

## AMBIENT AIR MONITORING

EPA and its partners at state, tribal, and local 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 the NAAQS.

The EPA Monitoring Group 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 <http://www.epa.gov/ttn/amtic/>.

EPA works with state, tribal, and local 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 Strategy<sup>1</sup> (monitoring strategy) as well as through NAAQS reviews that include both public and scientific input.

While recent NAAQS reviews are resulting 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 a network assessment every five years (next due date is July 2015) to determine, at a minimum, if networks meet the monitoring objectives defined in regulation, whether new sites are needed, whether existing sites are no longer needed and can be terminated, and whether new technologies are appropriate for incorporation into the ambient air monitoring network. Copies of the Network Assessments are available on the web at: <http://www.epa.gov/ttn/amtic/plans.html>.

As part of EPA's commitment to review each NAAQS within a five-year period, EPA also reviews the associated ambient air monitoring network requirements and has revised the NAAQS associated monitoring requirements for lead (Pb), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO), and particulate matter (PM<sub>2.5</sub>). Changes to the Ozone (O<sub>3</sub>) network were proposed on November 25, 2014. 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 work closely with tribal air monitoring agencies

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<sup>1</sup> Available at <http://www.epa.gov/ttn/amtic/monstratdoc.html>

through participation in the Tribal Air Monitoring Support (TAMS) Center. In addition, EPA has numerous consultative meetings with the Ambient Air Methods and Monitoring Subcommittee (AAMMS) of the Clean Air Scientific Advisory Committee (CASAC) to obtain independent scientific reviews of proposed monitoring changes.

Table 1 has been provided to: assist agencies in understanding the status of each NAAQS review; identify important dates that affect monitoring implementation; and find 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	Current review ongoing; proposal expected in Winter 2014	<ul style="list-style-type: none"> <li>Proposed: Lead Monitoring at NCore no longer required.</li> </ul>		<a href="http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html">http://www.epa.gov/ttn/naaqs/standards/pb/s_pb_index.html</a>
NO <sub>2</sub> – Primary NAAQS and Monitoring	Current review ongoing; proposal expected in Fall 2016	<ul style="list-style-type: none"> <li>Near road network - Phase 3 (monitoring in CBSA's with population between 500k-1.0 mil)</li> </ul>	Phase 2: January 1, 2015 Phase 3: January 1, 2017	<a href="http://www.epa.gov/ttn/naaqs/standards/nox/s_nox_index.html">http://www.epa.gov/ttn/naaqs/standards/nox/s_nox_index.html</a>
SO <sub>2</sub> – Primary NAAQS and Monitoring	Data Requirements Final Rule – expected Summer 2015	<ul style="list-style-type: none"> <li>States will be asked to choose between monitoring and/or modeling for meeting air quality data requirements.</li> </ul>	January 1, 2017	<a href="http://www.epa.gov/ttn/naaqs/standards/so2/s_so2_index.html">http://www.epa.gov/ttn/naaqs/standards/so2/s_so2_index.html</a>
Ozone - Primary and Secondary NAAQS	Proposal signed Nov 25, 2014; Final rule required no later than October 1, 2015	<ul style="list-style-type: none"> <li>Proposed changes to ozone monitoring season for 33 states</li> <li>Proposed changes to PAMS network</li> <li>Proposed addition of a new FRM and revisions to the FEM testing requirements</li> </ul>		<a href="http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html">http://www.epa.gov/ttn/naaqs/standards/ozone/s_o3_index.html</a>
SO <sub>2</sub> and NO <sub>2</sub> – Secondary NAAQS and Monitoring	Final Rule signed March 20, 2012.	Secondary NAAQS retained.		<a href="http://www.epa.gov/ttn/naaqs/standards/no2so2sec/index.html">http://www.epa.gov/ttn/naaqs/standards/no2so2sec/index.html</a>
CO – Primary and Secondary NAAQS and Monitoring		<ul style="list-style-type: none"> <li>Phased approach will be used to implement the required near-road CO monitoring. 1 monitor is required in CBSAs of 2.5 million or more persons by January 1, 2015. 1 monitor is required in CBSAs of 1 million or more persons (and less than 2.5 million persons) by January 1, 2017. These near-road CO monitors are to be collocated with near-road NO<sub>2</sub> monitors.</li> </ul>		<a href="http://www.epa.gov/ttn/naaqs/standards/co/s_co_index.html">http://www.epa.gov/ttn/naaqs/standards/co/s_co_index.html</a>
PM – Primary and Secondary NAAQS and Monitoring	Final rule signed December 14, 2012.	<ul style="list-style-type: none"> <li>PM<sub>2.5</sub> near-road monitoring will be required in CBSAs of 1 million or more persons. Monitors are to be collocated with near-road NO<sub>2</sub> and CO monitors. Monitoring will be phased in between Jan 2015 and Jan 2017.</li> </ul>		<a href="http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_index.html">http://www.epa.gov/ttn/naaqs/standards/pm/s_pm_index.html</a>

