Exchange Network Forum

Partnerships with EPA, States & Tribes

Thursday, March 14, 2024

Format

- **This Forum is an open meeting.** We want to encourage open dialogue. Please be respectful.

- **You will hear from Tribes, States, and EPA.** Calls are divided into thirds, with time for each group to push updates and request feedback.

- **We will send polls, surveys to gauge interests.** This is a call run by Exchange Network partners for Exchange Network partners.
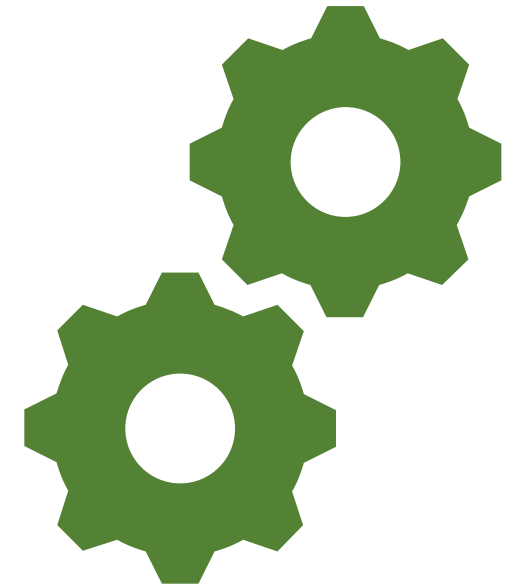
Logistics

- **Introduce yourself!** If or when you speak, please tell us your name the organization you represent.

- **Submit questions using Zoom Q/A Feature.** We will do our best to answer questions during the call.
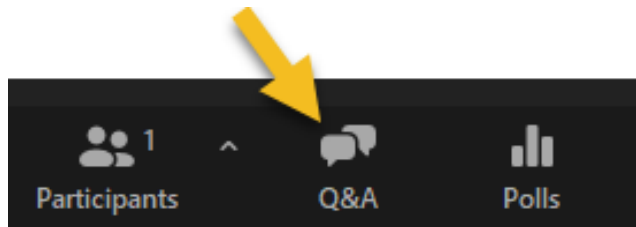
- **Use the chat to share ideas.** You can message the (co)hosts and participants directly.

Meeting Guidelines

- **Choose to be present and participate**

- **Engage actively, raise your hand to speak**

- **Maintain a respectful, open space to share and discuss ideas**

- **Assume positive intent**

- **Be curious and open to new ideas**

- **Listen and question with a desire to understand**

- **Stay on topic**

- **Turn on your camera when speaking**

- **Meetings will be recorded**
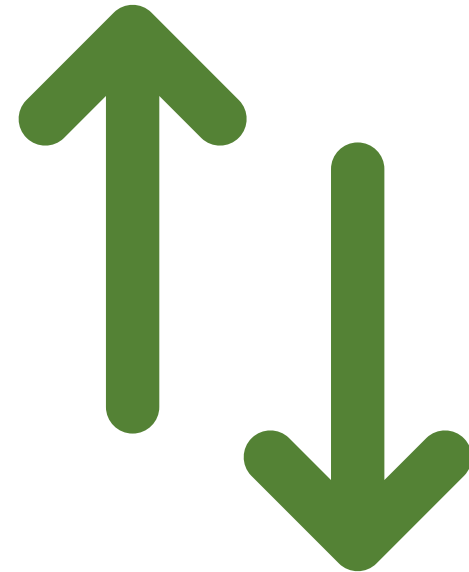
Agenda

- **Welcome**

- **Environmental Information & Innovation National Meeting (E2i)**

- **Combined Air Emissions Reporting System (CAERS)**

- **Open Forum**

National Meeting

- **Environmental Information & Innovation (E2i).** National meeting for the environmental protection community that builds on a long-standing meeting series.

- **E2i will be an in-person event**, likely with some virtual components.

- **EPA, states, and tribes are cooperatively planning the meeting program** and soliciting content proposals from across the community of environmental regulators.

National Meeting

- **Theme:**   Reinvigorate, Collaborate, Innovate

- **Location:**   Kansas City, Missouri

- **Dates:**   September 17 to 19, 2024
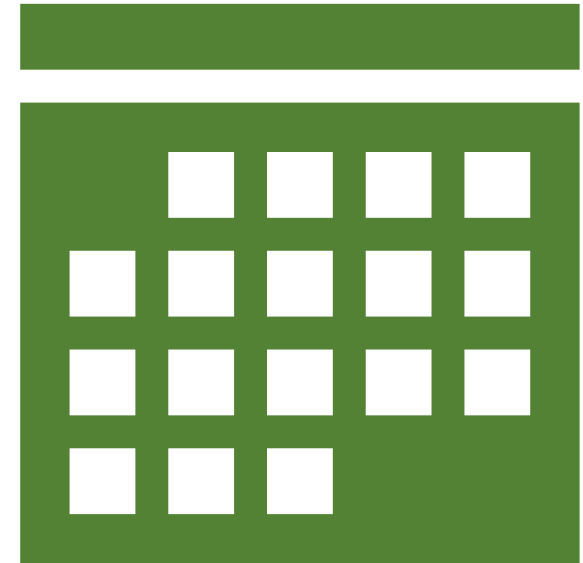
National Meeting

- **Call for Content:** You are invited to submit a brief abstract on a relevant topic that you would like to present at the 2024 E2i.

- **You can submit your abstract for any of the following formats:**
    - Lightning Talks
    - Podium Presentations
    - Panel Discussions
    - Innovation Videos
    - Workshops

- Submit your ideas by **accessing this form**.

Data Exchanges

- **An introduction** from Dwane Young, who supports the US EPA's Office of Information Management, about the Exchange Network and air quality information exchanges.

