

Staff Report

2020 Coachella Valley Vehicle Miles Traveled Emissions Offset Demonstration

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Executive Summary

The Coachella Valley ozone nonattainment area (Coachella Valley) was designated nonattainment for the 80 parts per billion (ppb) 8-hour ozone national ambient air quality standard (NAAQS or standard) with a classification of Severe requiring attainment by June 15, 2019. Based on ozone air quality in 2018, the South Coast Air Quality Management District (District) determined that the Coachella Valley did not attain the standard by the attainment deadline and the California Air Resources Board (CARB) submitted a request to the U. S. Environmental Protection Agency (U.S. EPA) to classify the Coachella Valley as an Extreme ozone nonattainment area with a new attainment deadline of June 15, 2024. On July 10, 2019, U.S. EPA classified the Coachella Valley as an Extreme ozone nonattainment area for the 80 ppb ozone standard.

CARB submitted a SIP revision to U.S. EPA on December 28, 2020 demonstrating that the Coachella Valley will attain the 80 ppb ozone standard by June 15, 2024. The SIP revision included all other Clean Air Act (Act) requirements for an Extreme ozone nonattainment area with the exception of a demonstration that enforceable transportation control strategies (TCSs) and transportation control measures (TCMs) are adequate to offset the growth in emissions from growth in vehicle miles travelled (VMT Emissions Offset Demonstration). CARB staff have since prepared the VMT Emissions Offset Demonstration and with the VMT Emissions Offset Demonstration, U.S. EPA can approve the Coachella Valley Extreme 80 ppb 8-hour ozone SIP.

Introduction

CARB has prepared this VMT Emissions Offset Demonstration for the Coachella Valley extreme nonattainment area for the 80 ppb 8-hour ozone standard as required by Section 182(d)(1)(A) of the Act. The Act requires states with nonattainment areas classified as severe or extreme submit additional enforceable TCSs and TCMs for the area to offset any growth in emissions from growth in VMT or vehicle trips. In other words, additional TCSs or TCMs must be submitted if vehicle emissions are projected to be higher than they would have been had VMT not grown.

This VMT Emissions Offset Demonstration is prepared in accordance with the U.S. EPA August 2012 guidance entitled *Implementing Clean Air Act Section 182(d)(1)(A): Transportation Control Measures and Transportation Control Strategies to Offset Growth in Emissions Due to Growth in Vehicle Miles Traveled*.¹ In its 2012 guidance, U.S. EPA indicated that technology improvements such as vehicle technology

¹ U.S. Environmental Protection Agency [EPA]: Office of Transportation and Air Quality. (2012, August). *Implementing Clean Air Act Section 182(d)(1)(A): Transportation Control Measures and Transportation Control Strategies to Offset Growth in Emissions Due to Growth in Vehicle Miles Traveled* (EPA-420-B-12-053). Retrieved from <http://www.epa.gov/otaq/stateresources/policy/general/420b12053.pdf>

improvements, motor vehicle fuels, and other control strategies that are transportation related could be used to offset emissions increases from VMT. The guidance also set forth a methodology for demonstrating achievement of the VMT offset requirement. The projected attainment year emissions, assuming no new control measures and no VMT growth, are to be compared with projected actual attainment year emissions that include new control measures and VMT growth. If the latter number is smaller than the former, then no additional TCMs or TCSs are required. The 2012 guidance recommends that the base year used in the VMT offset demonstration be the base year used in the attainment demonstration for the ozone NAAQS.

Methodology

The following calculations are based on the methodology described in the 2012 guidance. For the Coachella Valley Extreme nonattainment area for the 80-ppb 8-hour ozone standard, 2002 is the base year and 2023 is the attainment year. The VMT Emissions Offset Demonstration inventories for these years are based on vehicle activity (VMT and speed distribution) from the region's transportation plan² and emission rates from California's motor vehicle emissions model, Emission FACTor (EMFAC)³. Under federal law, the Southern California Association of Governments (SCAG) is designated as a Metropolitan Planning Organization (MPO), and under State law as a Regional Transportation Planning Agency and a Council of Governments. The SCAG region encompasses several ozone nonattainment areas including the Coachella Valley.

