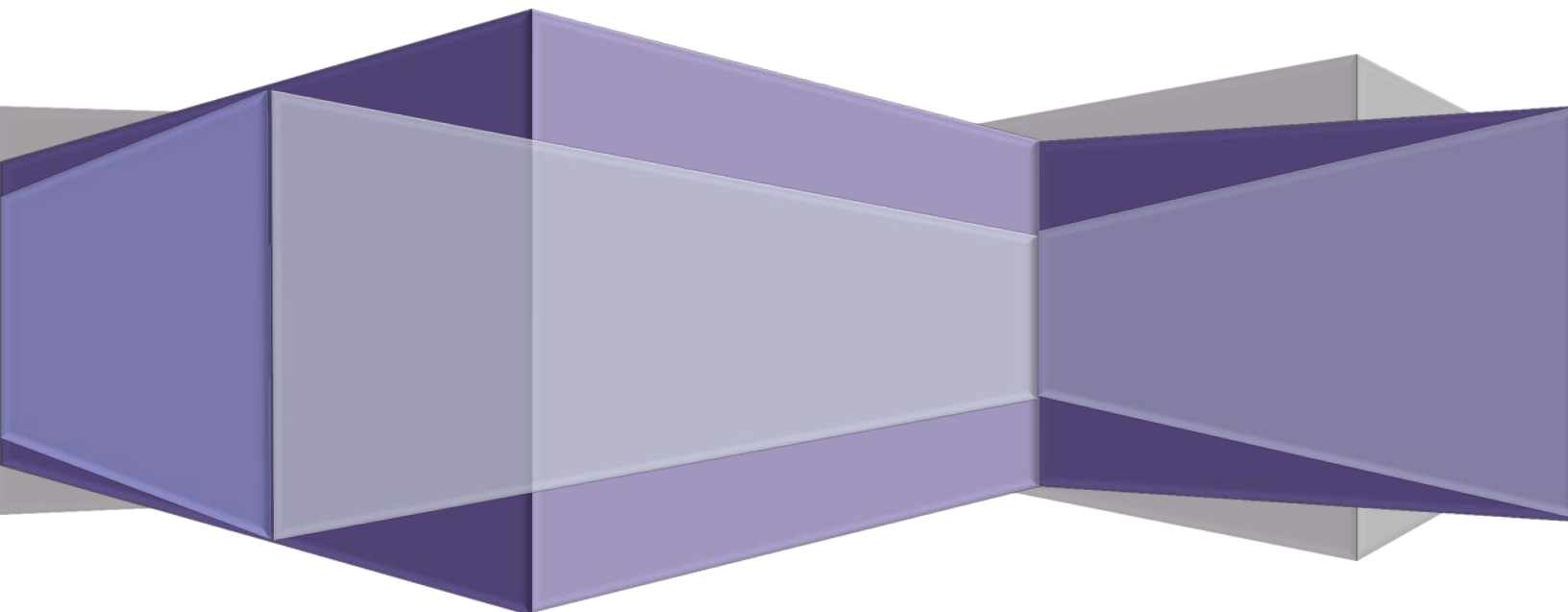


Appendix B

Emissions Inventory

PROPOSED 2016 Moderate Area Plan for the 2012 PM_{2.5} Standard



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Appendix B: Emissions Inventory

B.1 INTRODUCTION

Emissions inventories are one of the fundamental building blocks in the development of an attainment plan. Emissions inventories serve as 1) a primary input to air quality modeling used in attainment demonstrations; 2) the emissions data used for developing control strategies; and 3) a means to track progress in meeting the emission reduction commitments. The inventories in this appendix are used to study and propose control measures, to track emissions for Reasonable Further Progress (RFP), to establish motor vehicle conformity budgets for transportation planning, and to assist in demonstrating attainment.

Emissions inventories are an estimate of the air pollution emissions that are actually released into the environment—they are not measurements of ambient concentrations. The following are examples of pollution sources by key sectors:

- Industrial or stationary point sources—power plants and oil refineries;
- Area-wide sources—consumer products and residential fuel combustion;
- On-road sources—passenger vehicles and heavy-duty trucks;
- Off-road mobile sources—aircraft, trains, ships, recreational boats, construction equipment and farm equipment; and
- Nonanthropogenic (natural) sources—biogenic (or vegetation), geogenic (petroleum seeps), and wildfires.

Emissions inventories are usually developed at various geographical resolutions encompassing district, air basin, and county levels. The inventories presented in this appendix are the emissions for the San Joaquin Valley Air Basin.

This appendix includes emissions for the San Joaquin Valley Air Basin for the years 2013 through 2022. The tables in this appendix include:

- Table B-1 Directly emitted PM_{2.5}
- Table B-2 NO_x
- Table B-3 SO_x
- Table B-4 VOC
- Table B-5 Ammonia

Tables B-1 through B-5 are followed by an overview of emissions inventory calculations and revisions

B.2 EMISSIONS INVENTORY TABLES

Table B-1 Valley PM2.5 Emissions

SUMMARY CATEGORY NAME	PM2.5																			
	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
STATIONARY SOURCES																				
FUEL COMBUSTION																				
ELECTRIC UTILITIES	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
COGENERATION	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7
OIL AND GAS PRODUCTION (COMBUSTION)	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4
PETROLEUM REFINING (COMBUSTION)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MANUFACTURING AND INDUSTRIAL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
FOOD AND AGRICULTURAL PROCESSING	0.7	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4
SERVICE AND COMMERCIAL	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
OTHER (FUEL COMBUSTION)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL FUEL COMBUSTION	5.0	4.8	4.7	4.6	4.6	4.6	4.6	4.6	4.5	4.5	4.8	4.7	4.6	4.5	4.5	4.5	4.5	4.5	4.5	4.4
WASTE DISPOSAL																				
SEWAGE TREATMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LANDFILLS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
INCINERATORS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOIL REMEDIATION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (WASTE DISPOSAL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL WASTE DISPOSAL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
CLEANING AND SURFACE COATINGS																				
LAUNDERING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEGREASING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COATINGS AND RELATED PROCESS SOLVENTS	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
PRINTING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ADHESIVES AND SEALANTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (CLEANING AND SURFACE COATINGS)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL CLEANING AND SURFACE COATINGS	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
PETROLEUM PRODUCTION AND MARKETING																				
OIL AND GAS PRODUCTION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM REFINING	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
PETROLEUM MARKETING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL PETROLEUM PRODUCTION AND MARKETING	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
INDUSTRIAL PROCESSES																				
CHEMICAL	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
FOOD AND AGRICULTURE	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9
MINERAL PROCESSES	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.7	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.7

PM2.5																					
SUMMARY CATEGORY NAME	ANNUAL AVERAGE tons/day											WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
METAL PROCESSES	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
WOOD AND PAPER	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
GLASS AND RELATED PRODUCTS	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
ELECTRONICS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
OTHER (INDUSTRIAL PROCESSES)	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
* TOTAL INDUSTRIAL PROCESSES	3.4	3.4	3.5	3.6	3.7	3.7	3.8	3.9	3.9	4.0	3.3	3.3	3.4	3.5	3.5	3.6	3.7	3.7	3.8	3.9	
** TOTAL STATIONARY SOURCES	8.9	8.8	8.8	8.8	8.9	8.9	9.0	9.0	9.1	9.1	8.6	8.5	8.5	8.5	8.6	8.7	8.8	8.8	8.9	8.9	
AREA-WIDE SOURCES																					
SOLVENT EVAPORATION																					
CONSUMER PRODUCTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
PESTICIDES/FERTILIZERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
ASPHALT PAVING / ROOFING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
* TOTAL SOLVENT EVAPORATION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MISCELLANEOUS PROCESSES																					
RESIDENTIAL FUEL COMBUSTION	4.9	4.8	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	9.2	9.0	8.0	8.0	8.0	8.0	8.0	8.1	8.1	8.1	
FARMING OPERATIONS	13.0	13.0	12.9	12.9	12.9	12.8	12.8	12.7	12.7	12.6	9.9	9.8	9.8	9.7	9.7	9.6	9.6	9.6	9.5	9.5	
CONSTRUCTION AND DEMOLITION	1.5	1.6	1.6	1.7	1.8	1.8	1.9	1.9	1.5	1.6	1.4	1.4	1.5	1.6	1.6	1.7	1.7	1.7	1.4	1.4	
PAVED ROAD DUST	4.8	4.9	4.9	5.0	5.1	5.2	5.3	5.4	5.4	5.5	4.5	4.5	4.6	4.7	4.8	4.8	4.9	5.0	5.1	5.2	
UNPAVED ROAD DUST	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.4	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.3	
FUGITIVE WINDBLOWN DUST	7.5	7.5	7.5	7.4	7.4	7.4	7.3	7.3	7.3	7.2	4.8	4.7	4.7	4.7	4.7	4.6	4.6	4.6	4.6	4.5	
FIRES	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
MANAGED BURNING AND DISPOSAL	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	
COOKING	3.6	3.6	3.7	3.8	3.8	3.9	3.9	4.0	4.1	4.1	3.6	3.6	3.7	3.8	3.8	3.9	3.9	4.0	4.1	4.1	
OTHER (MISCELLANEOUS PROCESSES)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
* TOTAL MISCELLANEOUS PROCESSES	42.3	42.3	41.9	42.0	42.1	42.2	42.4	42.5	42.2	42.3	41.2	41.0	40.2	40.3	40.4	40.6	40.7	40.8	40.5	40.6	
** TOTAL AREA-WIDE SOURCES	42.3	42.3	41.9	42.0	42.1	42.2	42.4	42.5	42.2	42.3	41.2	41.0	40.2	40.3	40.4	40.6	40.7	40.8	40.5	40.6	
MOBILE SOURCES																					
ON-ROAD MOTOR VEHICLES																					
LIGHT DUTY PASSENGER (LDA)	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.3	
LIGHT DUTY TRUCKS - 1 (LDT1)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
LIGHT DUTY TRUCKS - 2 (LDT2)	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	
MEDIUM DUTY TRUCKS (MDV)	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	0.8	0.7	0.6	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.8	0.7	0.6	0.5	0.5	0.4	0.4	0.3	0.2	0.2	

