Combined Emission Reporting for Air Toxics – Phase II

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By State/Local/Tribal Emission Inventory (SLT EI) /National Emission Inventory (NEI)/Toxics Release Inventory (TRI) Research and Development Team

Madeleine Strum, US EPA, Office of Air Quality Planning and Standards (OAQPS) and Chun Yi Wu, Minnesota Pollution Control Agency, Co-Chairs

Stephanie Griffin, US EPA Office of Pollution Prevention and Toxics Rebekah Banas, Michigan Department of Environmental Quality

Chad Wilbanks, South Carolina Dept. of Health & Environmental Control

Juan Parra, US EPA, Office of Environmental Information (now Office of Mission Support)

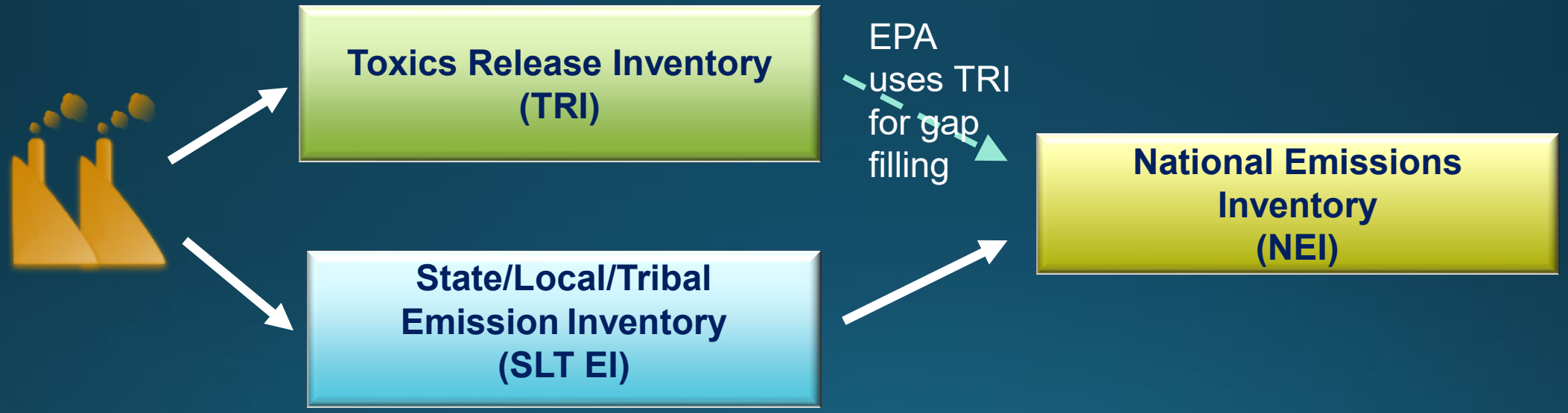
Josh Drukenbrod, US EPA, OAQPS

Deborah Basnight, Georgia Department of Natural Resources (formerly)