Combined Air Emissions Reporting System (CAERS)

Presentation for the Exchange Network Forum

03/14/2023

Why CAERS?

We believe that air emissions reporting can be streamlined, making the overall process significantly less burdensome and time consuming for industry, federal, state, local, and tribal (SLT) air quality authorities.

- **Saving/repurposing time**
- **Increasing data consistency and quality within and across programs for the same reporting facility**
- **Data in format for multipollutant analysis**

Industry, SLTs, and EPA programs all have same version of data, or data for which differences are logical and easy to explain.

Air Quality Programs

Air Quality Program air emissions reporting business needs must be met per the air quality regulations, e.g. 40 CFR parts:

- **51**: Air Emissions Reporting Requirements
- **52**: Implementation Plans
- **60**: Standards of Performance for New Stationary Sources
- **62**: Federal Plan Requirements for Existing Stationary Sources
- **63**: National Emission Standards for Hazardous Air Pollutants
- **98**: Mandatory Greenhouse Gas Reporting
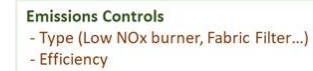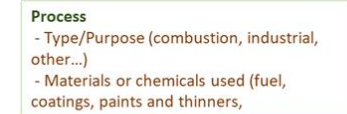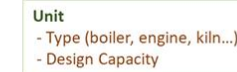- **372**: Toxic Chemical Release Reporting

Before CAERS

Industry could be having to report multiple times (potentially x 4 federal programs), and possible additional requirements for their SLT.

Shared data is entered over and over.

Air Emissions Reporting Before CAERS
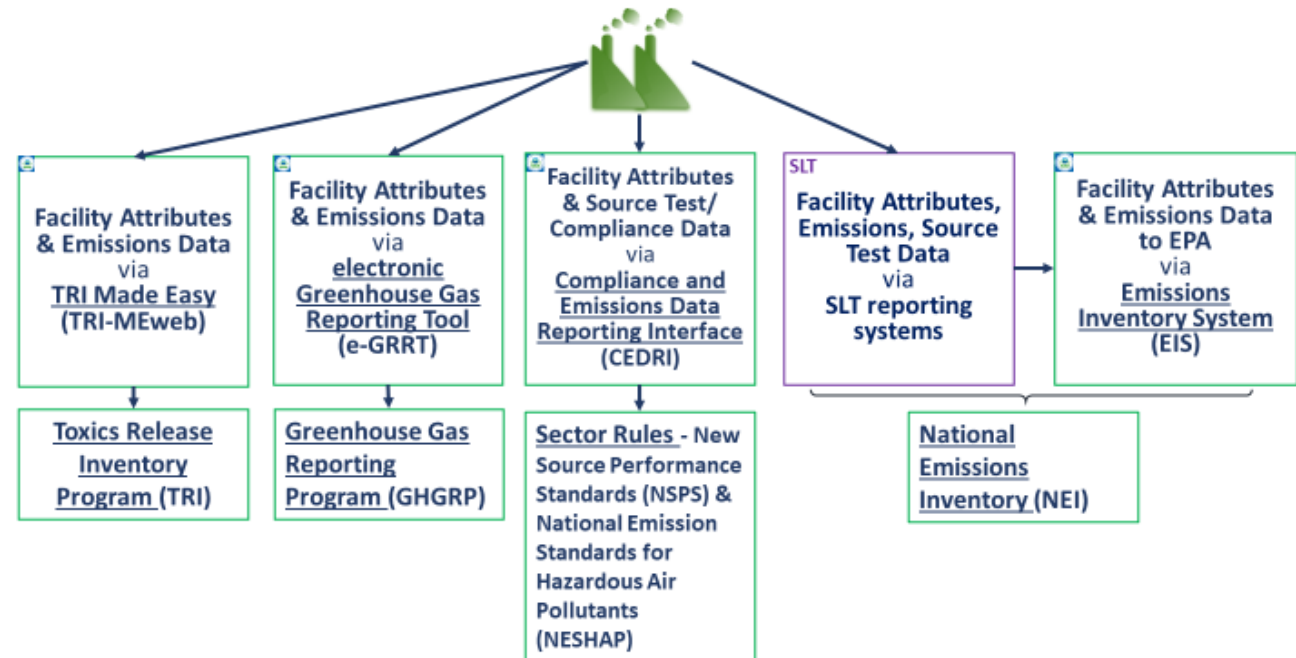
Shared Data

1) *Industry* reports *shared* data elements *once*

- Facility – e.g., company name, address
- Inputs to emissions estimation:
  - Activity data – e.g., heat content of coal, operating hours
  - Test data/emission factors – e.g., tons of VOC per BTU of coal
- Identical/related pollutants - e.g., toxics to TRI and NEI

2) *Federal and SLT staff* repurpose time *from*

- QA where CAERS can run automatic Quality Assurance (QA) checks,
- Data reconciliation of mismatched data between programs for the same facility ***to*** advanced QA and data analysis

Facility
- Name
- Address
- Type of activity

Unit
- Type (boiler, engine, kiln...)
- Design Capacity

Process
- Type/Purpose (combustion, industrial, other...)
- Materials or chemicals used (fuel, coatings, paints and thinners,

Emissions Controls
- Type (Low NOx burner, Fabric Filter...)
- Efficiency

Release Point
- Type (stack, fugitive...)
- Dimensions

Cyclone / Clean gas out
Particle-laden gas in
Spinning gas stream forces particles to outside walls and then to the base of the cyclone
Particles collected