PM2.5																				
SUMMARY CATEGORY NAME	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	3.2	1.7	1.3	1.2	0.9	0.8	0.8	0.7	0.7	0.7	3.2	1.7	1.3	1.2	0.9	0.8	0.8	0.7	0.7	0.7
MOTORCYCLES (MCY)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEAVY DUTY DIESEL URBAN BUSES (UB)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HEAVY DUTY GAS URBAN BUSES (UB)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCHOOL BUSES GAS (SBG)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCHOOL BUSES DIESEL (SBD)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER BUSES GAS (OBG)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER BUSES - MOTOR COACH - DIESEL (OBC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALL OTHER BUSES DIESEL (OBD)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MOTOR HOMES (MH)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL ON-ROAD MOTOR VEHICLES	6.4	4.7	4.2	4.0	3.7	3.6	3.5	3.4	3.3	3.3	6.4	4.7	4.2	4.0	3.7	3.6	3.5	3.4	3.3	3.3
OTHER MOBILE SOURCES																				
AIRCRAFT	1.2	1.2	1.2	1.2	1.2	1.2	1.7	1.7	1.7	1.7	1.2	1.2	1.2	1.2	1.2	1.2	1.7	1.7	1.7	1.7
TRAINS	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2
OCEAN GOING VESSELS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COMMERCIAL HARBOR CRAFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RECREATIONAL BOATS	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
OFF-ROAD RECREATIONAL VEHICLES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFF-ROAD EQUIPMENT	1.1	1.1	1.1	1.0	1.0	0.9	0.8	0.8	0.8	0.7	1.0	0.9	0.9	0.9	0.8	0.7	0.7	0.7	0.6	0.6
FARM EQUIPMENT	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1	2.0	1.9	1.7	1.7	1.6	1.5	1.5	1.4	1.4	1.3	1.2	1.2
FUEL STORAGE AND HANDLING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL OTHER MOBILE SOURCES	5.8	5.7	5.5	5.4	5.2	5.1	5.3	5.2	5.0	4.8	4.5	4.4	4.3	4.2	4.0	3.9	4.2	4.1	4.0	3.9
** TOTAL MOBILE SOURCES	12.3	10.4	9.8	9.4	9.0	8.6	8.9	8.6	8.3	8.1	10.9	9.1	8.5	8.2	7.8	7.5	7.8	7.5	7.3	7.2
GRAND TOTAL FOR SAN JOAQUIN VALLEY	63.4	61.5	60.4	60.2	60.0	59.8	60.2	60.0	59.5	59.5	60.7	58.7	57.2	57.1	56.8	56.8	57.2	57.1	56.7	56.7

Table B-2 Valley NOx Emissions

SUMMARY CATEGORY NAME	NOx																			
	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
STATIONARY SOURCES																				
FUEL COMBUSTION																				
ELECTRIC UTILITIES	4.4	4.1	4.0	4.2	4.2	4.3	4.3	4.3	4.3	4.3	4.2	3.9	3.8	3.9	4.0	4.0	4.1	4.0	4.0	4.1
COGENERATION	1.6	1.7	1.7	1.8	1.9	1.9	2.0	2.0	2.0	2.1	1.5	1.5	1.6	1.7	1.7	1.8	1.9	1.9	1.9	1.9
OIL AND GAS PRODUCTION (COMBUSTION)	3.1	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.2	3.1	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.2
PETROLEUM REFINING (COMBUSTION)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
MANUFACTURING AND INDUSTRIAL	5.2	5.2	5.2	5.2	5.1	5.2	5.2	5.2	5.2	5.3	5.3	5.3	5.3	5.2	5.2	5.3	5.3	5.3	5.3	5.3
FOOD AND AGRICULTURAL PROCESSING	11.5	11.2	8.0	6.0	5.6	5.4	5.2	5.0	4.8	4.6	7.9	7.7	5.6	4.3	4.0	3.8	3.7	3.6	3.4	3.3
SERVICE AND COMMERCIAL	4.6	4.5	4.5	4.6	4.6	4.7	4.7	4.8	4.8	4.8	4.9	4.9	4.9	4.9	5.0	5.1	5.2	5.2	5.2	5.2
OTHER (FUEL COMBUSTION)	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
* TOTAL FUEL COMBUSTION	31.2	30.4	27.0	25.1	24.7	24.7	24.5	24.2	24.0	23.8	27.6	26.9	24.7	23.4	23.2	23.2	23.1	22.9	22.8	22.6
WASTE DISPOSAL																				
SEWAGE TREATMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LANDFILLS	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
INCINERATORS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOIL REMEDIATION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (WASTE DISPOSAL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL WASTE DISPOSAL	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
CLEANING AND SURFACE COATINGS																				
LAUNDERING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEGREASING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COATINGS AND RELATED PROCESS SOLVENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PRINTING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ADHESIVES AND SEALANTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (CLEANING AND SURFACE COATINGS)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL CLEANING AND SURFACE COATINGS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM PRODUCTION AND MARKETING																				
OIL AND GAS PRODUCTION	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
PETROLEUM REFINING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM MARKETING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL PETROLEUM PRODUCTION AND MARKETING	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3
INDUSTRIAL PROCESSES																				
CHEMICAL	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4
FOOD AND AGRICULTURE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MINERAL PROCESSES	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
METAL PROCESSES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

NOx																				
SUMMARY CATEGORY NAME	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
WOOD AND PAPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GLASS AND RELATED PRODUCTS	6.2	4.0	4.1	4.2	4.3	4.3	4.3	4.4	4.5	4.7	6.2	4.0	4.1	4.2	4.3	4.3	4.3	4.4	4.5	4.7
ELECTRONICS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (INDUSTRIAL PROCESSES)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL INDUSTRIAL PROCESSES	6.7	4.5	4.6	4.7	4.8	4.9	4.9	5.0	5.1	5.3	6.7	4.5	4.6	4.7	4.8	4.8	4.9	4.9	5.1	5.3
** TOTAL STATIONARY SOURCES	38.6	35.6	32.3	30.5	30.2	30.2	30.1	29.8	29.8	29.7	35.0	32.1	29.9	28.7	28.6	28.7	28.6	28.5	28.5	28.5
AREA-WIDE SOURCES																				
SOLVENT EVAPORATION																				
CONSUMER PRODUCTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PESTICIDES/FERTILIZERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ASPHALT PAVING / ROOFING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL SOLVENT EVAPORATION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MISCELLANEOUS PROCESSES																				
RESIDENTIAL FUEL COMBUSTION	6.4	6.4	6.5	6.4	6.4	6.4	6.5	6.4	6.5	6.3	9.0	9.0	9.0	8.9	8.9	9.0	9.0	9.0	9.0	8.7
FARMING OPERATIONS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONSTRUCTION AND DEMOLITION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UNPAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FUGITIVE WINDBLOWN DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MANAGED BURNING AND DISPOSAL	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
COOKING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (MISCELLANEOUS PROCESSES)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL MISCELLANEOUS PROCESSES	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.0	11.5	11.6	11.5	11.5	11.4	11.5	11.5	11.5	11.5	11.2
** TOTAL AREA-WIDE SOURCES	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.1	8.0	11.5	11.6	11.5	11.5	11.4	11.5	11.5	11.5	11.5	11.2
MOBILE SOURCES																				
ON-ROAD MOTOR VEHICLES																				
LIGHT DUTY PASSENGER (LDA)	9.6	8.6	7.7	6.9	6.1	5.5	4.9	4.5	4.1	3.8	10.5	9.4	8.4	7.5	6.7	6.0	5.4	4.9	4.5	4.2
LIGHT DUTY TRUCKS - 1 (LDT1)	2.8	2.5	2.1	1.8	1.5	1.3	1.1	1.0	0.9	0.8	3.1	2.7	2.3	2.0	1.7	1.4	1.2	1.1	0.9	0.8
LIGHT DUTY TRUCKS - 2 (LDT2)	7.0	6.3	5.6	4.9	4.3	3.8	3.3	2.9	2.6	2.4	7.7	6.9	6.1	5.4	4.7	4.1	3.6	3.2	2.9	2.6
MEDIUM DUTY TRUCKS (MDV)	10.0	9.2	8.4	7.6	6.8	6.1	5.3	4.7	4.1	3.5	11.0	10.1	9.2	8.3	7.5	6.6	5.9	5.2	4.5	3.9
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	3.0	2.7	2.5	2.3	2.1	2.0	1.8	1.7	1.5	1.4	3.2	2.9	2.7	2.5	2.3	2.1	1.9	1.8	1.6	1.5

SUMMARY CATEGORY NAME	NOx																			
	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	0.8	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.2	0.8	0.7	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.2
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	11.0	10.3	9.6	8.9	8.1	7.5	6.8	6.1	5.5	4.9	11.2	10.5	9.8	9.0	8.3	7.6	6.9	6.2	5.6	5.0
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	2.8	2.6	2.3	2.1	1.9	1.7	1.5	1.3	1.1	1.0	2.8	2.6	2.4	2.1	1.9	1.7	1.5	1.3	1.2	1.0
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	18.2	16.4	14.0	13.0	11.8	11.1	10.2	8.3	6.5	6.4	18.5	16.6	14.2	13.2	12.0	11.2	10.3	8.4	6.6	6.5
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	110.1	89.4	81.9	76.7	70.1	66.1	64.4	61.5	57.2	52.5	111.8	90.8	83.1	77.8	71.0	66.9	65.2	62.3	57.8	53.1
MOTORCYCLES (MCY)	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9
HEAVY DUTY DIESEL URBAN BUSES (UB)	3.4	3.0	2.8	2.5	2.3	2.1	1.8	1.6	1.5	1.3	3.5	3.1	2.8	2.6	2.4	2.1	1.9	1.7	1.5	1.3
HEAVY DUTY GAS URBAN BUSES (UB)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
SCHOOL BUSES GAS (SBG)	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
SCHOOL BUSES DIESEL (SBD)	1.1	1.0	1.0	1.0	1.0	0.9	0.8	0.8	0.7	0.7	1.1	1.0	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.7
OTHER BUSES GAS (OBG)	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
OTHER BUSES - MOTOR COACH - DIESEL (OBC)	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2
ALL OTHER BUSES DIESEL (OBD)	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2
MOTOR HOMES (MH)	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2
* TOTAL ON-ROAD MOTOR VEHICLES	183.1	156.0	141.6	131.1	119.2	110.7	104.7	96.9	88.1	80.9	188.7	160.9	146.0	135.0	122.7	113.8	107.6	99.5	90.4	83.0
OTHER MOBILE SOURCES																				
AIRCRAFT	2.5	2.5	2.5	2.5	2.5	2.5	4.6	4.6	4.6	4.6	2.4	2.4	2.4	2.4	2.4	2.4	4.5	4.5	4.5	4.5
TRAINS	13.4	13.8	14.0	14.1	14.0	13.8	13.5	13.2	12.9	12.6	13.4	13.8	14.0	14.1	14.0	13.8	13.5	13.2	12.9	12.6
OCEAN GOING VESSELS	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
COMMERCIAL HARBOR CRAFT	0.7	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
RECREATIONAL BOATS	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.3	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8
OFF-ROAD RECREATIONAL VEHICLES	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
OFF-ROAD EQUIPMENT	21.3	21.0	20.8	20.3	19.6	18.3	17.5	17.2	16.4	15.3	18.3	17.9	17.7	17.2	16.6	15.5	14.8	14.5	13.9	12.9
FARM EQUIPMENT	48.4	46.5	44.7	43.1	41.5	40.0	38.6	36.2	34.0	32.0	30.1	28.9	27.8	26.7	25.8	24.8	23.9	22.5	21.2	19.9
FUEL STORAGE AND HANDLING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL OTHER MOBILE SOURCES	88.3	86.4	84.5	82.4	80.0	76.9	76.4	73.5	70.2	66.7	66.2	65.0	63.8	62.3	60.6	58.3	58.5	56.4	54.2	51.6
** TOTAL MOBILE SOURCES	271.4	242.4	226.1	213.5	199.2	187.6	181.2	170.4	158.3	147.5	254.9	226.0	209.7	197.4	183.3	172.1	166.1	156.0	144.6	134.6
GRAND TOTAL FOR SAN JOAQUIN VALLEY	318.1	286.2	266.6	252.1	237.5	225.9	219.4	208.3	196.2	185.2	301.4	269.6	251.2	237.6	223.3	212.3	206.2	195.9	184.6	174.3

