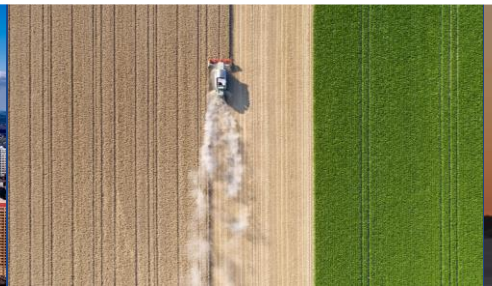
Overview of the 2022 Regulatory Emissions Modeling Platform

National Emissions Inventory Conference

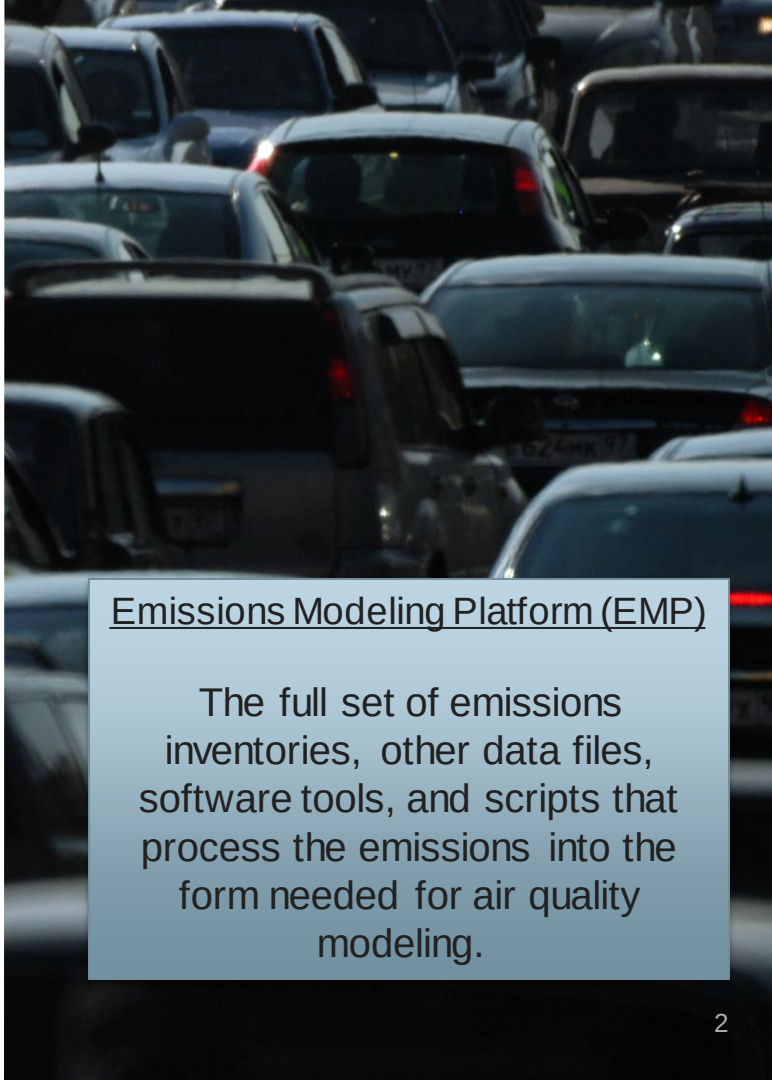
September 27, 2023






Why Do We Need a New National Emissions Modeling Platform?

- State Implementation Plans (SIPs) and regulatory air quality modeling
- Need for a new, contemporary base year for modeling to succeed 2016
- There are issues with using the triennial 2020 and 2023 National Emission Inventories
- 2022 was generally a good base year for modeling regarding the air quality issues that year



Emissions Modeling Platform (EMP)