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, IMPROVE, and PAMS. The document provides information on directions and priorities for ambient monitoring that attempt to take into account the emerging needs identified in various NAAQS reviews while adhering to the themes identified in the Ambient Air Monitoring Strategy for state, tribal, and local, air agencies. These include an emphasis on multi-pollutant monitoring and favoring continuous over integrated PM samplers.

### **Highlights in Monitoring Funding for FY 2016**

Beginning in FY 2016, and through FY 2019, EPA proposes to transition the funding authority for PM<sub>2.5</sub> 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 2016 follow:

- In developing the PM<sub>2.5</sub> monitoring allocation for FY 2016, 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 2015, all PM<sub>2.5</sub> monitoring grants are expected to end on March 31, 2016. Therefore, funding for FY 2016 will be for a 12 month period beginning April 1, 2016.
- Funding for the portion of the IMPROVE program that addresses progress in improving visibility in Class I areas will increase slightly to account for elevated contract costs. 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<sub>2.5</sub> monitoring is expected to be approximately \$1.5 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 \$350,000. 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.

- The level of funds for the nationally administered, independent National Performance Audit Program (NPAP) is expected to be approximately \$550,000. This level assumes no significant increase in monitoring sites for FY 2016. Similar to 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.
- For FY 2016, EPA plans to reserve 7% of the PAMS funds (\$1.0M) for the expressed purpose of purchasing new capital equipment (e.g., gas chromatographs and upper air meteorology equipment) for participating agencies, as a result of the PAMS re-engineering final recommendations. All funds will be utilized as either direct award to a PAMS program or equipment will be purchased and provided.
- EPA again proposes to allocate \$150,000 for data analysis. 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 2016 for follow-up data assessment and new data analysis work.
- In FY 2016, EPA plans to utilize \$75,000 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 will utilize \$35,000 in FYs 16 and 17 for the purchase of a new SRP.
- In FY 2016, EPA plans 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 AMP255 and include additional QA information that will be provided through the new QA transaction that was developed in 2012. 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.
- In FY 2016, EPA plans 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 several EPA Regions to verify the certified concentrations of EPA Protocol Gases used to calibrate ambient air quality monitors.
- In FY 2016, EPA plans to utilize \$35,000 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 networks monitoring plans, conducting TSA's, and overseeing quality assurance programs such as NPAP and PEP.

- In FY 2016, EPA anticipates funding air toxics monitoring at the existing 27 National Air Toxics Trends Stations (NATTS).
- For the 2016 community-scale air toxics funds, EPA plans to continue support for monitoring projects involving “hot-spots,” such as locations where communities that may be impacted from a local source or sources with elevated levels of air toxics emissions. EPA will emphasize monitoring in disproportionately affected communities. It is possible these funds could be re-directed to higher-priority monitoring needs in FY2016.

### **Fine Particulate (PM<sub>2.5</sub>) Monitoring Network**

The PM<sub>2.5</sub> 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; and speciation samplers operated as part of the Chemical Speciation Network (CSN) that are used to characterize the chemical composition that makes up fine particulate matter. The latter include the Speciation Trends Network, supplemental speciation sites, and the IMPROVE program whose primary objective is to support the regional haze program. A network assessment of the CSN was performed in 2013-2014 and final decisions were shared in October 2014. As a result of the final decisions, there were changes to the network in 2015 including the defunding of 42 supplemental speciation sites effective in January 2015. Other components of the PM<sub>2.5</sub> monitoring program include a small network of continuous speciation monitors 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 and expanding the network of PM<sub>2.5</sub> continuous monitors with recently approved FEMs that can be used for both NAAQS and AQI reporting.