On August 15, 2019, U.S. EPA approved EMFAC2017 for use in State Implementation Plans (SIPs) and to demonstrate transportation conformity⁴. The EMFAC model estimates emissions from two combustion processes (running and start exhaust), and four evaporative processes (hot soak, running losses, diurnal, and resting losses). Emissions from running exhaust, start exhaust, hot soak, and running losses are a function of vehicle activity. Emissions from these processes are directly related to VMT, trips, and starts and thus are included in the calculation of the emissions for the VMT offset demonstration. Emissions from resting loss and diurnal loss processes are not related to vehicle activity and occur whether or not the vehicle makes a trip.

In addition, The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule impacts some of the underlying assumptions in the EMFAC2017 model for model years 2021-2026

2 Southern California Association of Governments 2016 Regional Transportation Plan (RTP) at <https://scag.ca.gov/connect-socal>

3 More information on data sources can be found in the EMFAC technical support documentation at: <https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-road-documentation>

4 U.S. EPA approval of EMFAC2017 can be found at 84 FR 41717 <https://www.federalregister.gov/d/2019-17476>

passenger cars and light trucks. Hence, the emissions output from the EMFAC2017 model were adjusted to account for the impacts of this rule⁵.

Per the 2012 guidance, the VMT Emissions Offset Demonstration requires the following steps:

1. Estimate the base year (2002) on-road emissions with all the TCSs and TCMs in place in the base year;
2. Estimate emissions levels for the 2023 attainment year with the motor vehicle control program frozen at 2002 levels⁶ and with projected VMT in the attainment year. This represents what the emissions in the attainment year would have been if TCSs and TCMs had not been implemented after 2002;
3. Calculate emissions levels with the motor vehicle control program frozen at 2002 levels and assuming VMT does not increase from 2002 levels. This is also referred to as the VMT offset ceiling; and
4. Calculate an emissions level that represents emissions with full implementation of all TCSs and TCMs since 2002⁷. This is referred to as the attainment year emissions.

As provided in the 2012 guidance, to determine compliance with Act §182(d)(1)(A), emissions from calculations (4) should be less than or equal to emissions from calculation (3).

5 EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One, https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf

6 To perform this calculation, CARB staff identified on-road motor vehicle control programs adopted post-2002 and adjusted the EMFAC2017 input and output to reflect the VOC emissions levels in 2023 without the benefits of the post-2002 control programs. However, implicit in the EMFAC2017 model are benefits of CARB's Advanced Clean Cars (ACC) and Truck and Bus regulation, which are post-2002 control programs. In addition, the stringency level of the Inspection and Maintenance program cannot be adjusted. To determine the impact of these programs in EMFAC 2017 CARB staff conducted a sensitivity test using previous versions of the EMFAC model for the Coachella Valley in 2023. Specifically, CARB staff used the EMFAC2014 model because does not include CARB's ACC and Truck and Bus regulations, and EMFAC2011 because staff could adjust the I/M program's stringency. Staff determined that these programs decreased emissions by 0.25 tons/day VOC in 2023, thus 0.25 tons/day VOC were added to calculation steps 3 (i.e. 2023 emissions with both VMT and motor vehicle control program frozen at 2002 levels). Based on similar analysis staff added emissions by 0.33 tons/day VOC for step 2 (i.e. 2023 emissions with motor vehicle control program frozen at 2002 levels and with projected VMT in the attainment year). For further details, please see appendix A.

7 Since 1990, when this requirement was established, California has adopted a substantial number of enforceable TCSs—more than enough to meet the requirement to offset increased emissions from VMT growth. Attachment A-1 provides a list of the State's mobile source TCSs CARB has adopted since 1990 that are included in this analysis. However, the SCAG's Regional Transportation Plan (RTP) does not include specific TCMs for the Coachella Valley because upwind emissions from the South Coast Air Basin largely influence air quality in Coachella Valley (*Draft Final Coachella Valley Extreme Area Plan for 1997 8-Hour Ozone Standard*).

Analysis for the Coachella Valley

According to the General Preamble and U.S. EPA guidance, the TCM offset provisions only apply to emissions of volatile organic compounds (VOCs) for Severe and Extreme ozone nonattainment areas⁸. VOC emissions for the four calculations described above are provided in Table 1 and Figure 1 below.