Example of Current State

EIS/NEI 2014

9 units, 6 combustion & 3 process

GHG RP 2014

5 units, 3 combustion & 2 process

C_FUEL_LEVEL_INFORMATION.UNIT_NAME	C_FUEL_LEVEL_INFORMATION.UNIT	C_FUEL_LEVEL_INFORMATION.FUEL_TYPE
CS-134	OCS (Other combustion source)	Bituminous
CS-134	OCS (Other combustion source)	Residual Fuel Oil No. 6
CS-134	OCS (Other combustion source)	Distillate Fuel Oil No. 2
GP-Small Combustion Units- Propane	OCS (Other combustion source)	Propane
GP-Small Combustion Units-#2 Fuel Oil	OCS (Other combustion source)	Distillate Fuel Oil No. 2
GP-Small Combustion Units-Natural Gas	OCS (Other combustion source)	Natural Gas (Weighted U.S. Average)
Power Boiler #5	CFB (Boiler circulating fluidized bed)	Wood and Wood Residuals (dry basis)
Power Boiler #5	CFB (Boiler circulating fluidized bed)	Bituminous
Power Boiler #5	CFB (Boiler circulating fluidized bed)	Solid Byproducts
Power Boiler #5	CFB (Boiler circulating fluidized bed)	Residual Fuel Oil No. 6

| AA_SPENT_LIQUOR_INFORMATION.UNIT_N	AA_SPENT_LIQUOR_INFORMATION.UNIT_TYPE	
Recovery Boiler #3	Chemical Recovery Furnace	Distillate Fuel Oil No. 2
Recovery Boiler #3	Chemical Recovery Furnace	Residual Fuel Oil No. 6
Calciner	Pulp Mill Lime Kiln	Distillate Fuel Oil No. 2
Calciner	Pulp Mill Lime Kiln	Residual Fuel Oil No. 6

UNIT_ID	Unit Type	SCC	SCC Level Three
28925013	100	10200202	Bituminous Coal
28925013	100	10200501	Distillate Oil - Grades 1 and 2
28925313	690	40201399	Paper Coating
28925313	690	39001099	Liquified Petroleum Gas
28925313	690	39000699	Natural Gas
28925713	100	10201201	Solid Waste
28925713	100	10200907	Wood/Bark Waste
28925713	100	10200401	Residual Oil
28925713	100	10200219	Bituminous Coal
28925813	100	30700110	Sulfate (Kraft) Pulping
28925813	100	10200401	Residual Oil
28925813	100	10200501	Distillate Oil - Grades 1 and 2
28926013	220	39000403	Residual Oil
28926013	220	30501606	Lime Manufacture
28926013	220	39000503	Distillate Oil
28926113	100	10200202	Pulverized Coal: Dry Bottom
28926113	100	10200501	Distillate Oil - Grades 1 and 2
28926113	100	10200401	Residual Oil
28926213	690	30700105	Sulfate (Kraft) Pulping
28926613	100	10200202	Bituminous Coal
28926613	100	10200401	Residual Oil
28926613	100	10200501	Distillate Oil - Grades 1 and 2
28926713	690	40201399	Paper Coating
28926713	690	39000699	Natural Gas

Example view of the same pulp and paper facility in GHGRP and NEI.

After CAERS

Industry reports to the different programs but shared data is transferred from one system to another to avoid duplicate entries.
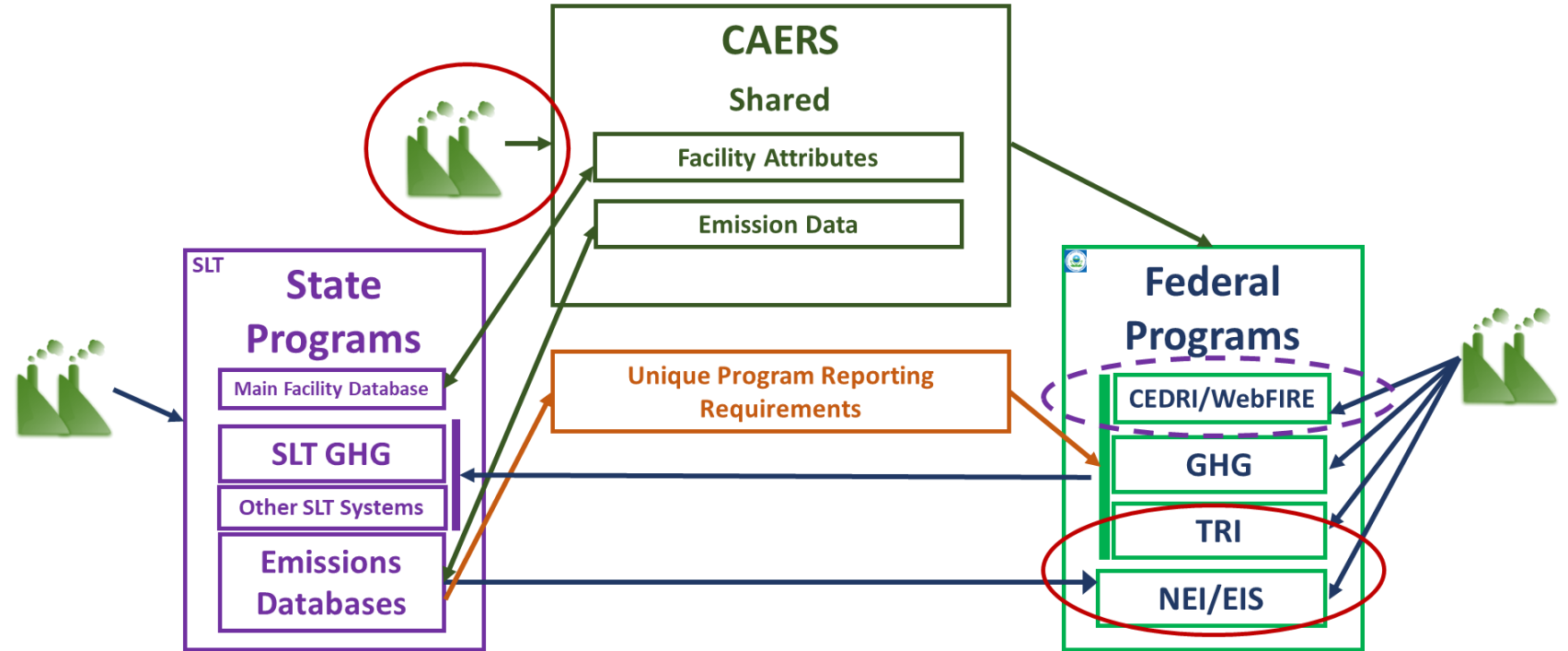
For example:

- CAERS adds up toxics shared with TRI at the facility level and makes them available to TRI-MEweb.

- Test data in ERT and CEDRI will be shared with CAERS for NEI reporting "test data" calculation method.

What is CAERS?

- A system that currently allows SLTs to collect annual inventory data from their industry, review it, and send it to EIS. Shared data with TRI is sent to TRI-MEweb for a reporter to use it there optionally. Future workflows with other air programs and states envisioned.

- CAERS was developed with the input of our Product Design Team (PDT) composed of SLTs and EPA staff.

  - A number of research projects have been conducted to gather requirements for the system, with work ongoing, e.g., NEI-TRI-SLT comparison.
  - The PDT meets every two weeks to discuss CAERS updates as well as to gather new information/business needs to build out additional functionality.
  - CAERS users meet every two weeks, provide feedback, discuss, and prioritize business needs and enhancements.
  - Agile development means we apply lessons learned as we develop avoiding huge/costly errors.

Highlight of CAERS Features: SLTS

- Customization (*e.g.*, GADNR Opt-In, DC Monthly Reporting)

- 300+ critical error and warning QA checks (EIS and State-requested, some customized to specific SLT needs)

- SLT Data Retrieval via Application Programming Interface (API)

- SLT-only editable fields as needed

- Non-Point Fuel Subtraction Report (ICI Template Option A)

- Ability to communicate via email with facilities (by type, reporting status, and preparer/certifier roles)

- SLT-specific emission factors via compendium

- Ongoing enhancements in response to user feedback

Workflow Cases

Case 1: State custom system reporting interface and backend are retained (CAERS receives data from state interface)

Case 2: State custom system reporting interface and backend are retained (CAERS pushes data to state interface)

Case 3: CAERS replaces state reporting interface, but state database is retained

Case 4: State does not have or does not want to keep custom system, and prefers to use CAERS

State custom system includes the use of SLEIS as the SLT system.

Case 1. State Interface & Backend are Retained
CAERS receives data from state interface
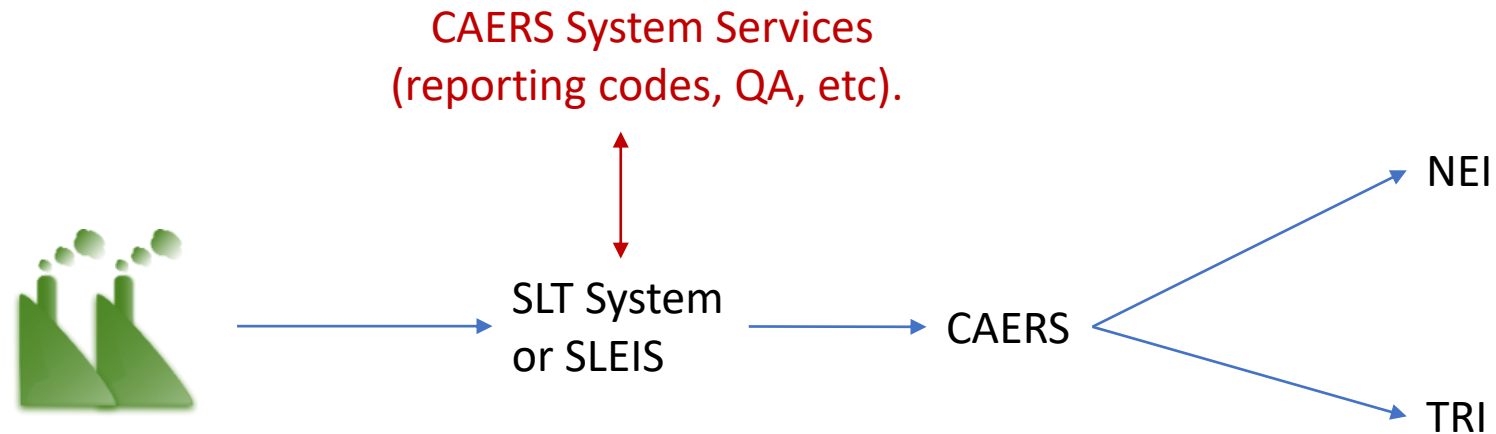
CAERS System Services
(reporting codes, QA, etc).

SLT System
or SLEIS

CAERS

NEI

TRI

State reviews its data in its own system/SLEIS. Toxics data coming from the SLT allows alignment of data between NEI and TRI. Direction of CAERS workflow with CEDRI and GHGRP to be determined.

