

**Updated Transportation Conformity Budgets for the San Joaquin Valley Ozone,
PM2.5, and PM10 State Implementation Plans**

DRAFT

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I. BACKGROUND

Section 176(c) of the Clean Air Act (Act) establishes transportation conformity requirements which are intended to ensure that transportation activities do not interfere with air quality progress. The Act requires that transportation plans, programs, and projects that obtain federal funds or approvals conform to applicable State Implementation Plans (SIP) before being approved by a Metropolitan Planning Organization. Conformity to a SIP means that proposed activities must not:

- Cause or contribute to any new violation of any standard,
- Increase the frequency or severity of any existing violation of any standard in any area, or
- Delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

On November 16, 2007 the Board submitted an air quality attainment plan for the 8-hour ozone National Ambient Air Quality Standard (NAAQS) and a maintenance plan and re-designation request for the PM10 NAAQS in the San Joaquin Valley (Ozone Plan and PM10 Plan). On March 4, 2013 the Board submitted an attainment plan for the 2006 PM2.5 NAAQS (PM2.5 Plan) for the Valley. The U.S. Environmental Protection Agency (U.S. EPA) approved the Ozone and PM10 Plans on March 1, 2012 and November 12, 2008 respectively. The U.S. EPA proposed approval of the PM2.5 Plan on January 13, 2015. The Ozone, PM10 and PM2.5 Plans all contain transportation conformity budgets that used the most up to date emission rates and planning assumptions available at the time the plans were developed.

II. UPDATED CONFORMITY BUDGETS FOR THE OZONE, PM2.5 and PM10 PLANS IN THE SAN JOAQUIN VALLEY

ARB staff has released a revised emission rate program, EMFAC 2014, which updates the emission rates and planning assumptions used in conformity budgets. Staff has updated the conformity budgets in the Ozone, PM10 and PM2.5 Plans to use the latest information.

Section 93.124(e) of the federal conformity rule states that nonattainment areas with more than one Metropolitan Planning Organization (MPO) may establish motor vehicle emission budgets for each MPO in the nonattainment area. The Ozone, PM10 and PM2.5 Plans establish county-level emission budgets for each MPO in the San Joaquin Valley (Valley).

Air Resources Board (ARB or Board) staff developed the proposed budgets in consultation with the eight Valley MPOs, U.S. EPA, and the San Joaquin Valley Air Pollution Control District. The transportation conformity budgets in this update use travel activity projections provided by the Valley MPOs consistent with the 2015 Federal Transportation Improvement Plan (2015 FTIP).

The budgets have been constructed using emissions for the season consistent with the emissions inventory in the respective plans, i.e. summer for the Ozone Plan, winter for the PM2.5 Plan and annual for the PM10 Plan, using the following method:

- 1) Sum the county-by-county emissions results from EMFAC 2014 to get a Valley-wide total;
- 2) Round the Valley-wide totals up to:
 - a. the nearest whole ton for NOx and ROG;
 - b. the nearest tenth of a ton for PM2.5 and PM10;
- 3) Reallocate the rounded total Valley-wide emissions to each county proportional to each county's contribution to the total; and
- 4) Calculate the budget by rounding each county's emissions to the nearest tenth ton (for all pollutants and precursors) using conventional rounding.

The attachment to this update provides more detailed calculations.

The following sections provide the proposed budget updates using EMFAC 2014 and discussion of their consistency with the demonstrations of progress and attainment or maintenance of the NAAQS in the respective plans. Following U.S. EPA guidance, consistency is determined by comparing inventories of emissions in tons for plans that model absolute concentrations, as in the Ozone and PM2.5 plans. Consistency is demonstrated by examining the relative reductions in emissions inventories for plans that use relative modeling, as in the PM10 maintenance plan.

For each of the tables that follow, an increase in emissions in the current emissions inventory compared to the existing plan inventory is denoted by a negative number in the "Differences" columns on the right side of the tables, and a reduction in emissions in the current inventory is denoted by a positive number in the "Differences" column.

