



Troubleshooting Annual Emission Inventory Reporting

EPAZ Conference

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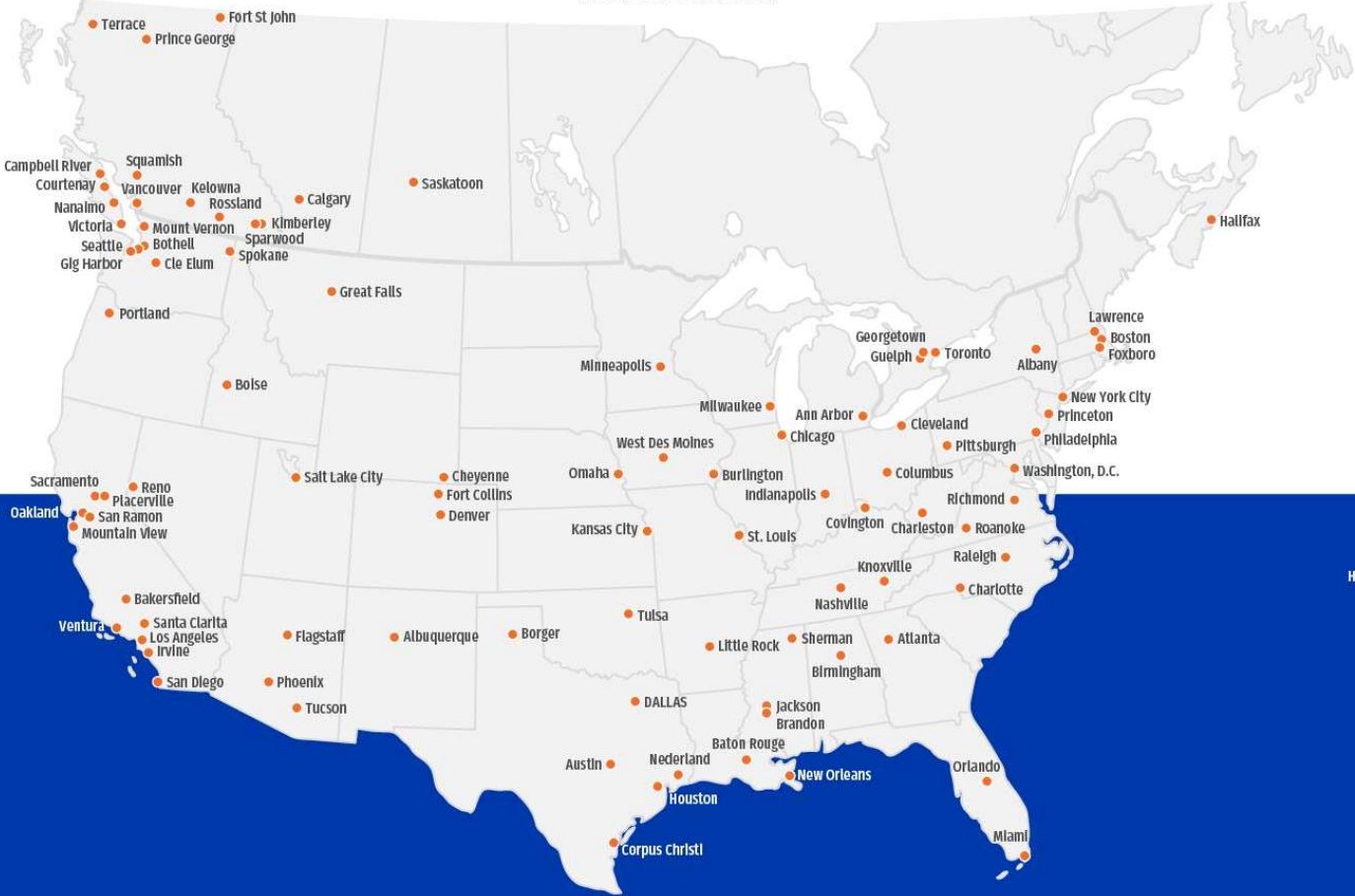
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North America