Table 1: Coachella Valley VOC Emissions Calculations for Attainment Year (2023)

Offset Demonstration Calculations	Description	VMT (miles/day)	VOC (tons/day)
(1)	Base year (2002) emissions	11,090,559	8.5
(2)	Emissions with motor vehicle control program frozen at 2002 levels (VMT at 2023 projected levels)	14,507,620	2.8 ^a
(3)	Emissions with motor vehicle control program frozen at 2002 levels (VMT at 2002 levels)	11,090,559	2.0 ^b
(4)	Emissions with full motor vehicle control program in place (VMT at 2023 projected levels)	14,507,620	1.9

a–This include adjustment 0.33 tons/day of VOC as discussed in Appendix A

b-This include adjustment 0.25 tons/day of VOC as discussed in Appendix A

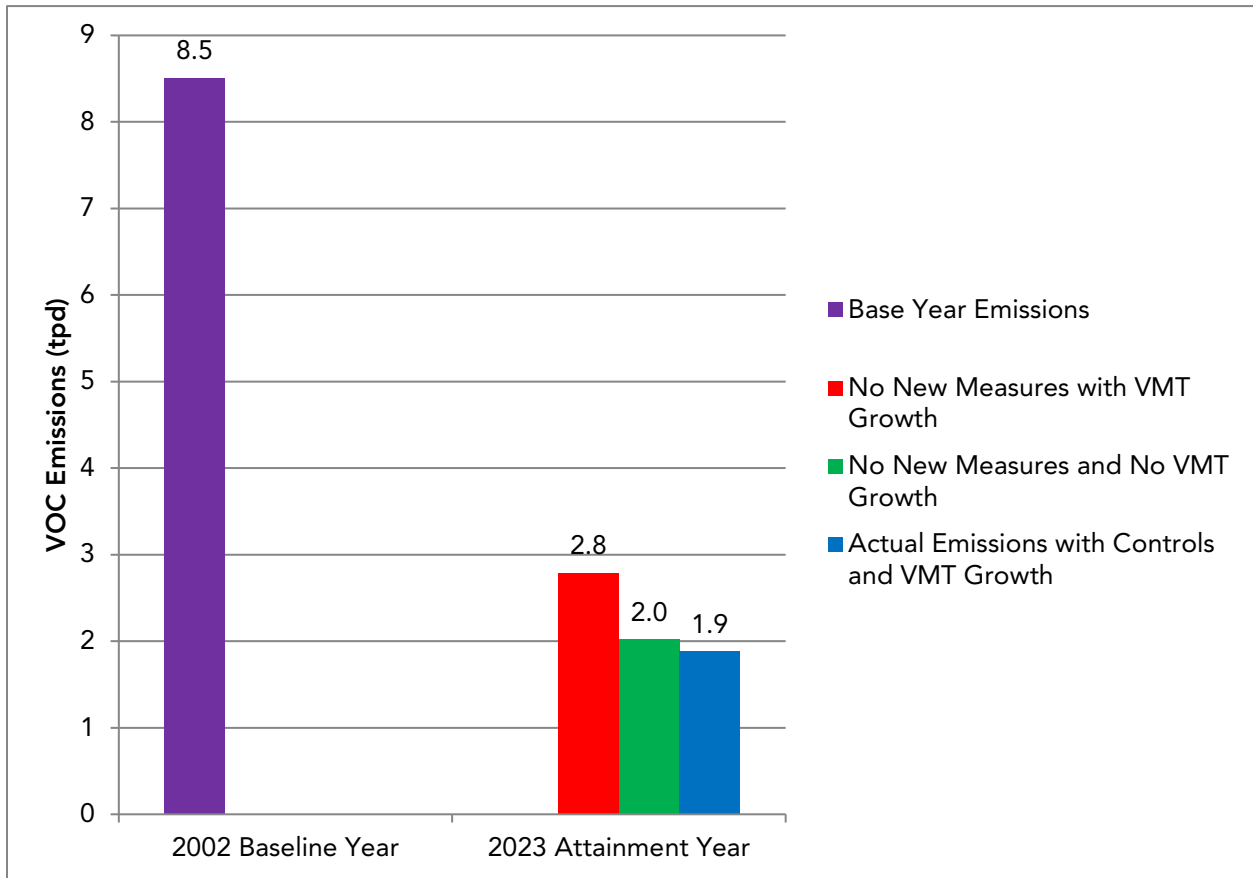
As provided in the 2012 guidance, to determine compliance with Act §182(d)(1)(A), emissions from calculations (4) should be less than or equal to emissions from calculation (3).

