

2. Point Sources

2.1 Introduction and scope

This inventory of PM₁₀ and related pollutants is one of two 2011 emission inventory reports prepared to meet US EPA reporting requirements. This inventory has been developed concurrently with a similar inventory for ozone precursors (VOC, NO_x, and CO), as part of Maricopa County's requirements under the respective SIPs.

In addition to preparing a periodic emissions inventory for the PM₁₀ nonattainment area (NAA) as a commitment under the current PM₁₀ State Implementation Plan (SIP), the federal Air Emission Reporting Requirements (AERR) rule requires that state and local agencies prepare emissions estimates on a county basis, and submit data electronically to the US EPA for inclusion in the National Emission Inventory (NEI) for 2011.

In order to provide consistency among all these inventories, it was decided to standardize the definition of a “point source” by adopting the designation of point sources as outlined in the AERR:

We are basing the requirement for point source format reporting on whether the source is major under 40 CFR part 70 for the pollutants for which reporting is required, i.e., CO, VOC, NO_x, SO₂, PM_{2.5}, PM₁₀, lead and NH₃ but without regard to emissions of HAPs... [T]his approach will result in a more stable universe of reporting point sources, which in turn will facilitate elimination of overlaps and gaps in estimating point source emissions, as compared to nonpoint source emissions. Under this requirement, states will know well in advance of the start of the inventory year which sources will need to be reported. (US EPA, 2008)

This chapter contains several tables that provide information on point source emissions. Table 2.2–1 provides an alphabetical listing of all point sources and their location. Table 2.4–1 shows the annual and typical daily emissions of PM₁₀, PM_{2.5}, NO_x, SO_x and NH₃ for those point sources that reported emissions of one or more of these pollutants in 2011. Table 2.6–1 summarizes point source emission totals for both Maricopa County and the PM₁₀ nonattainment area. Note that totals shown in the tables may not equal the sum of individual values due to independent rounding.

2.2 Identification of point sources

The Maricopa County Air Quality Department (MCAQD) identified point sources within Maricopa County through its electronic permit system database, EMS, and the 2011 annual emissions reports submitted to the department. A total of 18 stationary sources were identified as point sources using the definition described in Section 2.1. While the Arizona Department of Environmental Quality (ADEQ) retains permitting authority for a limited number of industrial source categories in Maricopa County, no ADEQ-permitted facilities are considered point sources, and are addressed instead as area sources.

Table 2.2–1 contains an alphabetical listing of all point sources, including a unique business identification number, NAICS business classification code, business name, and physical address.

Table 2.2–1. Name and location of all point sources in Maricopa County.

ID #	NAICS	Business name	Address	City	ZIP
3313	221112	APS West Phoenix Power Plant	4606 W Hadley St	Phoenix	85043
43063	221112	Arlington Valley LLC	39027 W Elliot Rd	Arlington	85322 *
127771	331111	CMC Steel Fabricators Inc	11444 E Germann Rd	Mesa	85212
44439	221112	Gila River Power Station	1250 E Watermelon Rd	Gila Bend	85337 *
3300	92811	Luke AFB – 56th Fighter Wing	14002 W Marauder St	Glendale	85309
44186	221112	Mesquite Generating Station	37625 W Elliot Rd	Arlington	85322 *
43530	221112	New Harquahala Generating Co	2530 N 491st Ave	Tonopah	85354 *
20706	32614	New Wincup Holdings Inc	7980 W Buckeye Rd	Phoenix	85043
1879	562212	Northwest Regional Landfill	19401 W Deer Valley Rd	Surprise	85387
1331	337122	Oak Canyon Manufacturing Inc	3021 N 29th Dr	Phoenix	85017
52382	221112	Ocotillo Power Plant	1500 E University Dr	Tempe	85281
42956	221112	Redhawk Generating Facility	11600 S 363rd Ave	Arlington	85322 *
303	332431	Rexam Beverage Can Company	211 N 51st Ave	Phoenix	85043
3315	221112	Santan Generating Station	1005 S Val Vista Rd	Gilbert	85296
4175	424710	SFPP LP Phoenix Terminal	49 N 53rd Ave	Phoenix	85043
3316	221112	SRP Agua Fria Generating Station	7302 W Northern Ave	Glendale	85303
3317	221112	SRP Kyrene Generating Station	7005 S Kyrene Rd	Tempe	85283
1210	337122	Trendwood Inc	2402 S 15th Ave	Phoenix	85007

* = Facility is located outside the PM₁₀ nonattainment area.

2.3 Procedures for estimating emissions from point sources

Annual and typical daily emission estimates were determined from annual source emissions reports, MCAQD investigation reports, permit files and logs, or telephone contacts with sources. For most of the sources, material balance methods were used for determining emissions. Emissions were estimated using the emission factors from AP–42, source tests, engineering calculations, or manufacturers' specifications.

