

APPENDIX C

Source Apportionment and Community Inventories

Shafter CERP

San Joaquin Valley Air Pollution Control District
September 19, 2019

APPENDIX C

SHAFTER SOURCE ATTRIBUTION

STATIONARY SOURCE EMISSIONS INVENTORY

A community emissions inventory is the compilation of criteria pollutant and air toxics emissions data from air pollution sources that are within the community. The stationary source community emissions inventory includes emissions of volatile organic compounds / reactive organic gases (VOC/ROG), oxides of nitrogen (NO_x), particulate matter of 2.5 microns (PM_{2.5}), and toxic air contaminants (e.g. diesel PM).

The District has longstanding experience working with regulated facilities and collecting emissions inventory data on an annual basis from these facilities. The District's current criteria emissions inventory reporting processes results an annual assessment of emissions from permitted facilities in the Valley. The inventory collection process begins early in the calendar year by requesting emissions-related information from stationary sources of pollution for the prior calendar year, using streamlined processes and forms developed over years of experience working with industry. The District then verifies or calculates emissions based on the inventory data received by the regulated facilities in the Valley.

Methodology

The emissions inventory represents actual emissions from stationary sources. The actual emissions are typically based one of the following general quantification methods:

$$\text{Emissions (ton-pollutant/yr)} = \text{Process Rate (ton-throughput/yr)} \\ \times \text{Emission Factor (ton-pollutant/ton-throughput)}$$

$$\text{Emissions (ton-pollutant/yr)} = \text{Fuel Use (gal combusted/yr)} \\ \times \text{Emission Factor (ton-pollutant/gal combusted)}$$

$$\text{Emissions (ton-pollutant/yr)} = \text{Fuel Use (SCF combusted/yr)} \\ \times \text{Emission Factor (SCF combusted)}$$

The District relies on the regulated facility owners and operators to submit accurate process rate and/or fuel use data, and identify the approved emission factors as well identify necessary updates to those emission factors. Emission factors are established based on the best available information, and according to the following overarching data quality hierarchy:

1. Continuous Emissions Monitoring (CEM) on the equipment
2. Periodic source test on the equipment
3. Manufacturer's guarantee on the equipment
4. Continuous measurement for similarly configured emission sources
5. Source testing data for similar emission sources
6. AP-42 or other state-approved industry derived emission factors.

7. Permitted emission limits and emission factors established during permitting actions and listed on the permit.

Stationary Source Facility-Level Emissions Inventories

Based on the emissions inventory gathering process described above, the table below summarizes the emissions inventory for each District permitted facility in the South Central Community for year 2017.

Table Notes:

- The facilities listed below are identified in alphabetical order.
- Not all facilities emit all pollutants
- Facilities first operating in 2017 have no reported inventory for 2017
- Values have been rounded to two decimal places

Table 1: Year 2017 Emissions Inventory for District Permitted Facilities

Region	ID	Facility Name	NOX (tpy)	VOC (tpy)	PM2.5 (tpy)
S	2183	AHDI ENTERPRISES CORP DBA SHAFER SHELL	0.00	0.22	0.00
S	9156	ALLIANCE READY MIX, INC.			
S	4152	APSG WHOLESALE	0.00	0.27	0.64
S	7573	ARGO CHEMICAL INC	0.00	0.00	0.00
S	3161	AT&T MOBILITY	0.00	0.00	0.00
S	6698	AT&T MOBILITY	0.01	0.01	0.00
S	5211	AUKEMAN DAIRY			
S	7351	B&L CASING SERVICE LLC	0.00	0.00	0.00
S	8022	BAKER HUGHES OILFIELD OPERATIONS LLC	0.00	0.01	5.06
S	704	BASF AGRICULTURAL SOLUTIONS SEED US LLC	0.00	0.00	0.00
S	1392	BASF AGRICULTURAL SOLUTIONS SEED US LLC	0.02	0.00	0.08
S	2501	BIDART COLD STORAGE INC	0.00	0.00	0.00
S	1872	BKSFD QUALITY DISTRIBUTION CENTER INC	0.00	0.00	0.46
S	8291	BROWN & BRYANT	0.00	0.02	0.00
S	3461	BUILDING MATERIALS MFG CORP (DBA GAF)	0.00	0.00	0.00
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - JACK AVE)			
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - MANNEL AVE)			
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - MERCED AVE)	2.10	2.71	0.62

Region	ID	Facility Name	NOX (tpy)	VOC (tpy)	PM2.5 (tpy)
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - OAK CT)			
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - SHAFTER AVE)			
S	7895	CAL COAST ACIDIZING SERVICE			
S	7122	CALIFORNIA PAPER PRODUCTS LLC	0.32	0.35	0.49
S	3362	CITY OF SHAFTER	0.03	0.00	0.00
S	3364	CITY OF SHAFTER	0.03	0.00	0.00
S	3365	CITY OF SHAFTER	0.02	0.00	0.00
S	3701	CITY OF SHAFTER	0.01	0.00	0.00
S	3745	CITY OF SHAFTER	0.01	0.00	0.00
S	3915	CITY OF SHAFTER	0.06	0.00	0.00
S	6910	CITY OF SHAFTER	0.04	0.00	0.00
S	8394	CITY OF SHAFTER	0.01	0.00	0.00
S	6849	CLEAN ENERGY SYSTEMS INC	0.00	0.00	0.00
S	9051	CLEAN ENERGY SYSTEMS KIMBERLINA, INC.			
S	2599	CODE PRECAST PRODUCTS INC	0.00	0.00	0.02
S	7322	CON-FAB CALIFORNIA LLC	0.03	0.00	0.30
S	6935	DENBESTE MANUFACTURING INC	0.00	1.47	0.27
S	2813	DJ'S FOOD MART	0.00	0.12	0.00
S	2033	ELK CORP OF TEXAS	0.41	15.71	1.03
S	4291	EXPRESS COLLISION CENTER	0.00	0.03	0.00
S	6639	FAIAL FARMS 2			
S	8952	FOREVERBOARD CALIFORNIA INC			
S	2139	FOX PETROLEUM INC	0.00	1.72	0.00
S	3860	GMC ROOFING & PAPER PRODUCTS	0.00	2.99	2.17
S	1183	GOLDEN EMPIRE CONCRETE CO	0.00	0.00	0.08
S	8071	GOLDEN LIVING CENTER - SHAFTER	0.00	0.00	0.00
S	8067	GREG'S PETROLEUM	0.00	0.61	0.00
S	3474	HELENA AGRI-ENTERPRISES, LLC	0.00	0.11	0.00
S	5281	HYPONEX CORP	0.00	0.00	3.37
S	4283	INDUSTRIAL DESIGN & CONSTRUCTION INC	0.00	0.36	0.51
S	1736	INLAND CROP DUSTER INC	0.00	0.14	0.00
S	2865	J P OIL CO INC	0.45	1.76	2.33
S	8561	J P OIL CO INC			
S	2360	JACO HILL	0.00	0.64	0.00
S	2369	JACO HILL	0.00	1.31	0.00
S	2417	JEFFRIES BROTHERS INC	0.00	0.16	0.00
S	8716	JEFFRIES BROTHERS INC	0.00	0.00	0.00
S	239	JEFFY'S STORE	0.00	0.15	0.00