(4) 1.9 tons/day < (3) 2.0 tons per day VOC

Since the estimated attainment year emissions (4) are less than the VMT offset ceiling (3), additional TCMs and TCSs will not be needed to satisfy the CAA section 181(d)(1)(A) VMT offset requirements.

⁸ U.S. Environmental Protection Agency [EPA]: Office of Transportation and Air Quality. (2012, August). *Implementing Clean Air Act Section 182(d)(1)(A): Transportation Control Measures and Transportation Control Strategies to Offset Growth in Emissions Due to Growth in Vehicle Miles Traveled* (EPA-420-B-12-053). Pg. 1-2. Retrieved from <http://www.epa.gov/otaq/stateresources/policy/general/420b12053.pdf>

Figure 1. Coachella Valley VMT Emissions Offset Demonstration*



* Does not include resting or diurnal loss emissions

Staff Recommendations

CARB staff recommends that the Board:

1. Adopt the VMT Emissions Offset Demonstration for the Coachella Valley; and
2. Direct the Executive Officer to submit the VMT Emissions Offset Demonstration to U.S. EPA as a revision to the California SIP.

Attachment A-1: State of California Motor Vehicle Control Program (1990-Present)

Measure	Hearing Date	Category
California Reformulated Gasoline (CalRFG), Phase I. T 13, CCR, 2251.5	9/27/1990	Fuels
California Reformulated Gasoline, Phase II. T 13, CCR, 2250, 2255.1, 2252, 2260 - 2272, 2295	11/21/1991	Fuels
Wintertime Gasoline Program. T 13, CCR, 2258, 2298, 2251.5, 2296	11/21/1991	Fuels
Wintertime Oxygenate Program. T 13, CCR, 2258, 2251.5, 2263(b), 2267, 2298, 2259, 2283, 2293.5	9/9/1993	Fuels
Diesel Fuel Certification Test Methods. T 13, CCR, 1956.8(b), 1960.1(k), 2281(c), 2282(b), (c) and (g)	10/24/1996	Fuels
Diesel Fuel Test Methods. T 13, CCR, 1956.8(b), 1960.1(k), 2281(c), 2282(b), (c) and (g)	10/24/1996	Fuels
1997 Amendments to Onboard Diagnostics, Phase II, Technical Status. T 13, CCR, 1968.1, 2030, 2031	12/12/1996	On-Road
Low Emission Vehicles Standards (LEV 2) and Compliance Assurance Program (CAP 2000). T 13, CCR, 1961 & 1962 (both new); 1900, 1960.1, 1965, 1968.1, 1976, 1978, 2037, 2038, 2062, 2101, 2106, 2107, 2110, 2112, 2114, 2119, 2130, 2137-2140, 2143-2148	11/5/1998	On-Road
Exhaust Standards for (On-Road) Motorcycles. T 13, CCR, 1900, 1958, 1965	12/10/1998	On-Road
Light-and Medium Duty Low Emission Vehicle Alignment with Federal Standards. Exhaust Emission Standards for Heavy Duty Gas Engines. T 13, CCR, 1956.8 & 1961	12/7/2000	On-Road
Heavy Duty Diesel Engine Standards for 2007 and Later. T 13, CCR, 1956.8 and incorporated test procedures	10/25/2001	On-Road
Low Emission Vehicle Regulations. T 13, CCR, 1960.1, 1960.5, 1961, 1962 and incorporate test procedures and guidelines	11/15/2001	On-Road
2003 Amendments to On-Board Diagnostic II Review Amendments. T 13, CCR, 1968.1, 1968.2, 1968.5	4/25/2002	On-Road
CaRFG Phase 3 Amendments. T 13, CCR, 2261, 2262, 2262.4, 2262.5, 2262.6, 2262.9, 2266.5, 2269, 2271, 2272, 2265, and 2296	7/25/2002	Fuels
Adoption of Minor Amendments to the Low-Emission Vehicle Regulations. T 13, CCR, 1961, 1965, 1978, and the incorporate test procedures	12/12/2002	On-Road

