

Combined Air Emissions Reporting System (CAERS)

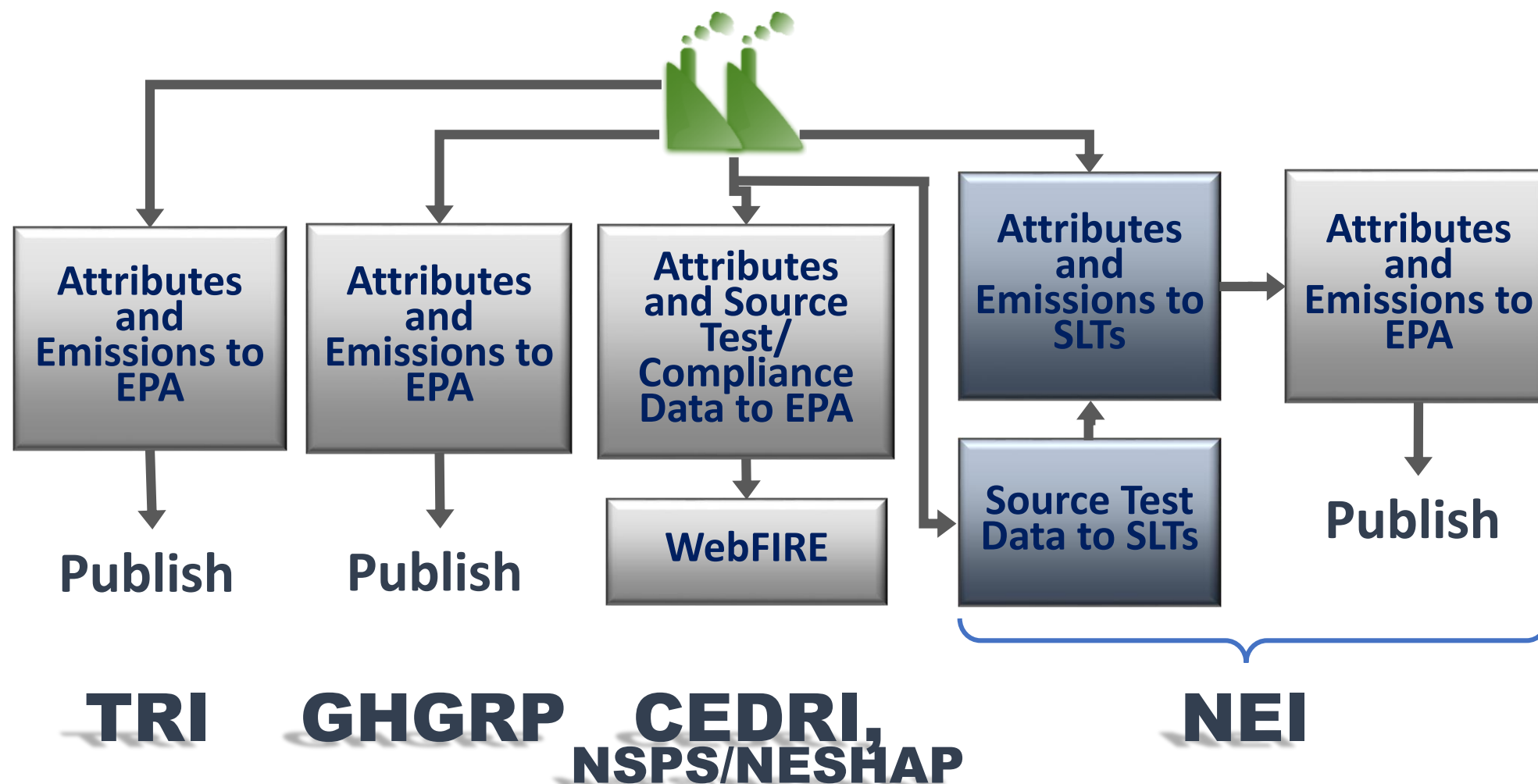
E-Enterprise for the Environment

Outline

- Background on CAERS
- Creation of CAERS
- Next Steps

Background

Air Emissions Reporting “As is” State



Legal Basis of Programs

- **Greenhouse Gas Reporting Rule/Program (GHGRP)**
 - 40 CFR Part 98
 - Reporting System: Electronic Greenhouse Gas Reporting Tool (EGGRT)
 - Industry reports greenhouse gas emissions at the facility level to EPA for specific unit/process types,
 - Results are published in a Greenhouse gas inventory used, e.g., by decision makers, & SLTs without their own GHG programs to understand their sources and take remedial action.
- **Air Emissions Reporting Rule (AERR)**
 - AERR, 40 CFR Part 51,
 - Reporting System: State, Local, Tribal Authority collects industry reports through their own system/paper, then sends them to EPA via the Emissions Inventory System (EIS)
 - Industry reports criteria pollutants at the unit/process level, to SLTs who are required to submit the data to EPA,
 - Results are published in the National Emissions Inventory (NEI) used, e.g., by decision makers to know which areas are in compliance with the National Ambient Air Quality Standards (NAAQS) and take remedial action.