Region	ID	Facility Name	NOX (tpy)	VOC (tpy)	PM2.5 (tpy)
S	3881	JOSE LUIS ALBERTO	0.00	0.00	0.00
S	3778	JR SIMPLOT CO/SIMPLOT GROWER SOLUTIONS	0.00	0.00	0.36
S	2443	KERN COUNTY FIRE STATION #32	0.00	0.00	0.00
S	7433	KERN SCHOOLS FEDERAL CREDIT UNION	0.01	0.00	0.00
S	7516	LARRY BASHOR SANDBLASTING	0.00	0.07	0.71
S	3562	LERDO CHEVRON	0.00	0.25	0.00
S	9202	LKMP PROPERTIES			
S	7748	LUFKIN INDUSTRIES INC	0.00	0.00	0.00
S	4803	MARTIN HEIN RANCH CO - PA2			
S	105	MEYER'S BIG STOP	0.00	0.19	0.00
S	7995	M-I SWACO	0.00	0.02	0.08
S	8	NIKKEL IRON WORKS INC	0.00	0.55	0.01
S	7876	NORRIS PRODUCTION SOLUTIONS	0.00	0.00	0.00
S	1316	NORTH OF RIVER SANITARY DIST	0.67	0.71	0.11
S	5141	OASIS HOLSTEIN DAIRY			
S	6058	OHANNESON ENTERPRISES			
S	7801	OMNI FAMILY HEALTH	0.00	0.00	0.00
S	1167	PACIFIC BELL TELEPHONE CO (DBA AT&T CA)	0.01	0.00	0.00
S	4170	PAGE INDUSTRIAL SERVICES INC	0.49	1.14	0.61
S	6646	PERFORMANCE FOOD GROUP	0.37	0.02	0.01
S	5257	PHOENIX CEMENT CO	0.00	0.00	0.11
S	2012	PILOT TRAVEL CENTERS LLC	0.00	1.52	0.00
S	71	PLAINS LPG SERVICES LP	11.53	11.53	5.09
S	3919	PW GILLIBRAND TRANSLOADING SERVICES INC	0.00	0.00	0.00
S	7886	RESA POWER SOLUTIONS	0.00	0.07	0.02
S	8480	ROLL REAL ESTATE DEVELOPMENT LLC			
S	8529	ROSS STORES INC	0.12	0.00	0.00
S	1732	S & A MARKET	0.00	0.07	0.00
S	1288	S & J QUICK STOP	0.00	0.26	0.00
S	7834	SHAFTER COLLISION	0.00	0.01	0.00
S	539	SHAFTER-WASCO GINNING CO	0.00	0.00	0.51
S	7041	SHAR CRAFT INC	0.00	0.71	1.17
S	82	SHELL PIPELINE CO LP	0.05	0.05	0.02
S	876	SJV QUALITY COTTON	0.00	0.00	0.00
S	6706	SKYVIEW DAIRY			
S	3152	SOUTH VALLEY ALMOND CO LLC	0.00	0.02	1.14

Region	ID	Facility Name	NOX (tpy)	VOC (tpy)	PM2.5 (tpy)
S	4755	STARRH & STARRH COTTON GROWERS			
S	4297	SUN WORLD INTERNATIONAL	0.00	0.00	0.00
S	872	SUPERIOR SOIL SUPPLEMENTS, LLC	0.00	0.00	0.00
S	3934	TARGET DISTRIBUTION CENTER	0.23	0.02	0.01
S	5060	TJAARDA DAIRY			
S	7674	VERIZON WIRELESS "NORTH SHAFTER"	0.00	0.00	0.00
S	3395	VERIZON WIRELESS- SHAFTER	0.00	0.00	0.00
S	8231	WEATHERFORD ARTIFICIAL LIFT SYSTEMS LLC	0.00	0.07	0.02
S	2935	WEST COAST PIPE INSPECTION	0.00	0.00	0.00
S	1301	WILBUR-ELLIS CO	0.00	0.02	0.00
S	8367	WONDERFUL ORCHARDS LLC	0.00	0.11	0.00
S	9080	WONDERFUL REAL ESTATE			
S	9081	WONDERFUL REAL ESTATE			

Forecasting Emissions - Stationary Sources:

For assessing future growth for the years 2024 and 2029, the District used Growth and control factors (Fresno/Kern County table) supplied by the Air Resources Board (ARB). The District assigned growth and control factors to each permitted process type in the community using the most appropriate Emissions inventory Code (EIC). The EIC is determined using the following method:

- For each facility located in South Central Fresno and corresponding process, compare the County EIC, Source Classification Code (SCC) and Standard industrial Classification (SIC) from ARB's table (Growth and control factors table) with the EIC, SCC, and SIC from the District database information related to facilities within the selected community.
- If the facility and process EIC, SCC, and SIC from ARB's table and District database all match, then the District uses the applicable growth factor.
- If the facility and process EIC, SCC, and SIC from ARB's table and District database do NOT ALL match, then identify facilities and corresponding process for which EIC, SIC, and area-wide EIC match.
- If the facility and process EIC, SCC, and area-wide EIC from ARB's table and District database match, then the District uses the applicable growth factor.
- If the facility and process EIC, SCC, and area-wide EIC from ARB's table and District database do NOT ALL match, then for each corresponding facility, the District is only using the EIC between ARB's table and the District database.

- f) If the EIC between ARB's table and the District database do not match for specific facilities, then the District assumes no growth or change in emission control for the affected facility.

Projected emissions were calculated using the 2017 emissions inventory as the base year to project emissions for 2024 and 2029. The 2017 emissions inventory values were used to project emissions by multiplying these emissions by the ratio of the growth factors and control factors for each process. The emissions are projected for each permitted unit and then totaled to grow the facility emissions. The following equation represents the formula for forecasting emissions in a future year from a specific emissions unit (i.e. equipment type):

$$2024 \text{ NOx (ton/yr)} = 2017 \text{ NOx emissions} \times [(2024 \text{ NOx GF} \div 2017 \text{ NOx GF}) \times (2024 \text{ NOx CF} \div 2017 \text{ NOx CF})]$$

Where,

GF= Growth factor

CF = Control factor

Forecasted Stationary Source Emissions Inventories

Based on the forecasting process described above, Tables 2 and 3 below summarize the emissions inventory for each District permitted facility in the Shafter Community for years 2024 and 2029.

Table 2: Year 2024 Projected Emissions Inventory for District Permitted Facilities

Region	ID	Facility Name	NOX (tpy)	VOC (tpy)	PM2.5 (tpy)
S	2183	AHDI ENTERPRISES CORP DBA SHAFTER SHELL	0.00	0.15	0.00
S	9156	ALLIANCE READY MIX, INC.			
S	4152	APSG WHOLESALE	0.00	0.32	0.74
S	7573	ARGO CHEMICAL INC	0.00	0.00	0.00
S	3161	AT&T MOBILITY	0.00	0.00	0.00
S	6698	AT&T MOBILITY	0.01	0.01	0.00
S	5211	AUKEMAN DAIRY			
S	7351	B&L CASING SERVICE LLC	0.00	0.00	0.00
S	8022	BAKER HUGHES OILFIELD OPERATIONS LLC	0.00	0.01	4.33
S	704	BASF AGRICULTURAL SOLUTIONS SEED US LLC	0.00	0.00	0.00
S	1392	BASF AGRICULTURAL SOLUTIONS SEED US LLC	0.02	0.00	0.09
S	2501	BIDART COLD STORAGE INC	0.00	0.00	0.00

