

Guidelines for Reporting VOC Emissions from Component Leaks



FEBRUARY 2015

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PREFACE

The South Coast Air Quality Management District (District) Rule 301(e) requires facilities operation under District permit to annually report their emissions from all equipment (permitted and non-permitted) to the District. This guidelines document represents a revision to the District's "Guidelines for Fugitive Emission Calculations – Petroleum Industry", dated June 1999 and "Guidelines for Fugitive Emissions Calculations", dated June 2003 to reflect the amendments to Rule 1173 and changes in the AER program. This guidelines document provides calculation methods for estimating fugitive emissions (component leaks) from the petroleum industry (i. e., oil and gas production facilities, refineries and marketing terminals), guidelines for component counting and leak quantification, and specific instructions (including examples) for how to report VOC emissions from component leaks.

This guidelines document primarily makes reference to the document entitled, "California Guidelines for Estimating Mass Emissions of Fugitive Hydrocarbon Leaks at Petroleum Facilities", dated February 1999, prepared by the California Air Pollution Control Officers Association (CAPCOA), and the California Air Resources Board (ARB). (The CAPCOA/ARB document represented a multi-year collaborative effort between the industry, the CAPCOA and ARB to provide a consistent approach for estimating fugitive emissions from equipment components used in the California petroleum industry. The CAPCOA/ARB document provides different calculation methodologies as well as component identification and counting guidelines, component-screening procedures and leak quantification methods, which must be followed by facilities in order to more accurately calculate the fugitive emissions. A copy of the CAPCOA/ARB document may be obtained from the District.).

The guidelines document contains a brief description of the 3 different methods of calculating fugitive hydrocarbon emissions from equipment component leaks and also provides guidance on how the components and emissions data should be reported to the District. These 3 methods are as follows:

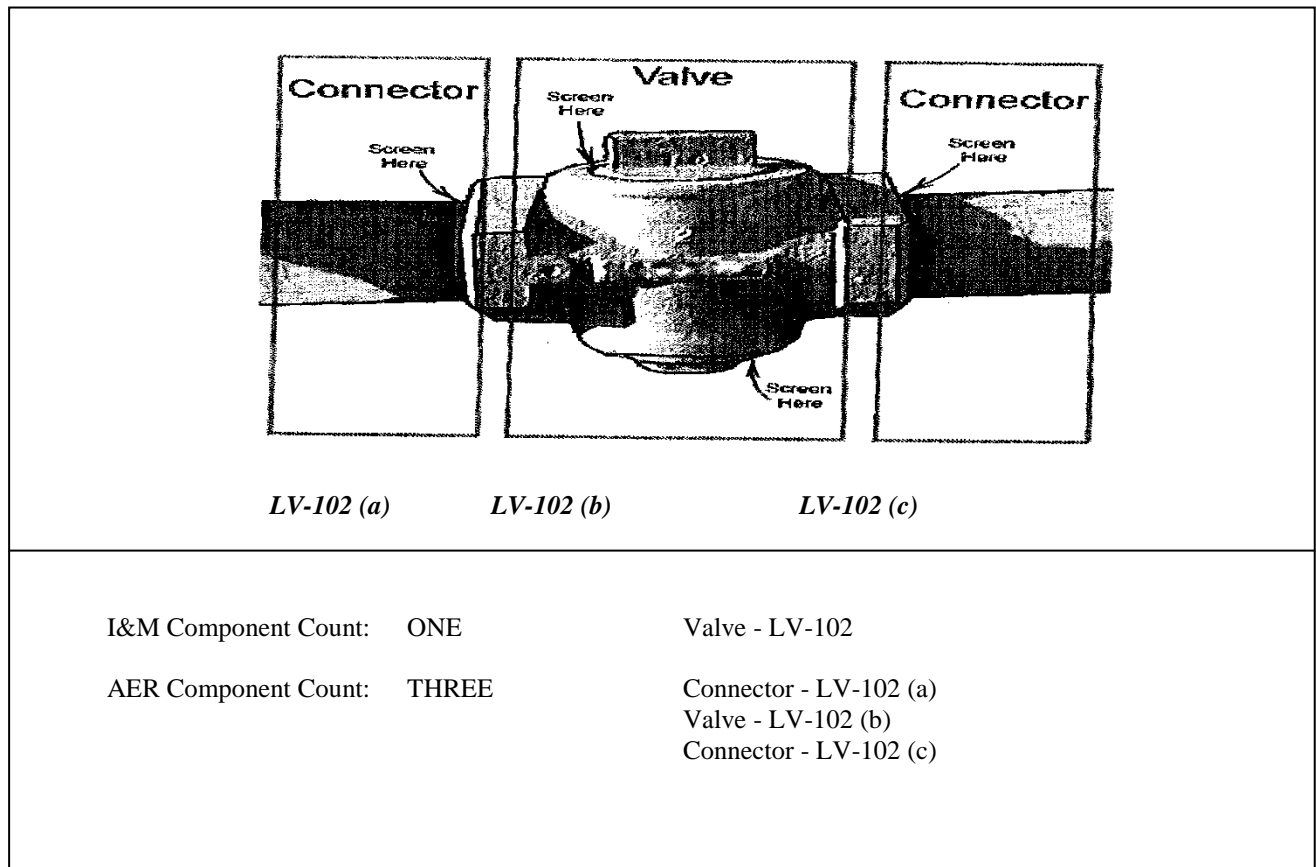
- Method 1:** Average (Default) Emissions Factor
- Method 2:** Correlation Equation
- Method 3:** Screening Value Range