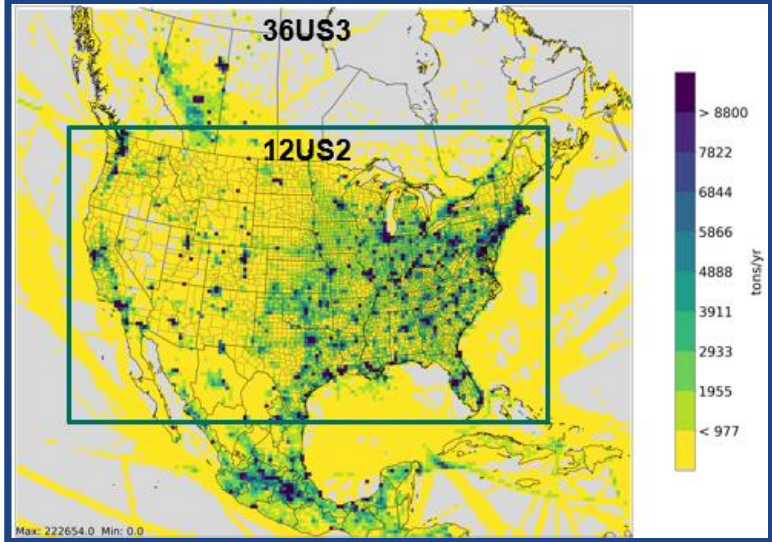
The full set of emissions inventories, other data files, software tools, and scripts that process the emissions into the form needed for air quality modeling.

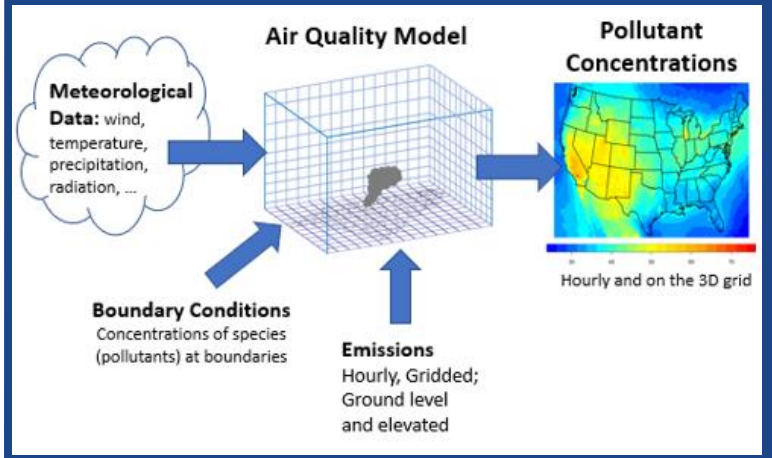
2022 EMP Expected Uses

- 2015 Ozone NAAQS SIP modeling
  - Serious nonattainment area SIPs are due in early 2026 and the analytic year needed is 2026
  - Areas that do not attain by August 2027 will be reclassified to severe and will require an analytic year of 2032
- Regional Haze 3rd Implementation Period
  - SIPs are due summer of 2028 and require an analytic year of 2038
- EPA regulatory and non-regulatory analyses

2022 EMP Planned Contents

- Year 2022 meteorological data for modeling on 36-km and 12-km national grids
- Boundary conditions (concentrations)
- Emissions inventories for base year 2022 and projected emissions for 2026, 2032, and 2038
  - Data/scripts/software to process emissions inventories into air quality model-ready inputs
- Air quality model-ready emissions for each modeling grid
- Eventually, air quality model outputs will be available for selected cases