Region	ID	Facility Name	NOX (tpy)	VOC (tpy)	PM2.5 (tpy)
S	1872	BKSFQ QUALITY DISTRIBUTION CENTER INC	0.00	0.00	0.54
S	8291	BROWN & BRYANT	0.00	0.02	0.00
S	3461	BUILDING MATERIALS MFG CORP (DBA GAF)	0.00	0.00	0.00
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - JACK AVE)			
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - MANNEL AVE)			
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - MERCED AVE)	1.79	2.32	0.53
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - OAK CT)			
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - SHAFTER AVE)			
S	7895	CAL COAST ACIDIZING SERVICE			
S	7122	CALIFORNIA PAPER PRODUCTS LLC	0.29	0.37	0.52
S	3362	CITY OF SHAFTER	0.02	0.00	0.00
S	3364	CITY OF SHAFTER	0.02	0.00	0.00
S	3365	CITY OF SHAFTER	0.02	0.00	0.00
S	3701	CITY OF SHAFTER	0.01	0.00	0.00
S	3745	CITY OF SHAFTER	0.01	0.00	0.00
S	3915	CITY OF SHAFTER	0.04	0.00	0.00
S	6910	CITY OF SHAFTER	0.02	0.00	0.00
S	8394	CITY OF SHAFTER	0.01	0.00	0.00
S	6849	CLEAN ENERGY SYSTEMS INC	0.00	0.00	0.00
S	9051	CLEAN ENERGY SYSTEMS KIMBERLINA, INC.			
S	2599	CODE PRECAST PRODUCTS INC	0.00	0.00	0.02
S	7322	CON-FAB CALIFORNIA LLC	0.03	0.00	0.35
S	6935	DENBESTE MANUFACTURING INC	0.00	1.67	0.27
S	2813	DJ'S FOOD MART	0.00	0.09	0.00
S	2033	ELK CORP OF TEXAS	0.38	20.04	1.23
S	4291	EXPRESS COLLISION CENTER	0.00	0.03	0.00
S	6639	FAIAL FARMS 2			
S	8952	FOREVERBOARD CALIFORNIA INC			
S	2139	FOX PETROLEUM INC	0.00	1.21	0.00
S	3860	GMC ROOFING & PAPER PRODUCTS	0.00	3.43	2.48
S	1183	GOLDEN EMPIRE CONCRETE CO	0.00	0.00	0.10

Region	ID	Facility Name	NOX (tpy)	VOC (tpy)	PM2.5 (tpy)
S	8071	GOLDEN LIVING CENTER - SHAFTER	0.00	0.00	0.00
S	8067	GREG'S PETROLEUM	0.00	0.43	0.00
S	3474	HELENA AGRI-ENTERPRISES, LLC	0.00	0.14	0.00
S	5281	HYPONEX CORP	0.00	0.00	3.90
S	4283	INDUSTRIAL DESIGN & CONSTRUCTION INC	0.00	0.40	0.57
S	1736	INLAND CROP DUSTER INC	0.00	0.07	0.00
S	2865	J P OIL CO INC	0.38	1.51	1.99
S	8561	J P OIL CO INC			
S	2360	JACO HILL	0.00	0.45	0.00
S	2369	JACO HILL	0.00	0.92	0.00
S	2417	JEFFRIES BROTHERS INC	0.00	0.11	0.00
S	8716	JEFFRIES BROTHERS INC	0.00	0.00	0.00
S	239	JIFFY'S STORE	0.00	0.10	0.00
S	3881	JOSE LUIS ALBERTO	0.00	0.01	0.00
S	3778	JR SIMPLOT CO/SIMPLOT GROWER SOLUTIONS	0.00	0.00	0.41
S	2443	KERN COUNTY FIRE STATION #32	0.00	0.00	0.00
S	7433	KERN SCHOOLS FEDERAL CREDIT UNION	0.01	0.00	0.00
S	7516	LARRY BASHOR SANDBLASTING	0.00	0.07	0.81
S	3562	LERDO CHEVRON	0.00	0.17	0.00
S	9202	LKMP PROPERTIES			
S	7748	LUFKIN INDUSTRIES INC	0.00	0.00	0.00
S	4803	MARTIN HEIN RANCH CO - PA2			
S	105	MEYER'S BIG STOP	0.00	0.13	0.00
S	7995	M-I SWACO	0.00	0.01	0.09
S	8	NIKKEL IRON WORKS INC	0.00	0.65	0.01
S	7876	NORRIS PRODUCTION SOLUTIONS	0.00	0.00	0.00
S	1316	NORTH OF RIVER SANITARY DIST	0.62	0.81	0.12
S	5141	OASIS HOLSTEIN DAIRY			
S	6058	OHANNESON ENTERPRISES			
S	7801	OMNI FAMILY HEALTH	0.00	0.00	0.00
S	1167	PACIFIC BELL TELEPHONE CO (DBA AT&T CA)	0.01	0.00	0.00
S	4170	PAGE INDUSTRIAL SERVICES INC	0.33	1.39	0.74
S	6646	PERFORMANCE FOOD GROUP	0.25	0.01	0.01
S	5257	PHOENIX CEMENT CO	0.00	0.00	0.12
S	2012	PILOT TRAVEL CENTERS LLC	0.00	1.07	0.00
S	71	PLAINS LPG SERVICES LP	8.55	12.70	4.73

Region	ID	Facility Name	NOX (tpy)	VOC (tpy)	PM2.5 (tpy)
S	3919	PW GILLIBRAND TRANSLOADING SERVICES INC	0.00	0.00	0.00
S	7886	RESA POWER SOLUTIONS	0.00	0.08	0.02
S	8480	ROLL REAL ESTATE DEVELOPMENT LLC			
S	8529	ROSS STORES INC	0.12	0.00	0.00
S	1732	S & A MARKET	0.00	0.05	0.00
S	1288	S & J QUICK STOP	0.00	0.18	0.00
S	7834	SHAFTER COLLISION	0.00	0.01	0.00
S	539	SHAFTER-WASCO GINNING CO	0.00	0.00	0.57
S	7041	SHAR CRAFT INC	0.00	0.85	1.35
S	82	SHELL PIPELINE CO LP	0.05	0.06	0.02
S	876	SJV QUALITY COTTON	0.00	0.00	0.00
S	6706	SKYVIEW DAIRY			
S	3152	SOUTH VALLEY ALMOND CO LLC	0.00	0.02	1.28
S	4755	STARRH & STARRH COTTON GROWERS			
S	4297	SUN WORLD INTERNATIONAL	0.00	0.00	0.00
S	872	SUPERIOR SOIL SUPPLEMENTS, LLC	0.00	0.00	0.00
S	3934	TARGET DISTRIBUTION CENTER	0.21	0.02	0.01
S	5060	TJAARDA DAIRY			
S	7674	VERIZON WIRELESS "NORTH SHAFTER"	0.00	0.00	0.00
S	3395	VERIZON WIRELESS- SHAFTER	0.00	0.00	0.00
S	8231	WEATHERFORD ARTIFICIAL LIFT SYSTEMS LLC	0.00	0.06	0.02
S	2935	WEST COAST PIPE INSPECTION	0.00	0.00	0.00
S	1301	WILBUR-ELLIS CO	0.00	0.01	0.00
S	8367	WONDERFUL ORCHARDS LLC	0.00	0.11	0.00
S	9080	WONDERFUL REAL ESTATE			
S	9081	WONDERFUL REAL ESTATE			

Table 3: Year 2029 Projected Emissions Inventory for District Permitted Facilities

