Travel Demand Model. The no-project forecasts at the observed data sites are taken directly from the Traffic Forecast Report for the I-80 Express Lanes Project.

The project forecasts involved an additional set of model runs with the Solano-Napa Travel Demand Model. The project networks involved extending the express lane through the east segment, but also opening both the existing and new express lane to single-occupant vehicles. The proposed HOT lane will be operated to ensure a high level-of-service in the express lane throughout the corridor, with the price set to limit the volume to 1600 vehicles per hour in the express lane. A separate revenue forecast is being conducted that will evaluate the anticipated toll rate and resulting revenue. For the PM 2.5 analysis, the important outcome is to measure how much the total volume in the corridor might change due both to the added capacity and the congestion relief effect of shifting vehicles out of the general purpose lanes and into the express lane. To model this condition, all vehicles were allowed to enter the express lane, but the capacity was artificially reduced to 1600 vehicles per hour in the express lane, allowing the model to fill that lane and evaluate the potential congestion relief in the general purpose lanes. This approach approximates the outcome that can be expected from the tolling analysis and is expected to provide a reasonable estimate of the total corridor volume that would result from the HOT conversion.

The Solano-Napa model is a peak-hour model, and provides estimates for the following time periods:

- AM Peak Hour: 7-8 am; and
- PM Peak Hour: 4-5 pm.

Because the model does not provide a daily forecast, the AADT is assumed to grow at the same rate as peak hour traffic. Table 2 shows the forecast growth in peak hour traffic for the no-project condition, and Table 3 shows the forecast growth in peak hour traffic for the project. For both tables, the volumes reported are the sum of both directions and both peak hours.

**Table 2: Forecast AM + PM Peak Hour Traffic (Both Directions), No Project**

Post Mile	Location	Count 2010	All Lanes		Increase from 2010	
			2020	2040	2020	2040
11.4	Red Top Road	15,764	18,310	23,999	16%	52%
13.99	East of Suisun Valley Road	28,592	31,883	39,528	12%	38%
18.07	Travis Blvd	21,998	24,232	29,808	10%	36%
23.96	East of Pena Adobe Road	23,397	25,848	30,793	10%	32%

**Table 3: Forecast AM + PM Peak Hour Traffic (Both Directions), Project**

Post Mile	Location	Count 2010	All Lanes		Increase from 2010	
			2020	2040	2020	2040
11.4	Red Top Road	15,764	18,358	24,179	16%	53%
13.99	East of Suisun Valley Road	28,592	31,946	39,869	12%	39%
18.07	Travis Blvd	21,998	24,612	30,460	12%	38%
23.96	East of Pena Adobe Road	23,397	25,976	31,882	11%	36%

The growth rates show in Table 2 and Table 3 were applied to the AADT and Truck AADT shown in Table 1 to derive an AADT forecast, which is shown in Table 4 and Table 5. Because the Solano-Napa model does not have a separate truck model, the total AADT and the truck AADT are grown at the same rate, resulting in a constant truck percent.

**Table 4: Forecast AADT and Truck AADT, Year 2020**

Post Mile	Location	2020 No-Project			2020 Project		
		AADT	Truck AADT	Pct. Trucks	AADT	Truck AADT	Pct. Trucks
11.4	Red Top Road	126,600	6,480	5.1%	126,900	6,490	5.1%
13.99	East of Suisun Valley Road	204,700	6,900	3.4%	205,100	6,910	3.4%
18.07	Travis Blvd	132,000	4,590	3.5%	134,100	4,660	3.5%
23.96	East of Pena Adobe Road	181,800	6,580	3.6%	182,700	6,620	3.6%

**Table 5: Forecast AADT and Truck AADT, Year 2040**

Post Mile	Location	2040 No-Project			2040 Project		
		AADT	Truck AADT	Pct. Trucks	AADT	Truck AADT	Pct. Trucks
11.4	Red Top Road	165,900	8,490	5.1%	167,100	8,550	5.1%
13.99	East of Suisun Valley Road	253,800	8,550	3.4%	256,000	8,630	3.4%
18.07	Travis Blvd	162,400	5,640	3.5%	165,900	5,760	3.5%
23.96	East of Pena Adobe Road	216,600	7,840	3.6%	224,200	8,120	3.6%

The results indicate that building the project would increase traffic volumes on I-80 between 0.2% and 1.6% in 2020 and between 0.7 and 3.5% in 2040. This increase is the result of congestion relief in the general purpose lanes, making I-80 a more attractive route. This draws some traffic off parallel routes, including the arterial street system in Fairfield and the roads connecting Fairfield and Vacaville.