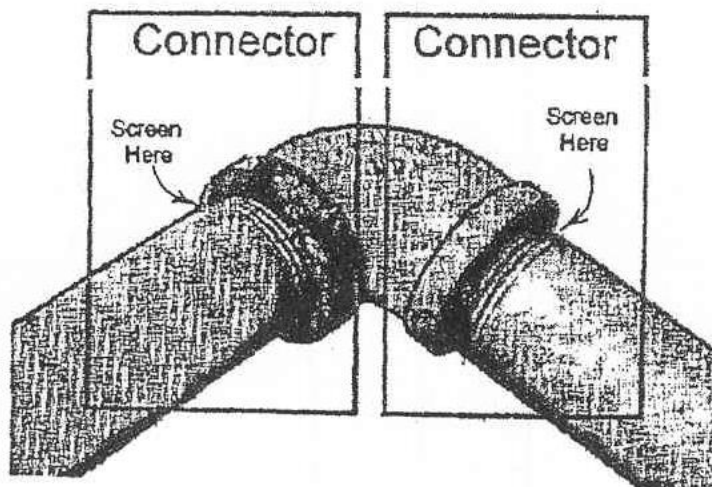
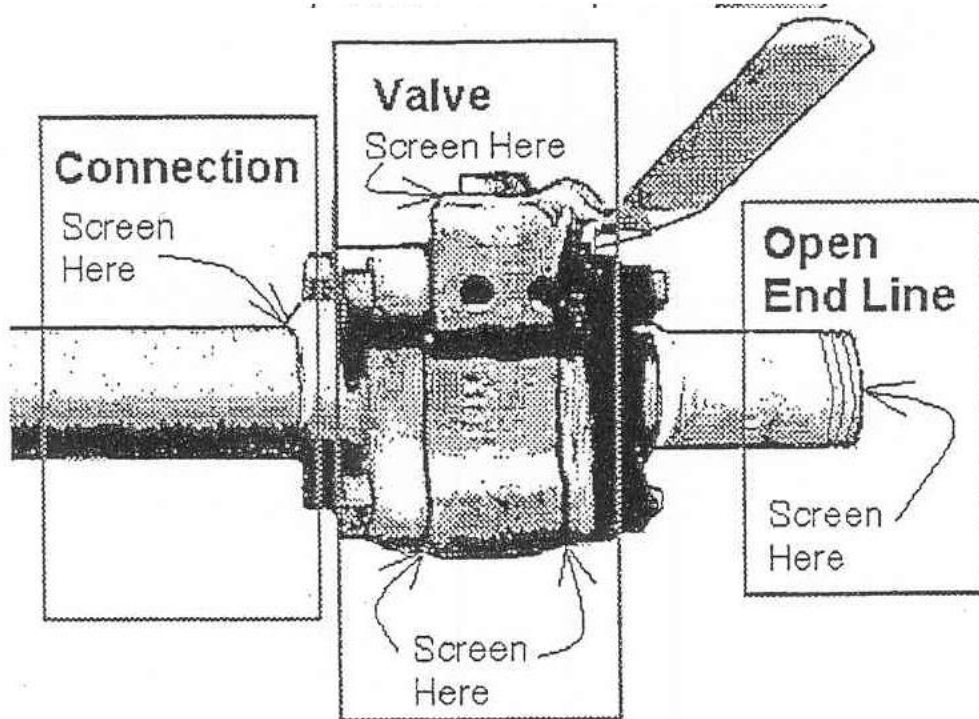
The District may require adjustment of the reported fugitive emissions based on the results of District inspections and/or audits of each refinery's data for discrepancies in reported parameters used for calculating emissions.

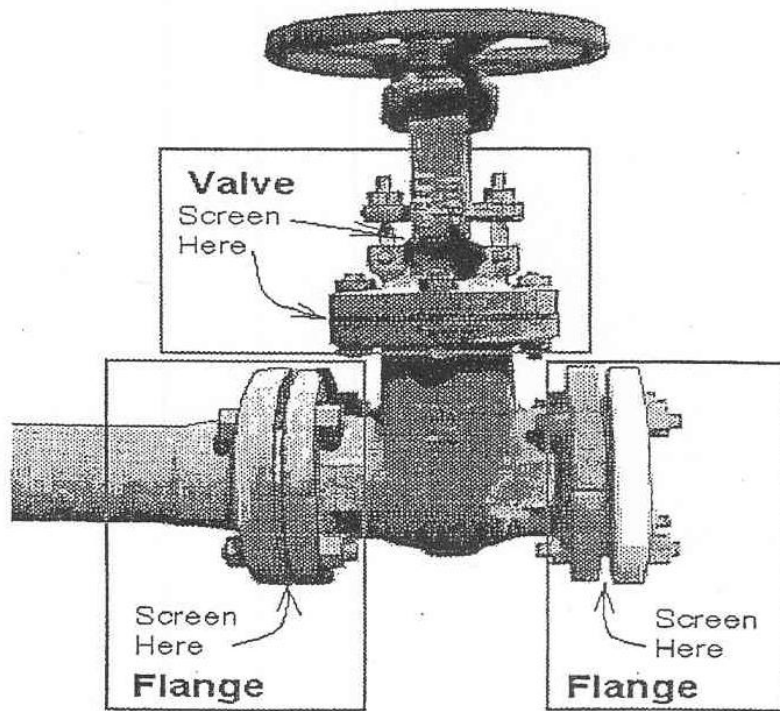
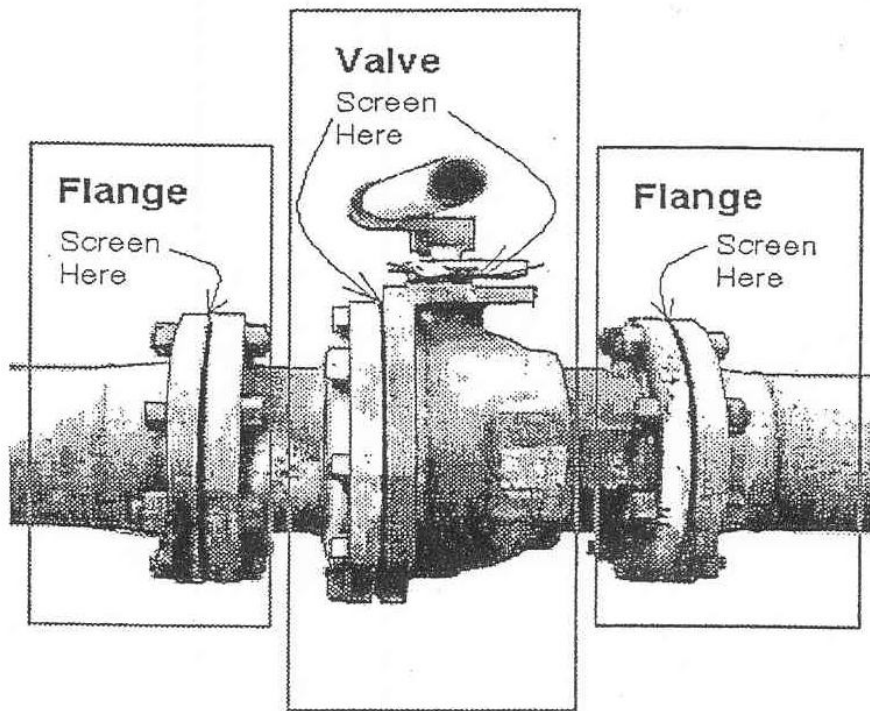
COMPONENT IDENTIFICATION AND SCREENING ILLUSTRATION

