

# E-Enterprise for the Environment Combined Air Emissions Reporting (CAER)

## Project Overview

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U.S. EPA, Office of Air Quality Planning and Standards

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# Presentation Overview

- CAER project purpose and goals
- Conceptual Approach
- Key challenges and concerns
- Past Project Results:
  - Five “Short Term Win” enabling projects completed in 2016
  - “Quick Start” event in fall 2016
- Current and Future Steps
  - CAER Implementation Plan
  - Product Design Team Projects
- Contacts

# CAER is an E-Enterprise Project

- E-Enterprise for the Environment is *jointly* governed by state/local/tribes (SLTs) and the EPA to collaboratively modernize business processes:
  - To improve **environmental results**
  - To **reduce burden** to the regulated community
  - To enhance services **to the regulated community** and **the public** by making government more efficient and effective
- Key E-Enterprise values integrated into all aspects of the project
  - Streamlining of processes
  - Modernization of business practices
  - Continued input received via regular outreach and participation
  - Trust and accessibility to regulated community

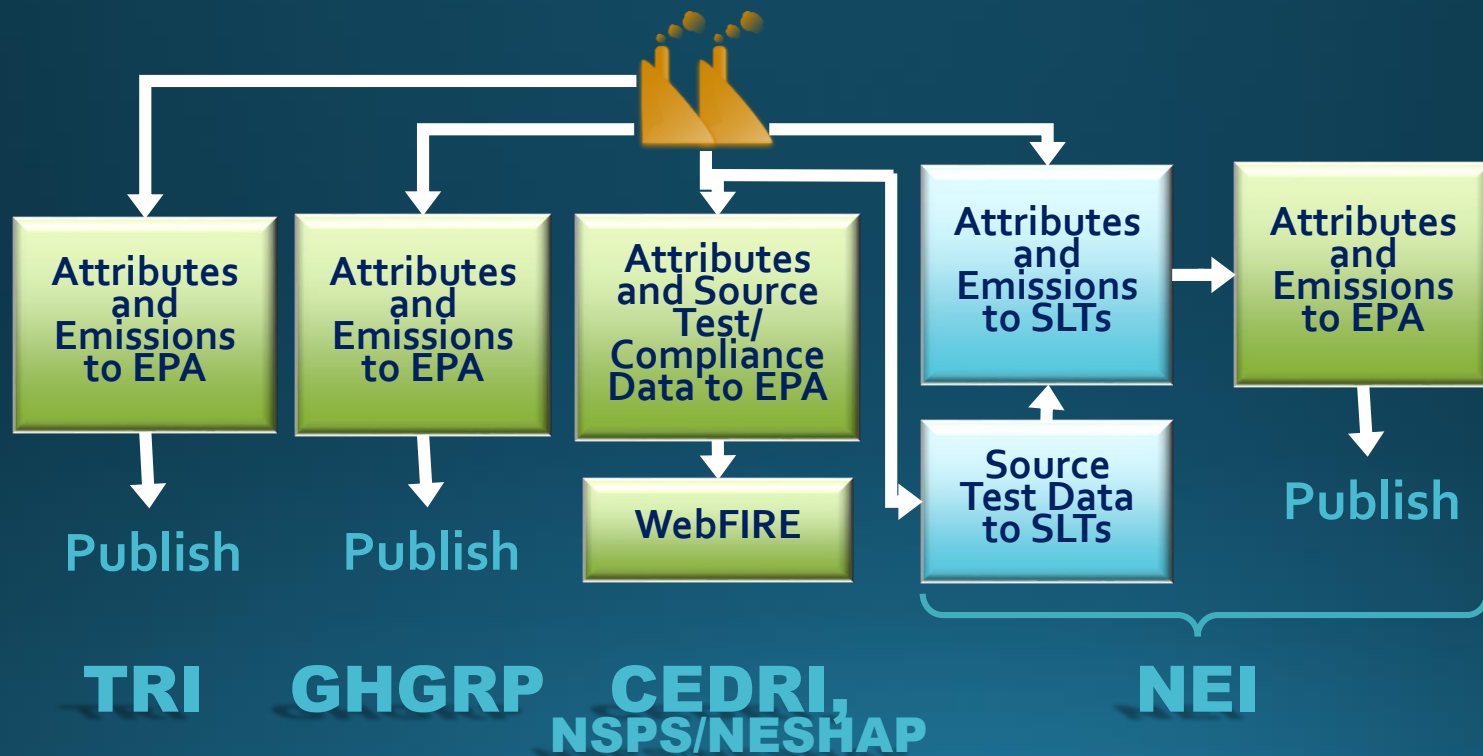