Measure	Hearing Date	Category
Incorporation of Federal Exhaust Emission Standards for 2008 and Later Model-Year Heavy Duty Gasoline Engines and the Adoption of Minor Amendments to the Low-Emission Vehicle Regulations. T 13, CCR, 1956.8 and documents incorporated by reference	12/12/2002	On-Road
CaRFG Phase 3 Amendments (specifications for De Minimis Levels of Oxygenates and MTBE Phase Out Issues). T 13, CCR, 2261, 2262.6, 2263, 2266.5, 2272, 2273, 2260, 2273.5	12/12/2002	Fuels
Specifications for Motor Vehicle Diesel Fuel. T 13 & T17, CCR, 1961, 2281, 2282, 2701, 2284, 2285, 93114, and incorporated test procedures	7/24/2003	Fuel
California Reformulated Gasoline, Phase 3. T 13, CCR, 2260, 2262, 2262.4, 2262.5, 2262.6, 2262.9, 2263, 2265 (and the incorporated "California Procedures"), and 2266.5	11/18/2004	Fuels
On-Board Diagnostic System Requirements for 2010 and Subsequent Model-Year Heavy-Duty Engines (HD OBD). T 13, CCR, 1971.1	7/21/2005	On-Road
Requirements to Reduce Idling Emissions from New and In-Use Trucks, Beginning in 2008. T 13, CCR, 1956.8, 2404, 2424, 2425, and 2485 and the incorporated document	10/20/2005	On-Road
Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yard. T 13, CCR, 2479	12/8/2005	On-road and Off-road
Evaporative and Exhaust Emission Test Procedures. T 13, CCR, 1961, 1976, 1978	6/22/2006	On-road
Heavy-Duty In-Use Compliance Regulation. T 13, CCR, 1956.1, 1956.8, and documents incorporated by reference	9/28/2006	On-Road
2007 Amendments to On-Board Diagnostic II. T 13, CCR, 1968.2, 1968.5, 2035, 2037 and 2038	9/28/2006	On-Road
Phase 3 Reformulated Gasoline (Ethanol Permeation) T 13, CCR, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2270, 2271, and 2273	6/14/2007	Fuel
2007 Amendments to Heavy-Duty In-Use Compliance Regulation. T 13, CCR, 1956.1, 1956.8, and documents incorporated by reference	12/6/2007	On-Road
Port Truck Modernization T 13, CCR, 2027	12/6/2007	On-Road
Cleaner In-Use Heavy-Duty Trucks (Truck and Bus Reg) T 13, CCR, 2025	12/11/2008	On-Road

Measure	Hearing Date	Category
2010 Amendments to On-Board Diagnostic II. T 13, CCR, 1968.2, 1968.5, 2035, 2037 and 2038	5/28/2009	On-Road
Plug-In Hybrid Electric Vehicle Test Procedure Amendments. T 13, CCR, 2032, 1900, 1962, 1962.1	5/28/2009	On-Road
2010 Amendments to On-Board Diagnostic System Requirements for Heavy-Duty Engines (HD OBD). T 13, CCR, 1971.1 and 1971.5	5/28/2009	On-Road
Truck and Bus Regulation 2010. T13, CCR, 2025	12/16/2010	On-Road
2011 Amendments to Heavy-Duty In-Use Compliance Regulation. T 13, CCR, 1956.1, 1956.8, and documents incorporated by reference	6/23/2011	On-Road
Amendments to Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yard. T 13, CCR, 2479	9/22/2011	On-Road
Advanced Clean Cars T 13, CCR, 1900, 1956, 1960, 1961, 1962, 1965, 1968, 1976, 1978, 2037, 2038, 2062, 2112, 2139, 2140, 2145, 2147, 2235, 2300, 2302, 2303, 2304, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, and 2318	1/26/2012	On-Road
Zero Emission Vehicle Standards for 2009 through 2017 models. T 13, CCR, 1962.1, 1962.3	1/26/2012	On-Road
2012 Amendments to On-Board Diagnostic II. T 13, CCR, 1968.2, 1968.5, 2035, 2037 and 2038	1/26/2012	On-Road
Emergency Regulatory Amendments to the Tractor-Trailer Greenhouse Gas Regulation T 17, CCR, 95307	2/29/2012	On-Road
2013 Amendments to On-Board Diagnostics (OBD I and II) Regulations T 13, CCR, 1968.2, 1971.1	8/23/2012	On-Road
2013 Amendments to Heavy Duty On Board Diagnostic Requirements	8/23/2012	On-Road
Low Emission Vehicle III Greenhouse Gas and Zero Emission Vehicle Regulation Amendments for Federal Compliance Option T 13, CCR, 1900, 1956.8, 1960.1, 1961, 1961.2, 1961.3, 1962.1, 1962.2, 1976	11/15/2012	On-Road
Heavy-Duty Greenhouse Gas Phase 1: On-Road Heavy Duty Greenhouse Gas Emissions Rule, Tractor-Trailer Rule, Commercial Motor Vehicle Idling Rule, Optional Emission Standards, Heavy-Duty Hybrid-Electric Vehicle Certification Procedure T 13, CCR, 1900, 1956.	12/12/2013	On-Road