# Case 1. State Interface & Backend are Retained
NEI receives data from state interface
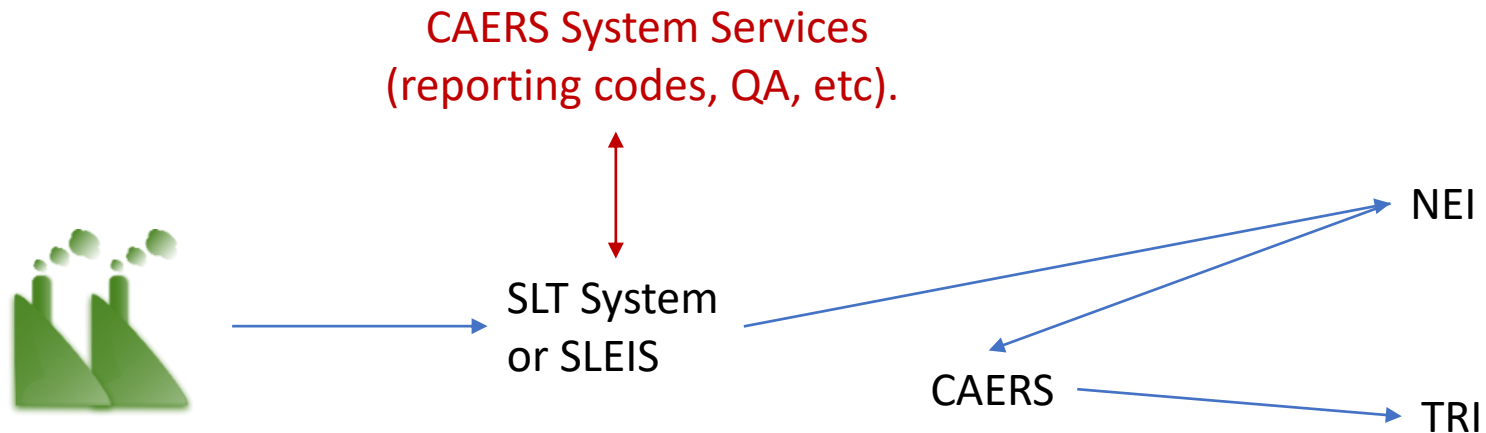
CAERS System Services
(reporting codes, QA, etc).

NEI

SLT System
or SLEIS

CAERS

TRI

State reviews its data in its own system/SLEIS. Toxics data coming from the SLT allows alignment of data between NEI and TRI. Direction of CAERS workflow with CEDRI and GHGRP to be determined.

# Case 2. State Interface & Backend are Retained
CAERS pushes data to state interface
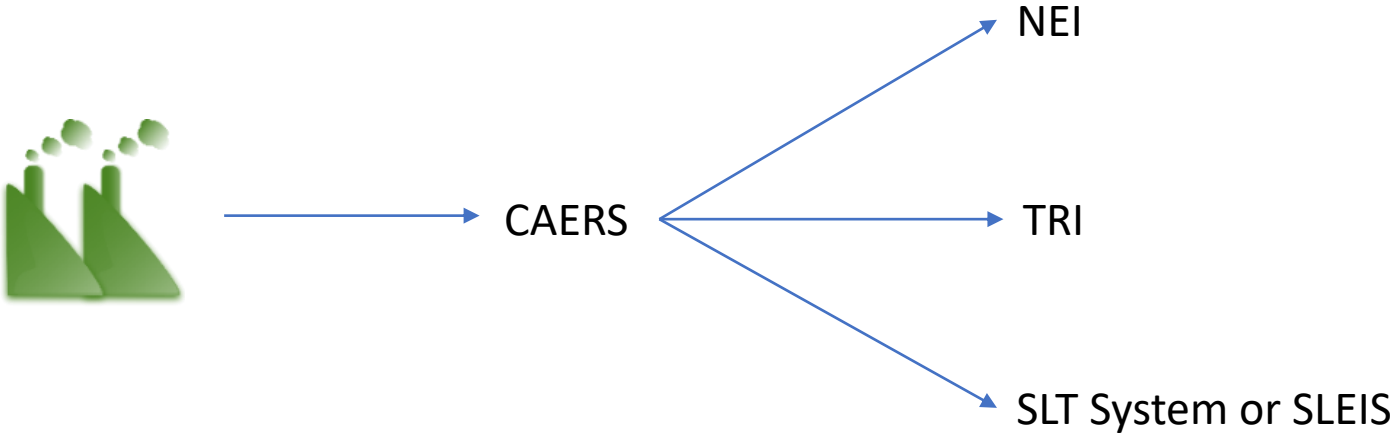
While the SLT could receive the data at the same time as EPA, this workflow takes advantage of the opportunity for data to be aligned amongst federal and state programs, by reviewing the data prior to sending it to EPA from CAERS. Direction of CAERS workflow with CEDRI and GHGRP to be determined.

Case 3. CAERS Replaces State Interface & State Database is Retained
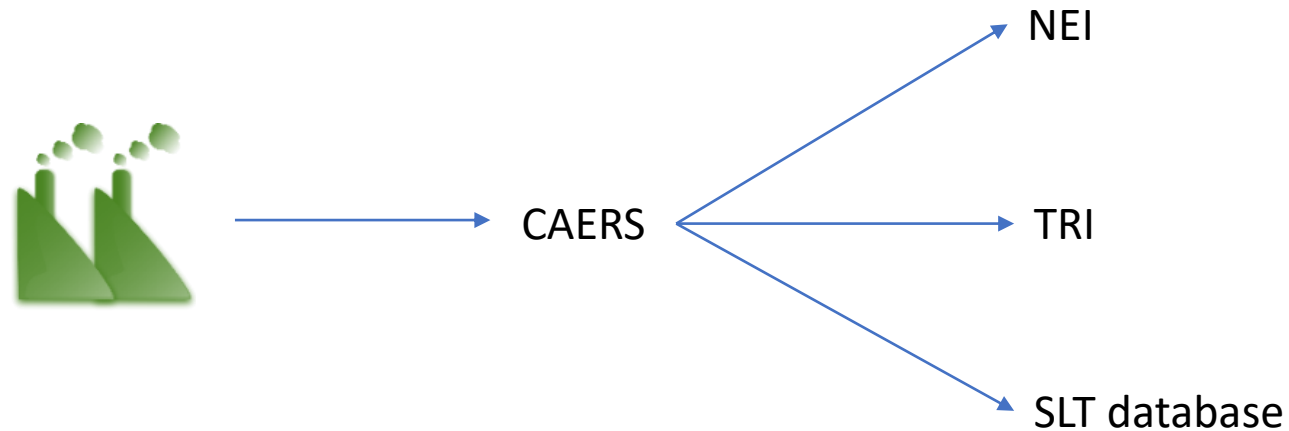
This workflow takes advantage of the opportunity for data to be aligned amongst federal and state programs. Direction of CAERS workflow with CEDRI and GHGRP to be determined.