# CAER Project Goals

- Basic purpose:
  - To streamline emissions reporting activities through modern data sharing technologies and program collaboration
- Expected benefits would include:
  - **Industry:** Reduced reporting burden for industry by avoiding duplicative efforts across different programs and improved reporter experience through integrated electronic reporting and shared services
  - **Co-regulators:** Support timely decision making and analyses with more consistent, accessible, and higher quality emissions data
  - **Public:** Improvements to the availability, timeliness and transparency of data; also, higher quality and consistent data for various end users

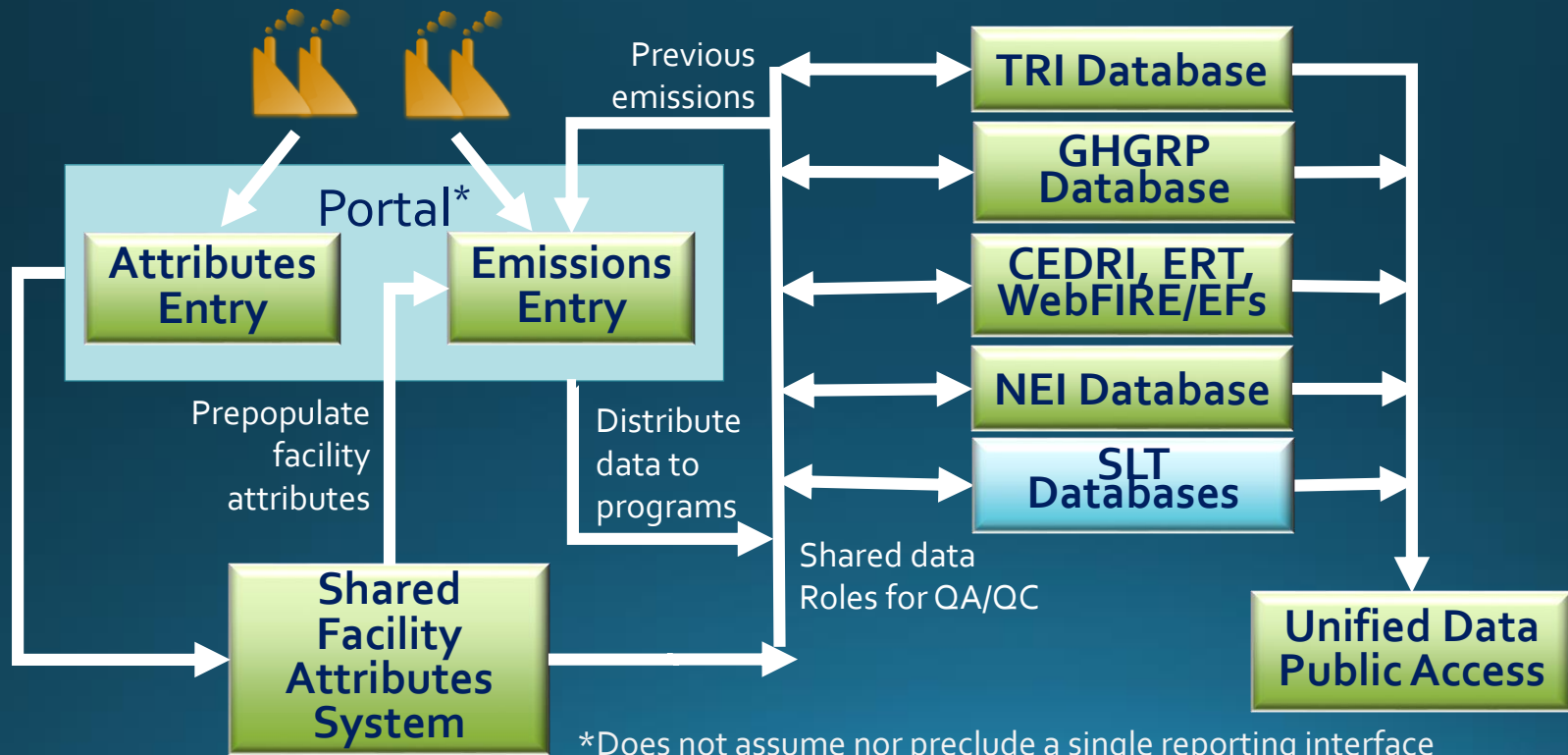
# CAER Basics

- Focuses on point sources under four major air reporting programs:
  - Toxics Release Inventory (TRI)
  - National Emissions Inventory (NEI)
  - Greenhouse Gas Reporting Program (GHGRP)
  - Compliance and Emissions Data Reporting Interface (CEDRI)
- Need to address different pollutants, facility definitions, data resolution across programs
- Focus on *emissions* reporting (not facility attributes)
- Look at process improvements first, not regulations
- Use modern information technology (IT) approaches to help implement