Measure	Hearing Date	Category
Heavy-Duty Hybrid-Electric Vehicle Certification Procedure T 13, CCR, 1900, 1956.8, 2036, 2037, 2112, 2139, 2140, 2147, 2485, T 17, CCR, 95300, 95301, 95302, 95303, 95305, 95660, 95661, 95662, 95663, 95664	12/12/2013	On-Road
Amendments to Low Emission Vehicle III Criteria Pollutant Requirements for Light-and Medium-Duty Vehicles the Hybrid Electric Vehicle Test Procedures, and the Heavy-Duty Otto-Cycle and Heavy-Duty Diesel Test Procedures T 13, CCR, 1900, 1956.8, 1961.2, 1962.2, 1965, 1976, 1978	10/23/2014	On-Road
2014 Amendments to Zero Emission Vehicle Regulation T 13, CCR, 1962.1, 1962.2	10/23/2014/5/21/2015	On-Road

Appendix A: Sensitivity Test to Estimate Emissions for the 2023 Attainment Year with the Motor Vehicle Control Program Frozen at 2002

Per the 2012 guidance, the VMT Offset Demonstration requires CARB to estimate emissions levels for the 2023 attainment year with the motor vehicle control program frozen at 2002 levels and with projected VMT in the attainment year. This represents what the emissions in the attainment year would have been if TCSs and TCMs had not been implemented after 2002. CARB’s current version of the EMFAC model (EMFAC2017) however, reflects control programs such as Advanced Clean Cars (ACC), the Truck and Bus Regulation and the Inspection and Maintenance (I&M) Program, which were adopted after 2002⁹. Because EMFAC’s baseline assumptions are based on vehicle data from the Department of Motor Vehicles, International Registration Plan, Bureau of Automotive Repair Smog Check Program, and Truck and Bus Regulation Reporting Program, removing the impacts of these programs is difficult. For this reason, staff pursued an alternative approach to meet US EPA’s guidance, which is described in detail in this appendix.

To assess pre-2002 control program emissions, CARB identified the on-road vehicle control programs adopted after 2002 and which versions of EMFAC do not have these programs reflected. Staff determined that EMFAC2014 was the most appropriate version to use to account for ACC and the Truck and Bus Regulation, and EMFAC2011 to account for the pre-2002 I&M Program.

⁹ The following programs adopted after 2002 are reflected in EMFAC2017: Advanced Clean Cars/ Zero Emission Vehicle Standard, Truck and Bus Regulation, I&M Program, Heavy-duty GHG Regulation (No impact on VOC emissions), Low Carbon Fuel Standard (No impact on VOC emissions)

In summary, staff determined that these programs decreased emissions by 0.25 tons/day VOC in 2023, and thus 0.25 tons/day VOC were added to calculation (3), 2023 emissions with both VMT and motor vehicle control program frozen at 2002 levels. Similarly, staff added 0.33 tons/day VOC to calculation (2), 2023 emissions with motor vehicle control program frozen at 2002 levels and with projected VMT in the attainment year.

EMFAC2014 Analysis

Step 1: CARB staff ran the EMFAC2014 model without any control programs, including the ACC, I&M Program, Truck and Bus Regulation, Low Carbon Fuel Standards, and Heavy-duty GHG Regulation with the 2002 activity data for Coachella Valley in calendar 2023. This scenario yields 2.68 tons/day of VOC (excluding diurnal and resting losses).