Under Rule 1173 I&M program, components are required to be identified and labeled for screening purposes. For example, as illustrated in the following diagram, a component is identified as a valve and tagged as LV-102.

However, for the Annual Emission Reporting (AER) program, all potential leak points associated with a component must be identified and screened for leaks. For AER purposes, potential leak points are counted as individual components. For example, in the following diagram, although a valve is identified and labeled as LV-102, the potential leak points are identified as 3 individual components: 1 connector (LV-102 (a)), 1 valve (LV-102 (b)), and 1 connector (LV-102 (c)). Emissions for each component are then calculated based on screening values measured. Note that for component LV-102 (b), screening value will be the higher of the two readings from the screening points.







METHOD 1 - Average Emission Factor Method

The Average Emission Factor Method may be used to calculate fugitive emissions only when an Inspection and Maintenance Program (i.e., Rule 1173 or Rule 1176) is not in place at the facility and reliable site-specific screening data are not available.

DISTRICT'S DEFAULT EMISSION FACTORS

REFINERIES

SOURCE TYPE	Emission Factor (lbs/source/yr)
Valves HC gas/vapor	72
Valves fuel & natural gas	12
Valves light liquid	57
Valves heavy liquid	4.4
Inaccessible valves HC gas/vapor	120
Inaccessible valves light liquid	74
Pumps light liquid	520
Pumps heavy liquid	402
Compressors	2,570
Others (fittings, hatches, sight-glasses, meters, etc.)	4.9
PRVs (no rupture disc)	1,135
Process drains	398

OIL/GAS PRODUCTION AND CHEMICAL PLANTS

SOURCES TYPE	Emission Factors (lbs/source/yr)
Production Facility – Valves in ROG vapor service	12
Others (fittings, hatches, sight-glasses, meters, etc.)	4.9
Production Facility – Valves in light liquid service.	47
Production Facility – Valves in heavy liquid service.	4.4
Production Facility – PRVs to atmosphere (no rupture disc)	567
Gas Plant – Valves in ROG service	12
Gas Plant – PRVs to atmosphere (no rupture disc)	193
Pumps in light liquid service.	432
Pumps in heavy liquid	86
Compressors in vapor recovery service	145
Compressors in gas injection service	437

TERMINALS/DEPOTS

SOURCE TYPE	Emission Factors (lbs/source/yr)
Valves in ROG vapor service	12
Valves in light liquid service	47
Valves in heavy liquid service	4.4
Pumps in light liquid service	432
Pumps in heavy liquid service	86
Compressors in vapor recovery service	145
PRVs to atmosphere (no rupture disc)	193
Others (fittings, hatches, sight-glasses, meters, etc.)	4.9

METHOD 2 - Correlation Equation Method

If an Inspection and Maintenance Program (i. e., Rule 1173 or Rule 1176) is in place at the facility and reliable site-specific screening data are available, the Correlation Equation Method can be used to calculate the fugitive emissions. Oil and Gas Production facilities may use the Correlation Equations and Factors for Refineries and Marketing Terminal.

TABLE IV-3a: CAPCOA-REVISED 1995 EPA CORRELATION EQUATIONS AND FACTORS FOR REFINERIES AND MARKETING TERMINALS ^a

Component Type/ Service Type	Default Zero Factor ^b lb/hr [kg/hr]	Correlation Equation ^c lb/hr [kg/hr]	Pegged Factor ^d lb/hr [kg/hr]	
			10,000 ppmv	100,000 ppmv
Valves/All	1.7x10⁻⁵ [7.8x10 ⁻⁶]	5.00x10⁻⁶(SV)^{0.747} [2.27x10 ⁻⁶ (SV) ^{0.747}]	0.141 [0.064]	0.304 [0.138]
Pump seals/All	4.2x10⁻⁵ [1.9x10 ⁻⁵]	1.12x10⁻⁴(SV)^{0.622} [5.07x10 ⁻⁵ (SV) ^{0.622}]	0.196 [0.089]	1.342 [0.610] ^e
Others ^f /All	8.8x10⁻⁶ [4.0x10 ⁻⁶]	1.92x10⁻⁵(SV)^{0.642} [8.69x10 ⁻⁶ (SV) ^{0.642}]	0.181 [0.082]	0.304 [0.138]
Connectors/All	1.7x10⁻⁵ [7.5x10 ⁻⁶]	3.37x10⁻⁶(SV)^{0.736} [1.53x10 ⁻⁶ (SV) ^{0.736}]	0.066 [0.030]	0.075 [0.034]
Flanges/All	6.8x10⁻⁷ [3.1x10 ⁻⁷]	9.92x10⁻⁶(SV)^{0.706} [4.53x10 ⁻⁶ (SV) ^{0.706}]	0.209 [0.095]	0.209 [0.095]
Open-ended lines/All	4.4x10⁻⁶ [2.0x10 ⁻⁶]	4.19x10⁻⁶(SV)^{0.724} [1.90x10 ⁻⁶ (SV) ^{0.724}]	0.073 [0.033]	0.180 [0.082]

^aSource: SBCAPCD Report, dated May 1, 1997, entitled *Review of the 1995 Protocol: The Correlation Equation Approach To Quantifying Fugitive Hydrocarbon Emissions At Petroleum Industry Facilities*. Technical corrections and adjustments were made to the refineries and marketing terminals bagged data, obtained by use of the blow through method, to account for the hydrocarbon leak flow rate.