E-ENTERPRISE for the environment

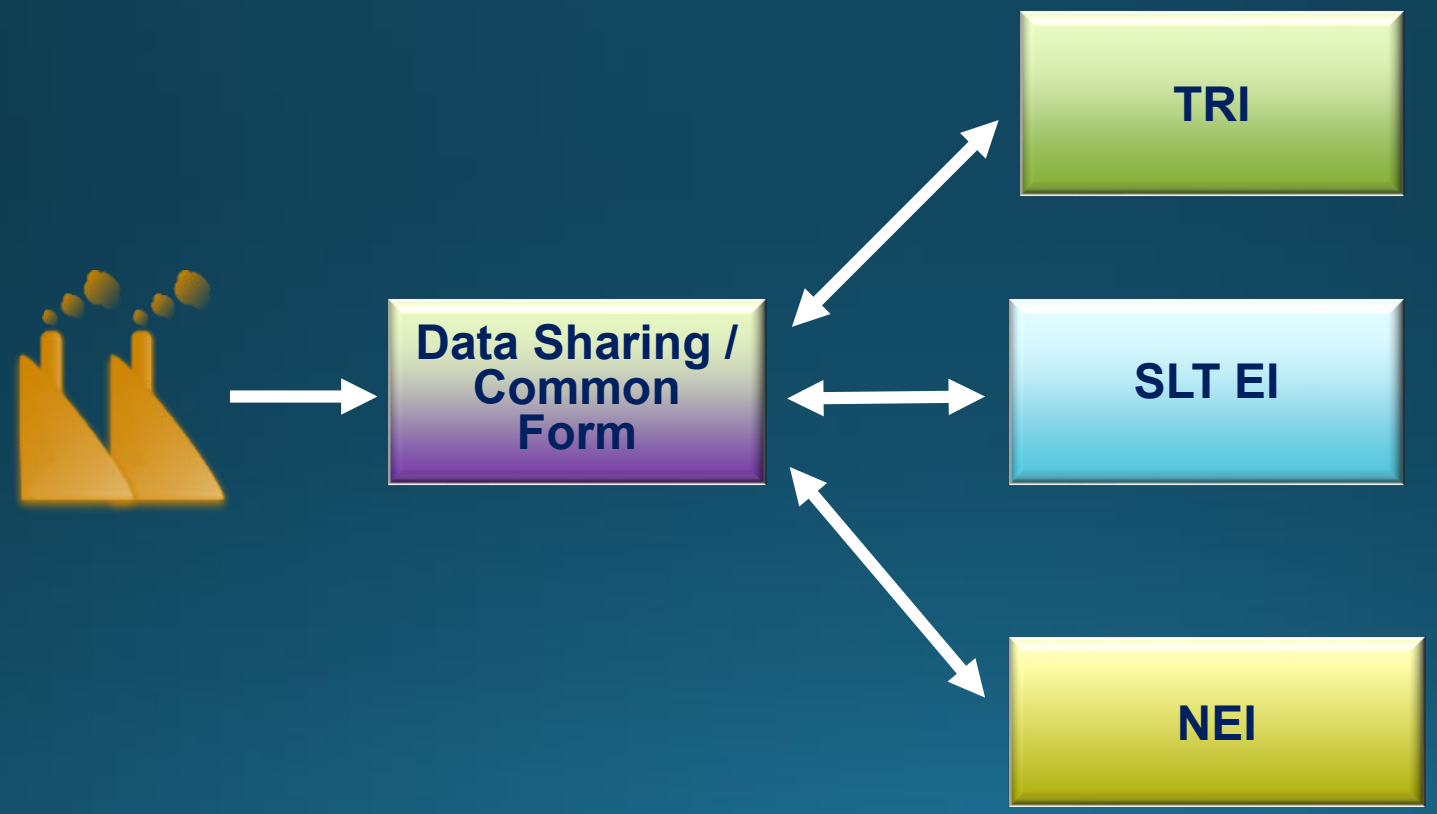
Modernizing the business of environmental protection

Background - Current



Background –Future Vision

Combined Air Emissions Reporting (CAER)



TRI/NEI/SLT EI Project

- Purpose
  - Identify and evaluate consistencies and possible workflows for sharing emissions data among TRI, SLT EIs, and NEI.
- Two Phases
  - Phase I – Completed Oct. 2017
  - Phase II – Completed Sept. 2018

Phase I

- Team Members
  - States: MN, SC
  - EPA: Office of Pollution Prevention & Toxics, Office of Air Quality Planning & Standards, Office of Environmental Information
  - Environmental Council of the States (ECOS)
- Products
  - Document identifying differences in terminology used and reporting requirements in TRI and NEI
  - Pollutant crosswalk between TRI and NEI
  - Survey of states on their use of TRI data in their emissions inventory submissions

Report: https://www.epa.gov/e-enterprise/trineislt-rd-team-summary-report-phase-i-caer-project
Pollutant crosswalk: https://www.epa.gov/sites/production/files/2018-01/tri-nei-crosswalk.xlsx

