Modernization of the Ambient Air Monitoring System

Input and progress to date

August 2024

This information is being shared as an update on progress made to date and may not represent EPA or SLT policy

Background:

From GAO report:

The GAO report highlights the fact that **"…the ambient air monitoring system is a national asset that provides standardized information for implementing the Clean Air Act and protecting public health."**

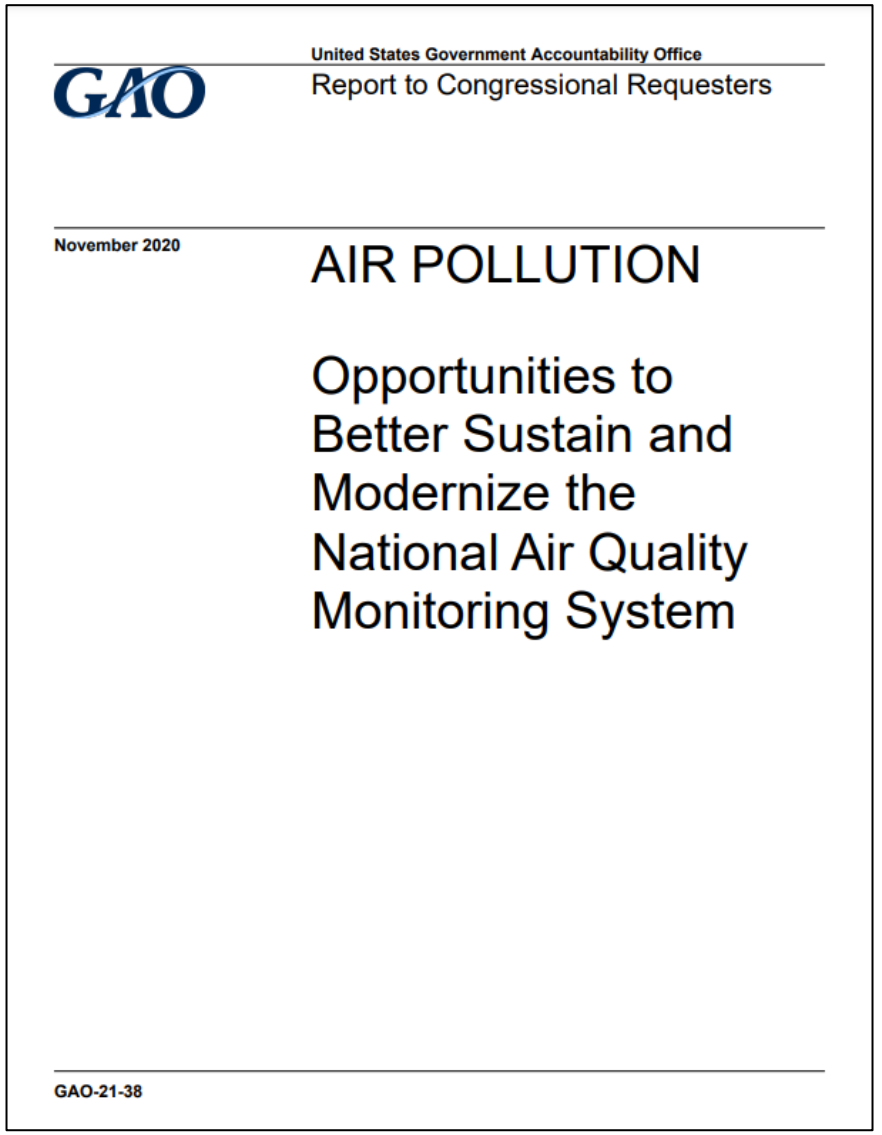
GAO made two recommendations which EPA generally agreed to:

(1) Establish an asset management framework for the monitoring system that includes key characteristics, and

(2) Develop an air quality monitoring modernization plan that aligns with leading practices. In written comments on the report, EPA generally agreed with the recommendations.

Status of these recommendations:

- Asset Management Framework – SLTs are implementing
- Modernization Plan – In Progress



What was our Charge for the Modernization Plan and What have we done to address Developing this Plan?

Charge:

GAO issued a priority recommendation that "The Assistant Administrator of EPA's Office of Air and Radiation, in consultation with state and local agencies and other relevant federal agencies, should develop and make public an air quality monitoring modernization plan to better meet the additional information needs of air quality managers, researchers, and the public. Such a plan could address the ongoing challenges in modernizing the national ambient air quality monitoring system by considering leading practices, including establishing priorities and roles, assessing risks to success, identifying the resources needed to achieve goals, and measuring and evaluating progress."

