

Air Quality Modeling, Monitoring and Other Technical Updates



AAPCA Spring Meeting
April 24-26, 2024

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Air Quality Assessment Division
U.S. EPA Office of Air Quality Planning & Standards



Ambient Monitoring Updates



Source: GAO File Photo.



Inflation Reduction Act

IRA Air Monitoring and Air Sensors Direct Grant Awards

- On February 16, 2024, EPA [announced](#) plans to make direct, non-competitive grant awards to eligible state, local, Tribal, and territorial air agencies using **a portion** of funds available under IRA sections 60105(a-c).
- EPA released two grant guidance documents:
 1. **Fenceline/Multipollutant grant guidance** for activities that will result in either establishing new monitoring activities or in maintaining, operating, or upgrading existing monitoring stations [60105(a)-(b)]. Approximately \$81M available.
 2. **Air Sensors grant guidance** for activities that will result in more air quality sensor data in and around low-income and disadvantaged communities [60105(c)]. Approximately \$2M available.



Inflation Reduction Act

IRA Air Monitoring and Air Sensors Direct Grant Awards

| Target Deadline | Milestone |
|--------------------------------|---|
| February 16, 2024 | EPA Released Grants Guidance for SLT Air Agencies |
| Now | SLT Air Agency Work with EPA Regional Office regarding “Please Apply” Letters |
| Spring 2024 | SLT Air Agency Workplan Development |
| May 31, 2024 (but ASAP) | SLT Grant Applications Due |

EPA Regional Office Contact
List for 60105(a-c) eligible
SLT direct award questions

| EPA Region | Point(s) of Contact | Email Contact |
|------------|--|--|
| 1 | Jennifer Brady | brady.jenniferL@epa.gov |
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| 3 | Krista Gonzalez AJ McCullough | gonzalez.krista@epa.gov Mccullough.amanda@epa.gov |
| 4 | Janine Morris Todd Rinck | morris.janine@epa.gov Rinck.Todd@epa.gov |
| 5 | Michelle Becker Nora Suntken | becker.michelle@epa.gov suntken.nora@epa.gov |
| 6 | Donnett Patterson (S/L) Aunjaneé Gautreaux (Tribal) | Patterson.Donnnett@epa.gov Gautreaux.Aunjane@epa.gov |
| 7 | Stephanie Doolan Andy Hawkins | Doolan.Stephanie@epa.gov hawkins.andy@epa.gov |
| 8 | Marisa McPhilliamy Emily Bertram | McPhilliamy.Marisa@epa.gov bertram.emily@epa.gov |
| 9 | Angela Latigue Jean Samolis | latigue.angela@epa.gov samolis.jean@epa.gov |
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Ambient Monitoring Topics in the Final Rule: Reconsideration of the PM NAAQS



Promulgated on February 7th, 2024 – What we finalized

- **PM_{2.5} Network Design** – Modified the PM_{2.5} network design criteria to require monitoring in at-risk communities where there are anticipated effects from sources in the area contributing to poor air quality. (see next slide)
- **PM Federal Equivalent Methods (FEMs)** - Finalized that valid State, local, and Tribal air monitoring data generated in routine networks and submitted to the EPA may be used to improve the PM concentration measurement performance of approved FEMs.
- **Remaining Technical Areas** – Finalized editing several technical areas for clarification, consistency with current practices, changes in aerosol composition, and lower concentration levels. These areas include:
 - Data calculations, commercially available second stage separator for the PM_{2.5} FRM, reference and equivalent methods, quality assurance requirements, probe and siting criteria, and monitoring aspects of Air Quality Index (AQI) reporting.

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Notice of Proposed Update of PM_{2.5} Data from T640/T640x PM Mass Monitors



Notice posted on February 15th, 2024; comments were due March 15, 2024

Overview of Update Process

- EPA intends to implement the data update entirely within AQS
 - Data: all hourly T640 and T640X PM_{2.5} concentration data starting in 2017
 - Years: 2017 to present
- Updated data will be added automatically to AQS
 - The original data will remain in AQS and be publicly available
 - Users will be able to distinguish between the updated data and newer T640 and T640x data measured with the Network Data Alignment
- To implement the Network Data Alignment methodology, EPA will use the hourly ambient temperature data in AQS associated with the site
 - If hourly ambient temperature data are unavailable, the more conservative warmer temperature correction will be used
 - **EPA strongly encourages monitoring agencies to submit the hourly ambient temperature data**
 - Monitoring Agencies will have the opportunity to review the updated data in AQS during the month of April, before the certification date of May 1, 2024

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Near-Road PM_{2.5} Monitoring Sites