Phase II

- Team Members
  - States: MN, SC, MI, GA, TX*
  - EPA: Same as Phase I
  - ECOS

States that did not participate in Phase 1

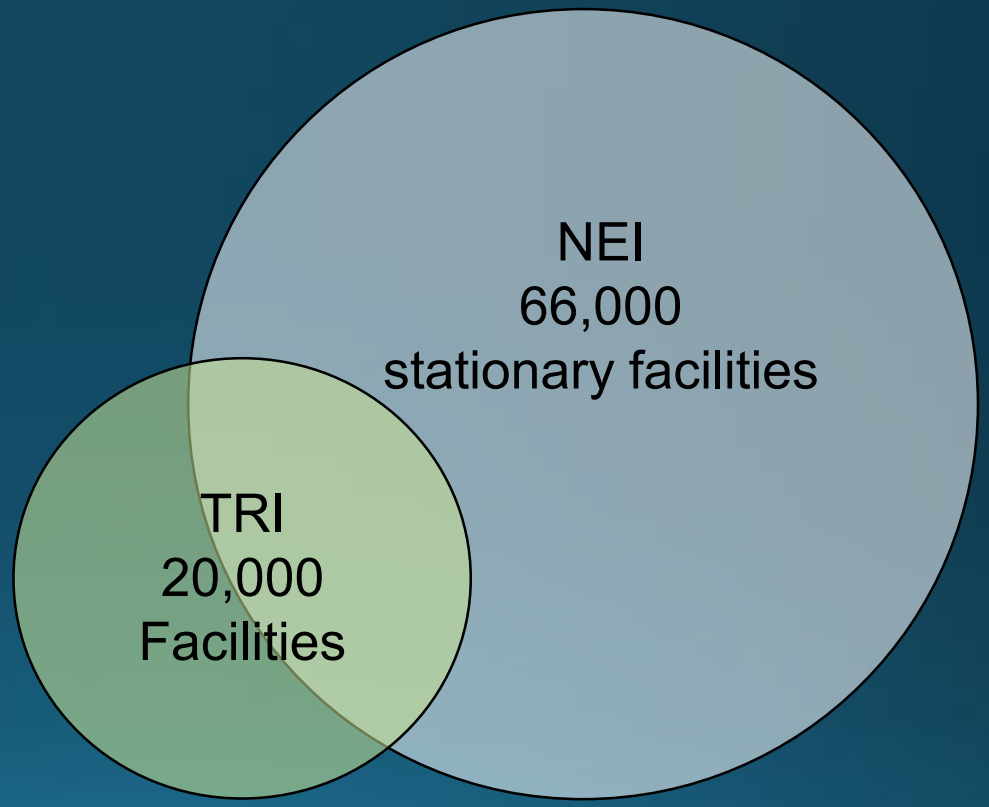
* TX participated in a few deliverables

- Products
  - Metrics on facilities reporting to each program and overlaps
  - Comparison of SLT emissions with TRI emissions
  - Case studies exploring differences between data reported to NEI and TRI
  - Crosswalks between NEI and TRI for emission estimation method codes and control/treatment codes
  - Cross-program data quality: process survey and recommendations
  - Recommendations for CAER Common Emissions Form (CEF)

Universe Overlap - NEI & TRI

2014 Reporting Year

- About 10,000 facilities in both NEI and TRI (based on ID matching)
  - About 65% of these have at least one pollutant that is reported by SLT
- Emissions from the ~10,000 TRI facilities that matched to NEI facilities comprise 97% total TRI emissions for matching pollutants