Given the peak-hour volumes forecast by the Solano-Napa model, the analysis continued to calculate the peak-hour level-of-service (LOS) in the corridor. The calculations apply the methodology for basic freeway segments in the Highway Capacity Manual 2000 (HCM). The approach used was to calculate the service flow rate for each freeway section in passenger car equivalents (PCEs) per hour per lane. Given this calculated service flow rate, the HCM thresholds are applied to determine the LOS, based on the values shown in Table 6.

**Table 6: LOS Thresholds from HCM 2000**

EXHIBIT 23-2. LOS CRITERIA FOR BASIC FREEWAY SEGMENTS

Criteria	LOS				
	A	B	C	D	E
FFS = 75 mi/h					
Maximum density (pc/mi/ln)	11	18	26	35	45
Minimum speed (mi/h)	75.0	74.8	70.6	62.2	53.3
Maximum w/c	0.34	0.56	0.76	0.90	1.00
Maximum service flow rate (pc/h/ln)	820	1350	1830	2170	2400
FFS = 70 mi/h					
Maximum density (pc/mi/ln)	11	18	26	35	45
Minimum speed (mi/h)	70.0	70.0	68.2	61.5	53.3
Maximum w/c	0.32	0.53	0.74	0.90	1.00
Maximum service flow rate (pc/h/ln)	770	1260	1770	2150	2400
FFS = 65 mi/h					
Maximum density (pc/mi/ln)	11	18	26	35	45
Minimum speed (mi/h)	65.0	65.0	64.6	59.7	52.2
Maximum w/c	0.30	0.50	0.71	0.89	1.00
Maximum service flow rate (pc/h/ln)	710	1170	1680	2090	2350
FFS = 60 mi/h					
Maximum density (pc/mi/ln)	11	18	26	35	45
Minimum speed (mi/h)	60.0	60.0	60.0	57.6	51.1
Maximum w/c	0.29	0.47	0.68	0.88	1.00
Maximum service flow rate (pc/h/ln)	660	1080	1560	2020	2300
FFS = 55 mi/h					
Maximum density (pc/mi/ln)	11	18	26	35	45
Minimum speed (mi/h)	55.0	55.0	55.0	54.7	50.0
Maximum w/c	0.27	0.44	0.64	0.85	1.00
Maximum service flow rate (pc/h/ln)	600	990	1430	1910	2250

Note:  
The exact mathematical relationship between density and w/c has not always been maintained at LOS boundaries because of the use of rounded values. Density is the primary determinant of LOS. The speed criterion is the speed at maximum density for a given LOS.

The level of service is calculated separately for express lanes versus the general purpose lanes. In the no-build scenario, the express lanes operate as high-occupancy vehicle (HOV) lanes. In the build scenario, the express lanes will be priced to ensure that the level-of-service does not fall below LOS C, corresponding to no more than about 1600 vehicles per

hour per lane. The freeway sections use the thresholds for a 65 mph free flow speed. The peak hour volumes were converted to passenger car equivalents (PCEs) by applying a PCE factor of 1.5 to trucks, consistent with the HCM recommendation for level terrain.

Tables 7 and 8 show the LOS for the 2020 no-project conditions and the 2020 project conditions. Tables 9 and 10 show the LOS for the 2040 no-project conditions and the 2040 project conditions.