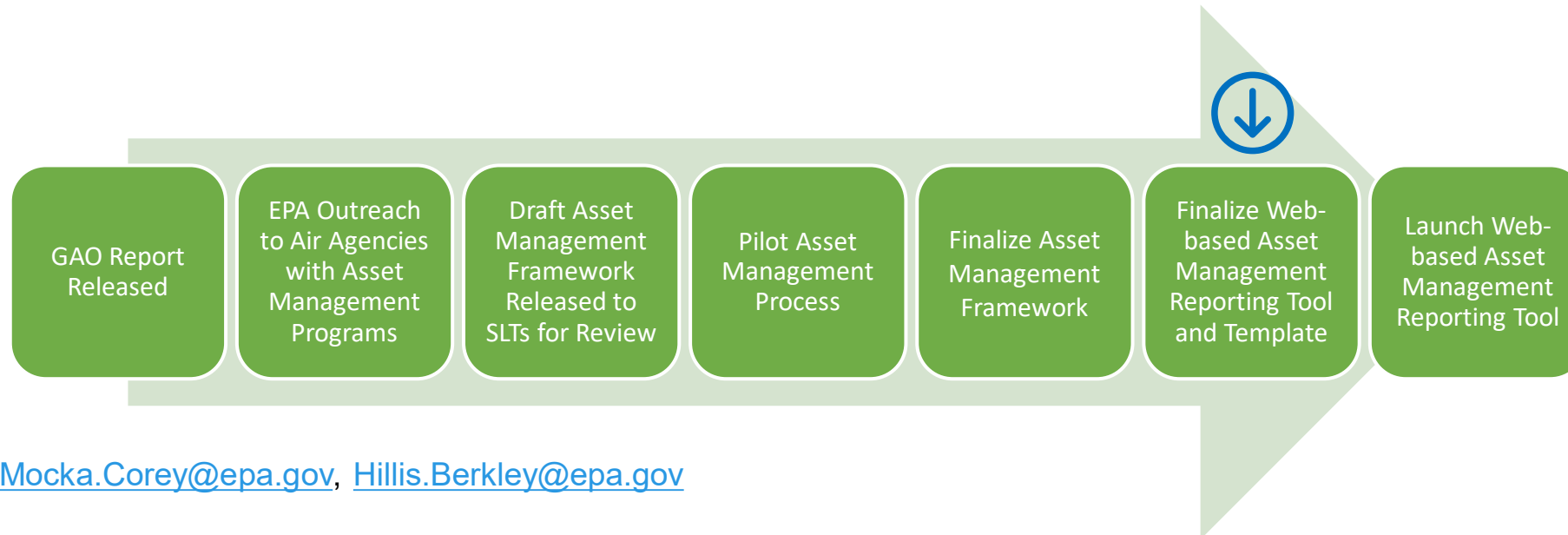
- **Are PM_{2.5} monitoring data from near-road sites applicable to the PM_{2.5} annual NAAQS?**
 - Yes. This is addressed in the preamble of 2012 PM NAAQS final rule. In that preamble EPA identified that PM_{2.5} data from micro- and middle-scale near-road sites are “...representative of many such locations throughout an area.” and thus are applicable to the PM_{2.5} annual NAAQS. See: <https://www.federalregister.gov/d/2012-30946/p-1491>
- **Is there any case in which PM_{2.5} data from a near-road site would not be applicable to the PM_{2.5} annual NAAQS?**
 - At this time, no PM_{2.5} monitors at near-road sites have been identified as appropriate for exclusion to the PM_{2.5} annual NAAQS. However, EPA did consider this issue in response to comments for the 2012 PM_{2.5} annual NAAQS. See: <https://www.federalregister.gov/d/2012-30946/p-1492>. It is important to note that our default position is that all near-road PM_{2.5} monitors are comparable to the annual standard.

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GAO Response – Asset Management

- SLTs will share asset data with EPA Regions on an annual basis, using a standard reporting template, focusing mainly on physical hardware and direct supporting infrastructure that are needed to generate data.
- EPA provided a final asset management plan in a memo signed January 25 (posted on AMTIC).
 - https://www.epa.gov/system/files/documents/2024-02/air-monitoring-asset-management-plan_jan24-.pdf



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Ambient Air Toxics Overview

National Air Toxics Trends Station (NATTS) update

- As of January 2023, we have 25 active NATTS sites, measuring VOCs, PAHs, Carbonyls, and metals.
 - We require 19 "Tier 1" compounds within NATTS, but routinely get nearly 100 compounds reported.
- Eastern Research Group (ERG) continues serving as our national contract laboratory.
- IRA funding will be used to streamline and modestly grow NATTS; planning currently commencing.

Methods Development

- OAQPS continues to work with ORD to develop, improve, and characterize measurement methods.
- Ongoing efforts to evaluate and improve characterization of EtO using TO-15/A.
- Efforts to evaluate emerging continuous technologies for EtO, Formaldehyde, and multi-pollutant platforms.
- Investigating new work for sorbent method improvement or development for priority or high interest compounds.



PAMS Support and Budget

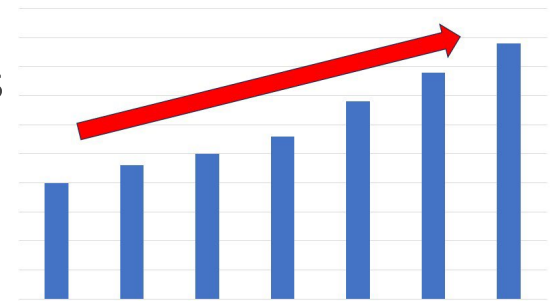
- EPA solicited input from State monitoring staff on support needed for PAMS operational and data verification
- Many States requested additional support for their PAMS sites, especially in 4 specific regions
- Funding is a zero-sum game, and while for FY24, we believe we can address this increased operational need, it is not sustainable on an ongoing basis
- This is funding that should not be expected to be used for annual site operation, but we do expect funding to continue to be available for annual maintenance, parts, and standards for CAS auto-GCs specifically.
- Why?:
 - Generally, PAMS contractor's unit costs **increased by 4.5%** in 2024
 - The overall PAMS National Contract Order **increased by over \$700K**
 - Some specific line-item orders decreased in 2024
 - **EPA saved \$30,592 in shipping costs** in 2024 by having contractor combine shipments and/or change shipping methods
 - Generally, the site support line item **increased by ~\$730,000** in 2024
 - Due to requests to reduce the burden on air agencies and get PAMS sites fully operational
 - Provide operational and data verification support for **one-year** to train SLTs and increase their ability to operate and maintain sites as required by regulation.