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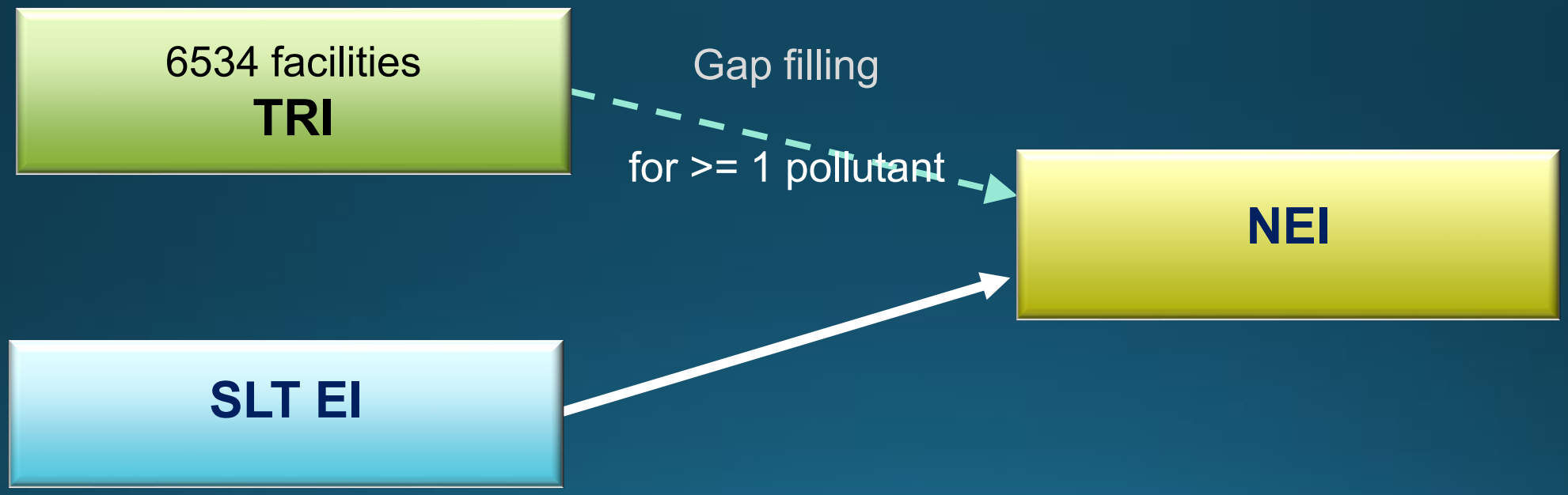
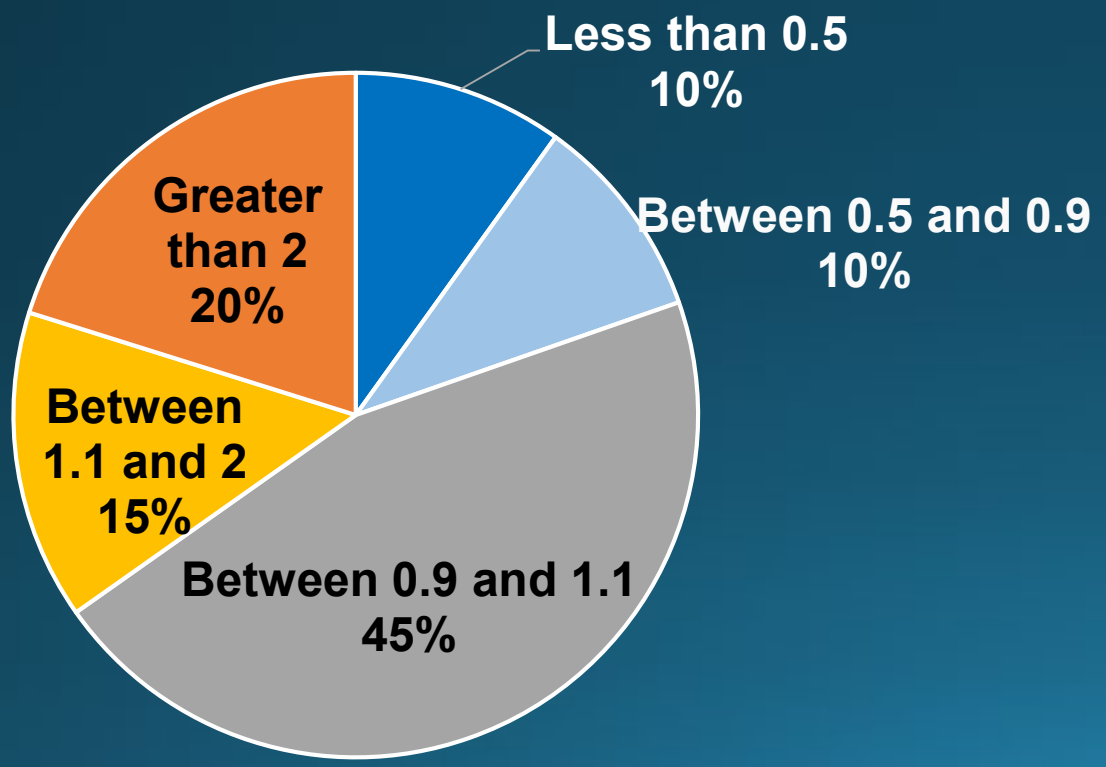