In planning a PM<sub>2.5</sub> monitoring network for 2016, 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, 2015. EPA does envision that state/local agencies will continue to maintain a large robust network of PM<sub>2.5</sub> monitors to support several monitoring objectives including protection of public health through the NAAQS.

### **Overall Direction**

In FY 2016 EPA is advocating continued operation of a robust monitoring network to continue support for the objectives stated above. For PM<sub>2.5</sub> this means continued operation of high value FRM and speciation sites; PM<sub>2.5</sub> 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<sub>2.5</sub> continuous FEMs available, monitoring agencies may replace existing PM<sub>2.5</sub> SLAMS sites operating filter-based FRMs with continuous FEMs, where there is an acceptable level of comparability with the continuous FEMs compared to 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<sub>2.5</sub> NAAQS;
- Public Reporting of PM<sub>2.5</sub> in the AQI;
- Characterization of PM<sub>2.5</sub> 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, SO<sub>2</sub>, NO/NO<sub>y</sub> and PM (PM<sub>2.5</sub> and PM<sub>10-2.5</sub>) monitoring to support characterization of PM precursors;
- Characterization of near-road PM<sub>2.5</sub> levels to evaluate exposure and determine gradients when compared with sites such as NCore;
- Assessment of PM<sub>2.5</sub> data quality;
- Procurement and testing of PM<sub>2.5</sub> filters.

### Network Changes

For FY 2016, EPA is not expecting significant changes to the PM<sub>2.5</sub> monitoring networks. EPA did issue a final rulemaking on the PM NAAQS in December 2012, which does include near-roadway PM<sub>2.5</sub> monitoring requirements. Monitoring will be phased in between January 2015 and January 2017. See table 1 above. Monitoring agencies will still want to consider what changes may be appropriate to their network in consideration of both the five-year assessment completed in 2015 and final decisions from the PM NAAQS review. In cases where the five-year assessment shows problems with the currently deployed networks (e.g., the current network design is not being appropriately implemented) EPA encourages addressing that issue 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<sub>2.5</sub> even after the national control strategies are implemented or that may be designated nonattainment with the revised 24-hour PM<sub>2.5</sub> NAAQS. EPA has shared the results of the CSN assessment and changes to the network were effective in January 2015. Forty-two supplemental speciation stations in areas that are not expected to be in violation of the PM<sub>2.5</sub> NAAQS were defunded, unless the state chose to provide funding to cover the lab analysis.

As in 2015, monitoring organizations will again be asked to determine whether they plan on implementing the PM<sub>2.5</sub> Performance Evaluation Program (PEP) or allow for continued Federal implementation of this program. Monitoring organizations must meet the minimum requirements of adequate and independent in order to implement the PEP. OAQPS has provided guidance to Regional offices on how to assess adequacy and independence of proposed audit programs.<sup>2</sup> Information on this decision process will be provided in a memorandum from the EPA regional office to the monitoring organizations each year in order to make decisions that

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<sup>2</sup> January 8, 2007 memorandum from Phil Lorang (Ambient Air Monitoring Group Leader) to Regional office ambient monitoring managers.

will affect the next calendar year audit activities. OAQPS anticipates that a FY 2016 guidance memorandum covering details on participation in the PM<sub>2.5</sub> PEP will be issued to the EPA Regional offices in June 2015.

EPA's Office of Research and Development has approved several PM<sub>2.5</sub> continuous monitors as FEMs.<sup>3</sup> These methods are now 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 (with the exception of 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 by EPA. Therefore, EPA regions will work closely with state and local agencies within the existing funding allocations on whether new monitors should be purchased. Technical direction on implementing and reporting data from continuous PM<sub>2.5</sub> FEM and FRM monitors is available on EPA's AMTIC web site.<sup>4</sup>

Gas monitoring at NCore with high sensitivity measurements of CO, SO<sub>2</sub>, and NO/NO<sub>y</sub> will continue as part of the multi-pollutant strategy to support characterization of PM and ozone precursors in FY 2016.

For daily speciation, EPA is working with a small number of monitoring agencies to pilot daily characterization of fine particle chemical speciation using a combination of continuous and filter-based technologies. For FY 2016, most of this effort will focus on operation of semi-continuous Sunset carbon monitors.

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.

Also in FY 2016, PM<sub>2.5</sub> 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<sub>2.5</sub> 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.

