

**FY2020
NATIONAL PROGRAM MANAGER GUIDANCE
MONITORING APPENDIX**

EPA and its partners at state, local, and tribal (SLT) agencies, manage and operate ambient air monitoring networks across the country with three primary objectives: to ensure the public has access to clean air by comparing data and implementation of the National Ambient Air Quality Standards (NAAQS) and other health indicators for toxics; to provide the public with timely reports and forecasts of the Air Quality Index, and to provide information to health and atmospheric scientists to better inform future reviews of and revisions to the NAAQS.

The EPA Ambient Air Monitoring Group (AAMG) maintains the Ambient Monitoring Technology Information Center (AMTIC) website which provides monitoring-related policy and technical guidance for all criteria pollutant and toxics pollutant monitoring networks. This website can be accessed at <https://www.epa.gov/amtic/>.

EPA works with state, local, and tribal air monitoring agencies to continuously improve the ambient air monitoring networks for current and future needs. This work includes milestones that have resulted from planning the ambient air monitoring network through a stakeholder driven process known as the Ambient Air Monitoring Strategy¹ (monitoring strategy) as well as through NAAQS reviews that include both public and scientific input.

While NAAQS reviews over the last several years have and may continue to result in changes to the monitoring networks, the overall goals and themes of the monitoring strategy remain the same. The major purpose of the monitoring strategy is to optimize the networks to be more responsive to current and future needs (e.g., assess air quality trends, better characterize the multi-pollutant nature of air pollution, provide for more timely information through continuous monitoring, better support development of improved air quality simulation models, etc.). To better support these and potentially new objectives, EPA requires that states perform network assessments every five years to determine, at a minimum, if networks meet the monitoring objectives defined in regulations, and whether new sites are needed, existing sites are no longer needed and can be terminated, and if new technologies are appropriate for incorporation into the ambient air monitoring network. Copies of the Network Assessments are available on the web at <https://www.epa.gov/amtic/state-and-local-monitoring-plans>.

As part of EPA's statutory requirement to review each NAAQS within a five-year period, EPA also reviews the associated ambient air monitoring network requirements and has previously revised the NAAQS' associated monitoring requirements for lead (Pb), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO), particulate matter (PM_{2.5}) and ozone (O₃). These changes to the monitoring requirements are summarized in Table 1 below. With the large number of new and changing needs, EPA remains committed to working closely with its State and local monitoring partners through forums such as the Monitoring Steering Committee of the National Association of Clean Air Agencies (NACAA) and the Monitoring Committee of the Association of Air Pollution Control Agencies (AAPCA) to ensure monitoring agencies and EPA are working together to improve the ambient air monitoring networks. EPA monitoring staff

¹ Available at <https://www3.epa.gov/ttn/amtic/monitor.html>

work closely with tribal air monitoring agencies through participation in the Tribal Air Monitoring Support (TAMS) Center.

Table 1 has been provided to: assist agencies in understanding the status of each NAAQS review; identify important dates that affect monitoring implementation; and direct readers to where more detailed information can be found.

Table 1 – Summary of NAAQS and Ambient Air Monitoring Implementation Timeline

NAAQS	Date of Proposed or Final Rule, if available	Summary of Changes to Monitoring	Date Monitoring must be Operating by:	More information on final/proposed rule available at:
Lead - Monitoring	Final rule 11/17/2016	<ul style="list-style-type: none"> Current standard retained 	Not applicable (N/A)	https://www.epa.gov/naaqs/lead-pb-air-quality-standards
NO ₂ – Primary NAAQS and Monitoring	Final rule 4/6/2018	<ul style="list-style-type: none"> Current standard retained 		https://www.epa.gov/naaqs/nitrogen-dioxide-no2-primary-air-quality-standards
SO ₂ – Primary NAAQS and Monitoring	Final Rule 2/25/2019	<ul style="list-style-type: none"> Current standard retained 		https://www.epa.gov/so2-pollution/primary-national-ambient-air-quality-standard-naaqs-sulfur-dioxide
Ozone - Primary and Secondary NAAQS	Final rule October 1, 2015	<ul style="list-style-type: none"> Standard is currently under review Required PAMS network to begin operations June 1, 2019 Proposed rule to delay implementation of PAMS network to June 2021 issued in Spring 2019 		https://www.gpo.gov/fdsys/pkg/FR-2015-10-26/pdf/2015-26594.pdf
SO ₂ and NO ₂ – Secondary NAAQS and Monitoring	Notice of Public Meeting	<ul style="list-style-type: none"> Review of ISA and secondary standards 		https://www.epa.gov/naaqs/nitrogen-dioxide-no2-and-sulfur-dioxide-so2-secondary-air-quality-standards
CO – Primary and Secondary NAAQS and Monitoring	Final Rule August 31, 2011	<ul style="list-style-type: none"> Primary standard retained, without revision 		https://www.epa.gov/NAAQS/carbon-monoxide-co-air-quality-standards
PM – Primary and Secondary NAAQS and Monitoring	Integrated Review plan was posted in December 2016. Integrated Science Assessment - (External review Draft) was posted in October 2018.	<ul style="list-style-type: none"> Currently under review 		https://www.epa.gov/naaqs/particulate-matter-pm-air-quality-standards
General QA & Monitoring	Final rule	Update to Quality Assurance and monitoring requirements	March 28, 2016	https://www3.epa.gov/ttn/amtic/monregs.html

This document provides guidance on the use of section 103 and 105 STAG resources for air toxics and criteria pollutant monitoring networks, as well as important associated networks such as the Chemical Speciation Network (CSN), NCore, Interagency Monitoring of Protected Visual Environments (IMPROVE), and Photochemical Assessment Monitoring Stations (PAMS). The document provides information on directions and priorities for ambient monitoring taking into account the emerging needs identified in various NAAQS reviews while adhering to the themes identified in the Ambient Air Monitoring Strategy for state, local, and tribal air agencies. These include an emphasis on multi-pollutant monitoring, and fully automated, continuous monitoring compared to integrated filter based PM samplers with separate gravimetric analysis

Highlights in Monitoring Funding for FY 2020

Beginning in FY 2020, and through FY 2023, EPA proposes to transition the funding authority for PM_{2.5} monitoring from section 103 to section 105. Federal funding for on-going operations of all other criteria pollutants is expected to utilize section 105 authority. EPA will work with the states on the details of the transition.

Some additional details of EPA's plans for funding monitoring in FY 2020 follow:

- In developing the PM_{2.5} monitoring allocation for FY 2020, OAR will employ the same region-by-region funding approach used in prior years – i.e., utilization of a historical per month network operations cost. This cost is based on examining prior year grants and determining a cost per month for each grantee. For FY 2019, all PM_{2.5} monitoring grants are expected to end on March 31, 2020. Therefore, funding for FY 2020 will be for a 12-month period beginning April 1, 2020.
- Funding for the portion of the IMPROVE program that addresses progress in improving visibility in Class I areas may increase slightly to account for elevated contract costs resulting from new contract awards. This includes funding for the 110 IMPROVE stations needed to meet the regional haze rule requirements of states monitoring Class I areas for long-term trends through and beyond the 10-year SIP period (2008 to 2018). This is also useful in the periodic assessments of progress that are required in achieving the national visibility goal.
- The level of funds for the nationally administered, independent Performance Evaluation Program (PEP) provided as associated program support for PM_{2.5} monitoring is expected to remain constant at a approximately \$1.7 million. Monitoring agencies with an adequate level of independence between quality assurance and monitoring groups may conduct the PEP themselves. In these cases, monitoring agencies that conduct the PEP will receive the refundable portion of the EPA program costs that would otherwise have been used to pay for EPA regional lab contract staff.
- The level of funds for the nationally administered, independent Lead (Pb) Performance Evaluation Program (PEP) provided as associated program support for Lead (Pb) monitoring is expected to be approximately \$300,000. Monitoring agencies with an adequate level of independence between quality assurance and monitoring groups may

conduct the Pb PEP themselves. In these cases, monitoring agencies that conduct the Pb PEP will receive the refundable portion of the EPA program costs that would otherwise have been used to pay for EPA regional lab contract staff.