Legal Basis of Programs

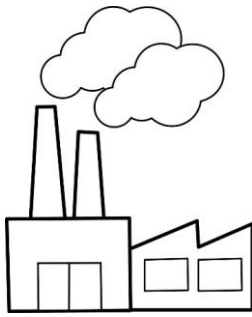
- **Toxics Release Inventory Program (TRI)**
 - 40 CFR, Part 372
 - Reporting System: Toxics Release Inventory Made Easy (TRI-MEweb)
 - Industry reports toxics emission to EPA at the facility level
 - Results are published in the Toxics Release Inventory and used, e.g., by decision makers to understand potential health risks from toxic pollutants to the population.
- **“Sectors Rules”**
 - New Source Performance Standards (NSPS, 40 CFR Part 60), Federal Plans under Clean Air Act sections 111(d) and 129 (40 CFR Part 62), National Emission Standards for Hazardous Air Pollutants (NESHAPS or MACT). Reporting System: Sector/Industry specific via the Compliance and Emissions Data Reporting Interface (CEDRI),
 - Industry reports to EPA, depending on the rule, of interest are types of unit/process (sector, types of equipment), facility level and sub-facility level reporting.
 - Results are used by decision makers, e.g., to ensure emissions are within compliance of their permitted emissions.

Legal Basis of Programs

- **SLT-specific air emissions regulations, e.g.:**
 - Georgia Rules for Air Quality Control 391-3-1-.02(6)(a)4.
 - Washington D.C., Title 20, Chapter 3
 - Arizona Administrative Code, Title 18, Chapter 2, Section 327 (R18-2-327)
 - Nebraska Title 129 of the Nebraska Administrative Code

Facility

- Name
- Address
- Type of activity

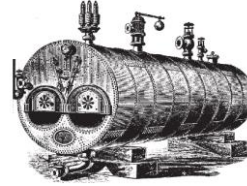


Shared Data Amongst Programs

1. Facility and sub-facility data at all levels of detail.

Unit

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



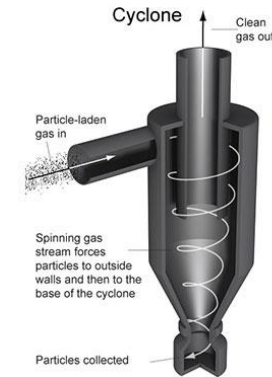
Process

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



Emissions Controls

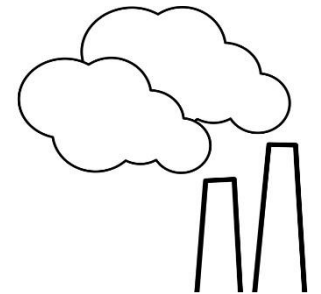
- Type (Low NOx burner, Fabric Filter...)
- Efficiency



New FRS Data Model (~2015)

Release Point

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



Shared Data Amongst Programs

2. Emissions data for the different programs: some, not all pollutants are shared, or it is desired that it be shared at the same level of detail for purposes of analyses, where the programs allow this. E.g.:

- Some SLT programs require HAPS/Toxics be reported every year, which may also be in NEI and TRI
- Greenhouse Gases (GHG):
 - Some GHGs reported to GHGRP, while not required, are sent to NEI voluntarily
 - We anticipate future need for GHGRP data (which GHGRP collects at the sub-facility level, for multipollutant analyses)
- CEDRI: Shared stack test data, emission factors, with NEI albeit sometimes at different levels of detail.

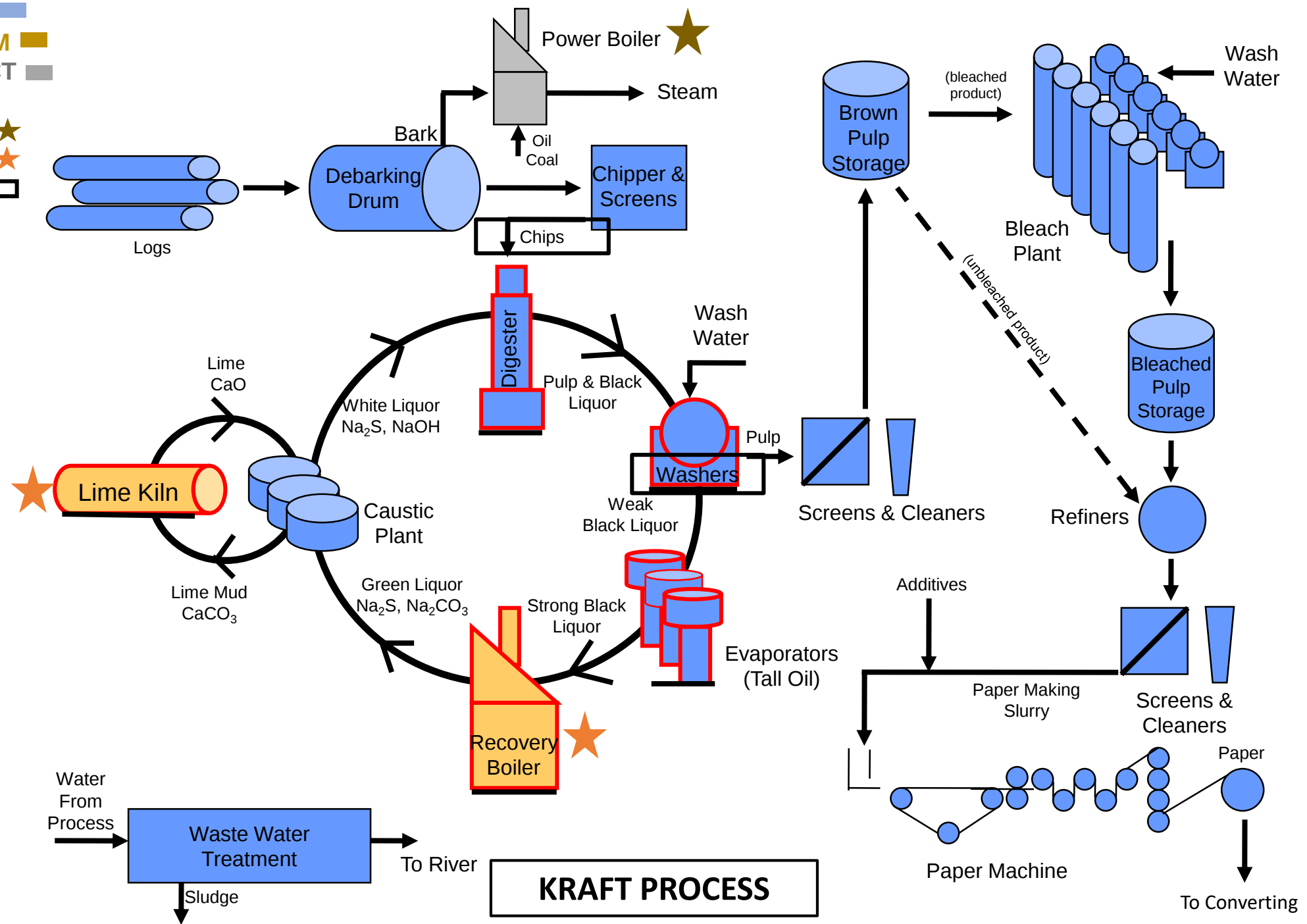
3. Relevant points of contact (POC) data:

- Industry report preparers/certifier names, email addresses, workplace addresses, phone numbers. E.g.:
 - The NEI preparer/certifier may be the same person as the TRI preparer/certifier.
 - The SLT needs to reach out to the NEI preparer/certifier with questions, reminders, and updates on trainings and/or system updates (new functionality available, e.g.).
- SLT POCs

Example for a Kraft Process

Rule	Sector/Type of Equipment	Pollutants
NESHAP Subpart S (40 CFR Part 63 Subpart S)	Pulp and Paper production	Total hazardous air pollutants (HAPS): including methanol, acetaldehyde, formaldehyde, and others
NESHAP Subpart MM (40 CFR Part 63 Subpart MM)	Pulp mill combustion sources which are recovery furnaces, smelt dissolving tanks, and lime kilns.	Particulate matter (PM) as a surrogate for HAPS metals. Also, gaseous organic HAPs.
NESHAP Boiler MACT (40 CFR Part 63 Subpart DDDDD)	Industrial boilers, commercial and institutional boilers, and process heaters; coal-fired, biomass-fired, and liquid-fired major source boilers are based on the maximum achievable control technology; all major source boilers and process heaters	Mercury, hydrogen chloride, particulate matter (as a surrogate for non-mercury metals), and carbon monoxide (as a surrogate for organic hazardous emissions)
NSPS (40 CFR 60, Subparts BB & Bba)	Kraft Pulp Mills	PM and total reduced sulfur compounds (TRS)
GHGRP Subpart C (40 CFR Part 98.30)	Facilities that emit 25,000 metric tons or more of Greenhouse Gases (GHG) per year (expressed as carbon dioxide equivalents) from stationary fuel combustion or that meet any other applicability requirements of the rule	GHG
GHGRP Subpart AA (40 CFR Part 98.270)	Facilities..25,000...from pulp and paper processes and all source categories located at the facility for which calculation methods are defined in the rule: Chemical recovery furnaces at kraft and soda mills (including recovery furnaces that burn spent pulping liquor produced by both the kraft and semichemical process). • Chemical recovery combustion units at sulfite facilities. • Chemical recovery combustion units at stand-alone semichemical facilities. • Pulp mill lime kilns at kraft and soda facilities. • Systems for adding makeup chemicals (calcium carbonate [CaCO3], sodium carbonate [Na2CO3]) in the chemical recovery areas of chemical pulp mills.	GHG
NEI	All major sources	Criteria Air Pollutants (includes PM and CO)
TRI	TRI are typically larger facilities involved in manufacturing, metal mining, electric power generation, chemical manufacturing and hazardous waste treatment, pulp mills, paperboard mills,...	Toxic chemicals (all media including air)

NESHAP Subpart S 
NESHAP Subpart MM 
NESHAP Boiler MACT 
NSPS 
GHG RP Subpart C 
GHGRP Subpart AA 
NEI (all air-related) 



KRAFT PROCESS

E.g.:

- Boiler emissions of interest to NEI at the unit/process level
- Emissions from all boilers of interest to CEDRI (Boiler-MACT facility total but for boilers only)
- Boilers of different types at the facility level
- Toxics from any equipment (boilers included) at the facility level for TRI