How have we approached seeking input on developing a Modernization Plan so far?

1. Covered in closing plenary session of 2022 National Ambient Air Monitoring Conference in Pittsburgh PA
2. Engaged stakeholders (regulated air monitoring entities) from State, Local, and Tribal Air Agencies as well as EPA Regional Offices
3. Conducted several virtual calls
4. Presenting here at NAAMC 2024 – Summary of Input Received.

Source: GAO File Photo.

Additional Air Quality Information Themes

Themes	What's going well?	Where can we do better?	What can we divest of?
• **Reliable, high-quality data** • Public interest in and communication of air quality • Inter-agency communication • Method development • Low priority/value measurements	• **Delivery of reliable, high-quality data and meeting minimum requirements** • Increased public interest in air quality and good tools for public use	• **Improving communication across agencies for successes, institutional knowledge, expectations, resource availability, and staff engagement** • **Ongoing need for method development in existing and emerging areas** • Public communication of methods/data limitations • Addressing roles/responsibilities around community monitoring • Adding sensors to networks (value vs limitations) • Identifying airsheds and populations serviced by each monitor	• **Low value monitoring requirements (especially in old non-attainment areas)?** • Low value QA requirements that could be guidance? • Collecting low or near-baseline data?

Ongoing Challenges in Modernizing the National Ambient Air Monitoring System

Themes	What's going well?	Where can we do better?	What can we divest of?
• **Funding and Resources** • **Staffing – onboarding and development** • **Education and Communications** • **Method development versus method testing?**	• **Strong group of air quality professionals** • **Consistent, defensible QA/QC procedures** • Improved visualization tools • Educating community groups is worthwhile • Air quality has improved tremendously	• **Ambient (real-time) air toxics methods** • **Ensuring data quality of FEM/FRM entering market** • Public communication of the AQI/NowCast • Increased concern over pollution transport • CASNET or rural networks for SO2?	• **How to divest of low-value measurements perceived to be of value?** • Do we need all the data we collect (e.g., PAMS sites)?

Leading Practices in Ambient Air Monitoring

Themes	What's going well?	Where can we do better?	What can we divest of?
• **Networks** • **QA/QC** • **Continuous monitoring** • **Partnerships** • Data availability (e.g., data in near real time) • Community monitoring	• **Network design and siting** • **Robust QA/QC creates reliable data** • **Continuous monitoring and public reporting of continuous data has increased** • Beneficial increase in use of electronic logbooks • Community of partners at the SLT and Federal level working in cooperation • The sensor loan program	• **Create more opportunities/resources for in person networking and training** • **Additional involvement in community monitoring, including education on data limitations, QC checks, funding for collocations/correlations, help interpreting results** • Variation in how agencies handle data validation/verification including implementing electronic logbooks • Streamlining the sensor loan program	• **Can we nationally right-size the networks by prioritizing funding for high value purposes?** • How useful is fence-line monitoring? • Can we consolidate audit levels? • How can we optimize QA for meteorological measurements?

Priorities of Ambient Air Monitoring

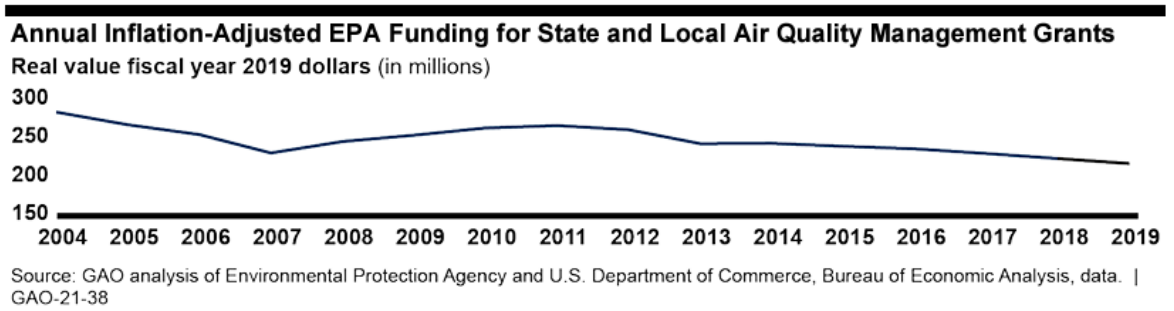
Themes	What's going well?	Where can we do better?	What can we divest of?
• **High quality data** • **Funding and resources** • Guidance and regulation • Communication • Data management	• **Providing high quality data that's being used by more and more people** • **Meeting the requirements of ambient air monitoring regulations**	• **Continue to put effort and resources into ambient monitoring and method development as community monitoring gains popularity** • **Educate public on possibilities of community monitoring** • **Put effort into succession planning, training, and developing community** • Ensure quality of FEMs and have tools for non-FEM/FRM comparisons • Ensure network adapts as populations grow/shift • Modernize data management systems (AQS) • Consistency of implementation and communication • Follow-up on corrective actions	• Traffic monitoring instead of CO monitors? • Can we streamline exceptional event demonstrations?