- In addition, funds will be held as associated program support for the development of lead audit strips and provided to the Pb analytical laboratories required to fulfill the quarterly Pb audit strip requirement. The estimate for a set of 24 audit strips is approximately \$1500.
- The level of funds for the nationally administered, independent National Performance Audit Program (NPAP) is expected to be approximately \$700,000. Like the PEP, monitoring agencies with an adequate level of independence between quality assurance and monitoring groups may conduct the NPAP themselves and receive the \$105 funds that otherwise would have supported their participation in the national program.
- EPA proposes to utilize \$2.0 million for the expressed purpose of purchasing new capital equipment (e.g., gas chromatographs, true NO₂ analyzers and upper air meteorology equipment) for participating agencies, because of the revised PAMS monitoring requirements associated with the 2015 revisions to the ozone NAAQS. All funds will be utilized as either direct award to a PAMS program or equipment will be purchased and provided.
- EPA proposes to allocate \$500,000 for Data Analysis and Reporting Tool development (DART) and quality assurance support for the PAMS program. EPA will further consult with state and local agencies on the use of the funds that would be prorated from each Region during FY 2020.
- EPA proposes to utilize \$55,000 from the national allocation to support the standard reference photometer (SRP) program. These resources will support the verification of the two EPA Headquarters SRPs each year, the maintenance, repair and updating of the Regional and Headquarters SRPs, the shipping of the traveling SRP to each region and the subsequent re-verification of the SRP upon return to EPA.
- EPA proposes to utilize \$30,000 from the national allocation to perform regional and national scale assessments of the data quality of the SLAMS criteria pollutant data. These assessments will build upon and enhance QA reports like the AMP256 and AMP600 and include additional QA information that will be provided through the QA transaction application. We plan on utilizing the AirData platform to develop assessment tools that can be used by the monitoring organizations to provide data reports and assessments. QA data will be loaded into the DATA Mart for use on the AirData platform and for subsequent report generation.
- EPA proposes to utilize \$50,000 from the national allocation to maintain the Ambient Air Protocol Gas Verification Program (AA-PGVP). The program establishes gas metrology laboratories in two EPA Regions to verify the certified concentrations of EPA Protocol Gases used to calibrate ambient air quality monitors.

- EPA proposes to utilize \$40,000 from the national allocation to maintain an operational on-site monitoring station in Research Triangle Park, NC for the evaluation of new ambient methods and data systems as well as to support hands-on training of monitoring agency site operators and EPA staff responsible for approving annual network monitoring plans, conducting TSA's, and overseeing quality assurance programs such as NPAP and PEP.
- In FY 2020, EPA anticipates funding air toxics monitoring at the existing National Air Toxics Trends Stations (NATTS).

Fine Particulate (PM_{2.5}) Monitoring Network

The PM_{2.5} monitoring network includes three well-established components: the network of filter-based FRM/FEMs used for comparison to the NAAQS; continuous mass monitors used primarily for public reporting of the Air Quality Index, but also for comparison to the NAAQS when continuous FEMs are employed; and speciation samplers operated as part of the Chemical Speciation Network (CSN) and IMPROVE program that are used to characterize the chemical composition that makes up fine particulate matter. The CSN includes the Speciation Trends Network and supplemental speciation sites. The primary objective of the IMPROVE program is to support the regional haze program. EPA is considering establishing a small network of daily filter-based speciation measurements in the most populated cities in the country where this information can support state data needs as well as for use in expediting health studies.

In planning a PM_{2.5} monitoring network for 2020, each agency may use information from their five-year assessment submitted to EPA in 2015. Agencies should identify the appropriate changes to their networks in the annual monitoring network plan due by July 1, 2019. EPA does envision that state/local agencies will continue to maintain a large robust network of PM_{2.5} monitors to support several monitoring objectives including protection of public health through the NAAQS.

Overall

In FY 2020 EPA is advocating continued operation of a robust monitoring network to continue support for the objectives stated above. For PM_{2.5} this means continued operation of high value FRM and speciation sites; PM_{2.5} continuous monitoring and associated data management systems for timely reporting of high-quality data; and precursor gas analyzers, data analyses and quality assurance activities that will support better understanding of particle formation. With several approved PM_{2.5} continuous FEMs available, monitoring agencies may replace filter-based FRMs at existing PM_{2.5} SLAMS sites with continuous FEMs, where there is an acceptable level of comparability between the continuous FEMs and collocated FRMs.

To provide a clearer understanding of the expected outcomes of the ambient air monitoring objectives, the following goals for the fine particulate monitoring network have been developed:

- Appropriate spatial characterization of PM_{2.5} NAAQS;
- Public Reporting of PM_{2.5} in the AQI;
- Characterization of PM_{2.5} chemical speciation data for long term trends, development and accountability of emission control programs, tracking of regional haze, and for use in health

studies;

- Operation of NCore trace-level CO, SO₂, NO/NO_y and PM (PM_{2.5} and PM_{10-2.5}) monitoring to support characterization of PM precursors;
- Characterization of near-road PM_{2.5} levels to evaluate exposure and determine gradients when compared with sites such as NCore;
- Assessment of PM_{2.5} data quality;
- Procurement and testing of PM_{2.5} filters.

Network Changes

For FY 2020, EPA is not expecting significant changes to the PM_{2.5} monitoring networks. Monitoring agencies will still want to consider what changes may be appropriate to their network in consideration of the five-year assessment required in 2020. In cases where the assessment shows problems with the currently deployed networks (e.g., the current network design is not being appropriately implemented or the monitoring agency will be evaluating new technologies) EPA encourages beginning to address those issues in this year's annual monitoring network plan.

Chemical speciation data from the Speciation Trends Network, IMPROVE, and the remaining supplemental speciation sites will continue to be utilized to track progress over time as the national and local control programs are implemented. There are some areas that are expected to be in residual nonattainment for PM_{2.5} even after the national control strategies are implemented or that may be designated nonattainment with the revised 24-hour PM_{2.5} NAAQS.

As in previous years, monitoring organizations will again be asked to determine whether they plan on implementing the PM_{2.5}-and Pb-Performance Evaluation Programs (PEPs) or allow for continued Federal implementation of these programs. Monitoring organizations must meet the minimum requirements of adequate and independent to implement the PEP for either pollutant. OAQPS has provided guidance to Regional offices on how to assess adequacy and independence of proposed audit programs. Information on this decision process will be provided in a memorandum from the EPA regional office to the monitoring organizations each year to make decisions that will affect the next calendar year audit activities. An FY 2020 guidance memorandum covering details on participation in the PM_{2.5} PEP was issued to the EPA Regional offices in July 2019².