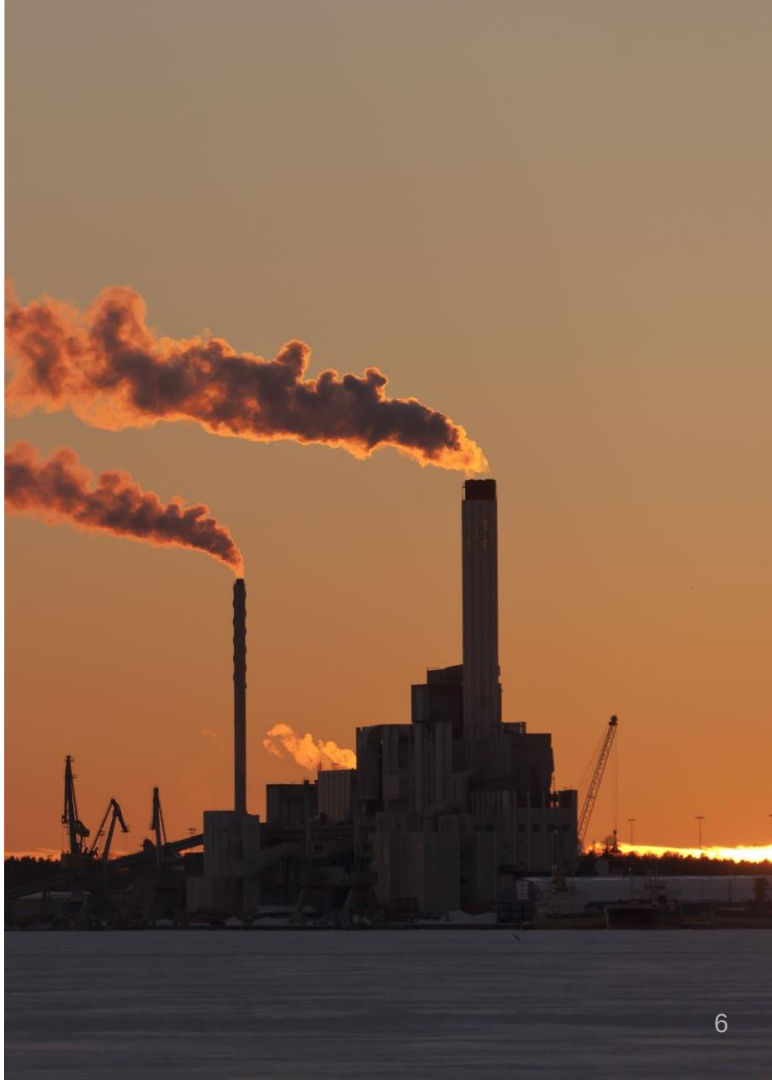


Comparison of the 2016 and 2022 Collaboratives

Feature	2016	2022
Application	Ozone attainment plans, plus:	visibility progress plans, EPA rulemaking
Coverage	US, Canada and Mexico	US, Canada and Mexico
Participants	US EPA, MJOs, state/local/tribal air agencies, FLMs for fires	US EPA, MJOs, state/local/tribal air agencies, FLMs for fires, other stakeholders
Starting Inputs	2014 & 2017 NEI + 2016 data	2020 NEI + some 2022-specific data
# of Iterations	3 (alpha, beta, v1)	2 (v1, v2)
Workgroups	12	6-7
Scope	Data collection, review, development	Mostly data reviews, limited data collection
Milestones	Data packages with detailed documentation	Data packages plus State/local/ tribal agency review by jurisdiction
Final Documentation	Manuscript TSD Specification Sheets	Available in late 2024 and 2025

2022 EMP Collaborative

- Co-leads
  - Zac Adelman (LADCO), Mary Uhl (WESTAR), and Alison Eyth (EPA OAQPS)
- Communication support
  - Tom Richardson (OK DEQ) and Tom Moore (Denver/NFR RAQC)
- Coordination Committee
  - 28 members from MJOs, state agencies, and US EPA staff from OAQPS, OTAQ, and CAMD
  - Monthly calls
  - Quarterly outreach webinars
- Workgroups
  - 2022-specific workgroups for fires and projections
  - Leverage existing national emissions workgroups