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National Monitoring Contracts & Costs

- The Ambient Air Monitoring Group manages several national air monitoring contracts, including contracts supporting and/or operating Air Toxics/NATTS, CSN, PAMS; national QA activities; and sample shipment.
- Costs for these contracts (shipping and labor) have increased significantly across programs between FY23 and FY24.
- Assuming a flat FY24 budget, we are working hard to preserve STAG direct award funding levels by leveraging opportunities under IRA to fund new sites, enhance monitoring activities at existing sites, and support air toxics monitoring.
- EPA will be working with SLTs starting in the Fall of 2024 to discuss options to address cost increases if Congress doesn't provide an increase in STAG allocations to support our existing networks.



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Emission Inventory Updates





Update on 2022 Regulatory Platform Emissions

The Collaborative process to develop the 2022 platform is ongoing

- Co-leads: Zac Adelman (LADCO), Mary Uhl (WESTAR), Alison Eyth (OAQPS)
- Quarterly update webinars were provided in August, November, and February
- Draft emissions data for the year 2022 have been prepared and the data review process started April 1
- Information on submitting comments and useful links are available here:
<https://www.epa.gov/air-emissions-modeling/2022v1-emissions-modeling-platform>

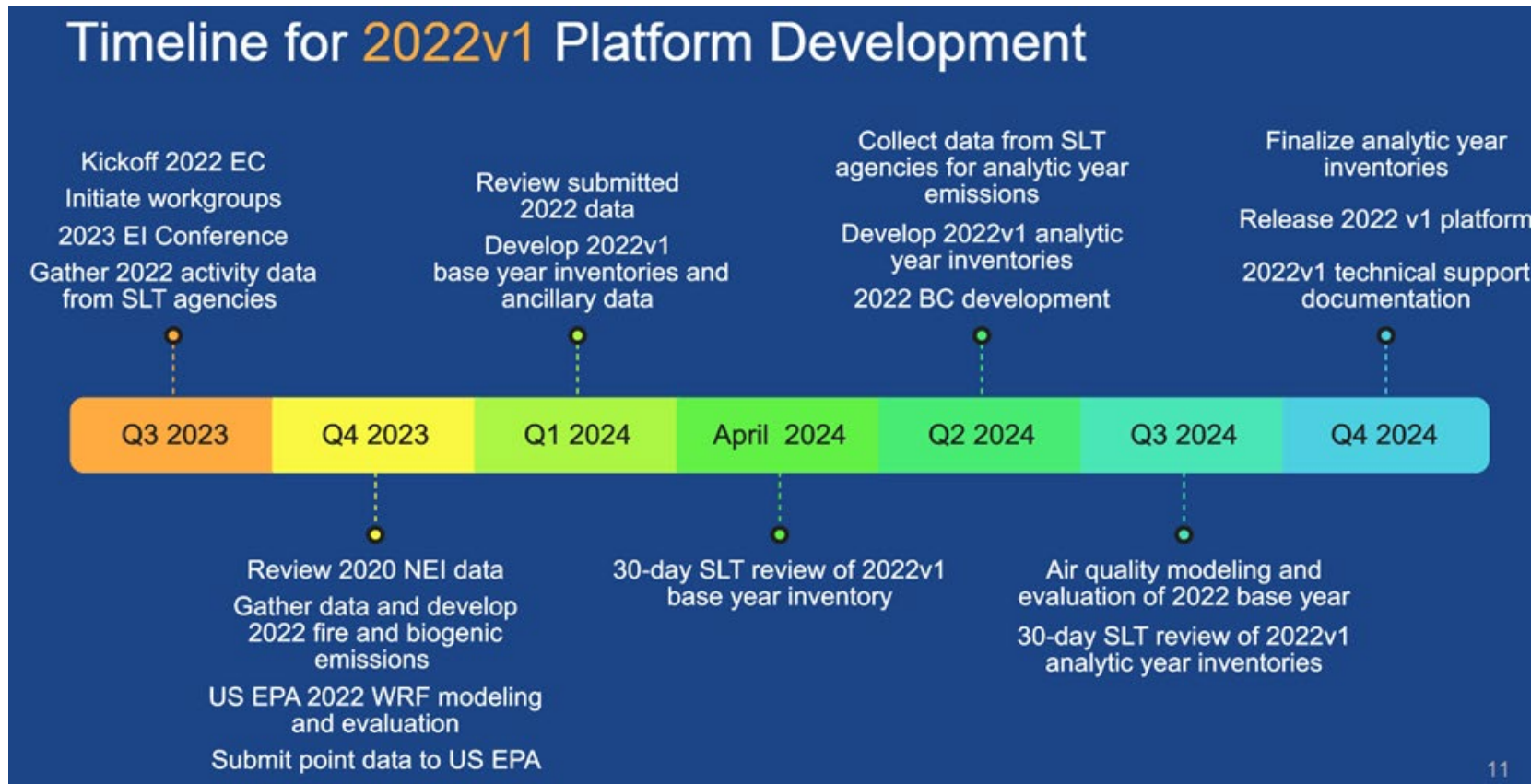
2022v1 timing

- Base year inventories will be finalized by June 2024 and premerged emissions will be made available during August 2024
- Draft analytic year inventories will be prepared during Summer 2024 and a data review will start late summer
- Analytic year emissions for 2026, 2032, and 2038 will be finalized by fall 2024

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Update on 2022 Regulatory Platform



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AirToxScreen Updates

2020 AirToxScreen will be released Spring 2024

- First edition with risk at higher geographic resolution (census-block level)
- Point source emission edits submitted by SLTs during 2022 review process were included in final 2020 NEI and modeled.
- Preview made available to SLTs on February 1, 2024
 - Webinars for SLTs on February 29 and March 4
 - Additional time for State, Local, and Tribal (SLT) preview prior to release (comments officially due 3/15/2024)
- Email airtoxics@epa.gov if you have questions