Region	ID	Facility Name	NOX (tpy)	VOC (tpy)	PM2.5 (tpy)
S	2183	AHDI ENTERPRISES CORP DBA SHAFTER SHELL	0.00	0.13	0.00
S	9156	ALLIANCE READY MIX, INC.			
S	4152	APSG WHOLESale	0.00	0.38	0.82
S	7573	ARGO CHEMICAL INC	0.00	0.00	0.00
S	3161	AT&T MOBILITY	0.00	0.00	0.00
S	6698	AT&T MOBILITY	0.01	0.01	0.00
S	5211	AUKEMAN DAIRY			
S	7351	B&L CASING SERVICE LLC	0.00	0.00	0.00
S	8022	BAKER HUGHES OILFIELD OPERATIONS LLC	0.00	0.01	3.87
S	704	BASF AGRICULTURAL SOLUTIONS SEED US LLC	0.00	0.00	0.00
S	1392	BASF AGRICULTURAL SOLUTIONS SEED US LLC	0.02	0.00	0.09
S	2501	BIDART COLD STORAGE INC	0.00	0.00	0.00
S	1872	BKSFD QUALITY DISTRIBUTION CENTER INC	0.00	0.00	0.60
S	8291	BROWN & BRYANT	0.00	0.02	0.00
S	3461	BUILDING MATERIALS MFG CORP (DBA GAF)	0.00	0.00	0.00
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - JACK AVE)			
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - MANNEL AVE)			
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - MERCED AVE)	1.60	2.08	0.47
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - OAK CT)			
S	1737	CA RESOURCES PRODUCTION CORP (N WASCO - SHAFTER AVE)			
S	7895	CAL COAST ACIDIZING SERVICE			
S	7122	CALIFORNIA PAPER PRODUCTS LLC	0.27	0.38	0.54
S	3362	CITY OF SHAFTER	0.02	0.00	0.00
S	3364	CITY OF SHAFTER	0.02	0.00	0.00
S	3365	CITY OF SHAFTER	0.02	0.00	0.00
S	3701	CITY OF SHAFTER	0.01	0.00	0.00
S	3745	CITY OF SHAFTER	0.01	0.00	0.00
S	3915	CITY OF SHAFTER	0.04	0.00	0.00
S	6910	CITY OF SHAFTER	0.02	0.00	0.00

Region	ID	Facility Name	NOX (tpy)	VOC (tpy)	PM2.5 (tpy)
S	8394	CITY OF SHAFTER	0.01	0.00	0.00
S	6849	CLEAN ENERGY SYSTEMS INC	0.00	0.00	0.00
S	9051	CLEAN ENERGY SYSTEMS KIMBERLINA, INC.			
S	2599	CODE PRECAST PRODUCTS INC	0.00	0.00	0.02
S	7322	CON-FAB CALIFORNIA LLC	0.03	0.00	0.38
S	6935	DENBESTE MANUFACTURING INC	0.00	1.92	0.27
S	2813	DJ'S FOOD MART	0.00	0.07	0.00
S	2033	ELK CORP OF TEXAS	0.35	23.27	1.38
S	4291	EXPRESS COLLISION CENTER	0.00	0.04	0.01
S	6639	FAIAL FARMS 2			
S	8952	FOREVERBOARD CALIFORNIA INC			
S	2139	FOX PETROLEUM INC	0.00	1.04	0.00
S	3860	GMC ROOFING & PAPER PRODUCTS	0.00	3.79	2.74
S	1183	GOLDEN EMPIRE CONCRETE CO	0.00	0.00	0.11
S	8071	GOLDEN LIVING CENTER - SHAFTER	0.00	0.00	0.00
S	8067	GREG'S PETROLEUM	0.00	0.37	0.00
S	3474	HELENA AGRI-ENTERPRISES, LLC	0.00	0.16	0.00
S	5281	HYPONEX CORP	0.00	0.00	4.40
S	4283	INDUSTRIAL DESIGN & CONSTRUCTION INC	0.00	0.46	0.65
S	1736	INLAND CROP DUSTER INC	0.00	0.06	0.00
S	2865	J P OIL CO INC	0.34	1.35	1.78
S	8561	J P OIL CO INC			
S	2360	JACO HILL	0.00	0.39	0.00
S	2369	JACO HILL	0.00	0.79	0.00
S	2417	JEFFRIES BROTHERS INC	0.00	0.10	0.00
S	8716	JEFFRIES BROTHERS INC	0.00	0.00	0.00
S	239	JIFFY'S STORE	0.00	0.09	0.00
S	3881	JOSE LUIS ALBERTO	0.00	0.01	0.00
S	3778	JR SIMPLOT CO/SIMPLOT GROWER SOLUTIONS	0.00	0.00	0.46
S	2443	KERN COUNTY FIRE STATION #32	0.00	0.00	0.00
S	7433	KERN SCHOOLS FEDERAL CREDIT UNION	0.01	0.00	0.00
S	7516	LARRY BASHOR SANDBLASTING	0.00	0.07	0.89
S	3562	LERDO CHEVRON	0.00	0.15	0.00
S	9202	LKMP PROPERTIES			
S	7748	LUFKIN INDUSTRIES INC	0.00	0.00	0.00
S	4803	MARTIN HEIN RANCH CO - PA2			

Region	ID	Facility Name	NOX (tpy)	VOC (tpy)	PM2.5 (tpy)
S	105	MEYER'S BIG STOP	0.00	0.12	0.00
S	7995	M-I SWACO	0.00	0.01	0.10
S	8	NIKKEL IRON WORKS INC	0.00	0.75	0.01
S	7876	NORRIS PRODUCTION SOLUTIONS	0.00	0.00	0.00
S	1316	NORTH OF RIVER SANITARY DIST	0.65	0.88	0.13
S	5141	OASIS HOLSTEIN DAIRY			
S	6058	OHANNESON ENTERPRISES			
S	7801	OMNI FAMILY HEALTH	0.00	0.00	0.00
S	1167	PACIFIC BELL TELEPHONE CO (DBA AT&T CA)	0.01	0.00	0.00
S	4170	PAGE INDUSTRIAL SERVICES INC	0.33	1.60	0.85
S	6646	PERFORMANCE FOOD GROUP	0.25	0.01	0.01
S	5257	PHOENIX CEMENT CO	0.00	0.00	0.13
S	2012	PILOT TRAVEL CENTERS LLC	0.00	0.92	0.00
S	71	PLAINS LPG SERVICES LP	6.82	13.58	4.53
S	3919	PW GILLIBRAND TRANSLOADING SERVICES INC	0.00	0.00	0.00
S	7886	RESA POWER SOLUTIONS	0.00	0.09	0.02
S	8480	ROLL REAL ESTATE DEVELOPMENT LLC			
S	8529	ROSS STORES INC	0.12	0.00	0.00
S	1732	S & A MARKET	0.00	0.04	0.00
S	1288	S & J QUICK STOP	0.00	0.16	0.00
S	7834	SHAFTER COLLISION	0.00	0.01	0.00
S	539	SHAFTER-WASCO GINNING CO	0.00	0.00	0.61
S	7041	SHAR CRAFT INC	0.00	0.93	1.49
S	82	SHELL PIPELINE CO LP	0.04	0.06	0.02
S	876	SJV QUALITY COTTON	0.00	0.00	0.00
S	6706	SKYVIEW DAIRY			
S	3152	SOUTH VALLEY ALMOND CO LLC	0.00	0.01	1.38
S	4755	STARRH & STARRH COTTON GROWERS			
S	4297	SUN WORLD INTERNATIONAL	0.00	0.00	0.00
S	872	SUPERIOR SOIL SUPPLEMENTS, LLC	0.00	0.00	0.01
S	3934	TARGET DISTRIBUTION CENTER	0.22	0.02	0.01
S	5060	TJAARDA DAIRY			
S	7674	VERIZON WIRELESS "NORTH SHAFTER"	0.00	0.00	0.00
S	3395	VERIZON WIRELESS- SHAFTER	0.00	0.00	0.00
S	8231	WEATHERFORD ARTIFICIAL LIFT SYSTEMS LLC	0.00	0.06	0.02
S	2935	WEST COAST PIPE INSPECTION	0.00	0.00	0.00
S	1301	WILBUR-ELLIS CO	0.00	0.01	0.00

