SACOG

Item #3

Regional Planning Partnership

February 18, 2009

PM_{10} Qualitative Analysis for I-5 and I-80 Interchange Improvement Project

Issue: Would the I-5 and I-80 Interchange Improvement Project create a significant enough impact from particulate matter (PM_{10}) emissions to find it to be a "project of air quality concern" (POAQC) which would require a qualitative hot spot analysis under Federal guidance.

Recommendation: That the Partnership, in its air quality conformity consultation role and using the criteria discussed below, make the finding that the I-5 and I-80 Interchange Improvement Project does not require a qualitative PM_{10} hot spot analysis (i.e., the project is not a project of air quality concern).

Discussion: Projects in Sacramento County -a non-attainment area for PM_{10}- that are non-exempt from regional emissions analysis may require a qualitative hot spot analysis if they meet certain criteria associated with specific types of projects. The guidance issued by EPA and FHWA requires qualitative hot spot analysis for the five following types of projects:

I. New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;
II. Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;
III. New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;
IV. Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and
V. Projects in or affecting locations, areas, or categories of sites which are identified in the PM2.5 or PM10 applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

The project in question proposes making safety improvements to the existing interchange and adding HOV – HOV connector ramps.

This project does not meet any of the criteria for a Project of Air Quality Concern as described in the EPA Final Rule of 3/10/2006 and the EPA Guidance of 3/29/2006.

Sharon Tang of the California Department of Transportation (Caltrans) will be at the partnership meeting to discuss this item and answer questions.

JPC:ef
Attachment
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Sacramento Area Council of Governments

VIEW PREVIOUS VERSIONS OF THIS PROJECT

SACOG ID:	CAL18410	VERSION:	8	MTP:	07-00
CTIPS_ID:	n/a	MTIP:	09-00	COMPLETION YEAR:	2018
PPNO:	n/a	MTIP STATE APPROVED:		TOTAL COST	$300,000,000
EA_NUMBER:	2C990	MTIP FEDERAL APPROVE DATE:	11/17/2008	OBLIGATED COST	$5,000,000

LAST MODIFIED BY: Jose Luis LAST MODIFIED DATE: 6/18/2008 LAST MODIFIED HISTORY

STATUS	CAPACITY STATUS	LUMP SUM	LUMP SUM NAME	EXEMPT CATEGORY
Programmed	CI	No		Non-Exempt

PROJECT TITLE
I-5 and I-80 HOV Connectors and Lanes to Downtown

FEDERAL ID

LEAD AGENCY	CT DISTRICT	BRIDGE NUMBER	HIGHWAY NUMBER	COMPLETION YEAR
Caltrans District 3	03		5	2018

PROJECT TYPE	TRANS SYSTEM	SYSTEM EFFICIENCY
Hwy: I - 5	State	N/A

PROJECT ACTIVITY	PROJECT LOCATION / AREA	CONGRESSIONAL DISTRICT
High Occupancy Vehicle Lanes	Sacramento County	

PROJECT DESCRIPTION
Reconstruct I-5/I-80 Interchange, including high occupancy vehicle (HOV, bus/carpool) lane connectors, and construction of HOV lanes from the I-5/I-80 Interchange to downtown Sacramento.

PROGRAMMED REVENUE

FFY	FUND TYPE (PROGRAMMED REVENUE SOURCE)	ENV/ENGR	ROW	CONSTRUCTION	TOTAL
2005	CMAQ - Congestion Mitigation	$5,000,000	$0	$0	$5,000,000
2011	Loc Funds - Sacramento Co Measure A	$17,000,000	$0	$0	$17,000,000
2013	State/Federal Funds Outside the MTIP	$0	$23,000,000	$0	$23,000,000
2014	State/Federal Funds Outside the MTIP	$0	$0	$255,000,000	$255,000,000
TOTAL		**$22,000,000**	**$23,000,000**	**$255,000,000**	**$300,000,000**