Updated Ozone Budgets

Table 1 below details the updated ROG and NOx budgets for the San Joaquin Valley Ozone Plan by subarea.

Table 1. San Joaquin Valley Summer Ozone Conformity Budgets
(Tons per summer day)*

County Subarea	2017		2020		2023	
	ROG	NOx	ROG	NOx	ROG	NOx
Fresno	8.7	29.9	6.8	24.3	5.6	14.6
Kern (SJV)	6.9	26.8	5.7	22.4	4.8	12.9
Kings	1.4	5.5	1.1	4.7	0.9	2.7
Madera	2.0	5.5	1.6	4.5	1.3	2.7
Merced	2.7	10.3	2.1	8.5	1.7	5.1
San Joaquin	6.4	14.1	5.1	11.3	4.3	7.3
Stanislaus	4.1	11.3	3.2	9.2	2.7	5.8
Tulare	4.0	10.3	3.1	8.1	2.5	4.9

*Budgets are rounded up to the nearest tenth ton (0.1).

Consistency with the Ozone Plan

Table 2 and Table 3 below compare the emissions inventories for NOx and ROG, respectively from the existing Ozone Plan and the most current inventory by major source category. These tables show net reductions of ROG and NOx emissions for the reasonable rate of progress (RFP) years of 2017 and 2020, and the attainment year of 2023. Note that the current inventory reflects the proposed budgets detailed in Table 1.

Table 2. Nitrogen Oxide Emissions Comparison – All Source Categories

Inventory Category	Emissions in existing 2008 Ozone Plan*			Current Emission Inventory			Differences By Year (Existing – Current (tons per day))		
	2017	2020	2023	2017	2020	2023	2017	2020	2023
Stationary	57.0	57.2	56.9	31.6	30.8	30.3	25.3	26.5	26.6
Area wide	8.8	8.8	8.8	4.8	4.9	4.9	4.0	3.9	3.9
On-Road Mobile	115.6	91.6	69.8	113.1	92.2	55.3	2.5	-0.6	14.5
Other Mobile	89.1	80.4	72.7	89.4	81.6	70.2	-0.3	-1.2	2.5
TOTAL	270.6	238.1	208.2	238.9	209.5	160.7	31.6	28.6	47.5

* Includes 2011 Plan updates

Table 3. Reactive Organic Gas Emissions Comparison – All Source Categories

Inventory Category	Emissions in existing 2008 Ozone Plan*			Current Emission Inventory			Differences By Year (Existing – Current (tons per day))		
	2017	2020	2023	2017	2020	2023	2017	2020	2023
Stationary	155.4	160.0	165.0	102.4	105.4	108.6	53.0	54.5	56.4
Area wide	124.9	129.3	133.8	152.8	157.9	163.0	-27.9	-28.6	-29.1
On-Road Mobile	46.4	39.1	37.5	36.2	28.6	23.7	10.2	10.4	13.7
Other Mobile	57.1	56.5	57.1	37.9	35.1	32.1	19.1	21.4	25.0
TOTAL	383.8	384.9	393.4	329.4	327.0	327.4	54.5	57.9	66.0

* Includes 2011 Plan updates

Increases in area wide emissions of ROG are offset by greater reductions in stationary sources of ROG. The net emissions of NOx from stationary sources are reduced by over 25 tons per day in all years. In the RFP year of 2020 the proposed budgets and the other mobile category represent a small increase in NOx from mobile sources. This is more than offset by net reductions in NOx from stationary and area wide sources.

The current emissions inventory is the most recent inventory being developed for the 2016 ozone plan for the Valley. The changes between existing plan and current inventories can be attributed to changes in base year, updates to both the EMFAC on road and OFFROAD emissions models and updates to area wide estimation methodologies.

Updated PM2.5 Budgets

Table 4 below details the updated PM2.5 and NOx budgets for the San Joaquin Valley PM2.5 Plan by subarea.