Region	ID	Facility Name	NOX (tpy)	VOC (tpy)	PM2.5 (tpy)
S	8367	WONDERFUL ORCHARDS LLC	0.00	0.11	0.00
S	9080	WONDERFUL REAL ESTATE			
S	9081	WONDERFUL REAL ESTATE			

Mobile Source Emissions Inventory

On-Road Mobile Sources

California Air Resources Board staff have developed a methodology to spatially allocate on-road vehicle emissions on each road (also called the VEER approach). The VEER approach spatially allocates vehicle activity data used in the latest adopted Regional Transportation Plans from the local metropolitan planning organization (MPO)¹ onto roadways from the U.S. Census Bureau's Topologically Integrated Geographic Encoding and Referencing (TIGER)² road network. The TIGER network represents the complete roadway network, whereas the MPO road network only captures a rough approximation of the actual roadway network. Functional road types from the MPO and TIGER network are broken into four categories (major roads, major arterials, minor arterials, and local/residential roads). The vehicle activity in terms of vehicle miles traveled (VMT) is spatially allocated from the MPO network onto the TIGER network for each road type using ArcGIS. Separating the road types into four categories allows similar VMT roads to be processed together; thus eliminating a possible bias in VMT allocation from high VMT roads onto low VMT roads and vice versa. Criteria air pollutant emissions are estimated by applying existing county-level aggregated emission factors and vehicle distribution from CARB's latest on-road mobile source emission factor model version 2017 (EMFAC2017)³ to the spatially allocated VMT on each road link. Toxic air contaminant emissions are estimated by applying CARB's chemical speciation profiles⁴ to the total organic gas (TOG) and particulate matter (PM) emissions estimated for each road link.

¹Kern Council of Government 2018 Regional Transportation Plan loaded network (2015 base year projected to 2017)

²Census Bureau's Topologically Integrated Geographic Encoding and Referencing (TIGER) road network (<https://tigerweb.geo.census.gov/tigerweb/>)

³EMFAC2017 includes information on California's car and truck fleet (e.g., vehicle population, age) and also reflects the emissions benefits of CARB's previously adopted on-road mobile source regulations (e.g., Pavley Standards, Advanced Clean Cars, Truck and Bus, other on-road diesel fleet rules). For more information on EMFAC2017, see <https://ww3.arb.ca.gov/msei/downloads/emfac2017-volume-iii-technical-documentation.pdf>

⁴California Air Resources Board, Speciation Profiles, <https://ww3.arb.ca.gov/ei/speciate/speciate.htm>

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. A summary of specific off-road categories is below:

Locomotives

In 2016, ARB updated California's Class I and Class II line-haul locomotive model. The new model provides the following updates: age and model year distribution based on 2011 and 2014 rail company data, activity based on Freight Analysis Framework (FAF) data, fuel growth based on Board of Equalization historical rail data, and new locomotive populations, survival rates, and Tier distributions. To estimate emissions, ARB used duty cycle, fuel consumption and activity data reported by the rail lines in 2011. These results were combined with the Class III locomotive emissions inventory from previous SIPS, which were incorporated in the 2006 locomotive inventory, to create an overall California line-haul locomotive emissions inventory for the SIP.

Additional information is available at:

https://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:

https://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:

https://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:

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

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 DOGGR Well Finder data from September 2013, supplied to ARB by the District.

Diesel Agricultural Equipment

The inventory for agricultural diesel equipment (such as tractors, harvesters, combines, sprayers and others) was revised based on a voluntary 2009 survey 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.

Fuel Storage and Handling

Emissions for fuel storage and handling were estimated using the OFFROAD2007 model.

Inventory Base Year

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 in the State. Mobile source emissions have been forecasted for years 2017, 2024, and 2029 for the purposes of the CERP.

Methodology

The EMFAC model was used to assess emissions from on-road vehicles. Off-road mobile source emissions are estimated using a new modular approach for different source categories. On-road and off-road models account for the effects of various adopted regulations, technology types, and seasonal conditions on emissions.

Additional information on all ARB's Mobile source Methodologies and categories is available at: <https://ww3.arb.ca.gov/msei/msei.htm>

Summary of On-Road Mobile Source Emissions

Table 4 below summarizes the total estimated on-road mobile source emissions for each general on-road mobile source category in the Shafter Community for 2017:

Table 4: Year 2017 On-Road Mobile Source Emissions

On-Road Mobile Source Category	NOx (tpy)	VOC (tpy)	PM2.5 (tpy)
Heavy Duty Vehicles	345.61	17.06	8.96
Medium Duty Vehicles	100.87	14.62	3.55
Light Duty Vehicles	80.22	94.75	7.57
Total	526.70	126.43	20.08

Summary of Off-Road Mobile Source Emissions

Table 5 below summarizes the total estimated off-road mobile source emissions for each general off-road mobile source category in the Shafter Community for 2017:

Table 5: Year 2017 Off-Road Mobile Source Emissions

Off-Road Mobile Source Category	NOx (tpy)	VOC (tpy)	PM2.5 (tpy)
Aircraft	5.94	5.02	4.06
Trains	5.42	0.00	0.10
Recreational Boats	0.00	1.53	0.00
Off-Road Recreational Vehicles	0.52	7.29	0.08
Off-Road Equipment	39.59	19.04	2.06
Farm Equipment	111.58	17.83	6.11
Fuel Storage and Handling	0.00	3.46	0.00
TOTAL	163.06	54.16	12.41

Summary of Mobile Source Emissions

Table 6 below summarizes total 2017 off-road and on-road mobile source emissions

Table 6: Year 2017 Mobile Source Emissions Summary

	NOx (tpy)	VOC (tpy)	PM2.5 (tpy)
On- Road Mobile Sources	526.70	126.43	20.08
Off- Road Mobile Sources	163.06	54.16	12.41
Total Mobile	689.76	180.59	32.49

Forecasting Emissions - Mobile Sources

The on-road mobile source inventory was forecasted using vehicle activity data in terms of VMT and criteria pollutant emission factor data for future years from CARB's on-road emission factor model, EMFAC2017. EMFAC2017 contains forecasted VMT and criteria pollutant emission factors for each year through 2050. The future year emission factors reflect fleet turnover and emission benefits from on-road mobile source regulations that

have been adopted prior to the release of EMFAC2017. However, CARB has since adopted four additional on-road vehicle emission regulations that provide additional emission reductions in future years (see Table 7). The emission reductions from these four regulations were also applied to the relevant vehicle categories and emission processes (e.g., exhaust, evaporative, breakwear, tirewear) to obtain the forecasted inventories in 2024 and 2029.

EMFAC2017 VMT for the county in which the community resides was used to estimate vehicle activity in the community for future years. This was done by calculating the growth rate of the county VMT from the 2017 base year to the target forecast years (2024 and 2029), and applying that growth rate to the base year VMT in the community. Once the on-road VMT for the future years was established in the community, criteria pollutant emissions for 2024 and 2029 were calculated by applying the year-specific emission factors from EMFAC2017, as well as the additional emission reductions from the four new adopted regulations. Toxic air contaminant emissions for on-road mobile sources were obtained by applying CARB's chemical speciation profiles to the forecasted on-road mobile source TOG and PM emissions. The forecasted on-road criteria pollutant inventory and the forecasted on-road toxic inventory together comprise the final forecasted on-road mobile source inventory for the community.

