Appendix B: Air Quality and Greenhouse Gas Data

Appendices

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GHG Emissions Target Setting - Forecasting the 2030 Efficiency Target

2017 Scoping Plan Emissions Inventory

Source: Pathways Main Outputs Final (Dec 2017). California Air Resources Board. 2017, December. The 2017 Climate Change Scoping Plan Update: The Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target. https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf.

End Use Sector 2030	MMTCO2e				
	Reference Scenario	Scoping Plan Scenario	Change	Percent Change	Sector Definition
Residential	46.5	41.4	-5.1	-11.0%	Residential final energy consumption
Commercial	36.00	30.1	-5.90	-16.4%	Commercial final energy consumption
Transportation	123.1	105.1	-18	-14.6%	Transportation energy consumption
Industrial*	33.8	30.7	-3.1	-9.2%	Industrial manufacturing final energy consumption,
Oil & Gas Extraction*	19.5	19.4	-0.1	-0.5%	Energy used in the extraction of oil and gas
Petroleum Refining*	32.6	32.5	-0.1	-0.3%	Energy used in petroleum Refining
Agriculture	7.7	6.8	-0.9	-11.7%	Energy use of physical infrastructure of agriculture, like buildings and pumps
Transportation Communications and Utilities	5.5	5	-0.5	-9.1%	Transportation Communications and Utilities (TCU) energy supports public infrastructure, like street lighting and waste treatment facilities
Non-Energy GHGs*	84.3	49.4	-34.9	-41.40%	Examples of non-energy GHG emissions include methane and N2O emissions from agriculture and waste, refrigerant F-gases, and emissions from cement production
Solid Waste Non-Energy GHGs	10.7	9.1	-1.6	-14.95%	Isolated the Solid Waste Subsector
Unspecified	0	0	0	n/a	
	389	320.4	-68.6	-17.63%	
Target	260	260			
Gap	-129	-60.4			

CARB 2017 Scoping Plan Assumes GAP from the Scoping Plan Scenario is closed by the Cap-and-Trade

GHG Emissions Target Setting - Forecasting the 2030 Efficiency Target

STATEWIDE SERVICE POPULATION CALCULATIONS

Population	
2020	40,639,392
2021	40,980,939
2022	41,321,565
2023	41,659,526
2024	41,994,283
2025	42,326,397
2026	42,655,695
2027	42,981,484
2028	43,304,691
2029	43,624,393
2030	43,939,250
2031	44,250,503
2032	44,556,617
2033	44,856,079
2034	45,150,800
2035	45,440,735
2036	45,726,459
2037	46,006,009
2038	46,277,743
2039	46,544,307
2040	46,804,202
2050	49,077,801

California Department of Finance. 2018, March 8. Report P-1 (County): State and County Total Population Projections, 2010-2060 (1 -year increments).http://www.dof.ca.gov/Forecasting/Demographics/Projections/

GHG Emissions Target Setting - Forecasting the 2030 Efficiency Target

CALIFORNIA SERVICE POPULATION (ESTIMATE)

Employment

	Total Employment	Farm Employment	Natural Resources and Mining Employment	Manufacturing + Durable Manufacturing Employment	Employment w/o Industrial and Agricultural Sectors
2020	17,630,930	418,171	22,268	2,177,747	15,012,744
2021	17,787,640	417,961	22,388	2,184,418	15,162,873
2022	17,939,780	418,291	22,578	2,190,008	15,308,902
2023	18,083,910	418,582	22,538	2,192,829	15,449,961
2024	18,224,870	418,862	22,398	2,195,081	15,588,529
2025	18,370,230	419,122	22,188	2,204,979	15,723,941
2026	18,511,920	419,372	22,198	2,215,447	15,854,903
2027	18,648,200	419,612	22,408	2,224,416	15,981,764
2028	18,808,150	419,872	22,438	2,229,397	16,136,443
2029	18,971,340	420,142	22,478	2,234,398	16,294,322
2030	19,137,080	420,402	22,508	2,239,408	16,454,761
2031	19,299,670	420,673	22,538	2,244,399	16,612,060
2032	19,458,160	420,933	22,578	2,249,420	16,765,229
2033	19,615,470	421,203	22,608	2,254,441	16,917,218
2034	19,770,890	421,463	22,648	2,259,502	17,067,277
2035	19,924,140	421,733	22,678	2,264,562	17,215,166
2036	20,078,780	421,993	22,718	2,269,643	17,364,425
2037	20,235,200	422,263	22,748	2,274,724	17,515,465
2038	20,395,030	422,523	22,788	2,279,835	17,669,884
2039	20,551,830	422,794	22,818	2,284,955	17,821,263
2040	20,709,630	423,054	22,859	2,290,086	17,973,632
2050	22,371,010	425,715	23,209	2,342,246	19,579,840

California Department of Transportation. 2017. Long-Term Socio-Economic Forecasts by County. http://www.dot.ca.gov/hq/tpp/offices/eab/socio_economic.html

GHG Emissions Target Setting - Forecasting the 2030 Efficiency Target

Service Population (SP)

	Total Employment	Employment w/o Industrial and Agricultural Sectors
2020	58,270,322	55,652,136
2021	58,768,579	56,143,812
2022	59,261,345	56,630,467
2023	59,743,436	57,109,487
2024	60,219,153	57,582,812
2025	60,696,627	58,050,338
2026	61,167,615	58,510,598
2027	61,629,684	58,963,248
2028	62,112,841	59,441,134
2029	62,595,733	59,918,715
2030	63,076,330	60,394,011
2031	63,550,173	60,862,563
2032	64,014,777	61,321,846
2033	64,471,549	61,773,297
2034	64,921,690	62,218,077
2035	65,364,875	62,655,901
2036	65,805,239	63,090,884
2037	66,241,209	63,521,474
2038	66,672,773	63,947,627
2039	67,096,137	64,365,570
2040	67,513,832	64,777,834
2050	71,448,811	68,657,641

Project Horizon Year Estimate	2040
2040 population	46,804,202
2040 employment (w/o industrial & Ag)	17,973,632
2040 GP	64,777,834

GHG Emissions Target Setting - Forecasting the 2030 Efficiency Target

2030 Scoping Plan - Efficiency Metric

Year 2030 Plan-Level			
2030 Target (Plan-Level)	MMTCO2e	260	
2030 Per Capita Target	MTCO2e/pc	5.9	
2030 Per Service Population Target (Plan-Level)	MTCO2e/sp	4.3	
Year 2050 Plan-Level			
2050 Target estimated (Plan-Level)	MMTCO2e	86	
2050 Per Capita Target	MTCO2e/pc	1.8	
2050 Per Service Population Target (Plan-Level)	MTCO2e/sp	1.3	
Project Horizon Year Estimate	2040		
2040 Estimated Target (Plan-Level)	MMTCO2e	173	-60%
2040 Per Service Population Target (Plan-Level)	MTCO2e/sp	2.7	

Land Use Statistics - Unincorporated San Bernardino County

	CEQA Baseline	GP Horizon	Change	Percent Change		EO S-03-05		
	2016	2040	2040-2016	2040-2016	2040-2050 Growth	2050	2040 Growth Factor from Baseline	2050 Growth Factor from Baseline
Population	307,697	357,377	49,680		8,444	365,821	0.16	0.19
Valley	128,415	153,308	24,893	50%		153,308	0.19	0.19
Mountain	54,266	56,621	2,355	5%		56,621	0.04	0.04
N. Desert	99,214	120,286	21,073	42%	8,444	128,730	0.21	0.30
E. Desert	25,803	27,162	1,359	3%		27,162	0.05	0.05
Household	95,226	110,029	14,803		2,384	112,413	0.16	0.18
Valley	31,413	39,077	7,664	52%		39,077	0.24	0.24
Mountain	20,721	21,398	677	5%		21,398	0.03	0.03
N. Desert	32,420	38,501	6,081	41%	2,384	40,884	0.19	0.26
E. Desert	10,673	11,053	380	3%		11,053	0.04	0.04
Dwelling Units	135,607	150,963	15,356		2,509	153,472	0.11	0.13
Valley	33,413	41,391	7,978	52%		41,391	0.24	0.24
Mountain	45,082	45,784	702	5%		45,784	0.02	0.02
N. Desert	40,318	46,600	6,281	41%	2,509	49,109	0.16	0.22
E. Desert	16,795	17,189	394	3%		17,189	0.02	0.02
Employment	52,937	65,483	12,546		2,057	67,540	0.24	0.28
Valley	30,851	42,392	11,541	92%	1,000	43,392	0.37	0.41
Mountain	8,015	8,217	202	2%		8,217	0.03	0.03
N. Desert	11,603	12,327	725	6%	1,057	13,384	0.06	0.15
E. Desert	2,469	2,547	78	1%		2,547	0.03	0.03
Non-Residential SQFT	32,094,265	51,492,166	19,397,900		1,513,936	53,006,102	0.60	0.65
Valley	19,698,680	38,086,128	18,387,448	95%	898,434	38,984,563	0.93	0.98
Mountain	4,296,904	4,459,260	162,356	1%		4,459,260	0.04	0.04
N. Desert	6,395,316	7,178,362	783,047	4%	615,502	7,793,864	0.12	0.22
E. Desert	1,703,366	1,768,415	65,050	0%		1,768,415	0.04	0.04
Service Population	360,634	422,860	62,226		10,501	433,361	0.17	0.20
Valley	159,265	195,700	36,434	59%	1,000	196,700	0.23	0.24
Mountain	62,281	64,838	2,557	4%	0	64,838	0.04	0.04
N. Desert	110,816	132,613	21,797	35%	9,501	142,114	0.20	0.28
E. Desert	28,272	29,709	1,437	2%	0	29,709	0.05	0.05

Notes

1. Non-residential square footage between 2040-2050 is based on 2040 employees/SQFT

2. Population and employment forecasts for 2040 and 2050 include geographic constraints, community input, infrastructure capacity, market demand, and environmental hazards. For a full accounting of the General Plan land use statistics, see the General Plan Buildout Methodology report.

Land Use Statistics - Unincorporated San Bernardino County

San Bernardino County Population Growth

	2014	2040	2050	2040 Growth Factor from Baseline	2050 Growth Factor from Baseline
San Bernardino County	2,110,975	2,730,966	2,976,804	0.29	0.41

California Department of Finance. P-1: State Population Projections (2010-2060). Total Population by County 1-yr Increments. http://www.dof.ca.gov/Forecasting/Demographics/Projections/

San Bernardino Countywide Project Activity Data

1 ICF. 2017, October. San Bernardino County Community and Municipal Greenhouse Gas Inventory.

2 Energy. Water use and wastewater treatment related energy use for in-county water was subtracted from the building energy sector to avoid double counting. The energy emissions associated with water and wastewater are included in the respective sectors.

3 Solid Waste Disposal. The community inventory for the EIR is adjusted to exclude disposal from incorporated areas. The increase in Solid Waste Disposal is based on Table 5.18-10 in the EIR. The generation factor for nonresidential land uses, 0.010 pound per day and 10 lbs per day for residential uses.

4 Refrigerants. CARB 2017 Scoping Plan. Greenhouse Gas Emissions Inventory - Query Results. Main Activity: Use of substitutes for ozone depleting substances Activity Subset: Refrigeration and Air Conditioning. AR 4.

5 Water. Water generation is based on the 2015 Urban Water Management Plan (UWMP) 2020 targets for service providers in the unincorporated areas (see Section 5.18, Utilities and Public Services, Table 5.18-2). Where the 2015 UWMP where not available, the projections utilize the 2015 UWMP actual existing water use excludes areas currently on well water as no data was available. The 2040 and 2050 forecast includes areas currently on wellwater; and therefore, the net increase in water use is conservative.

6 Wastewater. Wastewater generation for existing and 2040 is based on the totals in Section 5.18, Utilities and Public Services, Table 5.18-3, Forecast Wastewater Generation, San Bernardino County, 2040. Assumes no increase in septic generation from existing.

Sector	Subsector	Activity Data Units	2014 Activity Data[1]	Emissions Factor	Unit	Growth Factor Source	2040 Activity Forecast	2050 Activity Forecast
Building Energy								
		$MTCO_2e$	875,681					
Electricity		$MTCO_2e$						
	Electricity Sector Totals[2]	kWh	2,451,255,789				3,438,743,803	3,524,986,736
	Residential Electricity	kWh	750,100,740			Housing Units	835,041,246	848,919,576
	Commercial Electricity	kWh	341,400,335			Non-Residential SQFT	547,744,042	563,848,424
	Industrial Electricity[2]	kWh	1,116,789,238			Non-Residential SQFT	1,791,781,052	1,844,461,728
	Agriculture Electrical	kWh	120,030,573			Agricultural Land	120,030,573	120,030,573
	Institutional Electricity	kWh	74,375			Service Population	87,208	89,374
	Transmission & distribution losses	kWh	122,860,528			Service Population	144,059,682	147,637,061
	Electricity - SoCal Edison	kWh	2,390,262,640	573	lbs CO_2/Mwh		3,363,945,349	3,448,636,643
	Residential Electricity	kWh	705,669,564			Housing Units	785,578,737	798,635,004
	Commercial Electricity	kWh	327,700,763			Non-Residential SQFT	525,764,395	541,222,547
	Agriculture Electrical	kWh	120,030,573			Agricultural Land	120,030,573	120,030,573
	Industrial Electricity[2]	kWh	1,116,789,238			Non-Residential SQFT	1,791,781,052	1,844,461,728
	Transmission & distribution losses	kWh	120,072,502			Service Population	140,790,592	144,286,792
	*Subtraction for Wastewater & Water Electricity (in-County energy only)	kWh	-236,542,690					-236,542,690
	Electricity - Bear Valley Electric	kWh	58,950,561	569	lbs CO_2/Mwh		71,727,408	73,194,057
	Residential Electricity	kWh	44,093,676			Housing Units	49,086,791	49,902,610
	Commercial Electricity	kWh	12,087,852			Non-Residential SQFT	19,393,797	19,964,000
	Institutional Electricity	kWh	74,375			Service Population	87,208	89,374
	Transmission & distribution losses	kWh	2,694,658			Service Population	3,159,612	3,238,073
	Electricity - City of Needles Electric	kWh	2,042,588	569	lbs CO_2/Mwh		3,071,046	3,156,036
	Residential Electricity	kWh	337,500			Housing Units	375,718	381,963
	Commercial Electricity	kWh	1,611,720			Non-Residential SQFT	2,585,850	2,661,877
	Transmission & distribution losses	kWh	93,368			Service Population	109,478	112,197
Natural Gas				0.00531	MT/therm			
	Natural Gas Sector Totals	therms	45,007,722				56,292,861	57,494,650
	Residential	therms	31,445,177			Housing Units	35,005,991	35,587,788
	Commercial	therms	9,793,437			Non-Residential SQFT	15,712,629	16,174,600
	Industrial	therms	2,674,068			Non-Residential SQFT	4,290,285	4,416,425
	Water Pumping	therms	169			Agricultural Land	169	169
	Electricity Generation	therms	455,420			Service Population	534,001	547,262
	Other	therms	639,451			Service Population	749,786	768,405
	SoCal Gas	therms	36,602,929				46,261,725	47,260,801
	Residential Natural Gas	therms	25,376,717			Housing Units	28,250,346	28,719,865
	Commercial Natural Gas	therms	8,844,792			Non-Residential SQFT	14,190,619	14,607,842
	Industrial Natural Gas	therms	2,381,420			Non-Residential SQFT	3,820,760	3,933,095
	Southwest Gas	therms	8,404,793				10,031,137	10,233,849
	Residential Natural Gas	therms	6,068,460			Housing Units	6,755,645	6,867,923
	Commercial Natural Gas	therms	948,645			Non-Residential SQFT	1,522,010	1,566,759
	Industrial Natural Gas	therms	292,648			Non-Residential SQFT	469,526	483,330
	Water Pumping	therms	169			Agricultural Land	169	169
	Electricity Generation	therms	455,420			Service Population	534,001	547,262
	Other	therms	639,451			Service Population	749,786	768,405

Transportation								Transportation
On-Road Transportation		$MTCO_2e$	1,188,893					
	Light Duty Vehicles VMT	Annual VMT	2,258,092,288			Fehr & Peers O-D Model	see VMT	see VMT
	Heavy Duty Vehicles VMT	Annual VMT	165,181,629			Fehr & Peers O-D Model	see VMT	see VMT
	On-Road VMT Total (daily to annual = 365)	Daily VMT	6,639,107			Fehr & Peers O-D Model	see VMT	see VMT
Offroad Vehicles and Equipment								
OFFROAD	Construction, Lawn & Garden, Water Craft	$MTCO_2e$	48,442				57,549	58,978
	Diesel	gallons	3,214,151	10.35	$kgCO_2$/gallon	Service Population	3,768,742	3,862,329
	Gasoline	gallons	1,718,962	9.13	$kgCO_2$/gallon	Service Population	2,015,563	2,065,615
	Liquified Petroleum Gas (LPG)	gallons	21,027	5.68	$kgCO_2$/gallon	Service Population	24,655	25,267
Solid Waste/Landfills								
	Total Unincorporated County Disposal	tons	264,024			Service Population	327,464	345,637
						MTCO2e	100,050	105,602
	Total Solid Waste Disposal (Municipal + Community)	$MTCO_2e$	468,140			San Bernardino County Population	605,632	660,150
	Unincorporated Population-Generation Emissions [3]	$MTCO_2e$	80,667			Service Population	548,780	562,408
	2014 Waste Sent to Non-County Owned Landfills	tons	253					
	Mitsubishi Landfill	tons	161					
	California Street Landfill	tons	92					
	Non-County Landfill Emissions	$MTCO_2e$	116					
	2014 County-Owned Landfills Total Disposal	tons	1,532,584					
	Barstow (80% Capture)	Percent	61,934					
	Landers	Percent	23,491					
	Mid-Valley (80% Capture)	Percent	894,583					
	San Timoteo (80% Capture)	Percent	261,283					
	Victorville (80% Capture)	Percent	267,802					
	Apple Valley	Percent	Closed					
	Baker	Percent	Closed					
	Big Bear (80% Capture)	Percent	Closed					
	Colton (80% Capture)	Percent	23,491					
	Hesperia (75% Capture)	Percent	Closed					
	Lenwood-Hinkley	Percent	Closed					
	Lucerne Valley	Percent	Closed					
	Milliken (80% Capture)	Percent	Closed					
	Morongo Valley (80% Capture	Percent	Closed					
	Needles	Percent	Closed					
	Newberry Springs	Percent	Closed					
	Phelan	Percent	Closed					
	Trona Argus	Percent	Closed					
	Twentynine Palms	Percent	Closed					
	Yermo	Percent	Closed					
	Cajon	Percent	Closed					
	Heaps Peak (75% Capture)	Percent	Closed					
	Yucaipa (80% Capture)	Percent	Closed					
	2014 Unincorporated Waste Disposal - Non-County landfills	tons	263,771					
	% Unincorporated Waste Sent to County Owned Landfills	Percent	17.21%					
	Waste-In-Place Emissions (includes incorporated cities)	$MTCO_2e$	468,024					
	Unincorporated Waste-In-Place (excludes non-County landfills)	$MTCO_2e$	80,551					
Water and Wastewater								
Water Consumption		$MTCO_2e$	89,694					
	Electricity (treatment)	kWh	329,448,417	573	lbs CO_2/Mwh			
	Electricity (transmission & distribution losses)	kWh	15,780,579	573	lbs CO_2/Mwh			
	Total Electricity	Kwh	345,228,996	573	lbs CO_2/Mwh			
	Annual Water Use (General Plan)[5]	million gallons	106,857	3,230.76	Kwh/mgallon	General Plan Forecast	107,796	110,473

Wastewater Treatment		$MTCO_2e$	65,335					
	Treatment Electricity	kWh	194,554,167	573	lbs CO_2/Mwh	Service Population	242,976,355	250,169,165
	% of Inventory - Electricity		78%					
	% of Inventory - Fugitive from WWTP		6%					
	% of Inventory - Direct from Septic Tank		16%		10,454			
	Wastewater Treatment[6]	million gallons	6,350	30,638	Kwh/mgallons	Table 5.18-2, Utilities & SS	7,930	8,165
Other								
Refrigerants	Refrigerants	$MTCO_2e$	146,823			Population	170,529	174,558
	2014 Statewide Refrigerant Use[4]	$MTCO_2e$	16,076,000					
	2014 California Population	People	38,567,459					
		MT/person	0.42					
Agriculture								
		$MTCO_2e$	68,752				68,752	68,752
	Agricultural Area in San Bernardino County	acres	60,279					
	Agricultural Area in Unincorporated County	acres	38,785			Agricultural Land	same	same
	Percent in Unincorporated County	-	64%					
Residential Fuel Use								
		$MTCO_2e$	1,099				2,002	2,034
	Residential Fuel Use - Kerosene	MMBtu	197	75.21	$kgCO_2$/MMBtu	Housing Units	219	222
	Residential Fuel Use - LPG	MMBtu	11,209	61.74	$kgCO_2$/MMBtu	Housing Units	12,479	12,686
	Residential Fuel Use - Wood	MMBtu	48,468	5.37	$kgCO_2$/MMBtu	See Hearth Emissions		
	Number of houses using wood (sole source of heat)	units	1,695					
TOTAL COMMUNITY		MTCO2e	2,952,859					
TOTAL COMMUNITY without incorporated cities solid waste		MTCO2e	2,565,386					
Stationary Sources								
	Large Source Emissions	$MTCO_2e$	2,208,124					
	Cement Production Sources	$MTCO_2e$	2,308,909					

Unincorporated San Bernardino County Community GHG Emissions Forecast

Category	GHG Emissions ($MtCO_2e$/Year)									
	Existing		2040		Net Change		2050		Net Change	Percent Change
Building Energy	875,681	34%	921,733	40%	46,052	5%	943,734	41%	68,053	8%
On-Road Transportation	1,188,893	46%	813,311	35%	-375,582	-32%	794,748	34%	-394,145	-33%
Off-Road Vehicles and Equipment	48,442	2%	57,549	3%	9,107	19%	58,978	3%	10,536	22%
Solid Waste/Landfills[2]	80,667	3%	100,050	4%	19,383	24%	105,602	5%	24,935	31%
Water Use	89,694	3%	90,830	4%	1,136	1%	93,086	4%	3,392	4%
Wastewater Treatment	65,335	3%	74,202	3%	8,867	14%	76,134	3%	10,799	17%
Refrigerants	146,823	6%	170,529	7%	23,706	16%	174,558	8%	27,735	19%
Agriculture	68,752	3%	68,752	3%	0	0%	68,752	3%	0	0%
Residential Fuel Use	1,099	0%	2,002	0%	903	82%	2,034	0%	935	85%
Total Community Emissions	2,565,386	100%	2,298,956	100%	-266,430	-10%	2,317,626	100%	-247,760	-10%
Service Population (SP)	382,488		422,860		40,372	11%	433,361		50,873	13%
$MTCO_2e$/SP	6.7		5.4		-1.3	-19%	5.3		-1.4	-20%
SP 2040 Efficiency Target	—		2.7		—		1.3		—	
Achieves 2040 Plan-Level Threshold?	—		no		—		no		—	

Notes: Emissions may not total to 100 percent due to rounding. Based on GWPs in the IPCC Fifth Assessment Report (AR5).

[X] For the community inventory impact analysis in the EIR, the solid waste sector excludes Municipal emissions associated with CH4 emissions released directly from County-owned landfills from waste disposed of by incorporated cities. Emissions are based on only d waste disposal from unincorporated areas sent to County and non-County landfills.

The emissions inventory and forecast is based on activity data for the unincorporated County. This emissions inventory methodology identifies GHG emissions produced within a jurisdiction and captures direct and indirect emissions generated by land uses in a community. The activity data methodology allows a direct comparison between a community's GHG emissions and that identified by CARB in the AB 32 and SB 32 inventory and forecast prepared for the scoping plan. Unlike a "consumption-based" GHG emissions inventory, an activity-based emissions inventory does not capture lifecycle emissions associated with consumptions of goods. While a consumption-based emissions inventory approach may document GHG emissions associated with the final demand (regardless of where the were generated), a consumption-based emissions inventory excludes emissions associated with

Unincorporated San Bernardino County Community Criteria Air Pollutant Emissions Forecast

EXISTING

Phase	Existing (2016) Criteria Air Pollutant Emissions (pounds/day)					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
SoCAB – Valley and Mountain Regions						
Transportation[1]	496	4,189	12,167	30	299	248
Energy[2]	84	460	196	3	37	37
Offroad Equipment[3]	164	1,082	3,720	1	62	55
Consumer Products[4]	3,738					
Hearth[4]	5,191	84	6,214	11	866	866
Subtotal SoCAB	9,672	5,814	22,296	45	1,264	1,206
MDAB – East Desert and North Desert						
Transportation[1]	646	5,327	14,121	34	414	260
Energy[2]	49	426	220	3	34	34
Offroad Equipment[3]	42	310	851	0	17	15
Consumer Products[4]	2,519					
Hearth[4]	3,264	55	3,908	7	545	545
Subtotal MDAB	6,521	6,118	19,099	43	1,009	854
Total Unincorporated County						
Transportation[1]	1,141	9,517	26,287	64	713	509
Energy[2]	133	886	415	6	71	71
Offroad Equipment[3]	206	1,391	4,571	2	79	70
Consumer Products[4]	6,257					
Hearth[4]	8,456	139	10,122	18	1,410	1,410
Total	16,193	11,932	41,395	89	2,274	2,060

Notes: Emissions generated by land uses in the Mountain Region is proportioned to the SoCAB portion of the County.

[1] Source: Fehr & Peers; EMFAC2017, Version 1.0.2.

[2] Source: SoCalGas and Southwest Gas; CalEEMod User's Guide

[3] Source: OFFROAD 2017

[2] Source: CalEEMod User's Guide

Unincorporated San Bernardino County Community Criteria Air Pollutant Emissions Forecast

EXISTING WITH 2040 EMISSION RATES

Phase	Existing (2016) Criteria Air Pollutant Emissions (pounds/day)					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
SoCAB – Valley and Mountain Regions						
Transportation[1]	82	1,157	3,519	19	258	208
Energy[2]	84	460	196	3	37	37
Area[3]	164	1,082	3,720	1	62	55
Consumer Products[4]	3,738					
Hearth[4]	5,191	84	6,214	11	866	866
Subtotal SoCAB	9,259	2,782	13,648	34	1,223	1,165
MDAB – East Desert and North Desert						
Transportation[1]	139	1,346	3,573	20	352	199
Energy[2]	49	426	220	3	34	34
Area[3]	42	310	851	0	17	15
Consumer Products[4]	2,519					
Hearth[4]	3,264	55	3,908	7	545	545
Subtotal MDAB	6,014	2,136	8,551	30	947	793
Total Unincorporated County						
Transportation[1]	221	2,503	7,091	39	609	407
Energy[2]	133	886	415	6	71	71
Area[3]	206	1,391	4,571	2	79	70
Consumer Products[4]	6,257					
Hearth[4]	8,456	139	10,122	18	1,410	1,410
Total	15,273	4,919	22,199	64	2,170	1,958

Notes: Emissions generated by land uses in the Mountain Region is proportioned to the SoCAB portion of the County.

[1] Source: Fehr & Peers; EMFAC2017, Version 1.0.2.

[2] Source: SoCalGas and Southwest Gas; CalEEMod User's Guide

[3] Source: OFFROAD 2017

[2] Source: CalEEMod User's Guide

Unincorporated San Bernardino County Community Criteria Air Pollutant Emissions Forecast

2040 Project

Phase	Project (2040) Criteria Air Pollutant Emissions (pounds/day)					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
SoCAB – Valley and Mountain Regions						
Transportation[1]	98	1,390	4,226	22	318	246
Energy[2]	112	983	614	6	77	77
Area[3]	181	1,172	4,216	1	67	59
Consumer Products[4]	4,593					
Hearth[4]	5,282	87	6,328	11	882	882
Subtotal SoCAB	10,266	3,631	15,384	41	1,345	1,264
MDAB – East Desert and North Desert						
Transportation[1]	167	1,613	4,283	25	433	234
Energy[2]	71	610	301	4	49	49
Area[3]	43	315	872	0	17	15
Consumer Products[4]	2,890					
Hearth[4]	3,646	61	4,365	8	608	608
Subtotal MDAB	6,816	2,599	9,820	36	1,107	906
Total Unincorporated County						
Transportation[1]	265	3,003	8,509	47	751	480
Energy[2]	182	1,593	915	10	126	126
Area[3]	224	1,487	5,087	2	84	74
Consumer Products[4]	7,482					
Hearth[4]	8,928	148	10,692	19	1,490	1,490
Total	17,082	6,230	25,203	77	2,451	2,170

Notes: Emissions generated by land uses in the Mountain Region is proportioned to the SoCAB portion of the County.

[1] Source: Fehr & Peers; EMFAC2017, Version 1.0.2.

[2] Source: SoCalGas and Southwest Gas; CalEEMod User's Guide

[3] Source: OFFROAD 2017

[2] Source: CalEEMod User's Guide

Unincorporated San Bernardino County Community Criteria Air Pollutant Emissions Forecast

NET CHANGE (2040 Emission Rates)

Phase	Net Change (2040-2016) Criteria Air Pollutant Emissions (pounds/day)					
	VOC	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
SoCAB – Valley and Mountain Regions						
Transportation[1]	16	233	707	4	60	38
Energy[2]	28	523	418	3	40	40
Area[3]	17	90	496	0	5	4
Consumer Products[4]	855					
Hearth[4]	90	3	114	0	16	16
Subtotal SoCAB	1,007	849	1,736	7	122	99
SCAQMD Threshold	55	55	150	550	150	55
Exceeds Threshold	Yes	Yes	Yes	No	No	Yes
MDAB – East Desert and North Desert						
Transportation[1]	28	268	710	4	81	35
Energy[2]	21	183	81	1	15	15
Area[3]	1	5	20	0	0	0
Consumer Products[4]	371					
Hearth[4]	382	6	457	1	64	64
Subtotal MDAB	802	463	1,269	6	160	114
MDAQMD Threshold	137	137	548	137	82	65
Exceeds Threshold	Yes	Yes	Yes	No	Yes	Yes
Total Unincorporated County						
Transportation[1]	44	500	1,418	8	141	73
Energy[2]	49	707	500	4	55	55
Area[3]	18	95	517	0	5	5
Consumer Products[4]	1,226					
Hearth[4]	472	10	571	1	80	80
Total	1,809	1,312	3,005	13	281	212

Notes: Emissions generated by land uses in the Mountain Region is proportioned to the SoCAB portion of the County.

[1] Source: Fehr & Peers; EMFAC2017, Version 1.0.2.

[2] Source: SoCalGas and Southwest Gas; CalEEMod User's Guide

[3] Source: OFFROAD 2017

[2] Source: CalEEMod User's Guide

CWP - SBTAM Model VMT

Source: F&P May 14, 2018

Note: VMT in the model cannot be disaggregated lower than the TAZ Level. VMT for the County is adjusted based on the VMT/SP for the different regions from the SBTAM provided by F&P.

Existing (Rounded to the nearest thousand)										
		I-I Daily VMT	I-X Daily VMT	X-I Daily VMT	Total Daily VMT	Total with RTAC Daily VMT (50% ixxi)	Population	Employment	Service Population	VMT/SP with RTAC
North Desert	Incorporated	2,552,000	3,895,000	3,894,000	10,339,000	6,445,000	334,000	74,000	407,000	15.8
	Unincorporated	813,000	2,678,000	2,716,000	6,207,000	3,510,000	110,000	17,000	126,000	27.9
East Desert	Incorporated	182,000	632,000	648,000	1,461,000	821,000	38,000	9,000	47,000	17.5
	Unincorporated	193,000	756,000	783,000	1,731,000	962,000	36,000	6,000	41,000	23.5
Mountain	Incorporated	21,000	163,000	166,000	349,000	185,000	6,000	4,000	9,000	20.6
	Unincorporated	223,000	1,267,000	1,258,000	2,747,000	1,485,000	53,000	14,000	67,000	22.2
Valley	Incorporated	11,479,000	18,682,000	18,490,000	48,650,000	30,064,000	1,382,000	513,000	1,895,000	15.9
	Unincorporated	75,000	2,073,000	2,066,000	4,214,000	2,144,000	114,000	26,000	139,000	15.4
TOTAL	Unincorporated	1,304,000	6,774,000	6,823,000	14,899,000	8,101,000	313,000	63,000	373,000	21.7
Combined	Regional Average	16,842,000	36,920,000	36,844,000	90,597,000	53,717,000	2,386,000	726,000	3,104,000	17.3

Proposed GP (2040) (Rounded to the nearest thousand)										
		I-I Daily VMT	I-X Daily VMT	X-I Daily VMT	Total Daily VMT	Total with RTAC Daily VMT (50% ixxi)	Population	Employment	Service Population	VMT/SP with RTAC
North Desert	Incorporated	3,971,000	6,480,000	6,526,000	16,975,000	10,473,000	504,000	129,000	633,000	16.5
	Unincorporated	969,000	3,902,000	4,070,000	8,941,000	4,955,000	149,000	26,000	174,000	28.5
East Desert	Incorporated	273,000	830,000	800,000	1,902,000	1,087,000	51,000	17,000	68,000	16.0
	Unincorporated	228,000	865,000	897,000	1,988,000	1,108,000	43,000	6,000	49,000	22.6
Mountain	Incorporated	28,000	231,000	241,000	500,000	264,000	7,000	6,000	13,000	20.3
	Unincorporated	258,000	1,788,000	1,822,000	3,867,000	2,062,000	71,000	15,000	86,000	24.0
Valley	Incorporated	16,411,000	28,511,000	28,105,000	73,025,000	44,718,000	1,764,000	775,000	2,538,000	17.6
	Unincorporated	106,000	3,038,000	3,023,000	6,166,000	3,136,000	153,000	43,000	195,000	16.1
TOTAL	Unincorporated	1,561,000	9,593,000	9,812,000	20,962,000	11,261,000	416,000	90,000	504,000	22.3
Combined		23,805,000	55,238,000	55,296,000	134,326,000	79,064,000	3,158,000	1,107,000	4,260,000	18.6

CWP - SBTAM Model VMT

Source: F&P May 14, 2018

Note: VMT in the model cannot be disaggregated lower than the TAZ Level. VMT for the County is adjusted based on the VMT/SP for the different regions from the SBTAM provided by F&P.

Current GP (2040) (Rounded to the nearest thousand)										
		I-I Daily VMT	I-X Daily VMT	X-I Daily VMT	Total Daily VMT	Total with RTAC Daily VMT (50% ixxi)	Population	Employment	Service Population	VMT/SP with RTAC
North Desert	Incorporated	4,187,000	6,786,000	6,852,000	17,823,000	11,005,000	504,000	129,000	633,000	17.4
	Unincorporated	1,017,000	4,157,000	4,332,000	9,505,000	5,261,000	150,000	39,000	188,000	28.0
East Desert	Incorporated	292,000	875,000	833,000	1,999,000	1,145,000	51,000	17,000	68,000	16.8
	Unincorporated	273,000	1,006,000	1,032,000	2,310,000	1,292,000	47,000	7,000	54,000	23.9
Mountain	Incorporated	27,000	227,000	236,000	489,000	258,000	7,000	6,000	13,000	19.8
	Unincorporated	267,000	1,778,000	1,809,000	3,852,000	2,059,000	72,000	16,000	87,000	23.7
Valley	Incorporated	16,719,000	30,069,000	29,477,000	76,264,000	46,491,000	1,763,000	774,000	2,537,000	18.3
	Unincorporated	111,000	3,306,000	3,266,000	6,682,000	3,397,000	134,000	44,000	177,000	19.2
TOTAL	Unincorporated	1,668,000	10,247,000	10,439,000	22,349,000	12,009,000	403,000	106,000	506,000	23.7
Combined		24,561,000	58,451,000	58,276,000	141,273,000	82,917,000	3,131,000	1,138,000	4,263,000	19.5

Notes: Total may not add to 100% due to rounding.

1. Data aggregated to TAZ level and may be slightly different than control total at the parcel level.

2. VMT information was calculated using SBTAM model and select zone trip tracking. As such, the VMT numbers are slightly different than those presented in the SB 743 assessment since the methodologies are slightly different.

3. Population and employment, includes geographic constraints, community input, infrastructure capacity, market demand, environmental hazards

CWP - SBTAM Model VMT

Source: F&P May 14, 2018

Note: VMT in the model cannot be disaggregated lower than the TAZ Level. VMT for the County is adjusted based on the VMT/SP for the different regions from the SBTAM provided by F&P.

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)										
		SBTAM SP	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	SBTAM SP	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Change from Existing (CEQA Impact)
		Existing				General Plan 2040				
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000	195,000	153,308	3,136,000	2,466,000	485,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000	86,000	56,621	2,062,000	1,358,000	155,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000	174,000	120,286	4,955,000	3,425,000	661,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000	49,000	27,162	1,108,000	614,000	9,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000	504,000	357,377	11,261,000	7,863,000	1,310,000
				Percent Adjustment	-19%			Percent Adjustment	-30%	-83%

Comparison to 2014 ICF Activity Data					
Population	Employment	Service Population	ICF Activity Data	VMT/SP	Compare VMT/SP
Existing	Existing	Existing	Existing	Existing	
325,064	57,425	382,488	6,639,107	17.4	-4.4

Modeling of vehicle miles traveled (VMT) provided by Fehr & Peers is based on the San Bernardino Traffic Analysis Model (SBTAM), which is a regional travel demand forecasting model. VMT from passenger vehicles and trucks that have an origin or destination in the unincorporated County of San Bernardino was provided by Fehr & Peers using a transportation origin-destination methodology. Accounting of VMT is based on the recommendations of CARB's Regional Targets Advisory Committee (RTAC) created under Senate Bill 375 (SB 375). For accounting purposes, there are three types of trips:

» Vehicle trips that originated and terminated within the unincorporated County of San Bernardino (Internal-Internal, I-I). Using the accounting rules established by RTAC, 100 percent of the length of these trips, and their emissions, are attributed to the

» Vehicle trips that either originated or terminated (but not both) within the unincorporated County of San Bernardino (Internal-External or External-Internal, I-X and X-I). Using the accounting rules established by RTAC, 50 percent of the trip length for

» Vehicle trips that neither originated nor terminated within the unincorporated County of San Bernardino. These trips are commonly called pass-through trips (External-External, X-X). Using the accounting rules established by RTAC, these trips are not

To calculate annual VMT, daily VMT was multiplied by 365 days per year.

County of San Bernardino — TRANSPORTATION SECTOR

CRITERIA AIR POLLUTANTS

	lbs/day					
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Year 2016						
SoCAB						
Valley Region	308	2,602	7,526	19	275	138
Mountain Region	188	1,587	4,641	11	25	111
Subtotal SoCAB	496	4,189	12,167	30	299	248
MDAB						
North Desert Region	530	4,371	11,585	28	400	204
East Desert Region	116	957	2,536	6	14	56
Subtotal MDAB	646	5,327	14,121	34	414	260
Total	**1,141**	**9,517**	**26,287**	**64**	**713**	**509**
Year 2040						
SoCAB						
Valley Region	64	896	2,725	14	289	120
Mountain Region	35	494	1,501	8	28	126
Subtotal SoCAB	98	1,390	4,226	22	318	246
MDAB						
North Desert Region	141	1,368	3,632	21	419	178
East Desert Region	25	245	651	4	14	56
Subtotal MDAB	167	1,613	4,283	25	433	234
Total	**265**	**3,003**	**8,509**	**47**	**751**	**480**
Baseline in 2040						
SoCAB						
Valley Region	51	720	2,189	12	233	96
Mountain Region	31	437	1,329	7	25	112
Subtotal SoCAB	82	1,157	3,519	19	258	208
MDAB						
North Desert Region	114	1,104	2,931	17	338	143
East Desert Region	25	242	642	4	14	56
Subtotal MDAB	139	1,346	3,573	20	352	199
Total	**221**	**2,503**	**7,091**	**39**	**609**	**407**

Annual Criteria Air Pollutant Emissions						
	Tons/year					
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Year 2016	208	1,737	4,797	12	130	93
Year 2040	48	548	1,553	9	137	88
Baseline in 2040	40	457	1,294	7	111	74

Source: EMFAC2017, Version 1.0.2.

GHG EMISSIONS

	MTons/year			
	N_2O	CO_2	CH_4	CO_2e
Year 2016				
Valley Region	19	319,151	11	324,603
Mountain Region	12	193,810	6	197,122
North Desert Region	33	466,837	14	476,068
East Desert Region	7	102,184	3	104,205
Total	**72**	**1,081,981**	**35**	**1,101,998**
Year 2040				
Valley Region	14	246,356	6	250,176
Mountain Region	8	135,666	3	137,769
North Desert Region	25	354,079	5	360,787
East Desert Region	4	63,476	1	64,579
Total	**50**	**799,577**	**15**	**813,311**
Year 2050				
Valley Region	14	240,594	5	244,365
Mountain Region	8	132,493	3	134,569
North Desert Region	23	346,468	5	352,602
East Desert Region	4	62,111	1	63,211
Total	**48**	**781,666**	**14**	**794,748**
Source: EMFAC2014, Version 1.0.7.				
Note: MTons = metric tons; CO_2e = carbon dioxide-equivalent.				