EPA's Office of Research and Development has approved several PM_{2.5} continuous monitors as FEMs.³ These methods are available and their data can be compared to the NAAQS as well as for public reporting of the Air Quality Index (AQI). Monitoring agencies that are comfortable with an approved FEM could benefit by discontinuing operation of some or all (except for required FRMs for QA purposes and at NCore stations) of their FRMs, which tend to be costly to operate due to pre- and post- sampling laboratory analysis. These savings could be used to pay for some of the cost of the new monitors; however, capital acquisition funds would need to be provided up-front for the new monitors to be purchased. Therefore, EPA regions will work closely with state local and tribal agencies within the existing funding allocations on whether new monitors should be purchased. Technical direction on implementing and reporting data from continuous PM_{2.5} FEM and FRM monitors is available on EPA's AMTIC web site.⁴

² July 25, 2019 Memorandum from Chet Wayland to Air Directors <https://www3.epa.gov/ttn/amtic/npepqa.html> .

³ <https://www3.epa.gov/ttn/amtic/criteria.html>

⁴ <https://www3.epa.gov/ttn/amtic/datamang.html>

Monitoring agencies may benefit by maintaining an in-house inventory of portable low-cost PM sensors to support and supplement their existing FRM/FEM network on an as needed basis. These sensors generally have the ability to be deployed more readily than traditional FRMs and FEMs to support monitoring objectives such as evaluating their network design, source identification and characterization, and temporary monitoring during air pollution events such as wildfires. Decisions on which portable low-cost PM sensors to pursue should be informed by available independent testing such as the EPA Office of Research and Development's "Air Sensor Toolbox - Evaluation of Emerging Air Pollution Sensor Performance" (<https://www.epa.gov/air-sensor-toolbox/evaluation-emerging-air-pollution-sensor-performance>) or similar. As such monitoring agencies may utilize a portion of their existing PM section 103 grants to purchase portable low-cost PM sensors.

Gas monitoring at NCore with high sensitivity measurements of CO, SO₂, and NO/NO_y will continue as part of the multi-pollutant strategy to support characterization of PM and ozone precursors in FY 2020. This equipment should include appropriate calibration and auditing equipment to provide calibration points and audit points at lower concentrations ranges as required by the monitors detection limits. Replacing aging NCore monitors and equipment near the end of their useful lifetime is also an appropriate use of funds.

EPA and several monitoring agencies recently completed a pilot study of the continuous sunset carbon analyzer. For daily speciation, EPA is considering establishing a small network of daily filter-based speciation measurements in the most populated cities

Monitoring agencies may also find it useful to use a portion of their direct awards to implement additional meteorology equipment that supports forecasting of the AQI. Of specific interest may be recently commercialized, high quality, and lower priced instruments that characterize the vertical thermal structure of the boundary layer.

In FY 2020, PM_{2.5} monitoring grant funds allocated to states can be directed towards improvements in data management systems to support timely reporting of high quality data from PM continuous mass monitors, PM continuous speciation monitors, and precursor gas monitors. Of specific note is the need to transition PM_{2.5} continuous FEM monitors from analog to digital data systems so that important diagnostic data (e.g., sample flow rates, operational relative humidity or temperature...) is readily available for validation of data used in NAAQS decisions. Resources dedicated to this area will support processing, validating, and reporting of data that supports the PM monitoring program. Replacing aging PM samplers, monitors, laboratory and supporting equipment near the end of their useful lifetime is also an appropriate use of funds.

In 2020, EPA expects to host a comprehensive National Ambient Air Monitoring Conference. This conference was last held in August 2018 (<https://www.epa.gov/amtic/amtic-training-conferences-and-supporting-information>) and is planned to be held every other year. EPA and state, tribal, and local agencies both benefit from this conference. It is lauded as the premier opportunity for training, exchange of technical information, networking between monitoring agencies, EPA and air monitoring instrument vendors. Grant funds can be used to support SLT participation in this conference.

Distribution of Funds

The FY 2020 Ambient Monitoring appendix does not yet include a final allocation of PM_{2.5} monitoring funds among regional offices for use in direct awards based on a schedule for phasing out the use of section 103 authority. EPA will be consulting further with stakeholders on this topic once we have more detailed information on the funding for FY2020.

A final allocation will include tables that will provide more detailed information on the region-by-region allocation including cost estimates for associated program support. Cost estimates will assume that monitoring organizations will not reduce their networks (and the services/ materials needed to support them) in 2020 compared to previous years. The estimates should help inform how the program costs may change this coming year and are subject to change based on monitoring organizations' actual plans for the numbers of sites that will need these services in FY 2020.⁵ These numbers may decline if states choose not to maintain their existing PM_{2.5} monitoring networks.

For more information on PM_{2.5} monitoring, contact Tim Hanley at 919-541-4417 or via email at hanley.tim@epa.gov.

Monitoring Networks for Other NAAQS Pollutants

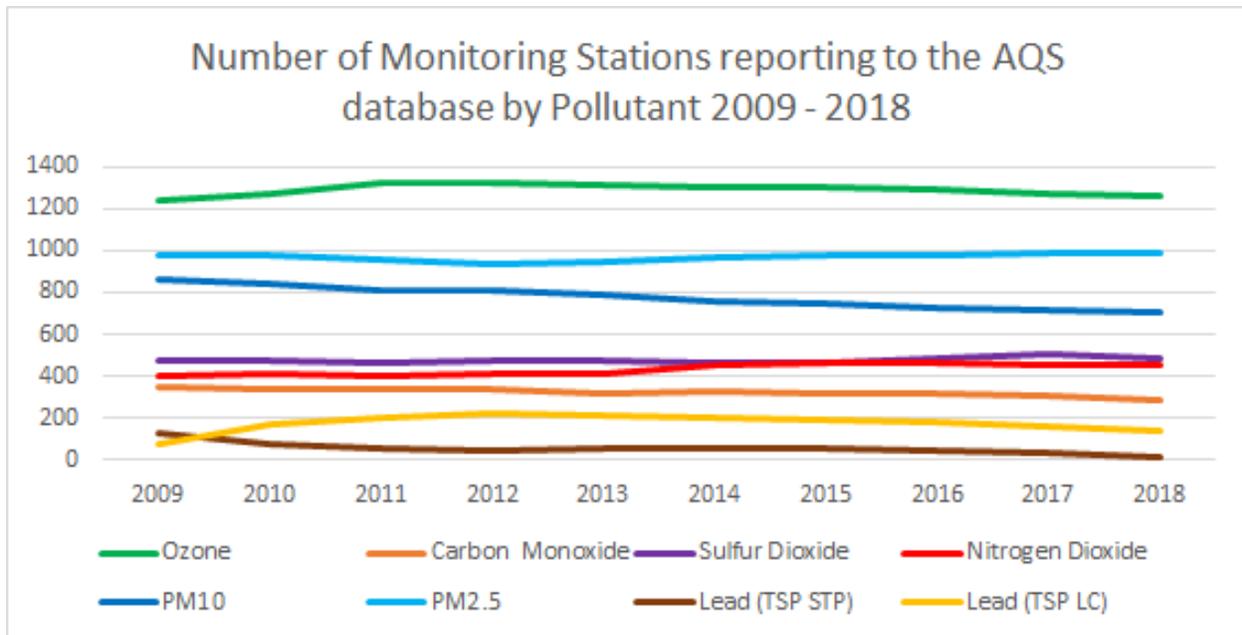
Support of Established NAAQS Networks

EPA will continue to work closely with affected air monitoring programs on deploying new or revised monitoring networks, where necessary. This section summarizes both the new monitoring that will need to be implemented during FY 2020 as well as new operations and maintenance for monitoring that needs to be operational during FY 2020 for NAAQS. These areas are traditionally funded using section 105 authority and include: ozone (O₃), lead (Pb), carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), PM₁₀, and PM_{10-2.5}.⁶ Additional information on each network is summarized below and a distribution of monitoring stations by pollutant is shown in Figure 2.