Risks to Success

Themes	What's going well?	Where can we do better?	What can we divest of?

• **Funding and resources**
• **Staffing and succession planning**
• **Workload and demand**
• **Methods and data**
	• You know you work in an important field when you have the attention of several independent advisory and investigative groups:
	  • GAO
	  • EPA – IAG
	  • CASAC
		• **Difficulties hiring, training, retaining staff**
		• **Improve succession planning, knowledge transfer, and information availability**
		• **Grants can create burdensome managerial work, political navigation, and risk of missing deadlines**
		• **Public communication on the lack of risk data for short-term monitoring data (especially toxics)**
		• Maintaining criteria pollutant monitoring on top of growing/shifting priorities and demands
		• Balancing remote work/automation with hands-on work, travel, and engagement
		• Lack of reliable information on new monitoring methods/technology
		• Improved data management systems for increased volume/types of data
			• How can we avoid "over-monitoring"?
			• Can we divest of low value measurements?

Resources Needed to Achieve Goals



Source: GAO analysis of Environmental Protection Agency and U.S. Department of Commerce, Bureau of Economic Analysis, data. | GAO-21-38

Themes	What's going well?	Where can we do better?	What can we divest of?
• **Appropriations and Funding** • **Grants** • **Contracts** • **Training and community building** • **Method Development** • **Data Systems and IT** • **Communications to the Public**	• **Efficiencies of <u>multi-year grants</u> (103/105) and add funds as they become available?** • **Existing <u>training and networking opportunities are highly valued</u>; however, even more is needed** • **A start has been made on <u>communications to the public</u>, but this needs ongoing support and organization** ◦ e.g., National monitoring conference and AT workshop • Purchasing power of national contracts, where available. • We have a great community; but cannot take for granted that new staff feel a part of it. We need to work to include staff in conferences, workshops, and stakeholder organizations.	• **One-time appropriations have been extremely useful and needed, but they are not sustainable** • **Enhance resources to network and share knowledge including travel.** • **Grant allocation increases each year to sustain networks that are a critical resource of the nation.** • **Invest time in new staff and succession planning** • Scope of grants so that they include additional needs such as staff and not just capital. • Better balancing regulatory requirements with important work that is not required (e.g, AT methods, continuous speciation…) • Invest in instrumentation • Data validation and reduction software investments (e.g., AutoGC's) • Develop mobile monitoring that can serve multiple purposes	• **<u>Grants Management</u> - Getting technical staff and managers away from grants management activities as it takes away from us focusing on technical work that no one else can provide.** • How can we streamline grant reporting? • IT requirements - IT requirements as part of our critical infrastructure where they do not add value.

Measuring and Evaluating Progress

Themes	What's going well?	Where can we do better?	What can we divest of?
• Meeting requirements • Using statistics and data reporting • Audits • Method development • Missing metrics	• **QA stats such as completeness, bias, precision** • **Meeting EPA requirements and the science and policy needs for which monitoring is intended** • Visualization tools and maps (including public resources) • Agency improvement from TSA to TSA	• **How do we measure progress made in method development?** • Can we use delays as a metric (missing deadlines due to cost of implementations)? • How can we encourage policy makers to be invested in long-term progress? • Can we use asset management to measure progress? • Track progress by modernizing AQS (ability to distinguish models within method designations) • Can we automate more required checks and notifications?	• **Are we using all the data being collected?** • Do we really need enhanced monitoring plans?

Where are we and next steps?

- August 2024 – Interim report out at National Ambient Air Monitoring Conference.
- Fall 2024 - Finish collecting input from Ambient Air Monitoring Stakeholders; Brief EPA Management
- Winter 2024 – Respond to GAO with letter and concise file. Post a public plan.
- Communicate plan especially to those that we rely on for support. Incorporate into all facets of our work, where possible.

Questions and Comments?

"Develop an air quality monitoring modernization plan that aligns with leading practices"

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