Table B-3 Valley SOx Emissions

SUMMARY CATEGORY NAME	SOx																			
	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
STATIONARY SOURCES																				
FUEL COMBUSTION																				
ELECTRIC UTILITIES	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
COGENERATION	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
OIL AND GAS PRODUCTION (COMBUSTION)	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2
PETROLEUM REFINING (COMBUSTION)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MANUFACTURING AND INDUSTRIAL	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
FOOD AND AGRICULTURAL PROCESSING	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
SERVICE AND COMMERCIAL	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4
OTHER (FUEL COMBUSTION)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL FUEL COMBUSTION	2.9	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.9	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4
WASTE DISPOSAL																				
SEWAGE TREATMENT	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
LANDFILLS	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
INCINERATORS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOIL REMEDIATION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (WASTE DISPOSAL)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL WASTE DISPOSAL	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
CLEANING AND SURFACE COATINGS																				
LAUNDERING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEGREASING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COATINGS AND RELATED PROCESS SOLVENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PRINTING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ADHESIVES AND SEALANTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (CLEANING AND SURFACE COATINGS)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL CLEANING AND SURFACE COATINGS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM PRODUCTION AND MARKETING																				
OIL AND GAS PRODUCTION	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4
PETROLEUM REFINING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM MARKETING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL PETROLEUM PRODUCTION AND MARKETING	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
INDUSTRIAL PROCESSES																				
CHEMICAL	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9
FOOD AND AGRICULTURE	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
MINERAL PROCESSES	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
METAL PROCESSES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WOOD AND PAPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GLASS AND RELATED PRODUCTS	2.0	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.0	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1

SOx																				
SUMMARY CATEGORY NAME	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ELECTRONICS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (INDUSTRIAL PROCESSES)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL INDUSTRIAL PROCESSES	3.6	3.5	3.6	3.6	3.7	3.7	3.8	3.8	3.9	4.0	3.4	3.2	3.3	3.3	3.4	3.4	3.5	3.5	3.6	3.7
** TOTAL STATIONARY SOURCES	7.2	6.5	6.5	6.6	6.6	6.7	6.8	6.8	6.9	7.0	6.9	6.2	6.2	6.3	6.3	6.4	6.5	6.5	6.6	6.7
AREA-WIDE SOURCES																				
SOLVENT EVAPORATION																				
CONSUMER PRODUCTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PESTICIDES/FERTILIZERS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ASPHALT PAVING / ROOFING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL SOLVENT EVAPORATION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MISCELLANEOUS PROCESSES																				
RESIDENTIAL FUEL COMBUSTION	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
FARMING OPERATIONS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CONSTRUCTION AND DEMOLITION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UNPAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FUGITIVE WINDBLOWN DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MANAGED BURNING AND DISPOSAL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
COOKING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (MISCELLANEOUS PROCESSES)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL MISCELLANEOUS PROCESSES	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
** TOTAL AREA-WIDE SOURCES	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
MOBILE SOURCES																				
ON-ROAD MOTOR VEHICLES																				
LIGHT DUTY PASSENGER (LDA)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
LIGHT DUTY TRUCKS - 1 (LDT1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LIGHT DUTY TRUCKS - 2 (LDT2)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MEDIUM DUTY TRUCKS (MDV)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

SOx																				
SUMMARY CATEGORY NAME	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
MOTORCYCLES (MCY)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEAVY DUTY DIESEL URBAN BUSES (UB)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEAVY DUTY GAS URBAN BUSES (UB)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCHOOL BUSES GAS (SBG)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCHOOL BUSES DIESEL (SBD)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER BUSES GAS (OBG)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER BUSES - MOTOR COACH - DIESEL (OBC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALL OTHER BUSES DIESEL (OBD)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MOTOR HOMES (MH)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL ON-ROAD MOTOR VEHICLES	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
OTHER MOBILE SOURCES																				
AIRCRAFT	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
TRAINS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCEAN GOING VESSELS	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
COMMERCIAL HARBOR CRAFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RECREATIONAL BOATS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFF-ROAD RECREATIONAL VEHICLES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFF-ROAD EQUIPMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FARM EQUIPMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FUEL STORAGE AND HANDLING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL OTHER MOBILE SOURCES	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
** TOTAL MOBILE SOURCES	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9
GRAND TOTAL FOR SAN JOAQUIN VALLEY	8.4	7.7	7.7	7.8	7.8	7.9	8.0	8.1	8.2	8.2	8.3	7.5	7.6	7.6	7.7	7.8	7.8	7.9	8.0	8.1

Table B-4 Valley Ammonia Emissions

AMMONIA																				
SUMMARY CATEGORY NAME	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
STATIONARY SOURCES																				
FUEL COMBUSTION																				
ELECTRIC UTILITIES	1.8	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7
COGENERATION	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
OIL AND GAS PRODUCTION (COMBUSTION)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM REFINING (COMBUSTION)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MANUFACTURING AND INDUSTRIAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FOOD AND AGRICULTURAL PROCESSING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SERVICE AND COMMERCIAL	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (FUEL COMBUSTION)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL FUEL COMBUSTION	2.3	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.1	2.2	2.2
WASTE DISPOSAL																				
SEWAGE TREATMENT	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7
LANDFILLS	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
INCINERATORS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOIL REMEDIATION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (WASTE DISPOSAL)	8.7	8.8	9.0	9.1	9.3	9.4	9.6	9.8	9.9	10.1	8.7	8.8	9.0	9.1	9.3	9.4	9.6	9.8	9.9	10.1
* TOTAL WASTE DISPOSAL	10.0	10.1	10.3	10.5	10.7	10.9	11.0	11.2	11.4	11.6	10.0	10.1	10.3	10.5	10.7	10.8	11.0	11.2	11.4	11.6
CLEANING AND SURFACE COATINGS																				
LAUNDERING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DEGREASING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COATINGS AND RELATED PROCESS SOLVENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PRINTING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ADHESIVES AND SEALANTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (CLEANING AND SURFACE COATINGS)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL CLEANING AND SURFACE COATINGS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM PRODUCTION AND MARKETING																				
OIL AND GAS PRODUCTION	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM REFINING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PETROLEUM MARKETING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL PETROLEUM PRODUCTION AND MARKETING	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
INDUSTRIAL PROCESSES																				
CHEMICAL	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3

AMMONIA																				
SUMMARY CATEGORY NAME	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
FOOD AND AGRICULTURE	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
MINERAL PROCESSES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
METAL PROCESSES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WOOD AND PAPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GLASS AND RELATED PRODUCTS	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
ELECTRONICS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (INDUSTRIAL PROCESSES)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL INDUSTRIAL PROCESSES	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8
** TOTAL STATIONARY SOURCES	13.9	13.9	14.1	14.4	14.6	14.8	15.0	15.2	15.5	15.7	13.9	13.9	14.1	14.3	14.5	14.8	15.0	15.2	15.4	15.7
AREA-WIDE SOURCES																				
SOLVENT EVAPORATION																				
CONSUMER PRODUCTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PESTICIDES/FERTILIZERS	117.6	116.9	116.3	115.7	115.0	114.4	113.8	113.1	112.5	111.8	97.9	97.3	96.8	96.2	95.6	95.1	94.5	94.0	93.4	92.8
ASPHALT PAVING / ROOFING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL SOLVENT EVAPORATION	117.6	116.9	116.3	115.7	115.0	114.4	113.8	113.1	112.5	111.8	97.9	97.3	96.8	96.2	95.6	95.1	94.5	94.0	93.4	92.8
MISCELLANEOUS PROCESSES																				
RESIDENTIAL FUEL COMBUSTION	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
FARMING OPERATIONS	186.5	186.5	186.5	186.5	186.5	186.5	186.5	186.5	186.5	186.5	186.4	186.4	186.4	186.4	186.4	186.4	186.4	186.4	186.4	186.4
CONSTRUCTION AND DEMOLITION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UNPAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FUGITIVE WINDBLOWN DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MANAGED BURNING AND DISPOSAL	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
COOKING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (MISCELLANEOUS PROCESSES)	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9	7.0
* TOTAL MISCELLANEOUS PROCESSES	193.3	193.3	193.4	193.5	193.6	193.7	193.8	193.9	194.0	194.1	193.7	193.7	193.8	193.9	194.0	194.1	194.2	194.3	194.4	194.5
** TOTAL AREA-WIDE SOURCES	310.9	310.3	309.7	309.2	308.7	308.1	307.6	307.0	306.5	306.0	291.5	291.0	290.6	290.1	289.7	289.2	288.7	288.3	287.8	287.4
MOBILE SOURCES																				
ON-ROAD MOTOR VEHICLES																				
LIGHT DUTY PASSENGER (LDA)	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
LIGHT DUTY TRUCKS - 1 (LDT1)	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
LIGHT DUTY TRUCKS - 2 (LDT2)	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7

