

AERSCREEN Input Form Instructions



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Introduction

The Maricopa County Air Quality Department (MCAQD) regulates all facilities and sources that release air pollutants into the ambient atmosphere. The primary purpose of this form is to provide technical information for a new or modified source to MCAQD in order to conduct screening air dispersion modeling to evaluate ground-level concentrations of criteria air pollutants for comparison against the National Ambient Air Quality Standards (NAAQS). Complete the form by typing or printing legibly. Enter information in the fields, as applicable to the emission point type. Note that not all data pertains to all emission point types. Complete one form per emission point. If you need help completing this form, please see our website or contact the Permitting Division at 602-618-9337.

Instructions for the AERSCREEN Input Form

These instructions are provided to assist owners and operators of affected facilities and sources located in Maricopa County to provide accurate information related to emissions and exhaust parameters to MCAQD.

Please provide data in specified units. If providing data in units other than specified, clearly indicate by underlining entry and noting alternate units. Unit abbreviations are noted below.

lb/hr - pounds per hour

tons/yr - tons per year

ft - feet

°F - Fahrenheit

fps - feet per second

ACFM - actual cubic feet per minute

BTU/hr - British Thermal Units per hour

Section 1 – Facility Information:

Business name: Enter the business name, as filed with the Arizona Corporation Commission.

Facility/Registered Entity Name: Enter the Facility/Registered Entity Name, if different than Business name.

Current Permit Number: If applicable, enter the current air permit number.

Address of site: Enter the address of the site, including address, city, and zip code.

Contact Person Details: Enter the name, title, email, and phone number for the contact person for the permit.

Section 2 – Emission Point Characteristics:

Section 2a – Stack or Release Type: Check the appropriate box for stack or release types. Select only one type per emission source. See the following table for source type descriptions.

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Source Type	Source Options	Source Description	Examples
Point	Vertical Stack, Capped Stack, Horizontal Stack	An emission source where emissions are being released through a stack into the atmosphere. Point sources can have weather caps (select capped stack) and can discharge vertically (select vertical stack), horizontally (select horizontal stack), and downward (select capped stack).	Combustion exhaust from a heater, boiler, engine or a thermal oxidizer, emissions from a baghouse or dust collection system is vented through a stack
	Flare	A flare is an elevated source that may be modeled using point source characterization or 'flare' source characterization. Flare source characterization requires certain input parameters that are specific to the flare and may not be readily available. Section 2e should be completed if the design heat input rating for the flare is known.	Flare (industrial wastewater or landfill)
Fugitive	Volume	Fugitive emission sources that have an initial vertical dimension.	Open buildings, open storage tanks, building roof vents, multiple vents, conveyor belts, transfer points
	Area	A low-level or ground-level release with no plume rise. Area sources can be rectangular, circular, or polygonal in shape.	Storage piles, open pits, ponds

Description of the Source: Enter a brief description of the source. Examples include: 20.0 MMBtu/hr natural gas-fired boiler, 600 hp diesel engine, emergency generator, stock pile, or process vent.

Source ID: Enter the assigned Source ID from the air permit, or assign a source ID.

Source Coordinates: Enter the source coordinates in latitude and longitude using decimal degrees, to the 4th decimal place (e.g., 33.2827 degrees). Coordinates can be obtained from GoogleMaps, GoogleEarth, the County Assessor's website (<http://maps.mcassessor.maricopa.gov/>), or by using a cell phone compass application.

Distance from Source to the Nearest Property Line: Enter the distance between the emission source and the nearest property boundary in feet. See Figure 1 for illustration.

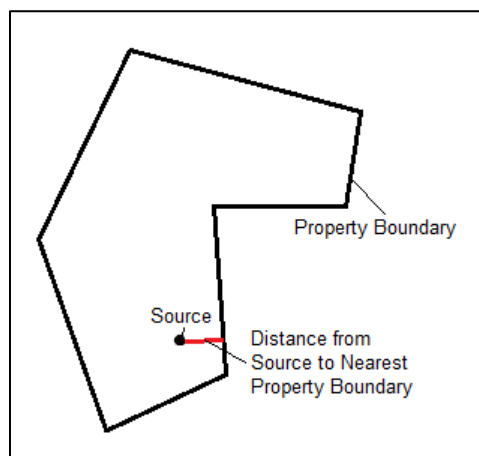


Figure 1. Distance from Source to Nearest Property Boundary Illustration

Section 2b – For Stacks/Point Sources Only (see Figure 2):

Stack Height (Above Ground): Enter the stack height, above ground level in feet.

Stack Diameter: Enter the inside diameter of the exit point of the stack in feet.

Stack Exhaust Temperature: Enter the stack exhaust temperature at the exit of the stack in degrees F. If exhaust temperature is ambient, please indicate by writing “Ambient”.

Stack Exit Flow Rate OR Exit Velocity: Enter the stack exit flow rate (in acfm) OR exit velocity (in ft/s). You do not need to enter both.