Source: EMFAC2017, 1.0.2. Based on the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) Global Warming Potentials (GWPs)

Note: MTons = metric tons; CO_2e = carbon dioxide-equivalent. Includes Pavley + California Advanced Clean Car Standards, the Low Carbon Fuel Standard (LCFS), on-road diesel fleet rules, and the Smartway/Phase I Heavy Duty Vehicle Greenhouse Gas Regulation.

Water and Wastewater

Water/Wastewater Demand Summary

	2016	2040	2050
		mgallons/yr	
Water Use	106,857	107,796	110,473
Wastewater Treatment	6,350	7,930	8,165

Fugitive Emissions - Process Emissions from WWTP with Nitrification/Denitrification

CH_4 - Microorganisms can biodegrade soluble organic material in wastewater under aerobic (presence of oxygen) or anaerobic (absence of oxygen) conditions. Anaerobic conditions result in the production of CH_4.

N_2O - Treatment of domestic wastewater during both nitrification and denitrification of the nitrogen present leads to the formation of N_2O, usually in the form of urea, ammonia, and proteins. These compounds are converted to nitrate through the aerobic process of nitrification. Denitrification occurs under anoxic conditions (without free oxygen), and involves the biological conversion of nitrate into dinitrogen. N_2O can be an intermediate product of both processes, but more often is associated with denitrification.

Fugitive Emissions - Process Emissions from WWTP with Nitrification/Denitrification for combustion of biogas.

Anaerobic digesters produce methane-rich biogas which is typically combusted on-site. In some cases the biogas is combusted simply for the purpose of converting methane to CO_2, which has a lower global warming potential than methane. In many cases, a cogeneration system is used to harvest the heat from combustion and use it to generate electricity for on-site energy needs. In both cases, inherent inefficiencies in the system result in incomplete combustion of the biogas, which results in remaining methane emissions. Excludes biogenic emissions from combustion of biogas.

LGOP Version 1.1. Equation 10.1.

CH_4 = Wastewater x Digester Gas x FCH_4 x ρ_{CH4} x (1-DE) x 0.0283 x 10^-3 x 10^-3

	2016	2040	2050	
net increase wastewater (gallons)=	6,350,046,125	1,580,450,000	1,815,215,835	

Digester gas	0.01	ft^3 biogas/gallon wastewater
FCH_4	0.65	fraction of CH4 in biogas
ρ_{CH4}	662.00	g/m^3; density of CH_4 at standard conditions
DE	0.99	CH4 destruction efficiency
0.0283 =	0.0283	m^3/ft^3; conversion factor
10^-3 =	1.00E-03	MT/kg conversion factor
10^-3 =	1.00E-03	kg/g conversion factor

	2016	2040	2050	
	MTons			MTons
CH_4 =	7.73	1.92	2.21	
CO_2e =	217	54	62	

Source: California Air Resources Board (CARB). 2010, May. Local Government Operations Protocol (LGOP), Version 1.1. The LGOP protocol provides default values for all the terms except the digester gas, which is assumed to be 0.1 cubic feet of biogas per gallon of wastewater effluent based on USEPA methodology outlined in the CalEEMod program manual. South Coast Air Quality Management District (SCAQMD). 2017. California Emissions Estimator Model (CalEEMod), Version 2016.3.1. User's Manual. USEPA. 2008. Page 8-12. USEPA cites Metcalf & Eddy, Inc., 1991, "Wastewater Engineering: Treatment Disposal, and Reuse," 3rd Ed. McGraw Hill Publishing.

Water and Wastewater

Buildout Fugitive Emissions - Process Emissions from WWTP with Nitrification/Denitrification from discharge into aquatic environments

LGOP Version 1.1. Equation 10.9.

N_2O = Wastewater x 10^-6 x Nload x 44/28 x EF effluent x 10^3

	2016	2040	2040
Net Increase in wastewater (Liters)=	24,034,924,582	5,982,003,250	6,870,591,937

10^-6 =	1.00E-06	conversion factor; kg/mg
N Load	26.00	mg/L of wastewater
44/28	1.57	Ratio of molecular weights for N_2O and N_2
EF effluent	0.005	kg/N_2O/kg N
10^-3 =	1.00E-03	conversion factor: MTons/kg

	2016	2040	2050
	MTons		
N_2O	4.91	1.22	1.403563781
CO_2e =	1,301	324	372

Source: California Air Resources Board (CARB). 2010, May. Local Government Operations Protocol (LGOP), Version 1.1. The LGOP protocol provides default values for all the terms except the Nitrogen Load, which is assumed to be 26 mg of N per Liter of wastewater effluent based on USEPA methodology outlined in the CalEEMod program manual. South Coast Air Quality Management District (SCAQMD). 2016. California Emissions Estimator Model (CalEEMod), Version 2016.3.1. Appendix A. USEPA 2013. California Statewide average. USEPA Database at http://cfpub.epa.gov/dmr/ez_search.cfm.

Total Fugitive Emissions - Process Emissions from WWTP with Nitrification/Denitrification

	2016	2040	2050
CO_2e =	3,920	4,298	4,354

2016 Fugitive Emissions based on ICF 2017

Septic Tanks

	2016	2040	2050
CO_2e =	10,454	10,454	10,454

Wastewater Modeling assumes no increase in Septic Tanks from Existing

Source: ICF 2017

Water and Wastewater

Energy for Water Conveyance, Treatment, Distribution, and Wastewater Treatment

Water	Wastwater
kWhr/million gallons	
3,231	30,638

Source: ICF 2017

	WCI -WECC Region Intensity factor			CO_2e
	CO_2 MTons/MWH[1]	CH_4 MTons/MWH[2]	N_2O MTons/MWH[2]	MTons/MWh
SCE	0.260	0.000015	0.000002	0.261
Bear Valley and City of Needles	0.258	0.000015	0.000002	0.259

[1] ICF 2017

[2] United State Environmental Protection Agency. 2017, February 27. eGRID2014v2 Annual Output Emission Rates, WECC California Region. https://www.epa.gov/sites/production/files/2017-02/documents/egrid2014_ghgoutputrates_v2.pdf (CH_4 = 33.1 lbs/GWH & N_2O = 4.0 lbs/GWH)

ABAU Carbon Intensity for SCE Energy

	2016	2030	CO_2e
Assumed Percent Renewable[1]	28.0%	50%	MTons/MWh
CO_2e MTons/Mwh without Renewable	0.362		0.181

[1] 2016 assumed RPS based on the SCE's 2016 RPS. Southern California Edison. 2016. 2016 Corporate Responsibility & Sustainability. https://www.edison.com/content/dam/eix/documents/investors/corporate_responsibility/2016-eix-corporate-responsibility-and-sustainability-report.pdf

GHG Emissions from Energy Associated with Water/Wastewater

	2016	2040	2050
Energy Associated with Water Use	**MwH/Year**		
Water	329,448	348,263	356,911
Wastewater	194,554	242,976	250,169
Total Water/Wastewater	524,003	591,239	607,080

2016 Energy Data based on ICF 2017

Wastewater Modeling assumes no increase in septic tanks from the Baseline Inventory.

	2016	2040	2050
GHG Emissions from Energy Associated with Water Use/Wastewater Generation	**$MTCO_2e$/Year**		
Water	89,694	90,830	93,086
Wastewater	50,961	63,371	65,247
Total Water/Wastewater	140,655	154,201	158,332

2016 GHGs from Energy based on ICF 2017

Total GHGs

	2016	2040	2050
GHG Emissions from Water/Wastewater Use	**$MTCO_2e$/Year**		
Water	89,694	90,830	93,086
Wastewater	62,933	74,202	76,134
Total Water/Wastewater	152,627	165,032	169,220

General Conversion Factors

lbs to kg	0.4536
kg to MTons	0.001
Mmbtu to Therm	0.1
Therms to kwh	29.30711111
kilowatt hrs to megawatt hrs	0.001
lbs to Tons	2000
Tons to MTon	0.9071847

Source: California Air Resources Board (CARB). 2010. Local Government Operations Protocol. Version 1.1. Appendix F, Standard Conversion Factors

General Conversion Factors

	AR5GWP
CO_2	1
CH_4	28
N_2O	265

Source: Intergovernmental Panel on Climate Change (IPCC). 2013. Fifth Assessment Report: Climate Change 2013 - a Summary for Policy Makers.

gallons to Liters	3.785
killowatt hrs to megawatt hrs	0.001
gallons to AF	325851.4290

Table 5.18-10 Estimated Net Increase in Solid Waste Generation by Countywide Plan Buildout,

pounds per day

Region/Area	Residential			Nonresidential			Total
	Net Increase, Residential Units	Generation per Unit[1]	Total Generation	Net Increase, Nonresidential Square Feet	Generation per square foot[1]	Total Generation	
Valley Region							
Bloomington CPA	6,169	10	61,690	3,756,069	0.01	37,561	99,251
Fontana SOI (west)	225	10	2,250	8,724,613	0.01	87,246	89,496
East Valley Area Plan	977	10	9,770	4,129,593	0.01	41,296	51,066
Balance Unincorporated Areas	607	10	6,070	1,777,173	0.01	17,772	23,842
Mountain Region							
Unincorporated Areas	702	10	7,020	162,356	0.01	1,624	8,644
North Desert Region							
Apple Valley SOI	4,841	10	48,410	613,380	0.01	6,134	54,544
Balance Unincorporated Areas	1,440	10	14,400	169,667	0.01	1,697	16,180
East Desert Region							
Unincorporated Areas	394	10	3,940	65,050	0.01	651	4,591
						lbs/day	347,614
						tons/yr	63,440

Energy

Natural Gas Emission Factors

Natural Gas	CO_2e
	MT/Therm
All Years	**0.00531**

ICF 2017

	WCI -WECC Region Intensity factor			CO_2e
	CO_2 MTons/MWH[1]	CH_4 MTons/MWH[2]	N_2O MTons/MWH[2]	MTons/MWh
SCE	0.260	0.000015	0.000002	0.261
Bear Valley and City of Needles	0.258	0.000015	0.000002	0.259

[1] ICF 2017

[2] United State Environmental Protection Agency. 2017, February 27. eGRID2014v2 Annual Output Emission Rates, WECC California Region. https://www.epa.gov/sites/production/files/2017-02/documents/egrid2014_ghgoutputrates_v2.pdf (CH_4 = 33.1 lbs/GWH & N_2O = 4.0 lbs/GWH)

ABAU Carbon Intensity for SCE Energy

	2016	2030	CO_2e
Assumed Percent Renewable[1]	28.0%	50%	MTons/MWh
CO_2e MTons/Mwh without Renewable	0.362		0.181

[1] 2016 assumed RPS based on the SCE's 2016 RPS. Southern California Edison. 2016. 2016 Corporate Responsibility & Sustainability. https://www.edison.com/content/dam/eix/documents/investors/corporate_responsibility/2016-eix-corporate-responsibility-and-sustainability-report.pdf

GHG Emissions from Energy Use

	2016	2040	2050
Electricity	**Therms**		
SCE	2,390,262,640	3,363,945,349	3,448,636,643
Bear Valley + Needles	60,993,148	74,798,454	76,350,093
Total	2,451,255,789	3,438,743,803	3,524,986,736

	2016	2040	2050
Electricity	**$MTCO_2e$/Year**		
SCE	621,249	609,270	624,609
Bear Valley + Needles	15,742	13,547	13,828
Total	636,991	622,818	638,438

	2016	2040	2050
Natural Gas	**Therms**		
Total	45,007,722	56,292,861	57,494,650

	2016	2040	2050
Natural Gas	**$MTCO_2e$/Year**		
Total	238,991	298,915	305,297

Summary	2016	2040	2050
Total	875,681	921,733	943,734

[1] Total GHGs for 2016 based on ICF 2017 (Minor differences due to rounding)

General Conversion Factors

lbs to kg	0.4536
kg to MTons	0.001
Mmbtu to Therm	0.1
Therms to kwh	29.30711111
kilowatt hrs to megawatt hrs	0.001
lbs to Tons	2000
Tons to MTon	0.9071847

Source: California Air Resources Board (CARB). 2010. Local Government Operations Protocol. Version 1.1. Appendix F, Standard Conversion Factors

	AR5
CO_2	1
CH_4	28
N_2O	265

Source: Intergovernmental Panel on Climate Change (IPCC). 2013. Fifth Assessment Report: Climate Change 2013 - a Summary for Policy Makers.

Criteria Air Pollutants from Natural Gas

Rate	lbs/MBTU					
Natural Gas	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Residential	0.01078431	0.09215686	0.03921569	0.00058824	0.00745098	0.00745098
Non-Residential	0.01078431	0.09803922	0.08235294	0.00058824	0.00745098	0.00745098
Source: CalEEMod Version 2016.2.2 (October 2017)						

Valley and Mountain	Existing	2040	2050
Residential	18,201,630	20,214,440	20,214,440
Non-Residential	10,140,166	17,588,271	17,954,872
Total	28,341,796	37,802,711	38,169,313
North Desert and East Desert	Existing	2040	2050
Residential	13,243,547	14,791,551	15,373,348
Non-Residential	3,422,379	3,698,600	3,951,989
Total	16,665,926	18,490,150	19,325,337
TOTAL SoCAB + MDAB	45,007,722	56,292,861	57,494,650

Assumptions - SoCAB and MDAB natural gas use proportioned based on housing units and non-residential square feet in the Valley Region and Mountain Region (SoCAB) and the North Desert Region and East Desert Region (MDAB)

Natural Gas	2016 lbs/day					
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
SoCAB (Valley + Mountain)						
Residential	54	460	196	3	37	37
Nonresidential	30	0	0	0	0	0
Total SoCAB	84	460	196	3	37	37
MDAB (North Desert and East Desert)						
Residential	39	334	142	2	27	27
Nonresidential	10	92	77	1	7	7
Total MDAB	49	426	220	3	34	34
Total	133	886	415	6	71	71

Natural Gas	Project 2040 lbs/day					
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
SoCAB (Valley + Mountain)						
Residential	60	510	217	3	41	41
Nonresidential	52	472	397	3	36	36
Total SoCAB	112	983	614	6	77	77
MDAB (North Desert and East Desert)						
Residential	60	510	217	3	41	41
Nonresidential	11	99	83	1	8	8
Total MDAB	71	610	301	4	49	49
Total	182	1593	915	10	126	126
Increase from Baseline	49	707	500	4	55	55

General Conversion Factors	
Mmbtu to Therm	0.1
lbs to Tons	2000
Tons to MTon	0.9071847

Source: California Air Resources Board (CARB). 2010. Local Government Operations Protocol. Version 1.1. Appendix F, Standard Conversion Factors

Area Sources - Consumer Products

Source: CalEEMod Users Guide. Version 2016.3.2

Residential and Non-Residential Consumer Product Use[a]

Emissions = EF x Building Area

Non-SCAQMD EF = 2.14E-05 lbs/sqft/day

Sources/Notes:

a. California Emissions Estimator Model, Version 2016.3.2, Users Guide. Appendix A.

AVERAGE HOUSING SQFT ASSUMPTIONS

Year Structure was Built	Percent of Housing Stock [a]	Average Square Feet of New Single Family Homes[b]	Average Square Feet (Weighted)
2010 or Later	1.5%	2,467	37
2000 to 2009	15.5%	2,404	373
1980 to 1999	37.0%	1,968	728
1979 or earlier	46.0%	1,699	782
			1,919

Sources/Notes:

a. United States Cenus Bureau, American FactFinder, San Bernardino County, California, Physical Housing Characteristics for Occupied Housing Units, 2016 American Community Survey 5-Year Estimates, Year structure built. https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

b. United States Census Bureau, Characteristics of New Housing, Characteristics of New Single-Family Houses Completed, Median and Average Square Feet by Location. Obtained from http://www.census.gov/construction/chars/

	2016	2040
	CEQA Baseline	**Proposed Project**
Valley and Mountain		
Non-Residential SQFT	23,995,584	42,545,388
Housing Units	78,495	87,175
Residential SQFT	150,655,934	172,070,094
lbs VOC per day	3,738	4,593
North Desert and East Desert		
Non-Residential SQFT	8,098,681	8,946,778
Housing Units	57,113	63,789
Residential SQFT	109,617,601	126,086,710
lbs VOC per day	2,519	2,890
TOTAL	6,257	7,482

Source

1 New housing units constructed post-2014 assumed to be 2,467 square feet (based on Source 2).

Hearth Use for Residential Homes

Source: CalEEMod 2016.3.2.2 User's Guide and 2018 US Energy Information Administration. Residential Energy Consumption Survey.

WOOD STOVE AND FIREPLACE USAGE FACTORS

	Wood Hearth %	Corrected Wood Hearth %	Natural Gas %	Corrected Natural Gas %	No Hearth %	Annual Wood mass Fireplace (kg)	Corrected Annual Wood mass Fireplace (kg)	Corrected Wood Stove Catalytic %	Corrected Wood Stove Non Catalytic %	Annual Wood Stove Mass (kg)	Corrected Annual Wood Stove Mass (kg)
Valley Region	5%	10%	85%	85%	10%	1019.2	16	1%	1%	99.6	16
Mountain Region	35%	10%	55%	85%	10%	3078.4	1633	1%	1%	3019.2	1633
North Desert	35%	10%	55%	85%	10%	3078.4	816.5	1%	1%	3019.2	816.5
East Desert	35%	10%	55%	85%	10%	3078.4	816.5	1%	1%	3019.2	816.5

Fireplaces and stoves in CalEEMod are based on 82 days/365 days per year (i.e., everyday during the Winter Season). Corrected modeling assumes an average of 4 days per year in the Vallley Region

Percent of Homes with Wood Fuel use is based on data from US Energy Information Administration (2015) for the Pacific Region (12%). Based on the 2015 data, 33% of homes in the Pacific Region use wood as a primary source of heat and 71% as a secondary source. Because of the seasonal use and high elevations, assumes higher hearth usage as the primary source so heat in the Mountain Region and no homes in the Valley region as the primary source of heat.

CalEEMod Annual defaults assume people are burning almost a cord a year in urban areas and 2 cords in rural areas. For this regional analysis, modeling assumes residents in the Valley Region burn 2 bundles of firewood (18 lb/bundle) a year. Residents in the North Desert and East Desert Burn 1/2 Cord (Pine) and residents in the Mountain Region burn 1 Cord (Pine) (3,600 lbs/Cord of Ponderosa Pine).

HEARTH EMISSION FACTORS

	lbs/ton of Wood ROG	NOx	CO	SO2	PM10	PM2.5	CO2-BIO	CO2-NBIO	CH4	N2O
Catalytic Woodstoves	15	2	104.4	0.4	20.4	20.4	2952	0	11.6	0
Non-Catalytic Woodstoves	12	2	140.8	0.4	19.6	19.6	2952	0	16	0
Wood Fireplace	229	2.6	252.6	0.4	34.6	34.6	3400	0	0	0.3
Natural Gas Fireplace (lbs/unit)	0.01078	0.09216	0.03922	0.00059	0.00745	0.00745	0	0	0	0
Natural Gas Fireplace (lbs/unit)	0.01078	0.09216	0.03922	0.00059	0.00745	0.00745	0	117.647	0.00225	0.00216

Zeroed out to avoid double-counting with Building Energy Sector

Residential Units	2016	2040	2050	Corrected Average Day/Yr Fireplace Use	
Valley	33,413	41,391	41,391	4	
Mountain	45,082	45,784	45,784	82	All houses every day during winter
N. Desert	40,318	46,600	49,109	41	On average 50% of the time during the winter.
E. Desert	16,795	17,189	17,189	41	On average 50% of the time during the winter.

HEARTH EMISSIONS

							AR5 GWP					
							1	1	28	265		
Existing	Lbs/Day											
	ROG	NOx	CO	SO2	PM10	PM2.5						
Valley	39	8	49	0	7	7						
Mountain	5,152	76	6,165	11	859	859						
SoCAB	5,191	84	6,214	11	866	866	17,979	0	12	1	704	18,686
N. Desert	2,304	38	2,759	5	384	384						
E. Desert	960	16	1,149	2	160	160						
MDAB	3,264	55	3,908	7	545	545						
TOTAL	8,456	139	10,122	18	1,410	1,410						

2040	Lbs/Day						MTCO2/Year				NON-Bio	TOTAL
	ROG	NOx	CO	SO2	PM10	PM2.5	CO2-BIO	CO2-NBIO	CH4	N2O	CO2e	CO2e
Valley	49	10	67	0	10	10	164	0	0	0	6	170
Mountain	5,233	78	6,261	11	872	872	18,125	0	13	1	712	18,837
SoCAB	5,282	87	6,328	11	882	882	18,289	0	13	1	719	19,007
N. Desert	2,663	44	3,188	6	444	444	9,224	0	6	1	362	9,586
E. Desert	982	16	1,176	2	164	164	3,402	0	2	0	134	3,536
MDAB	3,646	61	4,365	8	608	608	12,626	0	9	1	496	13,122
TOTAL	8,928	148	10,692	19	1,490	1,490	30,915	0	21	2	1,215	32,130
CHANGE FROM EXISTING	472	10	571	1	80	80						

2050	Lbs/Day						MTCO2/Year				NON-Bio	TOTAL
	ROG	NOx	CO	SO2	PM10	PM2.5	CO2-BIO	CO2-NBIO	CH4	N2O	CO2e	CO2e
Valley	48	9	60	0	9	9	164	0	0	0	6	170
Mountain	5,231	68	6,257	11	872	872	18,125	0	13	1	712	18,837
SoCAB	5,280	77	6,317	11	880	880	18,289	0	13	1	719	19,007
N. Desert	2,807	47	3,360	6	468	468	9,721	0	7	1	382	10,102
E. Desert	982	16	1,176	2	164	164	3,402	0	2	0	134	3,536
MDAB	3,789	63	4,536	8	632	632	13,123	0	9	1	516	13,639
TOTAL	9,069	141	10,854	19	1,512	1,512	31,412	0	22	2	1,234	32,646
CHANGE FROM EXISTING	613	2	732	1	102	102						

Area Sources

Source: OFFROAD2017. San Bernardino County Year 2016.

OFFROAD2017 Estimate based on:

Agricultural Equipment	Based on the percentage of agricultural land in the Unincorporated County compared to the County of San Bernardino (ICF 2017).
Construction Equipment	Based on the increase in residential units in the unincorporated County compared to the County of San Bernardino (DOF 2018).
Light Commercial and Portable Equipment	Based on the percentage of employment in the Unincorporated County compared to the County of San Bernardino (US Census 2018)
	Sources
	Farmland
	ICF. 2017, October. San Bernardino County Community and Municipal Greenhouse Gas Inventory.
	Housing Units
	Source: Department of Finance (DOF). 2018, May. E-5 Population and Housing Estimates for Cities, Counties, and the State, January 2011-2018, with 2010 Benchmark. http://www.dof.ca.gov/Forecasting/Demographics/Estimates/E-5/
	Employment
	Source. U.S. Census Bureau. Longitudinal Employer-Household Dynamics. http://lehd.ces.census.gov/

2016		ROG Exhaust	NO_x Exhaust	CO Exhaust	SO_2 Exhaust	PM_{10} Exhaust	$PM_{2.5}$ Exhaust*
		lbs/day					
Agricultural Equipment	SoCAB	28	73	1,054	0	4	4
Construction Equipment	SoCAB	79	711	1,023	1	41	37
Light Commercial Equipment	SoCAB	57	298	1,642	0	17	14
TOTAL SoCAB		164	1,082	3,720	1	62	55
Agricultural Equipment	MDAB	7	17	247	0	1	1
Construction Equipment	MDAB	21	202	245	0	11	10
Light Commercial Equipment	MDAB	14	91	359	0	5	4
TOTAL MDAB		42	310	851	0	17	15
TOTAL Unincorporated		206	1,391	4,571	2	79	70

2040		ROG Exhaust	NO_x Exhaust	CO Exhaust	SO2 Exhaust	PM10 Exhaust	PM2.5 Exhaust*
	Forecast Adjusted for:	lbs/day					
Agricultural Equipment	SoCAB similar to historic	28	73	1,054	0	4	4
Construction Equipment	SoCAB similar to historic	79	711	1,023	1	41	37
Light Commercial Equipment	SoCAB proportional to employment growth	74	388	2,138	1	22	19
TOTAL SoCAB		181	1,172	4,216	1	67	59
Agricultural Equipment	MDAB similar to historic	7	17	247	0	1	1
Construction Equipment	MDAB similar to historic	21	202	245	0	11	10
Light Commercial Equipment	MDAB proportional to employment growth	15	96	380	0	5	4
TOTAL MDAB		43	315	872	0	17	15
TOTAL Unincorporated		224	1,487	5,087	2	84	74

2050		ROG Exhaust	NO_x Exhaust	CO Exhaust	SO2 Exhaust	PM10 Exhaust	PM2.5 Exhaust*
	Forecast Adjusted for:	lbs/day					
Agricultural Equipment	SoCAB similar to historic	28	73	1,054	0	4	4
Construction Equipment	SoCAB similar to historic	79	711	1,023	1	41	37
Light Commercial Equipment	SoCAB proportional to employment growth	105	944	1,359	1	55	49
TOTAL SoCAB		212	1,728	3,437	2	100	89
Agricultural Equipment	MDAB similar to historic	7	17	247	0	1	1
Construction Equipment	MDAB similar to historic	21	202	245	0	11	10
Light Commercial Equipment	MDAB proportional to employment growth	16	103	407	0	5	4
TOTAL MDAB		44	322	899	0	17	15
TOTAL Unincorporated		256	2,050	4,335	2	118	105

San Bernardino County OFFROAD2017- 2016

Source: OFFROAD 2017

Region	CalYr	VehClass	Fuel	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2_5_tpd	CO2 MT/yr
South Coast Air Basin										
San Bernardino (SC)	2016	OFFROAD - Agricultural	Gasoline	0.02	0.02	0.80	0.00	0.00	0.00	862
San Bernardino (SC)	2016	OFFROAD - Agricultural	Diesel	0.00	0.04	0.02	0.00	0.00	0.00	1640
TOTAL AGRICULTURE OFFROAD				0.02	0.06	0.82	0.00	0.00	0.00	2501
ESTIMATED UNINCORPORATED (Tons/day)				0.01	0.04	0.53	0.00	0.00	0.00	1610
ESTIMATED UNINCORPORATED (lbs/day)				28	73	1054	0	4	4	NA
San Bernardino (SC)	2016	OFFROAD - Construction and Mining	Gasoline	0.09	0.08	3.52	0.00	0.04	0.03	3177
San Bernardino (SC)	2016	OFFROAD - Construction and Mining	Diesel	0.00	0.03	0.02	0.00	0.00	0.00	1392
San Bernardino (SC)	2016	Construction and Mining	Diesel	0.34	3.79	2.08	0.00	0.19	0.17	133791
TOTAL CONSTRUCTION OFFROAD				0.43	3.91	5.62	0.00	0.23	0.20	138361
ESTIMATED UNINCORPORATED				0.04	0.36	0.51	0.00	0.02	0.02	12589
ESTIMATED UNINCORPORATED (lbs/day)				79	711	1023	1	41	37	NA
San Bernardino (SC)	2016	OFFROAD - Light Commercial	Gasoline	0.22	0.20	9.82	0.00	0.04	0.03	9019
San Bernardino (SC)	2016	OFFROAD - Light Commercial	Diesel	0.02	0.10	0.09	0.00	0.01	0.01	3914
San Bernardino (SC)	2016	OFFROAD - Light Commercial	Nat Gas	0.00	0.02	0.25	0.00	0.00	0.00	2276
San Bernardino (SC)	2016	Portable Equipment	Diesel	0.14	1.65	0.75	0.00	0.06	0.06	79395
TOTAL LIGHT COMMERCIAL + PORTABLE OFFROAD				0.38	1.98	10.91	0.00	0.11	0.09	94603
ESTIMATED UNINCORPORATED				0.03	0.15	0.82	0.00	0.01	0.01	7116
ESTIMATED UNINCORPORATED (lbs/day)				57	298	1642	0	17	14	NA
TOTAL OFFROAD in Unincorporated SoCAB				0	1	2	0	0	0	21,314

Region	CalYr	VehClass	Fuel	ROG_tpd	NOx_tpd	CO_tpd	SOx_tpd	PM10_tpd	PM2_5_tpd	CO2 MT/yr
Mojave Desert Air Basin										
San Bernardino (MD)	2016	OFFROAD - Agricultural	Gasoline	0.00	0.00	0.19	0.00	0.00	0.00	202
San Bernardino (MD)	2016	OFFROAD - Agricultural	Diesel	0.00	0.01	0.01	0.00	0.00	0.00	376
TOTAL AGRICULTURE OFFROAD				0.01	0.01	0.19	0.00	0.00	0.00	578
ESTIMATED UNINCORPORATED				0.00	0.01	0.12	0.00	0.00	0.00	372
ESTIMATED UNINCORPORATED (lbs/day)				7	17	247	0	1	1	NA
San Bernardino (MD)	2016	OFFROAD - Construction and Mining	Gasoline	0.02	0.02	0.75	0.00	0.01	0.01	699
San Bernardino (MD)	2016	OFFROAD - Construction and Mining	Diesel	0.00	0.01	0.00	0.00	0.00	0.00	324
San Bernardino (MD)	2016	Construction and Mining	Diesel	0.10	1.08	0.60	0.00	0.05	0.05	38245
TOTAL CONSTRUCTION OFFROAD				0.12	1.11	1.35	0.00	0.06	0.06	39267
ESTIMATED UNINCORPORATED				0.01	0.10	0.12	0.00	0.01	0.01	3573
ESTIMATED UNINCORPORATED (lbs/day)				21	202	245	0	11	10	NA
San Bernardino (MD)	2016	OFFROAD - Light Commercial	Gasoline	0.05	0.04	2.13	0.00	0.01	0.01	1951
San Bernardino (MD)	2016	OFFROAD - Light Commercial	Diesel	0.00	0.02	0.02	0.00	0.00	0.00	837
San Bernardino (MD)	2016	OFFROAD - Light Commercial	Nat Gas	0.00	0.00	0.05	0.00	0.00	0.00	492
San Bernardino (MD)	2016	Portable Equipment	Diesel	0.04	0.54	0.18	0.00	0.02	0.02	21204
TOTAL LIGHT COMMERCIAL + PORTABLE OFFROAD				0.09	0.61	2.39	0.00	0.03	0.03	24485
ESTIMATED UNINCORPORATED				0.01	0.05	0.18	0.00	0.00	0.00	1842
ESTIMATED UNINCORPORATED (lbs/day)				14	91	359	0	5	4	NA
TOTAL OFFROAD in Unincorporated MDAB				0	0	0	0	0	0	5,786

	Tons/Day						MT/Yr
	ROG	NOx	CO	SOx	PM10	PM2.5	CO2
Agriculture	0	0	1	0	0	0	1,981
Construction	0	0	1	0	0	0	16,161
Light Commercial	0	0	1	0	0	0	8,957
TOTAL UNINCORPORATED	0	1	2	0	0	0	27,100

	lbs/day						MT/Yr
	ROG	NOx	CO	SOx	PM10	PM2.5	CO2
Agriculture	35	90	1,302	0	5	5	1,981
Construction	100	913	1,268	1	52	47	16,161
Light Commercial	71	389	2,001	1	21	18	8,957
TOTAL UNINCORPORATED	206	1,391	4,571	2	79	70	27,100

Assumptions

Agricultural Area in San Bernardino County	acres	60,279
Agricultural Area in Unincorporated County	acres	38,785
Percent in Unincorporated County	-	64%
		2015
Housing Units in San Bernardino County	units	709,385
Housing Units in Unincorporated County	units	133,404
Percent in Unincorporated County	-	
		2016
Employment in the San Bernardino County	units	703796
Employment in Unincorporated County	units	52,937
Percent in Unincorporated County	-	8%

Year 2016 Existing: Criteria Air Pollutants (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000
				Percent Adjustment	-19%

[1.] Based on data provided Fehr & Peers.

Emission year

		Year 2016						lbs/day		
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Valley Region										
All Other Buses	DSL	Aggregated	0.02%	0.98	9.57	2.69	0.01	0.76	0.65
LDA	GAS	Aggregated	54.56%	70.67	231.25	3,137.59	7.28	110.44	45.79
LDA	DSL	Aggregated	0.24%	0.35	2.44	3.50	0.02	0.68	0.39
LDA	ELEC	Aggregated	0.12%	0.00	0.00	0.00	0.00	0.23	0.09
LDT1	GAS	Aggregated	4.60%	19.68	65.96	693.98	0.73	9.75	4.27
LDT1	DSL	Aggregated	0.00%	0.03	0.18	0.19	0.00	0.03	0.03
LDT1	ELEC	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT2	GAS	Aggregated	15.72%	33.46	149.78	1,359.84	2.77	31.98	13.35
LDT2	DSL	Aggregated	0.03%	0.05	0.21	0.29	0.00	0.09	0.05
LDT2	ELEC	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
LHD1	GAS	Aggregated	1.46%	5.72	27.12	140.71	0.53	5.49	2.32
LHD1	DSL	Aggregated	1.07%	5.89	205.63	36.72	0.23	5.44	2.92
LHD2	GAS	Aggregated	0.26%	0.52	3.84	13.44	0.11	1.13	0.47
LHD2	DSL	Aggregated	0.39%	1.86	61.92	11.39	0.09	2.15	1.11
MCY	GAS	Aggregated	0.41%	45.10	20.75	394.59	0.04	0.31	0.14
MDV	GAS	Aggregated	14.39%	35.87	148.60	1,307.37	3.01	29.28	12.22
MDV	DSL	Aggregated	0.15%	0.14	0.94	1.75	0.03	0.37	0.19
MDV	ELEC	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
MH	GAS	Aggregated	0.10%	0.62	3.36	19.06	0.08	0.66	0.28
MH	DSL	Aggregated	0.03%	0.13	7.48	0.58	0.01	0.43	0.29
Motor Coach	DSL	Aggregated	0.01%	0.27	4.91	0.98	0.01	0.22	0.16
OBUS	GAS	Aggregated	0.06%	0.24	1.85	6.52	0.04	0.35	0.15
PTO	DSL	Aggregated	0.07%	2.65	32.69	8.78	0.06	0.95	0.91
SBUS	GAS	Aggregated	0.02%	0.26	0.84	5.85	0.01	0.75	0.32
SBUS	DSL	Aggregated	0.05%	0.61	22.19	1.56	0.03	2.09	1.04
T6 Ag	DSL	Aggregated	0.00%	0.00	0.02	0.01	0.00	0.00	0.00
T6 CAIRP heavy	DSL	Aggregated	0.02%	0.14	2.97	0.48	0.01	0.24	0.15
T6 CAIRP small	DSL	Aggregated	0.00%	0.03	0.55	0.11	0.00	0.04	0.03
T6 instate constr	DSL	Aggregated	0.09%	1.50	23.49	4.50	0.04	1.45	1.08
T6 instate constr	DSL	Aggregated	0.20%	3.08	47.46	10.01	0.09	3.11	2.32
T6 instate heavy	DSL	Aggregated	0.78%	10.65	178.56	32.12	0.33	11.04	7.94
T6 instate small	DSL	Aggregated	0.87%	12.49	195.00	41.21	0.38	13.24	9.73
T6 OOS heavy	DSL	Aggregated	0.01%	0.08	1.71	0.28	0.01	0.14	0.09
T6 OOS small	DSL	Aggregated	0.00%	0.02	0.32	0.06	0.00	0.02	0.02
T6 Public	DSL	Aggregated	0.03%	0.11	11.77	0.31	0.01	0.27	0.15
T6 utility	DSL	Aggregated	0.01%	0.01	0.95	0.04	0.00	0.06	0.03
T6TS	GAS	Aggregated	0.20%	2.03	10.57	53.76	0.15	1.25	0.52
T7 CAIRP	DSL	Aggregated	0.59%	5.41	131.21	19.53	0.37	5.00	3.29
T7 CAIRP constru	DSL	Aggregated	0.07%	0.60	14.52	2.16	0.04	0.55	0.36
T7 NNOOS	DSL	Aggregated	0.72%	5.88	130.24	22.87	0.42	6.31	4.22
T7 NOOS	DSL	Aggregated	0.23%	2.14	51.55	7.73	0.14	1.97	1.30
T7 POLA	DSL	Aggregated	0.50%	5.93	138.69	17.91	0.37	2.96	1.57
T7 Public	DSL	Aggregated	0.05%	0.27	31.13	1.07	0.04	0.41	0.26
T7 Single	DSL	Aggregated	0.35%	6.14	123.44	23.20	0.23	5.15	4.04
T7 single constru	DSL	Aggregated	0.16%	3.32	62.44	12.77	0.11	2.66	2.13
T7 SWCV	DSL	Aggregated	0.07%	0.02	60.50	0.11	0.15	0.36	0.16
T7 SWCV	NG	Aggregated	0.09%	2.55	24.36	49.78	0.00	0.44	0.18
T7 tractor	DSL	Aggregated	0.92%	17.24	310.06	62.95	0.59	12.23	9.37
T7 tractor constr	DSL	Aggregated	0.13%	2.69	46.93	9.75	0.09	1.84	1.42
T7 utility	DSL	Aggregated	0.00%	0.01	1.07	0.04	0.00	0.03	0.01

Year 2016 Existing: Criteria Air Pollutants (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000
				Percent Adjustment	-19%

[1.] Based on data provided Fehr & Peers.

Emission year

			Year 2016					lbs/day	
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
T7IS	GAS	Aggregated	0.00%	0.15	0.91	5.14	0.00	0.01	0.00
UBUS	GAS	Aggregated	0.03%	0.01	0.19	0.25	0.01	0.14	0.06
UBUS	DSL	Aggregated	0.00%	0.00	0.11	0.01	0.00	0.00	0.00
UBUS	ELEC	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	NG	Aggregated	0.07%	0.00	0.00	0.00	0.00	0.00	0.00
			TOTAL	**307.64**	**2,602.25**	**7,525.53**	**18.68**	**274.51**	**137.57**
Mountain Region									
All Other Buses	DSL	Aggregated	0.0240%	0.59	5.81	1.63	0.01	0.01	0.08
LDA	GAS	Aggregated	54.5634%	42.92	140.43	1,905.36	4.42	11.58	53.18
LDA	DSL	Aggregated	0.2384%	0.21	1.48	2.13	0.01	0.05	0.23
LDA	ELEC	Aggregated	0.1180%	0.00	0.00	0.00	0.00	0.03	0.12
LDT1	GAS	Aggregated	4.5984%	11.95	40.06	421.43	0.44	0.98	4.48
LDT1	DSL	Aggregated	0.0027%	0.02	0.11	0.11	0.00	0.00	0.00
LDT1	ELEC	Aggregated	0.0021%	0.00	0.00	0.00	0.00	0.00	0.00
LDT2	GAS	Aggregated	15.7152%	20.32	90.95	825.79	1.68	3.33	15.32
LDT2	DSL	Aggregated	0.0315%	0.03	0.13	0.17	0.00	0.01	0.03
LDT2	ELEC	Aggregated	0.0049%	0.00	0.00	0.00	0.00	0.00	0.00
LHD1	GAS	Aggregated	1.4587%	3.47	16.47	85.45	0.32	0.31	2.96
LHD1	DSL	Aggregated	1.0693%	3.57	124.87	22.30	0.14	0.34	2.17
LHD2	GAS	Aggregated	0.2619%	0.32	2.33	8.16	0.07	0.06	0.62
LHD2	DSL	Aggregated	0.3911%	1.13	37.60	6.92	0.06	0.12	0.93
MCY	GAS	Aggregated	0.4141%	27.39	12.60	239.62	0.02	0.04	0.13
MDV	GAS	Aggregated	14.3942%	21.79	90.24	793.92	1.83	3.05	14.03
MDV	DSL	Aggregated	0.1543%	0.08	0.57	1.06	0.02	0.03	0.15
MDV	ELEC	Aggregated	0.0004%	0.00	0.00	0.00	0.00	0.00	0.00
MH	GAS	Aggregated	0.1049%	0.38	2.04	11.58	0.05	0.03	0.36
MH	DSL	Aggregated	0.0331%	0.08	4.55	0.35	0.01	0.01	0.11
Motor Coach	DSL	Aggregated	0.0144%	0.17	2.98	0.60	0.01	0.00	0.05
OBUS	GAS	Aggregated	0.0568%	0.15	1.12	3.96	0.03	0.02	0.20
PTO	DSL	Aggregated	0.0695%	1.61	19.85	5.33	0.04	0.00	0.00
SBUS	GAS	Aggregated	0.0228%	0.16	0.51	3.55	0.01	0.00	0.45
SBUS	DSL	Aggregated	0.0543%	0.37	13.47	0.95	0.02	0.02	1.07
T6 Ag	DSL	Aggregated	0.0000%	0.00	0.01	0.00	0.00	0.00	0.00
T6 CAIRP heavy	DSL	Aggregated	0.0244%	0.09	1.80	0.29	0.01	0.01	0.08
T6 CAIRP small	DSL	Aggregated	0.0034%	0.02	0.33	0.06	0.00	0.00	0.01
T6 instate constr	DSL	Aggregated	0.0907%	0.91	14.27	2.73	0.02	0.03	0.31
T6 instate constr	DSL	Aggregated	0.1952%	1.87	28.82	6.08	0.05	0.06	0.67
T6 instate heavy	DSL	Aggregated	0.7770%	6.47	108.43	19.50	0.20	0.25	2.69
T6 instate small	DSL	Aggregated	0.8700%	7.58	118.42	25.03	0.23	0.28	3.01
T6 OOS heavy	DSL	Aggregated	0.0140%	0.05	1.04	0.17	0.00	0.00	0.05
T6 OOS small	DSL	Aggregated	0.0019%	0.01	0.19	0.04	0.00	0.00	0.01
T6 Public	DSL	Aggregated	0.0316%	0.06	7.15	0.19	0.01	0.01	0.11
T6 utility	DSL	Aggregated	0.0085%	0.01	0.58	0.02	0.00	0.00	0.03
T6TS	GAS	Aggregated	0.1979%	1.23	6.42	32.65	0.09	0.06	0.68
T7 CAIRP	DSL	Aggregated	0.5879%	3.29	79.68	11.86	0.22	0.56	0.96
T7 CAIRP constru	DSL	Aggregated	0.0651%	0.36	8.82	1.31	0.03	0.06	0.11
T7 NNOOS	DSL	Aggregated	0.7167%	3.57	79.09	13.89	0.26	0.68	1.17
T7 NOOS	DSL	Aggregated	0.2310%	1.30	31.31	4.69	0.09	0.22	0.38
T7 POLA	DSL	Aggregated	0.4967%	3.60	84.22	10.87	0.23	0.47	0.81
T7 Public	DSL	Aggregated	0.0502%	0.16	18.90	0.65	0.02	0.05	0.08
T7 Single	DSL	Aggregated	0.3502%	3.73	74.96	14.09	0.14	0.33	0.57

Year 2016 Existing: Criteria Air Pollutants (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000
				Percent Adjustment	-19%

[1.] Based on data provided Fehr & Peers.