AMMONIA																				
SUMMARY CATEGORY NAME	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MEDIUM DUTY TRUCKS (MDV)	1.3	1.2	1.1	1.1	1.0	0.9	0.9	0.8	0.8	0.7	1.3	1.2	1.1	1.1	1.0	0.9	0.9	0.8	0.8	0.7
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
MOTORCYCLES (MCY)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEAVY DUTY DIESEL URBAN BUSES (UB)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HEAVY DUTY GAS URBAN BUSES (UB)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCHOOL BUSES GAS (SBG)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCHOOL BUSES DIESEL (SBD)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER BUSES GAS (OBG)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER BUSES - MOTOR COACH - DIESEL (OBC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALL OTHER BUSES DIESEL (OBD)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MOTOR HOMES (MH)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL ON-ROAD MOTOR VEHICLES	4.4	4.3	4.1	4.0	3.9	3.8	3.7	3.6	3.5	3.5	4.4	4.3	4.1	4.0	3.9	3.8	3.7	3.6	3.5	3.5
OTHER MOBILE SOURCES																				
AIRCRAFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TRAINS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OCEAN GOING VESSELS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COMMERCIAL HARBOR CRAFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RECREATIONAL BOATS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFF-ROAD RECREATIONAL VEHICLES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OFF-ROAD EQUIPMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FARM EQUIPMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FUEL STORAGE AND HANDLING	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL OTHER MOBILE SOURCES	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
** TOTAL MOBILE SOURCES	4.4	4.3	4.2	4.0	3.9	3.8	3.7	3.6	3.6	3.5	4.4	4.3	4.2	4.0	3.9	3.8	3.7	3.6	3.6	3.5
GRAND TOTAL FOR SAN JOAQUIN VALLEY	329.2	328.5	328.0	327.6	327.2	326.7	326.3	325.9	325.5	325.2	309.8	309.2	308.8	308.5	308.1	307.8	307.4	307.1	306.8	306.5

Table B-5 Valley VOC Emissions

SUMMARY CATEGORY NAME	VOC																			
	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
STATIONARY SOURCES																				
FUEL COMBUSTION																				
ELECTRIC UTILITIES	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
COGENERATION	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6
OIL AND GAS PRODUCTION (COMBUSTION)	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.9	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.9
PETROLEUM REFINING (COMBUSTION)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MANUFACTURING AND INDUSTRIAL	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
FOOD AND AGRICULTURAL PROCESSING	1.0	1.0	0.9	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SERVICE AND COMMERCIAL	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7
OTHER (FUEL COMBUSTION)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL FUEL COMBUSTION	3.8	3.7	3.6	3.4	3.3	3.3	3.3	3.3	3.2	3.2	3.6	3.5	3.4	3.2	3.2	3.2	3.2	3.2	3.1	3.1
WASTE DISPOSAL																				
SEWAGE TREATMENT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LANDFILLS	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7
INCINERATORS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOIL REMEDIATION	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
OTHER (WASTE DISPOSAL)	22.2	22.6	23.1	23.4	22.9	23.3	23.7	24.1	24.5	24.9	22.2	22.6	23.1	23.4	22.9	23.3	23.7	24.1	24.5	24.9
* TOTAL WASTE DISPOSAL	23.9	24.3	24.8	25.2	24.7	25.1	25.5	25.9	26.4	26.8	23.9	24.3	24.8	25.2	24.7	25.1	25.5	25.9	26.4	26.8
CLEANING AND SURFACE COATINGS																				
LAUNDERING	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
DEGREASING	1.6	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.6	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.9
COATINGS AND RELATED PROCESS SOLVENTS	8.2	8.5	8.7	8.8	8.9	9.1	9.2	9.3	9.5	9.8	8.2	8.5	8.6	8.8	8.9	9.0	9.2	9.3	9.5	9.8
PRINTING	5.3	5.4	5.5	5.6	5.7	5.7	5.8	5.9	5.9	6.0	5.3	5.4	5.5	5.6	5.7	5.7	5.8	5.9	5.9	6.0
ADHESIVES AND SEALANTS	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7
OTHER (CLEANING AND SURFACE COATINGS)	6.6	6.8	6.9	7.0	7.1	7.1	7.2	7.3	7.5	7.6	6.6	6.8	6.9	7.0	7.1	7.1	7.2	7.3	7.5	7.6
* TOTAL CLEANING AND SURFACE COATINGS	22.4	23.0	23.5	23.8	24.1	24.4	24.7	25.1	25.5	26.0	22.4	23.0	23.5	23.8	24.1	24.4	24.7	25.1	25.5	26.0
PETROLEUM PRODUCTION AND MARKETING																				
OIL AND GAS PRODUCTION	12.6	12.3	12.0	11.7	11.5	11.2	11.0	10.7	10.5	10.3	12.6	12.3	12.0	11.7	11.5	11.2	11.0	10.7	10.5	10.3
PETROLEUM REFINING	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
PETROLEUM MARKETING	5.5	5.5	5.5	5.4	5.3	5.2	5.1	5.1	5.0	4.9	5.5	5.5	5.4	5.4	5.3	5.2	5.1	5.1	5.0	4.9
OTHER (PETROLEUM PRODUCTION AND MARKETING)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL PETROLEUM PRODUCTION AND MARKETING	18.8	18.6	18.3	18.0	17.6	17.3	16.9	16.6	16.3	16.0	18.8	18.5	18.3	18.0	17.6	17.3	16.9	16.6	16.3	16.0
INDUSTRIAL PROCESSES																				
CHEMICAL	4.9	4.9	5.0	5.1	5.1	5.2	5.3	5.4	5.5	5.7	4.9	4.9	5.0	5.0	5.1	5.2	5.3	5.4	5.5	5.6
FOOD AND AGRICULTURE	11.2	11.3	11.4	11.7	12.0	12.2	12.5	12.7	12.8	13.0	11.0	11.0	11.2	11.5	11.7	11.9	12.2	12.4	12.5	12.7
MINERAL PROCESSES	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
METAL PROCESSES	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

VOC																				
SUMMARY CATEGORY NAME	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
WOOD AND PAPER	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GLASS AND RELATED PRODUCTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ELECTRONICS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER (INDUSTRIAL PROCESSES)	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	0.8	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0
* TOTAL INDUSTRIAL PROCESSES	17.3	17.5	17.7	18.1	18.5	18.8	19.2	19.5	19.8	20.1	17.1	17.2	17.5	17.8	18.2	18.5	18.9	19.2	19.5	19.8
** TOTAL STATIONARY SOURCES	86.2	87.1	87.8	88.5	88.3	88.9	89.6	90.4	91.3	92.2	85.7	86.6	87.3	88.0	87.8	88.4	89.2	89.9	90.8	91.8
AREA-WIDE SOURCES																				
SOLVENT EVAPORATION																				
CONSUMER PRODUCTS	20.4	20.5	20.8	21.1	21.4	21.7	22.0	22.3	22.6	22.9	20.4	20.5	20.8	21.1	21.4	21.7	22.0	22.3	22.6	22.9
ARCHITECTURAL COATINGS AND RELATED PROCESS SOLVENTS	9.0	9.1	9.2	9.3	9.4	9.6	9.7	9.9	10.0	10.2	7.8	7.8	7.9	8.0	8.1	8.2	8.4	8.5	8.6	8.8
PESTICIDES/FERTILIZERS	19.5	17.8	16.7	16.7	16.6	16.5	16.4	16.4	16.3	16.2	19.4	18.9	16.7	16.6	16.6	16.5	16.4	16.3	16.3	16.2
ASPHALT PAVING / ROOFING	0.9	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	0.9	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2
* TOTAL SOLVENT EVAPORATION	49.8	48.3	47.7	48.1	48.5	48.9	49.3	49.7	50.1	50.5	48.5	48.1	46.4	46.8	47.2	47.5	47.9	48.3	48.7	49.1
MISCELLANEOUS PROCESSES																				
RESIDENTIAL FUEL COMBUSTION	5.4	5.3	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	10.4	10.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
FARMING OPERATIONS	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	95.9	95.9	95.9	95.9	95.9	95.9	95.9	95.9	95.9	95.9
CONSTRUCTION AND DEMOLITION	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
UNPAVED ROAD DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FUGITIVE WINDBLOWN DUST	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRES	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MANAGED BURNING AND DISPOSAL	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	3.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
COOKING	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7
OTHER (MISCELLANEOUS PROCESSES)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL MISCELLANEOUS PROCESSES	104.7	104.5	104.0	104.0	104.0	104.1	104.1	104.1	104.1	104.1	110.6	110.4	109.4	109.4	109.4	109.4	109.4	109.4	109.4	109.4
** TOTAL AREA-WIDE SOURCES	154.5	152.9	151.7	152.1	152.5	152.9	153.4	153.8	154.2	154.6	159.1	158.5	155.8	156.2	156.6	157.0	157.4	157.7	158.1	158.5
MOBILE SOURCES																				
ON-ROAD MOTOR VEHICLES																				
LIGHT DUTY PASSENGER (LDA)	13.6	12.0	10.6	9.4	8.3	7.4	6.7	6.2	5.8	5.5	13.6	11.9	10.5	9.2	8.1	7.2	6.5	6.1	5.7	5.4
LIGHT DUTY TRUCKS - 1 (LDT1)	5.0	4.4	3.9	3.4	2.9	2.6	2.3	2.0	1.8	1.7	5.3	4.7	4.1	3.6	3.1	2.7	2.4	2.1	1.9	1.7
LIGHT DUTY TRUCKS - 2 (LDT2)	7.3	6.7	6.0	5.5	4.9	4.4	4.1	3.8	3.6	3.4	7.7	7.0	6.3	5.7	5.1	4.6	4.2	3.9	3.7	3.5
MEDIUM DUTY TRUCKS (MDV)	7.8	7.5	7.2	6.8	6.4	6.1	5.7	5.3	4.9	4.5	8.2	7.9	7.5	7.1	6.6	6.3	5.8	5.4	5.0	4.6
LIGHT HEAVY DUTY GAS TRUCKS - 1 (LHDV1)	2.3	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.2	2.5	2.3	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3
LIGHT HEAVY DUTY GAS TRUCKS - 2 (LHDV2)	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1