In 2016, EPA expects to host a comprehensive National Ambient Air Monitoring Conference. This conference was last held in August 2014 (<http://www.epa.gov/ttn/amtic/2014present.html>) and is planned to be held every other year. EPA and state, tribal, and local agencies will benefit by strong participation in this conference to manage and enhance the ambient air monitoring program. Grant funds can be used to support participation in this conference.

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<sup>3</sup> <http://www.epa.gov/ttn/amtic/criteria.html>

<sup>4</sup> <http://www.epa.gov/ttn/amtic/datamang.html>



## Distribution of Funds

The FY 2016 Ambient Monitoring appendix does not yet include a final allocation of PM<sub>2.5</sub> 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 FY2016.

—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 be based on an assumption that monitoring organizations will not reduce their networks (and the services/ materials needed to support them) in 2016 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 2016.<sup>5</sup> These numbers may decline if states choose not to maintain their existing PM<sub>2.5</sub> monitoring networks.

For more information on PM<sub>2.5</sub> monitoring, contact Tim Hanley at 919-541-4417 or via email at [hanley.tim@epa.gov](mailto:hanley.tim@epa.gov).

## Monitoring Networks for Other NAAQS Pollutants

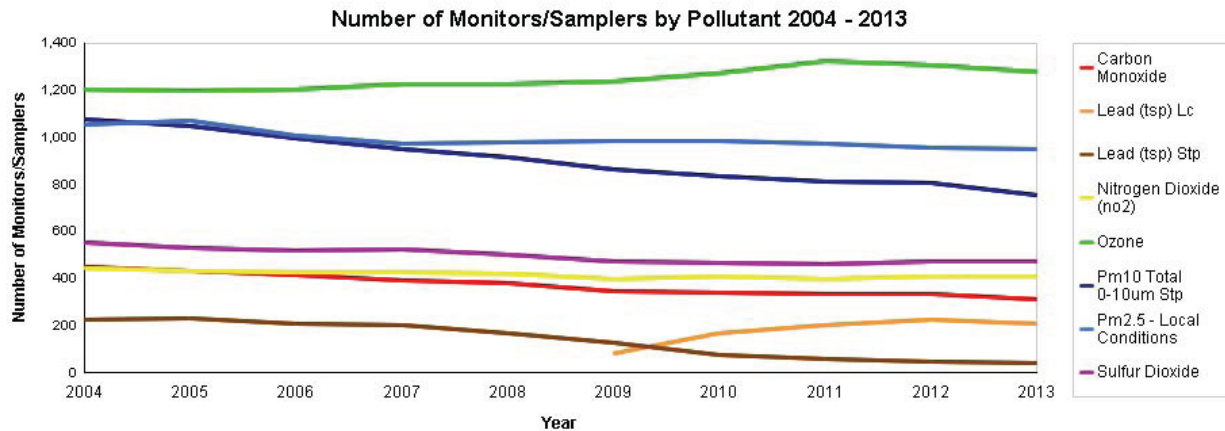
### Support of Established NAAQS Networks

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 2016 as well as new operations and maintenance for monitoring that needs to be operational during FY 2016 for NAAQS. These areas are traditionally funded using section 105 authority and include: ozone (O<sub>3</sub>), lead (Pb), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), PM<sub>10</sub>, and PM<sub>10-2.5</sub>.<sup>6</sup> Additional information on each network is summarized below and a distribution of monitoring stations by pollutant is shown in Figure 2.

EPA proposed changes to the ozone NAAQS (December 2014) by proposing to revise the 8-hour standard to a level between 0.065 ppm to 0.070 ppm.

<sup>5</sup> 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 fairly 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.

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

**Figure 2**

EPA proposed to revoke the requirement to conduct non-source lead monitoring at NCore sites in CBSAs with a population of 500,000 people as part of the proposed Revisions to Ambient Air Monitoring Quality Assurance and Other Requirements rulemaking that was published on September 11, 2014. This rule is expected to be finalized in 2015. EPA is currently conducting its five-year review of the Lead NAAQS and a proposal to retain the existing NAAQS was signed on December 19, 2014 with a final rule expected to be promulgated in late 2015. No other monitoring changes are expected.