^bThe default zero factors apply only when the screening value (SV), corrected for background, equals 0.0 ppmv (i.e., the screening value is indistinguishable from background reading). The default zero factors were based on the combined 1993 refinery and marketing terminal data only; default zero data were not collected from oil and gas production facilities.

^cThe correlation equations apply for actual screening values, corrected for background, between background and 9,999 ppmv and can be used for screening values up to 99,999 ppmv at the discretion of the local district.

^dThe 10,000 ppmv pegged factors apply for screening values, corrected for background, equal to or greater than 10,000 ppmv and are used when the correlation equations are used for screening values between background and 9,999 ppmv. The 100,000 ppmv pegged factors apply for screening values reported pegged at 100,000 ppmv and are used when the local district authorizes use of the correlation equations for screening values between background and 99,999 ppmv.

^eOnly 3 data points were available for the pump seals 100,000 ppmv pegged factor.

^fThe “other” component type includes instruments, loading arms, pressure relief valves, vents, compressors, dump lever arms, diaphragms, drains, hatches, meters, and polished rods stuffing boxes. This “others” component type should be applied for any component type other than connectors, flanges, open-ended lines, pumps, or valves. However, if an acceptable emission estimate exists which more accurately predicts emissions from the source, then that emission estimate applies (e.g., positive flowing junction boxes in SCAQMD). (For components such as junction box vents with positive flow, use the following correlation equation: 3.148E-04 (SV)^{1.02} lb/hr [1.428E-04(SV)^{1.02} kg/hr].

METHOD 3 - Screening Value Range Method

If an Inspection and Maintenance Program (i.e., Rule 1173 or Rule 1176) is in place at the facility and reliable site-specific screening data are available, the facility may choose to use the Screening Value Range Method to calculate the fugitive emissions as an alternative to Method 2 – Correlation Equation Method. In the Screening Value Range Method, emissions are calculated using the average screening value range factors based on two specific leak levels. Note that facilities may not use the Screening Value Range Method in combination with the Correlation Equation Method.

TABLE IV-2a: 1995 EPA PROTOCOL - REFINERY SCREENING VALUE RANGE EMISSION FACTORS^a

Component Type	Service Type	< 10,000 ppmv Emission Factor (kg/hr/source) ^b	< 10,000 ppmv Emission Factor (lbs/hr/source) ^b	≥ 10,000 ppmv Emission Factor (kg/hr/source) ^b	≥ 10,000 ppmv Emission Factor (lbs/hr/source) ^b
Valves	Gas	6.0x10 ⁻⁴	1.3x10⁻³	2.626x10 ⁻¹	5.8x10⁻¹
	Light liquid	1.7x10 ⁻³	3.7x10⁻³	8.52x10 ⁻²	1.9x10⁻¹
	Heavy liquid	2.3x10 ⁻⁴	5.1x10⁻⁴	2.3x10 ⁻⁴	5.1x10⁻⁴
Pump seals ^c	Light liquid	1.20x10 ⁻²	2.6x10⁻²	4.37x10 ⁻¹	9.6x10⁻¹
	Heavy liquid	1.35x10 ⁻²	3.0x10⁻²	3.885x10 ⁻¹	8.5x10⁻¹
Compressor seals	Gas	8.94x10 ⁻²	2.0x10⁻¹	1.608	3.54
Pressure relief valves	Gas	4.47x10 ⁻²	9.8x10⁻²	1.691	3.72
Connectors	All	6.0x10 ⁻⁵	1.3x10⁻⁴	3.75x10 ⁻²	8.3x10⁻²
Open-ended lines	All	1.5x10 ⁻³	3.3x10⁻³	1.195x10 ⁻²	2.6x10⁻²

^aSource: 1995 EPA Protocol for Equipment Leak Emission Estimates (EPA-453/R-95-017, November 1995) which referenced the 1982 Petroleum Refining Study (EPA-450/3-82-010, 1982). These factors are based on the 1980 and 1982 refining fugitive emissions studies.

^bThese factors are for non-methane organic compound emission rates.

^cThe light liquid pump seals factor can be used to estimate the leak rate from agitator seals.

TABLE IV-2b: 1995 EPA PROTOCOL - MARKETING TERMINAL SCREENING VALUE RANGE EMISSION FACTORS^a

Component Type	Service Type	< 10,000 ppmv THC Emission Factor (kg/hr/source) ^b	< 10,000 ppmv THC Emission Factor (lbs/hr/source) ^b	≥ 10,000 ppmv THC Emission Factor (kg/hr/source) ^b	≥ 10,000 ppmv THC Emission Factor (lbs/hr/source) ^b
Valves	Gas	1.3x10 ⁻⁵	2.9x10⁻⁵	N/A	N/A
	Light liquid	1.5x10 ⁻⁵	3.3x10⁻⁵	2.3x10 ⁻²	5.1x10⁻²
Pump seals	Light liquid	2.4x10 ⁻⁴	5.3x10⁻⁴	7.7x10 ⁻²	1.7x10⁻¹
Others (compressors and others) ^c	Gas	1.2x10 ⁻⁴	2.6x10⁻⁴	N/A	N/A
	Light liquid	2.4x10 ⁻⁵	5.3x10⁻⁵	3.4x10 ⁻²	7.5x10⁻²
Fittings (connectors and flanges) ^d	Gas	5.9x10 ⁻⁶	1.3x10⁻⁵	3.4x10 ⁻²	7.5x10⁻²
	Light liquid	7.2x10 ⁻⁶	1.6x10⁻⁵	6.5x10 ⁻³	1.4x10⁻²

^aSource: *1995 EPA Protocol for Equipment Leak Emission Estimates* (EPA-453/R-95-017, November 1995). NOTE: These factors have not been corrected to reflect the technical corrections and adjustments discussed in Section III of the implementation guidelines.

^bThese factors are for total organic compound emission rates (including non-VOC's such as methane and ethane). "NA" indicates that not enough data were available to develop the indicated emission factor.

^cThe "Others" component type should be applied for any component type other than fittings, pump seals, or valves.

^d"Fittings" were not identified as flanges or non-flanged connectors; therefore, the fitting emissions were estimated by averaging the estimates from the connector and the flange correlation equations.