Table 7. On-road Mobile Source Regulations Adopted after EMFAC2017 Release*

Regulation	Fuel Type	Pollutant	Percent (%) Reduction Benefits	
			2024	2029
Amendments to Smoke Opacity ¹	Diesel	PM2.5	24.1%	25.3%
Amendments to Heavy Duty Engine Warranty Requirements ²	Diesel	PM2.5	0.3%	1.6%
		NOx	0.2%	1.0%
Innovative Clean Transit ³	Gas, Diesel, Natural Gas	PM2.5	0.9%	13.9%
		NOx	14.1%	38.5%
Zero Emission Airport Shuttle Buses ⁴	Not considered			

***Table 7 References:**

¹ <https://ww2.arb.ca.gov/rulemaking/2018/heavy-duty-vehicle-inspection-program-and-periodic-smoke-inspection-program>

² <https://ww2.arb.ca.gov/rulemaking/2018/hd-warranty-2018>

³ <https://ww2.arb.ca.gov/rulemaking/2018/innovative-clean-transit-2018>

⁴ <https://ww2.arb.ca.gov/index.php/rulemaking/2019/asb19>. This regulation was

excluded from community inventory development because the current AB 617 communities do not have any airport related shuttle buses.

The Tables below, summarize the data used to forecast future-year mobile source emissions by broad source category groupings.

Tables 8 and 9 below summarize the total forecasted on-road emissions in the Shafter Community for the years 2024 and 2029:

Table 8: Year 2024 Projected On-Road Mobile Source Emissions

On-Road Mobile Source Category	NOx (tpy)	VOC (tpy)	PM2.5 (tpy)
Heavy Duty Vehicles	209.31	4.73	3.98
Medium Duty Vehicles	44.54	6.51	1.58
Light Duty Vehicles	37.46	63.64	8.20
Total	291.32	74.88	13.75

Table 9: Year 2029 Projected On-Road Mobile Source Emissions

On-Road Mobile Source Category	NOx (tpy)	VOC (tpy)	PM2.5 (tpy)
Heavy Duty Vehicles	214.16	4.96	4.17
Medium Duty Vehicles	34.52	5.32	1.43
Light Duty Vehicles	26.98	53.47	8.68
Total	275.66	63.75	14.28

Tables 10 and 11 below summarize the total forecasted off-road emissions in the Shafter Community for the years 2024 and 2029:

Table 10: Year 2024 Projected Off-Road Mobile Source Emissions

Off-Road Mobile Source Category	NOx (tpy)	VOC (tpy)	PM2.5 (tpy)
Aircraft	6.20	5.36	4.26
Trains	4.83	0.00	0.08
Recreational Boats	0.00	1.25	0.00
Off-Road Recreational Vehicles	0.65	6.26	0.08
Off-Road Equipment	28.07	17.62	1.30
Farm Equipment	73.73	12.65	4.15
Fuel Storage and Handling	0.00	2.90	0.00
Total	113.47	46.05	9.88

Table 11: Year 2029 Projected Off-Road Mobile Source Emissions

Off-Road Mobile Source Category	NOx (tpy)	VOC (tpy)	PM2.5 (tpy)
Aircraft	6.40	5.60	4.41
Trains	4.33	0.00	0.08
Recreational Boats	0.00	1.09	0.00
Off-Road Recreational Vehicles	0.71	5.84	0.08
Off-Road Equipment	23.40	17.61	1.04
Farm Equipment	53.29	10.09	3.01
Fuel Storage and Handling	0.00	2.75	0.00
Total	88.14	42.98	8.62

Area-Wide Sources Emissions Inventory

Area-wide sources are categories such as consumer products, unpaved road dust, fireplaces, and prescribed burning 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. A summary of the area-wide sources is presented below:

Ammonia Emissions from Publicly Owned Treatment Works, Landfills, Composting, Fertilizer Application, Domestic Activity, Native Animals, and Native Soils

ARB staff updated the ammonia emissions inventory methodology for publicly owned treatment works, landfills, composting, fertilizer application, domestic activity, native animals, and native soils. Revisions for these categories consist primarily of updated activity data for the 2008 calendar year. Emission factors were revised only for fertilizer application.

Ammonia Emissions, Miscellaneous Sources

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, and on-road motor vehicles, were estimated as part of the methodologies for those specific area source categories.

Consumer Products

The consumer products category reflects the four most recent surveys conducted by ARB staff for the years 2003, 2006, 2008, and 2010. 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 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: <https://www.arb.ca.gov/consprod/survey/survey.htm>.

Architectural Coatings

The architectural coatings category reflects emission estimates based on a comprehensive ARB survey for the 2004 calendar year. The emission estimates include benefits of the 2000 and 2007 ARB Suggested Control Measures as adopted in District Rule 4601. These emissions are grown based on DOF population projections.

Additional information about ARB's architectural coatings program is available at: <https://www.arb.ca.gov/coatings/arch/arch.htm>.

Pesticides

DPR develops month-specific emission estimates for agricultural and structural pesticides. Each calendar year, DPR updates the inventory based on the Pesticide Use Report, which provides updated information from 1990 to the most current data year available. The inventory includes estimates through the 2014 calendar year. Emission forecasts for years 2015 and beyond are based on the average of the most recent five years. Growth for agricultural pesticides is based on ARB projections of FMMP farmland acreage. Growth for structural pesticides is based on REMI forecasts of expenditures on structures.

Asphalt Paving/Roofing

Asphalt paving emissions were grown from 2008 estimates and asphalt roofing emissions were grown from a 2007 estimate. Emissions for both categories were developed using District methodologies. Emissions are estimated based on tons of asphalt applied and a default emission factor for each type of asphalt operation. The growth profile for both categories is based on ARB's REMI county economic forecasting model. The inventory reflects the reductions from District Rule 4641.

Additional information on the asphalt paving methodology is available at:
<https://www.arb.ca.gov/ei/areasrc/districtmeth/sjvalley/sjvasphpav.pdf>
http://www.valleyair.org/Air_Quality_Plans/EmissionsMethods/MethodForms/Current/AsphaltPaving2008.pdf.

Residential Wood Combustion

Emissions were estimated for 2012 using a 2016 District methodology. The methodology is based on ARB's 2011 methodology, with several refinements based on a 2014 District survey. The inventory reflects the regional distribution and use of wood burning devices, refined fuel usage rates for several types of devices, and emissions reductions from the District's Burn Cleaner Program. The emissions estimates reflect emission factors from U.S. EPA's National Emission Inventory. No growth is assumed for future years because of limits in new construction and the stringency of the requirements of District Rule 4901. The reduction benefits of Rule 4901 are reflected in the inventory.

Additional information on the Residential Wood Combustion methodology is available at:
<https://www.arb.ca.gov/ei/areasrc/arbmiscprocrsfuelcom.htm>.

Residential Natural Gas Combustion

The inventory for residential natural gas combustion 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 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.

Additional information on the Residential Natural Gas Combustion methodology is available at:
http://www.valleyair.org/Air_Quality_Plans/EmissionsMethods/MethodForms/Current

/ResidentialNG2006.pdf.