Europe

England, UK / Dublin, IE



Asia

China / Singapore / India



Australia

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Content

01 Annual Emission Inventory Background

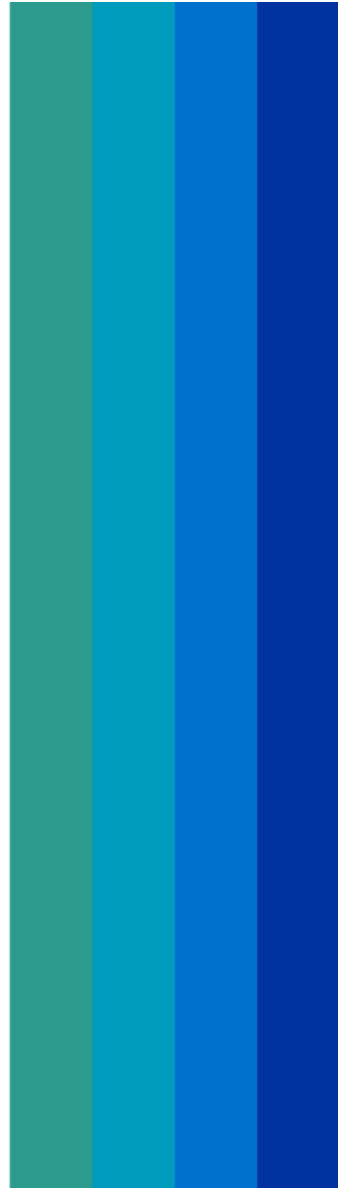
02 Quantifying Emissions

03 Submitting EIs

04 How Can Trinity Help?

01

Annual Emission Inventory Background



Why Do We Report Annual Emission Inventories?

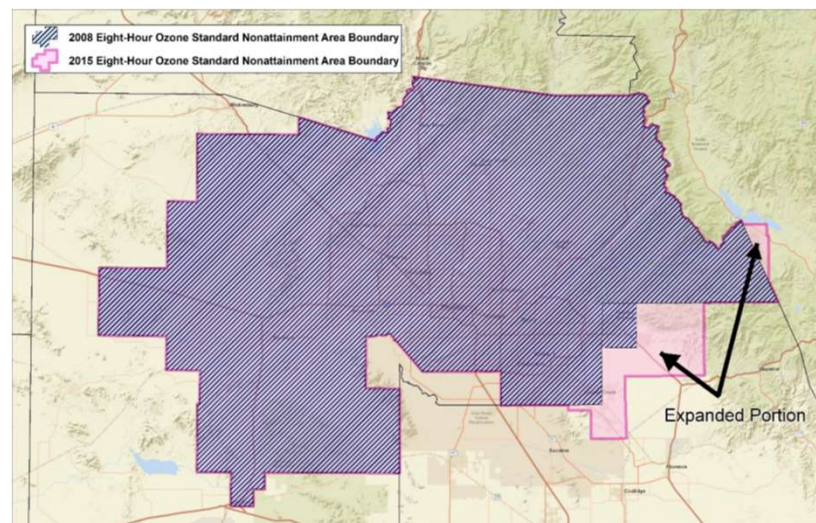
A tool for state and county air quality departments to better plan and predict air quality:

- ▶ National Ambient Air Quality Standards (NAAQS) nonattainment areas and boundaries
- ▶ Regulatory Compliance
- ▶ Policy and Regulation Development
- ▶ Regulatory Air Quality Management

Example: Annual Emission Inventories ^{TPO} have been used to develop boundaries for the Phoenix-Mesa nonattainment areas.

Table 3-1. 2017 and 2023 anthropogenic ozone precursor emissions in the Maricopa Nonattainment Area in pounds per ozone season day.

Emission Category	2017 VOC Emissions	2017 NOx Emissions	2023 VOC Emissions	2023 NOx Emissions
Point	6,016	18,708	4,075	15,284
Nonpoint	183,387	27,443	196,200	22,762
Airports	8,429	16,859	9,828	18,746
Nonroad	40,240	70,023	36,733	43,205
Onroad	97,643	161,488	72,466	79,146
Total Anthropogenic	335,715	294,521	319,302	179,143



Slide 6

TPO What do you mean by this? As in MCAQD air quality management, or a facility's management of their air permit.

Tom Pederson, 2025-02-19T20:00:14.931

JLO 0 This was meant as regulatory air management, added language

Joe Lynch, 2025-02-20T23:38:56.817

Who Needs to Submit AElS?