Table 4. San Joaquin Valley Winter PM2.5 Conformity Budgets*
(Tons per winter day)

County Subarea	2017	
	PM2.5	NOx
Fresno	1.0	32.1
Kern (SJV)	0.8	28.8
Kings	0.2	5.9
Madera	0.2	6.0
Merced	0.3	11.0
San Joaquin	0.6	15.5
Stanislaus	0.4	12.3
Tulare	0.4	11.2

*Budgets are rounded up to the nearest tenth ton (0.1).

Consistency with the PM2.5 Plan

Table 5 and Table 6 below compare the emissions inventories for NOx and PM2.5, respectively from the existing PM2.5 Plan and the most current inventory by major source category for the RFP year of 2017. Note that the Current Inventory reflects the proposed budgets detailed in Table 4

Table 5. Nitrogen Oxide Emissions Comparison – All Source Categories

Inventory Category	Emissions in existing PM2.5 Plan*	Current Emission Inventory	Differences By Year (Existing – Current (tons per day))
	2017	2017	2017
Stationary	27.4	28.5	-1.1
Area wide	15.6	11.7	3.9
On-Road Mobile	125.6	122.3	3.3
Other Mobile	64.3	62.9	1.4
TOTAL	232.9	225.4	7.5

* 2012 Plan (v.1.03) including 2014 conformity budget updates.

Table 6. PM2.5 Emissions Comparison – All Source Categories

Inventory Category	Emissions in existing PM2.5 Plan*	Current Emission Inventory	Differences By Year (Existing – Current (tons per day))
	2017	2017	2017
Stationary	8.9	8.7	0.2
Area wide	46.8	41.2	5.6
On-Road Mobile	4.2	3.7	0.5
Other Mobile	3.6	4.1	-0.5
TOTAL	63.6	57.7	5.9

* 2012 Plan (v.1.03) including 2014 conformity budget updates.

The only category of emissions that shows an increase between existing and current inventories is stationary NOx, and this small increase is offset by reductions in area wide, on road and other mobile source categories.

The current emissions inventory is the most recent inventory used in the 2015 PM2.5 Plan for the San Joaquin Valley. The changes between exiting plan and current inventories can be attributed to changes in base year, updates to both the EMFAC on road and OFFROAD emissions models and updates to area wide source estimation methodologies.

Updated PM10 Budgets

Table 7 below details the updated PM10 and NOx budgets for the San Joaquin Valley PM10 Plan by subarea.

Table 7. San Joaquin Valley Annual PM10 Conformity Budgets*
(Tons per annual day)

County Subarea	2020	
	PM10	NOx
Fresno	7.0	25.4
Kern (SJV)	7.4	23.3
Kings	1.8	4.8
Madera	2.5	4.7
Merced	3.8	8.9
San Joaquin	4.6	11.9
Stanislaus	3.7	9.6
Tulare	3.4	8.4

*Budgets are rounded up to the nearest tenth ton (0.1).

Consistency with the PM10 Plan

Table 8 and Table 9 below compare the emissions reductions from 2005 to 2020 in the inventories for NOx and PM10, respectively from the existing PM10 Plan and the most current inventory by major source category. Note that the current inventory reflects the proposed budgets detailed in Table 7.

Table 8. Nitrogen Oxide Emissions Reductions Comparison Existing vs. Current Inventories –All Source Categories*

Inventory Category	Existing PM10 Plan**	Current Emission Inventory
Stationary	2.2%	51.9%
Area wide	6.7%	8.7%
On-Road Mobile	58.5%	73.5%
Other Mobile	45.8%	44.6%
TOTAL	44.1%	63.5%

* Reductions in percent from 2005 to 2020

** 2007 PM10 Plan v1.00 RF994

Table 9. PM10 Emissions Reductions Comparison Existing vs. Current Inventories –All Source Categories*

Inventory Category	Existing PM10 Plan**	Current Emission Inventory ***
Stationary	-12.3%	4.7%
Area wide	-4.9%	0.5%
On-Road Mobile	34.2%	54.4%
Other Mobile	36.5%	37.8%
TOTAL	-2.0%	4.9%

* Reductions in percent from 2005 to 2020

** 2007 PM10 Plan v1.00 RF994

For NOx, the approved PM10 maintenance plan shows reductions of 44% while the updated inventory shows reductions of 63%. For PM10 emissions, the approved maintenance plan shows a slight increase of two percent while the current inventory shows a reduction of almost five percent. This demonstrates that reductions of PM10 and the precursor NOx in the updated inventory exceed those in the existing approved plan and are consistent with the maintenance demonstration in the approved plan.