Case 4. States use CAERS Only
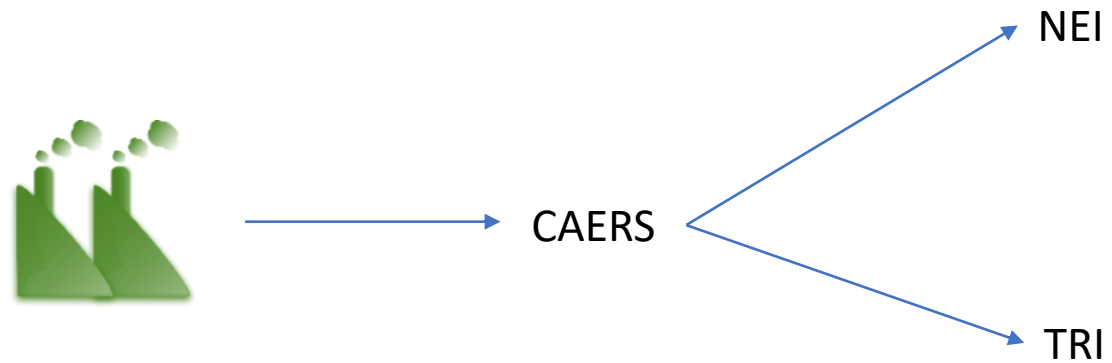
This workflow takes advantage of the opportunity for data to be aligned amongst federal and state programs. Direction of CAERS workflow with CEDRI and GHGRP to be determined.

Challenges

- Initial learning curve for users and EPA.

- Balancing different SLT business needs and priorities.

- Amongst air programs (state and federal) there are different definitions (facility) and terminology.

- The IT world moves very fast and new business needs are "breaking the mold".

  - Data business needs must be met per data regulations that may not have envisioned the future we're in: e.g., CROMERR (40 CFR, Part 3): SLTs must undergo additional process (180 days) even with blanket CROMERR agreement and show how they know which Certifier is authorized for each
  - System design, CAERS hosted in CDX

    - System has both industry reporters (regulated community) and SLTs (co-regulators) as users.

    - Registration via CDX means SLT cannot get registrant data (PII) even though SLT obtains same PII separately from industry and uses it to associate reporters with correct facility in CAERS per CROMERR.

    - Must review workflows with the other EPA systems even when a workflow is already present or system is within CDX (types of transactions and system boundaries). E.g. Enhance workflow between CAERS and TRI-Meweb to allow for more use cases.

Opportunities to Innovate

Data collection for human health and the environment must be supported by modern, efficient and secure IT solutions.
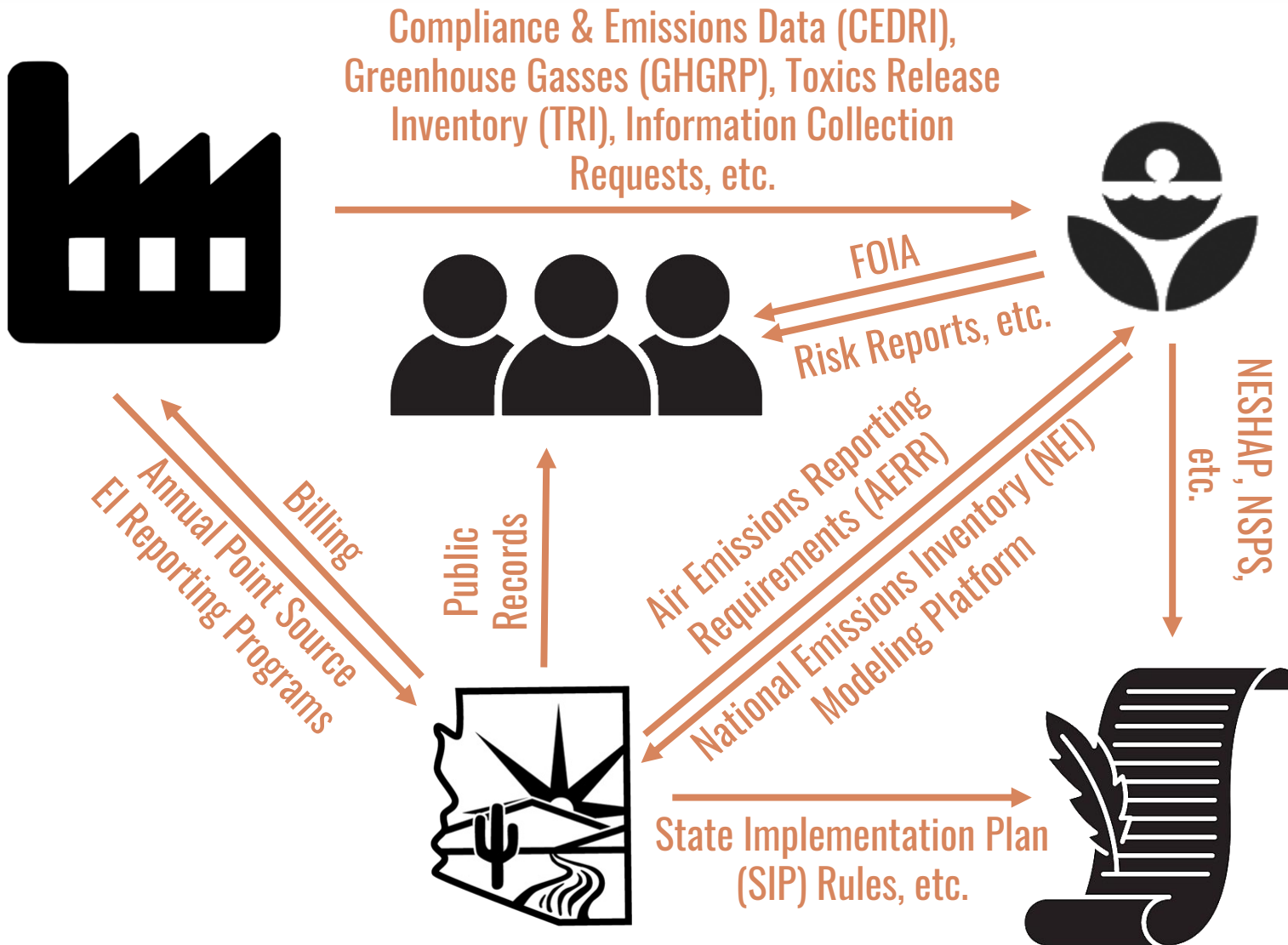
- OMB Open Source policy may be difficult to implement in CDX? Code reviews, volume of data…