Emission year

Year 2016				lbs/day					
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
T7 single constru	DSL	Aggregated	0.1615%	2.02	37.92	7.76	0.06	0.15	0.26
T7 SWCV	DSL	Aggregated	0.0735%	0.01	36.74	0.06	0.09	0.07	0.12
T7 SWCV	NG	Aggregated	0.0940%	1.55	14.79	30.23	0.00	0.09	0.15
T7 tractor	DSL	Aggregated	0.9194%	10.47	188.29	38.23	0.36	0.88	1.51
T7 tractor constr	DSL	Aggregated	0.1333%	1.63	28.50	5.92	0.05	0.13	0.22
T7 utility	DSL	Aggregated	0.0050%	0.01	0.65	0.03	0.00	0.00	0.01
T7IS	GAS	Aggregated	0.0013%	0.09	0.55	3.12	0.00	0.00	0.00
UBUS	GAS	Aggregated	0.0320%	0.01	0.11	0.15	0.01	0.01	0.08
UBUS	DSL	Aggregated	0.0007%	0.00	0.07	0.01	0.00	0.00	0.00
UBUS	ELEC	Aggregated	0.0000%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	NG	Aggregated	0.0684%	1.14	6.79	71.35	0.00	0.06	0.12
			TOTAL	**187.96**	**1,587.05**	**4,641.37**	**11.34**	**24.52**	**110.89**

Based on EMFAC2017, Version 1.0.2, emission factors for Riverside County - South Coast Air Basin

Year 2016 Existing: Criteria Air Pollutants (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000
				Percent Adjustment	-19%

[1.] Based on data provided Fehr & Peers.

Emission year

			Year 2016					lbs/day		
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
North Desert										
All Other Buses	DSL	Aggregated	0.01%	0.48	6.06	1.22	0.00	0.40	0.35
LDA	GAS	Aggregated	49.27%	91.36	330.37	3,785.74	9.08	138.75	57.34
LDA	DSL	Aggregated	0.33%	0.68	6.19	6.78	0.04	1.36	0.80
LDA	ELEC	Aggregated	0.20%	0.00	0.00	0.00	0.00	0.55	0.22
LDT1	GAS	Aggregated	4.77%	26.68	99.60	911.58	1.03	13.97	6.04
LDT1	DSL	Aggregated	0.00%	0.04	0.22	0.25	0.00	0.04	0.03
LDT1	ELEC	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.01	0.00
LDT2	GAS	Aggregated	16.42%	47.70	245.18	1,881.01	3.99	46.48	19.33
LDT2	DSL	Aggregated	0.04%	0.06	0.34	0.41	0.01	0.16	0.08
LDT2	ELEC	Aggregated	0.01%	0.00	0.00	0.00	0.00	0.03	0.01
LHD1	GAS	Aggregated	1.65%	11.61	54.70	343.11	0.85	8.68	3.68
LHD1	DSL	Aggregated	1.63%	13.99	529.77	109.10	0.48	11.96	6.59
LHD2	GAS	Aggregated	0.21%	0.70	5.23	20.16	0.12	1.25	0.53
LHD2	DSL	Aggregated	0.58%	4.10	152.01	31.80	0.19	4.55	2.37
MCY	GAS	Aggregated	1.21%	175.05	90.15	1,840.80	0.16	1.28	0.56
MDV	GAS	Aggregated	14.57%	58.85	257.85	2,004.63	4.21	41.33	17.23
MDV	DSL	Aggregated	0.21%	0.26	2.53	3.13	0.05	0.73	0.38
MDV	ELEC	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
MH	GAS	Aggregated	0.14%	1.42	7.72	52.37	0.15	1.21	0.51
MH	DSL	Aggregated	0.04%	0.25	15.44	1.10	0.02	0.96	0.71
Motor Coach	DSL	Aggregated	0.01%	0.14	3.32	0.54	0.01	0.15	0.11
OBUS	GAS	Aggregated	0.08%	0.66	5.35	17.08	0.09	0.70	0.29
PTO	DSL	Aggregated	0.01%	1.04	10.74	3.68	0.02	0.43	0.41
SBUS	GAS	Aggregated	0.00%	0.33	0.21	6.81	0.00	0.07	0.03
SBUS	DSL	Aggregated	0.07%	0.73	28.69	1.95	0.05	3.54	1.68
T6 CAIRP heavy	DSL	Aggregated	0.12%	0.72	19.26	2.76	0.07	1.73	1.09
T6 CAIRP small	DSL	Aggregated	0.02%	0.16	3.57	0.63	0.01	0.30	0.21
T6 instate constr	DSL	Aggregated	0.05%	0.85	16.85	2.58	0.03	1.06	0.79
T6 instate constr	DSL	Aggregated	0.12%	1.99	39.33	7.32	0.07	2.83	2.14
T6 instate heavy	DSL	Aggregated	0.17%	3.67	67.87	10.78	0.10	4.24	3.27
T6 instate small	DSL	Aggregated	0.19%	3.47	67.81	12.98	0.11	4.79	3.68
T6 OOS heavy	DSL	Aggregated	0.07%	0.42	11.07	1.62	0.04	1.00	0.63
T6 OOS small	DSL	Aggregated	0.01%	0.09	2.05	0.36	0.01	0.17	0.12
T6 Public	DSL	Aggregated	0.01%	0.04	6.20	0.12	0.01	0.15	0.08
T6 utility	DSL	Aggregated	0.00%	0.00	0.43	0.01	0.00	0.03	0.01
T6TS	GAS	Aggregated	0.23%	3.96	19.72	111.73	0.25	2.07	0.87
T7 CAIRP	DSL	Aggregated	2.45%	22.36	737.71	88.82	2.05	31.17	21.16
T7 CAIRP constru	DSL	Aggregated	0.03%	0.31	10.36	1.25	0.03	0.44	0.30
T7 NNOOS	DSL	Aggregated	2.98%	25.44	724.11	114.53	2.42	39.79	27.51
T7 NOOS	DSL	Aggregated	0.96%	8.86	289.89	35.21	0.81	12.30	8.37
T7 POLA	DSL	Aggregated	0.14%	2.39	56.55	7.23	0.15	1.19	0.63
T7 Public	DSL	Aggregated	0.01%	0.08	11.62	0.31	0.01	0.15	0.09
T7 Single	DSL	Aggregated	0.07%	1.88	40.95	7.64	0.06	1.89	1.58
T7 single constru	DSL	Aggregated	0.09%	1.88	44.69	7.44	0.08	1.95	1.57
T7 SWCV	DSL	Aggregated	0.00%	0.00	4.22	0.00	0.01	0.03	0.01
T7 SWCV	NG	Aggregated	0.00%	0.00	0.00	0.16	0.00	0.00	0.00
T7 tractor	DSL	Aggregated	0.67%	13.01	306.12	49.87	0.57	12.68	9.77
T7 tractor constr	DSL	Aggregated	0.07%	1.48	33.76	5.64	0.06	1.39	1.08
T7 utility	DSL	Aggregated	0.00%	0.00	0.41	0.01	0.00	0.01	0.01
T7IS	GAS	Aggregated	0.00%	0.18	0.36	9.92	0.00	0.00	0.00

Year 2016 Existing: Criteria Air Pollutants (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000
				Percent Adjustment	-19%

[1.] Based on data provided Fehr & Peers.

Emission year

			Year 2016				lbs/day		
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
UBUS	GAS	Aggregated	0.02%	0.02	0.32	0.38	0.02	0.14	0.06
UBUS	DSL	Aggregated	0.00%	0.00	0.15	0.02	0.00	0.01	0.00
UBUS	ELEC	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	NG	Aggregated	0.04%	0.48	3.55	82.18	0.00	0.26	0.11
			TOTAL	**529.91**	**4,370.62**	**11,584.78**	**27.51**	**400.35**	**204.43**
East Desert									
All Other Buses	DSL	Aggregated	0.01%	0.10	1.33	0.27	0.00	0.00	0.01
LDA	GAS	Aggregated	49.27%	20.00	72.31	828.64	1.99	5.26	24.15
LDA	DSL	Aggregated	0.33%	0.15	1.35	1.48	0.01	0.04	0.16
LDA	ELEC	Aggregated	0.20%	0.00	0.00	0.00	0.00	0.02	0.10
LDT1	GAS	Aggregated	4.77%	5.84	21.80	199.53	0.23	0.51	2.34
LDT1	DSL	Aggregated	0.00%	0.01	0.05	0.06	0.00	0.00	0.00
LDT1	ELEC	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT2	GAS	Aggregated	16.42%	10.44	53.67	411.73	0.87	1.75	8.05
LDT2	DSL	Aggregated	0.04%	0.01	0.07	0.09	0.00	0.00	0.02
LDT2	ELEC	Aggregated	0.01%	0.00	0.00	0.00	0.00	0.00	0.00
LHD1	GAS	Aggregated	1.65%	2.54	11.97	75.10	0.18	0.18	1.68
LHD1	DSL	Aggregated	1.63%	3.06	115.96	23.88	0.11	0.26	1.66
LHD2	GAS	Aggregated	0.21%	0.15	1.14	4.41	0.03	0.02	0.25
LHD2	DSL	Aggregated	0.58%	0.90	33.27	6.96	0.04	0.09	0.70
MCY	GAS	Aggregated	1.21%	38.32	19.73	402.92	0.03	0.06	0.19
MDV	GAS	Aggregated	14.57%	12.88	56.44	438.79	0.92	1.55	7.14
MDV	DSL	Aggregated	0.21%	0.06	0.55	0.69	0.01	0.02	0.10
MDV	ELEC	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
MH	GAS	Aggregated	0.14%	0.31	1.69	11.46	0.03	0.02	0.24
MH	DSL	Aggregated	0.04%	0.05	3.38	0.24	0.01	0.01	0.07
Motor Coach	DSL	Aggregated	0.01%	0.03	0.73	0.12	0.00	0.00	0.01
OBUS	GAS	Aggregated	0.08%	0.14	1.17	3.74	0.02	0.01	0.14
PTO	DSL	Aggregated	0.01%	0.23	2.35	0.81	0.00	0.00	0.00
SBUS	GAS	Aggregated	0.00%	0.07	0.05	1.49	0.00	0.00	0.02
SBUS	DSL	Aggregated	0.07%	0.16	6.28	0.43	0.01	0.01	0.69
T6 CAIRP heavy	DSL	Aggregated	0.12%	0.16	4.22	0.60	0.01	0.02	0.21
T6 CAIRP small	DSL	Aggregated	0.02%	0.03	0.78	0.14	0.00	0.00	0.03
T6 instate constr	DSL	Aggregated	0.05%	0.19	3.69	0.57	0.01	0.01	0.08
T6 instate constr	DSL	Aggregated	0.12%	0.44	8.61	1.60	0.02	0.02	0.21
T6 instate heavy	DSL	Aggregated	0.17%	0.80	14.86	2.36	0.02	0.03	0.29
T6 instate small	DSL	Aggregated	0.19%	0.76	14.84	2.84	0.02	0.03	0.33
T6 OOS heavy	DSL	Aggregated	0.07%	0.09	2.42	0.35	0.01	0.01	0.12
T6 OOS small	DSL	Aggregated	0.01%	0.02	0.45	0.08	0.00	0.00	0.02
T6 Public	DSL	Aggregated	0.01%	0.01	1.36	0.03	0.00	0.00	0.02
T6 utility	DSL	Aggregated	0.00%	0.00	0.09	0.00	0.00	0.00	0.00
T6TS	GAS	Aggregated	0.23%	0.87	4.32	24.46	0.06	0.04	0.41
T7 CAIRP	DSL	Aggregated	2.45%	4.89	161.48	19.44	0.45	1.18	2.02
T7 CAIRP constru	DSL	Aggregated	0.03%	0.07	2.27	0.27	0.01	0.02	0.03
T7 NNOOS	DSL	Aggregated	2.98%	5.57	158.50	25.07	0.53	1.43	2.46
T7 NOOS	DSL	Aggregated	0.96%	1.94	63.45	7.71	0.18	0.46	0.79
T7 POLA	DSL	Aggregated	0.14%	0.52	12.38	1.58	0.03	0.07	0.12
T7 Public	DSL	Aggregated	0.01%	0.02	2.54	0.07	0.00	0.01	0.01
T7 Single	DSL	Aggregated	0.07%	0.41	8.96	1.67	0.01	0.03	0.05
T7 single constru	DSL	Aggregated	0.09%	0.41	9.78	1.63	0.02	0.04	0.07
T7 SWCV	DSL	Aggregated	0.00%	0.00	0.92	0.00	0.00	0.00	0.00

Year 2016 Existing: Criteria Air Pollutants (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000
				Percent Adjustment	-19%

[1.] Based on data provided Fehr & Peers.

Emission year

Year 2016									lbs/day
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
T7 SWCV	NG	Aggregated	0.00%	0.00	0.00	0.04	0.00	0.00	0.00
T7 tractor	DSL	Aggregated	0.67%	2.85	67.00	10.92	0.13	0.32	0.55
T7 tractor constr	DSL	Aggregated	0.07%	0.32	7.39	1.24	0.01	0.03	0.06
T7 utility	DSL	Aggregated	0.00%	0.00	0.09	0.00	0.00	0.00	0.00
T7IS	GAS	Aggregated	0.00%	0.04	0.08	2.17	0.00	0.00	0.00
UBUS	GAS	Aggregated	0.02%	0.00	0.07	0.08	0.00	0.00	0.03
UBUS	DSL	Aggregated	0.00%	0.00	0.03	0.00	0.00	0.00	0.00
UBUS	ELEC	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	NG	Aggregated	0.04%	0.11	0.78	17.99	0.00	0.01	0.04
			TOTAL	**115.99**	**956.67**	**2,535.74**	**6.02**	**13.60**	**55.69**

Based on EMFAC2017, Version 1.0.2, emission factors for San Bernardino County - Mojave Desert Air Basin

Year 2040 Existing: Criteria Air Pollutants (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000
				Percent Adjustment	-19%

[1.] Based on data provided Fehr & Peers.

Emission year

Year 2040				lbs/day					
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Valley Region									
All Other Buses	DSL	Aggregated	0.03%	0.01	1.66	0.10	0.01	0.18	0.08
LDA	GAS	Aggregated	53.07%	4.85	40.58	979.26	4.58	105.16	42.47
LDA	DSL	Aggregated	0.66%	0.16	0.28	5.06	0.04	1.31	0.53
LDA	ELEC	Aggregated	3.06%	0.00	0.00	0.00	0.00	5.99	2.37
LDT1	GAS	Aggregated	5.15%	0.64	4.61	100.80	0.52	10.23	4.14
LDT1	DSL	Aggregated	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
LDT1	ELEC	Aggregated	0.19%	0.00	0.00	0.00	0.00	0.37	0.15
LDT2	GAS	Aggregated	15.61%	2.34	13.72	344.14	1.55	30.96	12.51
LDT2	DSL	Aggregated	0.16%	0.12	0.22	1.26	0.01	0.34	0.15
LDT2	ELEC	Aggregated	0.48%	0.00	0.00	0.00	0.00	0.93	0.37
LHD1	GAS	Aggregated	0.93%	0.15	1.41	5.07	0.27	3.49	1.46
LHD1	DSL	Aggregated	0.95%	1.88	8.21	9.07	0.15	3.94	1.74
LHD2	GAS	Aggregated	0.15%	0.02	0.26	0.79	0.05	0.63	0.26
LHD2	DSL	Aggregated	0.37%	0.77	4.45	3.78	0.07	1.87	0.88
MCY	GAS	Aggregated	0.33%	32.55	16.02	246.51	0.03	0.26	0.12
MDV	GAS	Aggregated	10.43%	1.81	10.74	236.82	1.27	20.69	8.37
MDV	DSL	Aggregated	0.37%	0.10	0.18	3.17	0.04	0.74	0.30
MDV	ELEC	Aggregated	0.35%	0.00	0.00	0.00	0.00	0.69	0.28
MH	GAS	Aggregated	0.05%	0.02	0.21	0.36	0.03	0.29	0.12
MH	DSL	Aggregated	0.02%	0.05	2.28	0.17	0.01	0.17	0.09
Motor Coach	DSL	Aggregated	0.02%	0.01	1.29	0.12	0.01	0.11	0.05
OBUS	GAS	Aggregated	0.03%	0.02	0.18	0.43	0.02	0.21	0.09
PTO	DSL	Aggregated	0.09%	0.11	19.24	1.70	0.06	0.02	0.02
SBUS	GAS	Aggregated	0.02%	0.01	0.13	0.22	0.01	0.79	0.34
SBUS	DSL	Aggregated	0.06%	0.04	5.38	0.38	0.02	2.16	0.93
T6 Ag	DSL	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP heavy	DSL	Aggregated	0.03%	0.01	1.19	0.08	0.01	0.18	0.08
T6 CAIRP small	DSL	Aggregated	0.00%	0.00	0.19	0.01	0.00	0.03	0.01
T6 instate constr	DSL	Aggregated	0.08%	0.03	4.58	0.27	0.03	0.50	0.22
T6 instate constr	DSL	Aggregated	0.16%	0.05	7.94	0.52	0.05	1.06	0.46
T6 instate heavy	DSL	Aggregated	0.92%	0.30	49.00	3.08	0.27	6.03	2.66
T6 instate small	DSL	Aggregated	1.20%	0.37	57.98	3.80	0.37	7.79	3.42
T6 OOS heavy	DSL	Aggregated	0.02%	0.00	0.69	0.05	0.00	0.10	0.05
T6 OOS small	DSL	Aggregated	0.00%	0.00	0.10	0.01	0.00	0.01	0.01
T6 Public	DSL	Aggregated	0.01%	0.01	0.74	0.04	0.00	0.08	0.04
T6 utility	DSL	Aggregated	0.01%	0.00	0.25	0.02	0.00	0.05	0.02
T6TS	GAS	Aggregated	0.19%	0.08	0.73	1.66	0.11	1.19	0.50
T7 CAIRP	DSL	Aggregated	0.66%	0.49	60.29	5.37	0.25	3.35	1.53
T7 CAIRP constru	DSL	Aggregated	0.05%	0.04	4.97	0.44	0.02	0.27	0.13
T7 NNOOS	DSL	Aggregated	0.81%	0.56	66.88	6.15	0.30	4.01	1.79
T7 NOOS	DSL	Aggregated	0.26%	0.19	23.73	2.11	0.10	1.32	0.60
T7 POLA	DSL	Aggregated	1.09%	1.16	148.88	14.98	0.51	5.56	2.56
T7 Public	DSL	Aggregated	0.04%	0.04	4.13	0.27	0.02	0.17	0.08
T7 Single	DSL	Aggregated	0.48%	0.31	36.14	3.40	0.22	2.32	1.01
T7 single constru	DSL	Aggregated	0.13%	0.09	10.33	0.96	0.06	0.65	0.29
T7 SWCV	DSL	Aggregated	0.01%	0.00	4.46	0.01	0.01	0.03	0.01
T7 SWCV	NG	Aggregated	0.09%	0.50	4.21	58.11	0.00	0.41	0.16
T7 tractor	DSL	Aggregated	0.96%	0.72	88.76	7.85	0.38	4.87	2.23
T7 tractor constr	DSL	Aggregated	0.11%	0.09	10.81	0.94	0.05	0.57	0.26
T7 utility	DSL	Aggregated	0.00%	0.00	0.27	0.03	0.00	0.02	0.01

Year 2040 Existing: Criteria Air Pollutants (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000
				Percent Adjustment	-19%

[1.] Based on data provided Fehr & Peers.

Emission year

			Year 2040				lbs/day		
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
T7IS	GAS	Aggregated	0.00%	0.03	0.23	2.32	0.00	0.01	0.00
UBUS	GAS	Aggregated	0.03%	0.00	0.05	0.15	0.01	0.12	0.05
UBUS	DSL	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	NG	Aggregated	0.06%	0.25	1.34	137.36	0.00	0.28	0.11
			TOTAL	**51.03**	**719.91**	**2,189.23**	**11.52**	**232.56**	**96.10**
Mountain Region									
All Other Buses	DSL	Aggregated	0.0280%	0.01	1.01	0.06	0.01	0.01	0.10
LDA	GAS	Aggregated	53.0712%	2.95	24.64	594.68	2.78	11.26	51.73
LDA	DSL	Aggregated	0.6560%	0.10	0.17	3.08	0.03	0.14	0.64
LDA	ELEC	Aggregated	3.0626%	0.00	0.00	0.00	0.00	0.65	2.99
LDT1	GAS	Aggregated	5.1514%	0.39	2.80	61.21	0.32	1.09	5.02
LDT1	DSL	Aggregated	0.0007%	0.00	0.00	0.00	0.00	0.00	0.00
LDT1	ELEC	Aggregated	0.1906%	0.00	0.00	0.00	0.00	0.04	0.19
LDT2	GAS	Aggregated	15.6141%	1.42	8.33	208.99	0.94	3.31	15.22
LDT2	DSL	Aggregated	0.1591%	0.07	0.14	0.76	0.01	0.03	0.16
LDT2	ELEC	Aggregated	0.4770%	0.00	0.00	0.00	0.00	0.10	0.46
LHD1	GAS	Aggregated	0.9333%	0.09	0.86	3.08	0.16	0.20	1.89
LHD1	DSL	Aggregated	0.9498%	1.14	4.99	5.51	0.09	0.30	1.93
LHD2	GAS	Aggregated	0.1464%	0.01	0.16	0.48	0.03	0.03	0.35
LHD2	DSL	Aggregated	0.3743%	0.47	2.70	2.30	0.04	0.12	0.89
MCY	GAS	Aggregated	0.3290%	19.77	9.73	149.70	0.02	0.03	0.10
MDV	GAS	Aggregated	10.4264%	1.10	6.52	143.81	0.77	2.21	10.16
MDV	DSL	Aggregated	0.3710%	0.06	0.11	1.92	0.03	0.08	0.36
MDV	ELEC	Aggregated	0.3549%	0.00	0.00	0.00	0.00	0.08	0.35
MH	GAS	Aggregated	0.0459%	0.01	0.13	0.22	0.02	0.01	0.16
MH	DSL	Aggregated	0.0211%	0.03	1.39	0.10	0.00	0.01	0.07
Motor Coach	DSL	Aggregated	0.0163%	0.01	0.78	0.07	0.00	0.01	0.06
OBUS	GAS	Aggregated	0.0337%	0.01	0.11	0.26	0.01	0.01	0.12
PTO	DSL	Aggregated	0.0946%	0.06	11.68	1.03	0.04	0.00	0.00
SBUS	GAS	Aggregated	0.0241%	0.01	0.08	0.13	0.00	0.01	0.48
SBUS	DSL	Aggregated	0.0649%	0.03	3.27	0.23	0.01	0.02	1.28
T6 Ag	DSL	Aggregated	0.0000%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP heavy	DSL	Aggregated	0.0279%	0.00	0.72	0.05	0.00	0.01	0.10
T6 CAIRP small	DSL	Aggregated	0.0043%	0.00	0.11	0.01	0.00	0.00	0.01
T6 instate constr	DSL	Aggregated	0.0753%	0.02	2.78	0.17	0.02	0.02	0.26
T6 instate constr	DSL	Aggregated	0.1621%	0.03	4.82	0.31	0.03	0.05	0.56
T6 instate heavy	DSL	Aggregated	0.9206%	0.18	29.76	1.87	0.16	0.29	3.18
T6 instate small	DSL	Aggregated	1.1957%	0.23	35.21	2.31	0.22	0.38	4.13
T6 OOS heavy	DSL	Aggregated	0.0162%	0.00	0.42	0.03	0.00	0.01	0.06
T6 OOS small	DSL	Aggregated	0.0022%	0.00	0.06	0.00	0.00	0.00	0.01
T6 Public	DSL	Aggregated	0.0124%	0.00	0.45	0.03	0.00	0.00	0.04
T6 utility	DSL	Aggregated	0.0079%	0.00	0.15	0.01	0.00	0.00	0.03
T6TS	GAS	Aggregated	0.1904%	0.05	0.45	1.01	0.07	0.06	0.66
T7 CAIRP	DSL	Aggregated	0.6627%	0.30	36.61	3.26	0.15	0.63	1.09
T7 CAIRP constru	DSL	Aggregated	0.0541%	0.02	3.02	0.27	0.01	0.05	0.09
T7 NNOOS	DSL	Aggregated	0.8078%	0.34	40.61	3.73	0.18	0.77	1.32
T7 NOOS	DSL	Aggregated	0.2603%	0.12	14.41	1.28	0.06	0.25	0.43
T7 POLA	DSL	Aggregated	1.0910%	0.70	90.41	9.10	0.31	1.04	1.79
T7 Public	DSL	Aggregated	0.0356%	0.03	2.51	0.16	0.01	0.03	0.06
T7 Single	DSL	Aggregated	0.4762%	0.19	21.95	2.06	0.13	0.45	0.78
T7 single constru	DSL	Aggregated	0.1342%	0.05	6.28	0.58	0.04	0.13	0.22

Year 2040 Existing: Criteria Air Pollutants (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000
				Percent Adjustment	-19%

[1.] Based on data provided Fehr & Peers.

Emission year

Year 2040						lbs/day			
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
T7 SWCV	DSL	Aggregated	0.0060%	0.00	2.71	0.01	0.01	0.01	0.01
T7 SWCV	NG	Aggregated	0.0925%	0.30	2.55	35.29	0.00	0.09	0.15
T7 tractor	DSL	Aggregated	0.9609%	0.44	53.90	4.77	0.23	0.92	1.57
T7 tractor constr	DSL	Aggregated	0.1107%	0.05	6.56	0.57	0.03	0.11	0.18
T7 utility	DSL	Aggregated	0.0047%	0.00	0.16	0.02	0.00	0.00	0.01
T7IS	GAS	Aggregated	0.0018%	0.02	0.14	1.41	0.00	0.00	0.00
UBUS	GAS	Aggregated	0.0285%	0.00	0.03	0.09	0.01	0.01	0.07
UBUS	DSL	Aggregated	0.0000%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	NG	Aggregated	0.0616%	0.15	0.81	83.41	0.00	0.06	0.11
			TOTAL	**30.99**	**437.18**	**1,329.45**	**6.99**	**25.14**	**111.59**

Based on EMFAC2017, Version 1.0.2, emission factors for Riverside County - South Coast Air Basin

Year 2040 Existing: Criteria Air Pollutants (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000
				Percent Adjustment	-19%

[1.] Based on data provided Fehr & Peers.

Emission year

Year 2040						lbs/day			
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
North Desert									
All Other Buses	DSL	Aggregated	0.01%	0.01	0.79	0.04	0.01	0.11	0.05
LDA	GAS	Aggregated	50.41%	5.38	53.68	1,116.96	5.91	139.04	55.98
LDA	DSL	Aggregated	0.62%	0.12	0.31	3.86	0.05	1.73	0.70
LDA	ELEC	Aggregated	3.14%	0.00	0.00	0.00	0.00	8.55	3.39
LDT1	GAS	Aggregated	5.17%	0.72	6.37	120.88	0.71	14.29	5.76
LDT1	DSL	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT1	ELEC	Aggregated	0.20%	0.00	0.00	0.00	0.00	0.54	0.21
LDT2	GAS	Aggregated	15.54%	2.70	19.16	411.42	2.09	42.88	17.27
LDT2	DSL	Aggregated	0.16%	0.10	0.24	0.99	0.02	0.47	0.21
LDT2	ELEC	Aggregated	0.49%	0.00	0.00	0.00	0.00	1.33	0.53
LHD1	GAS	Aggregated	0.97%	0.18	2.13	5.60	0.39	5.05	2.11
LHD1	DSL	Aggregated	1.03%	1.75	18.79	9.88	0.23	5.94	2.62
LHD2	GAS	Aggregated	0.15%	0.03	0.35	0.85	0.07	0.90	0.38
LHD2	DSL	Aggregated	0.41%	0.79	11.03	4.62	0.10	2.83	1.32
MCY	GAS	Aggregated	0.74%	88.93	51.40	798.90	0.09	0.80	0.36
MDV	GAS	Aggregated	10.10%	2.20	15.81	281.20	1.67	27.89	11.25
MDV	DSL	Aggregated	0.36%	0.08	0.23	2.53	0.05	1.01	0.41
MDV	ELEC	Aggregated	0.36%	0.00	0.00	0.00	0.00	0.97	0.39
MH	GAS	Aggregated	0.05%	0.02	0.32	0.41	0.04	0.43	0.18
MH	DSL	Aggregated	0.02%	0.05	3.00	0.20	0.01	0.29	0.16
Motor Coach	DSL	Aggregated	0.01%	0.01	0.69	0.07	0.01	0.08	0.04
OBUS	GAS	Aggregated	0.05%	0.04	0.45	0.89	0.04	0.47	0.20
PTO	DSL	Aggregated	0.02%	0.03	6.20	0.55	0.02	0.01	0.01
SBUS	GAS	Aggregated	0.03%	0.03	0.23	0.43	0.01	1.60	0.68
SBUS	DSL	Aggregated	0.06%	0.08	7.71	0.54	0.03	2.67	1.15
T6 CAIRP heavy	DSL	Aggregated	0.14%	0.06	6.06	0.42	0.05	1.28	0.58
T6 CAIRP small	DSL	Aggregated	0.02%	0.01	0.84	0.06	0.01	0.17	0.08
T6 instate constr	DSL	Aggregated	0.07%	0.04	4.77	0.26	0.03	0.69	0.33
T6 instate constr	DSL	Aggregated	0.18%	0.09	9.21	0.59	0.08	1.70	0.78
T6 instate heavy	DSL	Aggregated	0.16%	0.08	9.32	0.54	0.06	1.51	0.70
T6 instate small	DSL	Aggregated	0.21%	0.10	10.45	0.67	0.09	1.94	0.89
T6 OOS heavy	DSL	Aggregated	0.08%	0.03	3.38	0.23	0.03	0.71	0.32
T6 OOS small	DSL	Aggregated	0.01%	0.00	0.49	0.03	0.00	0.10	0.05
T6 Public	DSL	Aggregated	0.02%	0.01	0.74	0.05	0.01	0.15	0.07
T6 utility	DSL	Aggregated	0.00%	0.00	0.09	0.01	0.00	0.02	0.01
T6TS	GAS	Aggregated	0.28%	0.14	1.47	2.53	0.22	2.42	1.01
T7 CAIRP	DSL	Aggregated	2.76%	3.25	272.67	24.67	1.43	21.53	10.84
T7 CAIRP constru	DSL	Aggregated	0.05%	0.06	5.12	0.46	0.03	0.40	0.20
T7 NNOOS	DSL	Aggregated	3.36%	3.71	302.45	28.21	1.74	25.46	12.48
T7 NOOS	DSL	Aggregated	1.08%	1.28	107.36	9.70	0.56	8.46	4.27
T7 POLA	DSL	Aggregated	0.30%	0.44	57.42	5.73	0.19	2.13	0.98
T7 Public	DSL	Aggregated	0.02%	0.02	1.71	0.13	0.01	0.13	0.06
T7 Single	DSL	Aggregated	0.11%	0.11	9.23	0.86	0.07	0.81	0.38
T7 single constru	DSL	Aggregated	0.13%	0.13	11.02	1.00	0.08	0.94	0.45
T7 SWCV	DSL	Aggregated	0.01%	0.01	0.45	0.03	0.01	0.04	0.02
T7 SWCV	NG	Aggregated	0.00%	0.01	0.04	1.33	0.00	0.01	0.00
T7 tractor	DSL	Aggregated	0.77%	0.91	77.78	6.92	0.42	6.03	3.04
T7 tractor constr	DSL	Aggregated	0.11%	0.13	11.34	0.98	0.06	0.84	0.43
T7 utility	DSL	Aggregated	0.00%	0.00	0.09	0.01	0.00	0.01	0.00
T7IS	GAS	Aggregated	0.00%	0.04	0.47	3.57	0.00	0.01	0.01

Year 2040 Existing: Criteria Air Pollutants (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000
				Percent Adjustment	-19%

[1.] Based on data provided Fehr & Peers.

Emission year

Year 2040						lbs/day			
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
UBUS	GAS	Aggregated	0.02%	0.02	0.29	0.34	0.01	0.13	0.05
UBUS	DSL	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	NG	Aggregated	0.03%	0.15	0.84	80.83	0.00	0.24	0.10
			TOTAL	**114.08**	**1,104.00**	**2,930.97**	**16.78**	**337.75**	**143.46**
East Desert									
All Other Buses	DSL	Aggregated	0.01%	0.00	0.17	0.01	0.00	0.00	0.02
LDA	GAS	Aggregated	50.41%	1.18	11.75	244.49	1.29	5.38	24.71
LDA	DSL	Aggregated	0.62%	0.03	0.07	0.84	0.01	0.07	0.31
LDA	ELEC	Aggregated	3.14%	0.00	0.00	0.00	0.00	0.33	1.54
LDT1	GAS	Aggregated	5.17%	0.16	1.40	26.46	0.15	0.55	2.54
LDT1	DSL	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
LDT1	ELEC	Aggregated	0.20%	0.00	0.00	0.00	0.00	0.02	0.10
LDT2	GAS	Aggregated	15.54%	0.59	4.19	90.05	0.46	1.66	7.62
LDT2	DSL	Aggregated	0.16%	0.02	0.05	0.22	0.00	0.02	0.08
LDT2	ELEC	Aggregated	0.49%	0.00	0.00	0.00	0.00	0.05	0.24
LHD1	GAS	Aggregated	0.97%	0.04	0.47	1.23	0.08	0.10	0.99
LHD1	DSL	Aggregated	1.03%	0.38	4.11	2.16	0.05	0.16	1.05
LHD2	GAS	Aggregated	0.15%	0.01	0.08	0.19	0.02	0.02	0.18
LHD2	DSL	Aggregated	0.41%	0.17	2.41	1.01	0.02	0.07	0.49
MCY	GAS	Aggregated	0.74%	19.46	11.25	174.87	0.02	0.04	0.12
MDV	GAS	Aggregated	10.10%	0.48	3.46	61.55	0.37	1.08	4.95
MDV	DSL	Aggregated	0.36%	0.02	0.05	0.55	0.01	0.04	0.18
MDV	ELEC	Aggregated	0.36%	0.00	0.00	0.00	0.00	0.04	0.18
MH	GAS	Aggregated	0.05%	0.01	0.07	0.09	0.01	0.01	0.09
MH	DSL	Aggregated	0.02%	0.01	0.66	0.04	0.00	0.00	0.04
Motor Coach	DSL	Aggregated	0.01%	0.00	0.15	0.01	0.00	0.00	0.01
OBUS	GAS	Aggregated	0.05%	0.01	0.10	0.19	0.01	0.01	0.09
PTO	DSL	Aggregated	0.02%	0.01	1.36	0.12	0.00	0.00	0.00
SBUS	GAS	Aggregated	0.03%	0.01	0.05	0.10	0.00	0.00	0.35
SBUS	DSL	Aggregated	0.06%	0.02	1.69	0.12	0.01	0.01	0.57
T6 CAIRP heavy	DSL	Aggregated	0.14%	0.01	1.33	0.09	0.01	0.02	0.24
T6 CAIRP small	DSL	Aggregated	0.02%	0.00	0.18	0.01	0.00	0.00	0.03
T6 instate constr	DSL	Aggregated	0.07%	0.01	1.04	0.06	0.01	0.01	0.12
T6 instate constr	DSL	Aggregated	0.18%	0.02	2.02	0.13	0.02	0.03	0.31
T6 instate heavy	DSL	Aggregated	0.16%	0.02	2.04	0.12	0.01	0.03	0.27
T6 instate small	DSL	Aggregated	0.21%	0.02	2.29	0.15	0.02	0.03	0.36
T6 OOS heavy	DSL	Aggregated	0.08%	0.01	0.74	0.05	0.01	0.01	0.13
T6 OOS small	DSL	Aggregated	0.01%	0.00	0.11	0.01	0.00	0.00	0.02
T6 Public	DSL	Aggregated	0.02%	0.00	0.16	0.01	0.00	0.00	0.03
T6 utility	DSL	Aggregated	0.00%	0.00	0.02	0.00	0.00	0.00	0.00
T6TS	GAS	Aggregated	0.28%	0.03	0.32	0.55	0.05	0.04	0.48
T7 CAIRP	DSL	Aggregated	2.76%	0.71	59.68	5.40	0.31	1.32	2.27
T7 CAIRP constru	DSL	Aggregated	0.05%	0.01	1.12	0.10	0.01	0.02	0.04
T7 NNOOS	DSL	Aggregated	3.36%	0.81	66.20	6.17	0.38	1.61	2.77
T7 NOOS	DSL	Aggregated	1.08%	0.28	23.50	2.12	0.12	0.52	0.89
T7 POLA	DSL	Aggregated	0.30%	0.10	12.57	1.25	0.04	0.14	0.25
T7 Public	DSL	Aggregated	0.02%	0.00	0.37	0.03	0.00	0.01	0.02
T7 Single	DSL	Aggregated	0.11%	0.02	2.02	0.19	0.02	0.05	0.09
T7 single constru	DSL	Aggregated	0.13%	0.03	2.41	0.22	0.02	0.06	0.10
T7 SWCV	DSL	Aggregated	0.01%	0.00	0.10	0.01	0.00	0.00	0.01
T7 SWCV	NG	Aggregated	0.00%	0.00	0.01	0.29	0.00	0.00	0.00

Year 2040 Existing: Criteria Air Pollutants (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000
				Percent Adjustment	-19%

[1.] Based on data provided Fehr & Peers.

Emission year

Year 2040									lbs/day
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
T7 tractor	DSL	Aggregated	0.77%	0.20	17.03	1.51	0.09	0.37	0.63
T7 tractor constr	DSL	Aggregated	0.11%	0.03	2.48	0.21	0.01	0.05	0.09
T7 utility	DSL	Aggregated	0.00%	0.00	0.02	0.00	0.00	0.00	0.00
T7IS	GAS	Aggregated	0.00%	0.01	0.10	0.78	0.00	0.00	0.00
UBUS	GAS	Aggregated	0.02%	0.00	0.06	0.08	0.00	0.00	0.03
UBUS	DSL	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	NG	Aggregated	0.03%	0.03	0.18	17.69	0.00	0.01	0.04
			TOTAL	**24.97**	**241.65**	**641.55**	**3.67**	**14.03**	**55.64**

Based on EMFAC2017, Version 1.0.2, emission factors for San Bernardino County - Mojave Desert Air Basin

Year 2040 Project: Criteria Air Pollutants (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000
				Percent Adjustment	-30%

[1.] Based on data provided Fehr & Peers.