OBLIGATED REVENUE

FFY	FUND TYPE (PROGRAMMED REVENUE SOURCE)	ENV/ENGR	ROW	CONSTRUCTION	TOTAL
2005	CMAQ - Congestion Mitigation	$5,000,000	$0	$0	$5,000,000
TOTAL		**$5,000,000**	**$0**	**$0**	**$5,000,000**

MPO COMMENTS

VERSION	MTP #	MTIP #	COMMENTS
2	02	05-11	Carry over from 0 MTIP
3	05	05-18	Modify a fund source ** Change RSTP to CMAQ
4	06	05-31	Revise project ** For inclusion in 06 MTIP & 06 MTP.
5	06	07-00	Carry over from 05-31 ** Carry over from 05-31
6	07-00	07-00	Carry over from 05-31 ** Carry over from 05-31
7	07-00	07-07	Revise funding ** Add future funding to reflect all project phases.
8	07-00	09-00	Carry over from 07-07 ** Carry over from 07-07

MTP: SACOG # CAL18410
MTIP: **CAL18410**

TCWG Consideration Date (*date to be presented at the TCWG)*

Project Description *(clearly describe project)*
Please see attached

Type of Project *(use Table 1 on instruction sheet)*

- Change to existing state highway
- Change to existing regionally significant street
- Reconfigure existing interchange
- Roadway realignment

County	**Narrative Location/Route & Postmiles**
Sacramento	I-5: PM 25.2/27.8 – I-80: PM M1.3/3.8 **Caltrans Projects – EA#** 03-2C990

Lead Agency: Caltrans

Contact Person	**Phone#**	**Fax#**	**Email**
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Hot Spot Pollutant of Concern *(check one or both)* **PM2.5** **PM10 X**

Federal Action for which Project-Level PM Conformity is Needed *(check appropriate box)*

Categorical Exclusion (NEPA)	✓ **EA or Draft EIS**	**FONSI or Final EIS**	**PS&E or Construction**	**Other**

Scheduled Date of Federal Action:

NEPA Delegation – Project Type *(check appropriate box)*

Excluded	**Section 6004 –NEPA Categorical Exclusions (CEs)**	✓ **Section 6005 – All NEPA document types (i.e. CEs, EAs, EIS)**

Current Programming Dates *(as appropriate)*

	PE/Environmental	**ENG**	**ROW**	**CON**
Start	7/05	4/06	10/12	9/15
End	9/09	9/15	10/20	10/20

Project Purpose and Need (Summary): *(attach additional sheets as necessary)*
Please see attached

Surrounding Land Use/Traffic Generators *(especially effect on diesel traffic)*
Residential subdivisions are located in the areas adjacent to northbound Interstate 5 and eastbound Interstate 80. In addition, residential subdivisions are also located in the areas adjacent to southbound I-5 and westbound I-80. South of I-80, office park developments are located adjacent to southbound I-5. In addition, several motels (Marriott Springhill Suites, Residence Inn, and Hilton Garden Inn) are located adjacent to southbound I-5 south of I-80. A commercial shopping center is located north of westbound I-80.

Opening Year: Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility
Please see attached Table 1 for AADT.

VEHICLE AADT TOTAL	TRUCK AADT TOTAL	TRUCK % TOTAL VEHICL	TRUCK AADT TOTAL BY AXLE				% TRUCK AADT BY AXLE			
			TWO	THREE	FOUR	FIVE+	TWO	THREE	FOUR	FIVE+
		%					%	%	%	%

RTP Horizon Year / Design Year: Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility
Please see attached Table 1 for AADT.

Vehicle fleet mix percentages assumed to remain the same as existing.

Opening Year: If facility is an interchange(s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT
Please see attached Table 1 for AADT.

Vehicle fleet mix percentages assumed to remain the same as existing.

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
Please see attached Table 1 for AADT.

Vehicle fleet mix percentages assumed to remain the same as existing.

Describe potential traffic redistribution effects of congestion relief *(impact on other facilities)*
Implementation of the proposed project will result in increases of VMT and VHT equaling 0.1% or less (please see table below).