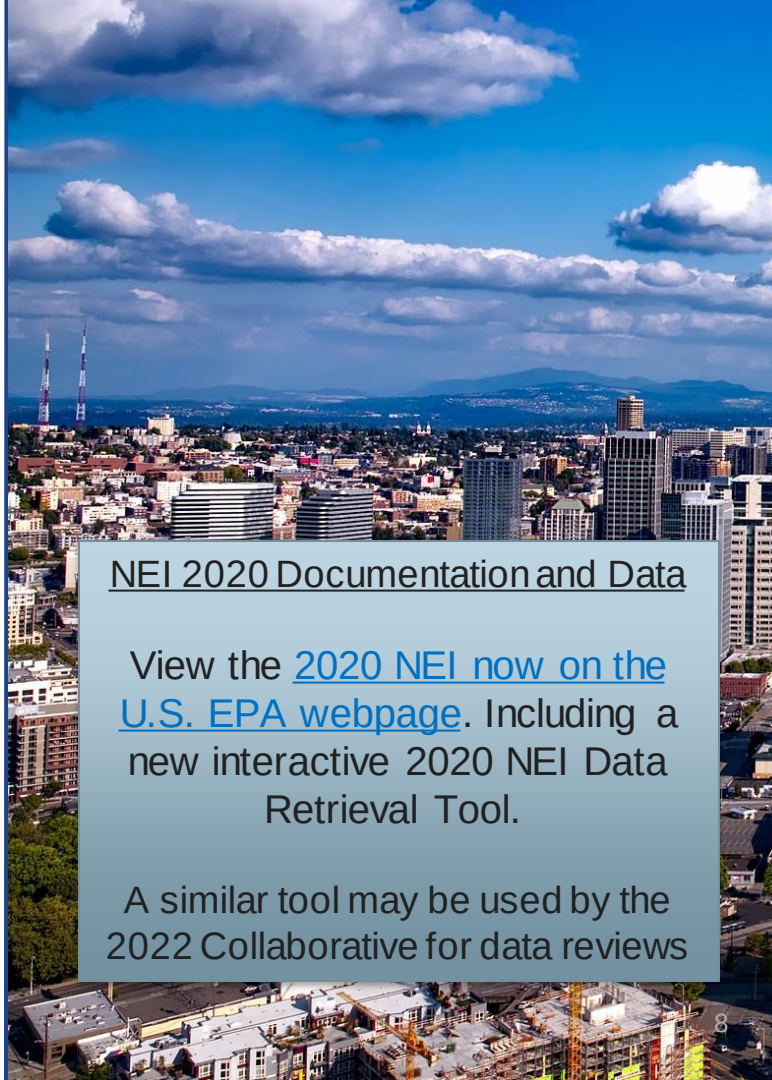


2022 EMP Development

- Two major versions planned:
  - 2022v1 base year by Summer 2024
  - 2022v1 analytic years by Fall 2024
  - 2022v2 base year by Summer 2025
  - 2022v2 analytic years by Fall 2025

2022v1 Planned Data Elements

- 2022 point source data from State/Local/Tribal (SLT) submittals
  - Type A (larger) point sources due December 31, 2023
  - SLTs may submit additional sources smaller than type A
  - Submitting any closures is important, non-closed sources submitted in 2020 or 2021 are presumed to be operating
- US EPA will develop 2022-specific emissions for onroad, nonroad, commercial marine vessels, major airports, biogenic, oil and gas, and fires
  - SLT activity data will be requested for fires and onroad mobile sources (optional)
  - Data for other sources (e.g., most nonpoint) will be derived from 2020 NEI data - adjusted for some sectors



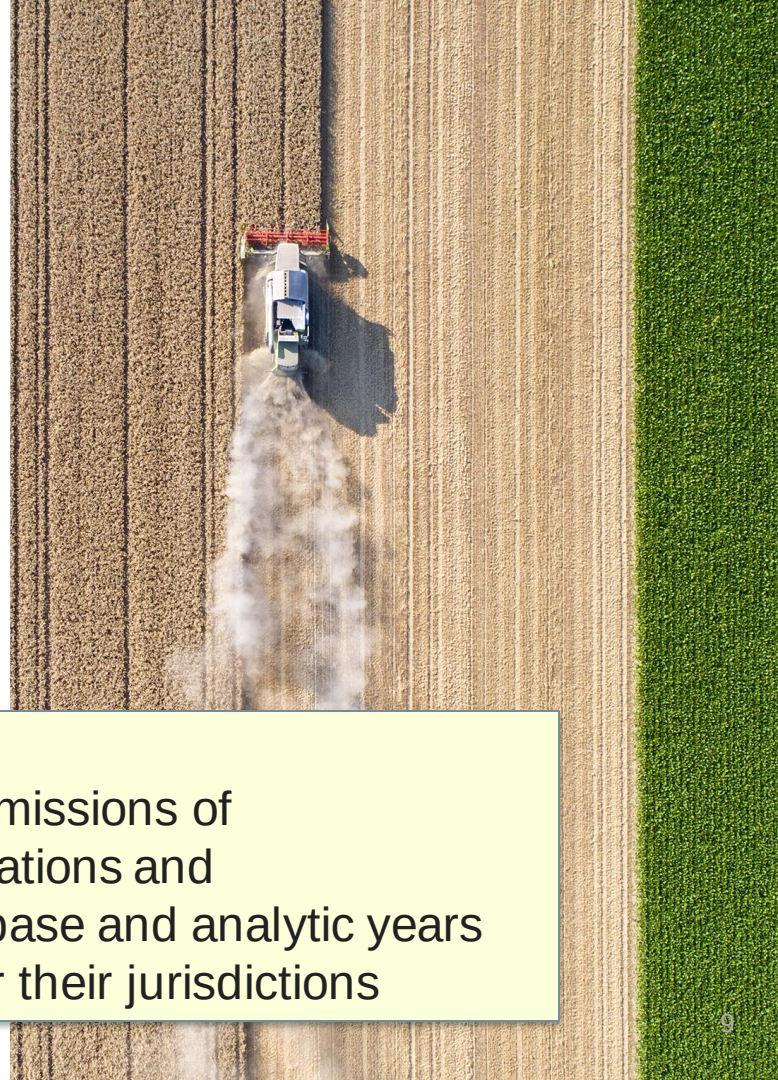
NEI 2020 Documentation and Data

View the 2020 NEI now on the U.S. EPA webpage. Including a new interactive 2020 NEI Data Retrieval Tool.