SUMMARY CATEGORY NAME	VOC																			
	ANNUAL AVERAGE tons/day										WINTER AVERAGE tons/day									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MEDIUM HEAVY DUTY GAS TRUCKS (MHDV)	0.6	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.7	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1
HEAVY HEAVY DUTY GAS TRUCKS (HHDV)	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
LIGHT HEAVY DUTY DIESEL TRUCKS - 1 (LHDV1)	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3
LIGHT HEAVY DUTY DIESEL TRUCKS - 2 (LHDV2)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
MEDIUM HEAVY DUTY DIESEL TRUCKS (MHDV)	1.5	1.3	1.0	0.9	0.8	0.7	0.6	0.4	0.2	0.2	1.5	1.3	1.0	0.9	0.8	0.7	0.6	0.4	0.2	0.2
HEAVY HEAVY DUTY DIESEL TRUCKS (HHDV)	6.8	3.8	3.2	2.9	2.3	2.1	2.1	2.0	1.9	1.8	6.8	3.8	3.2	2.9	2.3	2.1	2.1	2.0	1.9	1.8
MOTORCYCLES (MCY)	3.3	3.2	3.1	3.0	2.9	2.9	2.9	2.9	2.8	2.8	3.3	3.2	3.1	3.0	2.9	2.9	2.8	2.8	2.8	2.7
HEAVY DUTY DIESEL URBAN BUSES (UB)	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
HEAVY DUTY GAS URBAN BUSES (UB)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
SCHOOL BUSES GAS (SBG)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SCHOOL BUSES DIESEL (SBD)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
OTHER BUSES GAS (OBG)	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
OTHER BUSES - MOTOR COACH - DIESEL (OBC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ALL OTHER BUSES DIESEL (OBD)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MOTOR HOMES (MH)	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
* TOTAL ON-ROAD MOTOR VEHICLES	49.8	42.9	38.6	35.1	31.6	28.9	26.8	24.9	23.3	22.0	51.1	44.0	39.5	35.8	32.1	29.3	27.1	25.1	23.5	22.2
OTHER MOBILE SOURCES																				
AIRCRAFT	3.0	3.0	3.0	3.0	3.0	3.0	3.9	3.9	3.9	3.9	3.0	3.0	3.0	3.0	3.0	3.0	3.9	3.9	3.9	3.9
TRAINS	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6
OCEAN GOING VESSELS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
COMMERCIAL HARBOR CRAFT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
RECREATIONAL BOATS	7.8	7.4	7.1	6.7	6.4	6.1	5.8	5.5	5.2	4.9	4.7	4.4	4.2	4.0	3.8	3.6	3.4	3.3	3.1	2.9
OFF-ROAD RECREATIONAL VEHICLES	2.6	2.5	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.5	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.1	2.1
OFF-ROAD EQUIPMENT	9.1	8.9	8.6	8.3	8.1	7.8	7.7	7.6	7.6	7.5	8.8	8.5	8.3	7.9	7.7	7.5	7.3	7.2	7.2	7.1
FARM EQUIPMENT	8.8	8.4	8.0	7.6	7.2	6.8	6.5	6.2	5.9	5.6	6.1	5.8	5.5	5.2	4.9	4.6	4.4	4.2	4.0	3.8
FUEL STORAGE AND HANDLING	1.7	1.7	1.6	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.6	1.5	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2
* TOTAL OTHER MOBILE SOURCES	33.9	32.6	31.4	30.3	29.3	28.2	28.2	27.4	26.7	26.0	27.5	26.4	25.5	24.6	23.8	23.0	23.2	22.6	22.1	21.5
** TOTAL MOBILE SOURCES	83.7	75.5	70.1	65.4	60.8	57.2	55.0	52.3	50.0	48.0	78.6	70.4	65.0	60.4	55.9	52.3	50.3	47.7	45.6	43.7
GRAND TOTAL FOR SAN JOAQUIN VALLEY	324.4	315.5	309.6	306.0	301.6	299.0	298.0	296.4	295.4	294.8	323.4	315.5	308.2	304.6	300.3	297.7	296.9	295.4	294.6	294.1

B.3 EMISSIONS INVENTORY SUMMARY AND METHODOLOGY

[PROVIDED BY CALIFORNIA AIR RESOURCES BOARD]

Emissions inventories are one of the fundamental building blocks in the development of a State Implementation Plan (SIP or Plan). In simple terms, an emissions inventory is a systematic listing of the sources of air pollution along with the amount of pollution emitted from each source or category over a given time period. This document presents a summary of the data sources, along with revisions and improvements made to the emissions inventory included in the 2016 San Joaquin Valley Plan for the 2012 Annual PM_{2.5} Standard.

The California Air Resources Board (ARB) and San Joaquin Valley Unified Air Pollution Control District (District) have developed a comprehensive, accurate, and current emissions inventory consistent with the requirements set forth in Section 182(a)(1) of the federal Clean Air Act. ARB and District staff conducted a thorough review of the inventory to ensure that the emission estimates reflect accurate emission reports for point sources, and that estimates for mobile and area-wide sources are based on the most recent models and methodologies. Staff also reviewed the growth profiles for point and areawide source categories, and updated them as necessary to ensure that the emission projections are based on data that reflect historical trends, current conditions, and recent economic and demographic forecasts.

Emissions Inventory Overview

Emissions inventories are estimates of the amount and type of pollutants emitted into the atmosphere by industrial facilities, mobile sources, and areawide sources such as consumer products and paint. They are fundamental components of an air quality plan, and serve critical functions such as:

- 1) the primary input to air quality modeling used in attainment demonstrations;
- 2) the emissions data used for developing control strategies; and
- 3) a means to track progress in meeting the emission reduction commitments.

The United States Environmental Protection Agency (U.S. EPA) regulations require that the emissions inventory contain emissions data for directly emitted PM_{2.5} and its precursors: oxides of nitrogen (NO_x), sulfur oxides (SO_x), volatile organic compounds (VOC), and ammonia (NH₃). The inventory included in this plan substitutes VOC with reactive organic gases (ROG), which in general represent a slightly broader group of compounds than those in U.S. EPA's list of VOCs.

Agency Responsibilities

ARB and District staff worked jointly to develop the emissions inventory for the San Joaquin Valley PM_{2.5} Nonattainment Area. The District worked closely with operators of major stationary facilities in their jurisdiction to develop the point source emission estimates. ARB staff developed the emission inventory for mobile sources, both on-

road and off-road. The District and ARB shared responsibility for developing estimates for the nonpoint (areawide) sources such as paved road dust and agricultural burning. ARB worked with several State and local agencies such as the Department of Transportation (Caltrans), the Department of Motor Vehicles (DMV), the Department of Pesticide Regulation (DPR), the California Energy Commission (CEC), and municipal planning organizations (MPOs) to assemble activity information necessary to develop the mobile and area-wide source emission estimates.

Inventory Base Year

The base year inventory forms the basis for all future year projections and also establishes the emission levels against which progress in emission reductions will be measured. U.S. EPA regulations establish that the base year inventory should be preferably consistent with the triennial reporting schedule required under the Air Emissions Reporting Requirements (AERR) rule. However, U.S. EPA allows a different year to be selected if justified by the State. ARB worked with the local air districts to determine the base year that should be used across the State. Since the South Coast Air Quality Management District typically aligns their base year inventory with the data collection period for their Multiple Air Toxics Exposure Study, which was last conducted in 2012, ARB selected 2012 as the base year to maintain consistency across the various plans being developed in the State. [The base year and reference year modeling for this 2016 *PM2.5 Plan* is 2013, a projected base year based on the initial 2012 inventory data.]

Forecasted Inventories

In addition to a base year inventory, U.S. EPA regulations also require future year inventory projections for specific milestone years. Forecasted inventories are a projection of the base year inventory that reflects expected growth trends for each source category and emission reductions due to adopted control measures. ARB develops emission forecasts by applying growth and control profiles to the base year inventory.

Growth profiles for point and areawide sources are derived from surrogates such as economic activity, fuel usage, population, housing units, etc., that best reflect the expected growth trends for each specific source category. Growth projections were obtained primarily from government entities with expertise in developing forecasts for specific sectors, or in some cases, from econometric models. Control profiles, which account for emission reductions resulting from adopted rules and regulations, are derived from data provided by the regulatory agencies responsible for the affected emission categories.

Projections for mobile source emissions are generated by models that predict activity rates and vehicle fleet turnover by vehicle model year. As with stationary sources, the mobile source models include control algorithms that account for all adopted regulatory actions.

Temporal Resolution

Planning inventories typically include annual as well as seasonal (summer and winter) emission estimates. Annual emission inventories represent the total emissions over an entire year (tons per year), or the daily emissions produced on an average day (tons per day). Seasonal inventories account for temporal activity variations throughout the year, as determined by category-specific temporal profiles. Since PM_{2.5} concentrations tend to be highest during the winter months, the emission inventory used in the Plan is based on the winter season (November through April).

Geographical Scope

The inventories presented in this Plan include emissions for the seven full counties (Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare) and the portion of Kern County that comprise the San Joaquin Valley Air Basin.

Quality Assurance and Quality Control

ARB has established a quality assurance and quality control (QA/QC) process involving ARB and District staff to ensure the integrity and accuracy of the emissions inventories used in the development of air quality plans. QA/QC occurs at the various stages of SIP emission inventory development. Base year emissions are assembled and maintained in the California Emission Inventory Development and Reporting System (CEIDARS). ARB inventory staff works with District staff, who are responsible for developing and reporting point source emission estimates, to verify these data are accurate. The locations of point sources, including stacks, are checked to ensure they are valid. Area-wide source emission estimates are reviewed by ARB and District staff before their inclusion in the emission inventory. Additionally, CEIDARS is designed with automatic system checks to prevent errors such as double counting of emission sources. The system also makes various reports available to assist staff in their efforts to identify and reconcile anomalous emissions.

Future year emissions are estimated using the California Emission Projection Analysis Model (CEPAM). Growth and control factors are reviewed for each category and year along with the resulting emission projections. Year to year trends are compared to similar and past datasets to ensure general consistency. Emissions for specific categories are checked to confirm they reflect the anticipated effects of applicable control measures. Mobile categories are verified with mobile source staff for consistency with the on-road and off-road emission models.

A summary of the information supporting the San Joaquin Valley PM_{2.5} Nonattainment Area SIP emissions inventory is presented in the sections below.

Point Sources

The emissions inventory reflects actual emissions from industrial point sources reported to the District by the facility operators through calendar year 2012, in accordance with the requirements set forth in U.S. EPA's AERR rule. The data elements in the 2012 baseline inventory are consistent with the data elements required by the AERR rule. Estimation methods include source testing, direct measurement by continuous emissions monitoring systems, or engineering calculations.

The point source categories that occur in the PM_{2.5} nonattainment area are listed in Table B-6.