Emission year

Year 2040				lbs/day					
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Valley Region									
All Other Buses	DSL	Aggregated	0.03%	0.01	2.07	0.12	0.01	0.23	0.10
LDA	GAS	Aggregated	53.07%	6.04	50.52	1,219.01	5.70	130.91	52.86
LDA	DSL	Aggregated	0.66%	0.20	0.34	6.30	0.05	1.63	0.66
LDA	ELEC	Aggregated	3.06%	0.00	0.00	0.00	0.00	7.45	2.96
LDT1	GAS	Aggregated	5.15%	0.79	5.74	125.48	0.65	12.73	5.15
LDT1	DSL	Aggregated	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
LDT1	ELEC	Aggregated	0.19%	0.00	0.00	0.00	0.00	0.46	0.18
LDT2	GAS	Aggregated	15.61%	2.91	17.08	428.39	1.93	38.54	15.58
LDT2	DSL	Aggregated	0.16%	0.15	0.28	1.57	0.02	0.43	0.19
LDT2	ELEC	Aggregated	0.48%	0.00	0.00	0.00	0.00	1.16	0.46
LHD1	GAS	Aggregated	0.93%	0.19	1.76	6.31	0.34	4.35	1.82
LHD1	DSL	Aggregated	0.95%	2.34	10.22	11.29	0.19	4.90	2.17
LHD2	GAS	Aggregated	0.15%	0.03	0.32	0.98	0.06	0.78	0.33
LHD2	DSL	Aggregated	0.37%	0.96	5.54	4.71	0.08	2.33	1.09
MCY	GAS	Aggregated	0.33%	40.52	19.94	306.86	0.04	0.33	0.15
MDV	GAS	Aggregated	10.43%	2.25	13.36	294.80	1.58	25.75	10.41
MDV	DSL	Aggregated	0.37%	0.13	0.23	3.94	0.05	0.92	0.38
MDV	ELEC	Aggregated	0.35%	0.00	0.00	0.00	0.00	0.86	0.34
MH	GAS	Aggregated	0.05%	0.02	0.26	0.44	0.03	0.36	0.15
MH	DSL	Aggregated	0.02%	0.06	2.84	0.21	0.01	0.21	0.11
Motor Coach	DSL	Aggregated	0.02%	0.01	1.60	0.15	0.01	0.14	0.06
OBUS	GAS	Aggregated	0.03%	0.03	0.22	0.54	0.02	0.26	0.11
PTO	DSL	Aggregated	0.09%	0.13	23.95	2.12	0.08	0.03	0.02
SBUS	GAS	Aggregated	0.02%	0.02	0.16	0.28	0.01	0.99	0.42
SBUS	DSL	Aggregated	0.06%	0.05	6.70	0.48	0.03	2.69	1.15
T6 Ag	DSL	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP heavy	DSL	Aggregated	0.03%	0.01	1.48	0.10	0.01	0.22	0.10
T6 CAIRP small	DSL	Aggregated	0.00%	0.00	0.23	0.02	0.00	0.03	0.02
T6 instate constr	DSL	Aggregated	0.08%	0.03	5.70	0.34	0.03	0.62	0.28
T6 instate constr	DSL	Aggregated	0.16%	0.06	9.88	0.65	0.06	1.32	0.58
T6 instate heavy	DSL	Aggregated	0.92%	0.38	61.00	3.84	0.34	7.51	3.32
T6 instate small	DSL	Aggregated	1.20%	0.46	72.18	4.74	0.46	9.70	4.26
T6 OOS heavy	DSL	Aggregated	0.02%	0.01	0.86	0.06	0.01	0.13	0.06
T6 OOS small	DSL	Aggregated	0.00%	0.00	0.12	0.01	0.00	0.02	0.01
T6 Public	DSL	Aggregated	0.01%	0.01	0.92	0.05	0.01	0.10	0.04
T6 utility	DSL	Aggregated	0.01%	0.00	0.31	0.03	0.00	0.06	0.03
T6TS	GAS	Aggregated	0.19%	0.10	0.91	2.07	0.14	1.49	0.62
T7 CAIRP	DSL	Aggregated	0.66%	0.61	75.05	6.69	0.31	4.17	1.90
T7 CAIRP constru	DSL	Aggregated	0.05%	0.05	6.18	0.55	0.03	0.34	0.16
T7 NNOOS	DSL	Aggregated	0.81%	0.70	83.25	7.65	0.38	4.99	2.22
T7 NOOS	DSL	Aggregated	0.26%	0.24	29.54	2.63	0.12	1.64	0.75
T7 POLA	DSL	Aggregated	1.09%	1.45	185.33	18.65	0.63	6.93	3.18
T7 Public	DSL	Aggregated	0.04%	0.05	5.15	0.33	0.02	0.22	0.09
T7 Single	DSL	Aggregated	0.48%	0.39	44.99	4.23	0.27	2.89	1.26
T7 single constru	DSL	Aggregated	0.13%	0.11	12.87	1.20	0.08	0.81	0.36
T7 SWCV	DSL	Aggregated	0.01%	0.00	5.55	0.01	0.01	0.04	0.02
T7 SWCV	NG	Aggregated	0.09%	0.62	5.24	72.34	0.00	0.51	0.20
T7 tractor	DSL	Aggregated	0.96%	0.90	110.48	9.77	0.47	6.07	2.77
T7 tractor constr	DSL	Aggregated	0.11%	0.11	13.45	1.17	0.06	0.71	0.33
T7 utility	DSL	Aggregated	0.00%	0.00	0.33	0.03	0.00	0.03	0.01

Year 2040 Project: Criteria Air Pollutants (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000
				Percent Adjustment	-30%

[1.] Based on data provided Fehr & Peers.

Emission year

Year 2040						lbs/day			
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
T7IS	GAS	Aggregated	0.00%	0.03	0.29	2.89	0.00	0.01	0.00
UBUS	GAS	Aggregated	0.03%	0.01	0.06	0.19	0.01	0.16	0.07
UBUS	DSL	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	NG	Aggregated	0.06%	0.31	1.66	170.99	0.00	0.34	0.13
			TOTAL	**63.52**	**896.17**	**2,725.21**	**14.34**	**289.49**	**119.63**
Mountain Region									
All Other Buses	DSL	Aggregated	0.0280%	0.01	1.14	0.07	0.01	0.01	0.11
LDA	GAS	Aggregated	53.0712%	3.33	27.82	671.30	3.14	12.71	58.39
LDA	DSL	Aggregated	0.6560%	0.11	0.19	3.47	0.03	0.16	0.72
LDA	ELEC	Aggregated	3.0626%	0.00	0.00	0.00	0.00	0.73	3.37
LDT1	GAS	Aggregated	5.1514%	0.44	3.16	69.10	0.36	1.23	5.67
LDT1	DSL	Aggregated	0.0007%	0.00	0.00	0.00	0.00	0.00	0.00
LDT1	ELEC	Aggregated	0.1906%	0.00	0.00	0.00	0.00	0.05	0.21
LDT2	GAS	Aggregated	15.6141%	1.60	9.41	235.91	1.07	3.74	17.18
LDT2	DSL	Aggregated	0.1591%	0.08	0.15	0.86	0.01	0.04	0.18
LDT2	ELEC	Aggregated	0.4770%	0.00	0.00	0.00	0.00	0.11	0.52
LHD1	GAS	Aggregated	0.9333%	0.10	0.97	3.47	0.18	0.22	2.14
LHD1	DSL	Aggregated	0.9498%	1.29	5.63	6.22	0.10	0.34	2.17
LHD2	GAS	Aggregated	0.1464%	0.02	0.18	0.54	0.03	0.04	0.39
LHD2	DSL	Aggregated	0.3743%	0.53	3.05	2.59	0.05	0.13	1.00
MCY	GAS	Aggregated	0.3290%	22.31	10.98	168.98	0.02	0.04	0.12
MDV	GAS	Aggregated	10.4264%	1.24	7.36	162.34	0.87	2.50	11.47
MDV	DSL	Aggregated	0.3710%	0.07	0.12	2.17	0.03	0.09	0.41
MDV	ELEC	Aggregated	0.3549%	0.00	0.00	0.00	0.00	0.08	0.39
MH	GAS	Aggregated	0.0459%	0.01	0.14	0.24	0.02	0.02	0.18
MH	DSL	Aggregated	0.0211%	0.04	1.56	0.12	0.00	0.01	0.08
Motor Coach	DSL	Aggregated	0.0163%	0.01	0.88	0.08	0.01	0.01	0.06
OBUS	GAS	Aggregated	0.0337%	0.01	0.12	0.30	0.01	0.01	0.13
PTO	DSL	Aggregated	0.0946%	0.07	13.19	1.17	0.04	0.00	0.00
SBUS	GAS	Aggregated	0.0241%	0.01	0.09	0.15	0.01	0.01	0.54
SBUS	DSL	Aggregated	0.0649%	0.03	3.69	0.26	0.02	0.02	1.45
T6 Ag	DSL	Aggregated	0.0000%	0.00	0.00	0.00	0.00	0.00	0.00
T6 CAIRP heavy	DSL	Aggregated	0.0279%	0.01	0.82	0.06	0.01	0.01	0.11
T6 CAIRP small	DSL	Aggregated	0.0043%	0.00	0.13	0.01	0.00	0.00	0.02
T6 instate constr	DSL	Aggregated	0.0753%	0.02	3.14	0.19	0.02	0.03	0.29
T6 instate constr	DSL	Aggregated	0.1621%	0.03	5.44	0.36	0.03	0.06	0.63
T6 instate heavy	DSL	Aggregated	0.9206%	0.21	33.59	2.11	0.19	0.33	3.59
T6 instate small	DSL	Aggregated	1.1957%	0.26	39.75	2.61	0.25	0.43	4.67
T6 OOS heavy	DSL	Aggregated	0.0162%	0.00	0.47	0.03	0.00	0.01	0.06
T6 OOS small	DSL	Aggregated	0.0022%	0.00	0.07	0.00	0.00	0.00	0.01
T6 Public	DSL	Aggregated	0.0124%	0.00	0.51	0.03	0.00	0.00	0.05
T6 utility	DSL	Aggregated	0.0079%	0.00	0.17	0.01	0.00	0.00	0.03
T6TS	GAS	Aggregated	0.1904%	0.06	0.50	1.14	0.08	0.07	0.74
T7 CAIRP	DSL	Aggregated	0.6627%	0.34	41.33	3.68	0.17	0.71	1.22
T7 CAIRP constru	DSL	Aggregated	0.0541%	0.03	3.40	0.30	0.02	0.06	0.10
T7 NNOOS	DSL	Aggregated	0.8078%	0.39	45.84	4.21	0.21	0.87	1.49
T7 NOOS	DSL	Aggregated	0.2603%	0.13	16.27	1.45	0.07	0.28	0.48
T7 POLA	DSL	Aggregated	1.0910%	0.80	102.06	10.27	0.35	1.18	2.02
T7 Public	DSL	Aggregated	0.0356%	0.03	2.83	0.18	0.01	0.04	0.07
T7 Single	DSL	Aggregated	0.4762%	0.21	24.77	2.33	0.15	0.51	0.88
T7 single constru	DSL	Aggregated	0.1342%	0.06	7.08	0.66	0.04	0.14	0.25

Year 2040 Project: Criteria Air Pollutants (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000
				Percent Adjustment	-30%

[1.] Based on data provided Fehr & Peers.

Emission year

Year 2040									lbs/day
Vehicle Type		**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
T7 SWCV	DSL	Aggregated	0.0060%	0.00	3.06	0.01	0.01	0.01	0.01
T7 SWCV	NG	Aggregated	0.0925%	0.34	2.88	39.84	0.00	0.10	0.17
T7 tractor	DSL	Aggregated	0.9609%	0.49	60.84	5.38	0.26	1.04	1.78
T7 tractor constr	DSL	Aggregated	0.1107%	0.06	7.41	0.64	0.03	0.12	0.20
T7 utility	DSL	Aggregated	0.0047%	0.00	0.18	0.02	0.00	0.01	0.01
T7IS	GAS	Aggregated	0.0018%	0.02	0.16	1.59	0.00	0.00	0.00
UBUS	GAS	Aggregated	0.0285%	0.00	0.03	0.11	0.01	0.01	0.08
UBUS	DSL	Aggregated	0.0000%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	NG	Aggregated	0.0616%	0.17	0.92	94.16	0.00	0.06	0.12
			TOTAL	**34.98**	**493.51**	**1,500.74**	**7.90**	**28.38**	**125.96**

Based on EMFAC2017, Version 1.0.2, emission factors for Riverside County - South Coast Air Basin

Year 2040 Project: Criteria Air Pollutants (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000
				Percent Adjustment	-30%

[1] Based on data provided Fehr & Peers.

Emission year: **Year 2040** — **lbs/day**

Vehicle Type		Speed	Percent of VMT of SpeedBin	ROG	NOx	CO	SOx	PM10	PM2.5
North Desert									
All Other Buses	DSL	Aggregated	0.01%	0.01	0.97	0.05	0.01	0.14	0.06
	GAS	Aggregated	50.41%	6.66	66.51	1,384.07	7.32	172.30	69.36
LDA	DSL	Aggregated	0.62%	0.15	0.39	4.78	0.07	2.15	0.87
	ELEC	Aggregated	3.14%	0.00	0.00	0.00	0.00	10.60	4.20
	GAS	Aggregated	5.17%	0.90	7.90	149.78	0.87	17.70	7.14
LDT1	DSL	Aggregated	0.00%	0.00	0.00	0.01	0.00	0.00	0.00
	ELEC	Aggregated	0.20%	0.00	0.00	0.00	0.00	0.67	0.26
	GAS	Aggregated	15.54%	3.35	23.74	509.81	2.60	53.14	21.40
LDT2	DSL	Aggregated	0.16%	0.12	0.30	1.23	0.02	0.58	0.26
	ELEC	Aggregated	0.49%	0.00	0.00	0.00	0.00	1.65	0.65
LHD1	GAS	Aggregated	0.97%	0.22	2.64	6.94	0.48	6.26	2.61
	DSL	Aggregated	1.03%	2.17	23.28	12.25	0.29	7.36	3.25
LHD2	GAS	Aggregated	0.15%	0.03	0.44	1.05	0.09	1.12	0.47
	DSL	Aggregated	0.41%	0.98	13.67	5.73	0.12	3.50	1.63
MCY	GAS	Aggregated	0.74%	110.19	63.70	989.96	0.11	0.99	0.44
	GAS	Aggregated	10.10%	2.73	19.59	348.44	2.07	34.56	13.94
MDV	DSL	Aggregated	0.36%	0.10	0.29	3.13	0.07	1.25	0.51
	ELEC	Aggregated	0.36%	0.00	0.00	0.00	0.00	1.21	0.48
MH	GAS	Aggregated	0.05%	0.03	0.39	0.51	0.05	0.53	0.22
	DSL	Aggregated	0.02%	0.06	3.72	0.25	0.01	0.35	0.20
Motor Coach	DSL	Aggregated	0.01%	0.01	0.86	0.08	0.01	0.10	0.05
OBUS	GAS	Aggregated	0.05%	0.05	0.56	1.10	0.05	0.58	0.24
PTO	DSL	Aggregated	0.02%	0.04	7.68	0.68	0.02	0.01	0.01
SBUS	GAS	Aggregated	0.03%	0.03	0.29	0.54	0.02	1.98	0.85
	DSL	Aggregated	0.06%	0.10	9.56	0.67	0.04	3.31	1.42
T6 CAIRP heavy	DSL	Aggregated	0.14%	0.08	7.51	0.52	0.06	1.58	0.71
T6 CAIRP small	DSL	Aggregated	0.02%	0.01	1.04	0.07	0.01	0.21	0.10
T6 instate construction heavy	DSL	Aggregated	0.07%	0.05	5.91	0.32	0.04	0.86	0.40
T6 instate construction small	DSL	Aggregated	0.18%	0.11	11.41	0.73	0.09	2.11	0.97
T6 instate heavy	DSL	Aggregated	0.16%	0.10	11.55	0.67	0.08	1.87	0.87
T6 instate small	DSL	Aggregated	0.21%	0.12	12.95	0.83	0.11	2.41	1.10
T6 OOS heavy	DSL	Aggregated	0.08%	0.04	4.19	0.29	0.04	0.89	0.40
T6 OOS small	DSL	Aggregated	0.01%	0.01	0.61	0.04	0.01	0.12	0.06
T6 Public	DSL	Aggregated	0.02%	0.01	0.92	0.06	0.01	0.18	0.08
T6 utility	DSL	Aggregated	0.00%	0.00	0.11	0.01	0.00	0.03	0.01
T6TS	GAS	Aggregated	0.28%	0.17	1.82	3.14	0.28	3.00	1.25
T7 CAIRP	DSL	Aggregated	2.76%	4.02	337.88	30.56	1.78	26.67	13.44
T7 CAIRP construction	DSL	Aggregated	0.05%	0.08	6.35	0.57	0.04	0.50	0.25
T7 NNOOS	DSL	Aggregated	3.36%	4.60	374.78	34.95	2.16	31.55	15.46
T7 NOOS	DSL	Aggregated	1.08%	1.58	133.03	12.02	0.70	10.49	5.29
T7 POLA	DSL	Aggregated	0.30%	0.55	71.16	7.10	0.24	2.64	1.21
T7 Public	DSL	Aggregated	0.02%	0.02	2.11	0.16	0.01	0.16	0.07
T7 Single	DSL	Aggregated	0.11%	0.14	11.44	1.06	0.09	1.00	0.48
T7 single construction	DSL	Aggregated	0.13%	0.16	13.65	1.24	0.10	1.16	0.55
T7 SWCV	DSL	Aggregated	0.01%	0.01	0.55	0.04	0.01	0.05	0.02
	NG	Aggregated	0.00%	0.01	0.04	1.65	0.00	0.01	0.00
T7 tractor	DSL	Aggregated	0.77%	1.13	96.38	8.57	0.52	7.47	3.77
T7 tractor construction	DSL	Aggregated	0.11%	0.16	14.06	1.21	0.08	1.04	0.53
T7 utility	DSL	Aggregated	0.00%	0.00	0.11	0.01	0.00	0.01	0.00
T7IS	GAS	Aggregated	0.00%	0.05	0.58	4.42	0.00	0.02	0.01

Year 2040 Project: Criteria Air Pollutants (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000
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E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000
				Percent Adjustment	-30%

[1] Based on data provided Fehr & Peers.

Emission year: **Year 2040** — **lbs/day**

Vehicle Type		Speed	Percent of VMT of SpeedBin	ROG	NOx	CO	SOx	PM10	PM2.5
UBUS	GAS	Aggregated	0.02%	0.02	0.36	0.43	0.02	0.16	0.07
UBUS	DSL	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
UBUS	NG	Aggregated	0.03%	0.19	1.04	100.16	0.00	0.30	0.12
			TOTAL	**141.36**	**1,368.01**	**3,631.90**	**20.79**	**418.52**	**177.77**
East Desert									
All Other Buses	DSL	Aggregated	0.01%	0.00	0.17	0.01	0.00	0.00	0.02
	GAS	Aggregated	50.41%	1.19	11.92	248.12	1.31	5.46	25.08
LDA	DSL	Aggregated	0.62%	0.03	0.07	0.86	0.01	0.07	0.31
	ELEC	Aggregated	3.14%	0.00	0.00	0.00	0.00	0.34	1.56
	GAS	Aggregated	5.17%	0.16	1.42	26.85	0.16	0.56	2.57
LDT1	DSL	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00
	ELEC	Aggregated	0.20%	0.00	0.00	0.00	0.00	0.02	0.10
	GAS	Aggregated	15.54%	0.60	4.26	91.39	0.47	1.68	7.73
LDT2	DSL	Aggregated	0.16%	0.02	0.05	0.22	0.00	0.02	0.08
	ELEC	Aggregated	0.49%	0.00	0.00	0.00	0.00	0.05	0.24
LHD1	GAS	Aggregated	0.97%	0.04	0.47	1.24	0.09	0.11	1.00
	DSL	Aggregated	1.03%	0.39	4.17	2.20	0.05	0.17	1.06
LHD2	GAS	Aggregated	0.15%	0.01	0.08	0.19	0.02	0.02	0.18
	DSL	Aggregated	0.41%	0.18	2.45	1.03	0.02	0.07	0.49
MCY	GAS	Aggregated	0.74%	19.75	11.42	177.47	0.02	0.04	0.12
	GAS	Aggregated	10.10%	0.49	3.51	62.47	0.37	1.09	5.02
MDV	DSL	Aggregated	0.36%	0.02	0.05	0.56	0.01	0.04	0.18
	ELEC	Aggregated	0.36%	0.00	0.00	0.00	0.00	0.04	0.18
MH	GAS	Aggregated	0.05%	0.01	0.07	0.09	0.01	0.01	0.09
	DSL	Aggregated	0.02%	0.01	0.67	0.05	0.00	0.00	0.04
Motor Coach	DSL	Aggregated	0.01%	0.00	0.15	0.01	0.00	0.00	0.01
OBUS	GAS	Aggregated	0.05%	0.01	0.10	0.20	0.01	0.01	0.09
PTO	DSL	Aggregated	0.02%	0.01	1.38	0.12	0.00	0.00	0.00
SBUS	GAS	Aggregated	0.03%	0.01	0.05	0.10	0.00	0.00	0.35
	DSL	Aggregated	0.06%	0.02	1.71	0.12	0.01	0.01	0.58
T6 CAIRP heavy	DSL	Aggregated	0.14%	0.01	1.35	0.09	0.01	0.02	0.24
T6 CAIRP small	DSL	Aggregated	0.02%	0.00	0.19	0.01	0.00	0.00	0.03
T6 instate construction heavy	DSL	Aggregated	0.07%	0.01	1.06	0.06	0.01	0.01	0.13
T6 instate construction small	DSL	Aggregated	0.18%	0.02	2.05	0.13	0.02	0.03	0.32
T6 instate heavy	DSL	Aggregated	0.16%	0.02	2.07	0.12	0.01	0.03	0.28
T6 instate small	DSL	Aggregated	0.21%	0.02	2.32	0.15	0.02	0.03	0.36
T6 OOS heavy	DSL	Aggregated	0.08%	0.01	0.75	0.05	0.01	0.01	0.14
T6 OOS small	DSL	Aggregated	0.01%	0.00	0.11	0.01	0.00	0.00	0.02
T6 Public	DSL	Aggregated	0.02%	0.00	0.16	0.01	0.00	0.00	0.03
T6 utility	DSL	Aggregated	0.00%	0.00	0.02	0.00	0.00	0.00	0.00
T6TS	GAS	Aggregated	0.28%	0.03	0.33	0.56	0.05	0.05	0.49
T7 CAIRP	DSL	Aggregated	2.76%	0.72	60.57	5.48	0.32	1.34	2.30
T7 CAIRP construction	DSL	Aggregated	0.05%	0.01	1.14	0.10	0.01	0.03	0.04
T7 NNOOS	DSL	Aggregated	3.36%	0.82	67.19	6.27	0.39	1.64	2.81
T7 NOOS	DSL	Aggregated	1.08%	0.28	23.85	2.16	0.13	0.53	0.91
T7 POLA	DSL	Aggregated	0.30%	0.10	12.76	1.27	0.04	0.15	0.25
T7 Public	DSL	Aggregated	0.02%	0.00	0.38	0.03	0.00	0.01	0.02
T7 Single	DSL	Aggregated	0.11%	0.03	2.05	0.19	0.02	0.05	0.09
T7 single construction	DSL	Aggregated	0.13%	0.03	2.45	0.22	0.02	0.06	0.11
T7 SWCV	DSL	Aggregated	0.01%	0.00	0.10	0.01	0.00	0.00	0.01
	NG	Aggregated	0.00%	0.00	0.01	0.30	0.00	0.00	0.00
T7 tractor	DSL	Aggregated	0.77%	0.20	17.28	1.54	0.09	0.38	0.64
T7 tractor construction	DSL	Aggregated	0.11%	0.03	2.52	0.22	0.01	0.05	0.09
T7 utility	DSL	Aggregated	0.00%	0.00	0.02	0.00	0.00	0.00	0.00
T7IS	GAS	Aggregated	0.00%	0.01	0.10	0.79	0.00	0.00	0.00
UBUS	GAS	Aggregated	0.02%	0.00	0.06	0.08	0.00	0.00	0.03
	DSL	Aggregated	0.00%	0.00	0.00	0.00	0.00	0.00	0.00

Year 2040 Project: Criteria Air Pollutants (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)					
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000
				Percent Adjustment	-30%

[1] Based on data provided Fehr & Peers.

Emission year

Year 2040						lbs/day		
Vehicle Type	**Speed**	**Percent of VMT of SpeedBin**	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
NG	Aggregated	0.03%	0.03	0.19	17.96	0.00	0.01	0.04
		TOTAL	**25.34**	**245.24**	**651.09**	**3.73**	**14.24**	**56.47**

Based on EMFAC2017, Version 1.0.2, emission factors for San Bernardino County - Mojave Desert Air Basin

Year 2016 GHG Emissions (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000	723,065,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000	439,095,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000	1,008,860,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000	220,825,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000	2,391,845,000
				Percent Adjustment	-19%	

[1.] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
		Emission year		AR5 GWP	AR5 GWP	AR5 GWP	
		Year 2016		265	1	28	
Vehicle Type	**Fuel Type**	**Speed**	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
Valley Region							
All Other Buses	DSL	05 MPH	0.02%	0.03	192.81	0.01	201
LDA	GAS	05 MPH	54.56%	3.29	121,768.93	2.35	122,707
LDA	DSL	05 MPH	0.24%	0.06	403.73	0.00	421
LDA	ELEC	05 MPH	0.12%	0.00	0.00	0.00	0
LDT1	GAS	05 MPH	4.60%	0.69	12,173.32	0.59	12,372
LDT1	DSL	05 MPH	0.00%	0.00	8.45	0.00	9
LDT1	ELEC	05 MPH	0.00%	0.00	0.00	0.00	0
LDT2	GAS	05 MPH	15.72%	1.65	46,314.63	1.06	46,782
LDT2	DSL	05 MPH	0.03%	0.01	74.11	0.00	77
LDT2	ELEC	05 MPH	0.00%	0.00	0.00	0.00	0
LHD1	GAS	05 MPH	1.46%	0.25	8,835.95	0.16	8,907
LHD1	DSL	05 MPH	1.07%	0.62	3,967.95	0.04	4,134
LHD2	GAS	05 MPH	0.26%	0.04	1,814.88	0.02	1,826
LHD2	DSL	05 MPH	0.39%	0.25	1,596.34	0.01	1,663
MCY	GAS	05 MPH	0.41%	0.20	635.17	0.90	713
MDV	GAS	05 MPH	14.39%	1.67	50,361.39	1.11	50,834
MDV	DSL	05 MPH	0.15%	0.07	470.91	0.00	491
MDV	ELEC	05 MPH	0.00%	0.00	0.00	0.00	0
MH	GAS	05 MPH	0.10%	0.03	1,329.57	0.02	1,338
MH	DSL	05 MPH	0.03%	0.04	239.63	0.00	250
Motor Coach	DSL	05 MPH	0.01%	0.03	169.38	0.00	176
OBUS	GAS	05 MPH	0.06%	0.01	715.86	0.01	720
PTO	DSL	05 MPH	0.07%	0.17	1,103.31	0.00	1,149
SBUS	GAS	05 MPH	0.02%	0.01	152.07	0.00	154
SBUS	DSL	05 MPH	0.05%	0.08	503.29	0.00	524
T6 Ag	DSL	05 MPH	0.00%	0.00	0.34	0.00	0
T6 CAIRP heavy	DSL	05 MPH	0.02%	0.03	175.09	0.00	182
T6 CAIRP small	DSL	05 MPH	0.00%	0.00	25.58	0.00	27
T6 instate construction heavy	DSL	05 MPH	0.09%	0.11	702.23	0.01	732
T6 instate construction small	DSL	05 MPH	0.20%	0.24	1,508.39	0.02	1,572
T6 instate heavy	DSL	05 MPH	0.78%	0.91	5,784.31	0.07	6,027
T6 instate small	DSL	05 MPH	0.87%	1.05	6,670.98	0.08	6,951
T6 OOS heavy	DSL	05 MPH	0.01%	0.02	100.42	0.00	105
T6 OOS small	DSL	05 MPH	0.00%	0.00	14.70	0.00	15
T6 Public	DSL	05 MPH	0.03%	0.04	259.58	0.00	270
T6 utility	DSL		0.01%	0.01	64.43	0.00	67
T6TS	GAS	15 MPH	0.20%	0.08	2,499.20	0.05	2,521
T7 CAIRP	DSL	15 MPH	0.59%	1.01	6,398.47	0.04	6,666
T7 CAIRP construction	DSL	15 MPH	0.07%	0.12	732.42	0.00	763
T7 NNOOS	DSL	15 MPH	0.72%	1.17	7,443.62	0.04	7,755
T7 NOOS	DSL	15 MPH	0.23%	0.40	2,513.80	0.01	2,619
T7 POLA	DSL	15 MPH	0.50%	1.03	6,539.42	0.03	6,813
T7 Public	DSL	15 MPH	0.05%	0.10	644.64	0.00	672

Year 2016 GHG Emissions (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000	723,065,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000	439,095,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000	1,008,860,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000	220,825,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000	2,391,845,000
				Percent Adjustment	-19%	

[1] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
		Emission year		AR5 GWP	AR5 GWP	AR5 GWP	
		Year 2016		265	1	28	
Vehicle Type	**Fuel Type**	**Speed**	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
T7 Single	DSL	15 MPH	0.35%	0.64	4,044.56	0.04	4,214
T7 single construction	DSL	15 MPH	0.16%	0.29	1,874.97	0.02	1,954
T7 SWCV	DSL	15 MPH	0.07%	0.41	2,594.29	0.00	2,702
T7 SWCV	NG	15 MPH	0.09%	0.51	2,509.56	1.48	2,687
T7 tractor	DSL	15 MPH	0.92%	1.63	10,357.13	0.11	10,792
T7 tractor construction	DSL	15 MPH	0.13%	0.24	1,548.20	0.02	1,613
T7 utility	DSL	15 MPH	0.00%	0.01	57.80	0.00	60
T7IS	GAS	15 MPH	0.00%	0.00	22.85	0.00	24
UBUS	GAS	15 MPH	0.03%	0.00	233.15	0.00	234
UBUS	DSL	15 MPH	0.00%	0.00	6.16	0.00	6
UBUS	ELEC	15 MPH	0.00%	0.00	0.00	0.00	0
UBUS	NG	15 MPH	0.07%	0.20	992.57	2.34	1,112
				19.45	**319,150.55**	**10.66**	**324,603.45**
Mountain Region							
All Other Buses	DSL	10 MPH	0.02%	0.02	117.09	0.00	122
LDA	GAS	10 MPH	54.56%	2.00	73,946.50	1.43	74,516
LDA	DSL	10 MPH	0.24%	0.04	245.17	0.00	255
LDA	ELEC	10 MPH	0.12%	0.00	0.00	0.00	0
LDT1	GAS	10 MPH	4.60%	0.42	7,392.48	0.36	7,513
LDT1	DSL	10 MPH	0.00%	0.00	5.13	0.00	5
LDT1	ELEC	10 MPH	0.00%	0.00	0.00	0.00	0
LDT2	GAS	10 MPH	15.72%	1.00	28,125.44	0.64	28,409
LDT2	DSL	10 MPH	0.03%	0.01	45.01	0.00	47
LDT2	ELEC	10 MPH	0.00%	0.00	0.00	0.00	0
LHD1	GAS	10 MPH	1.46%	0.15	5,365.80	0.09	5,409
LHD1	DSL	10 MPH	1.07%	0.38	2,409.62	0.02	2,511
LHD2	GAS	10 MPH	0.26%	0.02	1,102.12	0.01	1,109
LHD2	DSL	10 MPH	0.39%	0.15	969.41	0.01	1,010
MCY	GAS	10 MPH	0.41%	0.12	385.72	0.54	433
MDV	GAS	10 MPH	14.39%	1.01	30,582.91	0.67	30,870
MDV	DSL	10 MPH	0.15%	0.04	285.97	0.00	298
MDV	ELEC	10 MPH	0.00%	0.00	0.00	0.00	0
MH	GAS	10 MPH	0.10%	0.02	807.41	0.01	812
MH	DSL	10 MPH	0.03%	0.02	145.52	0.00	152
Motor Coach	DSL	10 MPH	0.01%	0.02	102.86	0.00	107
OBUS	GAS	10 MPH	0.06%	0.01	434.72	0.00	437
PTO	DSL	10 MPH	0.07%	0.11	670.00	0.00	698
SBUS	GAS	10 MPH	0.02%	0.00	92.34	0.00	94
SBUS	DSL	10 MPH	0.05%	0.05	305.63	0.00	318
T6 Ag	DSL	10 MPH	0.00%	0.00	0.20	0.00	0
T6 CAIRP heavy	DSL	10 MPH	0.02%	0.02	106.33	0.00	111
T6 CAIRP small	DSL	10 MPH	0.00%	0.00	15.53	0.00	16
T6 instate construction heavy	DSL	0	0.09%	0.07	426.45	0.01	444
T6 instate construction small	DSL	15 MPH	0.20%	0.14	916.00	0.01	954

Year 2016 GHG Emissions (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000	723,065,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000	439,095,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000	1,008,860,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000	220,825,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000	2,391,845,000
				Percent Adjustment	-19%	

[1] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
		Emission year		AR5 GWP	AR5 GWP	AR5 GWP	
		Year 2016		265	1	28	
Vehicle Type	**Fuel Type**	**Speed**	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
T6 instate heavy	DSL	15 MPH	0.78%	0.55	3,512.63	0.04	3,660
T6 instate small	DSL	15 MPH	0.87%	0.64	4,051.08	0.05	4,221
T6 OOS heavy	DSL	15 MPH	0.01%	0.01	60.98	0.00	64
T6 OOS small	DSL	15 MPH	0.00%	0.00	8.93	0.00	9
T6 Public	DSL	15 MPH	0.03%	0.02	157.64	0.00	164
T6 utility	DSL		0.01%	0.01	39.12	0.00	41
T6TS	GAS	20 MPH	0.20%	0.05	1,517.69	0.03	1,531
T7 CAIRP	DSL	20 MPH	0.59%	0.61	3,885.59	0.02	4,048
T7 CAIRP construction	DSL	20 MPH	0.07%	0.07	444.78	0.00	463
T7 NNOOS	DSL	20 MPH	0.72%	0.71	4,520.28	0.02	4,709
T7 NOOS	DSL	20 MPH	0.23%	0.24	1,526.55	0.01	1,590
T7 POLA	DSL	20 MPH	0.50%	0.62	3,971.19	0.02	4,137
T7 Public	DSL	20 MPH	0.05%	0.06	391.47	0.00	408
T7 Single	DSL	20 MPH	0.35%	0.39	2,456.14	0.03	2,559
T7 single construction	DSL	20 MPH	0.16%	0.18	1,138.61	0.01	1,186
T7 SWCV	DSL	20 MPH	0.07%	0.25	1,575.43	0.00	1,641
T7 SWCV	NG	20 MPH	0.09%	0.31	1,523.98	0.90	1,632
T7 tractor	DSL	20 MPH	0.92%	0.99	6,289.56	0.07	6,553
T7 tractor construction	DSL	20 MPH	0.13%	0.15	940.18	0.01	980
T7 utility	DSL	20 MPH	0.00%	0.01	35.10	0.00	37
T7IS	GAS	20 MPH	0.00%	0.00	13.88	0.00	15
UBUS	GAS	20 MPH	0.03%	0.00	141.58	0.00	142
UBUS	DSL	20 MPH	0.00%	0.00	3.74	0.00	4
UBUS	ELEC	20 MPH	0.00%	0.00	0.00	0.00	0
UBUS	NG	20 MPH	0.07%	0.12	602.76	1.42	675
				11.81	**193,810.25**	**6.47**	**197,121.63**

Based on EMFAC2017, Version 1.0.2, emission factors for Riverside County - South Coast Air Basin

**CH_4 emissions utilizes emission rates based on the 40 MPH speed bin. N_2O and CO_2 emissions utlizes emission rates on the aggregated speed bin.*

Year 2016 GHG Emissions (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000	723,065,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000	439,095,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000	1,008,860,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000	220,825,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000	2,391,845,000
				Percent Adjustment	-19%	

[1.] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
Emission year				AR5 GWP	AR5 GWP	AR5 GWP	
Year 2016				265	1	28	
Vehicle Type	**Fuel Type**	**Speed***	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
North Desert							
All Other Buses	DSL	Aggregate/40 MPH	0.01%	0.01	82.93	0.00	87
LDA	GAS	Aggregate/40 MPH	49.27%	4.45	151,862.85	3.32	153,134
LDA	DSL	Aggregate/40 MPH	0.33%	0.12	781.39	0.00	814
LDA	ELEC	Aggregate/40 MPH	0.20%	0.00	0.00	0.00	0
LDT1	GAS	Aggregate/40 MPH	4.77%	1.00	17,279.05	0.86	17,567
LDT1	DSL	Aggregate/40 MPH	0.00%	0.00	8.92	0.00	9
LDT1	ELEC	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
LDT2	GAS	Aggregate/40 MPH	16.42%	2.58	66,694.48	1.68	67,425
LDT2	DSL	Aggregate/40 MPH	0.04%	0.02	139.50	0.00	145
LDT2	ELEC	Aggregate/40 MPH	0.01%	0.00	0.00	0.00	0
LHD1	GAS	Aggregate/40 MPH	1.65%	0.48	14,138.90	0.31	14,274
LHD1	DSL	Aggregate/40 MPH	1.63%	1.33	8,456.85	0.09	8,812
LHD2	GAS	Aggregate/40 MPH	0.21%	0.05	2,040.05	0.02	2,054
LHD2	DSL	Aggregate/40 MPH	0.58%	0.51	3,254.05	0.03	3,390
MCY	GAS	Aggregate/40 MPH	1.21%	0.85	2,605.44	3.68	2,935
MDV	GAS	Aggregate/40 MPH	14.57%	2.69	70,393.19	1.89	71,160
MDV	DSL	Aggregate/40 MPH	0.21%	0.14	891.47	0.00	929
MDV	ELEC	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
MH	GAS	Aggregate/40 MPH	0.14%	0.06	2,489.05	0.04	2,507
MH	DSL	Aggregate/40 MPH	0.04%	0.06	412.62	0.00	430
Motor Coach	DSL	Aggregate/40 MPH	0.01%	0.02	113.93	0.00	119
OBUS	GAS	Aggregate/40 MPH	0.08%	0.04	1,459.56	0.02	1,470
PTO	DSL	Aggregate/40 MPH	0.01%	0.05	292.85	0.00	305
SBUS	GAS	Aggregate/40 MPH	0.00%	0.00	16.22	0.00	17
SBUS	DSL	Aggregate/40 MPH	0.07%	0.14	878.00	0.00	915
T6 CAIRP heavy	DSL	Aggregate/40 MPH	0.12%	0.18	1,159.09	0.01	1,208
T6 CAIRP small	DSL	Aggregate/40 MPH	0.02%	0.03	168.94	0.00	176
T6 instate construction heavy	DSL	Aggregate/40 MPH	0.05%	0.08	495.13	0.01	516
T6 instate construction small	DSL	Aggregate/40 MPH	0.12%	0.20	1,242.98	0.02	1,295
T6 instate heavy	DSL	Aggregate/40 MPH	0.17%	0.27	1,690.95	0.03	1,762
T6 instate small	DSL	Aggregate/40 MPH	0.19%	0.31	1,979.13	0.03	2,062
T6 OOS heavy	DSL	Aggregate/40 MPH	0.07%	0.10	663.94	0.00	692
T6 OOS small	DSL	Aggregate/40 MPH	0.01%	0.02	96.86	0.00	101
T6 Public	DSL	Aggregate/40 MPH	0.01%	0.02	134.42	0.00	140
T6 utility	DSL	Aggregate/40 MPH	0.00%	0.00	29.51	0.00	31
T6TS	GAS	Aggregate/40 MPH	0.23%	0.14	4,225.66	0.10	4,265
T7 CAIRP	DSL	Aggregate/40 MPH	2.45%	5.65	35,967.19	0.22	37,472
T7 CAIRP construction	DSL	Aggregate/40 MPH	0.03%	0.08	526.74	0.00	549
T7 NNOOS	DSL	Aggregate/40 MPH	2.98%	6.67	42,422.46	0.24	44,196
T7 NOOS	DSL	Aggregate/40 MPH	0.96%	2.22	14,130.96	0.09	14,722
T7 POLA	DSL	Aggregate/40 MPH	0.14%	0.42	2,641.65	0.01	2,752
T7 Public	DSL	Aggregate/40 MPH	0.01%	0.03	212.00	0.00	221
T7 Single	DSL	Aggregate/40 MPH	0.07%	0.16	1,038.14	0.02	1,082

Year 2016 GHG Emissions (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000	723,065,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000	439,095,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000	1,008,860,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000	220,825,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000	2,391,845,000
				Percent Adjustment	-19%	