History of CAERS

Lean Event 2015

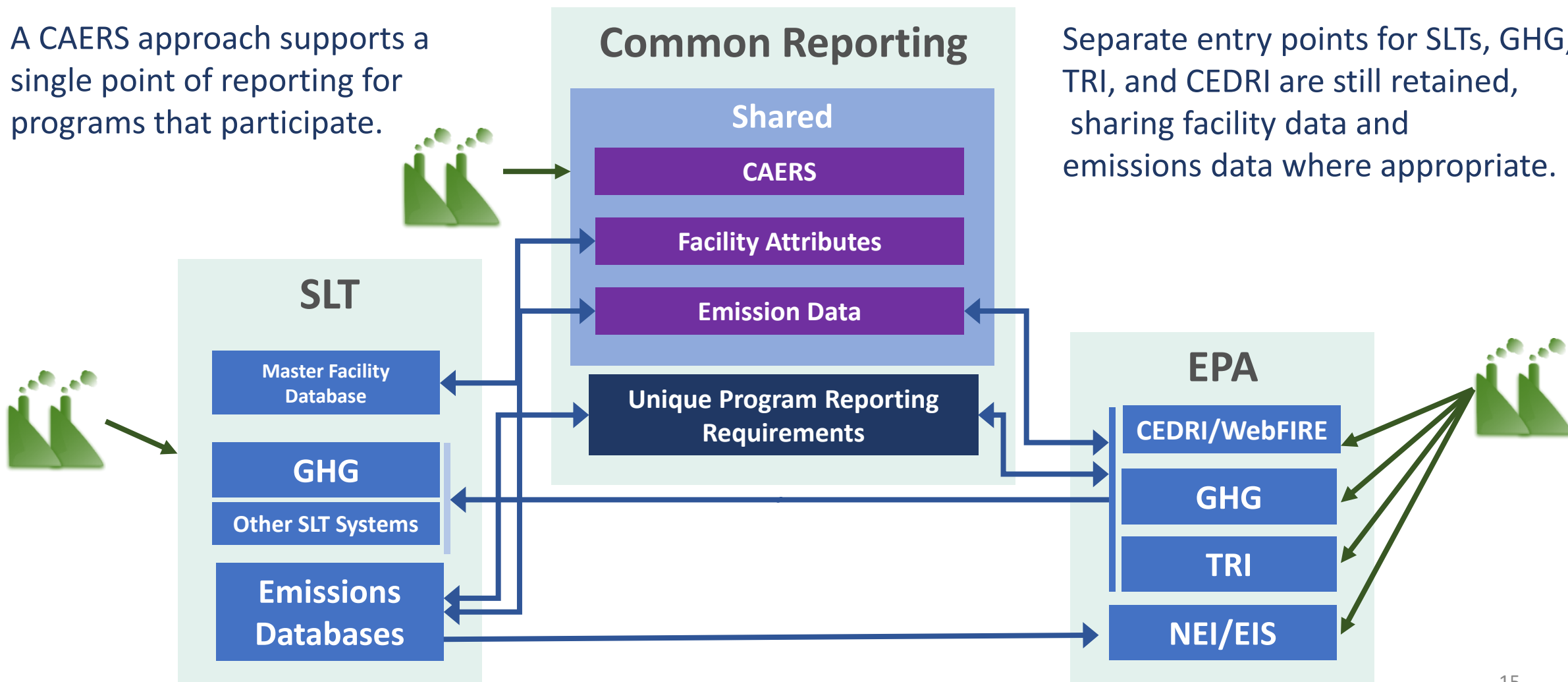
- Participants
 - Four EPA air programs:
 - National Emissions Inventory (NEI)
 - Toxics Release Inventory (TRI)
 - Greenhouse Gas Reporting Program (GHGRP)
 - “Sectors” Rules to Compliance and Emissions Data Reporting Interface (CEDRI)
 - Industry,
 - State, Local, Tribal authorities (SLTs)

History of CAERS

- Outcomes from Lean Event
 - Streamline *shared* data reporting
 - Data entered once, flows to multiple program(s)
 - Reduce burden:
 - Industry: time and resources in data entry and corrections
 - SLT and EPA staff: data curation and reconciliation
 - Data quality (e.g. reported vs. augmented Hazardous Air Pollutants (HAPs))
 - Program Requirements Gathering via Product Design Team
 - SLTs and EPA staff, e.g.:
 - NEI/TRI/SLT requirements overlaps and differences
 - Quality assurance and control procedures
 - Data model
 - Reporting codes alignment
 - Currently: facility data workflows

Proposed “Future State” Concept

A CAERS approach supports a single point of reporting for programs that participate.



CAERS Concept

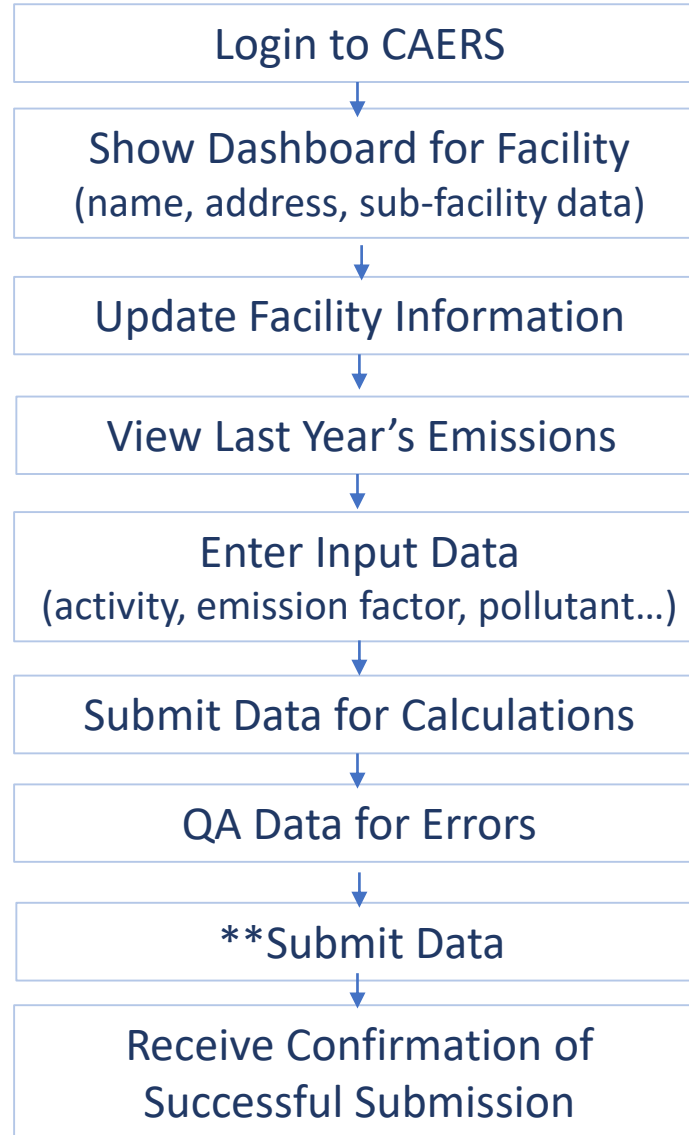
Application to report shared emissions and facility data to more than one federal (NEI, TRI, GHGRP & CEDRI*) and state program at one time.