Arizona Department of Environmental Quality (ADEQ)

- ▶ Class I: Required annually
- ▶ Class II: Every 3 years, unless required at the discretion of the Director (via email)

Due Date: June 1st

Maricopa County Air Quality Department (MCAQD)

- ▶ Title V: Required annually
- ▶ Non-Title V: Any source upon MCAQD request (email notification)
- ▶ Requests sent to applicable sources in January

Due Date: April 1st

Pinal County Air Quality Control Department (PCAQCD)

- ▶ Each permitted source (Class I, Class II, or Class III) subject to a permit requirement

Due Date: March 31st

Pima Department of Environmental Quality (PDEQ)

- ▶ Class I: Required Annually
- ▶ Class II and Class III: Upon request of the Control Officer

Due Date: March 31st

Where to Report?

ADEQ

Class I:

- ▶ Submit to Combined Annual Emissions Reporting System (CAERS)

Class II & General Permits:

- ▶ Can submit via CAERS or via email with ADEQ provided forms

MCAQD

All sources:

- ▶ **Submit to AQD Online Portal (i.e. SCS IMPACT)**



PCAQCD/PDEQ

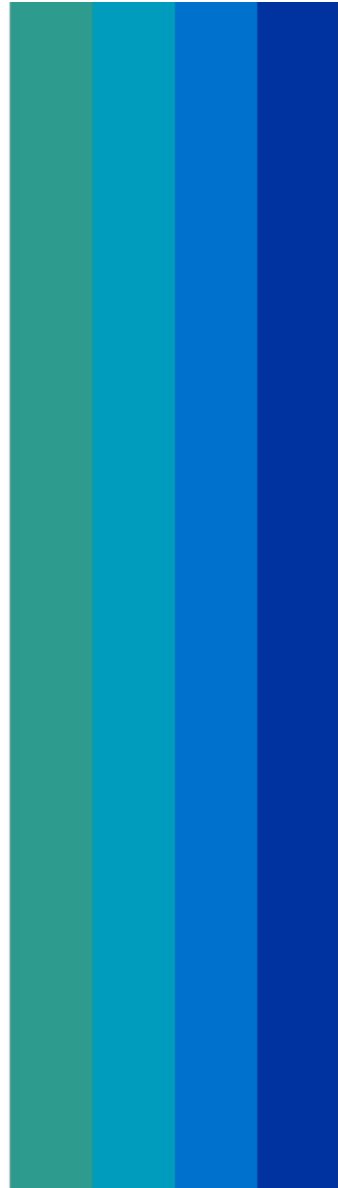
All Sources:

- ▶ No online portal
- ▶ Submit via email or mail



02

Quantifying Emissions



What Pollutants need to be Reported?

▶ All Criteria pollutants:

- Carbon Monoxide (CO)
- Oxides of nitrogen (NO_x)
- Sulfur Dioxide (SO₂)
- Volatile Organic Compounds (VOC)
- Particulate Matter with aerodynamic diameters of 10 micrometers or less (PM₁₀)
- Particulate matter with aerodynamic diameters of 2.5 micrometers or less (PM_{2.5})
- Lead (Pb)

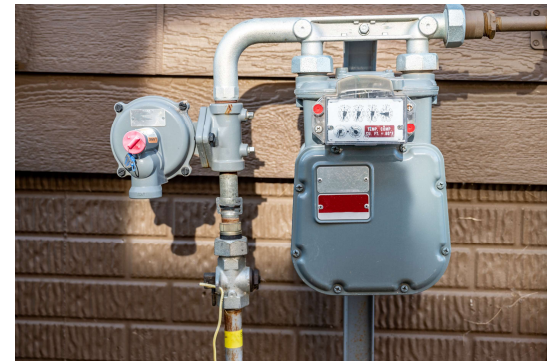
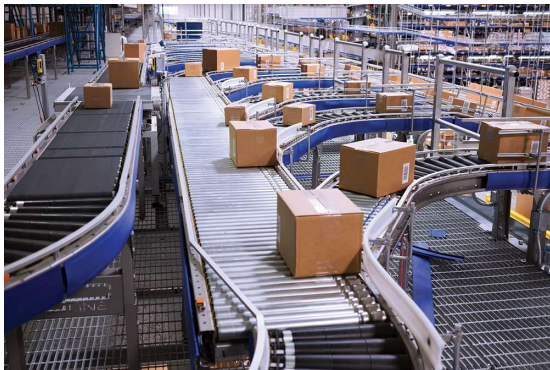
▶ Federal Hazardous Air Pollutants (HAPs)