Table B- 6 Point Source Categories

Source Category	Subcategory
Fuel Combustion	Electric Utilities Cogeneration Oil and Gas Production (Combustion) Petroleum Refining (Combustion) Manufacturing and Industrial Food and Agricultural Processing Service and Commercial Other (Fuel Combustion)
Waste Disposal	Sewage Treatment Landfills Incinerators Soil Remediation Other (Waste Disposal)
Cleaning and Surface Coatings	Laundering Degreasing Coatings and Related Process Solvents Printing Adhesives and Sealants Other (Cleaning and Surface Coatings)
Petroleum Production and Marketing	Oil and Gas Production Petroleum Refining Petroleum Marketing Other (Petroleum Production and Marketing)

Table B-7 Point Source Categories

Source Category	Subcategory
Industrial Processes	Chemical
	Food and Agriculture
	Mineral Processes
	Metal Processes
	Wood and Paper
	Glass and Related Products
	Electronics
	Other (Industrial Processes)

The point source inventory also includes emissions from stationary area sources, which are categories such as internal combustion engines and gasoline dispensing facilities that are not inventoried individually, but are estimated as a group and reported as a single source category. The District's methodologies encompassing over sixty individual stationary area source subcategories are available at:

http://www.valleyair.org/Air_Quality_Plans/EmissionsMethods/EmissionsMethods.htm

While emission estimates for most stationary area sources are provided by the District, the estimates for the following categories were developed by ARB:

Stationary Nonagricultural Diesel Engines

This category includes emissions from backup and prime generators and pumps, air compressors, and other miscellaneous stationary diesel engines that are widely used throughout the industrial, service, institutional, and commercial sectors. The emission estimates, including emission forecasts, are based on a 2003 ARB methodology derived from the OFFROAD model. Additional information on this methodology is available at:

<http://www.arb.ca.gov/ei/areasrc/FULLPDF/FULL1-2.pdf>

Agricultural Irrigation Pumps

Emissions from agricultural irrigation pumps are estimated from a model developed by ARB staff. Air districts with significant irrigated agricultural acreage provided estimates of the population and emissions from stationary and mobile diesel-fueled agricultural irrigation pumps. These data were reconciled with equipment population estimates from the 2003 US Department of Agriculture Farm and Ranch Irrigation Survey (FRIS). The inventory also reflects the number of pumps that have been replaced to date under the Carl Moyer Program. Emissions are forecasted using irrigated cropland acreage trends. Additional information on this methodology is available at:

<http://www.arb.ca.gov/regact/agen06/attach2.pdf>

Laundering

This category includes emissions from perchloroethylene (perc) dry cleaning establishments. The emission estimates are based on a 2002 ARB methodology that used nationwide perc consumption rates allocated to the county level based on population and an emission factor of 10.125 pounds per gallon used. Emissions were grown from the original estimates to 2012 using population growth trends from the California Department of Finance. Additional information on this methodology is available at:

<http://www.arb.ca.gov/ei/areasrc/onehtm/one3-1.htm>

Degreasing

This category includes emissions from the use of solvents in degreasing operations in the manufacturing and maintenance industries. The emission estimates from this source category are based on a 1996 study by E.H. Pechan and Associates, Inc. (Pechan) titled, "Solvent Cleaning/Degreasing Source Category Emission Inventory." To estimate degreasing emissions, Pechan collected activity data by surveying solvent users in two major groups: manufacturing and maintenance. Emissions were estimated for 32 equipment and solvent pairs. For the manufacturer's survey, the emission factor for pure solvents is the density of the particular solvent. The emission factor for solvent blends is the density of the solvent multiplied by the total organic gas (TOG) content of the solvent. Exhaust controls were taken into account if used. For the maintenance survey, the emission factors are the density of the solvent with no exhaust controls. The 1993 emissions estimates were grown to 2012 based on manufacturing output data developed by Pechan. Additional information on this methodology is available at:

<http://www.arb.ca.gov/ei/areasrc/onehtm/one3-2.htm>

Oil and Gas Production

ARB staff updated the emission inventory for oil and natural gas production, which included the revision of emission estimates and the addition of emission categories that previously were not estimated. The revised emissions were calculated with a software tool developed by U.S. EPA that generates county-level emissions for upstream oil and gas activity. This tool uses 2011 as the base year, with activity data taken from the California Division of Oil, Gas, and Geothermal Resources (DOGGR) and an industry database, and default emission factors provided in an associated report. Staff incorporated data from ARB's 2007 Oil and Gas Industry Survey (e.g., typical component counts) and feedback from individual air districts (e.g., minimum controls required to operate in a certain district, with associated control factors) to improve these parameters and further adjust the tool's output. Emissions estimates for 2012 and other years were forecasted using the historical trend in statewide oil production from DOGGR, which assumes a 2.2 percent annual decline.

Gasoline Dispensing Facilities

ARB staff developed an updated methodology to estimate emissions from fuel transfer and storage operations at gasoline dispensing facilities (GDFs). The methodology addresses emissions from underground storage tanks, vapor displacement during vehicle refueling, customer spillage, and hose permeation. The

updated methodology uses emission factors developed by ARB staff that reflect more current in-use test data and also accounts for the emission reduction benefits of onboard refueling vapor recovery (ORVR) systems. The emission estimates are based the 2012 statewide gasoline sales data from the California Board of Equalization that were apportioned to the county level using fuel consumption estimates from ARB's on-road mobile sources model (EMFAC). Additional information on this category is available at:

<http://www.arb.ca.gov/ei/areasrc/arbpetprodmarkpm.htm>

Areawide Sources

Areawide sources are categories such as consumer products, fireplaces, and prescribed burning (see Table B-8) for which emissions occur over a wide geographic area. Emissions for these categories are estimated by both ARB and the local air districts using various models and methodologies.

Table B-8 Areawide Sources

Source Category	Subcategory
Solvent Evaporation	Consumer Products
	Architectural Coatings and Related Solvents
	Pesticides/Fertilizers
	Asphalt Paving and Roofing
Miscellaneous Processes	Residential Fuel Combustion
	Farming Operations
	Construction and Demolition
	Paved Road Dust
	Unpaved Road Dust
	Fugitive Windblown Dust
	Fires
	Managed Burning and Disposal
Cooking	

A summary of the areawide methodologies is presented below:

Consumer Products

The consumer products category reflects the three most recent surveys conducted by ARB staff for the years 2003, 2006, and 2008. Together these surveys collected updated product information and ingredient information for approximately 350 product categories. Based on the survey data, ARB staff determined the total product sales and total VOC emissions for the various product categories. The growth trend for most consumer product subcategories is based on the latest DOF human population growth

projections, except for aerosol coatings. Staff determined that a no-growth profile would be more appropriate for aerosol coatings based on survey data that show relatively flat sales of these products over the last decade. Additional information on ARB's consumer products surveys is available at:

<http://www.arb.ca.gov/consprod/survey/survey.htm>.

Architectural Coatings

The architectural coatings category reflects emission estimates based on the comprehensive survey for the 2004 calendar year. The emission estimates include benefits of the 2003 and 2007 ARB Suggested Control Measures. These emissions are grown based on the growth in housing units. Additional information about ARB's architectural coatings program is available at:

<http://www.arb.ca.gov/coatings/arch/arch.htm>

Pesticides

The Department of Pesticide Regulation (DPR) develops month-specific emission estimates for agricultural and structural pesticides. Each calendar year, DPR updates the inventory based on the Pesticides Use Report, which provides updated information from 1990 to the most current data year available. The inventory includes estimates through the 2012 calendar year. Emission forecasts for years 2013 and beyond are based on the average of the most recent five years.

Asphalt Paving/Roofing

Asphalt paving and asphalt roofing emissions were estimated using methodologies developed by the District. VOC emissions are estimated based on tons of paving applied in 2008 or the amount of asphalt used for roofing in 2007, and a default emission factor for each type of asphalt operation. The growth profile for asphalt paving is based on construction employment from the REMI forecasting model. No growth is assumed for asphalt roofing, as the industry has been moving toward the use of more advanced alternative materials. The inventory reflects the emission reductions from District Rule 4641. The District methodologies are available at:

http://www.valleyair.org/Air_Quality_Plans/EmissionsMethods/MethodForms/Current/AsphaltPaving2008.pdf,

and

http://www.valleyair.org/Air_Quality_Plans/EmissionsMethods/MethodForms/Current/AsphaltRoofing2007.pdf

Residential Wood Combustion

The residential wood combustion methodology uses fuel consumption data from various surveys, including newer sales data for manufactured logs, and emission factors from U.S. EPA's National Emission Inventory. The fireplace wood consumption rate for 2008 and previous years is based on a 1997 firewood usage survey sponsored by the District. To reflect the episodic wood burning curtailment requirements in District Rule 4901 that became fully effective in 2009, the fireplace wood consumption rate for 2009 and subsequent years is based on the values suggested in a report by U.S. EPA staff and others entitled "A Recommended Procedure for Compiling Emission Inventory

National, Regional and County Level Activity Data for the Residential Wood Combustion Source Category.” Staff assumed no growth for this category because of limits in new construction and the stringency of the District’s rule. Additional information on this methodology is available at:

<http://www.arb.ca.gov/ei/areasrc/arbmiscprocrfuelcom.htm>

Residential Natural Gas Combustion

The inventory for residential natural gas combustion emissions is based on 2006 data provided by the District. Emissions are estimated based on the percentages of total natural gas consumed by various residential uses (space heating, water heating, cooking, other) obtained from the California Energy Commission (CEC), and U.S. EPA AP-42 emission factors. Emissions were grown from 2006 using CEC projections of natural gas consumption. The water heating inventory reflects the emission reductions from District Rule 4902. The District’s methodology is available at:

http://www.valleyair.org/Air_Quality_Plans/EmissionsMethods/MethodForms/Current/ResidentialNG2006.pdf

Farming Operations – Land Preparation and Harvesting

Emissions for land preparation and harvesting operations were estimated using ARB methodologies that reflect the 2012 harvested acreage and crop mix from the National Agricultural Statistics Service (NASS). NASS data are based on reports compiled by the Agricultural Commissioner for each county. The growth profile for these categories is based on a linear regression analysis of the 2000-2009 farm acreage estimates from the California Department of Conservation Farmland Mapping and Monitoring Program (FMMP), which results in a slight decline of about 0.3 percent per year. The inventory also reflects the emission reductions from District Rule 4550. Additional information on ARB’s methodologies is available at:

<http://www.arb.ca.gov/ei/areasrc/arbmiscprocfarmops.htm>

Farming Operations – Livestock Husbandry

Emission estimates for dairy, feedlot, and range cattle reflect livestock population data from the U.S. Department of Agriculture’s (USDA) 2012 Census of Agriculture, and emission factors for dairy support cattle provided by District staff. The emission estimates for other livestock categories are based on the USDA 2007 Census of Agriculture. Dairy emissions growth assumptions were set to no-growth based on an analysis of the SJV historical dairy cow population, which shows a relatively flat profile since 2007. Other livestock categories reflect a no-growth assumption based on an earlier analysis that found no significant growth. The emissions reflect updated District control profiles to account for control requirements, including VOC controls from District Rule 4570. Additional information on this methodology is available at:

<http://www.arb.ca.gov/ei/areasrc/arbmiscproclivestock.htm>

Construction and Demolition

Dust emissions from building and road construction operations are based on methodologies developed by ARB. Both methodologies employ disturbed acreage as the activity data and apply emission factors developed by Midwest Research Institute.