Users:

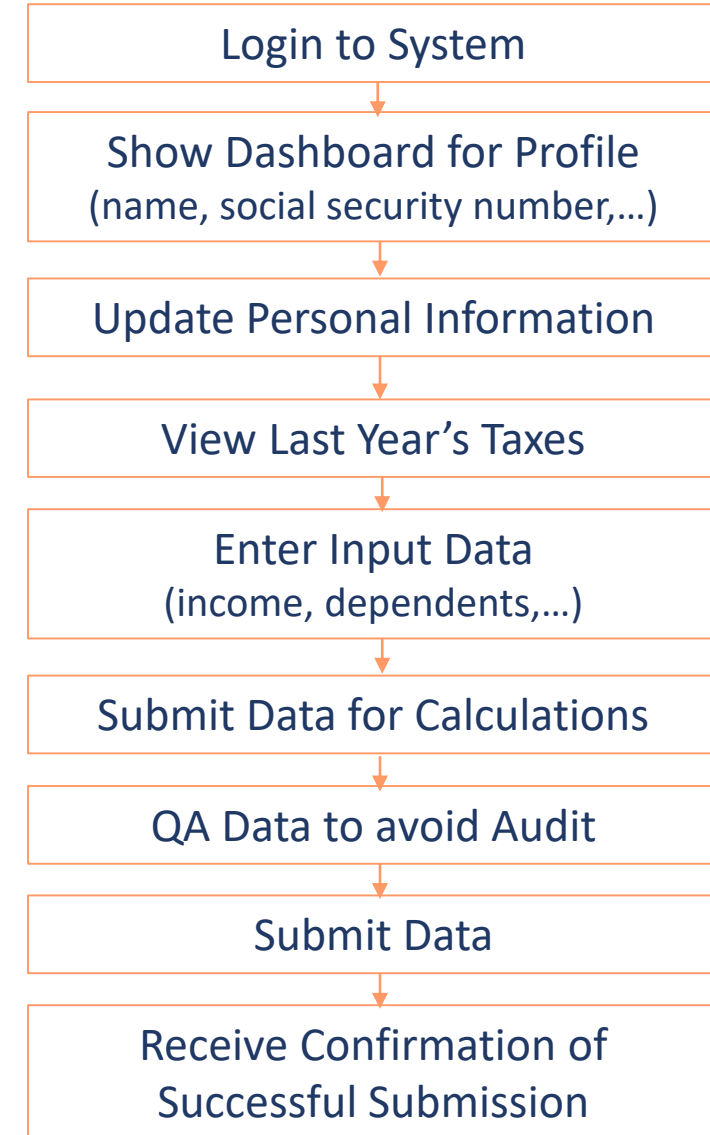
- Facilities reporting
- SLT authorities who review NEI data **

*CEDRI system collects data from many sector specific air rules (including: RTRs, NSPS: 60, 62, 63, & MATS)

Combined Air Emissions Reporting



Online Tax Reporting



Creation of CAERS

Considerations

- CAERS is different from other EPA applications; *both* industry and SLTs are users. AERR requires the SLT to report the inventory data to EPA. SLTs review reports for NEI before that data reaches EPA.
- CAERS is *not* mandatory per the AERR. SLTs can retain their current reporting process as before, or join CAERS.
- CAERS does *not* change the reporting rules for any of the programs, rather, it adapts and adjusts so that data can be shared.
- CAERS is not intended to replace any other reporting system (e.g. CEDRI, E-GRRT), but instead, to integrate with them but allowing data flows.
- CAERS flexibility for SLTs via modules: reporting requirements & workflows.

Flexibility for SLTs

Workflow “Cases”:

Case 1: SLT uses its own reporting system and CAERS receives data from that system and distributes shared data to EPA programs (e.g. to TRI)

Case 2: Facilities report using CAERS, the SLT receives the data in their system and after review, data moves to EPA

Case 3: CAERS replaces SLT *reporting* system, but SLT database is retained for other uses in their own system.

Case 4: SLT has no system (uses paper/electronic forms) or does not wish to keep it's current reporting system.

Cases 1-3 assume the state uses its own system.