# Air Emissions Reporting "As is" State



# CAER Proposed Future State for Emissions Reporting



# Key Challenges and Concerns

- Knowledge base differentiation/diversity across implementing community (e.g., air policy staff v. IT staff)
- Looking beyond program silos
- Potential for expanding scope
- Everyone has their “regular” jobs
- SLT and industry concerns:
  - Trust by SLT and industry that EPA will listen and incorporate feedback
  - Accommodating diversity in state requirements and reporting systems
  - Accommodating diversity in industry data compilation/submittal processes
  - Concerns about requirements changes or new additions
  - Concerns about IT costs to implement



# “Short Term Win” Projects

The EPA-SLT CAER ‘Short Term Win’ teams completed five enabling projects in 2016:

- CAER implementation plan
- Data dictionary and harmonization of code tables
- Web-based service for Source Classification Codes (SCCs)
  - Web search tool and web services available since early 2017 (type alias: [www.epa.gov/scc](http://www.epa.gov/scc) into your browser)
- WebFIRE search improvements and consolidated export of industry test data
- Identify and eliminate root causes of EPA augmentation for the NEI

# “Quick Start” Event

- Created a prototype during a 5-day challenge event in Sept. 2016
  - EPA members from each of the 4 CAER emissions programs and Office of Environmental Information (OEI)
  - State members from GA, MS, SC, and WY
  - Other EPA and state observers
- Focused on *emissions* sharing
  - Assumed sharing of facility attributes was in place via E-Enterprise Facility Team results
- Focused on NEI-SLT and NEI-TRI (two highest return on investments), with connections to GHGRP and CEDRI/WebFIRE
- Explored the idea of a “common emissions form”
- Explored the use of a software approach using model-driven design

# Current and Future Steps

- CAER Implementation plan lays out multi-year process to implement CAER
- Initial phase of the Implementation Plan has started
  - Product Design Team (PDT) formed late 2016
    - “First Round” R&D enabling projects conducted in first half of 2017
    - “Second Round” R&D projects to be defined and scoped out in Fall 2017
  - Potential full scale pilot project scope being defined with goals of a 2018 pilot
  - Software evaluations and procurement options being investigated
- Successive phases dependent on results of initial R&D projects, availability of resources, overcoming any identified constraints

# Contact Points

- Participate in future CAER PDT or R & D teams (SLT participants)
  - Contacts: Kelly Poole at [kpoole@ecos.org](mailto:kpoole@ecos.org), Michael Burton at [Burton.Michael@azdeq.gov](mailto:Burton.Michael@azdeq.gov), Mark Wert at [mark.wert@state.ma.us](mailto:mark.wert@state.ma.us), and Joe Mangino at [mangino.joseph@epa.gov](mailto:mangino.joseph@epa.gov)
- Join the CAER listserv; send email to: [join-caer@lists.epa.gov](mailto:join-caer@lists.epa.gov)
- Send comments and user stories to: [CAER@epa.gov](mailto:CAER@epa.gov)
  - Individual comments only (group comments cannot be used)
- CAER public website:
  - <https://www.epa.gov/e-enterprise/e-enterprise-combined-air-emissions-reporting-caer>
  - Contains all CAER R&D project descriptions and results
- Ongoing work on EPA-SLT sharing facility attributes
  - The Facility Integrated Planning Team (IPT)
    - <https://e-enterprisefortheenvironment.net/our-projects/program-modernization-projects/ee-facility-team/>
  - Contacts: Joshua Kalfas at [Joshua.Kalfas@deq.ok.gov](mailto:Joshua.Kalfas@deq.ok.gov); Susan Joan Smiley ([smiley.susan@epa.gov](mailto:smiley.susan@epa.gov)), Ron Evans [Evans.Ron@epa.gov](mailto:Evans.Ron@epa.gov)