Emissions Comparisons between TRI and SLT-reported data to NEI – 2014

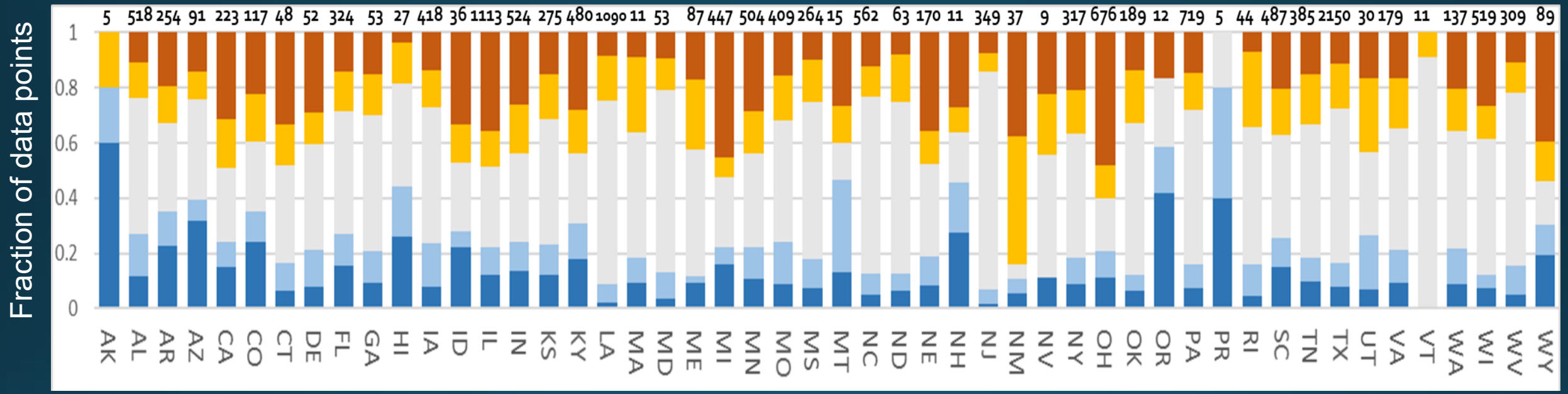
Distribution of TRI/NEI emissions ratios based on about 15,000 observations



OVERALL

- Within 10%: 45%
- TRI > NEI by more than 10%: 35%
- NEI > TRI by more than 10%: 20%