- IT solutions can facilitate business need challenges as air quality challenges push regulation to evolve.

    E.g., Not all facilities are the same and the Air Emissions Reporting Rule (AERR) proposal for obtaining HAP data means potentially more different "types" of facilities would become reporters in CAERS. E.g. Reporters where the owner reports hundreds or even thousands of small facilities (e.g. well pads) at one extreme or small gas stations in another.

Questions?

Thank you for your attention.

ADEQ
Arizona Department
of Environmental Quality

Compliance & Emissions Data (CEDRI), Greenhouse Gasses (GHGRP), Toxics Release Inventory (TRI), Information Collection Requests, etc.

FOIA

Risk Reports, etc.

Billing

Annual Point Source
EI Reporting Programs

Public Records

Air Emissions Reporting Requirements (AERR)

National Emissions Inventory (NEI)
Modeling Platform

NESHAP, NSPS, etc.

State Implementation Plan (SIP) Rules, etc.

Collect detailed, annual emissions estimates of ~~EIS~~ quality befitting regulatory decision-making

Encode into CERS and transmit to EIS by end of year

Distinguish billing-exempt subtotals & capture certain non-EIS pollutants,
Long-term record retention and accessibility, with CBI partitioned

Nice to have: consolidate or at least coordinate HAP reporting

Case 3: CAERS replaces state interface & state database is retained
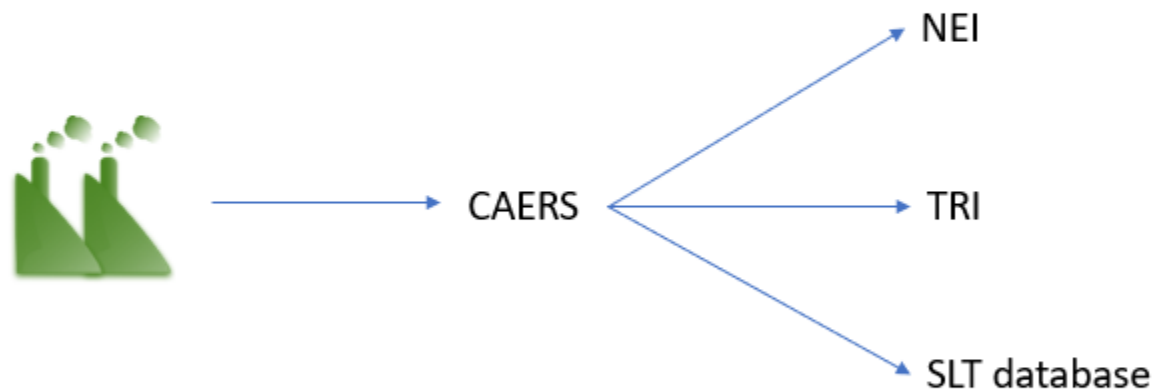
This workflow takes advantage of the opportunity for data to be aligned amongst federal and state programs. Direction of CAERS workflow with CEDRI and GHGRP to be determined.

Credit: Julia Gamas, US EPA

Data Access Solution

Combined Air Emissions Reporting System – CAERS

? Support

https://exchangenetwork.net/data-exchange/combined-air-emissions-reporting-system-caers/

Version:	Data Exchange Status:	
1.0 - Supported	Flowing	Download full package ▸

Data Exchange Description

Industry partners can utilize the Combined Air Emissions Reporting System (CAERS) to report air emissions to meet reporting requirements. CAERS provides outbound data across services that enable State, Local, and Tribal authorities to download air emissions data that was reported in CAERS. These outbound services provide CAERS reporting data using the same JavaScript Object Notation (JSON) schema used by industry partners within the CAERS application to upload reporting data.

CAERS has exposed REST publishing capabilities for the CAERS State, Local, Tribal (SLT) partner community. This capability allows SLTs to retrieve air emissions data that was reported by their industry in JSON format. All service requests must be accompanied by a valid OAuth security token. Information on how to request OAuth security credentials can be found in the Flow Configuration Document (FCD) below.