# Team and Supporters

## EPA (alphabetically)

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- Kong Chiu
- Alice Chow
- Mike Ciolek
- Brian Cook
- Sally Dombrowski
- Josh Drukenbrod
- Ron Evans
- Julia Gamas
- Lauren Gordon
- John Harman
- Marc Houyoux (co-chair)
- Kara Koehn
- Matthew Kelly
- Brandon Little

- Theresa Lowe
  - Joe Mangino
  - Jonathan Miller
  - Juan Parra
  - Ketan Patel
  - Ron Ryan
  - Bob Schell
  - Madeleine Strum
  - John Wakefield
- Supporting Roles (alphabetically)**
- Tina Chen, EPA
  - Beth Graves, ECOS
  - Shana Harbour, EPA
  - Kelly Poole, ECOS
  - Tobias Schroeder, EPA

## State/local/tribes (by agency)

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- Nattinee Nipataruedi, AK
- Michael Burton, AZ
- Steven Potter, CT
- Carla Bedenbaugh, GA
- Jing Wang, GA
- Jordan Garfinkle, MA
- Mark Wert, MA
- Dennis McGeen, MI
- Tom Shanley, MI
- Azra Kovacevic, MN
- Chun-Yi Wu, MN
- Elliot Bickerstaff, MS
- Deborah Boleware, MS
- Tammy Manning, NC
- Gary Saunders, NC
- Joshua Kalfas, OK
- Michelle Horn, OK
- Elizabeth Elbel, OR
- Stephanie Summers, OR
- Chad Wilbanks, SC
- David McClard, SC
- Paul Mairose, SWCAA
- Erin Chancellor, TX
- Kathy Pendleton, TX
- Bryan Shaw, TX (co-chair)
- Jeff Merrell, VT
- Sue Hines, VA
- Ben Way, WY

*Transition to Next CAER Session Presenter*

# E-Enterprise for the Environment Combined Air Emissions Reporting (CAER)

## Research and Development Projects

Tammy Manning,  
NCDEQ, Division of Air Quality

*AAPCA Fall Business Meeting  
September 22, 2017*

# Presentation Overview

The Combined Air Emission Reporting (CAER) project is starting an implementation phase, with a Product Design Team composed of representatives from emissions programs at state, local, tribal (SLT) agencies and the EPA, managing a series of research and development (R&D) projects.

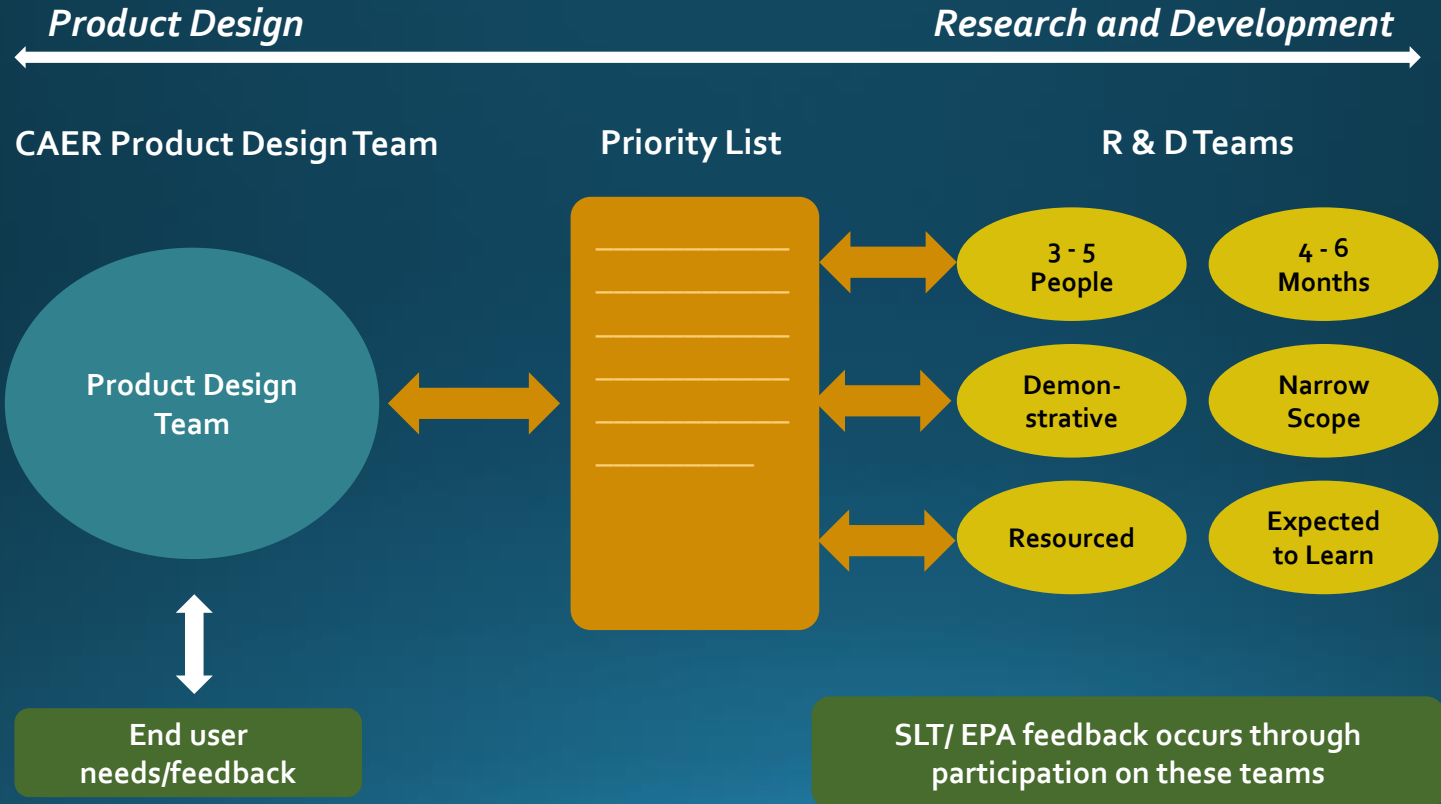
This presentation introduces the new work on these R&D projects and describes how they support the proposed CAER future state.