Farming Operations

Emissions for Agricultural Land Preparation Operations and Agricultural Harvest Operations were updated based on 2012 harvested crop acreage from the USDA's National Agricultural Statistics Service (NASS). NASS data are based on reports compiled by County Agricultural Commissioner staff. Emission estimates for both categories are based on ARB methodologies and reflect crop and operation specific emission factors. Temporal profiles were updated based on crop specific activity profiles. Activity profiles for land preparation operations were developed by ARB, based on monthly harvesting activity for 20 representative crops. Temporal profiles for harvesting operations were developed by the District, based on monthly harvesting activity for 46 representative crops. The District expanded the number of crop profiles to more completely characterize distinctions among groups of crops.

Activity profiles for harvesting were developed by the District and reflect refinements to Harvesting Growth is based on projected FMMP farmland acreage for 2010-2020, which results in a slight annual decline. The inventory reflects the emission reductions from District Rule 4550.

Additional information on Farming Operations methodologies is available at:
<https://www.arb.ca.gov/ei/areasrc/arbmiscprocrsfarmop.htm>.

The dairy, feedlot, and range cattle emission estimates reflect livestock population data from the USDA's 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's 2007 Census of Agriculture. A seasonal adjustment was added to account for the suppression of dust emissions in months in which rainfall occurs. 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. No growth is assumed for other livestock categories, based on an analysis of livestock population trends. The emissions reflect updated District control profiles to account for control requirements, including VOC controls from District Rule 4570 and fugitive dust controls from District Rule 4550.

Additional information on Livestock Operation methodology is available at:
<https://www.arb.ca.gov/ei/areasrc/arbmiscproclivestock.htm>.

Construction and Demolition

Emission estimates for building construction and road construction operations are based on ARB methodologies. Emissions are estimated by applying emission factors developed by Midwest Research Institute (MRI) to the acreage disturbed by construction. The emission estimates were grown from ARB estimates developed in 2002 and 1997, respectively. The growth profile for building construction is based on the REMI county economic forecast model. Road construction emissions are grown based on road construction forecasts by SJV transportation planning agencies (TPAs). The inventory reflects emission reductions from District Regulation VIII.

Additional information on Construction and Demolition methodology is available at:

<https://www.arb.ca.gov/ei/areasrc/arbmiscproconstdem.htm>.

Paved Road Dust

Paved road dust emissions for 2012 were estimated using an ARB methodology consistent with the current U.S. EPA AP-42 methodology (January 2011) for quantifying dust emissions. Revisions include California-specific reductions in silt loading values, updated 2012 vehicle miles traveled (VMT) provided by SJV MPOs, updated VMT distributions (travel fractions) from Caltrans for the year 2008, and incorporation of precipitation correction factors. Emissions were grown using VMT projections from the SJV MPOs. The inventory also reflects emission reductions from District Regulation VIII.

Additional information on Paved Road Dust methodology is available at:

<https://www.arb.ca.gov/ei/areasrc/arbmiscprocpaverddst.htm>.

Unpaved Road Dust - Farm Roads

Emissions for unpaved farm roads were updated based on ARB's methodology and 2012 harvested crop acreage from NASS. Emissions reflect crop specific VMT factors and an updated emission factor of 2.0 lbs PM₁₀/VMT, based on California test data conducted by the University of California, Davis (UC Davis), and the Desert Research Institute (DRI). An updated particle size profile (ARB PM profile #470) was used, which reduces the PM_{2.5} fraction by about 50%. Temporal profiles were updated based on crop specific activity profiles. Growth is based on projected FMMP farmland acreage for 2010-2020, which results in a slight annual decline. In addition, the inventory reflects the emission reductions from District Rule 4550 and District Regulation VIII.

Additional information on Unpaved Farm Road Dust methodology is available at:

<https://www.arb.ca.gov/ei/areasrc/arbmiscprocunpaverddst.htm>.

Unpaved Non-Farm Road Dust

Emissions from unpaved non-farm roads were estimated from 2008 unpaved road data collected from the California Statewide Local Streets and Roads Needs Assessment, Caltrans, and the District. Dust emissions were calculated using the same emission factor (2.00 lbs PM₁₀/VMT) and particle size fraction (ARB PM profile #470) described above for unpaved farm roads, and the addition of a rainfall adjustment factor. Temporal profiles were revised. 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. The inventory includes the emission reduction benefits of District Regulation VIII.

Additional information on Unpaved Non-Farm Road Dust methodology is available at:

<https://www.arb.ca.gov/ei/areasrc/arbmiscprocunpaverddst.htm>.

Fugitive Windblown Dust from Open Areas and Non-pasture Agriculture Lands

Fugitive windblown dust emissions were estimated using ARB's 1997 methodology. The methodology is based on 1993 harvested crop acreage and a wind erosion equation that incorporates climate, soil, and vegetative cover attributes. Emissions

for agricultural lands were grown based on projected FMMP farmland acreage for 2010-2020, which results in a slight annual decline. No growth is assumed for non-agricultural lands. The inventory reflects emission reductions from District Regulation VIII.

Additional information on Fugitive Windblown Dust from Open Areas and Non-pasture Agriculture Lands methodology is available at:

<https://www.arb.ca.gov/ei/areasrc/arbmiscprocfugwbdst.htm>.

Windblown Dust from Unpaved Roads and Associated Areas

Emissions for this source category were estimated based on a 1997 ARB methodology reflecting unpaved road mileage and local parameters that affect wind erosion. The estimates assume no growth. The inventory includes the emission reduction benefits of District Regulation VIII.

Additional information on Windblown Dust from Unpaved Roads and Associated Areas methodology is available at:

<https://www.arb.ca.gov/ei/areasrc/arbmiscprocfugwbdst.htm>.

Structural and Automobile Fires

Emissions from structural and automobile fires were estimated using ARB's 1999 methodology. Structural fire emissions are based on rates of structural and content material loss per fire, average combustible content, and emission factors obtained from test data. Automobile fire emissions are based on the number of vehicle fires per year and composite emission factors derived from AP-42 emission factors. No growth is assumed for this category.

Additional information on Structural and Automobile Fires methodology is available at:

<https://www.arb.ca.gov/ei/areasrc/arbmiscprocfires.htm>.

Managed Burning & Disposal

ARB updated the emissions inventory to reflect burn data reported by District staff for 2012. Emissions are calculated using crop specific emission factors and fuel loadings. Temporal profiles reflect monthly burn activity. Growth for agricultural burning is based on linear regression analyses of 2000-2009 FMMP 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 burning associated with weed abatement as the emission levels for this category have been fairly stable since 2005. The inventory includes the benefits of reductions from District Rules 4103 and 4550.

Additional information on Managed Burning & Disposal methodology is available at:

<https://www.arb.ca.gov/ei/areasrc/distmiscprocwstburndis.htm>.

Additional background information is available at:

<https://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 default emission factors from U.S. EPA's 2002 National Emissions Inventory. The growth profile reflects the latest population projections provided by the California DOF. The inventory also reflects the emission reductions from District Rule 4692.

Additional information on Commercial Cooking methodology is available at:
<https://www.arb.ca.gov/ei/areasrc/districtmeth/sjvalley/CommercialCooking2006.pdf>.