TABLE IV-2c: CAPCOA OIL AND GAS PRODUCTION SCREENING VALUE RANGE EMISSION FACTORS^a

Component Type	Service Type	< 10,000 ppmv THC Emission Factor (kg/hr/source) ^b	< 10,000 ppmv THC Emission Factor (lbs/hr/source) ^b	≥ 10,000 ppmv THC Emission Factor (kg/hr/source) ^b	≥ 10,000 ppmv THC Emission Factor (lbs/hr/source) ^b
Valves	Gas/Light Liquid	3.5x10 ⁻⁵	7.7x10⁻⁵	1.386x10 ⁻¹	3.0x10⁻¹
	Light Crude Oil	1.90x10 ⁻⁵	4.2x10⁻⁵	7.07x10 ⁻²	1.6x10⁻¹
	Heavy Crude Oil	1.40x10 ⁻⁵	3.1x10⁻⁵	N/A	N/A
Pump seals	Gas/Light Liquid	9.96x10 ⁻⁴	2.2x10⁻³	8.9x10 ⁻²	2.0x10⁻¹
	Light Crude Oil	2.65x10 ⁻⁴	5.8x10⁻⁴	8.9x10 ⁻²	2.0x10⁻¹
	Heavy Crude Oil	N/A	N/A	N/A	N/A
Others ^c	Gas/Light Liquid	1.47x10 ⁻⁴	3.2x10⁻⁴	1.376x10 ⁻¹	3.0x10⁻¹
	Light Crude Oil	1.31x10 ⁻⁴	2.9x10⁻⁴	7.1x10 ⁻³	1.6x10⁻²
	Heavy Crude Oil	5.7x10 ⁻⁵	1.3x10⁻⁴	N/A	N/A
Connectors	Gas/Light Liquid	1.20x10 ⁻⁵	2.6x10⁻⁵	2.59x10 ⁻²	5.7x10⁻²
	Light Crude Oil	1.0x10 ⁻⁵	2.2x10⁻⁵	2.34x10 ⁻²	5.1x10⁻²
	Heavy Crude Oil	8.0x10 ⁻⁶	1.8x10⁻⁵	N/A	N/A
Flanges	Gas/Light Liquid	2.80x10 ⁻⁵	6.2x10⁻⁵	6.1x10 ⁻²	1.3x10⁻¹
	Light Crude Oil	2.4x10 ⁻⁵	5.3x10⁻⁵	2.6x10 ⁻¹	5.7x10⁻¹
	Heavy Crude Oil	2.3x10 ⁻⁵	5.1x10⁻⁵	N/A	N/A
Open-ended lines	Gas/Light Liquid	2.4x10 ⁻⁵	5.3x10⁻⁵	5.49x10 ⁻²	1.2x10⁻¹
	Light Crude Oil	1.8x10 ⁻⁵	4.0x10⁻⁵	2.22x10 ⁻²	4.9x10⁻²
	Heavy Crude Oil	1.5x10 ⁻⁵	3.3x10⁻⁴	7.11x10 ⁻²	1.6x10⁻¹

^aSource: Fax Transmittal from STAR Environmental, dated December 17, 1997, entitled *Comparison of Screening Value Range Factors for Oil and Gas Production Operations*. These factors were developed using the separated oil and gas production default zero factors and pegged factors. Correlation equations for the petroleum industry (revised to reflect the technical corrections and adjustments discussed in Section III of the implementation guidelines) were used for components with screening values between background and 9,999 ppmv.

^bThese factors are for total organic compound emission rates (including non-VOC's such as methane and ethane) and apply to light crude, heavy crude, gas plant, gas production, and off shore facilities.

^cThe "Others" component type was derived from compressors, diaphragms, drains, dump arms, hatches, instruments, meters, pressure relief valves, polished rods stuffing boxes, relief valves, and vents. This "Others" component type should be applied for any component type other than connectors, flanges, open-ended lines, pumps, or valves.

SPECIFIC INSTRUCTIONS

Facilities holding individual permits must report fugitive emissions from components associated with permitted equipment that appears as an emission source in the reporting tool. Facilities subject to RECLAIM and/or Title V that were issued a facility permit must report fugitive emissions at the system level for each device designated as fugitive components in that system. Fugitive emissions from unpermitted components must also be reported; unpermitted component fugitive emissions may be aggregated and reported as one emission source that needs to be added by user to the list of emission sources.

Following are instructions on how to report fugitive emissions using the new AER format; for example purposes let's assume facility ABC with the ID# 999117 is subject to RECLAIM and was issued a facility permit. The methodology used for reporting emissions is the same for a non-RECLAIM facility that was issued individual permits. Facility ABC has permitted equipment with fugitive emissions, device D1, AER emission source ES1, covered by application A/N# 123456, Permit to Operate F12345, as shown below:

Facility ID: 999117 · ABC · Reporting period: 2012

Form data is successfully saved.

Build Reporting Structure

Emission Sources (ES) Classification

This section contains facility permit profile. Please make sure that every device has a specified Emission Source (ES). New emission sources can also be added.

EPA TANKS Software DATA IMPORT - [Click here](#) for more instructions.

Displaying 1 emission sources.

A/N: Permit NO:
AER Device ID: Permit Device ID:

[Search Emission Sources](#)

[Add New Emission Source](#)

Search: [Print Preview](#)

Action	A/N	Permit NO	Permit Device ID	Permit Equipment Description	AER Device ID	ES Name	Source Group	Has Emissions	Equipment	ES Status	Process Reference
Open	123456	F12345	D1		ES1					Work in progress	

Showing 1 to 1 of 1 entries

◀ Previous Next ▶

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[Report a Bug](#)

Click the “Open” link under the “Action” column and the following screen appears. Fill out the mandatory fields marked by an asterisk and optionally, fill out the other fields. For facility ABC, A/N 123456 describes Unit 1, in normal operation and is comprised of vessel V1 and pump P1:

South Coast AQMD Air Quality Management District

AER Home Access Facility Facility Home

Facility ID: 999117 · ABC · Reporting period: 2012

Facility ID: 999117

Edit Emission Source

Providing correct information and proper selection categories would help to classify emission source.