# Product Design Team (PDT)

- 12 member PDT team made up of SLTs and EPA program staff
- Also includes observers and supporters from:
  - National Association of Clean Air Agencies (NACAA)
  - Association of Air Pollution Control Agencies (AAPCA)
  - Environmental Council of States (ECOS)
  - E-Enterprise program
- PDT meeting weekly since Oct. 2016 to design and manage 'first round' of R&D projects
  - Key consideration is that the project support the CAER project objectives
  - General scope and product defined for each project

# CAER Product Development Structure



# “First Round” R&D Projects

*The 5 R&D Projects are:*

- ***QA/QC***
  - Identification and evaluation of a common set of emissions data QA/QC procedures for shared emission reporting
- ***GHG Emissions Mapping Study***
  - Pilot study to map emission data in the EPA's national GHGRP to example state greenhouse gas reporting program(s)
- ***TRI/NEI/SLT Program Crosswalk***
  - Research consistency and possible workflows for sharing of emissions data between TRI, SLTs and NEI -- Phase 1
- ***Emissions Data Model Design***
  - Establish and document a data model with basic core set of emissions-related data elements to support reporting through a CEF
- ***Source Classification Codes (SCCs)/Emission Factors***
  - Scoping study for identifying problems and solutions with SCCs and WebFIRE that will meet SLT, NEI, National Air Toxics Assessment (NATA), and CEDRI requirements under the CAER project

# QA/QC

**Purpose** - Identify and evaluate of a common set of emissions data QA/QC procedures for shared emission reporting

## **Products-**

- Compiled list of existing QA/QC procedures included in EPA and SLT programs
- SLT-run survey sent to SLTs to review QA/QC list and include additional checks
  - Received 33 responses with 12 respondents supplying additional 34 QA/QC checks for a total of 148 checks.
  - Characterization of QA/QC and reporting systems being used
  - Collection of comments on specific aspects of QA/QC
- Evaluate the potential for automating QA/QC checks

# QA/QC Next Steps

- Project documentation:
  - Summary of research, SLT-run survey results and findings being finalized
  - Finalize list of collected 'common' QA/QC checks and procedures
  - Available via CAER public webpage when finalized
- Distribute the compiled QA/QC checks and SLT-run survey results to SLTs for program comparisons:
  - Additional QA/QC checks might help to supplement their current QA/QC process
  - SLTs can submit additional suggestions to supplement the compilation
  - Consider posting/maintaining QA/QC checks list on website as inventory reference
- Use the common set of QA/QC procedures as part of a Common Emissions Form (CEF) approach within CAER:
  - Explore 'standard' sets of QA/QC procedures with the different CAER CEF workflow scenarios
  - Use recommended automated QA/QC checks for CEF data fields from CAER Data Model team
  - Pilot demonstration to incorporate QA/QC checks as part of a CEF