[1.] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
		Emission year		AR5 GWP	AR5 GWP	AR5 GWP	
		Year 2016		265	1	28	
Vehicle Type	**Fuel Type**	**Speed***	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
T7 single construction	DSL	Aggregate/40 MPH	0.09%	0.21	1,328.83	0.02	1,385
T7 SWCV	DSL	Aggregate/40 MPH	0.00%	0.03	175.44	0.00	183
T7 SWCV	NG	Aggregate/40 MPH	0.00%	0.00	6.75	0.00	7
T7 tractor	DSL	Aggregate/40 MPH	0.67%	1.58	10,036.43	0.12	10,458
T7 tractor construction	DSL	Aggregate/40 MPH	0.07%	0.17	1,100.71	0.01	1,147
T7 utility	DSL	Aggregate/40 MPH	0.00%	0.00	22.47	0.00	23
T7IS	GAS	Aggregate/40 MPH	0.00%	0.00	16.28	0.00	17
UBUS	GAS	Aggregate/40 MPH	0.02%	0.00	378.37	0.00	380
UBUS	DSL	Aggregate/40 MPH	0.00%	0.00	13.09	0.00	14
UBUS	ELEC	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
UBUS	NG	Aggregate/40 MPH	0.04%	0.13	641.34	1.45	716
				33.32	**466,836.77**	**14.34**	**476,068.46**
East Desert							
All Other Buses	DSL	Aggregate/40 MPH	0.01%	0.00	18.15	0.00	19
LDA	GAS	Aggregate/40 MPH	49.27%	0.97	33,240.60	0.73	33,519
LDA	DSL	Aggregate/40 MPH	0.33%	0.03	171.03	0.00	178
LDA	ELEC	Aggregate/40 MPH	0.20%	0.00	0.00	0.00	0
LDT1	GAS	Aggregate/40 MPH	4.77%	0.22	3,782.14	0.19	3,845
LDT1	DSL	Aggregate/40 MPH	0.00%	0.00	1.95	0.00	2
LDT1	ELEC	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
LDT2	GAS	Aggregate/40 MPH	16.42%	0.56	14,598.47	0.37	14,758
LDT2	DSL	Aggregate/40 MPH	0.04%	0.00	30.53	0.00	32
LDT2	ELEC	Aggregate/40 MPH	0.01%	0.00	0.00	0.00	0
LHD1	GAS	Aggregate/40 MPH	1.65%	0.10	3,094.80	0.07	3,124
LHD1	DSL	Aggregate/40 MPH	1.63%	0.29	1,851.08	0.02	1,929
LHD2	GAS	Aggregate/40 MPH	0.21%	0.01	446.54	0.01	450
LHD2	DSL	Aggregate/40 MPH	0.58%	0.11	712.26	0.01	742
MCY	GAS	Aggregate/40 MPH	1.21%	0.19	570.29	0.81	642
MDV	GAS	Aggregate/40 MPH	14.57%	0.59	15,408.06	0.41	15,576
MDV	DSL	Aggregate/40 MPH	0.21%	0.03	195.13	0.00	203
MDV	ELEC	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
MH	GAS	Aggregate/40 MPH	0.14%	0.01	544.82	0.01	549
MH	DSL	Aggregate/40 MPH	0.04%	0.01	90.32	0.00	94
Motor Coach	DSL	Aggregate/40 MPH	0.01%	0.00	24.94	0.00	26
OBUS	GAS	Aggregate/40 MPH	0.08%	0.01	319.48	0.00	322
PTO	DSL	Aggregate/40 MPH	0.01%	0.01	64.10	0.00	67
SBUS	GAS	Aggregate/40 MPH	0.00%	0.00	3.55	0.00	4
SBUS	DSL	Aggregate/40 MPH	0.07%	0.03	192.18	0.00	200
T6 CAIRP heavy	DSL	Aggregate/40 MPH	0.12%	0.04	253.71	0.00	264
T6 CAIRP small	DSL	Aggregate/40 MPH	0.02%	0.01	36.98	0.00	39
T6 instate construction heavy	DSL	Aggregate/40 MPH	0.05%	0.02	108.38	0.00	113
T6 instate construction small	DSL	Aggregate/40 MPH	0.12%	0.04	272.07	0.00	284
T6 instate heavy	DSL	Aggregate/40 MPH	0.17%	0.06	370.13	0.01	386
T6 instate small	DSL	Aggregate/40 MPH	0.19%	0.07	433.20	0.01	451

Year 2016 GHG Emissions (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP Existing	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	139,000	128,415	2,144,000	1,981,000	723,065,000
Mountain	Unincorporated	67,000	54,266	1,485,000	1,203,000	439,095,000
N. Desert	Unincorporated	126,000	99,214	3,510,000	2,764,000	1,008,860,000
E. Desert	Unincorporated	41,000	25,803	962,000	605,000	220,825,000
TOTAL	Unincorporated	373,000	307,697	8,101,000	6,553,000	2,391,845,000
				Percent Adjustment	-19%	

[1.] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
Emission year				AR5 GWP	AR5 GWP	AR5 GWP	
Year 2016				265	1	28	
Vehicle Type	**Fuel Type**	**Speed***	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
T6 OOS heavy	DSL	Aggregate/40 MPH	0.07%	0.02	145.33	0.00	151
T6 OOS small	DSL	Aggregate/40 MPH	0.01%	0.00	21.20	0.00	22
T6 Public	DSL	Aggregate/40 MPH	0.01%	0.00	29.42	0.00	31
T6 utility	DSL	Aggregate/40 MPH	0.00%	0.00	6.46	0.00	7
T6TS	GAS	Aggregate/40 MPH	0.23%	0.03	924.94	0.02	934
T7 CAIRP	DSL	Aggregate/40 MPH	2.45%	1.24	7,872.70	0.05	8,202
T7 CAIRP construction	DSL	Aggregate/40 MPH	0.03%	0.02	115.30	0.00	120
T7 NNOOS	DSL	Aggregate/40 MPH	2.98%	1.46	9,285.67	0.05	9,674
T7 NOOS	DSL	Aggregate/40 MPH	0.96%	0.49	3,093.06	0.02	3,222
T7 POLA	DSL	Aggregate/40 MPH	0.14%	0.09	578.22	0.00	602
T7 Public	DSL	Aggregate/40 MPH	0.01%	0.01	46.40	0.00	48
T7 Single	DSL	Aggregate/40 MPH	0.07%	0.04	227.23	0.00	237
T7 single construction	DSL	Aggregate/40 MPH	0.09%	0.05	290.86	0.00	303
T7 SWCV	DSL	Aggregate/40 MPH	0.00%	0.01	38.40	0.00	40
T7 SWCV	NG	Aggregate/40 MPH	0.00%	0.00	1.48	0.00	2
T7 tractor	DSL	Aggregate/40 MPH	0.67%	0.35	2,196.83	0.03	2,289
T7 tractor construction	DSL	Aggregate/40 MPH	0.07%	0.04	240.93	0.00	251
T7 utility	DSL	Aggregate/40 MPH	0.00%	0.00	4.92	0.00	5
T7IS	GAS	Aggregate/40 MPH	0.00%	0.00	3.56	0.00	4
UBUS	GAS	Aggregate/40 MPH	0.02%	0.00	82.82	0.00	83
UBUS	DSL	Aggregate/40 MPH	0.00%	0.00	2.87	0.00	3
UBUS	ELEC	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
UBUS	NG	Aggregate/40 MPH	0.04%	0.03	140.38	0.32	157
				7.29	**102,183.88**	**3.14**	**104,204.56**

Based on EMFAC2017, Version 1.0.2, emission factors for San Bernardino County - Mojave Desert Air Basin

CH_4 emissions utilizes emission rates based on the 40 MPH speed bin. N_2O and CO_2 emissions utlizes emission rates on the aggregated speed bin.

Year 2040 GHG Emissions: Project (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000	900,090,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000	495,670,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000	1,250,125,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000	224,110,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000	2,869,995,000
					Percent Adjustment	-30%

[1.] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
Emission year				AR5 GWP	AR5 GWP	AR5 GWP	
Year 2040				265	1	28	
Vehicle Type	**Fuel Type**	**Speed***	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
Valley Region							
All Other Buses	DSL	Aggregate/40 MPH	0.03%	0.03	199.87	0.00	208
LDA	GAS	Aggregate/40 MPH	53.07%	1.43	95,426.67	0.34	95,816
LDA	DSL	Aggregate/40 MPH	0.66%	0.15	923.12	0.00	962
LDA	ELEC	Aggregate/40 MPH	3.06%	0.00	0.00	0.00	0
LDT1	GAS	Aggregate/40 MPH	5.15%	0.15	10,804.91	0.04	10,846
LDT1	DSL	Aggregate/40 MPH	0.00%	0.00	1.90	0.00	2
LDT1	ELEC	Aggregate/40 MPH	0.19%	0.00	0.00	0.00	0
LDT2	GAS	Aggregate/40 MPH	15.61%	0.43	32,370.83	0.15	32,490
LDT2	DSL	Aggregate/40 MPH	0.16%	0.05	298.13	0.00	311
LDT2	ELEC	Aggregate/40 MPH	0.48%	0.00	0.00	0.00	0
LHD1	GAS	Aggregate/40 MPH	0.93%	0.03	5,609.33	0.01	5,617
LHD1	DSL	Aggregate/40 MPH	0.95%	0.52	3,328.92	0.01	3,468
LHD2	GAS	Aggregate/40 MPH	0.15%	0.01	1,015.13	0.00	1,017
LHD2	DSL	Aggregate/40 MPH	0.37%	0.23	1,454.59	0.01	1,515
MCY	GAS	Aggregate/40 MPH	0.33%	0.19	633.05	0.82	707
MDV	GAS	Aggregate/40 MPH	10.43%	0.31	26,366.90	0.11	26,453
MDV	DSL	Aggregate/40 MPH	0.37%	0.14	902.96	0.00	941
MDV	ELEC	Aggregate/40 MPH	0.35%	0.00	0.00	0.00	0
MH	GAS	Aggregate/40 MPH	0.05%	0.01	565.90	0.00	567
MH	DSL	Aggregate/40 MPH	0.02%	0.02	156.63	0.00	163
Motor Coach	DSL	Aggregate/40 MPH	0.02%	0.03	167.70	0.00	175
OBUS	GAS	Aggregate/40 MPH	0.03%	0.00	409.87	0.00	411
PTO	DSL	Aggregate/40 MPH	0.09%	0.21	1,348.86	0.00	1,405
SBUS	GAS	Aggregate/40 MPH	0.02%	0.00	158.38	0.00	159
SBUS	DSL	Aggregate/40 MPH	0.06%	0.08	538.05	0.00	560
T6 Ag	DSL	Aggregate/40 MPH	0.00%	0.00	0.02	0.00	0
T6 CAIRP heavy	DSL	Aggregate/40 MPH	0.03%	0.03	164.83	0.00	172
T6 CAIRP small	DSL	Aggregate/40 MPH	0.00%	0.00	27.99	0.00	29
T6 instate construction heavy	DSL	Aggregate/40 MPH	0.08%	0.09	550.33	0.00	573
T6 instate construction small	DSL	Aggregate/40 MPH	0.16%	0.17	1,088.40	0.00	1,134
T6 instate heavy	DSL	Aggregate/40 MPH	0.92%	0.93	5,917.99	0.00	6,165
T6 instate small	DSL	Aggregate/40 MPH	1.20%	1.26	7,996.31	0.00	8,329
T6 OOS heavy	DSL	Aggregate/40 MPH	0.02%	0.02	95.85	0.00	100
T6 OOS small	DSL	Aggregate/40 MPH	0.00%	0.00	14.77	0.00	15
T6 Public	DSL	Aggregate/40 MPH	0.01%	0.01	89.93	0.00	94
T6 utility	DSL	Aggregate/40 MPH	0.01%	0.01	52.16	0.00	54
T6TS	GAS	Aggregate/40 MPH	0.19%	0.01	2,297.16	0.00	2,301
T7 CAIRP	DSL	Aggregate/40 MPH	0.66%	0.85	5,417.57	0.00	5,643
T7 CAIRP construction	DSL	Aggregate/40 MPH	0.05%	0.08	489.50	0.00	510
T7 NNOOS	DSL	Aggregate/40 MPH	0.81%	1.04	6,595.24	0.00	6,870
T7 NOOS	DSL	Aggregate/40 MPH	0.26%	0.33	2,130.07	0.00	2,219
T7 POLA	DSL	Aggregate/40 MPH	1.09%	1.73	11,018.63	0.01	11,478
T7 Public	DSL	Aggregate/40 MPH	0.04%	0.06	373.48	0.00	389

Year 2040 GHG Emissions: Project (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000	900,090,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000	495,670,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000	1,250,125,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000	224,110,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000	2,869,995,000
					Percent Adjustment	-30%

[1.] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
			Emission year	AR5 GWP	AR5 GWP	AR5 GWP	
			Year 2040	265	1	28	
Vehicle Type	**Fuel Type**	**Speed***	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
T7 Single	DSL	Aggregate/40 MPH	0.48%	0.74	4,702.50	0.00	4,898
T7 single construction	DSL	Aggregate/40 MPH	0.13%	0.21	1,325.95	0.00	1,381
T7 SWCV	DSL	Aggregate/40 MPH	0.01%	0.04	261.32	0.00	272
T7 SWCV	NG	Aggregate/40 MPH	0.09%	0.47	2,321.61	1.31	2,484
T7 tractor	DSL	Aggregate/40 MPH	0.96%	1.30	8,270.08	0.01	8,615
T7 tractor construction	DSL	Aggregate/40 MPH	0.11%	0.17	1,070.25	0.00	1,115
T7 utility	DSL	Aggregate/40 MPH	0.00%	0.01	46.56	0.00	49
T7IS	GAS	Aggregate/40 MPH	0.00%	0.00	24.74	0.00	25
UBUS	GAS	Aggregate/40 MPH	0.03%	0.00	197.93	0.00	198
UBUS	DSL	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
UBUS	NG	Aggregate/40 MPH	0.06%	0.23	1,133.30	2.74	1,271
				13.82	**246,356.19**	**5.58**	**250,175.72**
Mountain Region							
All Other Buses	DSL	Aggregate/40 MPH	0.03%	0.02	110.07	0.00	115
LDA	GAS	Aggregate/40 MPH	53.07%	0.79	52,550.45	0.18	52,765
LDA	DSL	Aggregate/40 MPH	0.66%	0.08	508.35	0.00	530
LDA	ELEC	Aggregate/40 MPH	3.06%	0.00	0.00	0.00	0
LDT1	GAS	Aggregate/40 MPH	5.15%	0.08	5,950.15	0.02	5,973
LDT1	DSL	Aggregate/40 MPH	0.00%	0.00	1.05	0.00	1
LDT1	ELEC	Aggregate/40 MPH	0.19%	0.00	0.00	0.00	0
LDT2	GAS	Aggregate/40 MPH	15.61%	0.24	17,826.27	0.08	17,892
LDT2	DSL	Aggregate/40 MPH	0.16%	0.03	164.18	0.00	171
LDT2	ELEC	Aggregate/40 MPH	0.48%	0.00	0.00	0.00	0
LHD1	GAS	Aggregate/40 MPH	0.93%	0.02	3,089.00	0.01	3,093
LHD1	DSL	Aggregate/40 MPH	0.95%	0.29	1,833.20	0.01	1,910
LHD2	GAS	Aggregate/40 MPH	0.15%	0.00	559.02	0.00	560
LHD2	DSL	Aggregate/40 MPH	0.37%	0.13	801.03	0.00	834
MCY	GAS	Aggregate/40 MPH	0.33%	0.11	348.61	0.45	389
MDV	GAS	Aggregate/40 MPH	10.43%	0.17	14,519.97	0.06	14,567
MDV	DSL	Aggregate/40 MPH	0.37%	0.08	497.25	0.00	518
MDV	ELEC	Aggregate/40 MPH	0.35%	0.00	0.00	0.00	0
MH	GAS	Aggregate/40 MPH	0.05%	0.00	311.63	0.00	312
MH	DSL	Aggregate/40 MPH	0.02%	0.01	86.25	0.00	90
Motor Coach	DSL	Aggregate/40 MPH	0.02%	0.01	92.35	0.00	96
OBUS	GAS	Aggregate/40 MPH	0.03%	0.00	225.71	0.00	226
PTO	DSL	Aggregate/40 MPH	0.09%	0.12	742.80	0.00	774
SBUS	GAS	Aggregate/40 MPH	0.02%	0.00	87.22	0.00	88
SBUS	DSL	Aggregate/40 MPH	0.06%	0.05	296.30	0.00	309
T6 Ag	DSL	Aggregate/40 MPH	0.00%	0.00	0.01	0.00	0
T6 CAIRP heavy	DSL	Aggregate/40 MPH	0.03%	0.01	90.77	0.00	95
T6 CAIRP small	DSL	Aggregate/40 MPH	0.00%	0.00	15.41	0.00	16
T6 instate construction heavy	DSL	Aggregate/40 MPH	0.08%	0.05	303.06	0.00	316
T6 instate construction small	DSL	Aggregate/40 MPH	0.16%	0.09	599.37	0.00	624
T6 instate heavy	DSL	Aggregate/40 MPH	0.92%	0.51	3,258.97	0.00	3,395

Year 2040 GHG Emissions: Project (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000	900,090,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000	495,670,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000	1,250,125,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000	224,110,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000	2,869,995,000
					Percent Adjustment	-30%

[1.] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
		Emission year		AR5 GWP	AR5 GWP	AR5 GWP	
		Year 2040		265	1	28	
Vehicle Type	**Fuel Type**	**Speed***	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
T6 instate small	DSL	Aggregate/40 MPH	1.20%	0.69	4,403.48	0.00	4,587
T6 OOS heavy	DSL	Aggregate/40 MPH	0.02%	0.01	52.78	0.00	55
T6 OOS small	DSL	Aggregate/40 MPH	0.00%	0.00	8.13	0.00	8
T6 Public	DSL	Aggregate/40 MPH	0.01%	0.01	49.52	0.00	52
T6 utility	DSL	Aggregate/40 MPH	0.01%	0.00	28.72	0.00	30
T6TS	GAS	Aggregate/40 MPH	0.19%	0.01	1,265.02	0.00	1,267
T7 CAIRP	DSL	Aggregate/40 MPH	0.66%	0.47	2,983.40	0.00	3,108
T7 CAIRP construction	DSL	Aggregate/40 MPH	0.05%	0.04	269.56	0.00	281
T7 NNOOS	DSL	Aggregate/40 MPH	0.81%	0.57	3,631.93	0.00	3,783
T7 NOOS	DSL	Aggregate/40 MPH	0.26%	0.18	1,173.01	0.00	1,222
T7 POLA	DSL	Aggregate/40 MPH	1.09%	0.95	6,067.84	0.00	6,321
T7 Public	DSL	Aggregate/40 MPH	0.04%	0.03	205.67	0.00	214
T7 Single	DSL	Aggregate/40 MPH	0.48%	0.41	2,589.62	0.00	2,698
T7 single construction	DSL	Aggregate/40 MPH	0.13%	0.11	730.19	0.00	761
T7 SWCV	DSL	Aggregate/40 MPH	0.01%	0.02	143.91	0.00	150
T7 SWCV	NG	Aggregate/40 MPH	0.09%	0.26	1,278.49	0.72	1,368
T7 tractor	DSL	Aggregate/40 MPH	0.96%	0.72	4,554.24	0.00	4,744
T7 tractor construction	DSL	Aggregate/40 MPH	0.11%	0.09	589.38	0.00	614
T7 utility	DSL	Aggregate/40 MPH	0.00%	0.00	25.64	0.00	27
T7IS	GAS	Aggregate/40 MPH	0.00%	0.00	13.62	0.00	14
UBUS	GAS	Aggregate/40 MPH	0.03%	0.00	109.00	0.00	109
UBUS	DSL	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
UBUS	NG	Aggregate/40 MPH	0.06%	0.13	624.10	1.51	700
				7.61	**135,665.73**	**3.07**	**137,769.11**

Based on EMFAC2017, Version 1.0.2, emission factors for Riverside County - South Coast Air Basin

*CH_4 *emissions utilizes emission rates based on the 40 MPH speed bin.* N_2O *and* CO_2 *emissions utlizes emission rates on the aggregated speed bin.*

Year 2040 GHG Emissions: Project (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)

		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000	900,090,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000	495,670,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000	1,250,125,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000	224,110,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000	2,869,995,000
				Percent Adjustment	-30%	

[1.] Based on data provided Fehr & Peers.

Emission year	N_2O	CO_2 (Pavley)	CH_4	
	AR5 GWP	AR5 GWP	AR5 GWP	
Year 2040	265	1	28	

Vehicle Type	Fuel Type	Speed*	Percent of VMT of SpeedBin	N_2O	CO_2 (Pavley)	CH_4	CO_2e w/ Pavley + LCFS
North Desert							
All Other Buses	DSL	Aggregate/40 MPH	0.01%	0.02	112.45	0.00	117
LDA	GAS	Aggregate/40 MPH	50.41%	1.88	122,510.49	0.45	123,020
LDA	DSL	Aggregate/40 MPH	0.62%	0.18	1,176.19	0.00	1,225
LDA	ELEC	Aggregate/40 MPH	3.14%	0.00	0.00	0.00	0
LDT1	GAS	Aggregate/40 MPH	5.17%	0.21	14,617.24	0.06	14,673
LDT1	DSL	Aggregate/40 MPH	0.00%	0.00	2.48	0.00	3
LDT1	ELEC	Aggregate/40 MPH	0.20%	0.00	0.00	0.00	0
LDT2	GAS	Aggregate/40 MPH	15.54%	0.60	43,427.52	0.20	43,592
LDT2	DSL	Aggregate/40 MPH	0.16%	0.06	396.32	0.00	413
LDT2	ELEC	Aggregate/40 MPH	0.49%	0.00	0.00	0.00	0
LHD1	GAS	Aggregate/40 MPH	0.97%	0.04	7,982.06	0.01	7,994
LHD1	DSL	Aggregate/40 MPH	1.03%	0.79	4,996.03	0.02	5,205
LHD2	GAS	Aggregate/40 MPH	0.15%	0.01	1,423.83	0.00	1,426
LHD2	DSL	Aggregate/40 MPH	0.41%	0.34	2,163.28	0.01	2,254
MCY	GAS	Aggregate/40 MPH	0.74%	0.61	1,916.85	2.56	2,151
MDV	GAS	Aggregate/40 MPH	10.10%	0.44	34,701.08	0.16	34,821
MDV	DSL	Aggregate/40 MPH	0.36%	0.19	1,185.87	0.00	1,235
MDV	ELEC	Aggregate/40 MPH	0.36%	0.00	0.00	0.00	0
MH	GAS	Aggregate/40 MPH	0.05%	0.01	838.67	0.00	841
MH	DSL	Aggregate/40 MPH	0.02%	0.04	223.66	0.00	233
Motor Coach	DSL	Aggregate/40 MPH	0.01%	0.02	114.29	0.00	119
OBUS	GAS	Aggregate/40 MPH	0.05%	0.01	904.49	0.00	907
PTO	DSL	Aggregate/40 MPH	0.02%	0.07	429.66	0.00	448
SBUS	GAS	Aggregate/40 MPH	0.03%	0.01	308.91	0.00	310
SBUS	DSL	Aggregate/40 MPH	0.06%	0.11	693.83	0.00	723
T6 CAIRP heavy	DSL	Aggregate/40 MPH	0.14%	0.19	1,111.66	0.00	1,163
T6 CAIRP small	DSL	Aggregate/40 MPH	0.02%	0.03	165.84	0.00	174
T6 instate construction heavy	DSL	Aggregate/40 MPH	0.07%	0.10	715.84	0.00	743
T6 instate construction small	DSL	Aggregate/40 MPH	0.18%	0.25	1,659.34	0.00	1,726
T6 instate heavy	DSL	Aggregate/40 MPH	0.16%	0.23	1,408.51	0.00	1,469
T6 instate small	DSL	Aggregate/40 MPH	0.21%	0.26	1,890.61	0.00	1,960
T6 OOS heavy	DSL	Aggregate/40 MPH	0.08%	0.11	621.25	0.00	650
T6 OOS small	DSL	Aggregate/40 MPH	0.01%	0.02	96.85	0.00	101
T6 Public	DSL	Aggregate/40 MPH	0.02%	0.02	149.42	0.00	155
T6 utility	DSL	Aggregate/40 MPH	0.00%	0.00	24.09	0.00	24
T6TS	GAS	Aggregate/40 MPH	0.28%	0.49	4,622.41	0.01	4,753
T7 CAIRP	DSL	Aggregate/40 MPH	2.76%	5.42	31,125.32	0.02	32,562
T7 CAIRP construction	DSL	Aggregate/40 MPH	0.05%	0.09	641.91	0.00	666
T7 NNOOS	DSL	Aggregate/40 MPH	3.36%	5.97	37,890.76	0.02	39,473
T7 NOOS	DSL	Aggregate/40 MPH	1.08%	2.39	12,240.27	0.01	12,875
T7 POLA	DSL	Aggregate/40 MPH	0.30%	0.64	4,205.38	0.00	4,375
T7 Public	DSL	Aggregate/40 MPH	0.02%	0.04	255.71	0.00	266
T7 Single	DSL	Aggregate/40 MPH	0.11%	0.24	1,490.04	0.00	1,553

Year 2040 GHG Emissions: Project (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)

		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000	900,090,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000	495,670,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000	1,250,125,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000	224,110,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000	2,869,995,000
				Percent Adjustment	-30%	

[1.] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
		Emission year		AR5 GWP	AR5 GWP	AR5 GWP	
		Year 2040		265	1	28	
Vehicle Type	**Fuel Type**	**Speed***	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
T7 single construction	DSL	Aggregate/40 MPH	0.13%	0.76	1,738.53	0.00	1,941
T7 SWCV	DSL	Aggregate/40 MPH	0.01%	0.04	232.85	0.00	244
T7 SWCV	NG	Aggregate/40 MPH	0.00%	0.00	48.87	0.03	50
T7 tractor	DSL	Aggregate/40 MPH	0.77%	1.62	9,111.02	0.01	9,540
T7 tractor construction	DSL	Aggregate/40 MPH	0.11%	0.23	1,403.42	0.00	1,464
T7 utility	DSL	Aggregate/40 MPH	0.00%	0.00	18.45	0.00	19
T7IS	GAS	Aggregate/40 MPH	0.00%	0.00	49.48	0.00	50
UBUS	GAS	Aggregate/40 MPH	0.02%	0.00	307.08	0.00	307
UBUS	DSL	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
UBUS	NG	Aggregate/40 MPH	0.03%	0.00	728.73	1.67	775
				24.76	**354,078.86**	**5.26**	**360,786.83**
East Desert							
All Other Buses	DSL	Aggregate/40 MPH	0.01%	0.00	20.16	0.00	21
LDA	GAS	Aggregate/40 MPH	50.41%	0.34	21,962.46	0.08	22,054
LDA	DSL	Aggregate/40 MPH	0.62%	0.03	210.86	0.00	220
LDA	ELEC	Aggregate/40 MPH	3.14%	0.00	0.00	0.00	0
LDT1	GAS	Aggregate/40 MPH	5.17%	0.04	2,620.43	0.01	2,631
LDT1	DSL	Aggregate/40 MPH	0.00%	0.00	0.44	0.00	0
LDT1	ELEC	Aggregate/40 MPH	0.20%	0.00	0.00	0.00	0
LDT2	GAS	Aggregate/40 MPH	15.54%	0.11	7,785.26	0.04	7,815
LDT2	DSL	Aggregate/40 MPH	0.16%	0.01	71.05	0.00	74
LDT2	ELEC	Aggregate/40 MPH	0.49%	0.00	0.00	0.00	0
LHD1	GAS	Aggregate/40 MPH	0.97%	0.01	1,430.94	0.00	1,433
LHD1	DSL	Aggregate/40 MPH	1.03%	0.14	895.64	0.00	933
LHD2	GAS	Aggregate/40 MPH	0.15%	0.00	255.25	0.00	256
LHD2	DSL	Aggregate/40 MPH	0.41%	0.06	387.81	0.00	404
MCY	GAS	Aggregate/40 MPH	0.74%	0.11	343.63	0.46	386
MDV	GAS	Aggregate/40 MPH	10.10%	0.08	6,220.86	0.03	6,242
MDV	DSL	Aggregate/40 MPH	0.36%	0.03	212.59	0.00	221
MDV	ELEC	Aggregate/40 MPH	0.36%	0.00	0.00	0.00	0
MH	GAS	Aggregate/40 MPH	0.05%	0.00	150.35	0.00	151
MH	DSL	Aggregate/40 MPH	0.02%	0.01	40.10	0.00	42
Motor Coach	DSL	Aggregate/40 MPH	0.01%	0.00	20.49	0.00	21
OBUS	GAS	Aggregate/40 MPH	0.05%	0.00	162.15	0.00	163
PTO	DSL	Aggregate/40 MPH	0.02%	0.01	77.03	0.00	80
SBUS	GAS	Aggregate/40 MPH	0.03%	0.00	55.38	0.00	56
SBUS	DSL	Aggregate/40 MPH	0.06%	0.02	124.38	0.00	130
T6 CAIRP heavy	DSL	Aggregate/40 MPH	0.14%	0.03	199.29	0.00	208
T6 CAIRP small	DSL	Aggregate/40 MPH	0.02%	0.00	29.73	0.00	31
T6 instate construction heavy	DSL	Aggregate/40 MPH	0.07%	0.02	128.33	0.00	134
T6 instate construction small	DSL	Aggregate/40 MPH	0.18%	0.05	297.47	0.00	310
T6 instate heavy	DSL	Aggregate/40 MPH	0.16%	0.04	252.50	0.00	263
T6 instate small	DSL	Aggregate/40 MPH	0.21%	0.05	338.93	0.00	353
T6 OOS heavy	DSL	Aggregate/40 MPH	0.08%	0.02	111.37	0.00	116

Year 2040 GHG Emissions: Project (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000	900,090,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000	495,670,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000	1,250,125,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000	224,110,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000	2,869,995,000
				Percent Adjustment	-30%	

[1.] Based on data provided Fehr & Peers.

		N_2O	CO_2 (Pavley)	CH_4	
Emission year		AR5 GWP	AR5 GWP	AR5 GWP	
Year 2040		265	1	28	

Vehicle Type	Fuel Type	Speed*	Percent of VMT of SpeedBin	N_2O	CO_2 (Pavley)	CH_4	CO_2e w/ Pavley + LCFS
T6 OOS small	DSL	Aggregate/40 MPH	0.01%	0.00	17.36	0.00	18
T6 Public	DSL	Aggregate/40 MPH	0.02%	0.00	26.79	0.00	28
T6 utility	DSL	Aggregate/40 MPH	0.00%	0.00	4.32	0.00	4
T6TS	GAS	Aggregate/40 MPH	0.28%	0.01	828.66	0.00	830
T7 CAIRP	DSL	Aggregate/40 MPH	2.76%	0.88	5,579.84	0.00	5,812
T7 CAIRP construction	DSL	Aggregate/40 MPH	0.05%	0.02	115.08	0.00	120
T7 NNOOS	DSL	Aggregate/40 MPH	3.36%	1.07	6,792.68	0.00	7,076
T7 NOOS	DSL	Aggregate/40 MPH	1.08%	0.34	2,194.31	0.00	2,286
T7 POLA	DSL	Aggregate/40 MPH	0.30%	0.12	753.90	0.00	785
T7 Public	DSL	Aggregate/40 MPH	0.02%	0.01	45.84	0.00	48
T7 Single	DSL	Aggregate/40 MPH	0.11%	0.04	267.12	0.00	278
T7 single construction	DSL	Aggregate/40 MPH	0.13%	0.05	311.67	0.00	325
T7 SWCV	DSL	Aggregate/40 MPH	0.01%	0.01	41.74	0.00	43
T7 SWCV	NG	Aggregate/40 MPH	0.00%	0.00	8.76	0.00	9
T7 tractor	DSL	Aggregate/40 MPH	0.77%	0.26	1,633.33	0.00	1,701
T7 tractor construction	DSL	Aggregate/40 MPH	0.11%	0.04	251.59	0.00	262
T7 utility	DSL	Aggregate/40 MPH	0.00%	0.00	3.31	0.00	3
T7IS	GAS	Aggregate/40 MPH	0.00%	0.00	8.87	0.00	9
UBUS	GAS	Aggregate/40 MPH	0.02%	0.00	55.05	0.00	55
UBUS	DSL	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
UBUS	NG	Aggregate/40 MPH	0.03%	0.00	130.64	0.30	139
				4.06	**63,475.74**	**0.94**	**64,578.93**

Based on EMFAC2017, Version 1.0.2, emission factors for San Bernardino County - Mojave Desert Air Basin

CH_4 emissions utilizes emission rates based on the 40 MPH speed bin. N_2O and CO_2 emissions utlizes emission rates on the aggregated speed bin.

Year 2050 GHG Emissions: Project (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000	900,090,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000	495,670,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000	1,250,125,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000	224,110,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000	2,869,995,000
				Percent Adjustment	-30%	

[1.] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
Emission year				AR5 GWP	AR5 GWP	AR5 GWP	
Year 2050				265	1	28	
Vehicle Type	**Fuel Type**	**Speed***	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
Valley Region							
All Other Buses	DSL	Aggregate/40 MPH	0.03%	0.03	203.25	0.00	212
LDA	GAS	Aggregate/40 MPH	52.81%	1.42	93,434.80	0.30	93,820
LDA	DSL	Aggregate/40 MPH	0.66%	0.14	915.42	0.00	954
LDA	ELEC	Aggregate/40 MPH	3.16%	0.00	0.00	0.00	0
LDT1	GAS	Aggregate/40 MPH	5.19%	0.15	10,542.04	0.03	10,582
LDT1	DSL	Aggregate/40 MPH	0.00%	0.00	1.91	0.00	2
LDT1	ELEC	Aggregate/40 MPH	0.21%	0.00	0.00	0.00	0
LDT2	GAS	Aggregate/40 MPH	15.59%	0.41	31,307.79	0.12	31,420
LDT2	DSL	Aggregate/40 MPH	0.16%	0.05	298.14	0.00	311
LDT2	ELEC	Aggregate/40 MPH	0.50%	0.00	0.00	0.00	0
LHD1	GAS	Aggregate/40 MPH	0.92%	0.07	5,385.71	0.01	5,405
LHD1	DSL	Aggregate/40 MPH	0.95%	0.51	3,214.14	0.01	3,348
LHD2	GAS	Aggregate/40 MPH	0.14%	0.01	960.05	0.00	963
LHD2	DSL	Aggregate/40 MPH	0.37%	0.22	1,409.81	0.01	1,469
MCY	GAS	Aggregate/40 MPH	0.33%	0.19	627.26	0.81	700
MDV	GAS	Aggregate/40 MPH	10.31%	0.28	25,035.60	0.08	25,112
MDV	DSL	Aggregate/40 MPH	0.38%	0.14	893.26	0.00	930
MDV	ELEC	Aggregate/40 MPH	0.38%	0.00	0.00	0.00	0
MH	GAS	Aggregate/40 MPH	0.04%	0.01	533.19	0.00	535
MH	DSL	Aggregate/40 MPH	0.02%	0.02	139.76	0.00	146
Motor Coach	DSL	Aggregate/40 MPH	0.02%	0.03	165.49	0.00	172
OBUS	GAS	Aggregate/40 MPH	0.03%	0.01	394.40	0.00	396
PTO	DSL	Aggregate/40 MPH	0.10%	0.20	1,281.04	0.00	1,334
SBUS	GAS	Aggregate/40 MPH	0.03%	0.00	160.87	0.00	162
SBUS	DSL	Aggregate/40 MPH	0.07%	0.08	503.40	0.00	524
T6 CAIRP heavy	DSL	Aggregate/40 MPH	0.03%	0.03	166.29	0.00	173
T6 CAIRP small	DSL	Aggregate/40 MPH	0.00%	0.00	28.24	0.00	29
T6 instate construction heavy	DSL	Aggregate/40 MPH	0.08%	0.08	511.40	0.00	533
T6 instate construction small	DSL	Aggregate/40 MPH	0.16%	0.17	1,060.78	0.00	1,105
T6 instate heavy	DSL	Aggregate/40 MPH	0.93%	0.89	5,663.73	0.00	5,900
T6 instate small	DSL	Aggregate/40 MPH	1.21%	1.25	7,934.39	0.00	8,265
T6 OOS heavy	DSL	Aggregate/40 MPH	0.02%	0.02	96.76	0.00	101
T6 OOS small	DSL	Aggregate/40 MPH	0.00%	0.00	14.89	0.00	16
T6 Public	DSL	Aggregate/40 MPH	0.01%	0.01	73.60	0.00	77
T6 utility	DSL	Aggregate/40 MPH	0.01%	0.01	50.07	0.00	52
T6TS	GAS	Aggregate/40 MPH	0.19%	0.01	2,254.68	0.00	2,258
T7 CAIRP	DSL	Aggregate/40 MPH	0.67%	0.85	5,435.16	0.00	5,662
T7 CAIRP construction	DSL	Aggregate/40 MPH	0.05%	0.08	485.70	0.00	506
T7 NNOOS	DSL	Aggregate/40 MPH	0.82%	1.05	6,676.13	0.00	6,954
T7 NOOS	DSL	Aggregate/40 MPH	0.26%	0.34	2,135.97	0.00	2,225
T7 POLA	DSL	Aggregate/40 MPH	1.27%	1.93	12,247.54	0.01	12,758
T7 Public	DSL	Aggregate/40 MPH	0.03%	0.05	317.17	0.00	330
T7 Single	DSL	Aggregate/40 MPH	0.49%	0.70	4,466.07	0.00	4,652

Year 2050 GHG Emissions: Project (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000	900,090,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000	495,670,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000	1,250,125,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000	224,110,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000	2,869,995,000
				Percent Adjustment	-30%	

[1.] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
Emission year				AR5 GWP	AR5 GWP	AR5 GWP	
Year 2050				265	1	28	
Vehicle Type	**Fuel Type**	**Speed***	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
T7 single construction	DSL	Aggregate/40 MPH	0.13%	0.19	1,230.83	0.00	1,282
T7 SWCV	DSL	Aggregate/40 MPH	0.00%	0.00	21.81	0.00	23
T7 SWCV	NG	Aggregate/40 MPH	0.09%	0.42	2,063.22	1.18	2,208
T7 tractor	DSL	Aggregate/40 MPH	0.97%	1.24	7,899.36	0.01	8,229
T7 tractor construction	DSL	Aggregate/40 MPH	0.11%	0.16	1,002.96	0.00	1,045
T7 utility	DSL	Aggregate/40 MPH	0.00%	0.01	42.48	0.00	44
T7IS	GAS	Aggregate/40 MPH	0.00%	0.00	24.47	0.00	25
UBUS	GAS	Aggregate/40 MPH	0.03%	0.00	190.78	0.00	192
UBUS	DSL	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
UBUS	NG	Aggregate/40 MPH	0.06%	0.22	1,092.36	2.64	1,225
				13.68	**240,594.16**	**5.24**	**244,365.38**
Mountain Region							
All Other Buses	DSL	Aggregate/40 MPH	0.03%	0.02	111.93	0.00	117
LDA	GAS	Aggregate/40 MPH	52.81%	0.78	51,453.55	0.17	51,666
LDA	DSL	Aggregate/40 MPH	0.66%	0.08	504.11	0.00	525
LDA	ELEC	Aggregate/40 MPH	3.16%	0.00	0.00	0.00	0
LDT1	GAS	Aggregate/40 MPH	5.19%	0.08	5,805.39	0.02	5,827
LDT1	DSL	Aggregate/40 MPH	0.00%	0.00	1.05	0.00	1
LDT1	ELEC	Aggregate/40 MPH	0.21%	0.00	0.00	0.00	0
LDT2	GAS	Aggregate/40 MPH	15.59%	0.23	17,240.87	0.07	17,303
LDT2	DSL	Aggregate/40 MPH	0.16%	0.03	164.18	0.00	171
LDT2	ELEC	Aggregate/40 MPH	0.50%	0.00	0.00	0.00	0
LHD1	GAS	Aggregate/40 MPH	0.92%	0.04	2,965.86	0.00	2,976
LHD1	DSL	Aggregate/40 MPH	0.95%	0.28	1,769.99	0.01	1,844
LHD2	GAS	Aggregate/40 MPH	0.14%	0.01	528.69	0.00	530
LHD2	DSL	Aggregate/40 MPH	0.37%	0.12	776.37	0.00	809
MCY	GAS	Aggregate/40 MPH	0.33%	0.10	345.43	0.45	385
MDV	GAS	Aggregate/40 MPH	10.31%	0.15	13,786.84	0.04	13,829
MDV	DSL	Aggregate/40 MPH	0.38%	0.08	491.91	0.00	512
MDV	ELEC	Aggregate/40 MPH	0.38%	0.00	0.00	0.00	0
MH	GAS	Aggregate/40 MPH	0.04%	0.00	293.62	0.00	295
MH	DSL	Aggregate/40 MPH	0.02%	0.01	76.96	0.00	80
Motor Coach	DSL	Aggregate/40 MPH	0.02%	0.01	91.13	0.00	95
OBUS	GAS	Aggregate/40 MPH	0.03%	0.00	217.19	0.00	218
PTO	DSL	Aggregate/40 MPH	0.10%	0.11	705.46	0.00	735
SBUS	GAS	Aggregate/40 MPH	0.03%	0.00	88.59	0.00	89
SBUS	DSL	Aggregate/40 MPH	0.07%	0.04	277.22	0.00	289
T6 CAIRP heavy	DSL	Aggregate/40 MPH	0.03%	0.01	91.57	0.00	95
T6 CAIRP small	DSL	Aggregate/40 MPH	0.00%	0.00	15.55	0.00	16
T6 instate construction heavy	DSL	Aggregate/40 MPH	0.08%	0.04	281.62	0.00	293
T6 instate construction small	DSL	Aggregate/40 MPH	0.16%	0.09	584.16	0.00	608
T6 instate heavy	DSL	Aggregate/40 MPH	0.93%	0.49	3,118.95	0.00	3,249
T6 instate small	DSL	Aggregate/40 MPH	1.21%	0.69	4,369.38	0.00	4,551
T6 OOS heavy	DSL	Aggregate/40 MPH	0.02%	0.01	53.28	0.00	56

Year 2050 GHG Emissions: Project (Valley and Mountain Regions)

Based on EMFAC2017, Version 1.0.2., San Bernardino County - South Coast Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000	900,090,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000	495,670,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000	1,250,125,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000	224,110,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000	2,869,995,000
				Percent Adjustment	-30%	

[1.] Based on data provided Fehr & Peers.