Permitted

A/N 123456 123456

Permit No F12345

Permit Device ID D1

Permit Equipment Description

AER Device ID ES1

ES Name Unit 1

Operating ES Status Normal Operation

Comment Vessel V1, pump P1

Emission Source Group **Determine Emission Source Group Type**

Design Capacity

Save and return to List of Emission Sources or Save and proceed to Process Reporting or Cancel

Optional: Save and Mark as Completed Click here to [delete](#) this emission source and associated data.

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When clicking on the “Determine Emission Source Group Type” button, the following selection window appears:

South Coast AQMD Air Quality Management District

AER Home Access Facility Facility Home

Facility ID: 999117 · ABC · Reporting period: 2012

Determine Emission Source Group Type

Permitted	A/N	Permit No	Permit Device ID	Permit Equipment Description	AER Device ID	ES Name
Yes	123456	F12345	D1		ES1	Unit 1

- External Combustion Equipment (e.g., boiler, dryer, oven, furnace, heater, afterburner, flare, kiln or incinerator) [click here](#) to select one of the following Equipment:
- Internal Combustion Equipment (e.g., internal combustion engine (excluding vehicles), turbine or micro turbine) [click here](#) to select one of the following Equipment:
- Spray Coating/Spray Booth (e.g., coatings, solvents, adhesives, etc.) [click here](#) to select one of the following Equipment:
- Other Use of Organics (e.g., coatings, solvents, inks, adhesives, etc.) except in Spray Coating/Spray Booth, [click here](#) to select one of the following Equipment:
- Storage Tank (e.g. Underground, Aboveground, Small Tanks, Dispensing Systems) [click here](#) to select one of the following Equipment:
- Fugitive Components (Emission Leaks from Process Components per Rule 1173 and 1176), [click here](#) to select all applicable Equipment:
- Other Processes (does not fit in any of the groups mentioned above), click [click here](#) to mark "Other Process Equipment":

Save Cancel

Save and return to List of Emission Sources or Save and proceed to Process Reporting or Cancel

Optional: Save and Mark as Completed Click here to [delete](#) this emission source and associated data.

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Go to option #6: Fugitive Components and click on the link provided. Let’s assume that the fugitive components for this emission source are: 5 valves in gas/vapor service, 4 valves in light liquid service, 2 PRV’s, 1 pump in light liquid service, 20 connectors, 1 sight-glass, 6 flanges, and 1 drain.

On the next screen, check all the applicable boxes for the above component types:

Determine Emission Source Group Type

- External Combustion Equipment (e.g., boiler, dryer, oven, furnace, heater, afterburner, flare, kiln or incinerator) [click here](#) to select one of the following Equipment:
- Internal Combustion Equipment (e.g., internal combustion engine (excluding vehicles), turbine or micro turbine) [click here](#) to select one of the following Equipment:
- Spray Coating/Spray Booth (e.g., coatings, solvents, adhesives, etc.) [click here](#) to select one of the following Equipment:
- Other Use of Organics (e.g., coatings, solvents, inks, adhesives, etc.) except in Spray Coating/Spray Booth, [click here](#) to select one of the following Equipment:
- Storage Tank (e.g. Underground, Aboveground, Small Tanks, Dispensing Systems) [click here](#) to select one of the following Equipment:
- Fugitive Components (Emission Leaks from Process Components per Rule 1173 and 1176), [click here](#) to select all applicable Equipment:
 - Valves Gas/Vapor
 - Valves in Light Liquid Service
 - Valves in Heavy Liquid Service
 - Inaccessible Valves Gas/Vapor
 - Inaccessible Valves Light Liquid
 - Pumps in Light Liquid Service (Double Mechanical / Tandem Seals)
 - Pumps in Heavy Liquid Service (Single Mechanical Seal)
 - Pressure Relieve Valves (PRV)
 - Compressors
 - Connectors
 - Flanges meeting ANSI 16.5-1988
 - Process Drains with P-trap or Seal pot
 - Other (including fittings, hatches, sight-glasses, meters, etc)
- Other Processes (does not fit in any of the groups mentioned above) [click here](#) to mark "Other Process Equipment"

Buttons: Save, Cancel

Optional: Save and Mark as Completed | Click here to [delete](#) this emission source and associated data.

Click the “Save” button and proceed to Process Reporting. (If you are not ready to input the data at this time, click the “Save and return to List of Emission Sources” button to work on another emission source.) The following window displays 8 processes corresponded to the component types:

Facility ID: 999117 Form data is successfully saved.

Facility ID: 999117 · ABC · Reporting period: 2012

Process References

A/N	Permit NO	Permit Device ID	Permit Device Description	AER Device ID	ES Name	Source Group	Emissions?	Equipment	ES Status
123456	F12345	D1		ES1	Unit 1	Fugitive Components	Y	Fugitive	Work in progress

Search: Print Preview

Action	A/N	Permit NO	Permit Device ID	Permit Equipment Description	AER Device ID	ES Name	Source Group	Has Emissions	Equipment	ES Status	Process Reference
Open	123456	F12345	D1		ES1	Unit 1	Fugitive Components	Y	Fugitive	Work in progress	Reference

Showing 1 to 1 of 1 entries

To report emissions, click on the “P1” link. Note that the following window shows the component type as Valves Gas/Vapor:

South Coast AQMD Air Quality Management District

AER Home Access Facility Facility Home

Facility ID: 999117 · ABC · Reporting period: 2012

« Back to Emission Source Process Reference

Fugitive Components

This section contains emission data relative to leakage from process components as specified in Rule 1172 and Rule 1176. Please visit the supplemental instructions for more information on component identification, count, and emission calculation. Detailed instructions are available by clicking on Help icon in the tool bar.

Optional: Mark as Completed

Process	AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Component Type
Open	ES1	D1	123456	P1		Valves Gas/Vapor

Click here to [delete](#) this process.