Contact

Julia Gamas
U.S. Environmental Prote[ction] Agency
919.541.7915
▸ gamas.julia@epa.gov

Profiles and Progres[s]

Cli[c]k the map to find con[t] [in]formation for Exchange Network Partners and to s[ee] Partners' progress towar[d]

Version Notes

Status: Supported

The resources and documentation for the CAERS APIs have been approved for use on the Exchange Network. Implementation resources for the most recent version follow.

Resources

▸ Flow Configuration Document
▸ Data Exchange Template
▸ Example JSON File
▸ OpenAPI Specification
▸ Swagger UI (v1.0): (https://cdxapps.epa.gov/cef-web/swagger-ui/index.html)

Data Access Solution

- RESTful API

- Umbrella JSON schema derived from CAERS data model

- Secured using Oauth

SLT benefits of sticking to widespread/modern architecture, best practices, and technologies

  - Minimal ramp-up for client dev, both initial and transfer/collab
  - Maximal off-the-shelf solutions to leverage
  - Minimal upkeep (presumably) until functionality needs expand
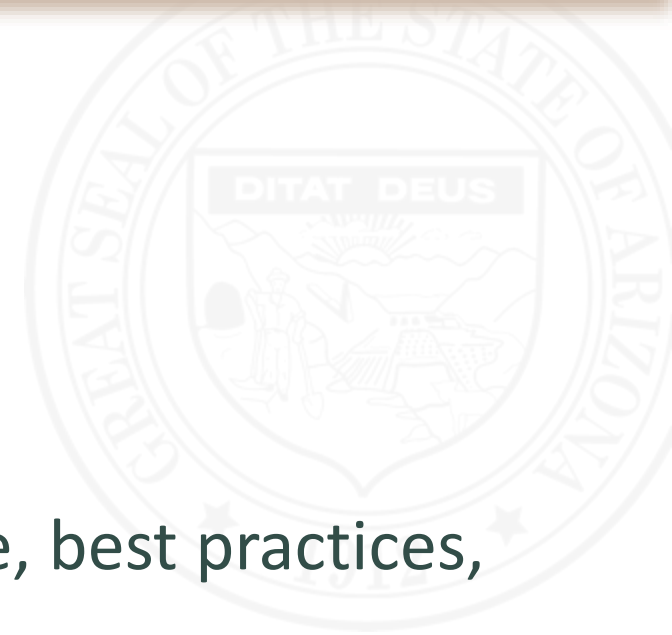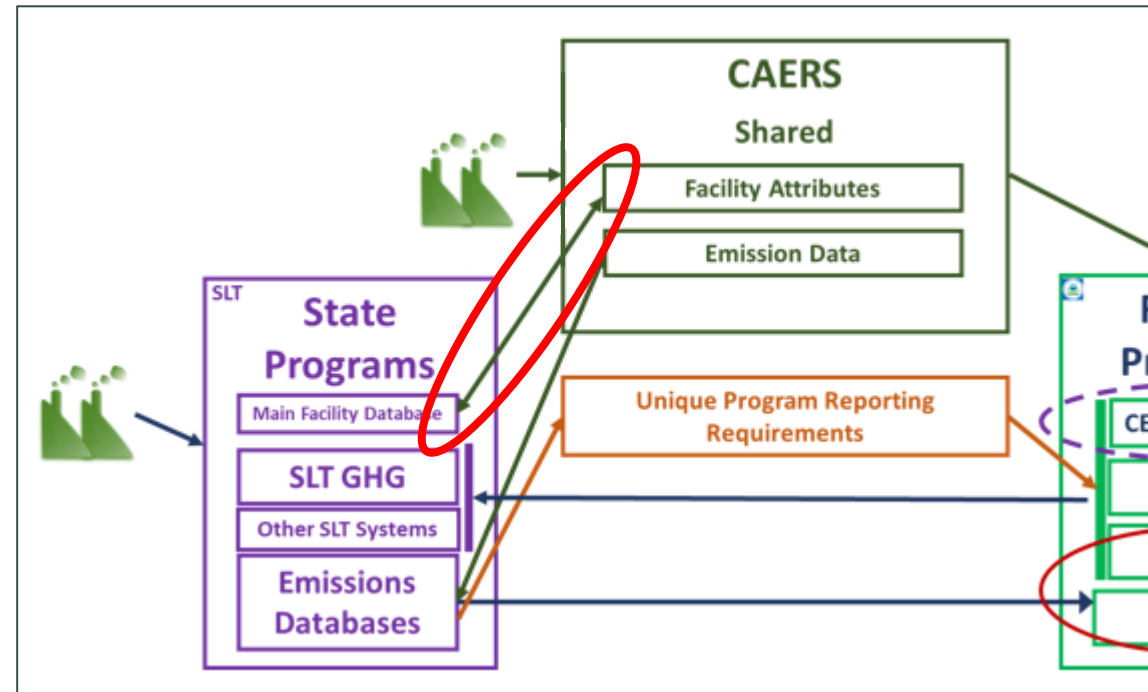
Credit: Julia Gamas, US EPA

EmissionInventory@AZDEQ.gov

Questions?

Extra slides: Agile Development

Extra slides: Agile Development

Open Forum

- **Submit questions using Zoom Q/A Feature.** We will do our best to answer questions during the call. If not, we will follow up with you directly or during the next Forum.

Contact

Moderator: Alex O'Neill (US EPA)

Panelists: Eric Cleckler (AL-DEM), Jennifer Reyher (Muscogee [Creek] Nation), Julia Gamas (US EPA), Adam Ross (AZ-DEQ), Kevin Brundage (US EPA)

Hosts: Beth Jackson (US EPA), Matt Kelly (US EPA), Alex Desibour (US EPA, Contractor)

Thank you!

Questions?