▶ Potentially Ammonia (NH₃) depending on jurisdiction



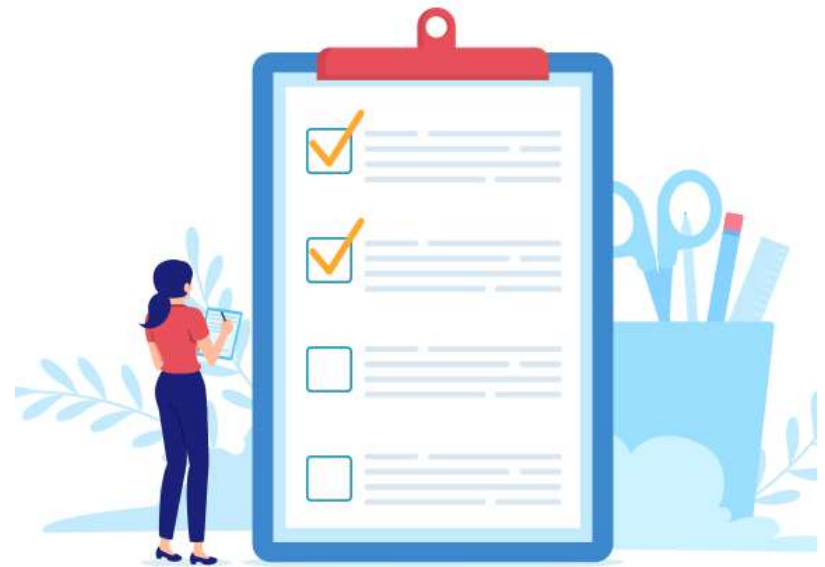
“Actual” Emissions

- ▶ **Actual** Emissions are reported in Annual Emission Reporting
 - Not potential/permitted emissions
- ▶ **Use actual hours of operation, throughputs, etc. for the calendar year being reported**
 - **Reference 12-Month rolling spreadsheets if applicable**
- ▶ Emission calculation methodology may differ from Potential-to-Emit (PTE) calculations used to permit your source



Key Steps for Emission Quantification

1. Characterize emission sources (e.g., Boiler, Engine, Chemical Usage?)
2. Identify pollutants from the emission sources (e.g., NO_x, VOC, HAPs?)
3. Establish a calculation methodology for each source (e.g., performance testing, continuous emission monitors (CEMs), material balance, AP-42?)
4. Gather necessary data for chosen calculation methodology (e.g., Hours of operation, material throughputs)
5. Calculate emissions for the reporting period
6. Prepare, upload, and manage data for emission report

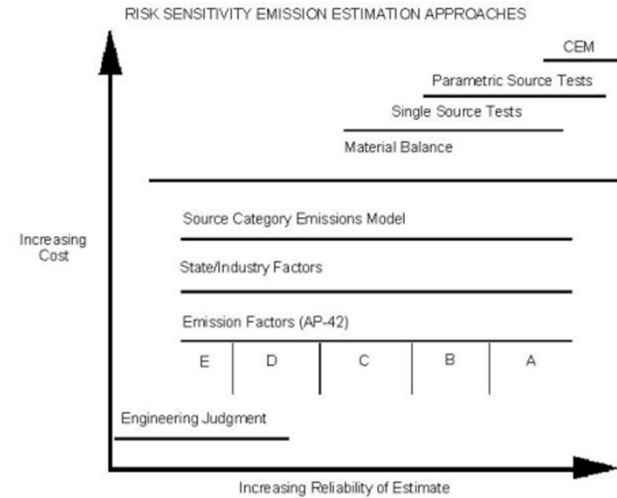


Emission Factor Hierarchy

Per Arizona Administrative Code (A.A.C.) R18-2-327(C) and MCAQD Rule 280 §304.1:

1. Continuous Emission Monitoring Systems (CEMS)
2. Performance Test data (i.e Stack test data)
3. AP-42 Emission Factors
4. Material Balance
5. Director Approved Alternate Method (such as Industry Accepted Emission Factors)