Step 2: CARB staff ran the EMFAC2014 model with the 2002 activity data for Coachella Valley in calendar year 2023 and kept all other parameters the same as in step 1 but with the ACC Regulation turned on. This scenario yields 2.62 tons/day of VOC (excluding diurnal and resting losses). In other words, 0.06 tons/day of VOC is the benefit of the ACC Program in Coachella Valley.

Step 3: CARB staff ran the EMFAC2014 model with the 2002 activity data for Coachella Valley in calendar year 2023 and kept all other parameters the same as in step 1 but with the truck and bus regulation turned on. This scenario yields 2.52 tons/day of VOC (excluding diurnal and resting losses). In other words, 0.16 tons/day of VOC is the benefit of the truck and bus regulation in Coachella Valley.

The total benefits from the ACC and Truck and Bus regulations are 0.22 tpd reductions in VOC. Table A1 shows the results of this analysis:

Table A1 Coachella Valley ACC and Truck and Bus Regulation Benefits in EMFAC2014

Scenario	VMT	Total VOC (tpd)	No Diurnal or Resting Losses VOC (tpd)	Benefits VOC (tpd)
All Programs Off	11,090,559	3.08	2.68	
Only ACC On	11,090,559	3.01	2.62	0.06
Only Truck & Bus Regulation On	11,090,559	2.92	2.52	0.16

EMFAC2011 Analysis

Step 1: CARB staff ran the EMFAC2011-LDV model with all the I&M programs including Change of Ownership, Enhanced Basic, and Enhanced Interim with the 2002 activity data for Coachella Valley in calendar 2023. This scenario yields 1.96 tons/day of VOC (excluding diurnal and resting losses).

Step 2: CARB staff ran the EMFAC2011-LDV model with the 2002 activity data for Coachella Valley in calendar year 2023 and kept all other parameters the same as in step 1, but the I&M

Program with only the pre-2002 Program (excluding Enhanced Interim (2005)) as shown in table A2. This scenario yields 1.99 tons/day of VOC (excluding diurnal and resting losses).

As a result of these calculations, staff determined the VOC benefit of the post-2002 I&M Program in Coachella Valley is 0.03 tons/day in 2023.

Table A2 Coachella Valley I&M Programs and Benefits

I/M Programs	All I/M Programs	Pre-2002 I/M Programs
I/M Program	COO 1984 (1984) 03/1984	COO 1984 (1984) 03/1984
I/M Program	COO 1990A (1990) 01/1990	COO 1990A (1990) 01/1990
I/M Program	BAR 1990A (1990) 07/1990	BAR 1990A (1990) 07/1990
I/M Program	BAR 1990B (1996) 07/1996	BAR 1990B (1996) 07/1996
I/M Program	Enhanced Basic (1998) 06/1998	Enhanced Basic (1998) 06/1998
I/M Program	Enhanced Interim (2001) 01/2001	Enhanced Interim (2001) 01/2001
I/M Program	Enhanced Interim (2005) 01/2005	
VMT/1000	11,091	11,091
Trips	2,542,470	2,542,470
Total VOC (tpd)	2.76	2.80
Total VOC (no Diurnal or Resting) (tpd)	1.96	1.99
Benefits (tpd)		0.03

Summary

Based on this analysis, CARB staff estimates that the emission benefits of ACC, Truck and Bus Regulation and I&M Program are about 0.25 tons/day of VOC using 2002 activity levels. Similarly, the emissions with projected 2023 vehicle activity (i.e., 14,507,620 VMT) in the attainment year is 0.33 tons/day of VOC. In other words, the sensitivity analysis test indicates that the VOC emissions in the VMT offset demonstration Calculations (2) and (3) should be about 13-15%¹⁰ higher than the estimated emissions in the EMFAC2017 model, which are appropriately adjusted.

¹⁰ The proportion of VOC emissions from the sensitivity test over the EMFAC2017 emissions for calculations (2) and (3) before adjusting for ACC, Truck and Bus Regulation and I&M Program. In other words, 0.25 tons/day over 1.77 tons/day and 0.33 tons/day over 2.46 tons/day.