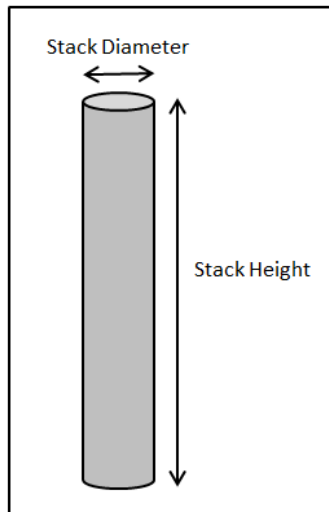


Figure 2. Stack height and stack diameter illustration.

Section 2c - For Volume Sources Only (see Figure 3):

Initial Lateral Dimension of the Volume: Enter the width of the volume source divided by 4.3. For non-square sources, the width of the source should be reported as the minimum building length side.

Initial Vertical Dimension of the Volume: Enter the height of the volume source divided by 2.15.

Center Point of the Volume: Enter the center point height above ground of the volume source in feet.

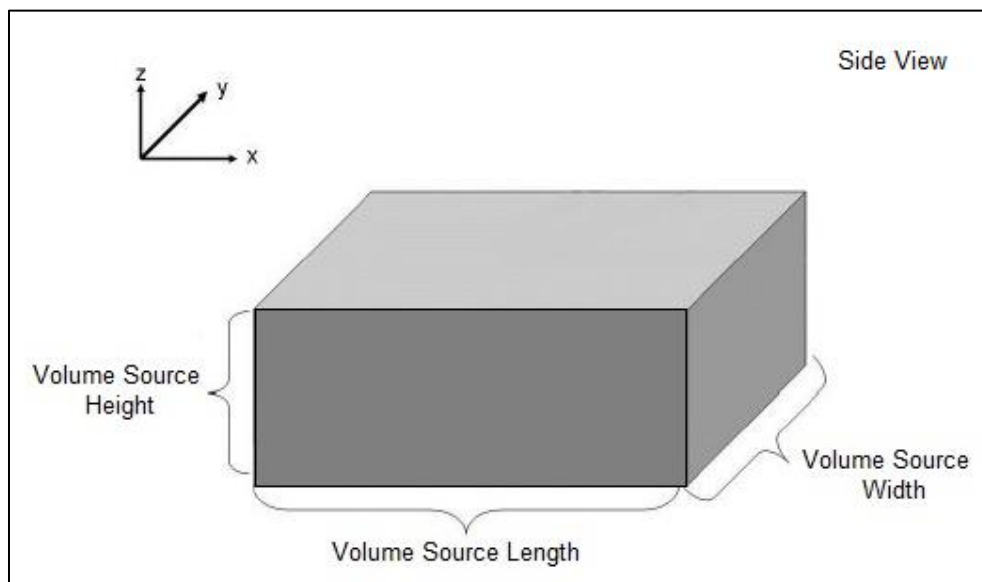


Figure 3. Volume source parameter illustration.

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Section 2d - For Area Source Only (see Figure 4):

Release Height (Above Ground): Enter the release height, above ground level in feet. Enter “0” for ground-based sources.

Area Source Length (if a Rectangular Source): Enter the Maximum Horizontal Dimension of the Source, or length of the longest side, in feet.

Area Source Width (if a Rectangular Source): Enter the Minimum Horizontal Dimension of the Source, or length of the shortest side, in feet.

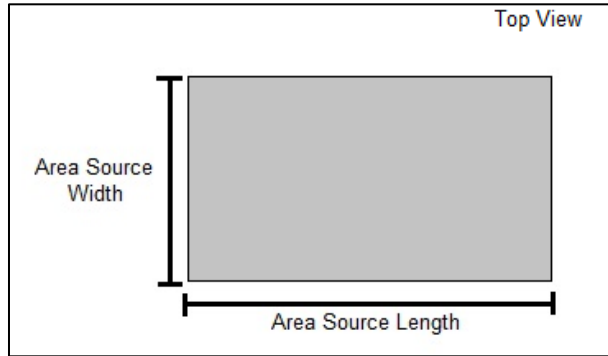


Figure 4. Area source parameter illustration.

Radius of the Circle (if a Circular Source): Enter the radius of the circle of the source, in feet.

Optional

Orientation Angle: Enter the orientation angle of the area source in degrees (0-360).

Initial Vertical Dimension of Plume: Enter the initial vertical dimension of the area source plume in feet.

Section 2e - For Flares Only:

Heat Release Rate: Enter the maximum heat release rating of the flare in cal/s.

Optional (if known)

Radiative Heat Loss Fraction: enter the radiative heat loss fraction of the flare.

Section 3 – Emission Rates:

The emission rates reported in the air permit application should match the emission rates appropriate for the pollutant averaging times with which they exceeded the minor NSR threshold.