**Table 7: Peak Hour Level of Service for 2020 No-Project**

Post Mile	Location	Dir	Network		Express Lane		General Purpose Lanes	
			Express Lanes	General Purpose Lanes	Level of Service		Level of Service	
					AM (7-8)	PM (4-5)	AM (7-8)	PM (4-5)
11.4	Red Top Road	EB	1	4	A	A	B	C
13.99	East of Suisun Valley Road	EB	1	5	A	B	B	C
18.07	Travis Blvd	EB	1	4	A	B	B	C
23.96	East of Pena Adobe Road	EB	0	4			C	D
11.4	Red Top Road	WB	1	4	A	A	C	B
13.99	East of Suisun Valley Road	WB	1	5	C	A	D	C
18.07	Travis Blvd	WB	1	4	C	A	C	C
23.96	East of Pena Adobe Road	WB	0	4			D	C

**Table 8: Peak Hour Level of Service for 2020 with Project**

Post Mile	Location	Dir	Network		Express Lane		General Purpose Lanes	
			Express Lanes	General Purpose Lanes	Level of Service		Level of Service	
					AM (7-8)	PM (4-5)	AM (7-8)	PM (4-5)
11.4	Red Top Road	EB	1	4	A	A	B	C
13.99	East of Suisun Valley Road	EB	1	5	A	A	B	C
18.07	Travis Blvd	EB	1	4	B	B	B	C
23.96	East of Pena Adobe Road	EB	0	4	A	A	C	D
11.4	Red Top Road	WB	1	4	A	B	C	B
13.99	East of Suisun Valley Road	WB	1	5	C	C	D	C
18.07	Travis Blvd	WB	1	4	C	C	C	C
23.96	East of Pena Adobe Road	WB	0	4	B	C	C	C

**Table 9: Peak Hour Level of Service for 2040 No-Project**

Post Mile	Location	Dir	Network		Express Lane		General Purpose Lanes	
			Express Lanes	General Purpose Lanes	Level of Service		Level of Service	
					AM (7-8)	PM (4-5)	AM (7-8)	PM (4-5)
11.4	Red Top Road	EB	1	4	A	C	B	C
13.99	East of Suisun Valley Road	EB	1	5	A	D	C	D
18.07	Travis Blvd	EB	1	4	A	C	C	D
23.96	East of Pena Adobe Road	EB	0	4			C	E
11.4	Red Top Road	WB	1	4	B	B	C	C
13.99	East of Suisun Valley Road	WB	1	5	D	B	D	D
18.07	Travis Blvd	WB	1	4	C	B	D	C
23.96	East of Pena Adobe Road	WB	0	4			E	D

**Table 10: Peak Hour Level of Service for 2040 with Project**

Post Mile	Location	Dir	Network		Express Lane		General Purpose Lanes	
			Express Lanes	General Purpose Lanes	Level of Service		Level of Service	
					AM (7-8)	PM (4-5)	AM (7-8)	PM (4-5)
11.4	Red Top Road	EB	1	4	A	C	B	C
13.99	East of Suisun Valley Road	EB	1	5	A	C	C	D
18.07	Travis Blvd	EB	1	4	B	C	B	D
23.96	East of Pena Adobe Road	EB	1	4	A	C	C	E
11.4	Red Top Road	WB	1	4	B	B	C	C
13.99	East of Suisun Valley Road	WB	1	5	C	B	D	D
18.07	Travis Blvd	WB	1	4	C	B	D	C
23.96	East of Pena Adobe Road	WB	1	4	C	B	D	C



**To:** I-80 Express Lanes Project Team  
**From:** Greg Erhardt, Parsons Brinckerhoff  
**Date:** August 30, 2012  
**Subject:** 2015 Traffic Forecasts for PM 2.5 Analysis

This technical memorandum is a supplement to the August 14, 2012 memorandum regarding “Traffic Forecasts for PM 2.5 Analysis”. This supplement presents additional information for a 2015 analysis year. For the 2015 analysis year, only Phase 1 of the project is included. Phase 1 includes the conversion of the existing high-occupancy vehicle (HOV) lanes to high-occupancy/toll (HOT) operations for the west segment, as shown in Figure 1. The east segment is not assumed to be complete in 2015.

The methods used for the analysis are identical to those described in the August 14 memo, with the exception that the Solano-Napa model was applied for 2015 conditions.