EPA strengthened the nitrogen dioxide (NO<sub>2</sub>) NAAQS with the addition of a one-hour standard at a level of 100 parts per billion to capture peaks associated with short-term exposures to this pollutant. Due to current economic difficulties facing the States, EPA, in coordination with NACAA, has developed a phased approach for funding the near-road component of the NO<sub>2</sub> network. The primary objective of the plan is to establish a base of monitors to characterize NO<sub>2</sub> concentrations in near-road environments across the country so that ambient concentrations relative to the revised 1-hour NAAQS can be assessed. A secondary objective is to establish a near-road monitoring network that can support future multi-pollutant monitoring efforts, as needed. Phase one funding was provided under section 103 authority in FYs 2011 and 2012 for the establishment of sites for CBSA's of one million persons or more. Phase two funding for the establishment of a second site in CBSA's of over 2.5 million persons or more (or those CBSAs over 500,000 persons with one or more traffic segments with 250,000 or greater Annual Average Daily Traffic counts) was provided in FY 2013 and FY2014, also under section 103 authority. The phase one sites became operational on January 1, 2014, and the phase two sites became operational on January 1, 2015. EPA will work closely with States not covered by the initial phases to plan for later funding of the remainder of the required sites, based on the FY16 budget and/or alternative sources such as local funds. States will be required to operate CO and PM<sub>2.5</sub> monitors at some of these near-road sites, following a staggered deployment schedule with deadlines of January 1, 2015 for those CBSAs with populations of 2.5M or greater or highly trafficked road segments as described above, and by January 1, 2017 for CBSAs with population

between 1M and 2.5M. Continued operations and maintenance of these near-road sites is to be funded from the section 105 state and local air quality management grants.

EPA strengthened the sulfur dioxide (SO<sub>2</sub>) NAAQS by establishing a new 1-hour standard at a level of 75 parts per billion. Ambient air monitoring is required in CBSAs based on a population-weighted emissions index for the area. Technical assistance documents for states implementing the health-based, sulfur dioxide (SO<sub>2</sub>) standard are available at <http://www.epa.gov/airquality/sulfurdioxide/implement.html>. These documents provide technical advice on the use of modeling and monitoring to determine if an area meets the 2010 SO<sub>2</sub> air quality standard. EPA proposed a rule in 2014 directing state, tribal, and local air quality management agencies to provide data to characterize current air quality in areas with large sources of sulfur dioxide (SO<sub>2</sub>) emissions for use in the NAAQS designations process. That rulemaking is expected to go final in summer 2015. Agencies are anticipated to have the option to choose the use of air quality modeling and/or ambient air monitoring to characterize their air quality data.

FY 2016 STAG grant funds should be utilized for on-going ambient monitoring programs to support:

- National and local spatial characterization of ozone (O<sub>3</sub>) relative to the NAAQS;
- National and local public reporting of O<sub>3</sub> in the AQI;
- Local public reporting of CO, SO<sub>2</sub>, NO<sub>2</sub>, and PM<sub>10</sub> 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<sub>2.5</sub> monitoring program;
- Operation and maintenance of Near Road stations established during Phases 1 and 2;
- Local characterization of the CO, SO<sub>2</sub>, NO<sub>2</sub>, and PM<sub>10</sub> NAAQS in the few areas with NAAQS non-attainment and maintenance issues;
- In addition to the monitoring provided for above, limited characterization of O<sub>3</sub>, CO, SO<sub>2</sub>, NO<sub>2</sub>, Pb, and PM<sub>10</sub> 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 O<sub>3</sub>, CO, SO<sub>2</sub>, NO<sub>2</sub>, Pb, and PM<sub>10</sub> data quality;
- Analysis and interpretation of the O<sub>3</sub>, PAMS, CO, SO<sub>2</sub>, NO<sub>2</sub>, Pb, and PM<sub>10</sub> 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<sub>2.5</sub> PEP, Pb PEP). State and local agencies will choose either to obtain audit services through EPA-managed contracts funded with STAG 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 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 required<sup>7</sup> to be submitted to the Air Quality System (AQS) database.

### **Ambient Air Performance Evaluation Programs**

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

### **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.

Although it is a goal to visit every monitoring site generating data that has significance to the air quality program within a 5-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, and 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 2016 funds is estimated to be approximately \$550,000. This is based on EPA’s current understanding of monitoring organizations’ intentions for how NPAP audits will be implemented in 2015. 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 2015, 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

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

associated with the number of audits conducted. The September 2015 cutoff date gives EPA time to make necessary contracting and other arrangements for the audits it will manage in 2016.