Throughput

Annual Throughput

[Open](#)

Criteria Emissions (lbs)

Pollutant	EF	Unit	EF Data Source	Overall CE	Emissions
Open	VOC	lbs /			

Toxic (TAC/ODC) Emissions (lbs)

TAC/ODC Group	CAS #	EF	Unit	EF Data Source	Overall CE	Emissions
Add New						

« Back to Emission Source Process Reference

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Under “Process”, click the “Open” link and select Rule 1173 in the mandatory field marked with an asterisk and optionally fill out other fields:

AQMD Air Quality Management District

AER Home Access Facility Facility Home

Facility ID: 999117 · ABC · Reporting period: 2012

« Back to Emission Source Process Reference

Fugitive Components

This section contains emission data relative to leakage from process components as specified in Rule 1172 and Rule 1176. Please visit the supplemental instructions for more information on component identification, count, and emission calculation. Detailed instructions are available by clicking on Help icon in the tool bar.

Optional: Mark as Completed

Process	AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Component Type
Open	ES1	D1	123456	P1	1173	Valves Gas/Vapor

Click here to [delete](#) this process.

Criteria Emissions (lbs)

Pollutant	EF	Unit	EF Data Source	Overall CE	Emissions
Open	VOC	72.0000 lbs / components	AQMD default		360.00

Toxic (TAC/ODC) Emissions (lbs)

TAC/ODC Group	CAS #	EF	Unit	EF Data Source	Overall CE	Emissions
Open	Benzene	71432	7.20000e-1 lbs / components	Material Balance		3.600e+0

[Add New](#)

« Back to Emission Source Process Reference

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Edit Emission Process - Fugitive Components

AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Component Type
ES1	D1	123456	P1	1173	Valves Gas/Vapor

AER Device ID: ES1 AER Device Name: Unit 1

PERMITTED AN: 123456 Permit Device ID: D1

Process ID: P1 Process Name: valves gas/vapor

Process Comment:

Rule #: 1173

Data must be saved before moving on to next step. Clicking on the “Save” button will bring user back to data enter screen for process P1 as shown:

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Fugitive Components

This section contains emission data relative to leakage from process components as specified in Rule 1172 and Rule 1176. Please visit the supplemental instructions for more information on component identification, count, and emission calculation. Detailed instructions are available by clicking on Help icon in the tool bar.

Optional: Mark as Completed

	AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Component Type
Open	ES1	D1	123456	P1	1173	Valves Gas/Vapor

Click here to [delete](#) this process.

Throughput

	Annual Throughput
Open	

Criteria Emissions (lbs)

	Pollutant	EF	Unit	EF Data Source	Overall CE	Emissions
Open	VOC		lbs /			

Toxic (TAC/ODC) Emissions (lbs)

	TAC/ODC Group	CAS #	EF	Unit	EF Data Source	Overall CE	Emissions
Add New							

« Back to Emission Source Process Reference

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Next, go to “Throughput”, click the “Open” link and fill out the “Number of components” field, and click “Save”. As mentioned before, facility ABC Unit 1 has 5 valves in gas/vapor service.

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Fugitive Components

This section contains emission data relative to leakage from process components as specified in Rule 1172 and Rule 1176. Please visit the supplemental instructions for more information on component identification, count, and emission calculation. Detailed instructions are available by clicking on Help icon in the tool bar.

Optional: Mark as Completed

	AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Component Type
Open	ES1	D1	123456	P1	1173	Valves Gas/Vapor

Click here to [delete](#) this process.

Throughput

	Annual Throughput
Open	

Edit Throughput Information - Fugitive Components

AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Component Type
ES1	D1	123456	P1	1173	Valves Gas/Vapor

Annual Throughput

Number of Components (Annual Throughput) * [components](#) *

Throughput Type [Existing](#) *

Number of Components Comment

[Save](#) [Cancel](#)

Criteria Emissions (lbs)

	Pollutant	EF	Unit	EF Data Source	Overall CE	Emissions
Open	VOC		lbs /			

Toxic (TAC/ODC) Emissions (lbs)

	TAC/ODC Group	CAS #	EF	Unit	EF Data Source	Overall CE	Emissions
Add New							

« Back to Emission Source Process Reference

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Save the entry, then go to “Criteria emissions” and click “Open”.

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Fugitive Components

This section contains emission data relative to leakage from process components as specified in Rule 1172 and Rule 1176. Please visit the supplemental instructions for more information on component identification, count, and emission calculation. Detailed instructions are available by clicking on Help icon in the tool bar.

Optional: Mark as Completed

AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Component Type
ES1	D1	123456	P1	1173	Valves Gas/Vapor

Click here to [delete](#) this process.

Throughput

Annual Throughput
5.0 components

Criteria Emissions (lbs)

Pollutant	EF	Unit	EF Data Source	Overall CE	Emissions
VOC		lbs / components			

[Open](#)

Toxic (TAC/ODC) Emissions (lbs)

TAC/ODC Group	CAS #	EF	Unit	EF Data Source	Overall CE	Emissions
Add New						

« Back to Emission Source Process Reference

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For the purpose of this exercise, assuming that no screening data are available, the AQMD default emission factors (EF) will be used; for valves in gas/vapor service, EF is 72 lb/component/year. Note that emissions are calculated automatically. In the mandatory field “Emission Factor Data Source”, select AQMD default; user may also comment on the emission factor in case other than default EF is used, then click “Save”.

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Fugitive Components

This section contains emission data relative to leakage from process components as specified in Rule 1172 and Rule 1176. Please visit the supplemental instructions for more information on component identification, count, and emission calculation. Detailed instructions are available by clicking on Help icon in the tool bar.

Optional: Mark as Completed

AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Component Type
ES1	D1	123456	P1	1173	Valves Gas/Vapor

Click here to [delete](#) this process.

Throughput

Annual Throughput
5.0 components

Open Criteria Emission Information - Fugitive Components

Pollutant	VOC - Volatile Organic Compounds
Emission Factor (EF)	72.0000 * lbs/components
Emission Factor Comment	
Emission Factor Data Source	AQMD default *
Emissions	360.00 lbs

[Save](#) [Cancel](#)

Criteria Emissions (lbs)

Pollutant	EF	Unit	EF Data Source	Overall CE	Emissions
VOC		lbs / components			

[Open](#)

Toxic (TAC/ODC) Emissions (lbs)

TAC/ODC Group	CAS #	EF	Unit	EF Data Source	Overall CE	Emissions
Add New						

« Back to Emission Source Process Reference

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If the VOC stream contains any toxic air compounds (TAC) or ozone depleting compounds (ODC), click on the “Add New” button under Toxic (TAC/ODC) Emissions. In the next window, select the TAC/ODC compound from the drop-down list.