# *GHG Emissions Mapping Study*

**Purpose** - Pilot study to map emission data in the EPA's national Greenhouse Gas Reporting Rule (GHGRP) to example state greenhouse gas reporting program(s)

## **Products-**

- A complete mapping of emissions from facilities that are subject to both national and the state GHGRP programs under the specified sectors for the pilot states
  - State versus Federal program comparisons—who has to report and thresholds
  - State versus Federal data element comparisons—what data elements are required
  - Unit to unit comparisons
- A document that specifies procedures for mapping the national GHGRP to state GHGRP programs at a sector level

# GHG Emissions Mapping Study Next Steps

- CEF would have to be able to:
  - Capture all data: send data required by one program to that program but not the other (e.g. BAMB data captured and sent to GHGRP)
  - Capture data at different levels of resolution and detail: facility, group of units, unit, process levels
  - Parse out facility totals or aggregate process/unit level data as needed
  - Perform calculations on activity data if different method required by each program
  - Capture the data in timely manner and provide to program with earliest deadline
  - Track facilities within the emissions threshold for each program and “know” rules for inclusion of a facility in one program or another
  - Interact with current state systems as well as E-GRRT
  - Keep any inputs to estimates that is CBI confidential and not submit it if so

*...and without increasing reporting **burden** to industry or processing burden to states and GHGRP*

# *TRI/NEI/SLT Program Crosswalk*

**Purpose** - Research consistency and possible workflows for sharing of emissions data between TRI, SLTs and NEI

## **Products-**

- Pollutant crosswalk
  - Identified overlap in categories of chemicals
  - Discovered and corrected issue with NEI glycol ethers
  - Crosswalk QA/QC'ed and finalized
  - Used to update EPA's Substance Registry Services (SRS)
- SLT-run survey
  - Use TRI- 3 states use TRI data for emission inventories
  - How TRI data are used- 2 states incorporate into NEI submittal, 1 replaces state data when TRI is more complete/accurate
- Document identifying differences in terms and reporting requirements



# TRI/NEI/SLT Program Crosswalk Next Steps

- Recommendations for near and future efforts to harmonize and utilize both systems towards the CAER goals
  - Develop EPA guidance on how to use TRI data in NEI submissions
  - Investigate reporting guidance used in NEI and TRI and harmonize
  - Explore the option to expand SLT capacity to provide review of TRI reported data
  - SLT/NEI/TRI case studies to demonstrate workflows and data sharing in a test environment

# *Emissions Data Model Design*

**Purpose** - Establish and document a data model with basic core set of emissions-related data elements to support reporting through a common emissions form (CEF)

## **Products-**

- List of common emissions-related data elements from SLT programs as well as GHG, CEDRI and TRI and the relationships between data elements
- SLT-run survey of SLTs that identifies the additional emissions-related data elements
  - 47 agency responses
  - Input on data elements and characteristics of system structure and function
  - Team currently working on compiling responses

# Emissions Data Design Next Steps

- Next steps detailed in SLT-run survey spreadsheet
- Second phase will support design and development of CEF for a potential pilot project

# *SCC/Emission Factors*

**Purpose** - Scoping study for identifying problems and solutions with SCCs and WebFIRE that will meet SLT, NEI, NATA, and CEDRI/ERT requirements under the CAER project

## **Product-**

- SLT-run survey form for SLTs that will identify the issues and challenges in the current SCC and WebFIRE systems that SLT, NEI, and CEDRI/ERT/WebFIRE programs are facing
  - 34 respondents
  - Follow-up with those SLTs that did not respond and questions for those SLTs that did respond in August and September

# SCC/Emission Factors Next Steps

- Prepare a project report outlining the results of the SLT-run survey
  - Documents existing challenges encountered in using SCCs and WebFIRE
  - Provides suggestions for a common emissions form with regard to SCCs / WebFIRE to better support CAER
- Complete by the end of September 2017

# Questions?

- Thanks for the opportunity to share information about this project.
  - Tammy Manning, NCDEQ, Division of Air Quality
    - [Tammy.Manning@ncdenr.gov](mailto:Tammy.Manning@ncdenr.gov)