2021 AirToxScreen still on schedule for December 2024 release

2022 AirToxScreen Point Source Emissions Review still on schedule to begin this summer

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Air Emissions Reporting Rule (AERR)

- Comment period closed in November 2023
- We received about 180 comment documents, some as long as 80 pages
- These comments spanned the range on most of the proposed requirements from fully supportive to fully opposed
- Many comments concerned about burden and resources for states
- As a result of these comments, the EPA is incorporating important changes from proposal to the final rule
- Target for final rule release is this summer
- Clarifying questions can be sent to NEI_Help@epa.gov (Please include AERR in the subject line)

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Emissions Data for IRA Climate Pollution Reduction Grants



- Preliminary Climate Action Plans have been submitted by States and MJOs; Tribes and Territories will submit by April 1.
- Implementation Grant applications for the general competition and the Tribes and Territories competition are due April 1 and May 1, respectively.
- EPA is working to extract data from CPRG deliverables and applications to enable air quality analyses resulting from this program.
 - Will be ongoing work for several years, with iterations occurring as newer and better data are submitted.

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National Emissions Inventory (NEI) Recent Milestones and Plans



Completed Fall 2023 through March 2024

- Draft release of 2022 NEI Point inventory in EIS
- Updated Air Emissions Trends summaries – New year 2023 added and updated estimates for years 2021 & 2022
- Additional revisions to 2020 NEI TSD errata as States work on 2022 emissions modeling platform
- 2021 AirToxScreen Point Source Review (September 17 – November 17, 2023)

Ongoing

- Migration of all nonpoint (Wagon Wheel) input templates into EIS
- New methodologies for several nonpoint categories, including residential wood combustion, fertilizer application, cooking, structure fires, motor vehicle fires, and more
- Incorporate changes from 2021 AirToxScreen Point Source Review into EIS and process for modeling

Spring 2024

- Finalizing new inventory codes into EIS and EIS input templates for SLT submittals + training for SLTs
- Updating Nonpoint Survey and QA reports for SLTs
- Continued NEI and EIS newsletter updates to stakeholders every 3-4 weeks

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Planned 2023 NEI Emissions Science and Methods Updates*

New national methods for:

Oil & Gas:

- Abandoned wells
- Solvent usage during operations

Residential cooking, food trucks

Barrel stoves (residential wood combustion)

Pile burns, campfires, structural and motor vehicle fires

Roofing asphalt

Non-agriculture NH₃ emissions

Dioxins and furans: adding individual congeners for sectors for which data are available

Method improvements:

Commercial cooking

RWC activity, emission factors, speciation, and projection

Road asphalt

Gasoline distribution

SPECIATE additions and improvements

*** SLTs can review and comment on new and revised methods by participating in the 2023 NEI process. Depending on timing and reviews, some new methods could be included in 2022 platform v2 inventories**



Combined Air Emissions Reporting System (CAERS) Update

CAERS V5 released February 5, 2024. Current users - feature customizations:

- AZ – Piloting use of API to retrieve data from CAERS automatically
- GA – Opt In Process,
- DC – Monthly Reporting
- ME – GHG emission factors from GHGRP
- RI – Adding their minors
- ID, Pima AZ – CAERS “as is”
- Additional SLTs have test accounts, and/or are seeking management approval to adopt CAERS
- Always seeking new SLTs for our Product Design Team (PDT)

Process:

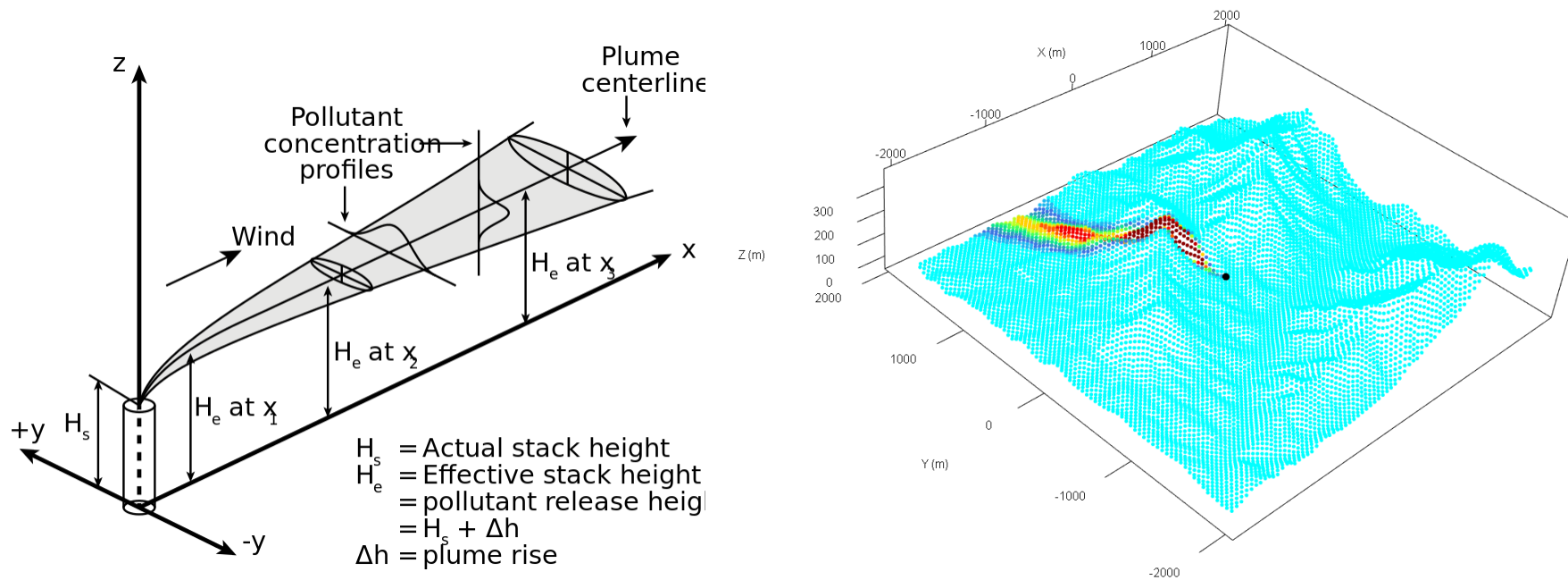
- Test accounts can be used to explore CAERS – several states are testing and providing feedback to us
- Ready to onboard?
 - Start CROMERR process ASAP
 - Customizations possible through EPA or EN Grant applications are an option for funding.
- Discuss “must haves” with CAERS Team by May for onboarding the following calendar year
- Trainings available for industry for SLTs and help desk assistance