**Figure 1: Project Area**

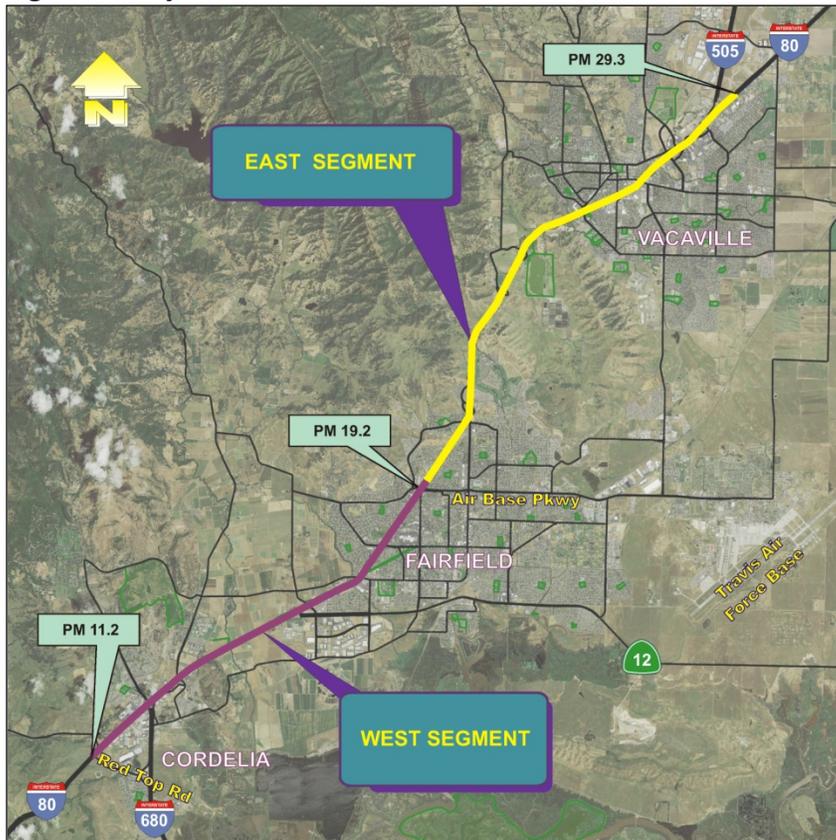


Table 1 shows the projected year 2015 AADT, truck AADT and percent trucks with and without the Phase 1 project. The results indicate that building the project would increase traffic volumes on I-80 between 0.1% and 0.4%.

**Table 1: Forecast AADT and Truck AADT, Year 2015**

Post Mile	Location	2015 No-Project			2015 Phase 1 Project		
		AADT	Truck AADT	Pct. Trucks	AADT	Truck AADT	Pct. Trucks
11.4	Red Top Road	117,507	6,011	5.1%	117,720	6,022	5.1%
13.99	East of Suisun Valley Road	193,669	6,525	3.4%	193,896	6,533	3.4%
18.07	Travis Blvd	125,922	4,375	3.5%	126,425	4,393	3.5%

Tables 2 and 3 show the LOS for the 2015 no-project conditions and the 2015 Phase 1 project conditions.

**Table 2: Peak Hour Level of Service for 2015 No-Project**

Post Mile	Location	Dir	Network		Express Lane		General Purpose Lanes	
			Express Lanes	General Purpose Lanes	Level of Service		Level of Service	
					AM (7-8)	PM (4-5)	AM (7-8)	PM (4-5)
11.4	Red Top Road	EB	1	4	A	A	B	C
13.99	East of Suisun Valley Road	EB	1	5	A	A	B	C
18.07	Travis Blvd	EB	1	4	A	A	B	C
11.4	Red Top Road	WB	1	4	A	A	C	B
13.99	East of Suisun Valley Road	WB	1	5	B	A	C	C
18.07	Travis Blvd	WB	1	4	B	A	C	C

**Table 3: Peak Hour Level of Service for 2015 with Phase 1 Project**

Post Mile	Location	Dir	Network		Express Lane		General Purpose Lanes	
			Express Lanes	General Purpose Lanes	Level of Service		Level of Service	
					AM (7-8)	PM (4-5)	AM (7-8)	PM (4-5)
11.4	Red Top Road	EB	1	4	A	A	B	C
13.99	East of Suisun Valley Road	EB	1	5	A	A	B	C
18.07	Travis Blvd	EB	1	4	A	A	B	C
11.4	Red Top Road	WB	1	4	A	A	C	B
13.99	East of Suisun Valley Road	WB	1	5	B	A	C	C
18.07	Travis Blvd	WB	1	4	B	A	C	C