MCAQD distributes annual emissions survey forms to nearly all facilities for which MCAQD has issued an operating permit. Facilities are required to report detailed information on stacks, control devices, operating schedules, and process-level information concerning their annual activities. (See Appendix A for a copy of the instructions to complete the emissions inventory.) These instructions include examples and explanations on how to complete the annual emissions reporting forms that facilities must submit to MCAQD.

After a facility has submitted an annual emissions report to MCAQD, emissions inventory staff check all reports for missing and questionable data, and check the accuracy and reasonableness of all emissions calculations with AP–42, the Factor Information and REtrieval (*webFIRE*) software, and other EPA documentation. Control efficiencies are determined by source tests when available, or by AP–42 factors, engineering calculations, or manufacturers' specifications. MCAQD has conducted annual emissions surveys for permitted facilities since 1988, and the department's database system, EMS, contains numerous automated quality assurance/quality control checks for data input and processing.

2.3.1 Calculation of PM_{2.5} emissions

For all county-permitted sources that submitted an annual emission inventory report, all process-level emissions for PM₁₀, NO_x, SO_x, and NH₃ were calculated for each facility. Actual emissions for these pollutants were calculated using reported emission factors (from AP–42 or source test

results) and reflecting any control devices installed. PM_{2.5} was calculated using a variety of methods, depending on the Source Classification Code (SCC) of the process reported:

1. For those SCCs and control device combinations included in EPA's *WebFIRE*, this database was used to calculate PM_{2.5}, using EPA-recommended emission factors and typical control efficiencies.
2. For processes with no PM₁₀ controls, emission factors for PM_{2.5} published by the California Air Resources Board (CARB, 2004) were used where available.
3. For all other processes (where neither of the above resources provided guidance), PM_{2.5} was assumed equal to PM₁₀ as a conservative estimate.

2.3.2 Application of rule effectiveness

Rule effectiveness reflects the actual ability of a regulatory program to achieve the emission reductions required by regulation. The concept of applying rule effectiveness in a SIP emission inventory has evolved from the observation that regulatory programs may be less than 100 percent effective for some source categories. Rule effectiveness ("RE") is applied to those sources affected by a regulation and for which emissions are determined by means of emission factors and control efficiency estimates.

MCAQD has estimated RE for the following groups of industrial processes:

- For manually controlled processes that are regulated under Maricopa County Rule 316 (Nonmetallic Mineral Processing), the analysis showed an overall rule effectiveness of 73.37%.
- For processes that claimed emissions reductions through the use of a control device, RE calculations were performed separately for Title V and non-Title V sources. Overall RE values of 91.81% (for Title V processes) and 87.81% (for non-Title V processes) were calculated.

Appendix B contains further details on the methods and data used in computing the above RE rates.

2.4 Detailed overview of point source emissions

Table 2.4–1 provides a summary of annual and typical daily emissions from all point sources, within and outside the PM₁₀ nonattainment area. Sources for which rule effectiveness has been applied (for PM₁₀ emissions) are noted. Values of "0.00" and "0.0" for annual and daily emissions denote a value below the level of significance (0.005 tons/yr and 0.05 lbs/day, respectively).

Table 2.4–1. Annual and typical daily point source emissions, by facility.

ID #	Business name	Annual emissions (tons/yr)					Typical daily (lbs/day)					
		PM ₁₀	PM _{2.5}	NO _x	SO _x	NH ₃	PM ₁₀	PM _{2.5}	NO _x	SO _x	NH ₃	
3313	APS West Phoenix Power Plant	24.90	22.37	596.56	4.37	30.58	136.8	122.9	3,277.8	24.0	168.0	
43063	Arlington Valley LLC	†*	17.20	15.09	38.68	2.56	6.29	95.2	83.6	223.5	16.1	34.6
127771	CMC Steel Fabricators Inc	*	20.13	14.73	34.05	27.83		191.4	139.7	318.6	267.5	
44439	Gila River Power Station	†	41.27	37.53	194.22	8.32	22.46	227.0	206.4	1,070.0	45.7	123.4
3300	Luke AFB – 56th Fighter Wing	*	0.67	0.66	10.04	0.21		4.3	4.3	65.1	1.4	
44186	Mesquite Generating Station	†	111.61	104.66	192.49	13.71	14.63	613.5	575.3	1,061.5	75.6	80.4
43530	New Harquahala Generating Co	†	21.43	21.39	23.24	1.15	16.67	117.8	117.5	127.7	6.3	91.6
20706	New Wincup Holdings Inc		0.49	0.49	11.82	0.10		2.7	2.7	65.0	0.6	
1879	Northwest Regional Landfill		48.39	16.29	9.74	2.36		307.5	102.5	53.5	13.0	
1331	Oak Canyon Manufacturing Inc		0.01	0.01				0.1	0.1			
52382	Ocotillo Power Plant		10.59	8.17	82.96	0.38		58.2	44.9	455.8	2.1	
42956	Redhawk Generating Facility	†	56.67	50.41	150.82	8.00	13.71	311.5	277.1	830.5	44.1	75.3
303	Rexam Beverage Can Company	*	0.33	0.33	4.35	0.03		1.8	1.8	23.9	0.1	
3315	Santan Generating Station		29.46	27.99	257.77	5.62	7.87	161.9	153.8	1,416.3	30.9	43.2
4175	SFPP LP Phoenix Terminal		2.27	1.07	4.89	0.25		13.7	6.2	26.9	1.4	
3316	SRP Agua Fria Generating Station		3.64	3.11	104.92	3.29		20.0	17.1	576.5	18.1	
3317	SRP Kyrene Generating Station		13.37	13.12	27.77	1.21	4.48	73.5	72.1	152.6	6.6	24.6
1210	Trendwood Inc (S. 15th Ave.)		0.05	0.05				0.4	0.4			
TOTAL:			402.48	337.46	1,744.32	79.39	116.69	2,337.2	1,928.4	9,745.1	553.5	641.2