Figure 2

⁵ State and local agencies have costs associated with many activities within each monitoring program area. Not all types of operating expenses may be accounted for. Some of these costs are well understood such as capital infrastructure, salaries of staff and management working on the program, and costs of expendable items used in the program. Less obvious, but important to include in planning operation of a network, are costs of participating in conferences and workshops that support training and building further expertise in agencies operating the network.

⁶ On October 17, 2006 EPA revoked the annual PM₁₀ NAAQS everywhere. 71 FR 61144. The 24-hour PM₁₀ NAAQS was retained everywhere. No NAAQS was established for PM_{10-2.5}. On the same day, EPA also promulgated a Federal Reference Method for PM_{10-2.5} and certain monitoring requirements for PM_{10-2.5} as part of the new NCore network with an implementation date of January 1, 2011. 71 FR 61236.



FY 2020 STAG grant funds should be utilized for on-going ambient monitoring programs to support:

- National and local spatial characterization of ozone (O₃) relative to the NAAQS;
- National and local public reporting of O₃ in the AQI;
- Local public reporting of CO, SO₂, NO₂, and PM₁₀ in the AQI for areas where these pollutants are of concern;
- Operation and maintenance of NCore stations beyond the leveraged funds provided under the PM_{2.5} monitoring program;
- Operation and maintenance of Near Road stations established during Phases 1 and 2;
- Local characterization of the CO, SO₂, NO₂, and PM₁₀ NAAQS in the few areas with NAAQS non-attainment and maintenance issues;
- In addition to the monitoring provided for above, limited characterization of O₃, CO, SO₂, NO₂, Pb, and PM₁₀ data in all other areas for long term trends, support for long-term health and scientific assessments, and development and accountability of emission control programs as part of a multi-pollutant approach to air quality management;
- Assessment of O₃, CO, SO₂, NO₂, Pb, and PM₁₀ data quality;
- Analysis and interpretation of the O₃, PAMS, CO, SO₂, NO₂, Pb, and PM₁₀ monitoring data and development of data assessment tools;
- Independent and adequate assessment of these pollutants' data quality, which is required in 40 CFR Part 58. This assessment is based on audit data generated under the National Performance Evaluation Program (NPAP, PM_{2.5} PEP, Pb PEP). State and local agencies will choose either to obtain audit services through EPA-managed contracts funded with grant funds, or may operate equivalent state-managed programs using independent staff, equipment, and standards. In some regions, EPA staff may perform or assist in audits with no charge to STAG funds, depending on staff and travel funds availability.
- Verification of monitoring organizations gas standards through participation in the Ambient Air Protocol Gas Verification Program

- Verification of monitoring organization ozone transfer standards through the Standard Reference Photometer Program
- Reporting and certification of ambient air monitoring data required⁷ to be submitted to the Air Quality System (AQS) database.

Quality Assurance

As outlined in 2 CFR § 1500.11, all organizations conducting environmental programs funded by EPA are required to establish and implement a quality system. EPA requires a Quality Management Plan (QMP) to document how an organization structures its quality system and describe its quality policies and procedures, criteria for and areas of application, and roles, responsibilities, and authorities. The QMP also describes an organization's policies and procedures for implementing and assessing the effectiveness of the quality system. Specifications for Quality Management Plans for organizations that receive funding from EPA can be found in [EPA Requirements for Quality Management Plans \(QA/R-2\)](#). For more information and resources, see [Tools - Quality Management Plans](#).

EPA also requires that all environmental data used in decision making be supported by an approved Quality Assurance Project Plan (QAPP). The QAPP integrates all technical and quality aspects of a project, including planning, implementation, and assessment. The purpose of the QA Project Plan is to document planning results for environmental data operations and to provide a project-specific “blueprint” for obtaining the type and quality of environmental data needed for a specific decision or use. The QA Project Plan documents how quality assurance (QA) and quality control (QC) are applied to an environmental data operation to assure that the results obtained are of the type and quality needed and expected. Specifications for QA Project Plans prepared for activities conducted by or funded by EPA can be found in [EPA Requirements for QA Project Plans \(QA/R-5\)](#). For more information and resources, see [Tools - QA Project Plans](#).

Both requirements are defined in EPA Order 5360.1 A2 (EPA 2000), Policy and Program Requirements for the Mandatory Agency-wide Quality System, for EPA organizations. Non-EPA organizations funded by EPA are required to develop a QMP and QAPP through:

- 48 CFR 46, for contractors;
- 40 CFR 30, 31, and 35 for assistance agreement recipients; and
- other mechanisms, such as consent agreements in enforcement actions.

Ambient Air Performance Evaluation Programs

A performance evaluation is a type of audit where quantitative data is collected independently to evaluate the proficiency of an analyst, laboratory, or some or all the component parts of a data collection activity. EPA implements many performance evaluation programs on behalf of the monitoring agencies. Two federally implemented performance evaluation efforts include the National Performance Audit Program (NPAP) for the gaseous pollutants and the national Performance Evaluation Programs for PM_{2.5} and Pb.

⁷ §58.15 – Annual air monitoring data certification, and §58.16 – Data submittal and archiving requirements.

National Performance Audit Program (NPAP)

The NPAP is a cooperative effort among OAQPS, the EPA Regional offices, the monitoring organizations that operate EPA-funded air pollution monitors, and the other organizations that operate air monitors, for example at PSD sites. The implementation goals of the NPAP are to audit approximately 20 percent of the monitoring sites in the Ambient Air Quality Monitoring Network each year and to audit all monitoring sites within 6 years.

Although it is a goal to visit every monitoring site generating data that has significance to the air quality program within a 6-year period, among these sites there is an emphasis on auditing higher priority monitors (e.g., sites prioritized for health risk reasons) more frequently. In 2016, the requirement for adequate independent audits applies to sites with monitoring types not designated as “non-regulatory. The NPAP program uses a through-the-probe (TTP) audit system, where appropriate for the monitoring situation given a site’s physical layout. This system has the advantage of testing the performance of the entire monitoring sampling train including inlets and manifolds. It also provides station operators immediate feedback on the audit results.

Each year, monitoring organizations are asked whether they plan on implementing the NPAP or would prefer continued Federal implementation of this program using STAG funds. Any non-EPA audits arranged by monitoring organizations must meet the minimum requirements of being adequate and independent. Under this approach EPA reserves a portion of appropriated STAG funds to cover Federal implementation of the NPAP, based on the number of geographically separate monitoring sites (not the number of distinct monitors) within each EPA Region.

The initial reserve of FY 2020 funds is estimated to be approximately \$700,000. This is based on EPA’s current understanding of monitoring organizations’ intentions for how NPAP audits will be implemented in 2020. If the number of sites in a Region to be audited by EPA staff or EPA-managed contractors is reduced because more monitoring organizations plan on implementing a program of adequate and independent NPAP audits without reliance on EPA contractors, and those organizations are assessed by the EPA regions as capable to perform the NPAP by September 2019, a corresponding amount of STAG funds will be made available to the regional office for allocation as direct awards. The amount of funds held by EPA to perform the NPAP includes both a fixed cost associated with programs tools and equipment such as standard operating procedures and hardware and variable costs such as the operator time and travel costs associated with the number of audits conducted. The September 2019 cutoff date gives EPA time to make necessary contracting and other arrangements for the audits it will manage in 2020.