The emission estimates were grown to 2012 based on REMI forecasting models for construction activity and employment. Road construction growth also includes estimates of annual road lane-miles constructed, based on forecasts by local transportation planning agencies. The inventory reflects the emission reductions from District Regulation VIII. The methodologies are available at: <http://www.arb.ca.gov/ei/areasrc/arbmiscproconstdem.htm>

Paved Road Dust

Paved road dust emissions were estimated using an ARB methodology consistent with the current U.S. EPA method (AP-42). The 2012 emission estimates are based on vehicle miles traveled (VMT) data from the local MPOs, California-specific silt loading values, updated VMT distribution (travel fractions) for various paved road categories, and a county specific rain adjustment. Emissions were grown using VMT projections from EMFAC2014. The inventory also reflects the emission reductions from District Rules 803 and 805. Additional information is available at: <http://www.arb.ca.gov/ei/areasrc/arbmiscprocpaverddst.htm>

Unpaved Road Dust – Farm Roads

The unpaved farm road dust estimates are based on the 2012 harvested acreage data from NASS, crop specific VMT factors, and an emission factor of 2.00 lbs PM10/VMT based on California test data. Growth for this category is based on linear regression analyses of the 2000-2009 farmland acreage. In addition, the inventory reflects the emission reductions from District Rule 806. Additional information on this methodology is available at: <http://www.arb.ca.gov/ei/areasrc/arbmiscprocunpaverddst.htm>

Unpaved Road Dust – Nonfarm Roads

Emissions from unpaved nonfarm roads were estimated from 2008 unpaved road data collected from the California Statewide Local Streets and Roads Needs Assessment, the California Department of Transportation, and local agencies. Dust emissions were calculated using an emission factor derived from tests conducted by the University of California, Davis, and the Desert Research Institute. Staff assumed no growth for this category based on the assumption that existing unpaved roads tend to get paved as vehicle traffic on them increases, which counteracts any additional emissions from new unpaved roads. Additional information on this methodology is available at: <http://www.arb.ca.gov/ei/areasrc/arbmiscprocunpaverddst.htm>

Windblown Dust

Emissions for this source category were estimated based on ARB's 1997 methodology. The methodology uses 1993 agricultural land acreage and unpaved road mileage along with a California-specific wind erosion equation that incorporates local attributes such as climate, soil, and vegetative cover. Agricultural land windblown dust emissions were grown based on a linear regression analysis of the 2000-2009 FMMP data. Windblown dust emissions from unpaved roads reflect a no-growth assumption. Additional information on this methodology is available at: <http://www.arb.ca.gov/ei/areasrc/arbmiscprocufugwbdst.htm>

Fires

Emissions from structural and automobile fires were estimated using ARB's March 1999 methodology. Structural fire emissions estimates are based on rates of structural and content material loss per fire, average combustible content, and an emission factor per ton of material burned. Automobile fire emissions are based the number of vehicle fires per year and a composite emission factor from US EPA's AP-42 (April 1973). Structural fire emissions were grown based on the growth in occupied households, and automobile fire emissions were grown based on population projections from the California Department of Finance. ARB's methodology is available at: <http://www.arb.ca.gov/ei/areasrc/arbmiscprocfires.htm>

Managed Burning & Disposal

The managed burning and disposal category is based on emissions data reported by District staff for 2012. Emissions are calculated using crop specific emission factors and fuel loadings. The agricultural burning emissions were grown based on linear regression analyses of the 2000-2009 farmland acreage. Staff used a no-growth assumption for forest management emissions based on analyses of District reported data that don't show a discernible trend. No-growth was also used for weed abatement, as the emission levels for this category have been fairly stable since 2005. ARB's methodology for managed burning is available at: <http://www.arb.ca.gov/ei/see/see.htm>

Commercial Cooking

The commercial cooking inventory is based on emissions data reported by the District for 2008. The emissions estimates were developed from the number of restaurants, the number and types of cooking equipment, the food type, and emission factors from U.S. EPA's 2002 National Emissions Inventory. The growth profile reflects the latest population projections provided by the California Department of Finance (DOF). The inventory also reflects the emission reductions from District Rule 4692. Additional information on the District's methodology is available at: <http://www.arb.ca.gov/ei/areasrc/districtmeth/sjvalley/CommercialCooking2006.pdf>

Ammonia Emissions

Ammonia emissions from miscellaneous domestic processes (human respiration and perspiration, smoking, pets, untreated human waste, etc.) were grown from a 2005 ARB estimate using DOF population projections. Ammonia emissions for other categories such as residential wood combustion, livestock husbandry, managed burning, on-road motor vehicles, were estimated as part of the methodologies for those specific area source categories.

Point and Areawide Source Emissions Forecasting

Emission forecasts (2013 and subsequent years) are based on growth profiles that in many cases incorporate historical trends up to the base year or beyond. The growth surrogates used to forecast the emissions from these categories are presented in Table B-9 below.

Table B-9 Growth Surrogates for Point and Areawide Sources

Source Category	Subcategory	Growth Surrogate
Electric Utilities	Natural Gas	CEC Integrated Energy Policy Report (IEPR 2013)
	Other Fuels	Annual Energy Outlook 2011(AEO 2011): Energy consumption forecasts
Cogeneration	Natural Gas	IEPR 2013
	Other Fuels	AEO 2011
Oil and Gas Production (Combustion)	All	DOGGR statewide total oil production (2.2% annual decline)
Petroleum Refining	All	No growth – facilities operating at capacity
Manufacturing & Industrial	Natural Gas	IEPR 2013
	Other Fuels	AEO 2011
Food & Agricultural Processing	Ag Irrigation Pumps	Farmland acreage
	Other	IEPR 2013 & AEO 2011
Service & Commercial	Natural Gas	IEPR 2013
	Other Fuels	AEO 2011
Other (Fuel Combustion)	I.C. Reciprocating Engines	Cal. Department of Finance (DOF) population projections
	Other	AEO 2011
Sewage Treatment	All	Regional Economic Models, Inc. (REMI) industry-specific outputs
Landfills	Stationary Aggregated (SA) Sources	DOF population projections
	Point Sources	REMI industry-specific outputs
Incinerators	All	REMI industry-specific outputs
Soil Remediation	All	REMI industry-specific outputs
Other (Waste Disposal)	SA Sources	DOF Population projections
Other (Waste Disposal)	Point Sources	REMI industry-specific outputs
Laundering	SA Sources	DOF Population projections
	Point Sources	REMI industry-specific outputs
Degreasing	All	REMI industry-specific outputs

Source Category	Subcategory	Growth Surrogate
Coatings & Related Process Solvents	All	REMI industry-specific outputs
Printing	All	REMI industry-specific outputs
Adhesives & Sealants	All	REMI industry-specific outputs
Other (Cleaning & Surface Coatings)	All	REMI industry-specific outputs
Oil & Gas Production	All	DOGGR statewide total oil production (2.2% annual decline)
Petroleum Marketing	Gasoline Dispensing Facilities	Gasoline consumption projections (EMFAC2014)
	Natural Gas Transmission Losses	DOGGR and CEC natural gas consumption
	Point Sources	REMI industry-specific outputs
Other (Petroleum Production & Marketing)	All	REMI industry-specific outputs
Chemical	All	REMI chemical manufacturing output
Food & Agriculture	All	REMI food manufacturing output
Mineral Processes	Cement Concrete Manufacturing & Fabrication	REMI cement and concrete products manufacturing output
	Cement (Portland & Others) Manufacturing	AEO 2011
	Other	REMI non-metallic mineral product manufacturing output
Metal Processes	All	REMI industry-specific outputs
Wood & Paper	All	REMI wood product and paper manufacturing output
Glass & Related Products	Flat Glass	Construction equipment curve, capped at pre-recession levels
	Container Glass	No growth
Other (Industrial Processes)	All	REMI manufacturing Output
Consumer Products	Consumer Products	Population projections
	Aerosol Coatings	No growth
Architectural Coatings & Thinners	All	Household projections
Pesticides & Fertilizers	Agricultural Pesticides	Farmland acreage
	Structural Pesticides	Housing expenditures
Asphalt Paving	Asphalt Paving	Construction employment
Asphalt Roofing	Asphalt Roofing	No growth
Residential Fuel Combustion	Wood Stoves and Fireplaces	No growth
	Others	Natural gas consumption

Source Category	Subcategory	Growth Surrogate
Farming Operations	Land Preparation and Harvest	Farmland acreage
Farming Operations	Livestock	No growth
Construction and Demolition	Building Construction Dust	Construction employment
	Road Construction Dust	MPO road construction data
Paved Road Dust	All	Vehicle miles traveled (VMT)
Unpaved Road Dust	U.S. Forest & Park Service Roads	No growth
	Farm Roads	Farmland acreage
	City & County Roads	No growth
Fugitive Windblown Dust	Dust from Agricultural or Pasture Lands	Farmland acreage
	Dust from Unpaved Roads	No growth
Fires	Structural Fires	Household projections
	Automobile Fires	Population projections
Managed Burning & Disposal	Ag Burning - Prunings or Field Crops	Farmland acreage
	Forest Management	No Growth
	Weed Abatement	No Growth
Cooking	All	Population projections

Control Profiles

The emissions inventory reflects emission reductions from point and areawide sources subject to District rules. The local rules reflected in the inventory are listed in Table B-10 below.