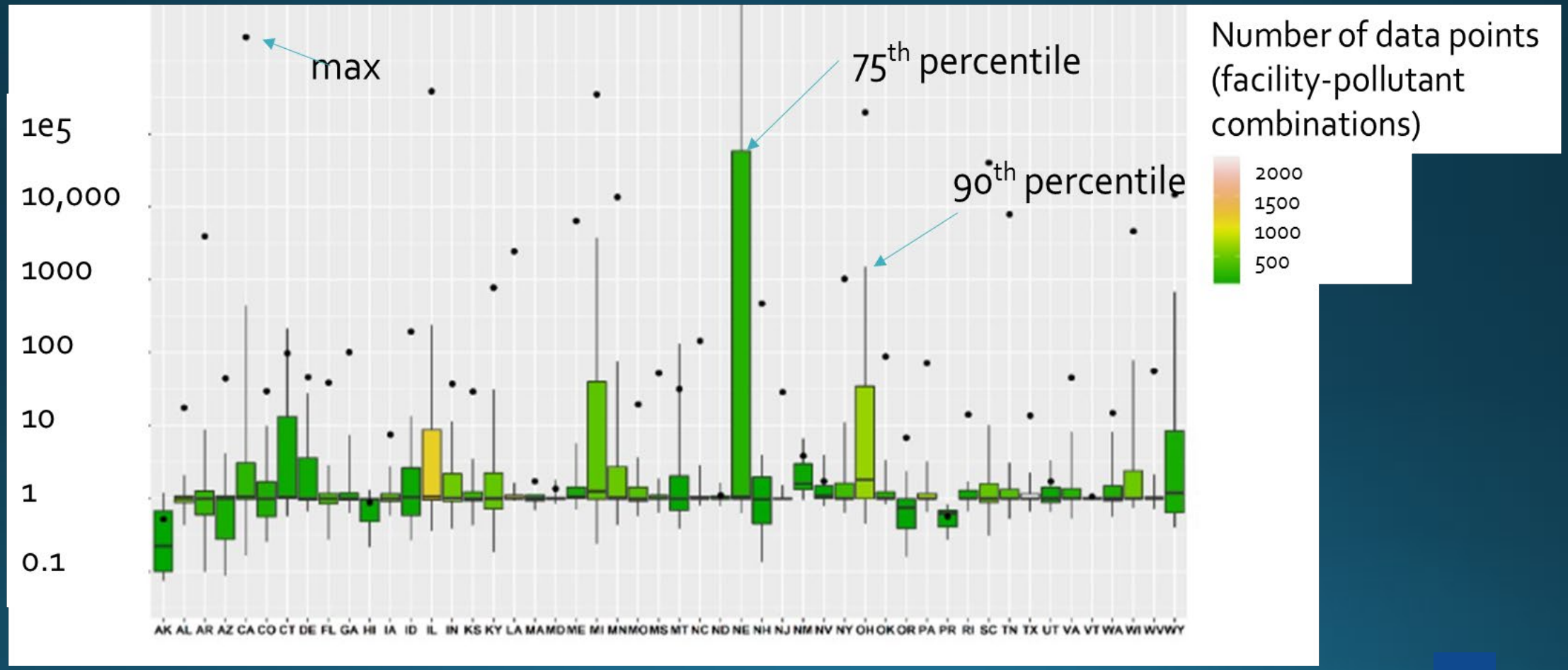
Emissions Comparison by State



Legend

- TRI/NEI ratio is less than 0.5
- TRI/NEI ratio is between 0.5 and 0.9
- TRI/NEI ratio is between 0.9 and 1.1
- TRI/NEI ratio is between 1.1 and 2
- TRI/NEI ratio is greater than 2

Magnitude of TRI/SLT Ratios by State



For some facilities, TRI emissions may be 100 or more times greater than the SLT data

Causes of TRI and NEI Emissions Differences (1)

~ 50 case studies – compared SLT data in NEI with data in TRI

- Incomplete SLT reporting for a pollutant at a facility
  - SLT automated emission factor approach
    - Emissions for SCCs with emission factors (mostly combustion processes)
    - No emissions for SCCs without emission factors
  - NEI business rules
    - When data are available for a pollutant in both SLT EI and TRI
      - Use SLT data not TRI data
        - Even if SLT data are only at one process
        - Even if SLT data are much less than TRI
    - When data are available for a pollutant only in TRI not in SLT EI
      - Use TRI data

Causes of TRI and NEI Emissions Differences (2)

- Different HAP reporting requirements/thresholds between TRI and SLT
- Different definitions for glycol ethers (ethylene glycol monobutyl ether)
- Different reporting for non-routine such as accidental releases
  - Not for some SLT
  - Yes for TRI
- Different emission factors used
- Different numerical values allowed (discrete vs. range, significant digits)
- Reporting errors by facilities

Crosswalks
Calculation Method and Control Code

- Fewer and broader codes in TRI than NEI
  - Emission calculation method codes/basis-of-estimate codes
    - 23 in NEI
    - 6 in TRI
  - Control measure codes/waste treatment codes
    - 124 in NEI
    - 25 in TRI (some not applicable to air streams)
  - Code mapping
    - 1 NEI code → 1 TRI code
    - 1 TRI code → > 1 NEI codes, selected best fit NEI code
  - Different codes in SLT programs

Quality Assurance
Using Data from Different Programs

- Surveyed EPA program offices and regions
  - A few regions responded
  - Some SLT provided information
- Respondents varied
  - In approaches
  - In support for doing these comparisons, indicating limitations
- Identified recommendations to short-term-wins to improve use of other program data for QA
  - Short-term-wins - current programs (pre-CAER implementation)