CAERS from Concept to Reality

CAERS Minimum Viable Product or MVP (2018 – 2019)

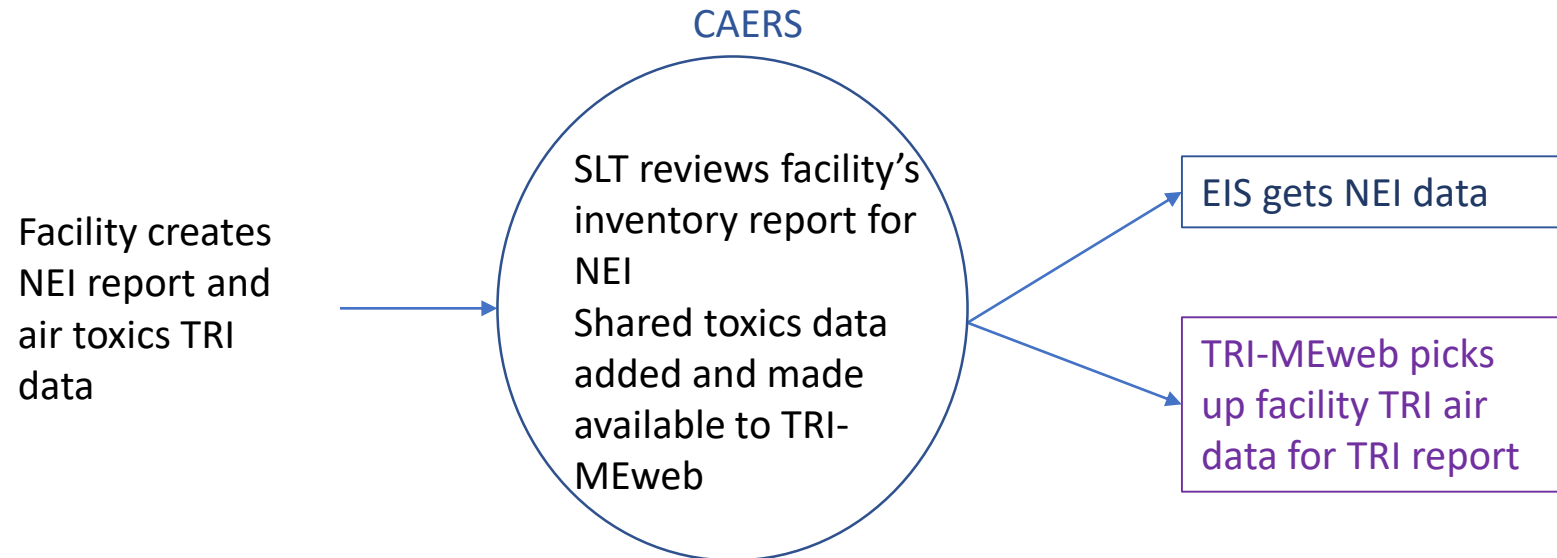
- Developed with:
 - Pilot state Georgia (Case 4), and
 - 12 pilot facilities
 - Additional input from GA and Industry:
 - Testing session in Atlanta
 - Conferences and webinars
- Agile development (build – test- build – test...)
- Released April 2020:
 - Used by GA facilities for 2019 reporting
 - GA reviewed reports in CAERS
 - Toxics data rolled up for TRI-MEweb to pick up

CAERS for Onboarded SLTs Before and After MVP

Before



After



CAERS Version 2

CAERS Version 2 (2020-2021)

- Enhancements:
 - More streamlined user registrations
 - Multiple alternative throughputs reporting
 - Fuel use data reporting
- Released March 8th 2021
 - Users (Case 4): GA, DC, Pima AZ, Lincoln-Lancaster NE, RI
- **CAERS Version 3 (2021-2022)**

Overall CAER Milestones

- **Milestone 1:** Define common reporting structure (March 2019) *COMPLETE*
 - Defining business processes and business rules
 - Data model and architecture
 - Web service needs and definitions
- **Milestone 2:** MVP (June 2020) *COMPLETE*
 - NEI/SLT & one other EPA program for at least 1 SLT Case 4
 - TRI is the EPA program and Georgia is the Pilot/MVP state
- **Milestone 3:** V2 (July 2021) *IN PROGRESS*
 - Additional SLTs Case 3
- **Milestone 4:** V3 (July 2022) *NOT STARTED*
 - Three or more programs (e.g., NEI, TRI, and GHG)
 - Additional SLTs Cases 1 and/or 2
- **Milestone 5:** V4-V5 (July 2024) *NOT STARTED*
 - All programs included
 - Developmental product complete
 - Additional SLTs (all cases) continue to be onboarded – ongoing henceforth

Next Steps

Planned Functionality towards V3 (February 2022 release)

- Continue to service current CAERS SLTs:
 - Incorporate more SLT reviewer features: e.g. Allow SLTs to send notifications to facilities from CAERS
 - Incorporate more reporting features for industry: e.g. Allow energy conversions for emission factors in BTUs to tons, gallons, standard cubic feet for fuel data
 - Learn and incorporate SLT facility data business rules and how to update facility data for NEI while maintaining facility crosswalk with TRI, and the other programs
- Onboard AZ (Case TBD), MN, MT (Case 3) and potentially other SLTs
 - CAERS open source to allow SLTs to build, customize, and share their module with other SLTs
 - Exchange Network grants
 - Free up EPA resources for other CAER tasks
 - CAERS DB transfers back to the SLT
 - “Integrate” with SLT systems (e.g. AZ)