A similar tool may be used by the 2022 Collaborative for data reviews

Projecting Analytic Year Emissions

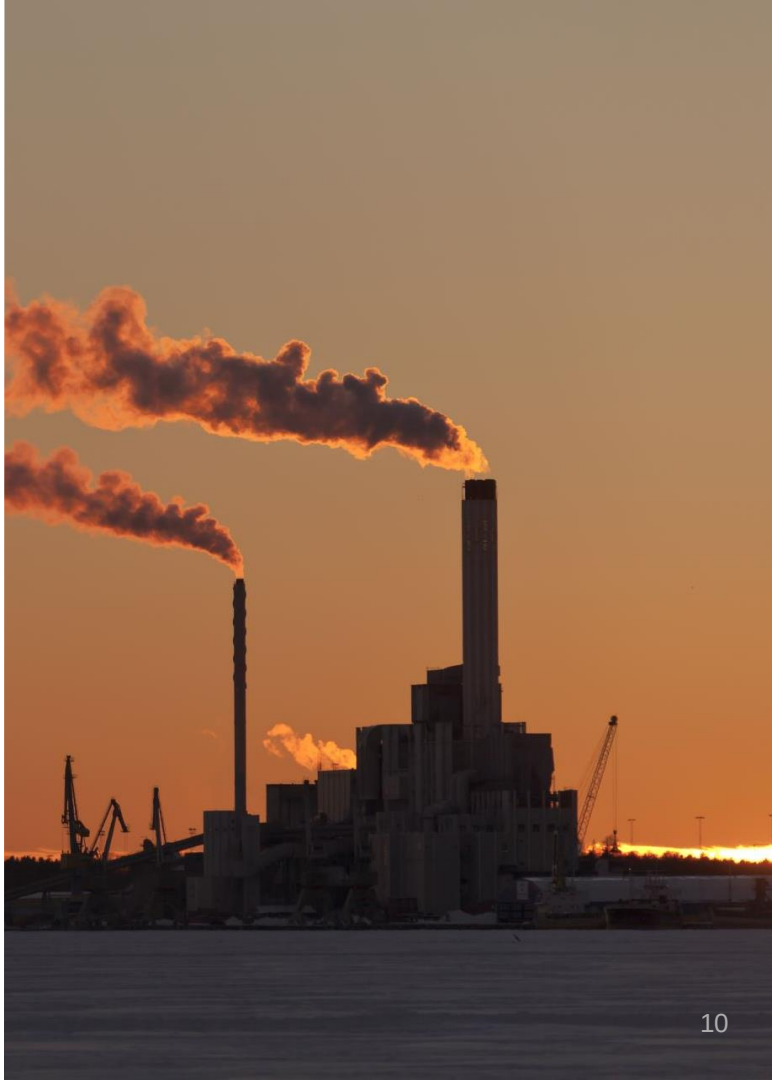
- The Collaborative plans to develop analytic year inventories for 2026, 2032, and 2038 for ozone and haze planning, etc.
- A Projections Workgroup will review, develop, or recommend methods for developing analytic year emissions for all sectors



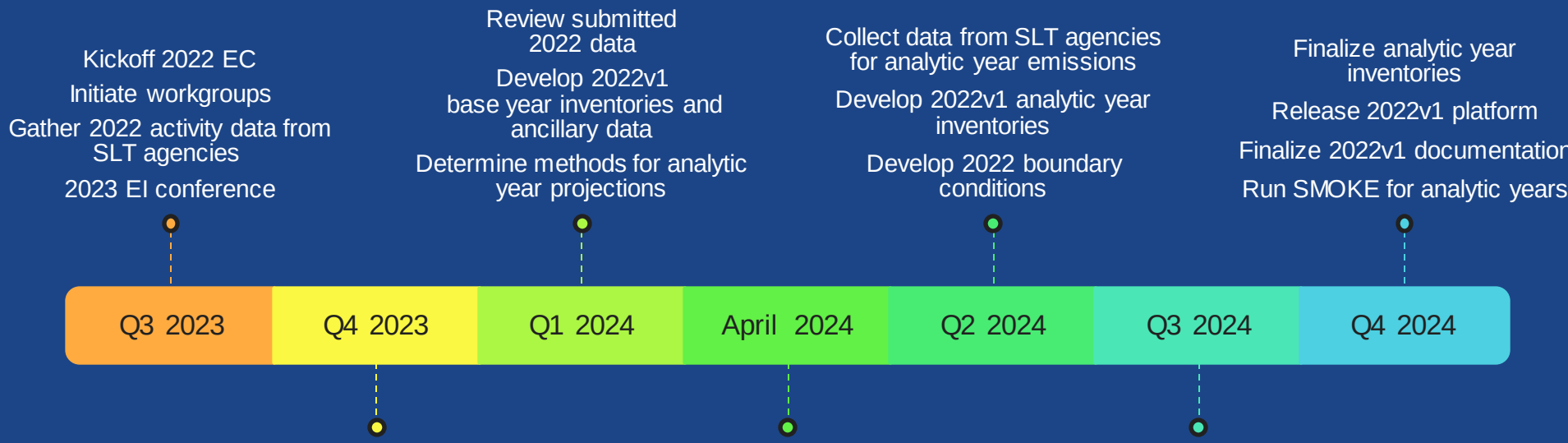
Important
SLTs should determine if the impacts on emissions of on-the-books federal, state and local regulations and any other planned modifications between base and analytic years (e.g., new control devices) are accurate for their jurisdictions