Higher ranked = More representative



Criteria Air Pollutants/Other	
Pollutant	Method Used
PM10 - (Includes Filterables + Condensibles) (PM<10 Microns)	Time-based factor - CEM
PM2.5 - (Includes Filterables + Condensibles) (PM<2.5 Microns)	Time-based factor - Stack Test
Formaldehyde	Time-based factor - Estimated
NOx - Nitrogen Oxides	Throughput-based factor
Pb - Lead	Time-based factor - Allowable Emissions
SO2 - Sulfur Dioxide	
VOC - Volatile Organic Compounds	
Ammonia	

Reporting Season

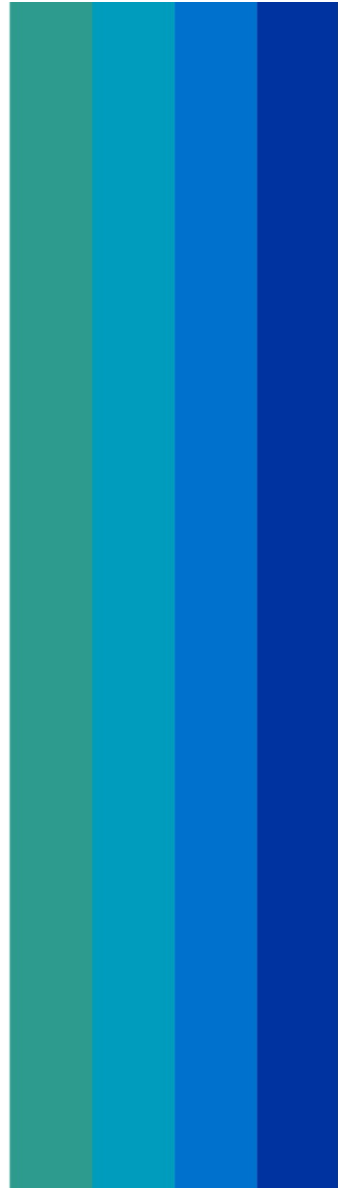
Do not wait until the last minute to start gathering data!

- ▶ Start early in case you run into any problems with:
 - Finding required operational records
 - Updating calculation methodology, if needed
 - Input is required from air control district
 - Data entry into reporting portal (CAERS or IMPACT) for submittal
- ▶ **Make sure records between emission inventories and other reports (Toxic Release Inventory (TRI), Semi-Annual reports) match!**
 - EPA will flag facilities with inconsistent reports
 - Enforcement risk