For additional information on all area source Methodologies and categories visit ARB and Districts Web pages:

- <https://ww3.arb.ca.gov/ei/areasrc/areameth.htm>
- http://www.valleyair.org/Air_Quality_Plans/EmissionsMethods/EmissionsMethods.htm

Table 11 below summarizes the total projected Area Source emissions for each Category in the Shafter Community for 2017:

Table 12: Year 2017 Area Source emissions for Shafter Community

Source Categories	NOx (tpy)	VOC (tpy)	PM2.5 (tpy)
FUEL COMBUSTION	31.68	3.03	1.38
Food and Agricultural Processing	24.81	2.60	1.07
Manufacturing and Industrial	1.30	0.00	0.00
Oil and Gas Production (Combustion)	0.47	0.01	0.00
Other (Fuel Combustion)	0.45	0.00	0.00
Service and Commercial	4.65	0.42	0.31
WASTE DISPOSAL	0.00	0.63	0.00
Other (Waste Disposal)	0.00	0.63	0.00
Sewage Treatment	0.00	0.00	0.00
CLEANING AND SURFACE COATINGS	0.00	21.95	0.00
Adhesives and Sealants	0.00	1.79	0.00
Coatings and Related Process Solvents	0.00	8.02	0.00
Degreasing	0.00	5.30	0.00
Laundering	0.00	0.00	0.00
Printing	0.00	6.85	0.00
PETROLEUM PRODUCTION AND MARKETING	0.01	17.39	0.00
Oil and Gas Production	0.01	10.75	0.00
Petroleum Marketing	0.00	6.63	0.00
INDUSTRIAL PROCESSES	0.00	1.00	0.20
Chemical	0.00	0.29	0.00
Food and Agriculture	0.00	0.72	0.00
Metal Processes	0.00	0.00	0.15
Wood and Paper	0.00	0.00	0.05

SOLVENT EVAPORATION	0.00	203.37	0.00
Architectural Coatings and Related Process Solvents	0.00	25.17	0.00
Asphalt Paving / Roofing	0.00	6.49	0.00
Consumer Products	0.00	51.57	0.00
Pesticides / Fertilizers	0.00	120.14	0.00
MISCELLANEOUS PROCESSES	18.00	280.61	186.90
Construction and Demolition	0.00	0.00	1.43
Cooking (Commercial Charbroiling / Frying)	0.00	1.73	10.69
Farming Operations	0.00	269.02	114.57
Fires	0.05	0.21	0.30
Fugitive Windblown Dust	0.00	0.00	21.47
Managed Burning and Disposal	3.08	6.09	5.81
Other (Miscellaneous Processes)	0.00	0.00	0.00
Paved Road Dust	0.00	0.00	21.13
Residential Fuel Combustion	14.87	3.56	3.53
Unpaved Road Dust	0.00	0.00	7.96
TOTAL	49.70	527.98	188.28

Forecasting Emissions – Area Sources

Emission forecasts 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 below.

Tables 12 and 13 below summarize the total projected area source emissions for each category in the Shafter Community for years 2024 and 2029:

Table 13: Year 2024 Projected Area Source Emissions for Shafter Community

Source Categories	NOx (tpy)	VOC (tpy)	PM2.5 (tpy)
FUEL COMBUSTION	24.80	2.33	1.08
Food and Agricultural Processing	17.74	1.83	0.72
Manufacturing and Industrial	1.36	0.00	0.00
Oil and Gas Production (Combustion)	0.40	0.01	0.00
Other (Fuel Combustion)	0.37	0.00	0.00
Service and Commercial	4.91	0.49	0.36
WASTE DISPOSAL	0.00	0.72	0.00
Other (Waste Disposal)	0.00	0.72	0.00
Sewage Treatment	0.00	0.00	0.00
CLEANING AND SURFACE COATINGS	0.00	24.36	0.00
Adhesives and Sealants	0.00	1.95	0.00

Coatings and Related Process Solvents	0.00	9.20	0.00
Degreasing	0.00	5.85	0.00
Laundering	0.00	0.00	0.00
Printing	0.00	7.36	0.00
PETROLEUM PRODUCTION AND MARKETING	0.01	15.83	0.00
Oil and Gas Production	0.01	9.20	0.00
Petroleum Marketing	0.00	6.63	0.00
INDUSTRIAL PROCESSES	0.00	1.14	0.20
Chemical	0.00	0.34	0.00
Food and Agriculture	0.00	0.80	0.00
Metal Processes	0.00	0.00	0.15
Wood and Paper	0.00	0.00	0.05
SOLVENT EVAPORATION	0.00	206.47	0.00
Architectural Coatings and Related Process Solvents	0.00	28.91	0.00
Asphalt Paving / Roofing	0.00	7.61	0.00
Consumer Products	0.00	58.59	0.00
Pesticides / Fertilizers	0.00	111.36	0.00
MISCELLANEOUS PROCESSES	16.77	280.73	182.43
Construction and Demolition	0.00	0.00	1.67
Cooking (Commercial Charbroiling / Frying)	0.00	1.98	12.28
Farming Operations	0.00	269.02	106.60
Fires	0.06	0.24	0.34
Fugitive Windblown Dust	0.00	0.00	19.95
Managed Burning and Disposal	2.92	5.85	5.60
Other (Miscellaneous Processes)	0.00	0.00	0.00
Paved Road Dust	0.00	0.00	24.70
Residential Fuel Combustion	13.80	3.63	3.64
Unpaved Road Dust	0.00	0.00	7.66
TOTAL	41.58	531.57	183.72

Table 14: Year 2029 Projected Area Source Emissions for Shafter Community

Source Categories	NOx (tpy)	VOC (tpy)	PM2.5 (tpy)
FUEL COMBUSTION	20.35	1.96	0.88
Food and Agricultural Processing	13.50	1.45	0.51
Manufacturing and Industrial	1.43	0.00	0.00
Oil and Gas Production (Combustion)	0.36	0.01	0.00
Other (Fuel Combustion)	0.37	0.00	0.00
Service and Commercial	4.69	0.50	0.36

WASTE DISPOSAL	0.00	0.79	0.00
Other (Waste Disposal)	0.00	0.79	0.00
Sewage Treatment	0.00	0.00	0.00
CLEANING AND SURFACE COATINGS	0.00	27.12	0.00
Adhesives and Sealants	0.00	2.05	0.00
Coatings and Related Process Solvents	0.00	10.63	0.00
Degreasing	0.00	6.71	0.00
Laundering	0.00	0.00	0.00
Printing	0.00	7.73	0.00
PETROLEUM PRODUCTION AND MARKETING	0.01	14.82	0.00
Oil and Gas Production	0.01	8.23	0.00
Petroleum Marketing	0.00	6.59	0.00
INDUSTRIAL PROCESSES	0.00	1.24	0.21
Chemical	0.00	0.38	0.00
Food and Agriculture	0.00	0.86	0.00
Metal Processes	0.00	0.00	0.15
Wood and Paper	0.00	0.00	0.05
SOLVENT EVAPORATION	0.00	208.68	0.00
Architectural Coatings and Related Process Solvents	0.00	31.61	0.00
Asphalt Paving / Roofing	0.00	8.31	0.00
Consumer Products	0.00	63.67	0.00
Pesticides / Fertilizers	0.00	105.09	0.00
MISCELLANEOUS PROCESSES	16.29	280.81	178.97
Construction and Demolition	0.00	0.00	1.82
Cooking (Commercial Charbroiling / Frying)	0.00	2.17	13.42
Farming Operations	0.00	269.02	100.91
Fires	0.06	0.26	0.37
Fugitive Windblown Dust	0.00	0.00	18.86
Managed Burning and Disposal	2.80	5.68	5.45
Other (Miscellaneous Processes)	0.00	0.00	0.00
Paved Road Dust	0.00	0.00	26.99
Residential Fuel Combustion	13.42	3.67	3.69
Unpaved Road Dust	0.00	0.00	7.45
TOTAL	36.65	535.41	180.06