PM_{2.5} Performance Evaluation Program (PM_{2.5}-PEP)

The PM_{2.5}-PEP is a Regionally implemented audit program that collocates an independent PM_{2.5} FRM sampler at selected SLT PM_{2.5} monitoring sites in every primary quality assurance organization (PQAO)⁸.

⁸ Primary Quality Assurance Organizations are convenient groupings of State, local and/or Tribal monitoring agencies that operate under a common Quality Assurance Project Plan and aggregate their quality assurance data for assessing uncertainty of the routine network data that is generated in their geographic region. This construct was promulgated (2006) to allow very small monitoring organizations to reduce the number of QA measurements in

- PQAOs with ≤ 5 sites require 5 audits
- PQAOs with > 5 sites require 8 audits

Samples are acquired over the four meteorological seasons; however, extremely low seasonal concentrations in some areas of the country are forcing EPA to concentrate the required PEP audits into 3 or even 2 seasons. $PM_{2.5}$ -PEP samplers are sited within 1-2 meters of the target primary sampler at the host agency's monitoring site. Twenty-four-hour integrated filter samplers are acquired and sent to an independent gravimetric laboratory staffed by an EPA contractor. The results are loaded into AQS and used for calculating bias for data certifications

Lead Performance Evaluation Program (Pb-PEP)

The Pb PEP program is a mix of one or two $PM_{2.5}$ PEP-like audits with additional collocated sampling. The program requires the same number of audit samples as required for $PM_{2.5}$ meaning:

- PQAOs with ≤ 5 sites require 5 audits (1 PEP, 4 collocated)
- PQAOs with > 5 sites require 8 audits (2 PEP, 6 collocated)

The Pb-PEP audits consist of the implementation of a separate portable TSP Pb audit sampler that is placed within 2-4 meters of the routine Pb sampler. The sampler is operated by an independent auditor and the sample is shipped to an independent Pb-PEP laboratory for analysis. For the collocated samples, each quarter the monitoring organization field operator will take one additional collocated sample and send this sample to the independent Pb-PEP laboratory for analysis.

Like the $PM_{2.5}$ PEP and the NPAP, implementation decisions for Pb-PEP are made by the monitoring organizations on an annual basis. EPA issues through the EPA Regional oversight programs, a memo to the monitoring organizations to determine whether they plan to self-implement the Pb-PEP or utilize the federally implemented program using STAG funds. Any non-EPA audits arranged by monitoring organizations must meet the minimum requirements of being adequate and independent. The definition for adequate and independent for Pb-PEP is very similar to $PM_{2.5}$ PEP and the requirements can be found in the July, 2019 memo which can be found at: <http://www.epa.gov/ttn/amtic/npepqa.html>. The EPA regions will collect this information from the monitoring organizations and provide the information to OAQPS in time to redirect the appropriate STAG funds for the federally implemented programs.

Under this approach EPA reserves a portion of appropriated STAG funds to cover potential Federal implementation of the Pb-PEP, based on the number of monitoring sites (not the number of distinct monitors) within each PQAQ within a Region.

The amount of funds that would be reserved by EPA to perform the Pb-PEP includes both a

their network compared to the number required under pre-2006 regulations. EPA determined through an analysis of the historic QA data that the number for larger organizations could also be reduced to the frequencies stated herein, and still provide enough statistical power to assess precision and bias of the network.

fixed cost associated with programs tools and equipment such as standard operating procedures and hardware and consumables and variable costs such as the operator time and travel costs associated with the number of audits conducted. For FY 2020, EPA proposes to allocate \$300,000 to perform the Pb-PEP program.

Ambient Air Protocol Gas Verification Program (AA-PGVP)

The AA-PGVP program established gas metrology laboratories in two EPA Regions to verify the certified concentrations of EPA Protocol Gases used to calibrate ambient air quality monitors. An Implementation Plan, QA Project Plan and SOPs can be found at the AMTIC Website: <http://www.epa.gov/ttn/amtic/aapgvp.html>. Annual costs for the program are approximately \$50,000. In 2020, EPA proposes to reallocate \$5,000 from each Region's STAG allocation to implement the program.

Standard Reference Photometer Program

In ambient air monitoring applications, precise ozone concentrations called standards are required for the calibration of ozone analyzers. Gaseous ozone standards cannot be stored for any practical length of time due to the reactivity and instability of the gas. Therefore, ozone concentrations must be generated and "verified" on site. When the monitor to be calibrated is located at a remote monitoring site, it is necessary to use a transfer standard that is traceable to a more authoritative standard. Traceability is the "property of a measurement result whereby the result can be related to a stated reference through a documented unbroken chain of calibrations, each contributing to the measurement uncertainty" (ISO). Since the 1980's EPA has implemented the Standard Reference Photometer Program which provides a mechanism to establish the traceability of the nations ambient air monitoring standards to the International Bureau of Weights and Measurements and to the National Institute of Standards and Technology. Annual costs for program are approximately \$55,000. In 2020, EPA proposes to reallocate \$5,500 from each Region's STAG allocation to implement the program. These resources will support the verification of the two EPA Headquarters SRPs each year, the maintenance, repair and updating of the Regional and Headquarters SRPs, the shipping of the traveling SRP to each region and the subsequent re-verification of the SRP upon return to EPA.

Photochemical Assessment Monitoring System (PAMS)

Required by section 182(c)(1) of the Clean Air Act, the PAMS program collects ambient air measurements of ozone precursors for a target list of volatile organic compounds (VOCs), NO_x, NO_y, and ozone, as well as surface and upper air meteorological measurements.

Changes to the PAMS network were included in the NAAQS for Ozone finalized in October 2015. The revised network includes an updated 2-part network design requiring PAMS measurements to be collocated with existing NCore sites in areas with population of 1 million or more irrespective of Ozone NAAQS attainment status (this results in a stable network of approximately 43 required sites) and requires states with moderate or above ozone non-attainment areas and states in the Ozone Transport Region to develop and implement an Enhanced Monitoring Plan (EMP). The EMPs will provide support for flexible approaches for collecting data to better understand ozone issues in new and existing high ozone areas. In Spring

2019 EPA issued a proposed regulation delaying the implementation date for the revised PAMS network to June 2021 to allow state and local monitoring agencies necessary time to establish and install their required sites.

For FY 2020, funding to support the revised regional PAMS requirements will be included in the overall allocation of section 105 ozone grant funding. Historically, \$14 million has been allocated to support the PAMS program. Of this amount, EPA recommends \$7.1 million be allocated to the required PAMS sites at NCore (\$166,000 per site), with the remaining funds used to support EMPs and other monitoring objectives.

For FY 2020, EPA proposes to allocate \$500,000 for data analysis and quality assurance support for the PAMS program. EPA will further consult with state and local agencies on the use of the funds that would be prorated from each PAMS Region during FY 2020 for follow-up data assessment and new data analysis and quality assurance work.

For FY 2020, EPA is proposing to reserve \$2,000,000 of the PAMS funds for purchasing new capital equipment (e.g., gas chromatographs, upper air meteorology equipment, and “true” NO₂ monitors) for participating PAMS agencies. The EPA has been working closely with state and local air monitoring agencies and is aware that several agencies need assistance in purchasing new equipment due to the changes. All funds will be utilized as either direct award to a PAMS program or equipment will be purchased and provided.