- Build out business rules of facility data workflows:
 - Updating SLT facility data inventory
 - Transfer of facility data inventory between SLT and EIS while maintaining crosswalk with TRI
 - Workflows with the other EPA programs:
 - Begin creation and maintenance of facility data crosswalk with CEDRI and GHGRP
 - Research on SLT “cases” for facility data workflows

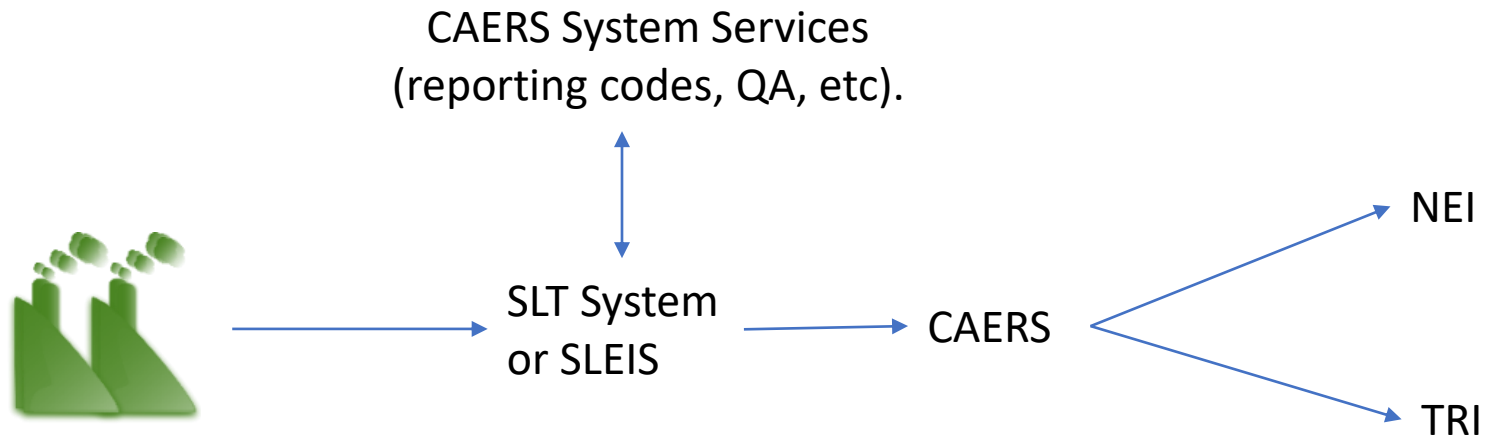
Work with OMS

- Gather and Understand IT Requirements:
 - Federal Information Technology Acquisition Reform Act (FITARA)
 - Privacy Threshold Assessment (PIA)
 - Privacy Impact Assessment (PTA)
 - Cross-Media Electronic Reporting Rule (CROMERR); requirement for FR notice from SLTs to their industry)
 - Authorization to Operate (ATO); we use CDX's
 - 508 Compliance (Michelle Dingle – OAQPS, other?)
 - Other?
- Work in collaboration with OMS to find how we can develop CAERS so that it meets program requirements and IT requirements: advice on solutions that will meet IT requirements.

Additional Slides

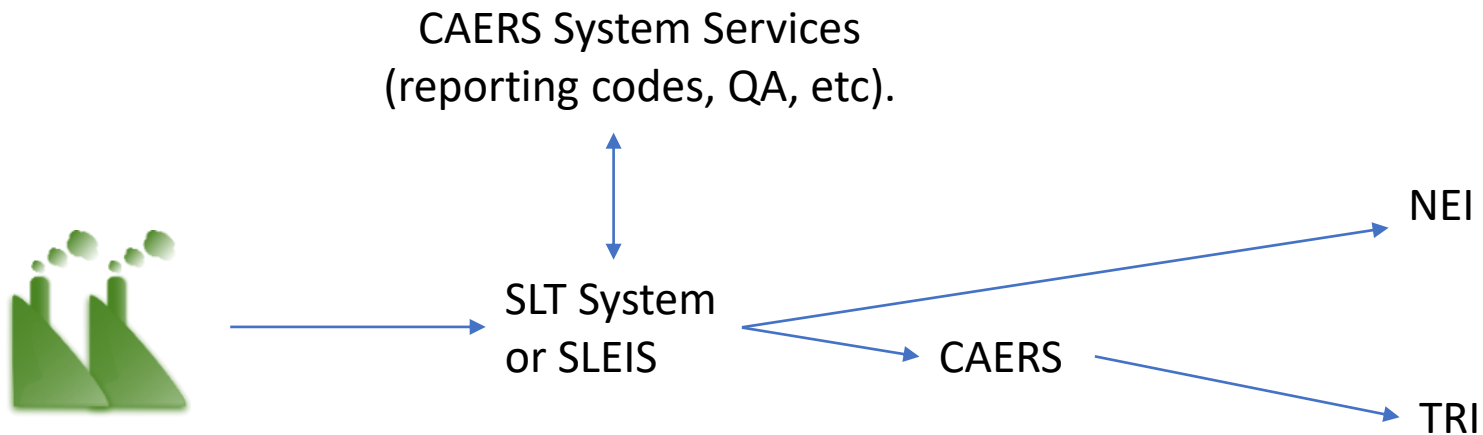
Conceptual Workflows with SLTs

Case 1a: SLT interface and backend are retained (CAERS receives data from state interface)