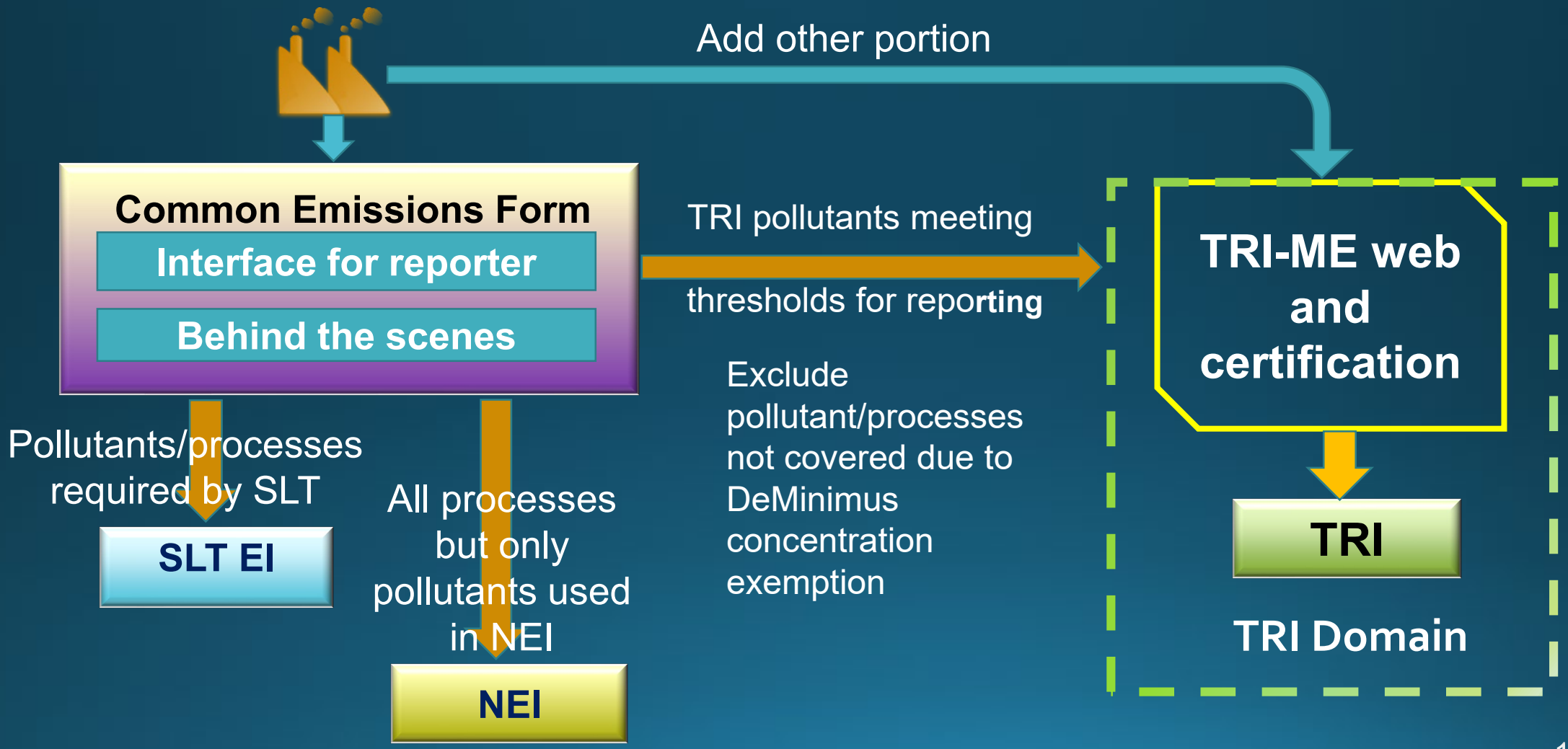
Recommendations for Short Term Wins

- Loading TRI data into EIS before SLT reporting deadline (in Oct./ Nov.)
  - Allow SLTs to do comparisons using EIS
- SLTs comparing SLT-EI data to TRI data for their QA
- Using TRI basis-of-estimate code when loading TRI data into EIS
  - “Engineering judgement” used in previous NEIs
- Increasing coordination across SLT, TRI staff, and facilities for data quality efforts within TRI
- Including treatment codes in TRI data quality calls - correct where non-air treatment codes are being reported for air waste streams

Recommendations for CEF

Focused on the scenario:

Facility reports air emissions to CEF, and those data are pushed to NEI, TRI and SLT-EI



Recommendations for CEF (1)

- Interface/other features
  - Provide clear definitions of pollutant codes
  - Incorporate requirements of different programs
  - Automated QA and emissions inventory assistance
  - Show data reporters what was reported and the data that will be pushed to TRI

Recommendations for CEF (2)

- Behind the scenes (back end calculations)
  - Compute proper emissions for each program, allocated properly to fugitive and stack release points
  - Provide proper basis-of-estimate and treatment information to TRI by using code crosswalks
  - Compute reporting fees associated with SLT reporting programs

Requirements for Populating TRI Data Elements for Air Releases in CEF

- TRIFID – TRI Facility ID
- Multi-establishment name (if applicable)
- Chemical no. and name
- Release quantities and basis of estimate codes
  - Stack
  - Fugitive
- Treatment information for air waste stream(s)
  - Treatment code(s) – not chemical-specific
  - Efficiency code – is chemical-specific
  - Waste treatment method sequence

Back end calculations needed to populate this information

Conclusions

- Combined Air Emissions Reporting is worthwhile and do-able for SLT EI/NEI/TRI work flows
- Our deliverables have been useful in the ongoing design and development of the CEF
- Things not addressed
  - How to deal with changes to emissions after originally reported on form
  - Multiple air waste streams

https://www.epa.gov/e-enterprise/trineislt-rd-team-summary-report-phase-2-caer-project

Thank You