FY 2020 PAMS Activities for State and Local Agencies

The allocated PAMS funds should be used to meet the following objectives:

(1) Continue System Implementation

- Continue work to procure, install, and become familiar with equipment necessary to make the required PAMS measurements at each required PAMS site. If the proposed extension is finalized as expected, new required PAMS monitoring sites are to begin operation by June 1, 2021.
- Reduce number of monitoring sites and monitoring at non-required sites based on new network design requirements.
- Operate operational PAMS sites (including existing and new sites), during the PAMS season June through August once equipment is properly installed.
- Develop and conduct area specific ozone precursor studies based on area specific needs as part of enhanced monitoring plans (EMPs).
- Continue making surface measurements of wind direction, wind speed, temperature, and humidity at all PAMS sites and additional measurements of solar radiation, ultraviolet radiation, pressure, and precipitation at one site in each PAMS area.
- For PAMS sites collocated with NCore multi-pollutant precursor gas sites, the meteorological monitoring data for ambient temperature, wind speed, wind direction, relative humidity, barometric pressure, and solar radiation are to be submitted to the AirNow program.

(2) Data Analysis

- Use PAMS data to develop and optimize control strategies in State Implementation

- Plan for ozone.
- Develop trends in ozone precursors, based on PAMS data that may serve to corroborate “rate-of-progress” and accountability demonstrations.
- Use PAMS data to corroborate ozone precursor emissions inventories and to address transport concerns.

(3) Data Reporting

- All PAMS data, including meteorological data, shall be submitted into AQS consistent with 40 CFR Part 58.
- All PAMS data shall be identified in EPA’s Air Quality System (AQS) as monitor type ‘PAMS’.
- Adequate procedures must be developed and followed to ensure proper validation of data prior to submission to AQS.

(4) Quality Assurance

- All sites must have and operate according to a Quality Assurance Project Plan (QAPP) developed by the monitoring agency and approved by an EPA regional office. The EPA has developed a model QAPP that may be used by monitoring agencies in developing their program specific QAPP.
- Ensure that adequate and independent audits are conducted for FRM and FEM SLAMS monitors at PAMS sites. These audits are discussed above under ‘National Performance Audit Program (NPAP).’
- Ensure the verification of PAMS calibration and retention time cylinders (funds will be held as associated program support based on the number of cylinders to be ordered via the national contract).

Air Toxics Monitoring

For FY2020, the President’s request includes resources for the support of national air toxics monitoring and characterization activities. Funds are awarded under §105 authority to continue support for ongoing air toxics monitoring activities initiated and conducted by state and local air quality agencies. In addition, CAA §103 funds are allocated for the support of continued operation and maintenance of the National Air Toxics Trends Stations (NATTS) Network. Funding for NATTS is again being requested using §103 authority which enables 100% federal funding. A request for proposals for community-scale air toxics projects is expected in early 2020 with grant awards being made in late FY2020. It is possible the FY20 funding for the community-scale air toxics monitoring could be redirected to higher-priority monitoring needs.

Included in the NATTS program total are four supplemental program components: quality assurance, methods and instrumentation, sample and equipment shipping and handling, and data analyses using all available ambient air quality data for toxics with special emphasis on observations from the NATTS and community-scale monitoring programs. These four components are associated program support for all grants that support air toxics monitoring or management activities. The desired program objectives are:

- Establish trends and evaluate the effectiveness of air toxics emissions reduction

strategies.

- Characterize local-scale ambient concentrations that result when air toxics originating from local sources concentrate in relatively small geographical areas, producing the greatest risks to human health.
- Provide data to support, evaluate, and improve emission inventories and air quality models used to develop emission control strategies, perform exposure assessments, and assess program effectiveness.
- Provide data to support scientific studies to better understand the relationship between ambient air toxics concentrations, human exposure, and health effects from these exposures.

In FY 2020, EPA proposes that approximately \$4.2 million in §103 STAG funds be used to fund operation of the National Air Toxics Trends Station (NATTS) Network during the period July 1, 2020 – June 30, 2021. About \$0.8 million is proposed to be used for quality assurance, data analysis, sample and equipment shipping and handling, and methods and instrumentation associated with the NATTS program.

The NATTS program component will continue to build on the established quality assurance and methods protocols. Laboratory and field staff will continue to work with EPA to ascertain the optimum methods for capturing and analyzing core pollutants associated with risk, develop performance based quality indicators to prove valid data results that will contribute to our understanding of risks, and stabilize the measurements for all NATTS sites so that comparisons across the nation can be made. The analytical community will continue to assess trends in air toxics concentration levels, relate those data to associated risk levels, and explore relationships between these ambient and risk levels to emission sources and changes in these levels to emission reduction efforts.

The community-scale projects are intended to better characterize air toxics problems at the local level, particularly for disproportionately affected areas, and to address those problems through local actions which complement national regulatory requirements. Such monitoring has the potential to define the scope of local air toxic problems, measure what reductions have been achieved through actions taken, and provide information needed for local policy development on reducing emissions from particular sources.

While aimed at meeting local data needs, EPA expects that data, results, and findings from all community-scale projects will also be valuable to other areas and to the national air toxics programs. Hence, a portion of the air toxics STAG funds are used to organize, summarize, and analyze the air toxics data from the community-scale studies and the NATTS sites (and data from other monitoring efforts) and to communicate the findings to all states involved in air toxics management.

Further information regarding prior year community-scale air toxics monitoring projects, including previous solicitations, successful project proposals and final reports, may be found at: <http://www.epa.gov/ttn/amtic/local.html>. For more information contact Doris Chen in OAQPS' Ambient Air Monitoring Group at 1-919-541-4957, or chen.xi@epa.gov.

IMPROVE Visibility Monitoring Network

The IMPROVE monitoring program supports the national goal of reducing haze to near natural levels in National Parks and wilderness areas. IMPROVE monitoring sites collect data on visibility, including optical, photographic, and speciated particulate data, though EPA resources are only used for particulate speciation monitoring. Data from IMPROVE sites are needed to meet the regional haze rule requirements of states for monitoring Class I area long-term trends through and beyond the 10-year SIP period (2008 to 2018), as well as being useful in the required periodic assessments of progress towards the national visibility goal. States also use data from the IMPROVE network to characterize upwind and background PM₁₀ and PM_{2.5} conditions and to assess source attribution for the PM_{2.5} and PM₁₀ NAAQS in nonattainment areas.

The IMPROVE network was started in 1987 as part of a federally-promulgated visibility plan and operated by the Department of the Interior (DOI) under the direction of a multi-agency federal/state steering committee. EPA expanded the original network in FY 1999 and FY 2000 from approximately 30 sites to 110 sites. The expanded network covers all the Clean Air Act Class I areas where visibility is important (except the Bering Sea area which is impractical to monitor). EPA provides state/local air quality management STAG funds to the DOI to help maintain the IMPROVE network because of the importance of IMPROVE data to development of SIPs for both regional visibility and PM NAAQS attainment. The DOI and the other participant organizations contribute more than \$3 million of their own funds or in-kind resources per year to support field operations and other monitoring at IMPROVE sites.

For reasons of convenience and/or consistency of data, many state, tribal, and local monitoring organizations have historically chosen to ask the IMPROVE program to provide field technical support and laboratory services for additional sampling stations at locations under their control, using the IMPROVE protocols for sampler design, sampler operation, and laboratory analysis. Data from these additional “state/local IMPROVE protocol sites” (currently about 50) are managed and made public along with the data from the 110 sites in protected class I areas. These additional sites are provided as associated program support. This arrangement will continue in FY 2020. In addition, some federal agencies provide full funding for additional IMPROVE protocol sites to meet various program or research objectives.