		N_2O	CO_2 (Pavley)	CH_4	
Emission year		AR5 GWP	AR5 GWP	AR5 GWP	
Year 2050		265	1	28	

Vehicle Type	Fuel Type	Speed*	Percent of VMT of SpeedBin	N_2O	CO_2 (Pavley)	CH_4	CO_2e w/ Pavley + LCFS
T6 OOS small	DSL	Aggregate/40 MPH	0.00%	0.00	8.20	0.00	9
T6 Public	DSL	Aggregate/40 MPH	0.01%	0.01	40.53	0.00	42
T6 utility	DSL	Aggregate/40 MPH	0.01%	0.00	27.57	0.00	29
T6TS	GAS	Aggregate/40 MPH	0.19%	0.01	1,241.63	0.00	1,244
T7 CAIRP	DSL	Aggregate/40 MPH	0.67%	0.47	2,993.09	0.00	3,118
T7 CAIRP construction	DSL	Aggregate/40 MPH	0.05%	0.04	267.47	0.00	279
T7 NNOOS	DSL	Aggregate/40 MPH	0.82%	0.58	3,676.47	0.00	3,830
T7 NOOS	DSL	Aggregate/40 MPH	0.26%	0.18	1,176.26	0.00	1,225
T7 POLA	DSL	Aggregate/40 MPH	1.27%	1.06	6,744.59	0.00	7,026
T7 Public	DSL	Aggregate/40 MPH	0.03%	0.03	174.66	0.00	182
T7 Single	DSL	Aggregate/40 MPH	0.49%	0.39	2,459.42	0.00	2,562
T7 single construction	DSL	Aggregate/40 MPH	0.13%	0.11	677.81	0.00	706
T7 SWCV	DSL	Aggregate/40 MPH	0.00%	0.00	12.01	0.00	13
T7 SWCV	NG	Aggregate/40 MPH	0.09%	0.23	1,136.19	0.65	1,216
T7 tractor	DSL	Aggregate/40 MPH	0.97%	0.68	4,350.10	0.00	4,531
T7 tractor construction	DSL	Aggregate/40 MPH	0.11%	0.09	552.32	0.00	575
T7 utility	DSL	Aggregate/40 MPH	0.00%	0.00	23.39	0.00	24
T7IS	GAS	Aggregate/40 MPH	0.00%	0.00	13.47	0.00	14
UBUS	GAS	Aggregate/40 MPH	0.03%	0.00	105.06	0.00	106
UBUS	DSL	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
UBUS	NG	Aggregate/40 MPH	0.06%	0.12	601.55	1.46	675
				7.53	**132,492.65**	**2.89**	**134,569.42**

Based on EMFAC2017, Version 1.0.2, emission factors for Riverside County - South Coast Air Basin

CH_4 emissions utilizes emission rates based on the 40 MPH speed bin. N_2O and CO_2 emissions utlizes emission rates on the aggregated speed bin.

Year 2040 GHG Emissions: Project (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000	900,090,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000	495,670,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000	1,250,125,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000	224,110,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000	2,869,995,000
					Percent Adjustment	-30%

[1.] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
Emission year				AR5 GWP	AR5 GWP	AR5 GWP	
Year 2040				265	1	28	
Vehicle Type	**Fuel Type**	**Speed***	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
North Desert							
All Other Buses	DSL	Aggregate/40 MPH	0.01%	0.02	114.89	0.00	120
LDA	GAS	Aggregate/40 MPH	50.36%	1.87	120,266.02	0.40	120,773
LDA	DSL	Aggregate/40 MPH	0.63%	0.18	1,166.80	0.00	1,215
LDA	ELEC	Aggregate/40 MPH	3.25%	0.00	0.00	0.00	0
LDT1	GAS	Aggregate/40 MPH	5.20%	0.20	14,236.22	0.04	14,291
LDT1	DSL	Aggregate/40 MPH	0.00%	0.00	2.54	0.00	3
LDT1	ELEC	Aggregate/40 MPH	0.21%	0.00	0.00	0.00	0
LDT2	GAS	Aggregate/40 MPH	15.50%	0.56	41,976.62	0.17	42,131
LDT2	DSL	Aggregate/40 MPH	0.16%	0.06	395.12	0.00	412
LDT2	ELEC	Aggregate/40 MPH	0.51%	0.00	0.00	0.00	0
LHD1	GAS	Aggregate/40 MPH	0.95%	0.10	7,602.98	0.01	7,630
LHD1	DSL	Aggregate/40 MPH	1.00%	0.74	4,681.53	0.02	4,877
LHD2	GAS	Aggregate/40 MPH	0.15%	0.02	1,376.81	0.00	1,381
LHD2	DSL	Aggregate/40 MPH	0.40%	0.32	2,024.18	0.01	2,109
MCY	GAS	Aggregate/40 MPH	0.73%	0.60	1,885.50	2.51	2,115
MDV	GAS	Aggregate/40 MPH	9.97%	0.38	32,685.79	0.11	32,789
MDV	DSL	Aggregate/40 MPH	0.36%	0.18	1,161.39	0.00	1,210
MDV	ELEC	Aggregate/40 MPH	0.38%	0.00	0.00	0.00	0
MH	GAS	Aggregate/40 MPH	0.05%	0.01	776.30	0.00	779
MH	DSL	Aggregate/40 MPH	0.02%	0.03	192.11	0.00	200
Motor Coach	DSL	Aggregate/40 MPH	0.01%	0.02	112.91	0.00	118
OBUS	GAS	Aggregate/40 MPH	0.05%	0.02	880.83	0.00	885
PTO	DSL	Aggregate/40 MPH	0.02%	0.07	422.96	0.00	441
SBUS	GAS	Aggregate/40 MPH	0.04%	0.01	365.19	0.00	367
SBUS	DSL	Aggregate/40 MPH	0.05%	0.08	499.27	0.00	520
T6 CAIRP heavy	DSL	Aggregate/40 MPH	0.14%	0.18	1,123.31	0.00	1,170
T6 CAIRP small	DSL	Aggregate/40 MPH	0.02%	0.03	167.51	0.00	174
T6 instate construction heavy	DSL	Aggregate/40 MPH	0.06%	0.09	591.35	0.00	616
T6 instate construction small	DSL	Aggregate/40 MPH	0.16%	0.23	1,437.37	0.00	1,497
T6 instate heavy	DSL	Aggregate/40 MPH	0.16%	0.21	1,324.49	0.00	1,380
T6 instate small	DSL	Aggregate/40 MPH	0.21%	0.29	1,872.10	0.00	1,950
T6 OOS heavy	DSL	Aggregate/40 MPH	0.08%	0.10	628.08	0.00	654
T6 OOS small	DSL	Aggregate/40 MPH	0.01%	0.02	97.78	0.00	102
T6 Public	DSL	Aggregate/40 MPH	0.02%	0.02	140.42	0.00	146
T6 utility	DSL	Aggregate/40 MPH	0.00%	0.00	23.16	0.00	24
T6TS	GAS	Aggregate/40 MPH	0.28%	0.03	4,572.74	0.01	4,581
T7 CAIRP	DSL	Aggregate/40 MPH	2.79%	4.92	31,280.32	0.02	32,584
T7 CAIRP construction	DSL	Aggregate/40 MPH	0.05%	0.09	566.08	0.00	590
T7 NNOOS	DSL	Aggregate/40 MPH	3.40%	6.04	38,419.97	0.02	40,021
T7 NOOS	DSL	Aggregate/40 MPH	1.10%	1.93	12,295.53	0.01	12,808
T7 POLA	DSL	Aggregate/40 MPH	0.35%	0.73	4,654.75	0.00	4,849
T7 Public	DSL	Aggregate/40 MPH	0.02%	0.04	243.22	0.00	253
T7 Single	DSL	Aggregate/40 MPH	0.12%	0.23	1,466.80	0.00	1,528

Year 2040 GHG Emissions: Project (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
Valley	Unincorporated	195,000	153,308	3,136,000	2,466,000	900,090,000
Mountain	Unincorporated	86,000	56,621	2,062,000	1,358,000	495,670,000
N. Desert	Unincorporated	174,000	120,286	4,955,000	3,425,000	1,250,125,000
E. Desert	Unincorporated	49,000	27,162	1,108,000	614,000	224,110,000
TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000	2,869,995,000
					Percent Adjustment	-30%

[1.] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
		Emission year		AR5 GWP	AR5 GWP	AR5 GWP	
		Year 2040		265	1	28	
Vehicle Type	**Fuel Type**	**Speed***	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
T7 single construction	DSL	Aggregate/40 MPH	0.11%	0.23	1,434.53	0.00	1,494
T7 SWCV	DSL	Aggregate/40 MPH	0.01%	0.04	225.74	0.00	235
T7 SWCV	NG	Aggregate/40 MPH	0.00%	0.01	49.79	0.03	53
T7 tractor	DSL	Aggregate/40 MPH	0.78%	1.38	8,791.92	0.01	9,158
T7 tractor construction	DSL	Aggregate/40 MPH	0.09%	0.18	1,168.95	0.00	1,218
T7 utility	DSL	Aggregate/40 MPH	0.00%	0.00	16.85	0.00	18
T7IS	GAS	Aggregate/40 MPH	0.00%	0.00	49.27	0.00	50
UBUS	GAS	Aggregate/40 MPH	0.01%	0.00	296.38	0.00	298
UBUS	DSL	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
UBUS	NG	Aggregate/40 MPH	0.03%	0.14	703.47	1.61	787
				22.62	**346,467.80**	**4.99**	**352,602.40**
East Desert							
All Other Buses	DSL	Aggregate/40 MPH	0.01%	0.00	20.60	0.00	21
LDA	GAS	Aggregate/40 MPH	50.36%	0.34	21,560.10	0.07	21,651
LDA	DSL	Aggregate/40 MPH	0.63%	0.03	209.17	0.00	218
LDA	ELEC	Aggregate/40 MPH	3.25%	0.00	0.00	0.00	0
LDT1	GAS	Aggregate/40 MPH	5.20%	0.04	2,552.13	0.01	2,562
LDT1	DSL	Aggregate/40 MPH	0.00%	0.00	0.45	0.00	0
LDT1	ELEC	Aggregate/40 MPH	0.21%	0.00	0.00	0.00	0
LDT2	GAS	Aggregate/40 MPH	15.50%	0.10	7,525.15	0.03	7,553
LDT2	DSL	Aggregate/40 MPH	0.16%	0.01	70.83	0.00	74
LDT2	ELEC	Aggregate/40 MPH	0.51%	0.00	0.00	0.00	0
LHD1	GAS	Aggregate/40 MPH	0.95%	0.02	1,362.99	0.00	1,368
LHD1	DSL	Aggregate/40 MPH	1.00%	0.13	839.26	0.00	874
LHD2	GAS	Aggregate/40 MPH	0.15%	0.00	246.82	0.00	248
LHD2	DSL	Aggregate/40 MPH	0.40%	0.06	362.87	0.00	378
MCY	GAS	Aggregate/40 MPH	0.73%	0.11	338.01	0.45	379
MDV	GAS	Aggregate/40 MPH	9.97%	0.07	5,859.58	0.02	5,878
MDV	DSL	Aggregate/40 MPH	0.36%	0.03	208.20	0.00	217
MDV	ELEC	Aggregate/40 MPH	0.38%	0.00	0.00	0.00	0
MH	GAS	Aggregate/40 MPH	0.05%	0.00	139.17	0.00	140
MH	DSL	Aggregate/40 MPH	0.02%	0.01	34.44	0.00	36
Motor Coach	DSL	Aggregate/40 MPH	0.01%	0.00	20.24	0.00	21
OBUS	GAS	Aggregate/40 MPH	0.05%	0.00	157.91	0.00	159
PTO	DSL	Aggregate/40 MPH	0.02%	0.01	75.82	0.00	79
SBUS	GAS	Aggregate/40 MPH	0.04%	0.00	65.47	0.00	66
SBUS	DSL	Aggregate/40 MPH	0.05%	0.01	89.50	0.00	93
T6 CAIRP heavy	DSL	Aggregate/40 MPH	0.14%	0.03	201.38	0.00	210
T6 CAIRP small	DSL	Aggregate/40 MPH	0.02%	0.00	30.03	0.00	31
T6 instate construction heavy	DSL	Aggregate/40 MPH	0.06%	0.02	106.01	0.00	110
T6 instate construction small	DSL	Aggregate/40 MPH	0.16%	0.04	257.68	0.00	268
T6 instate heavy	DSL	Aggregate/40 MPH	0.16%	0.04	237.44	0.00	247
T6 instate small	DSL	Aggregate/40 MPH	0.21%	0.05	335.61	0.00	350
T6 OOS heavy	DSL	Aggregate/40 MPH	0.08%	0.02	112.60	0.00	117

Year 2040 GHG Emissions: Project (North Desert and East Desert Regions)

Based on EMFAC2017, Version 1.0.2., San Benardino County - Mojave Desert Air Basin

Days per year 365

VMT Adjustments to correct for SBTAM TAZ (Rounded to the nearest thousand)						
		SBTAM SP General Plan 2040	General Plan SP	SBTAM Daily VMT	Corrected Daily VMT	Corrected Annual VMT
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TOTAL	Unincorporated	504,000	357,377	11,261,000	7,863,000	2,869,995,000
					Percent Adjustment	-30%

[1.] Based on data provided Fehr & Peers.

				N_2O	CO_2 (Pavley)	CH_4	
		Emission year		AR5 GWP	AR5 GWP	AR5 GWP	
		Year 2040		265	1	28	
Vehicle Type	**Fuel Type**	**Speed***	**Percent of VMT of SpeedBin**	**N_2O**	**CO_2 (Pavley)**	**CH_4**	**CO_2e w/ Pavley + LCFS**
T6 OOS small	DSL	Aggregate/40 MPH	0.01%	0.00	17.53	0.00	18
T6 Public	DSL	Aggregate/40 MPH	0.02%	0.00	25.17	0.00	26
T6 utility	DSL	Aggregate/40 MPH	0.00%	0.00	4.15	0.00	4
T6TS	GAS	Aggregate/40 MPH	0.28%	0.01	819.76	0.00	821
T7 CAIRP	DSL	Aggregate/40 MPH	2.79%	0.88	5,607.63	0.00	5,841
T7 CAIRP construction	DSL	Aggregate/40 MPH	0.05%	0.02	101.48	0.00	106
T7 NNOOS	DSL	Aggregate/40 MPH	3.40%	1.08	6,887.55	0.00	7,175
T7 NOOS	DSL	Aggregate/40 MPH	1.10%	0.35	2,204.22	0.00	2,296
T7 POLA	DSL	Aggregate/40 MPH	0.35%	0.13	834.46	0.00	869
T7 Public	DSL	Aggregate/40 MPH	0.02%	0.01	43.60	0.00	45
T7 Single	DSL	Aggregate/40 MPH	0.12%	0.04	262.95	0.00	274
T7 single construction	DSL	Aggregate/40 MPH	0.11%	0.04	257.17	0.00	268
T7 SWCV	DSL	Aggregate/40 MPH	0.01%	0.01	40.47	0.00	42
T7 SWCV	NG	Aggregate/40 MPH	0.00%	0.00	8.93	0.01	10
T7 tractor	DSL	Aggregate/40 MPH	0.78%	0.25	1,576.13	0.00	1,642
T7 tractor construction	DSL	Aggregate/40 MPH	0.09%	0.03	209.56	0.00	218
T7 utility	DSL	Aggregate/40 MPH	0.00%	0.00	3.02	0.00	3
T7IS	GAS	Aggregate/40 MPH	0.00%	0.00	8.83	0.00	9
UBUS	GAS	Aggregate/40 MPH	0.01%	0.00	53.13	0.00	53
UBUS	DSL	Aggregate/40 MPH	0.00%	0.00	0.00	0.00	0
UBUS	NG	Aggregate/40 MPH	0.03%	0.03	126.11	0.29	141
				4.06	**62,111.31**	**0.90**	**63,211.06**

Based on EMFAC2017, Version 1.0.2, emission factors for San Bernardino County - Mojave Desert Air Basin

CH_4 emissions utilizes emission rates based on the 40 MPH speed bin. N_2O and CO_2 emissions utlizes emission rates on the aggregated speed bin.

ASSESSING REGIONAL CRITERIA POLLUTANT EMISSIONS IMPACTS UNDER CEQA

IN LIGHT OF THE *FRIANT RANCH* RULING

Contributing Authors are the following members of the Association of Environmental Professionals Climate Change Committee: Dave Mitchell (First Carbon Solutions), Nicole Vermilion (PlaceWorks), Michael Hendrix (Atkins), and Rich Walter (ICF International, Inc.)[1]

California Environmental Quality Act (CEQA) practitioners continually adapt and expand how environmental assessments address impacts. Over the years impact analyses and how lead agencies determine what a 'significant' impact is has been clarified through case law and updates to the CEQA Guidelines. However, sometimes court rulings create uncertainty for CEQA practitioners to address them based on the information and tools at hand. Such is the case for requests made on regional air quality impacts in the *recent Sierra Club et al. v County of Fresno et al. and Friant Ranch, L.P,* (2014 266 Cal. App. 5th Dist, Case No. F066798), referred to as *Friant Ranch*.

Background

The Friant Ranch project is a proposed master planned retirement community for active adults (55 and older) on approximately 942 acres in central Fresno County. The regional air quality analysis was prepared in accordance with the adopted San Joaquin Valley Air Pollution Control District's (SJVAPCD) Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI). While the SJVAPCD is in the process of updating the GAMAQI, in general, the regional air quality significance thresholds and methodology between the adopted 2002 GAMAQI and the draft GAMAQI are similar. The EIR used a threshold for ozone precursors from the SJVAPCD GAMAQI which was based on the New Source Review offset thresholds for stationary sources 10 tons per year for (ROG and NOx). This threshold approach was adopted by most air pollution control districts in California who have adopted CEQA air quality guidelines.

Based on the SJVAPCD significance thresholds for criteria air pollutants, air quality impacts of the Friant Ranch project were identified as a significant unavoidable impact of the project in the Environmental Impact Report (EIR). Due to the size of the project, emissions of reactive organic gases (ROGs) and oxides of nitrogen (NO_x) exceed the SJVAPCD's significance thresholds by 10 times in a region that is designated as non-attainment under the California and National ambient air quality standards (AAQS) for these pollutants. At build-out, the proposed Friant Community Plan would emit approximately 117.38 tons per year of PM_{10}, 109.52 tons per year of ROGs, and 102.19 tons per year of NO_x.

[1] This paper represents the personal opinions of the contributing authors and not an opinion of the consulting firms for which they work. This paper does not represent legal advice. CEQA lead agencies are advised to consult with their legal counsel in matters of CEQA legal adequacy.

The central issue in the court case was not the methodology applied to quantifying regional air quality impacts or the determination that the magnitude of emissions was substantial and therefore 'significant' but, that the EIR did not adequately relate the magnitude of emissions over the threshold to the health-based effects of the criteria air pollutants emissions. The court found that simply reporting that the emissions exceed the threshold was not sufficient. Per the *Friant Ranch* ruling:

> "*The discussion of the adverse health effects, however, was not connected to the levels of the pollutant that would be emitted by the completed project. Instead, the discussion of adverse health effects was general in nature."*

The court agreed with the plaintiffs that the EIR was inadequate because it did not explain what it meant to exceed the significance threshold by 10 times and because it didn't provide a meaningful analysis of the adverse health effects that would be associated with the project's estimated emissions. Per the ruling, the

> *"EIR, however, provided no information about the composition of the particulate matter that was expected to be produced by the project."*

Drawing from *Bakersfield Citizens* (supra, 124 Cal. App. 4th 1184), health impacts resulting from adverse air quality impacts must be identified and analyzed. Despite the fact that the Friant Ranch EIR included a general discussion of adverse health effects, the court found it was 'short' on analysis as it did not correlate the additional tons per year of regional emission that would be generated by the project (i.e., the adverse air quality impacts) to adverse human health impacts that could be expected to result from those regional emissions. The *Friant Ranch* ruling indicated that the EIR should have provided an analysis of the correlation between the project's regional emissions and human health impacts.

Specific examples cited include:

- *"The information provided doesn't enable a reader to determine whether the 100-plus tons per year of PM_{10}, ROG, and NO_x will require people with respiratory difficulties to wear filtering devices when they go outdoors in the project area or nonattainment basis or, in contrast, will be no more than a drop in the bucket to those people breathing the air containing the additional pollutants."*

- *"If an estimate of the project's impact on the "days exceeding standards" had been provided, the public and decision makers might have some idea of the magnitude of the air pollutant impact on human health. As presently written, the final EIR does not inform the reader what impact, if any, the project is likely to have on the days of nonattainment per year—it might double those days or it might not even add a single a day per year. Similarly, no connection or correlation is made between (1) the EIR's statement that exposure to ambient levels of ozone ranging from 0.10 to 0.40 parts per million for one to two hours has been found to significantly alter lung functions and (2) the emissions that the project is expected to produce*."

These examples, highlight the difficulty that air quality practitioner have with the *Friant Ranch* ruling, as discussed further below. The current practice in addressing air quality impacts in CEQA documents is to relate health impacts to the regional significance thresholds, which are related to the AAQS. However, as cited in the *Friant Ranch* ruling, the court found this disclosure too general and not specific enough. However, on the other end of the spectrum, there are not adequate tools available to characterize health impacts of a single project to the degree requested. The court did not provide guidance in this. Rather, the court cited that the "County has discretion in choosing what type of analysis to provide and we will not direct County on how to exercise that discretion. (§ 21168.5.) Nonetheless, there must be some analysis of the correlation between the project's [regional] emissions and human health impacts." So CEQA air quality practitioners are now left scratching their heads on how to comply with the ruling and are seeking guidance from the regional air districts.

The court in the *Friant Ranch* ruling is clearly viewing the EIR analysis of regional criteria pollutants through a project-level paradigm, when this is clearly a cumulative impact issue. As such, the court's suggestions as to a remedy are based on the wrong paradigm, which creates further substantial challenge for the CEQA practitioner.

Origin of Criteria Air Pollutant Significance Thresholds

Before we get into addressing the specific components of the ruling, it is important to discuss how the regional significance thresholds (lbs per day and/or tons per year) were developed for CEQA significance findings and how they related to human health and welfare.

Regional significance thresholds are derived from the United Stated Environmental Protection Agency (USEPA) health-based standards. Regional significance thresholds have been used by air districts in California for the last 25 years. Air quality practitioners prior to the development of bright-line significance threshold struggled with the need to define the level at which a project's emissions are deemed significant. It is important to note that regional criteria air pollutant emissions are by definition a cumulative impact.

Regional air quality impacts, similar to greenhouse gas (GHG) emissions impacts are inherently cumulative in nature. Land use projects on their own would not single-handedly cause emissions that exceed the ambient air quality standards. In fact, localized emissions modeling requires air quality modelers to consider the background concentrations when calculating localized impacts. An analysis of regional emissions impacts addresses whether the additional amount of emissions generated by a project should be considered significant in the context of the existing cumulative effect, which is based on criteria air pollutant emissions for which the air basin is designated as nonattainment for. Therefore, the regional criteria air pollutant analysis in a CEQA document is not a project-level analysis, but a cumulative impact analysis.

Therefore, the "one molecule rule", as defined in the *Communities for a Better Environment v. California Resources Agency and California Building Industry Association* (2002 126 Cal. Rptr. 2d. 441, Cal.App.3 Dist., 2002) (CBE Case), applies. As defined in the CBE case, just because criteria air pollutant emissions

adds to the effect in the nonattainment area does not necessarily create a significant cumulative effect, and the "one [additional] molecule rule" is not the law. Consequently, air districts have developed these bright-line thresholds to define what constitutes a significant impact.

For example, in the South Coast Air Basin, these bright-line significance thresholds were originally developed based on the annual emissions permitting thresholds in the USEPA Prevention of Significant Deterioration (PSD) of Air Quality regulation. The USEPA thresholds are the increment of air pollution an area is allowed to increase. PSD increments prevent the air quality in clean areas from deteriorating to the level set by the National AAQS. Similar to CEQA thresholds, the USEPA thresholds require projects that generate regulated sources of emissions to demonstrate that new emissions emitted from a proposed major stationary source or major modification, in conjunction with other applicable emissions increases and decreases from existing sources, will not cause or contribute to a violation of any applicable National AAQS or PSD increment. Consequently, the thresholds used by air districts in California to determine significant impacts are derived from the health based AAQS. Table 1 shows the primary health and welfare effects from the criteria air pollutant emissions of concern for land use projects.

Table 1 Primary Sources and Effects of Criteria Air Pollutants

Pollutants	**Primary Health and Welfare Effects**
Carbon Monoxide	Aggravation of some heart diseases (angina); Reduced tolerance for exercise; Impairment of mental function; Impairment of fetal development; Death at high levels of exposure
Nitrogen Dioxide	Aggravation of respiratory illness
Ozone ($O_{3)}$[1]	Aggravation of respiratory and cardiovascular diseases; Reduced lung function, Increased cough and chest discomfort
Particulate Matter (PM_{10} and $PM_{2.5)}$	Reduced lung function; Aggravation of respiratory & cardio-respiratory diseases; Increases in mortality rate; Reduced lung function growth in children

Source: South Coast Air Quality Management District (SCAQMD). 2005, May 6. Guidance Document for Addressing Air Quality, Issues in General Plans and Local Planning, http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf?sfvrsn=4

[1] Ozone is a secondary criteria air pollutant and not emitted directly by a project.

One way to think about the existing thresholds is to think about the regional inventory of criteria pollutants. While a project that exceeds the thresholds by itself cannot "bounce the needle" on the ambient concentrations of criteria pollutants, when you amalgamate all the land use and other sources that exceed the thresholds, then you are dealing with a meaningful majority of the regional criteria

pollutant emissions. The existing thresholds are a tool by which to ensure that CEQA evaluations are conducted for projects that meaningfully contribute to the regional inventory. But this does not mean that a single project would substantially change ambient conditions in a specifically measurable way in terms of health effect. Rather it means that without control, the cumulative projects above this threshold would contribute to meaningfully changes in ambient concentrations which would have measurable changes in health effects. Using CEQA terminology, the thresholds do not identify the level at which a project results in a significant impact, instead the thresholds identify when the project's emissions are a considerable contribution to a cumulatively significant impact.

Limits of Air Quality Dispersion Modeling for Regional Criteria Pollutants

As a measure of cumulative contribution, the regional significance thresholds for criteria pollutants only indirectly tie emissions generated by a project to the health-based standards of the AAQS. The health-based standards of the AAQS are based on the concentration of air pollutant emissions in the air and not the quantity of emissions (mass emissions) generated within an air basin. If the ruling requires something more than a general discussion of the health implications of exceeding the regional significance thresholds of the air district, how can lead agencies comply with the ruling?

Ozone and Secondary Particulate Matter

Ozone and secondary PM cannot be modeled with one of the dispersion models used for localized pollutants (such as diesel particulate matter) because they are formed with complex chemical reactions in the atmosphere sometimes many miles from the source of emissions. The models need to simulate dispersion, deposition, atmospheric chemistry, and meteorology, in a three dimensional scale. The models need to include all precursor emission sources in a gridded inventory that accounts for the time of day and location of the emission sources throughout a modeling domain. Some simplified models referred to as mesoscale models have been developed to model the impact on a smaller scale for large point sources such as power plants, but according to USEPA they are not considered a reliable predictor of actual concentrations of ozone. In addition, emissions from development projects are primarily generated by mobile sources. Cars and trucks travel an average of 7-10 miles for each trip resulting in emissions being spread throughout the road network, not from a single project site. Therefore, ozone, and to lesser extent PM_{10} must be modeled using a regional atmospheric model.

Ozone air quality attainment plans use regional atmospheric models to determine the emission carrying capacity of the air basin. If the carrying capacity is exceeded, locations within the modeling domain will exceed the ambient air quality standard. The more that the carrying capacity is exceeded, the higher the concentration experienced in the areas exceeding the standard. When air basins are close to attainment, the areas that exceed the standard become more isolated. Attainment modeling is used to determine the amount of reductions needed to reach attainment at the last location within the basin. This means that most locations in a basin, including those with very large projects, may have no exceedances of the standard and areas with less favorable meteorology with no projects and limited local sources can exceed the standard.

Nitrogen Dioxide/Oxides of Nitrogen

Theoretically, it would be possible to add the emissions from a large project such as Friant Ranch into the regional attainment model and look for increases in concentration throughout the air basin. This would be considered a sensitivity analysis. The analysis could hold the emissions in the rest of the grid constant and see what happens when emissions are added to the appropriate grid squares. The SJVAB inventory for the ozone precursor NO_x is about 545 tons per day or 198,925 tons per year. Friant Ranch would produce approximately 102 tons per year of NO_x or a 0.051 percent increase. A small increase in emissions of less than a tenth of a percent spread over several grid cells is not likely to move the concentration by an amount beyond the uncertainty in the model.

The regional models account for phenomenon like low level jet streams that can quickly transport emissions from where they are generated to distant locations and wind eddies that recirculate polluted air on a sub-regional basis. In addition, photochemical modeling, in the case of ozone, is dependent of the amount of the individual precursors at all locations in the domain. This is because in the absence of sunlight, NO_x destroys ozone, and areas deficient in NO_x such as rural and mountain areas will experience high ozone concentrations well into the evening while urban areas with many NO_x sources will see rapid decreases in ozone in the evening. Therefore, modeling that adds emissions from a development project in one part of the modeling domain may have a beneficial effect in one area and a negative effect in another. For Friant Ranch, the regional model would be the only way to accurately measure the increase in concentration, if any that would occur by adding the emissions at the project site on the road network receiving traffic from the project. However, the scale of the additional emissions is so small compared to the basin scale variables, that the effect on ambient concentrations would be lost in the "noise" of the model and would be highly unlikely to be directly attributable (or "correlated" in court's language) to the project itself

The San Joaquin Valley Air Basin (SJVAB) is considered NO_x limited, meaning reductions in NO_x have the most effect on ozone formation while the other ozone precursor, ROG, would have little effect because of its abundance in the atmosphere. Most ROG compounds are not considered to have health impacts except for those classified as toxic air contaminants that are regulated separately. ROG is generated by plants. Eliminating all ROG from manmade sources will still leave sufficient biogenic ROG to participate in the photochemical reaction to form ozone.

Inhalable Particulate Matter

PM_{10} is formed by chemical reactions in the atmosphere with precursor emissions and directly from combustion and from fugitive dust. For example, the particulate ammonium nitrate is formed when NO_x and ammonia react in a series of complex chemical reactions. PM_{10} is an amalgamation of numerous particles, and aerosols. The mix of chemicals varies day to day and season to season. In winter, wood smoke and ammonium nitrate are larger portions the mix with occasional days heavily influenced by fugitive dust. In the summer, fugitive dust provides a larger fraction and nitrate is reduced. This variation somewhat complicates the modeling process. Regional PM_{10} emissions in the SJVAB were modeled using a procedure called chemical mass balance. The individual PM_{10} species are allocated into

a grid and reductions from the control measures designed to reduce each constituent are applied to the inventory in each grid square to demonstrate attainment. This process could be done in reverse by adding pollutants generated by the project into the appropriate grid square to see if it would substantially increase concentrations to unhealthful levels. However, again, the regional scale effects and dispersion dwarf nearly all project level emission contributions such that meaningful attribution of ambient concentrations to the project itself will be difficult. More sophisticated atmospheric models for PM_{10} and $PM_{2.5}$ exist, but to our knowledge have not been used in the SJVAB.

Number of Days Air Basins Exceed AAQS

In addition to effects on peak concentration, it is also important to know how many days people are exposed to the unhealthful levels and whether a project would increase the number of days each year in which the air quality standard is exceeded. The modeling only tells what conditions will be during days with the worst conditions (most favorable for forming ozone) called an episode. Poor air quality builds up over a number of days when stagnant conditions occur. Eventually, more favorable conditions return and the air quality is improved. In Fresno the number of days exceeding the federal 8-hour ozone standard of 0.075 ppm was between 50 and 70 days per year between 2009 and 2012. This is down from over 100 days per year in the past. The peak 8-hour readings were as high as 0.116 ppm in 2013. This indicates that the existing conditions are well over the standard on many days. A sufficient regional cumulative increase in emissions could cause the concentration to go up on the worst days and to increase the number of days exceeding the standard. However, as described above, the Friant Ranch emissions are so small relevant to the regional inventory (NOx emission are only 0.051 percent of regional emissions) that any project-attributable change in conditions is likely to be within the model uncertainty and thus would not be a valid result that could be used as the basis for a significant determination under CEQA.

Criteria Air Pollutant Burden: Number of People Exposed to Unhealthful Concentrations

Another factor that is considered in assessing air quality health impacts is the number of people exposed to unhealthful air quality from regional criteria pollutants. Areas with large populations with high pollutant concentrations would expose more people to bad air than areas with small populations and equally poor air quality. It is not acceptable to expose anyone to poor air quality, but it may help prioritize actions to reduce the impacts by where the most people would be helped.

The health impacts of ozone can be presented in a number of ways. The clearest in comparison is to the state and federal ambient ozone standards. If ambient concentrations are below the standard, it is safe to say that no health impact would occur to anyone. When concentrations exceed the standard, impacts will vary based on how much the standard is exceeded. The USEPA developed the Air Quality Index (AQI) as an easy to understand measure of health impact.

> 75 ppb: AQI 100 – Moderate:
> **Sensitive Groups**: Children and people with asthma are the groups most at risk.
> **Health Effects Statements**: Unusually sensitive individuals may experience respiratory symptoms.

Cautionary Statements: Unusually sensitive people should consider limiting prolonged outdoor exertion.

95 ppb: AQI 150 – Unhealthful for Sensitive Groups:
Sensitive Groups: Children and people with asthma are the groups most at risk.
Health Effects Statements: Increasing likelihood of respiratory symptoms and breathing discomfort in active children and adults and people with respiratory disease, such as asthma.
Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.

115 ppb: AQI 200 – Unhealthy:
Sensitive Groups: Children and people with asthma are the groups most at risk.
Health Effects Statements: Greater likelihood of respiratory symptoms and breathing difficulty in active children and adults and people with respiratory disease, such as asthma; possible respiratory effects in general population.
Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.

139 ppb: AQI 210 – Very Unhealthful:
Sensitive Groups: Children and people with asthma are the groups most at risk.
Health Effects Statements: Increasingly severe symptoms and impaired breathing likely in active children and adults and people with respiratory disease, such as asthma; increasing likelihood of respiratory effects in general population.
Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.

Based on the AQI scale, Fresno experienced one day in the last three years that would be categorized as unhealthful, and as many as 56 days that was unhealthful for sensitive groups or moderate at the worst monitoring station. This raises the question of what would be considered a significant project impact. Would a project need to be solely responsible for increasing the days over the standard by one day, five days, or ten days? Would a project need to increase the AQI to the next higher level – moderate to unhealthful for sensitive groups? This line of reasoning leads back to the basis of the 10 ton per year ozone precursor threshold that is based on a policy determination that this amount is a cumulative contribution deserving mitigation in consideration to the existing impact. Although this approach might in concept be thought useful, since nearly all projects would have such a small contribution in isolation[2], it is unlikely that any one project would change the modeled population exposed to concentrations above ambient thresholds.

[2] In the Friant Ranch case, using ozone precursors as an example, if regional cumulative emissions result in an AQI of 210 and the AQI is linearly related to the amount of emissions, then the project-only contribution would be an increase in the AQI of 0.1. Given the photochemistry issues described above for ozone formation, such a direct linear relationship is not a valid presumption and this points out that ultimately this is a cumulative impact, not a project-only impact.

The Air District's Shoes

The discussion above highlights the difficulties with doing macro-level dispersion modeling and relating mass emissions to the number of people requiring "filtering devices when they go outdoors" or the number of additional days a region may be in nonattainment for. However, do CEQA practitioners really need to go that far? As identified above, regional significance thresholds (lbs per day, and/or tons per year thresholds) are derived from the AAQS. Air basins are identified as either attainment or nonattainment of the California and National AAQS for criteria pollutants. If an air basin is designated as nonattainment, the regional air districts are required to prepare air quality management plans detailing strategies to meet the AAQS in the timeline specified. If air districts already need to forecast future emission levels based on growth, does the decision made by the court overstep into the shoes of the air district?

Projects that exceed the regional significance threshold contribute cumulatively to the nonattainment designation, but do not cause nonattainment in isolation. As the attainment designation is based on the AAQS, which are set at levels of exposure that are determined to not result in adverse health, a project in a nonattainment area with criteria pollutant emissions would cumulatively contribute to health impacts within the air basin. Therefore, in the absence of tools for equating regional emissions to more specific health-based affects, the appropriate place for evaluating how growth within the air basins affects the ability to meet the AAQS and attain the health based standards established by the State and EPA is the regional air quality management plans. Regional air quality management planning specifically accounts for new development in the region based on development patterns set forth in General Plan. The air district runs regional model simulations to determine whether or not an air basin can meet the AAQS. As addressed above, it would be exceedingly difficult to impossible for an individual project to accurately identify how it affects basin-wide concentrations within the uncertainty levels of available regional modeling tools. The air districts are the primary agencies responsible for ensuring the health and welfare of sensitive individuals to elevated concentrations of air quality. Therefore, the most appropriate discussion may be to relate when the air district anticipates the region attaining the health-based standards of the AAQS.

So….what is the CEQA practitioner to do?

As discussed above, regional scale modeling of project-level criteria pollutant emissions will be unrevealing and in nearly all cases will not result in any meaningful identification of changes in ambient levels and human health effects with any certainty. The court ruling is logically flawed in applying a project-level paradigm to a cumulative-level contribution and is asking for an unrealistic and unscientific level of disclosure. As the California Supreme Court has taken up the case, it may resolve the issues in its determination.

In the meantime, lead agencies would be wise to provide the following disclosure when analyzing regional criteria pollutant emissions to better "correlate" project-level criteria pollutant emissions to human health impacts:

1. Describe the cumulative context of regional criteria pollutant emissions and that regional health

effects occur due to the cumulative emissions of existing and future criteria pollutant sources.

2. Characterize the level of project criteria pollutant emissions in comparison to the regional inventory both in terms of tons and percentages.

3. Describe that regional criteria pollutant modeling cannot accurately capture the project-level effect on ambient pollutant concentrations beyond the uncertainty level of the modeling.

4. Disclose that cumulative contributions of regional criteria pollutant emissions collectively can and do have a real-world effect on human health and describe those in the impact analysis (not just in the setting section).

5. Disclose that in general, more criteria pollutant emissions will contribute to more health effects regionally, but that specifically attributing the project's emissions to a specifically defined quantitative or geographic health effect is beyond the resolution of current tools.

6. Differentiate between regional criteria pollutants that are a concern for regional air pollution and localized pollutants (like toxic air contaminants) that are a project-scale concern for the immediate surrounding area of a project. If localized pollutants are studied for their impacts on ambient air quality near the project, explain why this is not appropriate for regional-scale pollutants like ozone precursors.

The situation with the *Friant Ranch* ruling is not unlike the recent court rulings concerning CEQA baselines. In the first Sunnyvale baseline case (*Sunnyvale West Neighborhood Assn. v. City of Sunnyvale City Council*, 2010), the appellate court described in rather bold terms that sole reliance on a future year baseline is never appropriate and that only an existing year baseline is appropriate under CEQA. In a second Sunnyvale baseline case (*Pfeiffer v. City of Sunnyvale City Council* 2011), the same appellate court found that a future year baseline could be appropriate in a CEQA document provided that the analysis also compares project effects to existing conditions. A California Supreme Court ruling (*Neighbors for Smart Rail v. Exposition Metro Line Construction Authority, 4th Appellate District,* 2013) then resolved the issue by finding that use of a future-year baseline only without comparison to existing conditions could actually be appropriate when comparing project conditions to existing conditions would be misleading to the public and decision-makers. The Supreme Court ultimately overturned the original court's key finding, while adding requirements of substantiation that did not exist previously.

Depending on the actions of the Supreme Court, the *Friant Ranch* ruling may or may not be legal precedent on this issue. Given the pragmatic problems with trying to quantitatively correlate project-level criteria pollutant emissions to regional human health effects, it is hoped that future rulings are better informed by the science underlying regional criteria air pollution and associated health effects.

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

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LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

CATHERINE T. REDMOND (State Bar No. 226957)
261 High Street
Duxbury, Massachusetts 02332
Tel. (339) 236-5720
Catherinetredmond22@gmail.com

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT
Annette Ballatore-Williamson, District Counsel (State Bar. No. 192176)
1990 E. Gettysburg Avenue
Fresno, California 93726
Tel. (559) 230-6033
Annette.Ballatore-Williamson@valleyair.org

Counsel for San Joaquin Valley Unified Air Pollution Control District

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CATHERINE T. REDMOND (State Bar No. 226957)
261 High Street
Duxbury, Massachusetts 02332
Tel. (339) 236-5720
Catherinetredmond22@gmail.com

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT
Annette Ballatore-Williamson, District Counsel (State Bar. No. 192176)
1990 E. Gettysburg Avenue
Fresno, California 93726
Tel. (559) 230-6033
Annette.Ballatore-Williamson@valleyair.org

Counsel for San Joaquin Valley Unified Air Pollution Control District

APPLICATION

Pursuant to California Rules of Court 8.520(f)(1), proposed Amicus Curiae San Joaquin Valley Unified Air Pollution Control District hereby requests permission from the Chief Justice to file an amicus brief in support of Defendant and Respondent, County of Fresno, and Defendant and Real Parties in Interest Friant Ranch, L.P. Pursuant to Rule 8.520(f)(5) of the California Rules of Court, the proposed amicus curiae brief is combined with this Application. The brief addresses the following issue certified by this Court for review:

> Is an EIR adequate when it identifies the health impacts of air pollution and quantifies a project's expected emissions, or does CEQA further require the EIR to *correlate* a project's air quality emissions to specific health impacts?