Table B-10 District Rules Included in the SIP Inventory

Rule No.	Rule Title	Source Categories Impacted
4103	Open Burning	Agricultural burning
4204	Cotton Gins	Agricultural crop processing losses - Cotton ginning facilities
4305	Boilers, Process Heaters, and Steam Generators	Fuel combustion - Boilers, Process Heaters, and Steam Generators
4306	Boilers, Process Heaters, and Steam Generators	Fuel combustion - Boilers, Process Heaters, and Steam Generators

Rule No.	Rule Title	Source Categories Impacted
4307	Boilers, Process Heaters, and Steam Generators	Fuel combustion - Boilers, Process Heaters, and Steam Generators
4308	Boilers, Process Heaters, and Steam Generators	Fuel combustion - Boilers, Process Heaters, and Steam Generators
4309	Dryers, Dehydrators, and Ovens	Laundrying; manufacturing & industrial; service & commercial
4320	Boilers, Process Heaters, and Steam Generators - Advanced Options for Emission Reduction	Fuel combustion - Boilers, Process Heaters, and Steam Generators
4352	Solid Fuel Fired Boilers, Steam Generators and Process Heaters	Fuel combustion - Boilers, Process Heaters, and Steam Generators
4354	Glass Melting Furnaces	Glass and related processes
4401	Steam-Enhanced Crude Oil Production Well Vents	Oil and gas production
4402	Crude Oil Production Sumps	Oil and gas production
4404	Heavy Oil Test Station - Kern County	Oil and gas production
4408	Glycol Dehydration Systems	Oil and gas production
4409	Components at Gas/Oil Production Facilities	Oil and gas production
4453	Refinery Vacuum Producing Devices or Systems	Petroleum refining
4455	Components at Refineries & Chemical Plants	Petroleum refining
4550	Conservation Management Practices	Agricultural operations, dust, and managed burning
4565	Biosolids, Animal Manure, and Poultry Litter Operations	Composting operations
4566	Organic Material Composting Operations	Composting operations
4570	Confined Animal Facilities	Livestock operations
4601	Architectural Coatings	Architectural coatings
4602	Motor Vehicle and Mobile Equipment Coating Operations	Coating and related processes
4603	Surface Coating of Metal Parts and Products	Coating and related processes
4604	Can and Coil Coating Operations	Coating and related processes
4605	Aerospace Assembly and Component Coating Operations	Coating and related processes
4606	Wood Coating Operations	Coating and related processes
4607	Graphic Arts	Coating and related processes; printing
4610	Glass Coating Operations	Coating and related processes
4612	Automotive Coatings	Coating and related processes

Rule No.	Rule Title	Source Categories Impacted
4621	Gasoline Transfer into Stationary Storage Containers, Delivery Vessels, and Bulk Plants	Petroleum marketing
4622	Gas Transfer into Vehicle Storage Tanks	Petroleum marketing
4623	Storage of Organic Liquids	Oil and gas production; petroleum refining; petroleum marketing
4624	Organic Liquid Loading	Petroleum marketing
4625	Wastewater Separators	Petroleum refining - Wastewater treatment
4641	Cutback, Slow Cure, and Emulsified Asphalt Paving and Maintenance Operations	Asphalt paving & roofing
4642	Solid Waste Disposal Sites	Landfills; waste disposal
4651	Volatile Organic Compound Emissions from Decontaminated Soil	Waste disposal - Soil remediation
4653	Adhesives and Sealants	Adhesives & sealants
4661	Organic Solvents	Coatings and related process solvents; cleaning and surface coatings
4662	Organic Solvent Degreasing Operations	Degreasing; thinning and cleanup solvent uses
4663	Organic Solvent Cleaning, Storage and Disposal	Degreasing; thinning and cleanup solvent uses; cleaning & surface coating
4672	Petroleum Solvent Dry Cleaners	Laundering
4681	Rubber Tire Manufacturing	Chemical - Rubber and rubber products manufacturing
4682	Polystyrene	Chemical - Plastic and plastic products manufacturing
4684	Polyester Resin Operations	Chemical - Plastic and plastic products manufacturing
4691	Vegetable Oil Processing Operations	Food and agriculture
4692	Commercial Charbroiling	Cooking
4693	Bakery Ovens	Food and agriculture
4701	Internal Combustion Engines (Phase 1)	Fuel combustion
4702	Internal Combustion Engines (Phase 2)	Fuel combustion
4703	Stationary Gas Turbines	Fuel combustion
4901	Wood Burning Fireplaces and Wood Burning Heaters	Residential wood combustion
4902	Residual Water Heaters	Residential fuel combustion - Water heating

Rule No.	Rule Title	Source Categories Impacted
REG VIII	Regulation VIII -- PM Control for Fugitive Dust	Construction and demolition; paved and unpaved road dust; fugitive windblown dust; mineral processes

On-Road Mobile Sources

Emissions from on-road mobile sources, which include passenger vehicles, buses, and trucks, were estimated using ARB's EMFAC2014 model. The on-road emissions were calculated by applying EMFAC2014 emission factors to the transportation activity data provided by the local MPOs from their 2014 adopted Regional Transportation Plan.

EMFAC2014 includes data on California's car and truck fleets and travel activity. Light-duty motor vehicle fleet age, vehicle type, and vehicle population were updated based on 2012 California Department of Motor Vehicles data. The model also reflects the emissions benefits of ARB's recent rulemakings such as the Pavley Standards and Advanced Clean Cars Program, and includes the emissions benefits of ARB's Truck and Bus Rule and previously adopted rules for other on-road diesel fleets.

EMFAC2014 utilizes a socio-econometric regression modeling approach to forecast new vehicle sales and to estimate future fleet mix. Light-duty passenger vehicle population includes 2012 Department of Motor Vehicles (DMV) registration data along with updates to mileage accrual using Smog Check data. Updates to heavy-duty trucks include model year specific emission factors based on new test data, and population estimates using DMV data for in-state trucks and International Registration Plan (IRP) data for out-of-state trucks.

Additional information and documentation on the EMFAC2014 model is available at: <http://www.arb.ca.gov/msei/categories.htm#emfac2014>

Off-Road Mobile Sources

Emissions from off-road sources were estimated using a suite of category-specific models or, where a new model was not available, the OFFROAD2007 model. Many of the newer models were developed to support recent regulations, including in-use off-road equipment, ocean-going vessels and others. The sections below summarize the updates made to specific off-road categories.

Oil and Gas Wells: Workover Rigs, Drill Rigs and Support Equipment Allocation

The allocation of drill and work-over rigs and support equipment (such as pumps) for oil and gas wells was updated within the SJV Air Basin to reflect the physical location of wells instead of the registration location. This allocation was done at the county level, where the number of wells within a county in the SJV Air Basin was used to determine that county's share of emissions from specified equipment. The physical location and

count of wells was updated using Division of Oil, Gas and Geothermal Resources (DOGGR) Well Finder data, from September, 2013, supplied to ARB by the District. (DOGGR data are available at:

<http://www.conservation.ca.gov/dog/Pages/Wellfinder.aspx>)

Ocean-Going Vessels (OGV)

Staff updated the OGV activity growth rates and NO_x emission calculations in September 2013. These updates reflect more recently available long-term economic forecasts and historical data from 2006 to 2012. ARB staff updated the long-term growth factors for container ships, auto ships, tankers, and cruise ships. Additional information is available at:

http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles

Cargo Handling Equipment

The emissions inventory for the Cargo Handling Equipment category has been updated to reflect new information on equipment population, activity, recessionary impacts on growth, and engine load. The new information includes regulatory reporting data which provide an accounting of all the cargo handling equipment in the State including their model year, horsepower and activity. Additional information is available at:

http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles

Pleasure Craft and Recreational Vehicles

A new model was developed in 2011 to estimate emissions from pleasure craft and recreational vehicles. In both cases, population, activity, and emission factors were re-assessed using new surveys, registration information, and emissions testing. Additional information is available at:

http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles

In-Use Off-Road Equipment

ARB developed this model in 2010 to support the analysis for amendments to the In-Use Off-Road Diesel Fueled Fleets Regulation. Staff updated the underlying activity forecast to reflect more recent economic forecast data, which suggests a slower rate of recovery through 2024 than previously anticipated. Additional information is available at: http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles

Locomotives

In 2014, ARB developed a revised inventory for line-haul locomotive activity in California. The new model is based primarily on activity data reported to ARB by the major rail lines for calendar year 2011. To estimate emissions, ARB used duty cycle, fuel consumption and activity data reported by the rail lines. Activity is forecasted for individual train types and is consistent with ARB's ocean-going vessel and truck growth rates. Fuel efficiency improvements are projected to follow Federal Railroad Association projections and turnover assumptions are consistent with U.S. EPA projections. Additional information is available at:

http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles

Transport Refrigeration Units (TRU)

This model reflects updates to activity, population, growth and turn-over data, and emission factors developed to support the 2011 amendments to the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units. Additional information is available at:

http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles

Fuel Storage and Handling

Emissions for fuel storage and handling were estimated using the OFFROAD2007 model. Additional information is available at:

http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles

Diesel Agricultural Equipment

The inventory for agricultural diesel equipment (such as tractors, harvesters, combines, sprayers and others) was revised based on a 2008 survey of thousands of farmers, custom operators, and first processors. The survey data, along with information from the 2007 USDA Farm Census, was used to revise almost every aspect of the agricultural inventory, including population, activity, age distribution, fuel use, and allocation. This updated inventory replaces general information on farm equipment in the United States with one specific to California farms and practices. The updated inventory was compared against other available data sources such as Board of Equalization fuel reports, USDA tractor populations and age, and Eastern Research Group tractor ages and activity, to ensure the results were reasonable and compared well against outside data sources. Agricultural growth rates through 2050 were developed through a contract with URS Corp and UC Davis, in cooperation with the SJV agricultural community. Additional information is available at:

http://www.arb.ca.gov/msei/categories.htm#offroad_motor_vehicles

Mobile Source Forecasting

The table below summarizes the data and methods used to forecast future-year mobile source emissions by broad source category groupings.

Table B-11 Growth Surrogates for Mobile Sources

Category	Growth Methodology
On-Road Sources	
All	Match total VMT projections provided by Municipal Planning Organizations
Off-Road Gasoline Fueled Equipment	
Lawn & Garden	Household growth projection

Category	Growth Methodology
Off-Road Equipment	Employment growth projection
Recreational Boats	Housing starts (short-term) and human population growth (long-term)
Recreational Vehicles	Housing starts (short-term) and human population growth (long-term)
Off-Road Diesel-Fueled Equipment	
Commercial Harbor Craft	Growth rates provided by District, except for tugs and fishing vessels. Fishing fleet growth rates were adjusted to reflect a decline in fish landings. Assumed no growth for tugboats.
Construction and Mining	California construction employment data from U.S. Bureau of Labor Statistics
Farm Equipment	2011 study of forecasted growth by URS Corp, with SJV Advisory Committee funding.
Industrial Equipment	California construction employment data from Bureau of Labor Statistics
Oil Drilling	California oil and gas extraction gross domestic product from the U.S. Bureau of Economic analysis, oil company diesel fuel use published by the U.S. Energy Information Administration, California rotary rig counts from Baker Hughes, and California oil and gas extraction employment from the U.S. Bureau of Labor Statistics
Ocean-Going Vessels	Projected commodity tonnage in the Freight Analysis Framework (FAF) Model developed by the Federal Highway Administration
Trains (line haul)	International/premium train growth tied to OGV forecast; Domestic train growth tied truck growth
Transport Refrigeration Units	Projection of historical Truck/Trailer TRU sales from ACT Research, adjusted for recession.