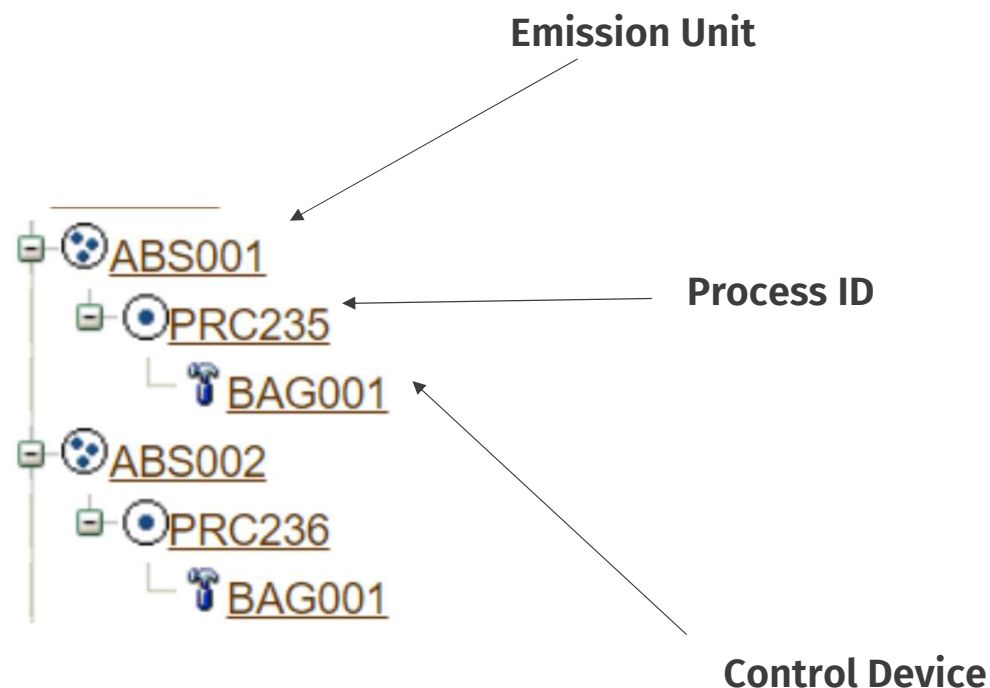
03

Submitting Els



MCAQD - AQD Portal Basics

- ▶ All AEIs for Maricopa County are required to be uploaded into the AQD Portal (IMPACT).
- ▶ Emissions broken down by emission unit
- ▶ Be sure to confirm your process is correctly represented (emission units, processes, and controls).



MCAQD - AQD Portal Emission Units

- ▶ IMPACT has various options for categorizing the types of emission units at your facility

Emission Unit Type Selection:

Abbreviation	Select This	If you have one of these
ABS	Abrasive Blasting	Abrasive Blasting
ACB	Air Curtain Burner	Air Curtain Burner, Air Curtain Destructor
BAK	Bakery	Bakery
BGM	Bagging Machine	Bagging Machine
BOL	Boiler	Boilers (Not used for electrical generation)
CKD	Calciner/Kiln/Dryer/Smelter/Foundry Furnace	Calciner, Kiln, Dryer, Smelter/Foundry Furnace, Fluid Bed Dryer
CMX	Concrete Batch/Cement Mixer	Concrete Batch/Cement Mixers
COT	Spray Booth or Coating Line	Bay, Booth, Coating System, Spray Booth, Spray Enclosure, Spray Gun, Spray System, Spray/Bake Booth, Enclosure, Roll Coating Paint Station, Gel Coating, Resin Applications, Adhesives
CSH	Crushing/Screening/Handling	Crusher, Screener, Grinder, Material Handling Unit, Conveyor, Conveyor Transfer Point, Mill, Pulverizer
CTW	Cooling Tower	Cooling Tower
DIS	Distillation Unit	Distillation Unit
DRY	Dry Cleaning	Dry Cleaner Vapor Control Unit, Dry to Dry Cleaning Machine
EGU	Electric Generating Unit	Generators (Used for electrical generation sale), Engines (Used for electrical generation sale), Turbines (Used for electrical generation sale), Boilers (Used for electrical generation sale)
ENG	Engine	Generators (Not used for selling electrical generation), Engines (Not used for selling electrical generation), Turbines (Not used for selling electrical generation)
FAT	Deep Fat Frying/ Cooking	Deep Fat Fryer, Tilt Skillet, Fryer, Cooker, Extruder
FLR	Flare	Flare
FOM	Foam Production	Expansion Process, Bead Storage, Pouring, Aging Bag, Pre-Expander, Polystyrene
FUG	Open Air Fugitive Source	Landfills, Settling Ponds, Drying Beds, Haul Roads
GIN	Cotton Gin	Cotton Gin
GRI	Grinder	Grinder

MCAQD Impact – Emission Process ID

- ▶ **Ensure the appropriate Source Classification Code (SCC) is assigned to the process ID for each emission source:**
 - Find a representative SCC Code in [the MCAQD guidance document](#) or
 - Select the SCC through cascading levels or Search SCCs by keyword to help locate the SCC.

- ▶ **The SCC is associated with EPA emission factors and may be used to report emissions → allows IMPACT to auto-populate emission factors**
 - Example: Example emergency engine with SCC 2-02-001-02 (for industrial reciprocating internal combustion engines operating on diesel fuel):

▶ PRC001: Source Classification Code (SCC) is 2-02-001-02

▼ Material Information, Annual Average Operating Schedule & Throughput Percent

Maximum Hours Per Day: 24
 Maximum Days Per Week: 7
 Maximum Weeks Per Year: 52
 Actual Hours: 50.30

Select Only One Material	Action	Throughput	Confidential	Units
Distillate Oil (Diesel)	Burned		<input type="checkbox"/>	1000 GALLONS
selected	Horsepower-Hours	Operated	19114	<input type="checkbox"/> HORSEPOWER-HOURS