Expected Differences Between 2022v1 and 2022v2

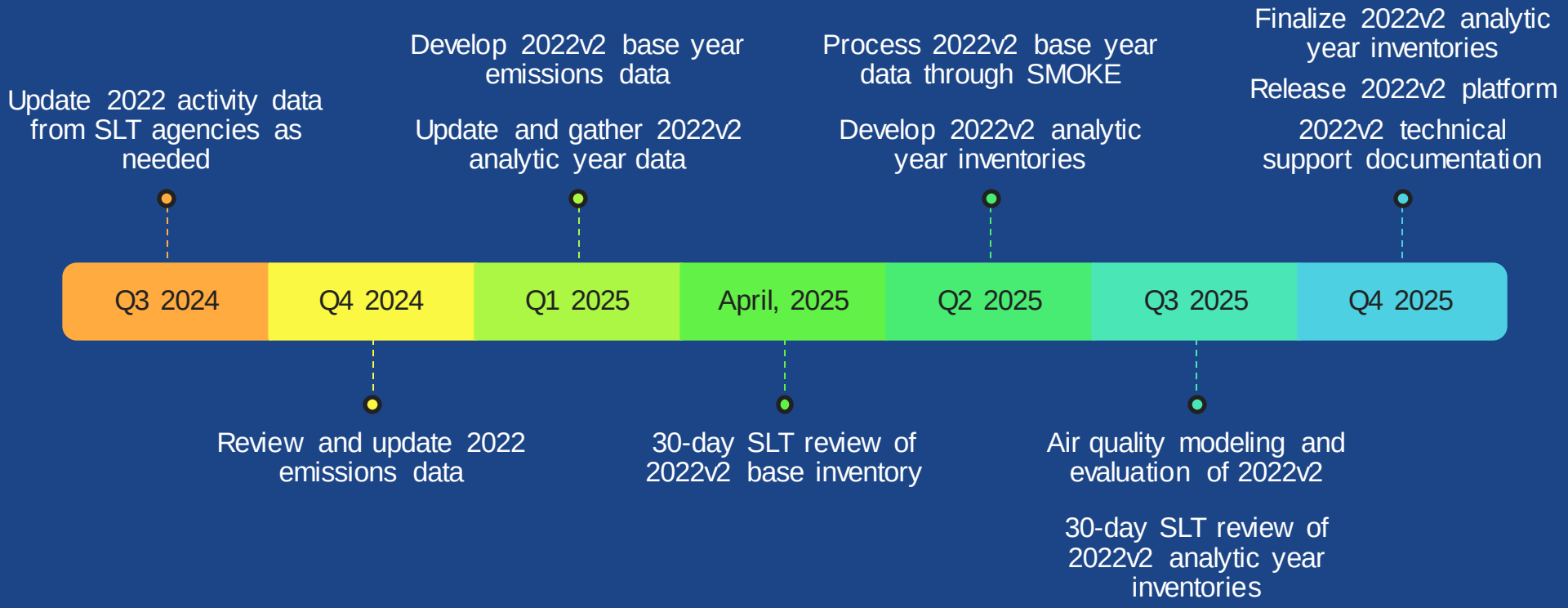
- 2022v2 will address issues identified during the use of 2022v1
- MOVES4 will be used in 2022v1 and MOVES5 will be used in 2022v2
- 2022v2 point source data will have been updated through the AirToxScreen SLT review process
- Some data may be incorporated into 2022v2 from the 2023NEI process and related efforts
    - Review 2022v2 to determine if 2023 NEI data are representative of 2022 emissions
    - Projections could/would change as a result