State, local, Tribal, and federal monitoring organizations may continue, discontinue, or add sites for the monitoring period which runs from April 1, 2020 through March 30, 2021. Once a monitoring organization has identified its source of funds for such sites, it may contact OAQPS (see below) to request monitoring support services and to begin arranging for the necessary funds transfer. Requests should be made as early in calendar year 2019 as possible, but no later than December 31, 2019. OAQPS is assuming that that monitoring organizations will retain all current state/local IMPROVE protocol sites in 2020.

The FED (Federal Land Managers Environmental Database) can be accessed at <http://views.cira.colostate.edu/fed>. The FED includes news, data and geolocations, as well as IMPROVE data; USFS weather data, ozone data, deposition, and CASTNET data.

For FY 2020, about \$2.7 million of PM_{2.5} monitoring funds appropriated under §103 authority and about \$1.3 million of state/local STAG funds appropriated under §105 authority is being proposed to support visibility monitoring at 110 IMPROVE sites and 2 sites collocated with

CASTNET. For more information on the IMPROVE program, contact Joann Rice (919-541-3372) or Laurie Trinca (919-541-0520) in OAQPS.

Planning Information for Ambient Monitoring in Indian countries

EPA respects each tribe's sovereign ability to identify its air quality goals and to make monitoring decisions it deems appropriate for its needs. This section addresses issues for consideration when conducting ambient air quality monitoring in the context of an EPA grant work plan. There are no Clean Air Act requirements for ambient monitoring in Indian country, so tribes have flexibility in customizing ambient monitoring to address the many different situations they face in terms of air quality and other environmental concerns. Whatever the local situation, the purpose of any ambient monitoring should be to inform the public living in Indian country about the quality of the air where that quality is in doubt, to assist the tribe in managing its air quality, to help the tribe make the case that other governments or private parties need to control emissions due to their effect on air quality in Indian country, and/or to help track the effects of control actions to verify that they have addressed a problem.

For some tribes ambient monitoring may or may not be a priority for funding compared to other air quality program or environmental program activities. If monitoring is conducted, a tribe's interests can be best served when the type of monitoring is appropriate for the specific situation. For a given tribe, some types of monitoring may be useful, while others may not be relevant. With limited resources available, strategic planning based on thoughtful priorities is needed. The EPA Regional offices will be the principal EPA partners with tribes in this case-by-case planning.

Over the last few years, EPA has emphasized that data from EPA-funded monitors in Indian country should be available to both EPA and the public through the AQS or other relevant national data system, once start-up issues are worked out and the data are reliable. EPA will continue to work with tribes on workable alternatives for data preparation and submission. In awarding grants to tribes with FY 2020 funds, Regional offices are expected to make sure that tribes will have a way to get data submitted, including QA-related data.

EPA has developed an Ambient Air Monitoring Strategy for State, Tribal and local Air Agencies that examines how the national ambient monitoring programs can be thoughtfully directed towards their multiple purposes (<http://www.epa.gov/ttn/amtic/monstratdoc.html>)⁹. For the most part, this strategy addresses situations and considerations relevant to states, rather than considerations relevant to tribes. In FY 2018, EPA updated the document titled: *Technical Guidance for the Development of Tribal Air Monitoring Programs* with the intent of providing tribes a better understanding of the ambient air monitoring process and to provide information on resources and tools to help build and sustain an air quality monitoring program. For 2020 and beyond, EPA may provide additional guidance specifically related to tribal air monitoring. Any new guidance will continue to provide flexibility for tribes and Regional offices to address the many different air quality situations in Indian country on a case-by-case prioritized basis.

⁹ The Ambient Air Monitoring Strategy was last updated in December of 2008.

Technical assistance in conducting ambient monitoring is provided to tribes through the Tribal Air Monitoring Support (TAMS) Center (<http://www7.nau.edu/itep/main/tams/>). TAMS staff can provide more specific information on any of the types of monitoring described here.

Additional information on various types of monitoring may be found on EPA's Ambient Monitoring Technology Information Center (AMTIC) at <http://www.epa.gov/amtic>. This website contains information on monitoring policy and guidance for both the criteria pollutants as well as air toxics pollutants.

Program Support for Monitoring (National/Regional Monitoring Procurement Contracts)

EPA makes procurement services available to state and local agencies, via national or regional contracts or interagency agreements, for a variety of support services and materials. These services can be conducted as either associated program support or as in-kind assistance. In providing associated program support, EPA works with regions, tribes, and state and local agencies in advance to identify needs on a national basis and targets funds for the support *before* determining the final Region-by-Region allocation of grant funds (i.e., pre-allotment). In contrast, in-kind assistance is agency-specific and the value of the service is included in the grant agreement of a state, tribe, or local agency *after* final agency-by-agency allotments are determined. This approach requires the recipient provide an appropriate amount of matching funds and meet other grant administrative obligations relative to the in-kind assistance. This occurs when contract support is requested by a grant recipient after its grant is awarded. Most support to monitoring programs is provided as associated program support, with the in-kind support being used to increase the level of support above planned levels if unexpected needs arise.

Traditionally, OAQPS works with regions to determine the level of funds that each state or tribe wants to allocate for the national procurement contracts. The services offered include assistance in monitoring site set-up and laboratory sample analysis for nonmethane organic compounds, urban air toxics, carbonyls, PAMS, and hazardous air pollutants; performance evaluation (PE) sample support for agencies participating in NATTS; filters for PM₁₀ and Pb in the form of total suspended particulates; PM_{2.5} filters; laboratory services for PM_{2.5} speciation and filter analysis for lead TSP; IMPROVE monitoring services; and independent audits under the NPAP and PEP programs. Audits are usually provided via contracts managed by Regional offices. Other services and materials are provided via contracts or interagency agreements managed by OAQPS.

Also available to monitoring organizations is the ability to obtain NADP technical support for speciated ambient mercury monitoring stations via EPA's interagency agreement with the U.S. Department of Agriculture, as associated program support or in-kind service. Organizations interested in this should contact David Schmeltz of EPA's Clean Air Markets Division (schmeltz.david@epa.gov).

In general, funding that would otherwise go to specific agencies in the form of a direct award at the regional office level can be identified in advance for associated program support. This

reduces the direct award level to that agency. If associated program support costs identified for a specific agency are not used or are less than anticipated, then these resources would ostensibly be returned to that agency's allotment. However, for some associated program support common to all recipients, there is a fixed EPA cost which does not depend on the number of individual recipients. An example would be the PEP or NPAP programs for auditing monitoring stations, which have fixed costs to pay contractors to maintain measurement standards and keep standard operating procedures current. There may also be variable costs for the contractor labor and supplies to make monitoring station visits. For audits, therefore, changes in the number of audits within a Region will result in a refund of only the variable portion of the cost of the station visits (i.e., the associated program support).

Another exception is that EPA considers the IMPROVE sites representing the Class I visibility protection areas to have benefits for all state air grant recipients because of interstate transport impacts and the responsibility of each state to protect visibility in every Class I area it impacts. Individual states (or regions) therefore cannot "unorder" these monitoring sites and receive back their operating costs. In contrast, the cost of supporting state/local IMPROVE protocol sites is "refundable" to a regional office.

Centralized Site Support and Laboratory Analytical Services - The EPA will continue coordinating centralized laboratory analytical services to support chemical speciation analysis, air toxics, organic compounds, and PAMS programs in FY 2020 with those regional, state, tribal, and local agencies wishing to participate. Examples of services available via the national contracts include those listed below.