Ongoing and Upcoming:

- Ongoing enhancements requested by industry and SLTs; Facility data alignment and stack test data sharing with CEDRI; Enhancements to flow with TRI

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Air Quality Modeling Updates





Guideline / AERMOD Revisions Rule

- In October 2023, EPA proposed to revise the scientific formulation in the AERMOD Modeling System and to make minor revisions to the *Guideline on Air Quality Models* (<https://www.epa.gov/scram/2023-appendix-w-proposed-rule>).
 - Proposed adding 3 new formulation options:
 1. Incorporation of COARE algorithms into AERMET for use in overwater marine boundary layer environments
 2. Proposed addition of a new Tier 3 detailed screening technique for NO₂ (GRSM)
 3. Proposed addition of RLINE as mobile source type
 - **Only adding formulation options to the model system...
...not removing any existing option or imposing any new requirements.**
 - Refinement to the recommendations regarding the determination of an appropriate background concentration for NAAQS implementation modeling, including new draft guidance.
 - “Draft Guidance on Developing Background Concentrations for Use in Modeling Demonstrations” details the EPA-recommended framework of considering the representativeness of relevant emissions, air quality monitoring, and pre-existing air quality modeling to appropriately represent background concentration for cumulative impact analyses.
 - “Appendix A” to Appendix W shifting to “Addendum A” due to new Federal Register requirements
- The goal is for the final rule publication with a corresponding 24XXX release version of the AERMOD Modeling System and final version of the Background Concentration Guidance by mid-summer 2024.

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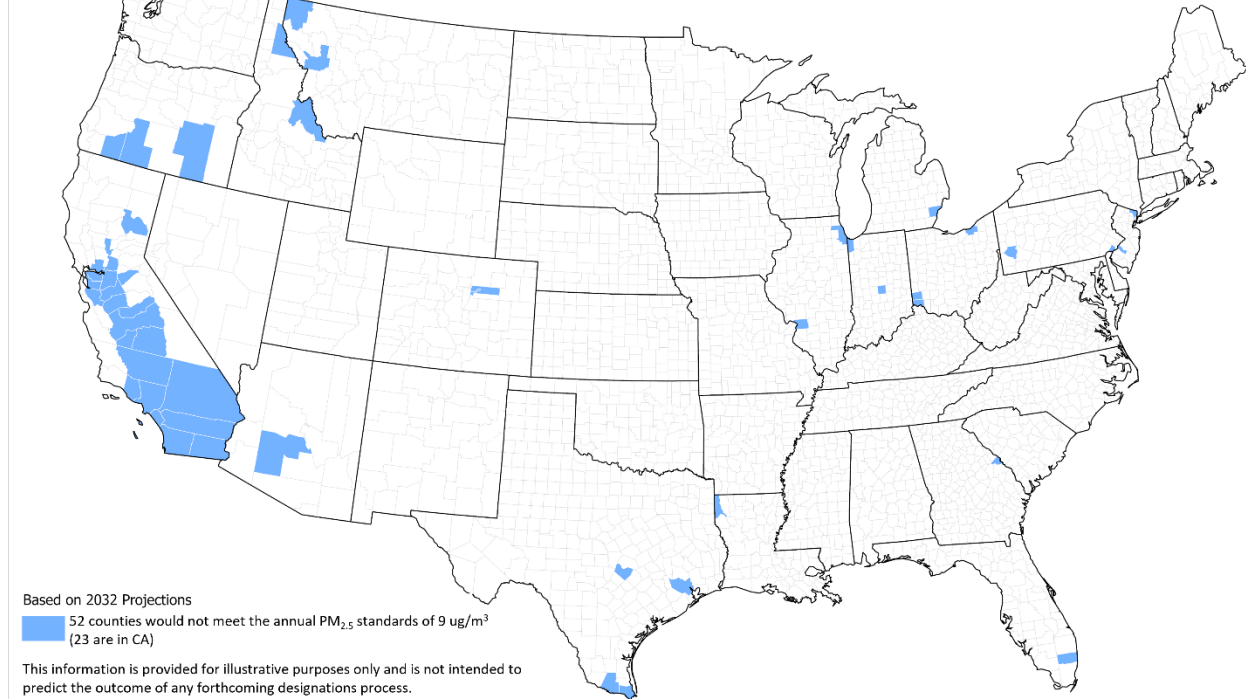


PM NAAQS Reconsideration Regulatory Impact Analysis

- PM_{2.5} design values were projected to 2032 to inform the PM NAAQS Regulatory Impact Analysis
 - 2018v2-based modeling platform
 - Limited screening of extreme values to help address wildfire influence in 2016-2020 base-year monitoring
- Emission reductions from ‘on-the-books’ rules in the 2032 case continue the progress in PM_{2.5} concentrations in recent decades
 - The number of counties above 9 $\mu\text{g}/\text{m}^3$ in the 2032 projection is under half the number for 2022 DVs
- Reductions in direct PM emission in exceedance areas will be important beyond the ‘on-the-books’ rules
 - Also helps to address exposure disparities