▼ Process Emissions

Criteria Air Pollutants/Other		Hours Uncontrolled	Uncontrolled Emissions Factor (Lbs/ Throughput Units)	Time-based Emissions Factor (LBS/ Hour)	Emissions Reported			
Pollutant	Method Used				Fugitive Amount	Stack Amount	Total	Units
PM Primary (includes filterables > 10 microns + condensibles)	Emissions		0.0022		42.05		42.05 POUNDS	
PM10 Primary (includes filterables + condensibles)	Emissions		0.0022		42.05		42.05 POUNDS	
PM2.5 Primary (includes filterables + condensibles)	Emissions		0.0022		42.05		42.05 POUNDS	
CO - Carbon Monoxide	Emissions		0.00668		127.68		127.68 POUNDS	
NOx - Nitrogen Oxides	Emissions		0.031		592.53		592.53 POUNDS	
SO2 - Sulfur Dioxide	Emissions		0.00205		39.18		39.18 POUNDS	
VOC - Volatile Organic Compounds	Emissions		0.00251		47.21		47.21 POUNDS	
Ammonia	Emissions		0		0		0 POUNDS	

MCAQD - Other AQD Portal Tips

- ▶ **Saving time: Emissions from similar types of units can be reported under a single representative emission unit ID.**
 - Example: a facility has 6 boilers (BOL001-BOL006) but elects to report all boiler emissions under BOL001
- ▶ **There are reporting exemptions:**
 - Insignificant activities: A source can select the “less than reporting requirement” option for that emission unit ID and does not need to report emissions.
- ▶ **Once a facility inventory is set up for AEI reporting once, the configuration and emission factor data can be utilized for future reporting years**
 - Minimizes “from scratch” effort every year emissions are reported; however, make sure to double check for any modifications or changes

For reporting year: 2022 ▼
For content type: Annual ▼

You are creating the first Annual emissions inventory for the year 2022. This emissions inventory will be associated with the current facility inventory.

Copy data from existing emissions inventory :

To ensure accuracy, this emissions inventory will be associated with the current facility inventory, not the facility inventory



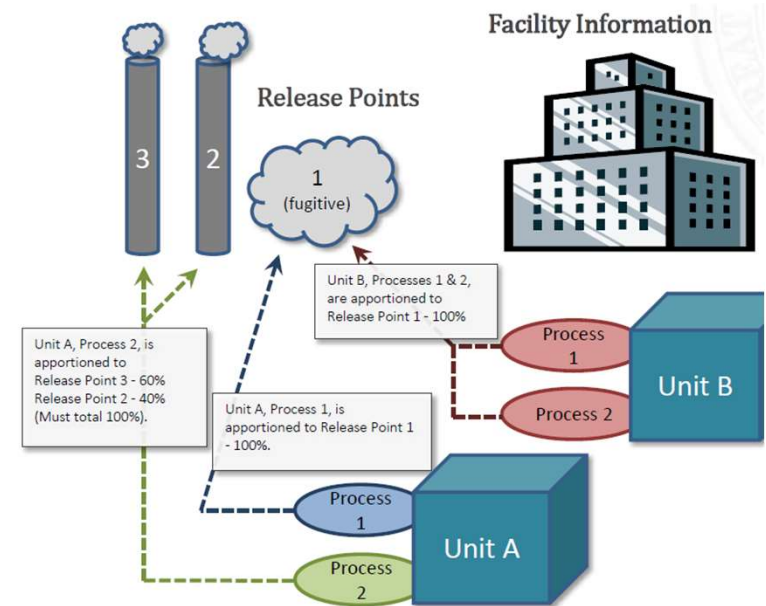
Common IMPACT Errors and Warnings

- ▶ Reminder: Each process ID can only have **one type of throughput**, but emission units can have multiple processes
 - Example: If a unit uses multiple fuels, each fuel would be reported under different processes for the same unit.
- ▶ Non-Title V sources with controls and/or emitting > 10 tpy of any pollutant and all Title V sources must configure **pollutants as vented through a release point**. This can be done by representing separate stacks for non-fugitive sources and fugitive sources.
- ▶ **Reporting for the first time?** Make sure to double-check any preloaded data. The reporting setup may reflect the initial facility setup by MCAQD on the AQD Portal and may not be representative of current operations:
 - Also applies to emission factor data
 - Update any outdated information and representations

CAERS Overview

► Required for ADEQ Class I AEI Submittals

- Similar to IMPACT, adding emission unit, process, and control device for each emitting activity
- Reminder: only one type of throughput value for each process TPO
- Again, always verify facility information, emission factors, and other information pre-loaded from prior years
- Each emission source needs to be associated with a release point



Slide 21

TPO This slide feels a little empty, is there anything else that could be discussed here?