† = Facility is outside the PM₁₀ nonattainment area.

* = Facility for which rule effectiveness has been applied.

2.5 Emission reduction credits

A major source or major modification planned in a nonattainment area must obtain emissions reductions as a condition for approval. These emissions reductions, generally obtained from existing sources located in the vicinity of a proposed source, must offset the emissions increase from the new source or modification. The obvious purpose of acquiring offsetting emissions decreases is to allow an area to move towards attainment of the national ambient air quality standards while still allowing some industrial growth.

In order for these emission reductions to be available in the future for offsetting, they must be: 1) explicitly included and quantified as growth in projection-year inventories required in rate of progress plans or attainment demonstrations that were based on 1990 actual inventories, and 2) meet the requirements outlined in MCAQD Rule 240 (Permit Requirements for New Major Sources and Major Modification to Existing Major Sources).

Table 2.5–1 provides a list of emission reduction credits for PM₁₀, NO_x, and SO_x. Only one previously operational facility maintains emission reduction credits for these pollutants that are still valid for inclusion in this report and the rate of progress plan.

Table 2.5–1. Emission reduction credits as of December 31, 2011.

ID	Facility	Reduction Date	Emission reduction credits (tons/yr)		
			PM ₁₀	NO _x	SO _x
1151	Freescale Semiconductor, Inc.	3/1/2004	1.80	9.80	0.16

2.6 Summary of point source emissions

Table 2.6–1 provides a summary of point source emissions for Maricopa County and the PM₁₀ nonattainment area, including emission reduction credits.

Table 2.6–1. Annual and typical daily point source emissions (including emission reduction credits).

Geographic Area	Annual emissions (tons/yr)					Typical daily (lbs/day)				
	PM ₁₀	PM _{2.5}	NO _x	SO _x	NH ₃	PM ₁₀	PM _{2.5}	NO _x	SO _x	NH ₃
Maricopa County	404.28	337.46	1,754.12	79.55	116.69	2,347.1	1,928.4	9,798.8	554.4	641.2
PM ₁₀ NAA	156.10	108.39	1,154.67	45.81	42.93	982.1	668.4	6,485.7	366.6	235.9

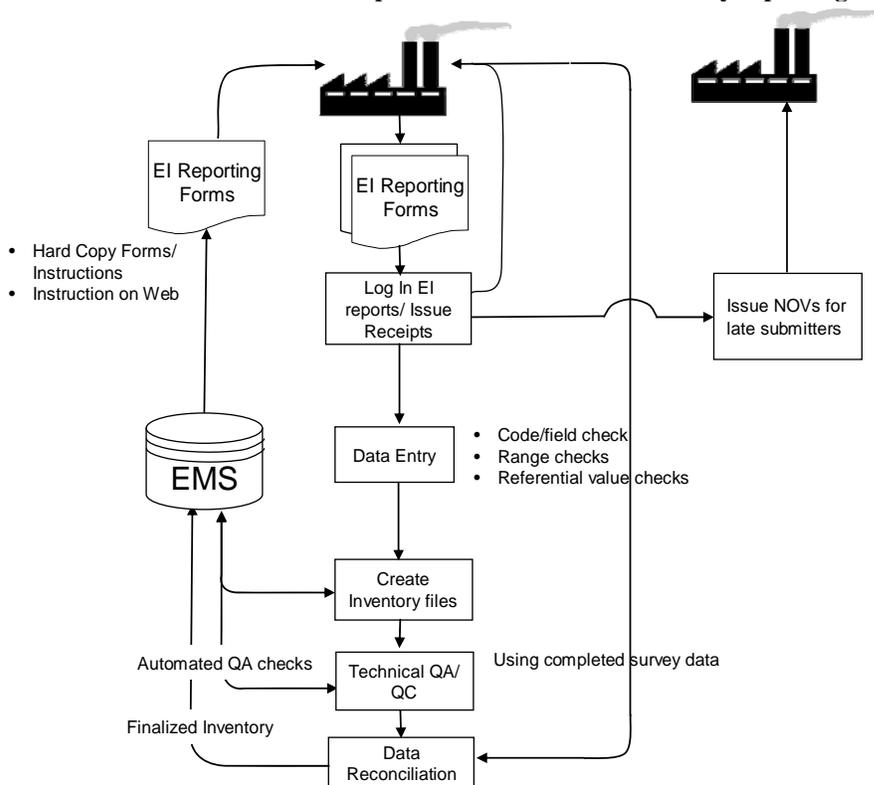
2.7 Quality assurance / quality control procedures