III. EMISSIONS TRADING MECHANISM

Section 93.124(b) of the federal conformity rule allows for a SIP to establish emissions trading mechanisms between budgets for pollutants or precursors, or among budgets allocated to mobile and other sources. The approved PM10 maintenance plan and the PM2.5 Plan proposed for approval both contain emissions trading mechanisms allowing trading between budgets. These budget updates do not modify the already approved and submitted emissions trading mechanisms.

IV. STAFF RECOMMENDATION

ARB staff has reviewed the transportation conformity budgets in this update to the Ozone, PM2.5 and PM10 state implementation plans and has concluded that they meet the applicable Act requirements. The transportation conformity budgets are consistent with the demonstrations of progress, attainment or maintenance in the respective plans. Therefore, staff recommends that the Board approve these updates to the transportation conformity budgets in the Ozone, PM2.5 and SIPs for the San Joaquin Valley and direct staff to submit these updates as a revision to the California SIP.

Attachment: Budget Detail for Updated Transportation Conformity Budgets for the San Joaquin Valley Ozone, PM2.5, and PM10 State Implementation Plans

San Joaquin Valley Draft 24 hr PM2.5 Motor Vehicle Emissions Budgets																		
2012 Plan for the 2006 24 hour NAAQS																		
(tons per winter average day)																		
2017 Motor Vehicle Emissions Budgets																		
2015 FSTIP MPO activity data																		
County	Fresno		Kern		Kings		Madera		Merced		San Joaquin		Stanislaus		Tulare		San Joaquin Valley Air Basin	
	PM2.5	NOx	PM2.5	NOx	PM2.5	NOx	PM2.5	NOx	PM2.5	NOx	PM2.5	NOx	PM2.5	NOx	PM2.5	NOx	PM2.5	NOx
EMFAC2014	0.94	31.97	0.80	28.67	0.15	5.88	0.18	5.97	0.29	10.98	0.60	15.44	0.39	12.25	0.37	11.15		
Total	0.94	31.97	0.80	28.67	0.15	5.88	0.18	5.97	0.29	10.98	0.60	15.44	0.39	12.25	0.37	11.15	3.71	122.31
Air Basin Total																	3.8	123
Disaggregated County Totals	0.961	32.146	0.814	28.836	0.151	5.912	0.185	6.008	0.292	11.038	0.618	15.527	0.403	12.319	0.376	11.213		
Budget¹	1.0	32.1	0.8	28.8	0.2	5.9	0.2	6.0	0.3	11.0	0.6	15.5	0.4	12.3	0.4	11.2	3.8	123.0

Attachment - continued

San Joaquin Valley Draft 8-Hour Ozone Motor Vehicle Emissions Budgets

2008/2011 Update Plan for the 1997 8-hour Ozone Standard

(tons per summer average day)

2017 Motor Vehicle Emissions Budgets

2015 FSTIP MPO activity data

County	Fresno		Kern		Kings		Madera		Merced		San Joaquin		Stanislaus		Tulare		San Joaquin Valley Air Basin	
	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx
EMFAC2014	8.69	29.71	6.87	26.66	1.41	5.46	2.01	5.51	2.69	10.20	6.38	14.03	4.10	11.28	4.04	10.25		
Total	8.69	29.71	6.87	26.66	1.41	5.46	2.01	5.51	2.69	10.20	6.38	14.03	4.10	11.28	4.04	10.25	36.19	113.08
Air Basin Total																	36.2	114
Disaggregated County Totals	8.690	29.948	6.868	26.807	1.407	5.488	2.012	5.537	2.694	10.258	6.379	14.105	4.103	11.343	4.046	10.308		
Budget	8.7	29.9	6.9	26.8	1.4	5.5	2.0	5.5	2.7	10.3	6.4	14.1	4.1	11.3	4.0	10.3	36.2	113.8