EPA Projects More than 99% of Counties would Meet Fine Particle Pollution Standard

Projection of Counties with Monitors that would not Meet in 2032
(Based on EPA Modeling of Projected 2032 Emissions)



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PM2.5 Implementation Efforts

- EPA recognizes the challenges with new source permitting under the more stringent, health protective PM2.5 NAAQS and expect to continue to work successfully with state and local air agencies and Tribes in implementing new source permitting under the Clean Air Act.
- EPA will soon release supplemental guidance with a new PM2.5 Significant Impact Level (SIL) value for the revised annual standard (*see next slide*).
- EPA will work with facilities and reviewing authorities on a case-by-case basis to identify the existing data, models and tools to demonstrate compliance under revised standard and, as appropriate, ***exercise the inherent discretion and flexibilities*** with the permitting process to best evaluate impacts from a proposed new project.
 - Develop representative background for PSD demonstrations that involves discretion in ambient data adjustments (per Data Exclusions Memo) and selection of representative monitors and nearby sources (per *Guideline* update and guidance on developing background concentrations)
 - EPA updates to AERMOD formulation and PM2.5 MERPs for PM2.5 (more hypothetical sources in database) to better represent new source impacts along with a streamlined Model Clearinghouse process for alternative model approvals.



Updated PM_{2.5} SILs for PSD Permitting

- The 2018 Guidance on SILs for Ozone and PM in the PSD Permitting Program recommended SIL values developed based on...
 - Technical analysis of the inherent variability in monitored pollutant concentrations
 - The level of the corresponding NAAQS
- Given the strengthening of the annual PM_{2.5} NAAQS, EPA updated the SILs value corresponding with the new level of the standard and updated technical analysis with more recent design value data
- EPA will release a Supplement to the 2018 Guidance and Supporting Documents on SILs for Ozone and PM_{2.5} presents...
 - Revised annual PM_{2.5} SILs for NAAQS and PSD increments
 - Retain the Ozone and PM_{2.5} 24-hour SILs
 - Updated technical analysis using the same peer-reviewed approach based on inherent variability in monitored pollutant concentrations

<https://www.epa.gov/nsr/significant-impact-levels-ozone-and-fine-particles>

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AQ Modeling Workshops & Conferences

• **13th Conference on Air Quality Models**

- Conducted November 14-15, 2023 in RTP, NC
- Triennial AQ Modeling Conference (CAA, Section 320)
- Public hearing for proposed revisions to the *Guideline on Air Quality Modeling* and AERMOD
- Please reference the following website for the conference proceedings (presentations and transcripts) and information on the proposed rule: <https://www.epa.gov/scram/13th-conference-air-quality-modeling>

• **2024 Regional, State, and Local Dispersion Modelers' Workshop**

- Planned for July 29 – August 1, 2024 at Colorado Dept of Public Health offices in Denver, CO
- There will be a virtual option but strongly encourage as much in-person participation as possible
- Agenda planning is underway and Workshop info / draft agenda will be posted to SCRAM by April 15th
- There will be focused engagements on PM NAAQS compliance demonstration concerns / issues
- Please reach out to the State & Local Modeling Rep (Sam Sampieri) and George Bridgers with recommendation for discussion / presentation topics

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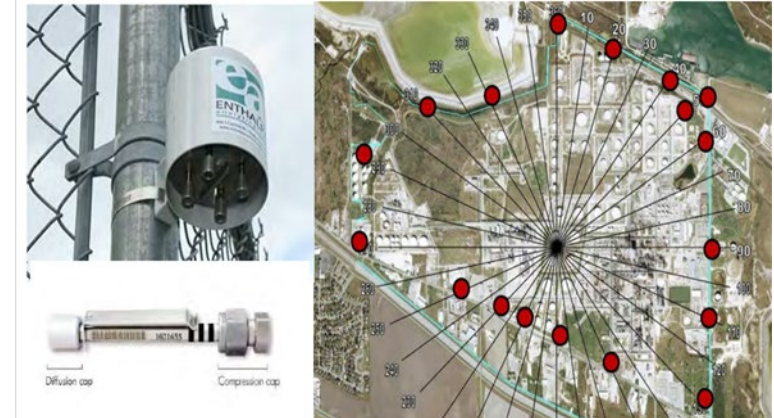


Source Monitoring Updates



Fenceline / Sorbent Monitoring

- EPA has recently proposed expanded applications of fenceline monitoring
 - Hazardous Organic NESHAP (HON), benzene, butadiene, vinyl chloride, ethylene oxide, ethylene dichloride, and chloroprene
 - Coke Oven NESHAP, Benzene
 - Integrated Iron and Steel, Chromium
- Method Development
 - Proposed Method 327, canister-based measurement for volatile organic HAPS (ethylene oxide and vinyl chloride) – **FINAL Spring 2024**
 - Future Revisions to 325A/B, expanded compound list and new sorbent material – **Proposal Summer/Fall 2024**
 - New Method for Fenceline, Metals – **Fall 2026**
 - Formaldehyde fenceline method - **Researching**



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PFAS Methods Update

Other Test Method 45 – Available at www.epa.gov/emc

- Provides sampling and analysis procedure to measure 50 polyfluorinated alkyl substances (PFAS) from stationary source vents or stacks
- Originally posted in January 2021
- Commercially available target compound and internal standards are now available.
- Currently being revised based on stakeholder experience to include improved sample preparation and compound recovery.
- Anticipated update release Summer 2024

Other Test Method 50 – Now Available (01/2024)

- Provides sampling and analysis procedure to measure volatile fluorinated compounds
- Includes water and acid gas management approach for whole gas sampling from stationary combustion sources
- Target compounds include refrigerants, climate change compounds, PFAS precursors.
- Target compounds also include products from incomplete thermal treatment of PFAS and fluoropolymers.