Timeline for 2022v1 Platform Development



Timeline for 2022v2 Platform Development



2022 Platforms and Planning Timelines

Summer: 2022v1 base year inventories

August: 2015 O3 NAAQS moderate area attainment date

Fall: 2022v1 analytic year inventories

Winter: 2015 O3 NAAQS Serious NAA SIPs

Summer/Fall: Haze 3rd implementation period SIPs

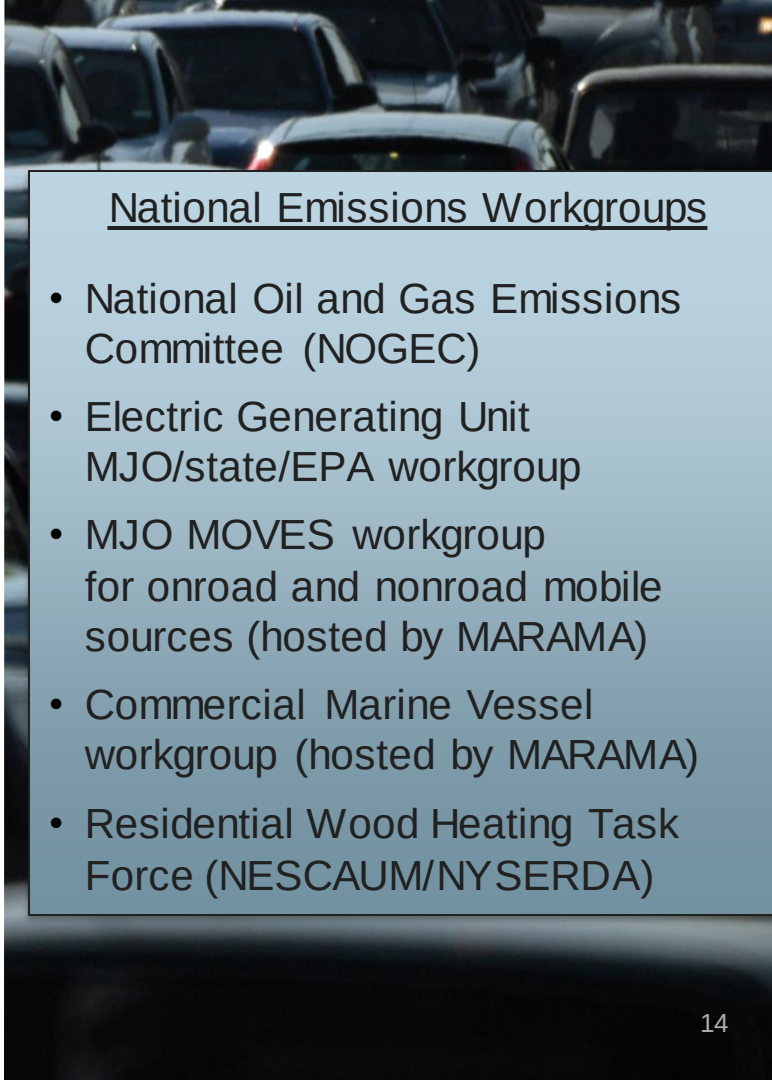
Summer: 2022v2 base year inventories

Fall: 2022v2 analytic year inventories

August: 2015 O3 NAAQS serious area attainment date

2022 EMP Workgroups

- 2022-specific working groups are planned for fires and projections
- The Collaborative will interface with existing national emissions workgroups to encourage input to the 2022 platform and provide opportunities for review
- Plan to hold sector-specific reviews during the development process
- Want to leverage workgroup feedback and expertise to create data for the platform that are well-documented



National Emissions Workgroups

- National Oil and Gas Emissions Committee (NOGEC)
- Electric Generating Unit MJO/state/EPA workgroup
- MJO MOVES workgroup for onroad and nonroad mobile sources (hosted by MARAMA)
- Commercial Marine Vessel workgroup (hosted by MARAMA)
- Residential Wood Heating Task Force (NESCAUM/NYSERDA)

The 2022 Collaborative Fires Workgroup

- Includes wildfire, prescribed burning, and agricultural burning emissions
- Similar to 2020NEI workgroup process
  - 3-4 total workgroup meetings
  - Request fire activity from SLTs/others (Fall 2023)
  - Python SMARTFIRE2 and Bluesky Pipeline (BSP) will be used to make daily emissions
  - Draft 2022 inventory created by EPA and shared with SLTs/MJOs/others (Fall 2023)
  - Feedback on draft inventory due late 2023
  - Updated 2022 inventory generated and shared (Early 2024)
  - 2022v1 fire inventory finalized (Spring 2024)
- Methodological updates to include updated emission factors and possibly pile burn emissions and SF2 Canadian fire emissions

Interested in Participating?