2020 Motor Vehicle Emissions Budgets

2015 FSTIP MPO activity data

County	Fresno		Kern		Kings		Madera		Merced		San Joaquin		Stanislaus		Tulare		San Joaquin Valley Air Basin	
	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx
EMFAC2014	6.77	24.15	5.67	22.21	1.14	4.62	1.57	4.43	2.10	8.47	5.11	11.25	3.21	9.10	3.09	8.01		
Total	6.77	24.15	5.67	22.21	1.14	4.62	1.57	4.43	2.10	8.47	5.11	11.25	3.21	9.10	3.09	8.01	28.65	92.24
Air Basin Total																	28.7	93
Disaggregated County Totals	6.776	24.348	5.682	22.396	1.144	4.654	1.568	4.468	2.102	8.543	5.118	11.339	3.218	9.179	3.094	8.072		
Budget	6.8	24.3	5.7	22.4	1.1	4.7	1.6	4.5	2.1	8.5	5.1	11.3	3.2	9.2	3.1	8.1	28.7	93.0

2023 Motor Vehicle Emissions Budgets

2015 FSTIP MPO activity data

County	Fresno		Kern		Kings		Madera		Merced		San Joaquin		Stanislaus		Tulare		San Joaquin Valley Air Basin	
	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx	ROG	NOx
EMFAC2014	5.56	14.40	4.82	12.71	0.94	2.68	1.27	2.66	1.71	5.07	4.29	7.18	2.65	5.78	2.48	4.87		
Total	5.56	14.40	4.82	12.71	0.94	2.68	1.27	2.66	1.71	5.07	4.29	7.18	2.65	5.78	2.48	4.87	23.71	55.34
Air Basin Total																	23.8	56
Disaggregated County Totals	5.583	14.570	4.837	12.858	0.942	2.714	1.270	2.690	1.712	5.132	4.302	7.261	2.660	5.845	2.493	4.930		
Budget	5.6	14.6	4.8	12.9	0.9	2.7	1.3	2.7	1.7	5.1	4.3	7.3	2.7	5.8	2.5	4.9	23.8	56.0

Attachment – continued

San Joaquin Valley Draft PM-10 Motor Vehicle Emissions Budgets																		
2008 Maintenance Plan for the 1987 PM-10 Standard																		
(tons per annual average day)																		
2020 Motor Vehicle Emissions Budgets																		
<i>2015 FSTIP MPO activity data</i>																		
County	Fresno		Kern		Kings		Madera		Merced		San Joaquin		Stanislaus		Tulare		San Joaquin Valley Air Basin	
	PM10	NOx	PM10	NOx	PM10	NOx	PM10	NOx	PM10	NOx	PM10	NOx	PM10	NOx	PM10	NOx	PM10	NOx
EMFAC2014	1.86	25.30	1.63	23.30	0.31	4.82	0.38	4.65	0.58	8.85	1.31	11.90	0.80	9.57	0.74	8.41	7.61	96.80
Paved Road Dust	4.24		4.57		0.96		1.57		1.40		2.99		1.31		1.70			
Unpaved Road Dust	0.60		0.34		0.42		0.51		1.27		0.11		0.27		0.76			
Road Construction Dust	0.34		0.85		0.07		0.08		0.55		0.16		1.36		0.22			
Total	7.04	25.30	7.39	23.30	1.76	4.82	2.53	4.65	3.81	8.85	4.58	11.90	3.75	9.57	3.42	8.41	34.27	96.80
Air Basin Total																	34.3	97
Disaggregated County Totals	7.045	25.352	7.398	23.348	1.761	4.830	2.536	4.660	3.808	8.868	4.579	11.925	3.748	9.590	3.425	8.427		
Budget	7.0	25.4	7.4	23.3	1.8	4.8	2.5	4.7	3.8	8.9	4.6	11.9	3.7	9.6	3.4	8.4	34.3	97.0

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