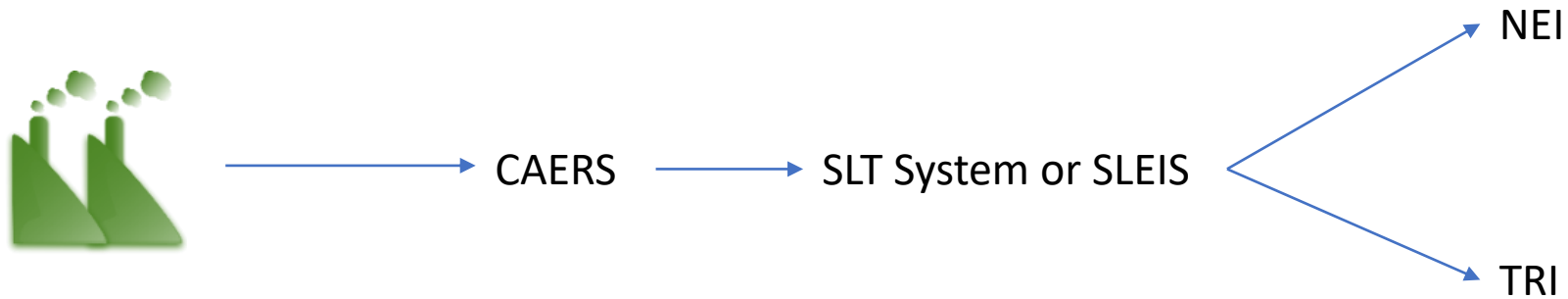
SLT reviews its data in its own system/SLEIS. Toxics data coming from the SLT allows alignment of data between NEI and TRI.

Case 1b: SLT interface and backend are retained (CAERS receives data from state interface)



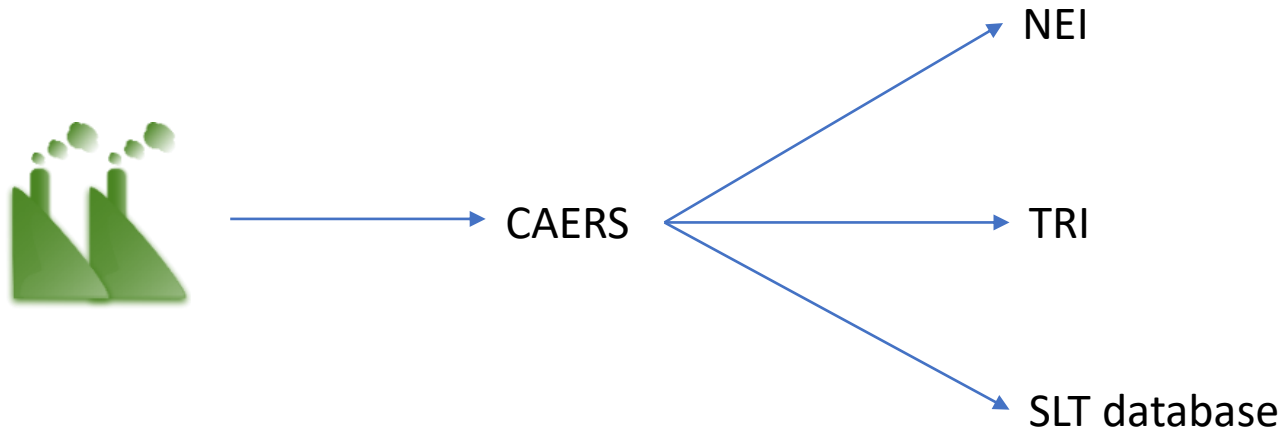
SLT reviews its data in its own system/SLEIS. Toxics data coming from the SLT allows alignment of data between NEI and TRI.

Case 2: SLT interface and backend are retained (CAERS pushes data to state interface)



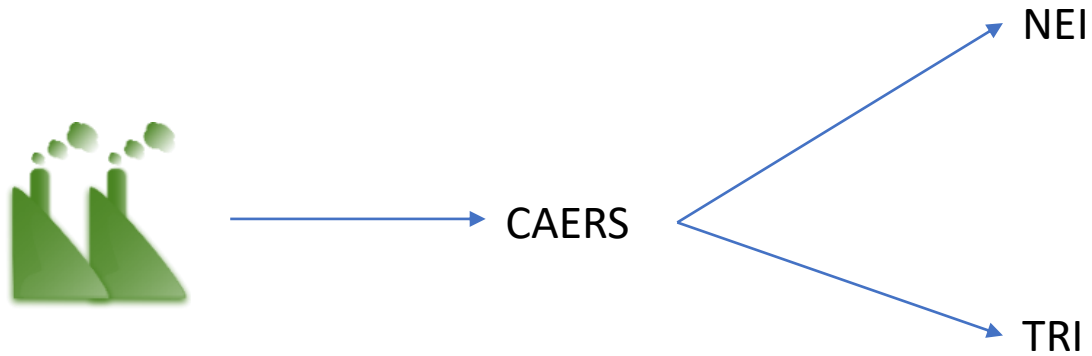
SLT has the option to review its data in CAERS before it moves to NEI, or use the functionality in its own system. This workflow takes advantage of the opportunity for data to be aligned amongst federal and state programs.

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



SLT reviews its data in CAERS before it moves to NEI. This workflow takes advantage of the opportunity for data to be aligned amongst federal and state programs.

Case 4: SLT uses CAERS



SLT reviews its data in CAERS before it moves to NEI. This workflow takes advantage of the opportunity for data to be aligned amongst federal and state programs.