In this example, the gas/vapor stream is assumed to contain 1% benzene by weight based on material balance. Therefore, the EF for benzene is 0.72 lbs/component (72 lbs x 0.01). In the “Emission Factor Data Source” field, select the appropriate source from the drop-down list, then click the “Save” button.

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Open Toxic (TAC/ODC) Emission Information - Fugitive Components

AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Component Type
ES1	D1	123456	P1	1173	Valves Gas/Vapor

Annual Throughput
5.0 components

TAC/ODC Toxic Pollutants / Ozone Depleting Compounds

Pollutant: 2 - Benzene

TAC Group: 2 - Benzene

CAS # (Pollutant): 71432 - Benzene

Emission Factor (EF): 7.20000e-1 * lbs/components

Emission Factor Comment:

Emission Factor Data Source: Material Balance

Emissions: 3.600e+0 lbs

Save Cancel

Toxic (TAC/ODC) Emissions (lbs)

TAC/ODC Group	CAS #	EF	Unit	EF Data Source	Overall CE	Emissions
Add New						

Back to Emission Source Process Reference

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Click on the “Save” button and the following screen appears:

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Facility ID: 999117 · ABC · Reporting period: 2012

Fugitive Components

This section contains emission data relative to leakage from process components as specified in Rule 1172 and Rule 1176. Please visit the supplemental instructions for more information on component identification, count, and emission calculation. Detailed instructions are available by clicking on Help icon in the tool bar.

Process

AER Device ID	Permit Device ID	A/N	Process ID	Rule #	Component Type
Open ES1	D1	123456	P1	1173	Valves Gas/Vapor

Optional: Mark as Completed

Click here to [delete](#) this process.

Throughput

Annual Throughput
5.0 components

Criteria Emissions (lbs)

Pollutant	EF	Unit	EF Data Source	Overall CE	Emissions
Open VOC	72.0000	lbs / components	AQMD default		360.00

Toxic (TAC/ODC) Emissions (lbs)

TAC/ODC Group	CAS #	EF	Unit	EF Data Source	Overall CE	Emissions
Open Benzene	71432	7.20000e-1	lbs / components	Material Balance		3.600e+0

Add New

Back to Emission Source Process Reference

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If the data entered for process P1 is final, the user may want to click the grey button “Optional: Mark as Completed”. Click “Back to Emission Source Reference” and proceed to the next process.

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Build Reporting Structure

Emission Sources (ES) Classification

This section contains facility permit profile. Please make sure that every device has a specified Emission Source (ES). New emission sources can also be added.

EPA TANKS Software DATA IMPORT - [Click here](#) for more instructions.

A/N	Permit NO	Permit Device ID	Permit Device Description	AER Device ID	ES Name	Source Group	Emissions?	Equipment	ES Status
123456	F12345	D1		ES1	Unit 1	Fugitive Components	Y	Fugitive	Work in progress

Process ID	Source Group	Process Name	Process Status	Operation Type
P1	Fugitive Components		Completed	routine
P2	Fugitive Components		Work in progress	routine
P3	Fugitive Components		Work in progress	routine
P4	Fugitive Components		Work in progress	routine
P5	Fugitive Components		Work in progress	routine
P6	Fugitive Components		Work in progress	routine
P7	Fugitive Components		Work in progress	routine
P8	Fugitive Components		Work in progress	routine

OK

[Open](#) 123456 F12345 D1 ES1 Unit 1 Fugitive Components Y Fugitive Work in progress [Reference](#)

Using the same steps as for P1, fill out the information for P2 through P8 by clicking on the respective buttons, such that all components are accounted for. Once all processes are completed, click “OK” and proceed to reporting another emission source by clicking on the “Back to Emission Source Process Reference” button.

If the facility is a non-RECLAIM facility that has individual permits where piping components are not explicitly listed in the permits, reporting associated fugitive emissions require adding new emission sources. For example, for a bulk loading terminal with a permitted loading rack, emissions associated with the organic liquid loading would be reported under the permitted emission source (loading rack). The fugitive emissions must be reported by creating a new emission source, with the suggested comment “loading rack – fugitive components”.

To start adding the unpermitted emission sources and report emissions, user must click on the “Add New Emission Source” link:

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AER Home Access Facility Facility Home

Facility ID: 999117 - ABC - Reporting period: 2012

Facility ID: 999117

Build Reporting Structure

Emission Sources (ES) Classification

This section contains facility permit profile. Please make sure that every device has a specified Emission Source (ES). New emission sources can also be added.

EPA TANKS Software DATA IMPORT - [Click here](#) for more instructions.

Displaying 1 emission sources.

A/N Permit NO
 AER Device ID Permit Device ID

[Search Emission Sources](#)

[Add New Emission Source](#)

Search: [Print Preview](#)

Action	A/N	Permit NO	Permit Device ID	Permit Equipment Description	AER Device ID	ES Name	Source Group	Has Emissions	Equipment	ES Status	Process Reference
Open	123456	F12345	D1		ES1	Unit 1	Fugitive Components	Y	Fugitive	Work in progress	Reference

Showing 1 to 1 of 1 entries

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The following screen will appear:

AER Home Access Facility Facility Home

Facility ID: 999117 - ABC - Reporting period: 2012

Facility ID: 999117

Edit Emission Source

Providing correct information and proper selection categories would help to classify emission source.

Permitted

A/N

Permit No

Permit Device ID

AER Device ID will be assigned upon saving

ES Name

Operating ES Status *

Comment

Emission Source Group [Determine Emission Source Group Type](#) *

Design Capacity

[Save and return to List of Emission Sources](#) or [Save and proceed to Process Reporting](#) or [Cancel](#)

Optional: [Save and Mark as Completed](#)

[AQMD web site Home](#) | [AER Web Site](#) | [Submit question/comment](#) | [Ecotek Web Site](#) | [Report a Bug](#)

Continue by repeating the steps described before for permitted sources and complete reporting emissions for all non-permitted components.