I-5/I-80 INTERCHANGE PROJECT – REGIONAL DAILY VMT, VHT, AND AVERAGE SPEED ANALYSIS

Scenario	Daily Vehicle-Miles Traveled (VMT)	Daily Vehicle-Hours Traveled (VHT)	Daily Average Speed (in mph)
Existing Conditions	36,912,756	1,013,096	41.74
2020 No Project	45,560,075	1,355,023	39.9

2020 With Project	45,564,154	1,355,836	39.9
2020 – Difference	4,079 (0.01%)	813 (0.06%)	0.0 (0%)
2030 No Project	51,324,955	1,582,974	38.7
2030 With Project	51,331,753	1,584,329	38.7
2030 – Difference	6,798 (0.01%)	1,355 (0.09%)	0.0 (0%)
2040 No Project	57,089,835	1,810,925	37.4
2040 With Project	57,099,352	1,812,822	37.5
2040 – Difference	9,518 (0.02%)	1,897 (0.10%)	0.1 (0.3%)
Source: Fehr & Peers, 2008			

Comments/Explanation/Details *(attach additional sheets as necessary)*

Purpose of Project:
The purpose of the proposed project is to:

- Provide congestion relief
- Improve safety and interchange operations,
- Promote the use of high occupancy vehicles
- Support the SACOG 2035 Metropolitan Transportation Plan goals by providing greater connectivity with the existing and proposed HOV network in the Sacramento region

Need for Project:

Existing Conditions

The Interstate 5/Interstate 80 (I-5/I-80) interchange is an important freeway-to-freeway interchange constructed in 1968 that serves primarily commuter traffic on weekdays and recreational travel to Lake Tahoe and Reno, Nevada and the San Francisco Bay area on weekends. In addition, the interchange also accommodates high volumes of long-distance interstate truck traffic. The project study area occurs in a heavily urbanized area, with frequent interchanges on both highways.

Within the study limits, I-5 is an eight-lane divided freeway south of the interchange and a six-lane divided freeway north of the interchange, with auxiliary lanes to and from the approaches to the interchange.

Operational deficiencies

The I-5/I-80 interchange presently experiences operational deficiencies and delays caused by the short weaving distances in the collector-distributor lanes between the loop connectors along I-5 and I-80. Downstream bottlenecks generated by high demands from the morning commute westbound I-80 to southbound I-5 and the evening commute northbound I-5 to eastbound I-80 cause delays. It is anticipated that delays will increase due to the regional and interregional growth of the surrounding areas.

Traffic Capacity and Congestion

Commute travel within the project study area is heavily congested with extended periods of stop-and-go traffic. Residential and commercial development is projected to continue to grow in the surrounding cities, which will increase the demand for this already congested interchange. A critical movement is westbound to southbound, with an am peak of 2458 vehicles per hour (vph) in the year 2005, growing to 3575 in 2024, an increase of 45% in less than 20 years.

In the afternoon on eastbound I-80 from West El Camino to 5/80 interchange, the afternoon has 4254 vph in 2005, which will increase to 8400 vph in 2024; an increase of 97% in less than 20 years.

Adding to the problem is the restriction of eastbound I-80 to two lanes at the merge point with the slip connector northbound I-5/eastbound I-80. Traffic delays, already a daily occurrence at peak hours, will become even more pronounced. Complete traffic stop, now occasional, will become common.

Level of Service
The PM peak period model has congested conditions on I-80 from the I-5 NB on-ramp through the Norwood Avenue on-ramp. The bottlenecks are located at the grades on Northgate Boulevard and Norwood Avenue. Northbound I-5 has only minor congestion at the I-80 off-ramp (queue back-up from eastbound I-80) and at Richards Boulevard, which is the bottleneck location that controls the amount of traffic entering the study area.