As of the date of this filing, the deadline for the final reply brief on the merits was March 5, 2015. Accordingly, under Rule 8.520(f)(2), this application and brief are timely.

1. Background and Interest of San Joaquin Valley Unified Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District ("Air District") regulates air quality in the eight counties comprising the San Joaquin Valley ("Central Valley"): Kern, Tulare, Madera, Fresno, Merced, San Joaquin, Stanislaus, and Kings, and is primarily responsible for attaining air quality standards within its jurisdiction. After billions of dollars of investment by Central Valley businesses, pioneering air quality regulations, and consistent efforts by residents, the Central Valley air basin has made historic improvements in air quality.

The Central Valley's geographical, topographical and meteorological features create exceptionally challenging air quality

conditions. For example, it receives air pollution transported from the San Francisco Bay Area and northern Central Valley communities, and the southern portion of the Central Valley includes three mountain ranges (Sierra, Tehachapi, and Coastal) that, under some meteorological conditions, effectively trap air pollution. Central Valley air pollution is only a fraction of what the Bay Area and Los Angeles produce, but these natural conditions result in air quality conditions that are only marginally better than Los Angeles, even though about ten times more pollution is emitted in the Los Angeles region. Bay Area air quality is much better than the Central Valley's, even though the Bay Area produces about six times more pollution. The Central Valley also receives air pollution transported from the Bay Area and northern counties in the Central Valley, including Sacramento, and transboundary anthropogenic ozone from as far away as China.

Notwithstanding these challenges, the Central Valley has reduced emissions at the same or better rate than other areas in California and has achieved unparalleled milestones in protecting public health and the environment:

- In the last decade, the Central Valley became the first air basin classified by the federal government under the Clean Air Act as a "serious nonattainment" area to come into attainment of health-based National Ambient Air Quality Standard ("NAAQS") for coarse particulate matter (PM10), an achievement made even more notable given the Valley's extensive agricultural sector. Unhealthy levels of particulate matter can cause and exacerbate a range of chronic and acute illnesses.
- In 2013, the Central Valley became the first air basin in the country to improve from a federal designation of "extreme" nonattainment to

actually attain (and quality for an attainment designation) of the 1-hour ozone NAAQS; ozone creates "smog" and, like PM10, causes adverse health impacts.

- The Central Valley also is in full attainment of federal standards for lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide.
- The Central Valley continues to make progress toward compliance with its last two attainment standards, with the number of exceedences for the 8-hour ozone NAAQS reduced by 74% (for the 1997 standard) and 38% (for the 2008 standard) since 1991, and for the small particulate matter (PM2.5) NAAQS reduced by 85% (for the 1997 standard) and 61% (for the 2006 standard).

Sustained improvement in Central Valley air quality requires a rigorous and comprehensive regulatory framework that includes prohibitions (e.g., on wood-burning fireplaces in new residences), mandates (e.g., requiring the installation of best available pollution reduction technologies on new and modified equipment and industrial operations), innovations (e.g., fees assessed against residential development to fund pollution reduction actions to "offset" vehicular emissions associated with new residences), incentive programs (e.g., funding replacements of older, more polluting heavy duty trucks and school buses)[1], ongoing planning for continued air quality improvements, and enforcement of Air District permits and regulations.

The Air District is also an expert air quality agency for the eight counties and cities in the San Joaquin Valley. In that capacity, the Air District has developed air quality emission guidelines for use by the Central

[1] San Joaquin's incentive program has been so successful that through 2012, it has awarded over $ 432 million in incentive funds and has achieved 93,349 tons of lifetime emissions reductions. *See* SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2012 PM2.5 PLAN, 6-6 (2012) *available at* http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/06%20Chapter%206%20Incentives.pdf.

Valley counties and cities that implement the California Environment Quality Act (CEQA).[2] In its guidance, the Air District has distinguished between toxic air contaminants and criteria air pollutants.[3] Recognizing this distinction, the Air District's CEQA Guidance has adopted distinct thresholds of significance for *criteria* pollutants (i.e., ozone, PM2.5 and their respective precursor pollutants) based upon scientific and factual data which demonstrates the level that can be accommodated on a cumulative basis in the San Joaquin Valley without affecting the attainment of the applicable NAAQS.[4] For *toxic air* pollutants, the District has adopted different thresholds of significance which scientific and factual data demonstrates has the potential to expose sensitive receptors (i.e., children, the elderly) to levels which may result in localized health impacts.[5]

The Air District's CEQA Guidance was followed by the County of Fresno in its environment review of the Friant Ranch project, for which the Air District also served as a commenting agency. The Court of Appeal's holding, however, requiring correlation between the project's criteria

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[2] *See, e.g.*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, PLANNING DIVISION, GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS (2015), *available at* http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf ("CEQA Guidance").

[3] Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from toxic air contaminants and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of toxic air contaminants occurs solely under section 112 of the Act. Compare 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 with 42 U.S.C. § 7411.

[4] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 64-66, 80.

[5] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 66, 99-101.

pollutants and local health impacts, departs from the Air District's Guidance and approved methodology for assessing criteria pollutants. A close reading of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants (for which a local health risk assessment is feasible and routinely performed) and criteria air pollutants (for which a local health risk assessment is not feasible and would result in speculative results).[6] The Air District has a direct interest in ensuring the lawfulness and consistent application of its CEQA Guidance, and will explain how the Court of Appeal departed from the Air District's long-standing CEQA Guidance in addressing criteria pollutants and toxic air contaminants in this amicus brief.

2. How the Proposed Amicus Curiae Brief Will Assist the Court

As counsel for the proposed amicus curiae, we have reviewed the briefs filed in this action. In addition to serving as a "commentary agency" for CEQA purposes over the Friant Ranch project, the Air District has a strong interest in assuring that CEQA is used for its intended purpose, and believes that this Court would benefit from additional briefing explaining the distinction between criteria pollutants and toxic air contaminants and the different methodologies employed by local air pollution control agencies such as the Air District to analyze these two categories of air pollutants under CEQA. The Air District will also explain how the Court of Appeal's opinion is based upon a fundamental misunderstanding of these two different approaches by requiring the County of Fresno to correlate the project's *criteria* pollution emissions with *local* health impacts. In doing

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[6] CEQA does not require speculation. *See, e.g., Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1137 (1993) (upholding EIR that failed to evaluate cumulative toxic air emission increases given absence of any acceptable means for doing so).

so, the Air District will provide helpful analysis to support its position that at least insofar as criteria pollutants are concerned, CEQA does not require an EIR to correlate a project's air quality emissions to specific health impacts, because such an analysis is not reasonably feasible.

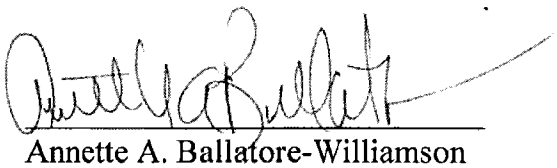
Rule 8.520 Disclosure

Pursuant to Cal. R. 8.520(f)(4), neither the Plaintiffs nor the Defendant or Real Party In Interest or their respective counsel authored this brief in whole or in part. Neither the Plaintiffs nor the Defendant or Real Party in Interest or their respective counsel made any monetary contribution towards or in support of the preparation of this brief.

CONCLUSION

On behalf of the San Joaquin Valley Unified Air Pollution Control District, we respectfully request that this Court accept the filing of the attached brief.

Dated: April 2, 2015



Annette A. Ballatore-Williamson
District Counsel
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

CATHERINE T. REDMOND (State Bar No. 226957)
261 High Street
Duxbury, Massachusetts 02332
Tel. (339) 236-5720
Catherinetredmond22@gmail.com

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT
Annette A. Ballatore-Williamson, District Counsel (State Bar. No. 192176)
1990 E. Gettysburg Avenue
Fresno, California 93726
Tel. (559) 230-6033
Annette.Ballatore-Williamson@valleyair.org
Counsel for San Joaquin Valley Unified Air Pollution Control District

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I. INTRODUCTION.

The San Joaquin Valley Unified Air Pollution Control District ("Air District") respectfully submits that the Court of Appeal erred when it held that the air quality analysis contained in the Environmental Impact Report ("EIR") for the Friant Ranch development project was inadequate under the California Environmental Quality Act ("CEQA") because it did not include an analysis of the correlation between the project's criteria air pollutants and the potential adverse human health impacts. A close reading of the portion of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants and criteria air pollutants.

Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants (hereinafter referred to as "TACs") regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health,

they are distinguishable from TACs and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of TACs occurs solely under section 112 of the Act. *Compare* 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 *with* 42 U.S.C. § 7411.

The most relevant difference between criteria pollutants and TACs for purposes of this case is the manner in which human health impacts are accounted for. While it is common practice to analyze the correlation between an individual facility's TAC emissions and the expected localized human health impacts, such is not the case for criteria pollutants. Instead, the human health impacts associated with criteria air pollutants are analyzed and taken into consideration when EPA sets the national ambient air quality standard ("NAAQS") for each criteria pollutant. 42 U.S.C. § 7409(b)(1). The health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the NAAQS. Accordingly, while the type of individual facility / health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task.

It is clear from a reading of both the administrative record and the Court of Appeal's decision that the Court did not have the expertise to fully

appreciate the difference between TACs and criteria air pollutants. As a result, the Court has ordered the County of Fresno to conduct an analysis that is not practicable and not likely yield valid information. The Air District respectfully requests that this portion of the Court of Appeal's decision be reversed.

II. THE COURT OF APPEAL ERRED IN FINDING THE FRIANT RANCH EIR INADEQUATE FOR FAILING TO ANALYZE THE SPECIFIC HUMAN HEALTH IMPACTS ASSOCIATED CRITERIA AIR POLLUTANTS.

Although the Air District does not take lightly the amount of air emissions at issue in this case, it submits that the Court of Appeal got it wrong when it required Fresno County to revise the Friant Ranch EIR to include an analysis correlating the criteria air pollutant emissions associated with the project with specific, localized health-impacts. The type of analysis the Court of Appeal has required will not yield reliable information because currently available modeling tools are not well suited for this task. Further, in reviewing this issue de novo, the Court of Appeal failed to appreciate that it lacked the scientific expertise to appreciate the significant differences between a health risk assessment commonly performed for toxic air contaminants and a similar type of analysis it felt should have been conducted for criteria air pollutants.

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A. Currently Available Modeling Tools are not Equipped to Provide a Meaningful Analysis of the Correlation between an Individual Development Project's Air Emissions and Specific Human Health Impacts.

In order to appreciate the problematic nature of the Court of Appeals' decision requiring a health risk type analysis for criteria air pollutants, it is important to understand how the relevant criteria pollutants (ozone and particulate matter) are formed, dispersed and regulated.

Ground level ozone (smog) is not directly emitted into the air, but is formed when precursor pollutants such as oxides of nitrogen (NOx) and volatile organic compounds (VOCs) are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight.[1] Once formed, ozone can be transported long distances by wind.[2] Because of the complexity of ozone formation, a specific tonnage amount of NOx or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area. In fact, even rural areas that have relatively low tonnages of emissions of NOx or VOCs can have high levels of ozone concentration simply due to wind transport.[3] Conversely, the San Francisco Bay Area has six times more NOx and VOC emissions per square mile than the San Joaquin Valley, but experiences lower

[1] *See* United States Environmental Protection Agency, *Ground-level Ozone: Basic Information*, available at: http://www.epa.gov/airquality/ozonepollution/basic.html (visited March 10, 2015).
[2] *Id.*
[3] *Id.*

concentrations of ozone (and better air quality) simply because sea breezes disperse the emissions.[4]

Particulate matter ("PM") can be divided into two categories: directly emitted PM and secondary PM.[5] While directly emitted PM can have a localized impact, the tonnage emitted does not always equate to the local PM concentration because it can be transported long distances by wind.[6] Secondary PM, like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides (SOx) and NOx.[7] Because of the complexity of secondary PM formation, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area.

The disconnect between the *tonnage* of precursor pollutants (NOx, SOx and VOCs) and the *concentration* of ozone or PM formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM. Indeed, the national ambient air quality standards ("NAAQS"), which are statutorily required to be set by the United States Environmental Protection

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[4] *San Joaquin Valley Air Pollution Control District 2007 Ozone Plan*, Executive Summary p. ES-6, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).

[5] United States Environmental Protection Agency, *Particulate Matter: Basic Information*, available at: http://www.epa.gov/airquality/particlepollution/basic.html (visited March 10, 2015).

[6] *Id.*

[7] *Id.*

Agency ("EPA") at levels that are "requisite to protect the public health," 42 U.S.C. § 7409(b)(1), are established as concentrations of ozone or particulate matter and not as tonnages of their precursor pollutants.[8]

Attainment of a particular NAAQS occurs when the concentration of the relevant pollutant remains below a set threshold on a consistent basis throughout a particular region. For example, the San Joaquin Valley attained the 1-hour ozone NAAQS when ozone concentrations remained at or below 0.124 parts per million Valley-wide on 3 or fewer days over a 3-year period.[9] Because the NAAQS are focused on achieving a particular concentration of pollution region-wide, the Air District's tools and plans for attaining the NAAQS are regional in nature.

For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NOx, SOx and VOCs) and the atmospheric chemistry and meteorology of the Valley.[10] At a very basic level, the models simulate future ozone or PM levels based on predicted changes in precursor

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[8] See, e.g., United States Environmental Protection Agency, *Table of National Ambient Air Quality Standards*, available at: http://www.epa.gov/air/criteria.html#3 (visited March 10, 2015).

[9] *San Joaquin Valley Unified Air Pollution Control District 2013 Plan for the Revoked 1-Hour Ozone Standard*, Ch. 2 p. 2-16, available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/02Chapter2ScienceTrendsModeling.pdf (visited March 10, 2015).

[10] *Id.* at Ch. 2 p. 2-19 (visited March 12, 2015); *San Joaquin Valley Unified Air Pollution Control District 2008 PM2.5 Plan*, Appendix F, pp. F-2 – F-5, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted_PM2.5/20%20Appendix%20F.pdf (visited March 19, 2015).

emissions Valley wide.[11] Because the NAAQS are set levels necessary to protect human health, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.

The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which *all* of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.[12]

Accordingly, the Air District has based its thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the Valley can accommodate without affecting the attainment date for the NAAQS.[13] The Air District has tied its CEQA significance thresholds to the level at which stationary pollution sources permitted by the Air District must "offset" their emissions.[14] This "offset"

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[11] *Id.*

[12] Although the Air District does have a dispersion modeling tool used during its air permitting process that is used to predict whether a particular project's directly emitted PM will either cause an exceedance of the PM NAAQS or contribute to an existing exceedance, this model bases the prediction on a worst case scenario of emissions and meteorology and has no provision for predicting any associated human health impacts. Further, this analysis is only performed for stationary sources (factories, oil refineries, etc.) that are required to obtain a New Source Review permit from the Air District and not for development projects such as Friant Ranch over which the Air District has no preconstruction permitting authority. *See* San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0; 3.3.9; 4.14.1, available at: http://www.valleyair.org/rules/currntrules/Rule2201041l.pdf (visited March 19, 2015).

[13] *San Joaquin Valley Unified Air Pollution Control District Guide to Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22, available at: http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf (visited March 30, 2015).

[14] *Id.* at pp. 22, 25.

level allows for growth while keeping the cumulative effects of all new sources at a level that will not impede attainment of the NAAQS.[15] In the Valley, these thresholds are 15 tons per year of PM, and 10 tons of NOx or VOC per year. *Sierra Club*, *supra*, 172 Cal.Rptr.3d at 303; AR 4554. Thus, the CEQA air quality analysis for criteria pollutants is not really a localized, project-level impact analysis but one of regional, "cumulative impacts."

Accordingly, the significance thresholds applied in the Friant Ranch EIR (15 tons per year of PM and 10 tons of NOx or VOCs) are not intended to be indicative of any localized human health impact that the project may have. While the health effects of air pollution are of primary concern to the Air District (indeed, the NAAQS are established to protect human health), the Air District is simply not equipped to analyze whether and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area. This is true even for projects with relatively high levels of emissions of criteria pollutant precursor emissions.

For instance, according to the EIR, the Friant Ranch project is estimated to emit 109.52 tons per year of ROG (VOC), 102.19 tons per year of NOx, and 117.38 tons per year of PM. Although these levels well

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[15] [15] *San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines* (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).

exceed the Air District's CEQA significance thresholds, this does not mean that one can easily determine the concentration of ozone or PM that will be created at or near the Friant Ranch site on a particular day or month of the year, or what specific health impacts will occur. Meteorology, the presence of sunlight, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone or PM. This is especially true for a project like Friant Ranch where most of the criteria pollutant emissions derive not from a single "point source," but from area wide sources (consumer products, paint, etc.) or mobile sources (cars and trucks) driving to, from and around the site.

In addition, it would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have. As discussed above, the currently available modeling tools are equipped to model the impact of *all* emission sources in the Valley on attainment. According to the most recent EPA-approved emission inventory, the NOx inventory for the Valley is for the year 2014 is 458.2 tons per day, or 167,243 tons per year and the VOC (or ROG) inventory is 361.7 tons per day, or 132,020.5 tons per year.[16] Running the photochemical grid model used for predicting ozone attainment with the

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[16] *San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan*, Appendix B pp. B-6, B-9,
available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).

emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NOx and VOC in the Valley) is not likely to yield valid information given the relative scale involved.

Finally, even once a model is developed to accurately ascertain local increases in concentrations of photochemical pollutants like ozone and some particulates, it remains impossible, using today's models, to correlate that increase in concentration to a specific health impact. The reason is the same: such models are designed to determine regional, population-wide health impacts, and simply are not accurate when applied at the local level.

For these reasons, it is not the norm for CEQA practitioners, including the Air District, to conduct an analysis of the localized health impacts associated with a project's criteria air pollutant emissions as part of the EIR process. When the accepted scientific method precludes a certain type of analysis, "the court cannot impose a legal standard to the contrary." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 717 n. 8. However, that is exactly what the Court of Appeal has done in this case. Its decision upends the way CEQA air quality analysis of criteria pollutants occurs and should be reversed.

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B. The Court of Appeal Improperly Extrapolated a Request for a Health Risk Assessment for Toxic Air Contaminants into a Requirement that the EIR contain an Analysis of Localized Health Impacts Associated with Criteria Air Pollutants.

The Court of Appeal's error in requiring the new health impact analysis for criteria air pollutants clearly stems from a misunderstanding of terms of art commonly used in the air pollution field. More specifically, the Court of Appeal (and Appellants Sierra Club et al.) appear to have confused the health risk analysis ("HRA") performed to determine the health impacts associated with a project's toxic air contaminants ("TACs"), with an analysis correlating a project's criteria air pollutants (ozone, PM and the like) with specific localized health impacts.

The first type of analysis, the HRA, is commonly performed during the Air District's stationary source permitting process for projects that emit TACs and is, thus, incorporated into the CEQA review process. An HRA is a comprehensive analysis to evaluate and predict the dispersion of TACs emitted by a project and the potential for exposure of human populations. It also assesses and quantifies both the individual and population-wide health risks associated with those levels of exposure. There is no similar analysis conducted for criteria air pollutants. Thus, the second type of analysis (required by the Court of Appeal), is not currently part of the Air District's process because, as outlined above, the health risks associated

with exposure to criteria pollutants are evaluated on a regional level based on the region's attainment of the NAAQS.

The root of this confusion between the types of analyses conducted for TACs versus criteria air pollutants appears to stem from a comment that was presented to Fresno County by the City of Fresno during the administrative process.

In its comments on the draft EIR, the City of Fresno (the only party to raise this issue) stated:

> [t]he EIR must disclose the human health related effects of the Project's air pollution impacts. (CEQA Guidelines section 15126.2(a).) The EIR fails completely in this area. The EIR should be revised to disclose and determine the significance of TAC impacts, and of human health risks due to exposure to Project-related air emissions.

(AR 4602.)

In determining that the issue regarding the correlation between the Friant Ranch project's criteria air pollutants and adverse health impacts was adequately exhausted at the administrative level, the Court of Appeal improperly read the first two sentences of the City of Fresno's comment in isolation rather than in the context of the entire comment. *See Sierra Club v. County of Fresno* (2014) 172 Cal.Rptr.3d 271, 306. Although the comment first speaks generally in terms of "human health related effects" and "air pollution," it requests only that the EIR be revised to disclose "the significance of TACs" and the "human health risks due to exposure."

The language of this request in the third sentence of the comment is significant because, to an air pollution practitioner, the language would only have indicated only that a HRA for TACs was requested, and not a separate analysis of the health impacts associated with the project's criteria air pollutants. Fresno County clearly read the comment as a request to perform an HRA for TACs and limited its response accordingly. (AR 4602.)[17] The Air District submits that it would have read the City's comment in the same manner as the County because the City's use of the terms "human health risks" and "TACs" signal that an HRA for TACs is being requested. Indeed, the Air District was also concerned that an HRA be conducted, but understood that it was not possible to conduct such an analysis until the project entered the phase where detailed site specific information, such as the types of emission sources and the proximity of the sources to sensitive receptors became available. (AR 4553.)[18] The City of Fresno was apparently satisfied with the County's discussion of human health risks, as it did not raise the issue again when it commented on the final EIR. (AR 8944 – 8960.)

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[17] Appellants do not challenge the manner in which the County addressed TACs in the EIR. (Appellants' Answer Brief p. 28 fn. 7.)

[18] Appellants rely on the testimony of Air District employee, Dan Barber, as support for their position that the County should have conducted an analysis correlating the project's criteria air pollutant emissions with localized health impacts. (Appellants Answer Brief pp. 10-11; 28.) However, Mr. Barber's testimony simply reinforces the Air District's concern that a risk assessment (HRA) be conducted once the actual details of the project become available. (AR 8863.) As to criteria air pollutants, Mr. Barber's comments are aimed at the Air District's concern about the amount of emissions and the fact that the emissions will make it "more difficult for Fresno County and the Valley to reach attainment which means that the health of Valley residents maybe [sic] adversely impacted." Mr. Barber says nothing about conducting a separate analysis of the localized health impacts the project's emissions may have.

The Court of Appeal's holding, which incorrectly extrapolates a request for an HRA for TACs into a new analysis of the localized health impacts of the project's criteria air pollutants, highlights two additional errors in the Court's decision.

First, the Court of Appeal's holding illustrates why the Court should have applied the deferential substantial evidence standard of review to the issue of whether the EIR's air quality analysis was sufficient. The regulation of air pollution is a technical and complex field and the Court of Appeal lacked the expertise to fully appreciate the difference between TACs and criteria air pollutants and tools available for analyzing each type of pollutant.

Second, it illustrates that the Court likely got it wrong when it held that the issue regarding the criteria pollutant / localized health impact analysis was properly exhausted during the administrative process. In order to preserve an issue for the court, '[t]he "exact issue" must have been presented to the administrative agency....' [Citation.] *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, (2011) 196 Cal.App.4th 515, 527 129 Cal.Rptr.3d 512, 521; *Sierra Club v. City of Orange* (2008) 163 Cal.App.4th 523, 535, 78 Cal.Rptr.3d 1, 13. "'[T]he objections must be sufficiently specific so that the agency has the

opportunity to evaluate and respond to them.' [Citation.]" *Sierra Club v. City of Orange*,163 Cal.App.4th at 536.[19]

As discussed above, the City's comment, while specific enough to request a commonly performed HRA for TACs, provided the County with no notice that it should perform a new type of analysis correlating criteria pollutant tonnages to specific human health effects. Although the parties have not directly addressed the issue of failure to exhaust administrative remedies in their briefs, the Air District submits that the Court should consider how it affects the issues briefed by the parties since "[e]xhaustion of administrative remedies is a jurisdictional prerequisite to maintenance of a CEQA action." *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1199, 22 Cal.Rptr.3d 203.

III. CONCLUSION

For all of the foregoing reasons, the Air District respectfully requests that the portion of the Court of Appeal's decision requiring an analysis correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

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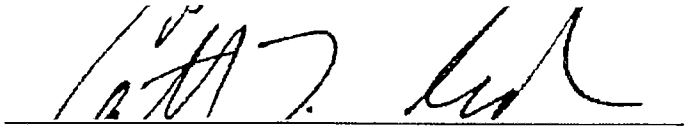
[19] *Sierra Club v. City of Orange*, is illustrative here. In that case, the plaintiffs challenged an EIR approved for a large planned community on the basis that the EIR improperly broke up the various environmental impacts by separate project components or "piecemealed" the analysis in violation of CEQA. In evaluating the defense that the plaintiffs had failed to adequately raise the issue at the administrative level, the Court held that comments such as *"the use of a single document for both a project-level and a program-level EIR [is] 'confusing',"* and *"[t]he lead agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project,"* were too vague to fairly raise the argument of piecemealing before the agency. *Sierra Club v. City of Orange*, 163 Cal.App.4th at 537.

correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

Respectfully submitted,

Dated: April 2, 2015



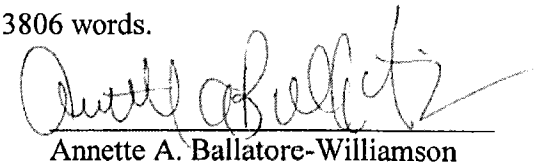
Catherine T. Redmond
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY
UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.204 of the California Rules of Court, I hereby certify that this document, based on the Word County feature of the Microsoft Word software program used to compose and print this document, contains, exclusive of caption, tables, certificate of word count, signature block and certificate of service, 3806 words.

Dated: April 2, 2015



Annette A. Ballatore-Williamson
District Counsel (SBN 192176)

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

PROOF OF SERVICE

I am over the age of 18 years and not a p[arty to the above-captioned action; that my business address is San Joaquin Valley Unified Air Pollution Control District located at 1990 E. Gettysburg Avenue, Fresno, California 93726.

On April 2, 2015, I served the document described below:

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO

On all parties to this action at the following addresses and in the following manner:

PLEASE SEE ATTACHED SERVICE LIST

(XX) **(BY MAIL)** I caused a true copy of each document(s) to be laced in a sealed envelope with first-class postage affixed and placed the envelope for collection. Mail is collected daily at my office and placed in a United State Postal Service collection box for pick-up and delivery that same day.

( ) **(BY ELECTRONIC MAIL)** I caused a true and correct scanned image (.PDF file) copy to be transmitted via electronic mail transfer system in place at the San Joaquin Valley Unified Air Pollution Control District ("District"), originating from the undersigned at 1990 E. Gettysburg Avenue, Fresno, CA, to the address(es) indicated below.

( ) **(BY OVERNIGHT MAIL)** I caused a true and correct copy to be delivered via Federal Express to the following person(s) or their representative at the address(es) listed below.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I executed this document on April 2, 2015, at Fresno, California.

Esthela Soto

SERVICE LIST

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

Sara Hedgpeth-Harris, Esq. LAW OFFICE OF SARA HEDGPETH-HARRIS 2125 Kern Street, Suite 301 Fresno, California 93721 Telephone: (559) 233-0907 Facsimile: (559) 272-6046 Email: sara.hedgpethharris@shh-law.com	Attorney for Plaintiffs and Appellants, Sierra Club, et al
Daniel C. Cederborg, Esq. Bruce B. Johnson, Jr., Esq. OFFICE OF THE FRESNO COUNTY COUNSEL 2220 Tulare Street, Suite 500 Fresno, California 93721 Telephone: (559) 600-3479 Facsimile: (559) 600-3480 Email: bjohnson@co.fresno.ca.us	Attorneys for Defendant and Respondent, County of Fresno
Bryan N. Wagner, Esq. WAGNER & WAGNER 7110 N. Fresno Street, Suite 340 Fresno, California 93720 Telephone: (559) 224-0871 Facsimile: (559) 224-0885 Email: bryan@wagnerandwagner.com	Attorneys for Real Party in Interest/Respondent Friant Ranch, L.P.
Clerk of the Court Superior Court of California County of Fresno 1130 'O' Street Fresno, California 93721 Telephone: (559) 457-1900	
Clerk of the Court Fifth District Court of Appeal 2424 Ventura Street Fresno, California 93721 Telephone: (559) 445-5491	

R. Tyson Sohagim, Esq. THE SOHAGI LAW GROUP 11999 San Vicente Blvd., Suite 150 Los Angeles, California 90049 Telephone: (310) 475-5700 Facsimile: (310) 475-5707 Email: tsohagi@sohagi.com	Attorney for Amici Curiae; League of California Cities, and the California State Association of Counties
Marcia L. Scully, Esq. General Counsel METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA Post Office Box 54153 Los Angeles, California 90054 Telephone: (213) 217-6115	Attorney for Amicus Curiae, The Metropolitan Water District of Southern CA
Amy Minteer, Esq. CHATEN-BROWN & CARSTENS LLP 2200 Pacific Coast Highway, Suite 318 Hermosa Beach, California 90254 Telephone: (310) 798-2400 Facsimile: (310) 798-2402 Email: ACM@CBCEarthlaw.com	Attorney for Amici Curiae, Association of Irritated Residents, Medical Advocates for Healthy Air, and Coalition for Clean Air
Shanda M. Beltran, Esq. General Counsel BUILDING INDUSTRY LEGAL DEFENSE FOUNDATION 17744 Sky Park Cr., Suite 170 Irvine, California 92614 Telephone: (949) 553-9500 Facsimile: (949) 769-8943 Email: sbeltran@biasc.org	Attorney for Amicus Curiae, Building Industry Legal Defense Foundation
Gene Talmadge, President CALIFORNIA ASSOCIATION OF ENVIRONMENTAL PROFESSIONALS 40747 Baranda Court Palm Desert, California 92260 Telephone: (760) 340-4499 Facsimile: (760) 674-2479	Attorney for Amicus Curiae, California Association of Environmental Professionals
Jennifer L. Hernandez, Esq. HOLLAND & KNIGHT LLP 50 California Street, Suite 2800 San Francisco, California 94111	On behalf of Amicus Curiae, CEQA Research Council

Telephone: (415) 743-6927 Facsimile: (415) 743-6910 Email: Jennifer.hernandez@hklaw.com	

S219783

IN THE SUPREME COURT OF C ALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,

Plaintiffs and Appellants,

v.

COUNTY OF FRESNO,

Defendant and Respondent,

and,

FRIANT RANCH, L.P.,

Real Party in Interest and Respondent.

After a Published Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726
Honorable Rosendo A. Pena, Jr.

APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*

Kurt R. Wiese, General Counsel (SBN 127251)
*Barbara Baird, Chief Deputy Counsel (SBN 81507)
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765
Telephone: 909-396-2302; Facsimile: 909-396-2961
Email: bbaird@aqmd.gov
Counsel for [Proposed] Amicus Curiae,
SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

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TO THE HONORABLE CHIEF JUSTICE AND JUSTICES OF THE SUPREME COURT:

APPLICATION FOR LEAVE TO FILE *AMICUS CURIAE* BRIEF

Pursuant to Rule 8.520(f) of the California Rules of Court, the South Coast Air Quality Management District (SCAQMD) respectfully requests leave to file the attached *amicus curiae* brief. Because SCAQMD's position differs from that of either party, we request leave to submit this amicus brief in support of neither party.

HOW THIS BRIEF WILL ASSIST THE COURT

SCAQMD's proposed amicus brief takes a position on two of the issues in this case. In both instances, its position differs from that of either party. The issues are:

1) Does the California Environmental Quality Act (CEQA) require an environmental impact report (EIR) to correlate a project's air pollution emissions with specific levels of health impacts?
2) What is the proper standard of review for determining whether an EIR provides sufficient information on the health impacts caused by a project's emission of air pollutants?

This brief will assist the Court by discussing the practical realities of correlating identified air quality impacts with specific health outcomes. In short, CEQA requires agencies to provide detailed information about a project's air quality impacts that is sufficient for the public and decisionmakers to adequately evaluate the project and meaningfully understand its impacts. However, the level of analysis is governed by a rule of reason; CEQA only requires agencies to conduct analysis if it is reasonably feasible to do so.

With regard to health-related air quality impacts, an analysis that correlates a project's air pollution emissions with specific levels of health impacts will be feasible in some cases but not others. Whether it is feasible depends on a variety of factors, including the nature of the project and the nature of the analysis under consideration. The feasibility of analysis may also change over time as air districts and others develop new tools for measuring projects' air quality related health impacts. Because SCAQMD has among the most sophisticated air quality modeling and health impact evaluation capability of any of the air districts in the State, it is uniquely situated to express an opinion on the extent to which the Court should hold that CEQA requires lead agencies to correlate air quality impacts with specific health outcomes.

SCAQMD can also offer a unique perspective on the question of the appropriate standard of review. SCAQMD submits that the proper standard of review for determining whether an EIR is sufficient as an informational document is more nuanced than argued by either party. In our view, this is a mixed question of fact and law. It includes determining whether additional analysis is feasible, which is primarily a factual question that should be reviewed under the substantial evidence standard. However, it also involves determining whether the omission of a particular analysis renders an EIR insufficient to serve CEQA's purpose as a meaningful, informational document. If a lead agency has not determined that a requested analysis is infeasible, it is the court's role to determine whether the EIR nevertheless meets CEQA's purposes, and courts should not defer to the lead agency's conclusions regarding the legal sufficiency of an EIR's analysis. The ultimate question of whether an EIR's analysis is "sufficient" to serve CEQA's informational purposes is predominately a question of law that courts should review de novo.

This brief will explain the rationale for these arguments and may assist the Court in reaching a conclusion that accords proper respect to a lead agency's factual conclusions while maintaining judicial authority over the ultimate question of what level of analysis CEQA requires.

STATEMENT OF INTEREST OF *AMICUS CURIAE*

The SCAQMD is the regional agency primarily responsible for air pollution control in the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of the Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410; Cal. Code Regs., tit. 17, § 60104.) The SCAQMD participates in the CEQA process in several ways. Sometimes it acts as a lead agency that prepares CEQA documents for projects. Other times it acts as a responsible agency when it has permit authority over some part of a project that is undergoing CEQA review by a different lead agency. Finally, SCAQMD also acts as a commenting agency for CEQA documents that it receives because it is a public agency with jurisdiction by law over natural resources affected by the project.

In all of these capacities, SCAQMD will be affected by the decision in this case. SCAQMD sometimes submits comments requesting that a lead agency perform an additional type of air quality or health impacts analysis. On the other hand, SCAQMD sometimes determines that a particular type of health impact analysis is not feasible or would not produce reliable and informative results. Thus, SCAQMD will be affected by the Court's resolution of the extent to which CEQA requires EIRs to correlate emissions and health impacts, and its resolution of the proper standard of review.

CERTIFICATION REGARDING AUTHORSHIP AND FUNDING

No party or counsel in the pending case authored the proposed amicus curiae brief in whole or in part, or made any monetary contribution intended to fund the preparation or submission of the brief. No person or entity other than the proposed *Amicus Curiae* made any monetary contribution intended to fund the preparation or submission of the brief.

Respectfully submitted,

DATED: April 3, 2015

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT
KURT R. WIESE, GENERAL COUNSEL
BARBARA BAIRD, CHIEF DEPUTY COUNSEL

By: Barbara Baird
Barbara Baird
Attorneys for [proposed] Amicus Curiae
SOUTH COAST AIR QUALITY
MANAGEMENT DISTICT

BRIEF OF AMICUS CURIAE

SUMMARY OF ARGUMENT

The South Coast Air Quality Management District (SCAQMD) submits that this Court should not try to establish a hard-and-fast rule concerning whether lead agencies are required to correlate emissions of air pollutants with specific health consequences in their environmental impact reports (EIR). The level of detail required in EIRs is governed by a few, core CEQA (California Environmental Quality Act) principles. As this Court has stated, "[a]n EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project." (*Laurel Heights Improvement Assn. v. Regents of the Univ of Cal.* (1988) 47 Cal.3d 376, 405 ["*Laurel Heights I*"]) Accordingly, "an agency must use its best efforts to find out and disclose all that it reasonably can." (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 428 (quoting CEQA Guidelines § 15144)[1].). However, "[a]nalysis of environmental effects need not be exhaustive, but will be judged in light of what is reasonably feasible." (*Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1390; CEQA Guidelines §§ 15151, 15204(a).)

With regard to analysis of air quality related health impacts, EIRs must generally quantify a project's pollutant emissions, but in some cases it is not feasible to correlate these emissions to specific, quantifiable health impacts (e.g., premature mortality; hospital admissions). In such cases, a general description of the adverse health impacts resulting from the pollutants at issue may be sufficient. In other cases, due to the magnitude

[1] The CEQA Guidelines are found at Cal. Code Regs., tit. 14 §§ 15000, *et seq.*

or nature of the pollution emissions, as well as the specificity of the project involved, it may be feasible to quantify health impacts. Or there may be a less exacting, but still meaningful analysis of health impacts that can feasibly be performed. In these instances, agencies should disclose those impacts.

SCAQMD also submits that whether or not an EIR complies with CEQA's informational mandates by providing sufficient, feasible analysis is a mixed question of fact and law. Pertinent here, the question of whether an EIR's discussion of health impacts from air pollution is sufficient to allow the public to understand and consider meaningfully the issues involves two inquiries: (1) Is it feasible to provide the information or analysis that a commenter is requesting or a petitioner is arguing should be required?; and (2) Even if it is feasible, is the agency relying on other policy or legal considerations to justify not preparing the requested analysis? The first question of whether an analysis is feasible is primarily a question of fact that should be judged by the substantial evidence standard. The second inquiry involves evaluating CEQA's information disclosure purposes against the asserted reasons to not perform the requested analysis. For example, an agency might believe that its EIR meets CEQA's informational disclosure standards even without a particular analysis, and therefore choose not to conduct that analysis. SCAQMD submits that this is more of a legal question, which should be reviewed de novo as a question of law.

ARGUMENT

I. RELEVANT FACTUAL AND LEGAL FRAMEWORK.

A. Air Quality Regulatory Background

The South Coast Air Quality Management District (SCAQMD) is one of the local and regional air pollution control districts and air quality

management districts in California. The SCAQMD is the regional air pollution agency for the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410, 17 Cal. Code Reg. § 60104.) The SCAQMD also includes the Coachella Valley in Riverside County (Palm Springs area to the Salton Sea). (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "chapter 7" hyperlink; pp 7-1, 7-3 (last visited Apr. 1, 2015).) The SCAQMD's jurisdiction includes over 16 million residents and has the worst or nearly the worst air pollution levels in the country for ozone and fine particulate matter. (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Executive Summary" hyperlink p. ES-1 (last visited Apr. 1, 2015).)

Under California law, the local and regional districts are primarily responsible for controlling air pollution from all sources except motor vehicles. (Health & Saf. Code § 40000.) The California Air Resources Board (CARB), part of the California Environmental Protection Agency, is primarily responsible for controlling pollution from motor vehicles. (*Id.*) The air districts must adopt rules to achieve and maintain the state and federal ambient air quality standards within their jurisdictions. (Health & Saf. Code § 40001.)

The federal Clean Air Act (CAA) requires the United States Environmental Protection Agency (EPA) to identify pollutants that are widely distributed and pose a threat to human health, developing a so-called "criteria" document. (42 U.S.C. § 7408; CAA § 108.) These pollutants are frequently called "criteria pollutants." EPA must then establish "national ambient air quality standards" at levels "requisite to protect public health",

allowing "an adequate margin of safety." (42 U.S.C. § 7409; CAA § 109.) EPA has set standards for six identified pollutants: ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter (PM), and lead. (U.S. EPA, National Ambient Air Quality Standards (NAAQS), http://www.epa.gov/air/criteria.html (last updated Oct. 21, 2014).)[2]

Under the Clean Air Act, EPA sets emission standards for motor vehicles and "nonroad engines" (mobile farm and construction equipment, marine vessels, locomotives, aircraft, etc.). (42 U.S.C. §§ 7521, 7547; CAA §§ 202, 213.) California is the only state allowed to establish emission standards for motor vehicles and most nonroad sources; however, it may only do so with EPA's approval. (42 U.S.C. §§ 7543(b), 7543(e); CAA §§ 209(b), 209(c).) Sources such as manufacturing facilities, power plants and refineries that are not mobile are often referred to as "stationary sources." The Clean Air Act charges state and local agencies with the primary responsibility to attain the national ambient air quality standards. (42 U.S.C. § 7401(a)(3); CAA § 101(a)(3).) Each state must adopt and implement a plan including enforceable measures to achieve and maintain the national ambient air quality standards. (42 U.S.C. § 7410; CAA § 110.) The SCAQMD and CARB jointly prepare portion of the plan for the South Coast Air Basin and submit it for approval by EPA. (Health & Saf. Code §§ 40460, et seq.)