Speciated and Total Nonmethane Organic Compound Program (SNMOC/NMOC): The SNMOC/NMOC program has been operating since 1984. The EPA continues to support a centralized program for assistance to state and local agencies in the collection of NMOC, SNMOC, selected toxic compounds, and carbonyl compounds. This program was initiated to provide data for use in development of control strategies for ozone. As part of the SNMOC/NMOC program, participating sites are provided with all necessary sampling equipment, which they may co-locate with NO_x monitors. The SNMOC/NMOC program consists of the following base components:

- Base Site support for sampling equipment preparation, installation and training, problem solving, and final reporting; and
- Canister sample analysis for 78 speciated NMOC or total NMOC.

Options include:

- Analysis for 60 toxic and polar volatile organic compounds (TO-15);
- Cartridge sample analysis for 14 carbonyl compounds (TO-11A); and
- Concurrent analysis for both toxic and polar compounds and speciated NMOC at a cost significantly reduced compared to performing the two analyses separately.

States collect the samples in canisters and/or cartridges and air freight them to Research Triangle Park, NC, for analysis. The samples are collected each week day from 6:00 to 9:00a.m. during

the summer (typically June 1-September 30). In general, 96 samples are collected at each site over the study period. However, additional samples may be purchased.

Urban Air Toxics Monitoring: To support emerging needs for information on levels of organic toxic species in ambient air, OAQPS initiated the Urban Air Toxics Monitoring Program (UATMP) in 1988. This program serves as an analytical/technical support program like the SNMOC/NMOC program. The major purpose of this program is to support state and local agency efforts to assess the nature and magnitude of various air toxics problems via collection of 24-hour integrated ambient air samples at six- or twelve-day sampling intervals, sample analysis in a central laboratory, data reporting to EPA's Air Quality System, and site-specific data analyses. This program continues to be highly successful, with excellent overall data capture and data quality that meets well-designed program goals. The UATMP consists of the following base components:

- Base site support for sampling equipment preparation, installation and training, problem solving, and final reporting;
- Canister sample analysis for 60 toxic and polar volatile organic compounds (TO-15); and
- Cartridge sample analysis for 14 carbonyl compounds (TO-11A).

Options include:

- Canister sample analysis for 78 speciated NMOC; and
- Concurrent analysis for both toxic and polar compounds and speciated NMOC at a cost that is significantly reduced compared to performing the two analyses separately.

Carbonyl Monitoring: Carbonyl sampling and analysis has been part of the monitoring support options that the Agency has provided since 1990. While carbonyl monitoring support can still be performed simultaneously with other program elements, the independent carbonyl option provides more flexibility for special studies and saturation monitoring programs. The Carbonyl Monitoring Program support consists of the following base components:

- Base site support for sampling equipment preparation, installation and training, problem solving, and final reporting; and
- Cartridge sample analysis for 14 carbonyl compounds (TO-11A).

PAMS and Toxics: PAMS support items will be available to include technical off-site and on-site support (initial equipment set-up, on-site technical assistance, consultation, problem solving, etc.); quality control (QC); and quality assurance (QA) program support (data validation, standards acquisition, and data management support). VOC canister, carbonyl compounds sample and concurrent toxics and speciated hydrocarbon analysis are also available.

The PAMS and toxics technical support program consists of the following base components:

- Technical site support;
- QA/QC support;

- Canister analysis support and retention time cylinder verification for PAMS compounds;
- Cartridge sample analysis for 14 carbonyl compounds (TO-11A); and
- Concurrent analysis for both toxic and polar compounds and speciated NMOC at a cost that is significantly reduced compared to performing the two analyses separately.

The PAMS automated analysis systems and/or multiple canister collection system purchase and installation are the responsibility of the participant. The amount of support an agency can order for the PAMS technical site support and QA/QC components of the program have been divided into smaller increments so that state, and local agencies can order the exact amount of support they require.

Other Hazardous Air Pollutant Analysis: The national monitoring support programs have been expanded to provide for the measurement of additional HAPs to support the effective implementation of the CAA and address the needs of other special studies. Analytical services support is provided for samples containing specific HAPs, which are a subset of the 187 compounds listed in the CAA. Participants are responsible for providing all necessary sampling equipment. The analysis among categories is based upon the specific needs of the state or local agency. This support also will assist the states in implementing the new national ambient monitoring network. Some of the available options under this category include:

- Canister sample analysis for 60 toxic and polar volatile organic compounds (TO-15);
- Cartridge sample analysis for 14 carbonyl compounds (TO-11A);
- Metals (IO-3.5), hexavalent chromium (EPA Method), semivolatiles (EPA Method 8270C), PAHs (TO-13A), etc.

Air Toxics Performance Evaluation Sample Support: Agencies that are participating in the NATTS can receive PE samples on an annual basis. These can include VOCs, Carbonyls, SVOCs and metals on quartz filters. The PE samples shall be generated and analyzed by the national contractor and sent as “blind” samples to the participating agency. If an agency uses the national contractor for analysis, the agency will not be able to use the contractor for PE sample support.

Chemical Speciation Analysis of PM Filters: Services available include:

- Prepared filter media and denuders for sampling and analytical support for the analysis of appropriate sampler filters for gravimetric mass, elements, organic and elemental carbon, and anions and cations.
- Sample filter analysis for optical absorption using transmissometry.
- Preparation and refurbishment of denuder devices, filter pretreatment and the shipment and receipt of filters and denuders to and from the field.
- Providing the associated QA, QC, data validation, computation, and reporting of results into Air Quality System (AQS).
- Storage of filters and extract solutions that contain filters from the CSN.

Lead TSP Filter Analysis: A national contract is available for the analysis of lead TSP (and PM₁₀). Analysis will be done by Inductively-coupled Plasma Mass Spectrometry (ICP-MS)

following EPA Federal Equivalent Method EQL-0512-201 or EQL-0512-202 or by X-ray Fluorescence (XRF) analysis of PM₁₀ filters following EPA Appendix Q to 40 CFR Part 50.

For more information on Centralized Site Support and Laboratory Analytical Services, contact Laurie Trinca at 919-541-0520 (trinca.laurie@epa.gov) or Jeff Yane at 919-541-2962 (yane.jeff@epa.gov).

Lead Analysis Audit Development

Lead analysis audits (40 CFR Part 58 Appendix A Section 3.3.4.2) are required to be developed by laboratories that analyze lead for regulatory purposes. Monitoring organizations have the option to develop these quality control samples themselves or opt into a national procurement for the development of the audit filters. Each year OAQPS will solicit monitoring organizations to determine whether they would like these audits developed for their organization. If they decide they would like the audits, approximately \$1500 per set will be allocated from the monitoring organizations STAG resources for development, referee analysis and shipping of these filters to the monitoring organization.

For more information on the Lead Analysis Audits contact Dennis Crumpler at 919-541-0871 (crumpler.dennis@epa.gov).

Particulate Matter Filters - OAQPS has historically purchased particulate matter filters (for PM₁₀ monitoring, total suspended particulate sampling used for Pb and other metals monitoring and PM_{2.5} monitoring) through national contracts and distributed these to state and local agencies across the nation. The economies of scale from this type of centralized purchasing, centralized acceptance testing, and distribution of filters has produced lower costs than if state and local agencies each purchased these filters through their individual agencies. State and local agencies are responsible for providing information to the regions each year on the numbers and types of filters required prior to shipment. For PM₁₀ filters, monitoring agencies will need to specify whether the filters requested are to be used to support high-volume samplers (i.e., 8 in X 10 in quartz filters) or low-volume samplers (i.e., 46.2 mm Teflon filters). For information on filter purchases, contact Solomon Ricks at 919-541-5242 (ricks.solomon@epa.gov) or Laurie Trinca at 919-541-0520 (trinca.laurie@epa.gov).