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Wood Heater Updates

Precision study of IDC wood heater test method and measurement of PM

- West coast lab work – 52 test runs on 3 wood heater models burning D. fir and maple – **completed**
- East coast lab work – Same stoves, 52 more tests, maple and birch – **completed**

Precision testing of hydronic heater IDC method – West coast testing complete

- West coast lab work – 54 test runs of hydronic cord wood and pellet fired heaters
- East coast lab work – Same 54 test runs, now underway.

Precision testing of Pellet heaters using IDC method

- East coast lab work – underway
- EPA ORD lab work – pending

Precision testing of Forced-air furnaces

- Method development in progress

IRA Grant of 8.8M to NESCAUM for wood heater testing/ranking

- <https://www.epa.gov/grants/grant-funding-emissions-wood-heaters>
- Planning underway



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Tools and Resources



Design Value Resources

Design Value Interactive Tool

03_DVs.DV.YEAR 2022

EPA Region: State: County: CBSA:

Overview: Ozone (2015 NAAQS) | **PM2.5 Annual (2012)** | PM 2.5 24 Hour (2006) | SO2 (2010 NAAQS) | PM10 (1987 NAAQS) | Lead (2008 NAAQS) | NO2 1-Hour (2008) | CO 8-Hour (1971)

Ozone Design Values

| Site Details | | Site Trends | | NAA Trends | | Violating Not In NAA | | | | |
|--------------|----------------------------------|---|----------|------------|-------------------|----------------------|------------------|---------|-------------------|-------|
| AQS Site ID | Local Site Name | Street Address | Latitude | Longitude | 2022 Design Value | DV Valid | Exceeds Standard | DV Year | 2020-2022 Average | Count |
| 02-068-0003 | Denali Np & Pres - Headquarters | Denali National Park | 63.7... | -148... | 0.053 | Y | N | 2022 | 94 | |
| 02-090-0034 | Ncore | 809 Pioneer Road | 64.8... | -147... | 0.048 | N | I | 2022 | 74 | |
| 04-003-8001 | Chiricahua Nm - Entrance Station | Chiricahua National Monument | 32.0... | -109... | 0.065 | Y | N | 2022 | 99 | |
| 04-005-1008 | Flagstaff Middle School | 755 W Bonito | 35.2... | -111... | 0.063 | Y | N | 2022 | 99 | |
| 04-005-8001 | Grand Canyon Np - The Abyss | Grand Canyon National Park, W Rim Drive | 36.0... | -112... | 0.063 | Y | N | 2022 | 97 | |
| 04-012-8000 | Alamo Lake | Alamo Lake State Park | 34.2... | -113... | 0.065 | Y | N | 2022 | 98 | |
| 04-013-0019 | West Phoenix | 3847 W Earll Dr-West Phoenix Station | 33.4... | -112... | 0.077 | Y | I | 2022 | 100 | |
| 04-013-1003 | Mesa | 310 S Brooks, Mesa | 33.4... | -111... | 0.080 | Y | I | 2022 | 99 | |

Design Value (ppm) chart showing values for various sites, with a horizontal line at 0.075 ppm.

Air Quality Design Values for Criteria Pollutants

Design Value Website

Ozone 8-hour (2015) | **PM2.5 Annual (2012)** | PM2.5 24-hour (2006) | SO2 1-hour (2010) | Lead 3-month (2008)

Fine Particle Annual (PM2.5) Standard

Basic Information:
In 2012, EPA strengthened the annual NAAQS for PM2.5 to 12 µg/m³.

The **design value** is the annual arithmetic mean concentrations, averaged over 3 years.

EPA designated 9 areas as nonattainment (not meeting the standards) effective April 15, 2015.

Related Links:
[PM2.5 Annual NAAQS](#)
[PM2.5 Annual Designations](#)

Map Options:

Map Options: Esri, USGS | Esri, HERE, Garmin, FAO, NOAA, USGS, EPA | U.S. EPA Office of...

<https://www.epa.gov/air-trends/air-quality-design-values>

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Exceptional Events Visualization Tools



- Identify days potentially impacted by exceptional events.
- Assess potential regulatory significance.
- Determine exceptional event tier category for your site(s).

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<https://www.epa.gov/air-quality-analysis/exceptional-events-analysis-and-visualization-tools>



Air Quality Trends

Criteria Pollutant Trends Show Clean Air Progress

Select a [NAAQS](#) to view concentration and emission trends
[Understand health effects](#)