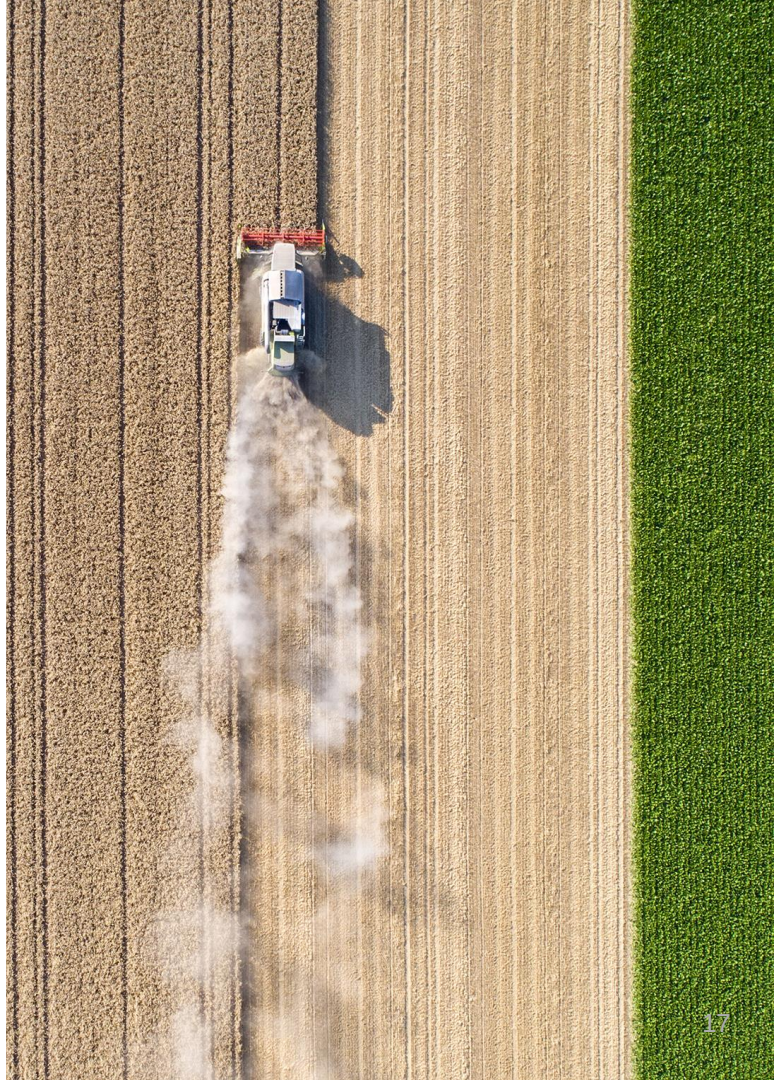
Reach out to Jeff Vukovich (vukovich.jeffrey@epa.gov)

The 2022 Collaborative Projections Workgroup

- Review the current approach for preparing interim and analytic year emissions for each sector
- Communicate with sector-specific workgroups about projection ideas
- Review and recommend projection methods for each sector
- Timing
  - Workgroup kicked off in September 2023
  - Make recommendations for 2022 emissions by Q4 2023 and on analytic year projection approaches for each sector by Q1 2024

How Can SLTs Get Involved?

- Submit high quality point source data to EIS for 2022 including closures and more than just Type A sources
- Provide data including fire and mobile source activity data and information on the impacts of recent regulations in their areas
    - Data for the 2022v1 base year emissions are needed no later than January 2024
- Participate in sector-specific workgroups
- Review the emissions data that will be used in the platform
    - April 2024: data review for 2022v1 base year
    - Late summer 2024: data review for 2022v1 analytic years



Stay Informed

- Updates will be posted on the 2022 EMP Wiki at the Intermountain West Data Warehouse (IWDW)
- Read the Development Plan on the Wiki
- Quarterly outreach calls
  - 1st Wednesday in August, November, February, and May at 2PM Eastern
- Attend workgroup meetings
- Participate in data reviews