Pollutant		Averaging Time	Emission Rate
Carbon Monoxide (CO)		8 hours	lbs/8-hours
		1 hour	lbs/hour
Nitrogen Dioxide (NO ₂)		1 hour	lbs/hour
		1 year	tons/year
Ozone (O ₃)		8 hours	lbs/8-hours
Particulate Matter	PM _{2.5}	1 year	tons/year
		24 hours	lbs/day
	PM ₁₀	24 hours	lbs/day
Sulfur Dioxide (SO ₂)		1 hour	lbs/hour
Lead (Pb)		Rolling 3 month average	lbs/3 months

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Emission rates for lbs/hour, lbs/day or lbs/8-hour should represent the worst-case emission rate that could occur in any given time period. Emission scenarios that are continuous enough or frequent enough to contribute significantly to the maximum daily concentrations should be included. See the examples in the modeling guidance document section 8.k. for assistance.

It is recommended the applicant consult MCAQD for any intermittent sources they are unsure of including.

Section 4 – Building/Downwash Parameters (if applicable, only point sources):

Provide information for the largest building in the region of influence of the stack. Provide building information only for point sources. An example for all building downwash parameters is provided in Figure 5. The region of influence is defined as a building that is within five times the lesser of its height or width from the stack.

If the applicant has a Building Profile Input Program for Plume Rise Model Enhancements (BPIPPRM) file, this should be provided to the Department instead of the parameters outlined below.

Building Height: Enter the height of the dominant building, above ground level in feet.

Building Length: Enter the Maximum Horizontal Building Dimension, or length of the longest side, in feet.

Building Width: Enter the Minimum Horizontal Building Dimension, or length of the shortest side, in feet.

Distance between Stack and Center of the Building: Enter the distance between the stack and the center of the building in feet.

Maximum Building Dimension Angle to North: Enter the angle (in degrees) from North of the longest side of the building. Angle range is 0 to 179 degrees. If unable to provide, ensure that site buildings are included on site plan required by the air permit application.

Direction of Stack from Center of the Building: Enter the angle (in degrees) from North of the stack location relative to the center of the building. Angle range is 0 to 360 degrees. If unable to provide, ensure that site buildings are included on site plan required by the air permit application.

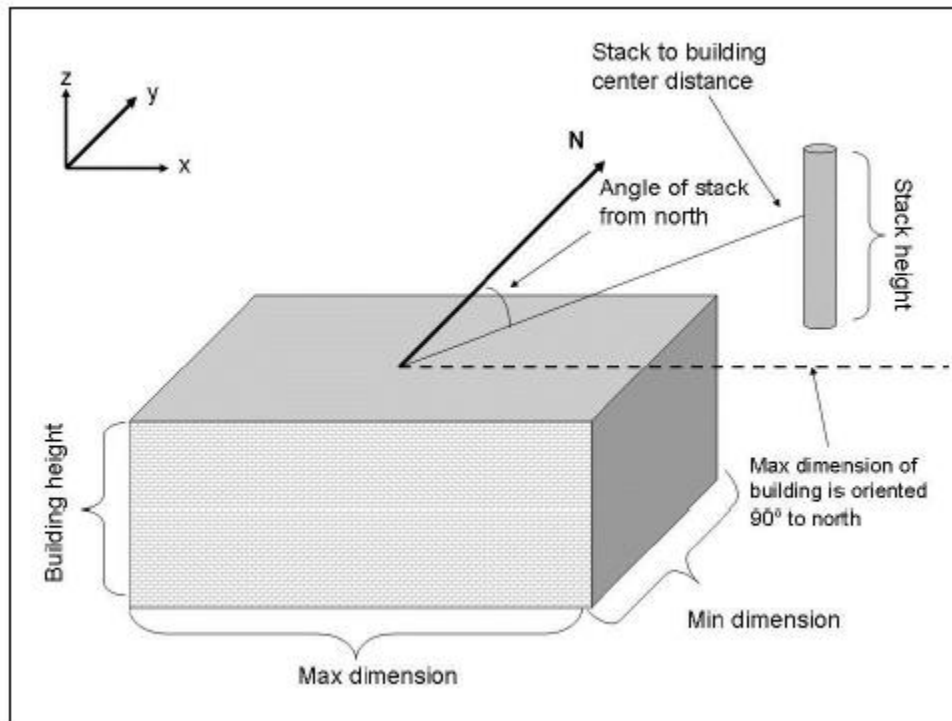


Figure 5. Stack and building orientation for a building oriented 90 degrees to north and stack oriented 45 degrees to north. (From U.S. EPA's AERSCREEN User's Guide, EPA-454/B-15-005)

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Section 5 – Surface Characteristics:

Provide information on the surface characteristics of the facility. The applicant may either use AERMET seasonal tables selecting Surface Profile Type and Climate Profile types or user defined values for Surface Roughness, Bowen Ratio and Albedo.

Surface Profile Type: Select the surface profile type that best fits.

Water, Coniferous Forest, Cultivated Land, Deciduous Forest, Grassland, Desert Shrubland, Swamp or Urban

Climate Profile: Dry should be used as the Climate Profile for Maricopa County, however, if Wet or Average are more representative please provide an explanation for their use.

OR

Surface Roughness: Provide the surface roughness for the facility area.

Bowen Ratio: Provide the Bowen ratio for the facility area.

Albedo: Provide albedo for the facility area.