### **Lead Performance Evaluation Program (Pb-PEP)**

The Pb PEP program is a mix of one or two PM<sub>2.5</sub> PEP like audits with additional collocated sampling. The program requires the same number of audit samples as required for PM<sub>2.5</sub> meaning:

- PQAOs with  $\leq 5$  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.

Similar to the PM<sub>2.5</sub> PEP and the NPAP, implementation decisions for Pb-PEP are made by the monitoring organizations on an annual basis. EPA will draft 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<sub>2.5</sub> PEP and the requirements were developed in the July 26, 2013 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 program.

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 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 2016, EPA proposes to allocate \$350,000 to perform the Pb-PEP program.

### **Ambient Air Protocol Gas Verification Program (AA-PGVP)**

\_\_\_ The AA-PGVP program establishes gas metrology laboratories in several 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/aapgv.html>. Annual costs for the program are approximately \$50,000. In 2016, 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 \$40,000. In 2016, EPA proposes to reallocate \$4,000 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. EPA will also fund the purchase of a new SRP, withholding \$35,000 in FY16 and FY17.

## Photochemical Assessment Monitoring System (PAMS)

Required by section 182(c)(1) of the Clean Air Act, the PAMS program collects ambient air measurements in areas classified as serious, severe, or extreme ozone nonattainment. Each PAMS area collects data for a target list of volatile organic compounds (VOCs), NO<sub>x</sub>, NO<sub>y</sub>, and ozone, as well as surface and upper air meteorological measurements.

In 2012, an evaluation of the PAMS program was initiated and in 2013 a work assignment was initiated to evaluate various auto gas-chromatographs to be used in the network. Laboratory testing of the auto-gas-chromatographs was conducted during 2014 and a field testing program is planned for the 2015 ozone season in several locations; results will be shared upon completion. Proposed changes to the PAMS network were included in the proposed NAAQS for Ozone published in December 2014. Final changes (if any) will be included in the final NAAQS rule for Ozone that will be published no later than October 1, 2015.

Consistent with recent years and applicable until program changes are recommended and adopted, FY 2016 STAG funds will support four types of PAMS activities: monitoring system implementation and operation including replacement of aging equipment, data reporting to AQS, data analysis, and quality assurance. For FY 2016, about \$14 million is targeted for operation of the PAMS network. Of this, \$10.5 million has nominally been allocated for program implementation and operation, data reporting, and QA. Three and one-half million dollars has been nominally allocated for data analysis by state and local agencies. However, Regional offices have had the flexibility to allow states to adjust this split and even to use a portion of their designated PAMS funds for other purposes. These PAMS funds are included in the ozone category of the national region-by-region allocation.

EPA again proposes to allocate \$150,000 for data analysis. 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 2016 for follow-up data assessment and new data analysis work.

For FY 2016, EPA is proposing to reserve \$1,000,000 of the PAMS funds for the purpose of purchasing new capital equipment (e.g., gas chromatographs, upper air meteorology equipment, and “true” NO2 monitors) for participating PAMS agencies. If the proposed PAMS changes are finalized, 2016 would be a transition year for the national network. Many of the existing PAMS sites would not be required to continue operations, while any newly required PAMS sites would not need to comply with the revised PAMS requirements until 2017. The EPA anticipates that many agencies will need assistance in purchasing new equipment due to the proposed changes. All funds will be utilized as either direct award to a PAMS program or equipment will be purchased and provided.

Notwithstanding a re-allocation, and in light of the expected changes in PAMS requirements, Regional offices should re-examine the current split between data analysis and implementation and operations with their recipients.

**Proposed Distribution of FY 2016 Funds for PAMS Support**

Region	Number of PAMS Areas	Local Data Analysis	Implementation and Operation	Total with proposed \$150K set aside for national data analysis and \$1.0M set aside for equipment replacement
1	5	\$726,297	\$2,125,815	\$2,648,426
2	1 <sup>1</sup>	\$232,415	\$571,060	\$746,094
3	3	\$348,623	\$1,087,907	\$1,333,939
4	1	\$145,259	\$366,848	\$475,534
5	2 <sup>2</sup>	\$290,519	\$959,749	\$1,160,979
6	5	\$617,603	\$2,061,029	\$2,487,335
7	0	\$0	\$0	\$0
8	0	\$0	\$0	\$0
9	7 <sup>3</sup>	\$1,162,075	\$3,307,303	\$4,150,194
10	0	\$0	\$0	\$0
National Data Analysis				\$150,000

Equipment Replacement				\$1,000,000
Totals	24	\$3,522,791	\$10,479,711	\$14,002,502

<sup>1</sup> Shares one PAMS area with Region 3.