2.7.1 Emission survey preparation and data collection

The MCAQD's Emissions Inventory (EI) Unit annually collects point source criteria pollutant emission data from sources in the county. MCAQD annually reviews EPA guidance, documents from the Emission Inventory Improvement Program (EIIP), and other source materials to ensure that the most current emission factors and emission calculation methods are used for each year's survey. Each January, the EI Unit prepares a pre-populated hard copy of the preceding year's submissions and mails reporting forms to permitted sources, along with detailed instructions for completing the forms. (A copy of these instructions is included as Appendix A). The EI Unit asks sources to verify and update the data. The EI Unit also holds numerous workshops each spring to assist businesses in completing EI forms.

The general data flow for data collection and inventory preparation is shown in Figure 2.7–1.

Figure 2.7–1. Data flow for annual point source emission inventory reporting.



2.7.2 Submission processing

Submitted EI reports are logged in as they are received, and receipts are issued for emissions fees paid. The data are input “as received” into the department's data base. During data entry, a variety of automated quality control (QC) checks are performed, including:

- pull-down menus to minimize data entry errors (e.g., city, pollutant, emission factor unit, etc.)
- mandatory data field requirement checks (e.g., a warning screen appears if a user tries to save an emission record with a missing emission factor).
- range checks (e.g., were valid SCC, Tier, SIC, and NAICS codes entered?)
- referential value checks (e.g., emission factor units, annual throughput units)
- automatic formatting of date, time, telephone number fields, etc.

Automated quality assurance (QA) checks on the report that has been entered include the following:

- Comparing reported emission factors to SCC reference lists
- Comparing reported emission factors to material name reference list
- Checking the report for calculation errors. This includes annual throughput, emission factors, unit conversion factors (e.g., BTU to therms), capture efficiency, primary / secondary control device efficiency, and any offsite recycling credits claimed.
- Checking the report for completeness of required data.

When data entry is complete, an electronic version of the original data is preserved separately to document changes made during the technical review and QA/QC process.

When errors are flagged, the businesses are contacted and correct information is obtained and input to the EMS. Outstanding reporting issues are documented. Confidential business information (CBI) is identified by a checkbox on the form, and these data elements are flagged during data entry and are not transmitted to the EPA.

To prepare the inventory for submittal to the National Emissions Inventory (NEI), the EI Unit has developed a series of MS-Access queries to extract data from EMS; and to append or convert codes, units of measure, etc., in order to create staging tables that adhere to the EPA’s Consolidated Emissions Reporting Schema (CERS). These tables are then converted to XML files using EPA’s Bridge conversion tool for submittal to the EPA’s Emission Inventory System (EIS).

2.7.3 Analysis of annual point source emissions data for this inventory

Two air quality planners checked inventory accuracy and reasonableness, and assured that all point sources had been identified and that the methodology applied to calculate emissions was appropriate and that the calculations were correct. Other reasonableness checks were conducted by recalculating emissions using methods other than those used to make the initial emissions calculations and then comparing results. QA was conducted by checking all emissions reports submitted to MCAQD for the year 2011 for missing and questionable data and by checking the accuracy and reasonableness of all emissions calculations made for such reports. Notes con-

cerning follow-up calls and corrections to calculations were documented on each 2011 annual emissions report.

The QA point source coordinator reviewed and checked calculations, identified errors, and performed completeness, reasonableness and accuracy checks.

2.8 References

CARB, 2004. Speciation Profiles and Size Fractions. Available at: <http://www.arb.ca.gov/ei/speciate/speciate.htm>.

US EPA, 2008. Air Emissions Reporting Requirements. 73 Fed. Reg. 76539. Available at: http://www.epa.gov/ttn/chief/aerr/final_published_aerr.pdf.