High Occupancy Vehicles (HOV) Lanes
The proposed project is an important part of the larger existing and planned bus/carpool network in the Sacramento region. The proposed project is a continuation of the existing bus/carpool lanes that currently extend from Watt Avenue to the Sacramento/Placer County line. By 2012, these lanes are planned to extend to Highway 65 in Roseville, creating over 22 miles of bus/carpool lanes along I-80 and serving both Sacramento and Placer Counties.

Bus/carpool lanes are incorporated in regional transportation plans, including the 2005/2007 Metropolitan Transportation Implementation Plan (MTIP), the 2006 Metropolitan Transportation Plan (MTP), Measure A funding, and the Sacramento Regional Blueprint. The I-5/I-80 bus/carpool lane project is included in each of these plans.

Safety
Within the project limits, northbound I-5 experienced 51 accidents over the three-year period. There were 54 accidents in the southbound I-5 direction. The total actual accident rates for both I-5 directions within the study limits were below the corresponding average accident rates for similar state freeways, and no fatalities were recorded. Eastbound I-80 experienced 53 accidents and westbound I-80 had 30 accidents with no fatalities. The total actual accident rates for both directions were at or below the corresponding average accident rate on state freeways.

Because I-5 and I-80 are major interstate truck routes, the accident rate according to vehicle type was reviewed. Collisions involving trucks with three or more axles were 15 percent of all accidents on southbound I-5, 22 percent on northbound I-5, and 16 percent on I-80. The percentages of trucks involved in accidents are consistent with the percentage of trucks in the traffic volume.

All three loop ramps have higher than average accident rates; however, none of the loop ramps had fatality-related accidents. The three other ramp segments that had higher than average accident rates also have the highest volumes: two of these segments are on the westbound to southbound connector, and the other is on the northbound to eastbound connector.

In the three-year period, 110 accidents occurred on the I-5/I-80 interchange ramps. Five accidents involved fatalities, and of these five, three were alcohol-related. None of the fatalities occurred during the AM or PM peak periods. The majority of accidents (55 percent) occurred outside of the peak periods. Unlike the mainline section, the highest accident type for the ramps was “hit object”, which includes objects such as curbs, dikes and guardrails, and other vehicles. The percent of overturns were also much higher at 20 percent compared to 4 percent.

Additional Considerations

Although the project build alternatives would provide additional capacity, the following bottlenecks would exist under design-year conditions both within and adjacent to the study area.

- American River Bridge – The demand volume exceeds capacity at this location under all future years. Additional capacity either on the bridge or on a parallel facility (for example, a Truxel Road bridge) would be needed to reduce congestion.
- I-5/SR-99 Interchange – With the planned growth in northeastern Sacramento County, southern Sutter County, and southwestern Placer County, traffic volumes are expected to grow significantly on SR-99. By 2040, half of the traffic volume on I-5 south of SR-99 will be traveling to or from SR-99. This demand creates the Del Paso Road bottleneck on northbound I-5 as described above. The planned interchange improvements should address the capacity needs on I-5 south of SR-99.
- SR-99 HOV Lanes – Given the high demand volumes for SR-99, consideration should be given for providing HOV direct connectors at the I-5/SR-99 interchange. Additionally, planned development along SR-99 (North Natomas, South Sutter, etc.) would favor continuing the HOV lanes along SR-99 rather than I-5 (Airport, Sacramento River, Yolo Bypass)

Opening Year Build and No Build Truck AADT

Route	VEHICLE AADT Total	Truck AADT Total	Truck % Total vehicle	TRUCK AADT TOTAL BY AXLE				% TRUCK AADT BY AXLE			
				Two	Three	Four	Five	Two	Three	Four	Five
I5 No Build	193184	21294	14.38	5229	1334	566	14164	31.72	8.06	3.41	86.02
I5 Build	193148	21290	14.38	5228	1333	566	14162	31.71	8.06	3.41	86.01
I80 No Build	150572	10759	10.10	3701	1284	635	5139	45.47	15.74	7.81	63.06
I80 Build	153910	10998	10.33	3783	1312	649	5253	46.48	16.09	7.99	64.46