<sup>2</sup> Chicago and Milwaukee have a combined network.

<sup>3</sup> So. Coast & Mojave Desert AQMDs have a combined network

### **FY 2016 PAMS Activities for State and Local Agencies**

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

#### (1) Continue System Implementation

- Reduce number of monitoring sites and monitoring at remaining sites, while remaining in compliance with revised PAMS regulations or approved alternative plans developed as part of reconfiguration efforts.
- Operate remaining existing sites, including replacement of aging equipment.
- Continue to improve NO<sub>x</sub> monitoring, replacing NO<sub>x</sub> instruments with NO<sub>y</sub>/NO instrumentation and/or more sensitive NO<sub>2</sub>/NO<sub>x</sub> monitors at select PAMS sites.
- Install and operate trace level CO monitors at Type II sites.
- Develop and conduct area specific ozone precursor studies based on area specific needs.
- 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.
- Continue making upper-air measurements of wind direction, wind speed, and temperature at a representative location in each PAMS area. The upper-air monitoring program will depend upon region-specific factors such that the optimum design for a given PAMS region is expected to be some combination of remote sensing and conventional atmospheric soundings.
- 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

- Continue to develop and implement PAMS data analysis plans at the state and local levels that demonstrate use of data, provide analyses demonstrating data analysis products and results commensurate with allocated resources targeted for data analysis in grant work plans and the minimum set of PAMS data analyses specified in EPA guidance.
- 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' or 'Unofficial 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) approved by an EPA regional office.
- 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 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 FY2016, 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: (1) continued operation and maintenance of the National Air Toxics Trends Stations (NATTS) Network, and (2) community-scale air toxics monitoring projects (see Table 4). Funding for NATTS and community-scale projects is again being requested using §103 authority which enables 100% federal funding. A request for proposals for community-scale air toxics projects was announced in December 2014 with grant awards being made in early FY2015. It is possible the FY16 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 2016, 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, 2016 – June 30, 2017. 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. Efforts to further improve methods for acrolein and formaldehyde are anticipated to continue through at least 2016. 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 Laurie Trinca in OAQPS' Ambient Air Monitoring Group at 1-919-541-0520, or [trinca.laurie@epa.gov](mailto:trinca.laurie@epa.gov).

EPA is planning to host an Air Toxics Workshop in RTP, NC during October 2015. Air Toxics monitoring staff and managers are encouraged to attend. Grant funds may be used to support participation in this workshop.

The FY 2016 allocation categories and amounts are provided in Table 4. The funding allocation for operation of NATTS sites will be sub-allocated to the regions with state and local agencies hosting those sites. The split of funding among the other listed line items may be adjusted prior to the start of FY 2016 based on consultations with state and local air agency representatives. Funds for other line items listed are anticipated to be used in nationally administered support contracts or competitively awarded to eligible recipients for specific activities.

**Table 4**  
**Proposed FY 2016 Funding for National Air Toxics Trends**  
**and Community-Scale Monitoring**

\$4,178,800	Operation and maintenance of existing and new NATTS sites.
\$250,000	NATTS Quality Assurance: includes periodic Proficiency Testing, targeted Technical Systems Audits, and annual data quality assessment via centrally (OAQPS) managed contracts.
\$250,000	Data Analysis: delineate and assess trends, data and network assessment to include exploration / demonstration of monitoring data utility in providing local scale findings that are useful in S/L/T air quality program management, and Annual Data Analysis Workshop for EPA and S/L/T's to share results; synthesize into annual report.
\$180,000	Methods and Instrumentation: support for improved air toxics monitoring methodology, especially for priority HAPs for which methods either do not exist, or existing methods have been deemed insufficient to meet end user needs; acquire new, upgrade, or replacement sampling or analytical equipment on a limited, case-by-case, as needed basis in direct support of NATTS.
\$100,000	Sample and equipment shipping and handling.
\$3,189,200	Community-scale monitoring projects Funds may be redirected to higher-priority monitoring needs.
\$8,148,000	Total Funding

### **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 the particle 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 PM<sub>10</sub> and PM<sub>2.5</sub> conditions and to assess source attribution for the PM<sub>2.5</sub> and PM<sub>10</sub> 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 of 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 in excess of \$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, a number of 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 60) 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 2016. In addition, some federal agencies provide full funding for additional IMPROVE protocol sites to meet various program or research objectives.