The Clean Air Act also requires state and local agencies to adopt a permit program requiring, among other things, that new or modified "major" stationary sources use technology to achieve the "lowest achievable emission rate," and to control minor stationary sources as

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[2] Particulate matter (PM) is further divided into two categories: fine particulate or $PM_{2.5}$ (particles with a diameter of less than or equal to 2.5 microns) and coarse particulate (PM_{10}) (particles with a diameter of 10 microns or less). (U.S. EPA, Particulate Matter (PM), http://www.epa.gov/airquality/particlepollution/ (last visited Apr. 1, 2015).)

needed to help attain the standards. (42 U.S.C. §§ 7502(c)(5), 7503(a)(2), 7410(a)(2)(C); CAA §§ 172(c)(5), 173(a)(2), 110(a)(2)(C).) The air districts implement these permit programs in California. (Health & Saf. Code §§ 42300, et seq.)

The Clean Air Act also sets out a regulatory structure for over 100 so-called "hazardous air pollutants" calling for EPA to establish "maximum achievable control technology" (MACT) for sources of these pollutants. (42 U.S.C. § 7412(d)(2); CAA § 112(d)(2).) California refers to these pollutants as "toxic air contaminants" (TACs) which are subject to two state-required programs. The first program requires "air toxics control measures" for specific categories of sources. (Health & Saf. Code § 39666.) The other program requires larger stationary sources and sources identified by air districts to prepare "health risk assessments" for impacts of toxic air contaminants. (Health & Saf. Code §§ 44320(b), 44322, 44360.) If the health risk exceeds levels identified by the district as "significant," the facility must implement a "risk reduction plan" to bring its risk levels below "significant" levels. Air districts may adopt additional more stringent requirements than those required by state law, including requirements for toxic air contaminants. (Health & Saf. Code § 41508; *Western Oil & Gas Assn. v. Monterey Bay Unified APCD* (1989) 49 Cal.3d 408, 414.) For example, SCAQMD has adopted a rule requiring new or modified sources to keep their risks below specified levels and use best available control technology (BACT) for toxics. (SCAQMD, *Rule 1401-New Source Review of Toxic Air Contaminants*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiv; then follow "Rule 1401" hyperlink (last visited Apr. 1, 2015).)

B. The SCAQMD's Role Under CEQA

The California Environmental Quality Act (CEQA) requires public agencies to perform an environmental review and appropriate analysis for projects that they implement or approve. (Pub. Resources Code § 21080(a).) The agency with primary approval authority for a particular project is generally the "lead agency" that prepares the appropriate CEQA document. (CEQA Guidelines §§ 15050, 15051.) Other agencies having a subsequent approval authority over all or part of a project are called "responsible" agencies that must determine whether the CEQA document is adequate for their use. (CEQA Guidelines §§ 15096(c), 15381.) Lead agencies must also consult with and circulate their environmental impact reports to "trustee agencies" and agencies "with jurisdiction by law" including "authority over resources which may be affected by the project." (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines §§ 15086(a)(3), 15073(c).) The SCAQMD has a role in all these aspects of CEQA.

Fulfilling its responsibilities to implement its air quality plan and adopt rules to attain the national ambient air quality standards, SCAQMD adopts a dozen or more rules each year to require pollution reductions from a wide variety of sources. The SCAQMD staff evaluates each rule for any adverse environmental impact and prepares the appropriate CEQA document. Although most rules reduce air emissions, they may have secondary environmental impacts such as use of water or energy or disposal of waste—e.g., spent catalyst from control equipment.[3]

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[3] The SCAQMD's CEQA program for its rules is a "Certified Regulatory Program" under which it prepares a "functionally equivalent" document in lieu of a negative declaration or EIR. (Pub. Resources Code § 21080.5, CEQA Guidelines § 15251(l).)

The SCAQMD also approves a large number of permits every year to construct new, modified, or replacement facilities that emit regulated air pollutants. The majority of these air pollutant sources have already been included in an earlier CEQA evaluation for a larger project, are currently being evaluated by a local government as lead agency, or qualify for an exemption. However, the SCAQMD sometimes acts as lead agency for major projects where the local government does not have a discretionary approval. In such cases, SCAQMD prepares and certifies a negative declaration or environmental impact report (EIR) as appropriate.[4] SCAQMD evaluates perhaps a dozen such permit projects under CEQA each year. SCAQMD is often also a "responsible agency" for many projects since it must issue a permit for part of the projects (e.g., a boiler used to provide heat in a commercial building). For permit projects evaluated by another lead agency under CEQA, SCAQMD has the right to determine that the CEQA document is inadequate for its purposes as a responsible agency, but it may not do so because its permit program already requires all permitted sources to use the best available air pollution control technology. (SCAQMD, *Rule 1303(a)(1) – Requirements*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiii; then follow "Rule 1303" hyperlink (last visited Apr. 1, 2015).)

Finally, SCAQMD receives as many as 60 or more CEQA documents each month (around 500 per year) in its role as commenting agency or an agency with "jurisdiction by law" over air quality—a natural resource affected by the project. (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines § 15366(a)(3).) The SCAQMD staff provides comments on as many as 25 or 30 such documents each month.

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[4] The SCAQMD's permit projects are not included in its Certified Regulatory Program, and are evaluated under the traditional local government CEQA analysis. (Pub. Resources Code §§ 21150-21154.)

(SCAQMD Governing Board Agenda, Apr. 3, 2015, Agenda Item 16, Attachment A, http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-april-3-2015; then follow "16. Lead Agency Projects and Environmental Documents Received by SCAQMD" hyperlink (last visited Apr. 1, 2015).) Of course, SCAQMD focuses its commenting efforts on the more significant projects.

Typically, SCAQMD comments on the adequacy of air quality analysis, appropriateness of assumptions and methodology, and completeness of the recommended air quality mitigation measures. Staff may comment on the need to prepare a health risk assessment detailing the projected cancer and noncancer risks from toxic air contaminants resulting from the project, particularly the impacts of diesel particulate matter, which CARB has identified as a toxic air contaminant based on its carcinogenic effects. (California Air Resources Board, Resolution 98-35, Aug. 27, 1998, http://www.arb.ca.gov/regact/diesltac/diesltac.htm; then follow Resolution 98-35 hyperlink (last visited Apr. 1, 2015).) Because SCAQMD already requires new or modified stationary sources of toxic air contaminants to use the best available control technology for toxics and to keep their risks below specified levels, (SCAQMD Rule 1401, supra, note 15), the greatest opportunity to further mitigate toxic impacts through the CEQA process is by reducing emissions—particularly diesel emissions—from vehicles.

II. THIS COURT SHOULD NOT SET A HARD-AND-FAST RULE CONCERNING THE EXTENT TO WHICH AN EIR MUST CORRELATE A PROJECT'S EMISSION OF POLLUTANTS WITH RESULTING HEALTH IMPACTS.

Numerous cases hold that courts do not review the correctness of an EIR's conclusions but rather its sufficiency as an informative document. (*Laurel Heights 1, supra*, 47 Cal.3d at p. 392; *Citizens of Goleta Valley v.*

Bd. of Supervisors (1990) 52 Cal.3d 553, 569; *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1197.)

As stated by the Court of Appeal in this case, where an EIR has addressed a topic, but the petitioner claims that the information provided about that topic is insufficient, courts must "draw[] a line that divides *sufficient* discussions from those that are *insufficient*." (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) The Court of Appeal readily admitted that "[t]he terms themselves – sufficient and insufficient – provide little, if any, guidance as to where the line should be drawn. They are simply labels applied once the court has completed its analysis." (*Id.*)

The CEQA Guidelines, however, provide guidance regarding what constitutes a sufficient discussion of impacts. Section 15151 states that "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." Case law reflects this: "Analysis of environmental effects need not be exhaustive, but will be judged in light of what was reasonably feasible." (*Association of Irritated Residents v. County of Madera, supra,* 107 Cal.App.4th at p. 1390; see also CEQA Guidelines § 15204(a).)

Applying this test, this Court cannot realistically establish a hard-and-fast rule that an analysis correlating air pollution impacts of a project to quantified resulting health impacts is always required, or indeed that it is never required. Simply put, in some cases such an analysis will be "feasible"; in some cases it will not.

For example, air pollution control districts often require a proposed new source of toxic air contaminants to prepare a "health risk assessment" before issuing a permit to construct. District rules often limit the allowable cancer risk the new source may cause to the "maximally exposed individual" (worker and residence exposures). (*See, e.g.*, SCAQMD Rule 1401(c)(8); 1401(d)(1), *supra* note 15.) In order to perform this analysis, it

is necessary to have data regarding the sources and types of air toxic contaminants, location of emission points, velocity of emissions, the meteorology and topography of the area, and the location of receptors (worker and residence). (SCAQMD, *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB2588), pp. 11-16*; (last visited Apr. 1, 2015) http://www.aqmd.gov/home/library/documents-support-material; "Guidelines" hyperlink; AB2588; then follow AB2588 Risk Assessment Guidelines hyperlink.)

Thus, it is feasible to determine the health risk posed by a new gas station locating at an intersection in a mixed use area, where receptor locations are known. On the other hand, it may not be feasible to perform a health risk assessment for airborne toxics that will be emitted by a generic industrial building that was built on "speculation" (i.e., without knowing the future tenant(s)). Even where a health risk assessment can be prepared, however, the resulting maximum health risk value is only a calculation of risk—it does not necessarily mean anyone will contract cancer as a result of the project.

In order to find the "cancer burden" or expected additional cases of cancer resulting from the project, it is also necessary to know the numbers and location of individuals living within the "zone of impact" of the project: i.e., those living in areas where the projected cancer risk from the project exceeds one in a million. (SCAQMD, Health Risk Assessment Summary form, http://www.aqmd.gov/home/forms ; filter by "AB2588" category; then "Health Risk Assessment" hyperlink (last visited Apr. 1, 2015).) The affected population is divided into bands of those exposed to at least 1 in a million risk, those exposed to at least 10 in a million risk, etc. up to those exposed at the highest levels. (*Id.*) This data allows agencies to calculate an approximate number of additional cancer cases expected from

the project. However, it is not possible to predict which particular individuals will be affected.

For the so-called criteria pollutants[5], such as ozone, it may be more difficult to quantify health impacts. Ozone is formed in the atmosphere from the chemical reaction of the nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. (U.S. EPA, Ground Level Ozone, http://www.epa.gov/airquality/ozonepollution/ (last updated Mar. 25, 2015).) It takes time and the influence of meteorological conditions for these reactions to occur, so ozone may be formed at a distance downwind from the sources. (U.S. EPA, *Guideline on Ozone Monitoring Site Selection* (Aug. 1998) EPA-454/R-98-002 § 5.1.2, http://www.epa.gov/ttnamti1/archive/cpreldoc.html (last visited Apr. 1, 2015).) NO_x and VOC are known as "precursors" of ozone.

Scientifically, health effects from ozone are correlated with increases in the ambient level of ozone in the air a person breathes. (U.S. EPA, *Health Effects of Ozone in the General Population,* Figure 9, http://www.epa.gov/apti/ozonehealth/population.html#levels (last visited Apr. 1, 2015).) However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels over an entire region. For example, the SCAQMD's 2012 AQMP showed that reducing NO_x by 432 tons per day (157,680 tons/year) and reducing VOC by 187 tons per day (68,255 tons/year) would reduce ozone levels at the SCAQMD's monitor site with the highest levels by only 9 parts per billion. (South Coast Air Quality Management District, *Final 2012 AQMP (February 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Appendix V: Modeling & Attainment Demonstrations" hyperlink,

[5] See discussion of types of pollutants, supra, Part I.A.

pp. v-4-2, v-7-4, v-7-24.) SCAQMD staff does not currently know of a way to accurately quantify ozone-related health impacts caused by NO_x or VOC emissions from relatively small projects.

On the other hand, this type of analysis may be feasible for projects on a regional scale with very high emissions of NO_x and VOCs, where impacts are regional. For example, in 2011 the SCAQMD performed a health impact analysis in its CEQA document for proposed Rule 1315, which authorized various newly-permitted sources to use offsets from the districts "internal bank" of emission reductions. This CEQA analysis accounted for essentially *all* the increases in emissions due to new or modified sources in the District between 2010 and 2030.[6] The SCAQMD was able to correlate this very large emissions increase (e.g., 6,620 pounds per day NO_x (1,208 tons per year), 89,180 pounds per day VOC (16,275 tons per year)) to expected health outcomes from ozone and particulate matter (e.g., 20 premature deaths per year and 89,947 school absences in the year 2030 due to ozone).[7] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System* (see hyperlink in fn 6*)* at p. 4.1-35, Table 4.1-29.)

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[6] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, Attachment G, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System, Vol. 1, p.4.0-6,* http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-february-4-2011; the follow "26. Adopt Proposed Rule 1315 – Federal New Source Review Tracking System" (last visited April 1, 2015).)

[7] The SCAQMD was able to establish the location of future NO_x and VOC emissions by assuming that new projects would be built in the same locations and proportions as existing stationary sources. This CEQA document was upheld by the Los Angeles County Superior Court in *Natural Res. Def. Council v SCAQMD*, Los Angeles Superior Court No. BS110792).

However, a project emitting only 10 tons per year of NO_x or VOC is small enough that its regional impact on ambient ozone levels may not be detected in the regional air quality models that are currently used to determine ozone levels. Thus, in this case it would not be feasible to directly correlate project emissions of VOC or NO_x with specific health impacts from ozone. This is in part because ozone formation is not linearly related to emissions. Ozone impacts vary depending on the location of the emissions, the location of other precursor emissions, meteorology and seasonal impacts, and because ozone is formed some time later and downwind from the actual emission. (EPA Guideline on Ozone Monitoring Site Selection (Aug. 1998) EPA-454/R-98-002, § 5.1.2; https://www.epa.gov/ttnamti1/archive/cpreldoc.html; then search "Guideline on Ozone Monitoring Site Selection" click on pdf) (last viewed Apr. 1, 2015).)

SCAQMD has set its CEQA "significance" threshold for NO_x and VOC at 10 tons per year (expressed as 55 lb/day). (SCAQMD, *Air Quality Analysis Handbook*, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook; then follow "SCAQMD Air Quality Significance Thresholds" hyperlink (last visited Apr. 1, 2015).) This is because the federal Clean Air Act defines a "major" stationary source for "extreme" ozone nonattainment areas such as SCAQMD as one emitting 10 tons/year. (42 U.S.C. §§ 7511a(e), 7511a(f); CAA §§ 182(e), 182(f).) Under the Clean Air Act, such sources are subject to enhanced control requirements (42 U.S.C. §§ 7502(c)(5), 7503; CAA §§ 172(c)(5), 173), so SCAQMD decided this was an appropriate threshold for making a CEQA "significance" finding and requiring feasible mitigation. Essentially, SCAQMD takes the position that a source that emits 10 tons/year of NO_x or VOC would contribute cumulatively to ozone formation. Therefore, lead agencies that use SCAQMD's thresholds of significance may determine

that many projects have "significant" air quality impacts and must apply all feasible mitigation measures, yet will not be able to precisely correlate the project to quantifiable health impacts, unless the emissions are sufficiently high to use a regional modeling program.

In the case of particulate matter ($PM_{2.5}$)[8], another "criteria" pollutant, SCAQMD staff is aware of two possible methods of analysis. SCAQMD used regional modeling to predict expected health impacts from its proposed Rule 1315, as mentioned above. Also, the California Air Resources Board (CARB) has developed a methodology that can predict expected mortality (premature deaths) from large amounts of $PM_{2.5}$. (California Air Resources Board, *Health Impacts Analysis: PM Premature Death Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort_arch.htm (last reviewed Jan. 19, 2012).) SCAQMD used the CARB methodology to predict impacts from three very large power plants (e.g., 731-1837 lbs/day). (Final Environmental Assessment for Rule 1315, *supra*, pp 4.0-12, 4.1-13, 4.1-37 (e.g., 125 premature deaths in the entire SCAQMD in 2030), 4.1-39 (0.05 to 1.77 annual premature deaths from power plants.) Again, this project involved large amounts of additional $PM_{2.5}$ in the District, up to 2.82 tons/day (5,650 lbs/day of $PM_{2.5}$, or, or 1029 tons/year. (*Id.* at table 4.1-4, p. 4.1-10.)

However, the primary author of the CARB methodology has reported that this $PM_{2.5}$ health impact methodology is not suited for small projects and may yield unreliable results due to various uncertainties. [9] (SCAQMD, *Final Subsequent Mitigated Negative Declaration for: Warren*

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[8] SCAQMD has not attained the latest annual or 24-hour national ambient air quality standards for "$PM_{2.5}$" or particulate matter less than 2.5 microns in diameter.

[9] Among these uncertainties are the representativeness of the population used in the methodology, and the specific source of PM and the corresponding health impacts. (*Id.* at p. 2-24.)

E&P, Inc. WTU Central Facility, New Equipment Project (certified July 19, 2011), http://www.aqmd.gov/home/library/documents-support-material/lead-agency-permit-projects/permit-project-documents---year-2011; then follow "Final Subsequent Mitigated Negative Declaration for Warren E&P Inc. WTU Central Facility, New Equipment Project" hyperlink, pp. 2-22, 2-23 (last visited Apr. 1, 2015).) Therefore, when SCAQMD prepared a CEQA document for the expansion of an existing oil production facility, with very small $PM_{2.5}$ increases (3.8 lb/day) and a very small affected population, staff elected not to use the CARB methodology for using estimated $PM_{2.5}$ emissions to derive a projected premature mortality number and explained why it would be inappropriate to do so. (*Id.* at pp 2-22 to 2-24.) SCAQMD staff concluded that use of this methodology for such a small source could result in unreliable findings and would not provide meaningful information. (*Id.* at pp. 2-23, 2-25.) This CEQA document was not challenged in court.

In the above case, while it may have been technically possible to plug the data into the methodology, the results would not have been reliable or meaningful. SCAQMD believes that an agency should not be required to perform analyses that do not produce reliable or meaningful results. This Court has already held that an agency may decline to use even the "normal" "existing conditions" CEQA baseline where to do so would be misleading or without informational value. (*Neighbors for Smart Rail v. Exposition Metro Line* (2013) 57 Cal.4th 439, 448, 457.) The same should be true for a decision that a particular study or analysis would not provide reliable or meaningful results.[10]

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[10] Whether a particular study would result in "informational value" is a part of deciding whether it is "feasible." CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and

Therefore, it is not possible to set a hard-and-fast rule on whether a correlation of air quality impacts with specific quantifiable health impacts is required in all cases. Instead, the result turns on whether such an analysis is reasonably feasible in the particular case.[11] Moreover, what is reasonably feasible may change over time as scientists and regulatory agencies continually seek to improve their ability to predict health impacts. For example, CARB staff has been directed by its Governing Board to reassess and improve the methodology for estimating premature deaths. (California Air Resources Board, *Health Impacts Analysis: PM Mortality Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort.htm (last reviewed Dec. 29, 2010).) This factor also counsels against setting any hard-and-fast rule in this case.

III. THE QUESTION OF WHETHER AN EIR CONTAINS SUFFICIENT ANALYSIS TO MEET CEQA'S REQUIREMENTS IS A MIXED QUESTION OF FACT AND LAW GOVERNED BY TWO DIFFERENT STANDARDS OF REVIEW.

A. Standard of Review for Feasibility Determination and Sufficiency as an Informative Document

A second issue in this case is whether courts should review an EIR's informational sufficiency under the "substantial evidence" test as argued by Friant Ranch or the "independent judgment" test as argued by Sierra Club.

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technological factors." (Pub. Resources Code § 21061.1.) A study cannot be "accomplished in a *successful* manner" if it produces unreliable or misleading results.

[11] In this case, the lead agency did not have an opportunity to determine whether the requested analysis was feasible because the comment was non-specific. Therefore, SCAQMD suggests that this Court, after resolving the legal issues in the case, direct the Court of Appeal to remand the case to the lead agency for a determination of whether the requested analysis is feasible. Because Fresno County, the lead agency, did not seek review in this Court, it seems likely that the County has concluded that at least some level of correlation of air pollution with health impacts is feasible.

As this Court has explained, "a reviewing court must adjust its scrutiny to the nature of the alleged defect, depending on whether the claim is predominantly one of improper procedure or a dispute over the facts." (*Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 435.) For questions regarding compliance with proper procedure or other legal questions, courts review an agency's action de novo under the "independent judgment" test. (*Id.*) On the other hand, courts review factual disputes only for substantial evidence, thereby "accord[ing] greater deference to the agency's substantive factual conclusions." (*Id.*)

Here, Friant Ranch and Sierra Club agree that the case involves the question of whether an EIR includes sufficient information regarding a project's impacts. However, they disagree on the proper standard of review for answering this question: Sierra Club contends that courts use the independent judgment standard to determine whether an EIR's analysis is sufficient to meet CEQA's informational purposes,[12] while Friant Ranch contends that the substantial evidence standard applies to this question.

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[12] Sierra Club acknowledges that courts use the substantial evidence standard when reviewing predicate factual issues, but argues that courts ultimately decide as a matter of law what CEQA requires. (Answering Brief, pp. 14, 23.)

SCAQMD submits that the issue is more nuanced than either party contends. We submit that, whether a CEQA document includes sufficient analysis to satisfy CEQA's informational mandates is a mixed question of fact and law,[13] containing two levels of inquiry that should be judged by different standards.[14]

The state CEQA Guidelines set forth standards for the adequacy of environmental analysis. Guidelines Section 15151 states:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good-faith effort at full disclosure.

In this case, the basic question is whether the underlying analysis of air quality impacts made the EIR "sufficient" as an informative document. However, whether the EIR's analysis was sufficient is judged in light of what was reasonably feasible. This represents a mixed question of fact and law that is governed by two different standards of review.

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[13] Friant Ranch actually states that the claim that an EIR lacks sufficient relevant information is, "most properly thought of as raising mixed questions of fact and law." (Opening Brief, p. 27.) However, the remainder of its argument claims that the court should apply the substantial evidence standard of review to all aspects of the issue.

[14] Mixed questions of fact and law issues may implicate predominantly factual subordinate questions that are reviewed under the substantial evidence test even though the ultimate question may be reviewed by the independent judgment test. *Crocker National Bank v. City and County of San Francisco* (1989) 49 Cal.3d 881, 888-889.

SCAQMD submits that an EIR's sufficiency as an informational document is ultimately a legal question that courts should determine using their independent judgment. This Court's language in *Laurel Heights I* supports this position. As this Court explained: "The court does not pass upon the correctness of the EIR's environmental conclusions, but only upon its *sufficiency as an informative document.*" (*Laurel Heights I, supra,* 47 Cal.3d at 392-393) (emphasis added.) As described above, the Court in *Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 431, also used its independent judgment to determine what level of analysis CEQA requires for water supply impacts. The Court did not defer to the lead agency's opinion regarding the law's requirements; rather, it determined for itself what level of analysis was necessary to meet "[t]he law's informational demands." (*Id.* at p. 432.) Further, existing case law also holds that where an agency fails to comply with CEQA's information disclosure requirements, the agency has "failed to proceed in the manner required by law." (*Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 118.)

However, whether an EIR satisfies CEQA's requirements depends in part on whether it was reasonably feasible for an agency to conduct additional or more thorough analysis. EIRs must contain "a detailed statement" of a project's impacts (Pub. Res. Code § 21061), and an agency must "use its best efforts to find out and disclose all that it reasonably can." (CEQA Guidelines § 15144.) Nevertheless, "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." (CEQA Guidelines § 15151.)

SCAQMD submits that the question of whether additional analysis or a particular study suggested by a commenter is "feasible" is generally a question of fact. Courts have already held that whether a particular alternative is "feasible" is reviewed by the substantial evidence test.

(*Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 598-99; *Center for Biological Diversity v. County of San Bernardino* (2010) 185 Cal.App.4th 866, 883.) Thus, if a lead agency determines that a particular study or analysis is infeasible, that decision should generally be judged by the substantial evidence standard. However, SCAQMD urges this Court to hold that lead agencies must explain the basis of any determination that a particular analysis is infeasible in the EIR itself. An EIR must discuss information, including issues related to the feasibility of particular analyses "in sufficient detail to enable meaningful participation and criticism by the public. '[W]hatever is required to be considered in an EIR must be in that formal report; what any official might have known from other writings or oral presentations cannot supply what is lacking in the report.'" (*Laurel Heights I, supra*, 47 Cal.3d at p. 405 (quoting *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831) (discussing analysis of alternatives).) The evidence on which the determination is based should also be summarized in the EIR itself, with appropriate citations to reference materials if necessary. Otherwise commenting agencies such as SCAQMD would be forced to guess where the lead agency's evidence might be located, thus thwarting effective public participation.

Moreover, if a lead agency determines that a particular study or analysis would not result in reliable or useful information and for that reason is not feasible, that determination should be judged by the substantial evidence test. (See *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority, supra*, 57 Cal.4th 439, 448, 457:

whether "existing conditions" baseline would be misleading or uninformative judged by substantial evidence standard.[15])

If the lead agency's determination that a particular analysis or study is not feasible is supported by substantial evidence, then the agency has not violated CEQA's information disclosure provisions, since it would be infeasible to provide additional information. This Court's decisions provide precedent for such a result. For example, this Court determined that the issue of whether the EIR should have included a more detailed discussion of future herbicide use was resolved because substantial evidence supported the agency's finding that "the precise parameters of future herbicide use could not be predicted." *Ebbetts Pass Forest Watch v. California Dept. of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 955.

Of course, SCAQMD expects that courts will continue to hold lead agencies to their obligations to consult with, and not to ignore or misrepresent, the views of sister agencies having special expertise in the area of air quality. (*Berkeley Keep Jets Over the Bay v. Board of Port Commissioners* (2007) 91 Cal.App.4th 1344, 1364 n.11.) In some cases, information provided by such expert agencies may establish that the purported evidence relied on by the lead agency is not in fact "substantial". (*Id.* at pp. 1369-1371.)

In sum, courts retain ultimate responsibility to determine what CEQA requires. However, the law does not require exhaustive analysis, but only what is reasonably feasible. Agencies deserve deference for their factual determinations regarding what type of analysis is reasonably feasible. On the other hand, if a commenter requests more information, and the lead agency declines to provide it but does *not* determine that the

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[15] The substantial evidence standard recognizes that the courts "have neither the resources nor the scientific expertise" to weigh conflicting evidence on technical issues. (*Laurel Heights I, supra,* 47 Cal.3d 376, 393.)

requested study or analysis would be infeasible, misleading or uninformative, the question becomes whether the omission of that analysis renders the EIR inadequate to satisfy CEQA's informational purposes. (*Id.* at pp. 1370-71.) Again, this is predominantly a question of law and should be judged by the de novo or independent judgment standard of review. Of course, this Court has recognized that a "project opponent or reviewing court can always imagine some additional study or analysis that might provide helpful information. It is not for them to design the EIR. That further study...might be helpful does not make it necessary." (*Laurel Heights I, supra,* 47 Cal.3d 376, 415 – see also CEQA Guidelines § 15204(a) [CEQA "does not require a lead agency to conduct every test. . . recommended or demanded by commenters."].) Courts, then, must adjudicate whether an omission of particular information renders an EIR inadequate to serve CEQA's informational purposes.[16]

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[16] We recognize that there is case law stating that the substantial evidence standard applies to "challenges to the scope of an EIR's analysis of a topic" as well as the methodology used and the accuracy of the data relied on in the document "because these types of challenges involve factual questions." (*Bakersfield Citizens for Local Control v. City of Bakersfield, supra,* 124 Cal.App.4th 1184, 1198, and cases relied on therein.) However, we interpret this language to refer to situations where the question of the scope of the analysis really is factual—that is, where it involves whether further analysis is feasible, as discussed above. This interpretation is supported by the fact that the *Bakersfield* court expressly rejected an argument that a claimed "omission of information from the EIR should be treated as inquiries whether there is substantial evidence supporting the decision approving the project. " *Bakersfield, supra,* 124 Cal.App.4th at p. 1208. And the *Bakersfield* court ultimately decided that the lead agency must analyze the connection between the identified air pollution impacts and resulting health impacts, even though the EIR already included some discussion of air-pollution-related respiratory illnesses. *Bakersfield, supra,* 124 Cal.App.4th at p. 1220. Therefore, the court must not have interpreted this question as one of the "scope of the analysis" to be judged by the substantial evidence standard.

B. Friant Ranch's Rationale for Rejecting the Independent Judgment Standard of Review is Unsupported by Case Law.

In its brief, Friant Ranch makes a distinction between cases where a required CEQA topic is not discussed at all (to be reviewed by independent judgment as a failure to proceed in the manner required by law) and cases where a topic is discussed, but the commenter claims the information provided is insufficient (to be judged by the substantial evidence test). (Opening Brief, pp. 13-17.) The Court of Appeal recognized these two types of cases, but concluded that both raised questions of law. (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) We believe the distinction drawn by Friant Ranch is unduly narrow, and inconsistent with cases which have concluded that CEQA documents are insufficient. In many instances, CEQA's requirements are stated broadly, and the courts must interpret the law to determine what level of analysis satisfies CEQA's mandate for providing meaningful information, even though the EIR discusses the issue to some extent.

For example, the CEQA Guidelines require discussion of the existing environmental baseline. In *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 954-955, the lead agency had discussed the environmental baseline by describing historic month-end water levels in the affected lakes. However, the court held that this was not an adequate baseline discussion because it failed to discuss the timing and amounts of past actual water releases, to allow comparison with the proposed project. The court evidently applied the independent judgment test to its decision, even though the agency discussed the issue to some extent.

Likewise, in *Vineyard Area Citizens* (2007) 40 Cal.4th 412, this Court addressed the question of whether an EIR's analysis of water supply impacts complied with CEQA. The parties agreed that the EIR was required to analyze the effects of providing water to the development project, "and that in order to do so the EIR had, in some manner, to identify the planned sources of that water." (*Vineyard Area Citizens, supra,* at p. 428.) However, the parties disagreed as to the level of detail required for this analysis and "what level of uncertainty regarding the availability of water supplies can be tolerated in an EIR . . . ." (*Id.*) In other words, the EIR had analyzed water supply impacts for the project, but the petitioner claimed that the analysis was insufficient.

This Court noted that neither CEQA's statutory language or the CEQA Guidelines specifically addressed the question of how precisely an EIR must discuss water supply impacts. (*Id.*) However, it explained that CEQA "states that '[w]hile foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.'" (*Id.*, [Guidelines § 15144].) The Court used this general principle, along with prior precedent, to elucidate four "principles for analytical adequacy" that are necessary in order to satisfy "CEQA's informational purposes." (*Vineyard Area Citizens, supra,* at p. 430.) The Court did not defer to the agency's determination that the EIR's analysis of water supply impacts was sufficient. Rather, this Court used its independent judgment to determine for itself the level of analysis required to satisfy CEQA's fundamental purposes. (*Vineyard Area Citizens, supra*, at p. 441: an EIR does not serve its purposes where it neglects to explain likely sources of water and "... leaves long term water supply considerations to later stages of the project.")

Similarly, the CEQA Guidelines require an analysis of noise impacts of the project. (Appendix G, "Environmental Checklist Form."[17]) In *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1123, the court held that the lead agency's noise impact analysis was inadequate even though it had addressed the issue and concluded that the increase would not be noticeable. If the court had been using the substantial evidence standard, it likely would have upheld this discussion.

Therefore, we do not agree that the issue can be resolved on the basis suggested by Friant Ranch, which would apply the substantial evidence standard to *every* challenge to an analysis that addresses a required CEQA topic. This interpretation would subvert the courts' proper role in interpreting CEQA and determining what the law requires.

Nor do we agree that the Court of Appeal in this case violated CEQA's prohibition on courts interpreting its provisions "in a manner which imposes procedural or substantive requirements beyond those explicitly stated in this division or in the state guidelines." (Pub. Resources Code § 21083.1.) CEQA requires an EIR to describe *all* significant impacts of the project on the environment. (Pub. Resources Code § 21100(b)(2); *Vineyard Area Citizens, supra,* at p. 428.) Human beings are part of the environment, so CEQA requires EIRs to discuss a project's significant impacts on human health. However, except in certain particular circumstances,[18] neither the CEQA statute nor Guidelines specify the precise level of analysis that agencies must undertake to satisfy the law's requirements. (see, e.g., CEQA Guidelines § 15126.2(a) [EIRs must describe "health and safety problems caused by {a project's} physical changes"].) Accordingly, courts must interpret CEQA as a whole to

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[17] Association of Environmental Professionals, 2015 CEQA Statute and Guidelines (2015) p.287.

[18] E.g., Pub. Resources Code § 21151.8(C)(3)(B)(iii) (requiring specific type of health risk analysis for siting schools).

determine whether a particular EIR is sufficient as an informational document. A court determining whether an EIR's discussion of human health impacts is legally sufficient does not constitute imposing a new substantive requirement.[19] Under Friant Ranch's theory, the above-referenced cases holding a CEQA analysis inadequate would have violated the law. This is not a reasonable interpretation.

IV. COURTS MUST SCRUPULOUSLY ENFORCE THE REQUIREMENTS THAT LEAD AGENCIES CONSULT WITH AND OBTAIN COMMENTS FROM AIR DISTRICTS

Courts must "scrupulously enforce" CEQA's legislatively mandated requirements. (*Vineyard Area Citizens, supra*, 40 Cal.4th 412, 435.) Case law has firmly established that lead agencies must consult with the relevant air pollution control district before conducting an initial study, and must provide the districts with notice of the intention to adopt a negative declaration (or EIR). (*Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 958.) As *Schenck* held, neither publishing the notice nor providing it to the State Clearinghouse was a sufficient substitute for sending notice directly to the air district. (*Id.*) Rather, courts "must be satisfied that [administrative] agencies have fully complied with the procedural requirements of CEQA, since only in this way can the important public purposes of CEQA be protected from subversion." *Schenck,* 198 Cal.App.4th at p. 959 (citations omitted).[20]

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[19] We submit that Public Resources Code Section 21083.1 was intended to prevent courts from, for example, holding that an agency must analyze economic impacts of a project where there are no resulting environmental impacts (see CEQA Guidelines § 15131) , or imposing new procedural requirements, such as imposing additional public notice requirements not set forth in CEQA or the Guidelines.

[20] Lead agencies must consult air districts, as public agencies with jurisdiction by law over resources affected by the project, *before* releasing an EIR. (Pub. Resources Code §§ 21104(a); 21153.) Moreover, air

Lead agencies should be aware, therefore, that failure to properly seek and consider input from the relevant air district constitutes legal error which may jeopardize their project approvals. For example, the court in *Fall River Wild Trout Foundation v. County of Shasta,* (1999) 70 Cal.App.4th 482, 492 held that the failure to give notice to a trustee agency (Department of Fish and Game) was prejudicial error requiring reversal. The court explained that the lack of notice prevented the Department from providing any response to the CEQA document. (*Id.* at p. 492.) It therefore prevented relevant information from being presented to the lead agency, which was prejudicial error because it precluded informed decision-making. (*Id.*)[21]

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districts should be considered "state agencies" for purposes of the requirement to consult with "trustee agencies" as set forth in Public Resources Code § 20180.3(a). This Court has long ago held that the districts are not mere "local agencies" whose regulations are superseded by those of a state agency regarding matters of statewide concern, but rather have concurrent jurisdiction over such issues. (*Orange County Air Pollution Control District v. Public Util. Com.* (1971) 4 Cal.3d 945, 951, 954.) Since air pollution is a matter of statewide concern, *Id* at 952, air districts should be entitled to trustee agency status in order to ensure that this vital concern is adequately protected during the CEQA process.

[21] In *Schenck,* the court concluded that failure to give notice to the air district was not prejudicial, but this was partly because the trial court had already corrected the error before the case arrived at the Court of Appeal. The trial court issued a writ of mandate requiring the lead agency to give notice to the air district. The air district responded by concurring with the lead agency that air impacts were not significant. (*Schenck,* 198 Cal.App.4th 949, 960.) We disagree with the *Schenck* court that the failure to give notice to the air district would not have been prejudicial (even in the absence of the trial court writ) merely because the lead agency purported to follow the air district's published CEQA guidelines for significance. (*Id.*, 198 Cal.App.4th at p. 960.) In the first place, absent notice to the air district, it is uncertain whether the lead agency properly followed those guidelines. Moreover, it is not realistic to expect that an air district's published guidelines would necessarily fully address all possible air-quality related issues that can arise with a CEQA project, or that those

Similarly, lead agencies must obtain additional information requested by expert agencies, including those with jurisdiction by law, if that information is necessary to determine a project's impacts. (*Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236-37.) Approving a project without obtaining that information constitutes a failure to proceed in the manner prescribed by CEQA. (*Id.* at p. 1236.)

Moreover, a lead agency can save significant time and money by consulting with the air district early in the process. For example, the lead agency can learn what the air district recommends as an appropriate analysis on the facts of its case, including what kinds of health impacts analysis may be available, and what models are appropriate for use. This saves the lead agency from the need to do its analysis all over again and possibly needing to recirculate the document after errors are corrected, if new significant impacts are identified. (CEQA Guidelines § 15088.5(a).) At the same time, the air district's expert input can help the lead agency properly determine whether another commenter's request for additional analysis or studies is reasonable or feasible. Finally, the air district can provide input on what mitigation measures would be feasible and effective.

Therefore, we suggest that this Court provide guidance to lead agencies reminding them of the importance of consulting with the relevant air districts regarding these issues. Otherwise, their feasibility decisions may be vulnerable to air district evidence that establishes that there is no substantial evidence to support the lead agency decision not to provide specific analysis. (*See Berkeley Keep Jets Over the Bay, supra,* 91 Cal.App.4th 1344, 1369-1371.)

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guidelines would necessarily be continually modified to reflect new developments. Therefore we believe that, had the trial court not already ordered the lead agency to obtain the air district's views, the failure to give notice would have been prejudicial, as in *Fall River, supra,* 70 Cal.App.4th 482, 492.

CONCLUSION

The SCAQMD respectfully requests this Court *not* to establish a hard-and-fast rule concerning whether CEQA requires a lead agency to correlate identified air quality impacts of a project with resulting health outcomes. Moreover, the question of whether an EIR is "sufficient as an informational document" is a mixed question of fact and law containing two levels of inquiry. Whether a particular proposed analysis is feasible is predominantly a question of fact to be judged by the substantial evidence standard of review. Where the requested analysis is feasible, but the lead agency relies on legal or policy reasons not to provide it, the question of whether the EIR is nevertheless sufficient as an informational document is predominantly a question of law to be judged by the independent judgment standard of review.

Respectfully submitted,

DATED: April 3, 2015

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
KURT R. WIESE, GENERAL COUNSEL
BARBARA BAIRD, CHIEF DEPUTY COUNSEL

By: Barbara Baird
Barbara Baird
Attorneys for Amicus Curiae
SOUTH COAST AIR QUALITY MANAGEMENT DISTICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.520(c)(1) of the California Rules of Court, I hereby certify that this brief contains 8,476 words, including footnotes, but excluding the Application, Table of Contents, Table of Authorities, Certificate of Service, this Certificate of Word Count, and signature blocks. I have relied on the word count of the Microsoft Word Vista program used to prepare this Certificate.

DATED: April 3, 2015 Respectfully submitted,

Barbara Baird

Barbara Baird

PROOF OF SERVICE

I am employed in the County of Los Angeles, California. I am over the age of 18 years and not a party to the within action. My business address is 21865 Copley Drive, Diamond Bar, California 91765.

On April 3, 2015 I served true copies of the following document(s) described as **APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*** by placing a true copy of the foregoing document(s) in a sealed envelope addressed as set forth on the attached service list as follows:

BY MAIL: I enclosed the document(s) in a sealed envelope or package addressed to the persons at the addresses listed in the Service List and placed the envelope for collection and mailing following our ordinary business practices. I am readily familiar with this District's practice for collection and processing of correspondence for mailing. Under that practice, the correspondence would be deposited with the United States Postal Service, with postage thereon fully prepaid at Diamond Bar, California, in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on April 3, 2015 at Diamond Bar, California.

Patricia Anderson

SERVICE LIST

James G. Moose, Tiffany K. Wright, Laura M. Harris REMY MOOSE MANLEY, LLP 555 Capitol Mall, Suite 800 Sacramento, CA 95814	Attorneys for Real Party in Interest and Respondent *Friant Ranch, L.P.*
Bryan N. Wagner WAGNER & WAGNER 7110 N. Fresno St, Suite 340 Fresno, CA 93720	Attorney for Real Party in Interest and Respondent *Friant Ranch, L.P.*
Sara Hedgpeth-Harris LAW OFFICE OF SARA HEDGPETH-HARRIS 5445 E. Lane Avenue Fresno, CA 93727	Attorney for Plaintiffs and Appellants *Sierra Club, et al*
Daniel C. Cederborg Bruce B. Johnson, Jr. Zachary Stephen Redmond OFFICE OF THE FRESNO COUNTY COUNSEL 2220 Tulare Street, Suite 500 Fresno, CA 93721	Attorneys for Respondents *County of Fresno*
Clerk of the Court California Court of Appeal Fifth Appellate District 2424 Ventura Street Fresno, CA 93721 *(via U.S. Mail & Electronic Transmission)*	
Clerk of the Court Superior Court of California County of Fresno 1130 O Street Fresno, CA 93721	