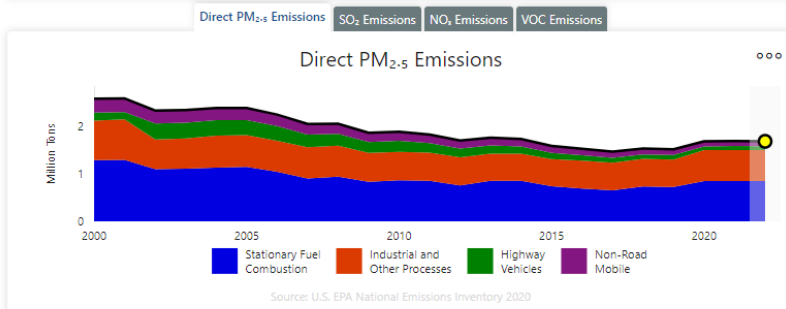
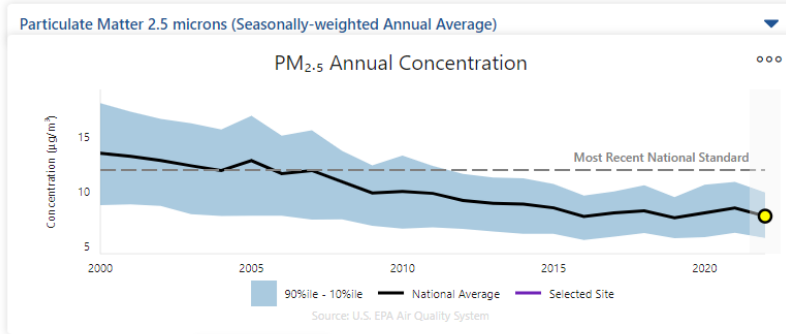
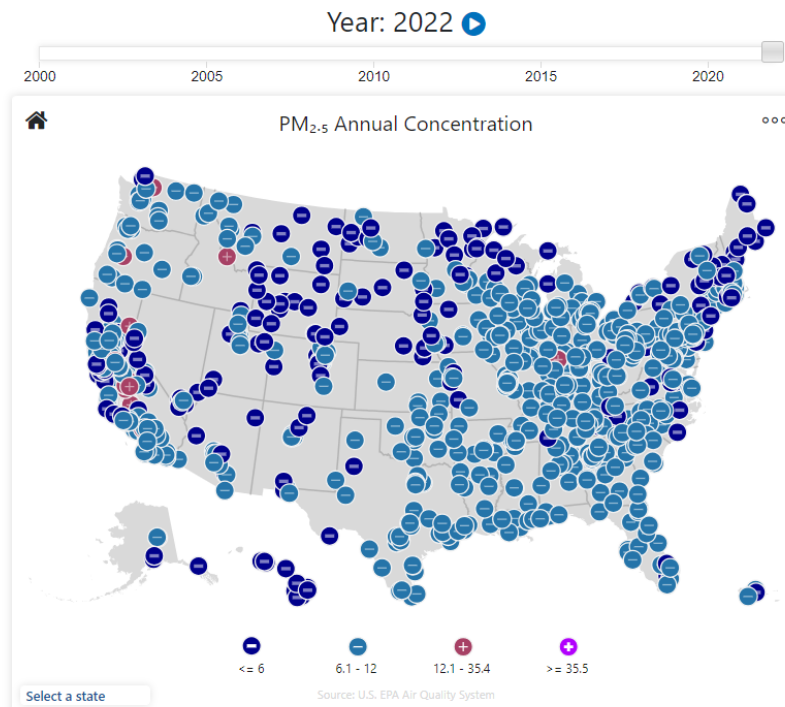
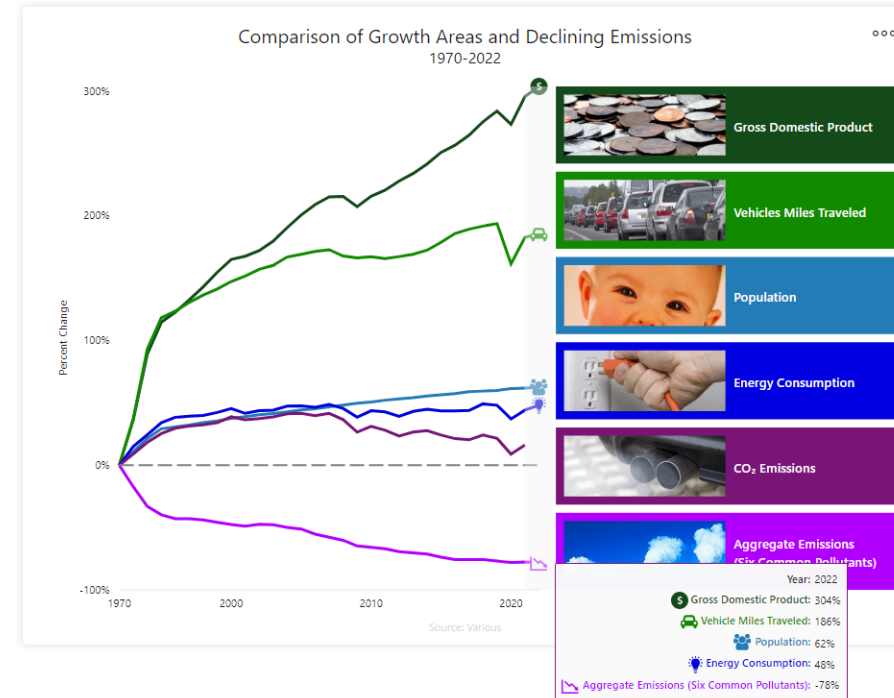


Chart Click emission tabs to change the emissions chart. The play/pause button controls animation, or manually change the year by dragging the yellow circle in the chart or the slider's gray square.



Map Symbols indicate values above or below the most recent standard. Click any point to display annual concentration data. Double click the map to zoom in and click the home button to reset. Please be patient with map exports.



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<https://gispub.epa.gov/air/trendsreport/2023>



Data Visualization Tools

Download Data

- [Pre-generated Data Files](#)
- [Download Daily Data](#)
- [Download Raw Data \(API\)](#)

Data Viz Tools

- [Daily Air Quality Tracker](#)
- [Tile Plot - Multiyear](#)
- [Tile Plot - Single Year](#)
- [AQI Plot](#)
- [Concentration Plot](#)
- [Concentration Map](#)
- [Ozone Exceedances](#)

Monitor Locations

- [Interactive Map of Air Quality Monitors](#)

Summary Reports

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Questions?