Tribal, state, local, and federal monitoring organizations may continue, discontinue, or add sites for the monitoring period which runs from April 1, 2016 through March 30, 2017. 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 2015 as possible, but no later than December 31, 2015. OAQPS is assuming that that monitoring organizations will retain all current state/local IMPROVE protocol sites in 2016.

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 2016, about \$2.7 million of PM<sub>2.5</sub> monitoring funds appropriated under §103 authority and about \$1.3 million of state/local STAG funds appropriated under §105 authority are being proposed to support visibility monitoring at 110 IMPROVE sites and 2 sites collocated with CASTNET. For more information on the IMPROVE program, contact Tim Hanley (919-541-4417) 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 particular 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 general 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 2016 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 re-examines how the national ambient monitoring programs can be more thoughtfully directed towards their multiple purposes (<http://www.epa.gov/ttn/amtic/monstratdoc.html>)<sup>8</sup>. For the most part, this strategy addresses situations and considerations relevant to states, rather than considerations relevant to tribes. In FY 2008, EPA developed a document titled: *Technical Guidance for the Development of Tribal Air Monitoring Programs* (<http://www.epa.gov/ttn/oarpg/t1/memoranda/techguidancetribalatch.pdf>) 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 2016 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. See: <http://www.epa.gov/oar/tribal/tam.html> for information on the progress in developing new guidance for tribal monitoring.

Technical assistance in conducting ambient monitoring is provided to tribes through the Tribal Air Monitoring Support (TAMS) Center (<http://www4.nau.edu/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/ttn/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)**

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<sup>8</sup> The Ambient Air Monitoring Strategy was last updated in December of 2008.

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 PM<sub>10</sub> and Pb in the form of total suspended particulates; PM<sub>2.5</sub> filters; laboratory services for PM<sub>2.5</sub> 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. Geological Survey, as associated program support or in-kind service. Organizations interested in this should contact Gary Lear of EPA's Clean Air Markets Division ([lear.gary@epa.gov](mailto:lear.gary@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. In essence 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 2016 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<sub>x</sub> 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 similar to 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 and denuders for gravimetric mass, elements, organic and elemental carbon, and anions and cations.
- Analysis of selected denuders for gas-phase ammonia, nitric acid and SO<sub>2</sub>.
- Analysis of selected quartz filter samples for semi-volatile organic aerosols and support services for scanning electron microscopy (SEM) analyses of selected filter samples. Electron microscopic analyses may also be required to be coupled with elemental particle analyses when ordered.
- Analysis by Inductively-Coupled Plasma Mass Spectrometry (ICPMS) on selected filter samples.
- Sample filter analysis for optical density through the use of densitometry.
- Preparation and refurbishment of denuder devices and adsorbent traps, filter pretreatment and the shipment and receipt of filters, traps, 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 PM<sub>10</sub>). Analysis will be done by Inductively-coupled Plasma Mass Spectrometry (ICP-MS) following EPA Federal Equivalent Method EQL-0510-191 or by X-ray Fluorescence (XRF) analysis of PM<sub>10</sub> 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](mailto:trinca.laurie@epa.gov)) or Margaret Dougherty at 919-541-2344 ([dougherty.margaret@epa.gov](mailto:dougherty.margaret@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 \$1200 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 Michael Papp at 919-541-2408 ([papp.michael@epa.gov](mailto:papp.michael@epa.gov)).

**Particulate Matter Filters** - OAQPS has historically purchased particulate matter filters (for PM<sub>10</sub> monitoring, total suspended particulate sampling used for Pb and other metals monitoring and PM<sub>2.5</sub> 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 PM<sub>10</sub> 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](mailto:ricks.solomon@epa.gov)) or Laurie Trinca at 919-541-0520 ([trinca.laurie@epa.gov](mailto:trinca.laurie@epa.gov)).