Tom Pederson, 2025-02-19T20:42:24.537

JLO 0 Added two bullet points at bottom

Joe Lynch, 2025-02-21T01:08:17.839

CAERS Overview cont.

My Facilities > Emissions Reports > 2022 Emissions Report [CBI Disclaimer](#) [CAERS Help](#) [Contact CDX](#)

Agency ID: 1111
Example Facility
123 fake street
Examplepton, AZ 85123
2022 Emissions Report
Agency: AZDEQ

Report Summary <
Report History
Annual Report Quality Checks
Report Creation Log
Data Bulk Entry
▼ Facility Inventory
 Facility Information
 Emissions Units
 Release Points
 Control Devices
 Control Paths
▼ Emissions Inventory
 001a
 ▶ 001b

Report Facility & Emissions Information Perform Quality Checks Submit to SLT Authority Received by SLT Authority

Report Summary

Pollutant	Type	Fugitive Amount	Stack Amount	Units of Measure	2022 Reported Emissions	Previous Year Reported Emissions	Previous Submittal Year
Hydrogen Sulfide	OTH	0	0.001	Tons	0.001	None Reported	
PM Condensibile	CAP	0	0.00000110231	Tons	0.00000110231	None Reported	
Total Emissions (Tons)	--	--	--	--	0.00100110231	0	--

[Download Report Summary](#) [Download Process Emissions Summary](#)

Preparer/NEI Certifier Attachments

Date	Role	User Name	Comments	Attachments

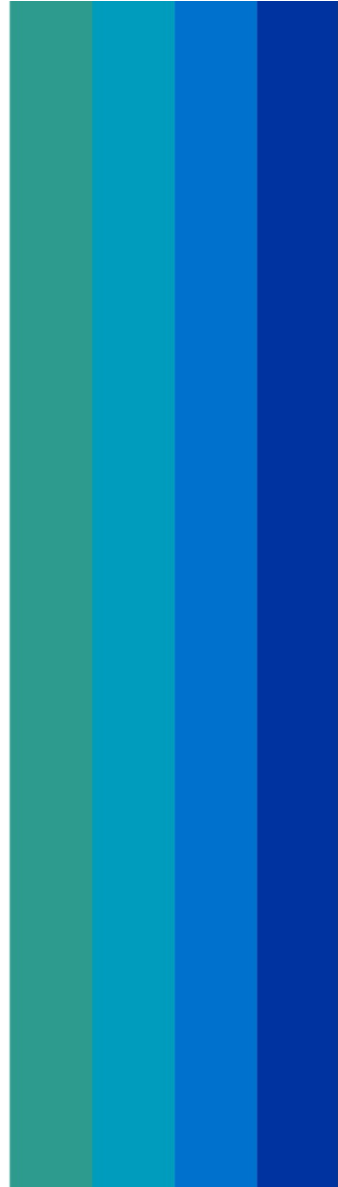
[Attach Report Document](#)

[Run Quality Checks](#)

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04

How Can Trinity Help?



How Can Trinity Help? PPE!

- ▶ **Plan: Strategize with Precision**
 - We help you navigate our reporting journey, ensuring all your bases are covered, from data unification to holistic budgeting.
- ▶ **Prepare: Set the Standard**
 - We help arm yourself with refined, consistent and flawless data across all environmental program types.
- ▶ **Execute: operate with Excellence**
 - We help from start to finish, ensuring every calculation is spot-on, every process gap is bridged, and every deadline is met.



Slide 24

- TPO** This is less takeaways and more how Trinity can help. I would just change the title.
Tom Pederson, 2025-02-19T20:43:13.973
- JLO 0** Agree with changing title. Unsure if this slide would be too pitch-like for EPAZ. Like some of the content, so maybe change wording?
Joe Lynch, 2025-02-21T00:38:06.891
- CM0 1** I think keeping this slide is okay
Camille Maradiaga Ponce, 2025-02-25T02:14:56.061

Thank you!



Slide 25

JLO

Make sure to include picture

Joe Lynch, 2025-02-25T22:22:48.659